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A report on research conducted under
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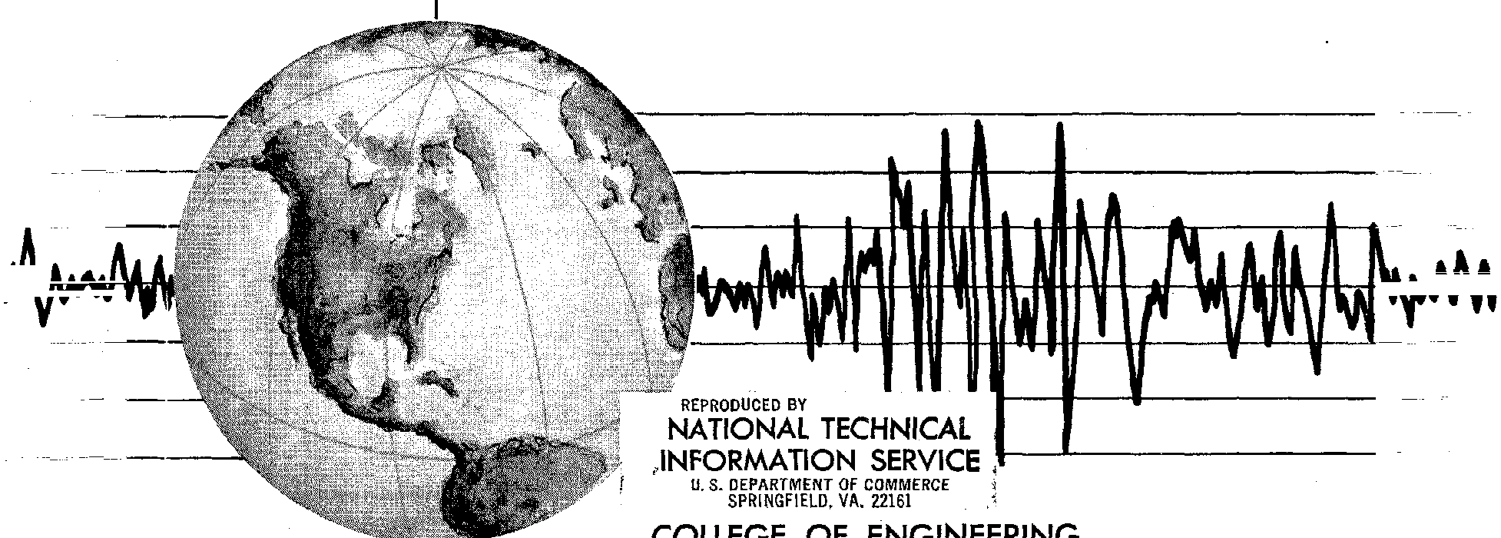

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ABSTRACT

Analytical expressions and numerical results are presented for the complex-valued, dynamic (frequency dependent), flexibility influence coefficients for a homogeneous, isotropic, linearly viscoelastic half space in plane strain or generalized plane stress. These influence coefficients, defined for uniformly spaced nodal points at the surface of the half space, are obtained from solutions of two boundary value problems, associated with harmonically time-varying ($e^{i\omega t}$) stresses uniformly distributed between two adjacent nodal points. Numerical values for these coefficients are presented for a viscoelastic half space of constant hysteretic material. A method is developed to determine from these results the dynamic stiffness matrix, associated with the nodal points at the base of a surface supported structure, for the half space. The resulting dynamic stiffness matrix is shown to be superior compared to the one determined from an available procedure, which is based on solutions of displacement boundary value problems for the half space.

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INTRODUCTION

The direct method for analysis of structure-soil systems (12), which is now widely used for nuclear power plant structures, is an obvious application of the finite element method. In order to define the portion of the soil to be included in the system to be analyzed,a boundary is introduced,whether a natural dividing line such as a soil-rock interface exists at the site or not. Vertically oriented wave transmitting boundaries have been developed to limit the lateral extent of the soil region included in the finite element system and yet simulate the infinite extent of the soil region (16). However, the horizontally oriented boundary, which defines the vertical extent of the soil region included in the analysis and where the earthquake input is defined, is assumed to be rigid.

If essentially similar soils extend to large depths at the site of the structure, the rigid boundary will distort the response of the structure to an extent depending on its location. By locating this boundary at considerable depth, it may, in principle, be possible to reduce this distortion so that it becomes small enough to be of no practical consequence; however, excessively large computational effort is required in a finite element analysis of the system with such a large soil region. The rigid boundary and the associated distortion of results can be eliminated by modelling the soil region not as a finite element system but as a half space.

The substructure method for earthquake response analysis (8,15) is applicable to systems where the structure is idealized as an assemblage of finite elements and the soil region as a half space. In this approach, structure-soil interaction introduces a dynamic (frequency dependent) stiffness matrix for the soil region in the equations governing the steady-state response of the structure to harmonic ground motion. This matrix $\underline{\mathcal{S}}_f(\omega)$

relates the interaction forces $\underset{\sim}{R}$ (t) at the structure-soil interface to the corresponding displacements $\underset{\sim}{r}$ (t), relative to the free-field earthquake displacement:

$$\underset{\sim}{\mathcal{S}}_f(\omega)\ \bar{\underset{\sim}{r}}\ (\omega) = \bar{\underset{\sim}{R}}\ (\omega) \qquad (1)$$

where the Fourier transform of z(t) has been denoted by $\bar{z}(\omega)$. $\underset{\sim}{\mathcal{S}}_f(\omega)$ is a square matrix of order equal to the number of connection degrees of freedom on the structure-soil interface. For structure-soil systems idealized as two-dimensional--in plane strain or generalized plane stress--each connection nodal point has two-degrees of freedom. The m-nth element of this matrix, $\mathcal{S}_f(\omega)_{mn}$, is defined in Fig. 1. This matrix is determined from solutions of boundary value problems for the soil region arising from the application of harmonic forces or displacements individually in each of the connection degrees of freedom.

In an earlier study (1) of dynamics of soil regions idealized as a viscoelastic half space in generalized plane stress or plane strain, it appeared preferable to solve the boundary value problems with prescribed displacements rather than applied forces. The solution for the latter case would not ensure compatibility of displacements at the surface of the soil region with the deformations in a displacement formulation of the finite element system representing the structure. Note that the displacement is prescribed only in the connection degrees of freedom, the tractions are zero outside the structure-soil interface, thus leading to a mixed boundary value problem. Instead of solving this mixed problem directly, it was more convenient to proceed as follows: (i) Solve the corresponding displacement boundary value problems with displacements prescribed as zero outside the base of the structure on the structure-soil interface; numerical solutions have been presented in both graphical and tabular form. (ii) Assemble an expanded version of the dynamic stiffness matrix $\underset{\sim}{\mathcal{S}}_f(\omega)$ including enough nodal points outside the interface. (iii) Finally, introduce the condition of zero forces and 'condense out' the outside degrees of freedom, a process which requires large computational effort. At the structure-soil interface, this approach insures compatibility of displacements but equilibrium of stresses is violated. This local discrepancy in stress equilibrium is unbounded and does not diminish with reduction in spacing between nodal points.

It is demonstrated in the first part of this paper that the resulting inaccuracy in the dynamic stiffness matrix for the half space is significant. The principal objective of this paper is to develop a procedure which is devoid of these errors and does not require 'condensing out' the degrees of freedom outside the base of the structure on the structure-soil interface. The procedure is based on solutions of two boundary value problems with prescribed stresses at the surface; normal stresses are prescribed in one problem and shear stresses in the other. Fig. 2 displays the problem associated with prescribed normal stresses. Solutions are presented herein for these two dynamic boundary value problems for a homogeneous, isotropic, linearly viscoelastic half space in generalized plane stress or plane strain. Two viscoelastic models, Voigt solid and constant hysteretic solid, are considered. The solutions in the form of indefinite integrals are first presented for the corresponding elastic material, the correspondence principle is utilized to obtain solutions for the viscoelastic material, and numerical results are tabulated for a wide range of the important parameters for the convenience of other researchers. A procedure for determining dynamic (frequency-dependent) stiffness matrices for the half space from the numerical results for the two boundary value problems is described. Finally, it is shown that the dynamic stiffness matrix for the half space determined in this manner is devoid of the inaccuracy of the previous approach (1).

EVALUATION OF AVAILABLE PROCEDURE

The dynamic stiffness matrix $\underline{\mathcal{S}}_f(\omega)$ for the half space with respect to a discrete set of nodal points at the structure-soil interface, as determined from the results and procedures of an earlier study (1), is employed to analyze a problem for which the dynamic flexibility (or compliance) coefficients or dynamic stiffness (or impedance) coefficients are available from a classical type analysis, without discretization of the structure-soil interface.

Such results are available for the system of Fig. 3, a rigid strip footing of infinite length and width 2B supported on the surface of an elastic half space (11). For steady state harmonic vibration at frequency ω the horizontal, vertical and rotational displacements

$$r_H(t) = \bar{r}_H e^{i\omega t},\ r_V(t) = \bar{r}_V e^{i\omega t},\ r_M(t) = \bar{r}_M e^{i\omega t}$$

and the corresponding forces

$$R_H(t) = \bar{R}_H e^{i\omega t},\ R_V(t) = \bar{R}_V e^{i\omega t},\ R_M(t) = \bar{R}_M e^{i\omega t}$$

are related as follows:

$$\begin{Bmatrix} \bar{r}_V \\ \bar{r}_H \\ \bar{r}_M \cdot B \end{Bmatrix} = \frac{1}{\pi\mu} \begin{bmatrix} C_{VV} & 0 & 0 \\ 0 & C_{HH} & C_{HM} \\ 0 & C_{HM} & C_{MM} \end{bmatrix} \begin{Bmatrix} \bar{R}_V \\ \bar{R}_H \\ \bar{R}_M/B \end{Bmatrix} \tag{2}$$

or in compact form

$$\bar{\underline{r}}_o = \frac{1}{\pi\mu}\, \underline{\mathcal{C}}\, \bar{\underline{R}}_o \tag{3}$$

where the subscript "o" refers to rigid-body motion and associated forces, and μ is the shear modulus for the material of the half space. The dimensionless compliance coefficients C_{VV}, C_{HH}, C_{HM} and C_{MM} are functions of the Poisson's ratio ν and the dimensionless frequency parameter

$$A_0 = \frac{\omega B}{c_s} \tag{4}$$

where c_s is the velocity of equivoluminal waves in the half space ; $\underset{\sim}{C}$ denotes the compliance matrix.

From the available compliance coefficients for the system of Fig. 3 with an elastic half space, the results for the same system but with a viscoelastic half space were determined numerically by utilizing an alternative representation of the elastic-viscoelastic analogy (5). For accurate numerical evaluation, it is necessary that the compliance coefficients for the elastic material be available up to a large enough value of the excitation frequency, beyond which the coefficients are small enough to be replaced by zero. The available data (Fig. 4) which reasonably fits this requirement is for Poisson's ratio of 0.5 and for the case of a rigid footing perfectly bonded to the half space. In numerically evaluating the compliance coefficients for a viscoelastic half space, the elastic coefficients were simply read-off from Fig. 4. Obviously, it would have been better to accurately re-evaluate the elastic coefficients from the analytical results (11) but this was not considered necessary for the purposes of this study. The compliance coefficients for the system of Fig. 3 with a viscoelastic half space, and the material idealized as a Voigt solid with loss coefficient $\xi = 0.1$, as computed from the numerical data of Fig. 4 and the alternative representation of the elastic-viscoelastic analogy, are presented in Fig. 5; see Appendix A for more information.

The compliance matrix $\underset{\sim}{C}(A_0)$ can also be expressed in terms of $\underset{\sim}{\mathcal{S}}_f(\omega)$, the dynamic stiffness matrix with reference to nodal point degrees of freedom, as follows:

$$\mathcal{C}(A_0) = \pi\mu\,[\underline{\Delta}^T \underline{\mathcal{S}}_f(\omega)\,\underline{\Delta}]^{-1} \qquad (5)$$

where $\underline{\Delta}$ transforms the rigid body degrees of freedom $\underline{r}_0$ to the nodal point degrees of freedom $\underline{r}$. The dynamic stiffness matrix $\underline{\mathcal{S}}_f(\omega)$ for a viscoelastic half space, with the material idealized as a Voigt solid with loss coefficient $\xi = 0.1$ and Poisson's ratio = 1/2, is determined in accordance with the earlier procedures (1). The compliance matrix $\underline{\mathcal{C}}(A_0)$ is then determined from Eq. 5. The compliance coefficients determined in this manner are also presented in Fig. 5.

It is apparent from Fig. 5 that the available procedures for evaluating $\underline{\mathcal{S}}_f(\omega)$ do not result in satisfactory solutions for the compliance coefficients for the system of Fig. 3. The compliance coefficients determined in this manner oscillate around the results obtained as described above by extending those in Ref. 11. These oscillations remained even after the numbers of nodal points on and outside the footing-soil interface were increased.

At the structure-soil interface, the available procedure for evaluating $\underline{\mathcal{S}}_f(\omega)$ insures compatibility of displacements but equilibrium of stresses is violated. For displacement interpolation functions that vary linearly over the boundary of finite elements, stresses at the base of the structure are bounded and uniform over an element. However, the stresses in the half space due to prescribed linearly varying displacements at nodal point ℓ have a logarithmic singularity at nodal points $\ell-1$, ℓ and $\ell+1$ (4). This local discrepancy in stress equilibrium is unbounded and does not diminish with reduction in spacing between nodal points. It is apparent from Fig. 5 that the resulting errors are significant. A procedure for determining $\underline{\mathcal{S}}_f(\omega)$ which is devoid of these errors is presented next.

BASIC EQUATIONS FOR ELASTIC MEDIA

With reference to an orthogonal cartesian coordinate system x_1, x_2, x_3, the equations relating τ_{ij}, the stress components, to u_i, the displacement components, applicable to a homogeneous, isotropic, linearly elastic body in the state of plane strain parallel to the $x_1 - x_2$ plane are

$$\tau_{ij} = \lambda\theta\delta_{ij} + \mu(u_{i,j} + u_{j,i}) \;, \qquad (i,j = 1,2) \tag{6}$$

where

$$u_{i,j} \equiv \frac{\partial u_i}{\partial x_j}$$

$\theta = u_{i,i}$ with a repeated subscript indicating summation as the index that is repeated takes the values 1,2; δ_{ij} is the Kronecker delta, λ and μ are the Lamé constants. In addition, $\tau_{33} = \lambda\theta$, $\tau_{13} = \tau_{23} = 0$.

The Navier equations of equilibrium are

$$\mu\nabla^2 u_i + (\lambda + \mu)\theta_{,i} = \rho\ddot{u}_i \;, \quad (i = 1,2) \tag{7}$$

where ρ is the density of the medium, $\ddot{u}_i \equiv \dfrac{\partial^2 u_i}{\partial t^2}$ and ∇^2 is the Laplace operator, i.e. $\nabla^2 u_i \equiv u_{i,jj}$, $(i = 1,2)$.

The displacements can be expressed in terms of potential functions ϕ and ψ:

$$\begin{aligned} u_1 &= \phi_{,1} + \psi_{,2} \\ u_2 &= \phi_{,2} - \psi_{,1} \end{aligned} \tag{8}$$

Eq. 7 will be satisfied if the functions ϕ and ψ are solutions of the wave equations

$$\nabla^2\phi = \frac{1}{c_p^{\,2}}\ddot{\phi} \quad , \quad \nabla^2\psi = \frac{1}{c_s^{\,2}}\ddot{\psi} \tag{9}$$

where

$$c_p = \sqrt{\frac{\lambda+2\mu}{\rho}} \quad , \quad c_s = \sqrt{\frac{\mu}{\rho}} \tag{10}$$

c_p is the velocity of irrotational waves (also referred to as longitudinal, dilatational, or p waves); and c_s the velocity of equivoluminal waves (also referred to as transverse, distortional, or s waves).

The stress components can, from Eqs. 6 and 8,be expressed in terms of the potential functions:

$$\begin{aligned}
\tau_{11} &= \lambda\nabla^2\phi + 2\mu(\phi_{,11} + \psi_{,12}) \\
\tau_{22} &= \lambda\nabla^2\phi + 2\mu(\phi_{,22} - \psi_{,12}) \\
\tau_{12} &= \mu(2\phi_{,12} - \psi_{,11} + \psi_{,22})
\end{aligned} \tag{11}$$

Eqs. 6 and 7 apply directly to a plane strain problem. They also apply to problems in generalized plane stress if λ is replaced by $\tilde{\lambda} \equiv 2\lambda\mu/(\lambda+2\mu)$.

EQUATIONS FOR STEADY STATE HARMONIC MOTIONS

As mentioned earlier, the objective is to obtain solutions for a half space with prescribed stress varying in time as $e^{i\omega t}$. As the governing equations are linear, any response quantity:

$$r(x_1,x_2,t) = \bar{r}(x_1,x_2,\omega)e^{i\omega t} \tag{12}$$

where $\bar{r}$ is the complex frequency response function for r; it is a complex valued function of the excitation frequency ω. Eq. 12 applies to all response quantities: τ_{ij}, u_i, ϕ, ψ etc. and its substitution into Eq. 9 leads to

$$\nabla^2\bar{\phi} + \kappa_p{}^2\bar{\phi} = 0$$
$$\nabla^2\bar{\psi} + \kappa_s{}^2\bar{\psi} = 0 \tag{13}$$

where

$$\kappa_p = \frac{\omega}{c_p} \quad , \quad \kappa_s = \frac{\omega}{c_s} \tag{14}$$

and Eq. 8 becomes

$$\bar{u}_1 = \bar{\phi}_{,1} + \bar{\psi}_{,2}$$
$$\bar{u}_2 = \bar{\phi}_{,2} - \bar{\psi}_{,1} \tag{15}$$

Similarly τ_{ij}, ϕ and ψ get replaced by $\bar{\tau}_{ij}$, $\bar{\phi}$ and $\bar{\psi}$ respectively in Eq. 11 which with the aid of Eq. 13 becomes

$$\bar{\tau}_{11} = \mu(-\kappa_s{}^2\bar{\phi} - 2\bar{\phi}_{,22} + 2\bar{\psi}_{,12})$$
$$\bar{\tau}_{22} = \mu(-\kappa_s{}^2\bar{\phi} - 2\bar{\phi}_{,11} - 2\bar{\psi}_{,12}) \tag{16}$$
$$\bar{\tau}_{12} = \mu(-\kappa_s{}^2\bar{\psi} + 2\bar{\phi}_{,12} - 2\bar{\psi}_{,11})$$

DYNAMIC FLEXIBILITY INFLUENCE COEFFICIENTS--ELASTIC MEDIUM

The spacing b between the nodal points on the structure-soil interface is taken to be uniform in order to produce results that are widely applicable. The stress components prescribed on the surface of the half space are assumed to be constant between adjacent nodal points in order to ensure compatibility of these stresses with those at the base of the finite element system representing the structure--assuming that interpolation functions vary linearly and stresses remain constant over a side of a finite element.

The stresses prescribed at the boundary $x_2 = 0$ of the half space are of the form

$$\tau_{j2}(x_1,0,t) = \bar{\tau}_{j2}(x_1,0,\omega)e^{i\omega t} \tag{17}$$

Consider the particular case (Fig. 2)

$$\begin{aligned} \bar{\tau}_{12}(x_1,0,\omega) &= 0 \\ \bar{\tau}_{22}(x_1,0,\omega) &= h(x_1) \end{aligned} \tag{18}$$

where, as shown in Fig. 6,

$$h(x_1) = \begin{cases} 1/b & -b/2 \leq x_1 \leq b/2 \\ 0 & x_1 < -b/2 \text{ and } x_1 > b/2 \end{cases} \tag{19}$$

Thus the prescribed stresses represent a harmonic force of unit amplitude in direction x_2 uniformly distributed over the spacing b between two adjacent nodal points. The displacements at nodal point m caused by the prescribed stresses defined by Eqs. 17 and 18 are denoted by $F_m^{i2}\ e^{i\omega t}$; i = 1,2. (Fig. 2).

Similarly the displacements at nodal point m due to prescribed stresses defined by Eqs. 17 and 20:

$$\bar{\tau}_{12}(x_1,0,\omega) = h(x_1)$$
$$\bar{\tau}_{22}(x_1,0,\omega) = 0 \tag{20}$$

are denoted by $F_m^{i1}\, e^{i\omega t}$; i = 1,2. The stresses prescribed by Eqs. 17 and 20 represent a harmonic force of unit amplitude in direction x_1 uniformly distributed over the spacing b between two adjacent nodal points. The quantities F_m^{ij} will be referred to as dynamic (frequency dependent) flexibility influence coefficients; they are complex valued.

The general solution for the Fourier Transform (along x_1) of Eq. 13 is written, the arbitrary constants are determined from Eq.16 for the prescribed stresses of Eqs. 18 and 20, and then the displacements are determined from Eq. 15. The solutions for the dynamic influence coefficients are*

$$F_m^{11}\,(a_o) = \frac{a_o^{\,2}}{\pi\mu} \int_0^\infty \hat{h}(\beta)\, \frac{\sqrt{\beta^2-a_o^{\,2}}\;\;\cos(m-\frac{1}{2})\beta}{4\beta^2\sqrt{(\beta^2-\chi a_o^{\,2})(\beta^2-a_o^{\,2})} - (2\beta^2-a_o^{\,2})^2}\, d\beta \tag{21a}$$

$$F_m^{22}\,(a_o) = \frac{a_o^{\,2}}{\pi\mu} \int_0^\infty \hat{h}(\beta)\, \frac{\sqrt{\beta^2-\chi a_o^{\,2}}\;\;\cos(m-\frac{1}{2})\beta}{4\beta^2\sqrt{(\beta^2-\chi a_o^{\,2})(\beta^2-a_o^{\,2})} - (2\beta^2-a_o^{\,2})^2}\, d\beta \tag{21b}$$

$$F_m^{12}\,(a_o) = \frac{1}{\pi\mu} \int_0^\infty \hat{h}(\beta)\, \frac{\beta[-2\sqrt{(\beta^2-\chi a_o^{\,2})(\beta^2-a_o^{\,2})} + 2\beta^2-a_o^{\,2}]\sin(m-\frac{1}{2})\beta}{4\beta^2\sqrt{(\beta^2-\chi a_o^{\,2})(\beta^2-a_o^{\,2})} - (2\beta^2-a_o^{\,2})^2}\, d\beta \tag{21c}$$

*See Appendix B for details of derivation

$$F_m^{21}(a_o) = -F_m^{12}(a_o) \tag{21d}$$

where the dimensionless frequency parameter

$$a_o = \frac{\omega b}{c_s} \tag{22}$$

β is a dimensionless Fourier transform parameter, and $\hat{h}(\beta)$ is the Fourier transform of $h(x_1)$:

$$\hat{h}(\beta) = \frac{2}{\beta} \sin \frac{\beta}{2} \tag{23}$$

and

$$\chi = \frac{c_s^2}{c_p^2} = \frac{1-2\nu}{2(1-\nu)} \tag{24}$$

where ν is the Poisson's ratio for the elastic solid.

DYNAMIC FLEXIBILITY INFLUENCE COEFFICIENTS--VISCOELASTIC MEDIUM

The equations governing steady state harmonic motions of a viscoelastic material are identical to those for elastic media--Eqs. 10, 13 to 16--except that the elastic constants are replaced by their complex moduli (2,7). Therefore, according to the correspondence principle (2,7), the frequency-dependent, complex-valued flexibility influence coefficients for a viscoelastic half space also are given by Eq. 21 provided the Lamé constants λ and μ are replaced by their complex moduli $\lambda^*(\omega)$ and $\mu^*(\omega)$, where ω is the frequency of vibration. Note that λ and μ enter into Eq. 21 directly, as well as indirectly through κ_p^2 and κ_s^2--see Eqs. 10 and 14.

The complex moduli depend on the viscoelastic model assumed for the material. For a Voigt solid--one of the two models of interest here--

$$\lambda^*(\omega) = \lambda[1+i\omega \frac{\lambda'}{\lambda}]$$
$$\mu^*(\omega) = \mu[1+i\omega \frac{\mu'}{\mu}] \tag{25}$$

where λ' and μ' may be referred to as the Lamé constants of viscosity. Introducing the assumption (9)

$$\frac{\lambda'}{\lambda} = \frac{\mu'}{\mu}$$

the number of viscous constants is reduced from two to one; furthermore it implies: the material is similarly viscoelastic in bulk and shear deformations; the Poisson's ratio is real valued, independent of ω, and equal to the Poisson's ratio for the corresponding elastic material. Eq. 25 may now be rewritten as

$$\lambda^*(\omega) = \frac{\lambda}{\zeta(\omega)} , \quad \mu^*(\omega) = \frac{\mu}{\zeta(\omega)} \tag{26}$$

where

$$\zeta(\omega) = (1+i\omega \frac{\mu'}{\mu})^{-1}$$

In terms of the frequency parameter a_o,

$$\zeta(a_o) = (1+ia_o\xi)^{-1} \tag{27}$$

where

$$\xi = \frac{c_s}{b} \frac{\mu'}{\mu}$$

For a Voigt solid, the energy loss per cycle of harmonic vibration is proportional to the excitation frequency. However, over a considerable range of frequencies, several materials, including rocks and soils, exhibit energy loss substantially independent of the frequency of vibration (6,13).

Such materials may be idealized as a constant hysteretic solid, which differs from a Voigt solid in the value assigned to μ'. For a Voigt solid, μ' is considered to be constant and the energy loss is proportional to ω, whereas for the constant hysteretic solid, the product $\omega\mu'$ is considered to be constant and the energy loss is then independent of ω. For the constant hysteretic solid, therefore

$$\zeta = (1+i\eta)^{-1} \tag{28}$$

where η is a coefficient of energy loss (10).

The dynamic flexibility influence coefficients for Voigt and constant hysteretic solids are obtained by substituting $\lambda^*(\omega)$ and $\mu^*(\omega)$ from Eq. 26 instead of λ and μ, wherever they appear--directly as well as indirectly through a_o--in Eq. 21. The final expressions for nodal point m are presented in Eq. 29, wherein Eq. 23 has been substituted for $\hat{h}(\beta)$:

$$F_m^{11}(a_o) = \frac{2a_o^2\zeta^2}{\pi\mu}\int_0^\infty \frac{\sqrt{\beta^2-\zeta a_o^2}\;\;\sin(\beta/2)\;\;\cos(m-\frac{1}{2})\beta}{\beta[4\beta^2\sqrt{(\beta^2-\chi\zeta a_o^2)(\beta^2-\zeta a_o^2)} - (2\beta^2-\zeta a_o^2)^2]}\,d\beta \tag{29a}$$

$$F_m^{22}(a_o) = \frac{2a_o^2\zeta^2}{\pi\mu}\int_0^\infty \frac{\sqrt{\beta^2-\chi\zeta a_o^2}\;\;\sin(\beta/2)\;\;\cos(m-\frac{1}{2})\beta}{\beta[4\beta^2\sqrt{(\beta^2-\chi\zeta a_o^2)(\beta^2-\zeta a_o^2)} - (2\beta^2-\zeta a_o^2)^2]}\,d\beta \tag{29b}$$

$$F_m^{12}(a_o) = \frac{2\zeta}{\pi\mu}\int_0^\infty \frac{[-2\sqrt{(\beta^2-\chi\zeta a_o^2)(\beta^2-\zeta a_o^2)} + 2\beta^2-\zeta a_o^2]\sin(\beta/2)\sin(m-\frac{1}{2})\beta}{4\beta^2\sqrt{(\beta^2-\chi\zeta a_o^2)(\beta^2-\zeta a_o^2)} - (2\beta^2-\zeta a_o^2)^2}\,d\beta \tag{29c}$$

$$F_m^{21}(a_o) = -F_m^{12}(a_o) \tag{29d}$$

In Eq. 29, as defined earlier, μ is one of the Lamé constants--the shear modulus--for the corresponding elastic solid; χ is defined by Eq. 24, and ζ by Eqs. 27 and 28 for Voigt solid and constant hysteretic solid, respectively. The energy loss per cycle of harmonic vibration in the two types of viscoelastic solids is related to ξ and η; the choice of values for ξ or η for a particular material will be considered later. The dynamic flexibility influence coefficients are complex-valued functions of the dimensionless frequency parameter a_0 (Eq. 22).

DYNAMIC STIFFNESS MATRIX

Because the flexibility coefficients for the half space depend on excitation frequency, it is most convenient to first determine structural response in the frequency domain and then obtain the response to arbitrary ground acceleration by Fourier synthesis. As mentioned earlier, the equations governing the steady-state response of the structure to harmonic ground motion contain $\underline{\mathcal{S}}_f(\omega)$, a frequency-dependent complex-valued stiffness matrix for the soil region (8). This section describes the procedure for determining this matrix from the influence coefficients F_m^{ij}.

For harmonic vibration, the forces at the nodal points on the structure-soil interface $\underline{R}(t) = \bar{\underline{R}}\, e^{i\omega t}$ and the corresponding displacements $\underline{r}(t) = \bar{\underline{r}}\, e^{i\omega t}$. By definition of $\underline{\mathcal{S}}_f(\omega)$, these complex-valued force and displacement vectors are related as

$$\underline{\mathcal{S}}_f(\omega)\ \bar{\underline{r}} = \bar{\underline{R}} \tag{30}$$

Between adjacent nodal points on the structure-soil interface, the interaction stresses imposed on the half space by the structure are uniformly distributed--assuming that interpolation functions vary linearly and stress is constant over a side of a finite element of the structure. If the complex amplitude of the interaction force on element ℓ (Fig. 7)--the element between nodal points ℓ and $(\ell+1)$-- of the structure-soil interface is

$$\bar{\underset{\sim}{P}}_\ell = \begin{Bmatrix} \bar{P}^1_\ell \\ \bar{P}^2_\ell \end{Bmatrix}$$

where the superscripts "1" and "2" denote the components along the x_1 and x_2 axes, the complex amplitude of the displacement at nodal point m is

$$\bar{\underset{\sim}{r}}_m = \begin{Bmatrix} \bar{r}^1_m \\ \bar{r}^2_m \end{Bmatrix}$$

and

$$\underset{\sim}{F}_m = \begin{bmatrix} F^{11}_m & F^{12}_m \\ F^{21}_m & F^{22}_m \end{bmatrix}$$

then, by definition of the dynamic flexibility influence coefficients, for the system of Fig. 7:

$$\begin{Bmatrix} \bar{\underset{\sim}{r}}_1 \\ \bar{\underset{\sim}{r}}_2 \\ \bar{\underset{\sim}{r}}_3 \\ \cdot \\ \cdot \\ \cdot \\ \bar{\underset{\sim}{r}}_N \end{Bmatrix} = \begin{bmatrix} \underset{\sim}{F}^T_1 & \underset{\sim}{F}^T_2 & \underset{\sim}{F}^T_3 & \underset{\sim}{F}^T_4 & \cdot & \cdot & \cdot & \cdot & \underset{\sim}{F}^T_{N-1} \\ \underset{\sim}{F}_1 & \underset{\sim}{F}^T_1 & \underset{\sim}{F}^T_2 & \underset{\sim}{F}^T_3 & \cdot & \cdot & \cdot & \cdot & \underset{\sim}{F}^T_{N-2} \\ \underset{\sim}{F}_2 & \underset{\sim}{F}_1 & \underset{\sim}{F}^T_1 & \underset{\sim}{F}^T_2 & \cdot & \cdot & \cdot & \cdot & \underset{\sim}{F}^T_{N-3} \\ \\ \\ \\ \underset{\sim}{F}_{N-1} & \underset{\sim}{F}_{N-2} & \underset{\sim}{F}_{N-3} & \underset{\sim}{F}_{N-4} & \cdot & \cdot & \cdot & \cdot & \underset{\sim}{F}_1 \end{bmatrix} \begin{Bmatrix} \bar{\underset{\sim}{P}}_1 \\ \bar{\underset{\sim}{P}}_2 \\ \bar{\underset{\sim}{P}}_3 \\ \bar{\underset{\sim}{P}}_4 \\ \cdot \\ \cdot \\ \bar{\underset{\sim}{P}}_{N-1} \end{Bmatrix} \quad (31)$$

Eq. 31 written in compact form is

$$\bar{\underline{r}} = \underline{F}(\omega)\ \bar{\underline{P}} \tag{32}$$

The precise relationship between the displacement at mid-point of element ℓ on the surface of the half space:

$$\bar{\underline{p}}_\ell = \begin{Bmatrix} \bar{p}_\ell^1 \\ \bar{p}_\ell^2 \end{Bmatrix}$$

and the displacements at nodal points ℓ and $(\ell+1)$: $\bar{\underline{r}}_\ell$ and $\bar{\underline{r}}_{\ell+1}$ depends on the vibration frequency ω. However, a reasonable approximation, which is consistent with the linear variation of displacement along a side of a finite element at the base of the structures, is

$$\bar{\underline{p}}_\ell = \frac{1}{2}\,(\bar{r}_\ell + \bar{r}_{\ell+1}) \tag{33}$$

Combining such relationships for all the elements and introducing a transformation matrix $\underline{D}$ leads to

$$\bar{\underline{p}} = \underline{D}\ \bar{\underline{r}} \tag{34}$$

As a consequence of the principle of virtual work

$$\bar{\underline{r}}^T\ \bar{\underline{R}} = \bar{\underline{p}}^T\ \bar{\underline{P}} \tag{35}$$

Substituting Eqs. 30 and 34 into Eq. 35 results in

$$\bar{\underline{r}}^T\ \mathcal{S}_f(\omega)\ \bar{\underline{r}} = \bar{\underline{r}}^T\ \underline{D}^T\ \bar{\underline{P}} \tag{36}$$

Combining Eqs. 32 and 34:

$$\bar{\underset{-}{p}} = \underset{-}{D}\ \underset{-}{F}(\omega)\ \bar{\underset{-}{P}} \tag{37}$$

With the aid of Eqs. 34 and 37, Eq. 36 becomes

$$\bar{\underset{-}{r}}^T\ \underset{-}{\mathcal{S}}_f(\omega)\ \bar{\underset{-}{r}} = \bar{\underset{-}{r}}^T\ \underset{-}{D}^T\ [\underset{-}{D}\ \underset{-}{F}(\omega)]^{-1}\ \underset{-}{D}\ \bar{\underset{-}{r}} \tag{38}$$

Because Eq. 38 is valid for arbitrary $\bar{\underset{-}{r}}$

$$\underset{-}{\mathcal{S}}_f(\omega) = \underset{-}{D}^T\ [\underset{-}{D}\ \underset{-}{F}(\omega)]^{-1}\ \underset{-}{D} \tag{39}$$

Recalling that $\underset{-}{F}(\omega)$ is known in terms of the dynamic flexibility influence coefficients (Eqs. 31 and 32), and $\underset{-}{D}$ is a simple displacement transformation matrix (Eqs. 33 and 34), Eq. 39 provides a means for determining $\underset{-}{\mathcal{S}}_f(\omega)$, the dynamic stiffness matrix for the half space, from the results of the dynamic flexibility influence coefficients $F_m^{ij}(\omega)$.

In employing this $\underset{-}{\mathcal{S}}_f(\omega)$--determined by the above procedure--in the substructure method, equilibrium of stresses will be ensured throughout the structure-soil interface, the compatibility of displacements will be ensured at the connection nodal points but will be violated locally between these nodal points.

NUMERICAL RESULTS FOR INFLUENCE COEFFICIENTS

It is desirable that numerical data for the dynamic influence coefficients $F_m^{ij}(a_o)$ be readily available so that $\underset{-}{\mathcal{S}}_f(\omega)$, the dynamic stiffness matrix for the half space, can be readily determined for analysis of any structure.

Numerical evaluation of the integrals of Eq. 29 for a viscoelastic solid is straightforward, because no singularities or branch points of the integrand appear on the real axis. Simpson's rule provided the more effective means for numerical integration compared to the Fast Fourier Transform algorithm. In the latter method it is necessary to use the same integration interval for all values of m, resulting in either an excessively short integration interval for the smaller values of m or in unacceptably large errors for the larger values of m.

The complex-valued dynamic influence coefficients $F_m^{ij}(a_o)$ are expressed as follows:

$$F_m^{ij}(a_o) = \frac{1}{\mu}[f_m^{ij}(a_o) + ig_m^{ij}(a_o)] \qquad (40)$$

The real and imaginary parts $f_m^{ij}(a_o)$ and $g_m^{ij}(a_o)$ are real-valued functions of the frequency parameter a_o. In addition to the energy loss coefficients ξ or η, the only material constant that explicitly enters into these functions is the Poisson's ratio ν. The Lamé constant μ and density ρ enter only implicitly through the frequency parameter a_o.

The dynamic flexibility influence coefficients f_m^{ij} and g_m^{ij} were evaluated over a range of the frequency parameter a_o for a constant hysteretic solid with constant values of η = 0.01, 0.1, 0.25 and 0.5. Poisson's ratio for these computations is set as $\nu = 1/3$. The results for m = 0,1,2,...8 are presented in Figs. 8 to 16 and in Appendix C.

Results for the purely elastic solid, $\eta = 0$, are not presented. In this case, the procedure for evaluating the integrals of Eq. 29 is more involved because the singularities of the integrand are on the real axis. However, this is no limitation from the point of view of applications, because for real materials a viscoelastic model with small values of η is more appropriate than a purely elastic model. Furthermore, the static values (a_o = 0) are not included because of the logarithmic singularity as a_o approaches zero (11).

Considerable numerical problems arise in evaluating the integrals of Eq. 29 for values of the frequency parameter a_o close to zero and very low values of the energy loss coefficient η. The consequences of these difficulties can be readily observed in the plots of the flexibility influence coefficients, e.g. in Fig. 8. In principle, the use of a large number of integration steps should eliminate this numerical problem. However, because this would require excessive computer storage and computation time, it may not be practical. For more realistic values of the energy loss coefficient (e.g. $\eta = 0.1$) these numerical problems do not arise with an acceptable number of integration steps (see Appendix D for further details).

Some features of the results for the dynamic flexibility influence coefficients are apparent in Figs. 8 to 16: These coefficients decay as the frequency parameter increases. With increase in m, these coefficients become smaller and vary with frequency in an increasingly oscillatory manner.

The dynamic flexibility influence coefficients presented above are applicable to foundation materials over a wide range of strain amplitude. At very small strains one of the two linear viscoelastic models is generally appropriate and the numerical data presented is directly applicable. The selection of values of ξ or η may be based on available data (3,10). Preferably, they should be determined from experiments on specimens of the foundation material subjected to harmonically varying stresses and strains and the following equations:

$$\frac{\Delta W}{W} = 2\pi \frac{\omega\mu'}{\mu} = 2\pi a_o \xi \qquad (41)$$

for a Voigt solid, and

$$\frac{\Delta W}{W} = 2\pi\eta \qquad (42)$$

for a constant hysteretic solid. In these equations, ΔW is the energy loss per cycle given by the area of the stress-strain ellipse, and W is the strain energy stored in an elastic material which experiences the same amplitudes of stress and strain as the viscoelastic material. At the larger strains associated with intense earthquake motions the linear viscoelastic models may be appropriate for rocks, but the behavior of many soils departs from linear viscoelasticity resulting in non-elliptical stress-strain loops (13); $\Delta W/W$ is substantially independent of the vibration frequency, but is a function of the strain amplitude (13,14). In view of the well known concept of equivalent viscous damping, the numerical results for the constant hysteretic solid with $\Delta W/W$ the same as experimentally determined for soils may be used even though the linear viscoelastic model is strictly inapplicable.

The results presented above are for a viscoelastic half space in the state of plane strain. They are also applicable to problems in plane stress provided ν is replaced by $\tilde{\nu}$ and E by $\tilde{E}$ where

$$\tilde{\nu} = \frac{\nu}{1+\nu} , \quad \tilde{E} = \frac{1+2\nu}{(1+\nu)^2} E \tag{43}$$

Thus, the numerical results are applicable to plane stress systems with $\tilde{\nu} = 1/4$.

EVALUATION OF THE NEW PROCEDURE

In order to establish its validity, $\underset{\sim}{\mathcal{S}}_f(\omega)$, the dynamic stiffness matrix for the half space with respect to a discrete set of nodal points at the structure-soil interface, as determined from the numerical data and the procedures of the preceeding sections, is employed to analyze the system of Fig. 3. The compliance matrix $\underset{\sim}{\mathcal{C}}(A_o)$ is determined from Eq. 5. The three sets--with the footing discretized into four, ten and twenty elements, respectively--of compliance coefficients determined in this manner for a viscoelastic half space, with the material idealized as a Voigt solid with energy loss coefficient ξ = 0.1 and Poisson's ratio = 1/2, are presented in Fig. 17. Also presented are the results obtained earlier (Fig. 5) by numerical application of an alternative representation of the elastic-viscoelastic analogy to the "exact" results (Fig. 4) for a purely elastic half space.

For the smaller values of the dimensionless frequency parameter A_0, the compliance coefficients determined from $\underset{=}{\mathcal{S}}_f(\omega)$ are essentially identical--even with as few as four elements--to those obtained from numerical application of the elastic-viscoelastic analogy to the "exact" results for the elastic half space; however, at larger values of A_0, the difference between the two types of results does not reduce beyond some small value even when the number of elements is increased to as many as 20. It is believed that the discrepancy will not be reduced further even if the number of elements was more than 20, and that it is really due to the numerical errors in the results for the elastic half space--as used here--to which the elastic-viscoelastic analogy was applied. As mentioned earlier, the compliance coefficients for elastic half space were not accurate enough to start with because they were read off from Fig. 4; furthermore, these coefficients were available only up to A_0 = 10 and were set equal to zero for larger values of A_0. The resulting numerical errors in the compliance coefficients determined for the viscoelastic half space via the elastic-viscoelastic analogy are more significant for the larger values of A_0.

In spite of these discrepancies, it is apparent that the approach developed in the preceeding sections provides better results for the dynamic stiffness matrix $\underset{=}{\mathcal{S}}_f(\omega)$ than were possible by the earlier procedures (1).

CONCLUSION

Analytical expressions and numerical results have been presented for the dynamic (frequency dependent), flexibility influence coefficients for a homogeneous, isotropic, linearly viscoelastic half space in plane strain or generalized plane stress. These influence coefficients, defined for uniformly spaced nodal points at the surface, were obtained from solutions of two boundary value problems, associated with harmonically time-varying ($e^{i\omega t}$) stresses uniformly distributed between two adjacent nodal points. Numerical values of these coefficients were presented for a viscoelastic half space of constant hysteretic material.

A method has been developed to determine from these results the dynamic stiffness matrix, associated with the nodal points at the base of a surface-supported structure, for the half space. The resulting dynamic stiffness matrix was shown to be superior compared to the one which was based on solutions of displacement boundary value problems for the half space (1).

Utilizing the results and procedures developed in this work, the earthquake response of a structure, idealized as a two-dimensional finite element system, supported on the surface of a viscoelastic half space in plane strain or generalized plane stress can be analyzed by the substructure method (8). In such an analysis it would not be necessary to limit the base of the structure to a rigid plate, an assumption made in previously reported solutions for continuum models of the soil region.

In the direct finite element method (12) a boundary is introduced to define a portion of the soil region to be included in the system to be analyzed, whether a natural dividing line such as a soil-rock interface exists at the site or not. The horizontally oriented boundary, which defines the vertical extent of the soil region included in the finite element system and where the earthquake input is defined, is assumed to be rigid. If essentially similar soils extend to large depth at the site of the structure, this rigid boundary will distort the response of the structure to an extent depending on its location. The results of this work along with the substructure method would make it possible to eliminate the rigid boundary and the associated distortion of results, thus leading to reliable results for earthquake response of structures at such sites.

ACKNOWLEDGEMENT

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NOTATION

a_o	=	dimensionless frequency parameter, defined by Eq. 22
A_o	=	dimensionless frequency parameter, defined by Eq. 4
b	=	spacing between nodal points
B	=	half-width of rigid footing
c_p	=	velocity of irrotational waves
c_s	=	velocity of equivoluminal waves
$\underset{\sim}{D}$	=	displacement transformation matrix, transforms $\underset{\sim}{r}$ to $\underset{\sim}{p}$
$\hat{f}(\beta_o)$	=	Fourier transform of $f(x_1)$
F_m^{ij}	=	frequency-dependent flexibility influence coefficients
f_m^{ij}, g_m^{ij}	=	real and imaginary parts of F_m^{ij}, defined by Eq. 40
$h(x_1)$	=	function defined by Eq. 19 and Fig. 6
$\underset{\sim}{p}$	=	element displacements
$\underset{\sim}{P}$	=	element forces
$\bar{q}$	=	complex frequency response function for q

$\underset{\sim}{r}$ = nodal displacements

$\underset{\sim}{r}_o$ = rigid footing displacements

$\underset{\sim}{R}$ = nodal forces

$\underset{\sim}{R}_o$ = rigid footing forces

t = time variable

u_i = displacement components

x_1, x_2, x_3 = cartesian coordinate system

$\zeta(a_o)$ = function defined by Eqs. 27 and 28

θ = $u_{i,i}$

κ_p, κ_s = wave numbers defined by Eq. 14

λ, μ = Lamé constants of elasticity

λ', μ' = Lamé constants of viscosity

λ^*, μ^* = complex-valued Lamé constants of viscoelasticity

ν = Poisson's ratio

ξ, η = coefficients characterizing energy loss in Voigt and constant hysteretic solids

ρ	=	density
τ_{ij}	=	stress components
ϕ, ψ	=	displacement potential functions
χ	=	c_s^2/c_p^2 (Eq. 24)
ω	=	excitation frequency
$\underline{\Delta}$	=	displacement transformation matrix, transforms $\underline{r}_o$ to $\underline{r}$
$\underline{\mathcal{C}}(A_o)$	=	frequency-dependent, complex-valued rigid footing compliance matrix
$\underline{\mathcal{S}}_f(\omega)$	=	frequency-dependent, complex-valued foundation stiffness matrix

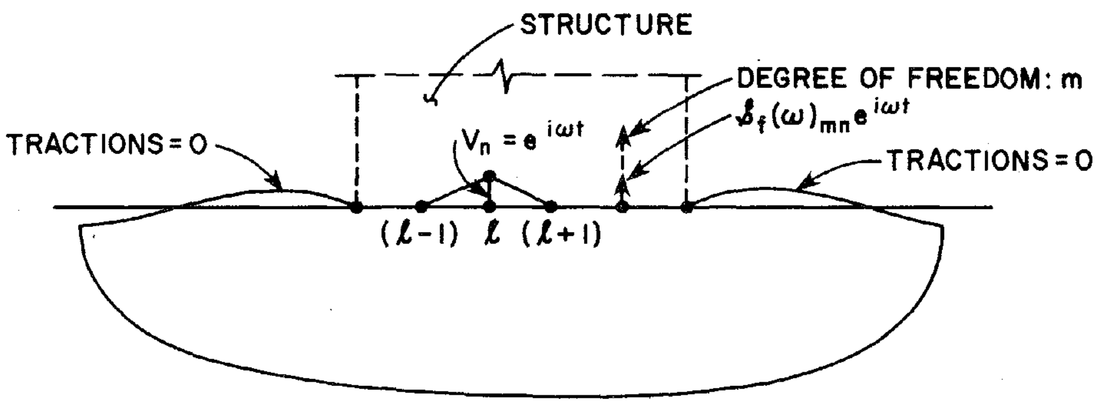


FIG. 1: PHYSICAL INTERPRETATION OF $\mathcal{S}_f(\omega)$

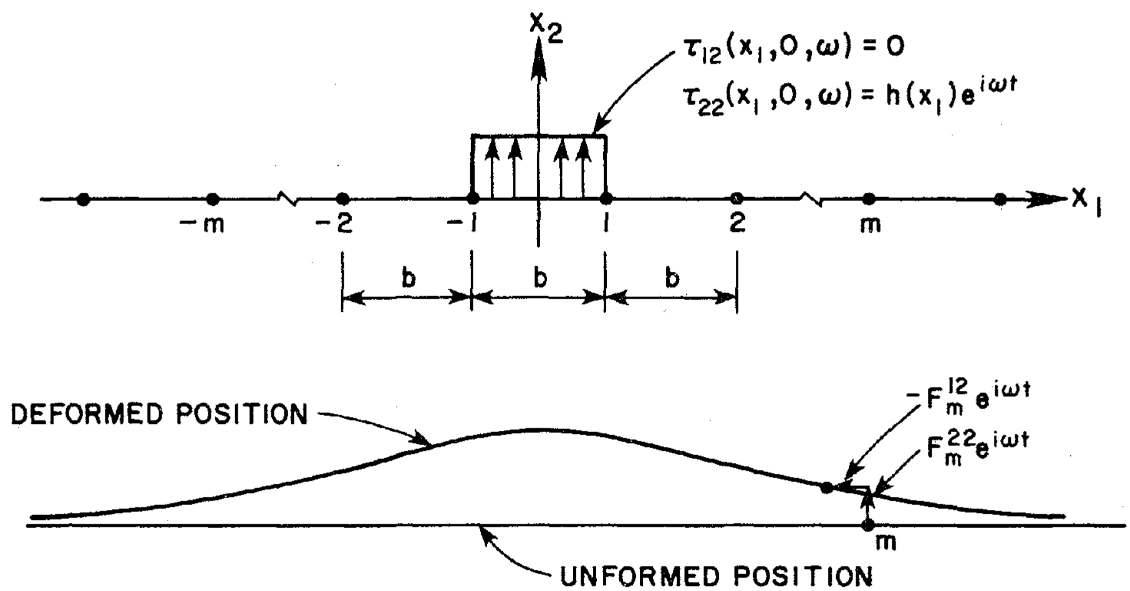


FIG. 2: STRESS BOUNDARY VALUE PROBLEM AND DEFINITION OF INFLUENCE COEFFICIENTS

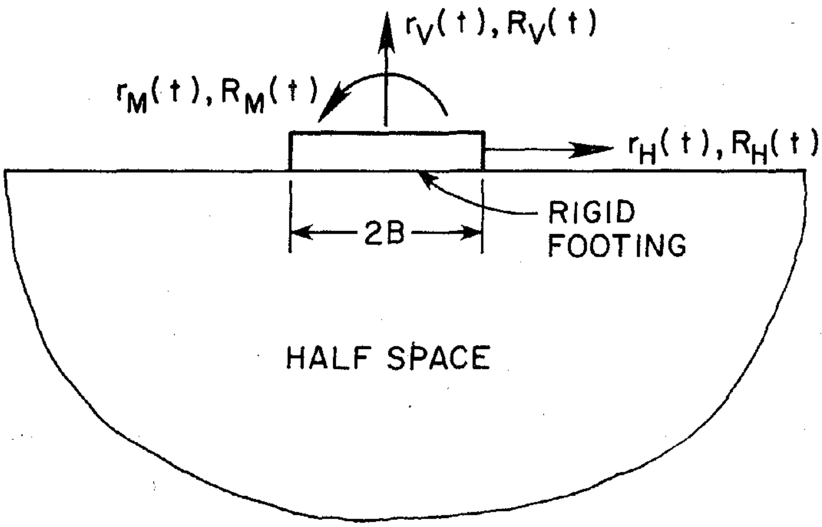


FIG. 3: RIGID STRIP FOOTING ON HALF SPACE

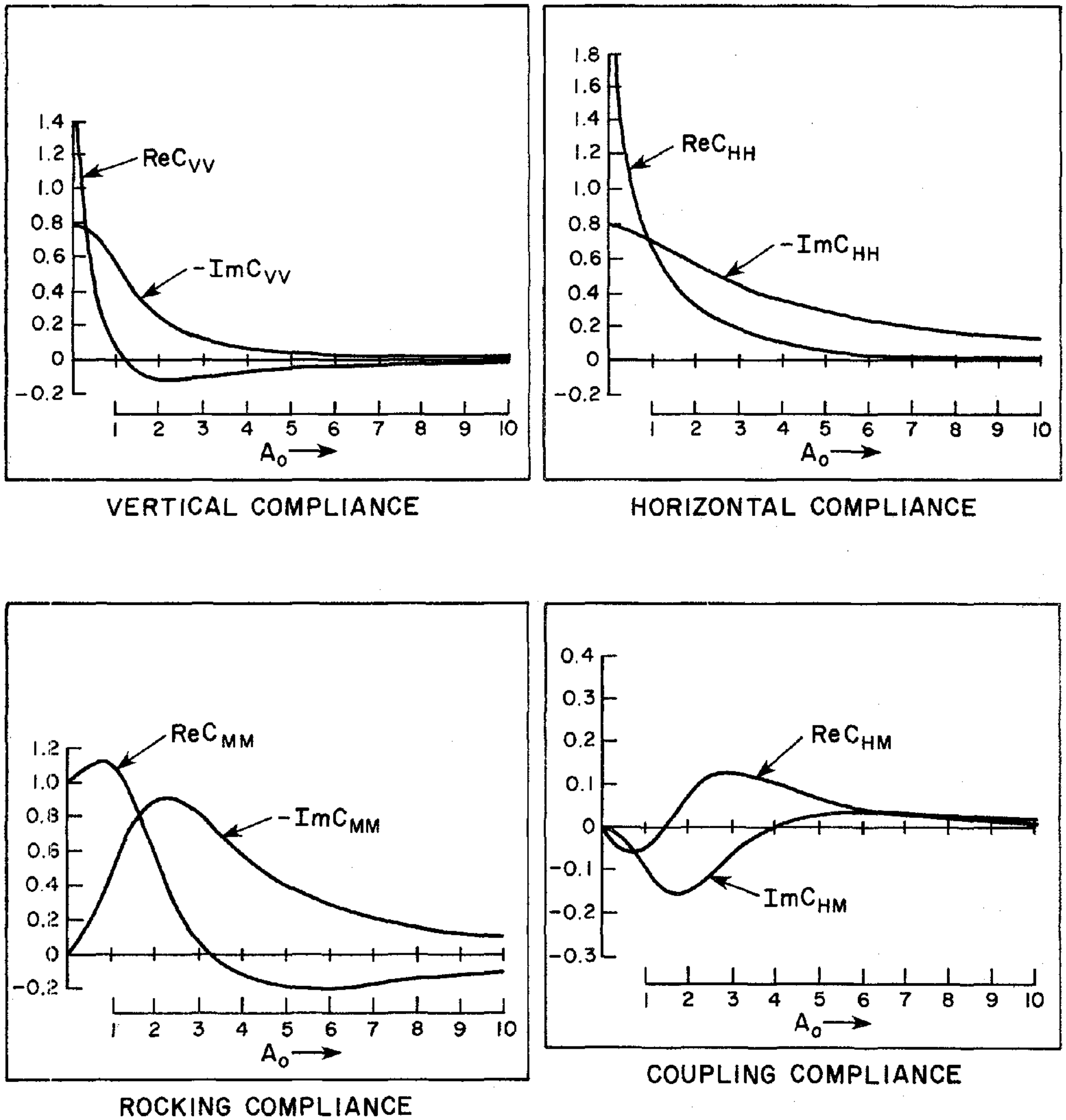


FIG. 4: COMPLIANCE COEFFICIENTS FOR RIGID FOOTING ON ELASTIC HALF SPACE: POISSON'S RATIO $\nu = 1/2$ (FROM REFERENCE 11)

