TABLE B7 SCHEDULE OF MEASURED AND MODEL MEAN PEAK RESISTANT SHEAR STRESS FOR SPECIMENS IN CHAPTER 4

Specimen Type	d (mm)	a/d	f_{cu} (MPa)	ρ (%)	c (MPa)	v_R (MPa)	v_{Rm} (MPa)
Prestressed Slab (punch)	50	1,0	30	1,6	6,0	13,0	12,5
"	50	1,5	30	1,6	6,0	5,8	6,0
"	50	2,4	30	1,6	6,0	3,4	4,0
"	50	1,0	30	1,6	6,0	12,3	12,5
"	50	1,0	30	1,0	3,0	8,9	8,6
"	75	1,0	30	0,7	3,0	6,5	6,5
"	75	1,0	30	1,2	6,0	8,7	10,1

APPENDIX C

TEST RESULTS PERTINENT TO CHAPTER 5

A summary of the test results for Chapter 5 is included in this Appendix. Examination of this test data indicates that the partial elimination of local bond does not have a significant influence on the shear performance of the structural element.

The test results have again been recorded against the five parameters which have been perceived within the scope of this research as having the major influence on the shear performance of the reinforced concrete structural elements.

A new, universal model for the evaluation of resistant shear stress is proposed in Chapter 8. This model is developed independently of the influence on shear performance of local bond. The predicted resistant shear stress for each structural element according to this model is presented adjacent to the test result

for direct comparison. The notation used in this table is consistent with the remainder of the thesis, and all parameters are defined in the list of symbols.

TABLE C1 SCHEDULE OF MEASURED AND MODEL MEAN PEAK RESISTANT SHEAR STRESS FOR SPECIMENS IN CHAPTER 5

Specimen Type	d (mm)	a/d	f_{cu} (MPa)	ρ (%)	μ	v_R (MPa)	v_{Rm} (MPa)
R C Beam (2 pt load'g) (debonded)	220	1,0	20	0,5	0	2,3	2,4
"	220	1,0	20	1,0	0	2,8	3,2
"	220	1,0	20	2,0	0	3,6	3,9
"	220	1,0	20	3,0	0	3,8	4,2
R C Beam (2 pt load'g) (normal bond)	220	1,0	20	0,5	0	2,2	2,4
"	220	1,0	20	1,0	0	3,0	3,2
"	220	1,0	20	2,0	0	3,3	3,9
"	220	1,0	20	3,0	0	3,6	4,2

APPENDIX D

TEST RESULTS PERTINENT TO CHAPTER 6

A summary of the test results for Chapter 6 is included in this Appendix. Examination of this test data indicates the consistent performance of deep sections relative to the other parameters.

The test results have again been recorded against the five parameters which have been perceived within the scope of this research as having the major influence on the shear performance of the reinforced concrete structural elements.

A new, universal model for the evaluation of resistant shear stress is proposed in Chapter 8 and the predicted resistant shear stress for each structural element according to this model is presented adjacent to the test result for direct comparison. The notation used in this table is consistent with the remainder of the thesis. The link reinforcement ratio, μ, is identified more

clearly by the additional notation that (v) implies vertical links and (h) horizontal links.

In order to demonstrate that shear resistance enhancement by using links appears to decrease for shallower sections, additional results are presented in Table D1, together with the model predictions.

TABLE D1 SCHEDULE OF MEASURED AND MODEL MEAN PEAK RESISTANT SHEAR STRESS FOR SPECIMENS IN CHAPTER 6

Specimen Type	d (mm)	a/d	f_{cu} (MPa)	ρ (%)	μ	v_R (MPa)	v_{Rm} (MPa)
R C Beam (1 pt load'g)	1170	0,9	35	1,5	0	1,9	1,8
"	1170	0,9	35	1,5	0,004v	4,0	3,8
"	1170	0,9	35	1,5	0,004h	3,8	3,4
"	1170	0,9	25	1,5	0,002v +0,002h	3,8	3,6
R C Beam (2 pt loading)	220	1,0	20	1,6	0	3,6	3,7
"	220	1,0	20	1,6	0,004v	4,7	5,3
"	220	1,0	20	1,6	0,002v	4,0	4,5
"	220	2,0	20	1,6	0	1,4	1,5
"	220	2,0	20	1,6	0,004v	3,5	4,1
"	220	2,0	20	1,6	0,002v	2,5	2,8
"	220	2,0	20	1,6	0,004h	1,7	1,9

APPENDIX E

DIAGONAL SHEAR CRACK WIDTH MEASUREMENTS

Measurements of the maximum crack width of the diagonal shear crack which precipitated shear failure for a variety of structural types are given in Tables E1 and E2 of this Appendix. As is evident from these tables, there appears to be no distinct trend regarding the value of this crack width with respect to any of the major parameters considered in this work for specimens both unreinforced or reinforced for shear. In particular, the maximum crack width measured did not vary appreciably over the significant depth variation considered. The measurements were taken using both demec readings and scaling off appropriate photographs.

TABLE E1 SCHEDULE OF DIAGONAL CRACK WIDTHS MEASURED AT VIRTUALLY THE INSTANT OF PEAK SHEAR RESISTANCE.

Specimen Type	d (mm)	a/d	f_{cu} (MPa)	ρ (%)	μ	v_R (MPa)	v_{Rm} (MPa)	Crack Width (mm)
R C Beam (2 pt load'g)	125	1,0	25	0,5	0	3,3	3,3	0,9
"	125	1,0	25	1,5	0	5,5	5,8	1,5
"	125	1,0	40	1,5	0	6,0	6,6	1,1
"	175	1,0	25	0,5	0	2,8	2,9	1,3
"	175	1,0	25	1,5	0	4,0	4,7	1,0
"	175	1,0	40	1,5	0	4,3	5,4	1,4
"	175	0,8	20	1,5	0	4,8	5,8	1,2
"	175	1,0	20	1,5	0	3,6	4,2	1,4
"	175	1,5	20	1,5	0	1,8	2,1	1,6
"	175	2,0	20	1,5	0	1,4	1,5	1,4
"	175	3,0	20	1,5	0	1,3	1,5	1,5
"	270	0,9	40	0,5	0	3,4	3,2	1,2
"	270	1,0	45	0,5	0	3,5	2,9	1,3
"	270	1,0	25	1,5	0	3,4	3,6	1,0
"	220	3,0	20	2,0	0	1,3	1,4	1,5
"	220	3,0	25	2,0	0	1,4	1,5	1,6
"	220	3,8	20	2,8	0	1,4	1,4	1,4

TABLE E2 SCHEDULE OF DIAGONAL CRACK WIDTHS MEASURED AT VIRTUALLY THE INSTANT OF PEAK SHEAR RESISTANCE.

Specimen Type	d (mm)	a/d	f_{cu} (MPa)	ρ (%)	μ	v_R (MPa)	v_{Rm} (MPa)	Crack Width (mm)
R C Beam (2 pt load'g)	570	0,9	20	0,5	0	2,6	1,9	1,2
"	570	0,9	40	0,5	0	2,9	2,3	1,5
"	570	1,0	20	1,5	0	2,3	1,9	0,9
"	570	0,9	50	1,5	0	3,9	3,1	1,0
"	1170	0,9	45	0,5	0	1,9	1,7	1,3
"	1170	0,9	25	1,5	0	1,8	1,5	1,7
"	1170	0,9	35	1,5	0	1,9	1,8	1,4
"	1170	0,9	35	1,5	0,004v	4,0	3,8	1,4
"	1170	0,9	35	1,5	0,004h	3,8	3,4	1,5
"	1170	0,9	25	1,5	0,002v +0,002h	3,8	3,6	1,4
Haunched in-situ corb.	270	0,6	20	1,3	0	3,7	5,0	1,3
"	270	0,6	40	0,4	0	4,2	4,6	1,1
"	270	0,6	40	1,3	0	5,4	7,3	1,4
"	270	0,6	20	0,4	0	3,1	3,7	1,1
Prismatic Corbel	220	1,0	30	0,5	0	2,7	2,8	1,4
"	220	1,0	30	1,0	0	3,6	3,7	1,7
"	220	1,0	30	2,0	0	4,3	4,6	1,3
"	220	1,0	30	3,0	0	4,7	5,0	1,3

APPENDIX F

SAMPLE NON-LINEAR FINITE ELEMENT ANALYSIS

A typical example of a non-linear finite element analysis of a prismatic corbel structural element is given in this Appendix. The finite element mesh for this plane stress analysis is shown in Figure F1. A large number of such analyses were undertaken in order to assess the influence of various parameters on the displacement trends of the structure. Typical displacements at pertinent points in the structural system are indicated in the nodal printouts of the mathematical model.

The parameters of grade of concrete, flexural steel ratio, depth of section and a/d ratio were all considered in these finite element analyses. Computer plots indicating the manner in which the a/d ratio was varied in these analyses are included as an example and the stress plots for the variation in this parameter are given in Figure F2.

The non-linear analyses were undertaken using 8 noded isoparametric concrete elements with the element stiffness matrix formulation incorporating a cracking model for the concrete. The flexural reinforcement was modelled using appropriate truss elements. The sample printout indicates the zones of the prismatic corbel which are cracked under the influence of increasing load. While it is evident from the printout that the flexural ultimate limit state of the structural element can be predicted from a record of plasticity being attained in the truss elements, there appears to be be no similar specific prediction of the occurence of the shear ultimate limit state being attained in the corbel. An evaluation of the displacement trends of the appropriate nodes of these finite element analyses did, however, coincide well with the test results and the predictions of the simplistic model. As is clear from the sample results, an extended zone of cracking is predicted by the model at the test result value of the ultimate limit state of shear, and while this was somewhat in contrast to the observed test behaviour of the development of a single diagonal shear crack, the results could still be correlated reasonably well by concentrating and summing the effects of the finite element cracking of the appropriate cracked zone.

