รายการอ้างอิง

ภาษาไทย

ปณิธาน ลักคุณะประสิทธิ์. 2527. การวิเคราะห์โครงสร้าง. วิศวกรรมสถานแห่งประเทศไทยในพระบรมราชูปถัมภ์.

สมชาย ตั้งจิตเพิ่มความดี. 2531. การวิเคราะห์ไม่เชิงเส้นทางเรขาคณิตของโครงข้อแข็งระนาบด้วยไมโครคอมพิวเตอร์. วิทยานิพนธ์ตามหลักสูตรปริญญาวิศวกรรมศาสตรมหาบัณฑิต. ภาควิชาวิศวกรรมโยธา บัณฑิตวิทยาลัย จุฬาลงกรณ์มหาวิทยาลัย.

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ภาคผนวก ก

สติฟเนสเมตริกซ์เชิงเส้นและสติฟเนสเมตริกซ์เรขาคณิต

จากสมการ (3.7) ในบทที่ 3

$$u = [M]\{c\} \tag{3.7}$$

เมื่อ $$[M] = [M_1 \ M_2] \tag{ก.1}$$

$$M_1 = 1 - \frac{x}{L} \tag{ก.2}$$

$$M_2 = \frac{x}{L} \tag{ก.3}$$

และ $$M_{1,x} = -\frac{1}{L} \tag{ก.4}$$

$$M_{2,x} = \frac{1}{L} \tag{ก.5}$$

แทนค่าสมการ (ก.3) และ (ก.4) ลงในสมการ (3.16) จะได้

$$[K_o^{a}] = \frac{EA}{L}\begin{bmatrix} 1 & -1 \\ -1 & 1 \end{bmatrix} \tag{ก.6}$$

จากบทที่ 3 สมการ (3.9)

$$v = [N]\{q\} \tag{3.9}$$

เมื่อ $[N] = [\ N_1 \ N_2 \ N_3 \ N_4\ ]$

$$N_1 = 1 - 3\frac{x^2}{L^2} + 2\frac{x^3}{L^3} \qquad (ก.7)$$

$$N_2 = x - 2\frac{x^2}{L} + \frac{x^3}{L^2} \qquad (ก.8)$$

$$N_3 = 3\frac{x^2}{L^2} - 2\frac{x^3}{L^3} \qquad (ก.9)$$

$$N_4 = -\frac{x^2}{L} + \frac{x^3}{L^2} \qquad (ก.10)$$

จากสมการ (3.10) $\quad V_{,x} = [\ N_{,x}\ ]\{q\}$ (3.10)

เมื่อ $\quad [N_{,x}] = [\ N_{1,x} \quad N_{2,x} \quad N_{3,x} \quad N_{4,x}\ ]$

$$N_{1,x} = -6\frac{x}{L^2} + 6\frac{x^2}{L^3} \qquad (ก.11)$$

$$N_{2,x} = 1 - 4\frac{x}{L} + 3\frac{x^2}{L^2} \qquad (ก.12)$$

$$N_{3,x} = 6\frac{x}{L^2} - 6\frac{x^2}{L^3} \qquad (ก.13)$$

$$N_{4,x} = -2\frac{x}{L} + 3\frac{x^2}{L^2} \qquad (ก.14)$$

จากสมการ (3.11)

$$V_{,xx} = [\ N_{,xx}\ ]\{q\} \qquad (3.11)$$

เมื่อ $[N_{,xx}] = [\ N_{1,xx} \quad N_{2,xx} \quad N_{3,xx} \quad N_{4,xx}\ ]$

$$N_{1,xx} = -\frac{6}{L^2} + 12\frac{x}{L^3} \qquad (ก.15)$$

$$N_{2,xx} = -\frac{4}{L} + 6\frac{x}{L^2} \qquad (ก.16)$$

$$N_{3,xx} = \frac{6}{L^2} - 12\frac{x}{L^3} \qquad (ก.17)$$

$$N_{4,xx} = -\frac{2}{L} + 6\frac{x}{L^2} \qquad (ก.18)$$

จากสมการ (3.17)

$$[K_o^b] = \int_L EI[N,_{xx}]^T[N,_{xx}]dx \qquad (3.17)$$

แทนค่าสมการ (ก.15) ถึง (ก.18) ลงใน (3.17) จะได้

$$[K_o^b] = \frac{EI}{L^3}\begin{bmatrix} 12 & 6L & -12 & 6L \\ & 4L^2 & -6L & 2L^2 \\ & & 12 & -6L \\ \text{สมมาตร} & & & 4L^2 \end{bmatrix} \qquad (ก.19)$$

และจากสมการ

$$[K_G^b] = \int_L P[N,_x]^T[N,_x]dx \qquad (3.19)$$

แทนค่าสมการ (ก.11) ถึง (ก.14) ลงใน (3.19) จะได้

$$[K_G^b] = \frac{P}{30L}\begin{bmatrix} 36 & 3L & -36 & 3L \\ & 4L^2 & -3L & -L^2 \\ & & 36 & -3L \\ \text{สมมาตร} & & & 4L^2 \end{bmatrix} \qquad (ก.20)$$

ภาคผนวก ข.