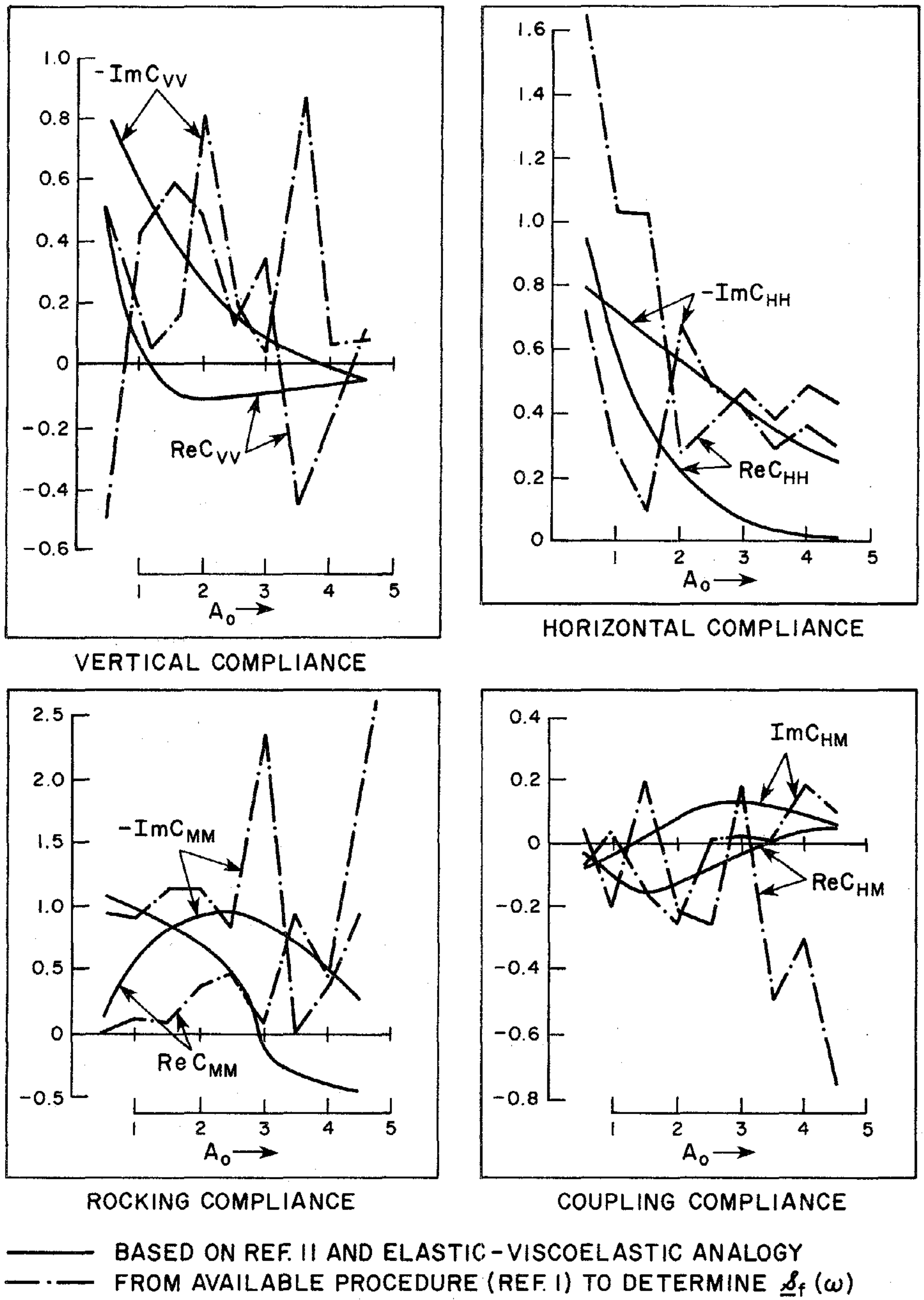


FIG. 5: EVALUATION OF AVAILABLE PROCEDURE TO EVALUATE $\mathcal{S}_f(\omega)$. COMPLIANCE COEFFICIENTS ARE FOR SYSTEM OF FIG. 3 WITH A VISCOELASTIC HALF SPACE: $\nu = 1/2$, $\xi = 0.1$

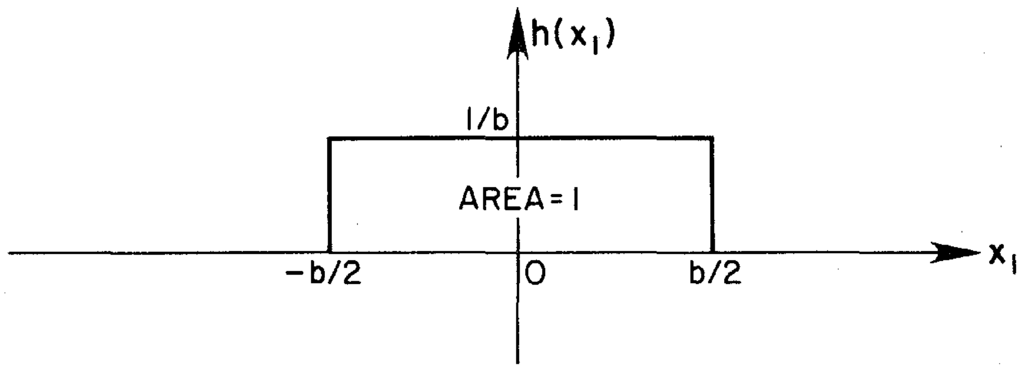


FIG. 6: DEFINITION OF $h(x_1)$

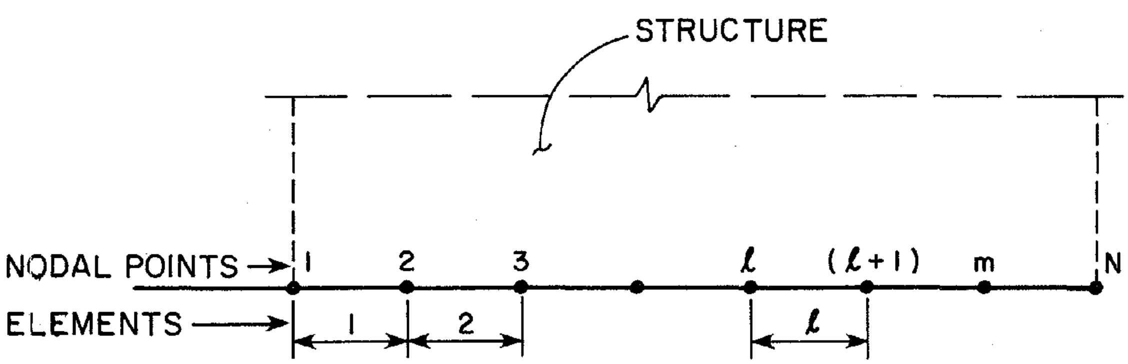


FIG. 7: NODAL POINTS AND ELEMENTS OF STRUCTURE-SOIL INTERFACE

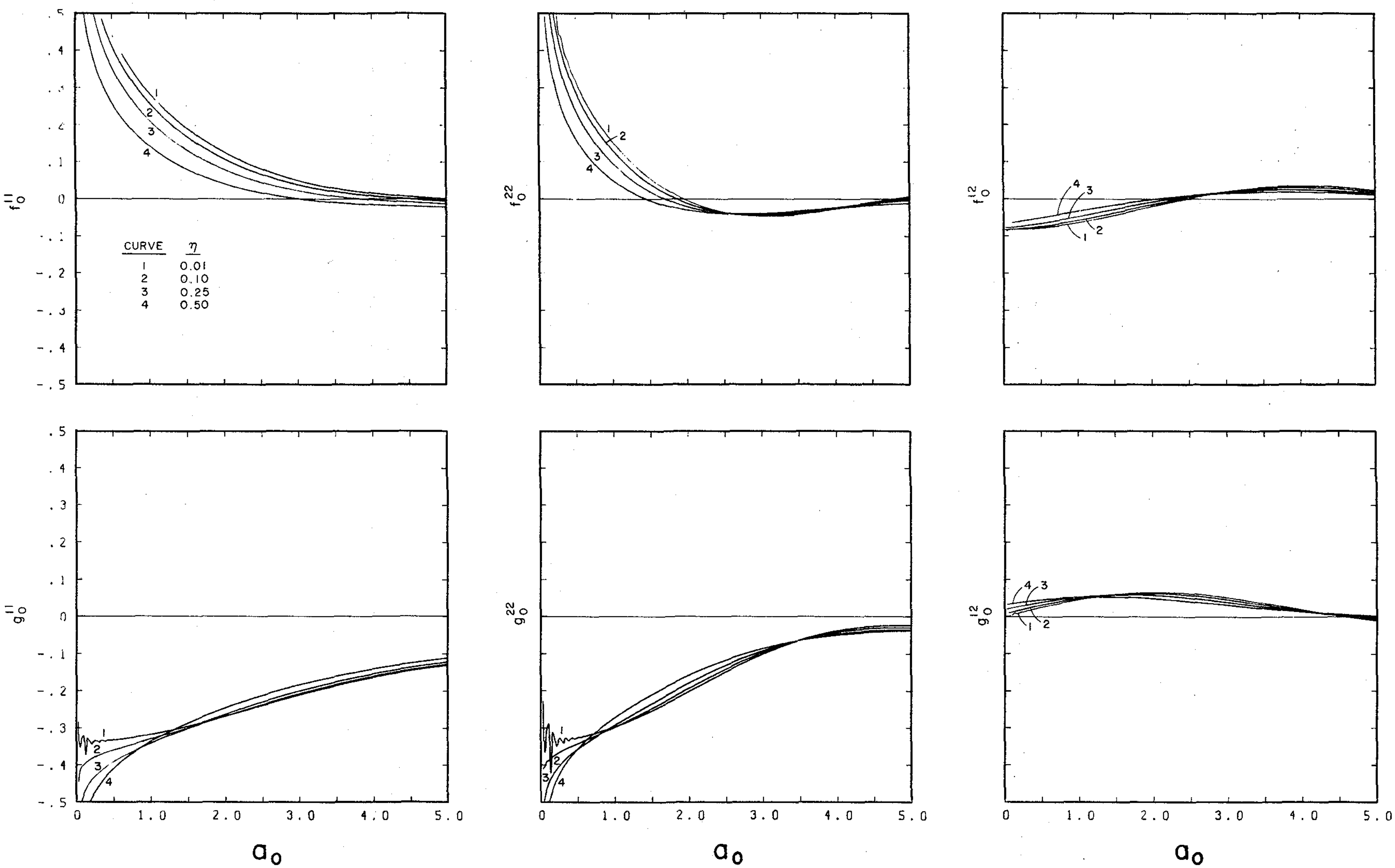


FIG. 8: VALUES OF f_o^{ij} AND g_o^{ij} FOR CONSTANT HYSTERETIC SOLID WITH $\nu = 1/3$

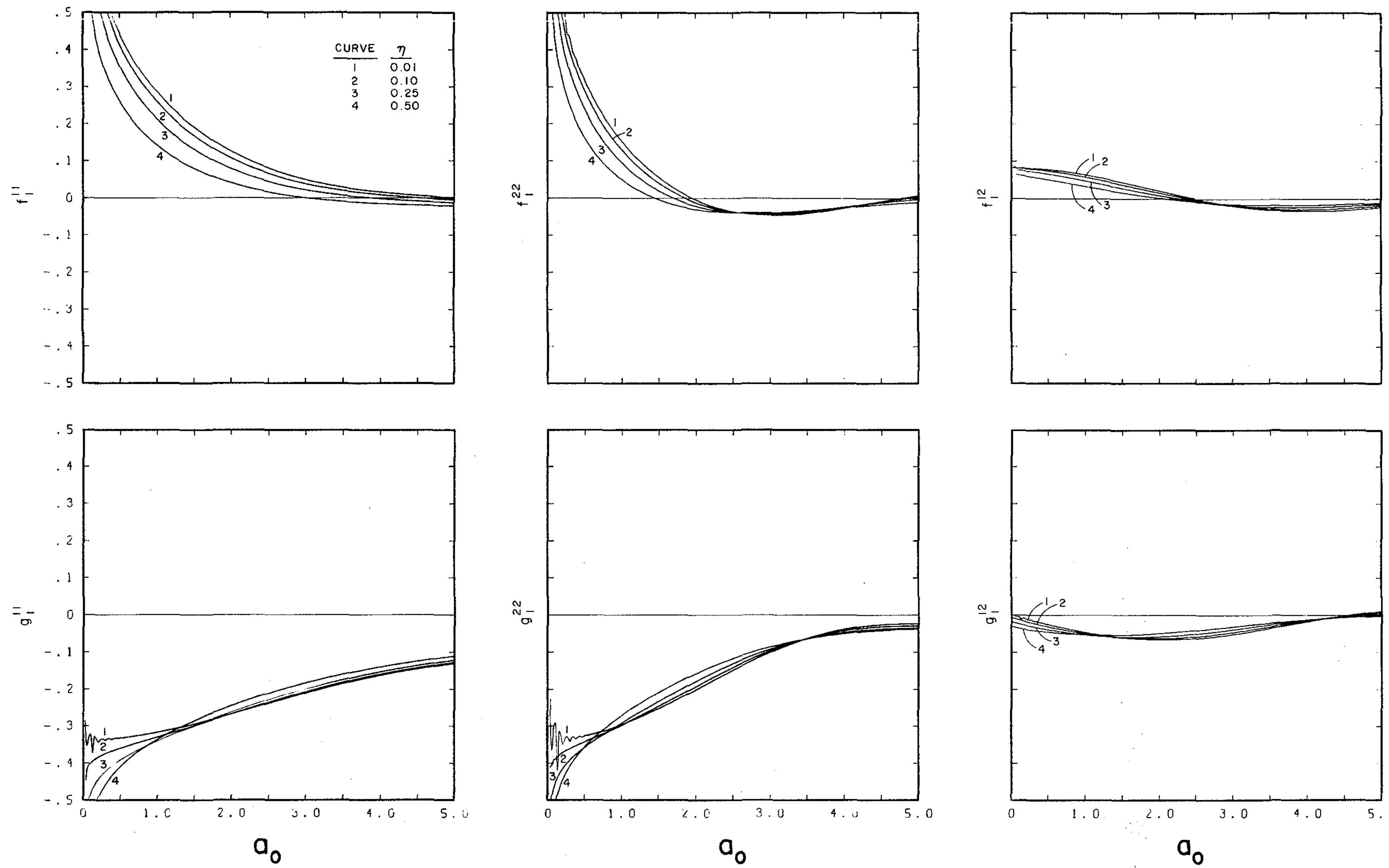


FIG. 9: VALUES OF f_1^{ij} AND g_1^{ij} FOR CONSTANT HYSTERETIC SOLID WITH $\nu = 1/3$

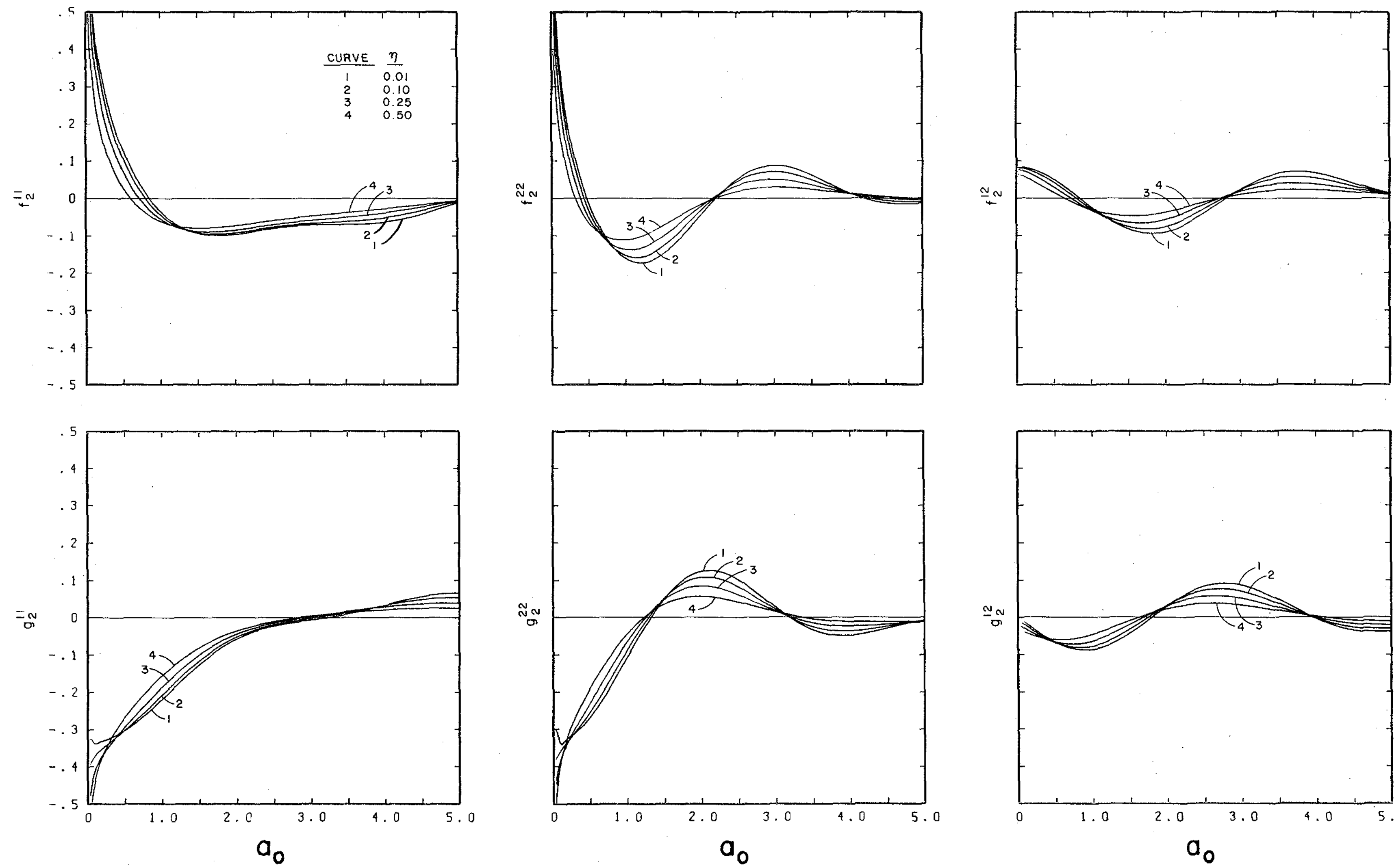


FIG. 10: VALUES OF f_2^{ij} AND g_2^{ij} FOR CONSTANT HYSTERETIC SOLID WITH ν = 1/3

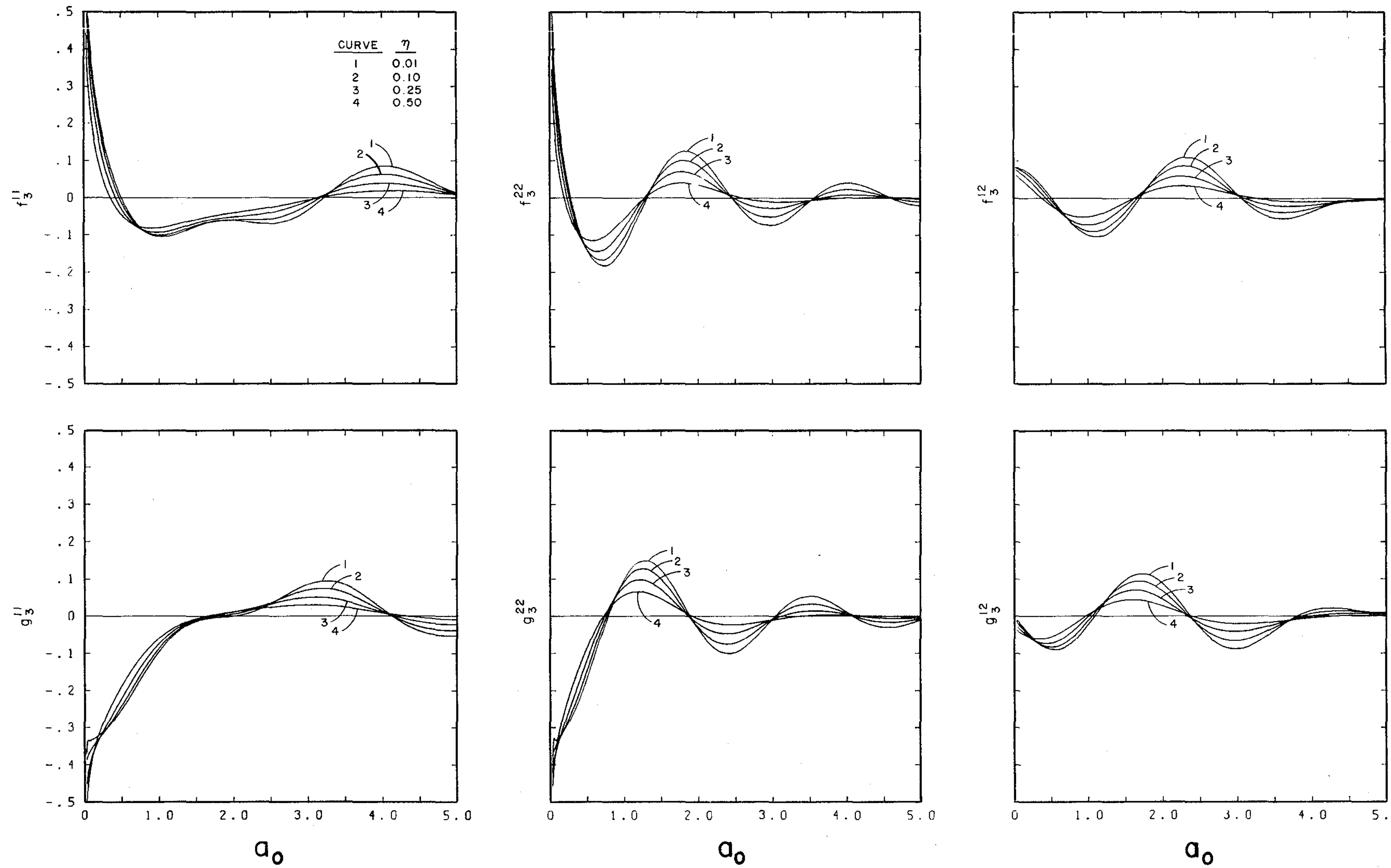


FIG. 11: VALUES OF f_3^{ij} AND g_3^{ij} FOR CONSTANT HYSTERETIC SOLID WITH $\nu = 1/3$

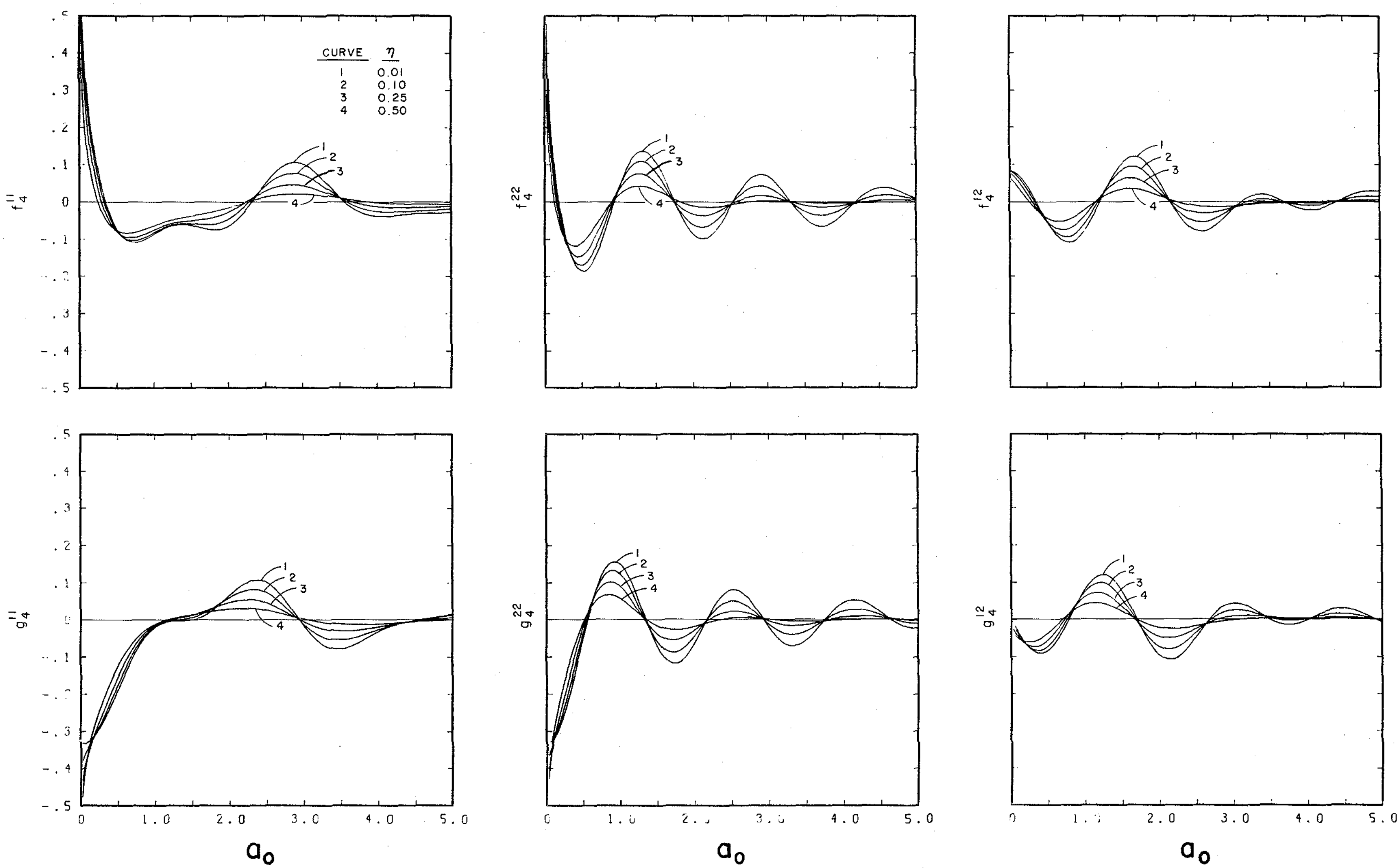


FIG. 12: VALUES OF f_4^{ij} AND g_4^{ij} FOR CONSTANT HYSTERETIC SOLID WITH ν = 1/3

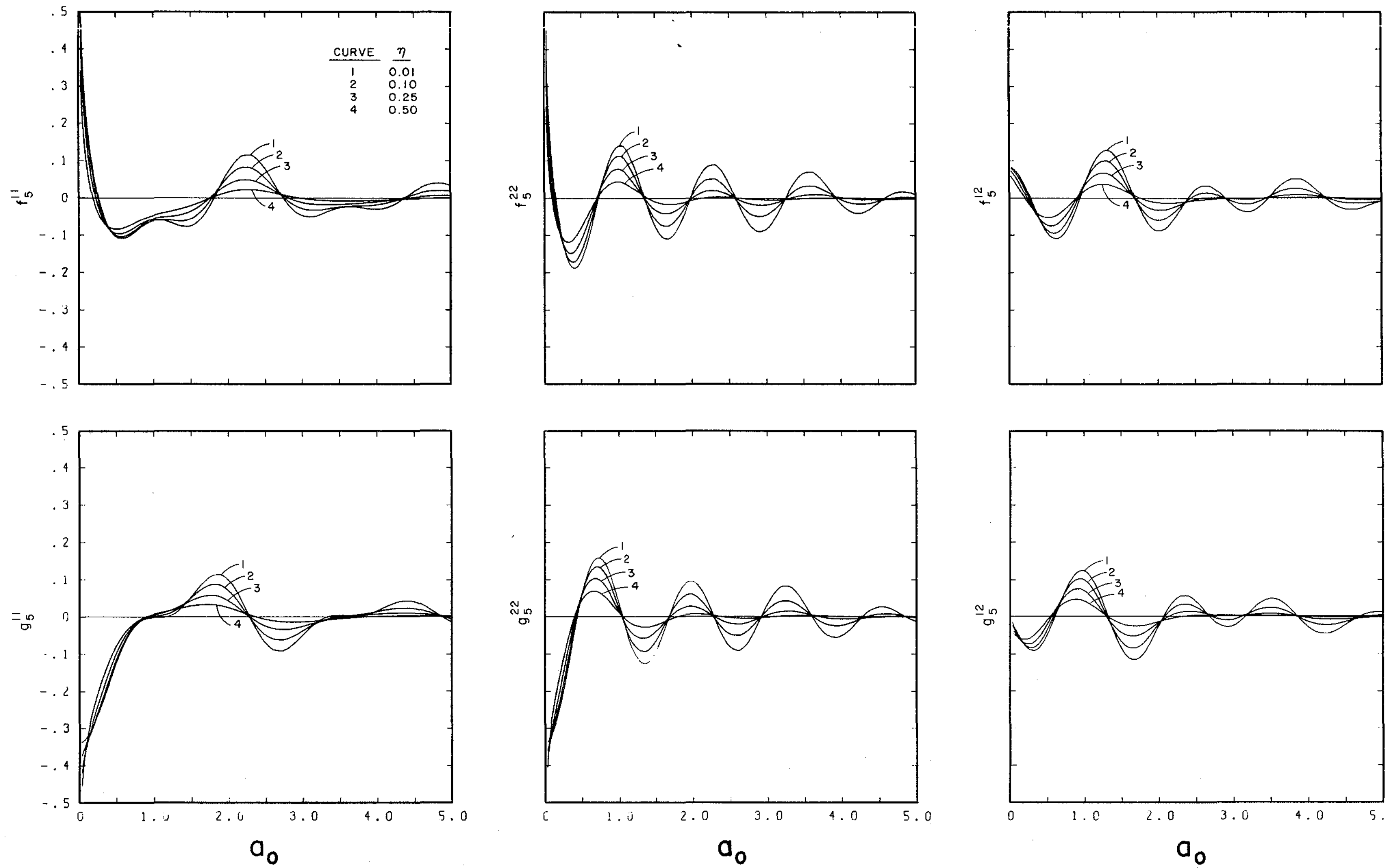


FIG. 13: VALUES OF f_5^{ij} AND g_5^{ij} FOR CONSTANT HYSTERETIC SOLID WITH $\nu = 1/3$

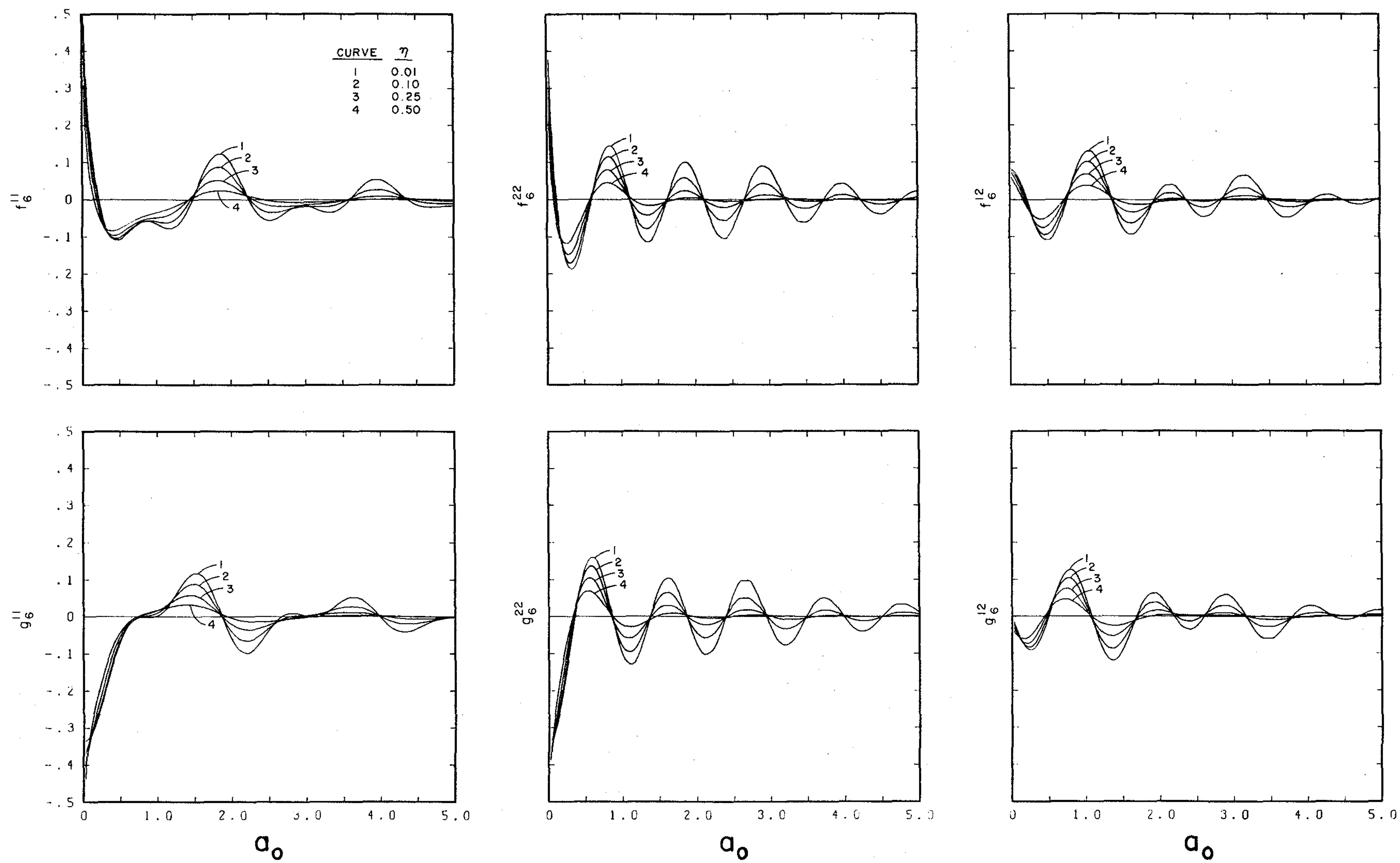


FIG. 14: VALUES OF f_6^{ij} AND g_6^{ij} FOR CONSTANT HYSTERETIC SOLID WITH $\nu = 1/3$

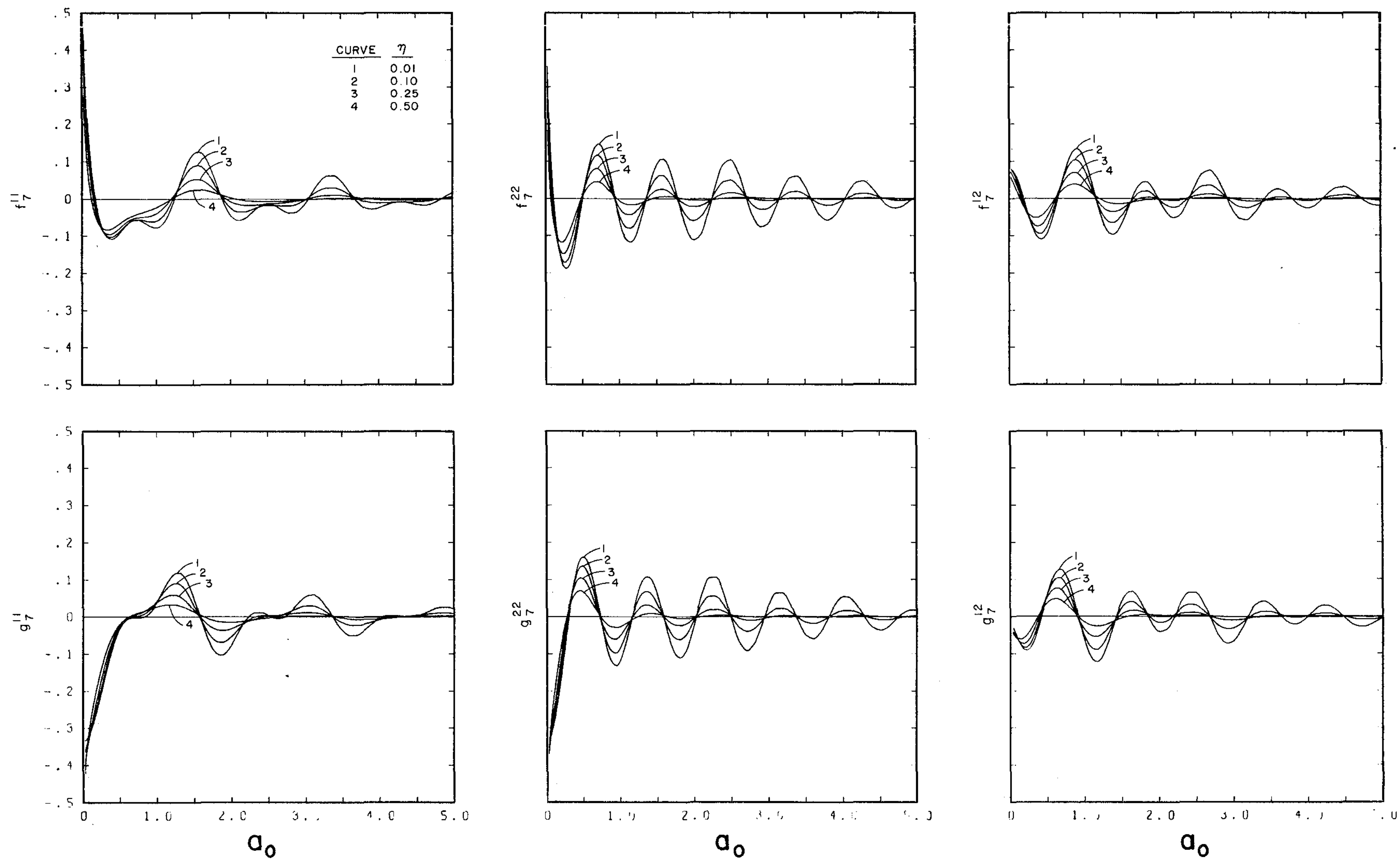


FIG. 15: VALUES OF f_7^{ij} AND g_7^{ij} FOR CONSTANT HYSTERETIC SOLID WITH $\nu = 1/3$

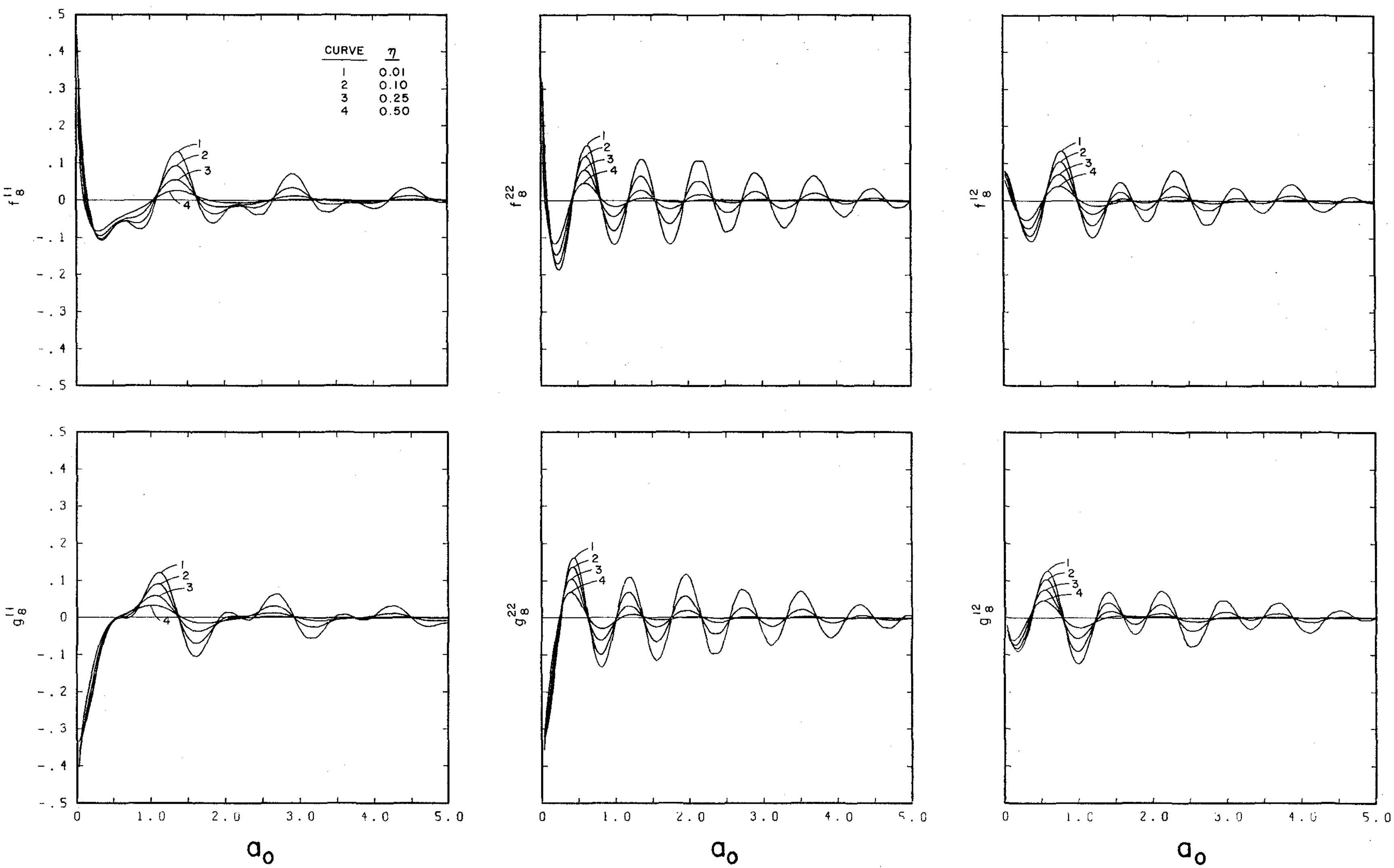
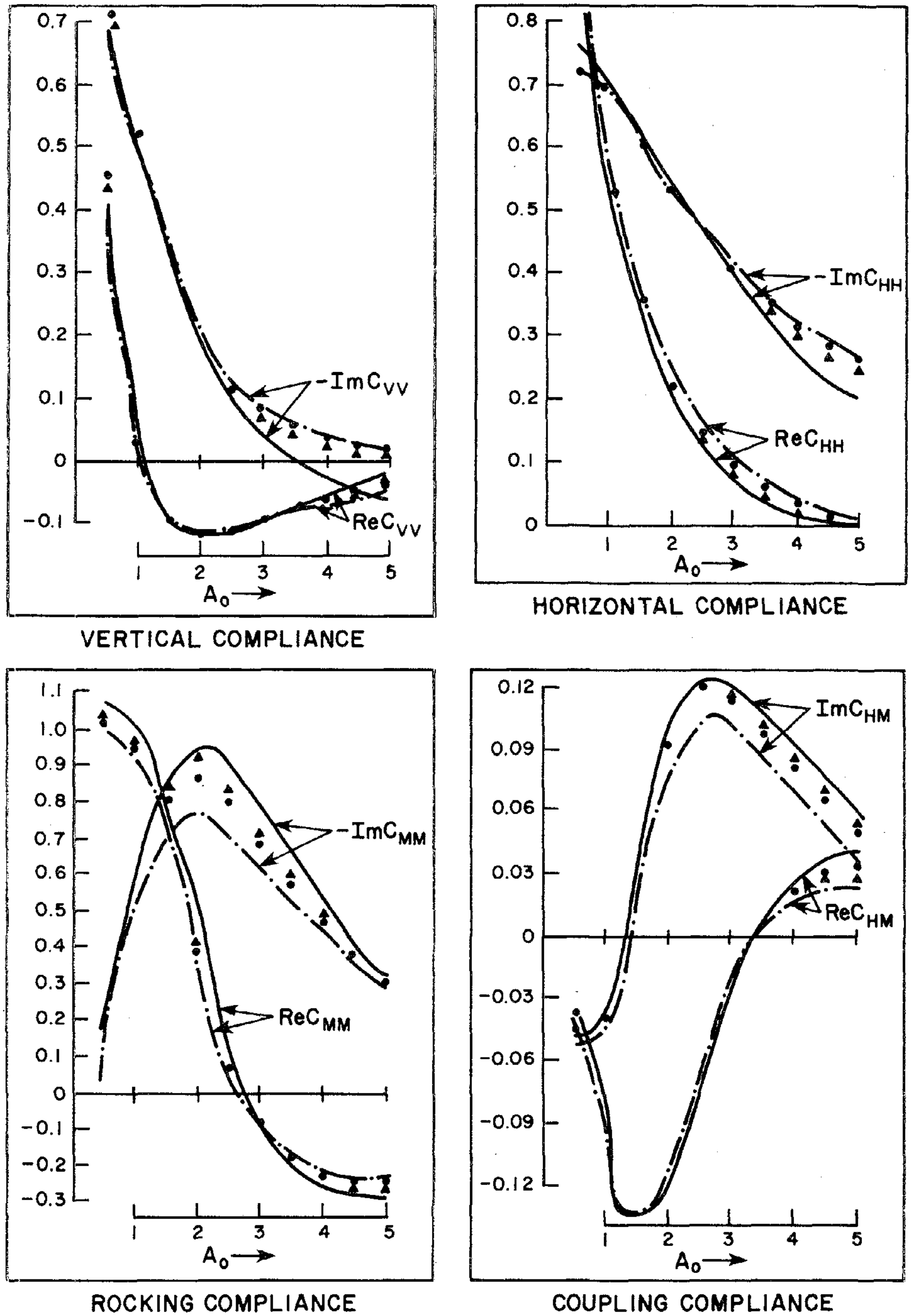


FIG. 16: VALUES OF f_8^{ij} AND g_8^{ij} FOR CONSTANT HYSTERETIC SOLID WITH $\nu = 1/3$



——— BASED ON REF. 11 AND ELASTIC–VISCOELASTIC ANALOGY.
FROM PROCEDURE OF THIS PAPER DISCRETIZING THE FOOTING INTO:
—·— 4 ELEMENTS
• 10 ELEMENTS
▲ 20 ELEMENTS

FIG. 17: EVALUATION OF NEW PROCEDURE OF THIS PAPER TO DETERMINE $\underline{\mathcal{S}}_f(\omega)$. COMPLIANCE COEFFICIENTS ARE FOR SYSTEM OF FIG. 3 WITH A VISCOELASTIC HALF SPACE: $\nu = 1/2$, $\xi = 0.1$

APPENDIX A

APPLICATION OF ELASTIC-VISCOELASTIC ANALOGY TO OBTAIN COMPLIANCE COEFFICIENTS FOR THE SYSTEM OF FIG. 3 WITH A VISCOELASTIC HALF SPACE

APPENDIX A: APPLICATION OF ELASTIC-VISCOELASTIC ANALOGY TO OBTAIN COMPLIANCE COEFFICIENTS FOR THE SYSTEM OF FIG. 3 WITH A VISCOELASTIC HALF SPACE

If $F(A_0)$ is a frequency response function for an elastic system, then the corresponding function $F^*(A_0)$ for a viscoelastic system, with the material similarly viscoelastic in bulk and shear, may be expressed as

$$F^*(A_0) = \frac{\beta(A_0)}{\pi} \int_{-\infty}^{\infty} \frac{F(\Omega)d\Omega}{\beta^2(A_0)+[\alpha(A_0)-\Omega]^2} \tag{A.1}$$

in which the positive, real-valued functions α and β are related to $\zeta(A_0)$ defined in Eq. 27 as follows

$$\alpha(A_0) - i\beta(A_0) = \frac{A_0}{\sqrt{\zeta(A_0)}} \tag{A.2}$$

Ω is a dummy integration variable over the frequency range. The integral of Eq. A.1 may be re-written over 0 to ∞ by noting that

$$F(-\Omega) = \text{complex conjugate of } F(\Omega) \tag{A.3}$$

The compliance functions for a rigid footing perfectly bonded to the surface of an elastic half space with Poisson's ratio of 0.5 are presented in Fig. 4. Numerical values for these functions were simply read-off from an enlargement of Fig. 4, starting from the frequency parameter $A_0 = 0.05$ up to $A_0 = 10.0$ at intervals of 0.05. For values of $A_0 > 10$ these coefficients were arbitrarily specified to be zero. This was necessary to truncate the range of integration and because the functions were not available for the larger values of A_0. An alternative was to re-compute the compliance coefficients from the analytical results (11), thus obtaining accurate values and for a larger range of A_0, but this was not considered necessary for purposes of this study.

The function $F(\Omega)$ in Eq. A.1 is defined by numerical values for each of the compliance functions, successively, determined in the above-mentioned manner for the elastic system. The integral in Eq. A.1 is numerically evaluated by Simpson's rule to obtain each corresponding compliance function for the system of Fig. 3 where the half space is of Voigt solid with energy loss coefficient $\xi = 0.1$. The results are presented in Fig. 5.

Because the functions C_{HH} and C_{MM} do not decay to a negligible value at $A_0 = 10$, the corresponding functions for the viscoelastic system contain greater errors relative to those in the functions C_{VV} and C_{HM}.

APPENDIX B

DERIVATION OF EQS. 21a TO 21d

APPENDIX B: DERIVATION OF EQS. 21a to 21d

The Fourier Transform of a function $f(x_1)$ is defined by

$$\hat{f}(\beta_o) = \int_{-\infty}^{\infty} f(x_1)\, e^{-i\beta_o x_1} dx_1$$

$f(x_1)$ can then be represented as a Fourier integral or by an inverse Fourier transform:

$$f(x_1) = \frac{1}{2\pi} \int_{-\infty}^{\infty} \hat{f}(\beta_o)\, e^{i\beta_o x_1} d\beta_o$$

The Fourier transform of Eq. 13 is

$$\left.\begin{aligned} \frac{d^2\hat{\bar{\phi}}}{d\,x_2^2} - (\beta_o^2 - \kappa_p^2)\,\hat{\bar{\phi}} = 0 \\ \frac{d^2\hat{\bar{\psi}}}{d\,x_2^2} - (\beta_o^2 - \kappa_s^2)\,\hat{\bar{\psi}} = 0 \end{aligned}\right\} \qquad \text{(B.1)}$$

The functions ϕ and ψ must be chosen so that the stresses τ_{ij} assume specified values at the boundary $x_2 = 0$, and remain finite at $x_2 = -\infty$. Thus, the solutions of Eq. B.1 are

$$\left.\begin{aligned} \hat{\bar{\phi}}(\beta_o,x_2,\omega) = A(\beta_o,\omega)\, \exp(x_2 \sqrt{\beta_o^2 - \kappa_p^2}\,) \\ \hat{\bar{\psi}}(\beta_o,x_2,\omega) = B(\beta_o,\omega)\, \exp(x_2 \sqrt{\beta_o^2 - \kappa_s^2}\,) \end{aligned}\right\} \qquad \text{(B.2)}$$

with restriction that the real parts of $\sqrt{\beta_o^2 - \kappa_p^2}$ and $\sqrt{\beta_o^2 - \kappa_s^2}$ be non-negative for all values of β_o. A and B are to be determined from the prescribed tractions at $x_2 = 0$.

The Fourier transform of $\bar{\tau}_{12}$ and $\bar{\tau}_{22}$ from Eq. 16 is

$$\hat{\bar{\tau}}_{12} = \mu(-\kappa_s^2\hat{\bar{\psi}} + 2i\beta_o\,\hat{\bar{\phi}},_2 + 2\beta_o^2\hat{\bar{\psi}})$$

$$\hat{\bar{\tau}}_{22} = \mu(-\kappa_s^2\hat{\bar{\phi}} + 2\beta_o^2\,\hat{\bar{\phi}} - 2i\beta_o\bar{\psi},_2)$$

Substituting from Eq. B.2 and specializing for $x_2 = 0$:

$$\hat{\bar{\tau}}_{12}(\beta_o,0,\omega) = \mu(2i\beta_o\sqrt{\beta_o^2-\kappa_p^2}\;A - \kappa_s^2B + 2\beta_o^2B)$$
$$\hat{\bar{\tau}}_{22}(\beta_o,0,\omega) = \mu(-\kappa_s^2A + 2\beta_o^2A - 2i\beta_o\sqrt{\beta_o^2-\kappa_s^2}\;B) \qquad \text{(B.3)}$$

<u>Problem 1</u>

The prescribed tractionsat $x_2 = 0$ are defined by Eq. 20 ;its Fourier transform is

$$\left.\begin{aligned}\hat{\bar{\tau}}_{12}(\beta_o,0,\omega) &= \hat{h}(\beta_o)\\ \hat{\bar{\tau}}_{22}(\beta_o,0,\omega) &= 0\end{aligned}\right\} \qquad \text{(B.4)}$$

where $\hat{h}(\beta_o)$ is the Fourier transform of $h(x_1)$:

$$\hat{h}(\beta_o) = \int_{-\infty}^{\infty} h(x_1)e^{-i\beta_o x_1}dx_1$$

Substituting for $h(x_1)$ from Eq. 19 results in

$$\hat{h}(\beta_o) = \frac{2}{\beta_o b}\sin\frac{b\beta_o}{2}$$

A and B are determined from Eqs. B.3 and B.4 and then Eq. B.2 becomes

$$\hat{\bar{\phi}}(\beta_0,x_2,\omega) = \frac{1}{\mu}\ \frac{2i\beta_0\sqrt{\beta_0^2-\kappa_s^2}}{(2\beta_0^2-\kappa_s^2)^2-4\beta_0^2\sqrt{\beta_0^2-\kappa_s^2}\ \sqrt{\beta_0^2-\kappa_p^2}}\ \hat{h}(\beta_0)\ \exp\left(x_2\sqrt{\beta_0^2-\kappa_p^2}\right)$$

$$\hat{\bar{\psi}}(\beta_0,x_2,\omega) = \frac{1}{\mu}\ \frac{(2\beta_0^2-\kappa_s^2)}{(2\beta_0^2-\kappa_s^2)^2-4\beta_0^2\sqrt{\beta_0^2-\kappa_s^2}\ \sqrt{\beta_0^2-\kappa_p^2}}\ \hat{h}(\beta_0)\ \exp\left(x_2\sqrt{\beta_0^2-\kappa_s^2}\right)$$

Substituting these equations into the Fourier transform of Eq. 15 and specializing for $x_2 = 0$ leads to

$$\hat{\bar{u}}_1 = \frac{-\kappa_s^2\sqrt{\beta_0^2-\kappa_s^2}}{(2\beta_0^2-\kappa_s^2)^2-4\beta_0^2\sqrt{\beta_0^2-\kappa_s^2}\ \sqrt{\beta_0^2-\kappa_p^2}}\ \frac{\hat{h}(\beta_0)}{\mu}$$

$$\hat{\bar{u}}_2 = \frac{i\beta_0(2\sqrt{\beta_0^2-\kappa_s^2}\sqrt{\beta_0^2-\kappa_p^2}-2\beta_0^2+\kappa_s^2)}{(2\beta_0^2-\kappa_s^2)^2-4\beta_0^2\sqrt{\beta_0^2-\kappa_s^2}\ \sqrt{\beta_0^2-\kappa_p^2}}\ \frac{\hat{h}(\beta_0)}{\mu}$$

The inverse Fourier transform of these equations are Eqs. 21a and 21c.