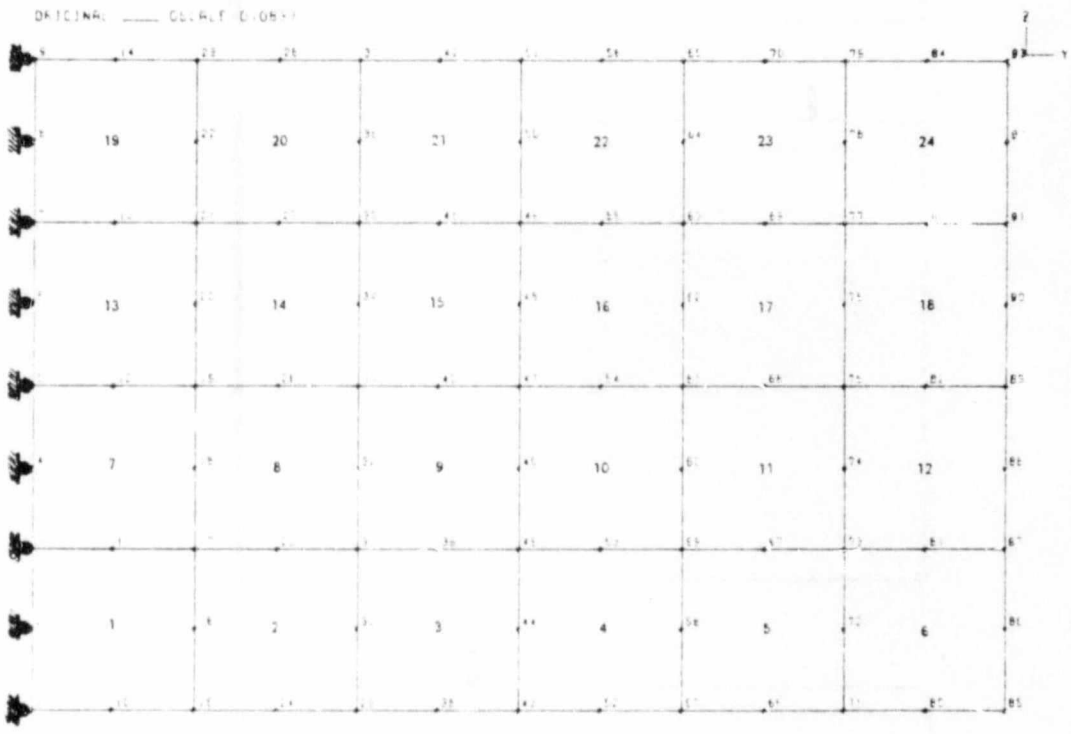

FIGURE F1 FINITE ELEMENT MESH REPRESENTATION FOR NON-LINEAR PLANE STRESS ANALYSIS

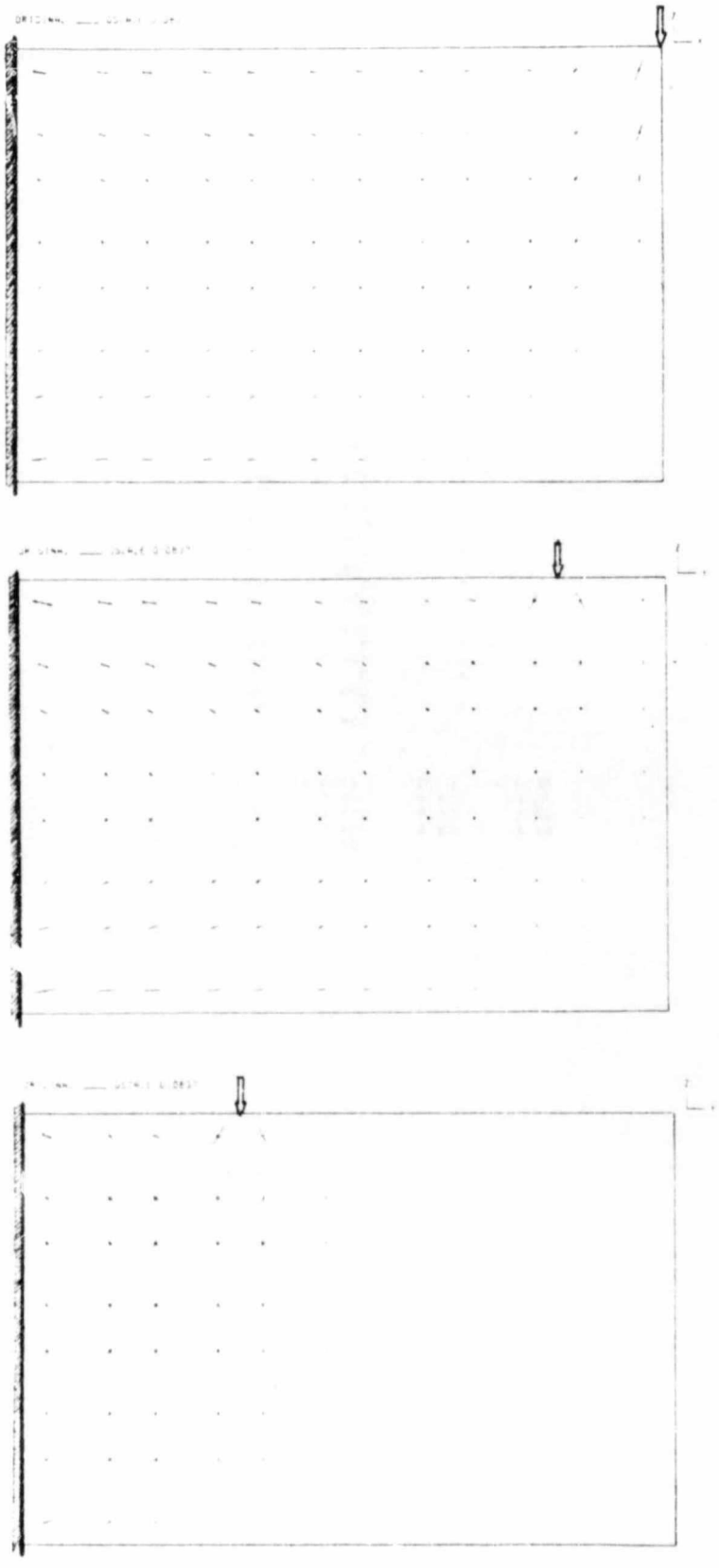

FIGURE F2 STRESS TRAJECTORY PLOTS WITH VARIATION IN a/d RATIO FOR PARAMETRIC EVALUATION USING PLANE STRESS FINITE ELEMENT ANALYSIS

ADINA input data for non-linear analysis

```
REINFORCED CONCRETE SHEAR ANALYSIS 1
   93100111    0    2    1    9    1.0       0.0       1
                    1
    1


    1
    1    1    1    1
    1    1    1                        1


   47   49    1


    1    2
    1    2
      0.0         0.0         9.0 100000.0
    1              1    1                          0         0          1
    9              1    1                          0.      400.
   10                                             50.       0.         1
   14                                             50.      400.
   15                                            100.       0.         1
   23                                            100.      400.
   24                                            150.       0.         1
   28                                            150.      400.
   29                                            200.       0.         1
   37                                            200.      400.
   38                                            250.       0.         1
   42                                            250.      400.
   43                                            300.       0.         1
   51                                            300.      400.
   52                                            350.       0.         1
   56                                            350.      400.
   57                                            400.       0.         1
   65                                            400.      400.
   66                                            450.       0.         1
   70                                            450.      400.
   71                                            500.       0.         1
   79                                            500.      400.
   80                                            550.       0.         1
   84                                            550.      400.
   85                                            600.       0.         1
   93                                            600.      400.

   2  24    1         2         8                                    5    1
     124.0000E-6
25000.0          0.15                        2.0      -24.0    -0.0025      -20.0    -0.0035
     0.0         0.25        0.50        0.75         1.00        1.20         1.00        1.35
    1.75         2.15        2.50        2.80         1.25        1.70         2.10        2.55
    2.95         3.30        1.20        1.60         2.00        2.40         2.80        3.10
    0.75         1.00        1.00        0.05    0.0005           0.50
    1    8    0    1   14                                      150.0
   17    3    1   15   11    2   10   16
    5    8    0    1                                          15 .0
   73   59   57   71   67   58   66   72
    6    8    0    1                                         150.0
   87   73   71   85   81   72   80   86
    7    8    0    1   14                                     150.0

   19    5    3   17   12    4   11   18
   11    8    0    1                                        150.0
   75   61   59   73   68   60   67   74
   12    8    0    1                                        150.0
   89   75   73   87   82   74   81   88
   13    8    1    1   14                                   150.0
   21    7    5   19   13    6   12   20
   17    8    1    1                                        150.0
   77   63   61   75   69   62   68   76
   18    8    1    1                                        150.0
   91   77   75   89   83   76   82   90
   19    8    0    1   14                                   150.0
   23    9    7   21   14    8   13   22
   23    8    0    1                                        150.0
   79   65   63   77   70   64   69   78
   24    8    0    1                                        150.0
   93   79   77   91   84   78   83   92
    1   10    1                                                    4    2
      1      300.0          0.0
210000.0          420.0          0.0
      2        75.0          0.0
210000.0          420.0          0.0
      1              1
      9   23
      2
     23   37
      3
     37   51
      4
     51   65
      5              1
     65   79
      6
     79   93
      7              1    2
     43   45
      8              1    2
     45   47
      9              1    2
     47   49
     10              1    2
     49   51
     79    3    1         -1.0
STOP
```

ADINA output for non-linear analysis

```
                    A FINITE ELEMENT PROGRAM FOR
            AUTOMATIC DYNAMIC INCREMENTAL NONLINEAR ANALYSIS

     AAAAAAAAAA     DDDDDDDDD      IIIIIIIIIII   NN         NN    AAAAAAAAAA
    AAAAAAAAAAAA    DDDDDDDDDD     IIIIIIIIIII   NNN        NN   AAAAAAAAAAAA
    AA          AA  DD        DD       II       NNNN       NN   AA          AA
    AA          AA  DD         DD      II       NN NN      NN   AA          AA
    AA          AA  DD         DD      II       NN  NN     NN   AA          AA
    AAAAAAAAAAAA    DD         DD      II       NN   NN    NN   AAAAAAAAAAAA
    AAAAAAAAAAAA    DD         DD      II       NN    NN   NN   AAAAAAAAAAAA
    AA          AA  DD         DD      II       NN     NN  NN   AA          AA
    AA          AA  DD         DD      II       NN      NNNN   AA          AA
    AA          AA  DD        DD       II       NN       NNN   AA          AA
    AA          AA  DDDDDDDDDD     IIIIIIIIIII   NN        NN   AA          AA
    AA          AA  DDDDDDDDD      IIIIIIIIIII   NN         N   AA          AA

                          VERSION - 1981.9
                REFERENCE- ADINA ENGINEERING REPORT AE 81-1
```

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1REINFORCED CONCRETE SHEAR ANALYSIS 1

M A S T E R C O N T R O L C A R D S

CARD NUMBER 1

NUMBER OF NODAL POINTS . . . . . (NUMNP) = 93

MASTER X-TRANSLATION CODE . . . . . (IDOF(1)) = 1

MASTER Y-TRANSLATION CODE . . . . . (IDOF(2)) = 0

MASTER Z-TRANSLATION CODE . . . . . (IDOF(3)) = 0

MASTER X-ROTATION CODE . . . . . (IDOF(4)) = 1

MASTER Y-ROTATION CODE . . . . . (IDOF(5)) = 1

MASTER Z-ROTATION CODE . . . . . (IDOF(6)) = 1

NUMBER OF LINEAR ELEMENT GROUPS . . . . . (NEGL) = 0

NUMBER OF NONLINEAR ELEMENT GROUPS . . . (NEGNL) = 2

SOLUTION MODE . . . . . (MODEX) = 1
EQ.0, DATA CHECK
EQ.1, EXECUTION
EQ.2 RESTART

NUMBER OF TIME STEPS . . . . . .(NSTE) = 9

TIME STEP INCREMENT . . . . . .(DT) = 0.1000D+01

TIME AT SOLUTION START . . . . . .(TSTART) = 0.0

FLAG FOR WRITING INPUT DATA IN CARD IMAGE AND/OR GENERATED FORM . . . . . (IDATWR) = 1
EQ.0, BOTH CARD IMAGE LISTING AND DETAILED OUTPUT OF INPUT DATA
EQ.1, ONLY DETAILED OUTPUT OF INPUT DATA
EQ.2, ONLY A CARD IMAGE LISTING OF INPUT DATA
GT.2, NO DETAILED OUTPUT NOR CARD IMAGE LISTING OF INPUT DATA