รายละเอียด (Source Code)ของโปรแกรม CU-NTABS

```
$LARGE
C***$NOFLOATCALLS
C      PROGRAM  CU-NTABS(INPUT,OUTPUT,TAPE5=INPUT,TAPE6=OUTPUT,TAPE1,
C     1                 TAPE2,TAPE3,TAPE11,TAPE12,TAPE13,TAPE15,TAPE16)
C
C      PROGRAM CU-NTABS :
C      THIS PROGRAM IS PART OF FULFILLMENT OF MASTER DEGREE THESIS,
C      'A PROGRAM FOR GEOMETRIC NONLINEAR ANALYSIS OF FRAME-SHEAR WALL
C      BUILDINGS',GRADUATE SCHOOL,CHULALONGKORN UNIVERSITY 1995.
C
C      THESIS ADVISOR : PROF.DR.PANITAN LUKKUNAPRASIT
C      DEVELOPED BY   : MR.VICROM PANICHACARN
C
C                       MAY 1995
C
C      PROGRAM SUPER-ETABS ... AN ENHANCED VERSION OF THE ETABS PROGRAM
C
C      DEVELOPED BY ... B. F. MAISON AND C. F. NEUSS
C                       J.G. BOUWKAMP, INC.
C                       BERKELEY, CALIFORNIA
C
C                       JANUARY 1983
C
C      PROGRAM ETABS ... A GENERAL PROGRAM FOR THE STATIC AND DYNAMIC
C                        ANALYSIS OF FRAME AND SHEAR WALL THREE-
C                        DIMENSIONAL BUILDINGS AND SYSTEMS
C
C      DEVELOPED BY ... E. L. WILSON, H. H. DOVEY AND J. P. HOLLINGS
C                       DEPARTMENT OF CIVIL ENGINEERING
C                       UNIVERSITY OF CALIFORNIA, BERKELEY
C
C                       SEPTEMBER 1974, REVISED MARCH 1979
C
C      MICRO
C      CONVERSION BY .. B. F. MAISON AND G. A. RODRIGUEZ
C
C                       FEBRUARY 1985
C
C      CORRECTIONS TO ETAB1.FOR (MICRO VERSION) .. JANUARY 1987 .. BFM
C      MODIFIED TO GENERATE DYNAMIC PROPERTIES FOR SLAM .. JUNE 1988
C      MODIFIED TO CREATE RESTART TAPE FOR SLAM-2 .. APRIL 1990
C     ****************************************************************
C
C     NO RESPONSIBILITY IS ASSUMED BY THE AUTHORS OR BY CHULALONGKORN
C     UNIVERSITY FOR ANY ERRORS, MISTAKES, OR MISREPRESENTATIONS
C     THAT MAY OCCUR FROM THE USE OF THIS COMPUTER PROGRAM.  ALL
C     SOFTWARE PROVIDED ARE IN "AS IS" CONDITION.  NO WARRANTIES OF ANY
C     KIND, WHETHER STATUTORY, WRITTEN, ORAL, EXPRESSED, OR IMPLIED
C     (INCLUDING WARRANTIES OF FITNESS AND MERCHANTABILITY) SHALL APPLY.
C
C     IF THIS PROGRAM HAS GIVEN YOU NEW ANALYSIS CAPABILITY RESULTING
C     IN INDIRECT PROFITS, YOU MAY WISH TO SUPPORT FURTHER WORK IN THIS
C     AREA BY GIVING AN UNRESTRICTED GRANT TO THE AUTHORS UNIVERSITY.
C
C     ****************************************************************
C
      IMPLICIT REAL*8 (A-H)
      IMPLICIT REAL*8 (O-Z)
      COMMON/GEN/ NST,NOF,NTF,NLD,NAT,NFQ,NSD,BHED(9),FHED(7),NSS
     1            ,RLAB(3),I6,I3,T(8)
      COMMON/JUNK/IFIL(3),MM,MN,JFIL(65)
      COMMON/BUNK/AFIL(260)
      COMMON/STIF/ STF(336)
      COMMON /DYN/ NTIME,DT,NPC,DAMP
      COMMON /CNTR/ A(26000)
      DIMENSION KODE(3)
      CHARACTER*14 FLINP,FLOUT
      CHARACTER*4 RLAB,BHED,FHED
C
      RLAB(1)=' X '
      RLAB(2)=' Y '
```

```
      RLAB(3)='ROTN'
C
      MTOT=26000
C
C      WRITE(*,4999)
C      WRITE(*,5000)
C      WRITE(*,5001)
C      WRITE(*,5002)
C      WRITE(*,5003)
C      WRITE(*,5004)
C      WRITE(*,5005)
      WRITE(*,*)'-------------------------'
      WRITE(*,*)'     PROGRAM  CU-NTABS'
      WRITE(*,*)'-------------------------'
      WRITE(*,333)
 333  FORMAT( '   * ENTER INPUT FILE *   ')
      READ(*,334) FLINP
 334  FORMAT(A)
      WRITE(*,335)
 335  FORMAT( '   * ENTER OUTPUT FILE *   ')
      READ(*,336) FLOUT
 336  FORMAT(A)
C
       OPEN(1, FILE='TAPE1' ,STATUS='NEW',ACCESS='SEQUENTIAL',
     *FORM='UNFORMATTED')
       OPEN(2, FILE='TAPE2' ,STATUS='NEW',ACCESS='SEQUENTIAL',
     *FORM='UNFORMATTED')
       OPEN(3, FILE='TAPE3' ,STATUS='NEW',ACCESS='SEQUENTIAL',
     *FORM='UNFORMATTED')
       OPEN(5, FILE=FLINP)
       OPEN(6, FILE=FLOUT,STATUS='NEW')
       OPEN(11, FILE='TAPE11' ,STATUS='NEW',ACCESS='SEQUENTIAL',
     *FORM='UNFORMATTED')
       OPEN(12, FILE='TAPE12' ,STATUS='NEW',ACCESS='SEQUENTIAL',
     *FORM='UNFORMATTED')
       OPEN(13, FILE='TAPE13' ,STATUS='NEW',ACCESS='SEQUENTIAL',
     *FORM='UNFORMATTED')
       OPEN(15, FILE='TAPE15' ,STATUS='NEW',ACCESS='DIRECT',
     *FORM='UNFORMATTED',RECL=20)
       OPEN(16, FILE='TAPE16' ,STATUS='NEW')
C
C
C      WRITE(6,2999)
C      WRITE(6,3000)
C      WRITE(6,3001)
C      WRITE(6,3002)
C      WRITE(6,3003)
C      WRITE(6,3004)
C      WRITE(6,3005)
      WRITE (6,*) 'PROGRAM  CU-NTABS'
      WRITE (6,6001) FLINP
      WRITE (6,6002) FLOUT
 6001 FORMAT (T2,14HINPUT  FILE : ,T17,A14)
 6002 FORMAT (T2,14HOUTPUT FILE : ,T17,A14)
      ILP = 1
      TDIS = 0.0
      TTIME = 0.0
C
C     READ AND PRINT OF GENERAL INFORMATION
C
  100 READ(5,1000) NST,NDF,NTF,NLD,NAT,NFQ,NSD,KODE,ICHEK,ITYPE,
     1              IMAXL,TANORM,( BHED(I),I=1,4 )
      GRAV = 0.0
      IF( ICHEK.NE.0 ) MTOT = 300000
      IF(ILP .EQ. 1) THEN
        NPT = 6
      ELSE
        NPT = 16
      ENDIF
      IF(NST.GT.0) GO TO 40
C .. ADDED BY BFM .. JANUARY 1987
```

```
      N6=N5+NS*NB*3
      N7=N6+NS*NB*3
      N8=N7+NS*NC*2
      N9=N8+3*NPAN
C
C     COMPUTE STIFFNESS FOR REDUCED STORAGE
C
      CALL STIFF(NA,S,R,NN,NS)
C
      N10=N9+NA
      N11=N10
      N12=N11+NFEF
      N13=N12+5*NPAN
      N14=N13+3*NTRU
      N15 = N14 + 3*NTRU
      N16=N15+2*NC
      IF(N16.GT.MTOT) CALL MEMORY (N16-MTOT)
      IF( ICHEK.NE.0 ) WRITE(NPT,4000) N16
      CALL FORM(A(N1),A(N2),A(N3),A(N4),A(N5),A(N6),A(N7),A(N8),A(N9),
     1 A(N10),       NST,NB,NC,NCP,NBP,NS,NFEF,NPAN,A(N11),A(N12),NN,I
     2 ,A(N13),A(N14),NTRU,A(N15),KODE(3),ICHEK,NPT )
      CALL SECOND (TTT)
      TTT=TTT-TT
      WRITE (NPT,2003) I,TTT
  200 CONTINUE
      CALL SECOND (T(2))
C
C     SOLVE STATIC LOAD CASES
C
      N3=N2+NSS*NSS
      N4=N3+5*NSS
      N5=N4+NFS*NFS
      N6=N5+3*NFS
      N7=N6+NST*NTF*2
      N8=N7+5*NTF
      N9=N8+4*NTF
      N10=N9
      IF( DABS(GRAV).GT.1.0D-10 )N10=N9+NSS*2
      IF(N10.GT.MTOT)CALL MEMORY(N10-MTOT)
      IF( ICHEK.NE.0 ) WRITE(NPT,4001) N10
      CALL  LAT (A(1),A(N1),A(N2),A(N3),A(N4),A(N5),A(N6),A(N7),NSS,NFS,
     1 NTF,A(N8),NST,GRAV,ICHEK,A(N10),NPT,ITYPE)
      CALL SECOND (T(3))
C
C     MODE SHAPES AND FREQUENCIES AND SPECTRUM RESPONSE
  210 CALL SECOND( T(3) )
      M1 = N1 + 8*NST
      IF(NAT.LT.0)M1=N1+14*NST
      M2 = M1 + NFQ*NFQ
      N2 = M2 + NFQ*NFQ
      IF( (NAT.NE.3) .AND. (NAT.NE.6) .AND. (NAT.NE.-6) .AND.
     1     (NAT.NE.7) ) N2 = M1
      N3=N2+NSS*NSS
      N4=N3+NSS
      N5=N4+NSS
      N6=N5+NSS
      N7=N6+NSS*NSS
      N8 = N7 + NSS*NFQ
      IF( DABS(GRAV).LT.1.0D-10 ) N8 = N7
      N9 = N2 + ( NFQ + 5 )*NSS
      N10 = N6 + 4*NSS
      N8 = MAX0( N8,N9,N10 )
      IF( N8.GT.MTOT ) CALL MEMORY( N8 - MTOT )
      IF( ICHEK.EQ.0 ) GO TO 212
      WRITE(NPT,4002) N8
      NAT = IABS( NAT )
      GO TO 214
  212 NMD = 0
      IF( NAT.GT.9 ) CALL SLAM( A(1),A(N1),A(N2),A(N3),A(N4),A(N5),
     1                          A(N6),NSS,NST )
      CALL EARTH(A(1),A(N1),A(N2),A(N3),A(N4),A(N5),A(N6),A(N6),A(N7),
```

```
      CLOSE (1,STATUS='DELETE')
      CLOSE (2,STATUS='DELETE')
      CLOSE (3,STATUS='DELETE')
      CLOSE (11,STATUS='DELETE')
      CLOSE (12,STATUS='DELETE')
      CLOSE (13,STATUS='DELETE')
      CLOSE (15,STATUS='DELETE')
      CLOSE (16,STATUS='DELETE')
      STOP
C
   40 CALL SECOND (T(1))
      I3=3
      I6=0
      IF(NSD.EQ.0) GO TO 50
      I3=1
      I6=NSD-1
   50 NSS=NST*I3
      NFS=NST*3
      IF(NFQ.GT.NSS) NFQ=NSS
      IF(NAT.EQ.0) NFQ=0
C     WRITE(6,*) ')))))))))))))))))))))))))))))))))))))))))))))))'
C     WRITE(6,*) 'LOOP No. ',ILP
C     WRITE(6,*) ')))))))))))))))))))))))))))))))))))))))))))))))'
      WRITE(NPT,2000) (BHED(I),I=1,6),NST,NOF,NTF,NLD,NAT
      WRITE(NPT,1998)
      WRITE (NPT,1999) NFQ,NSD,KODE,ICHEK,ITYPE,IMAXL,TANORM
      REWIND 2
      REWIND 3
C
C     READ AND PRINT OF STORY INFORMATION
C
      N1 = 1+NST
C .. CORRECTED BY BFM .. JANUARY 1987
C     N2 = 1 + 14*NST
      N2 = N1+14*NST
      N3 = N2+2*NST
      N4 = N3+2*NST
      N5 = N4+NST
      I = 3*NST
      CALL INPUT (A(1),A(N1),A(N2),A(N3),A(N4),A(N5),NST,I,RLAB,KODE,
     1            NPT)
      CALL SECOND( T(2) )
      IF( NAT.LT.0 ) GO TO 210
C
C     READ AND PRINT OF FRAME PROPERTIES AND FORM LATERAL STIFFNESSES
C
      DO 200 I=1,NOF
      CALL SECOND (TT)
      READ  (5,1001) M,NS,NC,NB ,NCP,NBP,NFEF,NPAN,NTRU,FHED
      WRITE (NPT,2001) FHED,M,NS,NC,NB,NCP,NBP,NFEF,NPAN,NTRU
C
      IF (ILP .NE. 1) GOTO 113
      VVP = 0.0
      DO 111 NV = 1,NB
        DO 111 MV = 1,NC
          NREC = NC*(NV-1)+MV
  111     WRITE (15,REC = NREC) VVP
      DO 112 LV = 1,NPAN
        NREC = NB*NC+LV
  112 WRITE (15,REC = NREC) VVP
C
  113 NA=0
      MM=3*NC
      NCP=NCP+1
      NBP=NBP+1
      NN=6*NC+3*NB+3
      N1=1+NST
      N2=N1+14*NST
      N3 = N2 + 14*NCP
      N4 = N3 + 11*NBP
      N5=N4+7*NFEF
```

```
     1         NSS,NST,NMD,A(N8),A(M1),A(M2),NFQ,GRAV )
C---- OPT 8 CALCS DONE NOW SAME AS NAT = 3
  214 IF( NAT.EQ.7 ) NAT = 3
      IF(ICHEK.EQ.1)NTIME=0
      IF(ICHEK.EQ.1)NPC=0
C
C     COMPUTE DYNAMIC RESPONSE
C
      IF( (NAT.NE.4) .AND. (NAT.NE.8) .AND. (NAT.NE.9 ) ) GO TO 250
      MLD = 5 + NTIME
      N3 = N2 + MLD*NSS
      N4 = N3 + NTIME*NSS
      IF( NAT.EQ.4 ) N4 = N3
      N5 = N4 + 2*IABS( NPC )
      N6 = N5 + NTIME
      N7 = N6 + NSS
      L1 = N7 + NSS
      L2 = N4 + 4*NSS
      L3 = N4 + NSS*NSS
      IF( DABS(GRAV).LT.1.0D-10 ) L3 = 1
      N8 = MAX0( L1,L2,L3 )
      IF( NAT.EQ.4 ) N8 = N7
      IF( N8.GT.MTOT ) CALL MEMORY( N8 - MTOT )
      IF( ICHEK.EQ.0 ) GO TO 220
      N9=NSS+1
      IF(NAT.EQ.8.OR.NAT.EQ.9)N9=N9+NSS
      WRITE(NPT,4003)N8,N9
      GO TO 250
  220 CALL DYNA(A(1),A(N1),A(N2),A(N3),A(N4),A(N5),A(N6),A(N7),A(N4),
     1 A(N4),NSS,NST,GRAV )
  250 CALL SECOND (T(4))
      IF( (NAT.EQ.6) .OR. (NAT.EQ.8) ) GO TO 300
C---- OPT 8 CALCS DONE NOW SAME AS NAT = 4
      IF( NAT.EQ.9 ) NAT = 4
C
C     COMPUTE FRAME DISPLACEMENTS
C
      IF(NAT.LE.2) NFQ=0
      IF (NAT.EQ.1) GO TO 300
      MLD=5+NFQ
      IF(NAT.EQ.4)MLD=5+NTIME
      N3=N2+MLD*NSS
      N4=N3+NST*NTF*2
      N5=N4+NFS*MLD
      N6=N5+5*NTF
      N7=N6+NTF*4
      IF(N7.GT.MTOT) CALL MEMORY(N7-MTOT)
      IF( ICHEK.EQ.0 ) GO TO 290
      IF( NAT.NE.4 ) WRITE(NPT,4004) N7
      N8 = NSS + NTF
      IF( NAT.EQ.4 ) WRITE(NPT,4005) N7,N8
      GO TO 300
  290 CONTINUE
      CALL DISP (A(N1),A(N2),A(N3),A(N4),A(N5),NSS,NTF,MLD,NST,NFS,A(N6)
     1)
  300 CALL SECOND (T(5))
C
C     CALCULATE AND PRINT DISPLACEMENTS AND STRESSES
C
      IF (NAT.EQ.1) GO TO 400
      IF( (NAT.EQ.6) .OR. (NAT.EQ.8) ) GO TO 400
      CALL FRAME( MTOT,NMD,NFS,KODE(3),ICHEK,NPT,TANORM,TNORM,TDIS
     1              ,ILP,ITYPE )
  400 CALL SECOND (T(6))
      TT=T(6)-T(1)
      DO 500 I=1,5
  500 T(I)=T(I+1)-T(I)
      T(6)=TT
C     WRITE (6,2002) T
      TTAME = T(6)
      TTIME = TTIME+TTAME
```

```
      IF ( ITYPE .EQ. 0 ) GOTO 98
      IF ( ILP .EQ. IMAXL ) GOTO 101
      IF ( TNORM .LE. TANORM ) GOTO 102
      ILP = ILP + 1
      REWIND 5
      GOTO 99
  101 WRITE (6,1002) ILP
      GOTO 98
  102 WRITE (6,1003) ILP
   98 WRITE (6,1004) TTIME
   99 GO TO 100
C .
 1000 FORMAT( 7I5,1X,5I1,I4,F10.0,4A4 )
 1002 FORMAT( 2(/),T5,'DIVERGE UNTIL ITERATION NO. ',I4 )
 1003 FORMAT( 2(/),T5,'CONVERGE IN ITERATION NO. ',I4 )
 1004 FORMAT( 1(/),T5,'TOTAL TIME',F7.2,' SEC.' )
 1001 FORMAT(9I5,7A4)
 2000 FORMAT( /,6A4,/,
     126H TOTAL NUMBER OF STORIES--,I4/
     126H NUMBER OF DIFF. FRAMES---,I4/
     126H TOTAL NUMBER OF FRAMES---,I4/
     126H NUMBER OF LOAD CONDITIONS,I4/
     126H TYPE OF ANALYSIS---------,I4/
     1/40H   EQ.0-STATIC LOADS ONLY                    ,/
     1 40H   EQ.1-MODE SHAPES AND FREQUENCIES ONLY,/
     1 40H   EQ.2-STATIC AND MODE SHAPE ANALYSES   ,/
     1 41H   EQ.3-TYPE 2 AND RESPONSE SPECTRUM ANAL    ,/
     1 80H   EQ.4-TYPE 2 AND TIME HISTORY ANAL (INDIVIDUAL MEMBER RESPON
     1SE ENVELOPES ONLY)  /
     1 44H   EQ.5-THIS OPTION IS NOT AVAILABLE FOR USE    ,/
     2 56H   EQ.6-RESPONSE SPECTRUM ANAL (GROSS BUILDING RESPONSE) ,/
     2 29H   EQ.7-TYPE 3 AND 6 ANALYSES ,/
     1 87H   EQ.8-TIME HISTORY ANAL (GROSS BUILDING RESPONSE/ENVELOPES O
     1R STEP-BY-STEP RESPONSE)      ,/
     2 29H   EQ.9-TYPE 4 AND 8 ANALYSES ,/,21H   EQ.10-SLAM RESTART  )
 1998 FORMAT(  23H   EQ.11-SLAM-2 RESTART,/
     2 76H   EQ.-1,-6,-8 SAME AS 1,6,8 ABOVE EXCEPT APPROXIMATE PERIODS
     2AND MODES USED       ,/)
 1999 FORMAT (26H NUMBER OF FREQUENCIES----,I4,/
     1 26H STORY TRANSLATION CODE--- ,I4,/
     2 26H LAT FORCE GENERATION CODE ,2I2,/
     2 26H STRESS CHECK KEY--------- ,I4,/,
     2 26H DATA CHECK KEY----------- ,I4,/,
     2 26H TYPE OF SOLUTION--------- ,I4,/,
     2 26H MAXIMUM NO. OF CYCLES---- ,I4,/,
     2 40H CONVERGENCE TOLERENCE OF EQUILIBRIUM     ,F10.6)
 2001 FORMAT (/,1H ,7A4,/
     127H FRAME ID NUMBER----------- ,I4,/
     127H NUMBER OF STORY LEVELS---- ,I4,/
     127H NUMBER OF COLUMN LINES---- ,I4,/
     127H NUMBER OF BAYS------------ ,I4,/
     127H NUMBER OF DIFF. COL. PROP- ,I4,/
     127H NUMBER OF DIFF. BEAM PROP- ,I4,/
     127H NUMBER OF DIFF. FEF------- ,I4,/
     127H NUMBER OF PANEL ELEMENTS-- ,I4,/
     127H NUMBER OF BRACING ELEMENTS ,I4/)
 2002 FORMAT (///19H TIME LOG (MINUTES)  ,//
     1  41H FORM FRAME STIFFNESSES.................. = ,F7.2/
     2  41H SOLVE STATIC LOAD CASES................. = ,F7.2/
     3  41H MODE SHAPES AND FREQUENCIES............ = ,F7.2/
     4  41H COMPUTE FRAME DISPLACEMENTS............ = ,F7.2/
     5  41H COMPUTE AND PRINT STRESSES AND DISPLS. = ,F7.2//
     6  41H TOTAL TIME............................. = ,F7.2)
 2003 FORMAT (/,14H0...FRAME TYPE I3,4H .... ,/
     1  4X,33HTIME REQUIRED TO FORM STIFFNESS = ,F6.2)
 2999 FORMAT( 1H ,18( / ) )
 3000 FORMAT(   31X,5(1HS),2X,1HS,3X,1HS,2X,4(1HS),3X,5(1HS),2X,4(1HS),
     1    9X,5(1HS),2X,5(1HS),2X,4(1HS),3X,4(1HS),3X,5(1HS) )
 3001 FORMAT(     30X,1HS,6X,1HS,3X,1HS,2X,1HS,3X,1HS,2X,1HS,6X,1HS,3X,
     1            1HS,8X,1HS,8X,1HS,4X,1HS,3X,1HS,2X,1HS,3X,1HS,2X,1HS )
 3002 FORMAT(   28X,5(1HS),2X,1HS,3X,1HS,2X,5(1HS),2X,3(1HS),4X,5(1HS),
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     1     3X,2(1HS),3X,3(1HS),6X,1HS,4X,5(1HS),2X,5(1HS),2X,5(1HS) )
 3003 FORMAT(    32X,1HS,2X,1HS,3X,1HS,2X,1HS,6X,1HS,6X,1HS,3X,1HS,8X,
     1     1HS,8X,1HS,4X,1HS,3X,1HS,2X,1HS,3X,1HS,6X,1HS )
 3004 FORMAT(    27X,5(1HS),2X,5(1HS),2X,1HS,6X,5(1HS),2X,1HS,4X,1HS,7X,
     1     5(1HS),4X,1HS,4X,1HS,3X,1HS,2X,5(1HS),2X,5(1HS) )
 3005 FORMAT( //,59X, 13HSUPER - ETABS ,//,
     *              46X, 40HAN ENHANCED VERSION OF THE ETABS PROGRAM,//,
     1 60X, 12HDEVELOPED BY,//,  52X, 28HS. F. MAISON AND C. F. NEUSS,/,
     2 51X, 31HJG BOUWKAMP, INC., BERKELEY, CA,/, 60X,13HJANUARY 1983 ,
     3 ///,  47X,37HPROGRAM ETABS ORIGINALLY DEVELOPED BY,//,44X,
     4 44HE. L. WILSON, H. H. DOVEY AND J. P. HOLLINGS,/,
     5 47X, 38HUNIVERSITY OF CALIFORNIA, BERKELEY, CA,/,49X,
     6 34HSEPTEMBER 1974, REVISED MARCH 1979 ,
     7 3(/),56X,19HMICRO CONVERSION BY ,
     8   / ,49X,32HB. F. MAISON AND G. A. RODRIGUEZ,
     9   / ,58X,13HFEBRUARY 1985 ,
     A   / ,54X,22HCORRECTED JANUARY 1987 )
 4000 FORMAT( /,10X,52H * ROUTINE FORM ( FRAME STIFFNESS ) REQUIRES MTOT
     1 = ,I6,/ )
 4001 FORMAT( /,10X, 65H * ROUTINE LAT ( SOLUTION OF STATIC LOAD CASES )
     1 REQUIRES MTOT = ,I6,/ )
 4002 FORMAT( /,10X,66H * ROUTINE EARTH ( FREQ, MODE SHAPES, RESP SPEC )
     1 REQUIRES MTOT = ,I6,/ )
 4003 FORMAT( /      45H * ROUTINE DYN ( TIME HIST ) REQUIRES MTOT = ,I6,
     1 3H  + ,I6,31H  X  (NO.TIME STEPS TO BE USED)    ,
     1 39H  +  2  X  (NO.GR.ACCELERATION VALUES)     )
 4004 FORMAT( /,10X,47H * ROUTINE DISP ( FRAME DISP ) REQUIRES MTOT =
     1          ,I6,/ )
 4005 FORMAT( /,47H * ROUTINE DISP ( FRAME DISP ) REQUIRES MTOT = ,I6,
     1 3H  + ,I6,31H  X  (NO.TIME STEPS TO BE USED) )
 4999 FORMAT( 2(/),34X,11H WELCOME TO ,2( / ) )
 5000 FORMAT(     5X,5(1HS),2X,1HS,3X,1HS,2X,4(1HS),3X,5(1HS),2X,4(1HS),
     1     9X,5(1HS),2X,5(1HS),2X,4(1HS),3X,4(1HS),3X,5(1HS) )
 5001 FORMAT(      4X,1HS,6X,1HS,3X,1HS,2X,1HS,3X,1HS,2X,1HS,6X,1HS,3X,
     1             1HS,8X,1HS,8X,1HS,4X,1HS,3X,1HS,2X,1HS,3X,1HS,2X,1HS )
 5002 FORMAT(     3X,5(1HS),2X,1HS,3X,1HS,2X,5(1HS),2X,3(1HS),4X,5(1HS),
     1     3X,2(1HS),3X,3(1HS),6X,1HS,4X,5(1HS),2X,5(1HS),2X,5(1HS) )
 5003 FORMAT(     6X,1HS,2X,1HS,3X,1HS,2X,1HS,6X,1HS,6X,1HS,3X,1HS,8X,
     1     1HS,8X,1HS,4X,1HS,3X,1HS,2X,1HS,3X,1HS,6X,1HS )
 5004 FORMAT(     1X,5(1HS),2X,5(1HS),2X,1HS,6X,5(1HS),2X,1HS,4X,1HS,7X,
     1     5(1HS),4X,1HS,4X,1HS,3X,1HS,2X,5(1HS),2X,5(1HS) )
 5005 FORMAT( //,30X,21H MICRO CONVERSION BY ,
     1 / ,22X,37H B. F. MAISON  AND  G. A. RODRIGUEZ  ,
     2 / ,25X,24H          FEBRUARY 1985  ,3(/) )
      END
      SUBROUTINE INPUT(SN,SD,PA,PB,HH,F,NST,NN,RLAB,KODE,NPT )
C
      IMPLICIT REAL*8 (A-H)
      IMPLICIT REAL*8 (O-Z)
      DIMENSION SD(NST,14),PA(NST,2),PB(NST,2),SN(NST)
      DIMENSION D(7),AB(2),HH(NST),F(NN,2),KODE(3)
c     CHARACTER*4 SN
      Integer*4 sn, rlab
      CHARACTER*1 AB
      DATA AB /'A','B'/
C
C     READ AND PRINT STORY DATA
C
      WRITE (NPT,3000)
      DO 200 N=1,NST
      LN=NST+1-N
      READ (5,1000) SN(N),(SD(N,I),I=2,10),PA(N,1),PA(N,2),SD(N,12),
     1              SD(N,13),PB(N,1),PB(N,2)
  200 WRITE (NPT,2000) LN,SN(N),(SD(N,I),I=2,8)
C
C     PRINT CUMULATIVE STORY QUANTITIES
C
      HT=0.
      DO 201 N=1,NST
  201 HT=HT+SD(N,2)
      WRITE(NPT,3002)
```

```
      R1=HT
      R2=0.
      R3=0.
      DO 202 N=1,NST
      LN=NST+1-N
      IF(N.NE.1)R1=R1-SD(N-1,2)
      R2=R2+SD(N,3)
      R3=R3+SD(N,4)
  202 WRITE(NPT,2000)LN,BN(N),R1,R2,R3
C
C---- LOOP OVER LAT LOAD CASES A AND B
C
      DO 50 K=1,2
      IF( KODE(K).LE.0 ) GO TO 50
C---- CODE FORCE GENERATION
      READ(5,4000) ITYP,D
      IF( ITYP.EQ.1 ) WRITE(NPT,4001) AB(K), ( D(I),I=1,7 )
      IF( ITYP.EQ.2 ) WRITE(NPT,4002) AB(K),( D(I),I=1,3 )
      X = 0.0
      TM = 0.0
      DO 15 I=1,NST
      J = NST + 1 - I
      X = X + SD(J,2)
      TM = TM + SD(J,3)
   15 HH(J) = X
C
      P = 1.0
      IF( ITYP.EQ.1 ) GO TO 18
C---- ATC
      P = 1.0
      IF( D(1).GE.2.5 ) P = 2.0
      IF( (D(1).GT.0.5 ) .AND. (D(1).LT.2.5) ) P = 1.0 + (D(1)-0.5)/2.0
   18 SUM = 0.0
      DO 20 I=1,NST
      X = SD(I,3)*( HH(I)**P )
      SUM = SUM + X
   20 HH(I) = X
C
      DO 25 I=1,NST
   25 HH(I) = HH(I)/SUM
      IF( ITYP.EQ.2 ) GO TO 30
C---- UBC
      V = D(2)*D(3)*D(4)*D(5)*D(6)*D(7)*TM
      FT = 0.07*D(1)*V
      IF( FT.GT.( 0.25*V ) ) FT = 0.25*V
      IF( D(1).LE.0.70 ) FT = 0.0
      WRITE(NPT,4006) FT
      WRITE(NPT,4007) V
      V = V - FT
      GO TO 32
C---- ATC
   30 V = D(2)*D(3)*TM
      WRITE(NPT,4008) P
      WRITE(NPT,4007) V
   32 DO 35 I=1,NST
   35 HH(I) = HH(I)*V
      IF( ITYP.EQ.1 ) HH(1) = HH(1) + FT
      DO 48 I=1,NST
      N = 0
      IF( K.EQ.2 ) N = 3
      GO TO ( 42,44,46 ), KODE(K)
   42 SD(I,9+N) = HH(I)
      SD(I,10+N) = 0.0
      GO TO 48
   44 SD(I,9+N) = 0.0
      SD(I,10+N) = HH(I)
      GO TO 48
   46 SD(I,9+N) = HH(I)
      SD(I,10+N) = HH(I)
   48 CONTINUE
   50 CONTINUE
```

```
C
      WRITE (NPT,3001)
      DO 300 N=1,NST
      LN=NST+1-N
      SD(N,11)= -SD(N,9)*(PA(N,2)-SD(N,6))+SD(N,10)*(PA(N,1)-SD(N,5))
      SD(N,14)=-SD(N,12)*(PB(N,2)-SD(N,6))+SD(N,13)*(PB(N,1)-SD(N,5))
  300 WRITE (NPT,2001) LN,(SD(N,I),I=9,14),PA(N,1),PA(N,2),PB(N,1),
     1        PB(N,2)
C---- PUT LOADS IN F FOR CALC
      DO 60 M=1,NST
      I = 3*( M - 1 ) + 1
      DO 55 J=1,3
      K = J - 1
      F(I+K,1) = SD(M,9+K)
   55 F(I+K,2) = SD(M,12+K)
   60 CONTINUE
C---- RETURN IF NO STAT LAT LOADS
      DO 62 I=1,2
      DO 62 J=1,NN
      IF( DABS(F(J,I)).GT.1.0D-10 ) GO TO 64
   62 CONTINUE
      RETURN
C
C---- CALC STORY SHEARS
C
   64 N = 3*NST - 3
      IF(NST.EQ.1)GO TO 66
      DO 65 I=1,2
      DO 65 J=1,N
   65 F(J+3,I) = F(J+3,I) + F(J,I)
   66 WRITE(NPT,4003)
      WRITE(NPT,4009)
      WRITE(NPT,4005)
      IF (NPT.EQ.16) GOTO 150
      CALL PROUT( F,NN,2,SN,NST,RLAB,3,0 )
  150 CONTINUE
C
C---- CALC OTM
C
      DO 90 I=1,2
      F(3,I) = 0.0
      DO 80 K=1,2
   80 F(K,I) = F(K,I)*SD(1,2)
      IX = 4
      IY = 5
      IT = 6
      IF(NST.EQ.1)GO TO 90
      DO 85 J=2,NST
      X = SD(J,2)
      F(IX,I) = F(IX,I)*X + F(IX-3,I)
      F(IY,I) = F(IY,I)*X + F(IY-3,I)
      F(IT,I) = 0.0
      IX = IX + 3
      IY = IY + 3
   85 IT = IT + 3
   90 CONTINUE
      WRITE(NPT,4004)
      WRITE(NPT,4009)
      WRITE(NPT,4005)
      IF (NPT.EQ.16) GOTO 160
      CALL PROUT( F,NN,2,SN,NST,RLAB,3,0 )
  160 CONTINUE
 4000 FORMAT( I5,5X,7F10.0 )
 4001 FORMAT( //,21X,50(1H-),/,
     *         20X,50H UBC STATIC LATERAL LOADS GENERATED FOR LOAD CAS
     *E  ,A1,/,21X,50(1H-),
     1      //,26X,16H PERIOD VALUE  =,F10.3,/,
     2         26X,16H GRAVITY VALUE =,F10.3,/,
     3         26X,16H      Z        =,F10.3,/,
     4         26X,16H      I        =,F10.3,/,
     5         26X,16H      K        =,F10.3,/,
```

```
     6          26X,16H      C          =,F10.5,/,
     7          26X,16H      S          =,F10.3,/   )
 4002 FORMAT( //,21X,50(1H-),/,
     *             20X,50H ATC STATIC LATERAL LOADS GENERATED FOR LOAD CAS
     *E   ,A1,/,21X,50(1H-),
     1        //,26X,16H PERIOD VALUE   =,F10.3,/,
     2          26X,16H GRAVITY VALUE =,F10.3,/,
     3          26X,16H      C          =,F10.5,/ )
 4003 FORMAT( ///,1H ,12(1H-),/,13H STORY SHEARS ,/,1H ,12(1H-),/ )
 4004 FORMAT( ///,1H ,25(1H-),/,26H STORY OVERTURNING MOMENTS ,/,1H ,
     1 25(1H-),/ )
 4005 FORMAT( 20X,65H OUTPUT COLUMN 1 CONTAINS RESULTS FROM STATIC LATER
     1AL LOAD CASE A  ,/,20X,65H OUTPUT COLUMN 2 CONTAINS RESULTS FROM ST
     2ATIC LATERAL LOAD CASE B ,/ )
 4006 FORMAT( 26X,16H TOP FORCE      =,F10.3 )
 4007 FORMAT( 26X,16H BASE SHEAR     =,F10.3,// )
 4008 FORMAT( 26X,16H POWER K        =,F10.3 )
 4009 FORMAT(69H NOTE THAT THE FORCE QUANTITIES BELOW DO NOT INCLUDE P-D
     2ELTA EFFECTS.  /    )
      RETURN
C
 1000 FORMAT (1X,A4,5X,7F10.0/8F10.0)
 2000 FORMAT (I8,4X,A4,7F13.2)
 2001 FORMAT (I8,6F13.2,3X,4F8.1)
 3000 FORMAT (////11H STORY DATA ,//,10H LEVEL NO.,3X,2HID 8X,6HHEIGHT,
     1 8X,7HMASS(M),8X,5HMR**2,9X,4HX(M),9X,4HY(M),10X,3HK-X,10X,3HK-Y)
 3001 FORMAT (///40H STRUCTURE LATERAL LOADS...CASES A AND B   ,//
     1 10H LEVEL NO.,7X,4HFX-A,9X,4HFY-A,8X,5HMOM-A,9X,4HFX-B,9X,4HFY-B
     2 8X,5HMOM-B,8X,2HXA,6X,2HYA,6X,2HXB,6X,2HYB )
 3002 FORMAT(//22H CUMULATIVE STORY DATA,//,10H LEVEL NO.,3X,2HID,8X,
     1 8HHEIGHT,6X,7HMASS(M),8X,5HMR**2)
      END
      SUBROUTINE ECHO   (LBC,NS,NR,NL,L,NPROP,NPT)
      IMPLICIT REAL*8 (A-H)
      IMPLICIT REAL*8 (O-Z)
      COMMON /JUNK/ NLD,LOC(60),IFIL(9)
      DIMENSION LBC(NS,NR,NL)
C
C     PRINT MEMBER LOCATIONS AS GENERATED
C
      DO 200 J=1,NR,30
      JJ=J+29
      IF (JJ.GT.NR) JJ=NR
      WRITE (NPT,2000) (I,I=J,JJ)
      WRITE (NPT,2002)
      DO 200 I=1,NS
      DO 100 K=J,JJ
      LOC(K)=LBC(I,K,L)
      IF (LOC(K).EQ.NPROP) LOC(K)=0
  100 CONTINUE
      M=NS+1-I
  200 WRITE (NPT,2001) M,(LOC(K),K=J,JJ)
C
      RETURN
 2000 FORMAT (/,6H0STORY,30I4)
 2001 FORMAT (I4,2X,30I4)
 2002 FORMAT (1H )
      END
      SUBROUTINE SLAM( SN,A,F,W,XM,IQ,S,MSS,MST )
C-----------------------------------------------------------------------
C     ROUTINE TO CREATE A RESTART TAPE FOR PROGRAMS SLAM OR SLAM-2
C-----------------------------------------------------------------------
      IMPLICIT REAL*8 (A-H)
      IMPLICIT REAL*8 (O-Z)
      DIMENSION F(MSS,MSS),S(MSS,MSS),XM(MSS),W(MSS),IQ(1),A(MST,4),
     1          SN(MST)
      COMMON/GEN/ NST,NDF,NTF,NLD,NAT,NFQ,NSD,SHED(9),FHED(7),NSS
     1              ,RLAB(3),IS,I3,T(6)
      CHARACTER*4 SN,RLAB,SHED,FHED
C
C     COMPUTE MODE SHAPES AND FREQUENCIES
```

```
C
      NFQ = NSS
      DM1 = 1.0
      TPI = 8.0*DATAN(DM1)
      DO 100 I=1,NST
      II=I3*(I-1)+1
      XM(II  )=A(I,3)
      XM(II+1)=A(I,3)
  100 XM(II+2)=A(I,4)
      REWIND 1
      READ(1) S
      REWIND 1
      WRITE(1) NST,NSS,IS,I3,RLAB
      WRITE(1) SN,XM,( A(I,2),I=1,NST ),S
C
      REWIND 2
      READ(2) S
      IF( NAT.EQ.10 ) GO TO 120
      WRITE(1) S
      WRITE(6,5002)
      GO TO 820
C
  120 DO 150 I=1,NSS
      IF(XM(I).GT.0.) GO TO 150
      WRITE (6,3002)
      STOP
  150 XM(I)=1.0/DSQRT(XM(I))
C
      DO 800 IK=1,2
      WRITE(6,5000) IK
C
      DO 200 I=1,NSS
      DO 200 J=1,NSS
  200 S(I,J)=S(I,J)*XM(I)*XM(J)
C
      CALL EIGEN(S,NSS,0,F,NR,W,IQ)
C
      DO 250 I=1,NSS
      W(I)=S(I,I)
      DO 250 J=1,NSS
  250 F(I,J)=F(I,J)*XM(I)
      DO 300 I=1,NFQ
      WM=W(I)
      DO 270 J=I,NSS
      IF(W(J).GT.WM) GO TO 270
      WM=W(J)
      K=J
  270 CONTINUE
C
      W(K)=W(I)
      W(I)=TPI/DSQRT(WM)
      DO 300 J=1,NSS
      WM=F(J,K)
      F(J,K)=F(J,I)
  300 F(J,I)=WM
      WRITE(6,4000)
      DO 522 I=1,NFQ
      X = 1.0/W(I)
      Y = TPI/W(I)
  522 WRITE(6,4001) I,W(I),X,Y
      DO 600 I=1,NFQ,8
      IH=I+7
      IF(IH.GT.NFQ) IH=NFQ
      WRITE (6,2003) (J,J=I,IH)
      DO 600 N=1,NST
      LN=NST+1-N
      NN=I3*(N-1)
      WRITE (6,2002)
      DO 600 J=1,I3
  600 WRITE (6,2004) LN,SN(N),RLAB(J+IS),( F(NN+J,K),K=I,IH)
      WRITE(1) W,F
```

```
C
      IF( IK.GT.1 ) GO TO 800
      REWIND 2
      READ(2) S
C---- CALC STATE 2 STIFFNESS
      READ(5,1006) IL,IXY,SPR,EC
      IF( I3.EQ.3 ) GO TO 610
      EC = 0.0
      IXY = IS
  610 WRITE(6,3003) IL,IXY,SPR,EC
      IF( I3.EQ.3 ) GO TO 620
C---- PLANAR ANAL
      IDOF = NST - IL + 1
      JDOF = IDOF
      EC = 0.0
      S(IDOF,IDOF) = S(IDOF,IDOF) + SPR
      GO TO 640
C---- 3D ANAL
  620 IDOF = 3*( NST - IL ) + IXY + 1
      JDOF = IDOF - IXY + 2
      S(IDOF,IDOF) = S(IDOF,IDOF) + SPR
      S(JDOF,JDOF) = S(JDOF,JDOF) + SPR*EC*EC
      S(IDOF,JDOF) = S(IDOF,JDOF) - SPR*EC
      S(JDOF,IDOF) = S(IDOF,JDOF)
  640 WRITE(1) IL,IXY,SPR,EC,IDOF,JDOF
C
  800 CONTINUE
C
      WRITE(6,5001)
  820 CLOSE( 2,STATUS='DELETE' )
      CLOSE( 3,STATUS='DELETE' )
      CLOSE(11,STATUS='DELETE' )
      CLOSE(12,STATUS='DELETE' )
      CLOSE(13,STATUS='DELETE' )
      STOP
C
 1006 FORMAT( 2I5,2F10.0 )
 2002 FORMAT (1H )
 2003 FORMAT (/// 12H MODE SHAPES,//,16H LEVEL  ID    DIRN ,8I13)
 2004 FORMAT (I5,3X,A4,2X,A4,2X,8F13.6)
 3002 FORMAT (/// 22H NEGATIVE OR ZERO MASS ,//,21H EXECUTION TERMINATED
     1)
 3003 FORMAT( //,10X,12H LEVEL      =,I3,/,
     1              10X,12H DIRECTION =,I3,/,
     2              10X,15H SPRING STIFF =,F12.1,/,
     3              10X,15H ECCENTRICITY =,F12.1,/ )
 4000 FORMAT(/,1H ,13X,4HMODE,10X,7HNATURAL,3X,9HFREQUENCY,4X,8HCIRCULAR
     1 ,/,13X,6HNUMBER,10X, 6HPERIOD,7X,4H(HZ),4X,9HFREQUENCY,/ )
 4001 FORMAT( 10X,I7,6X,F12.6,2F12.4 )
 5000 FORMAT( ///,10X,26(1H-),/,10X,5HSTATE,I2,19H DYNAMIC PROPERTIES,
     1           /,10X,26(1H-),// )
 5001 FORMAT( //,10X,34HSLAM RESTART FILE CREATED ON TAPE1,/ )
 5002 FORMAT( //,10X,36HSLAM-2 RESTART FILE CREATED ON TAPE1,/ )
      END
```

```
      SUBROUTINE FORM(SD,CP,BP,FEF,LB,LDB,LC,LP,S,R,NST,NB,NC,NCP,
     1 NBP,NS,NFEF,NPAN,IFEF,PP,NN,IF,LT,TP,NTRU,CLN,KODE,ICHEK,NPT)
      IMPLICIT REAL*8 (A-H)
      IMPLICIT REAL*8 (O-Z)
      DIMENSION SD(NST,14),CLN(NC,2),CP(14,NCP),BP(11,NBP),FEF(7,NFEF),
     1 LB(NB,NB,3),  LDB(NB,NB,3),LC(NB,NC,2)    ,LP(3,NPAN),IFEF(NFEF),
     1 PP(5,NPAN),LT(3,NTRU),TP(3,NTRU)
C
      COMMON/JUNK/ NLD,N,ND,MM,MN,LM(12),IFIL(53)
      COMMON/BUNK/P(12,3),TT(8),AFIL(216)
      COMMON/STIF/ ABA(12,12),SA(8,12),T(8,12)
      CHARACTER*1 HI
      DATA HI /'I'/
C
      NLD=3
C
C     READ AND PRINT OF COLUMN LINE COORDINATES
C
      WRITE(NPT,1000)
      READ(5,2501) (M,(CLN(J,I),I=1,2),J=1,NC)
      WRITE(NPT,2000)(J,(CLN(J,I),I=1,2),J=1,NC)
C
C     READ AND PRINT OF COLUMN PROPERTIES
C
  100 L=NCP-1
      IF(L.EQ.0) GO TO 105
      IF( KODE.EQ.0 ) WRITE(NPT,2001)
      IF( KODE.NE.0 ) WRITE(NPT,5001)
      DO 10 I=1,L
      READ(5,1001) M,( CP(J,I),J=1,9 )
      IF( KODE.NE.0 ) READ(5,4000) ( CP(J,I),J=10,14 )
      WRITE(NPT,4003) I, ( CP(J,I),J=1,9 )
      IF( KODE.NE.0 ) WRITE(NPT,4001) ( CP(J,I),J=10,14 )
   10 CONTINUE
      IF( KODE.LE.0 ) GO TO 105
C---- CALC ALLOWABLE FORCES
      DO 18 I=1,L
      DO 12 J=10,14
      IF( CP(J,I).LE.0.0 ) GO TO 16
   12 CONTINUE
      CP(10,I) = CP(2,I)*CP(10,I)
      CP(11,I) = CP(11,I)*CP(13,I)
      CP(12,I) = CP(12,I)*CP(14,I)
      GO TO 18
   16 CP(10,I) = 0.0
   18 CONTINUE
  105 DO 110 I=1,14
  110 CP(I,NCP)=0.
C
C     READ AND PRINT OF BEAM PROPERTIES
C
      L=NBP-1
      IF(L.EQ.0) GO TO 115
      IF( KODE.EQ.0 ) WRITE(NPT,2002)
      IF( KODE.NE.0 ) WRITE(NPT,5002)
      DO 20 I=1,L
      READ(5,1002) M,( BP(J,I),J=1,9 )
      IF( KODE.NE.0 ) READ(5,4000) ( BP(J,I),J=10,11 )
      WRITE(NPT,4003) I,( BP(J,I),J=1,9 )
      IF( KODE.NE.0 ) WRITE(NPT,4002) ( BP(J,I),J=10,11 )
   20 CONTINUE
      IF( KODE.LE.0 ) GO TO 115
C---- CALC ALLOWABLE FORCES
      DO 30 I=1,L
   30 BP(10,I) = BP(10,I)*BP(11,I)
  115 DO 120 I=1,11
  120 BP(I,NBP)=0.
C
C     READ AND PRINT OF FIXED END BEAM LOADS
C
      IF (NFEF.EQ.0) GO TO 208
```

```
  205 READ  (5,1003) (M,IFEF(I),(FEF(J,I),J=1,7),I=1,NFEF)
      WRITE (NPT,2003) (I,IFEF(I),(FEF(J,I),J=1,5),I=1,NFEF)
C
C     READ (OR GENERATE) AND PRINT OF BEAM LOCATION CARDS - LB
C
  209 IF (NB.EQ.0) GO TO 300
  210 WRITE (NPT,2004)
      DO 260 M=1,NB
      K=0
      DO 250 N=1,NS
      IF (K.NE.0) GO TO 220
      LN=NS+1-N
      READ(5,1004) I,(LB(N,M,L),L=1,NLD),K,(LDB(N,M,L),L=1,NLD)
      WRITE(NPT,1004)I,LN,(LB(N,M,L),L=1,NLD),K,(LDB(N,M,L),L=1,NLD)
      IF (LB(N,M,NLD).EQ.0) LB(N,M,NLD)=NBP
      GO TO 250
  220 K=K-1
      DO 230 L=1,NLD
      LB(N,M,L)=LB(N-1,M,L)
  230 LDB(N,M,L)=LDB(N-1,M,L)
  250 CONTINUE
  260 WRITE (NPT,3000)
      WRITE (NPT,3004)
      CALL ECHO  (LB,NS,NB,3,3,NBP,NPT)
      IF (NFEF.EQ.0) GO TO 300
      DO 270 L=1,NLD
      WRITE (NPT,4004) (HI,I=1,L)
      CALL ECHO  (LDB,NS,NB,3,L,100000,NPT)
  270 CONTINUE
C
C     READ (OR GENERATE) AND PRINT COLUMN LOCATIONS - LC
C
  300 WRITE (NPT,2005)
      DO 360 M=1,NC
      K=0
      DO 350 N=1,NS
      IF (K.NE.0) GO TO 320
      LN=NS+1-N
      READ(5,1005) KK,(LC(N,M,I),I=1,2),K
      WRITE(NPT,1005)KK,LN,(LC(N,M,I),I=1,2),K
      IF(LC(N,M,1).EQ.0)LC(N,M,1)=NCP
      GO TO 350
  320 K=K-1
      DO 330 I=1,2
  330 LC(N,M,I)=LC(N-1,M,I)
  350 CONTINUE
  360 WRITE (NPT,3000)
      WRITE (NPT,3005)
      CALL ECHO  (LC,NS,NC,2,1,NCP,NPT)
C
C     READ AND PRINT OF PANEL CARDS - LP,PP
C
      IF(NPAN.EQ.0) GO TO 365
      READ  (5,1006) (LP(1,I),LP(2,I),LP(3,I),(PP(J,I),J=1,5),I=1,NPAN)
      WRITE(NPT,2006)(LP(1,I),LP(2,I),LP(3,I),(PP(J,I),J=1,5),I=1,NPAN)
C
C     READ AND PRINT DIAGONALS
C
  365 IF (NTRU.EQ.0) GO TO 380
      READ(5,1007) ( LT(1,I),LT(2,I),LT(3,I),TP(1,I),TP(2,I),TP(3,I),
     1               I=1,NTRU )
      IF( KODE.EQ.0 ) WRITE(6,2007) ( LT(1,I),LT(2,I),LT(3,I),TP(1,I),
     1                   TP(2,I),I=1,NTRU )
      IF( KODE.NE.0 ) WRITE(6,5007) ( LT(1,I),LT(2,I),LT(3,I),TP(1,I),
     1                   TP(2,I),TP(3,I),I=1,NTRU )
C---- CALC ALLOWABLE FORCE
      DO 40 I=1,NTRU
   40 TP(3,I) = TP(2,I)*TP(3,I)
C
C     PRINT BEAM PROPERTIES AND LOADS
C
```

```
C
C       REDUCE E BY B,E
C
        JB=0
        DO 540 J=MNP,NNL
        JJ=J-MN
        IB=1
        DO 530 I=2,MM
        IM=I-1
        KF=MAX0(KH(I),KH(J))
        BB=0.0
        IF (KF.GT.IM) GO TO 530
        DO 520 K=KF,IM
  520 BB=BB+B(IB+K)*E(K,JJ)
      E(I,JJ)=E(I,JJ)-BB
  530 IB=IB+I
  540 CONTINUE
      DO 830 I=1,MM
      DO 830 J=1,NE
  830 EB(I,J)=0.0
      L=3*(N-1)
      DO 840 I=1,MM
      DO 840 J=1,6
  840 EB(I,J+L)=EB(I,J+L)+EF(I+MM,J)
      DO 845 I=1,MM
      DO 845 J=1,NLD
  845 EB(I,J+NNM)=EB(I,J+NNM)+PF(I+MM,J)
C
C       RED EB BY C,E
C
      DO 570 J=MNP,NNL
      JJ=J-MN
      DO 560 I=MMP,MN
      II=I-MM
      KF=MAX0(KH(I),KH(J))
      BB=0.0
      IF (KF.GT.MM) GO TO 560
      DO 550 K=KF,MM
  550 BB=BB+C(K,II)*E(K,JJ)
  560 EB(II,JJ)=EB(II,JJ)-BB
  570 CONTINUE
      REWIND NTE
      REWIND NTSL
      WRITE (NTE) EB
C
C       OVERWRITE B BY SL
C
      READ (NTSL) SL
      L=3*(N-1)
      K=(L*(L+1))/2
      DO 860 J=1,6
      DO 850 I=1,J
  850 SL(K+L+I)=SL(K+L+I)+EF(I+MN,J)
  860 K=K+L+J
C
C       RED SL BY E,E
C
      JB=0
      DO 700 J=MNP,NNL
      JJ=J-MN
      JM=J-1
      JM=MIN0(JM,NNN)
      IF (MNP.GT.JM) GO TO 610
      DO 600 I=MNP,JM
      KF=MAX0(KH(I),KH(J))
      II=I-MN
      BB=0.0
      IF (KF.GT.MM) GO TO 600
      DO 580 K=KF,MM
  580 BB=BB+E(K,II)*E(K,JJ)
  600 SL(JB+II)=SL(JB+II)-BB
```

```
      TF(5,11)=B/XLR
      TF(3,10)=1.+B/XLR
      TF(6,11)=1.+B/XLR
      DO 150 I=1,12
      DO 150 J=1,12
  150 TT(I,J)=0.
      TT(1,1)=SNA
      TT(2,2)=SNA
      TT(1,2)=-CSA
      TT(2,1)= CSA
      TT(3,3)=1.
      DO 155 II=3,9,3
      DO 152 I=1,3
      DO 152 J=1,3
  152 TT(II+I,II+J)=TT(I,J)
  155 CONTINUE
      TT(1,3)=-YL1*SNA-XL1*CSA
      TT(2,3)=-YL1*CSA+XL1*SNA
      TT(7,9)=TT(1,3)
      TT(8,9)=TT(2,3)
      DO 190 I=1,6
      DO 190 I1=1,10,3
      I2=I1+2
      DO 180 J=I1,I2
      XX=0.
      DO 170 K=I1,I2
  170 XX=XX+TF(I,K)*TT(K,J)
  180 T(I,J)=XX
  190 CONTINUE
      RETURN
C
C     BEAM LOCAL TRANSFORMATION
  200 D1=-1./XLR
      TF(1,2)=-1.
      TF(1,5)=1.
      TF(2,1)=1.+A/XLR
      TF(3,1)=A/XLR
      TF(2,4)=B/XLR
      TF(3,4)=1.+B/XLR
      TF(2,3)=-D1
      TF(3,3)=-D1
      TF(2,6)=D1
      TF(3,6)=D1
      DO 210 I=1,3
      DO 210 J=1,3
  210 TT(I,J)=0.
      TT(1,1)=SNA
      TT(2,2)=SNA
      TT(1,2)=-CSA
      TT(2,1)= CSA
      TT(3,3)=1.
      DO 230 J=1,3
      DO 230 I1=1,4,3
      I2=I1-1
      DO 230 J1=1,3
      XX=0.
      DO 220 K=1,3
  220 XX=XX+TF(J,I2+K)*TT(K,J1)
      I=J1+I2
  230 T(J,I)=XX
      RETURN
C
C     PANEL TRANSFORMATION
C
  300 D1=1./XLR
      D2=1./A
C
      IF(KK.EQ.5) GO TO 305
C
      TF(1,4)=-D1
      TF(2,4)=-D1
```

```
      TF(1,1)=D1
      TF(2,1)=D1
      TF(2,5)=-D2
      TF(2,6)=D2
      TF(1,2)=-D2
      TF(1,3)=D2
      TF(3,5)=-0.5
      TF(3,6)=-0.5
      TF(3,2)=0.5
      TF(3,3)=0.5
C
      KN=3
      GO TO 315
C
  305 TF(1,1)=D1
      TF(1,4)=-D1
      TF(1,2)=-D2/2.
      TF(1,3)=D2/2.
      TF(1,5) = -D2/2.
      TF(1,6) = D2/2.
C
      KN=1
C
  315 DO 310 I=1,6
        DO 310 J=1,10
  310     TT(I,J)=0.
      TT(1,1)=CSA
      TT(1,2)=SNA
      TT(1,3)= B
      TT(2,4)=1.
      TT(3,5)=1.
      TT(4,6)=CSA
      TT(4,7)=SNA
      TT(4,8)= B
      TT(5,9)=1.
      TT(6,10)=1.
      DO 330 II=1,4,3
      I2=II-1
      JJ=0
      IF(II.EQ.4) JJ=5
      DO 330 J1=1,5
      XX=0.
      DO 320 K=1,3
  320 XX=XX+TF(J,I2+K)*TT(K,J1)
      I=J1+JJ
  330 T(J,I)=XX
      RETURN
C
C     DIAGONAL TRANSFORMATION
C
  400 T(1,1)=DCOS(XLR)*CSA
      T(1,2)=DCOS(XLR)*SNA
      T(1,3)= DCOS(XLR)*XL1
      T(1,4)=DSIN(XLR)
      T(1,5)=-T(1,1)
      T(1,6)=-T(1,2)
      T(1,7)=-T(1,3)
      T(1,8)=-T(1,4)
      RETURN
      END
      SUBROUTINE STIFF (IO,B,R,NN,NS)
      IMPLICIT REAL*8 (A-H)
      IMPLICIT REAL*8 (O-Z)
      DIMENSION B(1)
      COMMON/JUNK/NLD,N,ND,MM,MN,LM(12),IFIL(53)
      COMMON/BUNK/ P(12,3),TT(8),AFIL(216)
      COMMON/STIF/ES(12,12),BA(6,12),T(6,12)
      COMMON/FTAPES/ NTS,NTE,NTSL,NSKS
      NSKS=3
      NTS=11
      NTE=12
```

```
      NTSL=13
      NLD=3
      MN=2*MM
      MN6=MN+6
      LS=(MM*(MM+1))/2
      LC=MM*MM
      NE=NN+NLD-MN
      LE=MM*NE
      NNM=NN-MN
      LSL=(NNM*(NNM+1))/2+NNM*NLD
      NNL=NN+NLD
      N1=1
      N2=N1+MAX0(LS,LE)
      N3=N2+LC
      N4=N1+LSL
      N3=MAX0(N3,N4)
      N4=N3+MAX0(LS,LE)
      N5=N4+MN6*6
      N6=N5+MN*3
      N7=N6+NNL
      N8=N7+MM
      IF (IO.GT.0) GO TO 50
      IO=N8-N1
      RETURN
   50 GO TO (100,200,300,400,500) , IO
C
C      IO=1  ZERO ARRAYS
C
  100 NL=N8-1
      DO 110 I=N1,NL
  110 S(I)=0.0
      REWIND NTSL
      REWIND NTS
      REWIND NTE
      WRITE (NTS) (S(I),I=1,LS)
      WRITE (NTE) (S(I),I=1,LE)
      WRITE (NTSL) (S(I),I=1,LSL)
      RETURN
C
C      IO=2  SHIFT STORAGE
C
  200 REWIND NTS
      READ (NTS) (S(I),I=1,LS)
      NL=N8-N1
      DO 210 I=N2,NL
  210 S(I)=0.0
      RETURN
C
C      IO=3  REDUCE EQN,S  WRITE SS EQNS ON TAPE 3 (NBKS)
C
  300 MN6=MN+6
      CALL SHRINK (S(N1),LS,S(N6),MM,NNL,S(N7),S(N2),S(N3),S(N3),S(N1),
     1            S(N1),NE,LSL,S(N4),S(N5),MN6,MN,NS)
      RETURN
C
C     IO=4   WRITE LAT STIF ON TAPE 2
C
  400 NFR=NN-MN-3
      NT2=2
      NF=N1
      NL=(NFR*(NFR+1))/2
      M=LSL-NNM
      L=M-NNM
      K=L-NNM
      WRITE (NT2) N,NFR,(S(I),I=NF,NL),(S(K+I),I=1,NFR),
     1            (S(L+I),I=1,NFR),(S(M+I),I=1,NFR)
      RETURN
C
C     IO=5    ADD ELEMENT STIFF TO FRAME STIFFNESS
C
  500 MN6=MN+6
```

```
C       -----------          SB=(MM*(MM+1))/2
C
C        MAXIMUM STORAGE GOVERNED BY THAT REQUIRED FOR ANY THREE BLOCKS
C
       IMPLICIT REAL*8 (A-H)
       IMPLICIT REAL*8 (O-Z)
      DIMENSION S(LS),KH(NNL),C(MM,MM),SB(LS),SD(MM)
     1          ,E(MM,NE),EB(MM,NE),SL(LSL),EF(MN6,6),PF(MN,3)
      COMMON/JUNK/NLD,N,ND,ID,JD,LM(12),IFIL(53)
      COMMON/SUNK/ P(12,3),TT(8),AFIL(216)
      COMMON/FTAPES/NTS,NTE,NTSL,NSKS
C
      NLD=3
      MN=2*MM
      MMP=MM+1
      MNP=MN+1
      NNN=MN+3*N+3
      NN=NNL-NLD
      NNM=NN-MN
C
C     DETERMINE PROFILE OF (S,C,SB)
C
      JB=0
      DO 50 J=1,MM
      KH(J)=1
      DO 40 I=1,J
      IF (S(JB+I)) 50,40,50
   40 KH(J)=I+1
   50 JB=JB+J
      DO 70 J=1,MM
      KH(J+MM)=1
      DO 60 I=1,MM
      IF (C(I,J)) 70,60,70
   60 KH(J+MM)=I+1
   70 CONTINUE
C
C       REDUCTION OF S
C
      SD(1)=S(1)
      JB=1
      DO 300 J=2,MM
      SD(J)=0.0
      JM=J-1
      IF (J.EQ.2) GO TO 260
      IB=1
      DO 250 I=2,JM
      IM=I-1
      SS=0.0
      KF=MAX0(KH(I),KH(J))
      IF (KF.GT.IM) GO TO 250
C
C     REDUCE S BY S,S
C
      DO 200 K=KF,IM
  200 SS=SS+S(IB+K)*S(JB+K)
      S(JB+I)=S(JB+I)-SS
  250 IB=IB+I
C
C     RED COL BY SELF
C
  260 SS=0.0
      KF=KH(J)
      IF (KF.GT.JM) GO TO 290
      KD=(KF*(KF+1))/2
      DO 280 K=KF,JM
      IF (S(KD)) 270,280,270
  270 T=S(JB+K)/S(KD)
      SS=SS+T*S(JB+K)
      S(JB+K)=T
  280 KD=KD+K+1
      S(JB+J)=S(JB+J)-SS
```

```
  290 SD(J)=S(JB+J)
  300 JB=JB+J
C
C       REDUCTION OF C,SS
C
      JB=0
      DO 500 J=MMP,MN
      JJ=J-MM
      JM=J-1
      IB=1
      DO 450 I=2,JM
      II=I-MM
      IM=I-1
      KL=MIN0(IM,MM)
      KF=MAX0(KH(I),KH(J))
      IF (KF.GT.KL) GO TO 450
      SS=0.0
      IF (I.GT.MM) GO TO 430
C
C     RED C BY S,C
C
      DO 420 K=KF,KL
  420 SS=SS+S(IB+K)*C(K,JJ)
      C(I,JJ)=C(I,JJ)-SS
      GO TO 450
C
C     RED SS BY C,C
C
  430 DO 440 K=KF,KL
  440 SS=SS+C(K,II)*C(K,JJ)
      SS(JB+II)=SS(JB+II)-SS
  450 IB=IB+I
C
C
C     RED COL BY SELF
      SS=0.0
      KF=KH(J)
      IF (KF.GT.MM) GO TO 500
      DO 460 K=KF,MM
      IF (SD(K)) 455,460,455
  455 T=C(K,JJ)/SD(K)
      SS=SS+T*C(K,JJ)
      C(K,JJ)=T
  460 CONTINUE
      SS(JB+JJ)=SS(JB+JJ)-SS
  500 JB=JB+JJ
      REWIND NTS
      WRITE (NTS) SS
      WRITE (NBKS) S,C
C
C       OVERWRITE SS WITH (E,EB)
C
      REWIND NTE
      READ (NTE) E
      L=3*(N-1)
      DO 810 I=1,MM
      DO 810 J=1,6
  810 E(I,J+L)=E(I,J+L)+EF(I,J)
      DO 820 I=1,MM
      DO 820 J=1,3
  820 E(I,J+NNM)=E(I,J+NNM)+PF(I,J)
C
C       DETIRMINE PROFILE OF (E,EB)
C
      DO 90 J=MNP,NNL
      JJ=J-MN
      KH(J)=1
      DO 80 I=1,MM
      IF (E(I,JJ)) 90,80,90
   80 KH(J)=I+1
   90 CONTINUE
```

```
      AJ(3,1)=D(M,K,1)
      AJ(3,2)=D(M,K,2)
C
      DO 225 II=1,3
      DO 225 J1=1,I3
      JJ=J1+IS
      AR(II,JJ)=0.
      DO 225 KK=1,3
  225 AR(II,JJ)=AR(II,JJ)+B(I2+II,J2+KK)*AI(KK,JJ)
C
      DO 275 I1=1,I3
      II=I1+IS
C
      IF(N.NE.NT) GO TO 260
      DO 250 L=1,3
      DO 250 KK=1,3
  250 RR(IR+I1,L)=RR(IR+I1,L)+AJ(I1,KK)*R(I2+KK,L)
C
  260 DO 275 J1=1,I3
      JJ=J1+IS
      AS(II,JJ)=0.
      DO 275 KK=1,3
  275 AS(II,JJ)=AS(II,JJ)+AJ(I1,KK)*AR(KK,JJ)
C
      NN=I3*(NT-1)
C
      DO 300 I=1,I3
      II=I3*(M-NT)+I
      DO 300 J=1,I3
      JJ=I3*(N-NT)+J
  300 SS(NN+II,NN+JJ)=SS(NN+II,NN+JJ)+AS(I+IS,J+IS)
  400 CONTINUE
C
      AA(K,1)=IF
      AA(K,2)=IFC
      AA(K,3)=AI(1,1)
      AA(K,4)=AI(1,2)
      AA(K,5)=NT
  500 CONTINUE
      IF( ICHEK.NE.0 ) RETURN
C
C---- MOD OF LAT STIFFNESS FOR P-DELTA EFFECTS
C
      IF( NAT.GT.9 ) REWIND 1
      IF( NAT.GT.9 ) WRITE(1) SS
      IF( DABS(GRAV).LT.1.0D-10 ) GO TO 655
      IPD=0
  501 XMT=0.0
      XMMT = 0.0
      DO 650 I=1,NST
      H = A(I,2)
      XMT = XMT + A(I,3)
      XMMT = XMMT + A(I,4)
      MM = ( I - 1 )*I3
C
      DO 600 J=1,I3
      IF( J.NE.3 ) PDEL = XMT*GRAV/H
      IF( J.EQ.3 ) PDEL = XMMT*GRAV/H
      NN = MM + J
      SS(NN,NN) = SS(NN,NN) - PDEL
      IF( I.GE.NST ) GO TO 600
      SS(NN,NN+I3) = SS(NN,NN+I3) + PDEL
      SS(NN+I3,NN) = SS(NN+I3,NN) + PDEL
      SS(NN+I3,NN+I3) = SS(NN+I3,NN+I3) - PDEL
  600 CONTINUE
  650 CONTINUE
      IF(IPD.EQ.1)GO TO 730
C
C---- END OF P-DELTA MODS
C
  655 NT2 = 2
```

```
      REWIND NT2
      WRITE (NT2) SS,XM
      IF(NAT.EQ.1) RETURN
      IF(DABS(GRAV).LT.1.0D-10)GO TO 657
      DO 656 I=1,NSS
      DO 656 J=1,2
  656 RRR(I,J)=RR(I,J+3)
  657 CONTINUE
C       DO 658 I = 1,NSS
C         IF ( SS(I,I) .LE. 0.0 ) THEN
C           WRITE (6,*) ' MATRIX SS '
C           WRITE (6,*) 'SS(',I,',',I,') = ',SS(I,I)
C           GOTO 659
C         ELSE
C           WRITE (6,*) 'SS(',I,',',I,') = ',SS(I,I)
C         ENDIF
C 658 CONTINUE
C       GOTO 660
C 659 WRITE (6,1101)
C       WRITE (6,1102)
C       STOP
C 1101 FORMAT (T5,'*******************************************' )
C 1102 FORMAT (T5,'ZERO ON DIAGONAL OF STRUCTURE STIFFNESS MTX.' )
C 660 CONTINUE
      CALL SOLVE(SS,NSS,RR,5)
C
C     PRINT STRUCTURE DISPLACEMENTS
C
      IF ( ITYPE .EQ. 0 ) THEN
        WRITE(6,1001)
        WRITE(6,1003)
        CALL PROUT( RR,NSS,5,SN,NST,RLAB,I3,IS )
      ENDIF
C
      WRITE (2) RR
      WRITE (2) AA,D,HED
      IF(DABS(GRAV).LT.1.0D-10)GO TO 750
      DO 725 I=1,NSS
      DO 725 J=1,NSS
  725 SS(I,J)=0.0
      IPD=1
      GO TO 501
C
C-----CALCULATE P-DELTA FORCES
C
  730 CONTINUE
      DO 740 I=1,NSS
      K1=I-13
      K2=I+13
      IF(K1.LE.0)K1=1
      IF(K2.GT.NSS)K2=NSS
      DO 735 J=1,2
      XX=0.
      DO 732 K=K1,K2
  732 XX=XX+SS(I,K)*RR(K,J+3)
  735 RRR(I,J)=RRR(I,J)-XX
  740 CONTINUE
  750 CONTINUE
C
C---- CALC DRIFTS
      N = NST - 1
      DO 722 I=1,5
      IF(NST.EQ.1)GO TO 721
      DO 720 J=1,N
      JJ = I3*( J - 1 ) + 1
      RR(JJ,I) = ( RR(JJ,I) - RR(JJ+I3,I) )/A(J,2)
      IF( I3.NE.3 ) GO TO 720
      RR(JJ+1,I) = ( RR(JJ+1,I) - RR(JJ+4,I) )/A(J,2)
      RR(JJ+2,I) = RR(JJ+2,I) - RR(JJ+5,I)
  720 CONTINUE
  721 JJ = I3*( NST - 1 ) + 1
```

```
  380 IF(NB.EQ.0) GO TO 372
      WRITE(NPT,2011)
      DO 370 M=1,NB
      WRITE (NPT,2012) M
      DO 370 N=1,NS
      LN=NS+1-N
      NN=LB(N,M,3)
  370 WRITE(NPT,2010) LN,(BP(J,NN),J=1,9),(LDB(N,M,L),L=1,NLD)
C
C     PRINT COLUMN PROPERTIES
C
  372 WRITE (NPT,2013)
      DO 375 M=1,NC
      WRITE (NPT,2014) M
      DO 375 N=1,NS
      LN=NS+1-N
      NN=LC(N,M,1)
  375 WRITE(NPT,2016) LN,(CP(J,NN),J=1,9)
      IF( ICHEK.NE.0 ) GO TO 815
C
C     STORY BY STORY FORMATION AND REDUCTION OF STIFFNESS MATRIX
C
      K=NST-NS
      MM=3*NC
      MN=6*NC
      NN=MN+3*NS+3
      CALL STIFF(1,S,R,NN,NS)
C
      DO 700 N=1,NS
C
      CALL STIFF(2,S,R,NN,NS)
C
C      1. FORM COLUMN MATRICES
C
      DO 390 I=1,12
      DO 390 L=1,NLD
  390 P(I,L)=0.0
      NF=6
      ND=12
      DO 500 M=1,NC
      MC=LC(N,M,1)
      IF(MC.EQ.NCP) GO TO 500
      XL =SD(N+K,2)
      KK=LC(N,M,2)
      B1=CLN(KK,1)-CLN(M,1)
      B2=CLN(KK,2)-CLN(M,2)
      B3=B1*B1+B2*B2
      B3=DSQRT(B3)
      IF(B3.LE.0.) STOP1
      CSA=B1/B3
      SNA=B2/B3
      XL1=CLN(M,1)
      YL1=CLN(M,2)
      NREC = NC*(N-1)+M
      READ (15,REC = NREC) VVP
C     WRITE (6,*) '############################################'
C     WRITE (6,*) 'SUBROUTINE FORM'
C     WRITE (6,*) 'STORY NO. ',N
C     WRITE (6,*) 'COLUMN LINE NO. ',M
C     WRITE (6,*) 'AXIAL IN COLUMN = ',VVP
C     WRITE (6,*) '############################################'
      CALL COLUMN(1,MC,XL,SNA,CSA,NCP,XL1,YL1,CP,VVP)
C
      LM(6)=3*M
      LM(5)=LM(6)-1
      LM(4)=LM(5)-1
      LM(11)=LM(5)+MM
      LM(10)=LM(4)+MM
      LM(12)=LM(6)+MM
      LM(3)=MN+3*N
      LM(2)=LM(3)-1
```

```
      SNA=B2/B3
      D=B3
      AR=CLN(KI,1)*CLN(KJ,2)-CLN(KJ,1)*CLN(KI,2)
      DF=AR/B3
      NREC = NC*NS+L
      READ (15,REC = NREC) VVP
C      WRITE (6,*) '##############################################'
C      WRITE (6,*) 'SUBROUTINE FORM'
C      WRITE (6,*) 'STORY NO. ',N
C      WRITE (6,*) 'PANEL NO. ',L
C      WRITE (6,*) 'AXIAL IN PANEL = ',VVP
C      WRITE (6,*) '##############################################'
      CALL PANEL (1,L,XL,D,DF,SNA,CSA,NPAN,PP,VVP)
C
      LM(3)=MN+3*N
      LM(2)=LM(3)-1
      LM(1)=LM(2)-1
      LM(4)=3*KI
      LM(5)=3*KJ
      LM(8)=MN+3*N+3
      LM(7)=LM(8)-1
      LM(6)=LM(7)-1
      LM(9)=MM+3*KI
      LM(10)=MM+3*KJ
      CALL STIFF(5,S,R,NN,NS)
  600 CONTINUE
C
C     FORM DIAGONAL STIFFNESS
C
  610 IF (NTRU.EQ.0) GO TO 710
      DO 620 I=1,8
      DO 620 J=1,NLD
  620 P(I,J)=0.
      NF=1
      ND=8
      DO 690 L=1,NTRU
      NP=NS-LT(1,L)+1
      IF (NP.NE.N) GO TO 690
      YL=SD(N+K,2)
      KJ=LT(2,L)
      KI=LT(3,L)
      B1=CLN(KJ,1)-CLN(KI,1)
      B2=CLN(KJ,2)-CLN(KI,2)
      B3=B1*B1+B2*B2
      B3=DSQRT (B3)
      CSA=B1/B3
      SNA=B2/B3
      VANG=DATAN(YL/B3)
      DL=DSQRT(B3*B3+YL*YL)
      AR=CLN(KI,1)*CLN(KJ,2)-CLN(KJ,1)*CLN(KI,2)
      D1=AR/B3
      CALL DIAG(1,L,VANG,DL,SNA,CSA,NTRU,D1,TP)
C
      LM(3)=MN+3*N
      LM(2)=LM(3)-1
      LM(1)=LM(2)-1
      LM(4)=3*KJ
      LM(7)=MN+3*N+3
      LM(6)=LM(7)-1
      LM(5)=LM(6)-1
      LM(8)=MM+3*KI
      CALL STIFF(5,S,R,NN,NS)
  690 CONTINUE
  710 CONTINUE
C
C     REDUCE STIFFNESS MATRIX FOR LEVEL N
C
      CALL STIFF(3,S,R,NN,NS)
C
  700 CONTINUE
C
```

```
C     WRITE LATERAL STIFFNESS ON TAPE
C
  810 N=NST+1-NS
      CALL STIFF(4,S,R,NN,NS)
      WRITE (3)CLN,CP,BP,FEF,LB,LDS,LC,LP,IFEF,PP,LT,TP
  815 WRITE(3) IF,NC,NS,NCP,NBP,NFEF,NPAN,NTRU,NB
C
      RETURN
 1000 FORMAT(/,24H COLUMN LINE COORDINATES,/,5H LINE,14X,1HX,14X,1HY)
 2000 FORMAT(I5,5X,F10.2,5X,F10.2)
 1001 FORMAT(I5,F15.0,F10.0,2F5.0,3F10.0,2F5.0)
 2001 FORMAT (/,10H COLUMN ID ,11X,1HE 11X,1HA 6X,6HMAJ SA,6X,6HMIN SA,
     16X,8HTORS I,7X,5HMAJ I,7X,5HMIN I,3X,9HRIGID TOP,3X,9HRIGID BOT /)
 1002 FORMAT(I5,F15.0,F5.0,2F10.0,5F5.0)
 2002 FORMAT(/,10H   BEAM ID,11X,2HE ,9X,2HSA ,6X,6HTORS I,6X,6HFLEX I
     1   ,9X,3HKII,9X,3HKJJ  ,9X,3HKIJ,5X,7HRIGID I ,5X,7HRIGID J ,/ )
 1003 FORMAT (2I5,7F10.0)
 2003 FORMAT (/,10H    FEF ID,6X,4HCODE,10X,2HML,10X,2HVL,10X,2HMR,10X,
     1 2HVR,11X,1HW ,/,(2I10,5F12.3))
 1004 FORMAT (9I5)
 2004 FORMAT(/,15H BEAM LOCATIONS,/,45H/ BAY  LEV   IC   JC  BID  GEN  V
     1L1  VL2  VL3  )
 3004 FORMAT (//25H GENERATED BEAM LOCATIONS )
 4004 FORMAT (//34H GENERATED BEAM LOADS...LOAD CASE   3A1)
 1005 FORMAT(5I5)
 2005 FORMAT (/,17H COLUMN LOCATIONS,//,26H0 LINE  LEV  CID KOOL  GEN )
 3005 FORMAT (//27H GENERATED COLUMN LOCATIONS )
 1006 FORMAT (3I5,5F10.0)
 2006 FORMAT (///12H PANEL CARDS,//,20H LEVEL COL I COL J  ,12X,1HE,14X,
     11HA,14X,1HI,13X,2HSA,14X,1HG,/,(I4,2I7,2X,5F15.2))
 1007 FORMAT(3I5,3F10.0)
 2007 FORMAT ( //22H BRACING ELEMENT CARDS,//,16H   LEV   UC   LC,14X,
     11HE,14X,1HA,/,(1X,3I5,2F15.5))
 3000 FORMAT (1H )
 2010 FORMAT (I4,2X,F12.2,8F10.2,5X,I5,5X,I5,5X,I5)
 2011 FORMAT (//26H BEAM PROPERTIES AND LOADS/)
 2012 FORMAT(12H BAY NUMBERS,I5,/,129H LEVEL          E         SA    TO
     1RS I    FLEX I        KII        KJJ        KIJ        WI         WJ
     1      VERT1      VERT2   VERT3  )
 2013 FORMAT (//18H COLUMN PROPERTIES,/)
 2014 FORMAT( 16H COLUMN LINE NO.,I5,/,98H LEVEL          E          A
     1 MAJ SA   MIN SA     TORS I      MAJ I     MIN I          DT
     1DS ,/)
 2016 FORMAT (I4,2X,F12.2,8F10.2)
 2501 FORMAT( I5,2F10.0)
 4000 FORMAT( 5F10.0 )
 4001 FORMAT( 22X,3F12.2,12X,2F12.2 )
 4002 FORMAT( 22X,F12.2,12X,F12.2 )
 4003 FORMAT( I10,9F12.2 )
 5001 FORMAT(/,10H COLUMN ID,11X,1HE,11X,1HA,6X,6HMAJ SA,6X,6HMIN SA,
     16X,8HTORS I,7X,5HMAJ I,7X,5HMIN I,3X,9HRIGID TOP,3X,9HRIGID BOT,/
     2 32X,2HFA,6X,6HMAJ FB,6X,6HMIN FB,19X,5HMAJ S,7X,5HMIN S,/ )
 5002 FORMAT(/,10H   BEAM ID,11X,2HE ,9X,2HSA ,6X,6HTORS I,6X,6HFLEX I
     1 ,9X,3HKII,9X,3HKJJ  ,9X,3HKIJ,5X,7HRIGID I ,5X,7HRIGID J ,/
     2 32X,2HFB,19X,5HSEC S,/ )
 5007 FORMAT( //22H BRACING ELEMENT CARDS,//,16H   LEV   UC   LC,14X,1HE
     1 ,14X,1HA,13X,2HFA,/,(1X,3I5,2F15.5,F15.2) )
      END
C*********************************************************************
      SUBROUTINE COLUMN(IO,MC,XL,SNA,CSA,NCP,XL1,YL1,CP,VP)
      IMPLICIT REAL*8 (A-H)
      IMPLICIT REAL*8 (O-Z)
      DIMENSION CP(14,NCP),TS(6,6),TSF(6,12),TFSF(12,12),TFSFT(12,12),
     1          TFT(12,6),TTT(12,12),BMG(12,12)
      COMMON/STIF/ ASA(12,12),SA(8,12),T(8,12)
      COMMON/JUNK/ NLD,N,ND,MM,MN,LM(12),IFIL(53)
      COMMON/BUNK/ P(12,3),TF(6,12),TT(12,12),AFIL(8)
C
C     COLUMN STIFFNESS AND FORCE MATRICES
C
C     TRANSFORMATION MATRICES
```

```
      DT=CP(8,MC)
      DB=CP(9,MC)
      XLR=XL-DT-DB
      CALL TRANS(1,XLR,DT,DB,BNA,CSA,XL1,YL1,0.D0,0.D0)
C
C     COLUMN MEMBER STIFFNESS
      E=CP(1,MC)
       AZ=CP(2,MC)
       AY=CP(3,MC)
       AX=CP(4,MC)
      AAZ=CP(5,MC)
      AAY=CP(6,MC)
      AAX=CP(7,MC)
      SHFX=0.
      SHFY=0.
      EIY=AAY*E/(XLR*XLR)
      EIX=AAX*E/(XLR*XLR)
      IF(AY.GT.0.) SHFY=14.4*EIY/(AY*E)
      IF(AX.GT.0.) SHFX=14.4*EIX/(AX*E)
      COMMY=2.*EIX*XLR/(1.+2.*SHFX)
      COMMX=2.*EIY*XLR/(1.+2.*SHFY)
C
      S1=0.414*E*AAZ/XLR
      S2=COMMX*(2.+SHFY)
      S3=COMMX*(1.-SHFY)
      S4=E*AZ/XLR
      S5=COMMY*(2.+SHFX)
      S6=COMMY*(1.-SHFX)
C
C      WRITE (6,*) '|||||||||||||||||||||||||||||||||||||||'
C      WRITE (6,*) 'SUBROUTINE COLUMN'
C      WRITE (6,*) 'AXIAL IN COLUMN =',VP
C      WRITE (6,*) '|||||||||||||||||||||||||||||||||||||||'
      IF(IO.EQ.2) GOTO 15
C
C-----Kc
      DO 130 I = 1,6
        DO 130 J = 1,6
  130     TS(I,J) = 0.0
      TS(1,1) = S1
      TS(2,2) = S2
      TS(2,3) = S3
      TS(3,2) = S3
      TS(3,3) = S2
      TS(4,4) = S4
      TS(5,5) = S5
      TS(5,6) = S6
      TS(6,5) = S6
      TS(6,6) = S5
C
C-----KcAc
      CALL MULTIP(TS,6,6,TF,6,12,TSF)
C
C-----Act
      CALL TRANSP(TF,6,12,TFT)
C
C-----ActKcAc
      CALL MULTIP(TFT,12,6,TSF,6,12,TFSF)
C
C-----GEOMETRIC NONLINEAR STIFFNESS MATRIX
      DO 140 I = 1,12
        DO 140 J = 1,12
  140     SMG(I,J) = 0.0
      SMG(2,2)   = (6.*VP)/(5.*XLR)
      SMG(2,4)   = VP/10.
      SMG(2,8)   = ((-1.)*6.*VP)/(5.*XLR)
      SMG(2,10)  = SMG(2,4)
      SMG(4,2)   = SMG(2,4)
      SMG(4,4)   = (4.*VP*XLR)/30.
      SMG(4,8)   = (-1.)*SMG(2,4)
      SMG(4,10)  = ((-1.)*VP*XLR)/30.
```

```
      BMG(8,2)    = BMG(2,8)
      BMG(8,4)    = BMG(4,8)
      BMG(8,8)    = BMG(2,2)
      BMG(8,10)   = (-1.)*BMG(2,4)
      BMG(10,2)   = BMG(2,10)
      BMG(10,4)   = BMG(4,10)
      BMG(10,8)   = BMG(8,10)
      BMG(10,10)  = BMG(4,4)
C
C-----ADD GEOMETRIC NONLINEAR STIFFNESS MATRIX TO TFBF
      CALL PLUS(TFBF,12,12,BMG,TFBF)
C
C-----ActKcAcBc
      CALL MULTIP(TFBF,12,12,TT,12,12,TFBFT)
C
C-----Bct
      CALL TRANSP(TT,12,12,TTT)
C
C-----BctActKcAcBc
      CALL MULTIP(TTT,12,12,TFBFT,12,12,ABA)
C
      RETURN
C
   15 S2 = S2+((4.*VP*XLR)/30.)
      S3 = S3-((VP*XLR)/30.)
C
C     FORCE-FRAME DISPLACEMENT MATRIX
      DO 10 I=1,12
      SA(1,I)=S1*T(1,I)
      SA(2,I)=S2*T(2,I)+S3*T(3,I)
      SA(3,I)=S3*T(2,I)+S2*T(3,I)
      SA(4,I)=S4*T(4,I)
      SA(5,I)=S5*T(5,I)+S6*T(6,I)
      SA(6,I)=S6*T(5,I)+S5*T(6,I)
      SA(7,I)= (SA(2,I)+SA(3,I))/XLR
   10 SA(8,I)= (SA(5,I)+SA(6,I))/XLR
      RETURN
C
      END
C*******************************************************************
      SUBROUTINE  BEAM (IO,MB,XL,SNA,CSA,NBP,BP)
      IMPLICIT REAL*8 (A-H)
      IMPLICIT REAL*8 (O-Z)
      DIMENSION BP(11,NBP)
C
      COMMON/STIF/ ABA(12,12),SA(8,12),T(8,12)
      COMMON/JUNK/ NLD,N,ND,MM,MN,LM(12),IFIL(63)
      COMMON/BUNK/ P(12,3),TX(8),AFIL(216)
C
C     BEAM STIFFNESS AND FORCE MATRICES
C
C     TRANSFORMATION MATRIX
      WI=BP(8,MB)
      WJ=BP(9,MB)
      XLR=XL-WI-WJ
      CALL TRANS(2,XLR,WI,WJ,SNA,CSA,0.D0,0.D0,0.D0,0.D0)
C
C     MEMBER STIFFNESS
      E=BP(1,MB)
      SHFZ=0.
      EIX=BP(4,MB)*E/(XLR*XLR)
      IF(BP(2,MB).GT.0.) SHFZ=14.4*EIX/(BP(2,MB)*E)
      COMMX=(XLR*EIX)/(1.+2.*SHFZ)
C
      S1=0.414*E*BP(3,MB)/XLR
      S2=COMMX*BP(5,MB)*(1.+0.5*SHFZ)
      S3=COMMX*BP(6,MB)*(1.+0.5*SHFZ)
      S4=COMMX*BP( 7,MB)*(1.-SHFZ)
C
C     FORCE-FRAME DISPLACEMENT MATRIX
      DO 10 I=1,6
```

```
      BA(1,I)=B1*T(1,I)
      BA(2,I)=B2*T(2,I)+B4*T(3,I)
   10 BA(3,I)=B4*T(2,I)+B3*T(3,I)
C
C
      IF(IO.EQ.2) RETURN
C     STIFFNESS MATRIX ABA
      DO 120 I=1,6
      DO 120 J=I,6
      ABA(I,J)=0.
      DO 110 K=1,3
  110 ABA(I,J)=ABA(I,J)+T(K,I)*BA(K,J)
  120 ABA(J,I)=ABA(I,J)
C
C     FIXED END FORCES
      DO 160 L=1,NLD
      TX(3)= P(2,L)
      TX(1)= SNA*P(1,L)
      TX(2)=-CSA*P(1,L)
      TX(6)= P(4,L)
      TX(4)= SNA*P(3,L)
      TX(5)=-CSA*P(3,L)
      DO 150 I=1,6
  150 P(I,L)=TX(I)
  160 CONTINUE
      RETURN
C
      END
C*******************************************************************
      SUBROUTINE PANEL (IO,L,XL,D,DF,SNA,CSA,NPAN,PP,VP)
      IMPLICIT REAL*8 (A-H)
      IMPLICIT REAL*8 (O-Z)
      DIMENSION PP(5,NPAN),TS(3,3),VSF(3,6),TFSF(6,6),TFSFT(6,10),
     1          VFT(6,3),VTT(10,6),SMG(6,6),VF(3,6),VT(6,10),
     2          VABA(10,10)
C
      COMMON/STIF/ ABA(12,12),BA(8,12),T(8,12)
      COMMON/JUNK/ NLD,N,ND,MM,MN,LM(12),IFIL(53)
      COMMON/SUNK/ P(12,3),TF(6,12),TT(12,12),AFIL(8)
C
C     PANEL STIFFNESS AND FORCE MATRICES
C
      NP=3
C
C  CHECK PANEL TYPE  (DEFAULT TO PURE SHEAR PANEL IF FLEX != ZERO)
C
      IF(PP(3,L).LE.0.) NP=5
C
C     TRANSFORMATION MATRIX
C
      CALL TRANS(NP,XL,D,DF,SNA,CSA,0.D0,0.D0,0.D0,0.D0)
      DO 180 I = 1,3
        DO 180 J = 1,6
  180     VF(I,J) = TF(I,J)
      DO 190 I = 1,6
        DO 190 J = 1,10
  190     VT(I,J) = TT(I,J)
C
      IF(NP.EQ.5) GO TO 50
C
C  FLEXURAL PANEL STIFFNESS (NP=3)
C
      E=PP(1,L)
      SHFY=0.
      EIX=E*PP(3,L)/(XL*XL)
      IF(PP(4,L).GT.0.) SHFY=6.*EIX/(PP(4,L)*PP(5,L))
      COMMX=(EIX*XL*2.)/(1.+2.*SHFY)
C
      B1=COMMX*2.*(1.+0.5*SHFY)
      B2=COMMX*(1.-SHFY)
      B3=E*PP(2,L)/XL
```

```
C
C     WRITE (6,*) '*********************************'
C     WRITE (6,*) 'SUBROUTINE PANEL'
C     WRITE (6,*) 'AXIAL IN PANEL = ',VP
C     WRITE (6,*) '*********************************'
      IF (IO.EQ.2) GOTO 160
C
C-----Kc : LINEAR STIFFNESS MATRIX
      DO 160 I = 1,3
        DO 160 J = 1,3
  160     TS(I,J) = 0.0
      TS(1,1) = S1
      TS(1,2) = S2
      TS(2,1) = S2
      TS(2,2) = S1
      TS(3,3) = S3
C
C-----KcAp
      CALL MULTIP(TS,3,3,VF,3,6,VSF)
C
C-----Apt
      CALL TRANSP(VF,3,6,VFT)
C
C-----AptKcAp
      CALL MULTIP(VFT,6,3,VSF,3,6,TFSF)
C
C-----GEOMETRIC NONLINEAR STIFFNESS MATRIX
      DO 170 I = 1,6
        DO 170 J = 1,6
  170     SMG(I,J) = 0.0
      SMG(1,1) = (6.*VP)/(5.*XL)
      SMG(1,2) = ((-1.)*VP)/(10.*D)
      SMG(1,3) = (-1.)*SMG(1,2)
      SMG(1,4) = (-1.)*SMG(1,1)
      SMG(1,5) = SMG(1,2)
      SMG(1,6) = SMG(1,3)
      SMG(2,1) = SMG(1,2)
      SMG(2,2) = (4.*VP*XL)/(30.*D*D)
      SMG(2,3) = (-1.)*SMG(2,2)
      SMG(2,4) = SMG(1,3)
      SMG(2,5) = ((-1.)*VP*XL)/(30.*D*D)
      SMG(2,6) = (-1.)*SMG(2,5)
      SMG(3,1) = SMG(1,3)
      SMG(3,2) = SMG(2,3)
      SMG(3,3) = SMG(2,2)
      SMG(3,4) = SMG(1,2)
      SMG(3,5) = SMG(2,6)
      SMG(3,6) = SMG(2,5)
      SMG(4,1) = SMG(1,4)
      SMG(4,2) = SMG(2,4)
      SMG(4,3) = SMG(3,4)
      SMG(4,4) = SMG(1,1)
      SMG(4,5) = SMG(1,3)
      SMG(4,6) = SMG(1,2)
      SMG(5,1) = SMG(1,5)
      SMG(5,2) = SMG(2,5)
      SMG(5,3) = SMG(3,5)
      SMG(5,4) = SMG(4,5)
      SMG(5,5) = SMG(2,2)
      SMG(5,6) = SMG(2,3)
      SMG(6,1) = SMG(1,6)
      SMG(6,2) = SMG(2,6)
      SMG(6,3) = SMG(3,6)
      SMG(6,4) = SMG(4,6)
      SMG(6,5) = SMG(5,6)
      SMG(6,6) = SMG(2,2)
C
C-----ADD GEOMETRIC NONLINEAR STIFFNESS MATRIX TO TFSF
      CALL PLUS(TFSF,6,6,SMG,TFSF)
C
C-----AptKcApBp
```

```
      CALL MULTIP(TFBF,6,6,VT,6,10,TFBFT)
C
C-----Bpt
      CALL TRANSP(VT,6,10,VTT)
C
C-----BptAptKcApBp
      CALL MULTIP(VTT,10,6,TFBFT,6,10,VABA)
      DO 200 I = 1,10
        DO 200 J = 1,10
  200     ABA(I,J) = VABA(I,J)
C
      RETURN
C
  150 S1 = S1+((4.*VP*XL)/30.)
      S2 = S2-((VP*XL)/30.)
C
C     FORCE-FRAME DISPLACEMENT MATRIX
C
      DO 10 I=1,10
      BA(1,I)=S1*T(1,I)+S2*T(2,I)
      BA(2,I)=S2*T(1,I)+S1*T(2,I)
      BA(3,I)=S3*T(3,I)
   10 BA(4,I)=(BA(1,I)+BA(2,I))/XL
C
      RETURN
C
C SHEAR PANEL STIFFNESS (NP=5)
C
   50 IF(IO.EQ.2) XL=1.
      S1=PP(2,L)*PP(5,L)*XL
C
C FORCE-FRAME DISPLACEMENT MATRIX
C
      DO 20 I=1,10
      BA(1,I)=S1*T(1,I)
   20 BA(2,I)=BA(1,I)/PP(2,L)
C
      KK=1
C
   30 IF(IO.EQ.2) RETURN
C
C     STIFFNESS MATRIX
      DO 120 I=1,10
      DO 120 J=I,10
      ABA(I,J)=0.
      DO 110 K=1,KK
  110 ABA(I,J)=ABA(I,J)+T(K,I)*BA(K,J)
  120 ABA(J,I)=ABA(I,J)
      RETURN
C
      END
C     SUBROUTINE SECOND (T)
C
C     IMPLICIT REAL*8 (A-H)
C     IMPLICIT REAL*8 (O-Z)
C     INTEGER*2 IHRS,IMIN,ISEC
C     CALL CLOCK(IHRS,IMIN,ISEC)
C     T =  DBLE(IHRS)*60 +  DBLE(IMIN)+ DBLE(ISEC)/60
C
C     RETURN
C     END
C
      SUBROUTINE PLUS(VA,IROWA,ICOLVA,VB,VC)
C
      DOUBLE PRECISION VA(IROWA,ICOLVA),VB(IROWA,ICOLVA),
     1                 VC(IROWA,ICOLVA)
      DO 5 I = 1,IROWA
        DO 5 J = 1,ICOLVA
    5     VC(I,J) = VA(I,J) + VB(I,J)
      RETURN
      END
```

```
C
SUBROUTINE MINUS(VA,IROWA,ICOLVA,VB,VC)
C----------------------------------------------------------------
CThis is a subprogram for matrix substraction A - B = C
CVA(20,20) is local matrix A dimension 20 * 20
CVB(20,20) is local matrix B dimension 20 * 20
C VC(20,20) is local result matrix C dimension 20 * 20
C----------------------------------------------------------------
DOUBLE PRECISION VA(20,20),VB(20,20),VC(20,20)
DO 20 I = 1,IROWA
DO 15 J = 1,ICOLVA
   15 VC(I,J) = VA(I,J)-VB(I,J)
   20 CONTINUE
RETURN
END
C
SUBROUTINE MULTIP(VA,IROWA,ICOLVA,VB,IROWB,ICOLVB,VC)
C----------------------------------------------------------------
CThis is a subprogram for matrix multiplication VA * VB = VC
CIROWA is number of row of matrix VA
CICOLVA is number of column of matrix VA
CIROWB is number of row of matrix VB
CICOLVB is number of column of matrix VB
C----------------------------------------------------------------
DOUBLE PRECISION VA(IROWA,ICOLVA),VB(IROWB,ICOLVB),
     1                  VC(IROWA,ICOLVB)
IF ( ICOLVA.NE.IROWB) GOTO 40
DO 35 I = 1,IROWA
DO 30 J = 1,ICOLVB
VC(I,J) = 0.
DO 25 K = 1,IROWB
   25 VC(I,J) = VC(I,J) + (VA(I,K)*VB(K,J))
   30 CONTINUE
   35 CONTINUE
GOTO 45
   40 WRITE (*,*) 'COLUMN 1ST .NE. ROW 2ND'
   45RETURN
END
C
SUBROUTINE DISPLY(VA,IROWA,ICOLVA)
C----------------------------------------------------------------
CThis is a subprogram for displaying matrix on datafile or screen.
C----------------------------------------------------------------
DOUBLE PRECISION VA(IROWA,ICOLVA)
WRITE (6,*) '      '
      DO 75 I = 1,IROWA
   75 WRITE (6,100) (VA(I,J),J=1,ICOLVA)
  100 FORMAT (10D12.5)
RETURN
END
C
      SUBROUTINE TRANSP(VA,IROWA,ICOLVA,VB)
C----------------------------------------------------------------
C     This is a subprogram for matrix transposation.
C     IROWA is number of row of matrix VA.
C     ICOLVA is number of column of matrix VA.
C----------------------------------------------------------------
      DOUBLE PRECISION VA(IROWA,ICOLVA),VB(ICOLVA,IROWA)
      DO 115 I = 1,ICOLVA
        DO 115 J = 1,IROWA
  115 VB(I,J) = VA(J,I)
      RETURN
      END
```

```
      SUBROUTINE EIGEN(H,N,IEGEN,U,NR,X,IQ)
C
      IMPLICIT REAL*8 (A-H)
      IMPLICIT REAL*8 (O-Z)
      DIMENSION H(N,N),U(N,N),X(N),IQ(N)
C
      IF (IEGEN) 15,10,15
 10   DO 14 I=1,N
      DO 14 J=1,N
      IF(I-J) 12,11,12
 11   U(I,J)=1.0
      GO TO 14
 12   U(I,J)=0
 14   CONTINUE
C
 15   NR = 0
      IF (N-1) 1000,1000,17
C
C     SCAN FOR LARGEST OFF DIAGONAL ELEMENT IN EACH ROW
C     X(I) CONTAINS LARGEST ELEMENT IN ITH ROW
C     IQ(I) HOLDS SECOND SUBSCRIPT DEFINING POSITION OF ELEMENT
C
 17   NMI1=N-1
      DO 30 I=1,NMI1
      X(I) = 0.
      IPL1=I+1
      DO 30 J=IPL1,N
      IF ( X(I) - DABS( H(I,J))) 20,20,30
 20   X(I)=DABS(H(I,J))
      IQ(I)=J
 30   CONTINUE
C
C     SET INDICATOR FOR SHUT-OFF.RAP=2**-27,NR=NO OF ROTATIONS
      RAP=7.450580596E-9
      HDTEST=1.0E32
C
C     FIND MAXIMUM OF X(I) S FOR PIVOT ELEMENT AND
C     TEST FOR END OF PROBLEM
C
 40   DO  70  I=1,NMI1
      IF (I-1) 60,60,45
 45   IF ( XMAX- X(I)) 60,70,70
 60   XMAX=X(I)
      IPIV=I
      JPIV=IQ(I)
 70   CONTINUE
C
C     IS MAX. X(I) EQUAL TO ZERO, IF LESS THAN HDTEST, REVISE HDTEST
      IF ( XMAX) 1000,1000,80
 80   IF (HDTEST) 90,90,85
 85   IF (XMAX - HDTEST) 90,90,148
 90   HDIMIN = DABS( H(1,1) )
      DO 110  I= 2,N
      IF (HDIMIN- DABS( H(I,I))) 110,110,100
 100  HDIMIN=DABS(H(I,I))
 110  CONTINUE
C
      HDTEST=HDIMIN*RAP
C
C     RETURN IF MAX.H(I,J)LESS THAN(2**-27)ABSF(H(K,K)-MIN)
      IF (HDTEST- XMAX) 148,1000,1000
 148  NR = NR+1
C
C     COMPUTE TANGENT, SINE AND COSINE,H(I,I),H(J,J)
 150  DM1 = 2.0
      TANG=DSIGN(DM1,(H(IPIV,IPIV)-H(JPIV,JPIV)))*H(IPIV,JPIV)/(
     *DABS(H(IPIV,IPIV)-
     1H(JPIV,JPIV))+DSQRT((H(IPIV,IPIV)-H(JPIV,JPIV))**2
     2+4.0*H(IPIV,JPIV)**2))
      COSINE=1.0/DSQRT(1.0+TANG**2)
      SINE=TANG*COSINE
```

```
      HII=H(IPIV,IPIV)
      H(IPIV,IPIV)=COSINE**2*(HII+TANG*(2.*H(IPIV,JPIV)+TANG*H(JPIV,JPIV
     1)))
      H(JPIV,JPIV)=COSINE**2*(H(JPIV,JPIV)-TANG*(2.*H(IPIV,JPIV)-TANG*H
     1II))
      H(IPIV,JPIV)=0.
C
C       PSEUDO RANK THE EIGENVALUES
C       ADJUST SINE AND COS FOR COMPUTATION OF H(IK) AND U(IK)
      IF ( H(IPIV,IPIV) -  H(JPIV,JPIV)) 152,153,153
  152 HTEMP = H(IPIV,IPIV)
      H(IPIV,IPIV) = H(JPIV,JPIV)
      H(JPIV,JPIV) = HTEMP
C        RECOMPUTE SINE AND COS
      DM1 = 1.0
      HTEMP = DSIGN (DM1, -SINE) * COSINE
      COSINE = DABS (SINE)
      SINE = HTEMP
  153 CONTINUE
C
C       INSPECT THE IQS BETWEEN I+1 AND N-1 TO DETERMINE
C      WHETHER A NEW MAXIMUM VALUE SHOULD BE COMPUTED SINCE
C      THE PRESENT MAXIMUM IS IN THE I OR J ROW.
C
      DO 350 I=1,NMI1
      IF(I-IPIV)210,350,200
  200 IF(I-JPIV)210,350,210
  210 IF(IQ(I)-IPIV)230,240,230
  230 IF(IQ(I)-JPIV)350,240,350
  240 K=IQ(I)
  250 HTEMP=H(I,K)
      H(I,K)=0.
      IPL1=I+1
      X(I) =0.
C
C      SEARCH IN DEPLETED ROW FOR NEW MAXIMUM
C
      DO 320 J=IPL1,N
      IF ( X(I)- DABS( H(I,J)) ) 300,300,320
  300 X(I) = DABS(H(I,J))
      IQ(I)=J
  320 CONTINUE
      H(I,K)=HTEMP
  350 CONTINUE
C
      X(IPIV) =0.
      X(JPIV) =0.
C
C      CHANGE THE OTHER ELEMENTS OF H
C
      DO 530 I=1,N
C
      IF(I-IPIV)370,530,420
  370 HTEMP = H(I,IPIV)
      H(I,IPIV) = COSINE*HTEMP + SINE*H(I,JPIV)
      IF ( X(I) -  DABS( H(I,IPIV)) )380,390,390
  380 X(I) = DABS(H(I,IPIV))
      IQ(I) = IPIV
  390 H(I,JPIV) = -SINE*HTEMP + COSINE*H(I,JPIV)
      IF ( X(I) -  DABS( H(I,JPIV)) ) 400,530,530
  400 X(I) = DABS(H(I,JPIV))
      IQ(I) = JPIV
      GO TO 530
C
  420 IF(I-JPIV)430,530,480
  430 HTEMP = H(IPIV,I)
      H(IPIV,I) = COSINE*HTEMP + SINE*H(I,JPIV)
      IF ( X(IPIV) -  DABS( H(IPIV,I)) ) 440,450,450
  440 X(IPIV) = DABS(H(IPIV,I))
      IQ(IPIV) = I
  450 H(I,JPIV) = -SINE*HTEMP + COSINE*H(I,JPIV)
```

```
      IF ( X(I) -  DABS( H(I,JPIV)) ) 400,530,530
C
 480  HTEMP = H(IPIV,I)
      H(IPIV,I) = COSINE*HTEMP + SINE*H(JPIV,I)
      IF ( X(IPIV) -  DABS( H(IPIV,I)) ) 490,500,500
 490  X(IPIV) = DABS(H(IPIV,I))
      IQ(IPIV) = I
 500  H(JPIV,I) = -SINE*HTEMP + COSINE*H(JPIV,I)
      IF ( X(JPIV) -  DABS( H(JPIV,I)) ) 510,530,530
 510  X(JPIV) = DABS(H(JPIV,I))
      IQ(JPIV) = I
 530  CONTINUE
C
C     TEST FOR COMPUTATION OF EIGENVECTORS
C
      IF(IEGEN)40,540,40
 540  DO 550 I=1,N
      HTEMP=U(I,IPIV)
      U(I,IPIV)=COSINE*HTEMP+SINE*U(I,JPIV)
 550  U(I,JPIV)=-SINE*HTEMP+COSINE*U(I,JPIV)
      GO TO 40
 1000 RETURN
      END
      SUBROUTINE RESP (PA,X,PERD,NTIME,NPC,DDT,DAMP)
      IMPLICIT REAL*8 (A-H)
      IMPLICIT REAL*8 (O-Z)
      DIMENSION PA(2,1),X(1)
C
C     EVALUATION OF MODAL RESPONSE ... USING EXPLICIT INTEGRATION
C
      DM1 = 1.0
      W=8.0*DATAN(DM1)/PERD
      WW=W*W
      ZW=DAMP*W
      TZW=2.*ZW
      WD=W*DSQRT(1.0-DAMP**2)
      FB=TZW/(WW*WW)
      FA=ZW/WW
      FV=ZW*WW
      FVD=WW*(2.*DAMP**2-1.0)
      FBB=(2.*DAMP**2-1.0)/WW
C
      L=0
      II=1
      VO=0.
      VDO=0.
      TO=PA(1,1)
   10 DT=DDT
   50 B=(PA(2,II+1)-PA(2,II))/(PA(1,II+1)-PA(1,II))
      A=PA(2,II)+B*(TO-PA(1,II))
      TT=TO+DT
      IF(PA(1,II+1).GT.TT) GO TO 100
      DELT=PA(1,II+1)-TO
      GO TO 200
  100 DELT=DT
C
  200 EX=DEXP(-ZW*DELT)
      FT=WD*DELT
      CS=DCOS(FT)
      SN=DSIN(FT)
      VT=(VDO+ZW*VO-FA*A+FBB*B)*SN/WD
      VT=VT+(VO-A/WW+FB*B)*CS
      VT=VT*EX+A/WW-FB*B+B*DELT/WW
C
      VDT=(A-WW*VO-ZW*(VDO+B/WW))*SN/WD
      VDT=EX*((VDO-B/WW)*CS+VDT)+B/WW
C
      VDDT=(B+FV*VO+FVD*VDO-ZW*A)/WD
      VDDT=EX*((A-WW*VO-TZW*VDO)*CS+VDDT*SN)
C
      VO=VT
```

```
      VDO=VDT

      IF(PA(1,II+1).GT.TT) GO TO 500
      DT=DT-DELT
      II=II+1
      TO=PA(1,II)
      IF( DABS(DT).LT.1.0D-10 ) GO TO 600
      GO TO 50
C
  500 TO=TO+DT
  600 L=L+1
      X(L)=VT
      IF(L.LT.NTIME) GO TO 10
C
      RETURN
      END
      SUBROUTINE LOAD(XM,NLD,NPT)
      IMPLICIT REAL*8 (A-H)
      IMPLICIT REAL*8 (O-Z)
      DIMENSION XM(10,NLD)
C
      WRITE (NPT,2000)
      DO 100 L=1,NLD
      READ(5,1000) ( XM(I,L),I=1,10 )
  100 WRITE(NPT,2001) L,( XM(I,L),I=1,10 )
      WRITE (NPT,2002)
      RETURN
C
 1000 FORMAT( 5F10.0,5F5.0 )
 2000 FORMAT (//,32H LOAD CONDITION DEFINITION CARDS ,//,5H0LOAD ,11X,
     1  1HI,10X,2HII,9X,3HIII,11X,1HA,11X,1HB,12H  SPECTRUM-1,12H  SPECT
     1RUM-2,12H  SPECTRUM-3,12H  SPECTRUM-4,12H   TIME HIST  )
 2001 FORMAT( I5,10F12.2 )
 2002 FORMAT (////43H SPECTRUM-1... ROOT MEAN SQUARE COMBINATION  ,//,
     1 37H SPECTRUM-2... SUM OF ABSOLUTE VALUES  ,//,
     2 37H SPECTRUM-3... DOUBLE SUM COMBINATION  ,//,
     3 45H SPECTRUM-4... COMPLETE QUADRATIC COMBINATION  )
C
      END
      SUBROUTINE DISP (SD,R,D,RF,A,MSS,MTF,MLD,MST,NFS,HED)
      IMPLICIT REAL*8 (A-H)
      IMPLICIT REAL*8 (O-Z)
      DIMENSION SD(MST,9),R(MSS,MLD),D(MST,MTF,2),RF(NFS,MLD),A(MTF,5)
     1  ,HED(MTF,4)
      COMMON/GEN/  IFIL(24),RLAB(3),IS,I3,BFIL(6)
      COMMON/BUNK/ AI(3,3),AJ(3,5),AFIL(236)
      CHARACTER*4 HED,RLAB
C
C     COMPUTE FRAME DISPLACEMENTS FROM STRUCTURE DISPLACEMENTS
C
      READ(2) A,D,HED
      REWIND 2
      DO 500 K=1,MTF
      I=MTF+1-K
      DO 25 L=1,3
      DO 25 J=1,3
   25 AI(L,J)=0.
C
      IF=A(I,1)
      IFC=A(I,2)
      AI(1,1)=A(I,3)
      AI(1,2)=A(I,4)
      AI(2,2)=AI(1,1)
      AI(2,1)=-AI(1,2)
      NT=A(I,5)
      AI(3,3)=1.
      NS=MST+1-NT
      NFR=NS*3
      DO 300 N=NT,MST
      NN=(N-1)*13
      N1=(N-NT)*3
```

```
      AI( 1,3)=D(N,I,1)
      AI( 2,3)=D(N,I,2)
      DO 225 II=1,3
      DO 225 L=1,MLD
      RF(N1+II,L)=0.
      DO 225 KK=1,13
      K1=KK+18
  225 RF(N1+II,L)=RF(N1+II,L)+AI(II,K1)*R(NN+KK,L)
  300 CONTINUE
C
      WRITE (2) IF,IFC,NFR,((RF(N,L),N=1,NFR),L=1,MLD),(HED(I,J),J=1,4)
  500 CONTINUE
C
      RETURN
      END
      SUBROUTINE FRAME( MTOT,NMD,NFS,KODE,ICHEK,NPT,TANORM,TNORM,TDIS
     1                 ,ILP,ITYPE )
      IMPLICIT REAL*8 (A-H)
      IMPLICIT REAL*8 (O-Z)
      COMMON /CNTR/ A(26000)
      COMMON/GEN/ NST,NOF,NTF,NLD,NAT,NFQ,KFIL(18),RLAB(3),IS,I3,
     1             AFIL(6)
      COMMON/ DYN / NTIME,DT,NPC,DAMP
      COMMON/JUNK/ FHED(4),IF,IFC,IFIL,II,JFIL(62)
      COMMON/STIF/ ASA(12,12),SA(8,12),T(8,12)
      CHARACTER*4 FHED,RLAB
C
C     OUTPUT DISPLACEMENTS AND FORCES
C
      N0=1+3*NST
      IF( NAT.EQ.3 ) N0 = 1 + 9*NST + 2*NFQ*NFQ
      IF( ICHEK.EQ.0 ) CALL LOAD( A(N0),NLD,NPT )
      REWIND 2
      KO=0
      M=0
      MLD=5+NFQ
      IF (NAT.EQ.4) MLD=5+NTIME
C---- M1, M2 = LOCATIONS OF DSC + CQC MATRICES
      M1 = 1 + 9*NST
      M2 = M1 + NFQ*NFQ
      N1 = N0 + 10*NLD
      NBK = 1
C
      DO 500 I=1,NTF
      IF( ICHEK.NE.0 ) GO TO 100
      II=NTF+1-I
      IF ( ITYPE .EQ. 1 ) THEN
        NPT = 18
      ENDIF
      CALL SORT( A(N1),A(N0),A(M1),A(M2),NFS,NLD,MLD,NAT,NMD,NFR,NFQ
     1          ,TANORM,TNORM,TDIS,NPT )
      IF(IF.EQ.M) GO TO 200
      IF(KO.EQ.0) GO TO 100
      IF(KO.NE.1) GO TO 100
C
      DO 50 K=1,NBK
   50 BACKSPACE 3
C
  100 BACKSPACE 3
      READ  (3)  M,NC,NS,NCP,NSP,NFEF,NPAN,NTRU,NB
      NBKS=2*NB
      BACKSPACE 3
      IF( ICHEK.NE.0 ) GO TO 300
      KO=1
  200 IF(IFC.NE.0) GO TO 500
      IF(KO.NE.2) GO TO 300
C
      DO 250 K=1,NBKS
  250 READ (3) XX
C
  300 CALL SECOND (TS)
```

```
      MM=3*NC
      NN=6*NC+3*NB+3
      N2=N1+NFS*MLD
      N3=N2+NC*2
      N4 = N3 + 14*NCP
      N5 = N4 + 11*NBP
      N6=N5+7*NFEF
      N7=N6+NB*NS*3
      N8=N7+NS*NB*3
      N9=N8+NB*NC*2
      N10=N9+3*NPAN
      LB=(MM*(MM+1))/2
      LC=MM*MM
      LE=MM*(3*NS+3)
      LKH=NN
      N11=N10+LB+LE+LC+LKH
      N12=N11+NN*MLD
      N13=N12+NFEF
      N14=N13+5*NPAN
      N15=N14+8*NFQ
      N16=N15+3*NTRU
      N17 = N16 + 3*NTRU
      IF(N17.GT.MTOT) CALL MEMORY (N17-MTOT)
      IF( ICHEK.EQ.0 ) GO TO 450
      IF( NAT.NE.4 ) WRITE(6,3000) N17
      N18 = NN + NFS
      IF( NAT.EQ.4 ) WRITE(6,3001) N17,N18
      GO TO 460
  450 CONTINUE
      N = 1+NST
      CALL OUTPUT(A(1),A(N),A(N0),A(N1),A(N2),A(N3),A(N4),A(N5),A(N6),
     1A(N7),A(N8),A(N9),A(N10),A(N11),NST,NB,NC,NCP,NBP,NS,NFEF,NPAN,
     2A(N12),A(N13),NN,MM,NLD,MLD,KO,A(N14),NMD,A(N15),A(N16),NTRU,NFR,
     3NFS,NFQ,A(M1),A(M2),KODE,ILP,NPT )
  460 CALL SECOND( TE )
      TE=TE-TS
      II=NTF+1-I
C      WRITE (6,2000) II,TE
      KO =2
  500 NBK=NBKS+1
C
      RETURN
 2000 FORMAT (/,12H ...FRAME NO I3,3H... /
     1   4X,38HTIME REQUIRED FOR STRESS COMPUTATION = F6.2)
 3000 FORMAT( /,10X,53H * ROUTINE OUTPUT ( ELEMENT FORCES ) REQUIRES MTO
     1T = ,I6,/ )
 3001 FORMAT( /,    53H * ROUTINE OUTPUT ( ELEMENT FORCES ) REQUIRES MTO
     1T = ,I6,3H  + ,I6,31H  X  (NO.TIME STE   TO BE USED) )
      END
      SUBROUTINE SORT( U,XM,DSC,CQC,NFS,NLD,MLD,NAT,NMD,NFR,NFQ
     1                ,TANORM,TNORM,TDIS,NPT )
C
      IMPLICIT REAL*8 (A-H)
      IMPLICIT REAL*8 (O-Z)
      DIMENSION HDM(8),LNUM(8)
      DIMENSION DNUM(8)
      DIMENSION U(NFS,MLD),XM(10,NLD),DSC(NFQ,NFQ),CQC(NFQ,NFQ)
      COMMON /JUNK/FHED(4),IF,IFC,NS,NFRM,IFIL(62)
      COMMON /BUNK/ UU(8,3),UMIN(8,3),AFIL(212)
      COMMON/GEN/ JFIL(24),RLAB(3),IS,I3,BFIL(6)
      COMMON/DYN/NTIME,DT,NPC,DAMP
      CHARACTER*4 FHED,RLAB
      CHARACTER*3 HT,HD1,HD2
      CHARACTER*1 HDM
      DATA HT/'DT='/
      DATA HD1,HD2/'MAX','MIN'/
C
C    LOAD CASE COMBINATION AND OUTPUT OF DISPLACEMENTS
C
      READ (2) IF,IFC,NFR,((U(N,L),N=1,NFR),L=1,MLD),FHED
      IF (IFC.NE.0) GO TO 600
```

```
C
      LLD=NLD+NMD
      DO 500 LL=1,LLD,8
      LH=LL+7
      IF (LH.GT.LLD) LH=LLD
      IH=LH+1-LL
      WRITE (NPT,2000) NFRM,IF,FHED
      IF (NAT.GE.3) WRITE(6,3000)
      IF (NMD.GT.0) WRITE(6,3001)
      DO 60 L=LL,LH
      LNUM(L+1-LL)=L
      HDM(L+1-LL)='H'
      IF (L.LE.NLD) GO TO 60
      LNUM(L+1-LL)=L-NLD
      HDM(L+1-LL)='M'
60    CONTINUE
      WRITE (NPT,2001) (HDM(I),LNUM(I),I=1,IH)
C
C     STATIC DISPLACEMENT COMPONENTS
C
      NS=NFR/3
      DO 400 N=1,NS
      NL=NS+1-N
      DO 400 II=1,3
      NV=(N-1)*3+II
      DO 100 L=LL,LH
      I=L-LL+1
      UU(I,II)=0.
      DO 100 J=1,5
100   UU(I,II)=UU(I,II)+U(NV,J)*XM(J,L)
      IF (NAT.GE.3) GO TO 150
      IF ( N .EQ. 1 ) THEN
        IF ( II .EQ. 1 ) THEN
          TNORM1 = UU(1,1)-TDIS
          TNORM2 = (TNORM1*TNORM1)/(UU(1,1)*UU(1,1))
          TNORM = DSQRT(TNORM2)
C          WRITE (6,*) 'UU(1,1) = ',UU(1,1)
C          WRITE (6,*) 'TDIS = ',TDIS
C          WRITE (6,*) 'TNORM = ',TNORM
          IF ( TNORM .LE. TANORM ) THEN
            WRITE (6,2101)
            NPT = 6
          ENDIF
          TDIS = UU(1,1)
        ENDIF
      ENDIF
      WRITE (NPT,2002) NL,RLAB(II),(UU(I,II),I=1,IH)
      GO TO 400
C
C     DYNAMIC DISPLACEMENT COMPONENTS
C
150   NATT=NAT-3
      S1=0.
      S2=0.
      TH=0.
      DO 200 I=6,MLD
      UA=DABS(U(NV,I))
      IF (NATT) 160,160,180
160   S1=S1+UA*UA
      S2=S2+UA
      GO TO 200
180   IF (UA.GT.TH) TH=UA
200   CONTINUE
      S1=DSQRT(S1)
      S3 = 0.0
C---- CHECK IF DSC CALC REQD
      IF( (DSC(1,1).LT.0.0) .OR. (NAT.NE.3) ) GO TO 210
C---- DSC COMBO
      DO 202 I=1,NFQ
      X = U(NV,I+5)
      DO 202 J=1,NFQ
```

```
   202 B3 = B3 + X*DSC(I,J)*U(NV,J+5)
       B3 = DSQRT( B3 )
   210 B4 = 0.0
C---- CHECK IF CQC COMBO REQD
       IF( (CQC(1,1).LT.0.0) .OR. (NAT.NE.3) ) GO TO 216
       DO 212 I=1,NFQ
       X = U(NV,I+5)
       DO 212 J=1,NFQ
   212 B4 = B4 + X*CQC(I,J)*U(NV,J+5)
       B4 = DSQRT( B4 )
   216 DO 250 L=LL,LH
       I=L-LL+1
       IF (L.GT.NLD) GO TO 220
       UD = B1*XM(6,L) + B2*XM(7,L) + B3*XM(8,L) + B4*XM(9,L) +
     1      TH*XM(10,L)
       UMIN(I,II)=UU(I,II)-UD
       UU(I,II)=UU(I,II)+UD
       GO TO 250
 220   UMIN(I,II)=U(NV,L+5-NLD)
       UU(I,II)=UMIN(I,II)
 250   CONTINUE
       WRITE (6,2003) NL,HD1,RLAB(II),(UU(I,II),I=1,IH)
       WRITE (6,2004) HD2,RLAB(II),(UMIN(I,II),I=1,IH)
       IF (II.EQ.3) WRITE (6,2114)
 400   CONTINUE
 500   CONTINUE
 C    PRINT OF TIME HISTORY DISPLACEMENTS
 C
       IF (NATT.NE.2) GO TO 800
       WRITE (6,2005)
       DO 700 LL=6,MLD,8
       LH=LL+7
       IF (LH.GT.MLD) LH=MLD
       IH=LH+1-LL
       DO 660 L=LL,LH
       DNUM(L+1-LL)=(L-5)*DT
 660   HCM(L+1-LL)=HT
       WRITE (6,2006) (HCM(I),DNUM(I),I=1,IH)
C
       DO 670 N=1,NS
       NL=NS+1-N
       DO 670 II=1,3
       NV=(N-1)*3+II
       DO 665 L=LL,LH
       I=L-LL+1
       UU(I,II)=U(NV,L)
 665   CONTINUE
       WRITE (6,2003) NL,HD1,RLAB(II),(UU(I,II),I=1,IH)
 670   CONTINUE
C
 700   CONTINUE
C
 800   RETURN
C
 2000  FORMAT (//,24H ...OUTPUT FOR FRAME NO I3,4H ... ,//
     1   10X,12HFRAME TYPE = I3/10X,12HFRAME ID      ,7A4,//
     2   32H0..LATERAL FRAME DISPLACEMENTS.. )
 2001  FORMAT (/,6H LEVEL,7X,8(11X,A1,I2))
 2002  FORMAT (I6,4X,A4,5X,8F14.7)
 2003  FORMAT (I6,2X,A3,1X,A4,2X,(8F14.7))
 2004  FORMAT (8X,A3,1X,A4,2X,8F14.7)
 2005  FORMAT (23H TIME HISTORY RESPONSE  )
 2006  FORMAT (13X,8(5X,A3,F6.3))