Problem 2

The prescribed tractions at $x_2 = 0$ are defined by Eq. 18; its Fourier transform is

$$\left.\begin{aligned}\hat{\bar{\tau}}_{12}(\beta_0,0,\omega) &= 0\\ \hat{\bar{\tau}}_{22}(\beta_0,0,\omega) &= \hat{h}(\beta_0)\end{aligned}\right\}\qquad (B.5)$$

A and B are determined from Eqs. B.3 and B.5 and then Eq. B.2 becomes

$$\hat{\bar{\phi}}(\beta_o,x_2,\omega) = \frac{1}{\mu}\,\frac{2\beta_o{}^2-\kappa_s{}^2}{(2\beta_o{}^2-\kappa_s{}^2)^2-4\beta_o{}^2\sqrt{\beta_o{}^2-\kappa_s{}^2}\,\sqrt{\beta_o{}^2-\kappa_p{}^2}}\;\hat{h}(\beta_o)\;\exp(x_2\sqrt{\beta_o{}^2-\kappa_p{}^2}\,)$$

$$\hat{\bar{\psi}}(\beta_o,x_2,\omega) = \frac{1}{\mu}\,\frac{-2i\beta_o\sqrt{\beta_o{}^2-\kappa_p{}^2}}{(2\beta_o{}^2-\kappa_s{}^2)^2-4\beta_o{}^2\sqrt{\beta_o{}^2-\kappa_s{}^2}\,\sqrt{\beta_o{}^2-\kappa_p{}^2}}\;\hat{h}(\beta_o)\;\exp(x_2\sqrt{\beta_o{}^2-\kappa_s{}^2}\,)$$

Substituting these equations into the Fourier transform of Eq. 15 and specializing for $x_2 = 0$ leads to

$$\hat{\bar{u}}_1 = -\,\frac{i\beta_o(2\sqrt{\beta_o{}^2-\kappa_s{}^2}\,\sqrt{\beta_o{}^2-\kappa_p{}^2}\,-2\beta_o{}^2+\kappa_s{}^2)}{(2\beta_o{}^2-\kappa_s{}^2)^2-4\beta_o{}^2\sqrt{\beta_o{}^2-\kappa_s{}^2}\,\sqrt{\beta_o{}^2-\kappa_p{}^2}}\;\frac{\hat{h}(\beta_o)}{\mu}$$

$$\hat{\bar{u}}_2 = -\,\frac{\kappa_s{}^2\sqrt{\beta_o{}^2-\kappa_p{}^2}}{(2\beta_o{}^2-\kappa_s{}^2)^2-4\beta_o{}^2\sqrt{\beta_o{}^2-\kappa_s{}^2}\,\sqrt{\beta_o{}^2-\kappa_p{}^2}}\;\frac{\hat{h}(\beta_o)}{\mu}$$

The inverse Fourier transform of these equations are expressed in Eqs. 21b and 21d. In Eqs. 21a through 21d a change of variable $\beta = b\beta_o$ has been introduced.

APPENDIX C

VALUES OF f_m^{ij} AND g_m^{ij} FOR CONSTANT HYSTERETIC SOLID

The following computer program listing is available upon request from Professor A.K. Chopra, Structural Engineering and Structural Mechanics, Davis Hall, University of California, Berkeley, California.

TABLE 1: VALUES OF f_o^{ij} AND g_o^{ij} FOR CONSTANT HYSTERETIC SOLID WITH η = .01 AND ν = 1/3

a_o	f_o^{11}	g_o^{11}	f_o^{22}	g_o^{22}	f_o^{12}	g_o^{12}
.025	1.0539	-.2849	.8652	-.2270	-.0818	.0011
.050	1.0270	-.3534	1.0239	-.3663	-.0861	.0039
.075	.8363	-.3275	.6885	-.3016	-.0814	.0037
.100	.7877	-.3203	.6635	-.2873	-.0921	.0043
.125	.7397	-.3731	.6134	-.4213	-.0818	.0109
.150	.7125	-.3278	.6013	-.3110	-.0830	.0072
.175	.6735	-.3329	.5527	-.3236	-.0820	.0091
.200	.6343	-.3438	.4980	-.3504	-.0801	.0121
.225	.6266	-.3381	.5154	-.3368	-.0830	.0125
.250	.5963	-.3337	.4740	-.3263	-.0813	.0130
.275	.5710	-.3362	.4417	-.3325	-.0800	.0148
.300	.5587	-.3395	.4387	-.3413	-.0812	.0171
.325	.5405	-.3337	.4191	-.3275	-.0807	.0169
.350	.5214	-.3338	.3951	-.3283	-.0795	.0183
.375	.5075	-.3365	.3826	-.3351	-.0795	.0205
.400	.4952	-.3337	.3724	-.3288	-.0797	.0210
.425	.4801	-.3325	.3544	-.3261	-.0787	.0220
.450	.4671	-.3336	.3405	-.3289	-.0781	.0238
.475	.4566	-.3328	.3316	-.3274	-.0782	.0249
.500	.4446	-.3313	.3186	-.3240	-.0775	.0257
.525	.4332	-.3312	.3058	-.3242	-.0767	.0271
.550	.4234	-.3309	.2965	-.3240	-.0765	.0285
.575	.4136	-.3297	.2864	-.3214	-.0760	.0294
.600	.4036	-.3291	.2754	-.3202	-.0752	.0305
.625	.3945	-.3288	.2661	-.3198	-.0747	.0319
.650	.3859	-.3279	.2574	-.3180	-.0742	.0329
.675	.3772	-.3271	.2480	-.3163	-.0734	.0339
.700	.3688	-.3265	.2392	-.3153	-.0728	.0351
.725	.3610	-.3257	.2312	-.3138	-.0722	.0362
.750	.3532	-.3248	.2230	-.3121	-.0715	.0372
.775	.3457	-.3241	.2149	-.3107	-.0707	.0383
.800	.3384	-.3233	.2074	-.3092	-.0700	.0394
.825	.3314	-.3225	.2000	-.3074	-.0693	.0403
.850	.3245	-.3216	.1927	-.3058	-.0685	.0413
.875	.3178	-.3208	.1857	-.3042	-.0677	.0424
.900	.3113	-.3199	.1789	-.3024	-.0669	.0433
.925	.3049	-.3190	.1722	-.3006	-.0661	.0443
.950	.2987	-.3181	.1657	-.2988	-.0652	.0452
.975	.2927	-.3171	.1594	-.2970	-.0644	.0462
1.000	.2868	-.3161	.1532	-.2951	-.0635	.0471
1.050	.2754	-.3142	.1412	-.2913	-.0617	.0488
1.100	.2645	-.3122	.1298	-.2873	-.0598	.0505
1.150	.2541	-.3101	.1190	-.2832	-.0579	.0521
1.200	.2441	-.3079	.1086	-.2789	-.0560	.0537
1.250	.2345	-.3057	.0987	-.2746	-.0539	.0551

a_o	f_o^{11}	g_o^{11}	f_o^{22}	g_o^{22}	f_o^{12}	g_o^{12}
1.300	.2253	-.3034	.0893	-.2701	-.0519	.0565
1.350	.2165	-.3011	.0802	-.2656	-.0498	.0578
1.400	.2079	-.2987	.0716	-.2609	-.0476	.0590
1.450	.1997	-.2962	.0634	-.2561	-.0454	.0601
1.500	.1918	-.2937	.0555	-.2513	-.0432	.0611
1.550	.1842	-.2912	.0480	-.2464	-.0410	.0620
1.600	.1768	-.2886	.0409	-.2414	-.0387	.0629
1.650	.1697	-.2860	.0341	-.2363	-.0364	.0636
1.700	.1629	-.2833	.0276	-.2312	-.0341	.0643
1.750	.1562	-.2806	.0214	-.2261	-.0317	.0648
1.800	.1499	-.2779	.0156	-.2209	-.0294	.0653
1.850	.1437	-.2751	.0101	-.2156	-.0271	.0657
1.900	.1377	-.2723	.0048	-.2103	-.0247	.0660
1.950	.1320	-.2695	-.0001	-.2051	-.0224	.0662
2.000	.1264	-.2667	-.0048	-.1997	-.0200	.0663
2.100	.1159	-.2609	-.0132	-.1891	-.0154	.0662
2.200	.1061	-.2551	-.0207	-.1784	-.0108	.0658
2.300	.0970	-.2493	-.0270	-.1679	-.0063	.0650
2.400	.0885	-.2435	-.0325	-.1574	-.0020	.0639
2.500	.0806	-.2376	-.0369	-.1471	.0022	.0625
2.600	.0733	-.2318	-.0405	-.1370	.0062	.0608
2.700	.0666	-.2261	-.0433	-.1272	.0101	.0588
2.800	.0603	-.2204	-.0453	-.1177	.0137	.0565
2.900	.0546	-.2147	-.0465	-.1085	.0171	.0540
3.000	.0493	-.2092	-.0471	-.0997	.0202	.0512
3.100	.0444	-.2038	-.0470	-.0913	.0230	.0483
3.200	.0399	-.1985	-.0464	-.0834	.0256	.0452
3.300	.0358	-.1933	-.0452	-.0759	.0279	.0419
3.400	.0321	-.1883	-.0435	-.0689	.0298	.0385
3.500	.0286	-.1834	-.0415	-.0623	.0315	.0351
3.600	.0255	-.1787	-.0390	-.0563	.0328	.0315
3.700	.0226	-.1742	-.0363	-.0508	.0339	.0279
3.800	.0200	-.1698	-.0333	-.0458	.0346	.0244
3.900	.0176	-.1655	-.0300	-.0414	.0350	.0208
4.000	.0154	-.1615	-.0266	-.0374	.0352	.0173
4.100	.0134	-.1576	-.0231	-.0340	.0350	.0138
4.200	.0116	-.1539	-.0195	-.0310	.0345	.0104
4.300	.0099	-.1503	-.0159	-.0286	.0338	.0072
4.400	.0083	-.1469	-.0123	-.0266	.0328	.0041
4.500	.0068	-.1437	-.0089	-.0251	.0316	.0011
4.600	.0054	-.1406	-.0053	-.0240	.0302	-.0017
4.700	.0041	-.1376	-.0020	-.0233	.0285	-.0043
4.800	.0028	-.1349	.0012	-.0230	.0267	-.0067
4.900	.0016	-.1320	.0041	-.0230	.0248	-.0089
5.000	.0005	-.1294	.0069	-.0233	.0226	-.0109

TABLE 2: VALUES OF f_1^{ij} AND g_1^{ij} FOR CONSTANT HYSTERETIC SOLID WITH η = .01 AND ν = 1/3

a_o	f_1^{11}	g_1^{11}	f_1^{22}	g_1^{22}	f_1^{12}	g_1^{12}
.025	1.0539	-.2848	.8652	-.2270	.0818	-.0011
.050	1.0270	-.3534	1.0239	-.3663	.0861	-.0039
.075	.8363	-.3275	.6885	-.3016	.0814	-.0037
.100	.7877	-.3203	.6635	-.2873	.0821	-.0043
.125	.7397	-.3731	.6134	-.4213	.0818	-.0109
.150	.7125	-.3278	.6013	-.3110	.0830	-.0072
.175	.6735	-.3329	.5527	-.3236	.0820	-.0091
.200	.6343	-.3438	.4980	-.3504	.0801	-.0121
.225	.6266	-.3381	.5154	-.3368	.0830	-.0125
.250	.5963	-.3337	.4740	-.3263	.0813	-.0130
.275	.5710	-.3362	.4417	-.3325	.0800	-.0148
.300	.5587	-.3395	.4387	-.3413	.0812	-.0171
.325	.5405	-.3337	.4191	-.3275	.0807	-.0169
.350	.5214	-.3338	.3951	-.3283	.0795	-.0183
.375	.5075	-.3365	.3826	-.3351	.0795	-.0205
.400	.4952	-.3337	.3724	-.3288	.0797	-.0210
.425	.4801	-.3325	.3544	-.3261	.0787	-.0220
.450	.4671	-.3336	.3405	-.3289	.0781	-.0238
.475	.4566	-.3328	.3316	-.3274	.0782	-.0249
.500	.4446	-.3313	.3186	-.3240	.0775	-.0257
.525	.4332	-.3312	.3058	-.3242	.0767	-.0271
.550	.4234	-.3309	.2965	-.3240	.0765	-.0285
.575	.4136	-.3297	.2864	-.3214	.0760	-.0294
.600	.4036	-.3291	.2754	-.3202	.0752	-.0305
.625	.3945	-.3288	.2661	-.3198	.0747	-.0319
.650	.3859	-.3279	.2574	-.3180	.0742	-.0329
.675	.3772	-.3271	.2480	-.3163	.0734	-.0339
.700	.3688	-.3265	.2392	-.3153	.0728	-.0351
.725	.3610	-.3257	.2312	-.3138	.0722	-.0362
.750	.3532	-.3248	.2230	-.3121	.0715	-.0372
.775	.3457	-.3241	.2149	-.3107	.0707	-.0383
.800	.3384	-.3233	.2074	-.3092	.0700	-.0394
.825	.3314	-.3225	.2000	-.3074	.0693	-.0403
.850	.3245	-.3216	.1927	-.3058	.0685	-.0413
.875	.3178	-.3208	.1857	-.3042	.0677	-.0424
.900	.3113	-.3199	.1789	-.3024	.0669	-.0433
.925	.3049	-.3190	.1722	-.3006	.0661	-.0443
.950	.2987	-.3181	.1657	-.2988	.0652	-.0452
.975	.2927	-.3171	.1594	-.2970	.0644	-.0462
1.000	.2868	-.3161	.1532	-.2951	.0635	-.0471
1.050	.2754	-.3142	.1412	-.2913	.0617	-.0488
1.100	.2645	-.3122	.1298	-.2873	.0598	-.0505
1.150	.2541	-.3101	.1190	-.2832	.0579	-.0521
1.200	.2441	-.3079	.1086	-.2789	.0560	-.0537
1.250	.2345	-.3057	.0987	-.2746	.0539	-.0551
1.300	.2253	-.3034	.0893	-.2701	.0519	-.0565
1.350	.2165	-.3011	.0802	-.2656	.0498	-.0578
1.400	.2079	-.2987	.0716	-.2609	.0476	-.0590
1.450	.1997	-.2962	.0634	-.2561	.0454	-.0601
1.500	.1918	-.2937	.0555	-.2513	.0432	-.0611
1.550	.1842	-.2912	.0480	-.2464	.0410	-.0620
1.600	.1768	-.2886	.0409	-.2414	.0387	-.0629
1.650	.1697	-.2860	.0341	-.2363	.0364	-.0636
1.700	.1629	-.2833	.0276	-.2312	.0341	-.0643
1.750	.1563	-.2806	.0214	-.2261	.0317	-.0648
1.800	.1499	-.2779	.0156	-.2209	.0294	-.0653
1.850	.1437	-.2751	.0101	-.2156	.0271	-.0657
1.900	.1377	-.2723	.0048	-.2103	.0247	-.0660
1.950	.1320	-.2695	-.0001	-.2051	.0224	-.0662
2.000	.1264	-.2667	-.0048	-.1997	.0200	-.0663
2.100	.1159	-.2609	-.0132	-.1891	.0154	-.0662
2.200	.1061	-.2551	-.0207	-.1784	.0108	-.0658
2.300	.0970	-.2493	-.0270	-.1679	.0063	-.0650
2.400	.0885	-.2435	-.0325	-.1574	.0020	-.0639
2.500	.0806	-.2376	-.0369	-.1471	-.0022	-.0625
2.600	.0733	-.2318	-.0405	-.1372	-.0062	-.0608
2.700	.0666	-.2261	-.0433	-.1272	-.0101	-.0588
2.800	.0603	-.2204	-.0453	-.1177	-.0137	-.0565
2.900	.0546	-.2147	-.0465	-.1085	-.0171	-.0540
3.000	.0493	-.2092	-.0471	-.0997	-.0202	-.0512
3.100	.0444	-.2038	-.0470	-.0913	-.0230	-.0483
3.200	.0399	-.1985	-.0464	-.0834	-.0256	-.0452
3.300	.0358	-.1933	-.0452	-.0759	-.0279	-.0419
3.400	.0321	-.1883	-.0435	-.0689	-.0298	-.0385
3.500	.0286	-.1834	-.0415	-.0623	-.0315	-.0351
3.600	.0255	-.1787	-.0390	-.0563	-.0328	-.0315
3.700	.0226	-.1742	-.0363	-.0508	-.0339	-.0279
3.800	.0200	-.1698	-.0333	-.0458	-.0346	-.0244
3.900	.0176	-.1656	-.0300	-.0414	-.0350	-.0208
4.000	.0154	-.1615	-.0266	-.0374	-.0352	-.0173
4.100	.0134	-.1576	-.0231	-.0340	-.0350	-.0138
4.200	.0116	-.1539	-.0195	-.0310	-.0345	-.0104
4.300	.0099	-.1503	-.0159	-.0286	-.0338	-.0072
4.400	.0083	-.1469	-.0123	-.0266	-.0328	-.0041
4.500	.0068	-.1437	-.0088	-.0251	-.0316	-.0011
4.600	.0054	-.1406	-.0053	-.0240	-.0302	.0017
4.700	.0041	-.1376	-.0020	-.0233	-.0285	.0043
4.800	.0028	-.1348	.0012	-.0230	-.0267	.0067
4.900	.0016	-.1320	.0041	-.0230	-.0248	.0089
5.000	.0005	-.1294	.0069	-.0233	-.0226	.0109

TABLE 3: VALUES OF f_2^{ij} AND g_2^{ij} FOR CONSTANT HYSTERETIC SOLID WITH η = .01 AND ν = 1/3

a_o	f_2^{11}	g_2^{11}	f_2^{22}	g_2^{22}	f_2^{12}	g_2^{12}
.025	.7755	-.3269	.6279	-.3010	.0822	-.0037
.050	.6518	-.3273	.5408	-.3106	.0838	-.0072
.075	.5660	-.3377	.4551	-.3367	.0839	-.0126
.100	.4982	-.3393	.3785	-.3416	.0823	-.0171
.125	.4472	-.3365	.3226	-.3358	.0808	-.0207
.150	.4069	-.3338	.2807	-.3301	.0797	-.0240
.175	.3730	-.3318	.2461	-.3260	.0786	-.0275
.200	.3435	-.3300	.2157	-.3227	.0774	-.0311
.225	.3171	-.3283	.1883	-.3195	.0760	-.0347
.250	.2932	-.3265	.1632	-.3161	.0744	-.0382
.275	.2714	-.3246	.1401	-.3124	.0726	-.0417
.300	.2512	-.3225	.1186	-.3083	.0707	-.0451
.325	.2325	-.3202	.0987	-.3038	.0686	-.0483
.350	.2150	-.3178	.0800	-.2991	.0663	-.0515
.375	.1987	-.3153	.0624	-.2940	.0640	-.0546
.400	.1832	-.3126	.0459	-.2887	.0615	-.0575
.425	.1687	-.3097	.0303	-.2831	.0588	-.0604
.450	.1549	-.3068	.0155	-.2773	.0561	-.0631
.475	.1417	-.3037	.0015	-.2712	.0532	-.0657
.500	.1293	-.3005	-.0118	-.2649	.0502	-.0682
.525	.1173	-.2972	-.0244	-.2583	.0472	-.0705
.550	.1060	-.2938	-.0363	-.2515	.0440	-.0727
.575	.0951	-.2902	-.0477	-.2445	.0407	-.0748
.600	.0847	-.2865	-.0584	-.2373	.0373	-.0767
.625	.0747	-.2828	-.0686	-.2299	.0339	-.0785
.650	.0651	-.2789	-.0783	-.2223	.0304	-.0801
.675	.0559	-.2749	-.0874	-.2145	.0268	-.0815
.700	.0471	-.2709	-.0960	-.2066	.0231	-.0828
.725	.0387	-.2668	-.1041	-.1986	.0194	-.0840
.750	.0306	-.2626	-.1117	-.1904	.0157	-.0849
.775	.0228	-.2583	-.1188	-.1821	.0119	-.0857
.800	.0154	-.2539	-.1255	-.1737	.0081	-.0864
.825	.0083	-.2495	-.1317	-.1652	.0042	-.0869
.850	.0014	-.2450	-.1374	-.1567	.0004	-.0872
.875	-.0051	-.2405	-.1427	-.1480	-.0035	-.0873
.900	-.0114	-.2359	-.1475	-.1393	-.0073	-.0873
.925	-.0174	-.2313	-.1519	-.1306	-.0112	-.0871
.950	-.0231	-.2266	-.1558	-.1219	-.0150	-.0867
.975	-.0285	-.2219	-.1594	-.1131	-.0189	-.0862
1.000	-.0337	-.2172	-.1625	-.1044	-.0227	-.0855
1.050	-.0434	-.2077	-.1675	-.0869	-.0302	-.0836
1.100	-.0521	-.1981	-.1710	-.0696	-.0375	-.0811
1.150	-.0600	-.1885	-.1729	-.0526	-.0445	-.0779
1.200	-.0670	-.1790	-.1734	-.0359	-.0512	-.0742
1.250	-.0731	-.1696	-.1724	-.0197	-.0576	-.0699

a_o	f_2^{11}	g_2^{11}	f_2^{22}	g_2^{22}	f_2^{12}	g_2^{12}
1.300	-.0785	-.1603	-.1702	-.0040	-.0636	-.0651
1.350	-.0831	-.1511	-.1667	.0111	-.0692	-.0598
1.400	-.0871	-.1421	-.1620	.0255	-.0743	-.0540
1.450	-.0904	-.1333	-.1563	.0391	-.0788	-.0479
1.500	-.0931	-.1247	-.1495	.0518	-.0829	-.0414
1.550	-.0952	-.1164	-.1419	.0637	-.0863	-.0346
1.600	-.0968	-.1084	-.1335	.0746	-.0892	-.0275
1.650	-.0979	-.1007	-.1243	.0846	-.0914	-.0202
1.700	-.0986	-.0933	-.1145	.0935	-.0930	-.0128
1.750	-.0988	-.0863	-.1042	.1014	-.0940	-.0053
1.800	-.0987	-.0796	-.0935	.1083	-.0944	.0023
1.850	-.0983	-.0732	-.0824	.1140	-.0941	.0098
1.900	-.0976	-.0673	-.0712	.1187	-.0932	.0172
1.950	-.0966	-.0616	-.0597	.1223	-.0917	.0246
2.000	-.0954	-.0564	-.0483	.1249	-.0896	.0317
2.100	-.0926	-.0469	-.0256	.1270	-.0837	.0453
2.200	-.0894	-.0387	-.0038	.1252	-.0758	.0576
2.300	-.0860	-.0318	.0166	.1199	-.0660	.0684
2.400	-.0826	-.0261	.0350	.1115	-.0547	.0773
2.500	-.0795	-.0212	.0510	.1005	-.0423	.0842
2.600	-.0767	-.0172	.0643	.0874	-.0292	.0890
2.700	-.0743	-.0138	.0747	.0729	-.0156	.0915
2.800	-.0723	-.0108	.0821	.0574	-.0021	.0919
2.900	-.0709	-.0080	.0865	.0416	.0111	.0901
3.000	-.0698	-.0054	.0881	.0261	.0236	.0863
3.100	-.0692	-.0026	.0870	.0112	.0350	.0807
3.200	-.0689	.0003	.0835	-.0027	.0452	.0736
3.300	-.0687	.0034	.0779	-.0152	.0539	.0652
3.400	-.0687	.0070	.0706	-.0256	.0610	.0558
3.500	-.0686	.0108	.0621	-.0343	.0664	.0457
3.600	-.0682	.0151	.0527	-.0410	.0701	.0353
3.700	-.0676	.0197	.0429	-.0456	.0720	.0248
3.800	-.0666	.0246	.0331	-.0483	.0723	.0145
3.900	-.0651	.0297	.0235	-.0491	.0710	.0047
4.000	-.0629	.0349	.0146	-.0482	.0684	-.0044
4.100	-.0602	.0401	.0066	-.0459	.0646	-.0126
4.200	-.0567	.0451	-.0002	-.0424	.0599	-.0198
4.300	-.0526	.0499	-.0059	-.0380	.0544	-.0258
4.400	-.0479	.0544	-.0102	-.0331	.0484	-.0307
4.500	-.0426	.0583	-.0132	-.0280	.0422	-.0344
4.600	-.0368	.0616	-.0150	-.0228	.0359	-.0369
4.700	-.0305	.0642	-.0156	-.0179	.0297	-.0384
4.800	-.0240	.0661	-.0151	-.0135	.0239	-.0389
4.900	-.0173	.0672	-.0139	-.0098	.0185	-.0385
5.000	-.0106	.0674	-.0120	-.0068	.0137	-.0375

TABLE 4: VALUES OF f_3^{ij} AND g_3^{ij} FOR CONSTANT HYSTERETIC SOLID WITH η = .01 AND ν = 1/3

a_o	f_3^{11}	g_3^{11}	f_3^{22}	g_3^{22}	f_3^{12}	g_3^{12}
.025	.6767	-.3726	.5505	-.4208	.0826	-.0109
.050	.5335	-.3334	.4114	-.3263	.0824	-.0130
.075	.4449	-.3365	.3204	-.3359	.0809	-.0207
.100	.3823	-.3318	.2567	-.3257	.0794	-.0261
.125	.3323	-.3299	.2043	-.3228	.0771	-.0325
.150	.2910	-.3267	.1610	-.3165	.0746	-.0383
.175	.2555	-.3235	.1233	-.3102	.0716	-.0441
.200	.2243	-.3197	.0900	-.3028	.0682	-.0496
.225	.1964	-.3156	.0600	-.2948	.0644	-.0548
.250	.1711	-.3111	.0329	-.2859	.0602	-.0598
.275	.1480	-.3063	.0081	-.2763	.0556	-.0644
.300	.1268	-.3011	-.0146	-.2660	.0508	-.0688
.325	.1072	-.2956	-.0355	-.2550	.0456	-.0727
.350	.0889	-.2897	-.0547	-.2435	.0402	-.0763
.375	.0719	-.2835	-.0723	-.2313	.0345	-.0795
.400	.0561	-.2771	-.0884	-.2186	.0286	-.0823
.425	.0412	-.2704	-.1031	-.2055	.0225	-.0847
.450	.0274	-.2634	-.1164	-.1919	.0163	-.0866
.475	.0145	-.2563	-.1284	-.1779	.0099	-.0881
.500	.0024	-.2489	-.1392	-.1637	.0034	-.0891
.525	-.0089	-.2413	-.1487	-.1492	-.0032	-.0897
.550	-.0193	-.2336	-.1569	-.1345	-.0098	-.0898
.575	-.0291	-.2258	-.1640	-.1197	-.0164	-.0894
.600	-.0381	-.2178	-.1699	-.1047	-.0229	-.0886
.625	-.0465	-.2098	-.1747	-.0898	-.0294	-.0873
.650	-.0541	-.2017	-.1784	-.0749	-.0358	-.0856
.675	-.0612	-.1936	-.1809	-.0601	-.0421	-.0834
.700	-.0676	-.1854	-.1824	-.0455	-.0483	-.0807
.725	-.0735	-.1773	-.1829	-.0310	-.0542	-.0777
.750	-.0787	-.1692	-.1824	-.0168	-.0599	-.0742
.775	-.0834	-.1612	-.1810	-.0029	-.0654	-.0703
.800	-.0876	-.1532	-.1786	.0106	-.0706	-.0661
.825	-.0913	-.1453	-.1753	.0237	-.0755	-.0615
.850	-.0945	-.1376	-.1712	.0363	-.0801	-.0565
.875	-.0972	-.1299	-.1662	.0485	-.0844	-.0513
.900	-.0995	-.1224	-.1605	.0600	-.0883	-.0457
.925	-.1013	-.1151	-.1542	.0711	-.0918	-.0399
.950	-.1028	-.1080	-.1471	.0815	-.0949	-.0339
.975	-.1038	-.1011	-.1394	.0912	-.0976	-.0276
1.000	-.1045	-.0943	-.1312	.1003	-.0999	-.0211
1.050	-.1049	-.0816	-.1133	.1162	-.1031	-.0078
1.100	-.1042	-.0698	-.0938	.1293	-.1045	.0059
1.150	-.1025	-.0590	-.0731	.1392	-.1041	.0197
1.200	-.1000	-.0493	-.0517	.1459	-.1018	.0333
1.250	-.0969	-.0406	-.0300	.1495	-.0977	.0466

a_o	f_3^{11}	g_3^{11}	f_3^{22}	g_3^{22}	f_3^{12}	g_3^{12}
1.300	-.0933	-.0330	-.0085	.1500	-.0918	.0592
1.350	-.0894	-.0265	.0125	.1476	-.0844	.0709
1.400	-.0854	-.0210	.0325	.1423	-.0754	.0816
1.450	-.0815	-.0163	.0513	.1344	-.0651	.0911
1.500	-.0776	-.0126	.0684	.1242	-.0537	.0991
1.550	-.0740	-.0096	.0836	.1119	-.0413	.1056
1.600	-.0708	-.0073	.0968	.0978	-.0282	.1104
1.650	-.0679	-.0055	.1076	.0824	-.0146	.1135
1.700	-.0655	-.0041	.1161	.0658	-.0008	.1148
1.750	-.0636	-.0031	.1220	.0486	.0131	.1144
1.800	-.0622	-.0023	.1254	.0311	.0268	.1122
1.850	-.0613	-.0016	.1263	.0135	.0400	.1082
1.900	-.0609	-.0008	.1248	-.0037	.0526	.1027
1.950	-.0610	.0000	.1210	-.0202	.0643	.0956
2.000	-.0614	.0011	.1150	-.0357	.0750	.0872
2.100	-.0632	.0042	.0974	-.0627	.0926	.0668
2.200	-.0656	.0090	.0739	-.0831	.1044	.0431
2.300	-.0680	.0156	.0469	-.0956	.1099	.0177
2.400	-.0695	.0241	.0185	-.1000	.1090	-.0077
2.500	-.0695	.0341	-.0088	-.0965	.1020	-.0316
2.600	-.0674	.0452	-.0330	-.0860	.0898	-.0523
2.700	-.0627	.0568	-.0525	-.0699	.0734	-.0690
2.800	-.0553	.0680	-.0660	-.0499	.0542	-.0807
2.900	-.0452	.0782	-.0730	-.0279	.0335	-.0871
3.000	-.0327	.0865	-.0735	-.0059	.0128	-.0883
3.100	-.0182	.0924	-.0680	.0143	-.0065	-.0846
3.200	-.0024	.0953	-.0576	.0313	-.0235	-.0767
3.300	.0140	.0949	-.0434	.0439	-.0372	-.0656
3.400	.0302	.0912	-.0270	.0515	-.0472	-.0524
3.500	.0453	.0843	-.0101	.0539	-.0532	-.0382
3.600	.0587	.0745	.0060	.0514	-.0554	-.0240
3.700	.0697	.0625	.0199	.0447	-.0542	-.0109
3.800	.0780	.0486	.0306	.0348	-.0501	.0004
3.900	.0832	.0337	.0375	.0228	-.0441	.0095
4.000	.0853	.0185	.0404	.0100	-.0367	.0160
4.100	.0845	.0038	.0394	-.0024	-.0290	.0200
4.200	.0809	-.0100	.0350	-.0133	-.0216	.0216
4.300	.0751	-.0222	.0280	-.0219	-.0150	.0212
4.400	.0675	-.0325	.0192	-.0277	-.0097	.0195
4.500	.0586	-.0407	.0097	-.0305	-.0060	.0168
4.600	.0491	-.0468	.0004	-.0302	-.0037	.0139
4.700	.0394	-.0507	-.0079	-.0274	-.0028	.0113
4.800	.0299	-.0528	-.0145	-.0225	-.0029	.0092
4.900	.0211	-.0534	-.0190	-.0163	-.0037	.0080
5.000	.0130	-.0526	-.0212	-.0095	-.0048	.0077

TABLE 5: VALUES OF f_4^{ij} AND g_4^{ij} FOR CONSTANT HYSTERETIC SOLID WITH η = .01 AND ν = 1/3

a_o	f_4^{11}	g_4^{11}	f_4^{22}	g_4^{22}	f_4^{12}	g_4^{12}
.025	.6088	-.3324	.4882	-.3233	.0828	-.0091
.050	.4570	-.3337	.3311	-.3288	.0807	-.0184
.075	.3691	-.3318	.2422	-.3262	.0786	-.0275
.100	.3049	-.3281	.1757	-.3192	.0755	-.0360
.125	.2538	-.3235	.1216	-.3103	.0715	-.0441
.150	.2111	-.3182	.0759	-.2999	.0666	-.0518
.175	.1743	-.3122	.0364	-.2880	.0610	-.0589
.200	.1419	-.3054	.0016	-.2746	.0547	-.0655
.225	.1131	-.2980	-.0293	-.2598	.0477	-.0714
.250	.0871	-.2899	-.0567	-.2438	.0402	-.0766
.275	.0636	-.2812	-.0810	-.2267	.0322	-.0810
.300	.0422	-.2720	-.1025	-.2085	.0238	-.0846
.325	.0228	-.2623	-.1213	-.1895	.0150	-.0874
.350	.0051	-.2521	-.1376	-.1698	.0060	-.0893
.375	-.0110	-.2416	-.1514	-.1495	-.0033	-.0904
.400	-.0255	-.2307	-.1629	-.1288	-.0125	-.0905
.425	-.0387	-.2196	-.1720	-.1078	-.0218	-.0897
.450	-.0504	-.2083	-.1788	-.0868	-.0310	-.0879
.475	-.0609	-.1969	-.1835	-.0658	-.0401	-.0853
.500	-.0702	-.1854	-.1861	-.0450	-.0488	-.0819
.525	-.0783	-.1740	-.1867	-.0246	-.0573	-.0775
.550	-.0852	-.1626	-.1853	-.0047	-.0653	-.0724
.575	-.0912	-.1513	-.1820	.0145	-.0727	-.0665
.600	-.0961	-.1402	-.1770	.0330	-.0797	-.0598
.625	-.1000	-.1294	-.1704	.0505	-.0859	-.0525
.650	-.1031	-.1188	-.1623	.0670	-.0915	-.0446
.675	-.1054	-.1086	-.1527	.0823	-.0964	-.0362
.700	-.1069	-.0987	-.1419	.0964	-.1004	-.0273
.725	-.1076	-.0892	-.1299	.1091	-.1036	-.0181
.750	-.1077	-.0802	-.1169	.1205	-.1059	-.0085
.775	-.1073	-.0717	-.1031	.1304	-.1073	.0012
.800	-.1063	-.0636	-.0886	.1387	-.1078	.0111
.825	-.1048	-.0561	-.0736	.1455	-.1074	.0211
.850	-.1029	-.0491	-.0581	.1508	-.1060	.0309
.875	-.1007	-.0426	-.0425	.1544	-.1037	.0407
.900	-.0982	-.0367	-.0267	.1565	-.1006	.0502
.925	-.0955	-.0313	-.0110	.1570	-.0965	.0595
.950	-.0926	-.0265	.0045	.1560	-.0916	.0683
.975	-.0897	-.0222	.0197	.1535	-.0859	.0767
1.000	-.0866	-.0184	.0343	.1496	-.0794	.0846
1.050	-.0806	-.0121	.0618	.1377	-.0644	.0984
1.100	-.0749	-.0077	.0859	.1211	-.0471	.1094
1.150	-.0698	-.0047	.1059	.1006	-.0280	.1171
1.200	-.0656	-.0028	.1213	.0770	-.0078	.1214
1.250	-.0624	-.0018	.1316	.0514	.0129	.1219
1.300	-.0603	-.0014	.1367	.0248	.0334	.1188
1.350	-.0594	-.0011	.1365	-.0018	.0530	.1121
1.400	-.0595	-.0006	.1313	-.0274	.0712	.1021
1.450	-.0605	.0003	.1215	-.0511	.0872	.0891
1.500	-.0623	.0018	.1074	-.0721	.1007	.0735
1.550	-.0647	.0043	.0900	-.0896	.1113	.0559
1.600	-.0673	.0078	.0698	-.1031	.1186	.0368
1.650	-.0698	.0124	.0478	-.1124	.1224	.0169
1.700	-.0721	.0181	.0249	-.1171	.1227	-.0032
1.750	-.0738	.0248	.0019	-.1173	.1196	-.0229
1.800	-.0746	.0325	-.0203	-.1131	.1133	-.0416
1.850	-.0742	.0410	-.0408	-.1048	.1039	-.0586
1.900	-.0726	.0500	-.0590	-.0929	.0919	-.0737
1.950	-.0694	.0593	-.0742	-.0780	.0776	-.0862
2.000	-.0547	.0687	-.0860	-.0607	.0617	-.0960
2.100	-.0505	.0860	-.0982	-.0220	.0270	-.1064
2.200	-.0304	.0997	-.0946	.0168	-.0077	-.1045
2.300	-.0058	.1076	-.0771	.0500	-.0383	-.0915
2.400	.0212	.1082	-.0490	.0730	-.0613	-.0700
2.500	.0480	.1008	-.0155	.0829	-.0748	-.0435
2.600	.0721	.0857	.0181	.0791	-.0780	-.0159
2.700	.0909	.0644	.0466	.0631	-.0719	.0092
2.800	.1028	.0386	.0659	.0380	-.0583	.0289
2.900	.1068	.0109	.0738	.0083	-.0402	.0412
3.000	.1029	-.0160	.0696	-.0212	-.0208	.0456
3.100	.0919	-.0400	.0548	-.0462	-.0029	.0427
3.200	.0754	-.0589	.0322	-.0630	.0108	.0340
3.300	.0553	-.0717	.0056	-.0697	.0190	.0219
3.400	.0339	-.0780	-.0208	-.0658	.0212	.0090
3.500	.0132	-.0781	-.0431	-.0527	.0179	-.0024
3.600	-.0050	-.0729	-.0584	-.0327	.0105	-.0104
3.700	-.0195	-.0640	-.0649	-.0093	.0010	-.0138
3.800	-.0299	-.0529	-.0623	.0139	-.0086	-.0125
3.900	-.0361	-.0412	-.0517	.0338	-.0163	-.0071
4.000	-.0387	-.0301	-.0354	.0477	-.0207	.0013
4.100	-.0386	-.0207	-.0160	.0544	-.0211	.0108
4.200	-.0370	-.0132	.0034	.0536	-.0173	.0197
4.300	-.0346	-.0076	.0201	.0463	-.0102	.0265
4.400	-.0324	-.0036	.0323	.0343	-.0029	.0301
4.500	-.0308	-.0005	.0387	.0198	.0091	.0299
4.600	-.0299	.0023	.0394	.0052	.0184	.0261
4.700	-.0294	.0053	.0352	-.0074	.0256	.0194
4.800	-.0290	.0090	.0275	-.0165	.0299	.0108
4.900	-.0281	.0133	.0182	-.0216	.0309	.0015
5.000	-.0263	.0181	.0089	-.0227	.0290	-.0071

TABLE 6: VALUES OF f_5^{ij} AND g_5^{ij} FOR CONSTANT HYSTERETIC SOLID WITH η = .01 AND ν = 1/3

a_o	f_5^{11}	g_5^{11}	f_5^{22}	g_5^{22}	f_5^{12}	g_5^{12}
.025	.5613	-.3377	.4505	-.3367	.0837	-.0126
.050	.4022	-.3339	.2761	-.3303	.0795	-.0241
.075	.3125	-.3285	.1838	-.3199	.0759	-.0347
.100	.2466	-.3228	.1140	-.3089	.0707	-.0452
.125	.1940	-.3157	.0576	-.2950	.0642	-.0549
.150	.1501	-.3075	.0103	-.2787	.0565	-.0637
.175	.1123	-.2980	-.0301	-.2600	.0477	-.0714
.200	.0794	-.2876	-.0648	-.2392	.0379	-.0780
.225	.0503	-.2761	-.0946	-.2166	.0274	-.0833
.250	.0246	-.2638	-.1198	-.1925	.0162	-.0873
.275	.0018	-.2507	-.1408	-.1671	.0046	-.0898
.300	-.0183	-.2370	-.1578	-.1408	-.0073	-.0908
.325	-.0360	-.2229	-.1709	-.1139	-.0193	-.0903
.350	-.0514	-.2084	-.1802	-.0868	-.0312	-.0883
.375	-.0647	-.1937	-.1859	-.0597	-.0429	-.0849
.400	-.0760	-.1789	-.1882	-.0331	-.0540	-.0800
.425	-.0854	-.1641	-.1872	-.0071	-.0646	-.0737
.450	-.0931	-.1496	-.1831	.0178	-.0743	-.0661
.475	-.0991	-.1353	-.1761	.0414	-.0831	-.0573
.500	-.1035	-.1215	-.1665	.0633	-.0908	-.0475
.525	-.1066	-.1082	-.1544	.0835	-.0973	-.0367
.550	-.1083	-.0955	-.1402	.1016	-.1024	-.0252
.575	-.1089	-.0835	-.1242	.1175	-.1062	-.0130
.600	-.1085	-.0722	-.1066	.1310	-.1085	-.0004
.625	-.1072	-.0618	-.0877	.1420	-.1092	.0124
.650	-.1051	-.0522	-.0680	.1504	-.1084	.0254
.675	-.1023	-.0435	-.0477	.1561	-.1061	.0382
.700	-.0991	-.0358	-.0271	.1592	-.1023	.0507
.725	-.0954	-.0289	-.0066	.1598	-.0969	.0627
.750	-.0916	-.0229	.0135	.1577	-.0902	.0741
.775	-.0875	-.0178	.0330	.1533	-.0821	.0847
.800	-.0835	-.0135	.0515	.1465	-.0729	.0943
.825	-.0795	-.0100	.0688	.1375	-.0625	.1028
.850	-.0757	-.0072	.0847	.1266	-.0512	.1101
.875	-.0721	-.0050	.0990	.1139	-.0390	.1160
.900	-.0689	-.0034	.1114	.0997	-.0262	.1205
.925	-.0660	-.0023	.1218	.0843	-.0130	.1236
.950	-.0636	-.0017	.1301	.0678	.0006	.1251
.975	-.0616	-.0013	.1363	.0506	.0143	.1250
1.000	-.0601	-.0011	.1402	.0330	.0279	.1234
1.050	-.0536	-.0011	.1413	-.0025	.0542	.1156
1.100	-.0590	-.0009	.1338	-.0365	.0781	.1020
1.150	-.0610	.0002	.1184	-.0670	.0984	.0835
1.200	-.0641	.0026	.0964	-.0923	.1140	.0609
1.250	-.0679	.0067	.0694	-.1110	.1241	.0355

a_o	f_5^{11}	g_5^{11}	f_5^{22}	g_5^{22}	f_5^{12}	g_5^{12}
1.300	-.0717	.0128	.0392	-.1222	.1284	.0086
1.350	-.0749	.0209	.0077	-.1255	.1266	-.0183
1.400	-.0768	.0308	-.0230	-.1210	.1190	-.0440
1.450	-.0769	.0422	-.0512	-.1093	.1060	-.0671
1.500	-.0746	.0546	-.0750	-.0912	.0885	-.0865
1.550	-.0696	.0674	-.0933	-.0683	.0675	-.1014
1.600	-.0619	.0800	-.1051	-.0419	.0440	-.1111
1.650	-.0512	.0915	-.1099	-.0140	.0195	-.1153
1.700	-.0379	.1015	-.1075	.0138	-.0048	-.1139
1.750	-.0223	.1091	-.0984	.0396	-.0277	-.1074
1.800	-.0050	.1138	-.0834	.0620	-.0480	-.0962
1.850	.0136	.1153	-.0635	.0795	-.0649	-.0812
1.900	.0326	.1132	-.0402	.0914	-.0776	-.0633
1.950	.0512	.1075	-.0151	.0968	-.0856	-.0436
2.000	.0687	.0982	.0102	.0958	-.0889	-.0233
2.100	.0975	.0704	.0553	.0757	-.0817	.0146
2.200	.1142	.0338	.0841	.0370	-.0600	.0429
2.300	.1161	-.0050	.0903	-.0098	-.0304	.0566
2.400	.1036	-.0428	.0734	-.0530	-.0007	.0549
2.500	.0795	-.0713	.0384	-.0823	.0221	.0404
2.600	.0483	-.0878	-.0056	-.0910	.0334	.0185
2.700	.0156	-.0914	-.0479	-.0780	.0318	-.0040
2.800	-.0133	-.0834	-.0785	-.0471	.0194	-.0210
2.900	-.0347	-.0671	-.0909	-.0063	.0007	-.0281
3.000	-.0468	-.0468	-.0829	.0348	-.0184	-.0241
3.100	-.0499	-.0270	-.0576	.0667	-.0324	-.0105
3.200	-.0461	-.0109	-.0214	.0829	-.0373	.0087
3.300	-.0386	-.0004	.0163	.0808	-.0317	.0282
3.400	-.0305	.0045	.0486	.0621	-.0169	.0428
3.500	-.0245	.0051	.0676	.0324	.0034	.0488
3.600	-.0219	.0038	.0707	-.0010	.0246	.0448
3.700	-.0227	[illegible]	.0588	-.0305	.0419	.0315
3.800	-.0256	.0047	.0363	-.0500	.0515	.0121
3.900	-.0285	.0097	.0092	-.0564	.0517	-.0092
4.000	-.0294	.0177	-.0159	-.0501	.0430	-.0281
4.100	-.0266	.0271	-.0336	-.0341	.0277	-.0410
4.200	-.0195	.0359	-.0409	-.0136	.0094	-.0461
4.300	-.0086	.0420	-.0379	.0061	-.0091	-.0432
4.400	.0045	.0438	-.0268	.0255	-.0217	-.0340
4.500	.0179	.0407	-.0117	.0268	-.0294	-.0213
4.600	.0293	.0328	.0030	.0250	-.0310	-.0082
4.700	.0372	.0216	.0136	.0169	-.0274	.0027
4.800	.0405	.0088	.0182	.0056	-.0208	.0099
4.900	.0392	-.0038	.0164	-.0053	-.0134	.0128
5.000	.0342	-.0144	.0098	-.0129	-.0071	.0124

TABLE 7: VALUES OF f_6^{ij} AND g_6^{ij} FOR CONSTANT HYSTERETIC SOLID WITH η = .01 AND ν = 1/3

a_o	f_6^{11}	g_6^{11}	f_6^{22}	g_6^{22}	f_6^{12}	g_6^{12}
.025	.5061	-.3359	.3770	-.3326	.0808	-.0149
.050	.3590	-.3317	.2326	-.3263	.0784	-.0290
.075	.2670	-.3249	.1357	-.3130	.0727	-.0418
.100	.1996	-.3166	.0636	-.2968	.0651	-.0539
.125	.1458	-.3065	.0058	-.2767	.0556	-.0646
.150	.1011	-.2947	-.0420	-.2533	.0446	-.0738
.175	.0630	-.2813	-.0817	-.2269	.0322	-.0812
.200	.0303	-.2666	-.1144	-.1980	.0188	-.0866
.225	.0020	-.2508	-.1407	-.1672	.0046	-.0899
.250	-.0223	-.2340	-.1610	-.1349	-.0099	-.0910
.275	-.0430	-.2165	-.1755	-.1019	-.0246	-.0898
.300	-.0604	-.1986	-.1845	-.0687	-.0390	-.0864
.325	-.0748	-.1805	-.1883	-.0359	-.0529	-.0808
.350	-.0863	-.1625	-.1871	-.0041	-.0658	-.0731
.375	-.0952	-.1447	-.1813	.0261	-.0775	-.0635
.400	-.1017	-.1275	-.1713	.0542	-.0878	-.0522
.425	-.1060	-.1109	-.1575	.0798	-.0963	-.0394
.450	-.1083	-.0953	-.1404	.1023	-.1028	-.0254
.475	-.1089	-.0806	-.1205	.1216	-.1073	-.0104
.500	-.1080	-.0672	-.0984	.1372	-.1095	.0052
.525	-.1057	-.0549	-.0746	.1490	-.1095	.0211
.550	-.1025	-.0440	-.0498	.1569	-.1071	.0369
.575	-.0985	-.0345	-.0244	.1608	-.1025	.0523
.600	-.0939	-.0263	.0008	.1609	-.0956	.0670
.625	-.0890	-.0194	.0253	.1571	-.0867	.0807
.650	-.0840	-.0138	.0487	.1497	-.0758	.0930
.675	-.0790	-.0094	.0703	.1390	-.0632	.1037
.700	-.0743	-.0061	.0898	.1253	-.0491	.1126
.725	-.0699	-.0038	.1067	.1091	-.0339	.1195
.750	-.0662	-.0022	.1208	.0906	-.0178	.1241
.775	-.0630	-.0014	.1319	.0705	-.0010	.1265
.800	-.0605	-.0010	.1396	.0492	.0159	.1266
.825	-.0588	-.0010	.1440	.0273	.0327	.1242
.850	-.0578	-.0011	.1449	.0051	.0491	.1196
.875	-.0576	-.0012	.1426	-.0167	.0647	.1127
.900	-.0580	-.0012	.1370	-.0376	.0793	.1038
.925	-.0591	-.0008	.1284	-.0572	.0925	.0929
.950	-.0607	.0000	.1170	-.0752	.1041	.0803
.975	-.0628	.0014	.1032	-.0910	.1139	.0662
1.000	-.0651	.0034	.0873	-.1044	.1216	.0509
1.050	-.0702	.0096	.0510	-.1229	.1305	.0181
1.100	-.0747	.0189	.0115	-.1296	.1302	-.0158
1.150	-.0775	.0311	-.0273	-.1242	.1209	-.0481
1.200	-.0774	.0456	-.0620	-.1077	.1035	-.0764
1.250	-.0736	.0615	-.0895	-.0820	.0794	-.0986

a_o	f_6^{11}	g_6^{11}	f_6^{22}	g_6^{22}	f_6^{12}	g_6^{12}
1.300	-.0655	.0776	-.1077	-.0498	.0507	-.1133
1.350	-.0530	.0927	-.1151	-.0142	.0197	-.1196
1.400	-.0363	.1053	-.1114	.0213	-.0112	-.1174
1.450	-.0160	.1142	-.0973	.0535	-.0395	-.1071
1.500	.0068	.1185	-.0745	.0794	-.0634	-.0900
1.550	.0308	.1174	-.0452	.0969	-.0811	-.0677
1.600	.0546	.1105	-.0125	.1045	-.0916	-.0423
1.650	.0768	.0983	.0206	.1018	-.0945	-.0160
1.700	.0958	.0810	.0500	.0892	-.0901	.0091
1.750	.1104	.0596	.0757	.0682	-.0793	.0310
1.800	.1198	.0354	.0929	.0409	-.0633	.0481
1.850	.1234	.0097	.1007	.0099	-.0440	.0594
1.900	.1200	-.0160	.0988	-.0218	-.0233	.0642
1.950	.1127	-.0400	.0875	-.0513	-.0031	.0626
2.000	.0995	-.0611	.0680	-.0759	.0148	.0554
2.100	.0618	-.0903	.0122	-.1023	.0390	.0285
2.200	.0182	-.0987	-.0482	-.0924	.0399	-.0039
2.300	-.0205	-.0874	-.0922	-.0506	.0224	-.0287
2.400	-.0463	-.0628	-.1051	.0081	-.0058	-.0365
2.500	-.0560	-.0339	-.0835	.0633	-.0324	-.0249
2.600	-.0516	-.0091	-.0358	.0968	-.0464	.0010
2.700	-.0391	.0059	.0211	.0985	-.0419	.0312
2.800	-.0256	.0101	.0682	.0696	-.0199	.0540
2.900	-.0172	.0067	.0910	.0213	.0121	.0607
3.000	-.0164	.0011	.0838	-.0295	.0434	.0486
3.100	-.0221	-.0009	.0515	-.0663	.0636	.0212
3.200	-.0298	.0040	.0066	-.0784	.0663	-.0128
3.300	-.0344	.0160	-.0349	-.0644	.0511	-.0429
3.400	-.0313	.0318	-.0600	-.0316	.0234	-.0603
3.500	-.0192	.0460	-.0620	.0070	-.0080	-.0639
3.600	.0001	.0537	-.0430	.0378	-.0328	-.0462
3.700	.0222	.0513	-.0118	.0513	-.0472	-.0221
3.800	.0414	.0387	.0194	.0446	-.0461	.0031
3.900	.0529	.0187	.0397	.0224	-.0334	.0218
4.000	.0542	-.0030	.0431	-.0059	-.0149	.0297
4.100	.0456	-.0238	.0301	-.0297	.0022	.0265
4.200	.0303	-.0370	.0068	-.0411	.0127	.0158
4.300	.0126	-.0416	-.0176	-.0372	.0143	.0030
4.400	-.0033	-.0385	-.0347	-.0209	.0085	-.0064
4.500	-.0144	-.0303	-.0395	.0011	-.0009	-.0093
4.600	-.0199	-.0204	-.0316	.0209	-.0093	-.0055
4.700	-.0206	-.0117	-.0152	.0322	-.0129	.0027
4.800	-.0188	-.0056	.0032	.0327	-.0105	.0114
4.900	-.0166	-.0023	.0176	.0239	-.0033	.0170
5.000	-.0154	-.0005	.0242	.0102	.0060	.0174