NUMBER OF INDEPENDENT SUBSTRUCTURES . . . .(NSUBST) = 0

NUMBER OF SKEW (R,S,T) REFERENCE SYSTEMS. .(NSKEWS) = 0

NUMBER OF MID-SURFACE SYSTEMS . . . . . .(NMIDSS) = 0

CARD NUMBER 2

RESTART SAVE INTERVAL . . . . . .(IRINT) = 9999

```
     TEMPERATURE TAPE FLAG . . . . . .(ITP96)    =    0
        EQ.0, TEMPERATURE TAPE NOT USED,
        EQ.1, TEMPERATURE TAPE USED
        EQ.2, TEMPERATURES SPECIFIED
              VIA INPUT DATA CARDS

     PREPROCESSOR INPUT CONTROL PARAMETER . . . .(INPORT)  =    0
        EQ.0, NO PREPROCESSOR TAPE USED
        EQ.1, NODAL AND ELEMENT INFORMATION READ FROM UNIT59
        EQ.2, ABOVE INFORMATION AND ID ARRAY READ FROM UNIT59

     PORTHOLE PARAMETER . . . . . .(JNPORT)  =    1
        EQ.0, PORTHOLE NOT WRITTEN
        EQ.1, PORTHOLE WRITTEN


CARD NUMBER 3

     NUMBER OF CONCENTRATED LOAD CARDS . . . . . (NLOAD)   =    1

     NUMBER OF 2/D PRESSURE LOAD SETS. . . . . (NPR2)    =    0

     NUMBER OF 3/D PRESSURE LOAD SETS. . . . . (NPR3)    =    0

     NUMBER OF BEAM DISTRIBUTED LOAD SETS. . . .(NPBM)   =    0

     NUMBER OF ISO/BEAM DISTRIBUTED LOAD SETS. .(NPISB)  =    0

     NUMBER OF PLATE DISTRIBUTED LOAD SETS . . .(NPPL)   =    0

     NUMBER OF SHELL DISTRIBUTED LOAD SETS . . .(NPSH)   =    0

     MASS PROPORTIONAL LOADING CODE. . . . . .(IDGRAV)  =    0
        EQ.0, NO LOADING
        EQ.1, LUMPED MASS LOADING

     NUMBER OF PRESCRIBED DISPLACEMENTS. . . . .(NPDIS)  =    0

     NUMBER OF NODAL TEMPERATURE CARDS . . . . .(NTEMP)  =    0

     NUMBER OF DISPLACEMENT CONSTRAINT EQUATIONS (NDISCE)  =    0

     MAX NUMBER OF INDEPENDENT DISPLACEMENTS
        IN ANY CONSTRAINT EQUATION . . . . . .(NIDM)    =    0


CARD NUMBER 4

     MASS MATRIX CODE . . . . . .(IMASS)   =    0
        EQ.0, NO MASS EFFECTS
        EQ.1, LUMPED MASS
        EQ.2, CONSISTENT MASS

     DAMPING MATRIX CODE . . . . . .(IDAMP)   =    0
        EQ.0, NO DAMPING
```



```
        EQ.1, DAMPING INCLUDED

     CONCENTRATED NODAL MASSES CODE. . . . . .(IMASSN)  =    0
        EQ.0, NO CONCENTRATED NODAL MASSES
        EQ.1, CONCENTRATED NODAL MASSES PRESENT


CARD NUMBER 5

     FREQUENCIES SOLUTION CODE . . . . . .(IEIG) =    0
        EQ.0, NO FREQUENCIES SOLUTION
        EQ.1, FREQUENCIES AND MODE SHAPES
              ARE DETERMINED

     FLAG INDICATING FREQUENCY SOLUTION TYPE. . .(IESTYP) =    0
        EQ.0, DETERMINANT SEARCH METHOD
        EQ.1, BATHE'S  SUBSPACE ITERATION METHOD

     NUMBER OF EIGENPAIRS TO BE CALCULATED. . . .(NFREQ) =    0
        EQ.0, DEFAULT SET TO 1 IF IEIG.GT.0

     NUMBER OF VECTORS USED FOR SUBSPACE ITERATION . .(NQ) =    0
        EQ.0, SET TO MIN. (2*NFREQ, NFREQ + 8)
        (NOT APPLICABLE IF IESTYP.EQ.0)

     NUMBER OF MODE SHAPES TO BE PRINTED. . . . .(NMODE) =    0

     INTERMEDIATE PRINT-OUT CONTROL PARAMETER. . .(IEPR) =    0
        EQ.0, NO PRINTING
        EQ.1, PRINT

     FLAG INDICATING PRESENCE OF RIGID BODY MODES. .(IRBM) =    0
        EQ.0, NO ZERO FREQUENCIES ARE PRESENT

     RIGID BODY MODE SHIFT APPLIED. . . . . .(RBMSH) = 0.0

     CUT-OFF CIRCULAR FREQUENCY. . . . . .(COFQ) = 0.100D+09
        EQ.0., DEFAULT SET TO 1.D+08


CARD NUMBER 6

     FLAG FOR MODE SUPERPOSITION ANALYSIS . . .(IMODES)  =    0
        EQ.0, STATIC ANALYSIS OR DIRECT TIME INTEGRATION
        EQ.1, MODE SUPERPOSITION ANALYSIS PERFORMED

     TIME INTEGRATION CODE . . . . . .(IOPE)    =    0
        EQ.1, WILSON'S  THETA METHOD
        EQ.2, NEWMARK'S  METHOD
        EQ.3, CENTRAL DIFFERENCE METHOD


     NUMBER OF MODES TO BE USED FOR MODE
        SUPERPOSITION ANALYSIS . . . . . .(NMODES)  =    0

     FLAG FOR INCLUDING MODAL DAMPING EFFECTS . (IMDAMP)  =    0
        EQ.0, NO MODAL DAMPING EFFECTS
```

EQ.1, MODAL DAMPING FACTORS ARE INPUT

CARD NUMBER 7

NO. OF BLOCKS OF EFFECTIVE STIFFNESS REFORMATION TIME STEPS . . . . . (NSREFB) = 1
EQ.0, NO STIFFNESS REFORMATION

NO. OF BLOCKS OF EQUILIBRIUM ITERATION TIME STEPS . . . . . (NEQITB) = 0
EQ.0, NO EQUILIBRIUM ITERATION PERFORMED

EQUILIBRIUM ITERATION METHOD . . . . . (METHOD) = 1
EQ.1, MODIFIED NEWTON ITERATION
EQ.2, BFGS MATRIX UPDATING

ACCELERATION SCHEME FOR ITERATION . . . . . (IATKEN) = 0
EQ.0, NO ACCELERATION
EQ.1, AITKEN ACCELERATION

MAXIMUM NUMBER OF EQUILIBRIUM ITERATIONS PERMITTED . . . . . (ITEMAX) = 15

NO. OF LOAD STEP DIVISIONS ALLOWED IN DIVERGENCE PROCEDURE . . . . . (NLSTPD) = 0
NLSTPD IS CURRENTLY SET TO ZERO
(DIVERGENCE PROCEDURE IN THIS VERSION NOT ACTIVE)

DISPLACEMENT CONVERGENCE TOLERANCE . . . . (DTOL) = 0.1000D-01

FORCE CONVERGENCE TOLERANCE . . . . (RTOL) = 0.1000D-01

LINE SEARCH CONVERGENCE TOLERANCE . . . . (STOL) = 0.5000D+00

REFERENCE LOAD FOR CONVERGENCE . . . . . (RNORM) = 0.0

CARD NUMBER 8

MASTER CONTROL PARAMETER FOR PRINT-OUT . . . (IOUTPT) = 1
EQ.0, PRINT RESPONSES AT ALL TIME STEPS AND AT ALL NODES
EQ.1, BLOCKS OF PRINT-OUT TIME STEPS AND NODAL POINTS ARE INPUT LATER

NO. OF BLOCKS OF TIME STEPS FOR NODAL AND ELEMENT ASSOCIATED QUANTITIES PRINT-OUT . . . . . (NPRIB) = 1

NUMBER OF BLOCKS OF NODAL PRINTOUT . . . . . (NPB) = 1

DISPLACEMENT PRINTOUT CODE . . . . . (IDC) = 1
EQ.0, NO PRINTING OF DISPLACEMENTS
EQ.1, PRINT DISPLACEMENTS

VELOCITY PRINTOUT CODE . . . . . (IVC) = 0
EQ.0, NO PRINTING OF VELOCITIES

EQ.1, PRINT VELOCITIES

ACCELERATION PRINTOUT CODE . . . . . (IAC) = 0
EQ.0, NO PRINTING OF ACCELERATIONS
EQ.1, PRINT ACCELERATIONS

FLAG FOR PRINTING STORAGE INFORMATION. . . . (ISTPRT) = 0
EQ.0, DO NOT PRINT
EQ.1, PRINT

CARD NUMBER 9

FLAG FOR SAVING INPUT DATA ON TAPE . . . . (NPUTSV) = 1
EQ.0, WRITE ONLY MAIN HEADER
EQ.1, WRITE ALL INPUT DATA ON PORTHOLE

NO. OF BLOCKS OF TIME STEPS FOR SAVING NODAL RESPONSES ON TAPE . . . . . (NODSVB) = 1
EQ.0, NO ACTION

NO. OF BLOCKS OF TIME STEPS FOR SAVING ELEMENT RESPONSES ON TAPE . . . . . (LEMSVB) = 1
EQ.0, NO ACTION

NODE DATA SAVE TAPE NUMBER . . . . . (LUNODE) = 60

TRUSS/BEAM TAPE NUMBER . . . . . (LU1) = 60

2/D CONTINUUM TAPE NUMBER . . . . . (LU2) = 60

3/D CONTINUUM AND SHELL TAPE NUMBER. . . . (LU3) = 60

DISPLACEMENT SAVE CODE . . . . . (JDC) = 1
EQ.0, NO SAVING OF DISPLACEMENTS
EQ.1, SAVE DISPLACEMENTS ON PORTHOLE

VELOCITY SAVE CODE . . . . . (JVC) = 0
EQ.0, NO SAVING OF VELOCITIES
EQ.1, SAVE VELOCITIES ON PORTHOLE

ACCELERATION SAVE CODE . . . . . (JAC) = 0
EQ.0, NO SAVING OF ACCELERATIONS
EQ.1, SAVE ACCELERATIONS ON PORTHOLE

TEMPERATURE SAVE CODE . . . . . (JTC) = 0
EQ.0, NO SAVING OF TEMPERATURES
EQ.1, SAVE TEMPERATURES ON PORTHOLE

* THIS IS A NONLINEAR STATIC ANALYSIS *

1 S O L U T I O N D E T A I L C A R D S

BLOCK DEFINITION CARDS FOR EFFECTIVE STIFFNESS MATRIX REFORMATION TIME STEPS

(NOT APPLICABLE FOR LINEAR ANALYSIS, EXPLICIT TIME INTEGRATION OR MODE SUPERPOSITION ANALYSIS)

BLOCK 1

FIRST STEP OF THIS BLOCK . . . (ISREFB(1, 1))= 1
LAST STEP OF THIS BLOCK . . . (ISREFB(2, 1))= 9
INCREMENT IN TIME STEP . . . . (ISREFB(3, 1))= 1

BLOCK DEFINITION CARDS FOR PRINT-OUT TIME STEPS

(NOT APPLICABLE, IF IOUTPT.EQ.0 ON MASTER CONTROL CARD 8)

BLOCK 1

FIRST STEP OF THIS BLOCK . . . (IPRIB(1, 1))= 1
LAST STEP OF THIS BLOCK . . . (IPRIB(2, 1))= 9
INCREMENT IN TIME STEP . . . . (IPRIB(3, 1))= 1

BLOCK DEFINITION CARDS FOR PRINT-OUT NODAL POINTS

(NOT APPLICABLE, IF IOUTPT.EQ.0 ON MASTER CONTROL CARD 8)

BLOCK 1

FIRST NODE OF THIS BLOCK . . . (IPNODE(1, 1))= 47
LAST NODE OF THIS BLOCK . . . (IPNODE(2, 1))= 49
INCREMENT IN NODE NUMBER . . . (IPNODE(3, 1))= 1

BLOCK DEFINITION CARDS OF TIME STEPS FOR SAVING NODAL RESPONSES

BLOCK 1

FIRST STEP OF THIS BLOCK . . . (INODB(1, 1))= 1
LAST STEP OF THIS BLOCK . . . (INODB(2, 1))= 9
INCREMENT IN TIME STEP . . . . (INODB(3, 1))= 1

BLOCK DEFINITION CARDS OF TIME STEPS FOR SAVING ELEMENT RESPONSES

BLOCK 1

FIRST STEP OF THIS BLOCK . . . (IELMB(1, 1))= 1
LAST STEP OF THIS BLOCK . . . (IELMB(2, 1))= 9
INCREMENT IN TIME STEP . . . . (IELMB(3, 1))= 1