 3001  FORMAT (/,45H  CONTRIBUTION TO SPECTRAL RESPONSE FROM EACH ,/,
     1   60H  INDIVIDUAL MODE LISTED UNDER HEADINGS    M 1    M 2    ETC
     2  )
 2114  FORMAT (1H )
 3000  FORMAT (/,23H MAX...STATIC + DYNAMIC /
     1            23H MIN...STATIC - DYNAMIC )
 2101  FORMAT (///,T10,'FRAME DISPLACEMENT',/,T3,'LEVEL')
       END
```

```
      END
      SUBROUTINE BKSUB (B,C,E,LB,MM,NNM,R,NN,MLD,KH)
      IMPLICIT REAL*8 (A-H)
      IMPLICIT REAL*8 (O-Z)
      DIMENSION B(LB),C(MM,MM),E(MM,NNM),R(NN,MLD),KH(NN)
C
C      COMPUTE FRAME DISPLACEMENTS AT ONE LEVEL
C
      NBKB=3
      BACKSPACE NBKB
      BACKSPACE NBKB
      READ (NBKB) B,C
      READ (NBKB) E,((R(I,J),I=1,MM),J=1,3),KH
      BACKSPACE NBKB
      BACKSPACE NBKB
      MN=2*MM
      MMP=MM+1
      DO 400 L=1,MLD
      DO 300 J=MMP,NN
      KF=KH(J)
      IF (KF.GT.MM) GO TO 300
      IF (J.GT.MN) GO TO 250
      DO 240 K=KF,MM
  240 R(K,L)=R(K,L)-C(K,J-MM)*R(J,L)
      GO TO 300
  250 DO 260 K=KF,MM
  260 R(K,L)=R(K,L)-E(K,J-MN)*R(J,L)
  300 CONTINUE
      IB=LB
      DO 400 II=1,MM
      I=MM+1-II
      KK=I-1
      KF=KH(I)
      IB=IB-I
      IF (KF.GT.KK) GO TO 400
      DO 340 K=KF,KK
  340 R(K,L)=R(K,L)-B(IB+K)*R(I,L)
  400 CONTINUE
      RETURN
      END
      SUBROUTINE STRESS( R,XM,NN,NLD,MLD,M,FM,NMD,NFQ,DBC,CQC,KODE,A,
     1                   NFF,VRR,NREC,B1,ILP,NPT )
      IMPLICIT REAL*8 (A-H)
      IMPLICIT REAL*8 (O-Z)
      DIMENSION R(NN,MLD),XM(10,NLD),FM(8,NFQ),DBC(NFQ,NFQ),CQC(NFQ,NFQ)
     1 ,A(1)
      COMMON/JUNK/ FHED(4),IF,IFC,ND,NF,LM(12),IFIL(50)
      COMMON/BUNK/ F(8,10),Q(3,3),P(10),PMIN(10),AFIL(151)
      COMMON/GEN/ JFIL(4),NAT,KFIL(24),BFIL(6)
      COMMON/STIF/ ABA(12,12),BA(8,12),T(8,12)
      CHARACTER*3 HD1,HD2
      CHARACTER*4 FHED
      DATA HD1,HD2 /'MAX','MIN'/
C
C     LOAD CASE COMBINATION AND OUTPUT OF MEMBER FORCES
C
      LLD=NLD+NMD
      DO 100 I=1,NF
      DO 100 J=1,8
  100 F(I,J)=0.0
      IF(NF.NE.3) GO TO 150
```

```
      DO 120 L=1,3
      F(2,L)=Q(1,L)
  120 F(3,L)=Q(2,L)
C
C     CALCULATE STATIC FORCES
C
  150 DO 200 K=1,ND
      KK=LM(K)
      DO 200 I=1,NF
      DO 200 J=1,5
  200 F(I,J)=F(I,J)+SA(I,K)*R(KK,J)
C
C     CALCULATE DYNAMIC FORCES
C
      NATT=NAT-3
      IF( NATT ) 550,250,512
  250 DO 500 I=1,NF
      DO 400 J=6,MLD
      X=0.0
      DO 300 K=1,ND
      KK=LM(K)
  300 X=X+SA(I,K)*R(KK,J)
      FM(I,J-5) = X
  400 CONTINUE
  500 CONTINUE
C
C---- RESPON SPEC MODAL COMBO
C
      DO 502 K=1,NF
      X1 = 0.0
      X2 = 0.0
      DO 501 I=1,NFQ
      X = FM(K,I)
C---- SRSS
      X1 = X1 + X*X
C---- ABS
  501 X2 = X2 + DABS( X )
      F(K,6) = DSQRT( X1 )
      F(K,7) = X2
      F(K,8) = 0.0
  502 F(K,9) = 0.0
C---- CHECK IF DSC COMBO REQD
      IF( DSC(1,1) .LT. 0.0 ) GO TO 506
      DO 505 K=1,NF
      X1 = 0.0
      DO 504 I=1,NFQ
      X = FM(K,I)
      DO 504 J=1,NFQ
  504 X1 = X1 + X*DSC(I,J)*FM(K,J)
  505 F(K,8) = DSQRT( X1 )
C---- CHECK IF CQC COMBO REQD
  506 IF( CQC(1,1) .LT. 0.0 ) GO TO 550
      DO 510 K=1,NF
      X1 = 0.0
      DO 508 I=1,NFQ
      X = FM(K,I)
      DO 508 J=1,NFQ
  508 X1 = X1 + X*CQC(I,J)*FM(K,J)
  510 F(K,9) = DSQRT( X1 )
      GO TO 550
C
C---- TIME HIST
C
  512 DO 520 I=1,NF
      F(I,10) = 0.0
      DO 520 J=6,MLD
      X = 0.0
      DO 515 K=1,ND
      KK = LM(K)
  515 X = X + SA(I,K)*R(KK,J)
      XA = DABS( X )
```

```
      IF( XA.GT.F(I,10) ) F(I,10) = XA
  520 CONTINUE
C
C     PRINT MEMBER FORCES FOR ALL LOAD CONDITIONS
C
  550 DO 700 L=1,LLD
C         STATIC FORCE COMPONENTS
      DO 600 I=1,NF
      P(I)=0.
      DO 600 J=1,5
  600 P(I)=P(I)+F(I,J)*XM(J,L)
      IF (NF.NE.8) GOTO 605
      IF (ILP.NE.1) THEN
        IK = LM(1)
        IKK = LM(7)
        VRT = R(IK,4)*XM(4,L)+R(IK,5)*XM(5,L)
        VRB = R(IKK,4)*XM(4,L)+R(IKK,5)*XM(5,L)
        IF (B1.GT.0.0) THEN
          P(7) = (P(2)+P(3)+(P(4)*(VRT-VRB)))/VRR
        ELSE
          P(7) = (P(2)+P(3)-(P(4)*(VRT-VRB)))/VRR
        ENDIF
      ENDIF
C      WRITE (6,*) '!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!'
C      WRITE (6,*) 'SUBROUTINE STRESS'
C      WRITE (6,*) 'JUST CAL. AXIAL IN COL. = ',P(4)
C      WRITE (6,*) '!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!'
      WRITE (15,REC = NREC) P(4)
C
  605 IF (NF.NE.4) GOTO 606
      IF (ILP.NE.1) THEN
        IK = LM(1)
        IKK = LM(6)
        VRT = R(IK,4)*XM(4,L)+R(IK,5)*XM(5,L)
        VRB = R(IKK,4)*XM(4,L)+R(IKK,5)*XM(5,L)
        IF (B1.GT.0.0) THEN
          P(4) = (P(1)+P(2)+(P(3)*(VRT-VRB)))/VRR
        ELSE
          P(4) = (P(1)+P(2)-(P(3)*(VRT-VRB)))/VRR
        ENDIF
      ENDIF
C      WRITE (6,*) '!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!'
C      WRITE (6,*) 'SUBROUTINE STRESS'
C      WRITE (6,*) 'JUST CAL. AXIAL IN PANEL = ',P(3)
C      WRITE (6,*) '!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!'
      WRITE (15,REC = NREC) P(3)
C
  606 IF(NATT) 610,620,620
C---- CALC STRESS RATIOS IF REQUESTED
  610 IF( KODE.NE.0 ) CALL CODE( P,A,NFF )
      IF ( NFF .EQ. 8 ) THEN
        WRITE ( NPT,2003 ) M,L,P(2),P(3),P(4),P(7)
      ELSEIF ( NFF .EQ. 3 ) THEN
        WRITE ( NPT,2003 ) M,L,P(2),P(3)
      ELSEIF ( NFF .EQ. 4 ) THEN
        WRITE ( NPT,2003 ) M,L,P(1),P(2),P(3),P(4)
      ELSE
        WRITE(NPT,2000) M,L,( P(I),I=1,NFF )
      ENDIF
      GO TO 700
C         DYNAMIC FORCE COMPONENTS
  620 DO 650 I=1,NF
      IF (L.GT.NLD) GO TO 640
      PI=F(I,6)*XM(6,L)+F(I,7)*XM(7,L)+F(I,8)*XM(8,L)
     1  + F(I,9)*XM(9,L) + F(I,10)*XM(10,L)
      PMIN(I)=P(I)-PI
      P(I)=P(I)+PI
      GO TO 650
  640 PMIN(I)=PM(I,L-NLD)
      P(I)=PMIN(I)
  650 CONTINUE
```

```
      IF( KODE.LE.0 ) GO TO 652
C---- CALC STRESS RATIOS
      CALL CODE( P,A,NFF )
      CALL CODE( PMIN,A,NFF )
  652 WRITE(6,2001) M,L,HD1,( P(I),I=1,NFF )
      WRITE(6,2002) L,HD2,( PMIN(I),I=1,NFF )
  700 CONTINUE
C
      RETURN
C
 2003 FORMAT( 2I6,5X,4F16.7 )
 2001 FORMAT( 2I6,2X,A3,8F12.4,2F6.2 )
 2002 FORMAT( 6X,I6,2X,A3,8F12.4,2F6.2 )
      END
```

```
      SUBROUTINE OUTPUT(SN,SD,XM,U,CLN,CP,BP,FEF,LB,LDB,LC,LP,S,R,NST,
     1 NB,NC,NCP,NBP,NS,NFEF,NPAN,IFEF,PP,NN,MM,NLD,MLD,KO,FM,NMD,LT,
     2 TP,NTRU,NFR,NFS,NFQ,DSC,CQC,KODE,ILP,NPT )
      IMPLICIT REAL*8 (A-H)
      IMPLICIT REAL*8 (O-Z)
      DIMENSION CLN(NC,2),CP(14,NCP),BP(11,NBP),FEF(7,NFEF),SD(NST,2),
     1 LB(NS,NB,3),LDB(NS,NB,3),LC(NS,NC,2),LP(3,NPAN),IFEF(NFEF),PP(5,N
     2PAN),S(1),R(NN,MLD),U(NFS,MLD),XM(10,NLD),LT(3,NTRU),TP(3,NTRU)
     3 ,DSC(NFQ,NFQ),CQC(NFQ,NFQ),SN(NST)
C
      COMMON/JUNK/ FHED(4),IF,IFC,ND,NF,LM(12),IFIL(50)
      COMMON/BUNK/ F(8,10),Q(3,3),P(10),PMIN(10),AFIL(151)
      COMMON/STIF/ ASA(12,12),SA(8,12),T(8,12)
      CHARACTER*4 FHED,SN
C
C     SET FOUNDATION DISPLACEMENTS AND LATERAL DISPLACEMENTS
C
      IF(KO.EQ.2) GO TO 50
      BACKSPACE 3
      READ  (3)CLN,CP,BP,FEF,LB,LDB,LC,LP,IFEF,PP,LT,TP
      BACKSPACE 3
   50 MN=6*NC
      DO 475 L=1,MLD
      DO 425 K=1,MN
  425 R(K,L)=0.0
      DO 450 N=1,NFR
      KK=MN+N
      KM=MN+NFR
  450 R(KK,L)=U(N,L)
      DO 475 II=1,3
  475 R(KM+II,L)=0
C
C     STORY BY STORY  CALCULATION OF MEMBER FORCES
C
      N=NS
C
C     CALCULATE ROTATIONS AND VERTICAL DISPLACEMENT AT LEVEL N
C
  300 CONTINUE
      NNM=NN-2*MM
      KC=(MM*(MM+1))/2
      KE=MM*MM+KC
      KKH=MM*NNM+KE
      CALL BKSUB(S(1),S(KC+1),S(KE+1),KC,MM,NNM,R,NN,MLD,S(KKH+1))
C
C     CALCULATE COLUMN FORCES
C
      LV=NS -N+1
      K=NST-NS
      WRITE (NPT,2000) FHED,IF,LV,SN(N+K)
      WRITE(NPT,2007)
      IF( KODE.EQ.0 ) WRITE(NPT,2001)
      IF( KODE.NE.0 ) WRITE(NPT,3001)
      NF=8
      NFF = 8
      IF( KODE.NE.0 ) NFF = 10
      ND=12
      DO 500 M=1,NC
      MC=LC(N,M,1)
      IF(MC.EQ.NCP) GO TO 510
      XL =SD(N+K,2)
      KK=LC(N,M,2)
      B1=CLN(KK,1)-CLN(M ,1)
      B2=CLN(KK,2)-CLN(M ,2)
      B3=B1*B1+B2*B2
      B3=DSQRT(B3)
      IF(B3.LE.0.) STOP1
      CSA=B1/B3
      SNA=B2/B3
      XL1=CLN(M ,1)
      YL1=CLN(M ,2)
```

```
      NREC = NC*(N-1)+M
      READ (15,REC = NREC) VVP
C      WRITE (6,*) '$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$'
C      WRITE (6,*) 'SUBROUTINE OUTPUT'
C      WRITE (6,*) 'STORY NO. ',N
C      WRITE (6,*) 'COLUMN LINE NO. ',M
C      WRITE (6,*) 'AXIAL IN COLUMN = ',VVP
C      WRITE (6,*) '$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$'
      CALL COLUMN(2,MC,XL,SNA,CSA,NCP,XL1,YL1,CP,VVP)
C
      LM(6)=3*M
      LM(5)=LM(6)-1
      LM(4)=LM(5)-1
      LM(11)=LM(5)+MM
      LM(10)=LM(4)+MM
      LM(12)=LM(6)+MM
      LM(3)=MN+3*N
      LM(2)=LM(3)-1
      LM(1)=LM(2)-1
      LM( 9)=LM(3)+3
      LM(8)=LM( 9)-1
      LM(7)=LM(8)-1
      VR = XL-CP(8,MC)-CP(9,MC)
      CALL STRESS( R,XM,NN,NLD,MLD,M,FM,NMD,NFQ,DSC,CQC,KODE,CP(1,MC),
     1             NFF,VR,NREC,B1,ILP,NPT )
      GO TO 490
  510 WRITE(6,2009) M
  490 GO TO 500
  500 CONTINUE
C
C     CALCULATE BEAM FORCES
C
      IF(NB.EQ.0) GO TO 565
      WRITE(NPT,2008)
      IF( KODE.EQ.0 ) WRITE(NPT,2002)
      IF( KODE.NE.0 ) WRITE(NPT,3002)
      NF=3
      NFF = 3
      IF( KODE.NE.0 ) NFF = 5
      ND=6
      DO 600 M=1,NB
      MB=LB(N,M,3)
      IF(MB.EQ.NBP) GO TO 515
      KI=LB(N,M,1)
      KJ=LB(N,M,2)
      B1=CLN(KJ,1)-CLN(KI,1)
      B2=CLN(KJ,2)-CLN(KI,2)
      B3=B1*B1+B2*B2
      B3=DSQRT (B3)
      CSA=B1/B3
      SNA=B2/B3
      XL=B3
      XLR=XL-BP(8,MB)-BP(9,MB)
      CALL  BEAM (2,MB,XL,SNA,CSA,NBP,BP)
C
      LM(3)=3*KI
      LM(2)=LM(3)-1
      LM(1)=LM(2)-1
      LM( 6)=3*KJ
      LM( 5)=LM( 6)-1
      LM(4)=LM( 5)-1
      DO 540 L=1,3
      DO 528 I=1,2
  528 Q(I,L)=0.
      J=LDB(N,M,L)
      IF (J) 540,540,530
  530 V=FEF(5,J)*XLR/2.
      YM=V*XLR/6.
      Q(1,L)= FEF(1,J)+YM
      Q(2,L)=-FEF(3,J)-YM
  540 Q(3,L)=0.0
```

```
      CALL STRESS( R,XM,NN,NLD,MLD,M,FM,NMD,NFQ,DSC,CQC,KODE,BP(1,MB),
     1            NFF,0.0,0,0.0,ILP,NPT )
      GO TO 590
  515 WRITE(6,2010) M
  590 GO TO 600
  600 CONTINUE
C
C     CALCULATE PANEL FORCES
C
      IF(NPAN.EQ.0) GO TO 565
      DO 770 L=1,NPAN
      NP=NB-LP(1,L)+1
      IF (NP.NE.N) GO TO 770
      GO TO 772
  770 CONTINUE
      GO TO 565
  772 WRITE(NPT,2004)
      LNF=0
      NC=10
      DO 800 L=1,NPAN
      NF=4
      NP=NB-LP(1,L)+1
      IF(NP.NE.N) GO TO 800
      IF(PP(3,L).GT.0.) GO TO 780
      NF=2
  780 IF(LNF.EQ.NF) GO TO 790
      IF(NF.EQ.2) WRITE(NPT,2011)
      IF(NF.EQ.4) WRITE(NPT,2003)
      LNF=NF
  790 XL=SD(N+K,2)
      KI=LP(2,L)
      M=KI
      KJ=LP(3,L)
      B1=CLN(KJ,1)-CLN(KI,1)
      B2=CLN(KJ,2)-CLN(KI,2)
      B3=B1*B1+B2*B2
      B3=DSQRT (B3)
      CSA=B1/B3
      SNA=B2/B3
      AR=CLN(KI,1)*CLN(KJ,2)-CLN(KJ,1)*CLN(KI,2)
      DF=AR/B3
      D=B3
      NREC = NC*NB+L
      READ (15,REC = NREC) VVP
C     WRITE (6,*) '$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$'
C     WRITE (6,*) 'SUBROUTINE OUTPUT'
C     WRITE (6,*) 'STORY NO. ',N
C     WRITE (6,*) 'PANEL NO. ',L
C     WRITE (6,*) 'AXIAL IN PANEL = ',VVP
C     WRITE (6,*) '$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$'
      CALL  PANEL( 2,L,XL,D,DF,SNA,CSA,NPAN,PP,VVP)
C
      LM(3)=MN+3*N
      LM(2)=LM(3)-1
      LM(1)=LM(2)-1
      LM(4)=3*KI
      LM(5)=3*KJ
      LM(8)=MN+3*N+3
      LM(7)=LM(8)-1
      LM(6)=LM(7)-1
      LM(9)=MM+3*KI
      LM(10)=MM+3*KJ
      CALL STRESS( R,XM,NN,NLD,MLD,M,FM,NMD,NFQ,DSC,CQC,KODE,DUM,NF,
     1            XL,NREC,B1,ILP,NPT )
C     WRITE (6,2005)
  800 CONTINUE
C
  565 IF (NTRU.EQ.0) GO TO 690
      DO 650 L=1,NTRU
      NP=NB-LT(1,L)+1
      IF(NP.NE.N) GO TO 650
```

```
      IF( KODE.EQ.0 ) WRITE(6,2006)
      IF( KODE.NE.0 ) WRITE(6,3006)
      GO TO 660
  650 CONTINUE
      GO TO 690
  660 NF=1
      NFF = 1
      IF( KODE.NE.0 ) NFF = 2
      ND=8
      DO 680 L=1,NTRU
      NP=NB-LT(1,L)+1
      IF (NP.NE.N) GO TO 680
      KJ=LT(2,L)
      MY=KJ
      KI=LT(3,L)
      B1=CLN(KJ,1)-CLN(KI,1)
      B2=CLN(KJ,2)-CLN(KI,2)
      B3=B1*B1+B2*B2
      B3=DSQRT (B3)
      CSA=B1/B3
      SNA=B2/B3
      YL=SD(N+K,2)
      DL=DSQRT(B3*B3+YL*YL)
      VANG=DATAN(YL/B3)
      AR=CLN(KI,1)*CLN(KJ,2)-CLN(KJ,1)*CLN(KI,2)
      D1=AR/B3
      CALL DIAG(2,L,VANG,DL,SNA,CSA,NTRU,D1,TP)
C
      LM(3)=MN+3*N
      LM(2)=LM(3)-1
      LM(1)=LM(2)-1
      LM(4)=3*KJ
      LM(7)=MN+3*N+3
      LM(6)=LM(7)-1
      LM(5)=LM(6)-1
      LM(8)=3*KI+MM
      CALL STRESS( R,XM,NN,NLD,MLD,MY,FM,NMD,NFQ,DSC,CQC,KODE,TP,NFF,
     1             0.0,0,0.0,ILP,NPT )
      WRITE (6,2005)
  680 CONTINUE
C
C     SHIFT DISPLACEMENTS
C
  690 DO 570 K=1,MM
      KK=MM+K
      DO 570 L=1,MLD
      R(KK,L)=R(K,L)
  570 R(K,L)=0.0
C
  610 N=N-1
      IF (N.NE.0) GO TO 300
C
  910 RETURN
C
 2000 FORMAT(//,1H ,21H MEMBER FORCES ..... ,9HFRAME ID ,4A4,10X,10HFRAM
     1E TYPE , I3/,T23,9HLEVEL NO,I3,T58,9HLEVEL ID  ,A4)
 2001 FORMAT(T3,4HLINE,T9,4HLOAD,T24,10HTOP MOMENT,T40,10HBOT MOMENT,
     1 T55,11HAXIAL FORCE,T71,11HSHEAR FORCE)
 3001 FORMAT(//,1H ,2X,9HLINE LOAD, 9X,9HTORSIONAL,9X,10HMAJOR AXIS,11X,
     1 5HAXIAL,10X,10HMINOR AXIS,11X,5HMAJOR,7X, 5HMINOR,1X,5HRATIO,1X,
     2 5HRATIO ,/,
     3 23X,6HMOMENT,4X,10HTOP MOMENT,2X,10HBOT MOMENT,5X,5HFORCE,4X,
     4 10HTOP MOMENT,2X,10HBOT MOMENT,5X,5HSHEAR,7X,5HSHEAR,2X,3HTOP,
     5 3X,3HBOT )
 2002 FORMAT(T4,3HBAY,T9,4HLOAD,T26,8HI MOMENT,T42,8HJ MOMENT)
 3002 FORMAT(    12H   BAY  LOAD, 6X,11HTORS MOMENT, 5X, 9HI  MOMENT,
     1  3X, 9HJ  MOMENT, 3X, 9HI  RATIO , 3X, 9HJ  RATIO  )
 2003 FORMAT(T2,5HI COL,T9,4HLOAD,T24,10HTOP MOMENT,T40,10HBOT MOMENT,
     1 T55,11HAXIAL FORCE,T71,11HSHEAR FORCE)
 2004 FORMAT(/,13H PANEL FORCES)
 2005 FORMAT (1H )
```

```
      SUBROUTINE OPT6(D,R,XM,W,DSC,CQC,KOD,SN,A,SC,S,Z,MSS,MST,NFQ,NMD,
     1 I3,I8,GRAV)
C-----------------------------------------------------------------------
C     ROUTINE TO PERFORM RESPONSE SPECTRUM OPTION 6 CALCULATIONS
C-----------------------------------------------------------------------
      IMPLICIT REAL*8 (A-H)
      IMPLICIT REAL*8 (O-Z)
      DIMENSION D(MSS,NFQ),R(MSS,4),XM(MSS),W(NFQ),DSC(NFQ,NFQ),
     1 CQC(NFQ,NFQ),KOD(5),A(MST,1),RLAB(6),NAM(4),SC(2),S(MSS,MSS),
     2 Z(MSS,NFQ),SN(MST)
      CHARACTER*4 NAM,RLAB
      DATA NAM /'SRSS',' DSC', ' CQC',' ABS'/
      DATA RLAB /'  X ','  Y ','ROTN','  R ','  S ','ROTN' /
C
C---- D = MODAL DISP, INTERIA FORCES, SHEARS, OTM
C     R = ARRAY TO COLLECT COMBINED MODAL RESPONSES
C     XM = MASS ARRAY
C     DSC = DSC MATRIX
C     CQC = CQC MATRIX
C     KOD = PRINT CODE ARRAY
C     SN  = STORY NAMES
C     A = STORY DATA
C     SC = SIN - COS OF EQ ANGLE
C     S = GEOM STIFFNESS ARRAY
C     Z = P-DELTA MODAL FORCES
C    *NOTE S AND Z SHARE STORAGE WITH R
C
      WRITE(6,1000)
      NUM = 0
      DO 10 I=1,4
      IF( KOD(I) LE 0 ) GO TO 10
      NUM = NUM + 1
      KOD(I) = NUM
   10 CONTINUE
      WRITE(6,1200)
      IF( NUM.LE.0 ) RETURN
C
      REWIND 1
      WRITE(1) (( D(I,J),I=1,MSS ), J=1,NFQ )
C
      IK = 0
      MM = 1
      IF( KOD(5).EQ.1 ) IK = 3
      IF( KOD(5).EQ.2 ) MM = 2
      DO 500 M=1,MM
C
      WRITE(6,1001)
      IF( IK.LE.0 ) GO TO 14
C---- TRANSFORM TO EQ DIRECTION COOR SYSTEM
      DO 100 J=1,NFQ
      II = 1
      DO 100 I=1,MST
      X = D(II,J)
      Y = D(II+1,J)
      D(II,J) = X*SC(1) + Y*SC(2)
      D(II+1,J) =-X*SC(2) + Y*SC(1)
  100 II = II + 3
   14 IF( NMD.LE.0 ) GO TO 15
C---- PRINT OUT INDIV MODAL DISP
      WRITE(6,1300)
      WRITE(6,1600)
      CALL PROUT(D,MSS,NMD,SN,MST,RLAB(1+IK),I3,I8)
C---- COMBINE MODAL DISP
   15 CALL COMBO(D,R,DSC,CQC,KOD,MSS,NFQ)
C---- PRINT OUT COMBINED RESULTS
      WRITE(6,1400)
      DO 16 I=1,4
      IF( KOD(I).LE.0 ) GO TO 16
      WRITE(6,1100) KOD(I),NAM(I)
   16 CONTINUE
      CALL PROUT(R,MSS,NUM,SN,MST,RLAB(1+IK),I3,I8)
```

```
C
C---- CALC MODAL DRIFTS
      N = MST - 1
      DO 30 I=1,NFQ
       IF(MST.EQ.1)GO TO 21
      DO 20 J=1,N
      JJ = I3*( J - 1 ) + 1
      D(JJ,I) = ( D(JJ,I) - D(JJ+I3,I) )/A(J,2)
       IF( I3.NE.3 ) GO TO 20
      D(JJ+1,I) = ( D(JJ+1,I) - D(JJ+4,I) )/A(J,2)
      D(JJ+2,I) = D(JJ+2,I) - D(JJ+5,I)
   20 CONTINUE
   21 JJ = I3*( MST - 1 ) + 1
      D(JJ,I) = D(JJ,I)/A(MST,2)
       IF( I3.EQ.3 ) D(JJ+1,I) = D(JJ+1,I)/A(MST,2)
   30 CONTINUE
      WRITE(6,1002)
       IF( NMD.LE.0 ) GO TO 32
C---- PRINT OUT INDIV MODAL DRIFTS
      WRITE(6,1300)
      WRITE(6,1600)
      CALL PROUT(D,MSS,NMD,SN,MST,RLAB(1+IK),I3,I8)
C---- COMBINE MODAL DRIFTS
   32 CALL COMBO(D,R,DSC,CQC,KOD,MSS,NFQ)
C---- PRINT OUT COMBINED RESULTS
      WRITE(6,1400)
      DO 33 I=1,4
      IF( KOD(I).LE.0 ) GO TO 33
      WRITE(6,1100) KOD(I),NAM(I)
   33 CONTINUE
      CALL PROUT(R,MSS,NUM,SN,MST,RLAB(1+IK),I3,I6)
C---- FORM MASS ARRAY ( AGAIN )
      DO 50 I=1,MST
      II = I3*( I - 1 ) + 1
      XM(II) = A(I,3)
      IF( I3.NE.3 ) GO TO 50
      XM(II+1) = A(I,3)
      XM(II+2) = A(I,4)
   50 CONTINUE
      DM1 = 1.0
      TPI = 8.0*DATAN( DM1 )
C---- GET MODAL DISP
      REWIND 1
      READ(1) (( D(I,J),I=1,MSS), J=1,NFQ )
      IF( IK.LE.0 ) GO TO 59
C---- TRANSFORM TO EQ DIRECTION COOR SYSTEM
      DO 200 J=1,NFQ
      II = 1
      DO 200 I=1,MST
      X = D(II,J)
      Y = D(II+1,J)
      D(II,J) = X*SC(1) + Y*SC(2)
      D(II+1,J) =-X*SC(2) + Y*SC(1)
  200 II = II + 3
C
   59 IF( DABS(GRAV).LT.1.0D-10 ) GO TO 56
C---- ASSEMBLE GEOM STIFFNESS MATRIX
      DO 40 I=1,MSS
      DO 40 J=1,MSS
   40 S(I,J) = 0.0
      XMT = 0.0
      XMMT = 0.0
      DO 52 I=1,MST
      H = A(I,2)
      XMT = XMT + A(I,3)
      XMMT = XMMT + A(I,4)
      KK = ( I - 1 )*I3
C
      DO 51 J=1,I3
      IF( J.NE.3 ) PDEL = XMT*GRAV/H
      IF( J.EQ.3 ) PDEL = XMMT*GRAV/H
```

```
      NN = KK + J
      B(NN,NN) = B(NN,NN) + PDEL
      IF( I.GE.MST ) GO TO 51
      B(NN,NN+I3) = -PDEL
      B(NN+I3,NN) = -PDEL
      B(NN+I3,NN+I3) = B(NN+I3,NN+I3) + PDEL
   51 CONTINUE
   52 CONTINUE
C---- CALC P-DELTA FORCES
      DO 38 I=1,MSS
      DO 38 J=1,NFQ
   38 Z(I,J) = 0.0
      DO 46 I=1,MSS
      K1 = I - I3
      K2 = I + I3
      IF( K1.LE.0 ) K1 = 1
      IF( K2.GT.MSS ) K2 = MSS
      DO 44 J=1,NFQ
      XX = 0.0
      DO 42 K=K1,K2
   42 XX = XX + B(I,K)*D(K,J)
   44 Z(I,J) = XX
   46 CONTINUE
C---- CALC STORY INTERIA FORCES
   56 DO 60 I=1,NFQ
      WW = ( TPI/W(I) )**2
      DO 60 J=1,MSS
   60 D(J,I) = D(J,I)*XM(J)*WW
      IF( DABS(GRAV).LT.1.0D-10 ) GO TO 64
C---- ADD P-DELTA FORCES TO INTERIA FORCES
      DO 62 I=1,NFQ
      DO 62 J=1,MSS
   62 D(J,I) = D(J,I) + Z(J,I)
C---- CALC STORY SHEARS
   64 N = MSS - I3
      DO 66 I=1,NFQ
      IF(N.EQ.0)GO TO 66
      DO 65 J=1,N
   65 D(J+I3,I) = D(J+I3,I) + D(J,I)
   66 CONTINUE
      WRITE(6,1003)
      IF( NMD.LE.0 ) GO TO 67
C---- PRINT OUT INDIV MODAL SHEARS
      WRITE(6,1300)
      WRITE(6,1600)
      CALL PROUT(D,MSS,NMD,SN,MST,RLAB(1+IK),I3,IS)
C---- COMBINE MODAL SHEARS
   67 CALL COMBO(D,R,DSC,CQC,KOD,MSS,NFQ)
C---- PRINT OUT COMBINED RESULTS
      WRITE(6,1400)
      DO 68 I=1,4
      IF( KOD(I).LE.0 ) GO TO 68
      WRITE(6,1100) KOD(I),NAM(I)
   68 CONTINUE
      CALL PROUT(R,MSS,NUM,SN,MST,RLAB(1+IK),I3,IS)
C
C---- CALC STORY OVERTURNING MOMENTS
      IF( I3.EQ.3 ) GO TO 75
C---- PLANAR ANALYSIS
      DO 71 I=1,NFQ
      D(1,I) = D(1,I)*A(1,2)
      IF(MST.EQ.1)GO TO 71
      DO 70 J=2,MST
   70 D(J,I) = D(J,I)*A(J,2) + D(J-1,I)
   71 CONTINUE
      GO TO 95
C---- 3D ANALYSIS
   75 DO 90 I=1,NFQ
      D(3,I) = 0.
      DO 80 K=1,2
   80 D(K,I) = D(K,I)*A(1,2)
```

```
      IF(MST.EQ.1)GO TO 90
      IX = 4
      IY = 5
      IT = 6
      DO 85 J=2,MST
      H = A(J,2)
      D(IX,I) = D(IX,I)*H + D(IX-3,I)
      D(IY,I) = D(IY,I)*H + D(IY-3,I)
      D(IT,I) = 0.0
      IX = IX + 3
      IY = IY + 3
   85 IT = IT + 3
   90 CONTINUE
   95 WRITE(6,1004)
      IF( NMD.LE.0 ) GO TO 97
C---- PRINT OUT INDIV MODAL OTM
      WRITE(6,1300)
      WRITE(6,1600)
      CALL PROUT(D,MSS,NMD,SN,MST,RLAB(1+IK),I3,IS)
C---- COMBINE MODAL OTM
   97 CALL COMBO(D,R,DSC,CQC,KOD,MSS,NFQ)
C---- PRINT OUT COMBINED RESULTS
      WRITE(6,1400)
      DO 98 I=1,4
      IF( KOD(I).LE.0 ) GO TO 98
      WRITE(6,1100) KOD(I),NAM(I)
   98 CONTINUE
      CALL PROUT(R,MSS,NUM,SN,MST,RLAB(1+IK),I3,IS)
C
      REWIND 1
      READ (1) (( D(I,J),I=1,MSS ), J=1,NFQ )
C
      IK = 3
      WRITE(6,1200)
  500 CONTINUE
C
      WRITE(6,1500)
      RETURN
 1000 FORMAT( 1H ,//,1H ,111(1H-),/, 112H RESPONSE SPECTRUM ANALYSIS TYP
     1E 6, SOLUTION FOR BUILDING STORY DEFLECTIONS, DRIFTS, SHEARS, OVER
     2TURNING MOMENTS  ,/,1H ,111(1H-),// )
 1001 FORMAT( ///,1H ,17(1H-),/,18H STORY DEFLECTIONS ,/,1H ,17(1H-), /)
 1002 FORMAT( ///,1H ,18(1H-),/,19H STORY DRIFT RATIOS ,/,1H ,18(1H-),/)
 1003 FORMAT( ///,1H ,12(1H-),/,13H STORY SHEARS ,/,1H ,12(1H-),/ )
 1004 FORMAT( ///,1H ,25(1H-),/,26H STORY OVERTURNING MOMENTS ,/,1H ,
     1 25(1H-),/ )
 1100 FORMAT( 20X,22H OUTPUT COLUMN NUMBER ,I1,10H CONTAINS ,A4,
     1 8H RESULTS )
 1200 FORMAT( 5(/) )
 1300 FORMAT( ///,24H --- MODAL RESPONSES ---,/ )
 1400 FORMAT( ///, 25H --- COMBINED RESULTS ---,/ )
 1500 FORMAT( /,1H ,22(1H-),/,23H END OF OPTION 8 OUTPUT ,/,1H ,22(1H-))
 1600 FORMAT( /,20X,38H COLUMN NUMBER REFERS TO MODE NUMBER ,/ )
      END
      SUBROUTINE OPT8(SN,A,AA,BB,R,MSS,MST,I3,IS)
C-----------------------------------------------------------------------
C     ROUTINE TO CALC RESPONSE ENVELOPES FOR, DISPLACEMENTS, DRIFTS,
C     SHEARS, AND OVERTURNING MOMENTS FOR OPTION NAT = 8
C-----------------------------------------------------------------------
      IMPLICIT REAL*8 (A-H)
      IMPLICIT REAL*8 (O-Z)
      DIMENSION A(MST,8),R(MSS,4),AA(MSS,1),BB(MSS,1),RLAB(6),SN(MST)
      COMMON /DYN/ NTIME,DT,NPC,DAMP
      COMMON /JUNK/ SHED(7),KOD(5),IFIL(58)
      COMMON /BUNK/ SC(2),AFIL(259)
      CHARACTER*4 RLAB,SN,SHED
      DATA RLAB /'  X ',' Y ','ROTN',' R ',' S ','ROTN'/
C
C---- A = STORY LEVEL INPUT DATA TABLE
C     R(I,1) = TIME OF MAX RESPONSE
C     R(I,2) = MAX RESPONSE
```

```
C     R(I,3) = TIME OF MIN RESPONSE
C     R(I,4) = MIN RESPONSE
C     KOD = TIME HISTORY OUTPUT TABLE
C     AA(I,J) = DISP OF DOF I AT TIME STEP J
C     BB(I,J) = INTERIA FORCE AT DOF I AT TIME STEP J
      WRITE(6,1000)
      REWIND 1
      WRITE(1) (( AA(I,J+5),I=1,MSS ), J=1,NTIME ),
     1         (( BB(I,J),I=1,MSS ), J=1,NTIME )
C
      IK = 0
      MM = 1
      IF( KOD(5).EQ.1 ) IK = 3
      IF( KOD(5).EQ.2 ) MM = 2
      DO 500 M=1,MM
C
      IF( IK.LE.0 ) GO TO 14
C---- TRANSFORM TO EQ DIRECTION COOR SYSTEM
      DO 100 J=1,NTIME
      II = 1
      DO 100 I=1,MST
      X = AA(II,J+5)
      Y = AA(II+1,J+5)
      AA(II,J+5) = X*SC(1) + Y*SC(2)
      AA(II+1,J+5) =-X*SC(2) + Y*SC(1)
      X = BB(II,J)
      Y = BB(II+1,J)
      BB(II,J) = X*SC(1) + Y*SC(2)
      BB(II+1,J) =-X*SC(2) + Y*SC(1)
  100 II = II + 3
C---- ENVELOPE STORY DISPLACEMENTS
C
   14 CALL ENVLS(AA,R,MSS,NTIME,DT,5)
C
C---- PRINT DISPLACEMENT ENVELOPES
C
      WRITE(6,1001)
      WRITE(6,1400)
      WRITE(6,1200)
C
      CALL PROUT(R,MSS,4,SN,MST,RLAB(1+IK),I3,I8)
C
C---- PRINT OUT FLOOR TIME HISTORY ( IF REQUESTED )
C
      IF( KOD(1).EQ.0 ) GO TO 10
      WRITE(6,1300)
      WRITE(6,1100)
C
      CALL PROUT(AA(1,6),MSS,NTIME,SN,MST,RLAB(1+IK),I3,I8)
C
C---- COMPUTE STORY DRIFTS ETC
C
   10 N = MST - 1
      DO 20 II=1,NTIME
      I=II+5
      IF(N.EQ.0)GO TO 16
      DO 15 J=1,N
      JJ = I3*( J - 1 ) + 1
      AA(JJ,I) = ( AA(JJ,I) - AA(JJ+I3,I) )/A(J,2)
      IF( I3.NE.3 ) GO TO 15
      AA(JJ+1,I) = ( AA(JJ+1,I) - AA(JJ+4,I) )/A(J,2)
      AA(JJ+2,I) = AA(JJ+2,I) - AA(JJ+5,I)
   15 CONTINUE
   16 JJ = I3*( MST - 1 ) + 1
      AA(JJ,I) = AA(JJ,I)/A(MST,2)
      IF( I3.EQ.3 ) AA(JJ+1,I) = AA(JJ+1,I)/A(MST,2)
   20 CONTINUE
C
      CALL ENVLS(AA,R,MSS,NTIME,DT,5)
      WRITE(6,1002)
      WRITE(6,1400)
```

```
      WRITE(6,1200)
      CALL PROUT(R,MSS,4,SN,MST,RLAB(1+IK),13,18)
      IF( KOD(2).EQ.0 ) GO TO 30
      WRITE(6,1300)
      WRITE(6,1100)
      CALL PROUT(AA(1,6),MSS,NTIME,SN,MST,RLAB(1+IK),13,18)
C
C---- STORY SHEARS ETC
C
   30 N = MSS - 13
      IF(N.EQ.0)GO TO 36
      DO 35 I=1,NTIME
      DO 35 J=1,N
   35 BB(J+13,I) = BB(J+13,I) + BB(J,I)
   36 CONTINUE
      CALL ENVLS(BB,R,MSS,NTIME,DT,0)
      WRITE(6,1003)
      WRITE(6,1400)
      WRITE(6,1200)
      CALL PROUT(R,MSS,4,SN,MST,RLAB(1+IK),13,18)
      IF( KOD(3).EQ.0 ) GO TO 40
      WRITE(6,1300)
      WRITE(6,1100)
      CALL PROUT(BB,MSS,NTIME,SN,MST,RLAB(1+IK),13,18)
C
C---- COMPUTE STORY OVERTURNING MOMENTS ETC
C
   40 IF( 13.EQ.3 ) GO TO 48
C---- PLANAR ANALYSIS
      DO 46 I=1,NTIME
      BB(1,I) = BB(1,I)*A(1,2)
      IF(MST.EQ.1)GO TO 46
      DO 45 J=2,MST
   45 BB(J,I) = BB(J,I)*A(J,2) + BB(J-1,I)
   46 CONTINUE
      GO TO 65
C---- 3D ANALYSIS
   48 DO 60 I=1,NTIME
      DO 50 K=1,2
   50 BB(K,I) = BB(K,I)*A(1,2)
      IF(MST.EQ.1)GO TO 60
      IX = 4
      IY = 5
      IT = 6
      DO 55 J=2,MST
      H = A(J,2)
      BB(IX,I) = BB(IX,I)*H + BB(IX-3,I)
      BB(IY,I) = BB(IY,I)*H + BB(IY-3,I)
      IX = IX + 3
      BB(IT,I) = 0.0
      IY = IY + 3
   55 IT = IT + 3
   60 CONTINUE
C
   65 CALL ENVLS(BB,R,MSS,NTIME,DT,0)
      WRITE(6,1004)
      WRITE(6,1400)
      WRITE(6,1200)
      CALL PROUT(R,MSS,4,SN,MST,RLAB(1+IK),13,18)
      IF( KOD(4).EQ.0 ) GO TO 68
      WRITE(6,1300)
      WRITE(6,1100)
      CALL PROUT(BB,MSS,NTIME,SN,MST,RLAB(1+IK),13,18)
C
   68 REWIND 1
      READ(1) (( AA(I,J+5),I=1,MSS ), J=1,NTIME ),
     1        (( BB(I,J),I=1,MSS ), J=1,NTIME )
      IK = 3
      WRITE(6,1800)
  500 CONTINUE
C
```

```
      WRITE(6,1500)
      RETURN
 1000 FORMAT( 1H ,//,1H ,106(1H-),/,107H TIME HISTORY ANALYSIS TYPE 8, 8
     1OLUTION FOR BUILDING STORY DEFLECTIONS, DRIFTS, SHEARS, OVERTURNIN
     2G MOMENTS ,/,1H ,106(1H-),// )
 1001 FORMAT( ///,1H ,17(1H-),/,18H STORY DEFLECTIONS ,/,1H ,17(1H-), /)
 1002 FORMAT( ///,1H ,18(1H-),/,19H STORY DRIFT RATIOS ,/,1H ,18(1H-),/)
 1003 FORMAT( ///,1H ,12(1H-),/,13H STORY SHEARS ,/,1H ,12(1H-),/ )
 1004 FORMAT( ///,1H ,25(1H-),/,26H STORY OVERTURNING MOMENTS ,/,1H ,
     1 25(1H-),/ )
 1100 FORMAT(  /,20X,48H OUTPUT COLUMN NUMBER REFERS TO TIME STEP NUMBER
     1  ,/ )
 1200 FORMAT(  /,20X,50H OUTPUT COLUMN 1 CONTAINS TIME OF MAXIMUM RESPON
     1SE,/
     2  20X,49H OUTPUT COLUMN 2 CONTAINS MAXIMUM RESPONSE VALUES,/
     3  20X,50H OUTPUT COLUMN 3 CONTAINS TIME OF MINIMUM RESPONSE  ,/
     4  20X,49H OUTPUT COLUMN 4 CONTAINS MINIMUM RESPONSE VALUES,/   )
 1300 FORMAT( //,30H --- TIME HISTORY RESPONSE ---,/ )
 1400 FORMAT( //,37H --- TIME HISTORY ENVELOPE VALUES ---,/ )
 1500 FORMAT( /,1H ,22(1H-),/,23H END OF OPTION 8 OUTPUT ,/,1H ,22(1H-))
 1600 FORMAT( 5(/) )
      END
      SUBROUTINE DSCCQC(A,CQC,WW,NFQ,DP,TIM)
C----------------------------------------------------------------------
C     ROUTINE TO FORM THE DSC AND CQC MATRICES
C----------------------------------------------------------------------
      IMPLICIT REAL*8 (A-H)
      IMPLICIT REAL*8 (O-Z)
      DIMENSION A(NFQ,NFQ),CQC(NFQ,NFQ),WW(NFQ)
      DM1 = 1.0
      TPI = 8.0*DATAN( DM1 )
C
C---- FORM THE DSC MATRIX
C
      DO 100 I=1,NFQ
      WI = TPI/WW(I)
      BI = DP + 2.0/(TIM*WI)
      WII = WI*DSQRT( 1.0 - BI*BI )
       DO 100 J=I,NFQ
      WJ = TPI/WW(J)
       BJ = DP + 2.0/(TIM*WJ)
      WJJ = WJ*DSQRT( 1.0 - BJ*BJ )
      A(I,J) = 1.0/( 1.0 + ( ( WII - WJJ )/( BI*WI + BJ*WJ ) )**2 )
  100 CONTINUE
C
      DO 200 I=1,NFQ
      DO 200 J=I,NFQ
  200 A(J,I) = A(I,J)
C
      WRITE(6,2000)
      IL=0
  180 IF=IL+1
      IL=IF+19
      IF(IL.GE.NFQ)IL=NFQ
      DO 185 I=1,NFQ
  185 WRITE(6,1100) I,(  A(I,J),J=IF,IL)
      WRITE(6,1200)
      IF(IL.NE.NFQ)GO TO 180
C
C---- FORM THE CQC MATRIX
C
      F = DP*DP
      DO 60 I=1,NFQ
      W1=TPI/WW(I)
      DO 50 J=1,I
      IF(J.NE.I)GO TO 20
      CQC(I,I)=1.0
      GO TO 50
   20 W2=TPI/WW(J)
      R=W2/W1
      R1=8.0*F*(1.0+R)*R**1.5
```

```
      R2=1.0-R*R
      R2=R2*R2
      R3=1.0+R
      R3=4.0*F*R*R3*R3
      CQC(I,J)=R1/(R2+R3)
   50 CONTINUE
   60 CONTINUE
      DO 70 J=2,NFQ
      JJ=J-1
      DO 70 I=1,JJ
   70 CQC(I,J)=CQC(J,I)
      WRITE(6,1000)
      IL=0
   80 IF=IL+1
      IL=IF+19
      IF(IL.GE.NFQ)IL=NFQ
      DO 85 I=1,NFQ
   85 WRITE(6,1100) I,(CQC(I,J),J=IF,IL)
      WRITE(6,1200)
      IF(IL.NE.NFQ)GO TO 80
      RETURN
 1000 FORMAT(///41H CQC MODAL CROSS-CORRELATION COEFFICIENTS//)
 1100 FORMAT(I5,20F6.3)
 1200 FORMAT(//3H    )
 2000 FORMAT(///42H DSC  MODAL CROSS-CORRELATION COEFFICIENTS//)
      END
      SUBROUTINE PROUT(F,NSS,NFQ,A,NST,RLAB,I3,IS)
C-----------------------------------------------------------------------
C     ROUTINE TO OUTPUT GROSS STORY RESPONSE QUANTITIES
C-----------------------------------------------------------------------
      IMPLICIT REAL*8 (A-H)
      IMPLICIT REAL*8 (O-Z)
      DIMENSION F(NSS,NFQ),A(NST),RLAB(3)
      CHARACTER*4 RLAB,A
C
      DO 600 I=1,NFQ,8
      IH = I + 7
      IF( IH.GT.NFQ ) IH = NFQ
      WRITE(6,2003) ( J,J=I,IH )
      DO 600 N=1,NST
      LN = NST + 1 - N
      NN = I3*( N - 1 )
      WRITE(6,2002)
      DO 600 J=1,I3
  600 WRITE(6,2004) LN,A(N),RLAB(J+IS),(F(NN+J,K),K=I,IH)
      RETURN
 2002 FORMAT( 1H  )
 2003 FORMAT(///, 18H LEVEL  ID    DIRN ,8I13 )
 2004 FORMAT( I5,3X,A4,2X,A4,2X,8F13.4 )
      END
      SUBROUTINE CODE(P,A,NF)
C-----------------------------------------------------------------------
C     ROUTINE TO PERFORM STRESS RATIO CALC
C-----------------------------------------------------------------------
      IMPLICIT REAL*8 (A-H)
      IMPLICIT REAL*8 (O-Z)
      DIMENSION P(10),A(12)
C---- P = MEMBER FORCES
C     A = ALLOWABLE FORCE QUANTITIES
C
      IF( NF.NE.10 ) GO TO 10
C---- COLUMN ELEMENT
      P(9) = 0.0
      P(10) = 0.0
      IF( A(10).LE.0.0 ) RETURN
      X = DABS( P(4)/A(10) )
      P(9) = X + DABS( P(2)/A(11) ) + DABS( P(5)/A(12) )
      P(10) = X + DABS( P(3)/A(11) ) + DABS( P(6)/A(12) )
      RETURN
   10 IF( NF.NE.5 ) GO TO 20
C---- BEAM ELEMENT
```

```
      P(4) = 0.0
      P(5) = 0.0
      IF( A(10).LE.0.0 ) RETURN
      P(4) = DABS( P(2)/A(10) )
      P(5) = DABS( P(3)/A(10) )
      RETURN
   20 IF( NF.NE.2 ) RETURN
C---- TRUSS ELEMENT
      P(2) = 0.0
      IF( DABS(A(3)).LT.1.0D-10 ) RETURN
      P(2) = DABS( P(1)/A(3) )
      RETURN
      END
      SUBROUTINE COMBO(A,R,DSC,CQC,KOD,MSS,NFQ)
C----------------------------------------------------------------------
C     ROUTINE TO PERFORM MODAL COMBINATIONS OF GROSS STORY RESPONSES
C----------------------------------------------------------------------
      IMPLICIT REAL*8 (A-H)
      IMPLICIT REAL*8 (O-Z)
      DIMENSION A(MSS,1),R(MSS,4),DSC(NFQ,NFQ),CQC(NFQ,NFQ),KOD(4)
C
C     A = MODAL RESPONSES
C     R = COMBINED MODAL RESPONSES
C
      II = KOD(1)
      IF( II.LE.0 ) GO TO 25
C---- SRSS COMBO
      DO 20 I=1,MSS
      X = 0.0
      DO 10 J=1,NFQ
   10 X = X + A(I,J)**2
   20 R(I,II) = DSQRT( X )
C
   25 II = KOD(2)
C---- DSC COMBO
      IF( II.LE.0 ) GO TO 45
      DO 40 K=1,MSS
      X = 0.0
      DO 30 I=1,NFQ
      Y = A(K,I)
      DO 30 J=1,NFQ
   30 X = X + Y*DSC(I,J)*A(K,J)
   40 R(K,II) = DSQRT( X )
C
   45 II = KOD(3)
      IF( II.LE.0 ) GO TO 60
C---- CQC COMBO
      DO 50 K=1,MSS
      X = 0.0
      DO 55 I=1,NFQ
      Y = A(K,I)
      DO 55 J=1,NFQ
   55 X = X + Y*CQC(I,J)*A(K,J)
   50 R(K,II) = DSQRT( X )
C
   60 II = KOD(4)
      IF( II.LE.0 ) RETURN
C---- ABS COMBO
      DO 70 I=1,MSS
      X = 0.0
      DO 65 J=1,NFQ
   65 X = X + DABS( A(I,J) )
   70 R(I,II) = X
      RETURN
      END
```

```
      SUBROUTINE TYPO(A,F,HH,AA,H,SH,MSS,MST,NFQ,I3)
C-----------------------------------------------------------------------
C     ROUTINE TO GENERATE TYPE 0 MODE SHAPES - EMPIRICAL RULE
C-----------------------------------------------------------------------
      IMPLICIT REAL*8 (A-H)
      IMPLICIT REAL*8 (O-Z)
      DIMENSION A(MST,1),F(MSS,MSS),HH(MST),AA(NFQ),H(NFQ),SH(NFQ)
C
C---- A = STORY DATA
C     F = MODE SHAPES
C     HH,AA,H,SH = LOCAL WORK ARRAYS ( LOCATED IN S )
C
C       SUM UP STORY HEIGHTS
      SUMH = 0.0
      DO 12 I=1,MST
C     HH IS STORY HEIGHT ABOVE BASE
      SUMH = SUMH + A(MST-I+1,2)
   12 HH(I) = SUMH
      AT=1.0
      AA(1)=1.0
      PI=3.1415927
      Z=PI-1.0
      SUM=0.0
      I = 0
      DO 300 IK=1,NFQ,I3
      IF( IK.GT.NFQ ) GO TO 300
      I = I + 1
      IF( I.GT.1 ) GO TO 62
C
C     FIRST MODE SHAPE LINEAR
C
      SUM = SUMH
      DO 60 J=1,MST
      JJ = I3*( J - 1 ) + 1
      XX = SUM/SUMH
      F(JJ,1) = XX
      IF( I3.NE.3 ) GO TO 60
      F(JJ+1,2) = XX
      F(JJ+2,3) = XX
   60 SUM = SUM - A(J,2)
      SUM = 0.0
      GO TO 300
C
C      HIGHER MODES
C
   62 II=I-1
      Q=II
      SUM=SUM+1/Q
      AA(I)=1.0+Z*SUM
      AT=AT+AA(I)
C
C     HA IS SUMMATION OF H(I)
C
      HA=0.0
      DO 140 J=1,I
      H(J)=AA(J)*SUMH/AT
      M=I-J
      IF(M.EQ.0) GO TO 140
      HA=HA+H(J)
C
C     SH(M)IS THE NODE HEIGHT FROM BASE
C
      SH(M)=SUMH-HA
  140 CONTINUE
C
      DO 100 M=1,MST
      JJ = ( MST - M )*I3 + 1
      IF(HH(M).LT.SH(1)) GO TO 90
      IF(HH(M).GE.SH(II)) GO TO 80
      III=I-2
      K=1
```

```
      DO 70 L=K,III
      IF(HH(M) .GE. SH(L) .AND. HH(M) .LT. SH(L+1)) GO TO 95
 70   CONTINUE
      GO TO 100
 80   XX=(HH(M)-SH(II))/H(I)
      X=I/2.0
      IL=X
      IF((X-IL) .EQ. 0.0) XX = - XX
      GO TO 96
 90   XX=DSIN(PI*(HH(M)/H(I))**1.3569)
      GO TO 96
 95   XX=DSIN(PI*(HH(M)-SH(L))/H(I-L))
      Y=L/2.0
      LI=Y
      IF(DABS(Y-LI) .GT. 1.0D-10) XX = -XX
      K=L
   96 F(JJ,IK) = XX
      IF( I3.NE.3 ) GO TO 100
      F(JJ+1,IK+1) = XX
      F(JJ+2,IK+2) = XX
 100  CONTINUE
 300  CONTINUE
C
      RETURN
      END
      SUBROUTINE TYP12(A,F,HH,MSS,MST,NFQ,I3,NSD,KOD)
C----------------------------------------------------------------------
C     ROUTINE TO GENERATE TYPE 1 OR TYPE 2 MODE SHAPES
C              TYPE 1 - UNIFORM SHEAR BEAM RULE
C              TYPE 2 - READ IN SHAPES
C----------------------------------------------------------------------
      IMPLICIT REAL*8 (A-H)
      IMPLICIT REAL*8 (O-Z)
      DIMENSION A(MST,1),F(MSS,MSS),HH(MST)
C
C---- A = STORY DATA
C     F = MODE SHAPES
C     HH = LOCAL WORK ARRAY
C
C       SUM UP STORY HEIGHTS
      SUMH = 0.0
      DO 12 I=1,MST
C     HH IS STORY HEIGHT ABOVE BASE
      SUMH = SUMH + A(MST-I+1,2)
   12 HH(I) = SUMH
      IF( KOD.EQ.2 ) GO TO 490
C
C---- GENERATE UNIFORM SHEAR BEAM MODE SHAPES
C
      T = 1.0
      DO 40 J=1,NFQ,I3
      IF( J.GT.NFQ ) GO TO 40
      SUM = SUMH
      DO 30 I=1,MST
      II = I3*( I - 1 ) + 1
      U = 3.1415927*SUM/SUMH
      X = DSIN( T*U/2.0 )
      F(II,J) = X
      IF( I3.NE.3 ) GO TO 30
      F(II+1,J+1) = X
      F(II+2,J+2) = X
   30 SUM = SUM - A(I,2)
      T = T + 2.0
   40 CONTINUE
      RETURN
C
C---- READ IN MODE SHAPES
C
  490 MODE = 1
      WRITE(6,3002)
  500 READ(5,3000) MOD,LB,X,Y,T
```

```
      WRITE(6,3001) MOD,LB,X,Y,T
      IF( LB.NE.MST ) GO TO 600
      IF( MOD.NE.MODE ) GO TO 600
      JJ = ( MST - LB )*I3 + 1
      F(JJ,MOD) = X
      IF( NSD.EQ.2 ) F(JJ,MOD) = Y
      IF( I3.NE.3 ) GO TO 502
      F(JJ+1,MOD) = Y
      F(JJ+2,MOD) = T
  502 II = JJ
      LT = LB
      READ(5,3000) MOD,LB,X,Y,T
      WRITE(6,3001) MOD,LB,X,Y,T
      IF( MOD.NE.MODE ) GO TO 600
      JJ = ( MST - LB )*I3 + 1
      F(JJ,MOD) = X
      IF( NSD.EQ.2 ) F(JJ,MOD) = Y
      IF( I3.NE.3 ) GO TO 504
      F(JJ+1,MOD) = Y
      F(JJ+2,MOD) = T
  504 IF( (LB+1).EQ.LT ) GO TO 550
C
C---- INTER MODAL VALUES
      LLB = LB + 1
      LLT = LT - 1
      DH = HH(LT) - HH(LB)
      DX = F(II,MOD) - F(JJ,MOD)
      IF( I3.NE.3 ) GO TO 506
      DY = F(II+1,MOD) - F(JJ+1,MOD)
      DT = F(II+2,MOD) - F(JJ+2,MOD)
  506 DO 520 I=LLB,LLT
      DDH = ( HH(I) - HH(LB) )/DH
      IK = ( MST - I )*I3 + 1
      F(IK,MOD) = F(JJ,MOD) + DX*DDH
      IF( I3.NE.3 ) GO TO 520
      F(IK+1,MOD) = F(JJ+1,MOD) + DY*DDH
      F(IK+2,MOD) = F(JJ+2,MOD) + DT*DDH
  520 CONTINUE
C
  550 IF( LB.NE.1 ) GO TO 502
      MODE = MODE + 1
      IF( MODE.LE.NFQ ) GO TO 500
C
      RETURN
  600 WRITE(6,3005)
      STOP
 3000 FORMAT( 2I5,3F10.0 )
 3001 FORMAT( 20X,I5,I6,3F12.4 )
 3002 FORMAT( //,25X,16H MODE INPUT DATA ,
     1          //,22X,11H MODE LEVEL 5X,3H X ,9X,3H Y ,8X,4HROTN,/ )
 3005 FORMAT( //,10X,14H *INPUT ERROR* )
      END
      SUBROUTINE ENVLS(A,R,MBS,NTIME,DT,IK)
C-----------------------------------------------------------------------
C     ROUTINE TO FIND ENVELOPE VALUES
C-----------------------------------------------------------------------
      IMPLICIT REAL*8 (A-H)
      IMPLICIT REAL*8 (O-Z)
      DIMENSION A(MBS,NTIME),R(MBS,4)
C
      DO 200 I=1,MBS
      I1 = 0
      X1 = 0.0
      I2 = 0
      X2 = 0.0
      DO 100 J=1,NTIME
      Y = A(I,J+IK)
      IF( Y.GT.X1 ) GO TO 20
      IF( Y.LT.X2 ) GO TO 30
      GO TO 100
C---- NEW MAXIMUM
```

```
   20 I1 = J
      X1 = Y
      GO TO 100
C---- NEW MINIMUM
   30 I2 = J
      X2 = Y
  100 CONTINUE
      T =  DBLE( I1 )
      R(I,1) = DT*T
      R(I,2) = X1
      T =  DBLE( I2 )
      R(I,3) = DT*T
      R(I,4) = X2
  200 CONTINUE
C
      RETURN
      END
      SUBROUTINE DYNA (SN,A,AA,BB,PA,X,T,XM,S,R,MSS,MST,GRAV)
C-----------------------------------------------------------------------
C     ROUTINE TO EVALUATE TIME DEPENDENT LATERAL DISPLACEMENTS AND
C     LATERAL INTERIA FORCES  ( FOR OPTION NAT = 8 )
C-----------------------------------------------------------------------
      IMPLICIT REAL*8 (A-H)
      IMPLICIT REAL*8 (O-Z)
      DIMENSION A(MST,8),PA(2,1),X(1),T(1),XM(1),AA(MSS,1),BB(MSS,1)
      DIMENSION R(MSS,4),S(MSS,MSS),SN(MST)
      COMMON/GEN/ NST,NDF,NTF,NLD,NAT,NFQ,NSD,SHED(9),FHED(7),NSS
     1            ,RLAB(3),IS,I3,G(6)
      COMMON/BUNK/ SC(2),AFIL(256)
      COMMON/DYN/NTIME,DT,NPC,DAMP
      CHARACTER*4 SN,RLAB,SHED,FHED
C
C---- A = STORY DATA
C     AA(I,J+5) = DISP OF DOF I AT TIME STEP J ( 5 STAT CASES IN FRONT )
C     BB(I,J) = STORY INTERIA FORCE AT DOF I AT TIME STEP J
C     PA = EQ GROUND TIME-ACC HISTORY
C     X(I) = MODAL AMP AT TIME STEP I
C     T = MODE SHAPE
C     XM = MASS ARRAY
C     S = GEOM STIFFNESS MATRIX
C    *NOTE S SHARES STORAGE WITH PA,X,T,XM
C    *PROGRAMMING NOTE S IS SPARSE POSSIBLE TO REDUCE STORAGE REQD.
C     R = ARRAY TO COLLECT MAX + MIN STORY RESPONSES ( OPT8 )
C    *NOTE R SHARES STORAGE WITH PA,X,T,XM
C
      DO 100 I=1,MSS
      DO 100 K=1,NTIME
  100 AA(I,K+5) = 0.0
C
      IF( NPC.LT.0 ) GO TO 105
C---- TIME AND ACC POINTS INPUT
      READ (5,1000) (PA(1,I),PA(2,I),I=1,NPC)
      WRITE(6,2000) (PA(1,I),PA(2,I),I=1,NPC)
      GO TO 118
C---- ACC POINTS INPUT
  105 NPC = IABS( NPC )
      READ(5,1001) DDT
      WRITE(6,2001) DDT
      TIM = 0.0
      DO 115 I=1,NPC
      PA(1,I) = TIM
  115 TIM = TIM + DDT
      READ(5,1002) ( PA(2,I),I=1,NPC )
      WRITE(6,2002) ( PA(1,I),PA(2,I),I=1,NPC )
C
C     CHECK GROUND ACCELERATION DATA
C
  118 DO 120 I=2,NPC
      IF (PA(1,I).GT.PA(1,I-1)) GO TO 120
      WRITE (6,3001) PA(1,I-1),PA(1,I)
      STOP
```

```
  120 CONTINUE
      TIME=NTIME
      TIME=TIME*DT
      ATIME=PA(1,NPC)-PA(1,1)
      IF(ATIME.GE.TIME) GO TO 150
      WRITE (6,3000)
      STOP
  150 REWIND 1
      IF( NAT.GT.4 ) GO TO 170
C
C---- ANALYSIS TYPE 4
C
      DO 160 L=1,NFQ
      READ (1) W,DAMP,(T(K),K=1,MSS)
C
      CALL RESP  (PA,X,W,NTIME,NPC,DT,DAMP)
C
      DO 155 I=1,MSS
      DO 155 J=1,NTIME
  155 AA(I,J+5) = AA(I,J+5) + T(I)*X(J)
  160 CONTINUE
      RETURN
C
C---- ANALYSIS TYPE 8 OR 9
C
  170 DO 172 I=1,MSS
      DO 172 J=1,NTIME
  172 BB(I,J) = 0.0
C---- CREATE MASS ARRAY XM FROM ARRAY A
      DO 175 I=1,NST
      II = I3*( I - 1 ) + 1
      XM(II) = A(I,3)
      IF( I3.NE.3 ) GO TO 175
      XM(II+1) = A(I,3)
      XM(II+2) = A(I,4)
  175 CONTINUE
      DM1 = 1.0
      TPI = 8.0*DATAN( DM1 )
      DO 300 L=1,NFQ
      READ (1) W,DAMP,(T(K),K=1,MSS)
      WW = ( TPI/W )**2
C
      CALL RESP  (PA,X,W,NTIME,NPC,DT,DAMP)
C
      DO 200 I=1,MSS
      XXM = WW*XM(I)
      DO 200 J=1,NTIME
      Z = T(I)*X(J)
      AA(I,J+5) = AA(I,J+5) + Z
  200 BB(I,J) = BB(I,J) + XXM*Z
  300 CONTINUE
      IF( DABS(GRAV) .LT.1.0D-10 ) GO TO 360
C---- ASSEMBLE GEOM STIFFNESS MATRIX
      DO 310 I=1,MSS
      DO 310 J=1,MSS
  310 S(I,J) = 0.0
      XMT = 0.0
      XMMT = 0.0
      DO 320 I=1,MST
      H = A(I,2)
      XMT = XMT + A(I,3)
      XMMT = XMMT + A(I,4)
      KK = ( I - 1 )*I3
C
      DO 315 J=1,I3
      IF( J.NE.3 ) PDEL = XMT*GRAV/H
      IF( J.EQ.3 ) PDEL = XMMT*GRAV/H
      NN = KK + J
      S(NN,NN) = S(NN,NN) + PDEL
      IF( I.GE.MST ) GO TO 315
      S(NN,NN+I3) = -PDEL
```

```
      B(NN+13,NN) = -PDEL
      B(NN+13,NN+13) = B(NN+13,NN+13) + PDEL
  315 CONTINUE
  320 CONTINUE
C---- CALC AND ADD P-DELTA FORCES TO BB
      IB = 3
      IF( I3.EQ.3 ) IB = 7
      DO 350 J=1,NTIME
      DO 350 I=1,MBS
      K1 = I - IB
      K2 = I + IB
      IF( K1.LE.0 ) K1 = 1
      IF( K2.GT.MBS ) K2 = MBS
      Z = 0.0
      DO 330 K=K1,K2
  330 Z = Z + B(I,K)*AA(K,J+5)
  350 BB(I,J) = BB(I,J) + Z
C
  360 CALL OPT8(SN,A,AA,BB,R,MBS,MBT,I3,IS)
C
      RETURN
 1000 FORMAT(2F10.0)
 1001 FORMAT( F10.0 )
 1002 FORMAT( 8F9.0 )
 2000 FORMAT (///26H GROUND ACCELERATION CARDS ,//,
     1          11X,4HTIME,3X,12HACCELERATION   ,/,(2F15.4))
 2001 FORMAT( //, 10X,42H ACCELERATION RECORD INPUT TIME INTERVAL = ,
     1             F10.5,/ )
 2002 FORMAT( ///, 26H GROUND ACCELERATION CARDS ,/, ( 3X,12F10.4 ) )
 3000 FORMAT (/,44H GROUND ACCELERATION TIME SPAN IS LESS THAN
     1 32HSPECIFIED BUILDING RESPONSE TIME  )
 3001 FORMAT (//,32H  INCONSISTENT ACCELERATION DATA ,//
     1 34H  TIMES MUST INCREASE SEQUENTIALLY ,//
     2 16H  ERROR AT TIMES  ,F12.5/16X,F12.6)
      END
      SUBROUTINE MODGEN(SN,A,DD,F,XM,RR,W,S,MBS,MBT,NFQ,I3,IS,NSD)
C-----------------------------------------------------------------------
C     SUBROUTINE TO GENERATE APPROX MODE SHAPES
C-----------------------------------------------------------------------
      IMPLICIT REAL*8 (A-H)
      IMPLICIT REAL*8 (O-Z)
      DIMENSION A(MBT,1),F(MBS,MBS),XM(MBS),W(NFQ),S(MBS,MBS),RR(MBS,2),
     1  RLAB(3),DD(MBS,2),SN(MBT)
      CHARACTER*4 RLAB,SN
      DATA RLAB /'  X ','  Y ','ROTN' /
C
C---- A = STORY DATA
C     DD = DISP FROM STAT LOADS ( LOCATED IN ARRAY A STORAGE )
C     F = MODE SHAPES
C     XM = MASS ARRAY
C     RR = LAT STATIC LOADS ( LOCATED IN ARRAY XM AND IQ STORAGE )
C     W = PERIOD ARRAY
C     S = FLEXIBILITY MATRIX ( USED AS SCRATCH IN TYP0 AND TYP12 )
C
      WRITE(6,3004)
      DO 10 I=1,MBS
      DO 10 J=1,MBS
      S(I,J) = 0.0
   10 F(I,J) = 0.0
C
      J=NFQ
      IF(NFQ.GT.7)J=7
      READ(5,1000)KOD,(W(I),I=1,J)
      IF(NFQ.GT.7)READ(5,1001)(W(I),I=8,NFQ)
      WRITE(6,2000) KOD
      WRITE(6,2001)(I,W(I),I=1,NFQ)
C
C-----DUMMY WRITE TAPE 2
      REWIND 2
      WRITE(2) ( ( F(I,J),I=1,MBS), J=1,5 )
      REWIND 2
```

```
C
C---- GENERATE EMPIRICAL MODE SHAPES
C
      IF( KOD.EQ.0 ) CALL TYP0( A,F,S(1,1),S(1,2),S(1,3),S(1,4),MSS,
     1 MST,NFQ,I3)
C
C---- GENERATE  SHEAR BEAM TYPE OR READ IN MODE SHAPES
C
      IF( KOD.NE.0 ) CALL TYP12(A,F,S(1,1),MSS,MST,NFQ,I3,NSD,KOD)
C
C---- ORDER PERIODS AND MODE SHAPES ACCORDING TO DECREASING PERIOD VAL.
C
      DO 580 I=1,NFQ
      WM = W(I)
      K = 0
      DO 560 J=I,NFQ
      IF( W(J).LT.WM ) GO TO 560
      WM = W(J)
      K = J
  560 CONTINUE
      IF( K.LE.0 ) GO TO 580
C
      W(K) = W(I)
      W(I) = WM
      DO 570 J=1,MSS
      WM = F(J,K)
      F(J,K) = F(J,I)
  570 F(J,I) = WM
  580 CONTINUE
C
C---- MASS ARRAY
C
      DO 105 I=1,MST
      II = I3*( I - 1 ) + 1
      XM(II) = A(I,3)
      IF( I3.NE.3 ) GO TO 105
      XM(II+1) = A(I,3)
      XM(II+2) = A(I,4)
  105 CONTINUE
C---- NORMALIZE MODE SHAPES
      DO 120 J=1,NFQ
      SUM = 0.0
      DO 110 I=1,MSS
      SUM = SUM + F(I,J)*F(I,J)*XM(I)
  110 CONTINUE
      Y = 1.0/DSQRT( SUM )
      DO 130 I=1,MSS
  130 F(I,J) = F(I,J)*Y
  120 CONTINUE
C
      WRITE(6,3005)
C
C---- SOLVE FOR DISP FROM LAT STATIC FORCES
C
C---- CALCULATE APPROX FLEXIBILITY MATRIX
      DM1 = 1.0
      TPI = 8.0*DATAN( DM1 )
      DO 703 I=1,MSS
      DO 702 J=1,MSS
      XX = 0.0
      DO 701 K=1,NFQ
      WFR = TPI/W(K)
      WFR = WFR*WFR
  701 XX = XX + F(I,K)*F(J,K)/WFR
  702 S(I,J) = XX
  703 CONTINUE
C---- ASSEMBLE LAT LOAD VECTOR
      DO 710 I=1,MST
      IF( NSD.NE.0 ) GO TO 707
C---- 3-D ANAL.
      II = I3*( I - 1 ) + 1
```

```
      RR(II,1) = A(I,9)
      RR(II+1,1) = A(I,10)
      RR(II+2,1) = A(I,11)
      RR(II,2) = A(I,12)
      RR(II+1,2) = A(I,13)
      RR(II+2,2) = A(I,14)
      GO TO 710
  707 IF( NSD.NE.1 ) GO TO 708
C---- X DIRECTION ANAL.
      RR(I,1) = A(I,9)
      RR(I,2) = A(I,12)
      GO TO 710
C---- Y DIRECTION ANAL.
  708 RR(I,1) = A(I,10)
      RR(I,2) = A(I,13)
  710 CONTINUE
C---- SOLVE FOR DISP
      DO 706 I=1,MSS
      DO 705 J=1,2
      XX = 0.0
      DO 704 K=1,MSS
  704 XX = XX + S(I,K)*RR(K,J)
  705 DD(I,J) = XX
  706 CONTINUE
C---- PRINT OUT DISP
      WRITE(6,3001)
      WRITE(6,3003)
      CALL PROUT(DD,MSS,2,SN,MST,RLAB,13,16)
C---- CALC DRIFTS
      N = MSS - 13
      DO 720 I=1,2
      DO 720 J=1,N
  720 DD(J,I) = DD(J,I) - DD(J+13,I)
C---- PRINT OUT DRIFTS
      WRITE(6,3002)
      WRITE(6,3003)
      CALL PROUT(DD,MSS,2,SN,MST,RLAB,13,16)
      RETURN
 1000 FORMAT( I5,5X, 7F10.0)
 1001 FORMAT((8F10.0))
 2000 FORMAT(  //,20X,23H MODE GENERATION CODE =  ,I2,//
     1  20X,22H EQ.0 - EMPIRICAL RULE ,/
     2  20X,23H EQ.1 - SHEAR BEAM RULE ,/
     3  20X,22H EQ.2 - SHAPES READ IN ,/ )
 2001 FORMAT(//48H APPROX PERIOD VALUES IN ORDER OF INPUT SEQUENCE  ,//
     1 8H  NUMBER,5X,7H PERIOD,/,(I8,F12.2))
 3001 FORMAT( ///,1H ,17(1H-),/,18H STORY DEFLECTIONS ,/,1H ,17(1H-), /)
 3002 FORMAT( ///,1H ,12(1H-),/,13H STORY DRIFTS ,/,1H ,12(1H-),/ )
 3003 FORMAT( 20X,65H OUTPUT COLUMN 1 CONTAINS RESULTS FROM STATIC LATER
     1AL LOAD CASE A ,/,20X,65H OUTPUT COLUMN 2 CONTAINS RESULTS FROM ST
     2ATIC LATERAL LOAD CASE B ,/ )
 3004 FORMAT( 1H ,//,1H ,37(1H-),/,38H GENERATION OF APPROXIMATE MODE SH
     1APES ,/,1H ,37(1H-),// )
 3005 FORMAT( //,1H ,28(1H-),/,29H END OF MODE SHAPE GENERATION ,/,1H ,
     128(1H-),// )
      END
```

```
      SUBROUTINE DIAG (IO,L,VANG,DL,SNA,CSA,NTRU,XL1,TP)
      IMPLICIT REAL*8 (A-H)
      IMPLICIT REAL*8 (O-Z)
      DIMENSION TP(3,NTRU)
C
      COMMON/STIF/ ABA(12,12),SA(8,12),T(8,12)
C
C     DIAGONAL STIFFNESS AND FORCE MATRICES
C
C     TRANSFORMATION MATRIX
      CALL TRANS(4,VANG,0.D0,DL,SNA,CSA,XL1,0.D0,0.D0,0.D0)
C
C     MEMBER STIFFNESS
      COMM=TP(1,L)*TP(2,L)/DL
C
C     FORCE-FRAME DISPLACEMENT MATRIX
      DO 10 I=1,8
   10 SA(1,I)=COMM*T(1,I)
C
      IF(IO.EQ.2) RETURN
C
C     STIFFNESS MATRIX
      DO 120 I=1,8
      DO 120 J=I,8
      ABA(I,J)=T(1,I)*SA(1,J)
  120 ABA(J,I)=ABA(I,J)
      RETURN
C
      END
      SUBROUTINE MEMORY(M)
      IMPLICIT REAL*8 (A-H)
      IMPLICIT REAL*8 (O-Z)
      WRITE (6,1000) M
      STOP
 1000 FORMAT (20H ** INCREASE MTOT BY I5,3H **)
      END
      SUBROUTINE TRANS(KK,XLR,A,B,SNA,CSA,XL1,YL1,XL2,YL2)
      IMPLICIT REAL*8 (A-H)
      IMPLICIT REAL*8 (O-Z)
      COMMON/STIF/ ABA(12,12),SA(8,12),T(8,12)
      COMMON/JUNK/ NLD,N,ND,MM,MN,LM(12),IFIL(53)
      COMMON/BUNK/ P(12,3),TF(6,12),TT(12,12),AFIL(8)
C
C     FORM TRANSFORMATION MATRICES
C
      DO 10 I=1,6
      DO 10 J=1,12
   10 TF(I,J)=0.
C
      GO TO (100,200,300,400,300)KK
C
C     COLUMN TRANSFORMATION
C
  100 D1= 1./XLR
      TF(2,2)=D1
      TF(3,2)=D1
      TF(2,8)=-D1
      TF(3,8)=-D1
      TF(5,1)=-D1
      TF(6,1)=-D1
      TF(5,7)=D1
      TF(6,7)=D1
      TF(1,3)=1.
      TF(4,6)=1.
      TF(1,9)=-1.
      TF(4,12)=-1.
      TF(3,4)=A/XLR
      TF(6,5)=A/XLR
      TF(2,4)=1.+A/XLR
      TF(5,5)=1.+A/XLR
      TF(2,10)=B/XLR
```

```
      TF(5,11)=B/XLR
      TF(3,10)=1.+B/XLR
      TF(6,11)=1.+B/XLR
      DO 150 I=1,12
      DO 150 J=1,12
  150 TT(I,J)=0.
      TT(1,1)=SNA
      TT(2,2)=SNA
      TT(1,2)=-CSA
      TT(2,1)= CSA
      TT(3,3)=1.
      DO 155 II=3,9,3
      DO 152 I=1,3
      DO 152 J=1,3
  152 TT(II+I,II+J)=TT(I,J)
  155 CONTINUE
      TT(1,3)=-YL1*SNA-XL1*CSA
      TT(2,3)=-YL1*CSA+XL1*SNA
      TT(7,9)=TT(1,3)
      TT(8,9)=TT(2,3)
      DO 190 I=1,6
      DO 190 I1=1,10,3
      I2=I1+2
      DO 180 J=I1,I2
      XX=0.
      DO 170 K=I1,I2
  170 XX=XX+TF(I,K)*TT(K,J)
  180 T(I,J)=XX
  190 CONTINUE
      RETURN
C
C     BEAM LOCAL TRANSFORMATION
  200 D1=-1./XLR
      TF(1,2)=-1.
      TF(1,5)=1.
      TF(2,1)=1.+A/XLR
      TF(3,1)=A/XLR
      TF(2,4)=B/XLR
      TF(3,4)=1.+B/XLR
      TF(2,3)=-D1
      TF(3,3)=-D1
      TF(2,6)=D1
      TF(3,6)=D1
      DO 210 I=1,3
      DO 210 J=1,3
  210 TT(I,J)=0.
      TT(1,1)=SNA
      TT(2,2)=SNA
      TT(1,2)=-CSA
      TT(2,1)= CSA
      TT(3,3)=1.
      DO 230 J=1,3
      DO 230 I1=1,4,3
      I2=I1-1
      DO 230 J1=1,3
      XX=0.
      DO 220 K=1,3
  220 XX=XX+TF(J,I2+K)*TT(K,J1)
      I=J1+I2
  230 T(J,I)=XX
      RETURN
C
C     PANEL TRANSFORMATION
C
  300 D1=1./XLR
      D2=1./A
C
      IF(KK.EQ.5) GO TO 305
C
      TF(1,4)=-D1
      TF(2,4)=-D1
```

```
      TF(1,1)=D1
      TF(2,1)=D1
      TF(2,5)=-D2
      TF(2,6)=D2
      TF(1,2)=-D2
      TF(1,3)=D2
      TF(3,5)=-0.5
      TF(3,6)=-0.5
      TF(3,2)=0.5
      TF(3,3)=0.5
C
      KN=3
      GO TO 315
C
  305 TF(1,1)=D1
      TF(1,4)=-D1
      TF(1,2)=-D2/2.
      TF(1,3)=D2/2.
      TF(1,5) = -D2/2.
      TF(1,6) = D2/2.
C
      KN=1
C
  315 DO 310 I=1,6
        DO 310 J=1,10
  310     TT(I,J)=0.
      TT(1,1)=CSA
      TT(1,2)=SNA
      TT(1,3)= B
      TT(2,4)=1.
      TT(3,5)=1
      TT(4,6)=CSA
      TT(4,7)=SNA
      TT(4,8)= B
      TT(5,9)=1.
      TT(6,10)=1.
      DO 330 II=1,4,3
      I2=II-1
      JJ=0
      IF(II.EQ.4) JJ=5
      DO 330 J1=1,5
      XX=0.
      DO 320 K=1,3
  320 XX=XX+TF(J,I2+K)*TT(K,J1)
      I=J1+JJ
  330 T(J,I)=XX
      RETURN
C
C     DIAGONAL TRANSFORMATION
C
  400 T(1,1)=DCOS(XLR)*CSA
      T(1,2)=DCOS(XLR)*SNA
      T(1,3)= DCOS(XLR)*XL1
      T(1,4)=DSIN(XLR)
      T(1,5)=-T(1,1)
      T(1,6)=-T(1,2)
      T(1,7)=-T(1,3)
      T(1,8)=-T(1,4)
      RETURN
      END
      SUBROUTINE STIFF (IO,S,R,NN,NS)
      IMPLICIT REAL*8 (A-H)
      IMPLICIT REAL*8 (O-Z)
      DIMENSION S(1)
      COMMON/JUNK/NLD,N,ND,MM,MN,LM(12),IFIL(53)
      COMMON/BUNK/ P(12,3),TT(8),AFIL(216)
      COMMON/STIF/ES(12,12),BA(8,12),T(8,12)
      COMMON/FTAPES/ NTS,NTE,NTSL,NSKS
      NSKS=3
      NTS=11
      NTE=12
```

```
      NTSL=13
      NLD=3
      MN=2*MM
      MN6=MN+6
      LS=(MM*(MM+1))/2
      LC=MM*MM
      NE=NN+NLD-MN
      LE=MM*NE
      NNM=NN-MN
      LSL=(NNM*(NNM+1))/2+NNM*NLD
      NNL=NN+NLD
      N1=1
      N2=N1+MAX0(LS,LE)
      N3=N2+LC
      N4=N1+LSL
      N3=MAX0(N3,N4)
      N4=N3+MAX0(LS,LE)
      N5=N4+MN6*6
      N6=N5+MN*3
      N7=N6+NNL
      N8=N7+MM
      IF (IO.GT.0) GO TO 50
      IO=N8-N1
      RETURN
   50 GO TO (100,200,300,400,500) , IO
C
C       IO=1  ZERO ARRAYS
C
  100 NL=N8-1
      DO 110 I=N1,NL
  110 S(I)=0.0
      REWIND NTSL
      REWIND NTS
      REWIND NTE
      WRITE (NTS) (S(I),I=1,LS)
      WRITE (NTE) (S(I),I=1,LE)
      WRITE (NTSL) (S(I),I=1,LSL)
      RETURN
C
C       IO=2  SHIFT STORAGE
C
  200 REWIND NTS
      READ (NTS) (S(I),I=1,LS)
      NL=N8-N1
      DO 210 I=N2,NL
  210 S(I)=0.0
      RETURN
C
C       IO=3  REDUCE EQN,S  WRITE BS EQNS ON TAPE 3 (NBKS)
C
  300 MN6=MN+6
      CALL SHRINK (S(N1),LS,S(N6),MM,NNL,S(N7),S(N2),S(N3),S(N3),S(N1),
     1             S(N1),NE,LSL,S(N4),S(N5),MN6,MN,NS)
      RETURN
C
C      IO=4   WRITE LAT STIF ON TAPE 2
C
  400 NFR=NN-MN-3
      NT2=2
      NF=N1
      NL=(NFR*(NFR+1))/2
      M=LSL-NNM
      L=M-NNM
      K=L-NNM
      WRITE (NT2) N,NFR,(S(I),I=NF,NL),(S(K+I),I=1,NFR),
     1             (S(L+I),I=1,NFR),(S(M+I),I=1,NFR)
      RETURN
C
C      IO=5    ADD ELEMENT STIFF TO FRAME STIFFNESS
C
  500 MN6=MN+6
```

```
      CALL ADDSM (B(N1),B(N2),B(N3),B(N4),B(N5),LS,MM,MN6,MN)
      RETURN
C
      END
      SUBROUTINE ADDSM (S,C,SS,EF,PF,LS,MM,MN6,MN)
      IMPLICIT REAL*8 (A-H)
      IMPLICIT REAL*8 (O-Z)
      DIMENSION S(LS),C(MM,MM),SS(LS),EF(MN6,6),PF(MN,3)
      COMMON/STIF/ ES(12,12),BFIL(192)
      COMMON/JUNK/ NLD,N,ND,ID,JD,LM(12),IFIL(53)
      COMMON/BUNK/ P(12,3),TT(8),AFIL(216)
      DIMENSION KM(12)
C
      DO 100 I=1,ND
      II=LM(I)
      DO 50 J=1,3
      II=II-MM
      IF (II) 20,20,50
   20 KM(I)=J
      GO TO 100
   50 KM(I)=3
  100 CONTINUE
C
C     ADD ELEMENT STIFF TO FRAME STIFFNESS
C
      MJ=MN+3*(N-1)
      DO 320 I=1,ND
      II=LM(I)
      IF (II) 320,320,110
  110 KI=KM(I)
      DO 290 J=1,ND
      JJ=LM(J)
      IF (JJ.LT.II) GO TO 290
      KJ=KM(J)
      MI=3*(N-1)
      GO TO (120,150,210) ,KI
  120 GO TO (130,140,200) ,KJ
  130 L=(JJ*(JJ-1))/2+II
      S(L)=S(L)+ES(I,J)
      GO TO 290
  140 C(II,JJ-MM)=C(II,JJ-MM)+ES(I,J)
      GO TO 290
  150 GO TO (290,180,200) ,KJ
  180 JM=JJ-MM
      L=(JM*(JM-1))/2+II-MM
      SS(L)=SS(L)+ES(I,J)
      GO TO 290
  200 MI=0
  210 EF(II-MI,JJ-MJ)=EF(II-MI,JJ-MJ)+ES(I,J)
  290 CONTINUE
      GO TO (300,300,320) ,KI
  300 DO 310 L=1,3
  310 PF(II,L)=PF(II,L)+P(I,L)
  320 CONTINUE
C
      RETURN
      END
      SUBROUTINE SHRINK (S,LS,KH,MM,NNL,SD,C,SS,E,ES,SL,NE,LSL,EF,PF,
     1                   MN6,MN,NS)
C
C     PERFORMS BLOCK BY BLOCK STATIC CONDENSATION ON SUBASSEMBLAGE
C     EQUATIONS
C
C     -----------
C     I         I        NSS=3*NUMBER OF STORIES
C     I S  C  E I        MM=3*NUMBER OF COLUMN LINES
C     I         I        E=(MM*NSS)
C     I   SS ES I        S=(MM*(MM+1))/2
C     I         I        ES=(MM*NSS)
C     I      SL I        C=MM*MM
C     I         I        SL=(NSS*(NSS+1))/2
```

```
C       ------------        SS=(MM*(MM+1))/2
C
C       MAXIMUM STORAGE GOVERNED BY THAT REQUIRED FOR ANY THREE BLOCKS
C
      IMPLICIT REAL*8 (A-H)
      IMPLICIT REAL*8 (O-Z)
      DIMENSION S(LS),KH(NNL),C(MM,MM),SS(LS),SD(MM)
     1          ,E(MM,NE),ES(MM,NE),SL(LSL),EF(MN6,6),PF(MN,3)
      COMMON/JUNK/NLD,N,ND,ID,JD,LM(12),IFIL(53)
      COMMON/BUNK/ P(12,3),TT(8),AFIL(216)
      COMMON/FTAPES/NTS,NTE,NTSL,NBKS
C
      NLD=3
      MN=2*MM
      MMP=MM+1
      MNP=MN+1
      NNN=MN+3*N+3
      NN=NNL-NLD
      NNM=NN-MN
C
C     DETERMINE PROFILE OF (S,C,SS)
C
      JB=0
      DO 50 J=1,MM
      KH(J)=1
      DO 40 I=1,J
      IF (S(JB+I)) 50,40,50
   40 KH(J)=I+1
   50 JB=JB+J
      DO 70 J=1,MM
      KH(J+MM)=1
      DO 60 I=1,MM
      IF (C(I,J)) 70,60,70
   60 KH(J+MM)=I+1
   70 CONTINUE
C
C      REDUCTION OF S
C
      SD(1)=S(1)
      JB=1
      DO 300 J=2,MM
      SD(J)=0.0
      JM=J-1
      IF (J.EQ.2) GO TO 260
      IB=1
      DO 250 I=2,JM
      IM=I-1
      SS=0.0
      KF=MAX0(KH(I),KH(J))
      IF (KF.GT.IM) GO TO 250
C
C     REDUCE S BY S,S
C
      DO 200 K=KF,IM
  200 SS=SS+S(IB+K)*S(JB+K)
      S(JB+I)=S(JB+I)-SS
  250 IB=IB+I
C
C     RED COL BY SELF
C
  260 SS=0.0
      KF=KH(J)
      IF (KF.GT.JM) GO TO 290
      KD=(KF*(KF+1))/2
      DO 280 K=KF,JM
      IF (S(KD)) 270,280,270
  270 T=S(JB+K)/S(KD)
      SS=SS+T*S(JB+K)
      S(JB+K)=T
  280 KD=KD+K+1
      S(JB+J)=S(JB+J)-SS
```

```
  290 BD(J)=B(JB+J)
  300 JB=JB+J
C
C        REDUCTION OF C,SB
C
      JB=0
      DO 500 J=MMP,MN
      JJ=J-MM
      JM=J-1
      IB=1
      DO 450 I=2,JM
      II=I-MM
      IM=I-1
      KL=MIN0(IM,MM)
      KF=MAX0(KH(I),KH(J))
      IF (KF.GT.KL) GO TO 450
      SS=0.0
      IF (I.GT.MM) GO TO 430
C
C     RED C BY B,C
C
      DO 420 K=KF,KL
  420 SS=SS+B(IB+K)*C(K,JJ)
      C(I,JJ)=C(I,JJ)-SS
      GO TO 450
C
C     RED SB BY C,C
C
  430 DO 440 K=KF,KL
  440 SS=SS+C(K,II)*C(K,JJ)
      SB(JB+II)=SB(JB+II)-SS
  450 IB=IB+I
C
C
C     RED COL BY SELF
      SS=0.0
      KF=KH(J)
      IF (KF.GT.MM) GO TO 500
      DO 460 K=KF,MM
      IF (BD(K)) 455,460,455
  455 T=C(K,JJ)/BD(K)
      SS=SS+T*C(K,JJ)
      C(K,JJ)=T
  460 CONTINUE
      SB(JB+JJ)=SB(JB+JJ)-SS
  500 JB=JB+JJ
      REWIND NTS
      WRITE (NTS) SB
      WRITE (NBKS) B,C
C
C        OVERWRITE SB WITH (E,EB)
C
      REWIND NTE
      READ (NTE) E
      L=3*(N-1)
      DO 810 I=1,MM
      DO 810 J=1,6
  810 E(I,J+L)=E(I,J+L)+EF(I,J)
      DO 820 I=1,MM
      DO 820 J=1,3
  820 E(I,J+NNM)=E(I,J+NNM)+PF(I,J)
C
C        DETIRMINE PROFILE OF (E,EB)
C
      DO 90 J=MNP,NNL
      JJ=J-MN
      KH(J)=1
      DO 80 I=1,MM
      IF (E(I,JJ)) 90,80,90
   80 KH(J)=I+1
   90 CONTINUE
```

```
C
C         REDUCE E BY S,E
C
      JB=0
      DO 540 J=MNP,NNL
      JJ=J-MN
      IB=1
      DO 530 I=2,MM
      IM=I-1
      KF=MAX0(KH(I),KH(J))
      SS=0.0
      IF (KF.GT.IM) GO TO 530
      DO 520 K=KF,IM
  520 SS=SS+S(IB+K)*E(K,JJ)
      E(I,JJ)=E(I,JJ)-SS
  530 IB=IB+I
  540 CONTINUE
      DO 830 I=1,MM
      DO 830 J=1,NE
  830 EB(I,J)=0.0
      L=3*(N-1)
      DO 840 I=1,MM
      DO 840 J=1,6
  840 EB(I,J+L)=EB(I,J+L)+EF(I+MM,J)
      DO 845 I=1,MM
      DO 845 J=1,NLD
  845 EB(I,J+NNM)=EB(I,J+NNM)+PF(I+MM,J)
C
C       RED EB BY C,E
C
      DO 570 J=MNP,NNL
      JJ=J-MN
      DO 560 I=MMP,MN
      II=I-MM
      KF=MAX0(KH(I),KH(J))
      SS=0.0
      IF (KF.GT.MM) GO TO 560
      DO 550 K=KF,MM
  550 SS=SS+C(K,II)*E(K,JJ)
  560 EB(II,JJ)=EB(II,JJ)-SS
  570 CONTINUE
      REWIND NTE
      REWIND NTSL
      WRITE (NTE) EB
C
C          OVERWRITE S BY SL
C
      READ (NTSL) SL
      L=3*(N-1)
      K=(L*(L+1))/2
      DO 860 J=1,6
      DO 850 I=1,J
  850 SL(K+L+I)=SL(K+L+I)+EF(I+MN,J)
  860 K=K+L+J
C
C       RED SL BY E,E
C
      JB=0
      DO 700 J=MNP,NNL
      JJ=J-MN
      JM=J-1
      JM=MIN0(JM,NNN)
      IF (MNP.GT.JM) GO TO 610
      DO 600 I=MNP,JM
      KF=MAX0(KH(I),KH(J))
      II=I-MN
      SS=0.0
      IF (KF.GT.MM) GO TO 600
      DO 590 K=KF,MM
  590 SS=SS+E(K,II)*E(K,JJ)
  600 SL(JB+II)=SL(JB+II)-SS
```

```
C
C     REDUCE COLS BY SELF
C
  610 SS=0.0
      KF=KH(J)
      IF (KF.GT.MM) GO TO 660
      DO 650 K=KF,MM
      IF (SD(K)) 640,650,640
  640 T=E(K,JJ)/SD(K)
      SS=SS+T*E(K,JJ)
      E(K,JJ)=T
  650 CONTINUE
  660 JA=MIN0(JJ,NNM)
      IF (J.GT.NNN) GO TO 700
      SL(JB+JA) = SL(JB+JA) - SS
  700 JB = JB + JA
      REWIND NTSL
      WRITE(NSKS) E,KH
      WRITE(NTSL) SL
C
      RETURN
C
      END
C
      FUNCTION TABA (NPC,SF,T,PA)
      IMPLICIT REAL*8 (A-H)
      IMPLICIT REAL*8 (O-Z)
      DIMENSION PA(2,NPC)
C
C     SPECTRUM INTERPOLATION
C
      DO 100 I=2,NPC
      T1=PA(1,I-1)
      T2=PA(1,I)
      IF (T.LE.T2) GO TO 200
100   CONTINUE
200   R1=(T2-T)/(T2-T1)
      R2=(T-T1)/(T2-T1)
      TABA=SF*(PA(2,I-1)*R1+PA(2,I)*R2)
      RETURN
      END
```

```
      SUBROUTINE LAT(SN,A,SS,RR,S,R,D,AA,MSS,NFS,MTF,HED,MST,GRAV,ICHEK
     1 ,RRR,NPT,ITYPE)
      IMPLICIT REAL*8 (A-H)
      IMPLICIT REAL*8 (O-Z)
      DIMENSION SS(MSS,MSS),RR(MSS,5),A(MST,14),S(NFS,NFS),R(NFS,3)
     1            ,D(MST,MTF  ,2),AA(MTF,5),HED(MTF,4),SN(MST)
     2 ,RRR(MSS,2)
      COMMON/GEN/ NST,NDF,NTF,NLD,NAT,NFQ,NSD,BHED(9),FHED(7),NSS
     1              ,RLAB(3),IS,I3,T(6)
      COMMON /BUNK/ AI(3,3),AJ(3,3),AR(3,3),AS(3,3),AFIL(224)
      CHARACTER*4 SN,HED,BHED,FHED,RLAB
C
C     COMPUTE STRUCTURE LATERAL STIFFNESS , SOLVE STATIC LOAD CASES
C
      IF( ICHEK.NE.0 ) GO TO 105
      REWIND 2
      DO 50 I=1,MSS
      DO 40 J=1,5
   40 RR(I,J)=0.
      DO 50 J=1,MSS
   50 SS(I,J)=0.
      DO 100 I=1,NST
      II=I3*(I-1)
      SS(II+1,II+1)=A(I,7+IS)
      IF(NSD.EQ.0) SS(II+2,II+2)=A(I,8)
      DO 100 J=1,I3
      DO 100 L=1,2
      LL=5+3*L+J-IS
  100 RR(II+J,L+3)=A(I,LL)
C
  105 WRITE(NPT,3000)
      IFP=0
      DO 500 K=1,NTF
      READ  (5,1000) IF,IFC,X1,Y1, ANG, (HED(K,J),J=1,4)
      WRITE (NPT,2000) K,IF,IFC,X1,Y1, ANG, (HED(K,J),J=1,4)
      IF( ICHEK.NE.0 ) GO TO 500
      IF(IF.EQ.IFP) GO TO 150
      READ (2)NT,NFR,((S(I,J),I=1,J),J=1,NFR)  ,((R(I,L),I=1,NFR),L=1,3)
      DO 145 I=1,NFR
      DO 145 J=I,NFR
  145 S(J,I)=S(I,J)
      IFP=IF
  150 DM1 = 1.0
      ANG=ANG*DATAN(DM1)/45.
      DO 190 I=1,3
      DO 190 J=1,3
  190 AI(I,J)=0.
C
      AI(1,1)=DCOS(ANG)
      AI(1,2)= DSIN(ANG)
      AI(2,1)=-AI(1,2)
      AI(2,2)=AI(1,1)
      AI(3,3)=1.
      DO 195 I=1,3
      DO 195 J=1,3
  195 AJ(J,I)=AI(I,J)
C
      DO 200 N=NT,NST
      XM=X1-A(N,5)
      YM=Y1-A(N,6)
      D(N,K,1)=-YM*DCOS(ANG)+XM*DSIN(ANG)
  200 D(N,K,2)= YM*DSIN(ANG)+XM*DCOS(ANG)
C
      DO 400 N=NT,NST
      J2=3*(N-NT)
      AI(1,3)=D( N,K,1)
      AI(2,3)=D( N,K,2)
C
      DO 400 M=NT,NST
      I2=3*(M-NT)
      IR=I3*(M-1)
```

```
      AJ(3,1)=D(M,K,1)
      AJ(3,2)=D(M,K,2)
C
      DO 225 I1=1,3
      DO 225 J1=1,13
      JJ=J1+IS
      AR(I1,JJ)=0
      DO 225 KK=1,3
  225 AR(I1,JJ)=AR(I1,JJ)+B(I2+I1,J2+KK)*AI(KK,JJ)
C
      DO 275 I1=1,13
      II=I1+IS
C
      IF(N.NE.NT) GO TO 260
      DO 250 L=1,3
      DO 250 KK=1,3
  250 RR(IR+I1,L)=RR(IR+I1,L)+AJ(I1,KK)*R(I2+KK,L)
C
  260 DO 275 J1=1,13
      JJ=J1+IS
      AB(II,JJ)=0.
      DO 275 KK=1,3
  275 AB(II,JJ)=AB(II,JJ)+AJ(I1,KK)*AR(KK,JJ)
C
      NN=13*(NT-1)
C
      DO 300 I=1,13
      II=13*(M-NT)+I
      DO 300 J=1,13
      JJ=13*(N-NT)+J
  300 BS(NN+II,NN+JJ)=BS(NN+II,NN+JJ)+AB(I+IS,J+IS)
  400 CONTINUE
C
      AA(K,1)=IF
      AA(K,2)=IFC
      AA(K,3)=AI(1,1)
      AA(K,4)=AI(1,2)
      AA(K,5)=NT
  500 CONTINUE
      IF( ICHEK.NE.0 ) RETURN
C
C---- MOD OF LAT STIFFNESS FOR P-DELTA EFFECTS
C
      IF( NAT.GT.9 ) REWIND 1
      IF( NAT.GT.9 ) WRITE(1) BS
      IF( DABS(GRAV).LT.1.0D-10 ) GO TO 655
      IPD=0
  501 XMT=0.0
      XMMT = 0.0
      DO 650 I=1,NST
      H = A(I,2)
      XMT = XMT + A(I,3)
      XMMT = XMMT + A(I,4)
      MM = ( I - 1 )*13
C
      DO 600 J=1,13
      IF( J.NE.3 ) PDEL = XMT*GRAV/H
      IF( J.EQ.3 ) PDEL = XMMT*GRAV/H
      NN = MM + J
      BS(NN,NN) = BS(NN,NN) - PDEL
      IF( I.GE.NST ) GO TO 600
      BS(NN,NN+13) = BS(NN,NN+13) + PDEL
      BS(NN+13,NN) = BS(NN+13,NN) + PDEL
      BS(NN+13,NN+13) = BS(NN+13,NN+13) - PDEL
  600 CONTINUE
  650 CONTINUE
      IF(IPD.EQ.1)GO TO 730
C
C---- END OF P-DELTA MODS
C
  655 NT2 = 2
```

```
      REWIND NT2
      WRITE (NT2) SS,XM
      IF(NAT.EQ.1) RETURN
      IF(DABS(GRAV).LT.1.0D-10)GO TO 657
      DO 656 I=1,NSS
      DO 656 J=1,2
  656 RRR(I,J)=RR(I,J+3)
  657 CONTINUE
C     DO 658 I = 1,NSS
C       IF ( SS(I,I) .LE. 0.0 ) THEN
C         WRITE (6,*) ' MATRIX SS '
C         WRITE (6,*) 'SS(',I,',',I,') = ',SS(I,I)
C         GOTO 659
C       ELSE
C         WRITE (6,*) 'SS(',I,',',I,') = ',SS(I,I)
C       ENDIF
C 658 CONTINUE
C     GOTO 660
C 659 WRITE (6,1101)
C     WRITE (6,1102)
C     STOP
C 1101 FORMAT (T5,'****************************************' )
C 1102 FORMAT (T5,'ZERO ON DIAGONAL OF STRUCTURE STIFFNESS MTX.' )
C 660 CONTINUE
      CALL SOLVE(SS,NSS,RR,5)
C
C     PRINT STRUCTURE DISPLACEMENTS
C
      IF ( ITYPE .EQ. 0 ) THEN
        WRITE(6,1001)
        WRITE(6,1003)
        CALL PROUT( RR,NSS,5,SN,NST,RLAB,I3,IS )
      ENDIF
C
      WRITE (2) RR
      WRITE (2) AA,D,HED
      IF(DABS(GRAV).LT.1.0D-10)GO TO 750
      DO 725 I=1,NSS
      DO 725 J=1,NSS
  725 SS(I,J)=0.0
      IPD=1
      GO TO 501
C
C-----CALCULATE P-DELTA FORCES
C
  730 CONTINUE
      DO 740 I=1,NSS
      K1=I-I3
      K2=I+I3
      IF(K1.LE.0)K1=1
      IF(K2.GT.NSS)K2=NSS
      DO 735 J=1,2
      XX=0.
      DO 732 K=K1,K2
  732 XX=XX+SS(I,K)*RR(K,J+3)
  735 RRR(I,J)=RRR(I,J)-XX
  740 CONTINUE
  750 CONTINUE
C
C---- CALC DRIFTS
      N = NST - 1
      DO 722 I=1,5
      IF(NST.EQ.1)GO TO 721
      DO 720 J=1,N
      JJ = I3*( J - 1 ) + 1
      RR(JJ,I) = ( RR(JJ,I) - RR(JJ+I3,I) )/A(J,2)
      IF( I3.NE.3 ) GO TO 720
      RR(JJ+1,I) = ( RR(JJ+1,I) - RR(JJ+4,I) )/A(J,2)
      RR(JJ+2,I) = RR(JJ+2,I) - RR(JJ+5,I)
  720 CONTINUE
  721 JJ = I3*( NST - 1 ) + 1
```

```
      RR(JJ,I) = RR(JJ,I)/A(NST,2)
      IF( I3.EQ.3 ) RR(JJ+1,I) = RR(JJ+1,I)/A(NST,2)
  722 CONTINUE
C---- PRINT OUT DRIFTS
      IF ( ITYPE .EQ. 0 ) THEN
        WRITE(6,1002)
        WRITE(6,1003)
        CALL PROUT( RR,NSS,5,SN,NST,RLAB,I3,I8 )
      ENDIF
C
C-----CALCULATE TOTAL RESISTING FORCES FOR STATIC LAT.LOAD CASES INCL.
C----- P-DELTA
      IF(DABS(GRAV).LT.1.0D-10)GO TO 790
      DO 760 I=1,NSS
      DO 760 J=1,5
      IF(J.LT.4)RR(I,J)=0
  760 IF(J.GE.4)RR(I,J)=RRR(I,J-3)
C-----CALCULATE CUMULATIVE SHEAR FORCES
      IF(NST.EQ.1)GO TO 766
C
      N=I3*(NST-1)
      DO 765 I=1,N
      DO 765 J=4,5
  765 RR(I+I3,J)=RR(I+I3,J)+RR(I,J)
  766 WRITE(6,1004)
      WRITE(6,1006)
      WRITE(6,1003)
      CALL PROUT(RR,NSS,5,SN,NST,RLAB,I3,I8)
C
C-----CALCULATE CUMULATIVE OVERTURNING FORCES
C
      IF(I3.NE.3)GO TO 772
      DO 770 I=1,NST
      II=I*3
      DO 770 J=4,5
  770 RR(II,J)=0.0
  772 DO 780 J=4,5
      XM=0.
      YM=0.
      DO 775 I=1,NST
      II=(I-1)*I3+1
      RR(II,J)=XM+RR(II,J)*A(I,2)
      IF(I3.EQ.3)RR(II+1,J)=YM+RR(II+1,J)*A(I,2)
      XM=RR(II,J)
  775 IF(I3.EQ.3)YM=RR(II+1,J)
  780 CONTINUE
      WRITE(6,1005)
      WRITE(6,1006)
      WRITE(6,1003)
      CALL PROUT(RR,NSS,5,SN,NST,RLAB,I3,I8)
  790 CONTINUE
C
      RETURN
 1000 FORMAT (2I5,3F10.0,4A4)
 2000 FORMAT (I6,I5,I9,6X,  3F12.2,10X,4A4)
 1001 FORMAT( ///,1H ,17(1H-),/,18H STORY DEFLECTIONS ,/,1H ,17(1H-), /)
 1002 FORMAT( ///,1H ,18(1H-),/,19H STORY DRIFT RATIOS ,/,1H ,18(1H-),/)
 1003 FORMAT( /,20X,65H OUTPUT COLUMNS 1,2,3 CONTAIN RESULTS FROM VERTIC
     1AL LOAD CASES I,II,III, RESPECTIVELY  ,/20X,
     2 64H OUTPUT COLUMNS 4,5 CONTAIN RESULTS FROM STATIC LATERAL LOAD C
     3ASES A,B, RESPECTIVELY  ,// )
 1004 FORMAT(///1H ,12(1H-),/,13H STORY SHEARS/1H ,12(1H-),/)
 1005 FORMAT(///1H ,25(1H-),/,26H STORY OVERTURNING MOMENTS,/,1H ,
     1 25(1H-),//)
 1006 FORMAT(/90H NOTE THAT THE FORCE QUANTITIES BELOW FOR LOAD CASES A
     1AND B INCLUDE P-DELTA EFFECTS.                  /
     180H HOWEVER, P-DELTA FORCES ARE NOT CALCULATED FOR LOAD CASES I,II
     1 AND III.                  /)
 3000 FORMAT ( //  20H1FRAME POSITION DATA ,//
     1  23H FRAME   ID  FORCE CODE ,10X,2HX1,10X,2HY1,9X,3HANG )
      END
```

```
      SUBROUTINE SOLVE(A,N,B,NL)
C
C     SOLUTION OF SYMMETRICAL LINEAR EQUATIONS- E L WILSON
C
      IMPLICIT REAL*8 (A-H)
      IMPLICIT REAL*8 (O-Z)
      DIMENSION A(N,N),B(N,NL)
C
      M=0
C     REDUCTION OF M TH EQUATION
C
   50 M=M+1
      MM=M+1
      WRITE (6,*) 'S(',M,',',M,') = ',A(M,M)
      IF ( A(M,M) .LE. 0.0 ) THEN
        WRITE (6,1000)
        WRITE (6,1001)
      ENDIF
 1000 FORMAT (T5,'**************************')
 1001 FORMAT (T5,'ZERO OR MINUS ON DIAGONAL')
      DO 60 L=1,NL
   60 B(M,L)=B(M,L)/A(M,M)
      IF (M-N) 70,130,70
   70 DO 80 J=MM,N
   80 A(M,J)=A(M,J)/A(M,M)
C
C     SUBSTITUTION INTO REMAINING EQUATIONS
C
      DO 120 I=MM,N
      IF (A(I,M)) 90,120,90
   90 DO 100 J=I,N
      A(I,J)=A(I,J)-A(I,M)*A(M,J)
  100 A(J,I)=A(I,J)
      DO 110 L=1,NL
  110 B(I,L)=B(I,L)-A(I,M)*B(M,L)
  120 CONTINUE
      GO TO 50
C
C     BACK SUBSTITUTION
C
  130 M=M-1
      IF (M.EQ.0) GO TO 150
      MM=M+1
      DO 140 L=1,NL
      DO 140 J=MM,N
  140 B(M,L)=B(M,L)-A(M,J)*B(J,L)
      GO TO 130
C
  150 RETURN
      END
      SUBROUTINE EARTH(SN,A,F,W,XM,IQ,S,PA,Z,MSS,MST,NMD,R,DSC,CQC,NQ,
     1                 GRAV )
      IMPLICIT REAL*8 (A-H)
      IMPLICIT REAL*8 (O-Z)
      DIMENSION F(MSS,MSS),S(MSS,MSS),XM(1),W(1),IQ(1),A(MST,4),PA(2,1)
     2         ,SN(MST),R(MSS,4),DSC(NQ,NQ),CQC(NQ,NQ),Z(MSS,NQ),RR(3)
      COMMON/GEN/ NST,NDF,NTF,NLD,NAT,NFQ,NSD,BHED(9),FHED(7),NSS
     1            ,RLAB(3),I8,I3,T(6)
      COMMON/JUNK/ SHED(7),KOD(5),IFIL(53)
      COMMON/BLNK/ SC(2),AFIL(258)
      COMMON /DYN/ NTIME,DT,NPC,DAMP
      CHARACTER*4 SN,RLAB,SHED,BHED,FHED
C
C     COMPUTE MODE SHAPES AND FREQUENCIES
C
      DM1 = 1.0
      TPI = 8.0*DATAN(DM1)
      TM = 0.0
      TMM = 0.0
      DO 100 I=1,NST
      TM = TM + A(I,3)
```

```
      TMM = TMM + A(I,4)
      II=I3*(I-1)+1
      XM(II  )=A(I,3)
      XM(II+1)=A(I,3)
  100 XM(II+2)=A(I,4)
      IF(NAT.LT.0)GO TO 510
      REWIND 2
      READ(2)S
      IF(NAT.EQ.0)GO TO 700
C
      DO 150 I=1,NSS
      IF(XM(I).GT.0.) GO TO 150
      WRITE (6,3002)
      STOP
  150 XM(I)=1.0/DSQRT(XM(I))
      DO 200 I=1,NSS
      DO 200 J=1,NSS
  200 S(I,J)=S(I,J)*XM(I)*XM(J)
C
      CALL EIGEN(S,NSS,0,F,NR,W,IQ)
C
      DO 250 I=1,NSS
      W(I)=S(I,I)
      DO 250 J=1,NSS
  250 F(I,J)=F(I,J)*XM(I)
      DO 300 I=1,NFQ
      WM=W(I)
      DO 270 J=I,NSS
      IF(W(J).GT.WM) GO TO 270
      WM=W(J)
      K=J
  270 CONTINUE
C
      W(K)=W(I)
      W(I)=TPI/DSQRT(WM)
      DO 300 J=1,NSS
      WM=F(J,K)
      F(J,K)=F(J,I)
  300 F(J,I)=WM
      WRITE(6,1005) ( I,W(I),I=1,NFQ )
      GO TO 520
C
C---- GENERATE APPROX MODE SHAPES
C
  510 CALL MODGEN(SN,A,A(1,9),F,XM,XM,W,S,MSS,MST,NFQ,I3,IS,NSD )
      NAT = IABS( NAT )
C     PRINT MODES,PERIODS
  520 WRITE(6,4000)
      DO 522 I=1,NFQ
      X = 1.0/W(I)
      Y = TPI/W(I)
  522 WRITE(6,4001) I,W(I),X,Y
      DO 600 I=1,NFQ,8
      IH=I+7
      IF(IH.GT.NFQ) IH=NFQ
      WRITE (6,2003) (J,J=I,IH)
      DO 600 N=1,NST
      LN=NST+1-N
      NN=I3*(N-1)
      WRITE (6,2002)
      DO 600 J=1,I3
  600 WRITE (6,2004) LN,SN(N),RLAB(J+IS),( F(NN+J,K),K=I,IH)
C---- CALC GLOBAL EFFECTIVE MODAL MASS ( NORMALIZED )
      DO 523 I=1,NFQ
      DO 523 J=1,3
  523 R(I,J) = 0.0
      IF( NSD.LE.0 ) GO TO 535
C---- PLANAR ANAL
      DO 530 J=1,NFQ
      X = 0.0
      DO 525 I=1,NST
```

```
  525 X = X + F(I,J)*A(I,3)
      IF( NSD.EQ.1 ) R(J,1) = X*X/TM
      IF( NSD.NE.1 ) R(J,2) = X*X/TM
  530 CONTINUE
      GO TO 548
C---- 3-D ANAL
  535 DO 545 J=1,NFQ
      X = 0.0
      Y = 0.0
      ZZ = 0.0
      DO 540 I=1,NST
      II = 3*( I - 1 ) + 1
      X = X + F(II,J)*A(I,3)
      Y = Y + F(II+1,J)*A(I,3)
  540 ZZ = ZZ + F(II+2,J)*A(I,4)
      R(J,1) = X*X/TM
      R(J,2) = Y*Y/TM
  545 R(J,3) = ZZ*ZZ/TMM
  548 WRITE(6,4002)
      WRITE(6,4003) ( I, ( R(I,J),J=1,3 ), I=1,NFQ )
      DO 549 J=1,3
      RR(J)=0.
      DO 549 I=1,NFQ
  549 RR(J)=RR(J)+R(I,J)
      WRITE(6,4004)(RR(I),I=1,3)
      IF(NAT.EQ.1) RETURN
C
C     DYNAMIC ANALYSIS
C
      IF( (NAT.NE.4) .AND. (NAT.NE.8) .AND. (NAT.NE.9) ) GO TO 440
C
C     GROUND MOTION CONTROL DATA
      READ(5,1001) NPC,NTIME,SF,FI,DT,KOD,SHED
      IF(NSD.NE.0)KOD(5)=0
      WRITE(6,2005) SHED,NPC,NTIME,SF,FI,DT,KOD
      GO TO 445
C
  440 IF( (NAT.NE.3).AND.(NAT.NE.5).AND.(NAT.NE.7) ) GO TO 700
C
C     RESPONSE SPECTRUM DATA
      READ(5,1000) NPC,NMD,SF,FI,DP,SS,KOD,SHED,( PA(1,I),PA(2,I),I=1,
     1 NPC )
      IF( NMD.GT.NFQ ) NMD = NFQ
      IF( SS.LE.0.0 ) SS = 1.0E+03
      IF(NSD.NE.0)KOD(5)=0
      WRITE(6,2000) SHED,NPC,NMD,SF,FI,DP,SS,KOD,( PA(1,I),PA(2,I),I=1,
     1 NPC )
      WRITE(6,4005)
      DX = 1.0
      DO 441 I=1,NFQ
      SAG=TABA(NPC,DX,W(I),PA)
  441 WRITE(6,4006)I,W(I),SAG
      CALL DSCCQC( DSC,CQC,W,NFQ,DP,SS )
C---- IF DSC AND/OR CQC COMBO NOT REQD THEN SET FLAG SUCH THAT
C     CALCS SKIPPED IN TYPE 3 ANAL ( SEE ROUTINE STRESS )
      IF( KOD(2).LE.0 ) DSC(1,1) = -1.0
      IF( KOD(3).LE.0 ) CQC(1,1) = -1.0
C
C     MODAL PARTICIPATION FACTORS
C
  445 FI=FI*DATAN(DM1)/45.
      SC(1)=DSIN(FI)
      SC(2)=DCOS(FI)
      IFLG = 0
      IF( NAT.EQ.4 ) IFLG = 1
      IF( NAT.EQ.8 ) IFLG = 1
      IF( NAT.EQ.9 ) IFLG = 1
      DO 500 I=1,NFQ
      RUM=0.
      DO 450 J=1,NST
      JJ=I3*(J-1)+1
```

```
      FR=F(JJ,I)*SC(1+IS)
      IF(NSD.EQ.0) FR=FR+F(JJ+1,I)*SC(2)
  450 RLM=RLM+FR*A(J,3)
      WW=(TPI/W(I))**2
      IF( IFLG.EQ.0 ) YM = RLM*TABA( NPC,SF,W(I),PA )/WW
      IF( IFLG.NE.0 ) YM = RLM*SF
      DO 500 J=1,NSS
  500 F(J,I)=F(J,I)*YM
C
C---- RESPONSE SPECTRUM OPTION 6
C
      IF( (NAT.EQ.6).OR.(NAT.EQ.7) ) CALL OPT6( F,R,XM,W,DSC,CQC,KOD,SN,
     1 A,SC,S,Z,MSS,MST,NFQ,NMD,I3,IS,GRAV )
      IF( NAT.EQ.6 ) RETURN
C
C     SAVE MODE SHAPES ON TAPE 1   NAT=4
C
      IF( (NAT.NE.4) .AND. (NAT.NE.8) .AND. (NAT.NE.9) ) GO TO 550
      REWIND 1
      WRITE(6,3000)
      DO 800 K=1,NFQ
      READ (5,1002) I,DAMP
      IF(DAMP.LE.1.0) GO TO 720
      DAMP=1.0
      WRITE (6,3001) I
  720 WRITE (6,2006) I,DAMP
      WRITE (1) W(K),DAMP,(F(I,K),I=1,NSS)
  800 CONTINUE
C
  550 DO 650 K=1,NFQ
      I=NFQ+1-K
      DO 650 J=1,NSS
  650 F(J,I+5)=F(J,I)
C
  700 READ (2) ((F(I,J),I=1,NSS),J=1,5)
C
      RETURN
C
 1000 FORMAT( 2I5,2F10.0,2F5.0,5I1    ,7A4,/,( 2F10.0 ) )
 1001 FORMAT( 2I5,3F10.0,5I1,7A4 )
 1002 FORMAT (I5,F10.2)
 1005 FORMAT( //,19X,13H      PERIODS,/, ( 10X,I5,F22.17 ) )
 2000 FORMAT(//22H ACCELERATION SPECTRUM ,5X, 7A4,//
     1 25H NUMBER OF PERIOD CARDS = ,I8,/
     2 25H NUMBER OF LOWEST MODES = ,I8,/
     2 25H ACCEL., UNITS/SEC/SEC  = ,F10.3,/
     3 25H ANGLE OF EQ INCIDENCE  = ,F10.3,/
     * 25H DSC / CQC DAMPING COE. = ,F10.3,/
     * 25H DSC TIME DURATION S    = ,F10.1,/
     * 25H OUTPUT CODE            = ,2X,4I2,/
     * 25H COOR. SYSTEM CODE      = ,8X,I2,//
     4 26H  PERIOD      ACCELERATION ,//,(F10.3,5X,F10.3))
 2002 FORMAT (1H )
 2003 FORMAT (/// 12H MODE SHAPES,//,16H LEVEL  ID    DIRN ,8I13)
 2004 FORMAT (I5,3X,A4,2X,A4,2X,8F13.6)
 2005 FORMAT (//,23H RESPONSE ANALYSIS DATA  ,///
     . 31H ACCELERATION HISTORY HEADING..  ,7A4,//
     1 30H NUMBER OF ACCELERATION CARDS  ,I3 ,/
     2 30H NUMBER OF OUTPUT TIMES        ,I3 ,/
     3 30H ACCELERATION SCALE FACTOR     ,F10.4,/
     4 30H ANGLE OF EQ INCIDENCE         ,F10.4,/
     5 30H TIME INCREMENT FOR OUTPUT     ,F10.4,/
     6 30H OUTPUT CODE                   ,2X,4I2,/
     7 30H COOR. SYSTEM CODE             ,8X,I2,// )
 2006 FORMAT(I4,F12.3)
 3000 FORMAT( /// 16H MODE    DAMPING )
 3001 FORMAT (30H DAMPING MUST BE LESS THAN 1.0 ,/,
     1  15H VALUE FOR MODE  ,I3, 8H RESET )
 3002 FORMAT (/// 22H NEGATIVE OR ZERO MASS ,//,21H EXECUTION TERMINATED
     1)
 4000 FORMAT(/,1H ,13X,4HMODE,10X,7HNATURAL,3X,9HFREQUENCY,4X,8HCIRCULAR
```

```
     1 ,/,13X,6HNUMBER,10X, 6HPERIOD,7X,4H(HZ),4X,9HFREQUENCY,/ )
 4001 FORMAT( 10X,I7,6X,F12.6,2F12.4 )
 4002 FORMAT( ////,14X,4HMODE,6X,53HGLOBAL EFFECTIVE MODAL MASS (AS RATI
     1O OF TOTAL MASS)   ,
     1       /,13X,6HNUMBER,12X,1HX,11X,1HY,11X,2HZZ,/ )
 4003 FORMAT( 10X,I7,6X,3F12.3 )
 4004 FORMAT(/14X,6HTOTALS,3X,3F12.3)
 4005 FORMAT(///26H MODAL SPECTRAL AMPLITUDES,//,5H MODE,7X,6HPERIOD,4X,
     2 9HAMPLITUDE  )
 4006 FORMAT(I5,F12.2,F12.3)
      END
      SUBROUTINE SECOND(T)
      REAL*8 T
      integer*2 hour, minute, secnd, hundredth
c
      call gettim (hour, minute, secnd, hundredth)
c  GETTIM is a FORTRAN-callable subroutine in Microsoft FORTRAN version 5.00
c         returning the system time with arguments in INTEGER*2
      T = ((dble(hour)*3600.)+(dble(minute)*60.)+dble(secnd)+
     1           (dble(hundredth)/100.))
      return
      END
```