TABLE 8: VALUES OF f_7^{ij} AND g_7^{ij} FOR CONSTANT HYSTERETIC SOLID WITH η = .01 AND ν = 1/3

a_o	f_7^{11}	g_7^{11}	f_7^{22}	g_7^{22}	f_7^{12}	g_7^{12}
.025	.4763	-.3335	.3552	-.3279	.0819	-.0170
.050	.3221	-.3292	.1941	-.3213	.0767	-.0336
.075	.2287	-.3206	.0948	-.3047	.0689	-.0486
.100	.1600	-.3095	.0210	-.2826	.0585	-.0619
.125	.1054	-.2959	-.0375	-.2556	.0458	-.0731
.150	.0604	-.2801	-.0845	-.2244	.0312	-.0818
.175	.0227	-.2624	-.1218	-.1898	.0151	-.0878
.200	-.0090	-.2433	-.1502	-.1527	-.0018	-.0907
.225	-.0353	-.2230	-.1705	-.1140	-.0192	-.0906
.250	-.0573	-.2019	-.1829	-.0747	-.0364	-.0873
.275	-.0743	-.1805	-.1880	-.0358	-.0528	-.0810
.300	-.0877	-.1592	-.1861	.0016	-.0680	-.0717
.325	-.0974	-.1383	-.1779	.0368	-.0814	-.0598
.350	-.1039	-.1183	-.1640	.0688	-.0927	-.0456
.375	-.1075	-.0993	-.1451	.0969	-.1014	-.0294
.400	-.1085	-.0818	-.1221	.1205	-.1072	-.0119
.425	-.1074	-.0658	-.0959	.1390	-.1099	.0066
.450	-.1045	-.0516	-.0674	.1523	-.1094	.0254
.475	-.1003	-.0393	-.0377	.1600	-.1056	.0441
.500	-.0951	-.0288	-.0076	.1621	-.0987	.0620
.525	-.0893	-.0203	.0218	.1589	-.0888	.0786
.550	-.0833	-.0135	.0497	.1506	-.0761	.0934
.575	-.0774	-.0084	.0753	.1376	-.0610	.1060
.600	-.0719	-.0049	.0977	.1205	-.0439	.1160
.625	-.0670	-.0026	.1165	.0999	-.0253	.1230
.650	-.0629	-.0013	.1310	.0767	-.0057	.1270
.675	-.0598	-.0009	.1410	.0515	.0145	.1276
.700	-.0577	-.0009	.1463	.0253	.0345	.1249
.725	-.0567	-.0012	.1468	-.0011	.0540	.1190
.750	-.0567	-.0013	.1426	-.0268	.0722	.1099
.775	-.0577	-.0012	.1340	-.0511	.0888	.0980
.800	-.0595	-.0005	.1214	-.0732	.1033	.0836
.825	-.0619	.0010	.1051	-.0924	.1152	.0670
.850	-.0648	.0034	.0860	-.1083	.1243	.0486
.875	-.0680	.0068	.0645	-.1203	.1303	.0291
.900	-.0710	.0113	.0415	-.1282	.1331	.0089
.925	-.0738	.0169	.0177	-.1318	.1327	-.0114
.950	-.0761	.0235	-.0061	-.1310	.1290	-.0313
.975	-.0775	.0312	-.0291	-.1261	.1222	-.0503
1.000	-.0780	.0397	-.0507	-.1172	.1125	-.0678
1.050	-.0750	.0584	-.0867	-.0891	.0856	-.0969
1.100	-.0661	.0779	-.1100	-.0508	.0515	-.1156
1.150	-.0509	.0959	-.1180	-.0076	.0140	-.1224
1.200	-.0297	.1103	-.1101	.0349	-.0227	-.1171
1.250	-.0039	.1189	-.0880	.0712	-.0550	-.1008

a_o	f_7^{11}	g_7^{11}	f_7^{22}	g_7^{22}	f_7^{12}	g_7^{12}
1.300	.0247	.1204	-.0549	.0967	-.0795	-.0758
1.350	.0537	.1138	-.0154	.1086	-.0940	-.0453
1.400	.0806	.0993	.0253	.1056	-.0977	-.0131
1.450	.1030	.0775	.0619	.0884	-.0908	.0172
1.500	.1189	.0502	.0896	.0595	-.0749	.0422
1.550	.1268	.0195	.1051	.0228	-.0526	.0596
1.600	.1260	-.0120	.1065	-.0168	-.0271	.0677
1.650	.1168	-.0418	.0939	-.0541	-.0016	.0665
1.700	.1001	-.0674	.0689	-.0845	.0205	.0568
1.750	.0776	-.0868	.0349	-.1042	.0367	.0405
1.800	.0515	-.0989	-.0038	-.1107	.0453	.0203
1.850	.0242	-.1031	-.0422	-.1033	.0456	-.0007
1.900	-.0017	-.0998	-.0757	-.0831	.0381	-.0195
1.950	-.0243	-.0898	-.1001	-.0527	.0243	-.0336
2.000	-.0420	-.0749	-.1126	-.0157	.0063	-.0410
2.100	-.0591	-.0384	-.0977	.0591	-.0308	-.0333
2.200	-.0538	-.0060	-.0391	.1067	-.0521	-.0010
2.300	-.0358	.0114	.0352	.1062	-.0452	.0388
2.400	-.0184	.0122	.0909	.0600	-.0122	.0653
2.500	-.0114	.0034	.1044	-.0090	.0320	.0644
2.600	-.0169	-.0040	.0722	-.0685	.0670	.0352
2.700	-.0291	-.0011	.0123	-.0928	.0767	-.0101
2.800	-.0378	.0142	-.0464	-.0740	.0571	-.0519
2.900	-.0342	.0365	-.0773	-.0245	.0170	-.0729
3.000	-.0154	.0554	-.0691	.0302	-.0260	-.0660
3.100	.0138	.0612	-.0292	.0642	-.0545	-.0362
3.200	.0433	.0492	.0207	.0635	-.0586	.0019
3.300	.0621	.0226	.0559	.0315	-.0402	.0316
3.400	.0635	-.0098	.0609	-.0141	-.0104	.0419
3.500	.0483	-.0369	.0354	-.0503	.0157	.0318
3.600	.0226	-.0506	-.0064	-.0606	.0270	.0096
3.700	-.0035	-.0486	-.0437	-.0417	.0206	-.0118
3.800	-.0217	-.0349	-.0595	-.0042	.0026	-.0215
3.900	-.0280	-.0172	-.0480	.0334	-.0160	-.0157
4.000	-.0243	-.0029	-.0165	.0543	-.0250	.0012
4.100	-.0161	.0038	.0194	.0508	-.0199	.0199
4.200	-.0093	.0035	.0436	.0270	-.0033	.0306
4.300	-.0076	.0001	.0472	-.0046	.0165	.0281
4.400	-.0108	-.0016	.0315	-.0293	.0304	.0139
4.500	-.0155	.0016	.0063	-.0376	.0327	-.0055
4.600	-.0175	.0094	-.0160	-.0290	.0233	-.0218
4.700	-.0139	.0185	-.0262	-.0103	.0073	-.0288
4.800	-.0047	.0249	-.0223	.0080	-.0083	-.0255
4.900	.0071	.0254	-.0091	.0176	-.0178	-.0151
5.000	.0177	.0197	.0049	.0160	-.0191	-.0032

TABLE 9: VALUES OF f_8^{ij} AND g_8^{ij} FOR CONSTANT HYSTERETIC SOLID WITH η = .01 AND ν = 1/3

a_o	f_8^{11}	g_8^{11}	f_8^{22}	g_8^{22}	f_8^{12}	g_8^{12}
.025	.4439	-.3365	.3194	-.3359	.0809	-.0207
.050	.2900	-.3268	.1600	-.3167	.0747	-.0383
.075	.1953	-.3158	.0589	-.2951	.0645	-.0550
.100	.1257	-.3014	-.0160	-.2666	.0511	-.0691
.125	.0706	-.2839	-.0740	-.2320	.0349	-.0801
.150	.0259	-.2639	-.1187	-.1926	.0166	-.0875
.175	-.0107	-.2418	-.1516	-.1498	-.0030	-.0909
.200	-.0402	-.2182	-.1736	-.1049	-.0230	-.0902
.225	-.0636	-.1937	-.1853	-.0596	-.0427	-.0853
.250	-.0815	-.1690	-.1874	-.0154	-.0611	-.0764
.275	-.0943	-.1447	-.1807	.0264	-.0775	-.0638
.300	-.1026	-.1213	-.1661	.0643	-.0911	-.0480
.325	-.1070	-.0993	-.1447	.0971	-.1014	-.0295
.350	-.1080	-.0791	-.1179	.1240	-.1079	-.0091
.375	-.1062	-.0611	-.0869	.1441	-.1102	.0124
.400	-.1022	-.0455	-.0533	.1570	-.1082	.0341
.425	-.0966	-.0324	-.0185	.1625	-.1019	.0553
.450	-.0901	-.0219	.0159	.1607	-.0915	.0750
.475	-.0831	-.0138	.0485	.1520	-.0773	.0926
.500	-.0763	-.0079	.0781	.1370	-.0599	.1072
.525	-.0700	-.0041	.1036	.1165	-.0398	.1183
.550	-.0645	-.0019	.1239	.0917	-.0179	.1254
.575	-.0603	-.0009	.1384	.0636	.0052	.1283
.600	-.0574	-.0008	.1467	.0335	.0286	.1267
.625	-.0559	-.0011	.1486	.0029	.0514	.1208
.650	-.0559	-.0014	.1442	-.0271	.0727	.1106
.675	-.0571	-.0013	.1339	-.0552	.0918	.0966
.700	-.0594	-.0003	.1182	-.0802	.1080	.0792
.725	-.0625	.0017	.0980	-.1012	.1207	.0591
.750	-.0661	.0050	.0742	-.1173	.1295	.0370
.775	-.0698	.0098	.0478	-.1281	.1340	.0137
.800	-.0732	.0160	.0202	-.1331	.1341	-.0099
.825	-.0759	.0237	-.0076	-.1324	.1298	-.0331
.850	-.0775	.0327	-.0342	-.1259	.1214	-.0551
.875	-.0777	.0428	-.0588	-.1143	.1092	-.0749
.900	-.0762	.0538	-.0801	-.0980	.0936	-.0920
.925	-.0727	.0651	-.0974	-.0778	.0753	-.1059
.950	-.0672	.0765	-.1099	-.0547	.0549	-.1160
.975	-.0594	.0875	-.1174	-.0298	.0333	-.1221
1.000	-.0496	.0976	-.1194	-.0041	.0112	-.1241
1.050	-.0242	.1137	-.1077	.0450	-.0313	-.1159
1.100	.0071	.1216	-.0774	.0844	-.0667	-.0933
1.150	.0411	.1193	-.0342	.1076	-.0904	-.0605
1.200	.0740	.1061	.0140	.1110	-.0997	-.0229
1.250	.1019	.0826	.0590	.0946	-.0944	.0137
1.300	.1214	.0511	.0930	.0614	-.0764	.0440
1.350	.1300	.0149	.1105	.0175	-.0495	.0638
1.400	.1269	-.0221	.1085	-.0296	-.0187	.0709
1.450	.1126	-.0557	.0877	-.0717	.0106	.0653
1.500	.0889	-.0823	.0517	-.1019	.0337	.0491
1.550	.0590	-.0995	.0066	-.1151	.0470	.0258
1.600	.0267	-.1059	-.0402	-.1092	.0490	.0003
1.650	-.0043	-.1018	-.0807	-.0852	.0400	-.0226
1.700	-.0304	-.0887	-.1085	-.0471	.0222	-.0388
1.750	-.0492	-.0693	-.1192	-.0012	-.0006	-.0453
1.800	-.0595	-.0470	-.1110	.0452	-.0240	-.0411
1.850	-.0614	-.0249	-.0855	.0846	-.0433	-.0270
1.900	-.0561	-.0061	-.0468	.1110	-.0550	-.0056
1.950	-.0459	.0074	-.0012	.1202	-.0566	.0194
2.000	-.0335	.0146	.0440	.1112	-.0474	.0435
2.100	-.0129	.0120	.1066	.0481	-.0036	.0727
2.200	-.0091	-.0011	.1057	-.0382	.0505	.0612
2.300	-.0219	-.0068	.0458	-.0958	.0822	.0134
2.400	-.0376	.0058	-.0338	-.0931	.0722	-.0438
2.500	-.0391	.0328	-.0843	-.0365	.0262	-.0786
2.600	-.0182	.0587	-.0781	.0354	-.0295	-.0729
2.700	.0190	.0659	-.0238	.0777	-.0644	-.0329
2.800	.0552	.0470	.0412	.0668	-.0622	.0165
2.900	.0724	.0086	.0757	.0134	-.0292	.0472
3.000	.0624	-.0316	.0600	-.0465	.0114	.0452
3.100	.0315	-.0558	.0066	-.0749	.0347	.0171
3.200	-.0043	-.0556	-.0496	-.0557	.0292	-.0154
3.300	-.0284	-.0359	-.0742	-.0027	.0025	-.0307
3.400	-.0331	-.0105	-.0535	.0505	-.0251	-.0198
3.500	-.0224	.0066	-.0026	.0726	-.0344	.0084
3.600	-.0081	.0093	.0471	.0527	-.0191	.0345
3.700	-.0011	.0018	.0671	.0059	.0111	.0414
3.800	-.0052	-.0057	.0492	-.0386	.0377	.0246
3.900	-.0154	-.0045	.0080	-.0559	.0451	-.0059
4.000	-.0220	.0070	-.0301	-.0397	.0301	-.0326
4.100	-.0179	.0226	-.0435	-.0040	.0023	-.0415
4.200	-.0027	.0329	-.0281	.0273	-.0224	-.0302
4.300	.0169	.0312	.0027	.0365	-.0317	-.0074
4.400	.0315	.0176	.0281	.0213	-.0239	.0128
4.500	.0348	-.0015	.0335	-.0055	-.0069	.0205
4.600	.0267	-.0174	.0187	-.0258	.0076	.0146
4.700	.0127	-.0243	-.0042	-.0281	.0118	.0024
4.800	.0002	-.0220	-.0195	-.0135	.0059	-.0066
4.900	-.0056	-.0150	-.0168	.0061	-.0040	-.0068
5.000	-.0055	-.0132	-.0009	.0062	-.0069	.0051

TABLE 10: VALUES OF f_o^{ij} AND g_o^{ij} FOR CONSTANT HYSTERETIC SOLID WITH η = .10 AND ν = 1/3

a_o	f_o^{11}	g_o^{11}	f_o^{22}	g_o^{22}	f_o^{12}	g_o^{12}
.025	1.0469	-.4473	.9922	-.4109	-.0822	.0096
.050	.8997	-.4198	.7667	-.4028	-.0811	.0107
.075	.8157	-.4019	.6985	-.3884	-.0812	.0119
.100	.7572	-.3989	.6376	-.3869	-.0809	.0133
.125	.7089	-.3932	.5888	-.3811	-.0806	.0145
.150	.6707	-.3893	.5506	-.3765	-.0803	.0157
.175	.6381	-.3858	.5178	-.3732	-.0799	.0169
.200	.6097	-.3828	.4891	-.3698	-.0796	.0182
.225	.5847	-.3801	.4639	-.3668	-.0792	.0194
.250	.5623	-.3776	.4412	-.3640	-.0788	.0206
.275	.5419	-.3753	.4205	-.3614	-.0783	.0218
.300	.5233	-.3731	.4016	-.3589	-.0779	.0230
.325	.5061	-.3711	.3842	-.3565	-.0774	.0241
.350	.4902	-.3691	.3690	-.3541	-.0769	.0253
.375	.4754	-.3672	.3528	-.3518	-.0764	.0264
.400	.4614	-.3654	.3386	-.3496	-.0759	.0276
.425	.4483	-.3637	.3251	-.3473	-.0753	.0287
.450	.4359	-.3620	.3124	-.3452	-.0747	.0298
.475	.4241	-.3603	.3004	-.3430	-.0741	.0309
.500	.4130	-.3587	.2889	-.3408	-.0735	.0320
.525	.4023	-.3571	.2779	-.3387	-.0728	.0331
.550	.3921	-.3556	.2674	-.3365	-.0722	.0342
.575	.3824	-.3540	.2574	-.3344	-.0715	.0352
.600	.3730	-.3525	.2477	-.3322	-.0708	.0362
.625	.3640	-.3510	.2384	-.3300	-.0701	.0373
.650	.3554	-.3495	.2295	-.3279	-.0694	.0383
.675	.3470	-.3480	.2209	-.3257	-.0686	.0393
.700	.3389	-.3465	.2125	-.3235	-.0678	.0402
.725	.3312	-.3451	.2045	-.3213	-.0671	.0412
.750	.3236	-.3436	.1967	-.3191	-.0663	.0421
.775	.3163	-.3421	.1891	-.3168	-.0654	.0430
.800	.3092	-.3406	.1818	-.3146	-.0646	.0439
.825	.3024	-.3392	.1747	-.3123	-.0638	.0448
.850	.2957	-.3377	.1678	-.3100	-.0629	.0457
.875	.2892	-.3363	.1612	-.3077	-.0620	.0465
.900	.2829	-.3348	.1547	-.3054	-.0611	.0474
.925	.2768	-.3333	.1483	-.3031	-.0602	.0482
.950	.2708	-.3319	.1422	-.3007	-.0593	.0490
.975	.2650	-.3304	.1362	-.2983	-.0584	.0498
1.000	.2593	-.3289	.1304	-.2959	-.0574	.0505
1.050	.2483	-.3259	.1192	-.2911	-.0555	.0520
1.100	.2379	-.3230	.1086	-.2862	-.0535	.0533
1.150	.2279	-.3200	.0985	-.2812	-.0515	.0546
1.200	.2183	-.3170	.0889	-.2762	-.0495	.0558
1.250	.2092	-.3139	.0797	-.2711	-.0474	.0570

a_o	f_o^{11}	g_o^{11}	f_o^{22}	g_o^{22}	f_o^{12}	g_o^{12}
1.300	.2004	-.3109	.0711	-.2660	-.0453	.0580
1.350	.1920	-.3078	.0628	-.2608	-.0431	.0590
1.400	.1839	-.3047	.0550	-.2555	-.0410	.0598
1.450	.1762	-.3016	.0475	-.2503	-.0388	.0606
1.500	.1687	-.2985	.0405	-.2450	-.0366	.0613
1.550	.1616	-.2954	.0337	-.2396	-.0344	.0619
1.600	.1547	-.2922	.0274	-.2342	-.0322	.0624
1.650	.1480	-.2891	.0213	-.2289	-.0299	.0629
1.700	.1416	-.2859	.0156	-.2235	-.0277	.0632
1.750	.1354	-.2827	.0103	-.2180	-.0255	.0635
1.800	.1295	-.2795	.0052	-.2126	-.0233	.0636
1.850	.1238	-.2763	.0004	-.2072	-.0210	.0637
1.900	.1183	-.2731	-.0041	-.2018	-.0188	.0637
1.950	.1130	-.2700	-.0083	-.1964	-.0167	.0636
2.000	.1079	-.2668	-.0123	-.1911	-.0145	.0635
2.100	.0982	-.2604	-.0193	-.1804	-.0102	.0629
2.200	.0893	-.2540	-.0254	-.1699	-.0061	.0620
2.300	.0810	-.2478	-.0306	-.1596	-.0021	.0609
2.400	.0733	-.2415	-.0348	-.1495	.0018	.0594
2.500	.0662	-.2353	-.0383	-.1397	.0054	.0577
2.600	.0596	-.2293	-.0409	-.1302	.0089	.0557
2.700	.0536	-.2233	-.0428	-.1210	.0121	.0535
2.800	.0480	-.2174	-.0440	-.1122	.0151	.0511
2.900	.0429	-.2117	-.0446	-.1038	.0179	.0485
3.000	.0382	-.2061	-.0446	-.0958	.0204	.0458
3.100	.0339	-.2006	-.0441	-.0882	.0227	.0429
3.200	.0299	-.1953	-.0431	-.0811	.0246	.0399
3.300	.0263	-.1901	-.0417	-.0744	.0264	.0368
3.400	.0230	-.1851	-.0400	-.0682	.0278	.0337
3.500	.0200	-.1803	-.0379	-.0625	.0289	.0305
3.600	.0172	-.1756	-.0355	-.0573	.0298	.0273
3.700	.0147	-.1711	-.0329	-.0525	.0304	.0241
3.800	.0123	-.1668	-.0302	-.0483	.0307	.0210
3.900	.0102	-.1626	-.0273	-.0444	.0308	.0179
4.000	.0083	-.1586	-.0243	-.0411	.0306	.0149
4.100	.0065	-.1548	-.0212	-.0382	.0302	.0119
4.200	.0048	-.1511	-.0181	-.0357	.0296	.0091
4.300	.0033	-.1476	-.0151	-.0337	.0288	.0064
4.400	.0019	-.1442	-.0121	-.0320	.0277	.0039
4.500	.0006	-.1409	-.0092	-.0307	.0265	.0015
4.600	-.0007	-.1378	-.0063	-.0297	.0251	-.0008
4.700	-.0018	-.1348	-.0037	-.0291	.0236	-.0028
4.800	-.0030	-.1319	-.0011	-.0288	.0219	-.0047
4.900	-.0040	-.1292	.0012	-.0287	.0202	-.0064
5.000	-.0050	-.1265	.0034	-.0289	.0183	-.0079

TABLE 11: VALUES OF f_1^{ij} AND g_1^{ij} FOR CONSTANT HYSTERETIC SOLID WITH η = .10 AND ν = 1/3

a_0	f_1^{11}	g_1^{11}	f_1^{22}	g_1^{22}	f_1^{12}	g_1^{12}
.025	1.0469	-.4473	.9922	-.4109	.0822	-.0096
.050	.8997	-.4108	.7667	-.4028	.0811	-.0107
.075	.8157	-.4019	.6985	-.3884	.0812	-.0119
.100	.7572	-.3989	.6376	-.3869	.0809	-.0133
.125	.7089	-.3932	.5888	-.3811	.0806	-.0145
.150	.6707	-.3893	.5506	-.3765	.0803	-.0157
.175	.6381	-.3858	.5178	-.3732	.0799	-.0169
.200	.6097	-.3828	.4891	-.3698	.0796	-.0182
.225	.5847	-.3801	.4639	-.3668	.0792	-.0194
.250	.5623	-.3776	.4412	-.3640	.0788	-.0206
.275	.5419	-.3753	.4205	-.3614	.0783	-.0218
.300	.5233	-.3731	.4016	-.3589	.0779	-.0230
.325	.5061	-.3711	.3842	-.3565	.0774	-.0241
.350	.4902	-.3691	.3680	-.3541	.0769	-.0253
.375	.4754	-.3672	.3528	-.3518	.0764	-.0264
.400	.4614	-.3654	.3386	-.3496	.0759	-.0276
.425	.4483	-.3637	.3251	-.3473	.0753	-.0287
.450	.4359	-.3620	.3124	-.3452	.0747	-.0298
.475	.4241	-.3603	.3004	-.3430	.0741	-.0309
.500	.4130	-.3587	.2889	-.3408	.0735	-.0320
.525	.4023	-.3571	.2779	-.3387	.0728	-.0331
.550	.3921	-.3556	.2674	-.3365	.0722	-.0342
.575	.3824	-.3540	.2574	-.3344	.0715	-.0352
.600	.3730	-.3525	.2477	-.3322	.0708	-.0362
.625	.3640	-.3510	.2384	-.3300	.0701	-.0373
.650	.3554	-.3495	.2295	-.3279	.0694	-.0383
.675	.3470	-.3480	.2209	-.3257	.0686	-.0393
.700	.3389	-.3465	.2125	-.3235	.0678	-.0402
.725	.3312	-.3451	.2045	-.3213	.0671	-.0412
.750	.3236	-.3436	.1967	-.3191	.0663	-.0421
.775	.3163	-.3421	.1891	-.3168	.0654	-.0430
.800	.3092	-.3406	.1818	-.3146	.0646	-.0439
.825	.3024	-.3392	.1747	-.3123	.0638	-.0448
.850	.2957	-.3377	.1678	-.3100	.0629	-.0457
.875	.2892	-.3363	.1612	-.3077	.0620	-.0465
.900	.2829	-.3348	.1547	-.3054	.0611	-.0474
.925	.2768	-.3333	.1483	-.3031	.0602	-.0482
.950	.2708	-.3319	.1422	-.3007	.0593	-.0490
.975	.2650	-.3304	.1362	-.2983	.0584	-.0498
1.000	.2593	-.3289	.1304	-.2959	.0574	-.0505
1.050	.2483	-.3259	.1192	-.2911	.0555	-.0520
1.100	.2379	-.3230	.1086	-.2862	.0535	-.0533
1.150	.2279	-.3200	.0985	-.2812	.0515	-.0546
1.200	.2183	-.3170	.0889	-.2762	.0495	-.0558
1.250	.2092	-.3139	.0797	-.2711	.0474	-.0570

a_0	f_1^{11}	g_1^{11}	f_1^{22}	g_1^{22}	f_1^{12}	g_1^{12}
1.300	.2004	-.3109	.0711	-.2660	.0453	-.0580
1.350	.1920	-.3078	.0628	-.2608	.0431	-.0590
1.400	.1839	-.3047	.0550	-.2555	.0410	-.0598
1.450	.1762	-.3016	.0475	-.2503	.0388	-.0606
1.500	.1687	-.2985	.0405	-.2450	.0366	-.0613
1.550	.1616	-.2954	.0337	-.2396	.0344	-.0619
1.600	.1547	-.2922	.0274	-.2342	.0322	-.0624
1.650	.1480	-.2891	.0213	-.2289	.0299	-.0629
1.700	.1416	-.2859	.0156	-.2235	.0277	-.0632
1.750	.1354	-.2827	.0103	-.2180	.0255	-.0635
1.800	.1295	-.2795	.0052	-.2126	.0233	-.0636
1.850	.1238	-.2763	.0004	-.2072	.0210	-.0637
1.900	.1183	-.2731	-.0041	-.2018	.0188	-.0637
1.950	.1130	-.2700	-.0083	-.1964	.0167	-.0636
2.000	.1079	-.2668	-.0123	-.1911	.0145	-.0635
2.100	.0982	-.2604	-.0193	-.1804	.0102	-.0629
2.200	.0893	-.2540	-.0254	-.1699	.0061	-.0620
2.300	.0810	-.2478	-.0306	-.1596	.0021	-.0609
2.400	.0733	-.2415	-.0348	-.1495	-.0019	-.0594
2.500	.0662	-.2353	-.0383	-.1397	-.0054	-.0577
2.600	.0596	-.2293	-.0409	-.1302	-.0089	-.0557
2.700	.0536	-.2233	-.0428	-.1210	-.0121	-.0535
2.800	.0480	-.2174	-.0440	-.1122	-.0151	-.0511
2.900	.0429	-.2117	-.0446	-.1038	-.0179	-.0485
3.000	.0382	-.2061	-.0446	-.0958	-.0204	-.0458
3.100	.0339	-.2006	-.0441	-.0882	-.0227	-.0429
3.200	.0299	-.1953	-.0431	-.0811	-.0246	-.0399
3.300	.0263	-.1901	-.0417	-.0744	-.0264	-.0368
3.400	.0230	-.1851	-.0400	-.0682	-.0278	-.0337
3.500	.0200	-.1803	-.0379	-.0625	-.0289	-.0305
3.600	.0172	-.1756	-.0355	-.0573	-.0298	-.0273
3.700	.0147	-.1711	-.0329	-.0525	-.0304	-.0241
3.800	.0123	-.1668	-.0302	-.0483	-.0307	-.0210
3.900	.0102	-.1626	-.0273	-.0444	-.0308	-.0179
4.000	.0083	-.1586	-.0243	-.0411	-.0306	-.0149
4.100	.0065	-.1548	-.0212	-.0382	-.0302	-.0119
4.200	.0048	-.1511	-.0181	-.0357	-.0296	-.0091
4.300	.0033	-.1475	-.0151	-.0337	-.0288	-.0064
4.400	.0019	-.1442	-.0121	-.0320	-.0277	-.0039
4.500	.0006	-.1409	-.0092	-.0307	-.0265	-.0015
4.600	-.0007	-.1378	-.0063	-.0297	-.0251	.0008
4.700	-.0018	-.1348	-.0037	-.0291	-.0236	.0028
4.800	-.0030	-.1319	-.0011	-.0288	-.0219	.0047
4.900	-.0040	-.1292	.0012	-.0287	-.0202	.0064
5.000	-.0050	-.1265	.0034	-.0289	-.0183	.0079

TABLE 12: VALUES OF f_2^{ij} AND g_2^{ij} FOR CONSTANT HYSTERETIC SOLID WITH η = .10 AND ν = 1/3

a_o	f_2^{11}	g_2^{11}	f_2^{22}	g_2^{22}	f_2^{12}	g_2^{12}
.025	.7555	-.3959	.6383	-.3824	.0819	-.0120
.050	.6106	-.3834	.4906	-.3708	.0811	-.0158
.075	.5247	-.3743	.4040	-.3613	.0801	-.0195
.100	.4633	-.3675	.3419	-.3537	.0790	-.0232
.125	.4155	-.3610	.2932	-.3471	.0777	-.0268
.150	.3761	-.3569	.2529	-.3410	.0762	-.0303
.175	.3425	-.3524	.2184	-.3351	.0746	-.0337
.200	.3133	-.3481	.1881	-.3293	.0728	-.0371
.225	.2873	-.3439	.1612	-.3235	.0709	-.0404
.250	.2638	-.3399	.1368	-.3176	.0689	-.0435
.275	.2425	-.3359	.1145	-.3117	.0667	-.0466
.300	.2229	-.3319	.0940	-.3056	.0644	-.0496
.325	.2047	-.3280	.0750	-.2993	.0620	-.0525
.350	.1879	-.3240	.0573	-.2929	.0595	-.0552
.375	.1721	-.3199	.0408	-.2863	.0568	-.0579
.400	.1573	-.3159	.0253	-.2796	.0541	-.0604
.425	.1433	-.3118	.0107	-.2727	.0512	-.0628
.450	.1301	-.3076	-.0029	-.2656	.0483	-.0650
.475	.1176	-.3034	-.0158	-.2584	.0452	-.0671
.500	.1058	-.2991	-.0279	-.2511	.0421	-.0691
.525	.0945	-.2948	-.0394	-.2435	.0389	-.0709
.550	.0838	-.2904	-.0501	-.2359	.0356	-.0726
.575	.0736	-.2859	-.0603	-.2281	.0322	-.0741
.600	.0638	-.2814	-.0698	-.2202	.0288	-.0755
.625	.0545	-.2769	-.0788	-.2122	.0254	-.0767
.650	.0457	-.2723	-.0872	-.2041	.0219	-.0778
.675	.0372	-.2676	-.0951	-.1959	.0184	-.0787
.700	.0291	-.2629	-.1024	-.1876	.0148	-.0795
.725	.0214	-.2582	-.1093	-.1793	.0112	-.0801
.750	.0140	-.2534	-.1156	-.1709	.0076	-.0806
.775	.0070	-.2486	-.1215	-.1624	.0040	-.0809
.800	.0002	-.2438	-.1269	-.1539	.0004	-.0810
.825	-.0062	-.2389	-.1319	-.1454	-.0032	-.0810
.850	-.0123	-.2341	-.1364	-.1369	-.0068	-.0808
.875	-.0182	-.2292	-.1405	-.1284	-.0103	-.0804
.900	-.0237	-.2243	-.1441	-.1199	-.0139	-.0800
.925	-.0290	-.2194	-.1474	-.1114	-.0174	-.0793
.950	-.0340	-.2144	-.1502	-.1030	-.0209	-.0785
.975	-.0388	-.2095	-.1527	-.0946	-.0243	-.0776
1.000	-.0433	-.2046	-.1547	-.0862	-.0277	-.0765
1.050	-.0517	-.1949	-.1577	-.0698	-.0343	-.0739
1.100	-.0592	-.1851	-.1593	-.0537	-.0406	-.0708
1.150	-.0658	-.1755	-.1594	-.0380	-.0466	-.0671
1.200	-.0716	-.1661	-.1584	-.0229	-.0523	-.0630
1.250	-.0766	-.1568	-.1561	-.0083	-.0575	-.0584

a_o	f_2^{11}	g_2^{11}	f_2^{22}	g_2^{22}	f_2^{12}	g_2^{12}
1.300	-.0810	-.1477	-.1527	.0055	-.0623	-.0535
1.350	-.0845	-.1388	-.1482	.0187	-.0667	-.0481
1.400	-.0877	-.1302	-.1428	.0311	-.0705	-.0424
1.450	-.0902	-.1218	-.1365	.0427	-.0739	-.0365
1.500	-.0922	-.1137	-.1295	.0534	-.0767	-.0303
1.550	-.0936	-.1059	-.1218	.0632	-.0790	-.0240
1.600	-.0945	-.0984	-.1135	.0721	-.0807	-.0175
1.650	-.0952	-.0912	-.1046	.0800	-.0819	-.0109
1.700	-.0955	-.0844	-.0954	.0870	-.0825	-.0043
1.750	-.0954	-.0779	-.0858	.0930	-.0826	.0024
1.800	-.0950	-.0717	-.0760	.0981	-.0821	.0089
1.850	-.0943	-.0659	-.0661	.1022	-.0811	.0154
1.900	-.0934	-.0604	-.0560	.1053	-.0796	.0217
1.950	-.0924	-.0553	-.0460	.1075	-.0776	.0278
2.000	-.0911	-.0505	-.0361	.1089	-.0751	.0337
2.100	-.0884	-.0418	-.0168	.1090	-.0687	.0446
2.200	-.0853	-.0343	.0014	.1059	-.0608	.0543
2.300	-.0821	-.0279	.0181	.1001	-.0516	.0624
2.400	-.0790	-.0224	.0327	.0920	-.0414	.0688
2.500	-.0761	-.0177	.0452	.0819	-.0305	.0734
2.600	-.0735	-.0136	.0553	.0705	-.0193	.0762
2.700	-.0711	-.0100	.0629	.0581	-.0080	.0771
2.800	-.0691	-.0068	.0681	.0453	.0030	.0763
2.900	-.0674	-.0038	.0708	.0325	.0136	.0738
3.000	-.0561	-.0009	.0714	.0201	.0233	.0699
3.100	-.0649	.0021	.0699	.0084	.0321	.0646
3.200	-.0639	.0051	.0667	-.0022	.0398	.0583
3.300	-.0630	.0083	.0620	-.0116	.0461	.0511
3.400	-.0621	.0116	.0561	-.0196	.0512	.0433
3.500	-.0610	.0152	.0494	-.0261	.0549	.0351
3.600	-.0598	.0189	.0422	-.0310	.0572	.0268
3.700	-.0583	.0228	.0348	-.0344	.0582	.0185
3.800	-.0565	.0267	.0275	-.0363	.0580	.0106
3.900	-.0543	.0307	.0204	-.0369	.0568	.0031
4.000	-.0517	.0345	.0139	-.0364	.0545	-.0038
4.100	-.0486	.0384	.0081	-.0349	.0514	-.0100
4.200	-.0451	.0420	.0031	-.0326	.0477	-.0153
4.300	-.0412	.0452	-.0011	-.0297	.0435	-.0199
4.400	-.0369	.0481	-.0043	-.0265	.0390	-.0235
4.500	-.0323	.0506	-.0067	-.0231	.0344	-.0263
4.600	-.0274	.0526	-.0082	-.0198	.0297	-.0284
4.700	-.0223	.0540	-.0090	-.0166	.0252	-.0296
4.800	-.0171	.0549	-.0092	-.0138	.0208	-.0302
4.900	-.0119	.0551	-.0089	-.0113	.0168	-.0303
5.000	-.0068	.0548	-.0082	-.009	.0132	-.0298

TABLE 13: VALUES OF f_3^{ij} AND g_3^{ij} FOR CONSTANT HYSTERETIC SOLID WITH η = .10 AND ν = 1/3

a_o	f_3^{11}	g_3^{11}	f_3^{22}	g_3^{22}	f_3^{12}	g_3^{12}
.025	.6465	-.3870	.5265	-.3751	.0814	-.0146
.050	.5000	-.3717	.3791	-.3585	.0798	-.0207
.075	.4133	-.3617	.2910	-.3470	.0777	-.0268
.100	.3510	-.3537	.2272	-.3370	.0753	-.0326
.125	.3021	-.3466	.1766	-.3274	.0724	-.0383
.150	.2616	-.3398	.1345	-.3178	.0691	-.0437
.175	.2270	-.3333	.0983	-.3079	.0655	-.0488
.200	.1967	-.3267	.0665	-.2975	.0615	-.0536
.225	.1698	-.3201	.0383	-.2868	.0572	-.0582
.250	.1455	-.3133	.0129	-.2756	.0525	-.0624
.275	.1234	-.3065	-.0101	-.2639	.0476	-.0662
.300	.1033	-.2994	-.0309	-.2518	.0425	-.0697
.325	.0847	-.2922	-.0498	-.2393	.0371	-.0728
.350	.0676	-.2848	-.0670	-.2264	.0316	-.0755
.375	.0517	-.2773	-.0825	-.2131	.0258	-.0778
.400	.0370	-.2696	-.0965	-.1995	.0200	-.0797
.425	.0234	-.2618	-.1091	-.1857	.0140	-.0812
.450	.0108	-.2539	-.1203	-.1716	.0079	-.0822
.475	-.0010	-.2458	-.1302	-.1574	.0018	-.0828
.500	-.0118	-.2377	-.1389	-.1431	-.0043	-.0829
.525	-.0219	-.2295	-.1463	-.1287	-.0105	-.0827
.550	-.0312	-.2213	-.1525	-.1142	-.0165	-.0820
.575	-.0397	-.2130	-.1577	-.0998	-.0225	-.0808
.600	-.0476	-.2047	-.1617	-.0856	-.0284	-.0793
.625	-.0548	-.1964	-.1646	-.0714	-.0342	-.0773
.650	-.0614	-.1882	-.1665	-.0574	-.0398	-.0750
.675	-.0673	-.1799	-.1675	-.0437	-.0452	-.0723
.700	-.0727	-.1718	-.1675	-.0303	-.0505	-.0692
.725	-.0775	-.1637	-.1665	-.0171	-.0555	-.0657
.750	-.0818	-.1557	-.1647	-.0044	-.0602	-.0619
.775	-.0856	-.1479	-.1621	.0079	-.0647	-.0578
.800	-.0889	-.1402	-.1587	.0198	-.0688	-.0534
.825	-.0917	-.1326	-.1546	.0312	-.0727	-.0487
.850	-.0941	-.1252	-.1497	.0421	-.0762	-.0438
.875	-.0961	-.1179	-.1442	.0524	-.0793	-.0387
.900	-.0977	-.1109	-.1382	.0621	-.0821	-.0333
.925	-.0989	-.1040	-.1315	.0713	-.0846	-.0278
.950	-.0998	-.0974	-.1244	.0798	-.0866	-.0221
.975	-.1004	-.0910	-.1168	.0876	-.0883	-.0163
1.000	-.1006	-.0848	-.1088	.0948	-.0895	-.0104
1.050	-.1003	-.0731	-.0918	.1071	-.0908	.0015
1.100	-.0991	-.0624	-.0738	.1166	-.0905	.0135
1.150	-.0971	-.0526	-.0552	.1233	-.0886	.0253
1.200	-.0945	-.0439	-.0363	.1272	-.0851	.0367
1.250	-.0914	-.0362	-.0177	.1284	-.0802	.0476

a_o	f_3^{11}	g_3^{11}	f_3^{22}	g_3^{22}	f_3^{12}	g_3^{12}
1.300	-.0881	-.0294	.0005	.1270	-.0739	.0576
1.350	-.0846	-.0235	.0179	.1232	-.0664	.0668
1.400	-.0810	-.0185	.0341	.1172	-.0578	.0748
1.450	-.0775	-.0142	.0490	.1092	-.0482	.0816
1.500	-.0741	-.0106	.0623	.0994	-.0379	.0871
1.550	-.0710	-.0077	.0738	.0882	-.0270	.0912
1.600	-.0682	-.0053	.0834	.0758	-.0158	.0939
1.650	-.0657	-.0032	.0910	.0624	-.0044	.0951
1.700	-.0635	-.0016	.0965	.0486	.0070	.0948
1.750	-.0618	-.0001	.1000	.0344	.0182	.0932
1.800	-.0604	.0012	.1015	.0202	.0291	.0901
1.850	-.0594	.0025	.1010	.0063	.0393	.0857
1.900	-.0587	.0038	.0987	-.0071	.0489	.0802
1.950	-.0583	.0052	.0946	-.0197	.0576	.0735
2.000	-.0581	.0068	.0890	-.0313	.0653	.0660
2.100	-.0582	.0106	.0738	-.0510	.0775	.0485
2.200	-.0586	.0155	.0549	-.0651	.0848	.0291
2.300	-.0586	.0216	.0338	-.0730	.0872	.0091
2.400	-.0578	.0287	.0126	-.0749	.0847	-.0102
2.500	-.0556	.0366	-.0072	-.0710	.0779	-.0278
2.600	-.0519	.0447	-.0242	-.0624	.0675	-.0427
2.700	-.0463	.0530	-.0374	-.0501	.0544	-.0542
2.800	-.0389	.0605	-.0462	-.0356	.0397	-.0619
2.900	-.0298	.0668	-.0504	-.0201	.0243	-.0658
3.000	-.0192	.0714	-.0501	-.0051	.0093	-.0659
3.100	-.0077	.0741	-.0459	.0084	-.0045	-.0626
3.200	.0043	.0745	-.0386	.0195	-.0164	-.0567
3.300	.0164	.0726	-.0291	.0275	-.0259	-.0487
3.400	.0279	.0685	-.0185	.0321	-.0328	-.0395
3.500	.0383	.0622	-.0077	.0335	-.0370	-.0297
3.600	.0473	.0542	.0023	.0318	-.0387	-.0200
3.700	.0544	.0448	.0108	.0276	-.0382	-.0111
3.800	.0596	.0344	.0173	.0215	-.0359	-.0034
3.900	.0626	.0236	.0215	.0144	-.0324	.0029
4.000	.0635	.0127	.0232	.0069	-.0280	.0077
4.100	.0625	.0023	.0227	-.0003	-.0234	.0109
4.200	.0597	-.0073	.0203	-.0066	-.0188	.0127
4.300	.0554	-.0158	.0164	-.0115	-.0147	.0133
4.400	.0501	-.0230	.0116	-.0149	-.0112	.0131
4.500	.0439	-.0289	.0064	-.0165	-.0085	.0123
4.600	.0373	-.0332	.0014	-.0166	-.0065	.0113
4.700	.0306	-.0363	-.0031	-.0153	-.0052	.0102
4.800	.0239	-.0381	-.0067	-.0129	-.0045	.0094
4.900	.0175	-.0389	-.0093	-.0099	-.0041	.0089
5.000	.0116	-.0388	-.0108	-.0065	-.0038	.0087

TABLE 14: VALUES OF f_4^{ij} AND g_4^{ij} FOR CONSTANT HYSTERETIC SOLID WITH η = .10 AND ν = 1/3

a_o	f_4^{11}	g_4^{11}	f_4^{22}	g_4^{22}	f_4^{12}	g_4^{12}
.025	.5740	-.3796	.4538	-.3671	.0807	-.0170
.050	.4264	-.3633	.3044	-.3490	.0780	-.0256
.075	.3386	-.3521	.2145	-.3350	.0746	-.0338
.100	.2753	-.3424	.1488	-.3216	.0703	-.0415
.125	.2253	-.3332	.0966	-.3078	.0654	-.0488
.150	.1839	-.3240	.0531	-.2933	.0597	-.0555
.175	.1484	-.3146	.0159	-.2779	.0534	-.0617
.200	.1175	-.3050	-.0163	-.2616	.0466	-.0671
.225	.0902	-.2951	-.0444	-.2445	.0393	-.0718
.250	.0658	-.2848	-.0690	-.2265	.0315	-.0758
.275	.0439	-.2743	-.0904	-.2078	.0234	-.0789
.300	.0241	-.2634	-.1090	-.1886	.0151	-.0813
.325	.0064	-.2523	-.1248	-.1689	.0066	-.0828
.350	-.0096	-.2410	-.1381	-.1488	-.0020	-.0835
.375	-.0240	-.2295	-.1490	-.1286	-.0106	-.0833
.400	-.0369	-.2179	-.1576	-.1083	-.0192	-.0822
.425	-.0483	-.2063	-.1639	-.0881	-.0276	-.0804
.450	-.0585	-.1946	-.1682	-.0681	-.0358	-.0777
.475	-.0674	-.1830	-.1705	-.0485	-.0437	-.0743
.500	-.0751	-.1715	-.1708	-.0294	-.0512	-.0701
.525	-.0818	-.1602	-.1694	-.0109	-.0582	-.0652
.550	-.0874	-.1490	-.1662	.0069	-.0648	-.0596
.575	-.0921	-.1381	-.1615	.0238	-.0708	-.0534
.600	-.0958	-.1274	-.1553	.0398	-.0762	-.0467
.625	-.0987	-.1171	-.1478	.0547	-.0809	-.0395
.650	-.1009	-.1072	-.1390	.0686	-.0849	-.0319
.675	-.1023	-.0976	-.1292	.0812	-.0882	-.0240
.700	-.1030	-.0885	-.1184	.0925	-.0907	-.0157
.725	-.1032	-.0798	-.1068	.1025	-.0924	-.0073
.750	-.1028	-.0716	-.0945	.1112	-.0933	.0013
.775	-.1019	-.0638	-.0817	.1185	-.0934	.0099
.800	-.1007	-.0566	-.0685	.1244	-.0927	.0185
.825	-.0990	-.0498	-.0550	.1288	-.0913	.0270
.850	-.0971	-.0436	-.0413	.1319	-.0890	.0353
.875	-.0949	-.0378	-.0277	.1336	-.0860	.0434
.900	-.0925	-.0326	-.0142	.1340	-.0822	.0511
.925	-.0900	-.0278	-.0009	.1331	-.0778	.0585
.950	-.0873	-.0235	.0120	.1309	-.0727	.0654
.975	-.0846	-.0196	.0245	.1275	-.0679	.0719
1.000	-.0819	-.0162	.0363	.1230	-.0607	.0778
1.050	-.0767	-.0105	.0580	.1109	-.0467	.0877
1.100	-.0718	-.0062	.0764	.0953	-.0312	.0950
1.150	-.0674	-.0031	.0910	.0770	-.0148	.0994
1.200	-.0638	-.0008	.1015	.0568	.0022	.1008
1.250	-.0611	.0009	.1078	.0355	.0190	.0992

a_o	f_4^{11}	g_4^{11}	f_4^{22}	g_4^{22}	f_4^{12}	g_4^{12}
1.300	-.0591	.0022	.1098	.0140	.0352	.0947
1.350	-.0580	.0034	.1077	-.0069	.0503	.0875
1.400	-.0575	.0049	.1017	-.0265	.0638	.0778
1.450	-.0577	.0067	.0924	-.0441	.0753	.0661
1.500	-.0583	.0089	.0802	-.0592	.0845	.0527
1.550	-.0591	.0119	.0659	-.0713	.0912	.0381
1.600	-.0600	.0155	.0497	-.0802	.0952	.0227
1.650	-.0606	.0198	.0327	-.0857	.0966	.0071
1.700	-.0609	.0249	.0154	-.0877	.0952	-.0083
1.750	-.0606	.0305	-.0015	-.0865	.0914	-.0230
1.800	-.0595	.0366	-.0174	-.0821	.0853	-.0365
1.850	-.0576	.0430	-.0317	-.0750	.0770	-.0487
1.900	-.0547	.0495	-.0440	-.0655	.0671	-.0590
1.950	-.0507	.0561	-.0540	-.0541	.0558	-.0674
2.000	-.0456	.0624	-.0614	-.0414	.0436	-.0736
2.100	-.0323	.0733	-.0679	-.0141	.0179	-.0792
2.200	-.0155	.0808	-.0637	.0122	-.0069	-.0762
2.300	.0035	.0836	-.0506	.0335	-.0278	-.0658
2.400	.0233	.0810	-.0313	.0474	-.0431	-.0502
2.500	.0418	.0730	-.0094	.0524	-.0517	-.0318
2.600	.0576	.0602	.0116	.0488	-.0534	-.0133
2.700	.0693	.0436	.0286	.0378	-.0492	.0032
2.800	.0759	.0249	.0395	.0219	-.0406	.0159
2.900	.0771	.0055	.0431	.0039	-.0294	.0239
3.000	.0732	-.0128	.0397	-.0133	-.0176	.0270
3.100	.0649	-.0287	.0303	-.0272	-.0070	.0259
3.200	.0532	-.0410	.0169	-.0361	.0012	.0216
3.300	.0397	-.0494	.0017	-.0391	.0063	.0154
3.400	.0255	-.0535	-.0129	-.0363	.0081	.0088
3.500	.0118	-.0539	-.0248	-.0285	.0070	.0030
3.600	-.0003	-.0510	-.0326	-.0174	.0039	-.0009
3.700	-.0102	-.0458	-.0357	-.0047	-.0002	-.0026
3.800	-.0177	-.0392	-.0340	.0076	-.0043	-.0020
3.900	-.0227	-.0320	-.0283	.0180	-.0074	.0005
4.000	-.0257	-.0250	-.0197	.0252	-.0088	.0043
4.100	-.0270	-.0185	-.0098	.0286	-.0084	.0084
4.200	-.0271	-.0129	.0000	.0285	-.0062	.0122
4.300	-.0265	-.0081	.0085	.0251	-.0025	.0149
4.400	-.0256	-.0042	.0149	.0195	.0020	.0160
4.500	-.0245	-.0007	.0185	.0126	.0068	.0154
4.600	-.0234	.0023	.0196	.0057	.0110	.0132
4.700	-.0222	.0053	.0183	-.0005	.0143	.0097
4.800	-.0209	.0082	.0155	-.0054	.0163	.0055
4.900	-.0191	.0111	.0117	-.0086	.0168	.0010
5.000	-.0169	.0138	.0077	-.0101	.0159	-.0033

TABLE 15: VALUES OF f_5^{ij} AND g_5^{ij} FOR CONSTANT HYSTERETIC SOLID WITH η = .10 AND ν = 1/3

a_o	f_5^{11}	g_5^{11}	f_5^{22}	g_5^{22}	f_5^{12}	g_5^{12}
.025	.5200	-.3739	.3994	-.3609	.0799	-.0195
.050	.3715	-.3565	.2483	-.3408	.0762	-.0303
.075	.2827	-.3437	.1566	-.3235	.0709	-.0404
.100	.2182	-.3318	.0892	-.3058	.0645	-.0498
.125	.1673	-.3200	.0358	-.2868	.0570	-.0583
.150	.1252	-.3078	-.0083	-.2664	.0485	-.0657
.175	.0894	-.2951	-.0452	-.2445	.0392	-.0719
.200	.0585	-.2818	-.0763	-.2213	.0292	-.0769
.225	.0316	-.2681	-.1023	-.1970	.0186	-.0805
.250	.0080	-.2539	-.1237	-.1718	.0077	-.0828
.275	-.0126	-.2394	-.1409	-.1460	-.0034	-.0837
.300	-.0306	-.2245	-.1541	-.1199	-.0145	-.0832
.325	-.0461	-.2096	-.1636	-.0938	-.0254	-.0813
.350	-.0594	-.1946	-.1695	-.0680	-.0360	-.0780
.375	-.0707	-.1796	-.1721	-.0427	-.0462	-.0735
.400	-.0801	-.1649	-.1716	-.0183	-.0557	-.0677
.425	-.0877	-.1504	-.1683	.0050	-.0644	-.0608
.450	-.0937	-.1363	-.1622	.0269	-.0722	-.0529
.475	-.0982	-.1227	-.1537	.0472	-.0790	-.0441
.500	-.1014	-.1096	-.1431	.0658	-.0846	-.0345
.525	-.1033	-.0972	-.1306	.0824	-.0891	-.0242
.550	-.1042	-.0854	-.1165	.0970	-.0922	-.0135
.575	-.1040	-.0745	-.1011	.1093	-.0941	-.0025
.600	-.1031	-.0643	-.0846	.1193	-.0946	.0087
.625	-.1014	-.0549	-.0674	.1271	-.0938	.0198
.650	-.0991	-.0463	-.0498	.1325	-.0917	.0308
.675	-.0963	-.0386	-.0319	.1356	-.0883	.0415
.700	-.0932	-.0317	-.0143	.1364	-.0836	.0518
.725	-.0898	-.0256	.0031	.1350	-.0778	.0614
.750	-.0863	-.0203	.0197	.1315	-.0708	.0702
.775	-.0827	-.0157	.0356	.1261	-.0629	.0782
.800	-.0792	-.0118	.0503	.1189	-.0542	.0852
.825	-.0758	-.0086	.0638	.1101	-.0446	.0912
.850	-.0725	-.0059	.0759	.0998	-.0345	.0960
.875	-.0695	-.0037	.0865	.0883	-.0238	.0996
.900	-.0667	-.0020	.0954	.0757	-.0129	.1020
.925	-.0643	-.0006	.1025	.0624	-.0017	.1031
.950	-.0623	.0005	.1079	.0485	.0094	.1030
.975	-.0606	.0013	.1114	.0343	.0205	.1015
1.000	-.0592	.0021	.1131	.0200	.0313	.0989
1.050	-.0576	.0034	.1112	-.0080	.0516	.0901
1.100	-.0572	.0050	.1028	-.0339	.0693	.0770
1.150	-.0579	.0072	.0887	-.0563	.0835	.0606
1.200	-.0592	.0105	.0702	-.0739	.0937	.0416
1.250	-.0606	.0150	.0485	-.0861	.0994	.0211

a_o	f_5^{11}	g_5^{11}	f_5^{22}	g_5^{22}	f_5^{12}	g_5^{12}
1.300	-.0618	.0208	.0252	-.0924	.1004	.0001
1.350	-.0622	.0278	.0018	-.0928	.0969	-.0202
1.400	-.0615	.0358	-.0203	-.0876	.0892	-.0390
1.450	-.0593	.0445	-.0398	-.0774	.0778	-.0553
1.500	-.0552	.0534	-.0557	-.0631	.0635	-.0684
1.550	-.0493	.0622	-.0672	-.0459	.0471	-.0779
1.600	-.0415	.0704	-.0739	-.0270	.0295	-.0835
1.650	-.0319	.0775	-.0757	-.0075	.0116	-.0851
1.700	-.0207	.0829	-.0726	.0112	-.0056	-.0828
1.750	-.0082	.0865	-.0651	.0280	-.0214	-.0771
1.800	.0050	.0878	-.0540	.0421	-.0351	-.0684
1.850	.0186	.0867	-.0402	.0526	-.0461	-.0573
1.900	.0321	.0831	-.0245	.0591	-.0541	-.0447
1.950	.0448	.0772	-.0082	.0614	-.0589	-.0311
2.000	.0563	.0689	.0077	.0595	-.0606	-.0175
2.100	.0742	.0469	.0349	.0449	-.0552	.0072
2.200	.0831	.0203	.0505	.0201	-.0411	.0250
2.300	.0822	-.0070	.0521	-.0080	-.0229	.0335
2.400	.0719	-.0312	.0403	-.0324	-.0053	.0327
2.500	.0549	-.0492	.0190	-.0476	.0079	.0248
2.600	.0341	-.0595	-.0061	-.0507	.0144	.0132
2.700	.0130	-.0617	-.0290	-.0419	.0139	.0016
2.800	-.0056	-.0577	-.0445	-.0238	.0079	-.0067
2.900	-.0196	-.0474	-.0497	-.0015	-.0009	-.0098
3.000	-.0283	-.0356	-.0443	.0199	-.0095	-.0074
3.100	-.0319	-.0237	-.0303	.0359	-.0152	-.0006
3.200	-.0316	-.0135	-.0115	.0433	-.0163	.0084
3.300	-.0290	-.0059	.0077	.0416	-.0125	.0169
3.400	-.0256	-.0010	.0232	.0321	-.0047	.0228
3.500	-.0227	.0019	.0323	.0177	.0052	.0244
3.600	-.0208	.0038	.0330	.0018	.0149	.0214
3.700	-.0198	.0057	.0287	-.0120	.0225	.0143
3.800	-.0193	.0082	.0188	-.0212	.0263	.0048
3.900	-.0186	.0115	.0070	-.0248	.0259	-.0052
4.000	-.0168	.0155	-.0040	-.0229	.0216	-.0139
4.100	-.0135	.0196	-.0120	-.0169	.0145	-.0199
4.200	-.0086	.0228	-.0160	-.0089	.0062	-.0225
4.300	-.0025	.0246	-.0159	-.0011	-.0019	-.0216
4.400	.0042	.0243	-.0125	.0049	-.0084	-.0181
4.500	.0106	.0219	-.0075	.0081	-.0126	-.0130
4.600	.0159	.0175	-.0023	.0083	-.0143	-.0074
4.700	.0194	.0119	.0016	.0063	-.0140	-.0024
4.800	.0210	.0056	.0037	.0030	-.0122	.0015
4.900	.0206	-.0006	.0037	-.0004	-.0097	.0039
5.000	.0185	-.0060	.0022	-.0029	-.0072	.0051