1T I M E F U N C T I O N D A T A

NUMBER OF TIME FUNCTIONS (NTFN) = 1

MAX NUMBER OF POINTS IN TIME FUNCTIONS (NPTM) = 2

TIME FUNCTION NUMBER = 1
NUMBER OF TIME POINTS = 2

TIME VALUE	FUNCTION
0.0	0.0
9.00000	0.10000000+06

1N O D A L P O I N T D A T A

INPUT NODAL DATA

IT	NODE	BOUNDARY CONDITION CODES (X, Y, Z IN COORDINATE SYSTEM NRST)			XX, YY, ZZ IN COORDINATE SYSTEM NRST)			NODAL POINT COORDINATES (X, Y, Z IN COORDINATE SYSTEM IT)			KN	NRST	MIDS
	1	0	1	1	0	0	0	0.0	0.0	0.0	1	0	0
	9	0	1	1	0	0	0	0.0	0.0	400.0000	0	0	0
	10	0	0	0	0	0	0	0.0	50.0000	0.0	1	0	0
	14	0	0	0	0	0	0	0.0	50.0000	400.0000	0	0	0
	15	0	0	0	0	0	0	0.0	100.0000	0.0	1	0	0
	23	0	0	0	0	0	0	0.0	100.0000	400.0000	0	0	0
	24	0	0	0	0	0	0	0.0	150.0000	0.0	1	0	0
	28	0	0	0	0	0	0	0.0	150.0000	400.0000	0	0	0
	29	0	0	0	0	0	0	0.0	200.0000	0.0	1	0	0
	37	0	0	0	0	0	0	0.0	200.0000	400.0000	0	0	0
	38	0	0	0	0	0	0	0.0	250.0000	0.0	1	0	0
	42	0	0	0	0	0	0	0.0	250.0000	400.0000	0	0	0
	43	0	0	0	0	0	0	0.0	300.0000	0.0	1	0	0
	51	0	0	0	0	0	0	0.0	300.0000	400.0000	0	0	0
	52	0	0	0	0	0	0	0.0	350.0000	0.0	1	0	0
	56	0	0	0	0	0	0	0.0	350.0000	400.0000	0	0	0
	57	0	0	0	0	0	0	0.0	400.0000	0.0	1	0	0
	65	0	0	0	0	0	0	0.0	400.0000	400.0000	0	0	0
	66	0	0	0	0	0	0	0.0	450.0000	0.0	1	0	0
	70	0	0	0	0	0	0	0.0	450.0000	400.0000	0	0	0
	71	0	0	0	0	0	0	0.0	500.0000	0.0	1	0	0
	79	0	0	0	0	0	0	0.0	500.0000	400.0000	0	0	0
	80	0	0	0	0	0	0	0.0	550.0000	0.0	1	0	0
	84	0	0	0	0	0	0	0.0	550.0000	400.0000	0	0	0
	85	0	0	0	0	0	0	0.0	600.0000	0.0	1	0	0
	93	0	0	0	0	0	0	0.0	600.0000	400.0000	0	0	0

GENERATED NODAL DATA

NODE	BOUNDARY CONDITION CODES	NODAL POINT COORDINATES	DIRECTIONS OF V1 AND V2

	X	Y	Z	XX	YY	ZZ		X	Y	Z	NRST
	(IN COORDINATE SYSTEM NRST)							(IN GLOBAL XYZ COORD SYSTEM)			
1	1	1	1	1	1	1	0.0	0.0	0.0	0	
2	1	1	1	1	1	1	0.0	0.0	50.0000	0	
3	1	1	1	1	1	1	0.0	0.0	100.0000	0	
4	1	1	1	1	1	1	0.0	0.0	150.0000	0	
5	1	1	1	1	1	1	0.0	0.0	200.0000	0	
6	1	1	1	1	1	1	0.0	0.0	250.0000	0	
7	1	1	1	1	1	1	0.0	0.0	300.0000	0	
8	1	1	1	1	1	1	0.0	0.0	350.0000	0	
9	1	1	1	1	1	1	0.0	0.0	400.0000	0	
10	1	0	0	1	1	1	0.0	50.0000	0.0	0	
11	1	0	0	1	1	1	0.0	50.0000	100.0000	0	
12	1	0	0	1	1	1	0.0	50.0000	200.0000	0	
13	1	0	0	1	1	1	0.0	50.0000	300.0000	0	
14	1	0	0	1	1	1	0.0	50.0000	400.0000	0	
15	1	0	0	1	1	1	0.0	100.0000	0.0	0	
16	1	0	0	1	1	1	0.0	100.0000	50.0000	0	
17	1	0	0	1	1	1	0.0	100.0000	100.0000	0	
18	1	0	0	1	1	1	0.0	100.0000	150.0000	0	
19	1	0	0	1	1	1	0.0	100.0000	200.0000	0	
20	1	0	0	1	1	1	0.0	100.0000	250.0000	0	
21	1	0	0	1	1	1	0.0	100.0000	300.0000	0	
22	1	0	0	1	1	1	0.0	100.0000	350.0000	0	
23	1	0	0	1	1	1	0.0	100.0000	400.0000	0	
24	1	0	0	1	1	1	0.0	150.0000	0.0	0	
25	1	0	0	1	1	1	0.0	150.0000	100.0000	0	
26	1	0	0	1	1	1	0.0	150.0000	200.0000	0	
27	1	0	0	1	1	1	0.0	150.0000	300.0000	0	
28	1	0	0	1	1	1	0.0	150.0000	400.0000	0	
29	1	0	0	1	1	1	0.0	200.0000	0.0	0	
30	1	0	0	1	1	1	0.0	200.0000	50.0000	0	
31	1	0	0	1	1	1	0.0	200.0000	100.0000	0	
32	1	0	0	1	1	1	0.0	200.0000	150.0000	0	
33	1	0	0	1	1	1	0.0	200.0000	200.0000	0	
34	1	0	0	1	1	1	0.0	200.0000	250.0000	0	
35	1	0	0	1	1	1	0.0	200.0000	300.0000	0	
36	1	0	0	1	1	1	0.0	200.0000	350.0000	0	
37	1	0	0	1	1	1	0.0	200.0000	400.0000	0	
38	1	0	0	1	1	1	0.0	250.0000	0.0	0	
39	1	0	0	1	1	1	0.0	250.0000	100.0000	0	
40	1	0	0	1	1	1	0.0	250.0000	200.0000	0	
41	1	0	0	1	1	1	0.0	250.0000	300.0000	0	
42	1	0	0	1	1	1	0.0	250.0000	400.0000	0	
43	1	0	0	1	1	1	0.0	300.0000	0.0	0	
44	1	0	0	1	1	1	0.0	300.0000	50.0000	0	
45	1	0	0	1	1	1	0.0	300.0000	100.0000	0	
46	1	0	0	1	1	1	0.0	300.0000	150.0000	0	
47	1	0	0	1	1	1	0.0	300.0000	200.0000	0	
48	1	0	0	1	1	1	0.0	300.0000	250.0000	0	
49	1	0	0	1	1	1	0.0	300.0000	300.0000	0	
50	1	0	0	1	1	1	0.0	300.0000	350.0000	0	
51	1	0	0	1	1	1	0.0	300.0000	400.0000	0	
52	1	0	0	1	1	1	0.0	350.0000	0.0	0	
53	1	0	0	1	1	1	0.0	350.0000	100.0000	0	
54	1	0	0	1	1	1	0.0	350.0000	200.0000	0	
55	1	0	0	1	1	1	0.0	350.0000	300.0000	0	
56	1	0	0	1	1	1	0.0	350.0000	400.0000	0	

57	1	0	0	1	1	1	0.0	400.0000	0.0	0	
58	1	0	0	1	1	1	0.0	400.0000	50.0000	0	
59	1	0	0	1	1	1	0.0	400.0000	100.0000	0	
60	1	0	0	1	1	1	0.0	400.0000	150.0000	0	
61	1	0	0	1	1	1	0.0	400.0000	200.0000	0	
62	1	0	0	1	1	1	0.0	400.0000	250.0000	0	
63	1	0	0	1	1	1	0.0	400.0000	300.0000	0	
64	1	0	0	1	1	1	0.0	400.0000	350.0000	0	
65	1	0	0	1	1	1	0.0	400.0000	400.0000	0	
66	1	0	0	1	1	1	0.0	450.0000	0.0	0	
67	1	0	0	1	1	1	0.0	450.0000	100.0000	0	
68	1	0	0	1	1	1	0.0	450.0000	200.0000	0	
69	1	0	0	1	1	1	0.0	450.0000	300.0000	0	
70	1	0	0	1	1	1	0.0	450.0000	400.0000	0	
71	1	0	0	1	1	1	0.0	500.0000	0.0	0	
72	1	0	0	1	1	1	0.0	500.0000	50.0000	0	
73	1	0	0	1	1	1	0.0	500.0000	100.0000	0	
74	1	0	0	1	1	1	0.0	500.0000	150.0000	0	
75	1	0	0	1	1	1	0.0	500.0000	200.0000	0	
76	1	0	0	1	1	1	0.0	500.0000	250.0000	0	
77	1	0	0	1	1	1	0.0	500.0000	300.0000	0	
78	1	0	0	1	1	1	0.0	500.0000	350.0000	0	
79	1	0	0	1	1	1	0.0	500.0000	400.0000	0	
80	1	0	0	1	1	1	0.0	550.0000	0.0	0	
81	1	0	0	1	1	1	0.0	550.0000	100.0000	0	
82	1	0	0	1	1	1	0.0	550.0000	200.0000	0	
83	1	0	0	1	1	1	0.0	550.0000	300.0000	0	
84	1	0	0	1	1	1	0.0	550.0000	400.0000	0	
85	1	0	0	1	1	1	0.0	600.0000	0.0	0	
86	1	0	0	1	1	1	0.0	600.0000	50.0000	0	
87	1	0	0	1	1	1	0.0	600.0000	100.0000	0	
88	1	0	0	1	1	1	0.0	600.0000	150.0000	0	
89	1	0	0	1	1	1	0.0	600.0000	200.0000	0	
90	1	0	0	1	1	1	0.0	600.0000	250.0000	0	
91	1	0	0	1	1	1	0.0	600.0000	300.0000	0	
92	1	0	0	1	1	1	0.0	600.0000	350.0000	0	
93	1	0	0	1	1	1	0.0	600.0000	400.0000	0	

EQUATION NUMBERS

N	X	Y	Z	XX (V1)	YY (V2)	ZZ (VN)
1	0	0	0	0	0	0
2	0	0	0	0	0	0
3	0	0	0	0	0	0
4	0	0	0	0	0	0
5	0	0	0	0	0	0
6	0	0	0	0	0	0
7	0	0	0	0	0	0
8	0	0	0	0	0	0
9	0	0	0	0	0	0
10	0	1	2	0	0	0
11	0	3	4	0	0	0
12	0	5	6	0	0	0
13	0	7	8	0	0	0
14	0	9	10	0	0	0

15	0	11	12	0	0	0
16	0	13	14	0	0	0
17	0	15	16	0	0	0
18	0	17	18	0	0	0
19	0	19	20	0	0	0
20	0	21	22	0	0	0
21	0	23	24	0	0	0
22	0	25	26	0	0	0
23	0	27	28	0	0	0
24	0	29	30	0	0	0
25	0	31	32	0	0	0
26	0	33	34	0	0	0
27	0	35	36	0	0	0
28	0	37	38	0	0	0
29	0	39	40	0	0	0
30	0	41	42	0	0	0
31	0	43	44	0	0	0
32	0	45	46	0	0	0
33	0	47	48	0	0	0
34	0	49	50	0	0	0
35	0	51	52	0	0	0
36	0	53	54	0	0	0
37	0	55	56	0	0	0
38	0	57	58	0	0	0
39	0	59	60	0	0	0
40	0	61	62	0	0	0
41	0	63	64	0	0	0
42	0	65	66	0	0	0
43	0	67	68	0	0	0
44	0	69	70	0	0	0
45	0	71	72	0	0	0
46	0	73	74	0	0	0
47	0	75	76	0	0	0
48	0	77	78	0	0	0
49	0	79	80	0	0	0
50	0	81	82	0	0	0
51	0	83	84	0	0	0
52	0	85	86	0	0	0
53	0	87	88	0	0	0
54	0	89	90	0	0	0
55	0	91	92	0	0	0
56	0	93	94	0	0	0
57	0	95	96	0	0	0
58	0	97	98	0	0	0
59	0	99	100	0	0	0
60	0	101	102	0	0	0
61	0	103	104	0	0	0
62	0	105	106	0	0	0
63	0	107	108	0	0	0
64	0	109	110	0	0	0
65	0	111	112	0	0	0
66	0	113	114	0	0	0
67	0	115	116	0	0	0
68	0	117	118	0	0	0
69	0	119	120	0	0	0
70	0	121	122	0	0	0
71	0	123	124	0	0	0
72	0	125	126	0	0	0
73	0	127	128	0	0	0