ภาคผนวก ค.

การป้อนข้อมูลสำหรับโปรแกรม CU-NTABS

1. <u>บรรทัดป้อนข้อมูลควบคุม</u> (7I5,3x,3I1,I4,F10.0,4A4)

คอลัมน์	ข้อมูล
1 - 5	จำนวนชั้นทั้งหมดของอาคาร (ไม่รวมพื้นและฐานราก)
6 - 10	จำนวนโครงข้อแข็งที่มีคุณสมบัติต่างกัน กรณีวิเคราะห์โครงสร้าง 2 มิติ ป้อนเลข 1
11 - 15	จำนวนโครงข้อแข็งทั้งหมด กรณีวิเคราะห์โครงสร้าง 2 มิติป้อนเลข 1
16 - 20	จำนวนชุดของแรงกระทำต่อโครงสร้าง กรณีวิเคราะห์โครงสร้าง 2 มิติพิจารณาความไม่เชิงเส้นทางเรขาคณิต ป้อนเลข 1 (ชุดของแรงกระทำต่อโครงสร้าง เกิดจากการประกอบกันขึ้นจากแรงกระทำพื้นฐาน 5 แรง,ดูหัวข้อ 5 บรรทัดกำหนดแรงกระทำ)
21 - 25	รหัสลักษณะปัญหา กรณีวิเคราะห์ปัญหาสถิตศาสตร์ ป้อนเลข 0
26 - 30	จำนวนความถี่ (Number of Frequencies) ที่ใช้ในการคำนวณ กรณีวิเคราะห์ปัญหาสถิตศาสตร์ ป้อนเลข 0
31 - 35	ดีกรีความอิสระ(Degree of Fredom) ที่ต้องการในแต่ละชั้น ป้อนเลข 1 สำหรับโครงข้อแข็ง 2 มิติ ที่มีความสมมาตรในระนาบ X , ป้อนเลข 2 สำหรับโครงข้อแข็ง 2 มิติ ที่มีความสมมาตรในระนาบ Y
36 - 38	ว่าง

39	รหัสการคำนวณอัตราส่วนความเค้นในองค์อาคาร (Element Stress Ratio) ป้อนเลข 0 สำหรับการวิเคราะห์ความไม่เชิงเส้นทางเรขาคณิตของโครงสร้าง
40	รหัสปฏิบัติการ ป้อนเลข 0 สำหรับการวิเคราะห์ปัญหาจนเสร็จสิ้น ป้อนเลข 1 สำหรับตรวจการป้อนข้อมูลเท่านั้น
41	รหัสการวิเคราะห์ ป้อนเลข 0 สำหรับการวิเคราะห์เชิงเส้น ป้อนเลข 1 สำหรับการวิเคราะห์ไม่เชิงเส้นทางเรขาคณิต
42 - 45	จำนวนรอบที่มากที่สุดที่ต้องการให้โปรแกรมทำงาน หากการคำนวณไม่สามารถให้ผลต่างของการเปลี่ยนตำแหน่งในแต่ละรอบอยู่ในขอบเขตของความคลาดเคลื่อนที่ยอมให้
46 - 55	ความคลาดเคลื่อนที่ยอมให้
56 - 71	ข้อความที่ต้องการให้พิมพ์ออกมาพร้อมกับผลการคำนวณ

2. <u>บรรทัดป้อนข้อมูลชั้น</u>

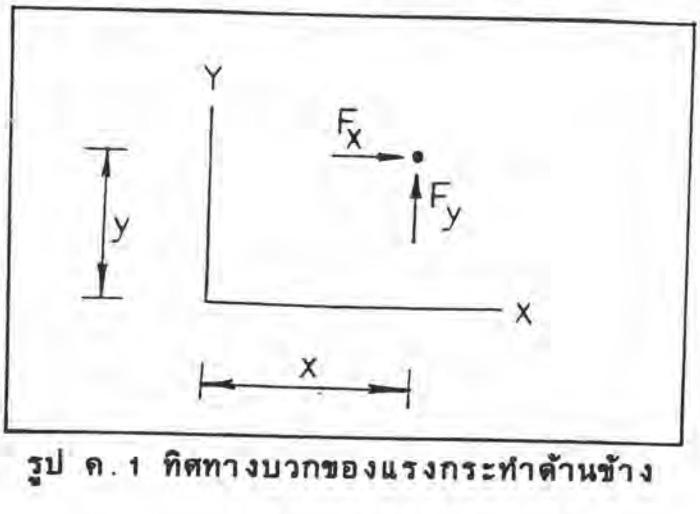
2 บรรทัดสำหรับ 1 ชั้น ข้อมูลต้องเริ่มจากชั้นบนลงล่างตามลำดับ

2.1 <u>บรรดทัดหนึ่ง</u> (1X,A4,5X,F10.0)

คอลัมน์	ข้อมูล
2 - 5	ตัวอักษร 4 ตัวหรือน้อยกว่าสำหรับแสดงข้อความประจำแต่ละชั้น
6 - 10	ว่าง
11 - 20	ความสูงของชั้น (ระยะระหว่างพื้นชั้นบน (หรือหลังคา) และพื้นชั้นล่าง)

2.2 <u>บรรทัดสอง</u> (8F10.0)

คอลัมน์	ข้อมูล
1 - 10	Fx_A; ขนาดของแรงกระทำด้านข้างกรณี A
11 - 20	Fy_A; ขนาดของแรงกระทำด้านข้างกรณี A
21 - 30	X_A; พิกัดตำแหน่งของแรงกระทำด้านข้างกรณี A แนว X
31 - 40	Y_A; พิกัดตำแหน่งของแรงกระทำด้านข้างกรณี A แนว Y
41 - 50	Fx_B; ขนาดของแรงกระทำด้านข้างกรณี B
51 - 60	Fy_B; ขนาดของแรงกระทำด้านข้างกรณี B
61 - 70	X_B; พิกัดตำแหน่งของแรงกระทำด้านข้างกรณี B แนว X
71 - 80	Y_B; พิกัดตำแหน่งของแรงกระทำด้านข้างกรณี B แนว Y



รูป ค.1 ทิศทางบวกของแรงกระทำด้านข้าง

3. ข้อมูลโครงอาคาร

3.1 บรรทัดป้อนข้อมูลโครงข้อแข็ง(9I5,7A4)

คอลัมน์	ข้อมูล
1 - 5	เลขประจำโครงข้อแข็ง
6 - 10	จำนวนชั้น(ไม่รวมพื้นและฐานราก)ของโครงข้อแข็งนี้
11 - 15	จำนวนเสาของโครงข้อแข็ง
16 - 20	จำนวนช่วงเสา (BAY) ของโครงข้อแข็ง
21 - 25	จำนวนชุดของคุณสมบัติที่ต่างกันของเสา
26 - 30	จำนวนชุดของคุณสมบัติที่ต่างกันของคาน จำนวนชุดของคุณสมบัติของคานจะเป็นตัวกำหนดจำนวณบรรทัดข้อมูลที่ต้องป้อนให้โปรแกรมในหัวข้อ 3.4
31 - 35	จำนวนชุดที่ต่างกันของแรงยึดแน่นปลาย(Fixed End Forces) ที่ประยุกต์ใช้เป็นน้ำหนักกระทำในแนวดิ่งกับคาน ถ้าไม่มีแรงกระทำในแนวดิ่งกระทำกับคาน ในปัญหาที่ต้องการวิเคราะห์ให้เว้นว่างในช่องนี้และยกเว้นหัวข้อ 3.5
36 - 40	จำนวนของผนังต้านแรงเฉือนในโครงข้อแข็งนี้ ถ้าไม่มีผนังต้านแรงเฉือนในโครงข้อแข็งนี้ ให้เว้นว่างในช่องนี้และยกเว้นหัวข้อ 3.8
41 - 45	ว่าง
46 - 73	ข้อความบรรยายโครงข้อแข็งนี้

3.2 <u>บรรทัดป้อนพิกัดตำแหน่งแนวเสา</u> (I5,2F10.0)

1 บรรทัดสำหรับ 1 แนวเสา

คอลัมน์	ข้อมูล
1 - 5	เลขประจำเสา
6 - 15	ระยะทางแกน X ถึงตำแหน่งเสา วัดจากจุดอ้างอิงของโครงข้อแข็งโลคอล (Local Frame Reference)
16 - 25	ระยะทางแกน Y ถึงตำแหน่งเสา วัดจากจุดอ้างอิงของโครงข้อแข็งโลคอล

3.3 <u>บรรทัดป้อนคุณสมบัติเสา</u> (I5,F15.0,F10.0,20X,F10.0)

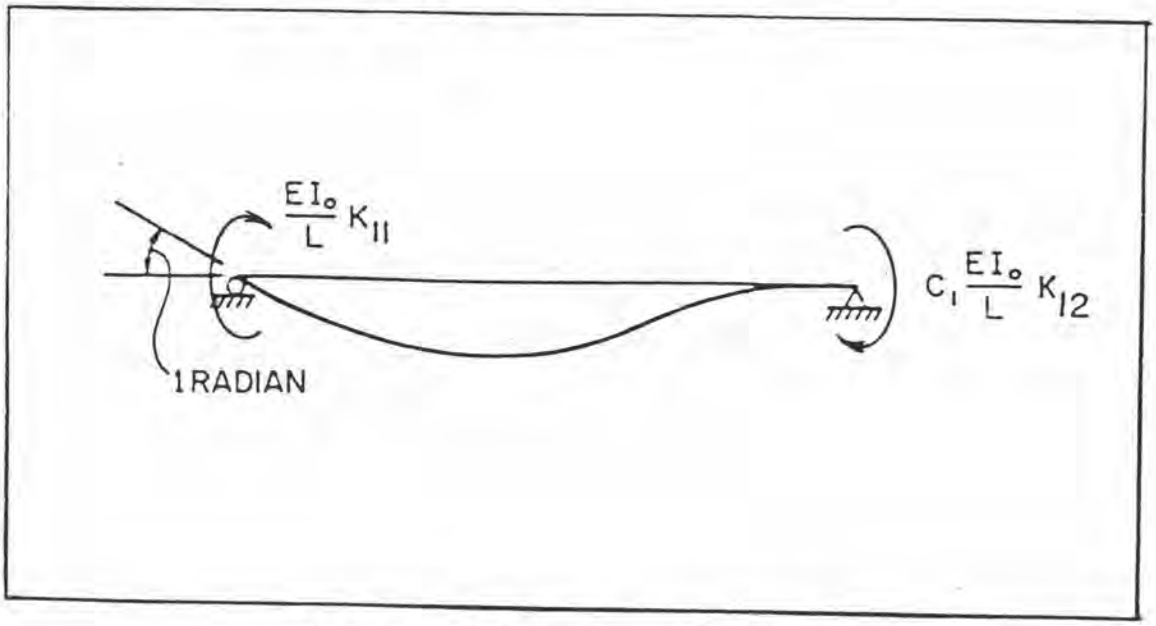
1 บรรทัดสำหรับ 1 ชุดคุณสมบัติเสา

คอลัมน์	ข้อมูล
1 - 5	เลขประจำชุดคุณสมบัติเสา ต้องป้อนเริ่มจาก 1 ขึ้นไปตามลำดับ
6 - 20	โมดูลัสความยืดหยุ่น (Elastic Modulus)
21 - 30	พื้นที่หน้าตัดรับแรงตามแนวแกน
31 - 50	ว่าง
51 - 60	อินเนอร์เชียรับแรงดัด (Flexural Inertia)

3.4 <u>บรรทัดป้อนคุณสมบัติคาน</u> (I5,F15.0,15X,F10.0,3F5.0)

1 บรรทัดสำหรับ 1 ชุดคุณสมบัติคาน

คอลัมน์	ข้อมูล
1 - 5	เลขประจำชุดคุณสมบัติคาน ต้องป้อนเริ่มจาก 1 ขึ้นไปตามลำดับ
6 - 20	โมดูลัสความยืดหยุ่น
21 - 35	ว่าง
36 - 45	อินเนอร์เชียรับแรงดัด
46 - 50	K_{II} ,สติฟเนสแฟคเตอร์ (Stiffness Factor) โดยทั่วไปเท่ากับ 4 ดูรูป ค.2 ประกอบ
51 - 55	K_{JJ} ,สติฟเนสแฟคเตอร์ (Stiffness Factor) โดยทั่วไปเท่ากับ 4 ดูรูป ค.2 ประกอบ
56 - 60	K_{IJ} ,สติฟเนสแฟคเตอร์ (Stiffness Factor) โดยทั่วไปเท่ากับ 2 ดูรูป ค.2 ประกอบ

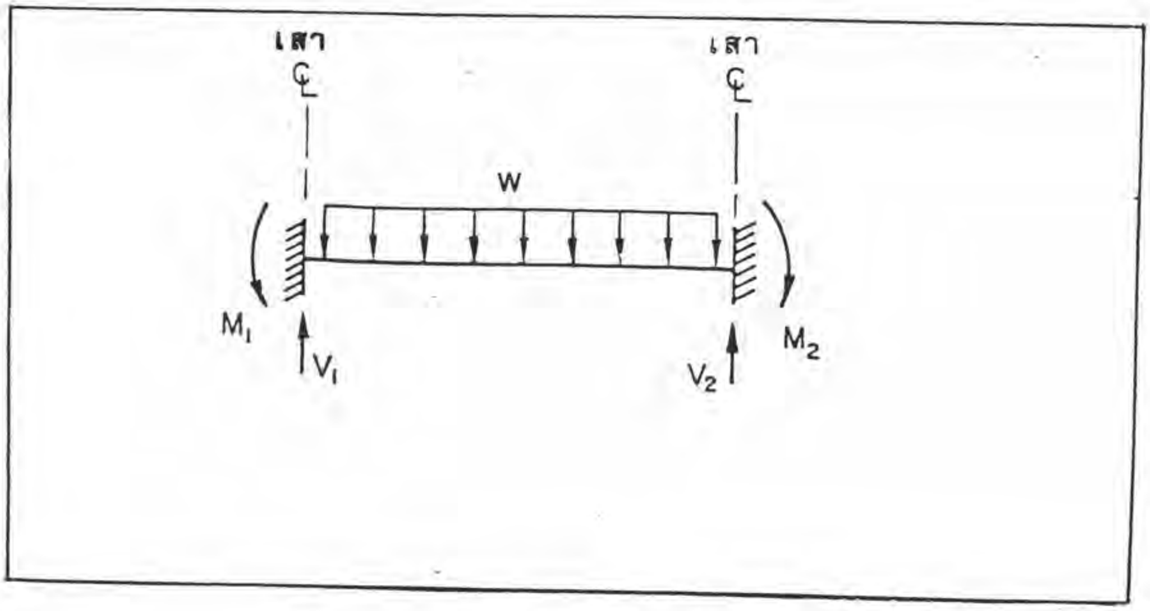


รูป ค.2 สติฟเนสแฟคเตอร์ของคาน

3.5 <u>บรรทัดป้อนแรงยึดแน่นที่ปลายของคาน</u> (2I5,5F10.0)

1 บรรทัดสำหรับ 1ชุดที่แตกต่างของแรงกระทำในแนวดิ่งบนคาน

คอลัมน์	ข้อมูล
1 - 5	เลขประจำชุดของแรงกระทำใน แนวดิ่งเริ่มจาก 1 ขึ้นไปตามลำดับ
6 - 10	รหัสตำแหน่งแรงกระทำ ป้อนเลข 0 สำหรับแรงยึดแน่นปลายกระทำที่ขอบเสา ป้อนเลข 1 สำหรับแรงยึดแน่นปลายกระทำที่จุดกึ่งกลาง (Center Line)ของเสา
11 - 20	แรงปฏิกิริยาของแรงยึดแน่นปลายแรงดัด M_1 ,ดูรูป ค.3 ประกอบ
21 - 30	แรงปฏิกิริยาของแรงยึดแน่นปลายแรงเฉือน V_1
31 - 40	แรงปฏิกิริยาของแรงยึดแน่นปลายแรงดัด M_2
41 - 50	แรงปฏิกิริยาของแรงยึดแน่นปลายแรงเฉือน V_2
51 - 60	แรงกระทำแผ่สม่ำเสมอตลอดความยาว, w , ทิศทางลงในแนวดิ่ง



รูป ค.3 แรงยึดแน่นปลายที่คาน

3.6 <u>บรรทัดป้อนข้อมูลคาน</u> (815)

1 บรรทัดสำหรับ 1 คาน ต้องป้อนข้อมูลจากคานชั้นบนลงสู่ชั้นล่างตามลำดับ (ยกเว้นใช้การสร้างคุณสมบัติซ้ำในคอลัมน์ 21-25) และต้องป้อนคานทุกช่วงเสาในแต่ละชั้น

คอลัมน์	ข้อมูล
1 - 5	เลขประจำช่วงเสาของคานนี้
6 - 10	เลขประจำแนวเสาที่ปลาย I
11 - 15	เลขประจำแนวเสาที่ปลาย J
16 - 20	เลขประจำชุดคุณสมบัติคานของคานนี้ คานที่มีสติฟเนสเป็นศูนย์ (คือไม่มีคาน) สามารถป้อนข้อมูลเลขประจำชุดคุณสมบัติคานเป็น 0 แต่ถ้าเป็นคานที่มีค่าสติฟเนส เลขประจำชุดคุณสมบัติคานต้องสอดคล้องกับชุดคุณสมบัติคานที่ได้ป้อนไปแล้วในหัวข้อ 3.4
21 - 25	จำนวนคานที่อยู่ชั้นล่างลงไปตามลำดับจากชั้นนี้ ที่ต้องการสร้างให้มีคุณสมบัติและแรงกระทำในแนวดิ่งเหมือนกัน การสร้างคานให้มีคุณสมบัติและแรงกระทำในแนวดิ่งซ้ำกันสามารถใช้ได้สำหรับคานที่อยู่ในช่วงเสาเดียวกันเท่านั้น สำหรับช่วงเสาต่อไปต้องเริ่มป้อนข้อมูลจากบรรทัดป้อนตำแหน่งคานบรรทัดใหม่
26 - 30	เลขประจำชุดของแรงยึดแน่นปลายที่ใช้เป็นแรงกระทำในแนวดิ่งชุดที่ I
31 - 35	เลขประจำชุดของแรงยึดแน่นปลายที่ใช้เป็นแรงกระทำในแนวดิ่งชุดที่ II
36 - 40	เลขประจำชุดของแรงยึดแน่นปลายที่ใช้เป็นแรงกระทำในแนวดิ่งชุดที่ III

3.7 <u>บรรทัดป้อนข้อมูลเสา</u> (415)

1 บรรทัดสำหรับ 1 เสา ป้อนข้อมูลจากเสาในชั้นบนลงชั้นล่างตามลำดับ (ยกเว้นใช้การสร้างคุณสมบัติซ้ำในคอลัมน์ 16-20)

คอลัมน์	ข้อมูล
1 - 5	เลขประจำแนวเสา
6 - 10	เลขประจำชุดคุณสมบัติของเสาแนวนี้ เสาที่มีสติฟเนสเป็นศูนย์ (คือไม่มีเสา) สามารถป้อนข้อมูลเลขประจำชุดคุณสมบัติเสาเป็น 0 แต่ถ้าเป็นเสาที่มีค่าสติฟเนส เลขประจำชุดคุณสมบัติของเสาต้องสอดคล้องกับชุดคุณสมบัติเสาที่ได้ป้อนไปแล้วในหัวข้อ 3.3
11 - 15	เลขประจำแนวเสาที่กำหนดทิศทางแกนหลัก (Direction of Major Axis)
16 - 20	จำนวนเสาที่อยู่ชั้นล่างลงไปจากชั้นนี้ ที่ต้องการสร้างให้มีคุณสมบัติเหมือนกัน การสร้างเสาให้มีคุณสมบัติซ้ำกันสามารถใช้ได้กับเสาที่อยู่ในแนวเสาเดียวกันเท่านั้น สำหรับแนวเสาต่อไป ต้องเริ่มป้อนข้อมูลจากบรรทัดป้อนข้อมูลเสาบรรทัดใหม่

3.8 <u>บรรทัดป้อนข้อมูลผนังต้านแรงเฉือน</u> (3I5,5F10.0)

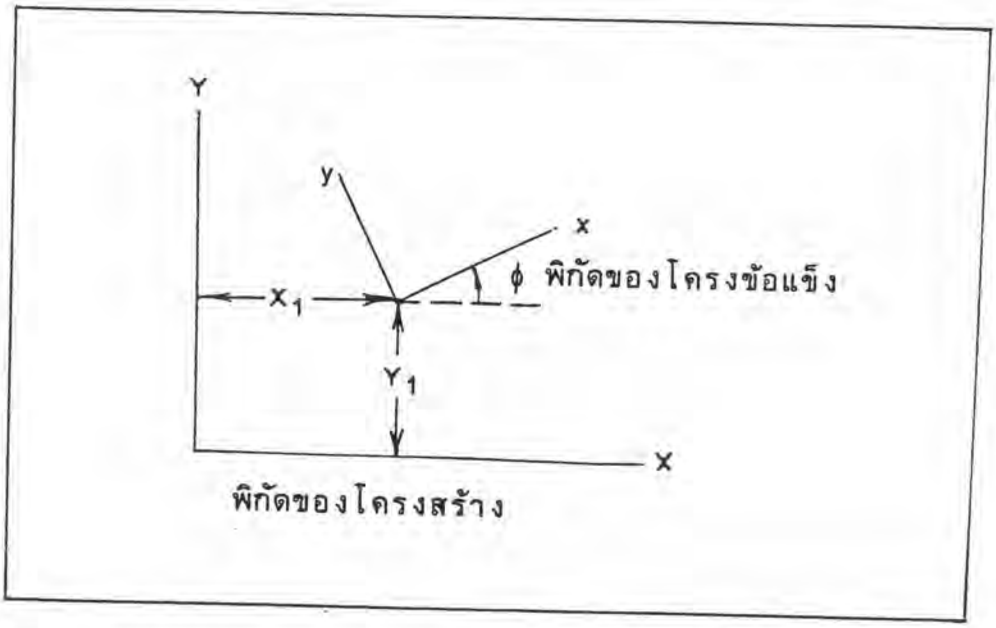
1 บรรทัดสำหรับ 1 ผนัง ไม่จำเป็นต้องเรียงลำดับ ไม่มีการสร้างคุณสมบัติซ้ำ

คอลัมน์	ข้อมูล
1 - 5	เลขชั้นที่อยู่ในตำแหน่งบนของผนังต้านแรงเฉือน เลขชั้นของชั้นฐาน (Foundation) กำหนดให้เป็นศูนย์ และชั้นบนสุดต้องมีเลขชั้นเท่ากับจำนวนชั้นทั้งหมดในอาคาร
6 - 10	แนวเสาที่ปลายด้าน I ของผนังต้านแรงเฉือนนี้
11 - 15	แนวเสาที่ปลายด้าน J ของผนังต้านแรงเฉือนนี้
16 - 25	โมดูลัสยืดหยุ่น
26 - 35	พื้นที่หน้าตัด
36 - 45	อินเนอร์เชียรับแรงดัด ถ้าอินเนอร์เชียรับแรงดัดไม่เท่ากับศูนย์ โปรแกรมจะสร้างหุ่นจำลอง (Model) ให้เป็นผนังรับแรงดัด (Flexural Panel) แต่ถ้าอินเนอร์เชียรับแรงดัดเท่ากับ 0 โปรแกรมจะสร้างหุ่นจำลองให้เป็นผนังรับแรงเฉือน (Pure Shear Panel)
46 - 55	พื้นที่รับแรงเฉือน (Effective Shear Area)
56 - 65	โมดูลัสเฉือน (Shear Modulus)

4. <u>บรรทัดป้อนตำแหน่งโครงข้อแข็ง</u> (2I5,3F10.0,4A4)

1 บรรทัดสำหรับ 1 โครงข้อแข็ง

คอลัมน์	ข้อมูล
1 - 5	เลขประจำโครงข้อแข็งนี้
6 - 10	รหัสการคำนวณแรงภายในโครงข้อแข็ง ป้อนเลข 0 เพื่อคำนวณแรงภายในโครงข้อแข็งและแสดงในแฟ้มผลการคำนวณ (Output File) ป้อนเลข 1 สำหรับไม่ต้องการคำนวณแรงภายใน
11 - 20	ระยะ X_1 ,ดูรูป ค.4 ประกอบ
21 - 30	ระยะ Y_1 ,ดูรูป ค.4 ประกอบ
31 - 40	มุม ϕ ในหน่วยองศาและจุดทศนิยม ทิศทางทวนเข็มนาฬิกาจาก X ถึง x ,ดูรูป ค.4 ประกอบ
41 - 56	ข้อความที่ต้องการให้พิมพ์ออกมาพร้อมผลการคำนวณของโครงข้อแข็งนี้



รูป ค.4 ความสัมพันธ์ระหว่าง พิกัดของโครงสร้าง (Global Coordinate) และพิกัดของโครงข้อแข็ง (Local Coordinate)

5. <u>บรรทัดข้อมูลแรงกระทำ</u> (5F10.0)

แรงกระทำทั้งหมดต่อโครงสร้างเกิดจากการรวมกันของแรงกระทำในแนวดิ่ง I,II,III และแรงกระทำในแนวราบ A,B

คอลัมน์	ข้อมูล
1 - 10	ตัวคูณสำหรับแรงกระทำในแนวดิ่ง I
11 - 20	ตัวคูณสำหรับแรงกระทำในแนวดิ่ง II
21 - 30	ตัวคูณสำหรับแรงกระทำในแนวดิ่ง III
31 - 40	ตัวคูณสำหรับแรงกระทำในแนวราบ A
41 - 50	ตัวคูณสำหรับแรงกระทำในแนวราบ B

ภาคผนวก ง.

แฟ้มป้อนข้อมูลและแฟ้ม ผลการคำนวณ

ตัวอย่าง 1 : เสายื่น

กรณี เสา 1 ชิ้นส่วน

```
    1    1    1    1    0    0    1 00001   5     0.001 tsts1.inp
Top          200.0
   29.6
    1    1    2    1    2    1    1    0    0 One-Col. Frame
    1
    2      1.06
    1      2000000.0      24.7                            476.0
    2           0.01      0.01                             0.01
    1           0.01                    0.01  4.0  4.0  2.0
    1    1               59100.0
    1    1    2    1    0    1
    1    1    2    0
    2    2    1    0
    1    0         0.0         0.0        0.0 One-Col.
     1.0                                  1.0
    0
```

PROGRAM CU-NTABS
INPUT FILE : tsts1.inp
OUTPUT FILE : tsts1g.out

tsts1.inp
TOTAL NUMBER OF STORIES-- 1
NUMBER OF DIFF. FRAMES--- 1
TOTAL NUMBER OF FRAMES--- 1
NUMBER OF LOAD CONDITIONS 1
TYPE OF ANALYSIS--------- 0

EQ.0-STATIC LOADS ONLY
EQ.1-MODE SHAPES AND FREQUENCIES ONLY
EQ.2-STATIC AND MODE SHAPE ANALYSES
EQ.3-TYPE 2 AND RESPONSE SPECTRUM ANAL
EQ.4-TYPE 2 AND TIME HISTORY ANAL (INDIVIDUAL MEMBER RESPONSE ENVELOPES ONLY)
EQ.5-THIS OPTION IS NOT AVAILABLE FOR USE
EQ.6-RESPONSE SPECTRUM ANAL (GROSS BUILDING RESPONSE)
EQ.7-TYPE 3 AND 6 ANALYSES
EQ.8-TIME HISTORY ANAL (GROSS BUILDING RESPONSE/ENVELOPES OR STEP-BY-STEP RESPONSE)
EQ.9-TYPE 4 AND 8 ANALYSES
EQ.10-SLAM RESTART
EQ.11-SLAM-2 RESTART
EQ -1,-6,-8 SAME AS 1,6,8 ABOVE EXCEPT APPROXIMATE PERIODS AND MODES USED

NUMBER OF FREQUENCIES---- 0
STORY TRANSLATION CODE--- 1
LAT FORCE GENERATION CODE 0 0
STRESS CHECK KEY--------- 0
DATA CHECK KEY----------- 0
TYPE OF SOLUTION--------- 1
MAXIMUM NO. OF CYCLES---- 5
CONVERGENCE TOLERENCE OF EQUILIBRIUM .001000

STORY DATA

LEVEL NO.	ID	HEIGHT	MASS(M)	MR**2	X(M)	Y(M)	K-X	K-Y
1	Top	200.00	72.63	.00	.00	.00	.00	.00

CUMULATIVE STORY DATA

LEVEL NO.	ID	HEIGHT	MASS(M)	MR**2
1	Top	200.00	72.63	.00

STRUCTURE LATERAL LOADS...CASES A AND B

LEVEL NO.	FX-A	FY-A	MOM-A	FX-B	FY-B	MOM-B	XA	YA	XB	YB
1	29.60	.00	.00	.00	.00	.00	.0	.0	.0	.0

STORY SHEARS

NOTE THAT THE FORCE QUANTITIES BELOW DO NOT INCLUDE P-DELTA EFFECTS.

OUTPUT COLUMN 1 CONTAINS RESULTS FROM STATIC LATERAL LOAD CASE A
OUTPUT COLUMN 2 CONTAINS RESULTS FROM STATIC LATERAL LOAD CASE B

LEVEL ID DIRN 1 2

1	Top	X	29.6000	.0000
1	Top	Y	.0000	.0000
1	Top	ROTN	.0000	.0000

STORY OVERTURNING MOMENTS

NOTE THAT THE FORCE QUANTITIES BELOW DO NOT INCLUDE P-DELTA EFFECTS.

OUTPUT COLUMN 1 CONTAINS RESULTS FROM STATIC LATERAL LOAD CASE A
OUTPUT COLUMN 2 CONTAINS RESULTS FROM STATIC LATERAL LOAD CASE B

LEVEL	ID	DIRN	1	2
1	Top	X	5920.0000	.0000
1	Top	Y	.0000	.0000
1	Top	ROTN	.0000	.0000

One-Col. Frame

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

COLUMN LINE COORDINATES

LINE	X	Y
1	.00	.00
2	1.06	.00

COLUMN ID	E	A	MAJ SA	MIN SA	TORS I	MAJ I	MIN I	RIGID TOP	RIGID BOT
1	2000000.00	24.70	.00	.00	.00	476.00	.00	.00	.00
2	.01	.01	.00	.00	.00	.01	.00	.00	.00

BEAM ID	E	SA	TORS I	FLEX I	KII	KJJ	KIJ	RIGID I	RIGID J
1	.01	.00	.00	.01	4.00	4.00	2.00	.00	.00

FEF ID	CODE	ML	VL	MR	VR	W
1	1	.000	59100.000	.000	.000	.000

BEAM LOCATIONS

/ BAY	LEV	IC	JC	BID	GEN	VL1	VL2	VL3
1	1	1	2	1	0	1	0	0

GENERATED BEAM LOCATIONS

0STORY 1

1 1

GENERATED BEAM LOADS...LOAD CASE 1

0STORY 1

1 1

GENERATED BEAM LOADS...LOAD CASE II

0STORY 1

1 0

GENERATED BEAM LOADS...LOAD CASE III

0STORY 1

1 0

COLUMN LOCATIONS

0 LINE	LEV	CID	KCOL	GEN
1	1	1	2	0
2	1	2	1	0

GENERATED COLUMN LOCATIONS

0STORY 1 2

1 1 2

BEAM PROPERTIES AND LOADS

BAY NUMBERS 1

LEVEL	E	SA	TORS I	FLEX I	KII	KJJ	KIJ	WI	WJ	VERT1	VERT2	VERT3
1	.01	.00	.00	.01	4.00	4.00	2.00	.00	.00	1	0	0

COLUMN PROPERTIES

COLUMN LINE NO. 1

LEVEL	E	A	MAJ SA	MIN SA	TORS I	MAJ I	MIN I	DT	DB
1	2000000.00	24.70	.00	.00	.00	476.00	.00	.00	.00

COLUMN LINE NO. 2

LEVEL	E	A	MAJ SA	MIN SA	TORS I	MAJ I	MIN I	DT	DB
1	.01	.01	.00	.00	.00	.01	.00	.00	.00

0...FRAME TYPE 1 ...

TIME REQUIRED TO FORM STIFFNESS = .99

1FRAME POSITION DATA

FRAME	ID	FORCE CODE	X1	Y1	ANG	
1	1	0	.00	00	.00	One-Col.

LOAD CONDITION DEFINITION CARDS

0LOAD	I	II	III	A	B	SPECTRUM-1	SPECTRUM-2	SPECTRUM-3	SPECTRUM-4	TIME HIST
1	1.00	.00	.00	1.00	.00	.00	.00	.00	.00	.00

SPECTRUM-1... ROOT MEAN SQUARE COMBINATION

SPECTRUM-2... SUM OF ABSOLUTE VALUES

SPECTRUM-3 ... DOUBLE SUM COMBINATION

SPECTRUM-4 ... COMPLETE QUADRATIC COMBINATION

FRAME DISPLACEMENT

LEVEL		
1	X	74.0010593
1	Y	.0000000
1	ROTN	.0000000

MEMBER FORCES ..... FRAME ID One-Col   FRAME TYPE 1

LEVEL NO 1   LEVEL ID Top

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	-.0000033	4379382.6061368	-59099.9999996	29.5999994
2	1	-.0000038	.0000044	-.0000004	.0000002

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	.0000033	-.0000038

CONVERGE IN ITERATION NO. 3

TOTAL TIME 3.73 SEC.

ตัวอย่าง 1 : เสายื่น

กรณี แบ่งเสาเป็น 2 ชิ้นส่วน

```
  2    1    1    1    0    0    1 00001   5      0.001 ts1s2.inp
Top          100.0
    29.4
Mid          100.0

  1    2    2    1    2    1    1    0    0 One-Col. Frame
  1
  2     1.06
  1     2000000.0      24.7                          476.0
  2          0.01      0.01                           0.01
  1          0.01                  0.01  4.0  4.0  2.0
  1    1              58750.0
  1    1    2    1    0    1
  1    1    2    1    0    0
  1    1    2    1
  2    2    1    1
  1    0       0.0        0.0        0.0 One-Col.
     1.0                             1.0
  0
```

PROGRAM CU-NTABS
INPUT FILE : tsts2.inp
OUTPUT FILE : tsts2g.out

tsts2.inp
TOTAL NUMBER OF STORIES-- 2
NUMBER OF DIFF. FRAMES--- 1
TOTAL NUMBER OF FRAMES--- 1
NUMBER OF LOAD CONDITIONS 1
TYPE OF ANALYSIS--------- 0

EQ.0-STATIC LOADS ONLY
EQ.1-MODE SHAPES AND FREQUENCIES ONLY
EQ.2-STATIC AND MODE SHAPE ANALYSES
EQ.3-TYPE 2 AND RESPONSE SPECTRUM ANAL
EQ.4-TYPE 2 AND TIME HISTORY ANAL (INDIVIDUAL MEMBER RESPONSE ENVELOPES ONLY)
EQ.5-THIS OPTION IS NOT AVAILABLE FOR USE
EQ.6-RESPONSE SPECTRUM ANAL (GROSS BUILDING RESPONSE)
EQ.7-TYPE 3 AND 6 ANALYSES
EQ.8-TIME HISTORY ANAL (GROSS BUILDING RESPONSE/ENVELOPES OR STEP-BY-STEP RESPONSE)
EQ.9-TYPE 4 AND 8 ANALYSES
EQ.10-SLAM RESTART
EQ.11-SLAM-2 RESTART
EQ.-1,-6,-8 SAME AS 1,6,8 ABOVE EXCEPT APPROXIMATE PERIODS AND MODES USED

NUMBER OF FREQUENCIES---- 0
STORY TRANSLATION CODE--- 1
LAT FORCE GENERATION CODE 0 0
STRESS CHECK KEY--------- 0
DATA CHECK KEY----------- 0
TYPE OF SOLUTION--------- 1
MAXIMUM NO. OF CYCLES---- 5
CONVERGENCE TOLERENCE OF EQUILIBRIUM .001000

STORY DATA

LEVEL NO.	ID	HEIGHT	MASS(M)	MR**2	X(M)	Y(M)	K-X	K-Y
2	Top	100.00	63.00	.00	.00	.00	.00	.00
1	Mid	100.00	.00	.00	.00	.00	.00	.00

CUMULATIVE STORY DATA

LEVEL NO.	ID	HEIGHT	MASS(M)	MR**2
2	Top	200.00	63.00	.00
1	Mid	100.00	63.00	.00

STRUCTURE LATERAL LOADS...CASES A AND B

LEVEL NO.	FX-A	FY-A	MOM-A	FX-B	FY-B	MOM-B	XA	YA	XB	YB
2	29.40	.00	.00	.00	.00	.00	.0	.0	.0	.0
1	.00	.00	.00	.00	.00	.00	.0	.0	.0	.0

STORY SHEARS

NOTE THAT THE FORCE QUANTITIES BELOW DO NOT INCLUDE P-DELTA EFFECTS.

OUTPUT COLUMN 1 CONTAINS RESULTS FROM STATIC LATERAL LOAD CASE A
OUTPUT COLUMN 2 CONTAINS RESULTS FROM STATIC LATERAL LOAD CASE B

LEVEL	ID	DIRN	1	2
2	Top	X	29.4000	.0000
2	Top	Y	.0000	.0000
2	Top	ROTN	.0000	.0000
1	Mid	X	29.4000	.0000
1	Mid	Y	.0000	.0000
1	Mid	ROTN	.0000	.0000

STORY OVERTURNING MOMENTS

NOTE THAT THE FORCE QUANTITIES BELOW DO NOT INCLUDE P-DELTA EFFECTS.

OUTPUT COLUMN 1 CONTAINS RESULTS FROM STATIC LATERAL LOAD CASE A
OUTPUT COLUMN 2 CONTAINS RESULTS FROM STATIC LATERAL LOAD CASE B

LEVEL	ID	DIRN	1	2
2	Top	X	2940.0000	.0000
2	Top	Y	.0000	.0000
2	Top	ROTN	.0000	.0000
1	Mid	X	5880.0000	.0000
1	Mid	Y	.0000	.0000
1	Mid	ROTN	.0000	.0000

One-Col. Frame

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

COLUMN LINE COORDINATES

LINE	X	Y
1	.00	.00
2	1.06	.00

COLUMN ID	E	A	MAJ SA	MIN SA	TORS I	MAJ I	MIN I	RIGID TOP	RIGID BOT
1	2000000.00	24.70	.00	.00	.00	476.00	.00	.00	.00
2	.01	.01	.00	.00	.00	.01	.00	.00	.00

BEAM ID	E	BA	TORS I	FLEX I	KII	KJJ	KIJ	RIGID I	RIGID J
1	.01	.00	.00	.01	4.00	4.00	2.00	.00	.00

FEF ID	CODE	ML	VL	MR	VR	W
1	1	.000	58750.000	.000	.000	.000

BEAM LOCATIONS

/ BAY	LEV	IC	JC	BID	GEN	VL1	VL2	VL3
1	2	1	2	1	0	1	0	0
1	1	1	2	1	0	0	0	0

GENERATED BEAM LOCATIONS

0STORY 1

2	1
1	1

GENERATED BEAM LOADS...LOAD CASE I

0STORY 1

2	1
1	0

GENERATED BEAM LOADS...LOAD CASE II

0STORY 1

2	0
1	0

GENERATED BEAM LOADS...LOAD CASE III

0STORY 1

2	0
1	0

COLUMN LOCATIONS

0 LINE	LEV	CID	KCOL	GEN
1	2	1	2	1
2	2	2	1	1

GENERATED COLUMN LOCATIONS

0STORY	1	2
2	1	2
1	1	2

BEAM PROPERTIES AND LOADS

BAY NUMBERS 1

LEVEL	E	SA	TORS I	FLEX I	KII	KJJ	KIJ	WI	WJ	VERT1	VERT2	VERT3
2	.01	.00	.00	.01	4.00	4.00	2.00	.00	.00	1	0	0
1	.01	.00	.00	.01	4.00	4.00	2.00	.00	.00	0	0	0

COLUMN PROPERTIES

COLUMN LINE NO. 1

LEVEL	E	A	MAJ SA	MIN SA	TORS I	MAJ I	MIN I	DT	DB
2	2000000.00	24.70	.00	.00	.00	476.00	.00	.00	.00
1	2000000.00	24.70	.00	.00	.00	476.00	.00	.00	.00

COLUMN LINE NO. 2

LEVEL	E	A	MAJ SA	MIN SA	TORS I	MAJ I	MIN I	DT	DB
2	.01	.01	.00	.00	.00	.01	.00	.00	.00
1	.01	.01	.00	.00	.00	.01	.00	.00	.00

0...FRAME TYPE 1 ...

TIME REQUIRED TO FORM STIFFNESS = 1.87

1FRAME POSITION DATA

FRAME	ID	FORCE CODE	X1	Y1	ANG	
1	1	0	.00	.00	.00	One-Col

LOAD CONDITION DEFINITION CARDS

DLOAD	I	II	III	A	B	SPECTRUM-1	SPECTRUM-2	SPECTRUM-3	SPECTRUM-4	TIME HIST
1	1.00	.00	.00	1.00	.00	.00	.00	.00	.00	.00

SPECTRUM-1... ROOT MEAN SQUARE COMBINATION

SPECTRUM-2... SUM OF ABSOLUTE VALUES

SPECTRUM-3... DOUBLE SUM COMBINATION

SPECTRUM-4... COMPLETE QUADRATIC COMBINATION

FRAME DISPLACEMENT

LEVEL		
2	X	1130.2859677
2	Y	.0000000
2	ROTN	.0000000
1	X	331.0490366
1	Y	.0000000
1	ROTN	.0000000

MEMBER FORCES ..... FRAME ID One-Col FRAME TYPE 1
LEVEL NO 1 LEVEL ID Mid

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	***************66409005.6039022		-58749.9999981	29.4000047
2	1	.0004594	.0001317	-.0000019	.0000122

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-.0008672	.0008748

MEMBER FORCES ..... FRAME ID One-Col FRAME TYPE 1
LEVEL NO 2 LEVEL ID Top

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	-.000234646958934.7040213		-58749.9999909	29.4000584
2	1	-.0002443	.0004154	-.0000091	.0000744

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	.0002346	-.0002443

CONVERGE IN ITERATION NO. 3

TOTAL TIME 7.30 SEC.

ตัวอย่าง 1 : เสายื่น

กรณี แบ่งเสาเป็น 4 ชิ้นส่วน

```
 4    1    1    1    0    0    1 00001   5     0.001 tata4.inp
F4           50.0
  29.4
F3           50.0

F2           50.0

F1           50.0

 1    4    2    1    2    1    1    0    0 One-Col. Frame
 1
 2     1.06
 1     2000000.0    24.7                          476.0
 2           0.01    0.01                          0.01
 1           0.01                 0.01  4.0  4.0  2.0
 1    1          58725.0
 1    1    2    1    0    1
 1    1    2    1    2    0
 1    1    2    3
 2    2    1    3
 1    0       0.0      0.0      0.0 One-Col
   1.0                          1.0
 0
```

```
PROGRAM  CU-NTABS
INPUT  FILE  :  TS184.INP
OUTPUT FILE  :  TS184G.OUT

ts184.inp
TOTAL NUMBER OF STORIES--    4
NUMBER OF DIFF. FRAMES---    1
TOTAL NUMBER OF FRAMES---    1
NUMBER OF LOAD CONDITIONS    1
TYPE OF ANALYSIS---------    0

  EQ.0-STATIC LOADS ONLY
  EQ.1-MODE SHAPES AND FREQUENCIES ONLY
  EQ.2-STATIC AND MODE SHAPE ANALYSES
  EQ.3-TYPE 2 AND RESPONSE SPECTRUM ANAL
  EQ.4-TYPE 2 AND TIME HISTORY ANAL (INDIVIDUAL MEMBER RESPONSE ENVELOPES ONLY)
  EQ.5-THIS OPTION IS NOT AVAILABLE FOR USE
  EQ.6-RESPONSE SPECTRUM ANAL (GROSS BUILDING RESPONSE)
  EQ.7-TYPE 3 AND 6 ANALYSES
  EQ.8-TIME HISTORY ANAL (GROSS BUILDING RESPONSE/ENVELOPES OR STEP-BY-STEP RESPONSE)
  EQ.9-TYPE 4 AND 8 ANALYSES
  EQ.10-SLAM RESTART
  EQ.11-SLAM-2 RESTART
  EQ.-1,-6,-8 SAME AS 1,6,8 ABOVE EXCEPT APPROXIMATE PERIODS AND MODES USED

NUMBER OF FREQUENCIES----    0
STORY TRANSLATION CODE---    1
LAT FORCE GENERATION CODE 0 0
STRESS CHECK KEY---------    0
DATA CHECK KEY-----------    0
TYPE OF SOLUTION---------    1
MAXIMUM NO. OF CYCLES----    5
CONVERGENCE TOLERENCE OF EQUILIBRIUM      .001000
```

STORY DATA

LEVEL NO.	ID	HEIGHT	MASS(M)	MR**2	X(M)	Y(M)	K-X	K-Y
4	F4	50.00	60.55	.00	.00	.00	.00	.00
3	F3	50.00	.00	.00	.00	.00	.00	.00
2	F2	50.00	.00	.00	.00	.00	.00	.00
1	F1	50.00	.00	.00	.00	.00	.00	.00

CUMULATIVE STORY DATA

LEVEL NO.	ID	HEIGHT	MASS(M)	MR**2
4	F4	200.00	60.55	.00
3	F3	150.00	60.55	.00
2	F2	100.00	60.55	.00
1	F1	50.00	60.55	.00

STRUCTURE LATERAL LOADS...CASES A AND B

LEVEL NO.	FX-A	FY-A	MOM-A	FX-B	FY-B	MOM-B	XA	YA	XB	YB
4	29.40	.00	.00	.00	.00	.00	.0	.0	.0	.0
3	.00	.00	.00	.00	.00	.00	.0	.0	.0	.0
2	.00	.00	.00	.00	.00	.00	.0	.0	.0	.0
1	.00	.00	.00	.00	.00	.00	.0	.0	.0	.0

STORY SHEARS

NOTE THAT THE FORCE QUANTITIES BELOW DO NOT INCLUDE P-DELTA EFFECTS.

OUTPUT COLUMN 1 CONTAINS RESULTS FROM STATIC LATERAL LOAD CASE A
OUTPUT COLUMN 2 CONTAINS RESULTS FROM STATIC LATERAL LOAD CASE B

LEVEL	ID	DIRN	1	2
4	F4	X	29.4000	.0000
4	F4	Y	.0000	.0000
4	F4	ROTN	.0000	.0000
3	F3	X	29.4000	.0000
3	F3	Y	.0000	.0000
3	F3	ROTN	.0000	.0000
2	F2	X	29.4000	.0000
2	F2	Y	.0000	.0000
2	F2	ROTN	.0000	.0000
1	F1	X	29.4000	.0000
1	F1	Y	.0000	.0000
1	F1	ROTN	.0000	.0000

STORY OVERTURNING MOMENTS

NOTE THAT THE FORCE QUANTITIES BELOW DO NOT INCLUDE P-DELTA EFFECTS.

OUTPUT COLUMN 1 CONTAINS RESULTS FROM STATIC LATERAL LOAD CASE A
OUTPUT COLUMN 2 CONTAINS RESULTS FROM STATIC LATERAL LOAD CASE B

LEVEL	ID	DIRN	1	2
4	F4	X	1470.0000	.0000
4	F4	Y	.0000	.0000
4	F4	ROTN	.0000	.0000
3	F3	X	2940.0000	.0000
3	F3	Y	.0000	.0000
3	F3	ROTN	.0000	.0000
2	F2	X	4410.0000	.0000
2	F2	Y	.0000	.0000
2	F2	ROTN	.0000	.0000
1	F1	X	5880.0000	.0000
1	F1	Y	.0000	.0000
1	F1	ROTN	.0000	.0000

One-Col. Frame

FRAME ID NUMBER-----------	1
NUMBER OF STORY LEVELS----	4
NUMBER OF COLUMN LINES----	2
NUMBER OF BAYS------------	1
NUMBER OF DIFF. COL. PROP-	2
NUMBER OF DIFF. BEAM PROP-	1
NUMBER OF DIFF. FEF-------	1
NUMBER OF PANEL ELEMENTS--	0
NUMBER OF BRACING ELEMENTS	0

COLUMN LINE COORDINATES

LINE	X	Y

1	.00	.00
2	1.06	.00

COLUMN ID	E	A	MAJ SA	MIN SA	TORS I	MAJ I	MIN I	RIGID TOP	RIGID BOT
1	2000000.00	24.70	.00	.00	.00	476.00	.00	.00	.00
2	.01	.01	.00	.00	.00	.01	.00	.00	.00

BEAM ID	E	SA	TORS I	FLEX I	KII	KJJ	KIJ	RIGID I	RIGID J
1	.01	.00	.00	.01	4.00	4.00	2.00	.00	.00

FEF ID	CODE	ML	VL	MR	VR	W
1	1	.000	58725.000	.000	.000	.000

BEAM LOCATIONS

/ BAY	LEV	IC	JC	BID	GEN	VL1	VL2	VL3
1	4	1	2	1	0	1	0	0
1	3	1	2	1	2	0	0	0

GENERATED BEAM LOCATIONS

0STORY 1

4	1
3	1
2	1
1	1

GENERATED BEAM LOADS...LOAD CASE I

0STORY 1

4	1
3	0
2	0
1	0

GENERATED BEAM LOADS...LOAD CASE II

0STORY 1

4	0
3	0
2	0
1	0

GENERATED BEAM LOADS...LOAD CASE III

0STORY 1

4	0
3	0
2	0
1	0

COLUMN LOCATIONS

0 LINE	LEV	CID	KCOL	GEN
1	4	1	2	3
2	4	2	1	3

GENERATED COLUMN LOCATIONS

DSTORY	1	2
4	1	2
3	1	2
2	1	2
1	1	2

BEAM PROPERTIES AND LOADS

BAY NUMBERS 1

LEVEL	E	SA	TORS I	FLEX I	KII	KJJ	KIJ	WI	WJ	VERT1	VERT2	VERT3
4	.01	.00	.00	.01	4.00	4.00	2.00	.00	.00	1	0	0
3	.01	.00	.00	.01	4.00	4.00	2.00	.00	.00	0	0	0
2	.01	.00	.00	.01	4.00	4.00	2.00	.00	.00	0	0	0
1	.01	.00	.00	.01	4.00	4.00	2.00	.00	.00	0	0	0

COLUMN PROPERTIES

COLUMN LINE NO. 1

LEVEL	E	A	MAJ SA	MIN SA	TORS I	MAJ I	MIN I	DT	DB
4	2000000.00	24.70	.00	.00	.00	476.00	.00	.00	.00
3	2000000.00	24.70	.00	.00	.00	476.00	.00	.00	.00
2	2000000.00	24.70	.00	.00	.00	476.00	.00	.00	.00
1	2000000.00	24.70	.00	.00	.00	476.00	.00	.00	.00

COLUMN LINE NO. 2

LEVEL	E	A	MAJ SA	MIN SA	TORS I	MAJ I	MIN I	DT	DB
4	.01	.01	.00	.00	.00	.01	.00	.00	.00
3	.01	.01	.00	.00	.00	.01	.00	.00	.00
2	.01	.01	.00	.00	.00	.01	.00	.00	.00
1	.01	.01	.00	.00	.00	.01	.00	.00	.00

0 . . FRAME TYPE 1 ...

TIME REQUIRED TO FORM STIFFNESS = 3.79

1FRAME POSITION DATA

FRAME	ID	FORCE CODE	X1	Y1	ANG	
1	1	0	.00	.00	.00	One-Col.

LOAD CONDITION DEFINITION CARDS

DLOAD	I	II	III	A	B	SPECTRUM-1	SPECTRUM-2	SPECTRUM-3	SPECTRUM-4	TIME HIST
1	1.00	.00	.00	1.00	.00	.00	.00	.00	.00	.00

SPECTRUM-1... ROOT MEAN SQUARE COMBINATION

SPECTRUM-2... SUM OF ABSOLUTE VALUES

SPECTRUM-3... DOUBLE SUM COMBINATION

SPECTRUM-4... COMPLETE QUADRATIC COMBINATION

FRAME DISPLACEMENT

LEVEL		
4	X	4453.1940258
4	Y	.0000000
4	ROTN	.0000000
3	X	2749.0318885
3	Y	.0000000

3	ROTN	.0000000
2	X	1304.3121317
2	Y	.0000000
2	ROTN	.0000000
1	X	338.9800980
1	Y	.0000000
1	ROTN	.0000000

MEMBER FORCES ..... FRAME ID One-Col FRAME TYPE 1
LEVEL NO 1 LEVEL ID F1

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	***************	***************	-58724.9999748	29.4001653
2	1	-.0009917	.0014145	-.0000252	.0001795

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-.0002927	.0002864

MEMBER FORCES ..... FRAME ID One-Col FRAME TYPE 1
LEVEL NO 2 LEVEL ID F2

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	***************	***************	-58724.9999807	29.4003570
2	1	-.0000595	.0012781	-.0000193	.0003974

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-.0007270	.0007138

MEMBER FORCES ..... FRAME ID One-Col FRAME TYPE 1
LEVEL NO 3 LEVEL ID F3

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	***************	***************	-58724.9999931	29.4001723
2	1	.0009405	.0007733	-.0000069	.0002327

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-.0015453	.0015872

MEMBER FORCES ..... FRAME ID One-Col FRAME TYPE 1
LEVEL NO 4 LEVEL ID F4

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	-.0003725	***************	-58724.9999725	29.4008707
2	1	-.0004020	.0008266	-.0000275	.0009420

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	.0003729	-.0004020

CONVERGE IN ITERATION NO. 3

TOTAL TIME 14.38 SEC.

ตัวอย่าง 2 : โครงข้อแข็งพอร์ทอล

กรณีแรง P = 1000 หน่วย

```
  2    1    1    1    0    0    1 00001   5      0.001 TBE4813.INP
TOP            60.0
    1.0        0.0        0.0        0.0
MID            60.0

  1    2    2    1    1    2    1                          TWO-STORY FRAME
  1      0.0        0.0
  2    120.0        0.0
  1        30000.0     11.77  0.0  0.0              310.1       0.0  0.0  0.0
  1        30000.0                     310.1  4.0  4.0  2.0
  2            0.1                       0.1  4.0  4.0  2.0
  1    1               1000.0              1000.0
  1    1    2    1    0    1
  1    1    2    2    0
  1    1    2    1
  2    1    1    1
  1    0       0.0        0.0        0.0 TWO-STORY FRAME
    1.0        0.0        0.0        1.0       0.0  0.0  0.0  0.0  0.0  0.0
  0
```

PROGRAM CU-NTAB8
INPUT FILE : tse4s13.inp
OUTPUT FILE : tse4s13g.out

TSE4S13.INP
TOTAL NUMBER OF STORIES-- 2
NUMBER OF DIFF FRAMES--- 1
TOTAL NUMBER OF FRAMES--- 1
NUMBER OF LOAD CONDITIONS 1
TYPE OF ANALYSIS--------- 0

EQ.0-STATIC LOADS ONLY
EQ.1-MODE SHAPES AND FREQUENCIES ONLY
EQ.2-STATIC AND MODE SHAPE ANALYSES
EQ.3-TYPE 2 AND RESPONSE SPECTRUM ANAL
EQ.4-TYPE 2 AND TIME HISTORY ANAL (INDIVIDUAL MEMBER RESPONSE ENVELOPES ONLY)
EQ.5-THIS OPTION IS NOT AVAILABLE FOR USE
EQ.6-RESPONSE SPECTRUM ANAL (GROSS BUILDING RESPONSE)
EQ.7-TYPE 3 AND 6 ANALYSES
EQ.8-TIME HISTORY ANAL (GROSS BUILDING RESPONSE/ENVELOPES OR STEP-BY-STEP RESPONSE)
EQ.9-TYPE 4 AND 8 ANALYSES
EQ.10-SLAM RESTART
EQ.11-SLAM-2 RESTART
EQ.-1,-6,-8 SAME AS 1,6,8 ABOVE EXCEPT APPROXIMATE PERIODS AND MODES USED

NUMBER OF FREQUENCIES---- 0
STORY TRANSLATION CODE--- 1
LAT FORCE GENERATION CODE 0 0
STRESS CHECK KEY--------- 0
DATA CHECK KEY----------- 0
TYPE OF SOLUTION--------- 1
MAXIMUM NO. OF CYCLES---- 5
CONVERGENCE TOLERENCE OF EQUILIBRIUM .001000

STORY DATA

LEVEL NO.	ID	HEIGHT	MASS(M)	MR**2	X(M)	Y(M)	K-X	K-Y
2	TOP	60.00	.00	.00	.00	.00	.00	.00
1	MID	60.00	.00	.00	.00	.00	.00	.00

CUMULATIVE STORY DATA

LEVEL NO.	ID	HEIGHT	MASS(M)	MR**2
2	TOP	120.00	.00	.00
1	MID	60.00	.00	.00

STRUCTURE LATERAL LOADS...CASES A AND B

LEVEL NO.	FX-A	FY-A	MOM-A	FX-B	FY-B	MOM-B	XA	YA	XB	YB
2	1.00	.00	.00	.00	.00	.00	.0	.0	.0	.0
1	.00	.00	.00	.00	.00	.00	.0	.0	.0	.0

STORY SHEARS

NOTE THAT THE FORCE QUANTITIES BELOW DO NOT INCLUDE P-DELTA EFFECTS.

OUTPUT COLUMN 1 CONTAINS RESULTS FROM STATIC LATERAL LOAD CASE A
OUTPUT COLUMN 2 CONTAINS RESULTS FROM STATIC LATERAL LOAD CASE B

LEVEL	ID	DIRN	1	2
2	TOP	X	1.0000	.0000
2	TOP	Y	.0000	.0000
2	TOP	ROTN	.0000	.0000
1	MID	X	1.0000	.0000
1	MID	Y	.0000	.0000
1	MID	ROTN	.0000	.0000

STORY OVERTURNING MOMENTS

NOTE THAT THE FORCE QUANTITIES BELOW DO NOT INCLUDE P-DELTA EFFECTS.

OUTPUT COLUMN 1 CONTAINS RESULTS FROM STATIC LATERAL LOAD CASE A
OUTPUT COLUMN 2 CONTAINS RESULTS FROM STATIC LATERAL LOAD CASE B

LEVEL	ID	DIRN	1	2
2	TOP	X	60.0000	.0000
2	TOP	Y	.0000	.0000
2	TOP	ROTN	.0000	.0000
1	MID	X	120.0000	.0000
1	MID	Y	.0000	.0000
1	MID	ROTN	.0000	.0000

TWO-STORY FRAME

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

COLUMN LINE COORDINATES

LINE	X	Y
1	.00	.00
2	120.00	.00

COLUMN ID	E	A	MAJ SA	MIN SA	TORS I	MAJ I	MIN I	RIGID TOP	RIGID BOT
1	30000.00	11.77	.00	.00	.00	310.10	.00	.00	.00

BEAM ID	E	SA	TORS I	FLEX I	KII	KJJ	KIJ	RIGID I	RIGID J
1	30000.00	.00	.00	310.10	4.00	4.00	2.00	.00	.00
2	.10	.00	.00	.10	4.00	4.00	2.00	.00	.00

FEF ID	CODE	ML	VL	MR	VR	W
1	1	.000	1000.000	.000	1000.000	.000

BEAM LOCATIONS

/ BAY	LEV	IC	JC	BID	GEN	VL1	VL2	VL3
1	2	1	2	1	0	1	0	0
1	1	1	2	2	0	0	0	0

GENERATED BEAM LOCATIONS

DSTORY 1

2	1
1	2

GENERATED BEAM LOADS ...LOAD CASE I

DSTORY 1

2	1
1	0

GENERATED BEAM LOADS...LOAD CASE II

DSTORY 1

2	0
1	0

GENERATED BEAM LOADS...LOAD CASE III

DSTORY 1

2	0
1	0

COLUMN LOCATIONS

D LINE	LEV	CID	KCOL	GEN
1	2	1	2	1
2	2	1	1	1

GENERATED COLUMN LOCATIONS

DSTORY 1 2

2	1	1
1	1	1

BEAM PROPERTIES AND LOADS

BAY NUMBERS 1

LEVEL	E	SA	TORS I	FLEX I	KII	KJJ	KIJ	WI	WJ	VERT1	VERT2	VERT3
2	30000.00	.00	.00	310.10	4.00	4.00	2.00	.00	.00	1	0	0
1	.10	.00	.00	.10	4.00	4.00	2.00	.00	.00	0	0	0

COLUMN PROPERTIES

COLUMN LINE NO. 1

LEVEL	E	A	MAJ SA	MIN SA	TORS I	MAJ I	MIN I	DT	DB
2	30000.00	11.77	.00	.00	.00	310.10	.00	.00	.00
1	30000.00	11.77	.00	.00	.00	310.10	.00	.00	.00

COLUMN LINE NO. 2

LEVEL	E	A	MAJ SA	MIN SA	TORS I	MAJ I	MIN I	DT	DB
2	30000.00	11.77	.00	.00	.00	310.10	.00	.00	.00
1	30000.00	11.77	.00	.00	.00	310.10	.00	.00	.00

0...FRAME TYPE 1 ...

TIME REQUIRED TO FORM STIFFNESS = 1.97

1FRAME POSITION DATA

FRAME	ID	FORCE CODE	X1	Y1	ANG	
1	1	0	.00	.00	.00	TWO-STORY FRAME

LOAD CONDITION DEFINITION CARDS

0LOAD	I	II	III	A	B	SPECTRUM-1	SPECTRUM-2	SPECTRUM-3	SPECTRUM-4	TIME HIST
1	1.00	.00	.00	1.00	.00	.00	.00	.00	.00	.00

SPECTRUM-1... ROOT MEAN SQUARE COMBINATION

SPECTRUM-2... SUM OF ABSOLUTE VALUES

SPECTRUM-3... DOUBLE SUM COMBINATION

SPECTRUM-4... COMPLETE QUADRATIC COMBINATION

FRAME DISPLACEMENT

LEVEL		
2	X	.0141583
2	Y	.0000000
2	ROTN	.0000000
1	X	.0059583
1	Y	.0000000
1	ROTN	.0000000

MEMBER FORCES ..... FRAME ID TWO-STORY FRAME   FRAME TYPE 1
LEVEL NO 1   LEVEL ID MID

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	-5.9846735	41.9436127	-999.4630780	.5000646
2	1	5.9846740	-41.9422564	-1000.5369220	-.4999354

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-.0000001	-.0000001

MEMBER FORCES ..... FRAME ID TWO-STORY FRAME   FRAME TYPE 1
LEVEL NO 2   LEVEL ID TOP

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	32.2154188	5.9846735	-999.4630780	.5000750
2	1	-32.2152216	-5.9846740	-1000.5369220	-.4999250

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-32.2154188	-32.2152216

CONVERGE IN ITERATION NO. 3

TOTAL TIME 7.03 SEC.

ตัวอย่าง 2 : โครงข้อแข็งพอร์ทอล

กรณีแรง P = 2000 หน่วย

```
  2    1    1    1    0    0    1 00001   5      0.001 TSE4814.INP
TOP            60.0
     2.0        0.0       0.0        0.0
MID            60.0

  1    2    2    1    1    2    1                      TWO-STORY FRAME
  1       0.0       0.0
  2     120.0       0.0
  1        30000.0     11.77  0.0  0.0            310.1       0.0  0.0  0.0
  1        30000.0                   310.1  4.0  4.0  2.0
  2            0.1                     0.1  4.0  4.0  2.0
  1    1            2000.0              2000.0
  1    1    2    1    0    1
  1    1    2    2    0
  1    1    2    1
  2    1    1    1
  1    0        0.0       0.0        0.0 TWO-STORY FRAME
     1.0        0.0       0.0        1.0       0.0  0.0  0.0  0.0  0.0  0.0
  0
```

PROGRAM CU-NTABS
INPUT FILE : tse4s14.inp
OUTPUT FILE : tse4s14g.out

TSE4S14.INP
TOTAL NUMBER OF STORIES-- 2
NUMBER OF DIFF. FRAMES--- 1
TOTAL NUMBER OF FRAMES--- 1
NUMBER OF LOAD CONDITIONS 1
TYPE OF ANALYSIS--------- 0

EQ.0-STATIC LOADS ONLY
EQ.1-MODE SHAPES AND FREQUENCIES ONLY
EQ.2-STATIC AND MODE SHAPE ANALYSES
EQ.3-TYPE 2 AND RESPONSE SPECTRUM ANAL
EQ.4-TYPE 2 AND TIME HISTORY ANAL (INDIVIDUAL MEMBER RESPONSE ENVELOPES ONLY)
EQ.5-THIS OPTION IS NOT AVAILABLE FOR USE
EQ.6-RESPONSE SPECTRUM ANAL (GROSS BUILDING RESPONSE)
EQ.7-TYPE 3 AND 6 ANALYSES
EQ.8-TIME HISTORY ANAL (GROSS BUILDING RESPONSE/ENVELOPES OR STEP-BY-STEP RESPONSE)
EQ.9-TYPE 4 AND 8 ANALYSES
EQ.10-SLAM RESTART
EQ.11-SLAM-2 RESTART
EQ.-1,-6,-8 SAME AS 1,6,8 ABOVE EXCEPT APPROXIMATE PERIODS AND MODES USED

NUMBER OF FREQUENCIES---- 0
STORY TRANSLATION CODE--- 1
LAT FORCE GENERATION CODE 0 0
STRESS CHECK KEY--------- 0
DATA CHECK KEY----------- 0
TYPE OF SOLUTION--------- 1
MAXIMUM NO. OF CYCLES---- 5
CONVERGENCE TOLERENCE OF EQUILIBRIUM .001000

STORY DATA

LEVEL NO.	ID	HEIGHT	MASS(M)	MR**2	X(M)	Y(M)	K-X	K-Y
2	TOP	60.00	.00	.00	.00	.00	.00	.00
1	MID	60.00	.00	.00	.00	.00	.00	.00

CUMULATIVE STORY DATA

LEVEL NO.	ID	HEIGHT	MASS(M)	MR**2
2	TOP	120.00	.00	.00
1	MID	60.00	.00	.00

STRUCTURE LATERAL LOADS...CASES A AND B

LEVEL NO.	FX-A	FY-A	MOM-A	FX-B	FY-B	MOM-B	XA	YA	XB	YB
2	2.00	.00	.00	.00	.00	.00	.0	.0	.0	.0
1	.00	.00	.00	.00	.00	.00	.0	.0	.0	.0

STORY SHEARS

NOTE THAT THE FORCE QUANTITIES BELOW DO NOT INCLUDE P-DELTA EFFECTS.

OUTPUT COLUMN 1 CONTAINS RESULTS FROM STATIC LATERAL LOAD CASE A
OUTPUT COLUMN 2 CONTAINS RESULTS FROM STATIC LATERAL LOAD CASE B

LEVEL	ID	DIRN	1	2
2	TOP	X	2.0000	.0000
2	TOP	Y	.0000	.0000
2	TOP	ROTN	.0000	.0000
1	MID	X	2.0000	.0000
1	MID	Y	.0000	.0000
1	MID	ROTN	.0000	.0000

STORY OVERTURNING MOMENTS

NOTE THAT THE FORCE QUANTITIES BELOW DO NOT INCLUDE P-DELTA EFFECTS.

OUTPUT COLUMN 1 CONTAINS RESULTS FROM STATIC LATERAL LOAD CASE A
OUTPUT COLUMN 2 CONTAINS RESULTS FROM STATIC LATERAL LOAD CASE B

LEVEL	ID	DIRN	1	2
2	TOP	X	120.0000	.0000
2	TOP	Y	.0000	.0000
2	TOP	ROTN	.0000	.0000
1	MID	X	240.0000	.0000
1	MID	Y	.0000	.0000
1	MID	ROTN	.0000	.0000

TWO-STORY FRAME

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

COLUMN LINE COORDINATES

LINE	X	Y
1	.00	.00
2	120.00	.00

COLUMN ID	E	A	MAJ SA	MIN SA	TORS I	MAJ I	MIN I	RIGID TOP	RIGID BOT
1	30000.00	11.77	.00	.00	.00	310.10	.00	.00	.00

BEAM ID	E	SA	TORS I	FLEX I	KII	KJJ	KIJ	RIGID I	RIGID J
1	30000.00	.00	.00	310.10	4.00	4.00	2.00	.00	.00
2	.10	.00	.00	.10	4.00	4.00	2.00	.00	.00

FEF ID	CODE	ML	VL	MR	VR	W
1	1	.000	2000.000	.000	2000.000	.000

BEAM LOCATIONS

/ BAY	LEV	IC	JC	BID	GEN	VL1	VL2	VL3
1	2	1	2	1	0	1	0	0
1	1	1	2	2	0	0	0	0

GENERATED BEAM LOCATIONS

DSTORY 1

2	1
1	2

GENERATED BEAM LOADS...LOAD CASE I

DSTORY 1

2	1
1	0

GENERATED BEAM LOADS...LOAD CASE II

DSTORY 1

2	0
1	0

GENERATED BEAM LOADS...LOAD CASE III

DSTORY 1

2	0
1	0

COLUMN LOCATIONS

D LINE	LEV	CID	KCOL	GEN
1	2	1	2	1
2	2	1	1	1

GENERATED COLUMN LOCATIONS

DSTORY	1	2
2	1	1
1	1	1

BEAM PROPERTIES AND LOADS

BAY NUMBERS 1

LEVEL	E	SA	TORS I	FLEX I	KII	KJJ	KIJ	WI	WJ	VERT1	VERT2	VERT3
2	30000.00	.00	.00	310.10	4.00	4.00	2.00	.00	.00	1	0	0
1	.10	.00	.00	.10	4.00	4.00	2.00	.00	.00	0	0	0

COLUMN PROPERTIES

COLUMN LINE NO. 1

- LEVEL	E	A	MAJ SA	MIN SA	TORS I	MAJ I	MIN I	DT	DB
2	30000.00	11.77	.00	.00	.00	310.10	.00	.00	.00
1	30000.00	11.77	.00	.00	.00	310.10	.00	.00	.00

COLUMN LINE NO. 2

LEVEL	E	A	MAJ SA	MIN SA	TORS I	MAJ I	MIN I	DT	DB
2	30000.00	11.77	.00	.00	.00	310.10	.00	.00	.00
1	30000.00	11.77	.00	.00	.00	310.10	.00	.00	.00

0...FRAME TYPE 1 ....

TIME REQUIRED TO FORM STIFFNESS = 1.87

1FRAME POSITION DATA

FRAME	ID	FORCE CODE	X1	Y1	ANG	
1	1	0	.00	.00	.00	TWO-STORY FRAME

LOAD CONDITION DEFINITION CARDS

DLOAD	I	II	III	A	B	SPECTRUM-1	SPECTRUM-2	SPECTRUM-3	SPECTRUM-4	TIME HIST
1	1.00	.00	.00	1.00	.00	.00	.00	.00	.00	.00

SPECTRUM-1... ROOT MEAN SQUARE COMBINATION

SPECTRUM-2... SUM OF ABSOLUTE VALUES

SPECTRUM-3... DOUBLE SUM COMBINATION

SPECTRUM-4... COMPLETE QUADRATIC COMBINATION

FRAME DISPLACEMENT

LEVEL		
2	X	.0386308
2	Y	.0000000
2	ROTN	.0000000
1	X	.0161626
1	Y	.0000000
1	ROTN	.0000000

MEMBER FORCES ..... FRAME ID TWO-STORY FRAME FRAME TYPE 1
LEVEL NO 1 LEVEL ID MID

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	-17.4004488	109.7309161	-1998.5410681	1.0004780
2	1	17.4004894	-109.7206555	-2001.4589319	-.9995220

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1.	1	-.0000002	-.0000002

MEMBER FORCES ..... FRAME ID TWO-STORY FRAME FRAME TYPE 1
LEVEL NO 2 LEVEL ID TOP

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	87.5368688	17.4004490	-1999.5410681	1.0005586
2	1	-87.5351546	-17.4004896	-2001.4589319	-.9994414

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-87.5368688	-87.5351546

CONVERGE IN ITERATION NO. 3

TOTAL TIME 7.03 SEC.

ตัวอย่าง 2 : โครงข้อแข็งพอร์ทอล

กรณีแรง P = 3000 หน่วย

```
  2    1    1    1    0    0    1 00001   5       0.001 TSE4815.INP
TOP            60.0
    3.0        0.0        0.0        0.0
MID            60.0

  1    2    2    1    1    2    1                        TWO-STORY FRAME
  1       0.0       0.0
  2     120.0       0.0
  1        30000.0     11.77  0.0  0.0              310.1        0.0  0.0  0.0
  1        30000.0                       310.1  4.0  4.0  2.0
  2            0.1                         0.1  4.0  4.0  2.0
  1    1               3000.0               3000.0
  1    1    2    1    0    1
  1    1    2    2    0
  1    1    2    1
  2    1    1    1
  1    0        0.0        0.0        0.0 TWO-STORY FRAME
    1.0         0.0        0.0        1.0        0.0  0.0  0.0  0.0  0.0  0.0
  0
```

PROGRAM CU-NTABS
INPUT FILE : tse4s15.inp
OUTPUT FILE : tse4s15g.out

TSE4S15.INP
TOTAL NUMBER OF STORIES-- 2
NUMBER OF DIFF. FRAMES--- 1
TOTAL NUMBER OF FRAMES--- 1
NUMBER OF LOAD CONDITIONS 1
TYPE OF ANALYSIS--------- 0

EQ.0-STATIC LOADS ONLY
EQ.1-MODE SHAPES AND FREQUENCIES ONLY
EQ.2-STATIC AND MODE SHAPE ANALYSES
EQ.3-TYPE 2 AND RESPONSE SPECTRUM ANAL
EQ.4-TYPE 2 AND TIME HISTORY ANAL (INDIVIDUAL MEMBER RESPONSE ENVELOPES ONLY)
EQ.5-THIS OPTION IS NOT AVAILABLE FOR USE
EQ.6-RESPONSE SPECTRUM ANAL (GROSS BUILDING RESPONSE)
EQ.7-TYPE 3 AND 6 ANALYSES
EQ.8-TIME HISTORY ANAL (GROSS BUILDING RESPONSE/ENVELOPES OR STEP-BY-STEP RESPONSE)
EQ.9-TYPE 4 AND 8 ANALYSES
EQ.10-SLAM RESTART
EQ.11-SLAM-2 RESTART
EQ.-1,-6,-8 SAME AS 1,6,8 ABOVE EXCEPT APPROXIMATE PERIODS AND MODES USED

NUMBER OF FREQUENCIES---- 0
STORY TRANSLATION CODE--- 1
LAT FORCE GENERATION CODE 0 0
STRESS CHECK KEY--------- 0
DATA CHECK KEY----------- 0
TYPE OF SOLUTION--------- 1
MAXIMUM NO. OF CYCLES---- 5
CONVERGENCE TOLERENCE OF EQUILIBRIUM .001000

STORY DATA

LEVEL NO.	ID	HEIGHT	MASS(M)	MR**2	X(M)	Y(M)	K-X	K-Y
2	TOP	60.00	.00	.00	.00	.00	.00	.00
1	MID	60.00	.00	.00	.00	.00	.00	.00

CUMULATIVE STORY DATA

LEVEL NO.	ID	HEIGHT	MASS(M)	MR**2
2	TOP	120.00	.00	.00
1	MID	60.00	.00	.00

STRUCTURE LATERAL LOADS...CASES A AND B

LEVEL NO.	FX-A	FY-A	MOM-A	FX-B	FY-B	MOM-B	XA	YA	XB	YB
2	3.00	.00	.00	.00	.00	.00	.0	.0	.0	.0
1	.00	.00	.00	.00	.00	.00	.0	.0	.0	.0

STORY SHEARS

NOTE THAT THE FORCE QUANTITIES BELOW DO NOT INCLUDE P-DELTA EFFECTS.

OUTPUT COLUMN 1 CONTAINS RESULTS FROM STATIC LATERAL LOAD CASE A
OUTPUT COLUMN 2 CONTAINS RESULTS FROM STATIC LATERAL LOAD CASE B

LEVEL	ID	DIRN	1	2
2	TOP	X	3.0000	.0000
2	TOP	Y	.0000	.0000
2	TOP	ROTN	.0000	.0000
1	MID	X	3.0000	.0000
1	MID	Y	.0000	.0000
1	MID	ROTN	.0000	.0000

STORY OVERTURNING MOMENTS

NOTE THAT THE FORCE QUANTITIES BELOW DO NOT INCLUDE P-DELTA EFFECTS.

OUTPUT COLUMN 1 CONTAINS RESULTS FROM STATIC LATERAL LOAD CASE A
OUTPUT COLUMN 2 CONTAINS RESULTS FROM STATIC LATERAL LOAD CASE B

LEVEL	ID	DIRN	1	2
2	TOP	X	180.0000	.0000
2	TOP	Y	.0000	.0000
2	TOP	ROTN	.0000	.0000
1	MID	X	360.0000	.0000
1	MID	Y	.0000	.0000
1	MID	ROTN	.0000	.0000

TWO-STORY FRAME

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

COLUMN LINE COORDINATES

LINE	X	Y
1	.00	.00
2	120.00	.00

COLUMN ID	E	A	MAJ BA	MIN BA	TORS I	MAJ I	MIN I	RIGID TOP	RIGID BOT
1	30000.00	11.77	.00	.00	.00	310.10	.00	.00	.00

BEAM ID	E	BA	TORS I	FLEX I	KII	KJJ	KIJ	RIGID I	RIGID J
1	30000.00	.00	.00	310.10	4.00	4.00	2.00	.00	.00
2	.10	.00	.00	.10	4.00	4.00	2.00	.00	.00

FEF ID	CODE	ML	VL	MR	VR	W
1	1	.000	3000.000	.000	3000.000	.000

BEAM LOCATIONS

/ BAY	LEV	IC	JC	BID	GEN	VL1	VL2	VL3
1	2	1	2	1	0	1	0	0
1	1	1	2	2	0	0	0	0

GENERATED BEAM LOCATIONS

0STORY 1

2	1
1	2

GENERATED BEAM LOADS...LOAD CASE I

0STORY 1

2	1
1	0

GENERATED BEAM LOADS...LOAD CASE II

0STORY 1

2	0
1	0

GENERATED BEAM LOADS...LOAD CASE III

0STORY 1

2	0
1	0

COLUMN LOCATIONS

0 LINE	LEV	CID	KCOL	GEN
1	2	1	2	1
2	2	1	1	1

GENERATED COLUMN LOCATIONS

0STORY.	1	2
2	1	1
1	1	1

BEAM PROPERTIES AND LOADS

BAY NUMBERS 1

LEVEL	E	SA	TORS I	FLEX I	KII	KJJ	KIJ	WI	WJ	VERT1	VERT2	VERT3
2	30000.00	.00	.00	310.10	4.00	4.00	2.00	.00	.00	1	0	0
1	.10	.00	.00	.10	4.00	4.00	2.00	.00	.00	0	0	0

COLUMN PROPERTIES

COLUMN LINE NO. 1

LEVEL	E	A	MAJ SA	MIN SA	TORS I	MAJ I	MIN I	DT	DB
2	30000.00	11.77	.00	.00	.00	310.10	.00	.00	.00
1	30000.00	11.77	.00	.00	.00	310.10	.00	.00	.00

COLUMN LINE NO. 2

LEVEL	E	A	MAJ SA	MIN SA	TORS I	MAJ I	MIN I	DT	DB
2	30000.00	11.77	.00	.00	.00	310.10	.00	.00	.00
1	30000.00	11.77	.00	.00	.00	310.10	.00	.00	.00

0...FRAME TYPE 1 ...

TIME REQUIRED TO FORM STIFFNESS = 2.03

1FRAME POSITION DATA

FRAME	ID	FORCE CODE	X1	Y1	ANG	
1	1	0	.00	.00	.00	TWO-STORY FRAME

LOAD CONDITION DEFINITION CARDS

0LOAD	I	II	III	A	B	SPECTRUM-1	SPECTRUM-2	SPECTRUM-3	SPECTRUM-4	TIME HIST
1	1.00	.00	.00	1.00	.00	.00	.00	.00	.00	.00

SPECTRUM-1... ROOT MEAN SQUARE COMBINATION

SPECTRUM-2... SUM OF ABSOLUTE VALUES

SPECTRUM-3... DOUBLE SUM COMBINATION

SPECTRUM-4... COMPLETE QUADRATIC COMBINATION

FRAME DISPLACEMENT

LEVEL		
2	X	.0912848
2	Y	.0000000
2	ROTN	.0000000
1	X	.0379455
1	Y	.0000000
1	ROTN	.0000000

MEMBER FORCES ..... FRAME ID TWO-STORY FRAME   FRAME TYPE 1
LEVEL NO 1   LEVEL ID MID

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	-43.9321917	247.7974578	-2996.5652405	1.5026519
2	1	43.9326230	-247.7403304	-3003.4347595	-1.4973481

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-.0000005	-.0000005

MEMBER FORCES ..... FRAME ID TWO-STORY FRAME   FRAME TYPE 1
LEVEL NO 2   LEVEL ID TOP

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	206.0899343	43.9321922	-2996.5652405	1.5031226
2	1	-206.0912072	-43.9326235	-3003.4347595	-1.4968774

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-206.0899343	-206.0912072

CONVERGE IN ITERATION NO. 3

TOTAL TIME 7.74 SEC.

ตัวอย่าง 2 : โครงข้อแข็งพอร์ทอล

กรณีแรง P = 3500 หน่วย

```
  2    1    1    1    0    0    1 00001   5     0.001 T8E4818.INP
TOP            60.0
    3.5         0.0       0.0       0.0
MID            60.0

  1    2    2    1    1    2    1                         TWO-STORY FRAME
  1      0.0       0.0
  2    120.0       0.0
  1        30000.0     11.77  0.0  0.0            310.1       0.0  0.0  0.0
  1        30000.0                      310.1  4.0  4.0  2.0
  2            0.1                        0.1  4.0  4.0  2.0
  1    1              3500.0            3500.0
  1    1    2    1    0    1
  1    1    2    2    0
  1    1    2    1
  2    1    1    1
  1    0        0.0       0.0       0.0 TWO-STORY FRAME
     1.0        0.0       0.0       1.0       0.0  0.0  0.0  0.0  0.0  0.0
  0
```

PROGRAM CU-NTABS
INPUT FILE : tse4s18.inp
OUTPUT FILE : tse4s18g.out

TSE4S18.INP
TOTAL NUMBER OF STORIES-- 2
NUMBER OF DIFF. FRAMES--- 1
TOTAL NUMBER OF FRAMES--- 1
NUMBER OF LOAD CONDITIONS 1
TYPE OF ANALYSIS--------- 0

EQ.0-STATIC LOADS ONLY
EQ.1-MODE SHAPES AND FREQUENCIES ONLY
EQ.2-STATIC AND MODE SHAPE ANALYSES
EQ.3-TYPE 2 AND RESPONSE SPECTRUM ANAL
EQ.4-TYPE 2 AND TIME HISTORY ANAL (INDIVIDUAL MEMBER RESPONSE ENVELOPES ONLY)
EQ.5-THIS OPTION IS NOT AVAILABLE FOR USE
EQ.6-RESPONSE SPECTRUM ANAL (GROSS BUILDING RESPONSE)
EQ.7-TYPE 3 AND 6 ANALYSES
EQ.8-TIME HISTORY ANAL (GROSS BUILDING RESPONSE/ENVELOPES OR STEP-BY-STEP RESPONSE)
EQ.9-TYPE 4 AND 8 ANALYSES
EQ.10-SLAM RESTART
EQ.11-SLAM-2 RESTART
EQ.-1,-6,-8 SAME AS 1,6,8 ABOVE EXCEPT APPROXIMATE PERIODS AND MODES USED

NUMBER OF FREQUENCIES---- 0
STORY TRANSLATION CODE--- 1
LAT FORCE GENERATION CODE 0 0
STRESS CHECK KEY--------- 0
DATA CHECK KEY----------- 0
TYPE OF SOLUTION--------- 1
MAXIMUM NO. OF CYCLES---- 5
CONVERGENCE TOLERENCE OF EQUILIBRIUM .001000

STORY DATA

LEVEL NO.	ID	HEIGHT	MASS(M)	MR**2	X(M)	Y(M)	K-X	K-Y
2	TOP	60.00	.00	.00	.00	.00	.00	.00
1	MID	60.00	.00	.00	.00	.00	.00	.00

CUMULATIVE STORY DATA

LEVEL NO.	ID	HEIGHT	MASS(M)	MR**2
2	TOP	120.00	.00	.00
1	MID	60.00	.00	.00

STRUCTURE LATERAL LOADS...CASES A AND B

LEVEL NO.	FX-A	FY-A	MOM-A	FX-B	FY-B	MOM-B	XA	YA	XB	YB
2	3.50	.00	.00	.00	.00	.00	.0	.0	.0	.0
1	.00	.00	.00	.00	.00	.00	.0	.0	.0	.0

STORY SHEARS

NOTE THAT THE FORCE QUANTITIES BELOW DO NOT INCLUDE P-DELTA EFFECTS.

OUTPUT COLUMN 1 CONTAINS RESULTS FROM STATIC LATERAL LOAD CASE A
OUTPUT COLUMN 2 CONTAINS RESULTS FROM STATIC LATERAL LOAD CASE B

LEVEL	ID	DIRN	1	2
2	TOP	X	3.5000	.0000
2	TOP	Y	.0000	.0000
2	TOP	ROTN	.0000	.0000
1	MID	X	3.5000	.0000
1	MID	Y	.0000	.0000
1	MID	ROTN	.0000	.0000

STORY OVERTURNING MOMENTS

NOTE THAT THE FORCE QUANTITIES BELOW DO NOT INCLUDE P-DELTA EFFECTS.

OUTPUT COLUMN 1 CONTAINS RESULTS FROM STATIC LATERAL LOAD CASE A
OUTPUT COLUMN 2 CONTAINS RESULTS FROM STATIC LATERAL LOAD CASE B

LEVEL	ID	DIRN	1	2
2	TOP	X	210.0000	.0000
2	TOP	Y	.0000	.0000
2	TOP	ROTN	.0000	.0000
1	MID	X	420.0000	.0000
1	MID	Y	.0000	.0000
1	MID	ROTN	.0000	.0000

TWO-STORY FRAME

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

COLUMN LINE COORDINATES

LINE	X	Y
1	.00	.00
2	120.00	.00

COLUMN ID	E	A	MAJ SA	MIN SA	TORS I	MAJ I	MIN I	RIGID TOP	RIGID BOT
1	30000.00	11.77	.00	.00	.00	310.10	.00	.00	.00

BEAM ID	E	SA	TORS I	FLEX I	KII	KJJ	KIJ	RIGID I	RIGID J
1	30000.00	.00	.00	310.10	4.00	4.00	2.00	.00	.00
2	.10	.00	.00	.10	4.00	4.00	2.00	.00	.00

FEF ID	CODE	ML	VL	MR	VR	W
1	1	.000	3500.000	.000	3500.000	.000

BEAM LOCATIONS

/ BAY	LEV	IC	JC	BID	GEN	VL1	VL2	VL3
1	2	1	2	1	0	1	0	0
1	1	1	2	2	0	0	0	0

GENERATED BEAM LOCATIONS

DSTORY 1

2	1
1	2

GENERATED BEAM LOADS...LOAD CASE I

DSTORY 1

2	1
1	0

GENERATED BEAM LOADS...LOAD CASE II

DSTORY 1

2	0
1	0

GENERATED BEAM LOADS...LOAD CASE III

DSTORY 1

2	0
1	0

COLUMN LOCATIONS

0 LINE	LEV	CID	KCOL	GEN
1	2	1	2	1
2	2	1	1	1

GENERATED COLUMN LOCATIONS

DSTORY	1	2
2	1	1
1	1	1

BEAM PROPERTIES AND LOADS

BAY NUMBERS 1

LEVEL	E	SA	TORS I	FLEX I	KII	KJJ	KIJ	WI	WJ	VERT1	VERT2	VERT3
2	30000.00	.00	.00	310.10	4.00	4.00	2.00	.00	.00	1	0	0
1	.10	.00	.00	.10	4.00	4.00	2.00	.00	.00	0	0	0

COLUMN PROPERTIES

COLUMN LINE NO. 1

LEVEL	E	A	MAJ SA	MIN SA	TORS I	MAJ I	MIN I	DT	DB
2	30000.00	11.77	.00	.00	.00	310.10	.00	.00	.00
1	30000.00	11.77	.00	.00	.00	310.10	.00	.00	.00

COLUMN LINE NO. 2

LEVEL	E	A	MAJ SA	MIN SA	TORS I	MAJ I	MIN I	DT	DB
2	30000.00	11.77	.00	.00	.00	310.10	.00	.00	.00
1	30000.00	11.77	.00	.00	.00	310.10	.00	.00	.00

0...FRAME TYPE 1 ...

TIME REQUIRED TO FORM STIFFNESS = 2.04

1FRAME POSITION DATA

FRAME	ID	FORCE CODE	X1	Y1	ANG	
1	1	0	.00	.00	.00	TWO-STORY FRAME

LOAD CONDITION DEFINITION CARDS

0LOAD	I	II	III	A	B	SPECTRUM-1	SPECTRUM-2	SPECTRUM-3	SPECTRUM-4	TIME HIST
1	1.00	.00	.00	1.00	.00	.00	.00	.00	.00	.00

SPECTRUM-1... ROOT MEAN SQUARE COMBINATION

SPECTRUM-2... SUM OF ABSOLUTE VALUES

SPECTRUM-3... DOUBLE SUM COMBINATION

SPECTRUM-4... COMPLETE QUADRATIC COMBINATION

FRAME DISPLACEMENT

LEVEL		
2	X	.1496361
2	Y	.0000000
2	ROTN	.0000000
1	X	.0619621
1	Y	.0000000
1	ROTN	.0000000

MEMBER FORCES ..... FRAME ID TWO-STORY FRAME FRAME TYPE 1
LEVEL NO 1 LEVEL ID MID

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	-74.5190010	396.5340987	-3494.3788472	1.7571028
2	1	74.5204327	-396.3800195	-3505.6211528	-1.7428972

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-.0000009	-.0000008

MEMBER FORCES ..... FRAME ID TWO-STORY FRAME FRAME TYPE 1
LEVEL NO 2 LEVEL ID TOP

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	337.2810653	74.5190019	-3494.3788472	1.7583986
2	1	-337.2572516	-74.5204336	-3505.6211528	-1.7416014

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-337.2810653	-337.2572516

CONVERGE IN ITERATION NO. 3

TOTAL TIME 7.41 SEC.

ตัวอย่าง 2 : โครงข้อแข็งพอร์ทอล

กรณีแรง P = 4000 หน่วย

```
    2    1    1    1    0    0    1 00001    5     0.001 TBE4811.INP
TOP             60.0
      4.0        0.0        0.0        0.0
MID             60.0

    1    2    2    1    1    2    1                          TWO-STORY FRAME
    1       0.0       0.0
    2     120.0       0.0
    1          30000.0     11.77  0.0  0.0               310.1        0.0  0.0  0.0
    1          30000.0                    310.1  4.0  4.0  2.0
    2              0.1                      0.1  4.0  4.0  2.0
    1    1              4000.0              4000.0
    1    1    2    1    0    1
    1    1    2    2    0
    1    1    2    1
    2    1    1    1
    1    0          0.0        0.0        0.0 TWO-STORY FRAME
      1.0           0.0        0.0        1.0        0.0  0.0  0.0  0.0  0.0  0.0
    0
```

PROGRAM CU-NTABS
INPUT FILE : tse4s11.inp
OUTPUT FILE : tse4s11g.out

TSE4S11.INP
TOTAL NUMBER OF STORIES-- 2
NUMBER OF DIFF. FRAMES--- 1
TOTAL NUMBER OF FRAMES--- 1
NUMBER OF LOAD CONDITIONS 1
TYPE OF ANALYSIS--------- 0

EQ.0-STATIC LOADS ONLY
EQ.1-MODE SHAPES AND FREQUENCIES ONLY
EQ.2-STATIC AND MODE SHAPE ANALYSES
EQ.3-TYPE 2 AND RESPONSE SPECTRUM ANAL
EQ.4-TYPE 2 AND TIME HISTORY ANAL (INDIVIDUAL MEMBER RESPONSE ENVELOPES ONLY)
EQ.5-THIS OPTION IS NOT AVAILABLE FOR USE
EQ.6-RESPONSE SPECTRUM ANAL (GROSS BUILDING RESPONSE)
EQ.7-TYPE 3 AND 6 ANALYSES
EQ.8-TIME HISTORY ANAL (GROSS BUILDING RESPONSE/ENVELOPES OR STEP-BY-STEP RESPONSE)
EQ.9-TYPE 4 AND 8 ANALYSES
EQ.10-SLAM RESTART
EQ.11-SLAM-2 RESTART
EQ.-1,-6,-8 SAME AS 1,6,8 ABOVE EXCEPT APPROXIMATE PERIODS AND MODES USED

NUMBER OF FREQUENCIES---- 0
STORY TRANSLATION CODE--- 1
LAT FORCE GENERATION CODE 0 0
STRESS CHECK KEY--------- 0
DATA CHECK KEY----------- 0
TYPE OF SOLUTION--------- 1
MAXIMUM NO. OF CYCLES---- 5
CONVERGENCE TOLERENCE OF EQUILIBRIUM .001000

STORY DATA

LEVEL NO.	ID	HEIGHT	MASS(M)	MR**2	X(M)	Y(M)	K-X	K-Y
2	TOP	60.00	.00	.00	.00	.00	.00	.00
1	MID	60.00	.00	.00	.00	.00	.00	.00

CUMULATIVE STORY DATA

LEVEL NO.	ID	HEIGHT	MASS(M)	MR**2
2	TOP	120.00	.00	.00
1	MID	60.00	.00	.00

STRUCTURE LATERAL LOADS...CASES A AND B

LEVEL NO.	FX-A	FY-A	MOM-A	FX-B	FY-B	MOM-B	XA	YA	XB	YB
2	4.00	.00	.00	.00	.00	.00	.0	.0	.0	.0
1	.00	.00	.00	.00	.00	.00	.0	.0	.0	.0

STORY SHEARS

NOTE THAT THE FORCE QUANTITIES BELOW DO NOT INCLUDE P-DELTA EFFECTS.

OUTPUT COLUMN 1 CONTAINS RESULTS FROM STATIC LATERAL LOAD CASE A
OUTPUT COLUMN 2 CONTAINS RESULTS FROM STATIC LATERAL LOAD CASE B

LEVEL	ID	DIRN	1	2
2	TOP	X	4.0000	.0000
2	TOP	Y	.0000	.0000
2	TOP	ROTN	.0000	.0000
1	MID	X	4.0000	.0000
1	MID	Y	.0000	.0000
1	MID	ROTN	.0000	.0000

STORY OVERTURNING MOMENTS

NOTE THAT THE FORCE QUANTITIES BELOW DO NOT INCLUDE P-DELTA EFFECTS.

OUTPUT COLUMN 1 CONTAINS RESULTS FROM STATIC LATERAL LOAD CASE A
OUTPUT COLUMN 2 CONTAINS RESULTS FROM STATIC LATERAL LOAD CASE B

LEVEL	ID	DIRN	1	2
2	TOP	X	240.0000	.0000
2	TOP	Y	.0000	.0000
2	TOP	ROTN	.0000	.0000
1	MID	X	480.0000	.0000
1	MID	Y	.0000	.0000
1	MID	ROTN	.0000	.0000

TWO-STORY FRAME

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

COLUMN LINE COORDINATES

LINE	X	Y
1	.00	.00
2	120.00	.00

COLUMN ID	E	A	MAJ SA	MIN SA	TORS I	MAJ I	MIN I	RIGID TOP	RIGID BOT
1	30000.00	11.77	.00	.00	.00	310.10	.00	.00	.00

BEAM ID	E	SA	TORS I	FLEX I	KII	KJJ	KIJ	RIGID I	RIGID J
1	30000.00	.00	.00	310.10	4.00	4.00	2.00	.00	.00
2	.10	.00	.00	.10	4.00	4.00	2.00	.00	.00

FEF ID	CODE	ML	VL	MR	VR	W
1	1	.000	4000.000	.000	4000.000	.000

BEAM LOCATIONS

/ BAY	LEV	IC	JC	BID	GEN	VL1	VL2	VL3
1	2	1	2	1	0	1	0	0
1	1	1	2	2	0	0	0	0

GENERATED BEAM LOCATIONS

OSTORY 1

2	1
1	2

GENERATED BEAM LOADS...LOAD CASE I

OSTORY 1

2	1
1	0

GENERATED BEAM LOADS...LOAD CASE II

OSTORY 1

2	0
1	0

GENERATED BEAM LOADS...LOAD CASE III

OSTORY 1

2	0
1	0

COLUMN LOCATIONS

O LINE	LEV	CID	KCOL	GEN
1	2	1	2	1
2	2	1	1	1

GENERATED COLUMN LOCATIONS

OSTORY	1	2
2	1	1
1	1	1

BEAM PROPERTIES AND LOADS

BAY NUMBERS 1

LEVEL	E	SA	TORS I	FLEX I	KII	KJJ	KIJ	WI	WJ	VERT1	VERT2	VERT3
2	30000.00	.00	.00	310.10	4.00	4.00	2.00	.00	.00	1	0	0
1	.10	.00	.00	.10	4.00	4.00	2.00	.00	.00	0	0	0

COLUMN PROPERTIES

COLUMN LINE NO. 1

LEVEL	E	A	MAJ SA	MIN SA	TORS I	MAJ I	MIN I	DT	DB
2	30000.00	11.77	.00	.00	.00	310.10	.00	.00	.00
1	30000.00	11.77	.00	.00	.00	310.10	.00	.00	.00

COLUMN LINE NO. 2

LEVEL	E	A	MAJ SA	MIN SA	TORS I	MAJ I	MIN I	DT	DB
2	30000.00	11.77	.00	.00	.00	310.10	.00	.00	.00
1	30000.00	11.77	.00	.00	.00	310.10	.00	.00	.00

O...FRAME TYPE 1 ...