TABLE 16: VALUES OF f_6^{ij} AND g_6^{ij} FOR CONSTANT HYSTERETIC SOLID WITH η = .10 AND ν = 1/3

a_o	f_6^{11}	g_6^{11}	f_6^{22}	g_6^{22}	f_6^{12}	g_6^{12}
.025	.4776	-.3692	.3564	-.3558	.0792	-.0219
.050	.3280	-.3506	.2036	-.3331	.0740	-.0349
.075	.2381	-.3358	.1101	-.3118	.0668	-.0468
.100	.1728	-.3214	.0414	-.2891	.0579	-.0574
.125	.1212	-.3065	-.0125	-.2641	.0476	-.0664
.150	.0789	-.2908	-.0560	-.2370	.0360	-.0737
.175	.0433	-.2743	-.0912	-.2080	.0234	-.0791
.200	.0132	-.2572	-.1192	-.1775	.0102	-.0825
.225	-.0124	-.2394	-.1408	-.1460	-.0033	-.0838
.250	-.0341	-.2213	-.1565	-.1141	-.0169	-.0830
.275	-.0521	-.2029	-.1666	-.0822	-.0302	-.0802
.300	-.0670	-.1846	-.1717	-.0510	-.0429	-.0753
.325	-.0790	-.1665	-.1719	-.0208	-.0547	-.0686
.350	-.0884	-.1488	-.1678	.0077	-.0654	-.0602
.375	-.0953	-.1316	-.1598	.0342	-.0747	-.0503
.400	-.1001	-.1152	-.1482	.0582	-.0825	-.0390
.425	-.1029	-.0997	-.1336	.0795	-.0885	-.0267
.450	-.1041	-.0852	-.1165	.0976	-.0926	-.0137
.475	-.1038	-.0719	-.0974	.1125	-.0948	-.0001
.500	-.1023	-.0597	-.0769	.1240	-.0949	.0137
.525	-.0997	-.0487	-.0554	.1320	-.0931	.0273
.550	-.0964	-.0390	-.0335	.1364	-.0893	.0406
.575	-.0926	-.0306	-.0117	.1375	-.0836	.0532
.600	-.0883	-.0233	.0095	.1353	-.0762	.0648
.625	-.0839	-.0172	.0297	.1299	-.0671	.0753
.650	-.0795	-.0122	.0484	.1218	-.0567	.0845
.675	-.0752	-.0082	.0653	.1111	-.0451	.0920
.700	-.0712	-.0052	.0801	.0983	-.0325	.0979
.725	-.0676	-.0026	.0925	.0836	-.0192	.1019
.750	-.0644	-.0008	.1024	.0675	-.0055	.1041
.775	-.0617	.0006	.1096	.0505	.0083	.1043
.800	-.0596	.0015	.1140	.0329	.0220	.1026
.825	-.0580	.0023	.1157	.0151	.0353	.0991
.850	-.0570	.0030	.1147	-.0024	.0480	.0937
.875	-.0565	.0038	.1112	-.0192	.0598	.0867
.900	-.0565	.0047	.1052	-.0351	.0705	.0782
.925	-.0568	.0059	.0971	-.0496	.0799	.0684
.950	-.0575	.0074	.0870	-.0625	.0878	.0575
.975	-.0584	.0094	.0754	-.0735	.0941	.0456
1.000	-.0594	.0118	.0624	-.0825	.0988	.0331
1.050	-.0613	.0181	.0339	-.0938	.1028	.0070
1.100	-.0624	.0263	.0043	-.0961	.0998	-.0187
1.150	-.0618	.0362	-.0236	-.0896	.0902	-.0423
1.200	-.0588	.0472	-.0474	-.0755	.0751	-.0620
1.250	-.0531	.0585	-.0653	-.0556	.0559	-.0767

a_o	f_6^{11}	g_6^{11}	f_6^{22}	g_6^{22}	f_6^{12}	g_6^{12}
1.300	-.0444	.0693	-.0761	-.0321	.0340	-.0855
1.350	-.0328	.0785	-.0791	-.0072	.0114	-.0881
1.400	-.0187	.0855	-.0746	.0167	-.0104	-.0848
1.450	-.0027	.0893	-.0634	.0374	-.0298	-.0762
1.500	.0143	.0897	-.0470	.0532	-.0455	-.0632
1.550	.0315	.0862	-.0271	.0630	-.0567	-.0473
1.600	.0477	.0789	-.0058	.0661	-.0628	-.0298
1.650	.0622	.0681	.0149	.0627	-.0640	-.0123
1.700	.0740	.0543	.0331	.0533	-.0605	.0040
1.750	.0824	.0382	.0473	.0392	-.0532	.0178
1.800	.0871	.0208	.0562	.0218	-.0429	.0284
1.850	.0878	.0031	.0594	.0029	-.0309	.0352
1.900	.0846	-.0141	.0567	-.0157	-.0183	.0380
1.950	.0779	-.0298	.0486	-.0324	-.0063	.0371
2.000	.0682	-.0432	.0361	-.0456	.0040	.0329
2.100	.0427	-.0612	.0032	-.0578	.0170	.0182
2.200	.0146	-.0560	-.0298	-.0496	.0181	.0013
2.300	-.0099	-.0592	-.0519	-.0249	.0092	-.0109
2.400	-.0266	-.0449	-.0564	.0069	-.0043	-.0139
2.500	-.0341	-.0282	-.0431	.0352	-.0161	-.0074
2.600	-.0340	-.0132	-.0177	.0506	-.0210	.0054
2.700	-.0292	-.0030	.0109	.0500	-.0170	.0190
2.800	-.0235	.0021	.0334	.0349	-.0053	.0282
2.900	-.0193	.0037	.0436	.0115	.0100	.0294
3.000	-.0178	.0043	.0399	-.0121	.0242	.0220
3.100	-.0183	.0059	.0252	-.0288	.0322	.0083
3.200	-.0191	.0098	.0055	-.0343	.0322	-.0076
3.300	-.0180	.0158	-.0123	-.0289	.0246	-.0209
3.400	-.0138	.0222	-.0231	-.0157	.0119	-.0285
3.500	-.0063	.0271	-.0246	-.0005	-.0020	-.0288
3.600	.0035	.0286	-.0180	.0117	-.0134	-.0228
3.700	.0136	.0258	-.0069	.0172	-.0198	-.0131
3.800	.0219	.0189	.0042	.0155	-.0205	-.0028
3.900	.0265	.0093	.0115	.0083	-.0166	.0053
4.000	.0269	-.0010	.0130	-.0010	-.0104	.0096
4.100	.0232	-.0101	.0091	-.0088	-.0042	.0100
4.200	.0167	-.0165	.0018	-.0126	.0001	.0077
4.300	.0091	-.0195	-.0059	-.0116	.0019	.0044
4.400	.0018	-.0194	-.0114	-.0067	.0013	.0017
4.500	-.0041	-.0170	-.0132	.0000	-.0004	.0006
4.600	-.0080	-.0134	-.0112	.0063	-.0021	.0013
4.700	-.0101	-.0096	-.0065	.0102	-.0026	.0030
4.800	-.0109	-.0061	-.0009	.0110	-.0017	.0049
4.900	-.0110	-.0032	.0038	.0092	.0004	.0060
5.000	-.0107	-.0008	.0065	.0054	.0029	.0058

TABLE 17: VALUES OF f_7^{ij} AND g_7^{ij} FOR CONSTANT HYSTERETIC SOLID WITH η = .10 AND ν = 1/3

a_o	f_7^{11}	g_7^{11}	f_7^{22}	g_7^{22}	f_7^{12}	g_7^{12}
.025	.4424	-.3652	.3207	-.3512	.0785	-.0244
.050	.2918	-.3451	.1661	-.3255	.0717	-.0394
.075	.2009	-.3280	.0710	-.2998	.0623	-.0528
.100	.1348	-.3107	.0016	-.2712	.0507	-.0642
.125	.0830	-.2923	-.0510	-.2396	.0372	-.0732
.150	.0409	-.2729	-.0935	-.2054	.0224	-.0796
.175	.0063	-.2525	-.1252	-.1691	.0067	-.0831
.200	-.0222	-.2313	-.1482	-.1316	-.0094	-.0838
.225	-.0455	-.2097	-.1632	-.0938	-.0253	-.0816
.250	-.0641	-.1880	-.1708	-.0566	-.0406	-.0765
.275	-.0786	-.1665	-.1716	-.0208	-.0547	-.0688
.300	-.0894	-.1456	-.1663	.0128	-.0672	-.0586
.325	-.0968	-.1256	-.1556	.0434	-.0778	-.0464
.350	-.1014	-.1066	-.1403	.0704	-.0861	-.0325
.375	-.1035	-.0890	-.1211	.0933	-.0918	-.0174
.400	-.1034	-.0729	-.0988	.1117	-.0948	-.0014
.425	-.1016	-.0585	-.0745	.1253	-.0950	.0149
.450	-.0984	-.0458	-.0489	.1341	-.0925	.0310
.475	-.0942	-.0348	-.0229	.1379	-.0872	.0465
.500	-.0893	-.0256	.0027	.1371	-.0793	.0609
.525	-.0841	-.0180	.0270	.1318	-.0691	.0738
.550	-.0788	-.0120	.0495	.1224	-.0569	.0849
.575	-.0738	-.0073	.0694	.1095	-.0430	.0937
.600	-.0691	-.0039	.0863	.0936	-.0278	.1001
.625	-.0650	-.0014	.0998	.0753	-.0118	.1040
.650	-.0615	.0003	.1095	.0554	.0047	.1051
.675	-.0589	.0015	.1155	.0345	.0211	.1036
.700	-.0570	.0023	.1175	.0133	.0369	.0994
.725	-.0559	.0031	.1158	-.0075	.0519	.0927
.750	-.0556	.0040	.1105	-.0272	.0655	.0838
.775	-.0558	.0052	.1020	-.0453	.0775	.0728
.800	-.0566	.0068	.0906	-.0613	.0875	.0601
.825	-.0577	.0090	.0768	-.0748	.0953	.0460
.850	-.0589	.0119	.0612	-.0853	.1007	.0310
.875	-.0602	.0154	.0442	-.0928	.1036	.0155
.900	-.0613	.0197	.0266	-.0971	.1040	-.0002
.925	-.0619	.0247	.0088	-.0981	.1020	-.0156
.950	-.0621	.0303	-.0086	-.0959	.0976	-.0304
.975	-.0615	.0364	-.0250	-.0908	.0910	-.0441
1.000	-.0601	.0429	-.0399	-.0830	.0824	-.0564
1.050	-.0544	.0565	-.0637	-.0608	.0605	-.0759
1.100	-.0445	.0695	-.0776	-.0326	.0344	-.0872
1.150	-.0305	.0806	-.0805	-.0024	.0071	-.0898
1.200	-.0130	.0882	-.0727	.0258	-.0186	-.0839
1.250	.0069	.0912	-.0560	.0486	-.0402	-.0710

a_o	f_7^{11}	g_7^{11}	f_7^{22}	g_7^{22}	f_7^{12}	g_7^{12}
1.300	.0276	.0889	-.0330	.0634	-.0559	-.0527
1.350	.0476	.0812	-.0070	.0689	-.0645	-.0316
1.400	.0652	.0682	.0185	.0648	-.0659	-.0102
1.450	.0789	.0511	.0402	.0521	-.0606	.0093
1.500	.0877	.0309	.0556	.0330	-.0500	.0249
1.550	.0908	.0094	.0629	.0101	-.0359	.0354
1.600	.0883	-.0118	.0617	-.0134	-.0203	.0401
1.650	.0805	-.0312	.0523	-.0345	-.0052	.0392
1.700	.0684	-.0474	.0364	-.0507	.0075	.0336
1.750	.0530	-.0593	.0160	-.0601	.0165	.0245
1.800	.0359	-.0665	-.0060	-.0618	.0211	.0136
1.850	.0184	-.0687	-.0269	-.0558	.0211	.0026
1.900	.0021	-.0665	-.0443	-.0431	.0171	-.0068
1.950	-.0120	-.0606	-.0561	-.0255	.0101	-.0135
2.000	-.0232	-.0518	-.0610	-.0052	.0012	-.0166
2.100	-.0351	-.0308	-.0501	.0335	-.0158	-.0114
2.200	-.0348	-.0118	-.0184	.0557	-.0238	.0048
2.300	-.0276	.0000	.0187	.0533	-.0180	.0228
2.400	-.0220	.0041	.0446	.0295	-.0009	.0329
2.500	-.0161	.0039	.0498	-.0033	.0197	.0298
2.600	-.0167	.0040	.0345	-.0301	.0344	.0144
2.700	-.0189	.0078	.0079	-.0406	.0370	-.0068
2.800	-.0189	.0156	-.0170	-.0326	.0268	-.0252
2.900	-.0136	.0245	-.0298	-.0126	.0087	-.0339
3.000	-.0028	.0305	-.0270	.0088	-.0099	-.0307
3.100	.0109	.0305	-.0124	.0219	-.0222	-.0196
3.200	.0235	.0231	.0055	.0220	-.0249	-.0033
3.300	.0308	.0104	.0179	.0110	-.0189	.0089
3.400	.0309	-.0039	.0196	-.0042	-.0087	.0141
3.500	.0243	-.0158	.0112	-.0160	.0006	.0122
3.600	.0138	-.0224	-.0022	-.0191	.0054	.0062
3.700	.0028	-.0230	-.0138	-.0130	.0047	.0001
3.800	-.0057	-.0190	-.0187	-.0014	.0006	-.0028
3.900	-.0103	-.0129	-.0153	.0101	-.0038	-.0016
4.000	-.0115	-.0070	-.0059	.0167	-.0056	.0027
4.100	-.0125	-.0029	.0048	.0162	-.0038	.0072
4.200	-.0090	-.0005	.0123	.0098	.0010	.0094
4.300	-.0081	.0009	.0143	.0010	.0064	.0082
4.400	-.0078	.0022	.0110	-.0063	.0101	.0039
4.500	-.0075	.0042	.0048	-.0097	.0107	-.0017
4.600	-.0064	.0067	-.0012	-.0088	.0082	-.0065
4.700	-.0040	.0100	-.0048	-.0051	.0038	-.0090
4.800	-.0005	.0102	-.0051	-.0009	-.0008	-.0088
4.900	.0035	.0098	-.0032	.0020	-.0042	-.0066
5.000	.0069	.0077	-.0005	.0026	-.0057	-.0036

TABLE 18: VALUES OF f_8^{ij} AND g_8^{ij} FOR CONSTANT HYSTERETIC SOLID WITH η = .10 AND ν = 1/3

a_o	f_8^{11}	g_8^{11}	f_8^{22}	g_8^{22}	f_8^{12}	g_8^{12}
.025	.4122	-.3616	.2900	-.3470	.0778	-.0269
.050	.2606	-.3398	.1335	-.3179	.0692	-.0437
.075	.1687	-.3202	.0371	-.2870	.0573	-.0583
.100	.1021	-.2996	-.0323	-.2522	.0427	-.0700
.125	.0504	-.2775	-.0843	-.2136	.0260	-.0784
.150	.0092	-.2541	-.1226	-.1720	.0080	-.0830
.175	-.0237	-.2297	-.1491	-.1288	-.0105	-.0838
.200	-.0496	-.2047	-.1651	-.0852	-.0288	-.0827
.225	-.0696	-.1797	-.1714	-.0426	-.0461	-.0739
.250	-.0843	-.1552	-.1691	-.0024	-.0616	-.0637
.275	-.0944	-.1316	-.1590	.0344	-.0747	-.0505
.300	-.1004	-.1094	-.1425	.0666	-.0849	-.0348
.325	-.1030	-.0890	-.1206	.0935	-.0918	-.0174
.350	-.1027	-.0706	-.0947	.1144	-.0951	.0011
.375	-.1002	-.0543	-.0662	.1289	-.0946	.0199
.400	-.0960	-.0404	-.0363	.1368	-.0904	.0384
.425	-.0907	-.0289	-.0063	.1383	-.0827	.0557
.450	-.0847	-.0195	.0224	.1338	-.0717	.0712
.475	-.0786	-.0123	.0487	.1236	-.0580	.0843
.500	-.0727	-.0069	.0718	.1087	-.0419	.0946
.525	-.0674	-.0031	.0908	.0898	-.0241	.1016
.550	-.0628	-.0006	.1052	.0680	-.0054	.1052
.575	-.0593	.0010	.1145	.0443	.0137	.1051
.600	-.0568	.0021	.1186	.0197	.0324	.1014
.625	-.0553	.0029	.1177	-.0046	.0500	.0944
.650	-.0548	.0039	.1119	-.0276	.0660	.0842
.675	-.0552	.0052	.1017	-.0485	.0797	.0713
.700	-.0562	.0072	.0878	-.0665	.0908	.0562
.725	-.0576	.0100	.0709	-.0809	.0989	.0394
.750	-.0591	.0137	.0518	-.0913	.1036	.0216
.775	-.0605	.0184	.0314	-.0975	.1051	.0033
.800	-.0615	.0240	.0106	-.0993	.1032	-.0147
.825	-.0617	.0305	-.0096	-.0968	.0981	-.0318
.850	-.0610	.0377	-.0285	-.0903	.0901	-.0476
.875	-.0591	.0453	-.0453	-.0803	.0795	-.0614
.900	-.0560	.0533	-.0594	-.0674	.0667	-.0729
.925	-.0514	.0612	-.0703	-.0521	.0523	-.0817
.950	-.0454	.0687	-.0776	-.0352	.0369	-.0877
.975	-.0379	.0757	-.0812	-.0176	.0209	-.0907
1.000	-.0291	.0817	-.0811	.0001	.0050	-.0908
1.050	-.0083	.0900	-.0703	.0325	-.0245	-.0826
1.100	.0154	.0918	-.0480	.0567	-.0479	-.0652
1.150	.0395	.0863	-.0188	.0693	-.0626	-.0419
1.200	.0614	.0736	.0120	.0687	-.0674	-.0165
1.250	.0787	.0546	.0391	.0560	-.0629	.0072

a_o	f_8^{11}	g_8^{11}	f_8^{22}	g_8^{22}	f_8^{12}	g_8^{12}
1.300	.0896	.0312	.0581	.0339	-.0507	.0261
1.350	.0929	.0059	.0661	.0066	-.0337	.0379
1.400	.0885	-.0187	.0624	-.0211	-.0151	.0419
1.450	.0772	-.0403	.0481	-.0445	.0020	.0384
1.500	.0606	-.0568	.0258	-.0598	.0150	.0291
1.550	.0408	-.0670	-.0003	-.0648	.0221	.0164
1.600	.0201	-.0704	-.0259	-.0591	.0230	.0030
1.650	.0007	-.0677	-.0469	-.0440	.0181	-.0085
1.700	-.0155	-.0599	-.0600	-.0220	.0090	-.0161
1.750	-.0274	-.0486	-.0636	.0029	-.0022	-.0185
1.800	-.0345	-.0357	-.0572	.0269	-.0130	-.0155
1.850	-.0369	-.0231	-.0424	.0462	-.0213	-.0079
1.900	-.0355	-.0121	-.0216	.0581	-.0254	.0028
1.950	-.0315	-.0037	.0016	.0612	-.0245	.0145
2.000	-.0263	.0017	.0236	.0553	-.0187	.0251
2.100	-.0172	.0048	.0522	.0232	.0037	.0358
2.200	-.0144	.0032	.0502	-.0170	.0282	.0272
2.300	-.0172	.0045	.0226	-.0422	.0454	.0036
2.400	-.0197	.0121	-.0116	-.0405	.0337	-.0220
2.500	-.0157	.0235	-.0322	-.0172	.0125	-.0364
2.600	-.0032	.0321	-.0299	.0110	-.0114	-.0335
2.700	.0141	.0319	-.0097	.0269	-.0262	-.0171
2.800	.0289	.0212	.0136	.0230	-.0263	.0025
2.900	.0351	.0037	.0252	.0045	-.0150	.0151
3.000	.0304	-.0135	.0197	-.0152	-.0009	.0161
3.100	.0177	-.0241	.0022	-.0239	.0077	.0083
3.200	.0032	-.0255	-.0154	-.0173	.0073	-.0011
3.300	-.0076	-.0196	-.0225	-.0009	.0007	-.0055
3.400	-.0120	-.0109	-.0160	.0153	-.0061	-.0027
3.500	-.0113	-.0038	-.0009	.0219	-.0078	.0046
3.600	-.0084	-.0002	.0137	.0166	-.0030	.0109
3.700	-.0064	.0006	.0201	.0037	.0054	.0118
3.800	-.0063	.0010	.0162	-.0088	.0123	.0066
3.900	-.0071	.0029	.0061	-.0145	.0141	-.0020
4.000	-.0066	.0064	-.0038	-.0118	.0100	-.0095
4.100	-.0037	.0101	-.0081	-.0041	.0026	-.0124
4.200	.0016	.0119	-.0059	.0032	-.0043	-.0103
4.300	.0074	.0104	.0001	.0060	-.0078	-.0050
4.400	.0116	.0061	.0055	.0038	-.0073	.0002
4.500	.0128	.0003	.0074	-.0012	-.0043	.0032
4.600	.0111	-.0049	.0053	-.0054	-.0011	.0035
4.700	.0075	-.0081	.0013	-.0068	.0007	.0021
4.800	.0035	-.0091	-.0019	-.0052	.0009	.0007
4.900	.0002	-.0085	-.0028	-.0026	.0003	.0002
5.000	-.0022	-.0071	-.0020	-.0007	.0001	.0006

TABLE 19: VALUES OF f_o^{ij} AND g_o^{ij} FOR CONSTANT HYSTERETIC SOLID WITH n = .25 AND ν = 1/3

a_o	f_o^{11}	g_o^{11}	f_o^{22}	g_o^{22}	f_o^{12}	g_o^{12}
.025	.9538	-.5577	.8513	-.5168	-.0775	.0206
.050	.8190	-.5114	.7042	-.4842	-.0769	.0217
.075	.7370	-.4915	.6236	-.4628	-.0764	.0229
.100	.6796	-.4770	.5659	-.4482	-.0759	.0240
.125	.6349	-.4656	.5210	-.4367	-.0753	.0251
.150	.5983	-.4563	.4843	-.4272	-.0748	.0262
.175	.5674	-.4484	.4532	-.4190	-.0742	.0272
.200	.5405	-.4414	.4262	-.4118	-.0736	.0283
.225	.5168	-.4352	.4023	-.4053	-.0730	.0294
.250	.4955	-.4296	.3809	-.3994	-.0724	.0304
.275	.4763	-.4245	.3615	-.3939	-.0718	.0314
.300	.4587	-.4198	.3437	-.3888	-.0711	.0324
.325	.4425	-.4154	.3273	-.3839	-.0704	.0334
.350	.4275	-.4112	.3121	-.3794	-.0697	.0344
.375	.4135	-.4073	.2980	-.3750	-.0690	.0353
.400	.4003	-.4036	.2847	-.3708	-.0683	.0363
.425	.3880	-.4000	.2722	-.3668	-.0676	.0372
.450	.3763	-.3966	.2603	-.3628	-.0668	.0381
.475	.3653	-.3934	.2492	-.3590	-.0660	.0390
.500	.3548	-.3902	.2385	-.3553	-.0652	.0399
.525	.3448	-.3872	.2284	-.3517	-.0644	.0408
.550	.3353	-.3842	.2188	-.3482	-.0636	.0416
.575	.3262	-.3814	.2095	-.3447	-.0628	.0424
.600	.3175	-.3786	.2007	-.3412	-.0620	.0432
.625	.3091	-.3759	.1922	-.3379	-.0611	.0440
.650	.3011	-.3732	.1840	-.3345	-.0603	.0448
.675	.2933	-.3706	.1762	-.3312	-.0594	.0456
.700	.2859	-.3680	.1687	-.3280	-.0585	.0463
.725	.2786	-.3655	.1614	-.3248	-.0576	.0470
.750	.2717	-.3630	.1544	-.3216	-.0567	.0477
.775	.2649	-.3606	.1476	-.3184	-.0558	.0484
.800	.2584	-.3582	.1410	-.3152	-.0549	.0491
.825	.2521	-.3559	.1347	-.3121	-.0539	.0497
.850	.2460	-.3535	.1286	-.3090	-.0530	.0503
.875	.2400	-.3512	.1226	-.3059	-.0521	.0509
.900	.2342	-.3489	.1169	-.3028	-.0511	.0515
.925	.2286	-.3467	.1113	-.2997	-.0501	.0521
.950	.2232	-.3444	.1059	-.2967	-.0492	.0526
.975	.2179	-.3422	.1006	-.2936	-.0482	.0531
1.000	.2127	-.3400	.0955	-.2906	-.0472	.0536
1.050	.2028	-.3357	.0858	-.2846	-.0452	.0546
1.100	.1933	-.3314	.0766	-.2786	-.0432	.0555
1.150	.1843	-.3272	.0679	-.2726	-.0412	.0563
1.200	.1757	-.3231	.0598	-.2667	-.0392	.0570
1.250	.1676	-.3190	.0520	-.2608	-.0371	.0576

a_o	f_o^{11}	g_o^{11}	f_o^{22}	g_o^{22}	f_o^{12}	g_o^{12}
1.300	.1598	-.3149	.0448	-.2549	-.0351	.0582
1.350	.1523	-.3109	.0379	-.2491	-.0330	.0586
1.400	.1452	-.3069	.0314	-.2433	-.0310	.0590
1.450	.1383	-.3030	.0253	-.2375	-.0289	.0593
1.500	.1318	-.2991	.0195	-.2318	-.0269	.0596
1.550	.1255	-.2952	.0141	-.2261	-.0249	.0597
1.600	.1195	-.2914	.0090	-.2204	-.0228	.0598
1.650	.1137	-.2876	.0042	-.2148	-.0208	.0598
1.700	.1081	-.2838	-.0003	-.2092	-.0189	.0598
1.750	.1028	-.2801	-.0045	-.2037	-.0169	.0596
1.800	.0977	-.2764	-.0084	-.1983	-.0149	.0594
1.850	.0928	-.2727	-.0121	-.1929	-.0130	.0592
1.900	.0881	-.2691	-.0155	-.1875	-.0111	.0588
1.950	.0836	-.2655	-.0186	-.1823	-.0093	.0584
2.000	.0793	-.2619	-.0216	-.1771	-.0075	.0579
2.100	.0711	-.2549	-.0267	-.1669	-.0039	.0568
2.200	.0636	-.2480	-.0310	-.1570	-.0005	.0555
2.300	.0567	-.2412	-.0345	-.1474	.0027	.0539
2.400	.0503	-.2346	-.0373	-.1382	.0057	.0521
2.500	.0444	-.2282	-.0394	-.1293	.0085	.0502
2.600	.0390	-.2219	-.0409	-.1208	.0111	.0481
2.700	.0341	-.2158	-.0418	-.1127	.0135	.0459
2.800	.0296	-.2099	-.0422	-.1050	.0157	.0435
2.900	.0254	-.2041	-.0421	-.0978	.0177	.0411
3.000	.0216	-.1985	-.0416	-.0910	.0194	.0385
3.100	.0181	-.1931	-.0407	-.0846	.0209	.0359
3.200	.0150	-.1879	-.0396	-.0786	.0222	.0333
3.300	.0121	-.1828	-.0381	-.0731	.0232	.0307
3.400	.0094	-.1779	-.0364	-.0679	.0240	.0280
3.500	.0070	-.1732	-.0345	-.0633	.0246	.0254
3.600	.0048	-.1687	-.0324	-.0590	.0250	.0228
3.700	.0028	-.1643	-.0302	-.0551	.0252	.0202
3.800	.0009	-.1601	-.0279	-.0516	.0251	.0177
3.900	-.0008	-.1561	-.0256	-.0485	.0249	.0153
4.000	-.0023	-.1522	-.0232	-.0458	.0246	.0130
4.100	-.0037	-.1485	-.0208	-.0434	.0240	.0108
4.200	-.0050	-.1449	-.0184	-.0414	.0233	.0086
4.300	-.0062	-.1414	-.0161	-.0396	.0225	.0067
4.400	-.0073	-.1381	-.0139	-.0382	.0216	.0048
4.500	-.0084	-.1349	-.0117	-.0370	.0205	.0031
4.600	-.0093	-.1318	-.0097	-.0361	.0193	.0015
4.700	-.0102	-.1289	-.0077	-.0354	.0181	.0000
4.800	-.0111	-.1260	-.0059	-.0349	.0168	-.0012
4.900	-.0119	-.1232	-.0042	-.0345	.0154	-.0024
5.000	-.0127	-.1206	-.0027	-.0344	.0140	-.0034

TABLE 20: VALUES OF f_1^{ij} AND g_1^{ij} FOR CONSTANT HYSTERETIC SOLID WITH η = .25 AND ν = 1/3

a_o	f_1^{11}	g_1^{11}	f_1^{22}	g_1^{22}	f_1^{12}	g_1^{12}
.025	.9538	-.5577	.8513	-.5168	.0775	-.0206
.050	.8190	-.5114	.7042	-.4842	.0769	-.0217
.075	.7370	-.4915	.6236	-.4628	.0764	-.0229
.100	.6796	-.4770	.5659	-.4482	.0759	-.0240
.125	.6349	-.4656	.5210	-.4367	.0753	-.0251
.150	.5983	-.4563	.4843	-.4272	.0748	-.0262
.175	.5674	-.4484	.4532	-.4190	.0742	-.0272
.200	.5405	-.4414	.4262	-.4118	.0736	-.0283
.225	.5168	-.4352	.4023	-.4053	.0730	-.0294
.250	.4955	-.4296	.3809	-.3994	.0724	-.0304
.275	.4763	-.4245	.3615	-.3939	.0718	-.0314
.300	.4587	-.4198	.3437	-.3888	.0711	-.0324
.325	.4425	-.4154	.3273	-.3839	.0704	-.0334
.350	.4275	-.4112	.3121	-.3794	.0697	-.0344
.375	.4135	-.4073	.2980	-.3750	.0690	-.0353
.400	.4003	-.4036	.2847	-.3708	.0683	-.0363
.425	.3880	-.4000	.2722	-.3668	.0676	-.0372
.450	.3763	-.3966	.2603	-.3628	.0668	-.0381
.475	.3653	-.3934	.2492	-.3590	.0660	-.0390
.500	.3548	-.3902	.2385	-.3553	.0652	-.0399
.525	.3448	-.3872	.2284	-.3517	.0644	-.0408
.550	.3353	-.3842	.2188	-.3482	.0636	-.0416
.575	.3262	-.3814	.2095	-.3447	.0628	-.0424
.600	.3175	-.3786	.2007	-.3412	.0620	-.0432
.625	.3091	-.3759	.1922	-.3379	.0611	-.0440
.650	.3011	-.3732	.1840	-.3345	.0603	-.0448
.675	.2933	-.3706	.1762	-.3312	.0594	-.0456
.700	.2859	-.3680	.1687	-.3280	.0585	-.0463
.725	.2786	-.3655	.1614	-.3248	.0576	-.0470
.750	.2717	-.3630	.1544	-.3216	.0567	-.0477
.775	.2649	-.3606	.1476	-.3184	.0558	-.0484
.800	.2584	-.3582	.1410	-.3152	.0549	-.0491
.825	.2521	-.3559	.1347	-.3121	.0539	-.0497
.850	.2460	-.3535	.1286	-.3090	.0530	-.0503
.875	.2400	-.3512	.1226	-.3059	.0521	-.0509
.900	.2342	-.3489	.1169	-.3028	.0511	-.0515
.925	.2286	-.3467	.1113	-.2997	.0501	-.0521
.950	.2232	-.3444	.1059	-.2967	.0492	-.0526
.975	.2179	-.3422	.1006	-.2936	.0482	-.0531
1.000	.2127	-.3400	.0955	-.2906	.0472	-.0536
1.050	.2028	-.3357	.0858	-.2846	.0452	-.0546
1.100	.1933	-.3314	.0766	-.2786	.0432	-.0555
1.150	.1843	-.3272	.0679	-.2726	.0412	-.0563
1.200	.1757	-.3231	.0598	-.2667	.0392	-.0570
1.250	.1676	-.3190	.0520	-.2608	.0371	-.0576

a_o	f_1^{11}	g_1^{11}	f_1^{22}	g_1^{22}	f_1^{12}	g_1^{12}
1.300	.1598	-.3149	.0448	-.2549	.0351	-.0582
1.350	.1523	-.3109	.0379	-.2491	.0330	-.0586
1.400	.1452	-.3069	.0314	-.2433	.0310	-.0590
1.450	.1383	-.3030	.0253	-.2375	.0289	-.0593
1.500	.1318	-.2991	.0195	-.2318	.0269	-.0596
1.550	.1255	-.2952	.0141	-.2261	.0249	-.0597
1.600	.1195	-.2914	.0090	-.2204	.0228	-.0598
1.650	.1137	-.2876	.0042	-.2148	.0208	-.0598
1.700	.1081	-.2838	-.0003	-.2092	.0189	-.0598
1.750	.1028	-.2801	-.0045	-.2037	.0169	-.0596
1.800	.0977	-.2764	-.0084	-.1983	.0149	-.0594
1.850	.0928	-.2727	-.0121	-.1929	.0130	-.0592
1.900	.0881	-.2691	-.0155	-.1875	.0111	-.0588
1.950	.0836	-.2655	-.0186	-.1823	.0093	-.0584
2.000	.0793	-.2619	-.0216	-.1771	.0075	-.0579
2.100	.0711	-.2549	-.0267	-.1669	.0039	-.0568
2.200	.0636	-.2480	-.0310	-.1570	.0005	-.0555
2.300	.0567	-.2412	-.0345	-.1474	-.0027	-.0539
2.400	.0503	-.2346	-.0373	-.1382	-.0057	-.0521
2.500	.0444	-.2282	-.0394	-.1293	-.0085	-.0502
2.600	.0390	-.2219	-.0409	-.1208	-.0111	-.0481
2.700	.0341	-.2158	-.0418	-.1127	-.0135	-.0459
2.800	.0296	-.2099	-.0422	-.1050	-.0157	-.0435
2.900	.0254	-.2041	-.0421	-.0978	-.0177	-.0411
3.000	.0216	-.1985	-.0416	-.0910	-.0194	-.0385
3.100	.0181	-.1931	-.0407	-.0846	-.0209	-.0359
3.200	.0150	-.1879	-.0396	-.0786	-.0222	-.0333
3.300	.0121	-.1828	-.0381	-.0731	-.0232	-.0307
3.400	.0094	-.1779	-.0364	-.0679	-.0240	-.0280
3.500	.0070	-.1732	-.0345	-.0633	-.0246	-.0254
3.600	.0048	-.1687	-.0324	-.0590	-.0250	-.0228
3.700	.0028	-.1643	-.0302	-.0551	-.0252	-.0202
3.800	.0009	-.1601	-.0279	-.0516	-.0251	-.0177
3.900	-.0008	-.1561	-.0256	-.0485	-.0249	-.0153
4.000	-.0023	-.1522	-.0232	-.0458	-.0246	-.0130
4.100	-.0037	-.1485	-.0208	-.0434	-.0240	-.0108
4.200	-.0050	-.1449	-.0184	-.0414	-.0233	-.0086
4.300	-.0062	-.1414	-.0161	-.0396	-.0225	-.0067
4.400	-.0073	-.1381	-.0139	-.0382	-.0216	-.0048
4.500	-.0084	-.1349	-.0117	-.0370	-.0205	-.0031
4.600	-.0093	-.1318	-.0097	-.0361	-.0193	-.0015
4.700	-.0102	-.1289	-.0077	-.0354	-.0181	-.0000
4.800	-.0111	-.1260	-.0059	-.0349	-.0168	.0012
4.900	-.0119	-.1232	-.0042	-.0345	-.0154	.0024
5.000	-.0127	-.1206	-.0027	-.0344	-.0140	.0034

TABLE 21: VALUES OF f_2^{ij} AND g_2^{ij} FOR CONSTANT HYSTERETIC SOLID WITH η = .25 AND ν = 1/3

a_0	f_2^{11}	g_2^{11}	f_2^{22}	g_2^{22}	f_2^{12}	g_2^{12}
.025	.6797	-.4772	.5663	-.4486	.0771	-.0231
.050	.5411	-.4421	.4272	-.4131	.0755	-.0264
.075	.4596	-.4212	.3453	-.3915	.0739	-.0296
.100	.4016	-.4059	.2867	-.3754	.0721	-.0328
.125	.3564	-.3937	.2409	-.3620	.0701	-.0359
.150	.3192	-.3833	.2033	-.3504	.0681	-.0388
.175	.2877	-.3741	.1712	-.3398	.0659	-.0417
.200	.2603	-.3658	.1433	-.3299	.0636	-.0444
.225	.2360	-.3581	.1185	-.3204	.0613	-.0471
.250	.2143	-.3509	.0963	-.3113	.0588	-.0496
.275	.1945	-.3440	.0762	-.3025	.0562	-.0520
.300	.1765	-.3374	.0578	-.2938	.0535	-.0542
.325	.1598	-.3311	.0409	-.2852	.0508	-.0564
.350	.1444	-.3249	.0253	-.2766	.0480	-.0584
.375	.1301	-.3188	.0109	-.2682	.0451	-.0603
.400	.1167	-.3129	-.0025	-.2597	.0421	-.0620
.425	.1041	-.3070	-.0149	-.2513	.0391	-.0636
.450	.0923	-.3013	-.0265	-.2428	.0361	-.0651
.475	.0812	-.2955	-.0373	-.2344	.0330	-.0664
.500	.0707	-.2899	-.0473	-.2259	.0299	-.0676
.525	.0608	-.2843	-.0567	-.2175	.0267	-.0686
.550	.0515	-.2787	-.0654	-.2090	.0235	-.0695
.575	.0426	-.2731	-.0735	-.2006	.0203	-.0702
.600	.0342	-.2676	-.0810	-.1922	.0170	-.0709
.625	.0262	-.2622	-.0879	-.1837	.0138	-.0713
.650	.0186	-.2567	-.0944	-.1753	.0106	-.0717
.675	.0114	-.2513	-.1003	-.1669	.0074	-.0719
.700	.0046	-.2459	-.1057	-.1586	.0041	-.0719
.725	-.0019	-.2405	-.1107	-.1503	.0009	-.0718
.750	-.0080	-.2352	-.1152	-.1420	-.0022	-.0716
.775	-.0138	-.2299	-.1192	-.1338	-.0054	-.0712
.800	-.0193	-.2246	-.1229	-.1256	-.0085	-.0707
.825	-.0246	-.2194	-.1261	-.1176	-.0116	-.0701
.850	-.0295	-.2142	-.1290	-.1095	-.0146	-.0694
.875	-.0342	-.2090	-.1315	-.1016	-.0176	-.0685
.900	-.0387	-.2039	-.1335	-.0938	-.0205	-.0675
.925	-.0428	-.1988	-.1353	-.0861	-.0234	-.0664
.950	-.0468	-.1937	-.1367	-.0784	-.0262	-.0652
.975	-.0505	-.1887	-.1378	-.0709	-.0289	-.0639
1.000	-.0540	-.1838	-.1385	-.0636	-.0316	-.0624
1.050	-.0604	-.1740	-.1391	-.0492	-.0367	-.0592
1.100	-.0660	-.1645	-.1385	-.0354	-.0415	-.0557
1.150	-.0708	-.1552	-.1368	-.0222	-.0459	-.0517
1.200	-.0750	-.1462	-.1342	-.0097	-.0499	-.0475
1.250	-.0785	-.1374	-.1307	.0022	-.0535	-.0430

a_0	f_2^{11}	g_2^{11}	f_2^{22}	g_2^{22}	f_2^{12}	g_2^{12}
1.300	-.0815	-.1290	-.1263	.0133	-.0567	-.0382
1.350	-.0839	-.1208	-.1213	.0236	-.0594	-.0333
1.400	-.0858	-.1129	-.1156	.0331	-.0617	-.0282
1.450	-.0873	-.1053	-.1093	.0419	-.0636	-.0230
1.500	-.0883	-.0980	-.1026	.0498	-.0650	-.0177
1.550	-.0890	-.0910	-.0954	.0569	-.0660	-.0123
1.600	-.0893	-.0844	-.0879	.0632	-.0665	-.0070
1.650	-.0894	-.0781	-.0802	.0686	-.0665	-.0017
1.700	-.0891	-.0721	-.0723	.0733	-.0662	.0036
1.750	-.0886	-.0664	-.0643	.0772	-.0654	.0087
1.800	-.0880	-.0611	-.0562	.0803	-.0642	.0137
1.850	-.0871	-.0560	-.0481	.0826	-.0627	.0186
1.900	-.0861	-.0512	-.0402	.0842	-.0607	.0232
1.950	-.0849	-.0468	-.0323	.0851	-.0585	.0276
2.000	-.0837	-.0426	-.0246	.0854	-.0559	.0318
2.100	-.0810	-.0349	-.0100	.0841	-.0499	.0394
2.200	-.0781	-.0283	.0034	.0806	-.0430	.0457
2.300	-.0752	-.0225	.0154	.0752	-.0353	.0508
2.400	-.0723	-.0174	.0256	.0684	-.0272	.0545
2.500	-.0696	-.0130	.0342	.0605	-.0189	.0568
2.600	-.0670	-.0090	.0409	.0518	-.0105	.0578
2.700	-.0646	-.0055	.0458	.0427	-.0023	.0576
2.800	-.0624	-.0023	.0490	.0335	.0055	.0562
2.900	-.0604	.0008	.0506	.0245	.0127	.0537
3.000	-.0585	.0035	.0507	.0159	.0193	.0503
3.100	-.0567	.0065	.0495	.0079	.0251	.0461
3.200	-.0550	.0092	.0473	.0007	.0300	.0413
3.300	-.0534	.0120	.0441	-.0056	.0341	.0360
3.400	-.0516	.0147	.0403	-.0109	.0372	.0304
3.500	-.0498	.0175	.0360	-.0153	.0394	.0247
3.600	-.0479	.0202	.0314	-.0187	.0407	.0191
3.700	-.0458	.0229	.0267	-.0211	.0412	.0135
3.800	-.0435	.0255	.0221	-.0227	.0410	.0082
3.900	-.0411	.0281	.0177	-.0234	.0400	.0032
4.000	-.0385	.0305	.0135	-.0235	.0385	-.0014
4.100	-.0356	.0327	.0098	-.0230	.0366	-.0055
4.200	-.0325	.0347	.0065	-.0221	.0342	-.0091
4.300	-.0293	.0365	.0037	-.0208	.0316	-.0121
4.400	-.0259	.0379	.0013	-.0193	.0287	-.0147
4.500	-.0224	.0391	-.0006	-.0176	.0258	-.0168
4.600	-.0189	.0399	-.0020	-.0159	.0229	-.0183
4.700	-.0153	.0404	-.0031	-.0143	.0200	-.0195
4.800	-.0117	.0405	-.0038	-.0127	.0172	-.0202
4.900	-.0082	.0403	-.0042	-.0113	.0145	-.0206
5.000	-.0048	.0398	-.0045	-.0100	.0120	-.0207

TABLE 22: VALUES OF f_3^{ij} AND g_3^{ij} FOR CONSTANT HYSTERETIC SOLID WITH η = .25 AND ν = 1/3

a_0	f_3^{11}	g_3^{11}	f_3^{22}	g_3^{22}	f_3^{12}	g_3^{12}
.025	.5755	-.4509	.4617	-.4221	.0761	-.0253
.050	.4363	-.4151	.3217	-.3852	.0733	-.0307
.075	.3542	-.3932	.2388	-.3616	.0702	-.0359
.100	.2956	-.3766	.1793	-.3428	.0667	-.0408
.125	.2498	-.3628	.1326	-.3264	.0630	-.0454
.150	.2121	-.3505	.0941	-.3111	.0589	-.0497
.175	.1801	-.3393	.0615	-.2965	.0546	-.0537
.200	.1523	-.3287	.0332	-.2823	.0501	-.0573
.225	.1278	-.3186	.0084	-.2682	.0453	-.0606
.250	.1059	-.3088	-.0135	-.2541	.0404	-.0635
.275	.0862	-.2992	-.0329	-.2401	.0353	-.0661
.300	.0683	-.2897	-.0503	-.2261	.0301	-.0682
.325	.0520	-.2804	-.0657	-.2120	.0247	-.0700
.350	.0371	-.2712	-.0794	-.1979	.0194	-.0714
.375	.0234	-.2620	-.0916	-.1838	.0139	-.0724
.400	.0109	-.2530	-.1022	-.1697	.0085	-.0730
.425	-.0006	-.2440	-.1115	-.1557	.0030	-.0732
.450	-.0111	-.2350	-.1196	-.1417	-.0024	-.0730
.475	-.0208	-.2261	-.1264	-.1279	-.0077	-.0725
.500	-.0296	-.2173	-.1320	-.1142	-.0130	-.0716
.525	-.0377	-.2086	-.1366	-.1007	-.0182	-.0703
.550	-.0451	-.2000	-.1401	-.0874	-.0232	-.0687
.575	-.0518	-.1915	-.1427	-.0744	-.0281	-.0668
.600	-.0579	-.1831	-.1443	-.0616	-.0328	-.0645
.625	-.0633	-.1748	-.1451	-.0492	-.0373	-.0620
.650	-.0682	-.1667	-.1450	-.0371	-.0416	-.0591
.675	-.0726	-.1587	-.1441	-.0254	-.0457	-.0560
.700	-.0765	-.1508	-.1424	-.0142	-.0495	-.0526
.725	-.0799	-.1432	-.1401	-.0033	-.0531	-.0490
.750	-.0829	-.1357	-.1371	.0070	-.0564	-.0452
.775	-.0854	-.1284	-.1335	.0169	-.0594	-.0412
.800	-.0875	-.1212	-.1293	.0262	-.0621	-.0370
.825	-.0893	-.1143	-.1247	.0351	-.0645	-.0326
.850	-.0907	-.1076	-.1195	.0434	-.0666	-.0282
.875	-.0918	-.1011	-.1139	.0511	-.0683	-.0236
.900	-.0926	-.0948	-.1080	.0583	-.0698	-.0189
.925	-.0931	-.0888	-.1017	.0649	-.0709	-.0142
.950	-.0933	-.0829	-.0951	.0709	-.0717	-.0094
.975	-.0933	-.0773	-.0882	.0763	-.0722	-.0047
1.000	-.0931	-.0719	-.0812	.0811	-.0724	.0001
1.050	-.0921	-.0618	-.0666	.0890	-.0718	.0096
1.100	-.0904	-.0527	-.0517	.0946	-.0699	.0188
1.150	-.0883	-.0444	-.0368	.0980	-.0669	.0276
1.200	-.0857	-.0370	-.0221	.0992	-.0628	.0358
1.250	-.0829	-.0304	-.0079	.0984	-.0578	.0434
1.300	-.0799	-.0246	.0056	.0958	-.0518	.0501
1.350	-.0768	-.0194	.0181	.0916	-.0451	.0560
1.400	-.0737	-.0150	.0295	.0858	-.0379	.0609
1.450	-.0707	-.0111	.0397	.0788	-.0301	.0648
1.500	-.0679	-.0078	.0486	.0708	-.0220	.0677
1.550	-.0652	-.0049	.0560	.0620	-.0137	.0695
1.600	-.0627	-.0024	.0619	.0525	-.0054	.0702
1.650	-.0605	-.0002	.0664	.0427	.0028	.0699
1.700	-.0584	.0018	.0694	.0327	.0109	.0686
1.750	-.0566	.0036	.0709	.0227	.0186	.0663
1.800	-.0551	.0053	.0711	.0129	.0258	.0632
1.850	-.0537	.0070	.0700	.0035	.0325	.0593
1.900	-.0525	.0086	.0678	-.0054	.0386	.0546
1.950	-.0514	.0103	.0645	-.0136	.0440	.0494
2.000	-.0505	.0120	.0603	-.0210	.0487	.0436
2.100	-.0487	.0157	.0496	-.0332	.0555	.0310
2.200	-.0470	.0199	.0371	-.0416	.0591	.0177
2.300	-.0449	.0244	.0237	-.0461	.0595	.0044
2.400	-.0422	.0292	.0106	-.0468	.0569	-.0080
2.500	-.0388	.0341	-.0014	-.0443	.0518	-.0190
2.600	-.0344	.0388	-.0115	-.0391	.0447	-.0280
2.700	-.0292	.0432	-.0192	-.0320	.0362	-.0348
2.800	-.0231	.0468	-.0243	-.0238	.0269	-.0393
2.900	-.0162	.0495	-.0269	-.0152	.0175	-.0415
3.000	-.0089	.0510	-.0271	-.0070	.0085	-.0416
3.100	-.0013	.0513	-.0253	.0004	.0002	-.0398
3.200	.0063	.0504	-.0218	.0064	-.0070	-.0365
3.300	.0136	.0481	-.0173	.0109	-.0128	-.0321
3.400	.0203	.0446	-.0122	.0137	-.0172	-.0271
3.500	.0262	.0402	-.0070	.0149	-.0201	-.0217
3.600	.0312	.0348	-.0022	.0147	-.0217	-.0163
3.700	.0351	.0288	.0020	.0133	-.0222	-.0113
3.800	.0379	.0225	.0053	.0109	-.0217	-.0068
3.900	.0394	.0160	.0076	.0081	-.0204	-.0029
4.000	.0399	.0096	.0089	.0050	-.0187	.0003
4.100	.0393	.0035	.0092	.0019	-.0167	.0028
4.200	.0377	-.0022	.0086	-.0008	-.0145	.0046
4.300	.0354	-.0073	.0075	-.0031	-.0124	.0059
4.400	.0325	-.0117	.0059	-.0047	-.0105	.0066
4.500	.0291	-.0153	.0040	-.0058	-.0087	.0070
4.600	.0254	-.0183	.0021	-.0062	-.0072	.0072
4.700	.0216	-.0205	.0003	-.0061	-.0060	.0072
4.800	.0177	-.0220	-.0012	-.0056	-.0049	.0071
4.900	.0140	-.0229	-.0025	-.0047	-.0040	.0070
5.000	.0103	-.0233	-.0034	-.0037	-.0032	.0069