74	0	129	130	0	0	0
75	0	131	132	0	0	0
76	0	133	134	0	0	0
77	0	135	136	0	0	0
78	0	137	138	0	0	0
79	0	139	140	0	0	0
80	0	141	142	0	0	0
81	0	143	144	0	0	0
82	0	145	146	0	0	0
83	0	147	148	0	0	0
84	0	149	150	0	0	0
85	0	151	152	0	0	0
86	0	153	154	0	0	0
87	0	155	156	0	0	0
88	0	157	158	0	0	0
89	0	159	160	0	0	0
90	0	161	162	0	0	0
91	0	163	164	0	0	0
92	0	165	166	0	0	0
93	0	167	168	0	0	0

1 I N I T I A L C O N D I T I O N S

INITIAL CONDITIONS CODE (ICON) = 0
EQ.0, ZERO INITIAL CONDITIONS
EQ.1, INITIAL CONDITIONS ARE READ
(BUT RESTART OVER-RIDES ICON)

INITIAL CONDITIONS PRINT-OUT CODE (IPRIC) = 0
EQ.0, DO NOT PRINT
EQ.1, PRINT

INITIAL TEMPERATURES CODE (ICONT) = 0
EQ.0, INITIAL TEMPERATURES ARE NOT
READ FROM INPUT
EQ.1, INITIAL TEMPERATURES ARE READ FROM INPUT

INITIAL TEMPERATURES PRINT-OUT CODE (IPRIT) = 0
EQ.0, DO NOT PRINT INITIAL TEMPERATURES
EQ.1, PRINT INITIAL TEMPERATURES

1E L E M E N T G R O U P D A T A

E L E M E N T G R O U P ..... = 1 (NONLINEAR)

E L E M E N T D E F I N I T I O N

ELEMENT TYPE . . . . . .(NPAR(1)). . = 2
EQ.1, TRUSS ELEMENTS
EQ.2, 2-DIM ELEMENTS
EQ.3, 3-DIM ELEMENTS
EQ.4, BEAM ELEMENTS
EQ.5, ISO/BEAM ELEMENTS
EQ.6, PLATE ELEMENTS

```
    EQ.7, SHELL ELEMENTS
    EQ.8,9,10, EMPTY
    EQ.11, 2-DIM FLUID ELEMENTS
    EQ.12, 3-DIM FLUID ELEMENTS

NUMBER OF ELEMENTS. . . . . .( NPAR(2) ). . =    24

TYPE OF ANALYSIS . . . . . ( NPAR(3) ). . =     1
    EQ.0, LINEAR
    EQ.1, MATERIAL NONLINEARITY ONLY
    EQ.2, TOTAL LAGRANGIAN FORMULATION
    EQ.3, UPDATED LAGRANGIAN FORMULATION

ELEMENT BIRTH AND DEATH OPTIONS . . .( NPAR(4) ). . =     0
    EQ.0, OPTION NOT ACTIVE
    EQ.1, BIRTH OPTION ACTIVE
    EQ.2, DEATH OPTION ACTIVE

ELEMENT SUBTYPE . . . . . .( NPAR(5) ). . =     2
    EQ.0, AXISYMMETRIC ELEMENTS
    EQ.1, PLANE STRAIN ELEMENTS
    EQ.2, PLANE STRESS ELEMENTS
    EQ.3, PLANE STRESS ELEMENTS IN 3/D

SKEW COORDINATE SYSTEM
    REFERENCE INDICATOR . . . . . .( NPAR(6) ). . =     0
    EQ.0, ALL ELEMENT NODES
          USE THE GLOBAL SYSTEM ONLY
    EQ.1, ELEMENT NODES REFER
          TO SKEW COORDINATE SYSTEM

MAX NUMBER OF NODES DESCRIBING
    ANY ONE ELEMENT . . . . . .( NPAR(7) ). . =     8

DEGENERATION INDICATOR . . . . . .( NPAR(8) ). . =     0
    EQ.0, NO DEGENERATION OR NO CORRECTION
          FOR SPATIAL ISOTROPY
    EQ.1, SPATIAL ISOTROPY CORRECTIONS APPLIED
          TO SPECIALLY DEGENERATED
          8-NODE ELEMENTS

NUMBER OF INTEGRATION POINTS FOR
    ELEMENT STIFFNESS GENERATION. . . .( NPAR(10)). . =     2

NUMBER OF STRESS OUTPUT TABLES . . . .( NPAR(13)). . =     0
    EQ.0, PRINT AT INTEGRATION POINTS


M A T E R I A L   D E F I N I T I O N

MATERIAL MODEL . . . . . .( NPAR(15)). . =     5
    EQ. 1, LINEAR ELASTIC ISOTROPIC
    EQ. 2, LINEAR ELASTIC ORTHOTROPIC
    EQ. 3, THERMOELASTIC MODEL
    EQ. 4, NONLINEAR CURVE DESCRIPTION MODEL
    EQ. 5, CONCRETE CRACKING MODEL
    EQ. 6, (EMPTY)
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    EQ. 7, DRUCKER PRAGER (CAP) MODEL
    EQ. 8, ELASTIC-PLASTIC WITH ISOTROPIC HARDENING
    EQ. 9, ELASTIC-PLASTIC WITH KINEMATIC HARDENING
    EQ.10, ELASTIC-PLASTIC WITH CREEP (ISOTROPIC)
    EQ.11, ELASTIC-PLASTIC WITH CREEP (KINEMATIC)
    EQ.12, (EMPTY)
    EQ.13, INCOMPRESSIBLE ELASTIC (MOONEY-RIVLIN)
    EQ.14, (EMPTY)

NUMBER OF DIFFERENT SETS OF MATERIAL
    CONSTANTS . . . . . .( NPAR(16)). . =     1

NUMBER OF MATERIAL CONSTANTS PER SET. .( NPAR(17)). . =    38

DIMENSION OF STORAGE ARRAY (WA)
    PER INTEGRATION POINT . . . . . .( NPAR(20)). . =    15


S T O R A G E   I N F O R M A T I O N

LENGTH OF ARRAY NEEDED FOR STORING ELEMENT GROUP
DATA (GROUP 1). . . . . .( MIDEST ). . = 4394


MATERIAL CONSTANTS SET NUMBER ....     1

    DEN .........( DENSITY ).. =  0.240000D-04


(A) UNIAXIAL PARAMETERS

INITIAL TANGENT MODULUS . . . . . (PROP(1))=  0.520000D+05
POISSONS RATIO . . . . . (PROP(2))=  0.150000D+00
COEFFICIENT OF THERMAL EXPANSION . . .(PROP(3))=  0.0
UNIAXIAL CUT-OFF TENSILE STRENGTH . .  (SIGMAT)=  0.200000D+01
UNIAXIAL MAXIMUM COMPRESSIVE STRESS . .(SIGMAC)= -0.240000D+02
COMPRESSIVE STRAIN AT SIGMAC . . . . . ( EPSC )= -0.250000D-02
UNIAXIAL ULTIMATE COMPRESSIVE STRESS . (SIGMAU)= -0.200000D+02
UNIAXIAL ULTIMATE COMPRESSIVE STRAIN . ( EPSU )= -0.350000D-02

(B) TRIAXIAL COMPRESSIVE FAILURE CURVES
```

PRINCIPAL STRESS RATIOS/	I=1	2	CURVE NUMBER 3	4	5	6
SP1(I)	0.0	0.2500	0.5000	0.7500	1.0000	1.2000
SP3(I,1) (AT SP2=SP1)	1.6000	1.3500	1.7500	2.1500	2.5000	2.8000
SP3(I,2) (AT SP2=BETA*SP3)	1.2500	1.7000	2.1000	2.5500	2.9500	3.3000
SP3(I,3)	1.2000	1.6000	2.0000	2.4000	2.8000	3.1000

(C) VARIOUS OTHER CONTROL PARAMETERS

STRESS RATIO FOR FAILURE SURFACE INPUT .(BETA) = 0.750000D+00
STRAINS SCALING FACTOR - MULTIAXIALITY .(GAMA) = 0.100000D+01
CONTROL FOR CHANGING MATERIAL LAW . . . (KAPA) = 0.100000D+01
CONTROL FOR LOADING/UNLOADING CRITERION (ALFA) = 0.500000D-01
STIFFNESS REDUCTION FACTOR . . . . . .(STIFAC) = 0.500000D-03
SHEAR REDUCTION FACTOR . . . . . .(SHEFAC) = 0.500000D+00

ELEMENT INFORMATION

M	IEL	IPS	MTYP	KC	BET	THIC	ETIME	INTEGR. POINT	NODE1	NODE2	NODE3	NODE4	NODE5	NODE6	NODE7	NODE8
								INTEGRATION		GLOBAL COORDINATES						
										X		Y	Z			
1	8	0	1	14	0.0	150.000	0.0	0	17	3	1	15	11	2	10	16
2	8	0	1	14	0.0	150.000	0.0	0	31	17	15	29	25	16	24	30
3	8	0	1	14	0.0	150.000	0.0	0	45	31	29	43	39	30	38	44
4	8	0	1	14	0.0	150.000	0.0	0	59	45	43	57	53	44	52	58
5	8	0	1	1	0.0	150.000	0.0	0	73	59	57	71	67	58	66	72
6	8	0	1	1	0.0	150.000	0.0	0	87	73	71	85	81	72	80	86
7	8		1	14	0.0	150.000	0.0	0	19	5	3	17	12	4	11	18
8	8		1	14	0.0	150.000	0.0	0	33	19	17	31	26	18	25	32
9	8		1	14	0.0	150.000	0.0	0	47	33	31	45	40	32	39	46
10	8	0	1	14	0.0	150.000	0.0	0	61	47	45	59	54	46	53	60
11	8	0	1	1	0.0	150.000	0.0	0	75	61	59	73	68	60	67	74
12	8	0	1	1	0.0	150.000	0.0	0	89	75	73	87	82	74	81	88
13	8	1	1	14	0.0	150.000	0.0	0	21	7	5	19	13	6	12	20
14	8	1	1	14	0.0	150.000	0.0	0	35	21	19	33	27	20	26	34
15	8	1	1	14	0.0	150.000	0.0	0	49	35	33	47	41	34	40	48
16	8	1	1	14	0.0	150.000	0.0	0	63	49	47	61	55	48	54	62
17	8	1	1	1	0.0	150.000	0.0	0	77	63	61	75	69	62	68	76
18	8	1	1	1	0.0	150.000	0.0	0	91	77	75	89	83	76	82	90
19	8	0	1	14	0.0	150.000	0.0	0	23	9	7	21	14	8	13	22

20	8	0	1	14	0.0	150.000	0.0	0	37	23	21	35	28	22	27	36
21	8	0	1	14	0.0	150.000	0.0	0	51	37	35	49	42	36	41	50
22	8	0	1	14	0.0	150.000	0.0	0	65	51	49	63	56	50	55	64
23	8	0	1	1	0.0	150.000	0.0	0	79	65	63	77	70	64	69	78
24	8	0	1	1	0.0	150.000	0.0	0	93	79	77	91	84	78	83	92