TIME REQUIRED TO FORM STIFFNESS = 1.93

1FRAME POSITION DATA

FRAME	ID	FORCE CODE	X1	Y1	ANG	
1	1	0	.00	.00	.00	TWO-STORY FRAME

LOAD CONDITION DEFINITION CARDS

0LOAD	I	II	III	A	B	SPECTRUM-1	SPECTRUM-2	SPECTRUM-3	SPECTRUM-4	TIME HIST
1	1.00	.00	.00	1.00	.00	.00	.00	.00	.00	.00

SPECTRUM-1... ROOT MEAN SQUARE COMBINATION

SPECTRUM-2... SUM OF ABSOLUTE VALUES

SPECTRUM-3... DOUBLE SUM COMBINATION

SPECTRUM-4... COMPLETE QUADRATIC COMBINATION

FRAME DISPLACEMENT

LEVEL		
2	X	.2877336
2	Y	.0000000
2	ROTN	.0000000
1	X	.1187397
1	Y	.0000000
1	ROTN	.0000000

MEMBER FORCES ...... FRAME ID TWO-STORY FRAME   FRAME TYPE 1
LEVEL NO 1   LEVEL ID MID

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	-148.3877376	743.6357200	-3989.2069238	2.0261783
2	1	148.3940293	-743.0637533	-4010.7930762	-1.9738217

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-.0000016	-.0000016

MEMBER FORCES ...... FRAME ID TWO-STORY FRAME   FRAME TYPE 1
LEVEL NO 2   LEVEL ID TOP

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	647.6293666	148.3877392	-3989.2069238	2.0310936
2	1	-647.5397745	-148.3940310	-4010.7930762	-1.9689064

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-647.6293666	-647.5397745

CONVERGE IN ITERATION NO. 3

TOTAL TIME 7.31 SEC.

ตัวอย่าง 2 : โครงข้อแข็งพอร์ทอล

กรณีแรง P = 4200 หน่วย

```
  2    1    1    1    0    0    1 00001   5      0.001 T8E4816.INP
TOP              60.0
    4.2          0.0         0.0         0.0
MID              60.0

  1    2    2    1    1    2    1                      TWO-STORY FRAME
  1       0.0          0.0
  2     120.0          0.0
  1          30000.0       11.77  0.0  0.0             310.1        0.0  0.0  0.0
  1          30000.0                        310.1  4.0  4.0  2.0
  2              0.1                          0.1  4.0  4.0  2.0
  1    1                4200.0                 4200.0
  1    1    2    1    0    1
  1    1    2    2    0
  1    1    2    1
  2    1    1    1
  1    0         0.0         0.0         0.0 TWO-STORY FRAME
     1.0         0.0         0.0         1.0        0.0  0.0  0.0  0.0  0.0  0.0
  0
```

```
PROGRAM  CU-NTABS
INPUT  FILE :  tse4s16.inp
OUTPUT FILE :  tse4s16g.out

TSE4S16.INP
TOTAL NUMBER OF STORIES--    2
NUMBER OF DIFF. FRAMES---    1
TOTAL NUMBER OF FRAMES---    1
NUMBER OF LOAD CONDITIONS    1
TYPE OF ANALYSIS---------    0

  EQ.0-STATIC LOADS ONLY
  EQ.1-MODE SHAPES AND FREQUENCIES ONLY
  EQ.2-STATIC AND MODE SHAPE ANALYSES
  EQ.3-TYPE 2 AND RESPONSE SPECTRUM ANAL
  EQ.4-TYPE 2 AND TIME HISTORY ANAL (INDIVIDUAL MEMBER RESPONSE ENVELOPES ONLY)
  EQ.5-THIS OPTION IS NOT AVAILABLE FOR USE
  EQ.6-RESPONSE SPECTRUM ANAL (GROSS BUILDING RESPONSE)
  EQ.7-TYPE 3 AND 6 ANALYSES
  EQ.8-TIME HISTORY ANAL (GROSS BUILDING RESPONSE/ENVELOPES OR STEP-BY-STEP RESPONSE)
  EQ.9-TYPE 4 AND 8 ANALYSES
  EQ.10-SLAM RESTART
  EQ.11-SLAM-2 RESTART
  EQ.-1,-6,-8 SAME AS 1,6,8 ABOVE EXCEPT APPROXIMATE PERIODS AND MODES USED

NUMBER OF FREQUENCIES----    0
STORY TRANSLATION CODE---    1
LAT FORCE GENERATION CODE 0 0
STRESS CHECK KEY---------    0
DATA CHECK KEY-----------    0
TYPE OF SOLUTION---------    1
MAXIMUM NO. OF CYCLES----    5
CONVERGENCE TOLERENCE OF EQUILIBRIUM      .001000
```

STORY DATA

LEVEL NO.	ID	HEIGHT	MASS(M)	MR**2	X(M)	Y(M)	K-X	K-Y
2	TOP	60.00	.00	.00	.00	.00	.00	.00
1	MID	60.00	.00	.00	.00	.00	.00	.00

CUMULATIVE STORY DATA

LEVEL NO.	ID	HEIGHT	MASS(M)	MR**2
2	TOP	120.00	.00	.00
1	MID	60.00	.00	.00

STRUCTURE LATERAL LOADS...CASES A AND B

LEVEL NO.	FX-A	FY-A	MOM-A	FX-B	FY-B	MOM-B	XA	YA	XB	YB
2	4.20	.00	.00	.00	.00	.00	.0	.0	.0	.0
1	.00	.00	.00	.00	.00	.00	.0	.0	.0	.0

STORY SHEARS

NOTE THAT THE FORCE QUANTITIES BELOW DO NOT INCLUDE P-DELTA EFFECTS.

OUTPUT COLUMN 1 CONTAINS RESULTS FROM STATIC LATERAL LOAD CASE A
OUTPUT COLUMN 2 CONTAINS RESULTS FROM STATIC LATERAL LOAD CASE B

LEVEL	ID	DIRN	1	2
2	TOP	X	4.2000	.0000
2	TOP	Y	.0000	.0000
2	TOP	ROTN	.0000	.0000
1	MID	X	4.2000	.0000
1	MID	Y	.0000	.0000
1	MID	ROTN	.0000	.0000

STORY OVERTURNING MOMENTS

NOTE THAT THE FORCE QUANTITIES BELOW DO NOT INCLUDE P-DELTA EFFECTS.

OUTPUT COLUMN 1 CONTAINS RESULTS FROM STATIC LATERAL LOAD CASE A
OUTPUT COLUMN 2 CONTAINS RESULTS FROM STATIC LATERAL LOAD CASE B

LEVEL	ID	DIRN	1	2
2	TOP	X	252.0000	.0000
2	TOP	Y	.0000	.0000
2	TOP	ROTN	.0000	.0000
1	MID	X	504.0000	.0000
1	MID	Y	.0000	.0000
1	MID	ROTN	.0000	.0000

TWO-STORY FRAME

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

COLUMN LINE COORDINATES

LINE	X	Y
1	.00	.00
2	120.00	.00

COLUMN ID	E	A	MAJ SA	MIN SA	TORS I	MAJ I	MIN I	RIGID TOP	RIGID BOT
1	30000.00	11.77	.00	.00	.00	310.10	.00	.00	.00

BEAM ID	E	SA	TORS I	FLEX I	KII	KJJ	KIJ	RIGID I	RIGID J
1	30000.00	.00	.00	310.10	4.00	4.00	2.00	.00	.00
2	.10	.00	.00	.10	4.00	4.00	2.00	.00	.00

FEF ID	CODE	ML	VL	MR	VR	W
1	1	.000	4200.000	.000	4200.000	.000

BEAM LOCATIONS

/ BAY	LEV	IC	JC	BID	GEN	VL1	VL2	VL3
1	2	1	2	1	0	1	0	0
1	1	1	2	2	0	0	0	0

GENERATED BEAM LOCATIONS

0STORY 1

2	1
1	2

GENERATED BEAM LOADS...LOAD CASE I

0STORY 1

2	1
1	0

GENERATED BEAM LOADS...LOAD CASE II

0STORY 1

2	0
1	0

GENERATED BEAM LOADS...LOAD CASE III

0STORY 1

2	0
1	0

COLUMN LOCATIONS

0 LINE	LEV	CID	KCOL	GEN
1	2	1	2	1
2	2	1	1	1

GENERATED COLUMN LOCATIONS

0STORY	1	2
2	1	1
1	1	1

BEAM PROPERTIES AND LOADS

BAY NUMBERS 1

LEVEL	E	SA	TORS I	FLEX I	KII	KJJ	KIJ	WI	WJ	VERT1	VERT2	VERT3
2	30000.00	.00	.00	310.10	4.00	4.00	2.00	.00	.00	1	0	0
1	.10	.00	.00	.10	4.00	4.00	2.00	.00	.00	0	0	0

COLUMN PROPERTIES

COLUMN LINE NO. 1

LEVEL	E	A	MAJ SA	MIN SA	TORS I	MAJ I	MIN I	DT	DB
2	30000.00	11.77	.00	.00	.00	310.10	.00	.00	.00
1	30000.00	11.77	.00	.00	.00	310.10	.00	.00	.00

COLUMN LINE NO. 2

LEVEL	E	A	MAJ SA	MIN SA	TORS I	MAJ I	MIN I	DT	DB
2	30000.00	11.77	.00	.00	.00	310.10	.00	.00	.00
1	30000.00	11.77	.00	.00	.00	310.10	.00	.00	.00

0...FRAME TYPE 1 ...

TIME REQUIRED TO FORM STIFFNESS = 1.97

1FRAME POSITION DATA

FRAME	ID	FORCE CODE	X1	Y1	ANG	
1	1	0	.00	.00	.00	TWO-STORY FRAME

LOAD CONDITION DEFINITION CARDS

DLOAD	I	II	III	A	B	SPECTRUM-1	SPECTRUM-2	SPECTRUM-3	SPECTRUM-4	TIME HIST
1	1.00	.00	.00	1.00	.00	.00	.00	.00	.00	.00

SPECTRUM-1... ROOT MEAN SQUARE COMBINATION

SPECTRUM-2... SUM OF ABSOLUTE VALUES

SPECTRUM-3... DOUBLE SUM COMBINATION

SPECTRUM-4... COMPLETE QUADRATIC COMBINATION

FRAME DISPLACEMENT

LEVEL		
2	X	.4157481
2	Y	.0000000
2	ROTN	.0000000
1	X	.1713002
1	Y	.0000000
1	ROTN	.0000000

MEMBER FORCES ..... FRAME ID TWO-STORY FRAME　　FRAME TYPE 1
LEVEL NO 1　　LEVEL ID MID

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	-217.4718493	1063.5377749	-4184.4132924	2.1546839
2	1	217.4858104	-1062.3416814	-4215.5867076	-2.0454161

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-.0000024	-.0000024

MEMBER FORCES ..... FRAME ID TWO-STORY FRAME　　FRAME TYPE 1
LEVEL NO 2　　LEVEL ID TOP

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	935.2966069	217.4718517	-4184.4132924	2.1649551
2	1	-935.1083059	-217.4858128	-4215.5867076	-2.0350449

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-935.2966069	-935.1083059

CONVERGE IN ITERATION NO. 3

TOTAL TIME 6.98 SEC.

ตัวอย่าง 3 : โครงข้อแข็ง 4 ชั้น

กรณีแรง P = 100,000 ปอนด์

```
   4    1    1    1    0    0    1 00001   5     0.001 TBE8801.INP
FOUR          144.0
    16.7
THRE          144.0

 TWO          144.0

 ONE          144.0

   1    4    2    1    1    2    1             FOUR-STORY FRAME
   1      0.0        0.0
   2    360.0        0.0
   1       30000.0     17.66  0.0  0.0                343.7      0.0  0.0  0.0
   1       30000.0                      889.9  4.0  4.0  2.0
   2       30000.0                      984.0  4.0  4.0  2.0
   1    1               100.0                100.0
   1    1    2    1    1    1
   1    1    2    2    1    1
   1    1    2    3
   2    1    1    3
   1    0       0.0         0.0        0.0 FOUR-STORY FRAME
     1.0        0.0         0.0        1.0        0.0  0.0  0.0  0.0  0.0  0.0
   0
```

PROGRAM CU-NTABS
INPUT FILE : tse9s01.inp
OUTPUT FILE : tse8s01g.out

TSE8S01.INP
TOTAL NUMBER OF STORIES-- 4
NUMBER OF DIFF. FRAMES--- 1
TOTAL NUMBER OF FRAMES--- 1
NUMBER OF LOAD CONDITIONS 1
TYPE OF ANALYSIS---------- 0

EQ.0-STATIC LOADS ONLY
EQ.1-MODE SHAPES AND FREQUENCIES ONLY
EQ.2-STATIC AND MODE SHAPE ANALYSES
EQ.3-TYPE 2 AND RESPONSE SPECTRUM ANAL
EQ.4-TYPE 2 AND TIME HISTORY ANAL (INDIVIDUAL MEMBER RESPONSE ENVELOPES ONLY)
EQ.5-THIS OPTION IS NOT AVAILABLE FOR USE
EQ.6-RESPONSE SPECTRUM ANAL (GROSS BUILDING RESPONSE)
EQ.7-TYPE 3 AND 6 ANALYSES
EQ.8-TIME HISTORY ANAL (GROSS BUILDING RESPONSE/ENVELOPES OR STEP-BY-STEP RESPONSE)
EQ.9-TYPE 4 AND 8 ANALYSES
EQ.10-SLAM RESTART
EQ.11-SLAM-2 RESTART
EQ.-1,-6,-8 SAME AS 1,6,8 ABOVE EXCEPT APPROXIMATE PERIODS AND MODES USED

NUMBER OF FREQUENCIES---- 0
STORY TRANSLATION CODE--- 1
LAT FORCE GENERATION CODE 0 0
STRESS CHECK KEY--------- 0
DATA CHECK KEY----------- 0
TYPE OF SOLUTION--------- 1
MAXIMUM NO. OF CYCLES---- 5
CONVERGENCE TOLERENCE OF EQUILIBRIUM .001000

STORY DATA

LEVEL NO.	ID	HEIGHT	MASS(M)	MR**2	X(M)	Y(M)	K-X	K-Y
4	FOUR	144.00	10.19	.00	.00	.00	.00	.00
3	THRE	144.00	10.19	.00	.00	.00	.00	.00
2	TWO	144.00	10.19	.00	.00	.00	.00	.00
1	ONE	144.00	10.19	.00	.00	.00	.00	.00

CUMULATIVE STORY DATA

LEVEL NO.	ID	HEIGHT	MASS(M)	MR**2
4	FOUR	576.00	10.19	.00
3	THRE	432.00	20.38	.00
2	TWO	288.00	30.57	.00
1	ONE	144.00	40.76	.00

STRUCTURE LATERAL LOADS...CASES A AND B

LEVEL NO.	FX-A	FY-A	MOM-A	FX-B	FY-B	MOM-B	XA	YA	XB	YB
4	16.70	.00	.00	.00	.00	.00	.0	.0	.0	.0
3	.00	.00	.00	.00	.00	.00	.0	.0	.0	.0
2	.00	.00	.00	.00	.00	.00	.0	.0	.0	.0
1	.00	.00	.00	.00	.00	.00	.0	.0	.0	.0

STORY SHEARS

NOTE THAT THE FORCE QUANTITIES BELOW DO NOT INCLUDE P-DELTA EFFECTS.

OUTPUT COLUMN 1 CONTAINS RESULTS FROM STATIC LATERAL LOAD CASE A
OUTPUT COLUMN 2 CONTAINS RESULTS FROM STATIC LATERAL LOAD CASE B

LEVEL	ID	DIRN	1	2
4	FOUR	X	16.7000	.0000
4	FOUR	Y	.0000	.0000
4	FOUR	ROTN	.0000	.0000
3	THRE	X	16.7000	.0000
3	THRE	Y	.0000	.0000
3	THRE	ROTN	.0000	.0000
2	TWO	X	16.7000	.0000
2	TWO	Y	.0000	.0000
2	TWO	ROTN	.0000	.0000
1	ONE	X	16.7000	.0000
1	ONE	Y	.0000	.0000
1	ONE	ROTN	.0000	.0000

STORY OVERTURNING MOMENTS

NOTE THAT THE FORCE QUANTITIES BELOW DO NOT INCLUDE P-DELTA EFFECTS.

OUTPUT COLUMN 1 CONTAINS RESULTS FROM STATIC LATERAL LOAD CASE A
OUTPUT COLUMN 2 CONTAINS RESULTS FROM STATIC LATERAL LOAD CASE B

LEVEL	ID	DIRN	1	2
4	FOUR	X	2404.8000	.0000
4	FOUR	Y	.0000	.0000
4	FOUR	ROTN	.0000	.0000
3	THRE	X	4809.6000	.0000
3	THRE	Y	.0000	.0000
3	THRE	ROTN	.0000	.0000
2	TWO	X	7214.4000	.0000
2	TWO	Y	.0000	.0000
2	TWO	ROTN	.0000	.0000
1	ONE	X	9619.2000	.0000
1	ONE	Y	.0000	.0000
1	ONE	ROTN	.0000	.0000

FOUR-STORY FRAME

FRAME ID NUMBER-----------	1
NUMBER OF STORY LEVELS----	4
NUMBER OF COLUMN LINES----	2
NUMBER OF BAYS------------	1
NUMBER OF DIFF. COL. PROP-	1
NUMBER OF DIFF. BEAM PROP-	2
NUMBER OF DIFF. FEF-------	1
NUMBER OF PANEL ELEMENTS--	0
NUMBER OF BRACING ELEMENTS	0

COLUMN LINE COORDINATES

LINE X Y

1	.00	.00
2	360.00	.00

COLUMN ID	E	A	MAJ SA	MIN SA	TORS I	MAJ I	MIN I	RIGID TOP	RIGID BOT
1	30000.00	17.66	.00	.00	.00	343.70	.00	.00	.00

BEAM ID	E	SA	TORS I	FLEX I	KII	KJJ	KIJ	RIGID I	RIGID J
1	30000.00	.00	.00	889.90	4.00	4.00	2.00	.00	.00
2	30000.00	.00	.00	984.00	4.00	4.00	2.00	.00	.00

FEF ID	CODE	ML	VL	MR	VR	W
1	1	.000	100.000	.000	100.000	.000

BEAM LOCATIONS

/ BAY	LEV	IC	JC	BID	GEN	VL1	VL2	VL3
1	4	1	2	1	1	1	0	0
1	2	1	2	2	1	1	0	0

GENERATED BEAM LOCATIONS

0STORY 1

4	1
3	1
2	2
1	2

GENERATED BEAM LOADS...LOAD CASE I

0STORY 1

4	1
3	1
2	1
1	1

GENERATED BEAM LOADS...LOAD CASE II

0STORY 1

4	0
3	0
2	0
1	0

GENERATED BEAM LOADS...LOAD CASE III

0STORY 1

4	0
3	0
2	0
1	0

COLUMN LOCATIONS

0 LINE	LEV	CID	KCOL	GEN
1	4	1	2	3
2	4	1	1	3

GENERATED COLUMN LOCATIONS

0STORY	1	2
4	1	1
3	1	1
2	1	1
1	1	1

BEAM PROPERTIES AND LOADS

BAY NUMBERS 1

LEVEL	E	BA	TORS I	FLEX I	KII	KJJ	KIJ	WI	WJ	VERT1	VERT2	VERT3
4	30000.00	.00	.00	889.90	4.00	4.00	2.00	.00	.00	1	0	0
3	30000.00	.00	.00	889.90	4.00	4.00	2.00	.00	.00	1	0	0
2	30000.00	.00	.00	984.00	4.00	4.00	2.00	.00	.00	1	0	0
1	30000.00	.00	.00	984.00	4.00	4.00	2.00	.00	.00	1	0	0

COLUMN PROPERTIES

COLUMN LINE NO 1

LEVEL	E	A	MAJ SA	MIN SA	TORS I	MAJ I	MIN I	DT	DB
4	30000.00	17.66	.00	.00	.00	343.70	.00	.00	.00
3	30000.00	17.66	.00	.00	.00	343.70	.00	.00	.00
2	30000.00	17.66	.00	.00	.00	343.70	.00	.00	.00
1	30000.00	17.66	.00	.00	.00	343.70	.00	.00	.00

COLUMN LINE NO 2

LEVEL	E	A	MAJ SA	MIN SA	TORS I	MAJ I	MIN I	DT	DB
4	30000.00	17.66	.00	.00	.00	343.70	.00	.00	.00
3	30000.00	17.66	.00	.00	.00	343.70	.00	.00	.00
2	30000.00	17.66	.00	.00	.00	343.70	.00	.00	.00
1	30000.00	17.66	.00	.00	.00	343.70	.00	.00	.00

0...FRAME TYPE 1 ...

TIME REQUIRED TO FORM STIFFNESS = 3.79

1FRAME POSITION DATA

FRAME	ID	FORCE CODE	X1	Y1	ANG	
1	1	0	.00	.00	.00	FOUR-STORY FRAM

LOAD CONDITION DEFINITION CARDS

0LOAD	I	II	III	A	B	SPECTRUM-1	SPECTRUM-2	SPECTRUM-3	SPECTRUM-4	TIME HIST
1	1.00	.00	.00	1.00	.00	.00	.00	.00	.00	.00

SPECTRUM-1... ROOT MEAN SQUARE COMBINATION

SPECTRUM-2... SUM OF ABSOLUTE VALUES

SPECTRUM-3... DOUBLE SUM COMBINATION

SPECTRUM-4... COMPLETE QUADRATIC COMBINATION

FRAME DISPLACEMENT

LEVEL		
4	X	2.1933002
4	Y	.0000000
4	ROTN	.0000000
3	X	1.6595535
3	Y	.0000000

3	ROTN	.0000000
2	X	1.0327302
2	Y	.0000000
2	ROTN	.0000000
1	X	.4146378
1	Y	.0000000
1	ROTN	.0000000

MEMBER FORCES ..... FRAME ID FOUR-STORY FRAM   FRAME TYPE 1
LEVEL NO 1   LEVEL ID ONE

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	514.8054844	854.4935810	-375.0754134	8.4290179
2	1	-515.3118357	-851.8995964	-424.9245866	-8.2709821

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-1226.6879010	-1226.5991549

MEMBER FORCES ..... FRAME ID FOUR-STORY FRAM   FRAME TYPE 1
LEVEL NO 2   LEVEL ID TWO

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	676.3619581	711.8824166	-281.8900996	8.4306268
2	1	-676.1235145	-711.2875192	-318.1099004	-8.2693732

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-1341.1596136	-1340.9133238

MEMBER FORCES ..... FRAME ID FOUR-STORY FRAM   FRAME TYPE 1
LEVEL NO 3   LEVEL ID THRE

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	663.0518405	664.7975554	-189.3403020	8.3969894
2	1	-662.8901283	-664.7898093	-210.6596980	-8.3030106

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-1211.5182379	-1211.4658005

MEMBER FORCES ..... FRAME ID FOUR-STORY FRAM   FRAME TYPE 1
LEVEL NO 4   LEVEL ID FOUR

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	707.2929032	548.4643974	-96.0708076	8.3644433
2	1	-707.2163551	-548.5756722	-103.9291924	-8.3355567

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-707.2929032	-707.2163551

CONVERGE IN ITERATION NO. 3

TOTAL TIME 15.27 SEC.

ตัวอย่าง 3 : โครงข้อแข็ง 4 ชั้น

กรณีแรง P = 200,000 ปอนด์

```
    4    1    1    1    0    0    1 00001   5     0.001 TSE8802.INP
FOUR          144.0
   33.3
THRE          144.0

 TWO          144.0

 ONE          144.0

    1    4    2    1    1    2    1           FOUR-STORY FRAME
    1      0.0       0.0
    2    360.0       0.0
    1       30000.0     17.66  0.0  0.0            343.7      0.0  0.0  0.0
    1       30000.0                   889.9  4.0  4.0  2.0
    2       30000.0                   984.0  4.0  4.0  2.0
    1    1               200.0             200.0
    1    1    2    1    1    1
    1    1    2    2    1    1
    1    1    2    3
    2    1    1    3
    1    0       0.0       0.0       0.0 FOUR-STORY FRAME
      1.0       0.0       0.0       1.0       0.0  0.0  0.0  0.0  0.0  0.0
    0
```

PROGRAM CU-NTABS
INPUT FILE : tee8e02.inp
OUTPUT FILE : tee8e02g.out

TBE8802.INP
TOTAL NUMBER OF STORIES-- 4
NUMBER OF DIFF. FRAMES--- 1
TOTAL NUMBER OF FRAMES--- 1
NUMBER OF LOAD CONDITIONS 1
TYPE OF ANALYSIS--------- 0

EQ.0-STATIC LOADS ONLY
EQ.1-MODE SHAPES AND FREQUENCIES ONLY
EQ.2-STATIC AND MODE SHAPE ANALYSES
EQ.3-TYPE 2 AND RESPONSE SPECTRUM ANAL
EQ.4-TYPE 2 AND TIME HISTORY ANAL (INDIVIDUAL MEMBER RESPONSE ENVELOPES ONLY)
EQ.5-THIS OPTION IS NOT AVAILABLE FOR USE
EQ.6-RESPONSE SPECTRUM ANAL (GROSS BUILDING RESPONSE)
EQ.7-TYPE 3 AND 6 ANALYSES
EQ.8-TIME HISTORY ANAL (GROSS BUILDING RESPONSE/ENVELOPES OR STEP-BY-STEP RESPONSE)
EQ.9-TYPE 4 AND 8 ANALYSES
EQ.10-SLAM RESTART
EQ.11-SLAM-2 RESTART
EQ.-1,-6,-8 SAME AS 1,6,8 ABOVE EXCEPT APPROXIMATE PERIODS AND MODES USED

NUMBER OF FREQUENCIES---- 0
STORY TRANSLATION CODE--- 1
LAT FORCE GENERATION CODE 0 0
STRESS CHECK KEY--------- 0
DATA CHECK KEY----------- 0
TYPE OF SOLUTION--------- 1
MAXIMUM NO. OF CYCLES---- 5
CONVERGENCE TOLERENCE OF EQUILIBRIUM .001000

STORY DATA

LEVEL NO.	ID	HEIGHT	MASS(M)	MR**2	X(M)	Y(M)	K-X	K-Y
4	FOUR	144.00	10.19	.00	.00	.00	.00	.00
3	THRE	144.00	10.19	.00	.00	.00	.00	.00
2	TWO	144.00	10.19	.00	.00	.00	.00	.00
1	ONE	144.00	10.19	.00	.00	.00	.00	.00

CUMULATIVE STORY DATA

LEVEL NO.	ID	HEIGHT	MASS(M)	MR**2
4	FOUR	576.00	10.19	.00
3	THRE	432.00	20.38	.00
2	TWO	288.00	30.57	.00
1	ONE	144.00	40.76	.00

STRUCTURE LATERAL LOADS...CASES A AND B

LEVEL NO.	FX-A	FY-A	MOM-A	FX-B	FY-B	MOM-B	XA	YA	XB	YB
4	33.30	.00	.00	.00	.00	.00	.0	.0	.0	.0
3	.00	.00	.00	.00	.00	.00	.0	.0	.0	.0
2	.00	.00	.00	.00	.00	.00	.0	.0	.0	.0
1	.00	.00	.00	.00	.00	.00	.0	.0	.0	.0

STORY SHEARS

NOTE THAT THE FORCE QUANTITIES BELOW DO NOT INCLUDE P-DELTA EFFECTS.

OUTPUT COLUMN 1 CONTAINS RESULTS FROM STATIC LATERAL LOAD CASE A
OUTPUT COLUMN 2 CONTAINS RESULTS FROM STATIC LATERAL LOAD CASE B

LEVEL	ID	DIRN	1	2
4	FOUR	X	33.3000	.0000
4	FOUR	Y	.0000	.0000
4	FOUR	ROTN	.0000	.0000
3	THRE	X	33.3000	.0000
3	THRE	Y	.0000	.0000
3	THRE	ROTN	.0000	.0000
2	TWO	X	33.3000	.0000
2	TWO	Y	.0000	.0000
2	TWO	ROTN	.0000	.0000
1	ONE	X	33.3000	.0000
1	ONE	Y	.0000	.0000
1	ONE	ROTN	.0000	.0000

STORY OVERTURNING MOMENTS

NOTE THAT THE FORCE QUANTITIES BELOW DO NOT INCLUDE P-DELTA EFFECTS.

OUTPUT COLUMN 1 CONTAINS RESULTS FROM STATIC LATERAL LOAD CASE A
OUTPUT COLUMN 2 CONTAINS RESULTS FROM STATIC LATERAL LOAD CASE B

LEVEL	ID	DIRN	1	2
4	FOUR	X	4795.2000	.0000
4	FOUR	Y	.0000	.0000
4	FOUR	ROTN	.0000	.0000
3	THRE	X	9590.4000	.0000
3	THRE	Y	.0000	.0000
3	THRE	ROTN	.0000	.0000
2	TWO	X	14385.6000	.0000
2	TWO	Y	.0000	.0000
2	TWO	ROTN	.0000	.0000
1	ONE	X	19180.8000	.0000
1	ONE	Y	.0000	.0000
1	ONE	ROTN	.0000	.0000

FOUR-STORY FRAME

FRAME ID NUMBER-----------	1
NUMBER OF STORY LEVELS----	4
NUMBER OF COLUMN LINES----	2
NUMBER OF BAYS------------	1
NUMBER OF DIFF. COL. PROP-	1
NUMBER OF DIFF. BEAM PROP-	2
NUMBER OF DIFF. FEF-------	1
NUMBER OF PANEL ELEMENTS--	0
NUMBER OF BRACING ELEMENTS	0

COLUMN LINE COORDINATES

LINE X Y

1	.00	.00
2	360.00	.00

COLUMN ID	E	A	MAJ SA	MIN SA	TORS I	MAJ I	MIN I	RIGID TOP	RIGID BOT
1	30000.00	17.66	.00	.00	.00	343.70	.00	.00	.00

BEAM ID	E	SA	TORS I	FLEX I	KII	KJJ	KIJ	RIGID I	RIGID J
1	30000.00	.00	.00	889.90	4.00	4.00	2.00	.00	.00
2	30000.00	.00	.00	984.00	4.00	4.00	2.00	.00	.00

FEF ID	CODE	ML	VL	MR	VR	W
1	1	.000	200.000	.000	200.000	.000

BEAM LOCATIONS

/ BAY	LEV	IC	JC	BID	GEN	VL1	VL2	VL3
1	4	1	2	1	1	1	0	0
1	2	1	2	2	1	1	0	0

GENERATED BEAM LOCATIONS

0STORY 1

4	1
3	1
2	2
1	2

GENERATED BEAM LOADS...LOAD CASE I

0STORY 1

4	1
3	1
2	1
1	1

GENERATED BEAM LOADS...LOAD CASE II

0STORY 1

4	0
3	0
2	0
1	0

GENERATED BEAM LOADS...LOAD CASE III

0STORY 1

4	0
3	0
2	0
1	0

COLUMN LOCATIONS

0 LINE	LEV	CID	KCOL	GEN
1	4	1	2	3
2	4	1	1	3

GENERATED COLUMN LOCATIONS

DSTORY 1 2

4	1	1
3	1	1
2	1	1
1	1	1

BEAM PROPERTIES AND LOADS

BAY NUMBERS 1

LEVEL	E	SA	TORS I	FLEX I	KII	KJJ	KIJ	WI	WJ	VERT1	VERT2	VERT3
4	30000.00	.00	.00	889.90	4.00	4.00	2.00	.00	.00	1	0	0
3	30000.00	.00	.00	889.90	4.00	4.00	2.00	.00	.00	1	0	0
2	30000.00	.00	.00	984.00	4.00	4.00	2.00	.00	.00	1	0	0
1	30000.00	.00	.00	984.00	4.00	4.00	2.00	.00	.00	1	0	0

COLUMN PROPERTIES

COLUMN LINE NO 1

LEVEL	E	A	MAJ SA	MIN SA	TORS I	MAJ I	MIN I	DT	DB
4	30000.00	17.66	.00	.00	.00	343.70	.00	.00	.00
3	30000.00	17.66	.00	.00	.00	343.70	.00	.00	.00
2	30000.00	17.66	.00	.00	.00	343.70	.00	.00	.00
1	30000.00	17.66	.00	.00	.00	343.70	.00	.00	.00

COLUMN LINE NO 2

LEVEL	E	A	MAJ SA	MIN SA	TORS I	MAJ I	MIN I	DT	DB
4	30000.00	17.66	.00	.00	.00	343.70	.00	.00	.00
3	30000.00	17.66	.00	.00	.00	343.70	.00	.00	.00
2	30000.00	17.66	.00	.00	.00	343.70	.00	.00	.00
1	30000.00	17.66	.00	.00	.00	343.70	.00	.00	.00

0...FRAME TYPE 1...

TIME REQUIRED TO FORM STIFFNESS = 3.79

1FRAME POSITION DATA

FRAME	ID	FORCE CODE	X1	Y1	ANG	
1	1	0	.00	.00	.00	FOUR-STORY FRAM

LOAD CONDITION DEFINITION CARDS

0LOAD	I	II	III	A	B	SPECTRUM-1	SPECTRUM-2	SPECTRUM-3	SPECTRUM-4	TIME HIST
1	1.00	.00	.00	1.00	.00	.00	.00	.00	.00	.00

SPECTRUM-1... ROOT MEAN SQUARE COMBINATION

SPECTRUM-2... SUM OF ABSOLUTE VALUES

SPECTRUM-3... DOUBLE SUM COMBINATION

SPECTRUM-4... COMPLETE QUADRATIC COMBINATION

FRAME DISPLACEMENT

LEVEL		
4	X	4.9566119
4	Y	.0000000
4	ROTN	.0000000
3	X	3.8199595
3	Y	.0000000

3	ROTN	.0000000
2	X	2.4196918
2	Y	.0000000
2	ROTN	.0000000
1	X	.9748194
1	Y	.0000000
1	ROTN	.0000000

MEMBER FORCES ..... FRAME ID FOUR-STORY FRAM   FRAME TYPE 1
LEVEL NO 1   LEVEL ID ONE

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	1219.1660777	1963.8530212	-744.0688091	17.0672668
2	1	-1221.7406131	-1950.1512653	-855.9311909	-16.2327332

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-2880.8981337	-2880.4609936

MEMBER FORCES ..... FRAME ID FOUR-STORY FRAM   FRAME TYPE 1
LEVEL NO 2   LEVEL ID TWO

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	1605.0604435	1661.7320560	-560.0725845	17.0663825
2	1	-1603.5340103	-1659.7203805	-639.9274155	-16.2336175

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-3065.2696621	-3064.0009619

MEMBER FORCES ..... FRAME ID FOUR-STORY FRAM   FRAME TYPE 1
LEVEL NO 3   LEVEL ID THRE

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	1497.7940367	1460.2092186	-377.0983362	16.8747544
2	1	-1496.9439631	-1460.4669516	-422.9016638	-16.4252456

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-2632.9878762	-2632.7320600

MEMBER FORCES ..... FRAME ID FOUR-STORY FRAM   FRAME TYPE 1
LEVEL NO 4   LEVEL ID FOUR

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	1489.6102627	1135.1936395	-191.7253360	16.7144378
2	1	-1489.2687666	-1135.7880969	-208.2746640	-16.5855622

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-1489.6102627	-1489.2687666

CONVERGE IN ITERATION NO. 3

TOTAL TIME 15.27 SEC.

ตัวอย่าง 3 : โครงข้อแข็ง 4 ชั้น

กรณีแรง P = 300,000 ปอนด์

```
   4    1    1    1    0    0    1 00001    5      0.001 TSE8803.INP
FOUR            144.0
     50.0
THRE            144.0

 TWO            144.0

 ONE            144.0

   1    4    2    1    1    2    1            FOUR-STORY FRAME
   1       0.0         0.0
   2     360.0         0.0
   1         30000.0      17.66  0.0  0.0              343.7         0.0  0.0  0.0
   1         30000.0                      889.9  4.0  4.0  2.0
   2         30000.0                      984.0  4.0  4.0  2.0
   1    1                300.0               300.0
   1    1    2    1    1    1
   1    1    2    2    1    1
   1    1    2    3
   2    1    1    3
   1    0         0.0         0.0         0.0 FOUR-STORY FRAME
      1.0         0.0         0.0         1.0        0.0  0.0  0.0  0.0  0.0  0.0
   0
```

PROGRAM CU-NTABS
INPUT FILE : tee8s03.inp
OUTPUT FILE : tee8s03g.out

TSE8S03.INP
TOTAL NUMBER OF STORIES-- 4
NUMBER OF DIFF. FRAMES--- 1
TOTAL NUMBER OF FRAMES--- 1
NUMBER OF LOAD CONDITIONS 1
TYPE OF ANALYSIS-------- 0

EQ.0-STATIC LOADS ONLY
EQ.1-MODE SHAPES AND FREQUENCIES ONLY
EQ.2-STATIC AND MODE SHAPE ANALYSES
EQ.3-TYPE 2 AND RESPONSE SPECTRUM ANAL
EQ.4-TYPE 2 AND TIME HISTORY ANAL (INDIVIDUAL MEMBER RESPONSE ENVELOPES ONLY)
EQ.5-THIS OPTION IS NOT AVAILABLE FOR USE
EQ.6-RESPONSE SPECTRUM ANAL (GROSS BUILDING RESPONSE)
EQ.7-TYPE 3 AND 6 ANALYSES
EQ.8-TIME HISTORY ANAL (GROSS BUILDING RESPONSE/ENVELOPES OR STEP-BY-STEP RESPONSE)
EQ.9-TYPE 4 AND 8 ANALYSES
EQ.10-SLAM RESTART
EQ.11-SLAM-2 RESTART
EQ.-1,-6,-8 SAME AS 1,6,8 ABOVE EXCEPT APPROXIMATE PERIODS AND MODES USED

NUMBER OF FREQUENCIES---- 0
STORY TRANSLATION CODE--- 1
LAT FORCE GENERATION CODE 0 0
STRESS CHECK KEY--------- 0
DATA CHECK KEY----------- 0
TYPE OF SOLUTION--------- 1
MAXIMUM NO. OF CYCLES---- 5
CONVERGENCE TOLERENCE OF EQUILIBRIUM .001000

STORY DATA

LEVEL NO.	ID	HEIGHT	MASS(M)	MR**2	X(M)	Y(M)	K-X	K-Y
4	FOUR	144.00	10.19	.00	.00	.00	.00	.00
3	THRE	144.00	10.19	.00	.00	.00	.00	.00
2	TWO	144.00	10.19	.00	.00	.00	.00	.00
1	ONE	144.00	10.19	.00	.00	.00	.00	.00

CUMULATIVE STORY DATA

LEVEL NO.	ID	HEIGHT	MASS(M)	MR**2
4	FOUR	576.00	10.19	.00
3	THRE	432.00	20.38	.00
2	TWO	288.00	30.57	.00
1	ONE	144.00	40.76	.00

STRUCTURE LATERAL LOADS...CASES A AND B

LEVEL NO.	FX-A	FY-A	MOM-A	FX-B	FY-B	MOM-B	XA	YA	XB	YB
4	50.00	.00	.00	.00	.00	.00	.0	.0	.0	.0
3	.00	.00	.00	.00	.00	.00	.0	.0	.0	.0
2	.00	.00	.00	.00	.00	.00	.0	.0	.0	.0
1	.00	.00	.00	.00	.00	.00	.0	.0	.0	.0

STORY SHEARS

NOTE THAT THE FORCE QUANTITIES BELOW DO NOT INCLUDE P-DELTA EFFECTS.

OUTPUT COLUMN 1 CONTAINS RESULTS FROM STATIC LATERAL LOAD CASE A
OUTPUT COLUMN 2 CONTAINS RESULTS FROM STATIC LATERAL LOAD CASE B

LEVEL	ID	DIRN	1	2
4	FOUR	X	50.0000	.0000
4	FOUR	Y	.0000	.0000
4	FOUR	ROTN	.0000	.0000
3	THRE	X	50.0000	.0000
3	THRE	Y	.0000	.0000
3	THRE	ROTN	.0000	.0000
2	TWO	X	50.0000	.0000
2	TWO	Y	.0000	.0000
2	TWO	ROTN	.0000	.0000
1	ONE	X	50.0000	.0000
1	ONE	Y	.0000	.0000
1	ONE	ROTN	.0000	.0000

STORY OVERTURNING MOMENTS

NOTE THAT THE FORCE QUANTITIES BELOW DO NOT INCLUDE P-DELTA EFFECTS.

OUTPUT COLUMN 1 CONTAINS RESULTS FROM STATIC LATERAL LOAD CASE A
OUTPUT COLUMN 2 CONTAINS RESULTS FROM STATIC LATERAL LOAD CASE B

LEVEL	ID	DIRN	1	2
4	FOUR	X	7200.0000	.0000
4	FOUR	Y	.0000	.0000
4	FOUR	ROTN	.0000	.0000
3	THRE	X	14400.0000	.0000
3	THRE	Y	.0000	.0000
3	THRE	ROTN	.0000	.0000
2	TWO	X	21600.0000	.0000
2	TWO	Y	.0000	.0000
2	TWO	ROTN	.0000	.0000
1	ONE	X	28800.0000	.0000
1	ONE	Y	.0000	.0000
1	ONE	ROTN	.0000	.0000

FOUR-STORY FRAME

FRAME ID NUMBER-----------	1
NUMBER OF STORY LEVELS----	4
NUMBER OF COLUMN LINES----	2
NUMBER OF BAYS------------	1
NUMBER OF DIFF. COL. PROP-	1
NUMBER OF DIFF. BEAM PROP-	2
NUMBER OF DIFF. FEF-------	1
NUMBER OF PANEL ELEMENTS--	0
NUMBER OF BRACING ELEMENTS	0

COLUMN LINE COORDINATES

LINE X Y

1	.00	.00
2	360.00	.00

COLUMN ID	E	A	MAJ SA	MIN SA	TORS I	MAJ I	MIN I	RIGID TOP	RIGID BOT
1	30000.00	17.66	.00	.00	.00	343.70	.00	.00	.00

BEAM ID	E	SA	TORS I	FLEX I	KII	KJJ	KIJ	RIGID I	RIGID J
1	30000.00	.00	.00	869.90	4.00	4.00	2.00	.00	.00
2	30000.00	.00	.00	984.00	4.00	4.00	2.00	.00	.00

FEF ID	CODE	ML	VL	MR	VR	W
1	1	.000	300.000	.000	300.000	.000

BEAM LOCATIONS

/ BAY	LEV	IC	JC	BID	GEN	VL1	VL2	VL3
1	4	1	2	1	1	1	0	0
1	2	1	2	2	1	1	0	0

GENERATED BEAM LOCATIONS

0STORY 1

4	1
3	1
2	2
1	2

GENERATED BEAM LOADS...LOAD CASE I

0STORY 1

4	1
3	1
2	1
1	1

GENERATED BEAM LOADS...LOAD CASE II

0STORY 1

4	0
3	0
2	0
1	0

GENERATED BEAM LOADS...LOAD CASE III

0STORY 1

4	0
3	0
2	0
1	0

COLUMN LOCATIONS

0 LINE	LEV	CID	KCOL	GEN
1	4	1	2	3
2	4	1	1	3

GENERATED COLUMN LOCATIONS

0STORY 1 2

4	1	1
3	1	1
2	1	1
1	1	1

BEAM PROPERTIES AND LOADS

BAY NUMBERS 1

LEVEL	E	SA	TORS I	FLEX I	KII	KJJ	KIJ	WI	WJ	VERT1	VERT2	VERT3
4	30000.00	.00	.00	889.90	4.00	4.00	2.00	.00	.00	1	0	0
3	30000.00	.00	.00	889.90	4.00	4.00	2.00	.00	.00	1	0	0
2	30000.00	.00	.00	984.00	4.00	4.00	2.00	.00	.00	1	0	0
1	30000.00	.00	.00	984.00	4.00	4.00	2.00	.00	.00	1	0	0

COLUMN PROPERTIES

COLUMN LINE NO 1

LEVEL	E	A	MAJ SA	MIN SA	TORS I	MAJ I	MIN I	DT	DB
4	30000.00	17.66	.00	.00	.00	343.70	.00	.00	.00
3	30000.00	17.66	.00	.00	.00	343.70	.00	.00	.00
2	30000.00	17.66	.00	.00	.00	343.70	.00	.00	.00
1	30000.00	17.66	.00	.00	.00	343.70	.00	.00	.00

COLUMN LINE NO 2

LEVEL	E	A	MAJ SA	MIN SA	TORS I	MAJ I	MIN I	DT	DB
4	30000.00	17.66	.00	.00	.00	343.70	.00	.00	.00
3	30000.00	17.66	.00	.00	.00	343.70	.00	.00	.00
2	30000.00	17.66	.00	.00	.00	343.70	.00	.00	.00
1	30000.00	17.66	.00	.00	.00	343.70	.00	.00	.00

0... FRAME TYPE 1 ...

TIME REQUIRED TO FORM STIFFNESS = 3.79

1FRAME POSITION DATA

FRAME	ID	FORCE CODE	X1	Y1	ANG	
1	1	0	.00	.00	.00	FOUR-STORY FRAM

LOAD CONDITION DEFINITION CARDS

0LOAD	I	II	III	A	B	SPECTRUM-1	SPECTRUM-2	SPECTRUM-3	SPECTRUM-4	TIME HIST
1	1.00	.00	.00	1.00	.00	.00	.00	.00	.00	.00

SPECTRUM-1 ... ROOT MEAN SQUARE COMBINATION

SPECTRUM-2 ... SUM OF ABSOLUTE VALUES

SPECTRUM-3 ... DOUBLE SUM COMBINATION

SPECTRUM-4 ... COMPLETE QUADRATIC COMBINATION

FRAME DISPLACEMENT

LEVEL		
4	X	6.6341524
4	Y	.0000000
4	ROTN	.0000000
3	X	6.7949526
3	Y	.0000000

3	ROTN	.0000000
2	X	4.3968283
2	Y	.0000000
2	ROTN	.0000000
1	X	1.7807238
1	Y	.0000000
1	ROTN	.0000000

MEMBER FORCES ..... FRAME ID FOUR-STORY FRAM   FRAME TYPE 1
LEVEL NO 1   LEVEL ID ONE

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	2245.6421506	3509.0178007	-1103.3631143	26.3185765
2	1	-2253.3795763	-3465.6975392	-1296.6368857	-23.6814235

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-5252.0116443	-5250.7633958

MEMBER FORCES ..... FRAME ID FOUR-STORY FRAM   FRAME TYPE 1
LEVEL NO 2   LEVEL ID TWO

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	2955.4729545	3006.3694937	-832.5374894	26.2766484
2	1	-2949.7619311	-2997.3838195	-967.4625106	-23.7233516

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-5402.4551014	-5398.5592740

MEMBER FORCES ..... FRAME ID FOUR-STORY FRAM   FRAME TYPE 1
LEVEL NO 3   LEVEL ID THRE

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	2592.2782446	2446.9821469	-562.5403071	25.6265195
2	1	-2589.6913234	-2448.7974429	-637.4596929	-24.3734805

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-4364.9928543	-4364.2386426

MEMBER FORCES ..... FRAME ID FOUR-STORY FRAM   FRAME TYPE 1
LEVEL NO 4   LEVEL ID FOUR

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	2378.5865100	1772.7146097	-286.7881724	25.1654192
2	1	-2377.6914438	-1774.5473192	-313.2118276	-24.8345808

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-2378.5865100	-2377.6914438

CONVERGE IN ITERATION NO. 3

TOTAL TIME 15.33 SEC.

ตัวอย่าง 3 : โครงข้อแข็ง 4 ชั้น

กรณีแรง P = 400,000 ปอนด์

```
   4    1    1    1    0    0    1 00001   5     0.001 T8E8804.INP
FOUR          144.0
    66.7        0.0        0.0        0.0
THRE          144.0

 TWO          144.0

 ONE          144.0

   1    4    2    1    1    2    1            FOUR-STORY FRAME
   1      0.0       0.0
   2    360.0       0.0
   1      30000.0     17.66  0.0  0.0              343.7      0.0  0.0  0.0
   1      30000.0                    889.9  4.0  4.0  2.0
   2      30000.0                    984.0  4.0  4.0  2.0
   1    1            400.0              400.0
   1    1    2    1    1    1
   1    1    2    2    1    1
   1    1    2    3
   2    1    1    3
   1    0       0.0        0.0        0.0 FOUR-STORY FRAME
     1.0        0.0        0.0        1.0       0.0  0.0  0.0  0.0  0.0  0.0
   0
```

```
PROGRAM  CU-NTABS
INPUT  FILE :  tse8s04.inp
OUTPUT FILE :  tse8s04g.out

TSE8S04.INP
TOTAL NUMBER OF STORIES--    4
NUMBER OF DIFF. FRAMES---    1
TOTAL NUMBER OF FRAMES---    1
NUMBER OF LOAD CONDITIONS    1
TYPE OF ANALYSIS---------    0

  EQ.0-STATIC LOADS ONLY
  EQ.1-MODE SHAPES AND FREQUENCIES ONLY
  EQ.2-STATIC AND MODE SHAPE ANALYSES
  EQ.3-TYPE 2 AND RESPONSE SPECTRUM ANAL
  EQ.4-TYPE 2 AND TIME HISTORY ANAL (INDIVIDUAL MEMBER RESPONSE ENVELOPES ONLY)
  EQ.5-THIS OPTION IS NOT AVAILABLE FOR USE
  EQ.6-RESPONSE SPECTRUM ANAL (GROSS BUILDING RESPONSE)
  EQ.7-TYPE 3 AND 6 ANALYSES
  EQ.8-TIME HISTORY ANAL (GROSS BUILDING RESPONSE/ENVELOPES OR STEP-BY-STEP RESPONSE)
  EQ.9-TYPE 4 AND 8 ANALYSES
  EQ.10-SLAM RESTART
  EQ.11-SLAM-2 RESTART
  EQ.-1,-6,-8 SAME AS 1,6,8 ABOVE EXCEPT APPROXIMATE PERIODS AND MODES USED

NUMBER OF FREQUENCIES----    0
STORY TRANSLATION CODE---    1
LAT FORCE GENERATION CODE 0 0
STRESS CHECK KEY---------    0
DATA CHECK KEY-----------    0
TYPE OF SOLUTION---------    1
MAXIMUM NO. OF CYCLES----    5
CONVERGENCE TOLERENCE OF EQUILIBRIUM      .001000
```

STORY DATA

LEVEL NO.	ID	HEIGHT	MASS(M)	MR**2	X(M)	Y(M)	K-X	K-Y
4	FOUR	144.00	10.19	.00	.00	.00	.00	.00
3	THRE	144.00	10.19	.00	.00	.00	.00	.00
2	TWO	144.00	10.19	.00	.00	.00	.00	.00
1	ONE	144.00	10.19	.00	.00	.00	.00	.00

CUMULATIVE STORY DATA

LEVEL NO.	ID	HEIGHT	MASS(M)	MR**2
4	FOUR	576.00	10.19	.00
3	THRE	432.00	20.38	.00
2	TWO	288.00	30.57	.00
1	ONE	144.00	40.76	.00

STRUCTURE LATERAL LOADS...CASES A AND B

LEVEL NO.	FX-A	FY-A	MOM-A	FX-B	FY-B	MOM-B	XA	YA	XB	YB
4	86.70	.00	.00	.00	.00	.00	.0	.0	.0	.0
3	.00	.00	.00	.00	.00	.00	.0	.0	.0	.0
2	.00	.00	.00	.00	.00	.00	.0	.0	.0	.0
1	.00	.00	.00	.00	.00	.00	.0	.0	.0	.0

STORY SHEARS

NOTE THAT THE FORCE QUANTITIES BELOW DO NOT INCLUDE P-DELTA EFFECTS.

OUTPUT COLUMN 1 CONTAINS RESULTS FROM STATIC LATERAL LOAD CASE A
OUTPUT COLUMN 2 CONTAINS RESULTS FROM STATIC LATERAL LOAD CASE B

LEVEL	ID	DIRN	1	2
4	FOUR	X	66.7000	.0000
4	FOUR	Y	.0000	.0000
4	FOUR	ROTN	.0000	.0000
3	THRE	X	66.7000	.0000
3	THRE	Y	.0000	.0000
3	THRE	ROTN	.0000	.0000
2	TWO	X	66.7000	.0000
2	TWO	Y	.0000	.0000
2	TWO	ROTN	.0000	.0000
1	ONE	X	66.7000	.0000
1	ONE	Y	.0000	.0000
1	ONE	ROTN	.0000	.0000

STORY OVERTURNING MOMENTS

NOTE THAT THE FORCE QUANTITIES BELOW DO NOT INCLUDE P-DELTA EFFECTS.

OUTPUT COLUMN 1 CONTAINS RESULTS FROM STATIC LATERAL LOAD CASE A
OUTPUT COLUMN 2 CONTAINS RESULTS FROM STATIC LATERAL LOAD CASE B

LEVEL	ID	DIRN	1	2
4	FOUR	X	9604.8000	.0000
4	FOUR	Y	.0000	.0000
4	FOUR	ROTN	.0000	.0000
3	THRE	X	19209.6000	.0000
3	THRE	Y	.0000	.0000
3	THRE	ROTN	.0000	.0000
2	TWO	X	28814.4000	.0000
2	TWO	Y	.0000	.0000
2	TWO	ROTN	.0000	.0000
1	ONE	X	38419.2000	.0000
1	ONE	Y	.0000	.0000
1	ONE	ROTN	.0000	.0000

FOUR-STORY FRAME

FRAME ID NUMBER-----------	1
NUMBER OF STORY LEVELS----	4
NUMBER OF COLUMN LINES----	2
NUMBER OF BAYS------------	1
NUMBER OF DIFF. COL. PROP-	1
NUMBER OF DIFF. BEAM PROP-	2
NUMBER OF DIFF. FEF-------	1
NUMBER OF PANEL ELEMENTS--	0
NUMBER OF BRACING ELEMENTS	0

COLUMN LINE COORDINATES

LINE X Y

1	.00	.00
2	360.00	.00

COLUMN ID	E	A	MAJ SA	MIN SA	TORS I	MAJ I	MIN I	RIGID TOP	RIGID BOT
1	30000.00	17.66	.00	.00	.00	343.70	.00	.00	.00

BEAM ID	E	SA	TORS I	FLEX I	KII	KJJ	KIJ	RIGID I	RIGID J
1	30000.00	.00	.00	889.90	4.00	4.00	2.00	.00	.00
2	30000.00	.00	.00	984.00	4.00	4.00	2.00	.00	.00

FEF ID	CODE	ML	VL	MR	VR	W
1	1	.000	400.000	.000	400.000	.000

BEAM LOCATIONS

/ BAY	LEV	IC	JC	BID	GEN	VL1	VL2	VL3
1	4	1	2	1	1	1	0	0
1	2	1	2	2	1	1	0	0

GENERATED BEAM LOCATIONS

OSTORY 1

4	1
3	1
2	2
1	2

GENERATED BEAM LOADS...LOAD CASE I

OSTORY 1

4	1
3	1
2	1
1	1

GENERATED BEAM LOADS...LOAD CASE II

OSTORY 1

4	0
3	0
2	0
1	0

GENERATED BEAM LOADS...LOAD CASE III

OSTORY 1

4	0
3	0
2	0
1	0

COLUMN LOCATIONS

O LINE	LEV	CID	KCOL	GEN
1	4	1	2	3
2	4	1	1	3

GENERATED COLUMN LOCATIONS

OSTORY 1 2

4	1	1
3	1	1
2	1	1
1	1	1

BEAM PROPERTIES AND LOADS

BAY NUMBERS 1

LEVEL	E	SA	TORS I	FLEX I	KII	KJJ	KIJ	WI	WJ	VERT1	VERT2	VERT3
4	30000.00	.00	.00	889.90	4.00	4.00	2.00	.00	.00	1	0	0
3	30000.00	.00	.00	889.90	4.00	4.00	2.00	.00	.00	1	0	0
2	30000.00	.00	.00	984.00	4.00	4.00	2.00	.00	.00	1	0	0
1	30000.00	.00	.00	984.00	4.00	4.00	2.00	.00	.00	1	0	0

COLUMN PROPERTIES

COLUMN LINE NO. 1

LEVEL	E	A	MAJ SA	MIN SA	TORS I	MAJ I	MIN I	DT	DB
4	30000.00	17.66	.00	.00	.00	343.70	.00	.00	.00
3	30000.00	17.66	.00	.00	.00	343.70	.00	.00	.00
2	30000.00	17.66	.00	.00	.00	343.70	.00	.00	.00
1	30000.00	17.66	.00	.00	.00	343.70	.00	.00	.00

COLUMN LINE NO 2

LEVEL	E	A	MAJ SA	MIN SA	TORS I	MAJ I	MIN I	DT	DB
4	30000.00	17.66	.00	.00	.00	343.70	.00	.00	.00
3	30000.00	17.66	.00	.00	.00	343.70	.00	.00	.00
2	30000.00	17.66	.00	.00	.00	343.70	.00	.00	.00
1	30000.00	17.66	.00	.00	.00	343.70	.00	.00	.00

0...FRAME TYPE 1 ...

TIME REQUIRED TO FORM STIFFNESS = 3.79

1FRAME POSITION DATA

FRAME	ID	FORCE CODE	X1	Y1	ANG	
1	1	0	.00	.00	.00	FOUR-STORY FRAM

LOAD CONDITION DEFINITION CARDS

DLOAD	I	II	III	A	B	SPECTRUM-1	SPECTRUM-2	SPECTRUM-3	SPECTRUM-4	TIME HIST
1	1.00	.00	.00	1.00	.00	.00	.00	.00	.00	.00

SPECTRUM-1... ROOT MEAN SQUARE COMBINATION

SPECTRUM-2... SUM OF ABSOLUTE VALUES

SPECTRUM-3... DOUBLE SUM COMBINATION

SPECTRUM-4... COMPLETE QUADRATIC COMBINATION

FRAME DISPLACEMENT

LEVEL		
4	X	13.8325415
4	Y	.0000000
4	ROTN	.0000000
3	X	11.1532463
3	Y	.0000000

3	ROTN	.0000000
2	X	7.4073071
2	Y	.0000000
2	ROTN	.0000000
1	X	3.0245057
1	Y	.0000000
1	ROTN	.0000000

MEMBER FORCES ..... FRAME ID FOUR-STORY FRAM   FRAME TYPE 1
LEVEL NO 1   LEVEL ID ONE

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	3852.4079450	5837.9712908	-1446.6823765	36.9088897
2	1	-3871.8744077	-5720.9646583	-1753.3176235	-29.7911103

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-8887.8655033	-8884.9739304

MEMBER FORCES ..... FRAME ID FOUR-STORY FRAM   FRAME TYPE 1
LEVEL NO 2   LEVEL ID TWO

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	5046.4137091	5035.4575583	-1096.0513749	36.6534432
2	1	-5028.5524660	-5013.0995227	-1303.9486251	-30.0465568

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-8757.2546595	-8747.0881553

MEMBER FORCES ..... FRAME ID FOUR-STORY FRAM   FRAME TYPE 1
LEVEL NO 3   LEVEL ID THRE

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	4087.8619611	3710.8409503	-744.6745494	34.7847037
2	1	-4081.2641035	-3718.5356893	-855.3254506	-31.9152963

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-6552.2761228	-6550.4668406

MEMBER FORCES ..... FRAME ID FOUR-STORY FRAM   FRAME TYPE 1
LEVEL NO 4   LEVEL ID FOUR

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	3408.1133815	2464.6141617	-381.0710576	33.6925394
2	1	-3406.3058999	-2469.2027370	-418.9289424	-33.0074606

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-3408.1133815	-3406.3058999

CONVERGE IN ITERATION NO. 3

TOTAL TIME 14.72 SEC.

ตัวอย่าง 3 : โครงข้อแข็ง 4 ชั้น

กรณีแรง P = 500,000 ปอนด์

```
   4    1    1    1    0    0    1 00001   5      0.001 TSE8805.INP
FOUR          144.0
     83.3
THRE          144.0

 TWO          144.0

 ONE          144.0

   1    4    2    1    1    2    1              FOUR-STORY FRAME
   1       0.0       0.0
   2     360.0       0.0
   1         30000.0       17.66  0.0  0.0               343.7       0.0  0.0  0.0
   1         30000.0                       889.9  4.0  4.0  2.0
   2         30000.0                       984.0  4.0  4.0  2.0
   1    1                 500.0                   500.0
   1    1    2    1    1    1
   1    1    2    2    1    1
   1    1    2    3
   2    1    1    3
   1    0        0.0        0.0       0.0 FOUR-STORY FRAME
      1.0        0.0        0.0       1.0       0.0  0.0  0.0  0.0  0.0  0.0
   0
```

PROGRAM CU-NTABS
INPUT FILE : tse8s05.inp
OUTPUT FILE : tse8s05g.out

TSE8S05.INP
TOTAL NUMBER OF STORIES-- 4
NUMBER OF DIFF. FRAMES--- 1
TOTAL NUMBER OF FRAMES--- 1
NUMBER OF LOAD CONDITIONS 1
TYPE OF ANALYSIS--------- 0

EQ.0-STATIC LOADS ONLY
EQ.1-MODE SHAPES AND FREQUENCIES ONLY
EQ.2-STATIC AND MODE SHAPE ANALYSES
EQ.3-TYPE 2 AND RESPONSE SPECTRUM ANAL
EQ.4-TYPE 2 AND TIME HISTORY ANAL (INDIVIDUAL MEMBER RESPONSE ENVELOPES ONLY)
EQ.5-THIS OPTION IS NOT AVAILABLE FOR USE
EQ.6-RESPONSE SPECTRUM ANAL (GROSS BUILDING RESPONSE)
EQ.7-TYPE 3 AND 6 ANALYSES
EQ.8-TIME HISTORY ANAL (GROSS BUILDING RESPONSE/ENVELOPES OR STEP-BY-STEP RESPONSE)
EQ.9-TYPE 4 AND 8 ANALYSES
EQ.10-SLAM RESTART
EQ.11-SLAM-2 RESTART
EQ.-1,-6,-8 SAME AS 1,6,8 ABOVE EXCEPT APPROXIMATE PERIODS AND MODES USED

NUMBER OF FREQUENCIES---- 0
STORY TRANSLATION CODE--- 1
LAT FORCE GENERATION CODE 0 0
STRESS CHECK KEY--------- 0
DATA CHECK KEY----------- 0
TYPE OF SOLUTION--------- 1
MAXIMUM NO. OF CYCLES---- 5
CONVERGENCE TOLERENCE OF EQUILIBRIUM .001000

STORY DATA

LEVEL NO.	ID	HEIGHT	MASS(M)	MR**2	X(M)	Y(M)	K-X	K-Y
4	FOUR	144.00	10.19	.00	.00	.00	.00	.00
3	THRE	144.00	10.19	.00	.00	.00	.00	.00
2	TWO	144.00	10.19	.00	.00	.00	.00	.00
1	ONE	144.00	10.19	.00	.00	.00	.00	.00

CUMULATIVE STORY DATA

LEVEL NO.	ID	HEIGHT	MASS(M)	MR**2
4	FOUR	576.00	10.19	.00
3	THRE	432.00	20.38	.00
2	TWO	288.00	30.57	.00
1	ONE	144.00	40.76	.00

STRUCTURE LATERAL LOADS...CASES A AND B

LEVEL NO.	FX-A	FY-A	MOM-A	FX-B	FY-B	MOM-B	XA	YA	XB	YB
4	83.30	.00	.00	.00	.00	.00	.0	.0	.0	.0
3	.00	.00	.00	.00	.00	.00	.0	.0	.0	.0
2	.00	.00	.00	.00	.00	.00	.0	.0	.0	.0
1	.00	.00	.00	.00	.00	.00	.0	.0	.0	.0

STORY SHEARS

NOTE THAT THE FORCE QUANTITIES BELOW DO NOT INCLUDE P-DELTA EFFECTS.

OUTPUT COLUMN 1 CONTAINS RESULTS FROM STATIC LATERAL LOAD CASE A
OUTPUT COLUMN 2 CONTAINS RESULTS FROM STATIC LATERAL LOAD CASE B

LEVEL	ID	DIRN	1	2
4	FOUR	X	83.3000	.0000
4	FOUR	Y	.0000	.0000
4	FOUR	ROTN	.0000	.0000
3	THRE	X	83.3000	.0000
3	THRE	Y	.0000	.0000
3	THRE	ROTN	.0000	.0000
2	TWO	X	83.3000	.0000
2	TWO	Y	.0000	.0000
2	TWO	ROTN	.0000	.0000
1	ONE	X	83.3000	.0000
1	ONE	Y	.0000	.0000
1	ONE	ROTN	.0000	.0000

STORY OVERTURNING MOMENTS

NOTE THAT THE FORCE QUANTITIES BELOW DO NOT INCLUDE P-DELTA EFFECTS.

OUTPUT COLUMN 1 CONTAINS RESULTS FROM STATIC LATERAL LOAD CASE A
OUTPUT COLUMN 2 CONTAINS RESULTS FROM STATIC LATERAL LOAD CASE B

LEVEL	ID	DIRN	1	2
4	FOUR	X	11995.2000	.0000
4	FOUR	Y	.0000	.0000
4	FOUR	ROTN	.0000	.0000
3	THRE	X	23990.4000	.0000
3	THRE	Y	.0000	.0000
3	THRE	ROTN	.0000	.0000
2	TWO	X	35985.6000	.0000
2	TWO	Y	.0000	.0000
2	TWO	ROTN	.0000	.0000
1	ONE	X	47980.8000	.0000
1	ONE	Y	.0000	.0000
1	ONE	ROTN	.0000	.0000

FOUR-STORY FRAME

FRAME ID NUMBER-----------	1
NUMBER OF STORY LEVELS----	4
NUMBER OF COLUMN LINES----	2
NUMBER OF BAYS------------	1
NUMBER OF DIFF. COL. PROP-	1
NUMBER OF DIFF. BEAM PROP-	2
NUMBER OF DIFF. FEF-------	1
NUMBER OF PANEL ELEMENTS--	0
NUMBER OF BRACING ELEMENTS	0

COLUMN LINE COORDINATES

LINE X Y

1	.00	.00
2	360.00	.00

COLUMN ID	E	A	MAJ SA	MIN SA	TORS I	MAJ I	MIN I	RIGID TOP	RIGID BOT
1	30000.00	17.66	.00	.00	.00	343.70	.00	.00	.00

BEAM ID	E	SA	TORS I	FLEX I	KII	KJJ	KIJ	RIGID I	RIGID J
1	30000.00	.00	.00	889.90	4.00	4.00	2.00	.00	.00
2	30000.00	.00	.00	984.00	4.00	4.00	2.00	.00	00

FEF ID	CODE	ML	VL	MR	VR	W
1	1	.000	500.000	.000	500.000	.000

BEAM LOCATIONS

/ BAY	LEV	IC	JC	BID	GEN	VL1	VL2	VL3
1	4	1	2	1	1	1	0	0
1	2	1	2	2	1	1	0	0

GENERATED BEAM LOCATIONS

0STORY 1

4	1
3	1
2	2
1	2

GENERATED BEAM LOADS...LOAD CASE I

0STORY 1

4	1
3	1
2	1
1	1

GENERATED BEAM LOADS...LOAD CASE II

0STORY 1

4	0
3	0
2	0
1	0

GENERATED BEAM LOADS...LOAD CASE III

0STORY 1

4	0
3	0
2	0
1	0

COLUMN LOCATIONS

0 LINE	LEV	CID	KCOL	GEN
1	4	1	2	3
2	4	1	1	3

GENERATED COLUMN LOCATIONS

DSTORY 1 2

4	1	1
3	1	1
2	1	1
1	1	1

BEAM PROPERTIES AND LOADS

BAY NUMBERS 1

LEVEL	E	SA	TORS I	FLEX I	KII	KJJ	KIJ	WI	WJ	VERT1	VERT2	VERT3
4	30000.00	.00	.00	889.90	4.00	4.00	2.00	.00	.00	1	0	0
3	30000.00	.00	.00	889.90	4.00	4.00	2.00	.00	.00	1	0	0
2	30000.00	.00	.00	984.00	4.00	4.00	2.00	.00	.00	1	0	0
1	30000.00	.00	.00	984.00	4.00	4.00	2.00	.00	.00	1	0	0

COLUMN PROPERTIES

COLUMN LINE NO. 1

LEVEL	E	A	MAJ SA	MIN SA	TORS I	MAJ I	MIN I	DT	DB
4	30000.00	17.66	.00	.00	.00	343.70	.00	.00	.00
3	30000.00	17.66	.00	.00	.00	343.70	.00	.00	.00
2	30000.00	17.66	.00	.00	.00	343.70	.00	.00	.00
1	30000.00	17.66	.00	.00	.00	343.70	.00	.00	.00

COLUMN LINE NO. 2

LEVEL	E	A	MAJ SA	MIN SA	TORS I	MAJ I	MIN I	DT	DB
4	30000.00	17.66	.00	.00	.00	343.70	.00	.00	.00
3	30000.00	17.66	.00	.00	.00	343.70	.00	.00	.00
2	30000.00	17.66	.00	.00	.00	343.70	.00	.00	.00
1	30000.00	17.66	.00	.00	.00	343.70	.00	.00	.00

0...FRAME TYPE 1 ...

TIME REQUIRED TO FORM STIFFNESS = 3.79

1FRAME POSITION DATA

FRAME	ID	FORCE CODE	X1	Y1	ANG	
1	1	0	.00	.00	.00	FOUR-STORY FRAM

LOAD CONDITION DEFINITION CARDS

0LOAD	I	II	III	A	B	SPECTRUM-1	SPECTRUM-2	SPECTRUM-3	SPECTRUM-4	TIME HIST
1	1.00	.00	.00	1.00	.00	.00	.00	.00	.00	.00

SPECTRUM-1... ROOT MEAN SQUARE COMBINATION

SPECTRUM-2... SUM OF ABSOLUTE VALUES

SPECTRUM-3... DOUBLE SUM COMBINATION

SPECTRUM-4... COMPLETE QUADRATIC COMBINATION

FRAME DISPLACEMENT

LEVEL		
4	X	21.9468295
4	Y	.0000000
4	ROTN	.0000000
3	X	18.2114779
3	Y	.0000000

```
   3    ROTN          .0000000
   2     X          12.4949685
   2     Y            .0000000
   2    ROTN          .0000000
   1     X           5.1669202
   1     Y            .0000000
   1    ROTN          .0000000


 MEMBER FORCES ..... FRAME ID  FOUR-STORY FRAM           FRAME TYPE  1
                     LEVEL NO  1                         LEVEL ID  ONE

 COLUMN FORCES
  LINE  LOAD            TOP MOMENT      BOT MOMENT     AXIAL FORCE      SHEAR FORCE
    1     1           6665.5364552    9799.4871994   -1759.6770236      51.2007839
    2     1          -6712.6198312   -9485.2373595   -2240.3229784     -32.0992181

 BEAM FORCES
  BAY   LOAD             I MOMENT        J MOMENT
    1     1         -15085.3779812  -15079.3062454


 MEMBER FORCES ..... FRAME ID  FOUR-STORY FRAM           FRAME TYPE  1
                     LEVEL NO  2                         LEVEL ID  TWO

 COLUMN FORCES
  LINE  LOAD            TOP MOMENT      BOT MOMENT     AXIAL FORCE      SHEAR FORCE
    1     1           8623.5301748    8419.8415260   -1343.4678131      49.9887131
    2     1          -8569.2867551   -8366.6864141   -1656.5321869     -33.3112869

 BEAM FORCES
  BAY   LOAD             I MOMENT        J MOMENT
    1     1         -14045.8278772  -14019.6172757


 MEMBER FORCES ..... FRAME ID  FOUR-STORY FRAM           FRAME TYPE  1
                     LEVEL NO  3                         LEVEL ID THRE

 COLUMN FORCES
  LINE  LOAD            TOP MOMENT      BOT MOMENT     AXIAL FORCE      SHEAR FORCE
    1     1           6285.0287250    5422.2977023    -921.4273830      44.7220707
    2     1          -6270.5617528   -5450.3305206   -1078.5728170     -38.5779293

 BEAM FORCES
  BAY   LOAD             I MOMENT        J MOMENT
    1     1          -9499.5595553   -9495.6146216


 MEMBER FORCES ..... FRAME ID  FOUR-STORY FRAM           FRAME TYPE  1
                     LEVEL NO  4                         LEVEL ID FOUR

 COLUMN FORCES
  LINE  LOAD            TOP MOMENT      BOT MOMENT     AXIAL FORCE      SHEAR FORCE
    1     1           4647.1894434    3214.5309303    -474.1917557      42.2947730
    2     1          -4643.7785148   -3225.0528688    -525.8092443     -41.0052270

 BEAM FORCES
  BAY   LOAD             I MOMENT        J MOMENT
    1     1          -4647.1894434   -4643.7785148


  CONVERGE IN ITERATION NO.    3

  TOTAL TIME  15.22 SEC.
```

ตัวอย่าง 4 : โครงข้อแข็งประกอบผนังต้านแรงเฉือน 25 ชั้น 3 ช่วงเสา

กรณี $\alpha = 0.5$

```
 25    1    1    1    0    0    1 00001   5      0.001 TS10805.INP
 F25             4.0
    .2.56
 F24             4.0
     5.12
 F23             4.0
     5.12
 F22             4.0
     5.12
 F21             4.0
     5.12
 F20             4.0
     5.12
 F19             4.0
     5.12
 F18             4.0
     5.12
 F17             4.0
     5.12
 F16             4.0
     5.12
 F15             4.0
     5.12
 F14             4.0
     5.12
 F13             4.0
     5.12
 F12             4.0
     5.12
 F11             4.0
     5.12
 F10             4.0
     4.48
 F09             4.0
     3.84
 F08             4.0
     3.84
 F07             4.0
     3.84
 F06             4.0
     3.84
 F05             4.0
     3.20
 F04             4.0
     2.56
 F03             4.0
     2.56
 F02             4.0
     1.60
 F01             4.0
     1.60
   1   25    4    3    5    1    2   25      25-STORY,3-BAY BUILDING
   1        0.0       0.0
   2        8.0       0.0
   3       11.5       0.0
   4       19.5       0.0
   1       3042000.0        0.16                     0.0021333
   2       3042000.0        0.36                     0.0108000
   3       3042000.0      0.5625                     0.0263672
   4       3042000.0        0.81                     0.0546750
   5       3042000.0        0.60                     0.0125000
   1       3042000.0                  0.0052083  4.0  4.0  2.0
   1    1                   38.4             55.2
   2    1                   55.2             38.4
   1    1    2    1   24    1
   2    2    3    1   24
   3    3    4    1   24    2
   1    1    2    4
   1    2    2    4
   1    3    2    5
   1    4    2    6
```

```
 2    5    3   24
 3    5    4   24
 4    1    3    4
 4    2    3    4
 4    3    3    6
 4    4    3    8
25    2    3 3042000.0       1.05  1.071875
24    2    3 3042000.0       1.05  1.071875
23    2    3 3042000.0       1.05  1.071875
22    2    3 3042000.0       1.05  1.071875
21    2    3 3042000.0       1.05  1.071875
20    2    3 3042000.0       1.05  1.071875
19    2    3 3042000.0       1.05  1.071875
18    2    3 3042000.0       1.05  1.071875
17    2    3 3042000.0       1.05  1.071875
16    2    3 3042000.0       1.05  1.071875
15    2    3 3042000.0       1.05  1.071875
14    2    3 3042000.0       1.05  1.071875
13    2    3 3042000.0       1.05  1.071875
12    2    3 3042000.0       1.05  1.071875
11    2    3 3042000.0       1.05  1.071875
10    2    3 3042000.0       1.05  1.071875
 9    2    3 3042000.0       1.05  1.071875
 8    2    3 3042000.0       1.05  1.071875
 7    2    3 3042000.0       1.05  1.071875
 6    2    3 3042000.0       1.05  1.071875
 5    2    3 3042000.0       1.05  1.071875
 4    2    3 3042000.0       1.05  1.071875
 3    2    3 3042000.0       1.05  1.071875
 2    2    3 3042000.0       1.05  1.071875
 1    2    3 3042000.0       1.05  1.071875
 1    0        0.0       0.0        0.0 25-8,3-B BUILD.
    0.5        0.0       0.0        0.5      0.0  0.0  0.0  0.0  0.0  0.0
 0
```

PROGRAM CU-NTABS
INPUT FILE : ts10s05.inp
OUTPUT FILE : ts10s05g.out

TS10S05.INP
TOTAL NUMBER OF STORIES-- 25
NUMBER OF DIFF. FRAMES--- 1
TOTAL NUMBER OF FRAMES--- 1
NUMBER OF LOAD CONDITIONS 1
TYPE OF ANALYSIS--------- 0

EQ.0-STATIC LOADS ONLY
EQ.1-MODE SHAPES AND FREQUENCIES ONLY
EQ.2-STATIC AND MODE SHAPE ANALYSES
EQ.3-TYPE 2 AND RESPONSE SPECTRUM ANAL
EQ.4-TYPE 2 AND TIME HISTORY ANAL (INDIVIDUAL MEMBER RESPONSE ENVELOPES ONLY)
EQ.5-THIS OPTION IS NOT AVAILABLE FOR USE
EQ.6-RESPONSE SPECTRUM ANAL (GROSS BUILDING RESPONSE)
EQ.7-TYPE 3 AND 6 ANALYSES
EQ.8-TIME HISTORY ANAL (GROSS BUILDING RESPONSE/ENVELOPES OR STEP-BY-STEP RESPONSE)
EQ.9-TYPE 4 AND 8 ANALYSES
EQ.10-SLAM RESTART
EQ.11-SLAM-2 RESTART
EQ.-1,-6,-8 SAME AS 1,6,8 ABOVE EXCEPT APPROXIMATE PERIODS AND MODES USED

NUMBER OF FREQUENCIES---- 0
STORY TRANSLATION CODE--- 1
LAT FORCE GENERATION CODE 0 0
STRESS CHECK KEY--------- 0
DATA CHECK KEY----------- 0
TYPE OF SOLUTION--------- 1
MAXIMUM NO. OF CYCLES---- 5
CONVERGENCE TOLERENCE OF EQUILIBRIUM .001000

STORY DATA

LEVEL NO.	ID	HEIGHT	MASS(M)	MR**2	X(M)	Y(M)	K-X	K-Y
25	F25	4.00	19.08	.00	.00	.00	.00	.00
24	F24	4.00	19.08	.00	.00	.00	.00	.00
23	F23	4.00	19.08	.00	.00	.00	.00	.00
22	F22	4.00	19.08	.00	.00	.00	.00	.00
21	F21	4.00	19.08	.00	.00	.00	.00	.00
20	F20	4.00	19.08	.00	.00	.00	.00	.00
19	F19	4.00	19.08	.00	.00	.00	.00	.00
18	F18	4.00	19.08	.00	.00	.00	.00	.00
17	F17	4.00	19.08	.00	.00	.00	.00	.00
16	F16	4.00	19.08	.00	.00	.00	.00	.00
15	F15	4.00	19.08	.00	.00	.00	.00	.00
14	F14	4.00	19.08	.00	.00	.00	.00	.00
13	F13	4.00	19.08	.00	.00	.00	.00	.00
12	F12	4.00	19.08	.00	.00	.00	.00	.00
11	F11	4.00	19.08	.00	.00	.00	.00	.00
10	F10	4.00	19.08	.00	.00	.00	.00	.00
9	F09	4.00	19.08	.00	.00	.00	.00	.00
8	F08	4.00	19.08	.00	.00	.00	.00	.00
7	F07	4.00	19.08	.00	.00	.00	.00	.00
6	F06	4.00	19.08	.00	.00	.00	.00	.00
5	F05	4.00	19.08	.00	.00	.00	.00	.00
4	F04	4.00	19.08	.00	.00	.00	.00	.00
3	F03	4.00	19.08	.00	.00	.00	.00	.00
2	F02	4.00	19.08	.00	.00	.00	.00	.00
1	F01	4.00	19.08	.00	.00	.00	.00	.00

CUMULATIVE STORY DATA

LEVEL NO.	ID	HEIGHT	MASS(M)	MR**2
25	F25	100.00	19.08	.00

24	F24	96.00	38.17	.00
23	F23	92.00	57.25	.00
22	F22	88.00	76.33	.00
21	F21	84.00	95.41	.00
20	F20	80.00	114.50	.00
19	F19	76.00	133.58	.00
18	F18	72.00	152.66	.00
17	F17	68.00	171.74	.00
16	F16	64.00	190.83	.00
15	F15	60.00	209.91	.00
14	F14	56.00	228.99	.00
13	F13	52.00	248.07	.00
12	F12	48.00	267.16	.00
11	F11	44.00	286.24	.00
10	F10	40.00	305.32	.00
9	F09	36.00	324.40	.00
8	F08	32.00	343.49	.00
7	F07	28.00	362.57	.00
6	F06	24.00	381.65	.00
5	F05	20.00	400.73	.00
4	F04	16.00	419.82	.00
3	F03	12.00	438.90	.00
2	F02	8.00	457.98	.00
1	F01	4.00	477.06	.00

STRUCTURE LATERAL LOADS...CASES A AND B

LEVEL NO.	FX-A	FY-A	MOM-A	FX-B	FY-B	MOM-B	XA	YA	XB	YB
25	2.56	.00	.00	.00	.00	.00	.0	.0	.0	.0
24	5.12	.00	.00	.00	.00	.00	.0	.0	.0	.0
23	5.12	.00	.00	.00	.00	.00	.0	.0	.0	.0
22	5.12	.00	.00	.00	.00	.00	.0	.0	.0	.0
21	5.12	.00	.00	.00	.00	.00	.0	.0	.0	.0
20	5.12	.00	.00	.00	.00	.00	.0	.0	.0	.0
19	5.12	.00	.00	.00	.00	.00	.0	.0	.0	.0
18	5.12	.00	.00	.00	.00	.00	.0	.0	.0	.0
17	5.12	.00	.00	.00	.00	.00	.0	.0	.0	.0
16	5.12	.00	.00	.00	.00	.00	.0	.0	.0	.0
15	5.12	.00	.00	.00	.00	.00	.0	.0	.0	.0
14	5.12	.00	.00	.00	.00	.00	.0	.0	.0	.0
13	5.12	.00	.00	.00	.00	.00	.0	.0	.0	.0
12	5.12	.00	.00	.00	.00	.00	.0	.0	.0	.0
11	5.12	.00	.00	.00	.00	.00	.0	.0	.0	.0
10	4.48	.00	.00	.00	.00	.00	.0	.0	.0	.0
9	3.84	.00	.00	.00	.00	.00	.0	.0	.0	.0
8	3.84	.00	.00	.00	.00	.00	.0	.0	.0	.0
7	3.84	.00	.00	.00	.00	.00	.0	.0	.0	.0
6	3.84	.00	.00	.00	.00	.00	.0	.0	.0	.0
5	3.20	.00	.00	.00	.00	.00	.0	.0	.0	.0
4	2.56	.00	.00	.00	.00	.00	.0	.0	.0	.0
3	2.56	.00	.00	.00	.00	.00	.0	.0	.0	.0
2	1.60	.00	.00	.00	.00	.00	.0	.0	.0	.0
1	1.60	.00	.00	.00	.00	.00	.0	.0	.0	.0

STORY SHEARS

NOTE THAT THE FORCE QUANTITIES BELOW DO NOT INCLUDE P-DELTA EFFECTS.

OUTPUT COLUMN 1 CONTAINS RESULTS FROM STATIC LATERAL LOAD CASE A
OUTPUT COLUMN 2 CONTAINS RESULTS FROM STATIC LATERAL LOAD CASE B

LEVEL ID DIRN 1 2

25	F25	X	2.5600	.0000
25	F25	Y	.0000	.0000
25	F25	ROTN	.0000	.0000
24	F24	X	7.6800	.0000
24	F24	Y	.0000	.0000
24	F24	ROTN	.0000	.0000
23	F23	X	12.8000	.0000
23	F23	Y	.0000	.0000
23	F23	ROTN	.0000	.0000
22	F22	X	17.9200	.0000
22	F22	Y	.0000	.0000
22	F22	ROTN	.0000	.0000
21	F21	X	23.0400	.0000
21	F21	Y	.0000	.0000
21	F21	ROTN	.0000	.0000
20	F20	X	28.1600	.0000
20	F20	Y	.0000	.0000
20	F20	ROTN	.0000	.0000
19	F19	X	33.2800	.0000
19	F19	Y	.0000	.0000
19	F19	ROTN	.0000	.0000
18	F18	X	38.4000	.0000
18	F18	Y	.0000	.0000
18	F18	ROTN	.0000	.0000
17	F17	X	43.5200	.0000
17	F17	Y	.0000	.0000
17	F17	ROTN	.0000	.0000
16	F16	X	48.6400	.0000
16	F16	Y	.0000	.0000
16	F16	ROTN	.0000	.0000
15	F15	X	53.7600	.0000
15	F15	Y	.0000	.0000
15	F15	ROTN	.0000	.0000
14	F14	X	58.8800	.0000
14	F14	Y	.0000	.0000
14	F14	ROTN	.0000	.0000
13	F13	X	64.0000	.0000
13	F13	Y	.0000	.0000
13	F13	ROTN	.0000	.0000
12	F12	X	69.1200	.0000
12	F12	Y	.0000	.0000
12	F12	ROTN	.0000	.0000
11	F11	X	74.2400	.0000
11	F11	Y	.0000	.0000
11	F11	ROTN	.0000	.0000
10	F10	X	78.7200	.0000
10	F10	Y	.0000	.0000
10	F10	ROTN	.0000	.0000
9	F09	X	82.5600	.0000
9	F09	Y	.0000	.0000
9	F09	ROTN	.0000	.0000
8	F08	X	88.4000	.0000
8	F08	Y	.0000	.0000

8	F08	ROTN	.0000	.0000
7	F07	X	90.2400	.0000
7	F07	Y	.0000	.0000
7	F07	ROTN	.0000	.0000
6	F06	X	94.0800	.0000
6	F06	Y	.0000	.0000
6	F06	ROTN	.0000	.0000
5	F05	X	97.2800	.0000
5	F05	Y	.0000	.0000
5	F05	ROTN	.0000	.0000
4	F04	X	99.8400	.0000
4	F04	Y	.0000	.0000
4	F04	ROTN	.0000	.0000
3	F03	X	102.4000	.0000
3	F03	Y	.0000	.0000
3	F03	ROTN	.0000	.0000
2	F02	X	104.0000	.0000
2	F02	Y	.0000	.0000
2	F02	ROTN	.0000	.0000
1	F01	X	105.6000	.0000
1	F01	Y	.0000	.0000
1	F01	ROTN	.0000	.0000

STORY OVERTURNING MOMENTS

NOTE THAT THE FORCE QUANTITIES BELOW DO NOT INCLUDE P-DELTA EFFECTS.