TABLE 23: VALUES OF f_4^{ij} AND g_4^{ij} FOR CONSTANT HYSTERETIC SOLID WITH η = .25 AND ν = 1/3

a_o	f_4^{11}	g_4^{11}	f_4^{22}	g_4^{22}	f_4^{12}	g_4^{12}
.025	.5064	-.4333	.3924	-.4041	.0749	-.0275
.050	.3666	-.3966	.2514	-.3654	.0707	-.0349
.075	.2840	-.3733	.1675	-.3391	.0659	-.0417
.100	.2248	-.3549	.1071	-.3168	.0604	-.0480
.125	.1785	-.3389	.0598	-.2962	.0545	-.0537
.150	.1405	-.3243	.0212	-.2764	.0481	-.0587
.175	.1084	-.3104	-.0110	-.2567	.0413	-.0630
.200	.0807	-.2970	-.0384	-.2371	.0342	-.0666
.225	.0566	-.2838	-.0616	-.2174	.0268	-.0695
.250	.0353	-.2709	-.0814	-.1977	.0192	-.0716
.275	.0165	-.2581	-.0981	-.1779	.0116	-.0729
.300	-.0002	-.2455	-.1119	-.1582	.0039	-.0735
.325	-.0150	-.2329	-.1233	-.1386	-.0037	-.0733
.350	-.0281	-.2205	-.1323	-.1192	-.0112	-.0724
.375	-.0397	-.2083	-.1391	-.1002	-.0185	-.0708
.400	-.0499	-.1962	-.1438	-.0815	-.0256	-.0685
.425	-.0588	-.1843	-.1467	-.0634	-.0324	-.0656
.450	-.0665	-.1727	-.1478	-.0458	-.0388	-.0620
.475	-.0731	-.1613	-.1473	-.0289	-.0448	-.0579
.500	-.0787	-.1502	-.1452	-.0129	-.0503	-.0532
.525	-.0834	-.1394	-.1418	.0024	-.0553	-.0481
.550	-.0872	-.1290	-.1371	.0167	-.0598	-.0426
.575	-.0902	-.1189	-.1312	.0300	-.0637	-.0366
.600	-.0924	-.1093	-.1243	.0423	-.0671	-.0304
.625	-.0940	-.1000	-.1165	.0536	-.0698	-.0240
.650	-.0950	-.0912	-.1080	.0637	-.0718	-.0173
.675	-.0955	-.0828	-.0987	.0727	-.0733	-.0106
.700	-.0954	-.0748	-.0890	.0805	-.0741	-.0037
.725	-.0949	-.0673	-.0788	.0871	-.0742	.0031
.750	-.0941	-.0603	-.0683	.0926	-.0737	.0099
.775	-.0929	-.0537	-.0576	.0970	-.0726	.0166
.800	-.0914	-.0475	-.0468	.1002	-.0710	.0231
.825	-.0897	-.0418	-.0360	.1023	-.0687	.0293
.850	-.0878	-.0365	-.0253	.1033	-.0659	.0354
.875	-.0858	-.0317	-.0149	.1033	-.0625	.0411
.900	-.0836	-.0272	-.0047	.1023	-.0587	.0464
.925	-.0814	-.0232	.0051	.1004	-.0545	.0514
.950	-.0791	-.0195	.0145	.0976	-.0498	.0559
.975	-.0768	-.0161	.0234	.0941	-.0448	.0600
1.000	-.0745	-.0131	.0317	.0897	-.0395	.0635
1.050	-.0701	-.0080	.0464	.0792	-.0281	.0691
1.100	-.0660	-.0038	.0583	.0666	-.0161	.0726
1.150	-.0624	-.0005	.0672	.0525	-.0039	.0740
1.200	-.0592	.0022	.0731	.0377	.0083	.0731
1.250	-.0565	.0045	.0760	.0226	.0199	.0703

a_o	f_4^{11}	g_4^{11}	f_4^{22}	g_4^{22}	f_4^{12}	g_4^{12}
1.300	-.0544	.0065	.0760	.0078	.0307	.0656
1.350	-.0527	.0085	.0733	-.0061	.0404	.0592
1.400	-.0514	.0105	.0682	-.0187	.0487	.0515
1.450	-.0503	.0127	.0612	-.0297	.0554	.0426
1.500	-.0494	.0152	.0526	-.0389	.0605	.0329
1.550	-.0486	.0179	.0428	-.0460	.0638	.0227
1.600	-.0476	.0209	.0324	-.0509	.0654	.0124
1.650	-.0465	.0242	.0216	-.0537	.0652	.0021
1.700	-.0451	.0277	.0109	-.0544	.0634	-.0077
1.750	-.0433	.0314	.0007	-.0532	.0601	-.0168
1.800	-.0410	.0351	-.0086	-.0502	.0555	-.0251
1.850	-.0383	.0389	-.0169	-.0457	.0498	-.0323
1.900	-.0349	.0425	-.0239	-.0399	.0432	-.0383
1.950	-.0311	.0459	-.0295	-.0333	.0360	-.0430
2.000	-.0267	.0490	-.0335	-.0260	.0283	-.0463
2.100	-.0166	.0537	-.0369	-.0109	.0128	-.0491
2.200	-.0051	.0560	-.0347	.0032	-.0017	-.0471
2.300	.0069	.0555	-.0280	.0143	-.0138	-.0411
2.400	.0185	.0519	-.0184	.0215	-.0227	-.0324
2.500	.0289	.0456	-.0078	.0243	-.0278	-.0225
2.600	.0373	.0375	.0022	.0229	-.0295	-.0126
2.700	.0432	.0268	.0102	.0182	-.0282	-.0037
2.800	.0462	.0157	.0153	.0114	-.0247	.0034
2.900	.0464	.0047	.0173	.0037	-.0198	.0084
3.000	.0439	-.0055	.0163	-.0036	-.0145	.0111
3.100	.0394	-.0143	.0127	-.0096	-.0096	.0119
3.200	.0332	-.0213	.0075	-.0135	-.0054	.0112
3.300	.0260	-.0262	.0016	-.0153	-.0024	.0096
3.400	.0185	-.0291	-.0041	-.0143	-.0006	.0076
3.500	.0111	-.0301	-.0088	-.0117	.0001	.0057
3.600	.0044	-.0294	-.0121	-.0077	.0000	.0042
3.700	-.0014	-.0275	-.0137	-.0031	-.0005	.0033
3.800	-.0062	-.0247	-.0136	.0014	-.0012	.0031
3.900	-.0099	-.0214	-.0120	.0054	-.0017	.0035
4.000	-.0126	-.0178	-.0093	.0084	-.0018	.0042
4.100	-.0143	-.0142	-.0060	.0102	-.0015	.0051
4.200	-.0153	-.0108	-.0025	.0108	-.0006	.0059
4.300	-.0157	-.0077	.0006	.0103	.0006	.0064
4.400	-.0157	-.0048	.0033	.0089	.0020	.0065
4.500	-.0153	-.0022	.0051	.0069	.0035	.0061
4.600	-.0145	.0001	.0062	.0047	.0048	.0053
4.700	-.0137	.0022	.0065	.0025	.0059	.0041
4.800	-.0126	.0041	.0062	.0006	.0066	.0026
4.900	-.0113	.0057	.0055	-.0010	.0069	.0010
5.000	-.0099	.0071	.0045	-.0022	.0068	-.0005

TABLE 24: VALUES OF f_5^{ij} AND g_5^{ij} FOR CONSTANT HYSTERETIC SOLID WITH η = .25 AND ν = 1/3

a_o	f_5^{11}	g_5^{11}	f_5^{22}	g_5^{22}	f_5^{12}	g_5^{12}
.025	.4552	-.4201	.3409	-.3905	.0736	-.0296
.050	.3148	-.3823	.1989	-.3495	.0679	-.0388
.075	.2316	-.3572	.1141	-.3197	.0611	-.0472
.100	.1720	-.3366	.0532	-.2933	.0535	-.0545
.125	.1255	-.3181	.0060	-.2678	.0451	-.0607
.150	.0876	-.3007	-.0318	-.2426	.0361	-.0657
.175	.0559	-.2837	-.0624	-.2173	.0267	-.0695
.200	.0290	-.2671	-.0873	-.1919	.0170	-.0721
.225	.0060	-.2508	-.1072	-.1665	.0071	-.0734
.250	-.0138	-.2346	-.1227	-.1412	-.0027	-.0735
.275	-.0307	-.2186	-.1343	-.1163	-.0124	-.0724
.300	-.0450	-.2029	-.1424	-.0919	-.0218	-.0701
.325	-.0572	-.1875	-.1471	-.0682	-.0307	-.0667
.350	-.0674	-.1724	-.1489	-.0454	-.0391	-.0622
.375	-.0757	-.1578	-.1480	-.0238	-.0467	-.0568
.400	-.0824	-.1437	-.1446	-.0034	-.0536	-.0506
.425	-.0876	-.1301	-.1390	.0154	-.0597	-.0436
.450	-.0914	-.1172	-.1314	.0327	-.0648	-.0360
.475	-.0941	-.1048	-.1222	.0483	-.0689	-.0279
.500	-.0957	-.0932	-.1115	.0620	-.0720	-.0194
.525	-.0964	-.0822	-.0997	.0739	-.0740	-.0106
.550	-.0962	-.0721	-.0870	.0839	-.0750	-.0018
.575	-.0953	-.0626	-.0735	.0919	-.0749	.0071
.600	-.0939	-.0539	-.0597	.0980	-.0737	.0158
.625	-.0919	-.0460	-.0457	.1022	-.0716	.0243
.650	-.0896	-.0388	-.0316	.1046	-.0685	.0324
.675	-.0870	-.0323	-.0179	.1052	-.0645	.0400
.700	-.0841	-.0264	-.0045	.1041	-.0597	.0471
.725	-.0812	-.0213	.0083	.1015	-.0541	.0535
.750	-.0782	-.0167	.0203	.0974	-.0478	.0592
.775	-.0752	-.0127	.0314	.0920	-.0410	.0641
.800	-.0722	-.0093	.0415	.0855	-.0338	.0682
.825	-.0694	-.0063	.0505	.0780	-.0261	.0714
.850	-.0667	-.0037	.0583	.0697	-.0183	.0737
.875	-.0642	-.0015	.0648	.0607	-.0102	.0751
.900	-.0619	.0004	.0701	.0512	-.0022	.0756
.925	-.0598	.0021	.0741	.0414	.0058	.0752
.950	-.0579	.0036	.0768	.0314	.0137	.0739
.975	-.0563	.0049	.0782	.0214	.0212	.0717
1.000	-.0549	.0062	.0784	.0116	.0285	.0688
1.050	-.0527	.0086	.0754	-.0071	.0416	.0608
1.100	-.0511	.0110	.0683	-.0238	.0524	.0503
1.150	-.0500	.0138	.0579	-.0375	.0605	.0380
1.200	-.0491	.0171	.0451	-.0479	.0657	.0246
1.250	-.0481	.0210	.0310	-.0546	.0678	.0108
1.300	-.0468	.0253	.0163	-.0575	.0670	-.0028
1.350	-.0450	.0301	.0021	-.0569	.0635	-.0155
1.400	-.0424	.0351	-.0109	-.0531	.0576	-.0269
1.450	-.0389	.0402	-.0221	-.0466	.0497	-.0364
1.500	-.0344	.0451	-.0309	-.0380	.0403	-.0439
1.550	-.0290	.0495	-.0371	-.0281	.0300	-.0490
1.600	-.0227	.0533	-.0405	-.0174	.0193	-.0518
1.650	-.0156	.0561	-.0412	-.0068	.0087	-.0523
1.700	-.0079	.0579	-.0394	.0031	-.0013	-.0506
1.750	.0001	.0584	-.0354	.0119	-.0104	-.0472
1.800	.0083	.0576	-.0297	.0190	-.0181	-.0422
1.850	.0163	.0555	-.0227	.0243	-.0243	-.0360
1.900	.0239	.0521	-.0150	.0275	-.0288	-.0291
1.950	.0308	.0475	-.0071	.0287	-.0317	-.0219
2.000	.0369	.0418	.0004	.0279	-.0329	-.0147
2.100	.0458	.0281	.0130	.0213	-.0311	-.0016
2.200	.0496	.0127	.0201	.0105	-.0251	.0080
2.300	.0483	-.0024	.0211	-.0015	-.0171	.0135
2.400	.0425	-.0155	.0164	-.0117	-.0091	.0147
2.500	.0335	-.0254	.0080	-.0181	-.0028	.0129
2.600	.0228	-.0313	-.0018	-.0195	.0010	.0093
2.700	.0119	-.0334	-.0107	-.0164	.0022	.0054
2.800	.0020	-.0322	-.0168	-.0099	.0014	.0024
2.900	-.0060	-.0286	-.0191	-.0018	-.0005	.0010
3.000	-.0118	-.0235	-.0176	.0060	-.0025	.0013
3.100	-.0154	-.0180	-.0132	.0120	-.0038	.0029
3.200	-.0171	-.0126	-.0069	.0152	-.0038	.0051
3.300	-.0174	-.0079	-.0004	.0154	-.0024	.0072
3.400	-.0169	-.0040	.0051	.0131	.0010	.0086
3.500	-.0159	-.0009	.0089	.0089	.0030	.0087
3.600	-.0147	.0017	.0104	.0041	.0060	.0075
3.700	-.0134	.0038	.0098	-.0005	.0082	.0052
3.800	-.0121	.0057	.0077	-.0040	.0095	.0022
3.900	-.0105	.0075	.0047	-.0060	.0095	-.0010
4.000	-.0087	.0090	.0015	-.0066	.0084	-.0039
4.100	-.0066	.0103	-.0012	-.0060	.0064	-.0061
4.200	-.0042	.0110	-.0031	-.0045	.0039	-.0074
4.300	-.0015	.0113	-.0040	-.0027	.0013	-.0077
4.400	.0009	.0108	-.0041	-.0011	-.0010	-.0073
4.500	.0032	.0098	-.0036	.0002	-.0028	-.0061
4.600	.0052	.0082	-.0028	.0009	-.0041	-.0047
4.700	.0066	.0062	-.0020	.0012	-.0048	-.0031
4.800	.0074	.0040	-.0014	.0010	-.0049	-.0016
4.900	.0076	.0017	-.0011	.0007	-.0047	-.0003
5.000	.0072	-.0003	-.0010	.0003	-.0042	.0006

TABLE 25: VALUES OF f_6^{ij} AND g_6^{ij} FOR CONSTANT HYSTERETIC SOLID WITH η = .25 AND ν = 1/3

a_o	f_6^{11}	g_6^{11}	f_6^{22}	g_6^{22}	f_6^{12}	g_6^{12}
.025	.4150	-.4096	.3003	-.3794	.0725	-.0317
.050	.2740	-.3704	.1573	-.3357	.0651	-.0427
.075	.1903	-.3433	.0718	-.3020	.0562	-.0522
.100	.1304	-.3202	.0110	-.2707	.0461	-.0601
.125	.0840	-.2988	-.0353	-.2399	.0351	-.0662
.150	.0467	-.2783	-.0711	-.2089	.0235	-.0706
.175	.0160	-.2581	-.0987	-.1779	.0115	-.0731
.200	-.0094	-.2382	-.1195	-.1469	-.0005	-.0737
.225	-.0305	-.2187	-.1342	-.1164	-.0124	-.0725
.250	-.0478	-.1995	-.1436	-.0866	-.0238	-.0695
.275	-.0618	-.1808	-.1483	-.0579	-.0345	-.0650
.300	-.0730	-.1627	-.1486	-.0308	-.0443	-.0589
.325	-.0816	-.1453	-.1451	-.0055	-.0530	-.0515
.350	-.0880	-.1286	-.1382	.0176	-.0604	-.0429
.375	-.0923	-.1129	-.1285	.0384	-.0665	-.0334
.400	-.0950	-.0982	-.1164	.0565	-.0710	-.0233
.425	-.0962	-.0845	-.1023	.0719	-.0739	-.0126
.450	-.0960	-.0719	-.0868	.0844	-.0753	-.0018
.475	-.0949	-.0604	-.0703	.0940	-.0751	.0091
.500	-.0929	-.0501	-.0531	.1008	-.0733	.0197
.525	-.0902	-.0408	-.0358	.1047	-.0700	.0299
.550	-.0870	-.0327	-.0188	.1059	-.0653	.0395
.575	-.0835	-.0256	-.0023	.1046	-.0594	.0482
.600	-.0798	-.0194	.0132	.1010	-.0524	.0559
.625	-.0761	-.0142	.0276	.0953	-.0444	.0626
.650	-.0724	-.0098	.0405	.0877	-.0356	.0680
.675	-.0689	-.0061	.0518	.0786	-.0263	.0721
.700	-.0656	-.0030	.0612	.0682	-.0166	.0748
.725	-.0626	-.0004	.0689	.0568	-.0066	.0762
.750	-.0599	.0017	.0745	.0448	.0033	.0762
.775	-.0575	.0035	.0782	.0325	.0131	.0749
.800	-.0555	.0051	.0800	.0201	.0225	.0723
.825	-.0538	.0065	.0799	.0079	.0313	.0685
.850	-.0525	.0079	.0781	-.0038	.0395	.0636
.875	-.0514	.0093	.0747	-.0147	.0469	.0577
.900	-.0505	.0108	.0698	-.0248	.0533	.0509
.925	-.0499	.0124	.0637	-.0338	.0587	.0435
.950	-.0493	.0142	.0565	-.0415	.0631	.0355
.975	-.0488	.0162	.0485	-.0479	.0663	.0272
1.000	-.0484	.0184	.0398	-.0530	.0683	.0186
1.050	-.0471	.0235	.0216	-.0588	.0690	.0014
1.100	-.0452	.0293	.0035	-.0589	.0654	-.0148
1.150	-.0421	.0355	-.0129	-.0541	.0580	-.0291
1.200	-.0377	.0419	-.0264	-.0452	.0476	-.0405
1.250	-.0318	.0478	-.0361	-.0334	.0352	-.0486

a_o	f_6^{11}	g_6^{11}	f_6^{22}	g_6^{22}	f_6^{12}	g_6^{12}
1.300	-.0244	.0530	-.0416	-.0201	.0218	-.0531
1.350	-.0157	.0568	-.0428	-.0065	.0083	-.0540
1.400	-.0061	.0590	-.0401	.0061	-.0042	-.0516
1.450	.0040	.0593	-.0341	.0167	-.0152	-.0464
1.500	.0143	.0576	-.0257	.0246	-.0239	-.0391
1.550	.0240	.0538	-.0159	.0294	-.0301	-.0304
1.600	.0329	.0480	-.0056	.0309	-.0337	-.0211
1.650	.0404	.0407	.0042	.0292	-.0347	-.0119
1.700	.0462	.0320	.0126	.0249	-.0335	-.0034
1.750	.0500	.0225	.0189	.0186	-.0304	.0039
1.800	.0519	.0126	.0229	.0110	-.0259	.0096
1.850	.0517	.0028	.0243	.0028	-.0206	.0136
1.900	.0495	-.0065	.0232	-.0050	-.0150	.0158
1.950	.0457	-.0149	.0199	-.0119	-.0097	.0163
2.000	.0405	-.0221	.0149	-.0173	-.0050	.0155
2.100	.0273	-.0319	.0019	-.0223	.0016	.0110
2.200	.0130	-.0354	-.0109	-.0193	.0037	.0053
2.300	.0002	-.0335	-.0193	-.0103	.0021	.0010
2.400	-.0094	-.0279	-.0213	.0012	-.0012	-.0004
2.500	-.0152	-.0205	-.0171	.0114	-.0042	.0010
2.600	-.0177	-.0133	-.0088	.0173	-.0052	.0043
2.700	-.0177	-.0071	.0008	.0180	-.0036	.0079
2.800	-.0165	-.0026	.0087	.0140	.0000	.0100
2.900	-.0148	.0007	.0129	.0072	.0046	.0099
3.000	-.0133	.0032	.0131	-.0001	.0087	.0074
3.100	-.0118	.0054	.0100	-.0058	.0111	.0032
3.200	-.0102	.0075	.0050	-.0088	.0113	-.0017
3.300	-.0082	.0095	-.0001	-.0087	.0093	-.0059
3.400	-.0055	.0112	-.0038	-.0065	.0058	-.0087
3.500	-.0022	.0121	-.0055	-.0032	.0017	-.0096
3.600	.0013	.0119	-.0052	-.0001	-.0020	-.0087
3.700	.0047	.0106	-.0037	.0019	-.0046	-.0065
3.800	.0074	.0081	-.0016	.0026	-.0059	-.0039
3.900	.0091	.0053	.0001	.0021	-.0060	-.0014
4.000	.0095	.0017	.0009	.0008	-.0052	.0006
4.100	.0089	-.0014	.0007	-.0005	-.0040	.0018
4.200	.0073	-.0040	-.0001	-.0014	-.0028	.0023
4.300	.0051	-.0056	-.0012	-.0016	-.0018	.0024
4.400	.0028	-.0065	-.0022	-.0010	-.0012	.0022
4.500	.0006	-.0065	-.0028	-.0001	-.0008	.0020
4.600	-.0013	-.0059	-.0027	.0010	-.0005	.0019
4.700	-.0027	-.0049	-.0022	.0018	-.0003	.0019
4.800	-.0037	-.0038	-.0014	.0023	.0001	.0019
4.900	-.0043	-.0025	-.0005	.0024	.0005	.0018
5.000	-.0045	-.0013	.0002	.0020	.0009	.0016

TABLE 26: VALUES OF f_7^{ij} AND g_7^{ij} FOR CONSTANT HYSTERETIC SOLID WITH η = .25 AND ν = 1/3

a_o	f_7^{11}	g_7^{11}	f_7^{22}	g_7^{22}	f_7^{12}	g_7^{12}
.025	.3818	-.4007	.2667	-.3699	.0714	-.0339
.050	.2402	-.3599	.1228	-.3230	.0621	-.0463
.075	.1561	-.3305	.0369	-.2849	.0510	-.0567
.100	.0961	-.3047	-.0233	-.2484	.0383	-.0648
.125	.0503	-.2802	-.0677	-.2119	.0247	-.0703
.150	.0140	-.2564	-.1004	-.1752	.0106	-.0733
.175	-.0151	-.2330	-.1236	-.1387	-.0037	-.0736
.200	-.0383	-.2101	-.1387	-.1028	-.0175	-.0715
.225	-.0566	-.1877	-.1467	-.0683	-.0306	-.0669
.250	-.0707	-.1660	-.1484	-.0356	-.0426	-.0602
.275	-.0811	-.1454	-.1447	-.0055	-.0530	-.0516
.300	-.0884	-.1258	-.1363	.0216	-.0616	-.0413
.325	-.0930	-.1075	-.1240	.0454	-.0683	-.0299
.350	-.0953	-.0906	-.1085	.0654	-.0728	-.0176
.375	-.0957	-.0752	-.0907	.0815	-.0752	-.0048
.400	-.0945	-.0614	-.0713	.0935	-.0752	.0081
.425	-.0921	-.0492	-.0510	.1015	-.0731	.0207
.450	-.0888	-.0385	-.0305	.1056	-.0690	.0327
.475	-.0849	-.0293	-.0105	.1060	-.0629	.0437
.500	-.0806	-.0215	.0085	.1029	-.0552	.0534
.525	-.0762	-.0150	.0260	.0968	-.0460	.0617
.550	-.0718	-.0097	.0415	.0880	-.0357	.0683
.575	-.0676	-.0054	.0547	.0770	-.0245	.0730
.600	-.0638	-.0020	.0654	.0643	-.0129	.0759
.625	-.0604	.0008	.0735	.0504	-.0010	.0768
.650	-.0574	.0030	.0787	.0358	.0107	.0758
.675	-.0549	.0049	.0813	.0210	.0220	.0730
.700	-.0530	.0065	.0812	.0065	.0325	.0685
.725	-.0514	.0081	.0787	-.0073	.0421	.0625
.750	-.0503	.0098	.0739	-.0201	.0505	.0551
.775	-.0494	.0116	.0673	-.0314	.0576	.0466
.800	-.0488	.0136	.0590	-.0411	.0631	.0372
.825	-.0482	.0159	.0495	-.0489	.0671	.0273
.850	-.0477	.0186	.0391	-.0548	.0694	.0170
.875	-.0471	.0215	.0282	-.0587	.0702	.0067
.900	-.0462	.0247	.0171	-.0605	.0693	-.0034
.925	-.0451	.0282	.0063	-.0604	.0670	-.0131
.950	-.0436	.0318	-.0041	-.0584	.0633	-.0221
.975	-.0416	.0356	-.0136	-.0548	.0583	-.0303
1.000	-.0392	.0394	-.0220	-.0498	.0523	-.0374
1.050	-.0327	.0468	-.0351	-.0364	.0380	-.0483
1.100	-.0241	.0531	-.0422	-.0204	.0219	-.0541
1.150	-.0137	.0577	-.0432	-.0040	.0058	-.0548
1.200	-.0020	.0598	-.0387	.0108	-.0089	-.0509
1.250	.0103	.0592	-.0299	.0223	-.0210	-.0433
1.300	.0223	.0556	-.0183	.0295	-.0296	-.0333
1.350	.0332	.0492	-.0057	.0320	-.0345	-.0220
1.400	.0423	.0404	.0063	.0300	-.0356	-.0108
1.450	.0490	.0297	.0162	.0242	-.0336	-.0006
1.500	.0528	.0180	.0230	.0156	-.0290	.0076
1.550	.0537	.0060	.0262	.0057	-.0228	.0133
1.600	.0517	-.0055	.0256	-.0043	-.0159	.0165
1.650	.0472	-.0158	.0217	-.0130	-.0092	.0172
1.700	.0407	-.0244	.0153	-.0196	-.0034	.0159
1.750	.0328	-.0307	.0072	-.0233	.0009	.0131
1.800	.0241	-.0348	-.0014	-.0240	.0036	.0095
1.850	.0153	-.0366	-.0094	-.0218	.0046	.0058
1.900	.0070	-.0363	-.0160	-.0171	.0041	.0025
1.950	-.0005	-.0343	-.0205	-.0106	.0025	.0001
2.000	-.0066	-.0310	-.0224	-.0033	.0003	-.0011
2.100	-.0148	-.0221	-.0190	.0106	-.0041	-.0001
2.200	-.0177	-.0130	-.0086	.0189	-.0059	.0042
2.300	-.0172	-.0058	.0038	.0190	-.0037	.0089
2.400	-.0152	-.0010	.0129	.0124	.0016	.0112
2.500	-.0132	.0021	.0159	.0026	.0076	.0097
2.600	-.0115	.0046	.0129	-.0059	.0118	.0049
2.700	-.0099	.0070	.0063	-.0104	.0127	-.0015
2.800	-.0077	.0096	-.0006	-.0101	.0100	-.0071
2.900	-.0044	.0117	-.0051	-.0063	.0051	-.0103
3.000	-.0002	.0126	-.0061	-.0015	-.0004	-.0105
3.100	.0044	.0118	-.0042	.0022	-.0046	-.0081
3.200	.0083	.0091	-.0010	.0035	-.0066	-.0044
3.300	.0106	.0051	.0017	.0025	-.0066	-.0009
3.400	.0111	.0007	.0027	.0002	-.0051	.0016
3.500	.0098	-.0033	.0021	-.0019	-.0031	.0026
3.600	.0072	-.0061	.0002	-.0028	-.0015	.0026
3.700	.0040	-.0074	-.0017	-.0023	-.0007	.0021
3.800	.0011	-.0074	-.0028	-.0008	-.0004	.0016
3.900	-.0013	-.0064	-.0028	.0011	-.0004	.0015
4.000	-.0028	-.0049	-.0016	.0024	-.0003	.0017
4.100	-.0037	-.0033	-.0000	.0029	.0001	.0019
4.200	-.0039	-.0018	.0014	.0024	.0008	.0020
4.300	-.0038	-.0005	.0023	.0013	.0016	.0017
4.400	-.0035	.0006	.0025	.0001	.0021	.0010
4.500	-.0030	.0015	.0020	-.0009	.0023	.0000
4.600	-.0022	.0022	.0013	-.0014	.0021	-.0009
4.700	-.0013	.0027	.0005	-.0014	.0015	-.0015
4.800	-.0004	.0029	.0000	-.0011	.0007	-.0018
4.900	.0006	.0028	-.0002	-.0008	-.0001	-.0018
5.000	.0015	.0023	-.0002	-.0005	-.0007	-.0015

TABLE 27: VALUES OF f_8^{ij} AND g_8^{ij} FOR CONSTANT HYSTERETIC SOLID WITH η = .25 AND ν = 1/3

a_o	f_8^{11}	g_8^{11}	f_8^{22}	g_8^{22}	f_8^{12}	g_8^{12}
.025	.3533	-.3930	.2379	-.3614	.0702	-.0359
.050	.2111	-.3504	.0931	-.3111	.0590	-.0498
.075	.1268	-.3185	.0073	-.2682	.0454	-.0608
.100	.0671	-.2897	-.0517	-.2261	.0302	-.0685
.125	.0221	-.2620	-.0933	-.1838	.0140	-.0729
.150	-.0126	-.2349	-.1217	-.1416	-.0025	-.0738
.175	-.0394	-.2084	-.1391	-.1002	-.0185	-.0713
.200	-.0597	-.1827	-.1472	-.0606	-.0334	-.0656
.225	-.0746	-.1581	-.1472	-.0238	-.0467	-.0572
.250	-.0849	-.1348	-.1403	.0095	-.0578	-.0463
.275	-.0914	-.1131	-.1277	.0385	-.0664	-.0336
.300	-.0946	-.0932	-.1106	.0626	-.0723	-.0196
.325	-.0952	-.0753	-.0902	.0816	-.0752	-.0048
.350	-.0937	-.0595	-.0677	.0951	-.0751	.0101
.375	-.0907	-.0457	-.0441	.1033	-.0721	.0245
.400	-.0865	-.0341	-.0205	.1064	-.0664	.0380
.425	-.0817	-.0244	.0021	.1046	-.0584	.0500
.450	-.0766	-.0164	.0229	.0986	-.0482	.0601
.475	-.0715	-.0101	.0412	.0888	-.0365	.0680
.500	-.0667	-.0052	.0566	.0761	-.0236	.0736
.525	-.0623	-.0014	.0685	.0611	-.0101	.0765
.550	-.0585	.0016	.0768	.0447	.0037	.0769
.575	-.0554	.0039	.0815	.0277	.0173	.0748
.600	-.0529	.0059	.0826	.0106	.0296	.0703
.625	-.0510	.0077	.0803	-.0056	.0411	.0637
.650	-.0496	.0096	.0750	-.0205	.0509	.0553
.675	-.0487	.0117	.0671	-.0336	.0590	.0454
.700	-.0480	.0141	.0571	-.0444	.0650	.0343
.725	-.0474	.0169	.0456	-.0526	.0690	.0226
.750	-.0468	.0201	.0331	-.0582	.0707	.0106
.775	-.0459	.0237	.0202	-.0610	.0703	-.0012
.800	-.0447	.0277	.0075	-.0612	.0678	-.0126
.825	-.0430	.0319	-.0045	-.0590	.0635	-.0231
.850	-.0407	.0363	-.0155	-.0545	.0575	-.0324
.875	-.0378	.0408	-.0249	-.0481	.0502	-.0404
.900	-.0341	.0451	-.0326	-.0403	.0419	-.0468
.925	-.0296	.0491	-.0383	-.0314	.0328	-.0515
.950	-.0245	.0528	-.0420	-.0219	.0234	-.0545
.975	-.0188	.0558	-.0436	-.0121	.0138	-.0557
1.000	-.0125	.0581	-.0432	-.0027	.0045	-.0553
1.050	.0013	.0602	-.0370	.0142	-.0122	-.0500
1.100	.0157	.0585	-.0255	.0262	-.0252	-.0401
1.150	.0292	.0528	-.0110	.0322	-.0333	-.0274
1.200	.0408	.0436	.0036	.0318	-.0362	-.0140
1.250	.0493	.0316	.0161	.0258	-.0345	-.0017

a_o	f_8^{11}	g_8^{11}	f_8^{22}	g_8^{22}	f_8^{12}	g_8^{12}
1.300	.0541	.0179	.0245	.0158	-.0292	.0081
1.350	.0549	.0039	.0279	.0042	-.0217	.0146
1.400	.0518	-.0094	.0262	-.0077	-.0135	.0176
1.450	.0455	-.0207	.0203	-.0173	-.0059	.0173
1.500	.0369	-.0294	.0114	-.0234	.0001	.0146
1.550	.0268	-.0350	.0011	-.0253	.0039	.0105
1.600	.0164	-.0375	-.0087	-.0231	.0053	.0059
1.650	.0066	-.0370	-.0166	-.0175	.0046	.0019
1.700	-.0019	-.0343	-.0216	-.0095	.0024	-.0008
1.750	-.0087	-.0299	-.0230	-.0005	-.0005	-.0019
1.800	-.0134	-.0245	-.0210	.0081	-.0033	-.0013
1.850	-.0163	-.0189	-.0161	.0150	-.0054	.0007
1.900	-.0175	-.0136	-.0092	.0194	-.0063	.0036
1.950	-.0175	-.0089	-.0016	.0209	-.0057	.0067
2.000	-.0167	-.0051	.0058	.0196	-.0037	.0095
2.100	-.0140	-.0009	.0159	.0104	.0031	.0118
2.200	-.0118	.0030	.0172	-.0017	.0101	.0087
2.300	-.0101	.0056	.0106	-.0102	.0136	.0016
2.400	-.0081	.0085	.0016	-.0118	.0120	-.0061
2.500	-.0047	.0114	-.0049	-.0076	.0063	-.0108
2.600	.0003	.0129	-.0063	-.0013	-.0005	-.0112
2.700	.0058	.0118	-.0034	.0032	-.0055	-.0079
2.800	.0133	.0082	.0012	.0039	-.0073	-.0031
2.900	.0124	.0029	.0039	.0015	-.0062	.0009
3.000	.0117	-.0024	.0039	-.0018	-.0036	.0028
3.100	.0088	-.0063	.0016	-.0037	-.0013	.0029
3.200	.0049	-.0081	-.0012	-.0033	-.0001	.0020
3.300	.0012	-.0079	-.0028	-.0011	-.[illegible]	.0012
3.400	-.0014	-.0064	-.0023	.0015	-.0003	.0011
3.500	-.0029	-.0044	-.0004	.0030	-.0002	.0016
3.600	-.0033	-.0026	.0020	.0029	.0005	.0021
3.700	-.0033	-.0010	.0036	.0015	.0016	.0020
3.800	-.0029	.0002	.0039	-.0004	.0026	.0012
3.900	-.0023	.0012	.0031	-.0018	.0030	-.0001
4.000	-.0015	.0021	.0019	-.0024	.0026	-.0014
4.100	-.0004	.0026	.0009	-.0022	.0016	-.0022
4.200	.0008	.0028	.0005	-.0016	.0005	-.0024
4.300	.0020	.0024	.0006	-.0011	-.0005	-.0020
4.400	.0030	.0016	.0009	-.0010	-.0010	-.0014
4.500	.0035	.0005	.0012	-.0012	-.0011	-.0007
4.600	.0034	-.0007	.0012	-.0015	-.0009	-.0002
4.700	.0030	-.0017	.0009	-.0018	-.0006	.0001
4.800	.0023	-.0023	.0005	-.0019	-.0003	.0002
4.900	.0014	-.0026	.0002	-.0018	-.0001	.0001
5.000	.0006	-.0025	.0000	-.0016	.0001	.0001

TABLE 28: VALUES OF f_o^{ij} AND g_o^{ij} FOR CONSTANT HYSTERETIC SOLID WITH η = .50 AND ν = 1/3

a_o	f_o^{11}	g_o^{11}	f_o^{22}	g_o^{22}	f_o^{12}	g_o^{12}
.025	.7688	-.6715	.6718	-.6188	-.0655	.0339
.050	.6503	-.6090	.5538	-.5609	-.0647	.0347
.075	.5814	-.5747	.4849	-.5262	-.0640	.0355
.100	.5325	-.5501	.4360	-.5015	-.0632	.0363
.125	.4946	-.5309	.3980	-.4822	-.0625	.0371
.150	.4636	-.5152	.3670	-.4663	-.0617	.0378
.175	.4374	-.5019	.3407	-.4527	-.0610	.0386
.200	.4146	-.4903	.3180	-.4408	-.0602	.0393
.225	.3946	-.4800	.2979	-.4302	-.0594	.0400
.250	.3767	-.4707	.2799	-.4206	-.0586	.0407
.275	.3604	-.4623	.2637	-.4119	-.0578	.0413
.300	.3456	-.4545	.2489	-.4037	-.0570	.0420
.325	.3320	-.4473	.2352	-.3962	-.0562	.0426
.350	.3194	-.4406	.2226	-.3891	-.0553	.0432
.375	.3076	-.4343	.2109	-.3824	-.0545	.0438
.400	.2967	-.4284	.1999	-.3760	-.0536	.0444
.425	.2863	-.4228	.1896	-.3700	-.0528	.0450
.450	.2766	-.4174	.1799	-.3642	-.0519	.0455
.475	.2674	-.4123	.1708	-.3586	-.0511	.0461
.500	.2587	-.4074	.1622	-.3532	-.0502	.0466
.525	.2505	-.4027	.1539	-.3481	-.0493	.0471
.550	.2426	-.3982	.1461	-.3430	-.0485	.0476
.575	.2351	-.3939	.1387	-.3382	-.0476	.0480
.600	.2279	-.3897	.1316	-.3335	-.0467	.0485
.625	.2210	-.3856	.1248	-.3289	-.0458	.0489
.650	.2144	-.3817	.1183	-.3244	-.0449	.0493
.675	.2080	-.3779	.1121	-.3200	-.0441	.0497
.700	.2019	-.3741	.1062	-.3157	-.0432	.0501
.725	.1960	-.3705	.1004	-.3115	-.0423	.0504
.750	.1904	-.3670	.0949	-.3074	-.0414	.0508
.775	.1849	-.3635	.0896	-.3033	-.0405	.0511
.800	.1796	-.3601	.0846	-.2994	-.0396	.0514
.825	.1745	-.3568	.0797	-.2955	-.0387	.0517
.850	.1695	-.3536	.0749	-.2916	-.0378	.0520
.875	.1648	-.3504	.0704	-.2879	-.0369	.0522
.900	.1601	-.3473	.0660	-.2841	-.0360	.0525
.925	.1556	-.3442	.0617	-.2805	-.0351	.0527
.950	.1513	-.3412	.0576	-.2769	-.0342	.0529
.975	.1470	-.3383	.0537	-.2733	-.0333	.0531
1.000	.1429	-.3354	.0499	-.2698	-.0324	.0533
1.050	.1350	-.3297	.0426	-.2629	-.0306	.0536
1.100	.1276	-.3242	.0358	-.2561	-.0288	.0538
1.150	.1205	-.3189	.0295	-.2496	-.0271	.0540
1.200	.1138	-.3137	.0236	-.2431	-.0253	.0541
1.250	.1074	-.3086	.0180	-.2368	-.0236	.0542
1.300	.1014	-.3037	.0129	-.2306	-.0219	.0542
1.350	.0956	-.2989	.0080	-.2246	-.0202	.0541
1.400	.0901	-.2942	.0035	-.2187	-.0185	.0540
1.450	.0849	-.2895	-.0007	-.2129	-.0168	.0538
1.500	.0799	-.2850	-.0046	-.2072	-.0152	.0536
1.550	.0752	-.2806	-.0083	-.2016	-.0136	.0533
1.600	.0706	-.2762	-.0117	-.1961	-.0120	.0530
1.650	.0663	-.2720	-.0148	-.1907	-.0105	.0526
1.700	.0622	-.2678	-.0177	-.1855	-.0090	.0522
1.750	.0582	-.2637	-.0204	-.1803	-.0075	.0517
1.800	.0544	-.2597	-.0229	-.1753	-.0061	.0512
1.850	.0508	-.2557	-.0252	-.1703	-.0047	.0506
1.900	.0474	-.2519	-.0273	-.1655	-.0033	.0501
1.950	.0441	-.2480	-.0292	-.1608	-.0019	.0494
2.000	.0409	-.2443	-.0309	-.1561	-.0007	.0488
2.100	.0350	-.2370	-.0339	-.1472	.0018	.0473
2.200	.0296	-.2300	-.0362	-.1387	.0041	.0458
2.300	.0247	-.2232	-.0380	-.1305	.0063	.0441
2.400	.0202	-.2167	-.0393	-.1228	.0083	.0423
2.500	.0161	-.2103	-.0402	-.1155	.0101	.0405
2.600	.0123	-.2042	-.0407	-.1085	.0117	.0386
2.700	.0089	-.1984	-.0408	-.1020	.0131	.0367
2.800	.0058	-.1927	-.0405	-.0959	.0144	.0347
2.900	.0029	-.1872	-.0400	-.0901	.0156	.0327
3.000	.0003	-.1820	-.0393	-.0847	.0165	.0307
3.100	-.0020	-.1769	-.0383	-.0797	.0173	.0286
3.200	-.0041	-.1720	-.0372	-.0751	.0179	.0266
3.300	-.0061	-.1673	-.0359	-.0708	.0184	.0247
3.400	-.0078	-.1628	-.0345	-.0668	.0188	.0227
3.500	-.0094	-.1585	-.0330	-.0631	.0190	.0208
3.600	-.0109	-.1543	-.0314	-.0598	.0190	.0190
3.700	-.0122	-.1503	-.0298	-.0567	.0190	.0172
3.800	-.0134	-.1464	-.0281	-.0539	.0188	.0155
3.900	-.0145	-.1427	-.0264	-.0514	.0185	.0139
4.000	-.0154	-.1391	-.0248	-.0492	.0182	.0123
4.100	-.0163	-.1357	-.0231	-.0472	.0177	.0108
4.200	-.0171	-.1323	-.0215	-.0454	.0172	.0094
4.300	-.0179	-.1291	-.0199	-.0438	.0166	.0081
4.400	-.0185	-.1261	-.0184	-.0424	.0159	.0069
4.500	-.0191	-.1231	-.0169	-.0412	.0152	.0058
4.600	-.0197	-.1202	-.0155	-.0401	.0144	.0048
4.700	-.0202	-.1175	-.0142	-.0392	.0136	.0038
4.800	-.0206	-.1148	-.0130	-.0384	.0128	.0030
4.900	-.0210	-.1122	-.0118	-.0378	.0119	.0022
5.000	-.0214	-.1097	-.0107	-.0372	.0111	.0016

TABLE 29: VALUES OF f_1^{ij} AND g_1^{ij} FOR CONSTANT HYSTERETIC SOLID WITH η = .50 AND ν = 1/3

a_o	f_1^{11}	g_1^{11}	f_1^{22}	g_1^{22}	f_1^{12}	g_1^{12}
.025	.7688	-.6715	.6718	-.6188	.0655	-.0339
.050	.6503	-.6090	.5538	-.5609	.0647	-.0347
.075	.5814	-.5747	.4849	-.5262	.0640	-.0355
.100	.5325	-.5501	.4360	-.5015	.0632	-.0363
.125	.4946	-.5309	.3980	-.4822	.0625	-.0371
.150	.4636	-.5152	.3670	-.4663	.0617	-.0378
.175	.4374	-.5019	.3407	-.4527	.0610	-.0386
.200	.4146	-.4903	.3180	-.4408	.0602	-.0393
.225	.3946	-.4800	.2979	-.4302	.0594	-.0400
.250	.3767	-.4707	.2799	-.4206	.0586	-.0407
.275	.3604	-.4623	.2637	-.4119	.0578	-.0413
.300	.3456	-.4545	.2489	-.4037	.0570	-.0420
.325	.3320	-.4473	.2352	-.3962	.0562	-.0426
.350	.3194	-.4406	.2226	-.3891	.0553	-.0432
.375	.3076	-.4343	.2109	-.3824	.0545	-.0438
.400	.2967	-.4284	.1999	-.3760	.0536	-.0444
.425	.2863	-.4228	.1896	-.3700	.0528	-.0450
.450	.2766	-.4174	.1799	-.3642	.0519	-.0455
.475	.2674	-.4123	.1708	-.3586	.0511	-.0461
.500	.2587	-.4074	.1622	-.3532	.0502	-.0466
.525	.2505	-.4027	.1539	-.3481	.0493	-.0471
.550	.2426	-.3982	.1461	-.3430	.0485	-.0476
.575	.2351	-.3939	.1387	-.3382	.0476	-.0480
.600	.2279	-.3897	.1316	-.3335	.0467	-.0485
.625	.2210	-.3856	.1248	-.3289	.0458	-.0489
.650	.2144	-.3817	.1183	-.3244	.0449	-.0493
.675	.2080	-.3779	.1121	-.3200	.0441	-.0497
.700	.2019	-.3741	.1062	-.3157	.0432	-.0501
.725	.1960	-.3705	.1004	-.3115	.0423	-.0504
.750	.1904	-.3670	.0949	-.3074	.0414	-.0508
.775	.1849	-.3635	.0896	-.3033	.0405	-.0511
.800	.1796	-.3601	.0846	-.2994	.0396	-.0514
.825	.1745	-.3568	.0797	-.2955	.0387	-.0517
.850	.1695	-.3536	.0749	-.2916	.0378	-.0520
.875	.1648	-.3504	.0704	-.2879	.0369	-.0522
.900	.1601	-.3473	.0660	-.2841	.0360	-.0525
.925	.1556	-.3442	.0617	-.2805	.0351	-.0527
.950	.1513	-.3412	.0576	-.2769	.0342	-.0529
.975	.1470	-.3383	.0537	-.2733	.0333	-.0531
1.000	.1429	-.3354	.0499	-.2698	.0324	-.0533
1.050	.1350	-.3297	.0426	-.2629	.0306	-.0536
1.100	.1276	-.3242	.0358	-.2561	.0288	-.0538
1.150	.1205	-.3189	.0295	-.2496	.0271	-.0540
1.200	.1138	-.3137	.0236	-.2431	.0253	-.0541
1.250	.1074	-.3096	.0180	-.2368	.0236	-.0542

a_o	f_1^{11}	g_1^{11}	f_1^{22}	g_1^{22}	f_1^{12}	g_1^{12}
1.300	.1014	-.3037	.0129	-.2306	.0219	-.0542
1.350	.0956	-.2989	.0080	-.2246	.0202	-.0541
1.400	.0901	-.2942	.0035	-.2187	.0185	-.0540
1.450	.0849	-.2895	-.0007	-.2129	.0168	-.0538
1.500	.0799	-.2850	-.0046	-.2072	.0152	-.0536
1.550	.0752	-.2806	-.0083	-.2016	.0136	-.0533
1.600	.0706	-.2762	-.0117	-.1961	.0120	-.0530
1.650	.0663	-.2720	-.0149	-.1907	.0105	-.0526
1.700	.0622	-.2678	-.0177	-.1855	.0090	-.0522
1.750	.0582	-.2637	-.0204	-.1803	.0075	-.0517
1.800	.0544	-.2597	-.0229	-.1753	.0061	-.0512
1.850	.0508	-.2557	-.0252	-.1703	.0047	-.0506
1.900	.0474	-.2519	-.0273	-.1655	.0033	-.0501
1.950	.0441	-.2480	-.0292	-.1608	.0019	-.0494
2.000	.0409	-.2443	-.0309	-.1561	.0007	-.0488
2.100	.0350	-.2370	-.0339	-.1472	-.0018	-.0473
2.200	.0296	-.2300	-.0362	-.1387	-.0041	-.0458
2.300	.0247	-.2232	-.0380	-.1305	-.0063	-.0441
2.400	.0202	-.2167	-.0393	-.1228	-.0083	-.0423
2.500	.0161	-.2103	-.0402	-.1155	-.0101	-.0405
2.600	.0123	-.2042	-.0407	-.1085	-.0117	-.0386
2.700	.0089	-.1984	-.0408	-.1020	-.0131	-.0367
2.800	.0058	-.1927	-.0405	-.0959	-.0144	-.0347
2.900	.0029	-.1872	-.0400	-.0901	-.0156	-.0327
3.000	.0003	-.1820	-.0393	-.0847	-.0165	-.0307
3.100	-.0020	-.1769	-.0383	-.0797	-.0173	-.0286
3.200	-.0041	-.1720	-.0372	-.0751	-.0179	-.0266
3.300	-.0061	-.1673	-.0359	-.0708	-.0184	-.0247
3.400	-.0078	-.1628	-.0345	-.0669	-.0188	-.0227
3.500	-.0094	-.1585	-.0330	-.0631	-.0190	-.0208
3.600	-.0109	-.1543	-.0314	-.0598	-.0190	-.0190
3.700	-.0122	-.1503	-.0298	-.0567	-.0190	-.0172
3.800	-.0134	-.1464	-.0281	-.0539	-.0188	-.0155
3.900	-.0145	-.1427	-.0264	-.0514	-.0185	-.0139
4.000	-.0154	-.1391	-.0248	-.0492	-.0182	-.0123
4.100	-.0163	-.1357	-.0231	-.0472	-.0177	-.0108
4.200	-.0171	-.1323	-.0215	-.0454	-.0172	-.0094
4.300	-.0179	-.1291	-.0199	-.0438	-.0166	-.0081
4.400	-.0185	-.1261	-.0184	-.0424	-.0159	-.0069
4.500	-.0191	-.1231	-.0169	-.0412	-.0152	-.0058
4.600	-.0197	-.1202	-.0155	-.0401	-.0144	-.0048
4.700	-.0202	-.1175	-.0142	-.0392	-.0136	-.0038
4.800	-.0206	-.1148	-.0130	-.0384	-.0128	-.0030
4.900	-.0210	-.1122	-.0118	-.0378	-.0119	-.0022
5.000	-.0214	-.1097	-.0107	-.0372	-.0111	-.0016

TABLE 30: VALUES OF f_2^{ij} AND g_2^{ij} FOR CONSTANT HYSTERETIC SOLID WITH η = .50 AND ν = 1/3

a_o	f_2^{11}	g_2^{11}	f_2^{22}	g_2^{22}	f_2^{12}	g_2^{12}
.025	.5327	-.5503	.4362	-.5019	.0646	-.0358
.050	.4149	-.4910	.3183	-.4422	.0624	-.0382
.075	.3459	-.4559	.2492	-.4064	.0601	-.0404
.100	.2969	-.4306	.2001	-.3802	.0577	-.0426
.125	.2589	-.4106	.1620	-.3592	.0553	-.0446
.150	.2278	-.3939	.1309	-.3413	.0528	-.0464
.175	.2015	-.3794	.1046	-.3255	.0503	-.0482
.200	.1788	-.3665	.0820	-.3113	.0477	-.0499
.225	.1588	-.3549	.0621	-.2982	.0451	-.0514
.250	.1409	-.3442	.0445	-.2859	.0424	-.0528
.275	.1249	-.3343	.0287	-.2743	.0397	-.0541
.300	.1102	-.3249	.0145	-.2632	.0370	-.0552
.325	.0969	-.3161	.0016	-.2526	.0343	-.0563
.350	.0846	-.3077	-.0101	-.2424	.0316	-.0572
.375	.0732	-.2997	-.0208	-.2324	.0288	-.0580
.400	.0627	-.2919	-.0307	-.2228	.0261	-.0587
.425	.0529	-.2845	-.0396	-.2134	.0233	-.0593
.450	.0437	-.2772	-.0479	-.2042	.0206	-.0597
.475	.0352	-.2702	-.0554	-.1952	.0178	-.0600
.500	.0272	-.2634	-.0623	-.1864	.0151	-.0603
.525	.0197	-.2568	-.0686	-.1778	.0124	-.0604
.550	.0127	-.2503	-.0743	-.1693	.0097	-.0604
.575	.0061	-.2440	-.0796	-.1610	.0071	-.0603
.600	-.0001	-.2378	-.0843	-.1528	.0045	-.0600
.625	-.0060	-.2317	-.0886	-.1448	.0019	-.0597
.650	-.0115	-.2258	-.0925	-.1370	-.0007	-.0593
.675	-.0166	-.2200	-.0960	-.1293	-.0032	-.0588
.700	-.0215	-.2142	-.0990	-.1217	-.0056	-.0582
.725	-.0260	-.2086	-.1017	-.1143	-.0080	-.0575
.750	-.0303	-.2031	-.1041	-.1070	-.0104	-.0567
.775	-.0344	-.1977	-.1061	-.0999	-.0127	-.0558
.800	-.0382	-.1924	-.1078	-.0929	-.0149	-.0548
.825	-.0417	-.1872	-.1092	-.0861	-.0171	-.0538
.850	-.0450	-.1821	-.1103	-.0794	-.0192	-.0527
.875	-.0482	-.1771	-.1111	-.0729	-.0213	-.0515
.900	-.0511	-.1721	-.1117	-.0665	-.0233	-.0502
.925	-.0538	-.1673	-.1120	-.0603	-.0252	-.0489
.950	-.0564	-.1625	-.1121	-.0542	-.0270	-.0475
.975	-.0587	-.1579	-.1119	-.0483	-.0288	-.0460
1.000	-.0609	-.1533	-.1116	-.0426	-.0305	-.0445
1.050	-.0648	-.1444	-.1102	-.0316	-.0337	-.0413
1.100	-.0682	-.1358	-.1082	-.0212	-.0365	-.0380
1.150	-.0710	-.1276	-.1054	-.0116	-.0390	-.0345
1.200	-.0733	-.1197	-.1021	-.0025	-.0412	-.0309
1.250	-.0751	-.1121	-.0983	.0058	-.0431	-.0271
1.300	-.0766	-.1048	-.0942	.0135	-.0447	-.0233
1.350	-.0777	-.0979	-.0894	.0205	-.0459	-.0195
1.400	-.0785	-.0913	-.0844	.0268	-.0468	-.0157
1.450	-.0789	-.0859	-.0792	.0325	-.0474	-.0118
1.500	-.0791	-.0790	-.0738	.0376	-.0476	-.0080
1.550	-.0791	-.0733	-.0682	.0421	-.0476	-.0043
1.600	-.0788	-.0679	-.0626	.0459	-.0473	-.0006
1.650	-.0783	-.0628	-.0568	.0492	-.0467	.0030
1.700	-.0777	-.0579	-.0511	.0519	-.0459	.0064
1.750	-.0770	-.0533	-.0454	.0540	-.0448	.0097
1.800	-.0761	-.0490	-.0397	.0557	-.0435	.0129
1.850	-.0751	-.0449	-.0342	.0569	-.0420	.0159
1.900	-.0740	-.0410	-.0288	.0576	-.0403	.0188
1.950	-.0729	-.0374	-.0235	.0578	-.0384	.0214
2.000	-.0717	-.0340	-.0185	.0577	-.0364	.0239
2.100	-.0691	-.0277	-.0089	.0564	-.0320	.0282
2.200	-.0665	-.0222	-.0004	.0538	-.0271	.0317
2.300	-.0639	-.0173	.0071	.0502	-.0220	.0343
2.400	-.0612	-.0130	.0136	.0459	-.0167	.0361
2.500	-.0587	-.0092	.0189	.0410	-.0115	.0370
2.600	-.0562	-.0057	.0231	.0357	-.0063	.0373
2.700	-.0538	-.0026	.0262	.0303	-.0014	.0368
2.800	-.0515	.0002	.0284	.0249	.0032	.0357
2.900	-.0493	.0027	.0296	.0196	.0074	.0340
3.000	-.0472	.0051	.0301	.0145	.0112	.0319
3.100	-.0452	.0073	.0298	.0098	.0145	.0293
3.200	-.0432	.0094	.0290	.0055	.0174	.0265
3.300	-.0412	.0114	.0276	.0017	.0197	.0235
3.400	-.0392	.0132	.0259	-.0016	.0215	.0204
3.500	-.0372	.0150	.0239	-.0044	.0229	.0172
3.600	-.0353	.0166	.0217	-.0068	.0238	.0140
3.700	-.0332	.0181	.0194	-.0087	.0243	.0109
3.800	-.0312	.0195	.0170	-.0101	.0244	.0079
3.900	-.0291	.0209	.0147	-.0111	.0241	.0050
4.000	-.0270	.0221	.0125	-.0118	.0235	.0024
4.100	-.0248	.0231	.0104	-.0121	.0227	-.0000
4.200	-.0226	.0240	.0085	-.0122	.0216	-.0022
4.300	-.0204	.0247	.0069	-.0121	.0204	-.0041
4.400	-.0182	.0253	.0052	-.0118	.0191	-.0058
4.500	-.0160	.0258	.0038	-.0113	.0177	-.0073
4.600	-.0138	.0260	.0026	-.0108	.0162	-.0085
4.700	-.0117	.0261	.0015	-.0102	.0147	-.0095
4.800	-.0095	.0251	.0007	-.0095	.0132	-.0103
4.900	-.0075	.0259	-.0001	-.0089	.0117	-.0109
5.000	-.0055	.0255	-.0007	-.0083	.0103	-.0113