1

E L E M E N T G R O U P . . . . . = 2 (NONLINEAR)

E L E M E N T D E F I N I T I O N

ELEMENT TYPE . . . . . .(NPAR(1)). . = 1
EQ.1, TRUSS ELEMENTS
EQ.2, 2-DIM ELEMENTS
EQ.3, 3-DIM ELEMENTS
EQ.4, BEAM ELEMENTS
EQ.5, ISO/BEAM ELEMENTS
EQ.6, PLATE ELEMENTS
EQ.7, SHELL ELEMENTS
EQ.8,9,10, EMPTY
EQ.11, 2-DIM FLUID ELEMENTS
EQ.12, 3-DIM FLUID ELEMENTS

NUMBER OF ELEMENTS. . . . . .(NPAR(2)). . = 10

TYPE OF NONLINEAR ANALYSIS. . . . . .(NPAR(3)). . = 1
EQ.0, LINEAR
EQ.1, MATERIALLY NONLINEAR ONLY
EQ.2, UPDATED LAGRANGIAN FORMULATION

ELEMENT BIRTH AND DEATH OPTIONS . . . .(NPAR(4)). . = 0
EQ.0, OPTION NOT ACTIVE
EQ.1, BIRTH OPTION ACTIVE
EQ.2, DEATH OPTION ACTIVE

ELEMENT TYPE CODE . . . . . .(NPAR(5)). . = 0
EQ.0, GENERAL 3-D TRUSS
EQ.1, RING ELEMENT

SKEW COORDINATE SYSTEM
REFERENCE INDICATOR . . . . . .(NPAR(6)). . = 0
EQ.0, ALL ELEMENT NODES
USE THE GLOBAL SYSTEM ONLY
EQ.1, ELEMENT NODES REFER
TO SKEW COORDINATE SYSTEM

MAXIMUM NUMBER OF NODES USED TO DESCRIBE
ANY ONE ELEMENT . . . . . .(NPAR(7)). . = 2

INTEGRATION ORDER FOR STIFFNESS
CALCULATION . . . . . .(NPAR(10)). . = 1

M A T E R I A L D E F , N I T I O N

MATERIAL MODEL . . . . . NPAR(15)). . = 4
EQ.1, LINEAR ELASTIC
EQ.2, NONLINEAR ELASTIC
(STRESS-STRAIN LAW SPECIFIED)
EQ.3, THERMOELASTIC
EQ.4, ELASTIC-PLASTIC (ISOTROPIC)
EQ.5, ELASTIC-PLASTIC (KINEMATIC)
EQ.6, ELASTIC-PLASTIC-CREEP (ISOTROPIC)
EQ.7, ELASTIC-PLASTIC-CREEP (KINEMATIC)
EQ. , USER SUPPLIED MODEL

NUMBER OF DIFFERENT SETS OF MATERIAL
CONSTANTS . . . . . .(NPAR(16)). . = 2

NUMBER OF MATERIAL CONSTANTS PER SET .(NPAR(17)). . = 3

LENGTH OF ARRAY NEEDED FOR STORING ELEMENT GROUP
DATA (GROUP 2). . . . . .(MIDEST). . = 310

M A T E R I A L C O N S T A N T S

SET	AREA	DEN	E	YIELD	ET
1	0.300000D+03	0.0	0.210000D+06	0.420000D+03	0.0
2	0.750000D+02	0.0	0.210000D+06	0.420000D+03	0.0

E L E M E N T I N F O R M A T I O N

N	IELD	IPS	MTYP	KG	INITIAL STRAIN	LENGTH	ETIME INTEGRATION POINT	INTLOC	NODE(1) GLOBAL COORDINATES X	NODE(2) Y	NODE(3) Z	NODE(4)
1	2	1	1	1	0.0	0.1000D+03	0.0	0	9	23		
2	2	0	1	1	0.0	0.1000D+03	0.0	0	23	37		
3	2	0	1	1	0.0	0.1000D+03	0.0	0	37	51		
4	2	0	1	1	0.0	0.1000D+03	0.0	0	51	65		
5	2	1	1	1	0.0	0.1000D+03	0.0	0	65	79		
6	2	0	1	1	0.0	0.1000D+03	0.0	0	79	93		
7	2	1	2	1	0.0	0.1000D+03	0.0	0	43	45		

- 17 -

8	2	1	2	1	0.0	0.1000D+03	0.0	0	45	47		
9	2	1	2	1	0.0	0.1000D+03	0.0	0	47	49		
10	2	1	2	1	0.0	0.1000D+03	0.0	0	49	51		

1TOTAL SYSTEM DATA

NUMBER OF EQUATIONS . . . . . .(NEQ) = 168
NUMBER OF MATRIX ELEMENTS . . . . . .(NWK) = 4164
MAXIMUM HALF BANDWIDTH . . . . . (MA) = 34
MEAN HALF BANDWIDTH . . . . . .(MAM) = 25
MAXIMUM BLOCK LENGTH . . . . . (ISTOR) = 4164
NUMBER OF BLOCKS . . . . . .(NBLOCK) = 1
MAXIMUM TOTAL STORAGE AVAILABLE. . . . . .(MTOT) = 40000

NUMBER OF COLUMNS PER BLOCK AND 1ST COUPLING BLOCK

NUMBER OF BLOCK 1
NUMBER OF COLUMNS PER BLOCK 168
FIRST COUPLING BLOCK 1

1 A P P L I E D L O A D S D A T A

C O N C E N T R A T E D L O A D S D A T A

	NODE	DIRECTION	LOAD CURVE	LOAD CURVE MULTIPL	ARRIVAL TIME	NODE GENERATION
0	45	3	1	-0.10000D+01	0.0	0

* E N D O F D A T A P R I N T *

TIMING INFORMATION FOR THE SOLUTION OF EQUATIONS FOR THE FIRST STEP

TIME AT ENTERING THE EQUATION SOLVER = 54709.00
TIME AT THE END OF SOLUTION OF EQUATIONS = 54756.00

1 P R I N T O U T F O R T I M E S T E P 1 (AT TIME 0.000D+01)

CONDITIONING OF THE COEFFICIENT MATRIX

LARGEST ELEMENT OF THE UNFACTORED STIFFNESS MATRIX = 0.15090D+08
SMALLEST ELEMENT OF THE UNFACTORED STIFFNESS MATRIX = 0.30371D+07

LARGEST DIAGONAL ELEMENT OF THE FACTORIZED MATRIX = 0.14595D+08
SMALLEST DIAGONAL ELEMENT OF THE FACTORIZED MATRIX = 0.18051D+06

NO EQUILIBRIUM ITERATION IN THIS TIME STEP
STIFFNESS REFORMED FOR THIS TIME STEP

D I S P L A C E M E N T S

NODE	X-DISPLACEMENT	Y-DISPLACEMENT	Z-DISPLACEMENT	X(V1)-ROTATION	Y(V2)-ROTATION	Z(VN)-ROTATION
47	0.0	-0.486777D-03	-0.145932D-01	0.0	0.0	0.0
48	0.0	0.190980D-02	-0.146190D-01	0.0	0.0	0.0
49	0.0	0.442651D-02	-0.146949D-01	0.0	0.0	0.0

1S T R E S S C A L C U L A T I O N S F O R E L E M E N T G R O U P 1 (2/D CONTINUUM)
(PLANE STRESS)

STRESSES ARE MEASURED IN GLOBAL COORDINATE SYSTEM

13									
	1	0.561D-01	0.142D-01	-0.197D+00	0.0	0.233D+00	-0.163D+00	138.03	0.199D+01	NO CRACK
	2	0.317D+00	0.502D-01	-0.190D+00	0.0	0.432D+00	-0.446D-01	153.51	0.200D+01	NO CRACK
	3	0.689D-01	0.976D-02	-0.234D+00	0.0	0.270D+00	-0.200D+00	136.10	0.198D+01	NO CRACK
	4	0.365D+00	0.324D-01	-0.224D+00	0.0	0.478D+00	-0.807D-01	153.25	0.199D+01	NO CRACK
14									
	1	0.534D-01	0.252D-02	-0.253D+00	0.0	0.282D+00	-0.226D+00	137.87	0.198D+01	NO CRACK
	2	0.303D+00	0.117D-01	-0.221D+00	0.0	0.422D+00	-0.107D+00	151.72	0.199D+01	NO CRACK
	3	0.411D-01	0.373D-02	-0.262D+00	0.0	0.285D+00	-0.240D+00	137.04	0.198D+01	NO CRACK
	4	0.279D+00	0.133D-01	-0.230D+00	0.0	0.411D+00	-0.119D+00	150.00	0.199D+01	NO CRACK
15									
	1	0.316D-01	0.219D-02	-0.265D+00	0.0	0.283D+00	-0.249D+00	136.58	0.198D+01	NO CRACK
	2	0.227D+00	0.549D-02	-0.232D+00	0.0	0.374D+00	-0.141D+00	147.76	0.199D+01	NO CRACK
	3	0.11[illegible]D-01	-0.422D-02	-0.267D+00	0.0	0.274D+00	-0.260D+00	136.[illegible]6	0.198D+01	NO CRACK
	4	0.179D+00	-0.817D-02	-0.240D+00	0.0	0.343D+00	-0.173D+00	145.62	0.199D+01	NO CRACK
16									
	1	0.675D-02	-0.258D-01	-0.266D+00	0.0	0.257D+00	-0.276D+00	136.75	0.198D+01	NO CRACK
	2	0.133D+00	-0.279D-01	-0.244D+00	0.0	0.309D+00	-0.204D+00	144.16	0.198D+01	NO CRACK
	3	0.244D-02	-0.570D-01	-0.270D+00	0.0	0.244D+00	-0.299D+00	138.14	0.198D+01	NO CRACK
	4	0.120D+00	-0.387D-01	-0.224D+00	0.0	0.279D+00	-0.197D+00	144.76	0.198D+01	NO CRACK
17									
	[illegible]	0.306D-01	-0.154D+00	-0.256D+00	0.0	0.211D+00	-0.333D+00	144.89	0.197D+01	NO CRACK
	[illegible]	0.540D-02	-0.188D+00	-0.317D+00	0.0	0.241D+00	-0.423D+00	143.46	0.196D+01	NO CRACK
		0.539D-01	-0.195D+00	-0.177D+00	0.0	0.146D+00	-0.286D+00	152.55	0.198D+01	NO CRACK
		0.158D+00	-0.316D+00	-0.121D+00	0.0	0.187D+00	-0.345D+00	166.50	0.197D+01	NO CRACK
18									
	1	0.577D-01	-0.206D+00	-0.907D-01	0.0	0.859D-01	-0.234D+00	162.72	0.198D+01	NO CRACK
	2	0.125D+00	-0.328D+00	-0.118D+00	0.0	0.154D+00	-0.357D+00	166.25	0.197D+01	NO CRACK
	[illegible]	0.362D-01	-0.196D+00	-0.106D-01	0.0	0.347D-01	-0.196D+00	177.36	0.198D+01	NO CRACK
		-0.519D-01	-0.222D+00	0.572D-01	0.0	-0.345D-01	-0.240D+00	16.93	0.198D+01	NO CRACK

1S T R E S S C A C U L A T I O N S F O R E L E M E N T G R O U P 2 (TRUSSES)

ELEMENT	LOCATION	STATE	FORCE	STRESS	STRAIN	PLASTIC STRAIN
1	1	ELASTIC	0.290381D+04	0.967936D+01	0.460922D-04	0.0

5	1	ELASTIC	0.102389D+03	0.341297D+00	0.162523D-05	0.0
7	1	ELASTIC	0.328094D+02	0.437459D+00	0.208314D-05	0.0
8	1	ELASTIC	0.532668D+01	0.710224D-01	0.338202D-06	0.0
9	1	ELASTIC	-0.160231D+02	-0.213642D+00	-0.101734D-05	0.0
10	1	ELASTIC	-0.359108D+02	-0.478811D+00	-0.228005D-05	0.0