OUTPUT COLUMN 1 CONTAINS RESULTS FROM STATIC LATERAL LOAD CASE A
OUTPUT COLUMN 2 CONTAINS RESULTS FROM STATIC LATERAL LOAD CASE B

LEVEL	ID	DIRN	1	2
25	F25	X	10.2400	.0000
25	F25	Y	.0000	.0000
25	F25	ROTN	.0000	.0000
24	F24	X	40.9600	.0000
24	F24	Y	.0000	.0000
24	F24	ROTN	.0000	.0000
23	F23	X	92.1600	.0000
23	F23	Y	.0000	.0000
23	F23	ROTN	.0000	.0000
22	F22	X	163.8400	.0000
22	F22	Y	.0000	.0000
22	F22	ROTN	.0000	.0000
21	F21	X	256.0000	.0000
21	F21	Y	.0000	.0000
21	F21	ROTN	.0000	.0000
20	F20	X	368.6400	.0000
20	F20	Y	.0000	.0000
20	F20	ROTN	.0000	.0000
19	F19	X	501.7600	.0000

19	F19	Y	.0000	.0000
19	F19	ROTN	.0000	.0000
18	F18	X	655.3600	.0000
18	F18	Y	.0000	.0000
18	F18	ROTN	.0000	.0000
17	F17	X	829.4400	.0000
17	F17	Y	.0000	.0000
17	F17	ROTN	.0000	.0000
16	F16	X	1024.0000	.0000
16	F16	Y	.0000	.0000
16	F16	ROTN	.0000	.0000
15	F15	X	1239.0400	.0000
15	F15	Y	.0000	.0000
15	F15	ROTN	.0000	.0000
14	F14	X	1474.5600	.0000
14	F14	Y	.0000	.0000
14	F14	ROTN	.0000	.0000
13	F13	X	1730.5600	.0000
13	F13	Y	.0000	.0000
13	F13	ROTN	.0000	.0000
12	F12	X	2007.0400	.0000
12	F12	Y	.0000	.0000
12	F12	ROTN	.0000	.0000
11	F11	X	2304.0000	.0000
11	F11	Y	.0000	.0000
11	F11	ROTN	.0000	.0000
10	F10	X	2618.8800	.0000
10	F10	Y	.0000	.0000
10	F10	ROTN	.0000	.0000
9	F09	X	2949.1200	.0000
9	F09	Y	.0000	.0000
9	F09	ROTN	.0000	.0000
8	F08	X	3294.7200	.0000
8	F08	Y	.0000	.0000
8	F08	ROTN	.0000	.0000
7	F07	X	3655.6800	.0000
7	F07	Y	.0000	.0000
7	F07	ROTN	.0000	.0000
6	F06	X	4032.0000	.0000
6	F06	Y	.0000	.0000
6	F06	ROTN	.0000	.0000
5	F05	X	4421.1200	.0000
5	F05	Y	.0000	.0000
5	F05	ROTN	.0000	.0000
4	F04	X	4820.4800	.0000
4	F04	Y	.0000	.0000
4	F04	ROTN	.0000	.0000
3	F03	X	5230.0800	.0000
3	F03	Y	.0000	.0000
3	F03	ROTN	.0000	.0000
2	F02	X	5646.0800	.0000
2	F02	Y	.0000	.0000
2	F02	ROTN	.0000	.0000

1	F01	X	6069.4800	.0000
1	F01	Y	.0000	.0000
1	F01	ROTN	.0000	.0000

25-STORY,3-BAY BUILDING

FRAME ID NUMBER------------ 1
NUMBER OF STORY LEVELS---- 25
NUMBER OF COLUMN LINES---- 4
NUMBER OF BAYS------------ 3
NUMBER OF DIFF. COL. PROP- 5
NUMBER OF DIFF. BEAM PROP- 1
NUMBER OF DIFF. FEF------- 2
NUMBER OF PANEL ELEMENTS-- 25
NUMBER OF BRACING ELEMENTS 0

COLUMN LINE COORDINATES

LINE	X	Y
1	.00	.00
2	8.00	.00
3	11.50	.00
4	19.50	.00

COLUMN ID	E	A	MAJ SA	MIN SA	TORS I	MAJ I	MIN I	RIGID TOP	RIGID BOT
1	3042000.00	.16	.00	.00	.00	.00	.00	.00	.00
2	3042000.00	.36	.00	.00	.00	.01	.00	.00	.00
3	3042000.00	.56	.00	.00	.00	.03	.00	.00	.00
4	3042000.00	.81	.00	.00	.00	.05	.00	.00	.00
5	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00

BEAM ID	E	SA	TORS I	FLEX I	KII	KJJ	KIJ	RIGID I	RIGID J
1	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00

FEF ID	CODE	ML	VL	MR	VR	W
1	1	.000	38.400	.000	55.200	.000
2	1	.000	55.200	.000	38.400	.000

BEAM LOCATIONS

/ BAY	LEV	IC	JC	BID	GEN	VL1	VL2	VL3
1	25	1	2	1	24	1	0	0
2	25	2	3	1	24	0	0	0
3	25	3	4	1	24	2	0	0

GENERATED BEAM LOCATIONS

OSTORY	1	2	3
25	1	1	1
24	1	1	1
23	1	1	1
22	1	1	1
21	1	1	1
20	1	1	1
19	1	1	1
18	1	1	1
17	1	1	1
16	1	1	1
15	1	1	1
14	1	1	1
13	1	1	1
12	1	1	1
11	1	1	1
10	1	1	1
9	1	1	1
8	1	1	1

7	1	1	1
6	1	1	1
5	1	1	1
4	1	1	1
3	1	1	1
2	1	1	1
1	1	1	1

GENERATED BEAM LOADS...LOAD CASE I

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

GENERATED BEAM LOADS...LOAD CASE II

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

GENERATED BEAM LOADS...LOAD CASE III

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

COLUMN LOCATIONS

0 LINE	LEV	CID	KOOL	GEN
1	25	1	2	4
1	20	2	2	4
1	15	3	2	5
1	9	4	2	8
2	25	5	3	24
3	25	5	4	24
4	25	1	3	4
4	20	2	3	4
4	15	3	3	5
4	9	4	3	8

GENERATED COLUMN LOCATIONS

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

7	4	5	5	4
6	4	5	5	4
5	4	5	5	4
4	4	5	5	4
3	4	5	5	4
2	4	5	5	4
1	4	5	5	4

PANEL CARDS

LEVEL	COL I	COL J	E	A	I	SA	G
25	2	3	3042000.00	1.05	1.07	.00	.00
24	2	3	3042000.00	1.05	1.07	.00	.00
23	2	3	3042000.00	1.05	1.07	.00	.00
22	2	3	3042000.00	1.05	1.07	.00	.00
21	2	3	3042000.00	1.05	1.07	.00	.00
20	2	3	3042000.00	1.05	1.07	.00	.00
19	2	3	3042000.00	1.05	1.07	.00	.00
18	2	3	3042000.00	1.05	1.07	.00	.00
17	2	3	3042000.00	1.05	1.07	.00	.00
16	2	3	3042000.00	1.05	1.07	.00	.00
15	2	3	3042000.00	1.05	1.07	.00	.00
14	2	3	3042000.00	1.05	1.07	.00	.00
13	2	3	3042000.00	1.05	1.07	.00	.00
12	2	3	3042000.00	1.05	1.07	.00	.00
11	2	3	3042000.00	1.05	1.07	.00	.00
10	2	3	3042000.00	1.05	1.07	.00	.00
9	2	3	3042000.00	1.05	1.07	.00	.00
8	2	3	3042000.00	1.05	1.07	.00	.00
7	2	3	3042000.00	1.05	1.07	.00	.00
6	2	3	3042000.00	1.05	1.07	.00	.00
5	2	3	3042000.00	1.05	1.07	.00	.00
4	2	3	3042000.00	1.05	1.07	.00	.00
3	2	3	3042000.00	1.05	1.07	.00	.00
2	2	3	3042000.00	1.05	1.07	.00	.00
1	2	3	3042000.00	1.05	1.07	.00	.00

BEAM PROPERTIES AND LOADS

BAY NUMBERS 1

LEVEL	E	SA	TORS I	FLEX I	KII	KJJ	KIJ	WI	WJ	VERT1	VERT2	VERT3
25	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	1	0	0
24	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	1	0	0
23	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	1	0	0
22	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	1	0	0
21	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	1	0	0
20	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	1	0	0
19	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	1	0	0
18	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	1	0	0
17	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	1	0	0
16	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	1	0	0
15	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	1	0	0
14	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	1	0	0
13	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	1	0	0
12	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	1	0	0
11	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	1	0	0
10	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	1	0	0
9	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	1	0	0
8	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	1	0	0
7	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	1	0	0
6	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	1	0	0
5	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	1	0	0
4	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	1	0	0
3	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	1	0	0
2	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	1	0	0
1	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	1	0	0

BAY NUMBERS 2

LEVEL	E	SA	TORS I	FLEX I	KII	KJJ	KIJ	WI	WJ	VERT1	VERT2	VERT3

LEVEL	E	BA	TORS I	FLEX I	KII	KJJ	KIJ	WI	WJ	VERT1	VERT2	VERT3
25	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	0	0	0
24	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	0	0	0
23	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	0	0	0
22	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	0	0	0
21	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	0	0	0
20	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	0	0	0
19	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	0	0	0
18	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	0	0	0
17	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	0	0	0
16	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	0	0	0
15	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	0	0	0
14	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	0	0	0
13	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	0	0	0
12	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	0	0	0
11	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	0	0	0
10	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	0	0	0
9	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	0	0	0
8	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	0	0	0
7	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	0	0	0
6	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	0	0	0
5	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	0	0	0
4	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	0	0	0
3	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	0	0	0
2	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	0	0	0
1	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	0	0	0

BAY NUMBERS 3

LEVEL	E	BA	TORS I	FLEX I	KII	KJJ	KIJ	WI	WJ	VERT1	VERT2	VERT3
25	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	2	0	0
24	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	2	0	0
23	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	2	0	0
22	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	2	0	0
21	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	2	0	0
20	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	2	0	0
19	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	2	0	0
18	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	2	0	0
17	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	2	0	0
16	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	2	0	0
15	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	2	0	0
14	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	2	0	0
13	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	2	0	0
12	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	2	0	0
11	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	2	0	0
10	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	2	0	0
9	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	2	0	0
8	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	2	0	0
7	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	2	0	0
6	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	2	0	0
5	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	2	0	0
4	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	2	0	0
3	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	2	0	0
2	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	2	0	0
1	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	2	0	0

COLUMN PROPERTIES

COLUMN LINE NO. 1

LEVEL	E	A	MAJ BA	MIN BA	TORS I	MAJ I	MIN I	DT	DB
25	3042000.00	.16	.00	.00	.00	.00	.00	.00	.00
24	3042000.00	.16	.00	.00	.00	.00	.00	.00	.00
23	3042000.00	.16	.00	.00	.00	.00	.00	.00	.00
22	3042000.00	.16	.00	.00	.00	.00	.00	.00	.00
21	3042000.00	.16	.00	.00	.00	.00	.00	.00	.00
20	3042000.00	.36	.00	.00	.00	.01	.00	.00	.00
19	3042000.00	.36	.00	.00	.00	.01	.00	.00	.00
18	3042000.00	.36	.00	.00	.00	.01	.00	.00	.00
17	3042000.00	.36	.00	.00	.00	.01	.00	.00	.00
16	3042000.00	.36	.00	.00	.00	.01	.00	.00	.00
15	3042000.00	.56	.00	.00	.00	.03	.00	.00	.00
14	3042000.00	.56	.00	.00	.00	.03	.00	.00	.00

13	3042000.00	.56	.00	.00	.00	.03	.00	.00	.00
12	3042000.00	.56	.00	.00	.00	.03	.00	.00	.00
11	3042000.00	.56	.00	.00	.00	.03	.00	.00	.00
10	3042000.00	.56	.00	.00	.00	.03	.00	.00	.00
9	3042000.00	.61	.00	.00	.00	.05	.00	.00	.00
8	3042000.00	.61	.00	.00	.00	.05	.00	.00	.00
7	3042000.00	.61	.00	.00	.00	.05	.00	.00	.00
6	3042000.00	.61	.00	.00	.00	.05	.00	.00	.00
5	3042000.00	.61	.00	.00	.00	.05	.00	.00	.00
4	3042000.00	.61	.00	.00	.00	.05	.00	.00	.00
3	3042000.00	.61	.00	.00	.00	.05	.00	.00	.00
2	3042000.00	.61	.00	.00	.00	.05	.00	.00	.00
1	3042000.00	.61	.00	.00	.00	.05	.00	.00	.00

COLUMN LINE NO. 2

LEVEL	E	A	MAJ BA	MIN BA	TORS I	MAJ I	MIN I	DT	DB
25	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
24	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
23	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
22	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
21	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
20	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
19	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
18	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
17	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
16	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
15	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
14	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
13	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
12	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
11	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
10	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
9	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
8	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
7	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
6	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
5	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
4	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
3	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
2	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
1	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00

COLUMN LINE NO. 3

LEVEL	E	A	MAJ BA	MIN BA	TORS I	MAJ I	MIN I	DT	DB
25	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
24	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
23	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
22	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
21	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
20	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
19	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
18	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
17	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
16	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
15	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
14	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
13	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
12	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
11	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
10	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
9	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
8	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
7	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
6	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
5	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
4	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
3	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
2	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
1	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00

COLUMN LINE NO. 4

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

25	3042000.00	.16	.00	.00	.00	.00	.00	.00	.00
24	3042000.00	.16	.00	.00	.00	.00	.00	.00	.00
23	3042000.00	.16	.00	.00	.00	.00	.00	.00	.00
22	3042000.00	.16	.00	.00	.00	.00	.00	.00	.00
21	3042000.00	.16	.00	.00	.00	.00	.00	.00	.00
20	3042000.00	.36	.00	.00	.00	.01	.00	.00	.00
19	3042000.00	.36	.00	.00	.00	.01	.00	.00	.00
18	3042000.00	.36	.00	.00	.00	.01	.00	.00	.00
17	3042000.00	.36	.00	.00	.00	.01	.00	.00	.00
16	3042000.00	.36	.00	.00	.00	.01	.00	.00	.00
15	3042000.00	.56	.00	.00	.00	.03	.00	.00	.00
14	3042000.00	.56	.00	.00	.00	.03	.00	.00	.00
13	3042000.00	.56	.00	.00	.00	.03	.00	.00	.00
12	3042000.00	.56	.00	.00	.00	.03	.00	.00	.00
11	3042000.00	.56	.00	.00	.00	.03	.00	.00	.00
10	3042000.00	.56	.00	.00	.00	.03	.00	.00	.00
9	3042000.00	.81	.00	.00	.00	.05	.00	.00	.00
8	3042000.00	.81	.00	.00	.00	.05	.00	.00	.00
7	3042000.00	.81	.00	.00	.00	.05	.00	.00	.00
6	3042000.00	.81	.00	.00	.00	.05	.00	.00	.00
5	3042000.00	.81	.00	.00	.00	.05	.00	.00	.00
4	3042000.00	.81	.00	.00	.00	.05	.00	.00	.00
3	3042000.00	.81	.00	.00	.00	.05	.00	.00	.00
2	3042000.00	.81	.00	.00	.00	.05	.00	.00	.00
1	3042000.00	.81	.00	.00	.00	.05	.00	.00	.00

0...FRAME TYPE 1 ...

TIME REQUIRED TO FORM STIFFNESS = 76.12

1FRAME POSITION DATA

FRAME	ID	FORCE CODE	X1	Y1	ANG	
1	1	0	.00	.00	.00	25-B,3-B BUILD.

LOAD CONDITION DEFINITION CARDS

0LOAD	I	II	III	A	B	SPECTRUM-1	SPECTRUM-2	SPECTRUM-3	SPECTRUM-4	TIME HIST
1	.50	.00	.00	.50	.00	.00	.00	.00	.00	.00

SPECTRUM-1... ROOT MEAN SQUARE COMBINATION

SPECTRUM-2... SUM OF ABSOLUTE VALUES

SPECTRUM-3... DOUBLE SUM COMBINATION

SPECTRUM-4... COMPLETE QUADRATIC COMBINATION

FRAME DISPLACEMENT

LEVEL		
25	X	.1294520
25	Y	.0000000
25	ROTN	.0000000
24	X	.1246610
24	Y	.0000000
24	ROTN	.0000000
23	X	.1198007
23	Y	.0000000
23	ROTN	.0000000
22	X	.1148365
22	Y	.0000000
22	ROTN	.0000000
21	X	.1097403
21	Y	.0000000
21	ROTN	.0000000
20	X	.1044931

20	Y	.0000000
20	ROTN	.0000000
19	X	.0990931
19	Y	.0000000
19	ROTN	.0000000
18	X	.0935163
18	Y	.0000000
18	ROTN	.0000000
17	X	.0877606
17	Y	.0000000
17	ROTN	.0000000
16	X	.0816295
16	Y	.0000000
16	ROTN	.0000000
15	X	.0757323
15	Y	.0000000
15	ROTN	.0000000
14	X	.0694972
14	Y	.0000000
14	ROTN	.0000000
13	X	.0631419
13	Y	.0000000
13	ROTN	.0000000
12	X	.0567034
12	Y	.0000000
12	ROTN	.0000000
11	X	.0502251
11	Y	.0000000
11	ROTN	.0000000
10	X	.0437620
10	Y	.0000000
10	ROTN	.0000000
9	X	.0373783
9	Y	.0000000
9	ROTN	.0000000
8	X	.0311569
8	Y	.0000000
8	ROTN	.0000000
7	X	.0251734
7	Y	.0000000
7	ROTN	.0000000
6	X	.0195275
6	Y	.0000000
6	ROTN	.0000000
5	X	.0143286
5	Y	.0000000
5	ROTN	.0000000
4	X	.0097024
4	Y	.0000000
4	ROTN	.0000000
3	X	.0057897
3	Y	.0000000
3	ROTN	.0000000
2	X	.0027480
2	Y	.0000000
2	ROTN	.0000000
1	X	.0007522
1	Y	.0000000
1	ROTN	.0000000

MEMBER FORCES ..... FRAME ID 25-B,3-B BUILD. FRAME TYPE 1

LEVEL NO 1 LEVEL ID F01

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	-10.6761815	18.0530037	-380.2214248	1.7727032
2	1	-1.3826925	4.6548454	-102.2769744	.7988046
3	1	-1.2950894	4.6100588	-640.3981239	.7083145
4	1	10.6144251	-18.0509746	-567.2815158	-1.7524576

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-4.5913058	-4.4811012
2	1	.5042466	.5130438
3	1	-4.6052671	-4.7183361

PANEL FORCES

I COL	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
2	1	-178.8080667	370.3677619	-649.8319610	47.7677200

MEMBER FORCES ..... FRAME ID 25-S,3-B BUILD. FRAME TYPE 1
LEVEL NO 2 LEVEL ID F02

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	-7.3877683	15.2674873	-362.1554757	1.7892406
2	1	.4746329	5.3595470	-128.0688115	1.3946471
3	1	.6017819	5.3873127	-585.1730332	1.2053109
4	1	7.2678172	-15.3327613	-546.9160654	-1.7434110

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-8.2343456	-8.0642128
2	1	1.2792750	1.2971521
3	1	-8.3082810	-8.4846734

PANEL FORCES

I COL	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
2	1	-140.8965353	325.6116079	-624.0866142	45.8673901

MEMBER FORCES ..... FRAME ID 25-S,3-B BUILD. FRAME TYPE 1
LEVEL NO 3 LEVEL ID F03

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	-3.7739619	15.6221039	-344.9927955	2.6996891
2	1	2.1948119	6.3113048	-150.4371190	2.0096303
3	1	2.3569728	6.4093469	-533.3976854	1.7959614
4	1	3.5955409	-15.7522906	-525.6169461	-2.6394857

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-11.2935269	-11.0612439
2	1	1.8738901	1.9017024
3	1	-11.4232867	-11.6647783

PANEL FORCES

I COL	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
2	1	-110.3811298	280.4621277	-598.3554539	42.0652342

MEMBER FORCES ..... FRAME ID 25-B,3-B BUILD. FRAME TYPE 1
LEVEL NO 4 LEVEL ID F04

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	-.8663063	15.0674888	-328.5871418	3.2288860
2	1	3.5940208	7.0025419	-188.9215159	2.4839090
3	1	3.8120419	7.1646114	-485.5221749	2.2692466
4	1	.6313758	-15.2603193	-503.5309380	-3.1647038

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-13.7721489	-13.4932739
2	1	2.3685873	2.4050643
3	1	-13.9706953	-14.2616160

PANEL FORCES

I COL	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE

2	1	-82.8936446	240.2271809	-572.6382294	38.7732542

MEMBER FORCES ..... FRAME ID 25-8,3-B BUILD. FRAME TYPE 1
LEVEL NO 5 LEVEL ID F05

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	1.6824255	14.6384532	-312.7953194	3.7184550
2	1	4.7596048	7.5306657	-193.9759797	2.8597895
3	1	5.0248249	7.7535791	-441.0921698	2.6844541
4	1	-1.9743304	-14.8929918	-490.8019004	-3.6607572

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-15.7458315	-15.4293655
2	1	2.7652478	2.8100253
3	1	-16.0197185	-16.3509215

PANEL FORCES

I COL	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
2	1	-58.5086317	203.9052435	-546.9346308	35.7165436

MEMBER FORCES ..... FRAME ID 25-8,3-B BUILD. FRAME TYPE 1
LEVEL NO 6 LEVEL ID F06

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	3.7892280	14.0634060	-297.4922190	4.0712510
2	1	5.7058926	7.9045129	-195.8837451	3.1479827
3	1	6.0183123	8.1848684	-399.8441004	3.0311080
4	1	-4.1113431	-14.3765911	-457.5555706	-4.0272880

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-17.2898943	-16.9231530
2	1	3.0793404	3.1320531
3	1	-17.6242948	-17.9884489

PANEL FORCES

I COL	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
2	1	-37.2130958	170.9724670	-521.2443649	32.7623694

MEMBER FORCES ..... FRAME ID 25-8,3-B BUILD. FRAME TYPE 1
LEVEL NO 7 LEVEL ID F07

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	5.7102774	13.5016663	-282.5663500	4.4041466
2	1	6.4369956	9.1381200	-204.6679347	3.3548673
3	1	6.7991912	8.4739295	-361.6945573	3.3077522
4	1	-6.1220287	-13.8771058	-433.9039776	-4.3873329

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-18.3858683	-18.0241649
2	1	3.3101957	3.3711322
3	1	-18.8328551	-19.2142865

PANEL FORCES

I COL	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
2	1	-19.4019884	140.8635384	-495.5671606	29.6658999

MEMBER FORCES ..... FRAME ID 25-8,3-B BUILD. FRAME TYPE 1
LEVEL NO 8 LEVEL ID F08

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE

1	1	6.4267790	12.6755909	-267.9176041	4.3749220
2	1	7.0386369	8.2770736	-210.7912537	3.5136109
3	1	7.4401610	8.6625316	-326.2403769	3.5376593
4	1	-6.8367281	-13.0922579	-409.9480849	-4.3690167

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-19.2021852	-18.8021398
2	1	3.4965517	3.5627943
3	1	-19.7204940	-20.1432409

PANEL FORCES

I COL	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
2	1	-2.7002255	115.1314438	-469.9026785	27.4048903

MEMBER FORCES ..... FRAME ID 25-S,3-B BUILD. FRAME TYPE 1
LEVEL NO 9 LEVEL ID F09

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	10.5622129	12.7754062	-253.4681447	5.4401736
2	1	7.3657736	8.2669511	-213.7389101	3.5757427
3	1	7.8582039	9.7176287	-293.9768824	3.6866971
4	1	-11.2352459	-13.3065146	-385.7651193	-5.5354411

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-19.5180183	-19.2015065
2	1	3.5829294	3.6680802
3	1	-20.2079959	-20.5489229

PANEL FORCES

I COL	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
2	1	6.5185624	86.4130751	-444.2511434	23.0419442

MEMBER FORCES ..... FRAME ID 25-S,3-B BUILD. FRAME TYPE 1
LEVEL NO 10 LEVEL ID F10

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	9.0090697	8.9558054	-239.1080853	4.1096161
2	1	7.7420003	8.2528035	-214.9362356	3.6556751
3	1	8.0695398	8.6817119	-263.4751765	3.7673217
4	1	-9.3358010	-9.3135770	-361.4705170	-4.0854584

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-19.7452532	-19.5412478
2	1	3.6240190	3.6600260
3	1	-20.0657995	-20.2756940

PANEL FORCES

I COL	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
2	1	24.0491653	73.5908523	-418.6099856	23.7419270

MEMBER FORCES ..... FRAME ID 25-S,3-B BUILD. FRAME TYPE 1
LEVEL NO 11 LEVEL ID F11

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	10.0308007	10.7361835	-224.8188980	4.9294942
2	1	7.9972723	8.1752284	-214.7772991	3.6960981
3	1	9.0947169	8.3362317	-234.2644489	3.7292236
4	1	-10.1453882	-10.9398929	-337.2278303	-4.7264433

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-20.0039409	-19.7673624

2	1	3.6687051	3.6741388
3	1	-19.8378271	-20.0759011

PANEL FORCES

I COL	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
2	1	31.6042068	51.4941417	-392.9115268	20.1397390

MEMBER FORCES ..... FRAME ID 25-8,3-B BUILD. FRAME TYPE 1
LEVEL NO 12 LEVEL ID F12

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	10.1622948	9.9731402	-210.5903109	4.6927901
2	1	8.1661971	8.1013850	-211.9801847	3.7235759
3	1	8.0675370	8.0689714	-207.6310553	3.6978512
4	1	-10.0536446	-9.9305129	-313.0388143	-4.4890471

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-19.9940189	-19.7625843
2	1	3.6562405	3.6298923
3	1	-19.4151498	-19.6406980

PANEL FORCES

I COL	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
2	1	39.3222943	34.8832246	-367.1598349	17.9567337

MEMBER FORCES ..... FRAME ID 25-8,3-B BUILD. FRAME TYPE 1
LEVEL NO 13 LEVEL ID F13

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	10.5036117	9.8317241	-198.3598863	4.7677651
2	1	8.2123508	7.9401467	-207.0886978	3.7047860
3	1	7.9327081	7.7177205	-183.0358351	3.6179852
4	1	-10.1874372	-9.5870535	-288.9566333	-4.4785063

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-19.8114313	-19.5894492
2	1	3.6113633	3.5574724
3	1	-18.8579114	-19.0889548

PANEL FORCES

I COL	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
2	1	44.2381039	19.6855777	-341.3589575	15.4309552

MEMBER FORCES ..... FRAME ID 25-8,3-B BUILD. FRAME TYPE 1
LEVEL NO 14 LEVEL ID F14

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	9.9398001	9.3078196	-182.0849963	4.5226071
2	1	8.2268950	7.7657451	-200.2741037	3.6799632
3	1	7.7690786	7.3677309	-160.3121516	3.5294974
4	1	-9.4721934	-8.8915175	-265.0157750	-4.1673684

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-19.5697715	-19.3136446
2	1	3.5662233	3.4833928
3	1	-18.2328021	-18.4693366

PANEL FORCES

I COL	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
2	1	49.4783201	7.6890905	-315.5129734	13.5405636

MEMBER FORCES ..... FRAME ID 25-8,3-B BUILD. FRAME TYPE 1
LEVEL NO 15 LEVEL ID F15

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	12.2863188	9.6299714	-167.7454233	5.2175933
2	1	8.0542208	7.5205262	-191.0614889	3.5958627
3	1	7.4939271	6.9803307	-139.9393479	3.4004289
4	1	-11.5243086	-8.9971532	-241.2280077	-4.7543426

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-18.8921665	-18.7871911
2	1	3.4542843	3.3613751
3	1	-17.3850879	-17.4785499

PANEL FORCES

I COL	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
2	1	46.8169719	-5.3640332	-289.6257322	9.9117701

MEMBER FORCES ..... FRAME ID 25-8,3-B BUILD. FRAME TYPE 1
LEVEL NO 16 LEVEL ID F16

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	8.7730420	6.6058479	-153.2553430	3.6111159
2	1	7.9243213	7.2786861	-180.8003651	3.5251585
3	1	7.0110450	6.5297857	-120.5727570	3.2014191
4	1	-7.8301958	-5.9542412	-217.6700530	-3.1143156

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-17.9480504	-18.2335456
2	1	3.2789643	3.1067928
3	1	-15.9389009	-15.6766791

PANEL FORCES

I COL	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
2	1	53.2777551	-8.1979650	-263.7014819	10.8679983

MEMBER FORCES ..... FRAME ID 25-8,3-B BUILD. FRAME TYPE 1
LEVEL NO 17 LEVEL ID F17

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	9.4333793	9.1750084	-138.5780425	4.4468142
2	1	7.8434636	7.0302600	-169.5800929	3.4669784
3	1	6.5089085	5.9210631	-102.0486282	2.9311757
4	1	-8.0054112	-7.9464834	-194.5181055	-3.6745432

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-17.8521307	-18.0298482
2	1	3.2383044	3.0052986
3	1	-14.8895107	-14.7324774

PANEL FORCES

I COL	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
2	1	49.6520536	-19.2798166	-237.6751309	7.2406858

MEMBER FORCES ..... FRAME ID 25-8,3-B BUILD. FRAME TYPE 1
LEVEL NO 18 LEVEL ID F18

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	9.2978296	8.4187514	-123.8632899	4.2509167
2	1	7.7278315	6.9480903	-156.0175982	3.4444821
3	1	6.0490079	5.3753034	-85.7537902	2.7328855

4	1	-7.4402344	-6.7270663	-171.6153569	-3.2949855

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-17.4269432	-17.6542587
2	1	3.1118268	2.8272482
3	1	-13.7828647	-13.5934401

PANEL FORCES

I COL	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
2	1	47.4235757	-24.2978568	-211.5499648	5.4770276

MEMBER FORCES ..... FRAME ID 25-B,3-B BUILD. FRAME TYPE 1
LEVEL NO 19 LEVEL ID F19

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	8.2751222	8.1290137	-109.0484276	3.9489981
2	1	7.6581241	6.8146004	-141.0651234	3.4215074
3	1	5.6340237	4.9066086	-70.7526119	2.5365145
4	1	-6.3447308	-6.1532057	-148.9933188	-2.9167569

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-17.3118910	-17.3980869
2	1	3.0706351	2.7296318
3	1	-12.8545385	-12.7705722

PANEL FORCES

I COL	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
2	1	44.0352041	-27.7367116	-185.3405183	3.8162204

MEMBER FORCES ..... FRAME ID 25-B,3-B BUILD. FRAME TYPE 1
LEVEL NO 20 LEVEL ID F20

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	11.8138234	9.0367688	-94.1871749	5.0854940
2	1	7.3457769	6.6693278	-123.6377929	3.3368634
3	1	5.1355462	4.4908829	-58.1342845	2.3281252
4	1	-8.4756831	-6.4258413	-126.5901800	-3.5544776

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-15.9345086	-16.5513517
2	1	2.9112827	2.5543679
3	1	-11.5910129	-11.1448092

PANEL FORCES

I COL	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
2	1	33.4114235	-33.4523923	-159.0505677	-.2249627

MEMBER FORCES ..... FRAME ID 25-B,3-B BUILD. FRAME TYPE 1
LEVEL NO 21 LEVEL ID F21

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	5.7032507	4.1206852	-79.0479074	2.3522882
2	1	6.7373642	6.2942923	-105.9572443	3.1189184
3	1	4.1977718	3.9010987	-45.7249306	1.9647354
4	1	-3.6090614	-2.6691461	-104.5482022	-1.4324046

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-12.5343731	-16.0223202
2	1	2.4519714	2.0247835
3	1	-9.1672741	-7.6104211

PANEL FORCES

I COL	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
2	1	36.3934729	-25.0904457	-132.7218155	2.8516511

MEMBER FORCES ..... FRAME ID 25-S,3-B BUILD. FRAME TYPE 1
LEVEL NO 22 LEVEL ID F22

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	6.7089965	6.8311224	-83.2924941	3.3043928
2	1	6.6328640	5.8329846	-88.7108003	3.0034414
3	1	3.5472037	2.9447188	-32.8126747	1.5811761
4	1	-3.7956986	-4.0013596	-83.2509903	-1.8431998

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-13.1531409	-16.3228826
2	1	2.5527174	2.0306746
3	1	-8.2619439	-7.0861747

PANEL FORCES

I COL	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
2	1	27.2566143	-29.8035745	-106.3330406	-.7722122

MEMBER FORCES ..... FRAME ID 25-S,3-B BUILD. FRAME TYPE 1
LEVEL NO 23 LEVEL ID F23

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	6.6174013	6.4441444	-47.6519970	3.2062473
2	1	6.7160080	6.1373011	-68.8867538	3.1279346
3	1	3.0973902	2.6840656	-22.3215275	1.4176615
4	1	-3.3119142	-3.2904760	-62.1324755	-1.5734873

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-12.9825557	-15.2250305
2	1	2.5102514	1.9069426
3	1	-7.3772956	-6.2611944

PANEL FORCES

I COL	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
2	1	18.1145187	-29.4192651	-79.8072461	-2.9252324

MEMBER FORCES ..... FRAME ID 25-S,3-B BUILD. FRAME TYPE 1
LEVEL NO 24 LEVEL ID F24

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	6.1472853	6.3451545	-31.9764453	3.0842570
2	1	6.1806733	5.9987711	-47.3010293	2.9873862
3	1	2.7117681	2.3709830	-13.4973123	1.2542798
4	1	-2.8157808	-2.9492801	-41.2276643	-1.3911700

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-13.6472238	-15.6286006
2	1	2.2712481	1.7455350
3	1	-6.9402803	-6.0595478

PANEL FORCES

I COL	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
2	1	7.6286990	-26.8795115	-53.1985489	-4.8770941

MEMBER FORCES ..... FRAME ID 25-S,3-B BUILD. FRAME TYPE 1
LEVEL NO 25 LEVEL ID F26

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	9.2099887	7.4999385	-16.4349234	4.1577970
2	1	8.9766897	7.1766792	-22.5631837	4.0113173
3	1	2.9021146	2.4829672	-7.7100901	1.3370357
4	1	-3.9693440	-3.2437670	-20.4026892	-1.7788405

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-9.2099887	-12.9106244
2	1	3.9339348	2.7600473
3	1	-5.6521619	-3.9893440

PANEL FORCES

I COL	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
2	1	-12.3653433	-27.5277122	-26.4891146	-10.0049911

CONVERGE IN ITERATION NO. 3

TOTAL TIME 280.51 SEC.

ตัวอย่าง 4 : โครงข้อแข็งประกอบผนังต้านแรงเฉือน 25 ชั้น 3 ช่วงเสา

กรณี $\alpha = 1.0$

```
  25    1    1    1    0    0    1 00001   5     0.001 TS10801.INP
 F25            4.0
    2.56
 F24            4.0
    5.12
 F23            4.0
    5.12
 F22            4.0
    5.12
 F21            4.0
    5.12
 F20            4.0
    5.12
 F19            4.0
    5.12
 F18            4.0
    5.12
 F17            4.0
    5.12
 F16            4.0
    5.12
 F15            4.0
    5.12
 F14            4.0
    5.12
 F13            4.0
    5.12
 F12            4.0
    5.12
 F11            4.0
    5.12
 F10            4.0
    4.48
 F09            4.0
    3.84
 F08            4.0
    3.84
 F07            4.0
    3.84
 F06            4.0
    3.84
 F05            4.0
    3.20
 F04            4.0
    2.56
 F03            4.0
    2.56
 F02            4.0
    1.60
 F01            4.0
    1.60
   1   25    4    3    5    1    2   25     25-STORY,3-BAY BUILDING
   1       0.0       0.0
   2       8.0       0.0
   3      11.5       0.0
   4      19.5       0.0
   1      3042000.0     0.16                0.0021333
   2      3042000.0     0.36                0.0108000
   3      3042000.0   0.5625                0.0263672
   4      3042000.0     0.81                0.0546750
   5      3042000.0     0.60                0.0126000
   1      3042000.0             0.0052083  4.0  4.0  2.0
   1    1                38.4          55.2
   2    1                55.2          38.4
   1    1    2    1   24    1
   2    2    3    1   24
   3    3    4    1   24    2
   1    1    2    4
   1    2    2    4
   1    3    2    5
   1    4    2    8
```

```
 2    5    3   24
 3    5    4   24
 4    1    3    4
 4    2    3    4
 4    3    3    6
 4    4    3    8
25    2    3 3042000.0       1.05  1.071875
24    2    3 3042000.0       1.05  1.071875
23    2    3 3042000.0       1.05  1.071875
22    2    3 3042000.0       1.05  1.071875
21    2    3 3042000.0       1.05  1.071875
20    2    3 3042000.0       1.05  1.071875
19    2    3 3042000.0       1.05  1.071875
18    2    3 3042000.0       1.05  1.071875
17    2    3 3042000.0       1.05  1.071875
16    2    3 3042000.0       1.05  1.071875
15    2    3 3042000.0       1.05  1.071875
14    2    3 3042000.0       1.05  1.071875
13    2    3 3042000.0       1.05  1.071875
12    2    3 3042000.0       1.05  1.071875
11    2    3 3042000.0       1.05  1.071875
10    2    3 3042000.0       1.05  1.071875
 9    2    3 3042000.0       1.05  1.071875
 8    2    3 3042000.0       1.05  1.071875
 7    2    3 3042000.0       1.05  1.071875
 6    2    3 3042000.0       1.05  1.071875
 5    2    3 3042000.0       1.05  1.071875
 4    2    3 3042000.0       1.05  1.071875
 3    2    3 3042000.0       1.05  1.071875
 2    2    3 3042000.0       1.05  1.071875
 1    2    3 3042000.0       1.05  1.071875
 1    0         0.0        0.0        0.0 25-8,3-B BUILD.
    1.0         0.0        0.0        1.0        0.0  0.0  0.0  0.0  0.0  0.0
 0
```

```
PROGRAM  CU-NTABS
INPUT  FILE :  ts10s01.inp
OUTPUT FILE :  ts10s01g.out

TS10S01.INP
TOTAL NUMBER OF STORIES--  25
NUMBER OF DIFF  FRAMES---   1
TOTAL NUMBER OF FRAMES---   1
NUMBER OF LOAD CONDITIONS   1
TYPE OF ANALYSIS---------   0

  EQ.0-STATIC LOADS ONLY
  EQ.1-MODE SHAPES AND FREQUENCIES ONLY
  EQ.2-STATIC AND MODE SHAPE ANALYSES
  EQ.3-TYPE 2 AND RESPONSE SPECTRUM ANAL
  EQ.4-TYPE 2 AND TIME HISTORY ANAL (INDIVIDUAL MEMBER RESPONSE ENVELOPES ONLY)
  EQ.5-THIS OPTION IS NOT AVAILABLE FOR USE
  EQ.6-RESPONSE SPECTRUM ANAL (GROSS BUILDING RESPONSE)
  EQ.7-TYPE 3 AND 6 ANALYSES
  EQ.8-TIME HISTORY ANAL (GROSS BUILDING RESPONSE/ENVELOPES OR STEP-BY-STEP RESPONSE)
  EQ.9-TYPE 4 AND 8 ANALYSES
  EQ.10-SLAM RESTART
  EQ.11-SLAM-2 RESTART
  EQ.-1,-6,-8 SAME AS 1,6,8 ABOVE EXCEPT APPROXIMATE PERIODS AND MODES USED

NUMBER OF FREQUENCIES----   0
STORY TRANSLATION CODE---   1
LAT FORCE GENERATION CODE 0 0
STRESS CHECK KEY---------   0
DATA CHECK KEY-----------   0
TYPE OF SOLUTION---------   1
MAXIMUM NO. OF CYCLES----   5
CONVERGENCE TOLERENCE OF EQUILIBRIUM      .001000
```

STORY DATA

LEVEL NO.	ID	HEIGHT	MASS(M)	MR**2	X(M)	Y(M)	K-X	K-Y
25	F25	4.00	19.08	.00	.00	.00	.00	.00
24	F24	4.00	19.08	.00	.00	.00	.00	.00
23	F23	4.00	19.08	.00	.00	.00	.00	.00
22	F22	4.00	19.08	.00	.00	.00	.00	.00
21	F21	4.00	19.08	.00	.00	.00	.00	.00
20	F20	4.00	19.08	.00	.00	.00	.00	.00
19	F19	4.00	19.08	.00	.00	.00	.00	.00
18	F18	4.00	19.08	.00	.00	.00	.00	.00
17	F17	4.00	19.08	.00	.00	.00	.00	.00
16	F16	4.00	19.08	.00	.00	.00	.00	.00
15	F15	4.00	19.08	.00	.00	.00	.00	.00
14	F14	4.00	19.08	.00	.00	.00	.00	.00
13	F13	4.00	19.08	.00	.00	.00	.00	.00
12	F12	4.00	19.08	.00	.00	.00	.00	.00
11	F11	4.00	19.08	.00	.00	.00	.00	.00
10	F10	4.00	19.08	.00	.00	.00	.00	.00
9	F09	4.00	19.08	.00	.00	.00	.00	.00
8	F08	4.00	19.08	.00	.00	.00	.00	.00
7	F07	4.00	19.08	.00	.00	.00	.00	.00
6	F06	4.00	19.08	.00	.00	.00	.00	.00
5	F05	4.00	19.08	.00	.00	.00	.00	.00
4	F04	4.00	19.08	.00	.00	.00	.00	.00
3	F03	4.00	19.08	.00	.00	.00	.00	.00
2	F02	4.00	19.08	.00	.00	.00	.00	.00
1	F01	4.00	19.08	.00	.00	.00	.00	.00

CUMULATIVE STORY DATA

LEVEL NO.	ID	HEIGHT	MASS(M)	MR**2
25	F25	100.00	19.08	.00

24	F24	96.00	38.17	.00
23	F23	92.00	57.25	.00
22	F22	88.00	76.33	.00
21	F21	84.00	95.41	.00
20	F20	80.00	114.50	.00
19	F19	76.00	133.58	.00
18	F18	72.00	152.66	.00
17	F17	68.00	171.74	.00
16	F16	64.00	190.83	.00
15	F15	60.00	209.91	.00
14	F14	56.00	228.99	.00
13	F13	52.00	248.07	.00
12	F12	48.00	267.16	.00
11	F11	44.00	286.24	.00
10	F10	40.00	305.32	.00
9	F09	36.00	324.40	.00
8	F08	32.00	343.49	.00
7	F07	28.00	362.57	.00
6	F06	24.00	381.65	.00
5	F05	20.00	400.73	.00
4	F04	16.00	419.82	.00
3	F03	12.00	438.90	.00
2	F02	8.00	457.98	.00
1	F01	4.00	477.06	.00

STRUCTURE LATERAL LOADS . CASES A AND B

LEVEL NO	FX-A	FY-A	MOM-A	FX-B	FY-B	MOM-B	XA	YA	XB	YB
25	2.56	.00	.00	.00	.00	.00	.0	.0	.0	.0
24	5.12	.00	.00	.00	.00	.00	.0	.0	.0	.0
23	5.12	.00	.00	.00	.00	.00	.0	.0	.0	.0
22	5.12	.00	.00	.00	.00	.00	.0	.0	.0	.0
21	5.12	.00	.00	.00	.00	.00	.0	.0	.0	.0
20	5.12	.00	.00	.00	.00	.00	.0	.0	.0	.0
19	5.12	.00	.00	.00	.00	.00	.0	.0	.0	.0
18	5.12	.00	.00	.00	.00	.00	.0	.0	.0	.0
17	5.12	.00	.00	.00	.00	.00	.0	.0	.0	.0
16	5.12	.00	.00	.00	.00	.00	.0	.0	.0	.0
15	5.12	.00	.00	.00	.00	.00	.0	.0	.0	.0
14	5.12	.00	.00	.00	.00	.00	.0	.0	.0	.0
13	5.12	.00	.00	.00	.00	.00	.0	.0	.0	.0
12	5.12	.00	.00	.00	.00	.00	.0	.0	.0	.0
11	5.12	.00	.00	.00	.00	.00	.0	.0	.0	.0
10	4.48	.00	.00	.00	.00	.00	.0	.0	.0	.0
9	3.84	.00	.00	.00	.00	.00	.0	.0	.0	.0
8	3.84	.00	.00	.00	.00	.00	.0	.0	.0	.0
7	3.84	.00	.00	.00	.00	.00	.0	.0	.0	.0
6	3.84	.00	.00	.00	.00	.00	.0	.0	.0	.0
5	3.20	.00	.00	.00	.00	.00	.0	.0	.0	.0
4	2.56	.00	.00	.00	.00	.00	.0	.0	.0	.0
3	2.56	.00	.00	.00	.00	.00	.0	.0	.0	.0
2	1.60	.00	.00	.00	.00	.00	.0	.0	.0	.0
1	1.60	.00	.00	.00	.00	.00	.0	.0	.0	.0

STORY SHEARS

NOTE THAT THE FORCE QUANTITIES BELOW DO NOT INCLUDE P-DELTA EFFECTS.

OUTPUT COLUMN 1 CONTAINS RESULTS FROM STATIC LATERAL LOAD CASE A
OUTPUT COLUMN 2 CONTAINS RESULTS FROM STATIC LATERAL LOAD CASE B

LEVEL ID DIRN 1 2

25	F25	X	2.5600	.0000
25	F25	Y	.0000	.0000
25	F25	ROTN	.0000	.0000
24	F24	X	7.6800	.0000
24	F24	Y	.0000	.0000
24	F24	ROTN	.0000	.0000
23	F23	X	12.8000	.0000
23	F23	Y	.0000	.0000
23	F23	ROTN	.0000	.0000
22	F22	X	17.9200	.0000
22	F22	Y	.0000	.0000
22	F22	ROTN	.0000	.0000
21	F21	X	23.0400	.0000
21	F21	Y	.0000	.0000
21	F21	ROTN	.0000	.0000
20	F20	X	28.1600	.0000
20	F20	Y	.0000	.0000
20	F20	ROTN	.0000	.0000
19	F19	X	33.2800	.0000
19	F19	Y	.0000	.0000
19	F19	ROTN	.0000	.0000
18	F18	X	38.4000	.0000
18	F18	Y	.0000	.0000
18	F18	ROTN	.0000	.0000
17	F17	X	43.5200	.0000
17	F17	Y	.0000	.0000
17	F17	ROTN	.0000	.0000
16	F16	X	48.6400	.0000
16	F16	Y	.0000	.0000
16	F16	ROTN	.0000	.0000
15	F15	X	53.7600	.0000
15	F15	Y	.0000	.0000
15	F15	ROTN	.0000	.0000
14	F14	X	58.8800	.0000
14	F14	Y	.0000	.0000
14	F14	ROTN	.0000	.0000
13	F13	X	64.0000	.0000
13	F13	Y	.0000	.0000
13	F13	ROTN	.0000	.0000
12	F12	X	69.1200	.0000
12	F12	Y	.0000	.0000
12	F12	ROTN	.0000	.0000
11	F11	X	74.2400	.0000
11	F11	Y	.0000	.0000
11	F11	ROTN	.0000	.0000
10	F10	X	78.7200	.0000
10	F10	Y	.0000	.0000
10	F10	ROTN	.0000	.0000
9	F09	X	82.5600	.0000
9	F09	Y	.0000	.0000
9	F09	ROTN	.0000	.0000
8	F08	X	86.4000	.0000
8	F08	Y	.0000	.0000

8	F08	ROTN	.0000	.0000
7	F07	X	90.2400	.0000
7	F07	Y	.0000	.0000
7	F07	ROTN	.0000	.0000
6	F06	X	94.0800	.0000
6	F06	Y	.0000	.0000
6	F06	ROTN	.0000	.0000
5	F05	X	97.2800	.0000
5	F05	Y	.0000	.0000
5	F05	ROTN	.0000	.0000
4	F04	X	99.8400	.0000
4	F04	Y	.0000	.0000
4	F04	ROTN	.0000	.0000
3	F03	X	102.4000	.0000
3	F03	Y	.0000	.0000
3	F03	ROTN	.0000	.0000
2	F02	X	104.0000	.0000
2	F02	Y	.0000	.0000
2	F02	ROTN	.0000	.0000
1	F01	X	105.6000	.0000
1	F01	Y	.0000	.0000
1	F01	ROTN	.0000	.0000

STORY OVERTURNING MOMENTS

NOTE THAT THE FORCE QUANTITIES BELOW DO NOT INCLUDE P-DELTA EFFECTS

OUTPUT COLUMN 1 CONTAINS RESULTS FROM STATIC LATERAL LOAD CASE A
OUTPUT COLUMN 2 CONTAINS RESULTS FROM STATIC LATERAL LOAD CASE B

LEVEL	ID	DIRN	1	2
25	F25	X	10.2400	.0000
25	F25	Y	.0000	.0000
25	F25	ROTN	.0000	.0000
24	F24	X	40.9600	.0000
24	F24	Y	.0000	.0000
24	F24	ROTN	.0000	.0000
23	F23	X	92.1600	.0000
23	F23	Y	.0000	.0000
23	F23	ROTN	.0000	.0000
22	F22	X	163.8400	.0000
22	F22	Y	.0000	.0000
22	F22	ROTN	.0000	.0000
21	F21	X	256.0000	.0000
21	F21	Y	.0000	.0000
21	F21	ROTN	.0000	.0000
20	F20	X	368.6400	.0000
20	F20	Y	.0000	.0000
20	F20	ROTN	.0000	.0000
19	F19	X	501.7600	.0000

19	F19	Y	.0000	.0000
19	F19	ROTN	.0000	.0000
18	F18	X	655.3600	.0000
18	F18	Y	.0000	.0000
18	F18	ROTN	.0000	.0000
17	F17	X	829.4400	.0000
17	F17	Y	.0000	.0000
17	F17	ROTN	.0000	.0000
16	F16	X	1024.0000	.0000
16	F16	Y	.0000	.0000
16	F16	ROTN	.0000	.0000
15	F15	X	1239.0400	.0000
15	F15	Y	.0000	.0000
15	F15	ROTN	.0000	.0000
14	F14	X	1474.5600	.0000
14	F14	Y	.0000	.0000
14	F14	ROTN	.0000	.0000
13	F13	X	1730.5600	.0000
13	F13	Y	.0000	.0000
13	F13	ROTN	.0000	.0000
12	F12	X	2007.0400	.0000
12	F12	Y	.0000	.0000
12	F12	ROTN	.0000	.0000
11	F11	X	2304.0000	.0000
11	F11	Y	.0000	.0000
11	F11	ROTN	.0000	.0000
10	F10	X	2618.8800	.0000
10	F10	Y	.0000	.0000
10	F10	ROTN	.0000	.0000
9	F09	X	2949.1200	.0000
9	F09	Y	.0000	.0000
9	F09	ROTN	.0000	.0000
8	F08	X	3294.7200	.0000
8	F08	Y	.0000	.0000
8	F08	ROTN	.0000	.0000
7	F07	X	3655.6800	.0000
7	F07	Y	.0000	.0000
7	F07	ROTN	.0000	.0000
6	F06	X	4032.0000	.0000
6	F06	Y	.0000	.0000
6	F06	ROTN	.0000	.0000
5	F05	X	4421.1200	.0000
5	F05	Y	.0000	.0000
5	F05	ROTN	.0000	.0000
4	F04	X	4820.4800	.0000
4	F04	Y	.0000	.0000
4	F04	ROTN	.0000	.0000
3	F03	X	5230.0800	.0000
3	F03	Y	.0000	.0000
3	F03	ROTN	.0000	.0000
2	F02	X	5646.0800	.0000
2	F02	Y	.0000	.0000
2	F02	ROTN	.0000	.0000

T	F01	X	6068.4800	.0000
1	F01	Y	0000	.0000
1	F01	ROTN	.0000	.0000

25-STORY,3-BAY BUILDING

FRAME ID NUMBER------------	1
NUMBER OF STORY LEVELS----	25
NUMBER OF COLUMN LINES----	4
NUMBER OF BAYS------------	3
NUMBER OF DIFF. COL. PROP-	5
NUMBER OF DIFF. BEAM PROP-	1
NUMBER OF DIFF. FEF-------	2
NUMBER OF PANEL ELEMENTS--	25
NUMBER OF BRACING ELEMENTS	0

COLUMN LINE COORDINATES

LINE	X	Y
1	.00	.00
2	8.00	.00
3	11.50	.00
4	19.50	.00

COLUMN ID	E	A	MAJ SA	MIN SA	TORS I	MAJ I	MIN I	RIGID TOP	RIGID BOT
1	3042000.00	.16	.00	.00	.00	.00	.00	.00	00
2	3042000.00	.36	.00	.00	.00	.01	.00	.00	.00
3	3042000.00	.56	.00	.00	.00	.03	.00	.00	.00
4	3042000.00	.81	.00	.00	.00	.05	.00	.00	.00
5	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00

BEAM ID	E	SA	TORS I	FLEX I	KII	KJJ	KIJ	RIGID I	RIGID J
1	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	00

FEF ID	CODE	ML	VL	MR	VR	W
1	1	.000	38.400	.000	55.200	.000
2	1	.000	55.200	.000	38.400	.000

BEAM LOCATIONS

/ BAY	LEV	IC	JC	BID	GEN	VL1	VL2	VL3
1	25	1	2	1	24	1	0	0
2	25	2	3	1	24	0	0	0
3	25	3	4	1	24	2	0	0

GENERATED BEAM LOCATIONS

0STORY	1	2	3
25	1	1	1
24	1	1	1
23	1	1	1
22	1	1	1
21	1	1	1
20	1	1	1
19	1	1	1
18	1	1	1
17	1	1	1
16	1	1	1
15	1	1	1
14	1	1	1
13	1	1	1
12	1	1	1
11	1	1	1
10	1	1	1
9	1	1	1
8	1	1	1

7	1	1	1
6	1	1	1
5	1	1	1
4	1	1	1
3	1	1	1
2	1	1	1
1	1	1	1

GENERATED BEAM LOADS...LOAD CASE I

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

GENERATED BEAM LOADS...LOAD CASE II

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

GENERATED BEAM LOADS ... LOAD CASE III

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

COLUMN LOCATIONS

D LINE	LEV	CID	KCOL	GEN
1	25	1	2	4
1	20	2	2	4
1	15	3	2	5
1	9	4	2	8
2	25	5	3	24
3	25	5	4	24
4	25	1	3	4
4	20	2	3	4
4	15	3	3	5
4	9	4	3	8

GENERATED COLUMN LOCATIONS

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

7	4	5	5	4
6	4	5	5	4
5	4	5	5	4
4	4	5	5	4
3	4	5	5	4
2	4	5	5	4
1	4	5	5	4

PANEL CARDS

LEVEL	COL I	COL J	E	A	I	SA	G
25	2	3	3042000.00	1.05	1.07	.00	.00
24	2	3	3042000.00	1.05	1.07	.00	.00
23	2	3	3042000.00	1.05	1.07	.00	.00
22	2	3	3042000.00	1.05	1.07	.00	.00
21	2	3	3042000.00	1.05	1.07	.00	.00
20	2	3	3042000.00	1.05	1.07	.00	.00
19	2	3	3042000.00	1.05	1.07	.00	.00
18	2	3	3042000.00	1.05	1.07	.00	.00
17	2	3	3042000.00	1.05	1.07	.00	.00
16	2	3	3042000.00	1.05	1.07	.00	.00
15	2	3	3042000.00	1.05	1.07	.00	.00
14	2	3	3042000.00	1.05	1.07	.00	.00
13	2	3	3042000.00	1.05	1.07	.00	.00
12	2	3	3042000.00	1.05	1.07	.00	.00
11	2	3	3042000.00	1.05	1.07	.00	.00
10	2	3	3042000.00	1.05	1.07	.00	.00
9	2	3	3042000.00	1.05	1.07	.00	.00
8	2	3	3042000.00	1.05	1.07	.00	.00
7	2	3	3042000.00	1.05	1.07	.00	.00
6	2	3	3042000.00	1.05	1.07	.00	.00
5	2	3	3042000.00	1.05	1.07	.00	.00
4	2	3	3042000.00	1.05	1.07	.00	.00
3	2	3	3042000.00	1.05	1.07	.00	.00
2	2	3	3042000.00	1.05	1.07	.00	.00
1	2	3	3042000.00	1.05	1.07	.00	.00

BEAM PROPERTIES AND LOADS

BAY NUMBERS 1

LEVEL	E	SA	TORS I	FLEX I	KII	KJJ	KIJ	WI	WJ	VERT1	VERT2	VERT3
25	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	1	0	0
24	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	1	0	0
23	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	1	0	0
22	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	1	0	0
21	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	1	0	0
20	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	1	0	0
19	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	1	0	0
18	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	1	0	0
17	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	1	0	0
16	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	1	0	0
15	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	1	0	0
14	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	1	0	0
13	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	1	0	0
12	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	1	0	0
11	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	1	0	0
10	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	1	0	0
9	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	1	0	0
8	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	1	0	0
7	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	1	0	0
6	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	1	0	0
5	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	1	0	0
4	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	1	0	0
3	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	1	0	0
2	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	1	0	0
1	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	1	0	0

BAY NUMBERS 2

LEVEL	E	SA	TORS I	FLEX I	KII	KJJ	KIJ	WI	WJ	VERT1	VERT2	VERT3

25	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	0	0	0
24	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	0	0	0
23	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	0	0	0
22	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	0	0	0
21	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	0	0	0
20	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	0	0	0
19	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	0	0	0
18	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	0	0	0
17	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	0	0	0
16	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	0	0	0
15	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	0	0	0
14	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	0	0	0
13	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	0	0	0
12	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	0	0	0
11	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	0	0	0
10	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	0	0	0
9	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	0	0	0
8	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	0	0	0
7	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	0	0	0
6	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	0	0	0
5	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	0	0	0
4	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	0	0	0
3	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	0	0	0
2	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	0	0	0
1	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	0	0	0

BAY NUMBERS 3

LEVEL	E	SA	TORS I	FLEX I	KII	KJJ	KIJ	WI	WJ	VERT1	VERT2	VERT3
25	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	2	0	0
24	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	2	0	0
23	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	2	0	0
22	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	2	0	0
21	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	2	0	0
20	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	2	0	0
19	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	2	0	0
18	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	2	0	0
17	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	2	0	0
16	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	2	0	0
15	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	2	0	0
14	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	2	0	0
13	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	2	0	0
12	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	2	0	0
11	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	2	0	0
10	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	2	0	0
9	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	2	0	0
8	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	2	0	0
7	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	2	0	0
6	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	2	0	0
5	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	2	0	0
4	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	2	0	0
3	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	2	0	0
2	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	2	0	0
1	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	2	0	0

COLUMN PROPERTIES

COLUMN LINE NO. 1

LEVEL	E	A	MAJ SA	MIN SA	TORS I	MAJ I	MIN I	DT	DB
25	3042000.00	.16	.00	.00	.00	.00	.00	.00	.00
24	3042000.00	.16	.00	.00	.00	.00	.00	.00	.00
23	3042000.00	.16	.00	.00	.00	.00	.00	.00	.00
22	3042000.00	.16	.00	.00	.00	.00	.00	.00	.00
21	3042000.00	.16	.00	.00	.00	.00	.00	.00	.00
20	3042000.00	.36	.00	.00	.00	.01	.00	.00	.00
19	3042000.00	.36	.00	.00	.00	.01	.00	.00	.00
18	3042000.00	.36	.00	.00	.00	.01	.00	.00	.00
17	3042000.00	.36	.00	.00	.00	.01	.00	.00	.00
16	3042000.00	.36	.00	.00	.00	.01	.00	.00	.00
15	3042000.00	.56	.00	.00	.00	.03	.00	.00	.00
14	3042000.00	.56	.00	.00	.00	.03	.00	.00	.00

13	3042000.00	.56	.00	.00	.00	.03	.00	.00	.00
12	3042000.00	.56	.00	.00	.00	.03	.00	.00	.00
11	3042000.00	.56	.00	.00	.00	.03	.00	.00	.00
10	3042000.00	.56	.00	.00	.00	.03	.00	.00	.00
9	3042000.00	.61	.00	.00	.00	.05	.00	.00	.00
8	3042000.00	.61	.00	.00	.00	.05	.00	.00	.00
7	3042000.00	.61	.00	.00	.00	.05	.00	.00	.00
6	3042000.00	.61	.00	.00	.00	.05	.00	.00	.00
5	3042000.00	.61	.00	.00	.00	.05	.00	.00	.00
4	3042000.00	.61	.00	.00	.00	.05	.00	.00	.00
3	3042000.00	.61	.00	.00	.00	.05	.00	.00	.00
2	3042000.00	.61	.00	.00	.00	.05	.00	.00	.00
1	3042000.00	.61	.00	.00	.00	.05	.00	.00	.00

COLUMN LINE NO. 2

LEVEL	E	A	MAJ SA	MIN SA	TORS I	MAJ I	MIN I	DT	DB
25	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
24	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
23	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
22	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
21	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
20	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
19	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
18	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
17	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
16	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
15	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
14	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
13	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
12	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
11	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
10	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
9	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
8	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
7	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
6	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
5	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
4	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
3	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
2	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
1	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00

COLUMN LINE NO. 3

LEVEL	E	A	MAJ SA	MIN SA	TORS I	MAJ I	MIN I	DT	DB
25	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
24	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
23	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
22	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
21	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
20	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
19	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
18	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
17	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
16	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
15	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
14	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
13	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
12	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
11	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
10	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
9	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
8	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
7	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
6	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
5	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
4	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
3	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
2	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
1	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00

COLUMN LINE NO. 4

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

25	3042000.00	.16	.00	.00	.00	.00	.00	.00	.00
24	3042000.00	.16	.00	.00	.00	.00	.00	.00	.00
23	3042000.00	.16	.00	.00	.00	.00	.00	.00	.00
22	3042000.00	.16	.00	.00	.00	.00	.00	.00	.00
21	3042000.00	.16	.00	.00	.00	.00	.00	.00	.00
20	3042000.00	.36	.00	.00	.00	.01	.00	.00	.00
19	3042000.00	.36	.00	.00	.00	.01	.00	.00	.00
18	3042000.00	.36	.00	.00	.00	.01	.00	.00	.00
17	3042000.00	.36	.00	.00	.00	.01	.00	.00	.00
16	3042000.00	.36	.00	.00	.00	.01	.00	.00	.00
15	3042000.00	.56	.00	.00	.00	.03	.00	.00	.00
14	3042000.00	.56	.00	.00	.00	.03	.00	.00	.00
13	3042000.00	.56	.00	.00	.00	.03	.00	.00	.00
12	3042000.00	.56	.00	.00	.00	.03	.00	.00	.00
11	3042000.00	.56	.00	.00	.00	.03	.00	.00	.00
10	3042000.00	.56	.00	.00	.00	.03	.00	.00	.00
9	3042000.00	.81	.00	.00	.00	.05	.00	.00	.00
8	3042000.00	.81	.00	.00	.00	.05	.00	.00	.00
7	3042000.00	.81	.00	.00	.00	.05	.00	.00	.00
6	3042000.00	.81	.00	.00	.00	.05	.00	.00	.00
5	3042000.00	.81	.00	.00	.00	.05	.00	.00	.00
4	3042000.00	.81	.00	.00	.00	.05	.00	.00	.00
3	3042000.00	.81	.00	.00	.00	.05	.00	.00	.00
2	3042000.00	.81	.00	.00	.00	.05	.00	.00	.00
1	3042000.00	.81	.00	.00	.00	.05	.00	.00	.00

0 FRAME TYPE 1

TIME REQUIRED TO FORM STIFFNESS = 75.47

1FRAME POSITION DATA

FRAME	ID	FORCE CODE	X1	Y1	ANG	
1	1	0	.00	.00	.00	25-S,3-B BUILD

LOAD CONDITION DEFINITION CARDS

DLOAD	I	II	III	A	B	SPECTRUM-1	SPECTRUM-2	SPECTRUM-3	SPECTRUM-4	TIME HIST
1	1.00	.00	.00	1.00	.00	.00	.00	.00	.00	.00

SPECTRUM-1 ... ROOT MEAN SQUARE COMBINATION

SPECTRUM-2 ... SUM OF ABSOLUTE VALUES

SPECTRUM-3 ... DOUBLE SUM COMBINATION

SPECTRUM-4 ... COMPLETE QUADRATIC COMBINATION

FRAME DISPLACEMENT

LEVEL		
25	X	.2740243
25	Y	.0000000
25	ROTN	.0000000
24	X	.2639665
24	Y	.0000000
24	ROTN	.0000000
23	X	.2535621
23	Y	.0000000
23	ROTN	.0000000
22	X	.2430379
22	Y	.0000000
22	ROTN	.0000000
21	X	.2322344
21	Y	.0000000
21	ROTN	.0000000
20	X	.2211108

20	Y	.0000000
20	ROTN	.0000000
19	X	.2098631
19	Y	.0000000
19	ROTN	.0000000
18	X	.1979400
18	Y	.0000000
18	ROTN	.0000000
17	X	.1858371
17	Y	.0000000
17	ROTN	.0000000
16	X	.1730611
16	Y	.0000000
16	ROTN	.0000000
15	X	.1601324
15	Y	.0000000
15	ROTN	.0000000
14	X	.1469108
14	Y	.0000000
14	ROTN	.0000000
13	X	.1334351
13	Y	.0000000
13	ROTN	.0000000
12	X	.1197840
12	Y	.0000000
12	ROTN	.0000000
11	X	.1060514
11	Y	.0000000
11	ROTN	.0000000
10	X	.0923556
10	Y	.0000000
10	ROTN	.0000000
9	X	.0789339
9	Y	.0000000
9	ROTN	.0000000
8	X	.0656640
8	Y	.0000000
8	ROTN	.0000000
7	X	.0530077
7	Y	.0000000
7	ROTN	.0000000
6	X	.0410775
6	Y	.0000000
6	ROTN	.0000000
5	X	.0301057
5	Y	.0000000
5	ROTN	.0000000
4	X	.0203574
4	Y	.0000000
4	ROTN	.0000000
3	X	.0121279
3	Y	.0000000
3	ROTN	.0000000
2	X	.0057442
2	Y	.0000000
2	ROTN	.0000000
1	X	.0015673
1	Y	.0000000
1	ROTN	.0000000

MEMBER FORCES ...... FRAME ID 25-S,3-B BUILD. FRAME TYPE 1
LEVEL NO 1 LEVEL ID F01

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	-22.4128719	37.3957962	-749.5722588	3.4520222
2	1	-2.9271731	9.6490490	-179.9384365	1.6099627
3	1	-2.6342145	9.4086333	-1305.3917443	1.1821061
4	1	22.2423919	-37.3356654	-1145.4336522	-3.3244971

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-9.5901100	-9.3608696
2	1	1.0771751	1.0941020
3	1	-9.6098671	-9.8445865

PANEL FORCES

I COL	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
2	1	-381.0635009	767.2261623	-1299.8639082	96.0314112

MEMBER FORCES ..... FRAME ID 25-S,3-B BUILD. FRAME TYPE 1
LEVEL NO 2 LEVEL ID F02

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	-15.5747877	32.0029820	-713.5411337	3.3619620
2	1	.9672076	11.2108876	-232.5848553	2.8018565
3	1	1.3005457	11.1499796	-1193.8988891	1.8659505
4	1	15.2969667	-32.0869783	-1104.6018455	-3.0440669

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-17.2834602	-16.9067250
2	1	2.6948041	2.7346481
3	1	-17.3930195	-17.7631745

PANEL FORCES

I COL	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
2	1	-301.9608334	678.8797002	-1248.1732764	92.9263621

MEMBER FORCES ..... FRAME ID 25-S,3-B BUILD. FRAME TYPE 1
LEVEL NO 3 LEVEL ID F03

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	-8.0620798	32.6392479	-679.4124069	5.1097540
2	1	4.5803340	13.2447133	-279.1180523	4.0058116
3	1	4.9596940	13.3578257	-1088.5514260	2.8421386
4	1	7.6742681	-33.0601412	-1061.8073213	-4.6519084

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-23.7378999	-23.2493452
2	1	3.9502715	4.0085955
3	1	-23.9710599	-24.4790050

PANEL FORCES

I COL	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
2	1	-237.5456301	598.3465663	-1196.7107935	85.7903640

MEMBER FORCES ..... FRAME ID 25-8,3-B BUILD. FRAME TYPE 1
LEVEL NO 4 LEVEL ID F04

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	-1.9621093	31.7997797	-646.9857875	6.1285271
2	1	7.5391265	14.7387397	-318.3702185	4.9144576
3	1	8.0107659	15.0027704	-990.5167945	3.7155137
4	1	1.4681268	-32.1532731	-1017.3510631	-5.5782079

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-29.0108895	-28.4229290
2	1	4.9978161	5.0739038
3	1	-29.3749757	-29.9883918

PANEL FORCES

I COL	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE

2	1	-179.1950293	506.6332609	-1145.2761364	79.5032987

MEMBER FORCES ..... FRAME ID 25-S,3-B BUILD. FRAME TYPE 1
LEVEL NO 5 LEVEL ID F05

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	3.4125104	30.9729988	-615.6650149	7.0959523
2	1	10.0141144	15.8859864	-351.0512327	5.6194852
3	1	10.5883645	16.2903061	-999.0844168	4.5230269
4	1	-4.0149336	-31.4565186	-971.5306422	-6.5001650

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-33.2296326	-32.5610099
2	1	5.8417343	5.9343854
3	1	-33.7389493	-34.4383593

PANEL FORCES

I COL	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
2	1	-127.1857295	432.0145696	-1093.8686934	73.5413643

MEMBER FORCES ..... FRAME ID 25-S,3-B BUILD. FRAME TYPE 1
LEVEL NO 6 LEVEL ID F06

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	7.8342138	29.8171222	-585.4888451	7.8068665
2	1	12.0319690	16.7051612	-377.5290748	6.1487386
3	1	12.6693284	17.2381993	-813.8856858	5.2444330
4	1	-8.5337904	-30.4234256	-924.6084786	-7.2031478

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-36.5030519	-35.7690904
2	1	6.5128267	6.6210943
3	1	-37.1698271	-37.9388136

PANEL FORCES

I COL	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
2	1	-81.5561421	363.7013414	-1042.4879156	67.6768061

MEMBER FORCES ..... FRAME ID 25-S,3-B BUILD. FRAME TYPE 1
LEVEL NO 7 LEVEL ID F07

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	11.9744721	28.6688381	-556.1228629	8.5021530
2	1	13.5986473	17.2242947	-397.8377037	6.5191573
3	1	14.3289683	17.8784044	-734.8860902	5.8599946
4	1	-12.8081254	-29.4050233	-876.8200235	-7.9381114

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-38.9124056	-38.1457615
2	1	7.0081758	7.1324527
3	1	-39.7809275	-40.5879937

PANEL FORCES

I COL	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
2	1	-43.2119958	300.7187835	-891.1333196	61.4205740

MEMBER FORCES ..... FRAME ID 25-S,3-B BUILD. FRAME TYPE 1
LEVEL NO 8 LEVEL ID F08

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE

```
      LM(1)=LM(2)-1
      LM( 9)=LM(3)+3
      LM(8)=LM( 9)-1
      LM(7)=LM(8)-1
      CALL STIFF(5,8,R,NN,NB)
  500 CONTINUE
C
C      2. FORM BEAM MATRICES
C
      IF (NB.EQ.0) GO TO 610
      NF=3
      ND=6
      DO 600 M=1,NB
      MB=LB(N,M,3)
      IF(MB.EQ.NBP) GO TO 600
      KI=LB(N,M,1)
      KJ=LB(N,M,2)
      B1=CLN(KJ,1)-CLN(KI,1)
      B2=CLN(KJ,2)-CLN(KI,2)
      B3=B1*B1+B2*B2
      B3=DSQRT (B3)
      CSA=B1/B3
      SNA=B2/B3
      XL=B3
      XLR=XL-BP(8,MB)-BP(9,MB)
      DO 550 L=1,NLD
      DO 520 I=1,6
  520 P(I,L)=0.
      J=LDB(N,M,L)
      IF (J) 550,550,530
530   V=FEF(5,J)*XLR/2.
      YM=V*XLR/6.
      P(1,L)=-FEF(1,J)-YM
      P(2,L)=-FEF(2,J)-V
      P(3,L)= FEF(3,J)+YM
      P(4,L)=-FEF(4,J)-V
      IF(IFEF(J)) 550,540,550
  540 P(1,L)=P(1,L)+P(2,L)*BP(8,MB)
      P(3,L)=P(3,L)-P(4,L)*BP(9,MB)
  550 CONTINUE
C
      CALL  BEAM (1,MB,XL,SNA,CSA,NBP,BP)
C
      LM(3)=3*KI
      LM(2)=LM(3)-1
      LM(1)=LM(2)-1
      LM( 6)=3*KJ
      LM( 5)=LM( 6)-1
      LM(4)=LM( 5)-1
      CALL STIFF(5,8,R,NN,NB)
  600 CONTINUE
C
C     FORM PANEL STIFFNESS
C
      IF(NPAN.EQ.0) GO TO 810
      DO 720 I=1,10
      DO 720 J=1,3
  720 P(I,J)=0.
      NF=3
      ND=10
      DO 800 L=1,NPAN
      NP=NS-LP(1,L)+1
      IF(NP.NE.N) GO TO 800
      XL=SD(N+K,2)
      KI=LP(2,L)
      KJ=LP(3,L)
      B1=CLN(KJ,1)-CLN(KI,1)
      B2=CLN(KJ,2)-CLN(KI,2)
      B3=B1*B1+B2*B2
      B3=DSQRT (B3)
      CSA=B1/B3
```

1	1	13.5111006	26.9379338	-527.3551338	8.4436699
2	1	14.8917007	17.5389384	-412.7115588	6.8018114
3	1	15.6964172	18.2995085	-661.3502853	6.4064226
4	1	-14.3363398	-27.7598683	-828.3789084	-7.9030029

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-40.6846004	-39.8353285
2	1	7.4095277	7.5439092
3	1	-41.6703138	-42.5658300

PANEL FORCES

I COL	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
2	1	-7.2232021	246.4979549	-939.8041136	56.8450819

MEMBER FORCES ...... FRAME ID 25-6,3-B BUILD. FRAME TYPE 1
LEVEL NO 9 LEVEL ID F09

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	22.3478481	27.1734999	-499.0201249	10.7373303
2	1	15.6041006	17.5341001	-420.9845453	6.8984729
3	1	16.5889165	18.4299874	-594.4450465	6.7975360
4	1	-23.6958551	-28.2294902	-779.4493904	-10.4150258

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-41.3871184	-40.7151843
2	1	7.5985370	7.7703721
3	1	-42.7268276	-43.4477179

PANEL FORCES

I COL	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
2	1	12.7689979	189.7789243	-888.5008928	47.7116217

MEMBER FORCES ...... FRAME ID 25-8,3-B BUILD. FRAME TYPE 1
LEVEL NO 10 LEVEL ID F10

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	19.0772603	19.0392703	-470.8829128	7.9373387
2	1	16.4031911	17.5125467	-425.5962192	7.0402297
3	1	17.0577522	18.3673389	-531.2248421	7.0604962
4	1	-19.7310315	-19.7518628	-730.2775972	-7.4020600

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-41.8637747	-41.4302378
2	1	7.6869573	7.7598111
3	1	-42.4782915	-42.9234572

PANEL FORCES

I COL	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
2	1	50.3239116	158.1162151	-837.2184287	49.2798605

MEMBER FORCES ...... FRAME ID 25-8,3-B BUILD. FRAME TYPE 1
LEVEL NO 11 LEVEL ID F11

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	21.2430587	22.7865144	-442.8948643	9.4909443
2	1	16.9401237	17.3400894	-427.3504258	7.1068270
3	1	17.1343101	17.6609282	-470.7311513	7.0870499
4	1	-21.4731951	-23.1924257	-681.2023786	-9.8340027

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-42.4022204	-41.8997071

2	1	7.7830302	7.7940625
3	1	-42.0401884	-42.5455456

PANEL FORCES

I COL	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
2	1	66.6884146	110.9586750	-785.8213799	41.7211597

MEMBER FORCES ..... FRAME ID 25-8,3-8 BUILD. FRAME TYPE 1
LEVEL NO 12 LEVEL ID F12

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	21.5213429	21.1591617	-415.0324053	9.2452543
2	1	17.2940593	17.1765532	-423.5077368	7.1636841
3	1	17.0967412	17.1118158	-415.7127607	7.1249316
4	1	-21.3027403	-21.0723505	-632.2291619	-8.4232300

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-42.3678110	-41.8764677
2	1	7.7567757	7.7037251
3	1	-41.1815631	-41.6607373

PANEL FORCES

I COL	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
2	1	83.3453140	75.3903319	-734.3179353	37.1628819

MEMBER FORCES ..... FRAME ID 25-8,3-8 BUILD. FRAME TYPE 1
LEVEL NO 13 LEVEL ID F13

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	22.2434187	20.8464681	-387.1629401	9.4511736
2	1	17.3861703	16.8256326	-415.1972803	7.1359776
3	1	16.8277189	16.3810968	-365.0497520	7.0563730
4	1	-21.6100281	-20.3579970	-583.4738744	-8.5007441

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-41.9643437	-41.4933603
2	1	7.6610944	7.5526128
3	1	-40.0305586	-40.4791172

PANEL FORCES

I COL	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
2	1	93.9603195	42.7823425	-682.7161532	31.8557122

MEMBER FORCES ..... FRAME ID 25-8,3-8 BUILD. FRAME TYPE 1
LEVEL NO 14 LEVEL ID F14

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	21.0442083	19.7209250	-359.1951531	8.9811708
2	1	17.4094937	16.4460956	-402.7617428	7.1070109
3	1	16.4955999	15.6502268	-316.4087543	6.9637517
4	1	-20.1066298	-18.8690890	-535.0101649	-7.9415042

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-41.4339367	-40.8908504
2	1	7.5642897	7.3975797
3	1	-38.7298407	-39.2331839

PANEL FORCES

I COL	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
2	1	103.0689302	16.9808073	-631.0241949	27.8865419

MEMBER FORCES ..... FRAME ID 25-S,3-B BUILD. FRAME TYPE 1
LEVEL NO 15 LEVEL ID F15

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	26.0012562	20.3897284	-331.0857515	10.5033748
2	1	17.0392351	15.9170669	-385.1834581	6.9658896
3	1	15.9210861	14.8366610	-276.8182548	6.7744479
4	1	-24.4740578	-19.1265541	-486.8647888	-9.2908694

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-39.9781273	-39.7553450
2	1	7.3261299	7.1391924
3	1	-36.9517137	-37.1507376

PANEL FORCES

I COL	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
2	1	99.5794239	-11.0192262	-579.2497488	20.2253965

MEMBER FORCES ..... FRAME ID 25-S,3-B BUILD. FRAME TYPE 1
LEVEL NO 16 LEVEL ID F16

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	18.5384485	13.9768711	-302.6524355	7.1505993
2	1	16.7416441	15.3899799	-365.3225413	6.8521137
3	1	14.9184040	13.8914353	-237.4217702	6.4350672
4	1	-16.6493822	-12.6766798	-439.2019804	-5.9119307

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-37.9184922	-38.5240494
2	1	6.9460906	6.6022906
3	1	-33.9349627	-33.3744309

PANEL FORCES

I COL	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
2	1	113.2584627	-17.2787496	-527.4012726	22.2902665

MEMBER FORCES ..... FRAME ID 25-S,3-B BUILD. FRAME TYPE 1
LEVEL NO 17 LEVEL ID F17

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	19.9154586	19.3800438	-273.8077532	8.9630218
2	1	16.5442027	14.8343146	-343.3758260	6.7650529
3	1	13.8789962	12.4142682	-199.8796090	5.9448930
4	1	-17.0590565	-16.7250488	-392.3893062	-7.2123543

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-37.6645611	-38.0401052
2	1	6.8584030	6.3908609
3	1	-31.7603312	-31.4252620

PANEL FORCES

I COL	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
2	1	105.4669327	-40.9703152	-475.3485056	14.6348548

MEMBER FORCES ..... FRAME ID 25-S,3-B BUILD. FRAME TYPE 1
LEVEL NO 18 LEVEL ID F18

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	19.5996064	17.7491025	-244.8708365	8.5901367
2	1	16.2776892	14.6374995	-316.4160883	6.7634898
3	1	12.9240482	11.4904742	-167.1247418	5.5937743

4	1	-15.8831929	-14.3662056	-346.0901070	-6.5065141

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-36.7161674	-37.1968553
2	1	6.5857258	6.0150569
3	1	-29.4548725	-29.0492287

PANEL FORCES

I COL	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
2	1	100.6612676	-51.7139480	-423.0982263	10.9460616

MEMBER FORCES ..... FRAME ID 25-S,3-B BUILD. FRAME TYPE 1
LEVEL NO 19 LEVEL ID F19

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	17.4250065	17.1165610	-215.7099643	7.9978025
2	1	16.1082888	14.3334403	-286.4768970	6.7636720
3	1	12.0641988	10.5157674	-137.1566717	5.2395678
4	1	-13.5630245	-13.1660356	-300.3770944	-5.7944190

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-36.4303540	-36.6125630
2	1	6.4946623	5.8111638
3	1	-27.5265048	-27.3481026

PANEL FORCES

I COL	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
2	1	93.3642568	-59.0437014	-370.6793726	7.4844953

MEMBER FORCES ..... FRAME ID 25-S,3-B BUILD. FRAME TYPE 1
LEVEL NO 20 LEVEL ID F20

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	24.8327201	19.0053475	-186.4403290	10.4259324
2	1	15.4364137	14.0096119	-251.2709105	6.6423795
3	1	11.0186133	9.8511422	-112.2714375	4.8461227
4	1	-18.1579273	-13.7850781	-255.1177685	-7.2556149

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-33.4923500	-34.7905065
2	1	6.1554160	5.4401992
3	1	-24.8704134	-23.9125906

PANEL FORCES

I COL	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
2	1	70.7390494	-71.1377887	-318.0995545	-1.0100725

MEMBER FORCES ..... FRAME ID 25-S,3-B BUILD. FRAME TYPE 1
LEVEL NO 21 LEVEL ID F21

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	11.9354549	9.6596300	-156.5756860	4.7133454
2	1	14.1211369	13.1986767	-215.5275009	6.2305868
3	1	9.0451625	8.4116009	-87.8348569	4.1199334
4	1	-7.7510632	-5.7546633	-210.6198930	-2.7907127

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-26.2449060	-31.4811872
2	1	5.1716399	4.3164498
3	1	-19.7732344	-16.4005502

PANEL FORCES

I COL	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
2	1	77.0165306	-53.3222279	-265.4420631	5.1854002

MEMBER FORCES FRAME ID 25-8,3-B BUILD. FRAME TYPE 1
LEVEL NO 22 LEVEL ID F22

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	14.0408520	14.3094511	-125.3914477	5.7489078
2	1	13.8680065	12.1884105	-180.7257757	6.0259845
3	1	7.7005066	6.4116021	-62.3197616	3.3597086
4	1	-8.2178997	-8.6494869	-167.6981699	-3.7639130

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-27.5082188	-32.0558015
2	1	5.3828558	4.3378668
3	1	-17.9364420	-15.3785111

PANEL FORCES

I COL	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
2	1	57.6228496	-83.2394451	-212.6648451	-1.9785324

MEMBER FORCES .... FRAME ID 25-8,3-B BUILD. FRAME TYPE 1
LEVEL NO 23 LEVEL ID F23

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	13.8218977	13.4673688	-94.4369502	5.5736452
2	1	14.0158911	12.8049392	-140.4845517	6.3355318
3	1	6.7811025	5.8980686	-41.9310478	3.0594689
4	1	-7.2140707	-7.1606114	-125.1338008	-3.2644338

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-27.0675268	-31.8029668
2	1	5.2866932	4.0834141
3	1	-16.1099822	-13.6693058

PANEL FORCES

I COL	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
2	1	38.2733907	-62.3267446	-159.6136495	-6.4332943

MEMBER FORCES ..... FRAME ID 25-8,3-B BUILD. FRAME TYPE 1
LEVEL NO 24 LEVEL ID F24

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	12.8282093	13.2456291	-63.3957619	6.3551661
2	1	12.8929638	12.5005825	-98.5490292	6.0998634
3	1	5.9568799	5.2454657	-25.0471565	2.7360616
4	1	-6.1676007	-6.4552351	-83.0113898	-2.9418605

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-28.4774147	-32.6148678
2	1	4.7847105	3.7330140
3	1	-15.2387299	-13.3036059

PANEL FORCES

I COL	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
2	1	16.1368211	-56.8514982	-106.3966625	-10.4527613

MEMBER FORCES ..... FRAME ID 25-8,3-B BUILD. FRAME TYPE 1
LEVEL NO 25 LEVEL ID F25

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	19.2058358	15.6491154	-32.6322722	8.6308694
2	1	18.6661076	14.9369935	-45.9817114	8.2840065
3	1	6.5190103	5.5488360	-14.5644913	2.9799756
4	1	-8.7279943	-7.1360052	-41.0435978	-3.8617712

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-19.2058358	-26.9359864
2	1	8.2698786	5.9017778
3	1	-12.4207881	-8.7279943

PANEL FORCES

I COL	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
2	1	-26.0886590	-58.1597097	-52.9779273	-21.1966276

CONVERGE IN ITERATION NO. 3

TOTAL TIME 284.29 SEC

ตัวอย่าง 4 : โครงข้อแข็งประกอบผนังต้านแรงเฉือน 25 ชั้น 3 ช่วงเสา

กรณี α = 1.5

```
   25    1    1    1    0    0    1 00001    5      0.001 T810802.INP
  F25           4.0
     2.56
  F24           4.0
     5.12
  F23           4.0
     5.12
  F22           4.0
     5.12
  F21           4.0
     5.12
  F20           4.0
     5.12
  F19           4.0
     5.12
  F18           4.0
     5.12
  F17           4.0
     5.12
  F16           4.0
     5.12
  F15           4.0
     5.12
  F14           4.0
     5.12
  F13           4.0
     5.12
  F12           4.0
     5.12
  F11           4.0
     5.12
  F10           4.0
     4.48
  F09           4.0
     3.84
  F08           4.0
     3.84
  F07           4.0
     3.84
  F06           4.0
     3.84
  F05           4.0
     3.20
  F04           4.0
     2.56
  F03           4.0
     2.56
  F02           4.0
     1.60
  F01           4.0
     1.60
    1   25    4    3    6    1    2   25     25-STORY,3-BAY BUILDING
    1        0.0       0.0
    2        8.0       0.0
    3       11.5       0.0
    4       19.5       0.0
    1      3042000.0       0.16                  0.0021333
    2      3042000.0       0.36                  0.0108000
    3      3042000.0     0.5625                  0.0263672
    4      3042000.0       0.81                  0.0546750
    5      3042000.0       0.60                  0.0125000
    1      3042000.0             0.0052083  4.0  4.0  2.0
    1    1                 38.4          55.2
    2    1                 55.2          38.4
    1    1    2    1   24    1
    2    2    3    1   24
    3    3    4    1   24    2
    1    1    2    4
    1    2    2    4
    1    3    2    5
    1    4    2    6
```

```
  2    5    3   24
  3    5    4   24
  4    1    3    4
  4    2    3    4
  4    3    3    5
  4    4    3    8
 25    2    3 3042000.0       1.05  1.071875
 24    2    3 3042000.0       1.05  1.071875
 23    2    3 3042000.0       1.05  1.071875
 22    2    3 3042000.0       1.05  1.071875
 21    2    3 3042000.0       1.05  1.071875
 20    2    3 3042000.0       1.05  1.071875
 19    2    3 3042000.0       1.05  1.071875
 18    2    3 3042000.0       1.05  1.071875
 17    2    3 3042000.0       1.05  1.071875
 16    2    3 3042000.0       1.05  1.071875
 15    2    3 3042000.0       1.05  1.071875
 14    2    3 3042000.0       1.05  1.071875
 13    2    3 3042000.0       1.05  1.071875
 12    2    3 3042000.0       1.05  1.071875
 11    2    3 3042000.0       1.05  1.071875
 10    2    3 3042000.0       1.05  1.071875
  9    2    3 3042000.0       1.05  1.071875
  8    2    3 3042000.0       1.05  1.071875
  7    2    3 3042000.0       1.05  1.071875
  6    2    3 3042000.0       1.05  1.071875
  5    2    3 3042000.0       1.05  1.071875
  4    2    3 3042000.0       1.05  1.071875
  3    2    3 3042000.0       1.05  1.071875
  2    2    3 3042000.0       1.05  1.071875
  1    2    3 3042000.0       1.05  1.071875
  1    0        0.0       0.0         0.0 25-8,3-8 BUILD.
     1.5        0.0       0.0         1.5        0.0  0.0  0.0  0.0  0.0  0.0
  0
```

```
PROGRAM  CU-NTABS
 INPUT  FILE :  ts10s02.inp
 OUTPUT FILE :  ts10s02g.out

 TS10S02.INP
 TOTAL NUMBER OF STORIES--  25
 NUMBER OF DIFF. FRAMES---   1
 TOTAL NUMBER OF FRAMES---   1
 NUMBER OF LOAD CONDITIONS   1
 TYPE OF ANALYSIS---------   0

   EQ.0-STATIC LOADS ONLY
   EQ.1-MODE SHAPES AND FREQUENCIES ONLY
   EQ.2-STATIC AND MODE SHAPE ANALYSES
   EQ.3-TYPE 2 AND RESPONSE SPECTRUM ANAL
   EQ.4-TYPE 2 AND TIME HISTORY ANAL (INDIVIDUAL MEMBER RESPONSE ENVELOPES ONLY)
   EQ.5-THIS OPTION IS NOT AVAILABLE FOR USE
   EQ.6-RESPONSE SPECTRUM ANAL (GROSS BUILDING RESPONSE)
   EQ.7-TYPE 3 AND 6 ANALYSES
   EQ.8-TIME HISTORY ANAL (GROSS BUILDING RESPONSE/ENVELOPES OR STEP-BY-STEP RESPONSE)
   EQ.9-TYPE 4 AND 8 ANALYSES
   EQ.10-SLAM RESTART
   EQ.11-SLAM-2 RESTART
   EQ.-1,-6,-8 SAME AS 1,6,8 ABOVE EXCEPT APPROXIMATE PERIODS AND MODES USED

 NUMBER OF FREQUENCIES----   0
 STORY TRANSLATION CODE---   1
 LAT FORCE GENERATION CODE 0 0
 STRESS CHECK KEY---------   0
 DATA CHECK KEY-----------   0
 TYPE OF SOLUTION---------   1
 MAXIMUM NO. OF CYCLES----   5
 CONVERGENCE TOLERENCE OF EQUILIBRIUM      .001000
```

STORY DATA

LEVEL NO.	ID	HEIGHT	MASS(M)	MR**2	X(M)	Y(M)	K-X	K-Y
25	F25	4.00	19.08	.00	.00	.00	.00	.00
24	F24	4.00	19.08	.00	.00	.00	.00	.00
23	F23	4.00	19.08	.00	.00	.00	.00	.00
22	F22	4.00	19.08	.00	.00	.00	.00	.00
21	F21	4.00	19.08	.00	.00	.00	.00	.00
20	F20	4.00	19.08	.00	.00	.00	.00	.00
19	F19	4.00	19.08	.00	.00	.00	.00	.00
18	F18	4.00	19.08	.00	.00	.00	.00	.00
17	F17	4.00	19.08	.00	.00	.00	.00	.00
16	F16	4.00	19.08	.00	.00	.00	.00	.00
15	F15	4.00	19.08	.00	.00	.00	.00	.00
14	F14	4.00	19.08	.00	.00	.00	.00	.00
13	F13	4.00	19.08	.00	.00	.00	.00	.00
12	F12	4.00	19.08	.00	.00	.00	.00	.00
11	F11	4.00	19.08	.00	.00	.00	.00	.00
10	F10	4.00	19.08	.00	.00	.00	.00	.00
9	F09	4.00	19.08	.00	.00	.00	.00	.00
8	F08	4.00	19.08	.00	.00	.00	.00	.00
7	F07	4.00	19.08	.00	.00	.00	.00	.00
6	F06	4.00	19.08	.00	.00	.00	.00	.00
5	F05	4.00	19.08	.00	.00	.00	.00	.00
4	F04	4.00	19.08	.00	.00	.00	.00	.00
3	F03	4.00	19.08	.00	.00	.00	.00	.00
2	F02	4.00	19.08	.00	.00	.00	.00	.00
1	F01	4.00	19.08	.00	.00	.00	.00	.00

CUMULATIVE STORY DATA

LEVEL NO.	ID	HEIGHT	MASS(M)	MR**2
25	F25	100.00	19.08	.00

24	F24	96.00	38.17	.00
23	F23	92.00	57.25	.00
22	F22	88.00	76.33	.00
21	F21	84.00	95.41	.00
20	F20	80.00	114.50	.00
19	F19	76.00	133.58	.00
18	F18	72.00	152.66	.00
17	F17	68.00	171.74	.00
16	F16	64.00	190.83	.00
15	F15	60.00	209.91	.00
14	F14	56.00	228.99	.00
13	F13	52.00	248.07	.00
12	F12	48.00	267.16	.00
11	F11	44.00	286.24	.00
10	F10	40.00	305.32	.00
9	F09	36.00	324.40	.00
8	F08	32.00	343.49	.00
7	F07	28.00	362.57	.00
6	F06	24.00	381.65	.00
5	F05	20.00	400.73	.00
4	F04	16.00	419.82	.00
3	F03	12.00	438.90	.00
2	F02	8.00	457.98	.00
1	F01	4.00	477.06	.00

STRUCTURE LATERAL LOADS...CASES A AND B

LEVEL NO	FX-A	FY-A	MOM-A	FX-B	FY-B	MOM-B	XA	YA	XB	YB
25	2.56	.00	.00	.00	.00	.00	.0	.0	.0	.0
24	5.12	.00	.00	.00	.00	.00	.0	.0	.0	.0
23	5.12	.00	.00	.00	.00	.00	.0	.0	.0	.0
22	5.12	.00	.00	.00	.00	.00	.0	.0	.0	.0
21	5.12	.00	.00	.00	.00	.00	.0	.0	.0	.0
20	5.12	.00	.00	.00	.00	.00	.0	.0	.0	.0
19	5.12	.00	.00	.00	.00	.00	.0	.0	.0	.0
18	5.12	.00	.00	.00	.00	.00	.0	.0	.0	.0
17	5.12	.00	.00	.00	.00	.00	.0	.0	.0	.0
16	5.12	.00	.00	.00	.00	.00	.0	.0	.0	.0
15	5.12	.00	.00	.00	.00	.00	.0	.0	.0	.0
14	5.12	.00	.00	.00	.00	.00	.0	.0	.0	.0
13	5.12	.00	.00	.00	.00	.00	.0	.0	.0	.0
12	5.12	.00	.00	.00	.00	.00	.0	.0	.0	.0
11	5.12	.00	.00	.00	.00	.00	.0	.0	.0	.0
10	4.48	.00	.00	.00	.00	.00	.0	.0	.0	.0
9	3.84	.00	.00	.00	.00	.00	.0	.0	.0	.0
8	3.84	.00	.00	.00	.00	.00	.0	.0	.0	.0
7	3.84	.00	.00	.00	.00	.00	.0	.0	.0	.0
6	3.84	.00	.00	.00	.00	.00	.0	.0	.0	.0
5	3.20	.00	.00	.00	.00	.00	.0	.0	.0	.0
4	2.56	.00	.00	.00	.00	.00	.0	.0	.0	.0
3	2.56	.00	.00	.00	.00	.00	.0	.0	.0	.0
2	1.60	.00	.00	.00	.00	.00	.0	.0	.0	.0
1	1.60	.00	.00	.00	.00	.00	.0	.0	.0	.0

STORY SHEARS

NOTE THAT THE FORCE QUANTITIES BELOW DO NOT INCLUDE P-DELTA EFFECTS.