TABLE 31: VALUES OF f_3^{ij} AND g_3^{ij} FOR CONSTANT HYSTERETIC SOLID WITH η = .50 AND ν = 1/3

a_o	f_3^{11}	g_3^{11}	f_3^{22}	g_3^{22}	f_3^{12}	g_3^{12}
.025	.4441	-.5058	.3475	-.4571	.0631	-.0374
.050	.3261	-.4458	.2294	-.3960	.0593	-.0412
.075	.2570	-.4097	.1601	-.3583	.0553	-.0446
.100	.2080	-.3832	.1111	-.3298	.0512	-.0477
.125	.1700	-.3617	.0732	-.3061	.0469	-.0505
.150	.1391	-.3434	.0426	-.2852	.0425	-.0530
.175	.1131	-.3272	.0171	-.2662	.0380	-.0551
.200	.0907	-.3125	-.0045	-.2485	.0335	-.0569
.225	.0712	-.2989	-.0231	-.2318	.0289	-.0583
.250	.0540	-.2862	-.0391	-.2159	.0243	-.0595
.275	.0387	-.2742	-.0529	-.2006	.0197	-.0603
.300	.0250	-.2627	-.0649	-.1857	.0151	-.0608
.325	.0128	-.2517	-.0752	-.1714	.0106	-.0610
.350	.0017	-.2412	-.0841	-.1575	.0061	-.0609
.375	-.0083	-.2310	-.0916	-.1440	.0017	-.0605
.400	-.0174	-.2211	-.0980	-.1308	-.0026	-.0598
.425	-.0255	-.2115	-.1032	-.1181	-.0068	-.0589
.450	-.0329	-.2022	-.1075	-.1057	-.0109	-.0576
.475	-.0396	-.1932	-.1108	-.0937	-.0148	-.0562
.500	-.0456	-.1845	-.1132	-.0821	-.0186	-.0545
.525	-.0509	-.1762	-.1148	-.0709	-.0222	-.0526
.550	-.0557	-.1677	-.1157	-.0601	-.0256	-.0505
.575	-.0600	-.1597	-.1159	-.0498	-.0288	-.0482
.600	-.0638	-.1519	-.1155	-.0398	-.0318	-.0457
.625	-.0672	-.1443	-.1144	-.0303	-.0347	-.0430
.650	-.0701	-.1370	-.1128	-.0212	-.0373	-.0402
.675	-.0726	-.1298	-.1107	-.0126	-.0397	-.0373
.700	-.0748	-.1230	-.1082	-.0045	-.0418	-.0343
.725	-.0766	-.1163	-.1052	.0032	-.0438	-.0312
.750	-.0781	-.1099	-.1019	.0105	-.0455	-.0280
.775	-.0794	-.1037	-.0982	.0173	-.0470	-.0247
.800	-.0803	-.0977	-.0942	.0236	-.0482	-.0214
.825	-.0810	-.0919	-.0900	.0295	-.0492	-.0180
.850	-.0815	-.0864	-.0855	.0349	-.0500	-.0146
.875	-.0817	-.0810	-.0808	.0398	-.0506	-.0113
.900	-.0818	-.0759	-.0760	.0443	-.0510	-.0079
.925	-.0817	-.0710	-.0710	.0483	-.0511	-.0045
.950	-.0814	-.0663	-.0660	.0519	-.0510	-.0012
.975	-.0809	-.0618	-.0608	.0551	-.0507	.0020
1.000	-.0804	-.0575	-.0556	.0578	-.0502	.0052
1.050	-.0789	-.0495	-.0451	.0621	-.0486	.0114
1.100	-.0771	-.0422	-.0348	.0648	-.0464	.0172
1.150	-.0749	-.0357	-.0247	.0661	-.0434	.0226
1.200	-.0726	-.0298	-.0151	.0661	-.0400	.0274
1.250	-.0702	-.0245	-.0060	.0649	-.0360	.0317
1.300	-.0676	-.0198	.0025	.0626	-.0316	.0353
1.350	-.0650	-.0156	.0102	.0594	-.0270	.0384
1.400	-.0625	-.0118	.0171	.0554	-.0221	.0408
1.450	-.0600	-.0085	.0231	.0508	-.0170	.0425
1.500	-.0576	-.0055	.0283	.0458	-.0119	.0436
1.550	-.0553	-.0029	.0325	.0403	-.0068	.0441
1.600	-.0531	-.0005	.0359	.0346	-.0019	.0440
1.650	-.0510	.0016	.0384	.0288	.0030	.0433
1.700	-.0490	.0035	.0401	.0230	.0076	.0421
1.750	-.0471	.0053	.0410	.0173	.0119	.0404
1.800	-.0454	.0070	.0412	.0118	.0159	.0383
1.850	-.0437	.0085	.0407	.0065	.0196	.0358
1.900	-.0422	.0100	.0396	.0016	.0228	.0330
1.950	-.0407	.0114	.0380	-.0030	.0257	.0299
2.000	-.0392	.0128	.0359	-.0071	.0291	.0265
2.100	-.0364	.0155	.0307	-.0139	.0317	.0195
2.200	-.0337	.0181	.0245	-.0189	.0335	.0122
2.300	-.0308	.0206	.0180	-.0219	.0337	.0051
2.400	-.0278	.0230	.0116	-.0231	.0325	-.0014
2.500	-.0246	.0252	.0056	-.0227	.0300	-.0072
2.600	-.0211	.0271	.0004	-.0212	.0267	-.0121
2.700	-.0174	.0287	-.0038	-.0186	.0227	-.0159
2.800	-.0135	.0298	-.0069	-.0155	.0183	-.0186
2.900	-.0095	.0305	-.0090	-.0121	.0138	-.0203
3.000	-.0055	.0307	-.0101	-.0087	.0094	-.0210
3.100	-.0014	.0303	-.0104	-.0055	.0052	-.0208
3.200	.0025	.0293	-.0099	-.0026	.0015	-.0200
3.300	.0061	.0279	-.0088	-.0003	-.0017	-.0185
3.400	.0094	.0260	-.0074	.0016	-.0044	-.0167
3.500	.0124	.0237	-.0058	.0028	-.0065	-.0146
3.600	.0149	.0210	-.0042	.0036	-.0080	-.0124
3.700	.0169	.0182	-.0026	.0039	-.0091	-.0101
3.800	.0184	.0151	-.0012	.0037	-.0097	-.0080
3.900	.0194	.0121	-.0001	.0033	-.0098	-.0060
4.000	.0200	.0090	.0008	.0027	-.0097	-.0041
4.100	.0201	.0061	.0015	.0020	-.0094	-.0025
4.200	.0198	.0032	.0018	.0013	-.0088	-.0012
4.300	.0191	.0006	.0019	.0006	-.0081	-.0000
4.400	.0181	-.0017	.0019	-.0001	-.0074	.0009
4.500	.0169	-.0038	.0017	-.0006	-.0067	.0017
4.600	.0155	-.0056	.0014	-.0010	-.0059	.0022
4.700	.0140	-.0070	.0010	-.0013	-.0052	.0027
4.800	.0123	-.0082	.0006	-.0014	-.0045	.0030
4.900	.0107	-.0092	.0002	-.0014	-.0038	.0032
5.000	.0090	-.0098	-.0001	-.0014	-.0032	.0034

TABLE 32: VALUES OF f_4^{ij} AND g_4^{ij} FOR CONSTANT HYSTERETIC SOLID WITH η = .50 AND ν = 1/3

a_o	f_4^{11}	g_4^{11}	f_4^{22}	g_4^{22}	f_4^{12}	g_4^{12}
.025	.3855	-.4762	.2889	-.4271	.0615	-.0389
.050	.2674	-.4153	.1706	-.3643	.0560	-.0439
.075	.1983	-.3779	.1014	-.3241	.0502	-.0483
.100	.1494	-.3498	.0527	-.2927	.0441	-.0520
.125	.1117	-.3266	.0156	-.2656	.0379	-.0551
.150	.0812	-.3063	-.0138	-.2411	.0315	-.0575
.175	.0559	-.2881	-.0375	-.2184	.0251	-.0593
.200	.0344	-.2712	-.0570	-.1969	.0186	-.0605
.225	.0160	-.2554	-.0729	-.1765	.0122	-.0610
.250	.0002	-.2405	-.0857	-.1568	.0059	-.0610
.275	-.0136	-.2263	-.0960	-.1380	-.0003	-.0604
.300	-.0255	-.2127	-.1040	-.1198	-.0062	-.0592
.325	-.0359	-.1997	-.1100	-.1025	-.0119	-.0576
.350	-.0448	-.1872	-.1142	-.0858	-.0174	-.0554
.375	-.0526	-.1752	-.1167	-.0699	-.0225	-.0528
.400	-.0592	-.1637	-.1178	-.0549	-.0273	-.0498
.425	-.0648	-.1526	-.1175	-.0406	-.0317	-.0464
.450	-.0695	-.1419	-.1161	-.0272	-.0358	-.0427
.475	-.0734	-.1317	-.1136	-.0146	-.0394	-.0387
.500	-.0765	-.1220	-.1101	-.0029	-.0425	-.0345
.525	-.0790	-.1127	-.1058	.0079	-.0453	-.0301
.550	-.0808	-.1038	-.1008	.0178	-.0475	-.0255
.575	-.0821	-.0954	-.0952	.0268	-.0494	-.0208
.600	-.0830	-.0874	-.0890	.0349	-.0507	-.0160
.625	-.0833	-.0798	-.0824	.0420	-.0516	-.0112
.650	-.0833	-.0726	-.0755	.0483	-.0521	-.0064
.675	-.0830	-.0659	-.0683	.0537	-.0522	-.0016
.700	-.0823	-.0595	-.0609	.0582	-.0518	.0030
.725	-.0814	-.0536	-.0534	.0619	-.0510	.0076
.750	-.0803	-.0480	-.0459	.0648	-.0499	.0120
.775	-.0790	-.0428	-.0385	.0669	-.0483	.0162
.800	-.0775	-.0380	-.0311	.0683	-.0465	.0202
.825	-.0759	-.0335	-.0239	.0690	-.0443	.0240
.850	-.0742	-.0293	-.0169	.0690	-.0419	.0275
.875	-.0724	-.0255	-.0101	.0684	-.0391	.0308
.900	-.0706	-.0219	-.0037	.0672	-.0362	.0337
.925	-.0688	-.0186	.0024	.0655	-.0330	.0364
.950	-.0669	-.0156	.0082	.0633	-.0297	.0388
.975	-.0650	-.0128	.0135	.0607	-.0263	.0408
1.000	-.0632	-.0103	.0185	.0577	-.0227	.0425
1.050	-.0596	-.0058	.0270	.0508	-.0153	.0450
1.100	-.0562	-.0020	.0338	.0429	-.0079	.0461
1.150	-.0530	.0011	.0388	.0344	-.0006	.0460
1.200	-.0501	.0039	.0420	.0258	.0065	.0448
1.250	-.0474	.0063	.0435	.0172	.0130	.0425

a_o	f_4^{11}	g_4^{11}	f_4^{22}	g_4^{22}	f_4^{12}	g_4^{12}
1.300	-.0450	.0084	.0434	.0089	.0189	.0392
1.350	-.0428	.0104	.0420	.0013	.0240	.0352
1.400	-.0408	.0123	.0395	-.0056	.0283	.0306
1.450	-.0389	.0141	.0359	-.0116	.0317	.0255
1.500	-.0371	.0159	.0317	-.0166	.0342	.0201
1.550	-.0353	.0177	.0269	-.0205	.0358	.0146
1.600	-.0335	.0195	.0218	-.0234	.0365	.0091
1.650	-.0316	.0213	.0165	-.0253	.0364	.0037
1.700	-.0297	.0230	.0114	-.0261	.0354	-.0013
1.750	-.0276	.0247	.0065	-.0261	.0338	-.0061
1.800	-.0254	.0264	.0019	-.0253	.0316	-.0103
1.850	-.0230	.0279	-.0022	-.0237	.0289	-.0140
1.900	-.0205	.0293	-.0059	-.0217	.0258	-.0172
1.950	-.0178	.0305	-.0087	-.0192	.0224	-.0197
2.000	-.0150	.0314	-.0111	-.0164	.0188	-.0217
2.100	-.0091	.0326	-.0139	-.0104	.0116	-.0238
2.200	-.0030	.0327	-.0144	-.0045	.0046	-.0239
2.300	.0029	.0315	-.0131	.0004	-.0014	-.0221
2.400	.0085	.0293	-.0105	.0041	-.0062	-.0191
2.500	.0133	.0260	-.0072	.0063	-.0096	-.0154
2.600	.0173	.0219	-.0038	.0071	-.0116	-.0114
2.700	.0201	.0171	-.0008	.0067	-.0124	-.0075
2.800	.0218	.0121	.0015	.0054	-.0121	-.0040
2.900	.0223	.0071	.0030	.0036	-.0112	-.0012
3.000	.0218	.0024	.0036	.0016	-.0098	.0010
3.100	.0204	-.0018	.0034	-.0002	-.0082	.0025
3.200	.0184	-.0054	.0026	-.0017	-.0066	.0034
3.300	.0158	-.0082	.0014	-.0027	-.0051	.0039
3.400	.0129	-.0103	.0001	-.0031	-.0039	.0040
3.500	.0099	-.0117	-.0012	-.0031	-.0029	.0039
3.600	.0070	-.0123	-.0023	-.0025	-.0021	.0037
3.700	.0042	-.0124	-.0031	-.0017	-.0015	.0034
3.800	.0017	-.0120	-.0035	-.0008	-.0011	.0032
3.900	-.0005	-.0112	-.0036	.0002	-.0008	.0030
4.000	-.0023	-.0102	-.0034	.0011	-.0005	.0029
4.100	-.0037	-.0090	-.0029	.0019	-.0002	.0028
4.200	-.0048	-.0076	-.0023	.0024	.0001	.0028
4.300	-.0056	-.0063	-.0016	.0027	.0004	.0027
4.400	-.0061	-.0049	-.0009	.0028	.0008	.0026
4.500	-.0064	-.0036	-.0002	.0027	.0011	.0024
4.600	-.0065	-.0024	.0003	.0024	.0014	.0021
4.700	-.0064	-.0013	.0008	.0021	.0017	.0018
4.800	-.0061	-.0003	.0011	.0016	.0019	.0015
4.900	-.0057	.0006	.0012	.0012	.0021	.0011
5.000	-.0053	.0013	.0012	.0008	.0022	.0006

TABLE 33: VALUES OF f_5^{ij} AND g_5^{ij} FOR CONSTANT HYSTERETIC SOLID WITH η = .50 AND ν = 1/3

a_0	f_5^{11}	g_5^{11}	f_5^{22}	g_5^{22}	f_5^{12}	g_5^{12}
.025	.3422	-.4541	.2454	-.4045	.0599	-.0403
.050	.2240	-.3921	.1271	-.3396	.0526	-.0464
.075	.1550	-.3532	.0582	-.2966	.0449	-.0514
.100	.1063	-.3233	.0104	-.2617	.0369	-.0554
.125	.0692	-.2980	-.0252	-.2310	.0287	-.0583
.150	.0396	-.2756	-.0525	-.2027	.0204	-.0602
.175	.0154	-.2552	-.0735	-.1762	.0121	-.0611
.200	-.0046	-.2361	-.0896	-.1511	.0042	-.0609
.225	-.0212	-.2182	-.1016	-.1272	-.0038	-.0598
.250	-.0351	-.2013	-.1100	-.1046	-.0113	-.0579
.275	-.0467	-.1852	-.1154	-.0831	-.0183	-.0551
.300	-.0562	-.1699	-.1182	-.0630	-.0248	-.0517
.325	-.0640	-.1554	-.1185	-.0441	-.0318	-.0475
.350	-.0702	-.1416	-.1169	-.0266	-.0360	-.0428
.375	-.0750	-.1285	-.1135	-.0106	-.0406	-.0376
.400	-.0787	-.1162	-.1086	.0041	-.0445	-.0322
.425	-.0813	-.1046	-.1023	.0172	-.0476	-.0262
.450	-.0830	-.0937	-.0950	.0288	-.0500	-.0201
.475	-.0839	-.0836	-.0869	.0389	-.0516	-.0139
.500	-.0840	-.0741	-.0781	.0476	-.0525	-.0077
.525	-.0836	-.0653	-.0688	.0547	-.0527	-.0015
.550	-.0827	-.0572	-.0592	.0604	-.0521	.0045
.575	-.0814	-.0497	-.0495	.0648	-.0509	.0103
.600	-.0797	-.0429	-.0398	.0678	-.0491	.0159
.625	-.0778	-.0367	-.0302	.0696	-.0467	.0211
.650	-.0757	-.0310	-.0209	.0702	-.0438	.0260
.675	-.0734	-.0259	-.0119	.0698	-.0404	.0304
.700	-.0710	-.0212	-.0035	.0683	-.0367	.0343
.725	-.0686	-.0171	.0044	.0660	-.0325	.0378
.750	-.0661	-.0133	.0117	.0629	-.0281	.0407
.775	-.0637	-.0100	.0184	.0591	-.0235	.0431
.800	-.0614	-.0070	.0243	.0547	-.0188	.0449
.825	-.0591	-.0044	.0294	.0499	-.0139	.0462
.850	-.0568	-.0020	.0338	.0447	-.0090	.0469
.875	-.0547	.0001	.0374	.0392	-.0042	.0471
.900	-.0527	.0021	.0403	.0336	.0006	.0468
.925	-.0508	.0038	.0424	.0278	.0052	.0461
.950	-.0490	.0054	.0438	.0221	.0096	.0448
.975	-.0474	.0068	.0445	.0165	.0138	.0432
1.000	-.0458	.0082	.0446	.0110	.0178	.0411
1.050	-.0430	.0107	.0429	.0007	.0247	.0360
1.100	-.0404	.0130	.0393	-.0083	.0303	.0297
1.150	-.0381	.0153	.0341	-.0157	.0343	.0228
1.200	-.0359	.0176	.0278	-.0213	.0368	.0155
1.250	-.0336	.0199	.0209	-.0251	.0377	.0082
1.300	-.0313	.0222	.0138	-.0271	.0372	.0011
1.350	-.0288	.0245	.0070	-.0275	.0354	-.0054
1.400	-.0260	.0267	.0007	-.0264	.0325	-.0112
1.450	-.0229	.0287	-.0047	-.0241	.0287	-.0161
1.500	-.0196	.0305	-.0092	-.0209	.0243	-.0200
1.550	-.0161	.0320	-.0126	-.0171	.0195	-.0229
1.600	-.0123	.0330	-.0149	-.0130	.0146	-.0246
1.650	-.0083	.0337	-.0161	-.0087	.0096	-.0254
1.700	-.0043	.0338	-.0163	-.0046	.0049	-.0252
1.750	-.0002	.0334	-.0156	-.0009	.0006	-.0243
1.800	.0037	.0324	-.0142	.0023	-.0033	-.0227
1.850	.0075	.0310	-.0122	.0049	-.0065	-.0206
1.900	.0110	.0291	-.0099	.0068	-.0092	-.0180
1.950	.0141	.0267	-.0074	.0080	-.0112	-.0153
2.000	.0169	.0239	-.0049	.0086	-.0126	-.0125
2.100	.0210	.0176	-.0004	.0080	-.0136	-.0070
2.200	.0231	.0108	.0028	.0057	-.0129	-.0023
2.300	.0231	.0041	.0043	.0027	-.0110	.0012
2.400	.0215	-.0019	.0042	-.0003	-.0086	.0034
2.500	.0185	-.0068	.0028	-.0027	-.0062	.0044
2.600	.0146	-.0103	.0007	-.0039	-.0041	.0046
2.700	.0104	-.0125	-.0015	-.0040	-.0026	.0042
2.800	.0062	-.0134	-.0034	-.0032	-.0017	.0037
2.900	.0024	-.0132	-.0046	-.0017	-.0012	.0032
3.000	-.0008	-.0122	-.0050	.0001	-.0009	.0029
3.100	-.0033	-.0106	-.0047	.0017	-.0007	.0027
3.200	-.0052	-.0087	-.0038	.0030	-.0005	.0028
3.300	-.0064	-.0068	-.0025	.0037	-.0001	.0028
3.400	-.0071	-.0049	-.0012	.0039	.0003	.0029
3.500	-.0073	-.0031	-.0001	.0036	.0009	.0028
3.600	-.0073	-.0015	.0008	.0030	.0015	.0025
3.700	-.0069	-.0001	.0014	.0022	.0020	.0020
3.800	-.0064	.0010	.0015	.0013	.0023	.0014
3.900	-.0058	.0020	.0014	.0005	.0025	.0008
4.000	-.0050	.0028	.0011	-.0001	.0025	.0001
4.100	-.0042	.0034	.0006	-.0004	.0023	-.0006
4.200	-.0033	.0038	.0002	-.0006	.0019	-.0011
4.300	-.0025	.0040	-.0003	-.0007	.0014	-.0015
4.400	-.0016	.0042	-.0006	-.0006	.0009	-.0017
4.500	-.0009	.0039	-.0009	-.0004	.0004	-.0017
4.600	-.0002	.0036	-.0010	-.0002	-.0001	-.0017
4.700	.0004	.0032	-.0011	-.0000	-.0005	-.0015
4.800	.0009	.0027	-.0012	.0001	-.0008	-.0012
4.900	.0012	.0022	-.0012	.0003	-.0010	-.0009
5.000	.0013	.0017	-.0011	.0004	-.0012	-.0006

TABLE 34: VALUES OF f_6^{ij} AND g_6^{ij} FOR CONSTANT HYSTERETIC SOLID WITH η = .50 AND ν = 1/3

a_o	f_6^{11}	g_6^{11}	f_6^{22}	g_6^{22}	f_6^{12}	g_6^{12}
.025	.3082	-.4366	.2114	-.3865	.0583	-.0418
.050	.1900	-.3733	.0931	-.3191	.0493	-.0488
.075	.1212	-.3327	.0249	-.2729	.0396	-.0542
.100	.0731	-.3008	-.0215	-.2344	.0296	-.0581
.125	.0369	-.2734	-.0549	-.1998	.0195	-.0604
.150	.0085	-.2488	-.0792	-.1678	.0094	-.0612
.175	-.0140	-.2262	-.0966	-.1378	-.0004	-.0605
.200	-.0321	-.2051	-.1083	-.1096	-.0097	-.0585
.225	-.0465	-.1853	-.1153	-.0832	-.0183	-.0552
.250	-.0579	-.1667	-.1183	-.0587	-.0262	-.0509
.275	-.0668	-.1492	-.1180	-.0362	-.0332	-.0456
.300	-.0734	-.1329	-.1147	-.0157	-.0392	-.0395
.325	-.0782	-.1176	-.1091	.0026	-.0442	-.0329
.350	-.0814	-.1034	-.1015	.0187	-.0480	-.0256
.375	-.0832	-.0903	-.0923	.0325	-.0508	-.0181
.400	-.0839	-.0782	-.0819	.0441	-.0524	-.0105
.425	-.0836	-.0672	-.0707	.0535	-.0529	-.0029
.450	-.0825	-.0571	-.0589	.0607	-.0523	.0046
.475	-.0809	-.0481	-.0470	.0659	-.0508	.0117
.500	-.0787	-.0400	-.0351	.0691	-.0483	.0184
.525	-.0762	-.0327	-.0235	.0705	-.0450	.0246
.550	-.0734	-.0263	-.0124	.0702	-.0410	.0301
.575	-.0704	-.0207	-.0019	.0684	-.0364	.0350
.600	-.0675	-.0157	.0076	.0653	-.0312	.0391
.625	-.0644	-.0114	.0163	.0611	-.0257	.0424
.650	-.0615	-.0076	.0238	.0559	-.0199	.0449
.675	-.0587	-.0043	.0303	.0500	-.0139	.0466
.700	-.0559	-.0015	.0356	.0435	-.0079	.0474
.725	-.0534	.0010	.0398	.0367	-.0019	.0475
.750	-.0510	.0032	.0428	.0296	.0039	.0468
.775	-.0488	.0052	.0447	.0225	.0094	.0454
.800	-.0467	.0069	.0456	.0155	.0146	.0433
.825	-.0449	.0085	.0455	.0088	.0194	.0407
.850	-.0431	.0100	.0445	.0024	.0238	.0375
.875	-.0415	.0115	.0427	-.0036	.0276	.0339
.900	-.0400	.0129	.0401	-.0090	.0308	.0300
.925	-.0386	.0143	.0370	-.0138	.0335	.0257
.950	-.0372	.0156	.0334	-.0179	.0356	.0213
.975	-.0359	.0170	.0295	-.0214	.0371	.0168
1.000	-.0346	.0184	.0253	-.0241	.0380	.0122
1.050	-.0318	.0213	.0165	-.0276	.0382	.0032
1.100	-.0288	.0241	.0078	-.0285	.0363	-.0051
1.150	-.0255	.0268	-.0000	-.0271	.0326	-.0123
1.200	-.0217	.0293	-.0066	-.0239	.0277	-.0181
1.250	-.0175	.0314	-.0116	-.0194	.0219	-.0224
1.300	-.0129	.0330	-.0149	-.0142	.0157	-.0250
1.350	-.0081	.0339	-.0165	-.0089	.0095	-.0261
1.400	-.0031	.0340	-.0166	-.0036	.0036	-.0258
1.450	.0019	.0333	-.0153	.0009	-.0016	-.0242
1.500	.0068	.0318	-.0130	.0046	-.0060	-.0218
1.550	.0112	.0296	-.0101	.0072	-.0095	-.0186
1.600	.0152	.0267	-.0068	.0087	-.0120	-.0151
1.650	.0186	.0231	-.0036	.0092	-.0135	-.0115
1.700	.0212	.0192	-.0006	.0088	-.0142	-.0079
1.750	.0230	.0150	.0019	.0076	-.0140	-.0047
1.800	.0241	.0106	.0038	.0059	-.0133	-.0018
1.850	.0244	.0063	.0050	.0038	-.0121	.0005
1.900	.0239	.0022	.0054	.0017	-.0106	.0023
1.950	.0228	-.0016	.0053	-.0003	-.0089	.0036
2.000	.0211	-.0049	.0046	-.0021	-.0073	.0044
2.100	.0166	-.0102	.0020	-.0044	-.0044	.0049
2.200	.0112	-.0132	-.0011	-.0048	-.0024	.0043
2.300	.0059	-.0142	-.0036	-.0036	-.0013	.0035
2.400	.0012	-.0136	-.0050	-.0014	-.0009	.0029
2.500	-.0024	-.0118	-.0051	.0010	-.0008	.0026
2.600	-.0050	-.0094	-.0040	.0030	-.0006	.0026
2.700	-.0065	-.0069	-.0023	.0041	-.0002	.0028
2.800	-.0072	-.0045	-.0004	.0042	.0004	.0030
2.900	-.0072	-.0024	.0011	.0035	.0012	.0028
3.000	-.0069	-.0006	.0020	.0023	.0020	.0024
3.100	-.0063	.0009	.0023	.0011	.0026	.0016
3.200	-.0054	.0021	.0022	-.0000	.0028	.0007
3.300	-.0045	.0030	.0014	-.0008	.0028	-.0003
3.400	-.0034	.0036	.0007	-.0011	.0023	-.0011
3.500	-.0023	.0040	.0000	-.0011	.0017	-.0017
3.600	-.0013	.0041	-.0005	-.0009	.0009	-.0020
3.700	-.0002	.0039	-.0008	-.0006	.0002	-.0020
3.800	.0006	.0035	-.0009	-.0003	-.0004	-.0018
3.900	.0013	.0029	-.0009	-.0000	-.0009	-.0014
4.000	.0018	.0021	-.0008	.0001	-.0012	-.0010
4.100	.0020	.0014	-.0007	.0002	-.0013	-.0006
4.200	.0020	.0007	-.0007	.0002	-.0013	-.0002
4.300	.0018	.0000	-.0007	.0002	-.0012	.0001
4.400	.0015	-.0005	-.0007	.0002	-.0010	.0004
4.500	.0011	-.0008	-.0007	.0003	-.0008	.0005
4.600	.0006	-.0011	-.0007	.0004	-.0007	.0006
4.700	.0002	-.0011	-.0007	.0005	-.0005	.0007
4.800	-.0002	-.0011	-.0007	.0006	-.0003	.0007
4.900	-.0006	-.0010	-.0006	.0006	-.0002	.0007
5.000	-.0008	-.0008	-.0005	.0007	-.0001	.0006

TABLE 35: VALUES OF f_7^{ij} AND g_7^{ij} FOR CONSTANT HYSTERETIC SOLID WITH η = .50 AND ν = 1/3

a_o	f_7^{11}	g_7^{11}	f_7^{22}	g_7^{22}	f_7^{12}	g_7^{12}
.025	.2802	-.4220	.1833	-.3713	.0569	-.0432
.050	.1620	-.3573	.0652	-.3012	.0459	-.0510
.075	.0936	-.3148	-.0019	-.2515	.0343	-.0566
.100	.0463	-.2808	-.0464	-.2092	.0223	-.0600
.125	.0113	-.2512	-.0769	-.1708	.0104	-.0612
.150	-.0154	-.2244	-.0975	-.1354	-.0011	-.0605
.175	-.0360	-.1998	-.1103	-.1024	-.0120	-.0578
.200	-.0516	-.1769	-.1168	-.0720	-.0220	-.0535
.225	-.0634	-.1556	-.1181	-.0443	-.0307	-.0477
.250	-.0719	-.1359	-.1151	-.0194	-.0382	-.0407
.275	-.0778	-.1178	-.1087	.0025	-.0442	-.0328
.300	-.0814	-.1011	-.0995	.0213	-.0486	-.0243
.325	-.0832	-.0859	-.0882	.0370	-.0515	-.0154
.350	-.0834	-.0722	-.0754	.0495	-.0528	-.0064
.375	-.0825	-.0599	-.0617	.0590	-.0526	.0025
.400	-.0806	-.0490	-.0476	.0655	-.0510	.0111
.425	-.0780	-.0394	-.0334	.0693	-.0481	.0190
.450	-.0749	-.0310	-.0198	.0706	-.0440	.0262
.475	-.0716	-.0238	-.0069	.0696	-.0390	.0325
.500	-.0680	-.0175	.0050	.0666	-.0331	.0378
.525	-.0645	-.0122	.0155	.0619	-.0267	.0420
.550	-.0610	-.0077	.0247	.0559	-.0198	.0451
.575	-.0576	-.0039	.0322	.0488	-.0127	.0470
.600	-.0544	-.0007	.0382	.0409	-.0056	.0477
.625	-.0515	.0021	.0425	.0326	.0014	.0474
.650	-.0488	.0045	.0452	.0242	.0081	.0460
.675	-.0463	.0066	.0465	.0158	.0144	.0437
.700	-.0441	.0085	.0463	.0078	.0201	.0406
.725	-.0421	.0102	.0449	.0002	.0252	.0367
.750	-.0403	.0119	.0424	-.0066	.0295	.0323
.775	-.0386	.0135	.0390	-.0127	.0330	.0274
.800	-.0369	.0151	.0349	-.0179	.0357	.0222
.825	-.0354	.0167	.0302	-.0221	.0376	.0168
.850	-.0338	.0184	.0251	-.0253	.0386	.0113
.875	-.0322	.0201	.0198	-.0275	.0388	.0059
.900	-.0306	.0218	.0145	-.0288	.0383	.0007
.925	-.0288	.0235	.0094	-.0292	.0371	-.0043
.950	-.0269	.0251	.0044	-.0288	.0352	-.0088
.975	-.0249	.0267	-.0001	-.0276	.0328	-.0129
1.000	-.0227	.0283	-.0042	-.0258	.0300	-.0166
1.050	-.0179	.0309	-.0108	-.0208	.0233	-.0222
1.100	-.0125	.0329	-.0149	-.0145	.0159	-.0255
1.150	-.0067	.0339	-.0166	-.0082	.0084	-.0266
1.200	-.0007	.0339	-.0161	-.0019	.0015	-.0258
1.250	.0052	.0326	-.0140	.0031	-.0044	-.0233
1.300	.0107	.0303	-.0106	.0067	-.0090	-.0198
1.350	.0156	.0269	-.0066	.0088	-.0121	-.0156
1.400	.0197	.0227	-.0026	.0094	-.0139	-.0112
1.450	.0227	.0179	.0009	.0086	-.0145	-.0069
1.500	.0245	.0128	.0037	.0068	-.0139	-.0031
1.550	.0253	.0076	.0055	.0044	-.0126	-.0000
1.600	.0250	.0025	.0063	.0018	-.0108	.0023
1.650	.0237	-.0021	.0062	-.0008	-.0088	.0039
1.700	.0216	-.0061	.0052	-.0029	-.0068	.0047
1.750	.0189	-.0094	.0037	-.0045	-.0050	.0050
1.800	.0158	-.0119	.0018	-.0054	-.0035	.0049
1.850	.0125	-.0136	-.0002	-.0055	-.0023	.0045
1.900	.0092	-.0146	-.0020	-.0051	-.0015	.0039
1.950	.0060	-.0149	-.0035	-.0041	-.0010	.0034
2.000	.0031	-.0145	-.0045	-.0027	-.0007	.0029
2.100	-.0016	-.0126	-.0050	.0004	-.0007	.0024
2.200	-.0047	-.0097	-.0037	.0029	-.0006	.0025
2.300	-.0064	-.0067	-.0014	.0042	-.0001	.0028
2.400	-.0069	-.0039	.0009	.0040	.0007	.0030
2.500	-.0067	-.0015	.0025	.0027	.0018	.0027
2.600	-.0060	.0004	.0031	.0010	.0027	.0019
2.700	-.0050	.0018	.0028	-.0005	.0031	.0007
2.800	-.0039	.0029	.0020	-.0014	.0030	-.0005
2.900	-.0026	.0035	.0010	-.0017	.0024	-.0015
3.000	-.0013	.0039	.0002	-.0015	.0015	-.0021
3.100	-.0000	.0038	-.0003	-.0010	.0005	-.0023
3.200	.0011	.0034	-.0004	-.0006	-.0003	-.0020
3.300	.0020	.0026	-.0003	-.0003	-.0009	-.0016
3.400	.0025	.0017	-.0001	-.0002	-.0012	-.0010
3.500	.0027	.0008	-.0000	-.0002	-.0013	-.0004
3.600	.0026	-.0001	-.0000	-.0002	-.0011	-.0000
3.700	.0022	-.0008	-.0001	-.0002	-.0009	.0003
3.800	.0017	-.0013	-.0001	-.0002	-.0007	.0005
3.900	.0011	-.0016	-.0002	-.0001	-.0005	.0006
4.000	.0006	-.0016	-.0002	.0000	-.0003	.0006
4.100	.0001	-.0015	-.0001	.0001	-.0001	.0006
4.200	-.0003	-.0013	[illegible]	.0002	[illegible]	.0005
4.300	-.0005	-.0010	.0002	.0002	.0002	.0005
4.400	-.0007	-.0007	.0003	.0001	.0003	.0004
4.500	-.0007	-.0004	.0003	.0001	.0003	.0003
4.600	-.0005	-.0001	.0004	-.0000	.0004	.0001
4.700	-.0005	.0001	.0004	-.0001	.0004	.0000
4.800	-.0004	.0002	.0003	-.0002	.0003	-.0001
4.900	-.0002	.0003	.0003	-.0003	.0002	-.0002
5.000	-.0001	.0004	.0002	-.0003	.0002	-.0002

TABLE 36: VALUES OF f_8^{ij} AND g_8^{ij} FOR CONSTANT HYSTERETIC SOLID WITH η = .50 AND ν = 1/3

a_o	f_8^{11}	g_8^{11}	f_8^{22}	g_8^{22}	f_8^{12}	g_8^{12}
.025	.2562	-.4093	.1593	-.3580	.0553	-.0446
.050	.1382	-.3431	.0417	-.2849	.0425	-.0530
.075	.0703	-.2986	-.0241	-.2316	.0289	-.0585
.100	.0240	-.2624	-.0661	-.1855	.0151	-.0611
.125	-.0094	-.2306	-.0931	-.1435	.0016	-.0609
.150	-.0341	-.2018	-.1091	-.1051	-.0111	-.0581
.175	-.0522	-.1754	-.1166	-.0700	-.0226	-.0531
.200	-.0652	-.1512	-.1173	-.0385	-.0325	-.0463
.225	-.0741	-.1290	-.1126	-.0108	-.0406	-.0379
.250	-.0796	-.1088	-.1036	.0129	-.0467	-.0284
.275	-.0824	-.0906	-.0914	.0323	-.0507	-.0182
.300	-.0830	-.0744	-.0770	.0477	-.0527	-.0078
.325	-.0820	-.0601	-.0612	.0589	-.0526	.0025
.350	-.0798	-.0476	-.0449	.0662	-.0506	.0123
.375	-.0767	-.0368	-.0286	.0699	-.0469	.0213
.400	-.0729	-.0277	-.0131	.0703	-.0418	.0293
.425	-.0689	-.0200	.0012	.0679	-.0354	.0359
.450	-.0648	-.0135	.0139	.0630	-.0282	.0412
.475	-.0607	-.0082	.0247	.0563	-.0203	.0450
.500	-.0568	-.0038	.0334	.0480	-.0121	.0472
.525	-.0532	-.0002	.0400	.0389	-.0038	.0479
.550	-.0499	.0029	.0445	.0292	.0042	.0471
.575	-.0469	.0054	.0468	.0194	.0118	.0450
.600	-.0443	.0077	.0473	.0099	.0187	.0417
.625	-.0419	.0097	.0460	.0010	.0247	.0375
.650	-.0397	.0116	.0431	-.0071	.0298	.0323
.675	-.0378	.0135	.0391	-.0140	.0338	.0266
.700	-.0360	.0154	.0341	-.0198	.0367	.0205
.725	-.0342	.0172	.0284	-.0242	.0385	.0142
.750	-.0324	.0192	.0224	-.0273	.0392	.0079
.775	-.0305	.0211	.0162	-.0291	.0388	.0017
.800	-.0285	.0231	.0102	-.0297	.0375	-.0041
.825	-.0263	.0250	.0044	-.0292	.0353	-.0094
.850	-.0240	.0269	-.0008	-.0277	.0325	-.0141
.875	-.0214	.0286	-.0054	-.0254	.0290	-.0181
.900	-.0186	.0302	-.0092	-.0225	.0251	-.0214
.925	-.0157	.0315	-.0123	-.0190	.0209	-.0239
.950	-.0125	.0326	-.0145	-.0153	.0166	-.0257
.975	-.0092	.0334	-.0158	-.0115	.0122	-.0267
1.000	-.0058	.0338	-.0164	-.0077	.0079	-.0269
1.050	.0012	.0336	-.0155	-.0007	.0000	-.0256
1.100	.0083	.0318	-.0124	.0047	-.0064	-.0223
1.150	.0141	.0285	-.0081	.0081	-.0110	-.0177
1.200	.0192	.0240	-.0033	.0094	-.0137	-.0126
1.250	.0230	.0185	.0011	.0088	-.0146	-.0075

a_o	f_8^{11}	g_8^{11}	f_8^{22}	g_8^{22}	f_8^{12}	g_8^{12}
1.300	.0253	.0125	.0044	.0067	-.0140	-.0030
1.350	.0261	.0065	.0065	.0038	-.0124	.0005
1.400	.0254	.0007	.0072	.0007	-.0102	.0030
1.450	.0235	-.0045	.0065	-.0022	-.0078	.0045
1.500	.0206	-.0087	.0050	-.0044	-.0055	.0051
1.550	.0171	-.0119	.0028	-.0057	-.0036	.0050
1.600	.0133	-.0140	.0004	-.0061	-.0021	.0045
1.650	.0094	-.0151	-.0017	-.0055	-.0012	.0038
1.700	.0057	-.0153	-.0034	-.0042	-.0007	.0031
1.750	.0024	-.0147	-.0045	-.0025	-.0005	.0026
1.800	-.0004	-.0136	-.0048	-.0006	-.0005	.0023
1.850	-.0026	-.0120	-.0044	.0012	-.0006	.0023
1.900	-.0042	-.0103	-.0035	.0027	-.0005	.0024
1.950	-.0054	-.0084	-.0022	.0037	-.0004	.0026
2.000	-.0061	-.0067	-.0007	.0041	-.0000	.0028
2.100	-.0065	-.0035	.0020	.0036	.0010	.0030
2.200	-.0060	-.0009	.0036	.0018	.0023	.0025
2.300	-.0050	.0010	.0037	-.0002	.0032	.0013
2.400	-.0038	.0024	.0028	-.0016	.0034	-.0002
2.500	-.0023	.0033	.0016	-.0021	.0027	-.0016
2.600	-.0008	.0037	.0006	-.0019	.0016	-.0023
2.700	.0007	.0036	.0002	-.0013	.0005	-.0025
2.800	.0020	.0030	.0001	-.0008	-.0005	-.0021
2.900	.0029	.0020	.0003	-.0005	-.0010	-.0014
3.000	.0033	.0008	.0005	-.0005	-.0012	-.0007
3.100	.0033	-.0003	.0006	-.0006	-.0011	-.0002
3.200	.0028	-.0012	.0005	-.0007	-.0008	.0002
3.300	.0022	-.0018	.0004	-.0007	-.0006	.0004
3.400	.0015	-.0020	.0004	-.0005	-.0003	.0005
3.500	.0008	-.0020	.0004	-.0004	-.0001	.0005
3.600	.0003	-.0018	.0005	-.0003	.0001	.0004
3.700	.0000	-.0014	.0007	-.0003	.0003	.0004
3.800	-.0002	-.0011	.0009	-.0004	.0004	.0003
3.900	-.0002	-.0007	.0009	-.0005	.0005	.0001
4.000	-.0001	-.0004	.0010	-.0007	.0005	-.0001
4.100	.0000	-.0002	.0009	-.0008	.0005	-.0002
4.200	.0002	-.0001	.0008	-.0009	.0004	-.0004
4.300	.0004	-.0000	.0008	-.0010	.0003	-.0004
4.400	.0006	-.0001	.0007	-.0010	.0002	-.0005
4.500	.0007	-.0001	.0006	-.0011	.0001	-.0005
4.600	.0008	-.0003	.0005	-.0011	.0000	-.0004
4.700	.0009	-.0004	.0005	-.0011	-.0001	-.0004
4.800	.0009	-.0005	.0004	-.0011	-.0001	-.0003
4.900	.0008	-.0007	.0003	-.0011	-.0001	-.0003
5.000	.0008	-.0008	.0003	-.0011	-.0001	-.0003

APPENDIX D

COMPUTER PROGRAM FOR DETERMINING DYNAMIC FLEXIBILITY INFLUENCE COEFFICIENTS FOR THE HALFPLANE

APPENDIX D: COMPUTER PROGRAM FOR DETERMINING DYNAMIC FLEXIBILITY INFLUENCE COEFFICIENTS FOR THE HALFPLANE

D.1 IDENTIFICATION

HFPC - Halfplane Compliance Coefficients

D.2 DESCRIPTION

This FORTRAN package determines the dynamic flexibility influence (or compliance) coefficients for the surface of a viscoelastic halfplane. These compliance coefficients, F_M^{ij} (a_o), are nodal displacements (at node M, in the direction i = X or Y) due to uniformly distributed, unit harmonic element loads, applied horizontally or vertically (j = X or Y, respectively) at the halfplane surface (see Figs. D.1 and D.2). The coefficients vary with the dimensionless frequency parameter $a_o = \omega b/c_s$, and are computed for unit shear modulus and specified Poisson's ratio and damping properties for the halfplane. Once obtained, these compliance coefficients can be used in the determination of the dynamic stiffness matrix for the halfplane by the program IMPN, as described in Appendix E.

This code is written for CDC 7600 machines, and utilizes large core memory by the compiler FTN. For convenience, the notations for coordinate axes, compliance coefficients, and nodal point numbering are indicated differently in this Appendix from those in the text.

D.3 INPUT DATA

The following punched cards, in the sequence indicated, are required:

A. PROBLEM IDENTIFICATION (8A10)

Columns 1 - 80 HEAD: Identification header to be printed with output.

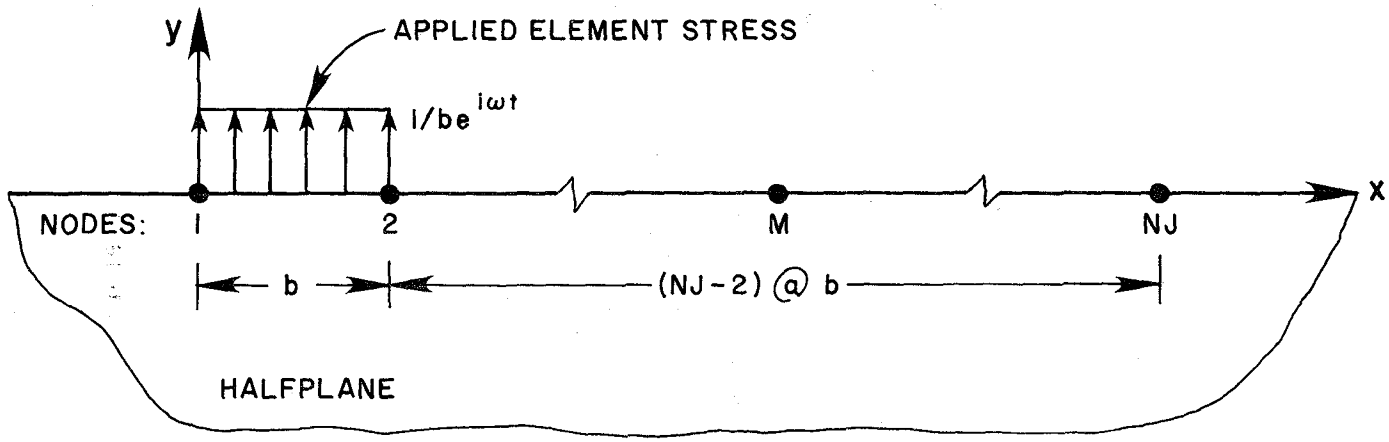


FIG. D.1: VERTICALLY APPLIED ELEMENT LOAD

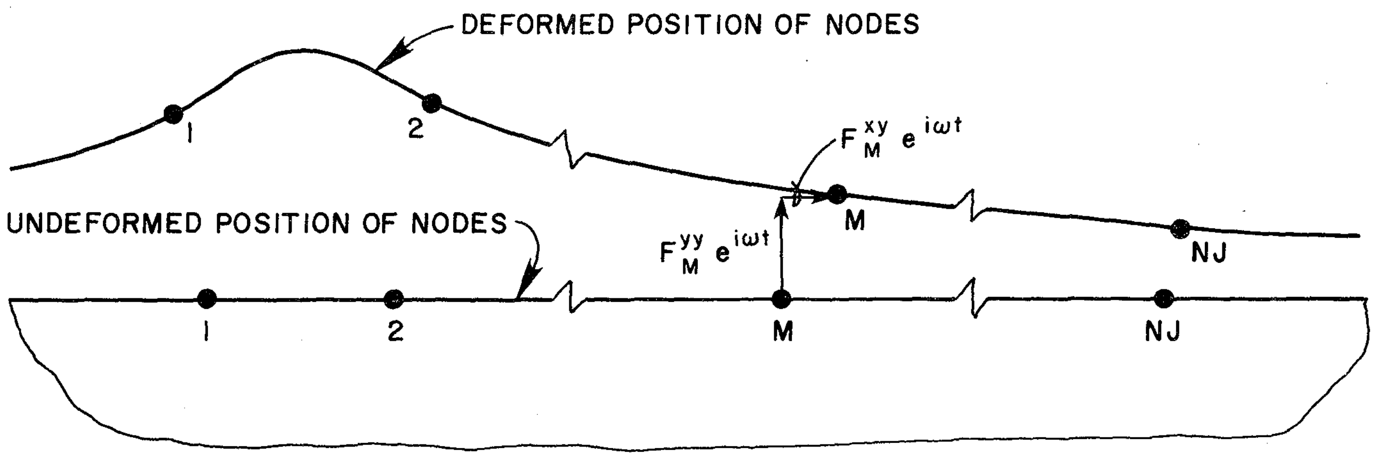


FIG. D.2: FLEXIBILITY INFLUENCE COEFFICIENTS FOR VERTICALLY APPLIED ELEMENT LOAD

B. PROBLEM DESCRIPTION (3F10.0)

Columns	1 - 10	ENU:	Poisson's ratio (see Note 1)
	11 - 20	DAØ:	Nondimensional frequency interval Δa_o
	21 - 30	DZETA:	Interval of spatial integration (see Note 3)

C. PROBLEM CONTROL CARD (5I5)

Columns	1 - 5	NPROB:	Number of problems wtih different damping coefficients.
	6 - 10	NJ:	Number of base nodal points
	11 - 15	NW:	Number of nondimensional frequencies for which compliance coefficients are to be generated, thus coefficients are evaluated for a_o = DAØ, 2*DAØ, 3*DAØ,..., NW*DAØ.
	16 - 20	NZT:	Number of spatial integration points (see Note 3)
	21 - 25	MCODE:	Material loss model identification code (see Note 2) = 0 for constant hysteretic solid = 1 for Voigt model

D. MATERIAL DAMPING CARD (F10.0)

This card is to be supplied for each of NPROB problems - this is the only parameter that may be varied between problems.

Columns	1 - 10	DAMP:	Material loss coefficient (see Note 2)

Note 1: The "elastic" material constants are determined as follows:

Shear modulus, G, is taken as unity.

Poisson's ratio, ν, is input via the parameter ENU for plane strain problems. To model plane stress conditions, input the equivalent parameter ENU = $\nu/(1-\nu)$. Thus, for example, to generate the compliances for a plane stress problem with a Poisson's ratio $\nu = 1/4$, input ENU = 1/3.

Modulus of elasticity, E, is computed as E = 2*(1 + ENU).

Note 2: The viscoelastic shear modulus G* is determined as follows:

For constant hysteretic solids (MCODE = 0) G* is frequency independent and is given by G* = 1 + i DAMP.

For the Voigt model (MCODE = 1) G* is frequency dependent and is given by G* = 1 + i a_0 * DAMP.

While the loss coefficient DAMP can be varied for each of the NPROB problems in a run, only one type of damping is allowed per run, viz. constant hysteretic or Voigt.

Note 3: Choice of integration parameters

In order to secure numerical stability for practical values of damping (e.g. $\eta \geq .10$ for constant hysteretic solid) it is recommended that the integration interval DZETA not exceed 0.0075 and that the number of integration points NZT be at least 10,000. In any case, NZT*DZETA, the range of integration, should not be less than 75.

Note 4: Blank common requirement

The blank common storage area, which is indicated in the main program by "COMMON A(1)", should have available NSIZE words, where NSIZE is the maximum of $6*NW*NJ+5*NZT+1000_8$ and $6*NW*NJ+32*NJ*NJ+1000_8$.

In the CDC 7600 the required field length is provided automatically by calling a system routine.

D.4 OUTPUT DATA

The following data is printed by the program:

A. An image of the input data set is printed, including the heading, material properties, integration parameters and the nondimensional frequency range. This is given for each of the NJ-1 sets of compliance coefficients described next.

B. Compliance coefficients vs. nondimensional frequency.

For each station point (node number), M = 2,3,4,...,NJ, the compliance coefficients F_M^{XX}, F_M^{YY} and F_M^{XY} are printed for all of the nondimensional frequency values considered. The results at the first station point are not given since $F_1^{XX} = F_2^{XX}$, $F_1^{YY} = F_2^{YY}$ and $F_1^{XY} = -F_2^{XY}$.

C. Compliance coefficients vs. station point.

This is a rearrangement of the data output in B, above. For each of the values of nondimensional frequency a_0 considered, the compliance coefficients F_M^{XX}, F_M^{YY} and F_M^{XY} are printed for all station points M = 1,2.3,...N.J.

For each of the NPROB problems, the following three unformatted binary records are written on tape unit TAPE 2:

Logical Record 1: HEAD, NPROB, NJ, NW

Logical Record 2: MCODE, E, ENU, DAMP, DAØ

Logical Record 3: F(I,J,K), the complex array of compliance coefficients where

I = 1,2,3,...,NW indexes the nondimensional frequency values

J = 1,2,3 indexes the compliance "directions" XX, YY and XY, respectively and

K = 1,2,3,...,NJ indexes the station point (node number).

D.5 EXAMPLE

An example is given to illustrate the form of the punched card input and the printed output for the program HFPC. The dynamic flexibility influence coefficients are to be generated for a constant hysteretic solid with loss coefficient η = .10. Poisson's ratio is ν = 1/3 for plane strain conditions. The compliances will be computed for 5 nodes at 32 frequencies, a_0 = .05, .10, .15, ..., 1.60. For the integration scheme 20,000 points spaced at an interval of .004 are to be used.

The four input cards required are shown on page 96. The resultant output is shown on pages 96 and 97; it is given only for station point 2 (for parts A and B described in section D.4 above) and only for the non-dimensional frequency a_0 = DAØ = .05 (for part C above). The output written on unit TAPE2 is not shown but will be used as input (via unit TAPE1) to the program IMPN in the Example given in Appendix E.

D.6 PROGRAM LISTING

The listing of the computer program HFPC is presented on pages 98 and 99.

The following computer program listing is available upon request from Professor A.K. Chopra, Structural Engineering and Structural Mechanics, Davis Hall, University of California, Berkeley, California.