1 P R I N T O U T F O R T I M E S T E P 2 (AT TIME 0.2000D+01)

CONDITIONING OF THE COEFFICIENT MATRIX

LARGEST ELEMENT OF THE UNFACTORED STIFFNESS MATRIX = 0.15084D+08
SMALLEST ELEMENT OF THE UNFACTORED STIFFNESS MATRIX = 0.30174D+07
LARGEST DIAGONAL ELEMENT OF THE FACTORIZED MATRIX = 0.14572D+08
SMALLEST DIAGONAL ELEMENT OF THE FACTORIZED MATRIX = 0.17571D+06

NO EQUILIBRIUM ITERATION IN THIS TIME STEP
STIFFNESS REFORMED FOR THIS TIME STEP

D I S P L A C E M E N T S

NODE	X-DISPLACEMENT	Y-DISPLACEMENT	Z-DISPLACEMENT	X(V1)-ROTATION	Y(V2)-ROTATION	Z(VN)-ROTATION
47	0.0	-0.115507D-02	-0.296754D-01	0.0	0.0	0.0
48	0.0	0.372514D-02	-0.297217D-01	0.0	0.0	0.0
49	0.0	0.884634D-02	-0.298707D-01	0.0	0.0	0.0

1S T R E S S C A L C U L A T I O N S F O R E L E M E N T G R O U P 1 (2/D CONTINUUM)
(PLANE STRESS)

STRESSES ARE MEASURED IN GLOBAL COORDINATE SYSTEM

13									
	1	0.930D-01	0.260D-01	-0.396D+00	0.0	0.457D+00	-0.338D+00	137.41	0.197D+01	NO CRACK
	2	0.669D+00	0.997D-01	-0.385D+00	0.0	0.863D+00	-0.944D-01	153.23	0.199D+01	NO CRACK
	3	0.104D+00	0.190D-01	-0.470D+00	0.0	0.533D+00	-0.410D+00	137.59	0.197D+01	NO CRACK
	4	0.724D+00	0.647D-01	-0.454D+00	0.0	0.956D+00	-0.167D+00	152.99	0.199D+01	NO CRACK
14									
	1	0.924D-01	0.581D-02	-0.508D+00	0.0	0.559D+00	-0.461D+00	137.43	0.196D+01	NO CRACK
	2	0.600D+00	0.236D-01	-0.446D+00	0.0	0.843D+00	-0.219D+00	151.44	0.198D+01	NO CRACK
	3	0.711D-01	0.910D-02	-0.526D+00	0.0	0.567D+00	-0.487D+00	136.69	0.196D+01	NO CRACK
	4	0.553D+00	0.278D-01	-0.464D+00	0.0	0.824D+00	-0.243D+00	149.74	0.198D+01	NO CRACK
15									
	1	0.548D-01	0.632D-02	-0.531D+00	0.0	0.562D+00	-0.501D+00	136.31	0.196D+01	NO CRACK
	2	0.450D+00	0.122D-01	-0.469D+00	0.0	0.748D+00	-0.286D+00	147.52	0.198D+01	NO CRACK
	3	0.295D-01	-0.628D-02	-0.534D+00	0.0	0.545D+00	-0.522D+00	135.96	0.196D+01	NO CRACK
	4	0.354D+00	-0.151D-01	-0.484D+00	0.0	0.687D+00	-0.348D+00	145.43	0.197D+01	NO CRACK
16									
	1	0.103D-01	-0.494D-01	-0.532D+00	0.0	0.513D+00	-0.552D+00	136.61	0.195D+01	NO CRACK
	2	0.264D+00	-0.545D-01	-0.489D+00	0.0	0.619D+00	-0.409D+00	144.01	0.197D+01	NO CRACK
	3	0.343D-02	-0.110D+00	-0.538D+00	0.0	0.488D+00	-0.595D+00	138.02	0.195D+01	NO CRACK
	4	0.240D+00	-0.749D-01	-0.449D+00	0.0	0.559D+00	-0.394D+00	144.66	0.197D+01	NO CRACK
17									

	1	0.6060D-01	-0.303D+00	-0.510D+00	0.0	0.420D+00	-0.667D+00	144.82	0.194D+01	NO CRACK
	2	0.889D-02	-0.371D+00	-0.631D+00	0.0	0.478D+00	-0.840D+00	153.56	0.193D+01	NO CRACK
	3	0.108D+00	-0.386D+00	-0.352D+00	0.0	0.291D+00	-0.569D+00	152.[illegible]	0.195D+01	NO CRACK
	4	0.315D+00	-0.627D+00	-0.240D+00	0.0	0.373D+00	-0.685D+00	160.52	0.194D+01	NO CRACK
18										
	1	0.116D+00	-0.410D+00	-0.180D+00	0.0	0.172D+00	-0.466D+00	162.78	0.195D+01	NO CRACK
	2	0.250D+00	-0.652D+00	-0.237D+00	0.0	0.308D+00	-0.710D+00	166.13	0.194D+01	NO CRACK
	3	0.694D-01	-0.390D+00	-0.206D-01	0.0	0.703D-01	-0.390D+00	177.54	0.196D+01	NO CRACK
	4	-0.104D+00	-0.442D+00	0.116D+00	0.0	-0.676D-01	-0.478D+00	17.24	0.195D+01	NO CRACK

1STRESS CALCULATIONS FOR ELEMENT GROUP 2 (TRUSSES)

ELEMENT	LOCATION	STATE	FORCE	STRESS	STRAIN	PLASTIC STRAIN
1	1	ELASTIC	0.586926D+04	0.195642D+02	0.931629D-04	0.0
5	1	ELASTIC	0.200029D+03	0.666762D+00	0.317506D-05	0.0
7	1	ELASTIC	0.670143D+02	0.893524D+00	0.425488D-05	0.0
8	1	ELASTIC	0.125884D+02	0.167846D+00	0.799266D-06	0.0
9	1	ELASTIC	-0.307716D+02	-0.410288D+00	-0.195375D-05	0.0
10	1	ELASTIC	-0.720730D+02	-0.960974D+00	-0.457607D-05	0.0

1PRINT OUT FOR TIME STEP 3 (AT TIME 0.3000D+01)

CONDITIONING OF THE COEFFICIENT MATRIX

LARGEST ELEMENT OF THE UNFACTORED STIFFNESS MATRIX = 0.15064D+08
SMALLEST ELEMENT OF THE UNFACTORED STIFFNESS MATRIX = 0.29993D+07
LARGEST DIAGONAL ELEMENT OF THE FACTORIZED MATRIX = 0.14189D+08
SMALLEST DIAGONAL ELEMENT OF THE FACTORIZED MATRIX = 0.15486D+06

NO EQUILIBRIUM ITERATION IN THIS TIME STEP
STIFFNESS REFORMED FOR THIS TIME STEP

DISPLACEMENTS

NODE	X-DISPLACEMENT	Y-DISPLACEMENT	Z-DISPLACEMENT	X(V1)-ROTATION	Y(V2)-ROTATION	Z(VN)-ROTATION
47	0.0	-0.897019D-04	-0.584018D-01	0.0	0.0	0.0
48	0.0	0.678707D-02	-0.545687D-01	0.0	0.0	0.0
49	0.0	0.179937D-01	-0.548756D-01	0.0	0.0	0.0

1STRESS CALCULATIONS FOR ELEMENT GROUP 1 (2/D CONTINUUM)
(PLANE STRESS)

STRESSES ARE MEASURED IN GLOBAL COORDINATE SYSTEM

13									
	1	0.362D+00	0.557D-01	-0.870D+00	0.0	0.109D+01	-0.674D+00	139.99	0.194D+01	NO CRACK
	2	0.154D+01	0.148D+00	-0.882D+00	0.0	0.197D+01	-0.279D+00	154.17	0.198D+01	NO CRACK
	3	0.420D+00	-0.954D-01	-0.951D+00	0.0	0.115D+01	-0.823D+00	142.58	0.193D+01	NO CRACK

	4	-0.614D-01	-0.457D+00	-0.168D+00	0.0	0.0	-0.518D+00	159.87	0.196D+01	1 CRACK
14									
	1	0.407D+00	-0.185D+00	-0.908D+00	0.0	0.107D+01	-0.844D+00	144.03	0.193D+01	NO CRACK
	2	0.125D+01	-0.382D+00	-0.553D+00	0.0	0.142D+01	-0.552D+00	162.91	0.195D+01	NO CRACK
	3	0.294D+00	-0.164D+00	-0.819D+00	0.0	0.896D+00	-0.797D+00	142.32	0.193D+01	NO CRACK
	4	0.973D+00	-0.152D+00	-0.586D+00	0.0	0.122D+01	-0.402D+00	156.90	0.197D+01	NO CRACK
15									
	1	0.157D+00	-0.129D+00	-0.795D+00	0.0	0.822D+00	-0.794D+00	140.09	0.193D+01	NO CRACK
	2	0.694D+00	-0.734D-01	-0.624D+00	0.0	0.104D+01	-0.423D+00	150.78	0.196D+01	NO CRACK
	3	0.692D-01	-0.690D-01	-0.794D+00	0.0	0.797D+00	-0.797D+00	137.49	0.193D+01	NO CRACK
	4	0.532D+00	-0.653D-01	-0.702D+00	0.0	0.997D+00	-0.530D+00	146.52	0.196D+01	NO CRACK
16									
	1	0.220D-01	-0.109D+00	-0.795D+00	0.0	0.754D+00	-0.841D+00	137.36	0.193D+01	NO CRACK
	2	0.400D+00	-0.111D+00	-0.728D+00	0.0	0.916D+00	-0.627D+00	144.68	0.195D+01	NO CRACK
	3	0.376D-02	-0.178D+00	-0.808D+00	0.0	0.726D+00	-0.900D+00	138.20	0.193D+01	NO CRACK
	4	0.361D+00	-0.123D+00	-0.671D+00	0.0	0.833D+00	-0.595D+00	144.91	0.195D+01	NO CRACK
17									
	1	0.910D-01	-0.461D+00	-0.767D+00	0.0	0.638D+00	-0.100D+01	144.90	0.192D+01	NO CRACK
	2	0.791D-02	-0.561D+00	-0.948D+00	0.0	0.713D+00	-0.127D+01	143.36	0.189D+01	NO CRACK
	3	0.161D+00	-0.581D+00	-0.530D+00	0.0	0.437D+00	-0.857D+00	152.49	0.193D+01	NO CRACK
	4	0.474D+00	-0.944D+00	-0.360D+00	0.0	0.560D+00	-0.103D+01	166.55	0.191D+01	NO CRACK
18									
	1	0.176D+00	-0.618D+00	-0.270D+00	0.0	0.260D+00	-0.701D+00	162.86	0.194D+01	NO CRACK
	2	0.376D+00	-0.980D+00	-0.362D+00	0.0	0.467D+00	-0.107D+01	165.94	0.191D+01	NO CRACK
	3	0.106D+00	-0.581D+00	-0.299D-01	0.0	0.108D+00	-0.582D+00	177.51	0.195D+01	NO CRACK
	4	-0.157D+00	-0.660D+00	0.179D+00	0.0	-0.997D-01	-0.717D+00	17.68	0.193D+01	NO CRACK

1STRESS CALCULATIONS FOR ELEMENT GROUP 2 (TRUSSES)

ELEMENT	LOCATION	STATE	FORCE	STRESS	STRAIN	PLASTIC STRAIN
1	1	ELASTIC	0.140527D+05	0.468423D+02	0.223059D-03	0.0
5	1	ELASTIC	0.298263D+03	0.994210D+00	0.473433D-05	0.0
7	1	ELASTIC	0.980538D+02	0.130738D+01	0.622564D-05	0.0
8	1	ELASTIC	-0.329384D+01	-0.439178D-01	-0.209133D-06	0.0
9	1	ELASTIC	-0.746221D+02	-0.994961D+00	-0.473791D-05	0.0
10	1	ELASTIC	-0.116342D+03	-0.155123D+01	-0.738681D-05	0.0