OUTPUT COLUMN 1 CONTAINS RESULTS FROM STATIC LATERAL LOAD CASE A
OUTPUT COLUMN 2 CONTAINS RESULTS FROM STATIC LATERAL LOAD CASE B

LEVEL ID DIRN 1 2

25	F25	X	2.5600	.0000
25	F25	Y	.0000	.0000
25	F25	ROTN	.0000	.0000
24	F24	X	7.6800	.0000
24	F24	Y	.0000	.0000
24	F24	ROTN	.0000	.0000
23	F23	X	12.8000	.0000
23	F23	Y	.0000	.0000
23	F23	ROTN	.0000	.0000
22	F22	X	17.9200	.0000
22	F22	Y	.0000	.0000
22	F22	ROTN	.0000	.0000
21	F21	X	23.0400	.0000
21	F21	Y	.0000	.0000
21	F21	ROTN	.0000	.0000
20	F20	X	28.1600	.0000
20	F20	Y	.0000	.0000
20	F20	ROTN	.0000	.0000
19	F19	X	33.2800	.0000
19	F19	Y	.0000	.0000
19	F19	ROTN	.0000	.0000
18	F18	X	38.4000	.0000
18	F18	Y	.0000	.0000
18	F18	ROTN	.0000	.0000
17	F17	X	43.5200	.0000
17	F17	Y	.0000	.0000
17	F17	ROTN	.0000	.0000
16	F16	X	48.6400	.0000
16	F16	Y	.0000	.0000
16	F16	ROTN	.0000	.0000
15	F15	X	53.7600	.0000
15	F15	Y	.0000	.0000
15	F15	ROTN	.0000	.0000
14	F14	X	58.8800	.0000
14	F14	Y	.0000	.0000
14	F14	ROTN	.0000	.0000
13	F13	X	64.0000	.0000
13	F13	Y	.0000	.0000
13	F13	ROTN	.0000	.0000
12	F12	X	69.1200	.0000
12	F12	Y	.0000	.0000
12	F12	ROTN	.0000	.0000
11	F11	X	74.2400	.0000
11	F11	Y	.0000	.0000
11	F11	ROTN	.0000	.0000
10	F10	X	78.7200	.0000
10	F10	Y	.0000	.0000
10	F10	ROTN	.0000	.0000
9	F09	X	82.5600	.0000
9	F09	Y	.0000	.0000
9	F09	ROTN	.0000	.0000
8	F08	X	86.4000	.0000
8	F08	Y	.0000	.0000

8	F08	ROTN	.0000	.0000
7	F07	X	90.2400	.0000
7	F07	Y	.0000	.0000
7	F07	ROTN	.0000	.0000
6	F06	X	94.0800	.0000
6	F06	Y	.0000	.0000
6	F06	ROTN	.0000	.0000
5	F05	X	97.2800	.0000
5	F05	Y	.0000	.0000
5	F05	ROTN	.0000	.0000
4	F04	X	99.8400	.0000
4	F04	Y	.0000	.0000
4	F04	ROTN	.0000	.0000
3	F03	X	102.4000	.0000
3	F03	Y	.0000	.0000
3	F03	ROTN	.0000	.0000
2	F02	X	104.0000	.0000
2	F02	Y	.0000	.0000
2	F02	ROTN	.0000	.0000
1	F01	X	105.6000	.0000
1	F01	Y	.0000	.0000
1	F01	ROTN	.0000	.0000

STORY OVERTURNING MOMENTS

NOTE THAT THE FORCE QUANTITIES BELOW DO NOT INCLUDE P-DELTA EFFECTS.

OUTPUT COLUMN 1 CONTAINS RESULTS FROM STATIC LATERAL LOAD CASE A
OUTPUT COLUMN 2 CONTAINS RESULTS FROM STATIC LATERAL LOAD CASE B

LEVEL	ID	DIRN	1	2
25	F25	X	10.2400	.0000
25	F25	Y	.0000	.0000
25	F25	ROTN	.0000	.0000
24	F24	X	40.9600	.0000
24	F24	Y	.0000	.0000
24	F24	ROTN	.0000	.0000
23	F23	X	92.1600	.0000
23	F23	Y	.0000	.0000
23	F23	ROTN	.0000	.0000
22	F22	X	163.8400	.0000
22	F22	Y	.0000	.0000
22	F22	ROTN	.0000	.0000
21	F21	X	256.0000	.0000
21	F21	Y	.0000	.0000
21	F21	ROTN	.0000	.0000
20	F20	X	368.6400	.0000
20	F20	Y	.0000	.0000
20	F20	ROTN	.0000	.0000
19	F19	X	501.7600	.0000

19	F19	Y	.0000	.0000
19	F19	ROTN	.0000	.0000
18	F18	X	655.3600	.0000
18	F18	Y	.0000	.0000
18	F18	ROTN	.0000	.0000
17	F17	X	829.4400	.0000
17	F17	Y	.0000	.0000
17	F17	ROTN	.0000	.0000
16	F16	X	1024.0000	.0000
16	F16	Y	.0000	.0000
16	F16	ROTN	.0000	.0000
15	F15	X	1239.0400	.0000
15	F15	Y	.0000	.0000
15	F15	ROTN	.0000	.0000
14	F14	X	1474.5600	.0000
14	F14	Y	.0000	.0000
14	F14	ROTN	.0000	.0000
13	F13	X	1730.5600	.0000
13	F13	Y	.0000	.0000
13	F13	ROTN	.0000	.0000
12	F12	X	2007.0400	.0000
12	F12	Y	.0000	.0000
12	F12	ROTN	.0000	.0000
11	F11	X	2304.0000	.0000
11	F11	Y	.0000	.0000
11	F11	ROTN	.0000	.0000
10	F10	X	2618.8800	.0000
10	F10	Y	.0000	.0000
10	F10	ROTN	.0000	.0000
9	F09	X	2949.1200	.0000
9	F09	Y	.0000	.0000
9	F09	ROTN	.0000	.0000
8	F08	X	3294.7200	.0000
8	F08	Y	.0000	.0000
8	F08	ROTN	.0000	.0000
7	F07	X	3655.6800	.0000
7	F07	Y	.0000	.0000
7	F07	ROTN	.0000	.0000
6	F06	X	4032.0000	.0000
6	F06	Y	.0000	.0000
6	F06	ROTN	.0000	.0000
5	F05	X	4421.1200	.0000
5	F05	Y	.0000	.0000
5	F05	ROTN	.0000	.0000
4	F04	X	4820.4800	.0000
4	F04	Y	.0000	.0000
4	F04	ROTN	.0000	.0000
3	F03	X	5230.0800	.0000
3	F03	Y	.0000	.0000
3	F03	ROTN	.0000	.0000
2	F02	X	5846.0800	.0000
2	F02	Y	.0000	.0000
2	F02	ROTN	.0000	.0000

```
   1    F01    X         6068.4800          .0000
   1    F01    Y             .0000          .0000
   1    F01  ROTN            .0000          .0000

 25-STORY,3-BAY BUILDING
 FRAME ID NUMBER-----------    1
 NUMBER OF STORY LEVELS----   25
 NUMBER OF COLUMN LINES----    4
 NUMBER OF BAYS------------    3
 NUMBER OF DIFF. COL. PROP-    5
 NUMBER OF DIFF. BEAM PROP-    1
 NUMBER OF DIFF. FEF-------    2
 NUMBER OF PANEL ELEMENTS--   25
 NUMBER OF BRACING ELEMENTS    0


 COLUMN LINE COORDINATES
 LINE            X            Y
   1            .00          .00
   2           8.00          .00
   3          11.50          .00
   4          19.50          .00

 COLUMN ID       E          A    MAJ SA   MIN SA   TORS I   MAJ I   MIN I  RIGID TOP  RIGID BOT

       1  3042000.00      .18     .00      .00      .00      .00     .00     .00       .00
       2  3042000.00      .36     .00      .00      .00      .01     .00     .00       .00
       3  3042000.00      .56     .00      .00      .00      .03     .00     .00       .00
       4  3042000.00      .81     .00      .00      .00      .05     .00     .00       .00
       5  3042000.00      .60     .00      .00      .00      .01     .00     .00       .00

   BEAM ID       E         SA    TORS I   FLEX I    KII      KJJ     KIJ   RIGID I   RIGID J

       1  3042000.00      .00     .00      .01     4.00     4.00    2.00     .00       .00

   FEF ID     CODE       ML       VL        MR       VR        W
      1         1       .000    38.400     .000    55.200     .000
      2         1       .000    55.200     .000    38.400     .000

 BEAM LOCATIONS
 / BAY  LEV  IC  JC  BID  GEN  VL1  VL2  VL3
    1   25    1   2   1   24    1    0    0

    2   25    2   3   1   24    0    0    0

    3   25    3   4   1   24    2    0    0


 GENERATED BEAM LOCATIONS

 OSTORY   1  2  3

   25     1  1  1
   24     1  1  1
   23     1  1  1
   22     1  1  1
   21     1  1  1
   20     1  1  1
   19     1  1  1
   18     1  1  1
   17     1  1  1
   16     1  1  1
   15     1  1  1
   14     1  1  1
   13     1  1  1
   12     1  1  1
   11     1  1  1
   10     1  1  1
    9     1  1  1
    8     1  1  1
```

7	1	1	1
6	1	1	1
5	1	1	1
4	1	1	1
3	1	1	1
2	1	1	1
1	1	1	1

GENERATED BEAM LOADS...LOAD CASE I

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

GENERATED BEAM LOADS...LOAD CASE II

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

GENERATED BEAM LOADS...LOAD CASE III

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

COLUMN LOCATIONS

D LINE	LEV	CID	KCOL	GEN
1	25	1	2	4
1	20	2	2	4
1	15	3	2	5
1	9	4	2	8
2	25	5	3	24
3	25	5	4	24
4	25	1	3	4
4	20	2	3	4
4	15	3	3	5
4	9	4	3	8

GENERATED COLUMN LOCATIONS

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

7	4	5	5	4
6	4	5	5	4
5	4	5	5	4
4	4	5	5	4
3	4	5	5	4
2	4	5	5	4
1	4	5	5	4

PANEL CARDS

LEVEL	COL I	COL J	E	A	I	SA	G
25	2	3	3042000.00	1.05	1.07	.00	.00
24	2	3	3042000.00	1.05	1.07	.00	.00
23	2	3	3042000.00	1.05	1.07	.00	.00
22	2	3	3042000.00	1.05	1.07	.00	.00
21	2	3	3042000.00	1.05	1.07	.00	.00
20	2	3	3042000.00	1.05	1.07	.00	.00
19	2	3	3042000.00	1.05	1.07	.00	.00
18	2	3	3042000.00	1.05	1.07	.00	.00
17	2	3	3042000.00	1.05	1.07	.00	.00
16	2	3	3042000.00	1.05	1.07	.00	.00
15	2	3	3042000.00	1.05	1.07	.00	.00
14	2	3	3042000.00	1.05	1.07	.00	.00
13	2	3	3042000.00	1.05	1.07	.00	.00
12	2	3	3042000.00	1.05	1.07	.00	.00
11	2	3	3042000.00	1.05	1.07	.00	.00
10	2	3	3042000.00	1.05	1.07	.00	.00
9	2	3	3042000.00	1.05	1.07	.00	.00
8	2	3	3042000.00	1.05	1.07	.00	.00
7	2	3	3042000.00	1.05	1.07	.00	.00
6	2	3	3042000.00	1.05	1.07	.00	.00
5	2	3	3042000.00	1.05	1.07	.00	.00
4	2	3	3042000.00	1.05	1.07	.00	.00
3	2	3	3042000.00	1.05	1.07	.00	.00
2	2	3	3042000.00	1.05	1.07	.00	.00
1	2	3	3042000.00	1.05	1.07	.00	.00

BEAM PROPERTIES AND LOADS

BAY NUMBERS 1

LEVEL	E	SA	TORS I	FLEX I	KII	KJJ	KIJ	WI	WJ	VERT1	VERT2	VERT3
25	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	1	0	0
24	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	1	0	0
23	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	1	0	0
22	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	1	0	0
21	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	1	0	0
20	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	1	0	0
19	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	1	0	0
18	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	1	0	0
17	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	1	0	0
16	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	1	0	0
15	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	1	0	0
14	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	1	0	0
13	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	1	0	0
12	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	1	0	0
11	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	1	0	0
10	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	1	0	0
9	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	1	0	0
8	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	1	0	0
7	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	1	0	0
6	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	1	0	0
5	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	1	0	0
4	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	1	0	0
3	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	1	0	0
2	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	1	0	0
1	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	1	0	0

BAY NUMBERS 2

LEVEL	E	SA	TORS I	FLEX I	KII	KJJ	KIJ	WI	WJ	VERT1	VERT2	VERT3

25	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	0	0	0
24	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	0	0	0
23	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	0	0	0
22	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	0	0	0
21	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	0	0	0
20	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	0	0	0
19	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	0	0	0
18	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	0	0	0
17	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	0	0	0
16	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	0	0	0
15	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	0	0	0
14	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	0	0	0
13	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	0	0	0
12	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	0	0	0
11	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	0	0	0
10	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	0	0	0
9	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	0	0	0
8	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	0	0	0
7	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	0	0	0
6	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	0	0	0
5	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	0	0	0
4	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	0	0	0
3	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	0	0	0
2	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	0	0	0
1	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	0	0	0

BAY NUMBERS 3

LEVEL	E	BA	TORS I	FLEX I	KII	KJJ	KIJ	WI	WJ	VERT1	VERT2	VERT3
25	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	2	0	0
24	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	2	0	0
23	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	2	0	0
22	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	2	0	0
21	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	2	0	0
20	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	2	0	0
19	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	2	0	0
18	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	2	0	0
17	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	2	0	0
16	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	2	0	0
15	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	2	0	0
14	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	2	0	0
13	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	2	0	0
12	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	2	0	0
11	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	2	0	0
10	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	2	0	0
9	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	2	0	0
8	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	2	0	0
7	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	2	0	0
6	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	2	0	0
5	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	2	0	0
4	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	2	0	0
3	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	2	0	0
2	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	2	0	0
1	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	2	0	0

COLUMN PROPERTIES

COLUMN LINE NO. 1

LEVEL	E	A	MAJ BA	MIN BA	TORS I	MAJ I	MIN I	DT	DB
25	3042000.00	.16	.00	.00	.00	.00	.00	.00	.00
24	3042000.00	.16	.00	.00	.00	.00	.00	.00	.00
23	3042000.00	.16	.00	.00	.00	.00	.00	.00	.00
22	3042000.00	.16	.00	.00	.00	.00	.00	.00	.00
21	3042000.00	.16	.00	.00	.00	.00	.00	.00	.00
20	3042000.00	.36	.00	.00	.00	.01	.00	.00	.00
19	3042000.00	.36	.00	.00	.00	.01	.00	.00	.00
18	3042000.00	.36	.00	.00	.00	.01	.00	.00	.00
17	3042000.00	.36	.00	.00	.00	.01	.00	.00	.00
16	3042000.00	.36	.00	.00	.00	.01	.00	.00	.00
15	3042000.00	.56	.00	.00	.00	.03	.00	.00	.00
14	3042000.00	.56	.00	.00	.00	.03	.00	.00	.00

13	3042000.00	.56	.00	.00	.00	.03	.00	.00	.00
12	3042000.00	.56	.00	.00	.00	.03	.00	.00	.00
11	3042000.00	.56	.00	.00	.00	.03	.00	.00	.00
10	3042000.00	.56	.00	.00	.00	.03	.00	.00	.00
9	3042000.00	.81	.00	.00	.00	.05	.00	.00	.00
8	3042000.00	.81	.00	.00	.00	.05	.00	.00	.00
7	3042000.00	.81	.00	.00	.00	.05	.00	.00	.00
6	3042000.00	.81	.00	.00	.00	.05	.00	.00	.00
5	3042000.00	.81	.00	.00	.00	.05	.00	.00	.00
4	3042000.00	.81	.00	.00	.00	.05	.00	.00	.00
3	3042000.00	.81	.00	.00	.00	.05	.00	.00	.00
2	3042000.00	.81	.00	.00	.00	.05	.00	.00	.00
1	3042000.00	.81	.00	.00	.00	.05	.00	.00	.00

COLUMN LINE NO. 2

LEVEL	E	A	MAJ SA	MIN SA	TORS I	MAJ I	MIN I	DT	DB
25	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
24	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
23	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
22	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
21	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
20	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
19	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
18	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
17	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
16	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
15	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
14	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
13	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
12	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
11	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
10	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
9	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
8	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
7	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
6	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
5	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
4	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
3	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
2	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
1	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00

COLUMN LINE NO. 3

LEVEL	E	A	MAJ SA	MIN SA	TORS I	MAJ I	MIN I	DT	DB
25	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
24	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
23	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
22	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
21	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
20	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
19	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
18	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
17	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
16	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
15	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
14	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
13	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
12	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
11	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
10	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
9	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
8	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
7	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
6	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
5	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
4	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
3	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
2	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
1	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00

COLUMN LINE NO. 4

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

25	3042000.00	.16	.00	.00	.00	.00	.00	.00	.00
24	3042000.00	.16	.00	.00	.00	.00	.00	.00	.00
23	3042000.00	.16	.00	.00	.00	.00	.00	.00	.00
22	3042000.00	.16	.00	.00	.00	.00	.00	.00	.00
21	3042000.00	.16	.00	.00	.00	.00	.00	.00	.00
20	3042000.00	.36	.00	.00	.00	.01	.00	.00	.00
19	3042000.00	.36	.00	.00	.00	.01	.00	.00	.00
18	3042000.00	.36	.00	.00	.00	.01	.00	.00	.00
17	3042000.00	.36	.00	.00	.00	.01	.00	.00	.00
16	3042000.00	.36	.00	.00	.00	.01	.00	.00	.00
15	3042000.00	.56	.00	.00	.00	.03	.00	.00	.00
14	3042000.00	.56	.00	.00	.00	.03	.00	.00	.00
13	3042000.00	.56	.00	.00	.00	.03	.00	.00	.00
12	3042000.00	.56	.00	.00	.00	.03	.00	.00	.00
11	3042000.00	.56	.00	.00	.00	.03	.00	.00	.00
10	3042000.00	.66	.00	.00	.00	.03	.00	.00	.00
9	3042000.00	.81	.00	.00	.00	.05	.00	.00	.00
8	3042000.00	.81	.00	.00	.00	.05	.00	.00	.00
7	3042000.00	.81	.00	.00	.00	.05	.00	.00	.00
6	3042000.00	.81	.00	.00	.00	.05	.00	.00	.00
5	3042000.00	.81	.00	.00	.00	.05	.00	.00	.00
4	3042000.00	.81	.00	.00	.00	.05	.00	.00	.00
3	3042000.00	.81	.00	.00	.00	.05	.00	.00	.00
2	3042000.00	.81	.00	.00	.00	.05	.00	.00	.00
1	3042000.00	.81	.00	.00	.00	.05	.00	.00	.00

0...FRAME TYPE 1

TIME REQUIRED TO FORM STIFFNESS = 74.64

1FRAME POSITION DATA

FRAME	ID	FORCE CODE	X1	Y1	ANG	
1	1	0	.00	.00	.00	25-S,3-B BUILD.

LOAD CONDITION DEFINITION CARDS

0LOAD	I	II	III	A	B	SPECTRUM-1	SPECTRUM-2	SPECTRUM-3	SPECTRUM-4	TIME HIST
1	1.50	.00	.00	1.50	.00	.00	.00	.00	.00	.00

SPECTRUM-1... ROOT MEAN SQUARE COMBINATION

SPECTRUM-2... SUM OF ABSOLUTE VALUES

SPECTRUM-3... DOUBLE SUM COMBINATION

SPECTRUM-4... COMPLETE QUADRATIC COMBINATION

FRAME DISPLACEMENT

LEVEL		
25	X	.4365313
25	Y	.0000000
25	ROTN	.0000000
24	X	.4203223
24	Y	.0000000
24	ROTN	.0000000
23	X	.4038798
23	Y	.0000000
23	ROTN	.0000000
22	X	.3870875
22	Y	.0000000
22	ROTN	.0000000
21	X	.3698502
21	Y	.0000000
21	ROTN	.0000000
20	X	.3521023

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-15.0877914	-14.7092641
2	1	1.7312836	1.7557569
3	1	-15.0836461	-15.4501266

PANEL FORCES

I COL	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
2	1	-610.9830114	1195.1739959	-1949.4969677	144.8505604

MEMBER FORCES ..... FRAME ID 25-B,3-B BUILD. FRAME TYPE 1
LEVEL NO 2 LEVEL ID F02

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	-24.7094946	50.4718999	-1052.1529746	4.7109596
2	1	1.4726228	17.6500835	-309.3491119	4.2721060
3	1	2.1191490	17.3473115	-1830.3778704	1.8574701
4	1	24.2227052	-50.5119649	-1675.0589336	-3.8185145

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-27.2276925	-26.6650944
2	1	4.2742035	4.3378713
3	1	-27.3911079	-27.9755279

PANEL FORCES

I COL	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
2	1	-496.9259647	1064.6021347	-1872.2611095	141.3410413

MEMBER FORCES ..... FRAME ID 25-B,3-B BUILD. FRAME TYPE 1
LEVEL NO 3 LEVEL ID F03

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	-12.9638551	51.9371871	-1001.2895717	7.2203231
2	1	7.1537579	20.9182581	-392.1038015	6.0551939
3	1	7.8564211	20.9340877	-1669.4014380	2.9911355
4	1	12.3239292	-52.1982331	-1610.5381042	-5.9104058

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-37.5372137	-36.7649075
2	1	6.2652735	6.3578146
3	1	-37.8430687	-38.6469560

PANEL FORCES

I COL	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
2	1	-384.6837330	928.4679998	-1795.0670846	131.4229276

MEMBER FORCES ..... FRAME ID 25-B,3-B BUILD. FRAME TYPE 1
LEVEL NO 4 LEVEL ID F04

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	-3.3369036	50.5010687	-952.9773369	9.6983767
2	1	11.8929984	23.3458761	-444.7593220	7.3816894
3	1	12.6686212	23.6288330	-1519.5717777	4.1302596
4	1	2.5501921	-50.9708852	-1543.3769511	-7.0803101

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-45.9791536	-46.0466245
2	1	7.9343874	8.0543908
3	1	-46.4895336	-47.4427594

PANEL FORCES

I COL	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE

2	1	-291.5218277	803.8918694	-1717.9147123	122.4993441

MEMBER FORCES ..... FRAME ID 25-8,3-B BUILD. FRAME TYPE 1
LEVEL NO 5 LEVEL ID F05

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	5.1903126	49.3160572	-906.7555591	10.1229553
2	1	15.8488918	25.2192387	-498.0565442	8.3425786
3	1	16.7197134	25.7465215	-1377.1469899	5.2953635
4	1	-6.1294859	-49.9929514	-1474.0378145	-8.3350351

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-52.7653065	-51.7025368
2	1	9.2955520	9.4303546
3	1	-53.4642990	-54.5757163

PANEL FORCES

I COL	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
2	1	-208.0733883	688.7293263	-1640.8030923	113.8240414

MEMBER FORCES ..... FRAME ID 25-8,3-B BUILD. FRAME TYPE 1
LEVEL NO 6 LEVEL ID F06

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	12.2436768	47.5749939	-862.2140395	11.1990917
2	1	19.0888743	26.5680930	-542.2848485	9.0521435
3	1	20.0687671	27.3142310	-1244.8370304	8.4235692
4	1	-13.3187291	-48.4462304	-1402.9328125	-9.3304362

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-58.0565481	-56.8876539
2	1	10.3646890	10.5324605
3	1	-58.9825100	-60.2077114

PANEL FORCES

I COL	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
2	1	-134.5132924	582.2170010	-1583.7314690	105.1147271

MEMBER FORCES ..... FRAME ID 25-8,3-B BUILD. FRAME TYPE 1
LEVEL NO 7 LEVEL ID F07

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	18.8861498	45.8128713	-818.9820648	12.2908193
2	1	21.8158813	27.4342907	-577.2720006	9.5248365
3	1	22.7228273	28.3912624	-1121.9127462	7.4559489
4	1	-20.1662509	-46.8889824	-1330.4340349	-10.4518654

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-61.9714123	-60.7487833
2	1	11.1647074	11.3556657
3	1	-63.1874218	-64.4525132

PANEL FORCES

I COL	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
2	1	-72.3996913	483.1477103	-1486.6991535	95.8364910

MEMBER FORCES ..... FRAME ID 25-8,3-B BUILD. FRAME TYPE 1
LEVEL NO 8 LEVEL ID F08

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE

1	1	21.3661738	43.0652628	-776.7220692	12.2010652
2	1	23.7073989	27.9694146	-603.9989913	9.6770577
3	1	24.9182586	29.0889287	-1007.0924049	8.4298182
4	1	-22.6145884	-44.2962623	-1256.8815430	-10.3977311

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-64.8669747	-63.5103052
2	1	11.8153627	12.0205651
3	1	-66.2698229	-67.6972253

PANEL FORCES

I COL	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
2	1	-14.0391690	397.2147990	-1409.7049716	88.6942625

MEMBER FORCES ..... FRAME ID 25-S,3-B BUILD. FRAME TYPE 1
LEVEL NO 9 LEVEL ID F09

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	35.5789723	43.5008008	-735.1692492	15.9140392
2	1	24.8750070	27.9875236	-620.4153095	9.9616039
3	1	26.3524673	29.3207992	-902.7273912	9.1635835
4	1	-37.6049687	-45.0726369	-1182.5391870	-14.4670830

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-66.0420417	-64.9686786
2	1	12.1268874	12.3872845
3	1	-67.9830871	-69.1311628

PANEL FORCES

I COL	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
2	1	19.5993481	306.6258706	-1332.7498631	74.3136380

MEMBER FORCES ..... FRAME ID 25-S,3-B BUILD. FRAME TYPE 1
LEVEL NO 10 LEVEL ID F10

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	30.3990744	30.4630694	-693.9455892	11.4762220
2	1	26.1533217	27.9669843	-631.0769705	10.1295291
3	1	27.1340693	29.2433354	-804.1526322	9.7611685
4	1	-31.3905011	-31.5261941	-1107.7989057	-9.7573194

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-66.7964694	-66.1031054
2	1	12.2702090	12.3904437
3	1	-67.6732703	-68.3839275

PANEL FORCES

I COL	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
2	1	79.1500223	255.7406960	-1255.8259023	76.9556832

MEMBER FORCES ..... FRAME ID 25-S,3-B BUILD. FRAME TYPE 1
LEVEL NO 11 LEVEL ID F11

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	33.8546518	36.3973940	-652.9580360	13.9975900
2	1	27.0039800	27.6795748	-637.2142276	10.1914349
3	1	27.2938169	28.1587574	-709.9058767	9.9867633
4	1	-34.2017461	-37.0033264	-1033.1917695	-12.1596129

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-67.6411604	-66.6378730

2	1	12.4259411	12.4428499
3	1	-67.0478209	-67.8551160

PANEL FORCES

I COL	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
2	1	105.9366334	160.0069243	-1178.7300912	65.0245346

MEMBER FORCES ..... FRAME ID 25-8,3-B BUILD. FRAME TYPE 1
LEVEL NO 12 LEVEL ID F12

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	34.2991888	33.7865086	-612.1679152	13.6686127
2	1	27.5626276	27.4079519	-634.4190542	10.2679649
3	1	27.2664743	27.3111541	-624.4093103	10.2245500
4	1	-33.9698721	-33.8533699	-959.7289014	-11.6546525

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-67.5663092	-66.7812200
2	1	12.3846171	12.3044433
3	1	-65.7368598	-66.5049732

PANEL FORCES

I COL	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
2	1	132.9005790	122.6869013	-1101.4748189	57.9641501

MEMBER FORCES ..... FRAME ID 25-8,3-B BUILD. FRAME TYPE 1
LEVEL NO 13 LEVEL ID F13

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	35.4497224	33.2671204	-571.3613563	14.0677996
2	1	27.7009435	26.8339753	-624.4526111	10.2332044
3	1	26.8646637	26.1679423	-545.9155070	10.2853086
4	1	-34.4976845	-32.5361011	-884.5984223	-11.9412685

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-66.8975568	-66.1454382
2	1	12.2313681	12.0673577
3	1	-63.9518237	-64.6692924

PANEL FORCES

I COL	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
2	1	150.1679429	70.0282224	-1024.0721033	49.4723442

MEMBER FORCES ..... FRAME ID 25-8,3-B BUILD. FRAME TYPE 1
LEVEL NO 14 LEVEL ID F14

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	33.5308281	31.4478344	-530.3917307	13.3930997
2	1	27.7285579	26.2131266	-607.8276535	10.2170340
3	1	26.3588870	25.0198023	-473.9256726	10.2966875
4	1	-32.1200982	-30.1716079	-810.9207828	-11.2131420

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-66.0233152	-65.1565903
2	1	12.0753119	11.8233610
3	1	-61.9164126	-62.7224981

PANEL FORCES

I COL	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
2	1	164.8970402	26.2583417	-946.5341604	43.1999575

MEMBER FORCES ..... FRAME ID 25-8,3-8 BUILD. FRAME TYPE 1
LEVEL NO 15 LEVEL ID F15

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	41.4132914	32.4924891	-489.1892189	15.8959071
2	1	27.1294410	25.3547205	-582.9020952	10.0461545
3	1	26.4567053	23.7341646	-410.0951647	10.1344111
4	1	-39.1160554	-30.6023999	-737.7409189	-13.5379326

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-63.6704080	-63.3145216
2	1	11.6941232	11.4116585
3	1	-59.1102843	-59.4291767

PANEL FORCES

I COL	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
2	1	159.3900597	-16.9543394	-868.8726024	31.0255116

MEMBER FORCES ..... FRAME ID 25-8,3-8 BUILD. FRAME TYPE 1
LEVEL NO 16 LEVEL ID F16

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	29.4833445	22.2571166	-447.4623351	10.6270064
2	1	26.6195834	24.4909574	-554.2374672	9.9187568
3	1	23.9906327	22.2419204	-349.9767614	9.7283972
4	1	-26.6427848	-20.3131214	-665.3234863	-8.3070921

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-60.2923307	-61.2588461
2	1	11.0808893	10.5595679
3	1	-54.3755247	-53.4735683

PANEL FORCES

I COL	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
2	1	161.1940241	-27.3567097	-791.0999500	34.3786616

MEMBER FORCES ..... FRAME ID 25-8,3-8 BUILD. FRAME TYPE 1
LEVEL NO 17 LEVEL ID F17

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	31.6438304	30.8089863	-405.0562322	13.5809433
2	1	26.2632318	23.5583633	-522.1594859	9.8356038
3	1	22.2725676	19.9253241	-292.7212704	9.0808226
4	1	-27.3580751	-26.8307835	-594.2423497	-10.5657633

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-59.8068072	-60.4039682
2	1	10.9323273	10.2282682
3	1	-50.9859971	-50.4478327

PANEL FORCES

I COL	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
2	1	168.8632823	-65.4866059	-713.0206618	22.2167794

MEMBER FORCES ..... FRAME ID 25-8,3-8 BUILD. FRAME TYPE 1
LEVEL NO 18 LEVEL ID F18

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	31.0947049	28.1629768	-382.4825791	13.0498198
2	1	25.8041382	23.2084091	-482.0054395	9.9066872
3	1	20.7809872	18.4851613	-243.3035205	8.6321118

4	1	-25.5175510	-23.0897575	-523.9631209	-9.8011234

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-59.2193648	-59.9839231
2	1	10 4900546	9.8313424
3	1	-47.3723923	-46.7185170

PANEL FORCES

I COL	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
2	1	180.8051895	-82.8064493	-634.6453400	16.4101696

MEMBER FORCES ..... FRAME ID 25-S,3-B BUILD. FRAME TYPE 1
LEVEL NO 19 LEVEL ID F19

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	27.6149441	27.1246598	-319.5329901	12.1778795
2	1	25.4995202	22.6897303	-437.0437749	9.9861062
3	1	19.4409145	16.9600627	-198.4043599	8.1645204
4	1	-21.8194285	-21.2009660	-454.6017573	-8.6110845

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-57.6962951	-57.9861226
2	1	10.3388339	9.3109382
3	1	-44.3590280	-44.0738825

PANEL FORCES

I COL	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
2	1	148.9831120	-94.5725689	-556.0171179	10.9803217

MEMBER FORCES ..... FRAME ID 25-S,3-B BUILD. FRAME TYPE 1
LEVEL NO 20 LEVEL ID F20

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	39.2848616	30.0814511	-276.3932923	16.0794650
2	1	24.4121717	22.1477684	-383.6452557	9.8881200
3	1	17.7905603	15.6071732	-161.6662318	7.6112061
4	1	-29.2733850	-22.2542541	-385.9476687	-11.1195311

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-52.9801021	-55.0360970
2	1	9.7953006	8.7200503
3	1	-40.1570480	-38.6097473

PANEL FORCES

I COL	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
2	1	112.7205332	-113.8388403	-477.1475515	-2.4584075

MEMBER FORCES ..... FRAME ID 25-S,3-B BUILD. FRAME TYPE 1
LEVEL NO 21 LEVEL ID F21

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	19.7983553	13.8952405	-232.2953172	7.0926978
2	1	22.2735819	20.8288247	-329.3873965	9.3140501
3	1	14.8644832	13.6464374	-125.6641308	6.5201991
4	1	-12.5240623	-9.3363623	-318.5018193	-4.0519043

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-41.3558254	-49.6487364
2	1	8.2098182	6.9251835
3	1	-32.0893335	-26.5903177

PANEL FORCES

I COL	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
2	1	122.6673679	-85.2764791	-398.1613383	7.5810687

MEMBER FORCES ..... FRAME ID 25-8,3-B BUILD. FRAME TYPE 1
LEVEL NO 22 LEVEL ID F22

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	22.1139936	22.5572701	-186.0709624	10.3659662
2	1	21.8192871	19.1655362	-276.8653674	9.0539501
3	1	12.5741871	10.4986668	-87.9011125	5.3894143
4	1	-13.3843480	-14.0662554	-253.5669879	-5.7699348

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-43.2933558	-50.4665661
2	1	8.5428789	6.9737744
3	1	-29.2998942	-25.1037673

PANEL FORCES

I COL	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
2	1	91.6865316	-100.9851760	-318.9956699	-3.6993342

MEMBER FORCES ..... FRAME ID 25-8,3-B BUILD. FRAME TYPE 1
LEVEL NO 23 LEVEL ID F23

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	21.7251262	21.1793623	-140.1907277	10.1375607
2	1	22.0094533	20.1034001	-215.3034400	9.6243378
3	1	11.1617399	9.7419228	-58.3166885	4.9810852
4	1	-11.9171317	-11.7194193	-189.1677615	-5.0899833

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-42.5317308	-49.9898091
2	1	8.3798575	6.5734946
3	1	-26.4536589	-22.4398391

PANEL FORCES

I COL	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
2	1	60.8639438	-99.3756339	-239.4193624	-10.6330405

MEMBER FORCES ..... FRAME ID 25-8,3-B BUILD. FRAME TYPE 1
LEVEL NO 24 LEVEL ID F24

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	20.1443582	20.8066046	-94.1559201	9.8506963
2	1	20.2373056	19.6006983	-148.1108897	9.3506653
3	1	9.9361442	8.7194244	-34.2827026	4.4977171
4	1	-10.1562882	-10.6227074	-125.4560942	-4.6790396

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-44.7143632	-51.2147623
2	1	7.5861553	6.0081500
3	1	-25.1519739	-21.9557202

PANEL FORCES

I COL	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
2	1	25.6917847	-90.5002397	-159.5943933	-16.8581545

MEMBER FORCES ..... FRAME ID 25-8,3-B BUILD. FRAME TYPE 1
LEVEL NO 25 LEVEL ID F25

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	30.1366023	24.5700050	-48.5470608	13.4799238
2	1	29.2030853	23.3913012	-70.4169754	12.8632448
3	1	10.9855751	9.3076797	-20.4018548	4.9906389
4	1	-14.4244482	-11.7994320	-61.9676325	-6.3048576

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-30.1366023	-42.2869110
2	1	13.0838257	9.5310363
3	1	-20.5166115	-14.4244482

PANEL FORCES

I COL	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
2	1	-41.4255986	-92.4810417	-79.4664765	-33.7986833

CONVERGE IN ITERATION NO. 3

TOTAL TIME 279.79 SEC.

ตัวอย่าง 4 : โครงข้อแข็งประกอบผนังต้านแรงเฉือน 25 ชั้น 3 ช่วงเสา

กรณี $\alpha = 2.0$

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  25    1    1    1    0    0    1 00001   5      0.001 TS10L03.INP
 F25             4.0
     2.56
 F24             4.0
     5.12
 F23             4.0
     5.12
 F22             4.0
     5.12
 F21             4.0
     5.12
 F20             4.0
     5.12
 F19             4.0
     5.12
 F18             4.0
     5.12
 F17             4.0
     5.12
 F16             4.0
     5.12
 F15             4.0
     5.12
 F14             4.0
     5.12
 F13             4.0
     5.12
 F12             4.0
     5.12
 F11             4.0
     5.12
 F10             4.0
     4.48
 F09             4.0
     3.84
 F08             4.0
     3.84
 F07             4.0
     3.84
 F06             4.0
     3.84
 F05             4.0
     3.20
 F04             4.0
     2.56
 F03             4.0
     2.56
 F02             4.0
     1.60
 F01             4.0
     1.60
   1   25    4    3    5    1    2   25     25-STORY,3-BAY BUILDING
   1        0.0       0.0
   2        8.0       0.0
   3       11.5       0.0
   4       19.5       0.0
   1       3042000.0       0.16                      0.0021333
   2       3042000.0       0.36                      0.0108000
   3       3042000.0     0.5625                      0.0263672
   4       3042000.0       0.81                      0.0546750
   5       3042000.0       0.60                      0.0125000
   1       3042000.0                0.0052083  4.0  4.0  2.0
   1    1                  38.4            55.2
   2    1                  55.2            38.4
   1    1    2    1   24    1
   2    2    3    1   24
   3    3    4    1   24    2
   1    1    2    4
   1    2    2    4
   1    3    2    5
   1    4    2    8
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   2    5    3   24
   3    5    4   24
   4    1    3    4
   4    2.   3    4
   4    3    3    5
   4    4    3    8
  25    2    3 3042000.0       1.05  1.071875
  24    2    3 3042000.0       1.05  1.071875
  23    2    3 3042000.0       1.05  1.071875
  22    2    3 3042000.0       1.05  1.071875
  21    2    3 3042000.0       1.05  1.071875
  20    2    3 3042000.0       1.05  1.071875
  19    2    3 3042000.0       1.05  1.071875
  18    2    3 3042000.0       1.05  1.071875
  17    2    3 3042000.0       1.05  1.071875
  16    2    3 3042000.0       1.05  1.071875
  15    2    3 3042000.0       1.05  1.071875
  14    2    3 3042000.0       1.05  1.071875
  13    2    3 3042000.0       1.05  1.071875
  12    2    3 3042000.0       1.05  1.071875
  11    2    3 3042000.0       1.05  1.071875
  10    2    3 3042000.0       1.05  1.071875
   9    2    3 3042000.0       1.05  1.071875
   8    2    3 3042000.0       1.05  1.071875
   7    2    3 3042000.0       1.05  1.071875
   6    2    3 3042000.0       1.05  1.071875
   5    2    3 3042000.0       1.05  1.071875
   4    2    3 3042000.0       1.05  1.071875
   3    2    3 3042000.0       1.05  1.071875
   2    2    3 3042000.0       1.05  1.071875
   1    2    3 3042000.0       1.05  1.071875
   1    0        0.0        0.0        0.0 25-8,3-8 BUILD.
      2.0        0.0        0.0        2.0        0.0  0.0  0.0  0.0  0.0  0.0
   0
```

PROGRAM CU-NTASS
INPUT FILE : ts10s03.inp
OUTPUT FILE : ts10s03g.out

TS10L03.INP
TOTAL NUMBER OF STORIES-- 25
NUMBER OF DIFF. FRAMES--- 1
TOTAL NUMBER OF FRAMES--- 1
NUMBER OF LOAD CONDITIONS 1
TYPE OF ANALYSIS--------- 0

EQ.0-STATIC LOADS ONLY
EQ.1-MODE SHAPES AND FREQUENCIES ONLY
EQ.2-STATIC AND MODE SHAPE ANALYSES
EQ.3-TYPE 2 AND RESPONSE SPECTRUM ANAL
EQ.4-TYPE 2 AND TIME HISTORY ANAL (INDIVIDUAL MEMBER RESPONSE ENVELOPES ONLY)
EQ.5-THIS OPTION IS NOT AVAILABLE FOR USE
EQ.6-RESPONSE SPECTRUM ANAL (GROSS BUILDING RESPONSE)
EQ.7-TYPE 3 AND 6 ANALYSES
EQ.8-TIME HISTORY ANAL (GROSS BUILDING RESPONSE/ENVELOPES OR STEP-BY-STEP RESPONSE)
EQ.9-TYPE 4 AND 8 ANALYSES
EQ.10-SLAM RESTART
EQ.11-SLAM-2 RESTART
EQ.-1,-6,-8 SAME AS 1,6,8 ABOVE EXCEPT APPROXIMATE PERIODS AND MODES USED

NUMBER OF FREQUENCIES---- 0
STORY TRANSLATION CODE--- 1
LAT FORCE GENERATION CODE 0 0
STRESS CHECK KEY--------- 0
DATA CHECK KEY----------- 0
TYPE OF SOLUTION--------- 1
MAXIMUM NO. OF CYCLES---- 5
CONVERGENCE TOLERENCE OF EQUILIBRIUM .001000

STORY DATA

LEVEL NO.	ID	HEIGHT	MASS(M)	MR**2	X(M)	Y(M)	K-X	K-Y
25	F25	4.00	19.08	.00	.00	.00	.00	.00
24	F24	4.00	19.08	.00	.00	.00	.00	.00
23	F23	4.00	19.08	.00	.00	.00	.00	.00
22	F22	4.00	19.08	.00	.00	.00	.00	.00
21	F21	4.00	19.08	.00	.00	.00	.00	.00
20	F20	4.00	19.08	.00	.00	.00	.00	.00
19	F19	4.00	19.08	.00	.00	.00	.00	.00
18	F18	4.00	19.08	.00	.00	.00	.00	.00
17	F17	4.00	19.08	.00	.00	.00	.00	.00
16	F16	4.00	19.08	.00	.00	.00	.00	.00
15	F15	4.00	19.08	.00	.00	.00	.00	.00
14	F14	4.00	19.08	.00	.00	.00	.00	.00
13	F13	4.00	19.08	.00	.00	.00	.00	.00
12	F12	4.00	19.08	.00	.00	.00	.00	.00
11	F11	4.00	19.08	.00	.00	.00	.00	.00
10	F10	4.00	19.08	.00	.00	.00	.00	.00
9	F09	4.00	19.08	.00	.00	.00	.00	.00
8	F08	4.00	19.08	.00	.00	.00	.00	.00
7	F07	4.00	19.08	.00	.00	.00	.00	.00
6	F06	4.00	19.08	.00	.00	.00	.00	.00
5	F05	4.00	19.08	.00	.00	.00	.00	.00
4	F04	4.00	19.08	.00	.00	.00	.00	.00
3	F03	4.00	19.08	.00	.00	.00	.00	.00
2	F02	4.00	19.08	.00	.00	.00	.00	.00
1	F01	4.00	19.08	.00	.00	.00	.00	.00

CUMULATIVE STORY DATA

LEVEL NO.	ID	HEIGHT	MASS(M)	MR**2
25	F25	100.00	19.08	.00

24	F24	96.00	38.17	.00
23	F23	92.00	57.25	.00
22	F22	88.00	76.33	.00
21	F21	84.00	95.41	.00
20	F20	80.00	114.50	.00
19	F19	76.00	133.58	.00
18	F18	72.00	152.66	.00
17	F17	68.00	171.74	.00
16	F16	64.00	190.83	.00
15	F15	60.00	209.91	.00
14	F14	56.00	228.99	.00
13	F13	52.00	248.07	.00
12	F12	48.00	267.16	.00
11	F11	44.00	286.24	.00
10	F10	40.00	305.32	.00
9	F09	36.00	324.40	.00
8	F08	32.00	343.49	.00
7	F07	28.00	362.57	.00
6	F06	24.00	381.65	.00
5	F05	20.00	400.73	.00
4	F04	16.00	419.82	.00
3	F03	12.00	438.90	.00
2	F02	8.00	457.98	.00
1	F01	4.00	477.06	.00

STRUCTURE LATERAL LOADS . . .CASES A AND B

LEVEL NO	FX-A	FY-A	MOM-A	FX-B	FY-B	MOM-B	XA	YA	XB	YB
25	2.56	.00	.00	.00	.00	.00	.0	.0	.0	.0
24	5.12	.00	.00	.00	.00	.00	.0	.0	.0	.0
23	5.12	.00	.00	.00	.00	.00	.0	.0	.0	.0
22	5.12	.00	.00	.00	.00	.00	.0	.0	.0	.0
21	5.12	.00	.00	.00	.00	.00	.0	.0	.0	.0
20	5.12	.00	.00	.00	.00	.00	.0	.0	.0	.0
19	5.12	.00	.00	.00	.00	.00	.0	.0	.0	.0
18	5.12	.00	.00	.00	.00	.00	.0	.0	.0	.0
17	5.12	.00	.00	.00	.00	.00	.0	.0	.0	.0
16	5.12	.00	.00	.00	.00	.00	.0	.0	.0	.0
15	5.12	.00	.00	.00	.00	.00	.0	.0	.0	.0
14	5.12	.00	.00	.00	.00	.00	.0	.0	.0	.0
13	5.12	.00	.00	.00	.00	.00	.0	.0	.0	.0
12	5.12	.00	.00	.00	.00	.00	.0	.0	.0	.0
11	5.12	.00	.00	.00	.00	.00	.0	.0	.0	.0
10	4.48	.00	.00	.00	.00	.00	.0	.0	.0	.0
9	3.84	.00	.00	.00	.00	.00	.0	.0	.0	.0
8	3.84	.00	.00	.00	.00	.00	.0	.0	.0	.0
7	3.84	.00	.00	.00	.00	.00	.0	.0	.0	.0
6	3.84	.00	.00	.00	.00	.00	.0	.0	.0	.0
5	3.20	.00	.00	.00	.00	.00	.0	.0	.0	.0
4	2.56	.00	.00	.00	.00	.00	.0	.0	.0	.0
3	2.56	.00	.00	.00	.00	.00	.0	.0	.0	.0
2	1.60	.00	.00	.00	.00	.00	.0	.0	.0	.0
1	1.60	.00	.00	.00	.00	.00	.0	.0	.0	.0

STORY SHEARS

NOTE THAT THE FORCE QUANTITIES BELOW DO NOT INCLUDE P-DELTA EFFECTS.

OUTPUT COLUMN 1 CONTAINS RESULTS FROM STATIC LATERAL LOAD CASE A
OUTPUT COLUMN 2 CONTAINS RESULTS FROM STATIC LATERAL LOAD CASE B

LEVEL ID DIRN 1 2

25	F25	X	2.5600	.0000
25	F25	Y	.0000	.0000
25	F25	ROTN	.0000	.0000
24	F24	X	7.6800	.0000
24	F24	Y	.0000	.0000
24	F24	ROTN	.0000	.0000
23	F23	X	12.8000	.0000
23	F23	Y	.0000	.0000
23	F23	ROTN	.0000	.0000
22	F22	X	17.9200	.0000
22	F22	Y	.0000	.0000
22	F22	ROTN	.0000	.0000
21	F21	X	23.0400	.0000
21	F21	Y	.0000	.0000
21	F21	ROTN	.0000	.0000
20	F20	X	28.1600	.0000
20	F20	Y	.0000	.0000
20	F20	ROTN	.0000	.0000
19	F19	X	33.2800	.0000
19	F19	Y	.0000	.0000
19	F19	ROTN	.0000	.0000
18	F18	X	38.4000	.0000
18	F18	Y	.0000	.0000
18	F18	ROTN	.0000	.0000
17	F17	X	43.5200	.0000
17	F17	Y	.0000	.0000
17	F17	ROTN	.0000	.0000
16	F16	X	48.6400	.0000
16	F16	Y	.0000	.0000
16	F16	ROTN	.0000	.0000
15	F15	X	53.7600	.0000
15	F15	Y	.0000	.0000
15	F15	ROTN	.0000	.0000
14	F14	X	58.8800	.0000
14	F14	Y	.0000	.0000
14	F14	ROTN	.0000	.0000
13	F13	X	64.0000	.0000
13	F13	Y	.0000	.0000
13	F13	ROTN	.0000	.0000
12	F12	X	69.1200	.0000
12	F12	Y	.0000	.0000
12	F12	ROTN	.0000	.0000
11	F11	X	74.2400	.0000
11	F11	Y	.0000	.0000
11	F11	ROTN	.0000	.0000
10	F10	X	78.7200	.0000
10	F10	Y	.0000	.0000
10	F10	ROTN	.0000	.0000
9	F09	X	82.5600	.0000
9	F09	Y	.0000	.0000
9	F09	ROTN	.0000	.0000
8	F08	X	86.4000	.0000
8	F08	Y	.0000	.0000

8	F08	ROTN	.0000	.0000
7	F07	X	90.2400	.0000
7	F07	Y	.0000	.0000
7	F07	ROTN	.0000	.0000
6	F06	X	94.0800	.0000
6	F06	Y	.0000	.0000
6	F06	ROTN	.0000	.0000
5	F05	X	97.2800	.0000
5	F05	Y	.0000	.0000
5	F05	ROTN	.0000	.0000
4	F04	X	99.8400	.0000
4	F04	Y	.0000	.0000
4	F04	ROTN	.0000	.0000
3	F03	X	102.4000	.0000
3	F03	Y	.0000	.0000
3	F03	ROTN	.0000	.0000
2	F02	X	104.0000	.0000
2	F02	Y	.0000	.0000
2	F02	ROTN	.0000	.0000
1	F01	X	105.6000	.0000
1	F01	Y	.0000	.0000
1	F01	ROTN	.0000	.0000

STORY OVERTURNING MOMENTS

NOTE THAT THE FORCE QUANTITIES BELOW DO NOT INCLUDE P-DELTA EFFECTS.

OUTPUT COLUMN 1 CONTAINS RESULTS FROM STATIC LATERAL LOAD CASE A
OUTPUT COLUMN 2 CONTAINS RESULTS FROM STATIC LATERAL LOAD CASE B

LEVEL	ID	DIRN	1	2
25	F25	X	10.2400	.0000
25	F25	Y	.0000	.0000
25	F25	ROTN	.0000	.0000
24	F24	X	40.9600	.0000
24	F24	Y	.0000	.0000
24	F24	ROTN	.0000	.0000
23	F23	X	92.1600	.0000
23	F23	Y	.0000	.0000
23	F23	ROTN	.0000	.0000
22	F22	X	163.8400	.0000
22	F22	Y	.0000	.0000
22	F22	ROTN	.0000	.0000
21	F21	X	256.0000	.0000
21	F21	Y	.0000	.0000
21	F21	ROTN	.0000	.0000
20	F20	X	368.6400	.0000
20	F20	Y	.0000	.0000
20	F20	ROTN	.0000	.0000
19	F19	X	501.7600	.0000

19	F19	Y	.0000	.0000
19	F19	ROTN	.0000	.0000
18	F18	X	655.3600	.0000
18	F18	Y	.0000	.0000
18	F18	ROTN	.0000	.0000
17	F17	X	829.4400	.0000
17	F17	Y	.0000	.0000
17	F17	ROTN	.0000	.0000
16	F16	X	1024.0000	.0000
16	F16	Y	.0000	.0000
16	F16	ROTN	.0000	.0000
15	F15	X	1239.0400	.0000
15	F15	Y	.0000	.0000
15	F15	ROTN	.0000	.0000
14	F14	X	1474.5600	.0000
14	F14	Y	.0000	.0000
14	F14	ROTN	.0000	.0000
13	F13	X	1730.5600	.0000
13	F13	Y	.0000	.0000
13	F13	ROTN	.0000	.0000
12	F12	X	2007.0400	.0000
12	F12	Y	.0000	.0000
12	F12	ROTN	.0000	.0000
11	F11	X	2304.0000	.0000
11	F11	Y	.0000	.0000
11	F11	ROTN	.0000	.0000
10	F10	X	2618.8800	.0000
10	F10	Y	.0000	.0000
10	F10	ROTN	.0000	.0000
9	F09	X	2949.1200	.0000
9	F09	Y	.0000	.0000
9	F09	ROTN	.0000	.0000
8	F08	X	3294.7200	.0000
8	F08	Y	.0000	.0000
8	F08	ROTN	.0000	.0000
7	F07	X	3655.6800	.0000
7	F07	Y	.0000	.0000
7	F07	ROTN	.0000	.0000
6	F06	X	4032.0000	.0000
6	F06	Y	.0000	.0000
6	F06	ROTN	.0000	.0000
5	F05	X	4421.1200	.0000
5	F05	Y	.0000	.0000
5	F05	ROTN	.0000	.0000
4	F04	X	4820.4800	.0000
4	F04	Y	.0000	.0000
4	F04	ROTN	.0000	.0000
3	F03	X	5230.0800	.0000
3	F03	Y	.0000	.0000
3	F03	ROTN	.0000	.0000
2	F02	X	5646.0800	.0000
2	F02	Y	.0000	.0000
2	F02	ROTN	.0000	.0000

1	F01	X	6068.4800	.0000
1	F01	Y	.0000	.0000
1	F01	ROTN	.0000	.0000

25-STORY,3-BAY BUILDING

FRAME ID NUMBER-----------	1
NUMBER OF STORY LEVELS----	25
NUMBER OF COLUMN LINES----	4
NUMBER OF BAYS------------	3
NUMBER OF DIFF. COL. PROP-	5
NUMBER OF DIFF. BEAM PROP-	1
NUMBER OF DIFF. FEF-------	2
NUMBER OF PANEL ELEMENTS--	25
NUMBER OF BRACING ELEMENTS	0

COLUMN LINE COORDINATES

LINE	X	Y
1	.00	.00
2	8.00	.00
3	11.50	.00
4	19.50	.00

COLUMN ID	E	A	MAJ SA	MIN SA	TORS I	MAJ I	MIN I	RIGID TOP	RIGID BOT
1	3042000.00	.16	.00	.00	.00	.00	.00	.00	.00
2	3042000.00	.36	.00	.00	.00	.01	.00	.00	.00
3	3042000.00	.56	.00	.00	.00	03	.00	.00	.00
4	3042000.00	.81	.00	.00	.00	.05	00	.00	.00
5	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00

BEAM ID	E	SA	TORS I	FLEX I	KII	KJJ	KIJ	RIGID I	RIGID J
1	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00

FEF ID	CODE	ML	VL	MR	VR	W
1	1	.000	38.400	.000	55.200	.000
2	1	.000	55.200	.000	38.400	.000

BEAM LOCATIONS

/ BAY	LEV	IC	JC	BID	GEN	VL1	VL2	VL3
1	25	1	2	1	24	1	0	0
2	25	2	3	1	24	0	0	0
3	25	3	4	1	24	2	0	0

GENERATED BEAM LOCATIONS

OSTORY	1	2	3
25	1	1	1
24	1	1	1
23	1	1	1
22	1	1	1
21	1	1	1
20	1	1	1
19	1	1	1
18	1	1	1
17	1	1	1
16	1	1	1
15	1	1	1
14	1	1	1
13	1	1	1
12	1	1	1
11	1	1	1
10	1	1	1
9	1	1	1
8	1	1	1

7	1	1	1
6	1	1	1
5	1	1	1
4	1	1	1
3	1	1	1
2	1	1	1
1	1	1	1

GENERATED BEAM LOADS...LOAD CASE I

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

GENERATED BEAM LOADS...LOAD CASE II

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

GENERATED BEAM LOADS...LOAD CASE III

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

COLUMN LOCATIONS

0 LINE	LEV	CID	KCOL	GEN
1	25	1	2	4
1	20	2	2	4
1	15	3	2	5
1	9	4	2	8
2	25	5	3	24
3	25	5	4	24
4	25	1	3	4
4	20	2	3	4
4	15	3	3	5
4	9	4	3	8

GENERATED COLUMN LOCATIONS

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

7	4	5	5	4
6	4	5	5	4
5	4	5	5	4
4	4	5	5	4
3	4	5	5	4
2	4	5	5	4
1	4	5	5	4

PANEL CARDS

LEVEL	COL I	COL J	E	A	I	SA	G
25	2	3	3042000.00	1.05	1.07	.00	.00
24	2	3	3042000.00	1.05	1.07	.00	.00
23	2	3	3042000.00	1.05	1.07	.00	.00
22	2	3	3042000.00	1.05	1.07	.00	.00
21	2	3	3042000.00	1.05	1.07	.00	.00
20	2	3	3042000.00	1.05	1.07	.00	.00
19	2	3	3042000.00	1.05	1.07	.00	.00
18	2	3	3042000.00	1.05	1.07	.00	.00
17	2	3	3042000.00	1.05	1.07	.00	.00
16	2	3	3042000.00	1.05	1.07	.00	.00
15	2	3	3042000.00	1.05	1.07	.00	.00
14	2	3	3042000.00	1.05	1.07	.00	.00
13	2	3	3042000.00	1.05	1.07	.00	.00
12	2	3	3042000.00	1.05	1.07	.00	.00
11	2	3	3042000.00	1.05	1.07	.00	.00
10	2	3	3042000.00	1.05	1.07	.00	.00
9	2	3	3042000.00	1.05	1.07	.00	.00
8	2	3	3042000.00	1.05	1.07	.00	.00
7	2	3	3042000.00	1.05	1.07	.00	.00
6	2	3	3042000.00	1.05	1.07	.00	.00
5	2	3	3042000.00	1.05	1.07	.00	.00
4	2	3	3042000.00	1.05	1.07	.00	.00
3	2	3	3042000.00	1.05	1.07	.00	.00
2	2	3	3042000.00	1.05	1.07	.00	.00
1	2	3	3042000.00	1.05	1.07	.00	.00

BEAM PROPERTIES AND LOADS

BAY NUMBERS 1

LEVEL	E	SA	TORS I	FLEX I	KII	KJJ	KIJ	WI	WJ	VERT1	VERT2	VERT3
25	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	1	0	0
24	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	1	0	0
23	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	1	0	0
22	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	1	0	0
21	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	1	0	0
20	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	1	0	0
19	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	1	0	0
18	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	1	0	0
17	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	1	0	0
16	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	1	0	0
15	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	1	0	0
14	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	1	0	0
13	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	1	0	0
12	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	1	0	0
11	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	1	0	0
10	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	1	0	0
9	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	1	0	0
8	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	1	0	0
7	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	1	0	0
6	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	1	0	0
5	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	1	0	0
4	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	1	0	0
3	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	1	0	0
2	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	1	0	0
1	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	1	0	0

BAY NUMBERS 2

LEVEL	E	SA	TORS I	FLEX I	KII	KJJ	KIJ	WI	WJ	VERT1	VERT2	VERT3

25	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	0	0	0
24	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	0	0	0
23	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	0	0	0
22	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	0	0	0
21	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	0	0	0
20	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	0	0	0
19	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	0	0	0
18	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	0	0	0
17	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	0	0	0
16	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	0	0	0
15	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	0	0	0
14	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	0	0	0
13	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	0	0	0
12	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	0	0	0
11	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	0	0	0
10	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	0	0	0
9	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	0	0	0
8	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	0	0	0
7	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	0	0	0
6	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	0	0	0
5	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	0	0	0
4	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	0	0	0
3	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	0	0	0
2	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	0	0	0
1	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	0	0	0

BAY NUMBERS 3

LEVEL	E	BA	TORS I	FLEX I	KII	KJJ	KIJ	WI	WJ	VERT1	VERT2	VERT3
25	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	2	0	0
24	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	2	0	0
23	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	2	0	0
22	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	2	0	0
21	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	2	0	0
20	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	2	0	0
19	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	2	0	0
18	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	2	0	0
17	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	2	0	0
16	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	2	0	0
15	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	2	0	0
14	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	2	0	0
13	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	2	0	0
12	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	2	0	0
11	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	2	0	0
10	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	2	0	0
9	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	2	0	0
8	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	2	0	0
7	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	2	0	0
6	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	2	0	0
5	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	2	0	0
4	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	2	0	0
3	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	2	0	0
2	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	2	0	0
1	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	2	0	0

COLUMN PROPERTIES

COLUMN LINE NO. 1

LEVEL	E	A	MAJ SA	MIN SA	TORS I	MAJ I	MIN I	DT	DB
25	3042000.00	.16	.00	.00	.00	.00	.00	.00	.00
24	3042000.00	.16	.00	.00	.00	.00	.00	.00	.00
23	3042000.00	.16	.00	.00	.00	.00	.00	.00	.00
22	3042000.00	.16	.00	.00	.00	.00	.00	.00	.00
21	3042000.00	.16	.00	.00	.00	.00	.00	.00	.00
20	3042000.00	.36	.00	.00	.00	.01	.00	.00	.00
19	3042000.00	.36	.00	.00	.00	.01	.00	.00	.00
18	3042000.00	.36	.00	.00	.00	.01	.00	.00	.00
17	3042000.00	.36	.00	.00	.00	.01	.00	.00	.00
16	3042000.00	.36	.00	.00	.00	.01	.00	.00	.00
15	3042000.00	.56	.00	.00	.00	.03	.00	.00	.00
14	3042000.00	.56	.00	.00	.00	.03	.00	.00	.00

13	3042000.00	.56	.00	.00	.00	.03	.00	.00	.00
12	3042000.00	.56	.00	.00	.00	.03	.00	.00	.00
11	3042000.00	.56	.00	.00	.00	.03	.00	.00	.00
10	3042000.00	.56	.00	.00	.00	.03	.00	.00	.00
9	3042000.00	.61	.00	.00	.00	.05	.00	.00	.00
8	3042000.00	.61	.00	.00	.00	.05	.00	.00	.00
7	3042000.00	.61	.00	.00	.00	.05	.00	.00	.00
6	3042000.00	.61	.00	.00	.00	.05	.00	.00	.00
5	3042000.00	.61	.00	.00	.00	.05	.00	.00	.00
4	3042000.00	.61	.00	.00	.00	.05	.00	.00	.00
3	3042000.00	.61	.00	.00	.00	.05	.00	.00	.00
2	3042000.00	.61	.00	.00	.00	.05	.00	.00	.00
1	3042000.00	.61	.00	.00	.00	.05	.00	.00	.00

COLUMN LINE NO. 2

LEVEL	E	A	MAJ SA	MIN SA	TORS I	MAJ I	MIN I	DT	DB
25	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
24	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
23	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
22	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
21	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
20	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
19	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
18	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
17	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
16	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
15	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
14	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
13	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
12	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
11	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
10	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
9	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
8	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
7	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
6	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
5	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
4	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
3	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
2	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
1	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00

COLUMN LINE NO. 3

LEVEL	E	A	MAJ SA	MIN SA	TORS I	MAJ I	MIN I	DT	DB
25	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
24	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
23	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
22	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
21	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
20	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
19	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
18	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
17	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
16	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
15	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
14	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
13	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
12	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
11	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
10	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
9	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
8	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
7	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
6	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
5	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
4	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
3	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
2	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
1	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00

COLUMN LINE NO. 4

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

25	3042000.00	.16	.00	.00	.00	.00	.00	.00	.00
24	3042000.00	.16	.00	.00	.00	.00	.00	.00	.00
23	3042000.00	.16	.00	.00	.00	.00	.00	.00	.00
22	3042000.00	.16	.00	.00	.00	.00	.00	.00	.00
21	3042000.00	.16	.00	.00	.00	.00	.00	.00	.00
20	3042000.00	.36	.00	.00	.00	.00	.00	.00	.00
19	3042000.00	.36	.00	.00	.00	.01	.00	.00	.00
18	3042000.00	.36	.00	.00	.00	.01	.00	.00	.00
17	3042000.00	.36	.00	.00	.00	.01	.00	.00	.00
16	3042000.00	.36	.00	.00	.00	.01	.00	.00	.00
15	3042000.00	.56	.00	.00	.00	.03	.00	.00	.00
14	3042000.00	.56	.00	.00	.00	.03	.00	.00	.00
13	3042000.00	.56	.00	.00	.00	.03	.00	.00	.00
12	3042000.00	.56	.00	.00	.00	.03	.00	.00	.00
11	3042000.00	.56	.00	.00	.00	.03	.00	.00	.00
10	3042000.00	.56	.00	.00	.00	.03	.00	.00	.00
9	3042000.00	.81	.00	.00	.00	.05	.00	.00	.00
8	3042000.00	.81	.00	.00	.00	.05	.00	.00	.00
7	3042000.00	.81	.00	.00	.00	.05	.00	.00	.00
6	3042000.00	.81	.00	.00	.00	.05	.00	.00	.00
5	3042000.00	.81	.00	.00	.00	.05	.00	.00	.00
4	3042000.00	.81	.00	.00	.00	.05	.00	.00	.00
3	3042000.00	.81	.00	.00	.00	.05	.00	.00	.00
2	3042000.00	.81	.00	.00	.00	.05	.00	.00	.00
1	3042000.00	.81	.00	.00	.00	.05	.00	.00	.00

0...FRAME TYPE 1 ...

TIME REQUIRED TO FORM STIFFNESS = 75.13

1FRAME POSITION DATA

FRAME	ID	FORCE CODE	X1	Y1	ANG	
1	1	0	.00	.00	.00	25-S.3-B BUILD.

LOAD CONDITION DEFINITION CARDS

0LOAD	I	II	III	A	B	SPECTRUM-1	SPECTRUM-2	SPECTRUM-3	SPECTRUM-4	TIME HIST
1	2.00	.00	.00	2.00	.00	.00	.00	.00	.00	.00

SPECTRUM-1... ROOT MEAN SQUARE COMBINATION

SPECTRUM-2... SUM OF ABSOLUTE VALUES

SPECTRUM-3... DOUBLE SUM COMBINATION

SPECTRUM-4... COMPLETE QUADRATIC COMBINATION

FRAME DISPLACEMENT

LEVEL		
25	X	.6205304
25	Y	.0000000
25	ROTN	.0000000
24	X	.5974482
24	Y	.0000000
24	ROTN	.0000000
23	X	.5740344
23	Y	.0000000
23	ROTN	.0000000
22	X	.5501236
22	Y	.0000000
22	ROTN	.0000000
21	X	.5255801
21	Y	.0000000
21	ROTN	.0000000
20	X	.5003099

20	Y	.0000000
20	ROTN	.0000000
19	X	.4743028
19	Y	.0000000
19	ROTN	.0000000
18	X	.4474410
18	Y	.0000000
18	ROTN	.0000000
17	X	.4197126
17	Y	.0000000
17	ROTN	.0000000
16	X	.3911330
16	Y	.0000000
16	ROTN	.0000000
15	X	.3617490
15	Y	.0000000
15	ROTN	.0000000
14	X	.3316989
14	Y	.0000000
14	ROTN	.0000000
13	X	.3010736
13	Y	.0000000
13	ROTN	.0000000
12	X	.2700580
12	Y	.0000000
12	ROTN	.0000000
11	X	.2388712
11	Y	.0000000
11	ROTN	.0000000
10	X	.2077896
10	Y	.0000000
10	ROTN	.0000000
9	X	.1771328
9	Y	.0000000
9	ROTN	.0000000
8	X	.1473125
8	Y	.0000000
8	ROTN	.0000000
7	X	.1187029
7	Y	.0000000
7	ROTN	.0000000
6	X	.0917919
6	Y	.0000000
6	ROTN	.0000000
5	X	.0671082
5	Y	.0000000
5	ROTN	.0000000
4	X	.0452471
4	Y	.0000000
4	ROTN	.0000000
3	X	.0268628
3	Y	.0000000
3	ROTN	.0000000
2	X	.0126677
2	Y	.0000000
2	ROTN	.0000000
1	X	.0034333
1	Y	.0000000
1	ROTN	.0000000

MEMBER FORCES ..... FRAME ID 25-8,3-8 BUILD. FRAME TYPE 1
LEVEL NO 1 LEVEL ID F01

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	-49.8955557	80.9502238	-1447.0418860	6.5216394
2	1	-6.6683186	20.9599636	-242.9252521	3.3644032
3	1	-5.4514126	19.6889256	-2727.7407495	1.2180989
4	1	49.2980972	-80.5265115	-2342.9593608	-5.7965905

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-21.1142770	-20.6143017
2	1	2.4823036	2.5139141
3	1	-21.1145636	-21.6248551

PANEL FORCES

I COL	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
2	1	-873.8825180	1660.0038116	-2599.3327515	194.2992594

MEMBER FORCES ..... FRAME ID 25-8,3-B BUILD. FRAME TYPE 1
LEVEL NO 2 LEVEL ID F02

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	-34.9800569	71.0098327	-1375.4579594	5.9320450
2	1	1.9825329	24.8003164	-353.0688235	5.8806134
3	1	3.0880882	24.0520621	-2499.9045676	1.0137276
4	1	34.2137807	-70.9209523	-2260.8169335	-3.9574435

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-38.3038974	-37.5126405
2	1	6.0474829	6.1388872
3	1	-38.4749768	-39.2981346

PANEL FORCES

I COL	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
2	1	-700.5036671	1489.8206796	-2496.3517171	191.3181451

MEMBER FORCES ..... FRAME ID 25-8,3-B BUILD. FRAME TYPE 1
LEVEL NO 3 LEVEL ID F03

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	-18.5058494	73.2839544	-1308.1350256	9.0272657
2	1	9.9977443	29.4828447	-454.4282991	8.2574462
3	1	11.1093859	29.2480013	-2280.9175301	1.9949122
4	1	17.6545676	-73.5119153	-2174.2952946	-6.2482793

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-52.9600755	-51.8608149
2	1	8.8643860	8.9982659
3	1	-53.2909940	-54.4260492

PANEL FORCES

I COL	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
2	1	-555.8276325	1306.8906509	-2393.4258506	179.2720547

MEMBER FORCES ..... FRAME ID 25-8,3-B BUILD. FRAME TYPE 1
LEVEL NO 4 LEVEL ID F04

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	-5.0541975	71.5559249	-1244.4363869	10.9058871
2	1	16.7270852	32.9986846	-543.5612843	9.9331845
3	1	17.9760278	33.1853422	-2074.2162884	3.2325525
4	1	3.9275710	-72.0806168	-2084.0306642	-7.4598637

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-65.0084511	-63.6892701
2	1	11.2371197	11.4069953
3	1	-65.5778651	-66.9555356

PANEL FORCES

I COL	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE

2	1	-423.1879339	1137.8921669	-2290.5553782	168.1484538

MEMBER FORCES ..... FRAME ID 25-8,3-B BUILD. FRAME TYPE 1
LEVEL NO 5 LEVEL ID F05

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	7.0148528	70.0826486	-1183.7236021	12.7999865
2	1	22.3706514	35.7250652	-820.9875476	11.1300594
3	1	23.6055564	36.2928420	-1879.2857371	4.7037602
4	1	-8.3278309	-70.8831065	-1990.6639891	-8.9232018

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-74.7487793	-73.2419662
2	1	13.1673753	13.3702804
3	1	-75.5823677	-77.1582116

PANEL FORCES

I COL	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
2	1	-303.7628251	979.6007823	-2187.7391241	157.0028863

MEMBER FORCES ..... FRAME ID 25-8,3-B BUILD. FRAME TYPE 1
LEVEL NO 6 LEVEL ID F06

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	17.0533250	67.7339265	-1125.4224453	14.2518996
2	1	27.0137359	37.7039395	-686.7007850	11.9418302
3	1	28.3830898	38.6065309	-1696.1291553	6.2756956
4	1	-18.5309587	-68.8303807	-1894.7714167	-10.1478161

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-82.3809252	-80.7202979
2	1	14.7158915	14.9486904
3	1	-83.5054778	-85.2450341

PANEL FORCES

I COL	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
2	1	-197.9719373	831.6076419	-2084.9761978	145.5426653

MEMBER FORCES ..... FRAME ID 25-8,3-B BUILD. FRAME TYPE 1
LEVEL NO 7 LEVEL ID F07

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	26.5825106	65.3276002	-1069.0100981	15.7804804
2	1	30.6520971	38.9908704	-740.1371198	12.4312243
3	1	32.1494972	40.1936975	-1525.3094397	7.8238773
4	1	-28.2899076	-66.7140754	-1796.8778027	-11.6620280

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-88.0574217	-86.3179451
2	1	15.8890387	16.1313593
3	1	-89.5359253	-91.3817989

PANEL FORCES

I COL	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
2	1	-108.2031972	692.6771744	-1982.2657396	132.7822789

MEMBER FORCES ..... FRAME ID 25-8,3-B BUILD. FRAME TYPE 1
LEVEL NO 8 LEVEL ID F08

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE

1	1	30.1341052	61.4949110	-1014.0070190	15.6546544
2	1	33.6725950	39.7969092	-782.4185173	12.7711686
3	1	35.2944878	41.2550687	-1365.7028680	9.3693146
4	1	-31.8172432	-63.0718891	-1697.4853874	-11.5813051

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-92.2792786	-90.3457176
2	1	16.8105860	17.0903330
3	1	-94.0061886	-96.0370075

PANEL FORCES

I COL	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
2	1	-23.7549194	571.2235333	-1879.6062104	123.4234286

MEMBER FORCES ..... FRAME ID 25-8,3-8 BUILD. FRAME TYPE 1
LEVEL NO 9 LEVEL ID F09

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	50.5356015	62.1451734	-960.0351435	21.0130319
2	1	35.3804426	39.8625366	-810.3514527	12.7694905
3	1	37.3513077	41.6213677	-1220.5044772	10.6441611
4	1	-53.2441894	-64.2197643	-1596.9099879	-17.4608585

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-94.0318862	-92.5021489
2	1	17.2682007	17.6204241
3	1	-96.5168793	-98.1478762

PANEL FORCES

I COL	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
2	1	23.7631880	442.1568229	-1776.9989387	103.2322909

MEMBER FORCES ..... FRAME ID 25-8,3-8 BUILD. FRAME TYPE 1
LEVEL NO 10 LEVEL ID F10

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	43.2199973	43.4962847	-906.5518979	14.7310419
2	1	37.2067660	39.8535056	-830.2273737	12.9020085
3	1	38.5124411	41.5451475	-1083.4106042	11.7108815
4	1	-44.5301883	-44.9036868	-1495.7768934	-10.8944801

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-95.1004138	-94.1109056
2	1	17.4765757	17.6257690
3	1	-98.2012959	-97.2133622

PANEL FORCES

I COL	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
2	1	110.9288977	369.2098118	-1674.4332307	107.2014242

MEMBER FORCES ..... FRAME ID 25-8,3-8 BUILD. FRAME TYPE 1
LEVEL NO 11 LEVEL ID F11

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	48.1406507	51.8804165	-853.4033128	18.3739643
2	1	38.4104778	39.4275638	-843.7208651	12.9034462
3	1	38.7943201	40.0630858	-952.4375354	12.3135115
4	1	-48.8067818	-52.6831739	-1394.8000612	-14.4843061

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-96.2848278	-95.1389987

2	1	17.7022675	17.7265049
3	1	-95.4177084	-96.5684778

PANEL FORCES

I COL	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
2	1	149.7785292	260.6890096	-1571.6384255	90.4045936

MEMBER FORCES ..... FRAME ID 25-S,3-B BUILD. FRAME TYPE 1
LEVEL NO 12 LEVEL ID F12

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	48.7763444	49.1441771	-800.5312911	17.9885956
2	1	39.1981648	39.0262534	-844.4985866	12.9717682
3	1	38.8027255	38.8979834	-833.9371045	12.9231610
4	1	-48.3319291	-47.9616961	-1294.0017879	-13.9844102

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-96.1519880	-95.0325092
2	1	17.5446940	17.5368933
3	1	-93.6427704	-94.7357484

PANEL FORCES

I COL	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
2	1	189.0323384	178.2573002	-1468.6312298	80.3718731

MEMBER FORCES ..... FRAME ID 25-S,3-B BUILD. FRAME TYPE 1
LEVEL NO 13 LEVEL ID F13

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	50.4135649	47.3756236	-747.6293508	18.6502136
2	1	39.3835332	38.1896504	-835.0073169	12.9186876
3	1	38.2705883	37.3031516	-725.4813103	13.2680864
4	1	-49.1409143	-46.4038193	-1193.6544731	-14.6306416

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-95.1659203	-94.0940529
2	1	17.4260442	17.2052901
3	1	-91.1703220	-92.1943079

PANEL FORCES

I COL	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
2	1	214.1119431	102.3665721	-1365.4275489	68.5321665

MEMBER FORCES ..... FRAME ID 25-S,3-B BUILD. FRAME TYPE 1
LEVEL NO 14 LEVEL ID F14

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	47.6747330	44.7523554	-694.4868474	17.7895445
2	1	39.4040593	37.2844755	-815.9264318	12.9251233
3	1	37.5856852	35.6944436	-626.4091726	13.5240304
4	1	-45.7864921	-43.0533937	-1093.9338943	-13.8344413

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-93.8827434	-92.6482921
2	1	17.2018858	16.8628963
3	1	-88.3304011	[illegible].4823084

PANEL FORCES

I COL	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
2	1	235.3814085	42.0157150	-1262.0436539	59.6866452

MEMBER FORCES ..... FRAME ID 25-B,3-B BUILD. FRAME TYPE 1
LEVEL NO 15 LEVEL ID F15

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	58.8620613	46.2080104	-641.0032289	21.4519109
2	1	38.5453148	36.0423470	-784.8899769	12.7503434
3	1	36.3224234	33.8818197	-539.1044057	13.5009798
4	1	-55.7875848	-43.6958163	-994.9073056	-17.3964951

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-90.4907957	-89.9833735
2	1	16.8576888	16.2776640
3	1	-84.3799428	-84.9357810

PANEL FORCES

I COL	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
2	1	227.6403567	-23.1468861	-1158.4950848	42.4200463

MEMBER FORCES ..... FRAME ID 25-B,3-B BUILD. FRAME TYPE 1
LEVEL NO 16 LEVEL ID F16

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	41.8445593	31.6287344	-586.7624980	14.0579285
2	1	37.7700682	34.7803701	-748.3892659	12.6398940
3	1	34.1409814	31.7798555	-457.0945537	13.1223633
4	1	-38.0445429	-29.0482162	-896.9553401	-10.1840983

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-85.5516213	-86.9279451
2	1	15.7704273	15.0710322
3	1	-77.7505997	-76.4551609

PANEL FORCES

I COL	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
2	1	258.6657491	-38.5693430	-1054.7983422	47.2754852

MEMBER FORCES ..... FRAME ID 25-B,3-B BUILD. FRAME TYPE 1
LEVEL NO 17 LEVEL ID F17

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	44.8684862	43.7070620	-531.5224438	18.3461803
2	1	37.2041363	33.3874495	-706.9044291	12.5970925
3	1	31.8950295	28.5385661	-379.6011369	12.3961689
4	1	-39.1518259	-38.4106180	-800.8796201	-13.6683580

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-84.7463967	-85.5935949
2	1	15.5512440	14.6080532
3	1	-73.0391472	-72.2676680

PANEL FORCES

I COL	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
2	1	240.6453608	-93.3468590	-950.8923702	30.0319663

MEMBER FORCES ..... FRAME ID 25-B,3-B BUILD. FRAME TYPE 1
LEVEL NO 18 LEVEL ID F18

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	44.0227775	39.8779105	-476.0149428	17.6753566
2	1	36.5028307	32.8382146	-653.8076080	12.8029073
3	1	29.8171168	26.5360645	-313.2690815	11.9166615

4	1	-36.5819678	-33.1158421	-705.8162682	-12.5309225

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-82.3910944	-83.4660844
2	1	14.9113408	13.7620077
3	1	-67.9863804	-67.0456216

PANEL FORCES

I COL	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
2	1	229.2361203	-118.2766683	-846.1921016	21.8739174

MEMBER FORCES ..... FRAME ID 25-S,3-B BUILD   FRAME TYPE 1
LEVEL NO 19   LEVEL ID F19

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	39.0536937	38.3583169	-419.9458401	16.5328361
2	1	36.0202821	32.0521129	-593.7865895	13.0304962
3	1	27.9545597	24.4072559	-253.4757529	11.3882252
4	1	-31.3221115	-30.4636538	-612.2372679	-11.3349324

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-81.5411100	-81.9524049
2	1	14.6876516	13.3128763
3	1	-63.7963546	-63.3789701

PANEL FORCES

I COL	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
2	1	212.1514259	-135.1439048	-741.3545496	14.2732780

MEMBER FORCES ..... FRAME ID 25-S,3-B BUILD.   FRAME TYPE 1
LEVEL NO 20   LEVEL ID F20

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	55.4591351	42.4874163	-363.5825295	22.1226684
2	1	34.4504570	31.2444712	-521.7031764	13.0316814
3	1	25.6303542	22.5189186	-205.3772866	10.7019801
4	1	-42.1086305	-32.0569587	-519.5416023	-15.1633759

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-74.7857613	-77.8913512
2	1	13.9105636	12.4730643
3	1	-57.8544543	-55.6240441

PANEL FORCES

I COL	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
2	1	160.2890722	-162.5429337	-636.1954052	-4.6999306

MEMBER FORCES ..... FRAME ID 25-S,3-B BUILD.   FRAME TYPE 1
LEVEL NO 21   LEVEL ID F21

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	26.4210076	19.3266262	-305.8421685	9.5047020
2	1	31.3494338	29.3303306	-449.3921630	12.3371524
3	1	21.2103669	19.7510358	-159.3283924	9.2400859
4	1	-19.0518155	-13.5154137	-428.5567900	-5.1843317

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-58.1503905	-69.8695214
2	1	11.6299921	9.9144575
3	1	-46.4546937	-38.4576749

PANEL FORCES

I COL	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
2	1	174.3561225	-121.6863631	-530.8804860	9.8135181

MEMBER FORCES ..... FRAME ID 25-S,3-B BUILD. FRAME TYPE 1
LEVEL NO 22 LEVEL ID F22

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	31.0783502	31.7293828	-245.0448575	14.1983406
2	1	30.6307777	26.6900955	-377.3141166	12.0650209
3	1	16.3128992	15.3298694	-106.7726027	7.7432640
4	1	-19.4440289	-20.4058594	-341.1427439	-7.8692220

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-60.7973754	-70.8899853
2	1	12.0992057	10.0044424
3	1	-42.8593948	-36.5489350

PANEL FORCES

I COL	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
2	1	130.1917645	-143.8966859	-425.3258793	-6.0360277

MEMBER FORCES ..... FRAME ID 25-S,3-B BUILD. FRAME TYPE 1
LEVEL NO 23 LEVEL ID F23

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	30.4684550	29.7190252	-194.7055664	13.9427299
2	1	30.8370141	26.1599120	-293.9865677	12.9918152
3	1	16.3792981	14.3420531	-70.8395488	7.2568704
4	1	-17.2610725	-17.1048061	-254.4417152	-7.0704580

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-59.6296900	-70.1096019
2	1	11.8528660	9.4425483
3	1	-38.7317932	-32.8454346

PANEL FORCES

I COL	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
2	1	86.3766293	-141.3915917	-319.2248019	-15.6620139

MEMBER FORCES ..... FRAME ID 25-S,3-B BUILD. FRAME TYPE 1
LEVEL NO 24 LEVEL ID F24

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	28.2237280	29.1612350	-124.1229778	13.6198791
2	1	28.3407917	27.4197218	-202.4507981	12.7550699
3	1	14.4771289	12.9099466	-40.7398475	6.6082957
4	1	-14.9094265	-15.5843621	-168.6945617	-6.6359830

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-62.6413330	-71.7536070
2	1	10.7336129	8.6287974
3	1	-37.0047255	-32.2988136

PANEL FORCES

I COL	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
2	1	36.5057185	-128.5598459	-212.7918149	-24.2591221

MEMBER FORCES ..... FRAME ID 25-S,3-B BUILD. FRAME TYPE 1
LEVEL NO 25 LEVEL ID F25

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	42.1909940	34.4176050	-64.1223453	18.7821200
2	1	40.7582714	32.6793024	-96.0732054	17.8049854
3	1	16.4725383	13.8987992	-25.0180134	7.4494633
4	1	-21.2466092	-17.3893871	-83.2316194	-9.1786958

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-42.1909940	-59.2302432
2	1	16.4719718	13.7338074
3	1	-30.2063457	-21.2466092

PANEL FORCES

I COL	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
2	1	-56.6995774	-131.2319432	-105.9548165	-46.0943118

CONVERGE IN ITERATION NO. 3

TOTAL TIME 280.77 SEC.

ตัวอย่าง 4 : โครงข้อแข็งประกอบผนังต้านแรงเฉือน 25 ชั้น 3 ช่วงเสา

กรณี $\alpha = 2.5$

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 25    1    1    1    0    0    1 00001   5     0.001 T810804.INP
 F25            4.0
     2.56
 F24            4.0
     5.12
 F23            4.0
     5.12
 F22            4.0
     5.12
 F21            4.0
     5.12
 F20            4.0
     5.12
 F19            4.0
     5.12
 F18            4.0
     5.12
 F17            4.0
     5.12
 F16            4.0
     5.12
 F15            4.0
     5.12
 F14            4.0
     5.12
 F13            4.0
     5.12
 F12            4.0
     5.12
 F11            4.0
     5.12
 F10            4.0
     4.48
 F09            4.0
     3.84
 F08            4.0
     3.84
 F07            4.0
     3.84
 F06            4.0
     3.84
 F05            4.0
     3.20
 F04            4.0
     2.56
 F03            4.0
     2.56
 F02            4.0
     1.60
 F01            4.0
     1.60
   1   25    4    3    5    1    2   25      25-STORY,3-BAY BUILDING
   1      0.0      0.0
   2      6.0      0.0
   3     11.5      0.0
   4     19.5      0.0
   1     3042000.0      0.16                    0.0021333
   2     3042000.0      0.36                    0.0108000
   3     3042000.0    0.5625                    0.0263672
   4     3042000.0      0.81                    0.0546750
   5     3042000.0      0.60                    0.0125000
   1     3042000.0             0.0052083  4.0  4.0  2.0
   1    1                39.4          55.2
   2    1                55.2          39.4
   1    1    2    1   24    1
   2    2    3    1   24
   3    3    4    1   24    2
   1    1    2    4
   1    2    2    4
   1    3    2    5
   1    4    2    6
```

```
  2    5    3   24
  3    5    4   24
  4    1    3    4
  4    2    3    4
  4    3    3    5
  4    4    3    6
 25    2    3 3042000.0       1.05  1.071875
 24    2    3 3042000.0       1.05  1.071875
 23    2    3 3042000.0       1.05  1.071875
 22    2    3 3042000.0       1.05  1.071875
 21    2    3 3042000.0       1.05  1.071875
 20    2    3 3042000.0       1.05  1.071875
 19    2    3 3042000.0       1.05  1.071875
 18    2    3 3042000.0       1.05  1.071875
 17    2    3 3042000.0       1.05  1.071875
 16    2    3 3042000.0       1.05  1.071875
 15    2    3 3042000.0       1.05  1.071875
 14    2    3 3042000.0       1.05  1.071875
 13    2    3 3042000.0       1.05  1.071875
 12    2    3 3042000.0       1.05  1.071875
 11    2    3 3042000.0       1.05  1.071875
 10    2    3 3042000.0       1.05  1.071875
  9    2    3 3042000.0       1.05  1.071875
  8    2    3 3042000.0       1.05  1.071875
  7    2    3 3042000.0       1.05  1.071875
  6    2    3 3042000.0       1.05  1.071875
  5    2    3 3042000.0       1.05  1.071875
  4    2    3 3042000.0       1.05  1.071875
  3    2    3 3042000.0       1.05  1.071875
  2    2    3 3042000.0       1.05  1.071875
  1    2    3 3042000.0       1.05  1.071875
  1    0        0.0        0.0        0.0 25-8,3-8 BUILD.
     2.5        0.0        0.0        2.5        0.0  0.0  0.0  0.0  0.0  0.0
  0
```