SAMPLE INPUT FOR THE PROGRAM HFPC


```
A:     EXAMPLE PROBLEM FOR THE PROGRAM HFPC
B:     .333333333      .05      .004
C:          1     5   3220000    0
D:                .1
```

SAMPLE OUTPUT FOR THE PROGRAM HFPC

Parts A and B (for M = 2 only)

```
       EXAMPLE PROBLEM FOR THE PROGRAM HFPC
E    =  .266667E+01
ENU  =  .333333E+00
DAC  =  .500000E-01
DAMP=   .100000E+00
IPRB=             1
NJ   =            5
NW   =           32
NZT  =        20000
DZTA=   .400000E-02
MCCO=             0
ANALYSIS FOR CONSTANT HYSTERETIC SOLID
COEFFICIENT ARRAYS ARE TO BE GENERATED IN TAPE3
TRANSFORM OF THE FORCING FUNCTION IS PROVIDED BY THE SUBROUTINE FORCFN2 WITH NFORCE=  0
STATION POINT NUMBER=     2              DAMPING COEFF.=  .100000E+00

               NON-DIMENSIONAL COMPLIANCES
               MODULUS OF RIGIDITY =  .100000E+01


LARGE CORE MEMORY   305155 (OCTAL)    100973 (DECIMAL) WORDS USED
```

A0	FXX		FYY		FXY	
.050000	.899670E+00	-.410780E+00	.766670E+00	-.402753E+00	.811458E-01	-.106938E-01
.100000	.757235E+00	-.398916E+00	.637616E+00	-.386914E+00	.809490E-01	-.132580E-01
.150000	.670727E+00	-.389337E+00	.550615E+00	-.376543E+00	.802921E-01	-.156987E-01
.200000	.609711E+00	-.382847E+00	.489133E+00	-.369825E+00	.795756E-01	-.181599E-01
.250000	.562256E+00	-.377591E+00	.441168E+00	-.364032E+00	.787768E-01	-.205765E-01
.300000	.523302E+00	-.373099E+00	.401648E+00	-.358875E+00	.778880E-01	-.229550E-01
.350000	.490213E+00	-.369166E+00	.367969E+00	-.354104E+00	.769127E-01	-.252925E-01
.400000	.461415E+00	-.365432E+00	.338563E+00	-.349564E+00	.758527E-01	-.275852E-01
.450000	.435892E+00	-.361997E+00	.312425E+00	-.345159E+00	.747102E-01	-.298239E-01
.500000	.412956E+00	-.358727E+00	.288871E+00	-.340825E+00	.734873E-01	-.320233E-01
.550000	.392113E+00	-.355575E+00	.267418E+00	-.336518E+00	.721865E-01	-.341623E-01
.600000	.373004E+00	-.352507E+00	.247712E+00	-.332208E+00	.708102E-01	-.362439E-01
.650000	.355353E+00	-.349497E+00	.229486E+00	-.327871E+00	.693612E-01	-.382653E-01
.700000	.338949E+00	-.346526E+00	.212532E+00	-.323494E+00	.678421E-01	-.402238E-01
.750000	.323626E+00	-.343581E+00	.196693E+00	-.319064E+00	.662558E-01	-.421167E-01
.800000	.309248E+00	-.340648E+00	.181830E+00	-.314573E+00	.646053E-01	-.439416E-01
.850000	.295707E+00	-.337720E+00	.167848E+00	-.310017E+00	.628936E-01	-.456961E-01
.900000	.282912E+00	-.334791E+00	.154658E+00	-.305393E+00	.611237E-01	-.473780E-01
.950000	.270789E+00	-.331854E+00	.142188E+00	-.300698E+00	.592991E-01	-.489853E-01
1.000000	.259274E+00	-.328906E+00	.130381E+00	-.295934E+00	.574228E-01	-.505160E-01
1.050000	.248314E+00	-.325944E+00	.119184E+00	-.291100E+00	.554984E-01	-.519685E-01
1.100000	.237863E+00	-.322966E+00	.108556E+00	-.286199E+00	.535291E-01	-.533410E-01
1.150000	.227881E+00	-.319971E+00	.984602E-01	-.281232E+00	.515185E-01	-.546321E-01
1.200000	.218334E+00	-.316957E+00	.888642E-01	-.276204E+00	.494701E-01	-.558405E-01
1.250000	.209192E+00	-.313925E+00	.797406E-01	-.271117E+00	.473875E-01	-.569652E-01
1.300000	.200429E+00	-.310874E+00	.710652E-01	-.265976E+00	.452741E-01	-.580050E-01
1.350000	.192020E+00	-.307804E+00	.628165E-01	-.260785E+00	.431338E-01	-.589591E-01
1.400000	.183946E+00	-.304717E+00	.549756E-01	-.255548E+00	.409700E-01	-.598270E-01
1.450000	.176188E+00	-.301613E+00	.475254E-01	-.250270E+00	.387865E-01	-.606086E-01
1.500000	.168729E+00	-.298493E+00	.404505E-01	-.244957E+00	.365868E-01	-.613019E-01
1.550000	.161555E+00	-.295358E+00	.337370E-01	-.239614E+00	.343747E-01	-.619083E-01
1.600000	.154651E+00	-.292211E+00	.273720E-01	-.234246E+00	.321538E-01	-.624274E-01

SAMPLE OUTPUT FOR THE PROGRAM HFPC
Part C (for a_0 = 0.05 only)

NONDIMENSIONAL FLEXIBILITY COEFFICIENTS
NONDIMENSIONAL FREGUECY = .500000E-01 POISSONS RATIO= .333333E+00 DAMP= .100000E+00

M	F^{XX}_{MO}		F^{YY}_{MO}		F^{XY}_{MO}	
1	.839670E+00	-.416780E+00	.766670E+00	-.402753E+00	-.811458E-01	.106938E-01
2	.839670E+00	-.416780E+00	.766670E+00	-.402753E+00	.811458E-01	-.106938E-01
3	.610579E+00	-.383430E+00	.490572E+00	-.370759E+00	.811026E-01	-.157973E-01
4	.530003E+00	-.371678E+00	.379125E+00	-.358465E+00	.798066E-01	-.207471E-01
5	.426405E+00	-.363328E+00	.304447E+00	-.348988E+00	.780391E-01	-.255718E-01

```
      PROGRAM HFPC(TAPE1,TAPE2,TAPE3,TAPE4,INPUT,OUTPUT,TAPE5=INPUT,         HFPC
     XTAPE6=OUTPUT)                                                          HFPC
      COMMON A(1)                                                            HFPC
      LEVEL2,A                                                               HFPC
      COMMON/VALUES/HEAD(8),F,ENU,DAO,NPROB,NJ,NW,NZT,MCODE,NZT1,NZT2        HFPC
     X,DZETA,NFORCE,GMU,INTP3,NWRITE3                                        HFPC
      COMMON/ADRS/N2,NX2,NX3,NX4,L                                           HFPC
      DATA NFORCE,INTP3,NWRTE3/0,1,0/                                        HFPC
      READ(5,1000) HEAD                                                      HFPC
      READ(5,1001) ENU,DAO,DZETA                                             HFPC
      READ(5,1002) NPROB,NJ,NW,NZT,MCODE                                     HFPC  1
      GMU=1.                                                                 HFPC  1
      F=2.*(1.+ENU)                                                          HFPC  1
      IF(DZETA.LE.0.) DZETA=.05                                              HFPC  1
      NZT1=(NZT/2)*2+1                                                       HFPC  1
      NZT2=NZT1+1                                                            HFPC  1
      N2=3+6*NW*NJ                                                           HFPC  1
      N3=N2+2*NZT2                                                           HFPC  1
      N4=N3+NZT2                                                             HFPC  1
      N5=N4+NZT2                                                             HFPC  1
      N6=N5+NZT2                                                             HFPC  2
      NJSQ8=8*NJ*NJ                                                          HFPC  2
      NX2=N2+NJSQ8                                                           HFPC  2
      NX3=NX2+NJSQ8                                                          HFPC  2
      NX4=NX3+NJSQ8                                                          HFPC  2
      NX5=NX4+NJSQ8                                                          HFPC  2
      IF(NX5.GT.N6) N6=NX5                                                   HFPC  2
      L=N6                                                                   HFPC  2
      LL=LOCF(A(N6+1))                                                       HFPC  2
      CALL SETFLL(LL)                                                        HFPC  2
      L=LL .AND. 17777778                                                    HFPC  3
      CALL MAIN2 (A(1),A(N2),A(N3),A(N4),A(N5),NW,NJ,NZT1)                   HFPC  3
      STOP                                                                   HFPC  3
 1000 FORMAT(8A10)                                                           HFPC  3
 1001 FORMAT(8F10.0)                                                         HFPC  3
 1002 FORMAT(16I5)                                                           HFPC  3
      END                                                                    HFPC  3


      SUBROUTINE FORCEFN  (H,GO,NZT1,NFORCE,ETA,DETA2,INJ)                   HFPC  3
      LEVEL2,H,GO                                                            HFPC  3
      COMPLEX GO                                                             HFPC  3
      DIMENSION H(NZT1),GO(NZT1)                                             HFPC  4
      IF(NFORCE.NE.0) GO TO 100                                              HFPC  4
      ETA=0.                                                                 HFPC  4
      H(1)=1.                                                                HFPC  4
      IF(INJ.EQ.2) GO TO 120                                                 HFPC  4
      DO 1 II=2,NZT1                                                         HFPC  4
      ETA=ETA+DETA2                                                          HFPC  4
    1 H(II)=SIN(ETA)/ETA                                                     HFPC  4
      RETURN                                                                 HFPC  4
  120 DO 2 II=2,NZT1                                                         HFPC  4
      ETA=ETA+DETA2                                                          HFPC  5
    2 H(II)=AIMAG(GO(II))/ETA                                                HFPC  5
      RETURN                                                                 HFPC  5
  100 WRITE(6,2020) NFORCE                                                   HFPC  5
      STOP                                                                   HFPC  5
 2020 FORMAT(5X,100(1H*),/,5X,*NFORCE=*,I3,5X,*IS NOT DEFINED IN SUBROUT HFPC  5
     XINE FORCEFN2*,/,5X,100(1H*),/,5X,*PROGRAM STOPS*/,5X,100(1H*))         HFPC  5
      END                                                                    HFPC  5


      SUBROUTINE MAIN2 (F,GO,H,ET,ETAR,NW,NJ,NZT1)                           HFPC  5
      LEVEL2,H,ET,ETAR,F,GO                                                  HFPC  5
      COMPLEX TEMPGO                                                         HFPC  6
      COMPLEX R1,R2,R3,F1,F2,F3,FXX,FYY,FXY,ETA2,A02G,A02N2G,G,DENOI,DET HFPC  6
     XA3G                                                                    HFPC  6
      COMPLEX F,GO                                                           HFPC  6
      DIMENSION H(NZT1),ET(NZT1),ETAR(NZT1),F(NW,3,NJ),GO(NZT1)              HFPC  6
      COMMON/ADRS/NX1,NX2,NX3,NX4,L                                          HFPC  6
      COMMON/VALUES/HEAD(8),F,ENU,DAO,NPROB,KJ,KW,NZT,MCODE,KZT1,NZT2        HFPC  6
     X,DZETA,NFORCE,GMU,INTP3,NWRITE3                                        HFPC  6
      DATA PI3/9.4247779608/                                                 HFPC  6
      NEL=NJ-1                                                               HFPC  6
      NEL2=NEL+NEL                                                           HFPC  7
      NJ2=NJ+NJ                                                              HFPC  7
      SON=.5*(1.-2.*ENU)/(1.-ENU)                                            HFPC  7
      IF(INTP3.GE.1) GO TO 140                                               HFPC  7
      READ(3) GO                                                             HFPC  7
      GO TO 141                                                              HFPC  7
  140 GO(1)=(1.,0.)                                                          HFPC  7
      ETA=0.                                                                 HFPC  7
      DETA=.5*DZETA                                                          HFPC  7
      DO 9 JJ=2,NZT1                                                         HFPC  7
      ETA=ETA+DETA                                                           HFPC  8
    9 GO(JJ)=CEXP(CMPLX(0.,ETA))                                             HFPC  8
      IF(NPROB.GT.1) WRITE(3) GO                                             HFPC  8
      IF(NWRITE3.GE.1) WRITE(3) GO                                           HFPC  8
  141 DO 5 IPROB=1,NPROB                                                     HFPC  8
      IF(IPROB.EQ.1) GO TO 132                                               HFPC  8
      REWIND 3                                                               HFPC  8
      READ(3) GO                                                             HFPC  8
  132 READ(5,1001) DAMP                                                      HFPC  8
      DAMP1=DAMP                                                             HFPC  8
      DO 3 INJ=2,NJ                                                          HFPC  9
      IF(IPROB.GT.1  .OR.  INTP3.LE.0) GO TO 120                             HFPC  9
      DETA=DZETA/(INJ+INJ 3)                                                 HFPC  9
      ETA=0.                                                                 HFPC  9
      DO 8 JJ=1,NZT1                                                         HFPC  9
      ETAR(JJ)=ETA                                                           HFPC  9
      ET(JJ)=ETA*ETA                                                         HFPC  9
    8 ETA=ETA+DETA                                                           HFPC  9
      DETA2=.5*DETA                                                          HFPC  9
      CALL FORCEFN (H,GO,NZT1,NFORCE,ETA,DETA2,INJ)                          HFPC  9
      IF(NPROB.GT.1) WRITE(3) DETA,H,ET,ETAR                                 HFPC 10
      IF(NWRITE3.GE.1) WRITE(3) DETA,H,ET,ETAR                               HFPC 10
      GO TO 105                                                              HFPC 10
  120 READ(3) DETA,H,ET,ETAR                                                 HFPC 10
  105 DETA3=DETA/PI3                                                         HFPC 10
      WRITE(6,3333)                                                          HFPC 10
      WRITE(6,2000) HEAD                                                     HFPC 10
      WRITE(6,2001)E,ENU,DAO,DAMP1,IPROB,NJ,NW,NZT,DZETA,MCODE               HFPC 10
      IF(MCODE.EQ.0) WRITE(6,2002)                                           HFPC 10
      IF(MCODE.EQ.1) WRITE(6,2003)                                           HFPC 10
      IF(INTP3.GE.1) WRITE(6,2021)                                           HFPC 11
      IF(INTP3.LE.0) WRITE(6,2022)                                           HFPC 11
      IF(NWRITE3.GE.1) WRITE(6,2025)                                         HFPC 11
      WRITE(6,2020) NFORCE                                                   HFPC 11
      WRITE(6,2011) INJ,DAMP1                                                HFPC 11
      WRITE(6,2012)GMU                                                       HFPC 11
      WRITE(6,3535)L,L                                                       HFPC 11
      WRITE(6,2004)                                                          HFPC 11
  300 A0=DAO                                                                 HFPC 11
      DO 1 INW=1,NW                                                          HFPC 11
      IF(MCODE.EQ.1) DAMP=DAMP1*A0                                           HFPC 12
      G=1./CMPLX(1.,DAMP)                                                    HFPC 12
      A02G=A0*A0*G                                                           HFPC 12
      A02N2G=A02G*SQN                                                        HFPC 12
      ETA=DETA                                                               HFPC 12
      DENOI=H(1)/(A02G*A02G)                                                 HFPC 12
      FXX=CSQRT(-A02G)*DENOI                                                 HFPC 12
      FYY=CSQRT(-A02N2G)*DENOI                                               HFPC 12
      FXY=(0.,0.)                                                            HFPC 12
      DO 2 JJJ=2,NZT,2                                                       HFPC 12
      JJ=JJJ                                                                 HFPC 13
      FI=4.                                                                  HFPC 13
  100 ETA2=CMPLX(ET(JJ),0.)                                                  HFPC 13
      R1=CSQRT(ETA2 A02G)                                                    HFPC 13
      R2=CSQRT(ETA2-A02N2G)                                                  HFPC 13
      R3=2.*ETA2 A02G                                                        HFPC 13
      DENOI=H(JJ)/(R3*R3-4.*ETA2*R1*R2)                                      HFPC 13
  200 R=REAL(GO(JJ))                                                         HFPC 13
      F1=R*R1*DENOI                                                          HFPC 13
      F2=R*R2*DENOI                                                          HFPC 13
```

```
      RETAR=ETAR(JJ)                                                    HFPC 14
      F3=AIMAG(GO(JJ))*RETAR*(2.*R1*R2 R3)*DENOI                        HFPC 14
201   FXX=FXX+FI*F1                                                     HFPC 14
      FYY=FYY+FI*F2                                                     HFPC 14
      FXY=FXY+FI*F3                                                     HFPC 14
202   I=FI                                                              HFPC 14
      IF(I.EQ.2) GO TO 2                                                HFPC 14
      FI=2.                                                             HFPC 14
      JJ=JJ+1                                                           HFPC 14
      GO TO 100                                                         HFPC 14
2     CONTINUE                                                          HFPC 15
      DETA3G=DETA3*G                                                    HFPC 15
      FXX=-FXX*A02G*DETA3G                                              HFPC 15
      FYY=-FYY*A02G*DETA3G                                              HFPC 15
      FXY=FXY*DETA3G                                                    HFPC 15
      WRITE(6,2010) AO,FXX,FYY,FXY                                      HFPC 15
      F(INW,1,INJ)=FXX                                                  HFPC 15
      F(INW,2,INJ)=FYY                                                  HFPC 15
      F(INW,3,INJ)=FXY                                                  HFPC 15
1     AO=AO+DAO                                                         HFPC 15
3     CONTINUE                                                          HFPC 16
      AO=0.                                                             HFPC 16
      DO 10 INW=1,NW                                                    HFPC 16
      AO=AO+DAO                                                         HFPC 16
      WRITE(6,2014)                                                     HFPC 16
      WRITE(6,2015) AO,ENU,DAMP1                                        HFPC 16
      WRITE(6,2018)                                                     HFPC 16
      F(INW,1,1)=F(INW,1,2)                                             HFPC 16
      F(INW,2,1)=F(INW,2,2)                                             HFPC 16
      F(INW,3,1)=-F(INW,3,2)                                            HFPC 16
10    WRITE(6,2017)(INJ,(F(INW,I,INJ),I=1,3),INJ=1,NJ)                  HFPC 17
      WRITE(2) HEAD,NPROB,NJ,NW                                         HFPC 17
      WRITE(2) MCODE,E,ENU,DAMP1,DAO                                    HFPC 17
      WRITE(2) F                                                        HFPC 17
5     CONTINUE                                                          HFPC 17
      RETURN                                                            HFPC 17
1001  FORMAT(8F10.0)                                                    HFPC 17
2000  FORMAT(1H1,10X,8A10)                                              HFPC 17
2001  FORMAT(5X,*E    =*,F13.6,/,5X,*ENU =*,E13.6,/,5X,*DAO =*,E13.6,/  HFPC 17
     X,5X,*DAMP=*,E13.6,/,5X,*IPRB=*,I13,/,5X,*NJ   =*,I13,/,5X,*NW   =* HFPC 17
     X,I13,/,5X,*NZT =*,I13,/,5X,*DZTA=*, E13.6,/,5X,*MCOD-*4I13,//)    HFPC 18
2002  FORMAT(5X,*ANALYSIS FOR CONSTANT HYSTERETIC SOLID*)               HFPC 18
2003  FORMAT(5X,*ANALYSIS FOR VOIGT SOLID*)                             HFPC 18
2004  FORMAT(8X,*AO*,17X,*FXX*,29X,*FYY*,29X,*FXY*//)                   HFPC 18
2010  FORMAT(1X,F9.6,5X,2E13.6,5X,2E13.6,5X,2E13.6)                     HFPC 18
2011  FORMAT(5X,*STATION POINT NUMBER=*,I5,10X,*DAMPING COEFF.=*,E13.6/) HFPC 18
2012  FORMAT(20X,*NON DIMENSIONAL COMPLIANCES*/,20X,*MODULUS OF RIGIDITY HFPC 18
     X =*,E13.6,//)                                                     HFPC 18
2014  FORMAT(1H1,10X,*NONDIMENSIONAL FLEXIBILITY COEFFICIENTS*)         HFPC 18
2015  FORMAT(5X,*NONDIMENSIONAL FREQUECY =*,E13.6,10X,*POISSONS RATIO=*, HFPC 18
     XE13.6,10X,*DAMP=*,E13.6,///)                                      HFPC 19
2017  FORMAT(I5,4X,2E13.6,4X,2E13.6,4X,2E13.6)                          HFPC 19
2018  FORMAT(23X,*XX*,28X,*YY*,28X,*XY*,/,4X,*M*,17X,*F*,29X,*F*,29X,*F* HFPC 19
     X,/,23X,*MO*,28X,*MO*,28X,*MO*//)                                  HFPC 19
2019  FORMAT(5X,*UNIFORM PRESSURE DISTRIBUTION BETWEEN COSEQUITIVE NODES HFPC 19
     X ASSUMED*/,5X,*COMPUTATION FOR UNIT ELEMENT LOAD UNIFORMLY DISTRIB HFPC 19
     XUTED ON THE BOUNDARY*//)                                          HFPC 19
2020  FORMAT(5X,*TRANSFORM OF THE FORCING FUNCTION IS PROVIDED BY THE SU HFPC 19
     XBROUTINE FORCFN2 WITH NFORCE=*,I3)                                HFPC 19
2021  FORMAT(5X,*COEFFICIENT ARRAYS ARE TO BE GENERATED IN TAPE3*)      HFPC 19
2022  FORMAT(5X,*COEFFICIENT ARRAYS ARE SUPPLIED IN TAPE3*)             HFPC 20
2025  FORMAT(5X,*WRITING ON TAPE3 IS REQUESTED FOR REUSE*)              HFPC 20
3333  FORMAT(//////)                                                    HFPC 20
3535  FORMAT(//,5X,*LARGE CORE MEMORY   *,O6,* (OCTAL) *,3X,I6,* (DECIMA HFPC 20
     XL) WORDS USED*///)                                                HFPC 20
      END                                                               HFPC 20
```

APPENDIX E

COMPUTER PROGRAM FOR DETERMINING THE DYNAMIC STIFFNESS MATRIX FOR THE HALFPLANE

APPENDIX E: COMPUTER PROGRAM FOR DETERMINING THE DYNAMIC STIFFNESS MATRIX FOR THE HALFPLANE

E.1 IDENTIFICATION

IMPN - Impedance Matrix in Nodal Coordinates

E.2 DESCRIPTION

This FORTRAN package determines the frequency dependent dynamic stiffness matrices, associated with nodal degrees of freedom on the surface of a viscoelastic halfplane, from the compliance coefficients generated by the program HFPC described in Appendix D. These impedance matrices can then be utilized by the substructure method of analysis of earthquake response of structures including the effects of structure-soil interaction.

This code is written to input via TAPE1 the problem parameters and compliance coefficients directly as written by the program HFPC in records 1 to 3 on TAPE2. Using these input parameters the program automatically determines and allocates the necessary blank common storage space.

E.3 INPUT DATA

The following punched cards, in the sequence indicated, are required:

A. PROBLEM IDENTIFICATION (8A10)

Columns 1 - 80 HEAD: Identification header to be printed with output.

B. ELASTICITY MODULUS (F10.0)

Columns 1 - 10 E: Modulus of elasticity for which impedances are to be computed (see Note below)

The remaining data, including the flexibility influence coefficients, is input via tape unit TAPE1, directly as written on unit TAPE2 by the program HFPC (see section D.4, part D, for a description).

Note: The dynamic flexibility influence coefficients computed by HFPC and input on TAPE1 by IMPN, are determined for a unit elastic shear modulus G. This program scales the values of the impedance coefficients to be calculated to correspond to the value of E as input on punched cards above. This overrides the value of E = 2*(1+ENU) as used by HFPC.

E.4 OUTPUT DATA

The following data is printed by the program.

A. The problem heading and an image of the problem parameters as input on TAPE1 are given.

B. For each value of the nondimensional frequency, the heading, material properties, and the foundation dynamic stiffness matrix are printed. These stiffness matrices are complex valued and are given in nodal degrees of freedom, as shown in Fig. E.1. At each position in the printed stiffness array, the real part of that quantity appears above the imaginary part.

The output under A and B above is repeated for each of NPROB problems, where NPROB is the parameter described in section D.3 for the program HFPC.

For each of the NW nondimensional frequencies, the following three unformatted binary records are written on tape unit TAPE2:

Logical Record 1: HEAD

Logical Record 2: AØ, MCODE, E, ENU, DAMP, DAØ, NW, NJ, where
AØ is the nondimensional frequency corresponding to SFW in the next record.

Logical Record 3: SFW(I,J), the complex dynamic stiffness matrix where I,J = 1,2,3,...,2*NW index the nodal degrees of freedom.

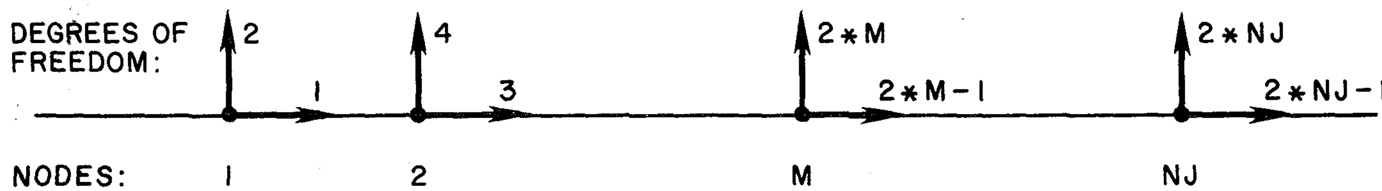


FIG. E.1: NODAL POINT DEGREES OF FREEDOM

This tape output is also repeated for each of the NPROB problems.

E.5 EXAMPLE

An example is given to illustrate the form of the punched card input and the printed output for the program IMPN. This is a continuation of the example given in section D.5 for the program HFPC. The impedances are to be generated for a modulus of elasticity E = 1.0, which will override the value of E = 2*(1+ENU) = 2(1+1/3) = 8/3 for which the compliances were calculated in section D.5.

The two input cards required are shown on page 105. The resultant output is shown on pages 105 and 106; it is given only for the non-dimensional frequency a_0 = DAØ = .05 (for part B described in section E.4 above). The output written on TAPE2 cannot be shown, but it could, for example, be punched on cards for subsequent use in dynamic analyses.

E.6 PROGRAM LISTING

The listing of the computer program IMPN is presented on pages 107 to 109.

The following computer program listing is available upon request from Professor A.K. Chopra, Structural Engineering and Structural Mechanics, Davis Hall, University of California, Berkeley, California.

SAMPLE INPUT FOR THE PROGRAM IMPN


```
A:     EXAMPLE PROBLEM FOR THE PROGRAM IMPN

B:               1.
```

SAMPLE OUTPUT FOR THE PROGRAM IMPN

Part A

```
EXAMPLE PROBLEM FOR THE PROGRAM IMPN                                                         PAGE =  1

        I N P U T    T A P E    S P E C I F I C A T I O N S

        TAPE1 CONTAINS NONDIMENSIONAL   (SHEAR MODULUS=1.)      FLEXIBILITY COEFFICIENTS
        TAPE1 HEADING                  EXAMPLE PROBLEM FOR THE PROGRAM HFPC
        NUMBER OF DIFFERENT DAMPINGS           1
        NUMBER OF BASE CONNECTION NODAL POINTS    5
        NUMBER OF DIFFERENT FREQUENCIES          32

LOCATION OF THE LAST WORD NEEDED IS  024346 OCTAL  =  10470 DECIMAL
```

SAMPLE OUTPUT FOR THE PROGRAM IMPN
Part B (for a_0 = 0.05 only)

EXAMPLE PROBLEM FOR THE PROGRAM IMPN

STIFFNESS MATRIX
NONDIMENSIONAL FREQUENCY= .500000E-01
DAMPING COEFFICIENT = .100000E+00
MODULUS OF ELASTICITY = .100000E+01   POISSONS RATIO = .333333E+00

ANALYSIS OF CONSTANT HYSTERETIC SOLID

	1	2	3	4	5	6	7	8
1	.4504102E+00 .5588132E-01	.8088895E-04 .1045243E-02	-.1066477E+00 .1526097E-02	.1103812E+00 .2124658E-01	-.2670444E+00 -.2287650E-01	-.5139293E-01 -.4043743E-02	.1542910E+00 .2623642E-01	-.7947304E-01 -.4264672E-02
2	.8088895E-04 .1045243E-02	.4822890E+00 .7372358E-01	-.1085598E+00 -.1945444E-01	-.1160990E+00 -.3875528E-03	.5394758E-01 .5558830E-02	-.2798433E+00 -.2975230E-01	.8035911E-01 .6078106E-02	.1697038E+00 .3808925E-01
3	-.1066477E+00 .1526097E-02	-.1085598E+00 -.1945444E-01	.4493228E+00 .5523492E-01	-.1956458E-03 -.4963889E-03	.5525852E-02 .3141169E-02	.1815095E+00 .1902927E-01	-.3961536E+00 -.2433124E-01	-.7204820E-02 -.6006883E-02
4	.1103812E+00 .2124658E-01	-.1160990E+00 -.3875528E-03	-.1956458E-03 -.4963889E-03	.4761162E+00 .7438764E-01	-.1828451E+00 -.2000076E-01	.5543843E-02 .3534143E-02	.7204820E-02 .6006883E-02	-.4169676E+00 -.3315180E-01
5	-.2670444E+00 -.2287650E-01	.5394758E-01 .5558830E-02	.5525852E-02 .3141169E-02	-.1828451E+00 -.2000076E-01	.5451406E+00 .5203533E-01	-.1998401E-14 .2997602E-14	.5525852E-02 .3141169E-02	.1828451E+00 .2000076E-01
6	-.5139293E-01 -.4043743E-02	-.2798433E+00 -.2975230E-01	.1815095E+00 .1902927E-01	.5543840E-02 .3534143E-02	-.1998401E-14 .2997602E-14	.5707742E+00 .6657288E-01	-.1815095E+00 -.1902927E-01	.3543840E-02 .3534143E-02
7	.1542910E+00 .2623642E-01	.8035911E-01 .6078106E-02	-.3961536E+00 -.2433124E-01	.7204820E-02 .6006883E-02	.5525852E-02 .3141169E-02	-.1815095E+00 -.1902927E-01	.4493228E+00 .5523492E-01	.1956458E-03 .4963889E-03
8	-.7947304E-01 -.4264672E-02	.1697038E+00 .3808925E-01	-.7204820E-02 -.6006883E-02	-.4169676E+00 -.3315180E-01	.1828451E+00 .2000076E-01	.5543840E-02 .3534143E-02	.1956458E-03 .4963889E-03	.4761162E+00 .7438764E-01
9	-.1457225E+00 -.6242310E-02	-.8222021E-01 -.1998041E-01	.1542910E+00 .2623642E-01	.7947304E-01 .4264672E-02	-.2670444E+00 -.2287650E-01	.5139293E-01 .4043743E-02	-.1066477E+00 .1526097E-02	-.1103812E+00 -.2124658E-01
10	.8222021E-01 .1998041E-01	-.1488409E+00 -.6269581E-02	-.8035911E-01 -.6078106E-02	.1697038E+00 .3808925E-01	-.5394758E-01 -.5558830E-02	-.2798433E+00 -.2975230E-01	.1085598E+00 .1945444E-01	-.1160990E+00 -.3875528E-03

	9	10
1	-.1457225E+00 -.6242310E-02	.8222021E-01 .1998041E-01
2	-.8222021E-01 -.1998041E-01	-.1488409E+00 -.6269581E-02
3	.1542910E+00 .2623642E-01	-.8035911E-01 -.6078106E-02
4	.7947304E-01 .4264672E-02	.1697038E+00 .3808925E-01
5	-.2670444E+00 -.2287650E-01	-.5394758E-01 -.5558830E-02
6	.5139293E-01 .4043743E-02	-.2798433E+00 -.2975230E-01
7	-.1066477E+00 .1526097E-02	.1085598E+00 .1945444E-01
8	-.1103812E+00 -.2124658E-01	-.1160990E+00 -.3875528E-03
9	.4504102E+00 .5588132E-01	-.8088895E-04 -.1045243E-02
10	-.8088895E-04 -.1045243E-02	.4822890E+00 .7372358E-01

```
      PROGRAM IMPN(TAPE1,TAPE2,INPUT,OUTPUT,TAPE5=INPUT,TAPE6=OUTPUT)   IMPN
      DIMENSION HIDEN(9)                                                IMPN
      COMMON A(1)                                                       IMPN
      COMMON/SPECS/NPROB,MCODE,E,ENU,DAMP,DAO,HEAD(8),IPG               IMPN
      READ(5,1000) HEAD                                                 IMPN
      READ(5,1001) E                                                    IMPN
      READ(1) HIDEN,NPROB,NJ,NW                                         IMPN
      NJ2=NJ+NJ                                                         IMPN
      NJSQ8=8*NJ*NJ                                                     IMPN
      N2=3+6*NW*NJ                                                      IMPN  1
      N3=N2+NJSQ8                                                       IMPN  1
      N4=N3+NJSQ8                                                       IMPN  1
      N5=N4+NJSQ8                                                       IMPN  1
      N6=N5+NJSQ8                                                       IMPN  1
      L=LOCF(A(N6+5))                                                   IMPN  1
      IPG=1                                                             IMPN  1
      WRITE(6,3000) HEAD,IPG                                            IMPN  1
      IPG=IPG+1                                                         IMPN  1
      WRITE(6,2000) HIDEN,NPROB,NJ,NW                                   IMPN  1
      WRITE(6,4000)L,L                                                  IMPN  2
      CALL CTRL (A(1),A(N2),A(N3),A(N4),A(N5),NW,NJ,NJ2)                IMPN  2
      STOP                                                              IMPN  2
 1000 FORMAT(8A10)                                                      IMPN  2
 1001 FORMAT(8F10.0)                                                    IMPN  2
 2000 FORMAT(///,T20,*I N P U T    T A P E    S P E C I F I C A T I O N IMPN  2
     XS* ///T20,*TAPE1 CONTAINS NONDIMENSIONAL    (SHEAR MODULUS=1.)    IMPN  2
     X FLEXIBILITY COEFFICIENTS*,/,T20,*TAPE1 HEADING*,T50,8A10,/,T20,*N IMPN  2
     XUMBER OF DIFFERENT DAMPINGS*,T50,I13,/,T20,*NUMBER OF BASE CONNECT IMPN  2
     XION NODAL POINTS*,T60,I3,/,T20,*NUMBER OF DIFFERENT FREQUENCIES*, IMPN  2
     XT55,I8)                                                           IMPN  3
 3000 FORMAT(1H6,10X,8A10,T120,*PAGE --*,I3)                            IMPN  3
 4000 FORMAT(///,5X,*LOCATION OF THE LAST WORD NEEDED I *,2X,O6,* OCTAL* IMPN  3
     X,2X,*=*,2X,I6,* DECIMAL*/)                                        IMPN  3
      END                                                               IMPN  3


      SUBROUTINE CTRL (F,A,B,C,D,NW,NJ,NJ2)                             IMPN  3
      COMMON/SPECS/NPROB,MCODE,E,ENU,DAMP,DAO,HEAD(8),IPG               IMPN  3
      COMPLEX F(NW,3,NJ),A(NJ2,NJ2),B(NJ2,NJ2),C(NJ2,NJ2),D(NJ2,NJ2)    IMPN  3
      NEL=NJ 1                                                          IMPN  3
      NEL2=NEL+NEL                                                      IMPN  3
      REWIND1                                                           IMPN  4
      DO 1 IPRB=1,NPROB                                                 IMPN  4
      READ(1)                                                           IMPN  4
      READ(1) MCODE,X,ENU,DAMP,DAO                                      IMPN  4
      READ (1) F                                                        IMPN  4
      CALL FORMK   (F,A,B,C,D,NW,NJ,NJ2,NEL,NEL2)                       IMPN  4
    1 CONTINUE                                                          IMPN  4
      RETURN                                                            IMPN  4
      END                                                               IMPN  4


      SUBROUTINE HFORM4(F,NW,INW,NJ,NJ2,NEL,NEL1,NEL2,H)                IMPN  4
      COMPLEX F(NW,3,NJ),H(NJ2,NEL2)                                    IMPN  5
      ISTART=-1                                                         IMPN  5
      DO 1 I=1,NEL                                                      IMPN  5
      ISTART=ISTART+2                                                   IMPN  5
      J=0                                                               IMPN  5
      ICOL=ISTART                                                       IMPN  5
      DO 1 IROW=ISTART,NJ2,2                                            IMPN  5
      J=J+1                                                             IMPN  5
      H (IROW,ICOL)=F(INW,1,J)                                          IMPN  5
      H (IROW+1,ICOL)=-F(INW,3,J)                                       IMPN  5
      H (IROW,ICOL+1)=F(INW,3,J)                                        IMPN  6
    1 H (IROW+1,ICOL+1)=F(INW,2,J)                                      IMPN  6
      ISTART= 1                                                         IMPN  6
      DO 2 I=1,NEL1                                                     IMPN  6
      ISTART=ISTART+2                                                   IMPN  6
      IROW=ISTART                                                       IMPN  6
```

```
      ISTART2=ISTART+2                                                  IMPN  6
      DO 2 ICOL=ISTART2,NEL2,2                                          IMPN  6
      H (IROW,ICOL)=H (ICOL+2,IROW)                                     IMPN  6
      H (IROW+1,ICOL)=H (ICOL+2,IROW+1)                                 IMPN  6
      H (IROW,ICOL+1)=H (ICOL+3,IROW)                                   IMPN  7
    2 H (IROW+1,ICOL+1)=H (ICOL+3,IROW+1)                               IMPN  7
      RETURN                                                            IMPN  7
      END                                                               IMPN  7


      SUBROUTINE FORMK ( F,A,B,C,D,NW,NJ,NJ2,NEL,NEL2)                  IMPN  7
      COMMON/SPECS/NPROB,MCODE,F,ENU,DAMP,DAO,HEAD(8),IPG               IMPN  7
      COMPLEX F(NW,3,NJ),            B(NJ2,NJ2),C(NEL2,NEL2),D(NEL2,NEL2) IMPN  7
     X,A(NJ2,NEL2)                                                      IMPN  7
      DATA RHO,NSD,NLM,NWL/1.,10,100,1000/                              IMPN  7
      GMUS=.125*E/(1.+ENU)                                              IMPN  7
      NJ4=NJ2+NJ2                                                       IMPN  8
      NEL4=NEL2+NEL2                                                    IMPN  8
      NEL1=NEL-1                                                        IMPN  8
      NI=NJ2-1                                                          IMPN  8
      NELO=NEL2+1                                                       IMPN  8
      AO=0.                                                             IMPN  8
      DO 10 INW=1,NW                                                    IMPN  8
      CALL HFORM4(F,NW,INW,NJ,NJ2,NEL,NEL1,NEL2,A)                      IMPN  8
      DO 1 I=1,NEL2                                                     IMPN  8
      DO 1 J=I,NEL2                                                     IMPN  8
    1 C(I,J)=.5*(A(I,J)+A(I+2,J))                                       IMPN  9
      DO 2 I=1,NEL2                                                     IMPN  9
      DO 3 J=1,NEL2                                                     IMPN  9
    3 D(I,J)=(0.,0.)                                                    IMPN  9
    2 D(I,I)=(1.,0.)                                                    IMPN  9
      CALL CSYMEQ (C,D,NEL2,NEL2)                                       IMPN  9
      B(1,1)=GMUS*D(1,1)                                                IMPN  9
      B(2,2)=GMUS*D(2,2)                                                IMPN  9
      B(2,1)=GMUS*D(2,1)                                                IMPN  9
      DO 4 I=3,NEL2                                                     IMPN  9
      DO 4 J=1,2                                                        IMPN 10
    4 B(I,J)=GMUS*(D(I-2,J)+D(I,J))                                     IMPN 10
      DO 5 I=3,NEL2                                                     IMPN 10
      DO 5 J=3,I                                                        IMPN 10
    5 B(I,J)=GMUS*(D(I-2,J-2)+D(I-2,J)+D(I,J-2)+D(I,J))                 IMPN 10
      DO 7 I=NELO,NJ2                                                   IMPN 10
      DO 7 J=NELO,I                                                     IMPN 10
    7 B(I,J)=GMUS*D(I-2,J-2)                                            IMPN 10
      DO 8 I=NELO,NJ2                                                   IMPN 10
      DO 8 J=1,2                                                        IMPN 10
    8 B(I,J)=GMUS*(D(I 2,J))                                            IMPN 11
      DO 9 I=NELO,NJ2                                                   IMPN 11
      DO 9 J=3,NEL2                                                     IMPN 11
    9 B(I,J)=GMUS*(D(I 2,J)+D(I 2,J 2))                                 IMPN 11
      DO 6 I=1,NI                                                       IMPN 11
      I1=I+1                                                            IMPN 11
      DO 6 J=I1,NJ2                                                     IMPN 11
    6 B(I,J)=B(J,I)                                                     IMPN 11
      AO=AO+DAO                                                         IMPN 11
      WRITE(6,3000) HEAD,IPG                                            IMPN 11
      IPG=IPG+1                                                         IMPN 12
      WRITE(6,3002) AO,DAMP,E,ENU                                       IMPN 12
      IF(MCODE.EQ.0) WRITE(6,3006)                                      IMPN 12
      IF(MCODE.NE.0) WRITE(6,3007)                                      IMPN 12
      CALL CMPRINT(B,NJ4,NJ2)                                           IMPN 12
      WRITE(2) HEAD                                                     IMPN 12
      WRITE(2) AO,MCODE,E,ENU,RHO,DAMP,DAO,NW,NJ,NSD,NJ,NLM,NWL         IMPN 12
      WRITE(2) B                                                        IMPN 12
   10 CONTINUE                                                          IMPN 12
      RETURN                                                            IMPN 12
 2001 FORMAT(5X,*MATRIX H IN FORMK*)                                    IMPN 13
 2002 FORMAT(5X,*MATRIX Q X H IN FORMK*)                                IMPN 13
 2003 FORMAT(5X,*MATRIX INVERSE OF Q X H IN FORMK*)                     IMPN 13
 2004 FORMAT(5X,*MATRIX Q(T) X F(=QHI) IN FORM K*)                      IMPN 13
 3000 FORMAT(1H1,10X,8A10,T120,*PAGE -*,I3)                             IMPN 13
 3002 FORMAT(/////5X,*STIFFNESS MATRIX*,/                               IMPN 13
```

```
     X,5X,*NONDIMENSIONAL FREQUENCY=*,E13.6,/                          IMPN 13
     X,5X,*DAMPING COEFFICIENT      =*,E13.6,/,5X,*MODULUS OF ELASTICITY IMPN 13
     X    =*,E13.6,10X,*POISSONS RATIO    =*,E13.6,//)                 IMPN 13
3006  FORMAT(5X,*ANALYSIS OF CONSTANT HYSTERETIC SOLID*///)            IMPN 13
3007  FORMAT(5X,*ANALYSIS FOR VOIGT SOLID*///)                         IMPN 14
      END                                                              IMPN 14


      SUBROUTINE CMATPR (A,NR,NC,ANAME)                                CMAT
      DIMENSION A(NR,NC)                                               CMAT
      NR2=NR/2                                                         CMAT
      NR1=NR-1                                                         CMAT
      WRITE(6,3002) ANAME,NR2,NC                                       CMAT
      DO 100 J=1,NC,8                                                  CMAT
      JH=J+7                                                           CMAT
      IF(JH-NC) 75,75,50                                               CMAT
50    JH=NC                                                            CMAT
75    WRITE(6,3000) (N,N=J,JH)                                         CMAT   1
      WRITE(6,2000)                                                    CMAT   1
      DO 100 I=1,NR1,2                                                 CMAT   1
      M=(I+1)/2                                                        CMAT   1
      WRITE(6,2001) (A(I,K),K=J,JH)                                    CMAT   1
      L=I+1                                                            CMAT   1
      WRITE(6,3001) M,(A(L,K),K=J,JH)                                  CMAT   1
100   WRITE(6,2000)                                                    CMAT   1
      RETURN                                                           CMAT   1
2000  FORMAT(1X,128(1H=))                                              CMAT   1
2001  FORMAT(8X,8E15.7)                                                CMAT   2
3000  FORMAT(///8X,8I15)                                               CMAT   2
3001  FORMAT(1X,I4,3X,8E15.7)                                          CMAT   2
3002  FORMAT(//,5X,20HNAME OF MATRIX IS   A10,5X,15HNUMBER OF ROWS=,I3, CMAT   2
     X5X, 18HNUMBER OF COLUMNS=,I3,//)                                 CMAT   2
      END                                                              CMAT   2


      SUBROUTINE CMULT (A,NRA,NCA,B,NRB,NCB,C)                         CMAT   2
      COMPLEX A,C,B                                                    CMAT   2
      DIMENSION A(NRA,NCA),B(NRB,NCB),C(NRA,NCB)                       CMAT   2
      IF(NCA.NE.NRB) GO TO 100                                         CMAT   2
      CALL CZERO(C,NRA,NCB)                                            CMAT   3
      DO 2 I=1,NRA                                                     CMAT   3
      DO 2 J=1,NCB                                                     CMAT   3
      DO 2 K=1,NCA                                                     CMAT   3
2     C(I,J)=C(I,J)+A(I,K)*B(K,J)                                      CMAT   3
      RETURN                                                           CMAT   3
100   WRITE(6,2000) NCA,NRB                                            CMAT   3
      STOP                                                             CMAT   3
2000  FORMAT(///,5X,*INCORRECT INPUT FOR MATRIX MULTIPLICATION*//,5X,  CMAT   3
     X*NUMBER OF COLUMN   OF THE   PRE-MULTIPLIER=*,I5,/,,5X,          CMAT   3
     X*NUMBER OF ROWS     OF THE POST MULTIPLIER=*,I5)                 CMAT   4
      END                                                              CMAT   4


      SUBROUTINE CMATINV (A,N,M,C)                                     CMAT   4
      COMPLEX A,D,C,TEMP                                               CMAT   4
      DIMENSION A(1),M(1),C(1)                                         CMAT   4
      DO 90 I=1,N                                                      CMAT   4
   90 M(I)=-I                                                          CMAT   4
      DO 140 I=1,N                                                     CMAT   4
      D=(0.,0.)                                                        CMAT   4
      DO 112 L=1,N                                                     CMAT   4
      IF (M(L)) 100,100,112                                            CMAT   5
  100 J=L                                                              CMAT   5
      DO 110 K=1,N                                                     CMAT   5
      IF (M(K)) 103,103,108                                            CMAT   5
103   CONTINUE                                                         CMAT   5
      IF(CABS(D)-CABS(A(J))) 105,105,108                               CMAT   5
  105 LD=L                                                             CMAT   5
      KD=K                                                             CMAT   5
      D=A(J)                                                           CMAT   5
  108 J=J+N                                                            CMAT   5
  110 CONTINUE                                                         CMAT   6
  112 CONTINUE                                                         CMAT   6
      IF(CABS(D)) 113,210,113                                          CMAT   6
113   CONTINUE                                                         CMAT   6
      ITEMP=-M(LD)                                                     CMAT   6
      M(LD)=M(KD)                                                      CMAT   6
      M(KD)=ITEMP                                                      CMAT   6
      L=LD                                                             CMAT   6
      K=KD                                                             CMAT   6
      DO 114 J=1,N                                                     CMAT   6
      C(J)=A(L)                                                        CMAT   7
      A(L)=A(K)                                                        CMAT   7
      A(K)=C(J)                                                        CMAT   7
      L=L+N                                                            CMAT   7
  114 K=K+N                                                            CMAT   7
      NR=(KD-1)*N+1                                                    CMAT   7
      NH=NR+N-1                                                        CMAT   7
      DO 115 K=NR,NH                                                   CMAT   7
  115 A(K)= A(K)/D                                                     CMAT   7
      L=1                                                              CMAT   7
      DO 135 J=1,N                                                     CMAT   8
      IF (J-KD) 130,125,130                                            CMAT   8
  125 L=L+N                                                            CMAT   8
      GO TO 135                                                        CMAT   8
  130 DO 134 K=NR,NH                                                   CMAT   8
      A(L)=A(L)+C(J)*A(K)                                              CMAT   8
  134 L=L+1                                                            CMAT   8
  135 CONTINUE                                                         CMAT   8
      C(KD)=1.0                                                        CMAT   8
      J=KD                                                             CMAT   8
      DO 140 K=1,N                                                     CMAT   9
      A(J)=C(K)/D                                                      CMAT   9
  140 J=J+N                                                            CMAT   9
      DO 200 I=1,N                                                     CMAT   9
      L=0                                                              CMAT   9
  150 L=L+1                                                            CMAT   9
      IF(M(L)-I) 150,160,150                                           CMAT   9
  160 K=(L-1)*N+1                                                      CMAT   9
      J=(I-1)*N+1                                                      CMAT   9
      M(L)=M(I)                                                        CMAT   9
      M(I)=I                                                           CMAT  10
      DO 200 LL=1,N                                                    CMAT  10
      TEMP=A(K)                                                        CMAT  10
      A(K)=A(J)                                                        CMAT  10
      A(J)=TEMP                                                        CMAT  10
      J=J+1                                                            CMAT  10
  200 K=K+1                                                            CMAT  10
      RETURN                                                           CMAT  10
  210 WRITE(6,1000)                                                    CMAT  10
      STOP                                                             CMAT  10
 1000 FORMAT(* SINGULAR MATRIX*)                                       CMAT  11
      END                                                              CMAT  11


      SUBROUTINE PART (K,KOO,KII,KIO,KOI,N,NO,NI)                      CMAT  11
      COMPLEX K(N,N),KOO(NO,NO),KII(NI,NI),KIO(NI,NO),KOI(NO,NI)       CMAT  11
      DO 1 II=1,NO                                                     CMAT  11
      DO 1 JJ=1,NO                                                     CMAT  11
1     KOO(II,JJ)=K(II,JJ)                                              CMAT  11
      DO 2 II=1,NI                                                     CMAT  11
      DO 2 JJ=1,NI                                                     CMAT  11
2     KII(II,JJ)=K(II+NO,JJ+NO)                                        CMAT  11
      DO 3 II=1,NI                                                     CMAT  12
      DO 3 JJ=1,NO                                                     CMAT  12
3     KIO(II,JJ)=K(II+NO,JJ)                                           CMAT  12
      DO 4 II=1,NO                                                     CMAT  12
      DO 4 JJ=1,NI                                                     CMAT  12
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      KOI(II,JJ)=KIO(JJ,II)                                             CMAT 12
      RETURN                                                            CMAT 12
      END                                                               CMAT 12


      SUBROUTINE CMULT1 (A,NROWA,NCOLA,B,NROWB,NCOLB,C)                 CMAT 12
      COMPLEX A(NROWA,NCOLA),C(NROWA,NCOLB)                             CMAT 12
      DIMENSION B(NROWB,NCOLB)                                          CMAT 13
      IF(NCOLA.NE.NROWB) GO TO 100                                      CMAT 13
      CALL CZERO (C,NROWA,NCOLB)                                        CMAT 13
      DO 2 I=1,NROWA                                                    CMAT 13
      DO 2 J=1,NCOLB                                                    CMAT 13
      DO 2 K=1,NCOLA                                                    CMAT 13
    2 C(I,J)=C(I,J)+A(I,K)*B(K,J)                                       CMAT 13
      RETURN                                                            CMAT 13
  100 WRITE(6,2000) NCOLA,NROWB                                         CMAT 13
      STOP                                                              CMAT 13
 2000 FORMAT(///,5X,*INCORRECT INPUT FOR MATRIX MULTIPLICATION*//,5X,   CMAT 14
     X*NUMBER OF COLUMN   OF THE   PRE-MULTIPLIER=*,I5,/,               CMAT 14
     X*NUMBER OF ROWS     OF THE POST MULTIPLIER=*,I5)                  CMAT 14
      END                                                               CMAT 14


      SUBROUTINE CMULT2(A,NROWA,NCOLA,B,NROWB,NCOLB,C)                  CMAT 14
      DIMENSION A(NROWA,NCOLA)                                          CMAT 14
      COMPLEX B(NROWB,NCOLB),C(NROWA,NCOLB)                             CMAT 14
      IF(NCOLA.NE.NROWB) GO TO 100                                      CMAT 14
      CALL CZERO (C,NROWA,NCOLB)                                        CMAT 14
      DO 2 I=1,NROWA                                                    CMAT 14
      DO 2 J=1,NCOLB                                                    CMAT 15
      DO 2 K=1,NCOLA                                                    CMAT 15
    2 C(I,J)=C(I,J)+A(I,K)*B(K,J)                                       CMAT 15
      RETURN                                                            CMAT 15
  100 WRITE(6,2000) NCOLA,NROWB                                         CMAT 15
      STOP                                                              CMAT 15
 2000 FORMAT(///,5X,*INCORRECT INPUT FOR MATRIX MULTIPLICATION*//,5X,   CMAT 15
     X*NUMBER OF COLUMN   OF THE   PRE-MULTIPLIER=*,I5,/,               CMAT 15
     X*NUMBER OF ROWS     OF THE POST MULTIPLIER=*,I5)                  CMAT 15
      END                                                               CMAT 15


      SUBROUTINE CINVRT (A,N,B)                                         CMAT 16
      COMPLEX A(N,N),B(N,N)                                             CMAT 16
      IF(N.EQ.1) B(1)=1./A(1)                                           CMAT 16
      IF(N.EQ.1) RETURN                                                 CMAT 16
      CALL CZERO (B,N,N)                                                CMAT 16
      DO 2 II=1,N                                                       CMAT 16
    2 B(II,II)=(1.,0.)                                                  CMAT 16
      CALL CSYMEQ (A,B,N,N)                                             CMAT 16
      RETURN                                                            CMAT 16
      END                                                               CMAT 16


      SUBROUTINE CSYMEQ (A,B,NN,LL)                                     CMAT 17
      COMPLEX A(NN,1),B(NN,1)                                           CMAT 17
      DO 475 N=1,NN                                                     CMAT 17
      N1=N+1                                                            CMAT 17
      DO 150 L=1,LL                                                     CMAT 17
  150 B(N,L)=B(N,L)/A(N,N)                                              CMAT 17
      IF(N-NN) 200,500,200                                              CMAT 17
  200 DO 450 J=N1,NN                                                    CMAT 17
      IF(CABS(A(N,J))) 250,450,250                                      CMAT 17
  250 A(N,J)=A(N,J)/A(N,N)                                              CMAT 17
      DO 300 I=J,NN                                                     CMAT 18
      A(I,J)=A(I,J)-A(I,N)*A(N,J)                                       CMAT 18
  300 A(J,I)=A(I,J)                                                     CMAT 18
      DO 400 L=1,LL                                                     CMAT 18
  400 B(J,L)=B(J,L)-A(J,N)*B(N,L)                                       CMAT 18
  450 CONTINUE                                                          CMAT 18
  475 CONTINUE                                                          CMAT 18
  500 N1=N                                                              CMAT 18
      N=N-1                                                             CMAT 18
      IF(N) 700,700,550                                                 CMAT 18
  550 DO 600 L=1,LL                                                     CMAT 19
      DO 600 J=N1,NN                                                    CMAT 19
  600 B(N,L)=B(N,L)-A(N,J)*B(J,L)                                       CMAT 19
      GO TO 500                                                         CMAT 19
  700 RETURN                                                            CMAT 19
      END                                                               CMAT 19


      SUBROUTINE CZERO (A,I,J)                                          CMAT 19
      COMPLEX A(I,J)                                                    CMAT 19
      DO 1 II=1,I                                                       CMAT 19
      DO 1 JJ=1,J                                                       CMAT 19
    1 A(II,JJ)=(0.,0.)                                                  CMAT 20
      RETURN                                                            CMAT 20
      END                                                               CMAT 20


      SUBROUTINE CMPRINT (A,NR,NC)                                      CMAT 20
      DIMENSION A(NR,NC)                                                CMAT 20
      DO 100 J=1,NC,8                                                   CMAT 20
      JH=J+7                                                            CMAT 20
      IF(JH-NC) 75,75,50                                                CMAT 20
   50 JH=NC                                                             CMAT 20
   75 WRITE(6,3000) (N,N=J,JH)                                          CMAT 20
      WRITE(6,2000)                                                     CMAT 21
      DO 100 I=1,NR,2                                                   CMAT 21
      M=(I+1)/2                                                         CMAT 21
      WRITE(6,2001) (A(I,K),K=J,JH)                                     CMAT 21
      L=I+1                                                             CMAT 21
      WRITE(6,3001) M, (A(L,K),K=J,JH)                                  CMAT 21
  100 WRITE(6,2000)                                                     CMAT 21
      RETURN                                                            CMAT 21
 2000 FORMAT(1X,128(1H=))                                               CMAT 21
 2001 FORMAT(8X,8E15.7)                                                 CMAT 21
 3000 FORMAT(///8X,8I15)                                                CMAT 22
 3001 FORMAT(1X,I4,3X,8E15.7)                                           CMAT 22
      END                                                               CMAT 22
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