PROGRAM CU-NTABS
INPUT FILE : ts10s04.inp
OUTPUT FILE : ts10s04g.out

TS10S04.INP
TOTAL NUMBER OF STORIES-- 25
NUMBER OF DIFF FRAMES--- 1
TOTAL NUMBER OF FRAMES--- 1
NUMBER OF LOAD CONDITIONS 1
TYPE OF ANALYSIS--------- 0

EQ.0-STATIC LOADS ONLY
EQ.1-MODE SHAPES AND FREQUENCIES ONLY
EQ.2-STATIC AND MODE SHAPE ANALYSES
EQ.3-TYPE 2 AND RESPONSE SPECTRUM ANAL
EQ.4-TYPE 2 AND TIME HISTORY ANAL (INDIVIDUAL MEMBER RESPONSE ENVELOPES ONLY)
EQ.5-THIS OPTION IS NOT AVAILABLE FOR USE
EQ.6-RESPONSE SPECTRUM ANAL (GROSS BUILDING RESPONSE)
EQ.7-TYPE 3 AND 6 ANALYSES
EQ.8-TIME HISTORY ANAL (GROSS BUILDING RESPONSE/ENVELOPES OR STEP-BY-STEP RESPONSE)
EQ.9-TYPE 4 AND 8 ANALYSES
EQ.10-SLAM RESTART
EQ.11-SLAM-2 RESTART
EQ.-1,-6,-8 SAME AS 1,6,8 ABOVE EXCEPT APPROXIMATE PERIODS AND MODES USED

NUMBER OF FREQUENCIES---- 0
STORY TRANSLATION CODE--- 1
LAT FORCE GENERATION CODE 0 0
STRESS CHECK KEY--------- 0
DATA CHECK KEY----------- 0
TYPE OF SOLUTION--------- 1
MAXIMUM NO. OF CYCLES---- 5
CONVERGENCE TOLERENCE OF EQUILIBRIUM .001000

STORY DATA

LEVEL NO.	ID	HEIGHT	MASS(M)	MR**2	X(M)	Y(M)	K-X	K-Y
25	F25	4.00	19.08	.00	.00	.00	.00	.00
24	F24	4.00	19.08	.00	.00	.00	.00	.00
23	F23	4.00	19.08	.00	.00	.00	.00	.00
22	F22	4.00	19.08	.00	.00	.00	.00	.00
21	F21	4.00	19.08	.00	.00	.00	.00	.00
20	F20	4.00	19.08	.00	.00	.00	.00	.00
19	F19	4.00	19.08	.00	.00	.00	.00	.00
18	F18	4.00	19.08	.00	.00	.00	.00	.00
17	F17	4.00	19.08	.00	.00	.00	.00	.00
16	F16	4.00	19.08	.00	.00	.00	.00	.00
15	F15	4.00	19.08	.00	.00	.00	.00	.00
14	F14	4.00	19.08	.00	.00	.00	.00	.00
13	F13	4.00	19.08	.00	.00	.00	.00	.00
12	F12	4.00	19.08	.00	.00	.00	.00	.00
11	F11	4.00	19.08	.00	.00	.00	.00	.00
10	F10	4.00	19.08	.00	.00	.00	.00	.00
9	F09	4.00	19.08	.00	.00	.00	.00	.00
8	F08	4.00	19.08	.00	.00	.00	.00	.00
7	F07	4.00	19.08	.00	.00	.00	.00	.00
6	F06	4.00	19.08	.00	.00	.00	.00	.00
5	F05	4.00	19.08	.00	.00	.00	.00	.00
4	F04	4.00	19.08	.00	.00	.00	.00	.00
3	F03	4.00	19.08	.00	.00	.00	.00	.00
2	F02	4.00	19.08	.00	.00	.00	.00	.00
1	F01	4.00	19.08	.00	.00	.00	.00	.00

CUMULATIVE STORY DATA

LEVEL NO.	ID	HEIGHT	MASS(M)	MR**2
25	F25	100.00	19.08	.00

24	F24	96.00	38.17	.00
23	F23	92.00	57.25	.00
22	F22	88.00	76.33	.00
21	F21	84.00	95.41	.00
20	F20	80.00	114.50	.00
19	F19	76.00	133.58	.00
18	F18	72.00	152.66	.00
17	F17	68.00	171.74	.00
16	F16	64.00	190.83	.00
15	F15	60.00	209.91	.00
14	F14	56.00	228.99	.00
13	F13	52.00	248.07	.00
12	F12	48.00	267.16	.00
11	F11	44.00	286.24	.00
10	F10	40.00	305.32	.00
9	F09	36.00	324.40	.00
8	F08	32.00	343.49	.00
7	F07	28.00	362.57	.00
6	F06	24.00	381.65	.00
5	F05	20.00	400.73	.00
4	F04	16.00	419.82	.00
3	F03	12.00	438.90	.00
2	F02	8.00	457.98	.00
1	F01	4.00	477.06	.00

STRUCTURE LATERAL LOADS...CASES A AND B

LEVEL NO.	FX-A	FY-A	MOM-A	FX-B	FY-B	MOM-B	XA	YA	XB	YB
25	2.56	.00	.00	.00	.00	.00	.0	.0	.0	.0
24	5.12	.00	.00	.00	.00	.00	.0	.0	.0	.0
23	5.12	.00	.00	.00	.00	.00	.0	.0	.0	.0
22	5.12	.00	.00	.00	.00	.00	.0	.0	.0	.0
21	5.12	.00	.00	.00	.00	.00	.0	.0	.0	.0
20	5.12	.00	.00	.00	.00	.00	.0	.0	.0	.0
19	5.12	.00	.00	.00	.00	.00	.0	.0	.0	.0
18	5.12	.00	.00	.00	.00	.00	.0	.0	.0	.0
17	5.12	.00	.00	.00	.00	.00	.0	.0	.0	.0
16	5.12	.00	.00	.00	.00	.00	.0	.0	.0	.0
15	5.12	.00	.00	.00	.00	.00	.0	.0	.0	.0
14	5.12	.00	.00	.00	.00	.00	.0	.0	.0	.0
13	5.12	.00	.00	.00	.00	.00	.0	.0	.0	.0
12	5.12	.00	.00	.00	.00	.00	.0	.0	.0	.0
11	5.12	.00	.00	.00	.00	.00	.0	.0	.0	.0
10	4.48	.00	.00	.00	.00	.00	.0	.0	.0	.0
9	3.84	.00	.00	.00	.00	.00	.0	.0	.0	.0
8	3.84	.00	.00	.00	.00	.00	.0	.0	.0	.0
7	3.84	.00	.00	.00	.00	.00	.0	.0	.0	.0
6	3.84	.00	.00	.00	.00	.00	.0	.0	.0	.0
5	3.20	.00	.00	.00	.00	.00	.0	.0	.0	.0
4	2.56	.00	.00	.00	.00	.00	.0	.0	.0	.0
3	2.56	.00	.00	.00	.00	.00	.0	.0	.0	.0
2	1.60	.00	.00	.00	.00	.00	.0	.0	.0	.0
1	1.60	.00	.00	.00	.00	.00	.0	.0	.0	.0

STORY SHEARS

NOTE THAT THE FORCE QUANTITIES BELOW DO NOT INCLUDE P-DELTA EFFECTS.

OUTPUT COLUMN 1 CONTAINS RESULTS FROM STATIC LATERAL LOAD CASE A
OUTPUT COLUMN 2 CONTAINS RESULTS FROM STATIC LATERAL LOAD CASE B

LEVEL ID DIRN 1 2

25	F25	X	2.5600	.0000
25	F25	Y	.0000	.0000
25	F25	ROTN	.0000	.0000
24	F24	X	7.6800	.0000
24	F24	Y	.0000	.0000
24	F24	ROTN	.0000	.0000
23	F23	X	12.8000	.0000
23	F23	Y	.0000	.0000
23	F23	ROTN	.0000	.0000
22	F22	X	17.9200	.0000
22	F22	Y	.0000	.0000
22	F22	ROTN	.0000	.0000
21	F21	X	23.0400	.0000
21	F21	Y	.0000	.0000
21	F21	ROTN	.0000	.0000
20	F20	X	28.1600	.0000
20	F20	Y	.0000	.0000
20	F20	ROTN	.0000	.0000
19	F19	X	33.2800	.0000
19	F19	Y	.0000	.0000
19	F19	ROTN	.0000	.0000
18	F18	X	38.4000	.0000
18	F18	Y	.0000	.0000
18	F18	ROTN	.0000	.0000
17	F17	X	43.5200	.0000
17	F17	Y	.0000	.0000
17	F17	ROTN	.0000	.0000
16	F16	X	48.6400	.0000
16	F16	Y	.0000	.0000
16	F16	ROTN	.0000	.0000
15	F15	X	53.7600	.0000
15	F15	Y	.0000	.0000
15	F15	ROTN	.0000	.0000
14	F14	X	58.8800	.0000
14	F14	Y	.0000	.0000
14	F14	ROTN	.0000	.0000
13	F13	X	64.0000	.0000
13	F13	Y	.0000	.0000
13	F13	ROTN	.0000	.0000
12	F12	X	69.1200	.0000
12	F12	Y	.0000	.0000
12	F12	ROTN	.0000	.0000
11	F11	X	74.2400	.0000
11	F11	Y	.0000	.0000
11	F11	ROTN	.0000	.0000
10	F10	X	78.7200	.0000
10	F10	Y	.0000	.0000
10	F10	ROTN	.0000	.0000
9	F09	X	82.5600	.0000
9	F09	Y	.0000	.0000
9	F09	ROTN	.0000	.0000
8	F08	X	86.4000	.0000
8	F08	Y	.0000	.0000

8	F08	ROTN	.0000	.0000
7	F07	X	90.2400	.0000
7	F07	Y	.0000	.0000
7	F07	ROTN	.0000	.0000
6	F06	X	94.0800	.0000
6	F06	Y	.0000	.0000
6	F06	ROTN	.0000	.0000
5	F05	X	97.2800	.0000
5	F05	Y	.0000	.0000
5	F05	ROTN	.0000	.0000
4	F04	X	99.8400	.0000
4	F04	Y	.0000	.0000
4	F04	ROTN	.0000	.0000
3	F03	X	102.4000	.0000
3	F03	Y	.0000	.0000
3	F03	ROTN	.0000	.0000
2	F02	X	104.0000	.0000
2	F02	Y	.0000	.0000
2	F02	ROTN	.0000	.0000
1	F01	X	105.6000	.0000
1	F01	Y	.0000	.0000
1	F01	ROTN	.0000	.0000

STORY OVERTURNING MOMENTS

NOTE THAT THE FORCE QUANTITIES BELOW DO NOT INCLUDE P-DELTA EFFECTS.

OUTPUT COLUMN 1 CONTAINS RESULTS FROM STATIC LATERAL LOAD CASE A
OUTPUT COLUMN 2 CONTAINS RESULTS FROM STATIC LATERAL LOAD CASE B

LEVEL	ID	DIRN	1	2
25	F25	X	10.2400	.0000
25	F25	Y	.0000	.0000
25	F25	ROTN	.0000	.0000
24	F24	X	40.9600	.0000
24	F24	Y	.0000	.0000
24	F24	ROTN	.0000	.0000
23	F23	X	92.1600	.0000
23	F23	Y	.0000	.0000
23	F23	ROTN	.0000	.0000
22	F22	X	163.8400	.0000
22	F22	Y	.0000	.0000
22	F22	ROTN	.0000	.0000
21	F21	X	256.0000	.0000
21	F21	Y	.0000	.0000
21	F21	ROTN	.0000	.0000
20	F20	X	368.6400	.0000
20	F20	Y	.0000	.0000
20	F20	ROTN	.0000	.0000
19	F19	X	501.7600	.0000

19	F19	Y	.0000	.0000
19	F19	ROTN	.0000	.0000
18	F18	X	665.3600	.0000
18	F18	Y	.0000	.0000
18	F18	ROTN	.0000	.0000
17	F17	X	829.4400	.0000
17	F17	Y	.0000	.0000
17	F17	ROTN	.0000	.0000
16	F16	X	1024.0000	.0000
16	F16	Y	.0000	.0000
16	F16	ROTN	.0000	.0000
15	F15	X	1239.0400	.0000
15	F15	Y	.0000	.0000
15	F15	ROTN	.0000	.0000
14	F14	X	1474.5600	.0000
14	F14	Y	.0000	.0000
14	F14	ROTN	.0000	.0000
13	F13	X	1730.5600	.0000
13	F13	Y	.0000	.0000
13	F13	ROTN	.0000	.0000
12	F12	X	2007.0400	.0000
12	F12	Y	.0000	.0000
12	F12	ROTN	.0000	.0000
11	F11	X	2304.0000	.0000
11	F11	Y	.0000	.0000
11	F11	ROTN	.0000	.0000
10	F10	X	2618.8800	.0000
10	F10	Y	.0000	.0000
10	F10	ROTN	.0000	.0000
9	F09	X	2949.1200	.0000
9	F09	Y	.0000	.0000
9	F09	ROTN	.0000	.0000
8	F08	X	3294.7200	.0000
8	F08	Y	.0000	.0000
8	F08	ROTN	.0000	.0000
7	F07	X	3655.6800	.0000
7	F07	Y	.0000	.0000
7	F07	ROTN	.0000	.0000
6	F06	X	4032.0000	.0000
6	F06	Y	.0000	.0000
6	F06	ROTN	.0000	.0000
5	F05	X	4421.1200	.0000
5	F05	Y	.0000	.0000
5	F05	ROTN	.0000	.0000
4	F04	X	4820.4800	.0000
4	F04	Y	.0000	.0000
4	F04	ROTN	.0000	.0000
3	F03	X	5230.0800	.0000
3	F03	Y	.0000	.0000
3	F03	ROTN	.0000	.0000
2	F02	X	5646.0800	.0000
2	F02	Y	.0000	.0000
2	F02	ROTN	.0000	.0000

1	F01	X	6068.4600	.0000
1	F01	Y	.0000	.0000
1	F01	ROTN	.0000	.0000

25-STORY,3-BAY BUILDING

FRAME ID NUMBER-----------	1
NUMBER OF STORY LEVELS----	25
NUMBER OF COLUMN LINES----	4
NUMBER OF BAYS------------	3
NUMBER OF DIFF. COL. PROP-	5
NUMBER OF DIFF. BEAM PROP-	1
NUMBER OF DIFF. FEF-------	2
NUMBER OF PANEL ELEMENTS--	25
NUMBER OF BRACING ELEMENTS	0

COLUMN LINE COORDINATES

LINE	X	Y
1	.00	.00
2	8.00	.00
3	11.50	.00
4	19.50	.00

COLUMN ID	E	A	MAJ SA	MIN SA	TORS I	MAJ I	MIN I	RIGID TOP	RIGID BOT
1	3042000.00	.16	.00	.00	.00	.00	.00	.00	.00
2	3042000.00	.36	.00	.00	.00	.01	.00	.00	.00
3	3042000.00	.56	.00	.00	.00	.03	.00	.00	.00
4	3042000.00	.81	.00	.00	.00	.05	.00	.00	.00
5	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00

BEAM ID	E	SA	TORS I	FLEX I	KII	KJJ	KIJ	RIGID I	RIGID J
1	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00

FEF ID	CODE	ML	VL	MR	VR	W
1	1	.000	38.400	.000	55.200	.000
2	1	.000	55.200	.000	38.400	.000

BEAM LOCATIONS

/ BAY	LEV	IC	JC	BID	GEN	VL1	VL2	VL3
1	25	1	2	1	24	1	0	0
2	25	2	3	1	24	0	0	0
3	25	3	4	1	24	2	0	0

GENERATED BEAM LOCATIONS

DSTORY	1	2	3
25	1	1	1
24	1	1	1
23	1	1	1
22	1	1	1
21	1	1	1
20	1	1	1
19	1	1	1
18	1	1	1
17	1	1	1
16	1	1	1
15	1	1	1
14	1	1	1
13	1	1	1
12	1	1	1
11	1	1	1
10	1	1	1
9	1	1	1
8	1	1	1

7	1	1	1
6	1	1	1
5	1	1	1
4	1	1	1
3	1	1	1
2	1	1	1
1	1	1	1

GENERATED BEAM LOADS...LOAD CASE I

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

GENERATED BEAM LOADS...LOAD CASE II

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

GENERATED BEAM LOADS...LOAD CASE III

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

COLUMN LOCATIONS

O LINE	LEV	CID	KCOL	GEN
1	25	1	2	4
1	20	2	2	4
1	15	3	2	5
1	9	4	2	8
2	25	5	3	24
3	25	5	4	24
4	25	1	3	4
4	20	2	3	4
4	15	3	3	5
4	9	4	3	8

GENERATED COLUMN LOCATIONS

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

7	4	5	5	4
6	4	5	5	4
5	4	5	5	4
4	4	5	5	4
3	4	5	5	4
2	4	5	5	4
1	4	5	5	4

PANEL CARDS

LEVEL	COL I	COL J	E	A	I	SA	G
25	2	3	3042000.00	1.05	1.07	.00	.00
24	2	3	3042000.00	1.05	1.07	.00	.00
23	2	3	3042000.00	1.05	1.07	.00	.00
22	2	3	3042000.00	1.05	1.07	.00	.00
21	2	3	3042000.00	1.05	1.07	.00	.00
20	2	3	3042000.00	1.05	1.07	.00	.00
19	2	3	3042000.00	1.05	1.07	.00	.00
18	2	3	3042000.00	1.05	1.07	.00	.00
17	2	3	3042000.00	1.05	1.07	.00	.00
16	2	3	3042000.00	1.05	1.07	.00	.00
15	2	3	3042000.00	1.05	1.07	.00	.00
14	2	3	3042000.00	1.05	1.07	.00	.00
13	2	3	3042000.00	1.05	1.07	.00	.00
12	2	3	3042000.00	1.05	1.07	.00	.00
11	2	3	3042000.00	1.05	1.07	.00	.00
10	2	3	3042000.00	1.05	1.07	.00	.00
9	2	3	3042000.00	1.05	1.07	.00	.00
8	2	3	3042000.00	1.05	1.07	.00	.00
7	2	3	3042000.00	1.05	1.07	.00	.00
6	2	3	3042000.00	1.05	1.07	.00	.00
5	2	3	3042000.00	1.05	1.07	.00	.00
4	2	3	3042000.00	1.05	1.07	.00	.00
3	2	3	3042000.00	1.05	1.07	.00	.00
2	2	3	3042000.00	1.05	1.07	.00	.00
1	2	3	3042000.00	1.05	1.07	.00	.00

BEAM PROPERTIES AND LOADS

BAY NUMBERS 1

LEVEL	E	SA	TORS I	FLEX I	KII	KJJ	KIJ	WI	WJ	VERT1	VERT2	VERT3
25	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	1	0	0
24	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	1	0	0
23	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	1	0	0
22	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	1	0	0
21	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	1	0	0
20	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	1	0	0
19	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	1	0	0
18	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	1	0	0
17	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	1	0	0
16	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	1	0	0
15	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	1	0	0
14	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	1	0	0
13	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	1	0	0
12	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	1	0	0
11	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	1	0	0
10	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	1	0	0
9	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	1	0	0
8	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	1	0	0
7	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	1	0	0
6	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	1	0	0
5	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	1	0	0
4	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	1	0	0
3	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	1	0	0
2	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	1	0	0
1	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	1	0	0

BAY NUMBERS 2

LEVEL	E	SA	TORS I	FLEX I	KII	KJJ	KIJ	WI	WJ	VERT1	VERT2	VERT3

25	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	0	0	0
24	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	0	0	0
23	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	0	0	0
22	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	0	0	0
21	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	0	0	0
20	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	0	0	0
19	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	0	0	0
18	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	0	0	0
17	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	0	0	0
16	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	0	0	0
15	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	0	0	0
14	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	0	0	0
13	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	0	0	0
12	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	0	0	0
11	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	0	0	0
10	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	0	0	0
9	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	0	0	0
8	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	0	0	0
7	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	0	0	0
6	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	0	0	0
5	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	0	0	0
4	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	0	0	0
3	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	0	0	0
2	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	0	0	0
1	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	0	0	0

BAY NUMBERS 3

LEVEL	E	BA	TORS I	FLEX I	KII	KJJ	KIJ	WI	WJ	VERT1	VERT2	VERT3
25	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	2	0	0
24	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	2	0	0
23	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	2	0	0
22	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	2	0	0
21	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	2	0	0
20	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	2	0	0
19	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	2	0	0
18	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	2	0	0
17	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	2	0	0
16	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	2	0	0
15	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	2	0	0
14	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	2	0	0
13	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	2	0	0
12	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	2	0	0
11	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	2	0	0
10	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	2	0	0
9	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	2	0	0
8	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	2	0	0
7	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	2	0	0
6	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	2	0	0
5	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	2	0	0
4	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	2	0	0
3	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	2	0	0
2	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	2	0	0
1	3042000.00	.00	.00	.01	4.00	4.00	2.00	.00	.00	2	0	0

COLUMN PROPERTIES

COLUMN LINE NO. 1

LEVEL	E	A	MAJ BA	MIN BA	TORS I	MAJ I	MIN I	DT	DB
25	3042000.00	.16	.00	.00	.00	.00	.00	.00	.00
24	3042000.00	.16	.00	.00	.00	.00	.00	.00	.00
23	3042000.00	.16	.00	.00	.00	.00	.00	.00	.00
22	3042000.00	.16	.00	.00	.00	.00	.00	.00	.00
21	3042000.00	.16	.00	.00	.00	.00	.00	.00	.00
20	3042000.00	.36	.00	.00	.00	.01	.00	.00	.00
19	3042000.00	.36	.00	.00	.00	.01	.00	.00	.00
18	3042000.00	.36	.00	.00	.00	.01	.00	.00	.00
17	3042000.00	.36	.00	.00	.00	.01	.00	.00	.00
16	3042000.00	.36	.00	.00	.00	.01	.00	.00	.00
15	3042000.00	.56	.00	.00	.00	.03	.00	.00	.00
14	3042000.00	.56	.00	.00	.00	.03	.00	.00	.00

LEVEL	E	A	MAJ BA	MIN BA	TORS I	MAJ I	MIN I	DT	DB
13	3042000.00	.56	.00	.00	.00	.03	.00	.00	.00
12	3042000.00	.56	.00	.00	.00	.03	.00	.00	.00
11	3042000.00	.56	.00	.00	.00	.03	.00	.00	.00
10	3042000.00	.56	.00	.00	.00	.03	.00	.00	.00
9	3042000.00	.61	.00	.00	.00	.05	.00	.00	.00
8	3042000.00	.61	.00	.00	.00	.05	.00	.00	.00
7	3042000.00	.61	.00	.00	.00	.05	.00	.00	.00
6	3042000.00	.61	.00	.00	.00	.05	.00	.00	.00
5	3042000.00	.61	.00	.00	.00	.05	.00	.00	.00
4	3042000.00	.61	.00	.00	.00	.05	.00	.00	.00
3	3042000.00	.61	.00	.00	.00	.05	.00	.00	.00
2	3042000.00	.61	.00	.00	.00	.05	.00	.00	.00
1	3042000.00	.61	.00	.00	.00	.05	.00	.00	.00

COLUMN LINE NO. 2

LEVEL	E	A	MAJ BA	MIN BA	TORS I	MAJ I	MIN I	DT	DB
25	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
24	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
23	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
22	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
21	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
20	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
19	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
18	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
17	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
16	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
15	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
14	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
13	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
12	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
11	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
10	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
9	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
8	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
7	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
6	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
5	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
4	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
3	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
2	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
1	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00

COLUMN LINE NO. 3

LEVEL	E	A	MAJ BA	MIN BA	TORS I	MAJ I	MIN I	DT	DB
25	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
24	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
23	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
22	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
21	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
20	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
19	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
18	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
17	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
16	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
15	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
14	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
13	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
12	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
11	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
10	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
9	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
8	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
7	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
6	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
5	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
4	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
3	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
2	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00
1	3042000.00	.60	.00	.00	.00	.01	.00	.00	.00

COLUMN LINE NO. 4

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

25	3042000.00	.16	.00	.00	.00	.00	.00	.00	.00
24	3042000.00	.16	.00	.00	.00	.00	.00	.00	.00
23	3042000.00	.16	.00	.00	.00	.00	.00	.00	.00
22	3042000.00	.16	.00	.00	.00	.00	.00	.00	.00
21	3042000.00	.16	.00	.00	.00	.00	.00	.00	.00
20	3042000.00	.36	.00	.00	.00	.01	.00	.00	.00
19	3042000.00	.36	.00	.00	.00	.01	.00	.00	00
18	3042000.00	.36	.00	.00	.00	.01	.00	00	00
17	3042000.00	.36	.00	.00	.00	.01	.00	.00	.00
16	3042000.00	.36	.00	.00	.00	.01	.00	00	.00
15	3042000.00	.56	.00	.00	.00	.03	00	.00	.00
14	3042000.00	.56	.00	00	.00	.03	.00	.00	00
13	3042000.00	.56	.00	.00	.00	.03	.00	.00	.00
12	3042000.00	.56	.00	.00	.00	.03	.00	.00	.00
11	3042000.00	.56	.00	.00	.00	.03	.00	.00	.00
10	3042000.00	.56	.00	.00	.00	.03	.00	.00	.00
9	3042000.00	.81	.00	.00	.00	.05	.00	.00	.00
8	3042000.00	.81	.00	.00	.00	.05	.00	.00	.00
7	3042000.00	.81	.00	.00	.00	.05	.00	.00	.00
6	3042000.00	.81	.00	.00	.00	.05	.00	.00	.00
5	3042000.00	.81	.00	.00	.00	.05	.00	.00	.00
4	3042000.00	.81	.00	.00	.00	.05	.00	.00	.00
3	3042000.00	.81	.00	.00	.00	.05	.00	.00	.00
2	3042000.00	.81	.00	.00	.00	.05	.00	.00	.00
1	3042000.00	.81	.00	.00	.00	.05	.00	.00	.00

0...FRAME TYPE 1 ...

TIME REQUIRED TO FORM STIFFNESS = 75.09

1FRAME POSITION DATA

FRAME	ID	FORCE CODE	X1	Y1	ANG	
1	1	0	.00	.00	.00	25-S,3-B BUILD

LOAD CONDITION DEFINITION CARDS

0LOAD	I	II	III	A	B	SPECTRUM-1	SPECTRUM-2	SPECTRUM-3	SPECTRUM-4	TIME HIST
1	2.50	.00	.00	2.50	.00	.00	.00	.00	.00	.00

SPECTRUM-1... ROOT MEAN SQUARE COMBINATION

SPECTRUM-2... SUM OF ABSOLUTE VALUES

SPECTRUM-3... DOUBLE SUM COMBINATION

SPECTRUM-4... COMPLETE QUADRATIC COMBINATION

FRAME DISPLACEMENT

LEVEL		
25	X	.8305843
25	Y	.0000000
25	ROTN	.0000000
24	X	.7998303
24	Y	.0000000
24	ROTN	.0000000
23	X	.7682330
23	Y	.0000000
23	ROTN	.0000000
22	X	.7361707
22	Y	.0000000
22	ROTN	.0000000
21	X	.7032612
21	Y	.0000000
21	ROTN	.0000000
20	X	.6693779

20	Y	.0000000
20	ROTN	.0000000
19	X	.6345062
19	Y	.0000000
19	ROTN	.0000000
18	X	.5984871
18	Y	.0000000
18	ROTN	.0000000
17	X	.5613041
17	Y	.0000000
17	ROTN	.0000000
16	X	.5229777
16	Y	.0000000
16	ROTN	.0000000
15	X	.4835709
15	Y	.0000000
15	ROTN	.0000000
14	X	.4432709
14	Y	.0000000
14	ROTN	.0000000
13	X	.4022025
13	Y	.0000000
13	ROTN	.0000000
12	X	.3606166
12	Y	.0000000
12	ROTN	.0000000
11	X	.3188118
11	Y	.0000000
11	ROTN	.0000000
10	X	.2771640
10	Y	.0000000
10	ROTN	.0000000
9	X	.2361068
9	Y	.0000000
9	ROTN	.0000000
8	X	.1961976
8	Y	.0000000
8	ROTN	.0000000
7	X	.1579427
7	Y	.0000000
7	ROTN	.0000000
6	X	.1219996
6	Y	.0000000
6	ROTN	.0000000
5	X	.0890771
5	Y	.0000000
5	ROTN	.0000000
4	X	.0599694
4	Y	.0000000
4	ROTN	.0000000
3	X	.0355382
3	Y	.0000000
3	ROTN	.0000000
2	X	.0167206
2	Y	.0000000
2	ROTN	.0000000
1	X	.0045158
1	Y	.0000000
1	ROTN	.0000000

MEMBER FORCES ..... FRAME ID 25-S,3-B BUILD. FRAME TYPE 1
LEVEL NO 1 LEVEL ID F01

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	-66.2030288	105.8390716	-1769.3281119	7.9115395
2	1	-8.9838585	27.4885144	-215.7876476	4.3625517
3	1	-6.9283208	25.2438584	-3497.5534095	.6303442
4	1	65.2294761	-105.0500889	-2968.1570310	-6.6042720

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-27.8445599	-27.1886487
2	1	3.3503276	3.3889585
3	1	-27.8150445	-28.4838938

PANEL FORCES

I COL	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
2	1	-1176.5634729	2169.1210896	-3249.1736000	244.4712712

MEMBER FORCES ..... FRAME ID 25-8,3-B BUILD. FRAME TYPE 1
LEVEL NO 2 LEVEL ID F02

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	-46.6287670	94.0475897	-1680.2072630	6.7280344
2	1	2.4835309	32.8221795	-356.8731828	7.7372262
3	1	4.2488246	31.3544068	-3209.2524430	-.8913065
4	1	45.4851478	-93.7131697	-2865.1196887	-3.3149136

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-50.7182655	-49.8711344
2	1	8.0541709	8.1788183
3	1	-50.8650583	-51.9565383

PANEL FORCES

I COL	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
2	1	-948.7287661	1959.2576502	-3120.4474226	243.1110697

MEMBER FORCES ..... FRAME ID 25-8,3-B BUILD. FRAME TYPE 1
LEVEL NO 3 LEVEL ID F03

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	-25.1515383	97.3470324	-1596.7559379	10.5370712
2	1	13.1317725	39.1334327	-489.7265579	10.7624244
3	1	14.8002447	38.4374154	-2929.4612143	-.4719858
4	1	23.8060694	-97.4418862	-2756.2669891	-5.4422809

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-70.3063465	-68.8608215
2	1	11.8057263	11.9840944
3	1	-70.6366690	-72.1455019

PANEL FORCES

I COL	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
2	1	-756.1483180	1731.3672176	-2991.7893007	229.7301069

MEMBER FORCES ..... FRAME ID 25-8,3-B BUILD. FRAME TYPE 1
LEVEL NO 4 LEVEL ID F04

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	-7.1967493	95.4579848	-1518.1518089	12.7930869
2	1	22.1309886	43.9231206	-608.9766686	12.7941683
3	1	23.7588184	43.8523299	-2663.2521172	.8368260
4	1	5.8636236	-95.9515713	-2642.4192178	-8.4332639

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-86.5229983	-84.7666889
2	1	14.9811837	15.2092520
3	1	-87.1137945	-88.9499426

PANEL FORCES

I COL	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE

2	1	-578.4494583	1516.1681282	-2863.2001875	216.9425124

MEMBER FORCES ..... FRAME ID 25-8,3-B BUILD. FRAME TYPE 1
LEVEL NO 5 LEVEL ID F05

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	8.8634760	93.7197476	-1443.5630198	15.1458988
2	1	29.7146313	47.6545186	-714.7103740	14.1411916
3	1	31.3794755	48.1457141	-2410.6366811	2.3385950
4	1	-10.6229260	-94.6135661	-2524.4112519	-7.9384595

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-99.6869552	-97.6760400
2	1	17.5775609	17.8469245
3	1	-100.5878592	-102.6916341

PANEL FORCES

I COL	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
2	1	-417.5876702	1311.7344510	-2734.6786732	203.6358721

MEMBER FORCES ..... FRAME ID 25-8,3-B BUILD. FRAME TYPE 1
LEVEL NO 6 LEVEL ID F06

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	22.3344887	90.8033792	-1372.2333817	16.9901080
2	1	35.9828134	50.3838477	-806.3758762	14.9546757
3	1	37.7405197	51.3614592	-2172.1856187	4.3971814
4	1	-24.2535354	-92.0687082	-2403.0013152	-9.3023221

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-110.0530876	-107.8323457
2	1	19.6699921	19.9756155
3	1	-111.3011488	-113.8267487

PANEL FORCES

I COL	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
2	1	-274.3661480	1118.3916662	-2606.2238081	189.5554895

MEMBER FORCES ..... FRAME ID 25-8,3-B BUILD. FRAME TYPE 1
LEVEL NO 7 LEVEL ID F07

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	35.1525097	87.7185989	-1303.4690609	19.0050615
2	1	40.9176052	52.1795402	-882.7920094	15.3416916
3	1	42.8254353	53.5850135	-1949.0189832	8.5691123
4	1	-37.3672211	-89.3732133	-2278.8853280	-11.2074948

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-117.8039756	-115.4741593
2	1	21.2353785	21.5756851
3	1	-119.4657174	-121.9284446

PANEL FORCES

I COL	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
2	1	-152.2251833	935.1120171	-2477.8346185	173.4563756

MEMBER FORCES ..... FRAME ID 25-8,3-B BUILD. FRAME TYPE 1
LEVEL NO 8 LEVEL ID F08

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE

1	1	39.9959183	92.8513659	-1236.6298153	19.8350076
2	1	45.0263439	53.3211757	-945.0942507	15.5482312
3	1	47.0671181	55.0845970	-1740.0591504	8.8964316
4	1	-42.1306952	-84.5612236	-2152.7095578	-11.0850052

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-123.6005597	-121.0061454
2	1	22.5186488	22.8763295
3	1	-125.5733207	-128.2936555

PANEL FORCES

I COL	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
2	1	-37.1631986	773.5837945	-2349.5092259	161.6350214

MEMBER FORCES ..... FRAME ID 25-8,3-B BUILD. FRAME TYPE 1
LEVEL NO 9 LEVEL ID F09

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	67.5760334	83.6046404	-1171.2046533	26.1096560
2	1	47.3790147	53.4611547	-988.6278852	15.3461632
3	1	49.8448686	56.8278732	-1549.9430674	10.9038693
4	1	-70.9741861	-86.1629603	-2024.9751859	-19.0804113

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-126.0604094	-124.0079303
2	1	23.1522184	23.6000861
3	1	-129.0193796	-131.2010619

PANEL FORCES

I COL	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
2	1	27.9989622	600.4879481	-2221.2494085	134.9595568

MEMBER FORCES ..... FRAME ID 25-8,3-B BUILD. FRAME TYPE 1
LEVEL NO 10 LEVEL ID F10

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	57.8544249	59.4843761	-1106.4631957	17.7275795
2	1	49.8382455	53.4766973	-1021.5594956	15.3430959
3	1	51.4670160	55.5744250	-1370.4990639	12.6931970
4	1	-59.4952784	-60.2268758	-1996.4476306	-10.4647445

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-127.4898356	-126.1601404
2	1	23.4376013	23.6279885
3	1	-128.7681419	-130.1255303

PANEL FORCES

I COL	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
2	1	146.1628863	502.0559377	-2093.0416144	140.5710034

MEMBER FORCES ..... FRAME ID 25-8,3-B BUILD. FRAME TYPE 1
LEVEL NO 11 LEVEL ID F11

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	64.4534424	89.6354106	-1042.1694427	22.6711269
2	1	51.4437631	52.8840936	-1046.0272454	15.1907103
3	1	51.9191653	53.6731374	-1199.1698937	13.9122978
4	1	-65.0417035	-70.6302519	-1769.0859215	-15.5086474

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-129.0565707	-127.5175489

2	1	23.7464078	23.7766958
3	1	-127.8640779	-129.4088839

PANEL FORCES

I COL	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
2	1	199.4396542	355.6471865	-1964.5474967	118.3168074

MEMBER FORCES ..... FRAME ID 25-B,3-B BUILD. FRAME TYPE 1
LEVEL NO 12 LEVEL ID F12

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	65.3124016	64.6031283	-978.2412077	22.2550269
2	1	52.4908165	52.3273781	-1053.4593982	15.1945691
3	1	51.9952219	52.1682169	-1044.5843170	15.1236349
4	1	-64.7506466	-64.3669605	-1639.9268283	-15.1401012

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-128.8462382	-127.3430701
2	1	23.6715667	23.5355523
3	1	-125.6061084	-127.0743492

PANEL FORCES

I COL	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
2	1	253.0716585	244.0184810	-1835.7882508	105.0862302

MEMBER FORCES ..... FRAME ID 25-B,3-B BUILD. FRAME TYPE 1
LEVEL NO 13 LEVEL ID F13

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	67.5081565	63.5338366	-914.2648712	23.2552992
2	1	52.7248952	51.1806669	-1047.0479327	15.0907059
3	1	51.3366804	50.0753343	-903.5618592	15.9590789
4	1	-65.9121840	-62.3237026	-1512.3417691	-16.3358370

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-127.4812768	-126.0427153
2	1	23.3763899	23.0992768
3	1	-122.3899097	-123.7659720

PANEL FORCES

I COL	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
2	1	287.3931153	141.0199762	-1706.7835878	89.3586151

MEMBER FORCES ..... FRAME ID 25-B,3-B BUILD. FRAME TYPE 1
LEVEL NO 14 LEVEL ID F14

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	63.8287641	59.9731202	-849.9553702	22.2238189
2	1	52.7318318	49.9394302	-1027.6333630	15.1169038
3	1	50.4669117	47.9539526	-775.2852215	16.6452118
4	1	-61.4569967	-57.8537880	-1385.5722839	-15.6017559

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-125.7113376	-124.0555448
2	1	23.0756846	22.6472393
3	1	-118.8620451	-120.2120071

PANEL FORCES

I COL	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
2	1	316.3373594	56.8981428	-1677.5537614	77.6118241

MEMBER FORCES ..... FRAME ID 25-8,3-B BUILD. FRAME TYPE 1
LEVEL NO 15 LEVEL ID F15

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	78.7835357	61.8825535	-785.1762305	27.2557895
2	1	51.5896599	48.2480284	-992.0034654	14.9598832
3	1	48.8026962	45.5478941	-682.9889304	16.9079646
4	1	-74.9211337	-58.7550104	-1259.7130274	-20.7272953

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-121.1089357	-120.4274994
2	1	22.3444607	21.8640794
3	1	-113.4269933	-114.0403806

PANEL FORCES

I COL	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
2	1	308.1120745	-29.5580425	-1449.1183463	54.5485639

MEMBER FORCES ..... FRAME ID 25-8,3-B BUILD FRAME TYPE 1
LEVEL NO 16 LEVEL ID F16

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	55.9262395	42.3254000	-719.3682849	17.4758429
2	1	50.4649694	46.5133788	-948.8557786	14.8966570
3	1	45.9432048	42.7602177	-557.9986799	16.6785685
4	1	-51.1549338	-39.1192469	-1135.2796056	-11.3840063

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-114.3151992	-116.1603148
2	1	21.1361372	20.2552438
3	1	-104.6891573	-102.9366196

PANEL FORCES

I COL	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
2	1	347.7003682	-51.0844645	-1318.4976511	61.1644109

MEMBER FORCES ..... FRAME ID 25-8,3-B BUILD. FRAME TYPE 1
LEVEL NO 17 LEVEL ID F17

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	59.9103448	58.3889597	-852.1777242	23.3258272
2	1	49.6280790	44.5592082	-898.8556040	14.9342190
3	1	43.0101562	38.4907087	-459.2755386	15.9745564
4	1	-52.7603289	-51.7816859	-1013.3263835	-16.4260714

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-113.0835140	-114.2150731
2	1	20.8322309	19.6463831
3	1	-98.5265637	-97.4848866

PANEL FORCES

I COL	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
2	1	323.3107852	-125.2091384	-1188.3647498	38.1388069

MEMBER FORCES ..... FRAME ID 25-8,3-B BUILD. FRAME TYPE 1
LEVEL NO 18 LEVEL ID F18

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	58.6915457	53.1731692	-584.5900478	22.5319011
2	1	48.8239206	43.7547632	-833.1310369	15.3499866
3	1	40.2958317	35.8700243	-375.7142966	15.5463899

4	1	-49.3827314	-44.7245578	-892.8249522	-15.2272306

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-109.7722627	-111.2218500
2	1	19.9607175	18.5172892
3	1	-91.8758275	-90.8009548

PANEL FORCES

I COL	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
2	1	307.7253704	-159.0189193	-1057.7396688	27.3439940

MEMBER FORCES ..... FRAME ID 25-B,3-B BUILD. FRAME TYPE 1
LEVEL NO 19 LEVEL ID F19

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	52.0100070	51.0807169	-516.2143116	21.1242113
2	1	47.9123798	42.6372118	-758.0133152	15.8115471
3	1	37.8497014	33.0727086	-301.0641982	15.0195424
4	1	-42.3382693	-41.2182233	-774.0153544	-13.9191752

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-108.5186771	-109.0881403
2	1	19.8498544	17.9246831
3	1	-86.3661048	-85.8182211

PANEL FORCES

I COL	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
2	1	284.4856870	-181.8064426	-926.6928225	17.3250145

MEMBER FORCES ..... FRAME ID 25-B,3-B BUILD. FRAME TYPE 1
LEVEL NO 20 LEVEL ID F20

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	73.7268636	56.5086702	-447.4126638	28.6582449
2	1	45.7789233	41.5061062	-686.6526972	16.0093122
3	1	34.7678992	30.5917203	-242.1979815	14.2283985
4	1	-57.0314215	-43.4799518	-656.4923137	-18.4044774

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-99.4075405	-103.2740028
2	1	18.6034838	16.8008280
3	1	-78.4808199	-75.4533789

PANEL FORCES

I COL	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
2	1	214.6425021	-218.5141177	-795.2443438	-7.9009240

MEMBER FORCES ..... FRAME ID 25-B,3-B BUILD. FRAME TYPE 1
LEVEL NO 21 LEVEL ID F21

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	34.9695504	25.6808789	-376.7478567	11.9711659
2	1	41.5473829	38.8915958	-573.6386467	15.2504367
3	1	28.8814348	26.9120927	-184.7622090	12.3832564
4	1	-24.4927467	-18.4219574	-541.2505388	-6.1437285

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-76.9941784	-92.5861787
2	1	15.5150963	13.3657196
3	1	-83.3113969	-52.3589742

PANEL FORCES

I COL	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
2	1	233.3798248	-163.4904834	-663.6007487	11.8509580

MEMBER FORCES ..... FRAME ID 25-8,3-B BUILD. FRAME TYPE 1
LEVEL NO 22 LEVEL ID F22

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	41.1265136	42.0246280	-301.9454014	18.3035065
2	1	40.4874381	36.5238996	-483.6786006	16.0232811
3	1	25.1024269	21.0642425	-123.9282561	10.5220381
4	1	-26.5882031	-27.8862275	-430.7917425	-10.0892356

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-80.3913117	-93.7625107
2	1	16.1371539	13.5146543
3	1	-58.4778406	-50.0819710

PANEL FORCES

I COL	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
2	1	174.0942284	-193.0710751	-531.6559996	-9.1184522

MEMBER FORCES ..... FRAME ID 25-8,3-B BUILD. FRAME TYPE 1
LEVEL NO 23 LEVEL ID F23

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	40.2335294	39.2647961	-227.7146292	18.0492639
2	1	40.8777726	37.1379207	-377.3879158	16.4200124
3	1	22.6135660	19.9607694	-79.6660068	9.9980093
4	1	-23.7255189	-23.4937678	-321.2217660	-9.2299678

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-78.7140821	-92.5785148
2	1	15.7981730	12.7719144
3	1	-53.3597139	-45.2360359

PANEL FORCES

I COL	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
2	1	115.4415359	-189.4335751	-399.0296823	-21.8965574

MEMBER FORCES ..... FRAME ID 25-8,3-B BUILD. FRAME TYPE 1
LEVEL NO 24 LEVEL ID F24

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	37.2311704	38.4805527	-153.1282038	17.7259599
2	1	37.3865924	36.1125694	-260.1848289	16.3276166
3	1	20.0437009	17.9742335	-43.9228372	9.1604943
4	1	-20.5908048	-21.5105170	-212.8872973	-9.8541837

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-82.8221048	-94.6481985
2	1	14.3011807	11.6892454
3	1	-51.2140003	-44.6961839

PANEL FORCES

I COL	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
2	1	48.8513136	-171.8735778	-265.9890328	-32.8684588

MEMBER FORCES ..... FRAME ID 25-8,3-B BUILD. FRAME TYPE 1
LEVEL NO 25 LEVEL ID F25

COLUMN FORCES

LINE	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
1	1	55.6114007	45.3909344	-79.2849917	24.6370207
2	1	53.5508018	42.9804254	-123.2126151	23.1793009
3	1	23.1991505	19.5010540	-28.1508431	10.4572001
4	1	-29.4357093	-24.1053790	-104.9085243	-12.5734161

BEAM FORCES

BAY	LOAD	I MOMENT	J MOMENT
1	1	-55.6114007	-78.1086658
2	1	24.5578640	18.6333343
3	1	-41.8324848	-29.4357093

PANEL FORCES

I COL	LOAD	TOP MOMENT	BOT MOMENT	AXIAL FORCE	SHEAR FORCE
2	1	-78.3257206	-175.3626905	-132.4430259	-64.4470401

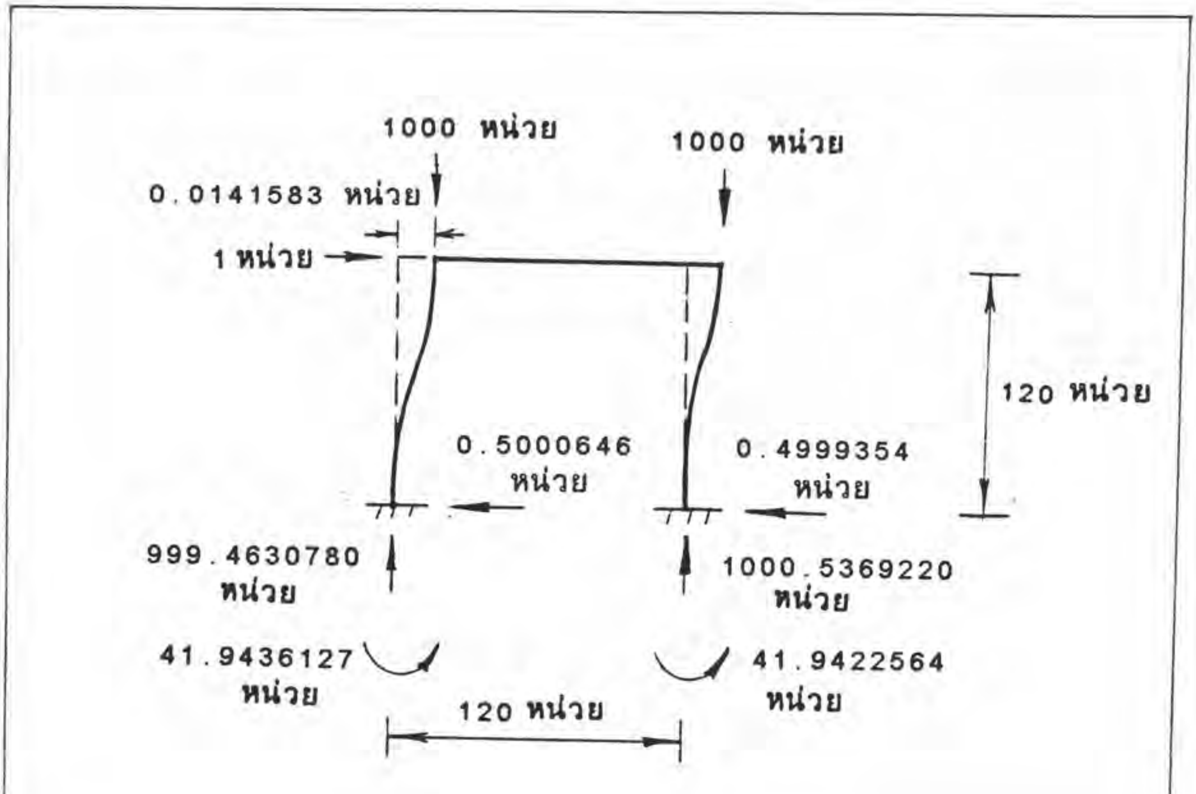
CONVERGE IN ITERATION NO. 3

TOTAL TIME 280.73 SEC.

ภาคผนวก จ.

ตรวจสอบสมดุลย์ของโครงข้อแข็งพอร์ทอล

เลือกตรวจสมดุลย์แรงภายในและภายนอกของโครงสร้างกรณี P เท่ากับ 1,000 หน่วย หลังจากเกิดการเปลี่ยนตำแหน่ง ไปทางขวาในแนวราบ เท่ากับ 0.0141583 หน่วย



รูป จ.1 สมดุลย์ของแรงที่กระทำกับโครงข้อแข็งพอร์ทอล

<u>แรงในแนวดิ่ง</u>

ผลรวมแรงกระทำภายนอกในแนวดิ่ง = 1000.0000000 + 1000.0000000
= 2000.0000000 หน่วยทิศทางลง
ผลรวมแรงปฏิกิริยาที่ฐานรองรับในแนวดิ่ง = 999.4630780 + 1000.5369220
= 2000.0000000 หน่วยทิศทางขึ้น
ฉนั้นแรงในแนวดิ่งอยู่ในสมดุลย์

<u>แรงในแนวราบ</u>

แรงกระทำภายนอกในแนวราบ = 1.0000000 หน่วยทิศทางขวา
ผลรวมแรงปฏิกิริยาที่ฐานรองรับในแนวราบ = 0.5000646 + 0.4999354
= 1.0000000 หน่วยทิศทางซ้าย
ฉนั้นแรงในแนวราบอยู่ในสมดุลย์

<u>แรงดัด</u>

พิจารณาผลรวมแรงดัดที่ฐานรองรับด้านซ้ายของโครงข้อแข็งพอร์ทอล
1.)แรงดัดทิศทางตามเข็มนาฬิกาจากแรงกระทำด้านข้าง
= 1.0000000 x 120.0000000
= 120.0000000 หน่วย
2.)แรงดัดทิศทางตามเข็มนาฬิกาจากแรงแนวดิ่งเสาต้นซ้าย
= 1000.0000000 x 0.0141583
= 14.1583000 หน่วย
3.)แรงดัดทิศทางตามเข็มนาฬิกาจากแรงแนวดิ่งเสาต้นขวา
= 1000.0000000 (120.0000000 + 0.0141583)
= 120,014.1583000 หน่วย

4.)แรงดัดทิศทางทวนเข็มนาฬิกาจากฐานรองรับด้านขวา

= 41.9422564 หน่วย

5.)แรงดัดทิศทางทวนเข็มนาฬิกาจากแรงปฏิกิริยาในแนวดิ่งจากฐานรองรับด้านขวา

= 1000.5369220 x 120.0000000

= 120,064.4306400 หน่วย

ผลรวมแรงดัดข้อ 1.) ถึง 5.) = 41.9437036 หน่วยทิศตามเข็มนาฬิกา

แรงดัดทวนเข็มเข็มนาฬิกาที่คำนวณได้โดยโปรแกรม CU-NTABS เท่ากับ 41.9436127 หน่วย มีความคลาดเคลื่อน 0.002% ซึ่งเกิดจากการตรวจสมดุลย์ในครั้งนี้ ใช้ความละเอียดทศนิยม 7 ตำแหน่ง ในขณะที่โปรแกรม CU-NTABS ใช้ความละเอียดทศนิยม 15 ตำแหน่ง

ภาคผนวก ฉ

รายละเอียดโปรแกรมคำนวณไม่เชิงเส้นแบบนิวตัน-ราฟสัน

```
C**********************************************************************
C                                                                      *
C
C                         TP4S4.FOR   *
C   by  Vicrom Panichacarn                *
C First Written    June 23rd,1993                          *
C Complete           October 20th,1994         *
C                                                                      *
C**********************************************************************
C
C     MAIN PROGRAM
C
      CHARACTER*32 INPUTF,OUTPUT
      DOUBLE PRECISION SST(15,15),SSL(15,15),SSG(15,15),PES(15,1),
     1        PRS(15,1),PDEL(15,1),QS(15,1),QDEL(15,1),
     2        SGCO,TI,TA,TE,TL,NORM,SML(6,6),SMG(6,6),PI,
     3        SMT(6,6),PRM(6,1),QM(6,1),QMS,QME,ZETA,TM(6,6),KA(6,6)
WRITE (*,*) ' ------------------------------'
WRITE (*,*) ' Problem 4 -                   '
WRITE (*,*) ' ------------------------------'
WRITE (*,'(A\)') '     INPUT  fn.ft <ret>'
READ (*,'(A32)') INPUTF
WRITE (*,'(A\)') '     OUTPUT fn.ft <ret>'
READ (*,'(A32)') OUTPUT
OPEN (5,FILE=INPUTF,STATUS='OLD')
OPEN (6,FILE=OUTPUT,STATUS='UNKNOWN')
C-----READ CONSTANTS
      READ (5,205) TI,TA,TE,TL
C-----READ STRUCTURAL EXTERNAL APPLIED FORCE MATRIX
READ (5,200) IROWA,ICOLA
DO 302 I = 1,IROWA
  302 READ (5,205) (PES(I,J),J=1,ICOLA)
  200 FORMAT (2I5)
  205 FORMAT (6D20.14)
C-----INITIALIZE STRUCTURAL DISPLACEMENT MATRIX
DO 320 I = 1,15
  320 QS(I,1) = 0.
C-----INITIALIZE STRUCTURAL LINEAR STIFFNESS MATRIX
      DO 395 I = 1,15
      DO 390 J = 1,15
  390 SSL(I,J) = 0.
  395 CONTINUE
C-----EVALUATE STRUCTURAL LINEAR STIFFNESS MATRIX
      SSL(1,1) = (24*TE*TI)/(TL*TL*TL)
SSL(1,4) = (-12*TE*TI)/(TL*TL*TL)
SSL(1,6) = (-6*TE*TI)/(TL*TL)
SSL(2,2) = (2*TA*TE)/TL
SSL(2,5) = (-1*TA*TE)/TL
SSL(3,3) = (8*TE*TI)/TL
SSL(3,4) = (6*TE*TI)/(TL*TL)
SSL(3,6) = (2*TE*TI)/TL
SSL(4,1) = SSL(1,4)
SSL(4,3) = SSL(3,4)
SSL(4,4) = ((TA*TE)/TL)+((12*TE*TI)/(TL*TL*TL))
SSL(4,6) = (6*TE*TI)/(TL*TL)
SSL(4,7) = (-1*TA*TE)/TL
SSL(5,2) = SSL(2,5)
SSL(5,5) = ((TA*TE)/TL)+((12*TE*TI)/(TL*TL*TL))
SSL(5,6) = (6*TE*TI)/(TL*TL)
SSL(5,8) = (-12*TE*TI)/(TL*TL*TL)
SSL(5,9) = (6*TE*TI)/(TL*TL)
SSL(6,1) = SSL(1,6)
SSL(6,3) = SSL(3,6)
SSL(6,4) = SSL(4,6)
SSL(6,5) = SSL(5,6)
SSL(6,6) = (8*TE*TI)/TL
SSL(6,8) = (-6*TE*TI)/(TL*TL)
SSL(6,9) = (2*TE*TI)/TL
SSL(7,4) = SSL(4,7)
SSL(7,7) = (2*TA*TE)/TL
SSL(7,10) = SSL(4,7)
```

```
SSL(8,5) = SSL(5,8)
SSL(8,6) = SSL(6,8)
SSL(8,8) = (24*TE*TI)/(TL*TL*TL)
SSL(8,11) = SSL(5,8)
SSL(8,12) = SSL(5,9)
SSL(9,5) = SSL(5,9)
SSL(9,6) = SSL(6,9)
SSL(9,9) = (8*TE*TI)/TL
SSL(9,11) = SSL(6,8)
SSL(9,12) = SSL(6,9)
SSL(10,7) = SSL(7,10)
SSL(10,10) = SSL(4,4)
SSL(10,12) = SSL(4,6)
SSL(10,13) = SSL(1,4)
SSL(10,15) = (6*TE*TI)/(TL*TL)
SSL(11,8) = SSL(8,11)
SSL(11,9) = SSL(9,11)
SSL(11,11) = SSL(5,5)
SSL(11,12) = (-6*TE*TI)/(TL*TL)
SSL(11,14) = SSL(2,5)
SSL(12,8) = SSL(8,12)
SSL(12,9) = SSL(9,12)
SSL(12,10) = SSL(10,12)
SSL(12,11) = SSL(11,12)
SSL(12,12) = SSL(3,3)
SSL(12,13) = (-6*TE*TI)/(TL*TL)
SSL(12,15) = SSL(3,6)
SSL(13,10) = SSL(10,13)
SSL(13,12) = SSL(12,13)
SSL(13,13) = SSL(1,1)
SSL(14,11) = SSL(11,14)
SSL(14,14) = SSL(2,2)
SSL(15,10) = SSL(10,15)
SSL(15,12) = SSL(12,15)
SSL(15,15) = SSL(3,3)
C-----BEGIN LOOP
IJ = 1
  330WRITE (6,*) 'LOOP NO. ',IJ
C-----INITIALIZE STRUCTURAL GEOMETRICALLY STIFFNESS MATRIX
DO 310 I = 1,15
DO 305 J = 1,15
  305 SSG(I,J) = 0.
  310 CONTINUE
C-----EVALUATE STRUCTURAL GEOMETRICALLY STIFFNESS MATRIX
SGCO = (TA*TE)/(30*TL*TL)
SSG(1,1) = SGCO*36*QS(5,1)
SSG(1,3) = SGCO*3*TL*(2*QS(2,1)-QS(5,1))
SSG(1,4) = SGCO*(-36)*(QS(5,1)-QS(2,1))
SSG(1,6) = SGCO*(-3)*TL*(QS(5,1)-QS(2,1))
SSG(3,1) = SSG(1,3)
SSG(3,3) = SGCO*4*TL*TL*QS(5,1)
SSG(3,4) = SGCO*3*TL*(QS(5,1)-QS(2,1))
SSG(3,6) = SGCO*(-1)*TL*TL*(QS(5,1)-QS(2,1))
SSG(4,1) = SSG(1,4)
SSG(4,3) = SSG(3,4)
SSG(4,4) = SGCO*36*(QS(5,1)-QS(2,1))
SSG(4,6) = SGCO*3*TL*(QS(5,1)-QS(2,1))
SSG(5,5) = SGCO*36*(QS(7,1)-QS(4,1))
SSG(5,6) = SGCO*3*TL*(QS(7,1)-QS(4,1))
SSG(5,8) = -1*SSG(5,5)
SSG(5,9) = SSG(5,6)
SSG(6,1) = SSG(1,6)
SSG(6,3) = SSG(3,6)
SSG(6,4) = SSG(4,6)
SSG(6,5) = SSG(5,6)
SSG(6,6) = SGCO*4*TL*TL*(QS(5,1)-QS(2,1)+QS(7,1)-QS(4,1))
SSG(6,8) = -1*SSG(5,9)
SSG(6,9) = SGCO*(-1)*TL*TL*(QS(7,1)-QS(4,1))
SSG(8,5) = SSG(5,8)
SSG(8,6) = SSG(6,8)
SSG(8,8) = SGCO*36*(QS(10,1)-QS(4,1))
```

```
SSG(8,9) = SGCO*(-3)*TL*(2*QS(7,1)-QS(4,1)-QS(10,1))
SSG(8,11) = SGCO*(-36)*(QS(10,1)-QS(7,1))
SSG(8,12) = SGCO*3*TL*(QS(10,1)-QS(7,1))
SSG(9,5) = SSG(5,9)
SSG(9,6) = SSG(6,9)
SSG(9,8) = SSG(8,9)
SSG(9,9) = SGCO*4*TL*TL*(QS(10,1)-QS(4,1))
SSG(9,11) = -1*SSG(8,12)
SSG(9,12) = SGCO*(-1)*TL*TL*(QS(10,1)-QS(7,1))
SSG(10,10) = SGCO*36*(QS(11,1)-QS(14,1))
SSG(10,12) = SGCO*3*TL*(QS(11,1)-QS(14,1))
SSG(10,13) = SGCO*(-36)*(QS(11,1)-QS(14,1))
SSG(10,15) = SGCO*3*TL*(QS(11,1)-QS(14,1))
SSG(11,8) = SSG(8,11)
SSG(11,9) = SSG(9,11)
SSG(11,11) = SGCO*36*(QS(10,1)-QS(7,1))
SSG(11,12) = SGCO*(-3)*TL*(QS(10,1)-QS(7,1))
SSG(12,8) = SSG(8,12)
SSG(12,9) = SSG(9,12)
SSG(12,10) = SSG(10,12)
SSG(12,11) = SSG(11,12)
SSG(12,12) = SGCO*4*TL*TL*(QS(10,1)-QS(7,1)+QS(11,1)-QS(14,1))
SSG(12,13) = -1*SSG(10,15)
SSG(12,15) = SGCO*(-1)*TL*TL*(QS(11,1)-QS(14,1))
SSG(13,10) = SSG(10,13)
SSG(13,12) = SSG(12,13)
SSG(13,13) = SGCO*36*QS(11,1)
SSG(13,15) = SGCO*(-3)*TL*(QS(11,1)-2*QS(14,1))
SSG(15,10) = SSG(10,15)
SSG(15,12) = SSG(12,15)
SSG(15,13) = SSG(13,15)
SSG(15,15) = SGCO*4*TL*TL*QS(11,1)
C-----ADDITION FOR TOTAL STRUCTURAL STIFFNESS MATRIX
CALL PLUS (SSL,15,15,SSG,SST)
C-----FIND STRUCTURAL INTERNAL RESISTING FORCE
CALL MULTIP (SST,15,15,QS,15,1,PRS)
C-----FIND DELTA FORCE
DO 380 I = 1,15
  380PDEL(I,1) = PES(I,1) - PRS(I,1)
 NORM = PDEL(4,1)/PES(4,1)
WRITE (6,*) 'NORM ',NORM
C-----FIND DELTA DISPLACEMENT
CALL GAUSS (SST,15,15,PDEL,15,1,QDEL)
C-----FIND NEW STRUCTURAL DISPLACEMENT
CALL PLUS (QS,15,15,QDEL,QS)
IF ( NORM .LE. .1D-3) GOTO 385
IJ = IJ + 1
GOTO 330
C=====DETERMINE MEMBER FORCES
  385 CALL DISPLY (QS,15,1)
      II = 1
      PI = 3.141592654
  415 IF ( II .EQ. 1 ) THEN
        DO 450 I = 1,6
  450     QM(I,1) = QS(I,1)
        QME = QM(5,1)
        QMS = QM(2,1)
         IM  = 2
        ZETA = PI/2.0
      ELSEIF (II .EQ. 2 ) THEN
        DO 455 I = 1,6
  455     QM(I,1) = QS(I+6,1)
        QME = QM(4,1)
        QMS = QM(1,1)
         IM  = 4
        ZETA = 0.0
      ELSE
        DO 460 I = 1,6
  460     QM(I,1) = QS(I+9,1)
        QME = QM(2,1)
        QMS = QM(5,1)
```

```
         IM  = 5
         ZETA = 1.5*PI
       ENDIF
C-----INITIALIZE MEMBER LINEAR STIFFNESS MATRIX
      DO 400 I = 1,6
        DO 400 J = 1,6
 400      SML(I,J) = 0.0
C-----EVALUATE MEMBER LINEAR STIFFNESS MATRIX
      SML(1,1) = TE*TA/TL
      SML(1,4) = (-1)*SML(1,1)
      SML(2,2) = (12*TE*TI)/(TL*TL*TL)
      SML(2,3) = (6*TE*TI)/(TL*TL)
      SML(2,5) = (-1)*SML(2,2)
      SML(2,6) = SML(2,3)
      SML(3,2) = SML(2,3)
      SML(3,3) = (4*TE*TI)/TL
      SML(3,5) = (-1)*SML(2,3)
      SML(3,6) = (2*TE*TI)/TL
      SML(4,1) = SML(1,4)
      SML(4,4) = SML(1,1)
      SML(5,2) = SML(2,5)
      SML(5,3) = SML(3,5)
      SML(5,5) = SML(2,2)
      SML(5,6) = (-1)*SML(2,3)
      SML(6,2) = SML(2,6)
      SML(6,3) = SML(3,6)
      SML(6,5) = SML(5,6)
      SML(6,6) = SML(3,3)
C-----INITIALIZE MEMBER GEOMETRICALLY STIFFNESS MATRIX
      DO 405 I = 1,6
        DO 405 J = 1,6
 405      SMG(I,J) = 0.0
C-----EVALUATE MEMBER GEOMETRICALLY STIFFNESS MATRIX
SGCO = (TA*TE*(QME-QMS))/(30*TL*TL)
      SMG(2,2) = SGCO*36
      SMG(2,3) = SGCO*3*TL
      SMG(2,5) = (-1)*SMG(2,2)
      SMG(2,6) = SMG(2,3)
      SMG(3,2) = SMG(2,3)
      SMG(3,3) = SGCO*4*TL*TL
      SMG(3,5) = (-1)*SMG(2,3)
      SMG(3,6) = SGCO*(-1)*TL*TL
      SMG(5,2) = SMG(2,5)
      SMG(5,3) = SMG(3,5)
      SMG(5,5) = SMG(2,2)
      SMG(5,6) = (-1)*SMG(2,3)
      SMG(6,2) = SMG(2,6)
      SMG(6,3) = SMG(3,6)
      SMG(6,5) = SMG(5,6)
      SMG(6,6) = SMG(3,3)
C-----ADDITION FOR MEMBER TOTAL STIFFNESS MATRIX
      CALL PLUS(SML,6,6,SMG,SMT)
C-----INITIALIZE TRANSFORMATION MATRIX
      DO 410 I = 1,6
        DO 410 J = 1,6
 410      TM(I,J) = 0.0
C-----EVALUATE TRANSFORMATION MATRIX
      TM(1,1) = COS(ZETA)
      TM(1,2) = SIN(ZETA)
      TM(2,1) = (-1)*TM(1,2)
      TM(2,2) = TM(1,1)
      TM(3,3) = 1.0
      TM(4,4) = TM(1,1)
      TM(4,5) = TM(1,2)
      TM(5,4) = TM(2,1)
      TM(5,5) = TM(2,2)
      TM(6,6) = TM(3,3)
C-----k*a MATRIX
      CALL MULTIP(SMT,6,6,TM,6,6,KA)
C-----FIND MEMBER FORCES
      CALL MULTIP (KA,6,6,QM,6,1,FRM)
```

```
      WRITE (6,*) '  ---- MEMBER FORCES OF MEMBER NO.',IM,' ---- '
      WRITE (6,*) '        NODE I AXIAL  = ',PRM(1,1)
      WRITE (6,*) '        NODE I SHEAR  = ',PRM(2,1)
      WRITE (6,*) '        NODE I MOMENT = ',PRM(3,1)
      WRITE (6,*) '        NODE j AXIAL  = ',PRM(4,1)
      WRITE (6,*) '        NODE j SHEAR  = ',PRM(5,1)
      WRITE (6,*) '        NODE J MOMENT = ',PRM(6,1)
      II = II + 1
      IF ( II .EQ. 4 ) GO TO 420
      GOTO 415
  420 STOP
      END
C
      SUBROUTINE PLUS(VA,IROWVA,ICOLVA,VB,VC)
C
      DOUBLE PRECISION VA(IROWVA,ICOLVA),VB(IROWVA,ICOLVA),
     1                 VC(IROWVA,ICOLVA)
      DO 5 I = 1,IROWVA
        DO 5 J = 1,ICOLVA
    5     VC(I,J) = VA(I,J) + VB(I,J)
      RETURN
      END
C
SUBROUTINE MINUS(VA,IROWVA,ICOLVA,VB,VC)
C----------------------------------------------------------------
CThis is a subprogram for matrix substraction A - B = C
CVA(20,20) is local matrix A dimension 20 * 20
CVB(20,20) is local matrix B dimension 20 * 20
C VC(20,20) is local result matrix C dimension 20 * 20
C----------------------------------------------------------------
DOUBLE PRECISION VA(20,20),VB(20,20),VC(20,20)
DO 20 I = 1,IROWVA
DO 15 J = 1,ICOLVA
   15 VC(I,J) = VA(I,J)-VB(I,J)
   20 CONTINUE
WRITE (*,*) 'SUBSTRACTION COMPLETE'
RETURN
END
C
SUBROUTINE MULTIP(VA,IROWVA,ICOLVA,VB,IROWVB,ICOLVB,VC)
C----------------------------------------------------------------
CThis is a subprogram for matrix multiplication VA * VB = VC
CIROWVA is number of row of matrix VA
CICOLVA is number of column of matrix VA
CIROWVB is number of row of matrix VB
CICOLVB is number of column of matrix VB
C----------------------------------------------------------------
DOUBLE PRECISION VA(IROWVA,ICOLVA),VB(IROWVB,ICOLVB),
     1                 VC(IROWVA,ICOLVB)
IF ( ICOLVA.NE.IROWVB) GOTO 40
DO 35 I = 1,IROWVA
DO 30 J = 1,ICOLVB
VC(I,J) = 0.
DO 25 K = 1,IROWVB
   25 VC(I,J) = VC(I,J) + (VA(I,K)*VB(K,J))
   30 CONTINUE
   35 CONTINUE
WRITE (*,*) 'MULTIPLICATION COMPLETE'
GOTO 45
   40 WRITE (*,*) 'COLUMN 1ST .NE. ROW 2ND'
   45RETURN
END
C
SUBROUTINE GAUSS(VA,IROWVA,ICOLVA,VB,IROWVB,ICOLVB,VX)
C----------------------------------------------------------------
CThis is a subprogram for elimination of linear equation by
CGaussian Method      : VA * VX = VB
CICOLVA is number of column of matrix VA
C----------------------------------------------------------------
DOUBLE PRECISION VA(IROWVA,ICOLVA),VB(IROWVB,ICOLVB),
     1                 VX(IROWVB,ICOLVB),SUM
```

```
C.... FORWARD REDUCTION ..............................................
DO 60 J = 1,ICOLVA
DO 55 I = J+1,ICOLVA
CO = -VA(I,J)/VA(J,J)
VB(I,1) = VB(I,1)+(VB(J,1)*CO)
DO 50 K = J,ICOLVA
   50 VA(I,K) = VA(I,K)+(VA(J,K)*CO)
   55 CONTINUE
   60 CONTINUE
C.... BACK SUBSTITUTION ...............................................
VX(ICOLVA,1) = VB(ICOLVA,1)/VA(ICOLVA,ICOLVA)
DO 70 K = ICOLVA-1,1,-1
SUM = 0.
DO 65 I = K+1,ICOLVA
   65 SUM = SUM+(VA(K,I)*VX(I,1))
   70 VX(K,1) = (VB(K,1)-SUM)/VA(K,K)
WRITE (*,*) 'ELIMINATION COMPLETE'
RETURN
END
C
SUBROUTINE DISPLY(VA,IROWVA,ICOLVA)
C-----------------------------------------------------------------
CThis is a subprogram for displaying matrix on datafile or screen.
C-----------------------------------------------------------------
DOUBLE PRECISION VA(IROWVA,ICOLVA)
WRITE (6,*) '      '
      DO 75 I = 1,IROWVA
   75 WRITE (6,100) (VA(I,J),J=1,ICOLVA)
  100 FORMAT (6D20.14)
RETURN
END
```

แฟ้มป้อนข้อมูลและแฟ้มแสดงผลการคำนวณ

กรณีแรง $P = 1000$ หน่วย

	310.1	11.77	30000.0	60.0
15	1			
	0.0			
	0.0			
	0.0			
	1.0			
	-1000.0			
	0.0			
	0.0			
	0.0			
	0.0			
	0.0			
	-1000.0			
	0.0			
	0.0			
	0.0			
	0.0			

```
LOOP NO.          1
NORM        1.000000000000000
LOOP NO.          2
NORM   1.115822992264838E-001
LOOP NO.          3
NORM  -1.572163086072109E-005

 .598956309983480D-02
-.169832298625700D+00
-.160588563393400D-03
 .142429220077000D-01
-.339864597251390D+00
-.730119835623400D-04
 .141583006784410D-01
-.339868432272860D+00
 .315884844286790D-04
 .140736793491820D-01
-.340029540388670D+00
-.715877761796370D-04
 .592699088424670D-02
-.170014770193340D+00
-.158823111171360D-03
   ---- MEMBER FORCES OF MEMBER NO.          2 ----
        NODE I AXIAL  =       999.463079535329800
        NODE I SHEAR  =    5.019997869186165E-001
        NODE I MOMENT =        6.043352791399367
        NODE J AXIAL  =      -999.463079535329800
        NODE J SHEAR  =   -5.019997869186165E-001
        NODE J MOMENT =       32.325554617140170
   ---- MEMBER FORCES OF MEMBER NO.          4 ----
        NODE I AXIAL  =    4.979965226903457E-001
        NODE I SHEAR  =   -5.369225877878022E-001
        NODE I MOMENT =   -1.104152177697729E-001
        NODE J AXIAL  =   -4.979965226903457E-001
        NODE J SHEAR  =    5.369225877878022E-001
        NODE J MOMENT =      -32.104859818218450
   ---- MEMBER FORCES OF MEMBER NO.          5 ----
        NODE I AXIAL  =      1000.536928874776000
        NODE I SHEAR  =    4.979854461720256E-001
        NODE I MOMENT =       32.104516359880320
        NODE J AXIAL  =     -1000.536928874776000
        NODE J SHEAR  =   -4.979854461720256E-001
        NODE J MOMENT =        5.925660715081342
```

แฟ้มป้อนข้อมูลและแฟ้มแสดงผลการคำนวณ

กรณีแรง P = 2000 หน่วย

	310.1	11.77	30000.0	60.0
15 1				
	0.0			
	0.0			
	0.0			
	2.0			
	-2000.0			
	0.0			
	0.0			
	0.0			
	0.0			
	0.0			
	-2000.0			
	0.0			
	0.0			
	0.0			
	0.0			

```
LOOP NO.            1
NORM       1.000000000000000
LOOP NO.            2
NORM    2.231646276331246E-001
LOOP NO.            3
NORM   -1.176982299899709E-004

 .162244541436690D-01
-.339599160772360D+00
-.439985870133330D-03
 .388006123705030D-01
-.679198321544730D+00
-.197900077940750D-03
 .386311622476540D-01
-.679737435884640D+00
 .858348383960630D-04
 .384617121248040D-01
-.680189953731400D+00
-.195013621015150D-03
 .161010018131800D-01
-.340094976865700D+00
-.436450457984140D-03
   ---- MEMBER FORCES OF MEMBER NO.          2 ----
        NODE I AXIAL  =    1998.541066952879000
        NODE I SHEAR  =       1.002778948193035
        NODE I MOMENT =      17.526733122493140
        NODE J AXIAL  =   -1998.541066952879000
        NODE J SHEAR  =      -1.002778948193035
        NODE J MOMENT =      87.759353321245540
   ---- MEMBER FORCES OF MEMBER NO.          4 ----
        NODE I AXIAL  =  9.972139729683733E-001
        NODE I SHEAR  =      -1.458938855057545
        NODE I MOMENT = -2.237867214961978E-001
        NODE J AXIAL  = -9.972139729683733E-001
        NODE J SHEAR  =       1.458938855057545
        NODE J MOMENT =     -87.312093324835500
   ---- MEMBER FORCES OF MEMBER NO.          5 ----
        NODE I AXIAL  =    2001.458956110939000
        NODE I SHEAR  =  9.971927085286314E-001
        NODE I MOMENT =      87.311410385863180
        NODE J AXIAL  =   -2001.458956110939000
        NODE J SHEAR  = -9.971927085286314E-001
        NODE J MOMENT =      17.274106396983830
```

	310.1	11.77	30000.0	60.0
15	1			
	0.0			
	0.0			
	0.0			
	3.0			
	-3000.0			
	0.0			
	0.0			
	0.0			
	0.0			
	0.0			
	-3000.0			
	0.0			
	0.0			
	0.0			
	0.0			

```
LOOP NO.            1
NORM         1.000000000000000
LOOP NO.            2
NORM    3.347469560397892E-001
LOOP NO.            3
NORM   -6.610751569894251E-004

 .380375736005120-01
-.50918694791562D+00
-.10440762626192D-02
 .91540918208436D-01
-.10183738958312D+01
-.46472755938725D-03
 .91286696694939D-01
-.10196072233038D+01
 .20208720735621D-03
 .91032475181440D-01
-.10207085170829D+01
-.46032664887203D-03
 .37854823690007D-01
-.51035425854147D+00
-.10387975431772D-02
  ---- MEMBER FORCES OF MEMBER NO.          2 ----
       NODE I AXIAL  =      2996.585202246725000
       NODE I SHEAR  =         1.503896211132425
       NODE I MOMENT =        44.132247290447940
       NODE J AXIAL  =     -2996.585202246725000
       NODE J SHEAR  =        -1.503896211132425
       NODE J MOMENT =       206.427718601684500
  ---- MEMBER FORCES OF MEMBER NO.          4 ----
       NODE I AXIAL  =         1.496093606941263
       NODE I SHEAR  =        -3.434811523588612
       NODE I MOMENT =    -3.412086458550178E-001
       NODE J AXIAL  =        -1.496093606941263
       NODE J SHEAR  =         3.434811523588612
       NODE J MOMENT =      -205.745835130879800
  ---- MEMBER FORCES OF MEMBER NO.          5 ----
       NODE I AXIAL  =      3003.434852555189000
       NODE I SHEAR  =         1.496063050276676
       NODE I MOMENT =       205.744810246548300
       NODE J AXIAL  =     -3003.434852555189000
       NODE J SHEAR  =        -1.496063050276676
       NODE J MOMENT =        43.734982136557730
```

แฟ้มป้อนข้อมูลและแฟ้มแสดงผลการคำนวณ

กรณีแรง $P = 3000$ หน่วย

แฟ้มป้อนข้อมูลและแฟ้มแสดงผลการคำนวณ

กรณีแรง P = 4000 หน่วย

	310.1	11.77	30000.0	60.0
15 1				
	0.0			
	0.0			
	0.0			
	4.0			
	-4000.0			
	0.0			
	0.0			
	0.0			
	0.0			
	-4000.0			
	0.0			
	0.0			
	0.0			
	0.0			

```
LOOP NO.              1
NORM       1.000000000000000
LOOP NO.              2
NORM   4.463292844464205E-001
LOOP NO.              3
NORM  -6.609329083135940E-003

 .118872763604740+00
-.67786003330427D+00
-.33050165016365D-02
 .28608732360110D+00
-.13557200666086D+01
-.14564892512866D-02
 .28775213338329D+00
-.13594785681884D+01
 .63506152916819D-03
 .28741694316559D+00
-.13630564839437D+01
-.14504701115114D-02
 .11862039391346D+00
-.68152824197185D+00
-.32984244124165D-02
   ---- MEMBER FORCES OF MEMBER NO.          2 ----
        NODE I AXIAL  =      3989.206339524666000
        NODE I SHEAR  =         2.027392553089967
        NODE I MOMENT =       148.594244108347000
        NODE J AXIAL  =     -3989.206339524666000
        NODE J SHEAR  =        -2.027392553089967
        NODE J MOMENT =       648.080978987684400
   ---- MEMBER FORCES OF MEMBER NO.          4 ----
        NODE I AXIAL  =         1.972594431166230
        NODE I SHEAR  =       -10.793704251498290
        NODE I MOMENT =  -4.664873097285185E-001
        NODE J AXIAL  =        -1.972594431166230
        NODE J SHEAR  =        10.793704251498290
        NODE J MOMENT =      -647.148710003471400
   ---- MEMBER FORCES OF MEMBER NO.          5 ----
        NODE I AXIAL  =      4010.793834268770000
        NODE I SHEAR  =         1.972555476214602
        NODE I MOMENT =       647.147050538432800
        NODE J AXIAL  =     -4010.793834268770000
        NODE J SHEAR  =        -1.972555476214602
        NODE J MOMENT =       148.214056581340500
```

ประวัติผู้เขียน

นายวิกรม พนิชการ เกิดวันเสาร์ที่ 23 ธันวาคม 2510 จังหวัดนครสวรรค์ สำเร็จการศึกษาวิศวกรรมศาสตรบัณฑิต(โยธา) จากภาควิชาวิศวกรรมโยธา คณะวิศกรรมศาสตร์ มหาวิทยาลัยเชียงใหม่ ในปีพ.ศ.2532