1PRINT OUT FOR TIME STEP 4 (AT TIME 0.4000D+01)

CONDITIONING OF THE COEFFICIENT MATRIX

LARGEST ELEMENT OF THE UNFACTORED STIFFNESS MATRIX = 0.15002D+08
SMALLEST ELEMENT OF THE UNFACTORED STIFFNESS MATRIX = 0.29823D+07
LARGEST DIAGONAL ELEMENT OF THE FACTORIZED MATRIX = 0.13556D+08
SMALLEST DIAGONAL ELEMENT OF THE FACTORIZED MATRIX = 0.11362D+06

NO EQUILIBRIUM ITERATION IN THIS TIME STEP
STIFFNESS REFORMED FOR THIS TIME STEP

DISPLACEMENTS

NODE	X-DISPLACEMENT	Y-DISPLACEMENT	Z-DISPLACEMENT	X(V1)-ROTATION	Y(V2)-ROTATION	Z(VN)-ROTATION
47	0.0	0.134145D-01	-0.109704D+00	0.0	0.0	0.0
48	0.0	0.330116D-01	-0.110194D+00	0.0	0.0	0.0
49	0.0	0.522466D-01	-0.110665D+00	0.0	0.0	0.0

1STRESS CALCULATIONS FOR ELEMENT GROUP 1 (2/D CONTINUUM)
(PLANE STRESS)

STRESSES ARE MEASURED IN GLOBAL COORDINATE SYSTEM

13									
	1	-0.102D+00	-0.376D+00	-0.196D+00	0.0	0.0	-0.477D+00	152.49	0.196D+01	1 CRACK
	2	-0.967D-01	-0.368D+00	-0.189D+00	0.0	0.0	-0.465D+00	152.87	0.196D+01	1 CRACK
	3	-0.374D-01	-0.515D+00	-0.139D+00	0.0	0.0	-0.552D+00	164.91	0.195D+01	1 CRACK
	4	0.272D+00	-0.448D+00	0.289D+00	0.0	0.0	-0.176D+00	159.87	0.200D+01	1 CRACK
14									
	1	0.150D+01	-0.621D+00	-0.267D+00	0.0	0.153D+01	-0.654D+00	172.92	0.195D+01	NO CRACK
	2	-0.263D+00	-0.760D+00	0.256D+00	0.0	-0.154D+00	-0.868D+00	22.94	0.192D+01	NO CRACK
	3	0.687D+00	-0.321D+00	-0.756D+00	0.0	0.109D+01	-0.725D+00	151.86	0.194D+01	NO CRACK
	4	-0.348D-01	-0.239D+00	-0.913D-01	0.0	0.0	-0.274D+00	159.10	0.198D+01	1 CRACK
15									
	1	0.493D+00	-0.471D+00	-0.895D+00	0.0	0.103D+01	-0.101D+01	149.14	0.192D+01	NO CRACK
	2	0.715D+00	-0.283D+00	-0.432D+00	0.0	0.876D+00	-0.444D+00	159.54	0.196D+01	NO CRACK
	3	0.181D+00	-0.214D+00	-0.928D+00	0.0	0.932D+00	-0.966D+00	141.01	0.192D+01	NO CRACK
	4	0.712D+00	-0.877D-01	-0.789D+00	0.0	0.120D+01	-0.573D+00	148.43	0.195D+01	NO CRACK
16									
	1	0.753D-01	-0.233D+00	-0.984D+00	0.0	0.917D+00	-0.107D+01	139.45	0.191D+01	NO CRACK
	2	0.452D+00	-0.162D+00	-0.888D+00	0.0	0.108D+01	-0.794D+00	144.54	0.193D+01	NO CRACK
	3	0.109D-01	-0.264D+00	-0.105D+01	0.0	0.931D+00	-0.118D+01	138.73	0.190D+01	NO CRACK
	4	0.457D+00	-0.158D+00	-0.880D+00	0.0	0.108D+01	-0.784D+00	144.63	0.193D+01	NO CRACK
17									
	1	0.125D+00	-0.632D+00	-0.101D+01	0.0	0.827D+00	-0.133D+01	145.26	0.189D+01	NO CRACK
	2	0.128D-02	-0.753D+00	-0.126D+01	0.0	0.938D+00	-0.169D+01	143.34	0.186D+01	NO CRACK
	3	0.214D+00	-0.781D+00	-0.705D+00	0.0	0.579D+00	-0.115D+01	152.61	0.190D+01	NO CRACK
	4	0.632D+00	-0.126D+01	-0.475D+00	0.0	0.744D+00	-0.138D+01	166.69	0.189D+01	NO CRACK
18									
	1	0.239D+00	-0.828D+00	-0.359D+00	0.0	0.348D+00	-0.938D+00	163.02	0.192D+01	NO CRACK
	2	0.501D+00	-0.131D+01	-0.458D+00	0.0	0.624D+00	-0.143D+01	165.85	0.188D+01	NO CRACK
	3	0.144D+00	-0.771D+00	-0.384D-01	0.0	0.146D+00	-0.772D+00	177.60	0.194D+01	NO CRACK
	4	-0.210D+00	-0.876D+00	0.243D+00	0.0	-0.131D+00	-0.955D+00	18.05	0.191D+01	NO CRACK

1STRESS CALCULATIONS FOR ELEMENT GROUP 2 (TRUSSES)

ELEMENT	LOCATION	STATE	FORCE	STRESS	STRAIN	PLASTIC STRAIN
1	1	ELASTIC	0.276029D+05	0.926762D+02	0.441315D-03	0.0
5	1	ELASTIC	0.414795D+03	0.138265D+01	0.658404D-05	0.0
7	1	ELASTIC	0.310862D+03	0.147816D+01	0.703887D-05	0.0
8	1	ELASTIC	-0.779750D+02	-0.103967D+01	-0.495079D-05	0.0
9	1	ELASTIC	-0.151413D+03	-0.201884D+01	-0.961350D-05	0.0
10	1	ELASTIC	-0.110002D+03	-0.146670D+01	-0.698428D-05	0.0

1PRINT OUT FOR TIME STEP 5 (AT TIME 0.5000D+01)

CONDITIONING OF THE COEFFICIENT MATRIX

LARGEST ELEMENT OF THE UNFACTORED STIFFNESS MATRIX = 0.148290D+08
SMALLEST ELEMENT OF THE UNFACTORED STIFFNESS MATRIX = 0.189010D+07
LARGEST DIAGONAL ELEMENT OF THE FACTORIZED MATRIX = 0.110930D+08
SMALLEST DIAGONAL ELEMENT OF THE FACTORIZED MATRIX = 0.851210D+05

NO EQUILIBRIUM ITERATION IN THIS TIME STEP
STIFFNESS REFORMED FOR THIS TIME STEP

D I S P L A C E M E N T S

NODE	X-DISPLACEMENT	Y-DISPLACEMENT	Z-DISPLACEMENT	X(V1)-ROTATION	Y(V2)-ROTATION	Z(VN)-ROTATION
47	0.0	0.442741D-01	-0.198544D+00	0.0	0.0	0.0
48	0.0	0.809592D-01	-0.199305D+00	0.0	0.0	0.0
49	0.0	0.116938D+00	-0.200847D+00	0.0	0.0	0.0

1STRESS CALCULATIONS FOR ELEMENT GROUP 1 (2/D CONTINUUM)
(PLANE STRESS)

STRESSES ARE MEASURED IN GLOBAL COORDINATE SYSTEM

13									
	1	-0.201D+00	-0.101D+01	-0.457D+00	0.0	0.0	-0.121D+01	152.49	0.200D+01	1 CRACK
	2	-0.521D+00	-0.127D+01	-0.833D+00	0.0	0.0	-0.179D+01	152.87	0.200D+01	1 CRACK
	3	0.906D-01	-0.124D+01	0.100D-02	0.0	0.0	-0.115D+01	164.91	0.200D+01	1 CRACK
	4	0.290D-01	-0.122D+01	-0.185D+00	0.0	0.0	-0.120D+01	159.87	0.200D+01	1 CRACK
14									
	1	0.178D+01	-0.806D+00	0.353D+00	0.0	0.182D+01	-0.853D+00	7.65	0.193D+01	NO CRACK
	2	0.601D-03	0.536D-02	0.160D-02	0.0	0.0	0.596D-02	161.49	0.200D+01	1 CRACK
	3	0.507D+00	0.144D+00	-0.638D+00	0.0	0.989D+00	-0.339D+00	142.94	0.197D+01	NO CRACK
	4	-0.247D+00	0.415D+00	-0.245D+00	0.0	0.0	0.167D+00	159.10	0.200D+01	1 CRACK
15									
	1	0.373D+00	-0.396D+00	-0.104D+01	0.0	0.109D+01	-0.112D+0	145.16	0.191D+01	NO CRACK
	2	0.707D-01	0.250D+00	-0.602D+00	0.0	0.768D+00	-0.448D+00	130.77	0.196D+01	NO CRACK
	3	0.216D+00	-0.927D-01	-0.134D+01	0.0	0.141D+01	-0.128D+01	138.29	0.189D+01	NO CRACK
	4	-0.179D+00	-0.597D+00	-0.327D+00	0.0	0.0	-0.776D+00	151.27	0.194D+01	1 CRACK
16									
	1	0.173D+00	-0.263D+00	-0.130D+01	0.0	0.127D+01	-0.136D+01	139.77	0.189D+01	NO CRACK
	2	0.507D+00	-0.515D+00	-0.943D+00	0.0	0.107D+01	-0.108D+01	149.23	0.191D+01	NO CRACK
	3	0.452D-01	-0.333D+00	-0.129D+01	0.0	0.116D+01	-0.145D+01	139.17	0.188D+01	NO CRACK
	4	0.612D+00	-0.182D+00	-0.107D+01	0.0	0.135D+01	-0.922D+00	145.22	0.192D+01	NO CRACK
17									
	1	0.157D+00	-0.833D+00	-0.123D+01	0.0	0.988D+00	-0.166D+01	145.96	0.186D+01	NO CRACK
	2	-0.765D-01	-0.891D+00	-0.154D+01	0.0	0.111D+01	-0.208D+01	142.41	0.183D+01	NO CRACK
	3	0.260D+00	-0.962D+00	-0.865D+00	0.0	0.709D+00	-0.141D+01	152.61	0.188D+01	NO CRACK
	4	0.766D+00	-0.155D+01	-0.600D+00	0.0	0.912D+00	-0.170D+01	166.31	0.186D+01	NO CRACK
18									
	1	0.295D+00	-0.102D+01	-0.446D+00	0.0	0.431D+00	-0.116D+01	162.97	0.190D+01	NO CRACK
	2	0.627D+00	-0.164D+01	-0.625D+00	0.0	0.788D+00	-0.180D+01	165.54	0.185D+01	NO CRACK
	3	0.180D+00	-0.953D+00	-0.460D-01	0.0	0.182D+00	-0.955D+00	177.68	0.192D+01	NO CRACK
	4	-0.262D+00	-0.108D+01	0.309D+00	0.0	-0.159D+00	-0.119D+01	18.49	0.189D+01	NO CRACK

1STRESS CALCULATIONS FOR ELEMENT GROUP 2 (TRUSSES)

ELEMENT	LOCATION	STATE	FORCE	STRAIN	PLASTIC STRAIN
1	1	ELASTIC	0.496176D+05	0.165392D+03	0.787581D-03	0.0
5	1	ELASTIC	0.513481D+03	0.171160D+01	0.8150490-05	0.0
7	1	ELASTIC	0.128503D+03	0.171337D+01	0.8158210-05	0.0
8	1	ELASTIC	-0.319984D+02	-0.426645D+00	-0.203164D-05	0.0
9	1	ELASTIC	-0.362684D+03	-0.483579D+01	-0.230275D-04	0.0
10	1	ELASTIC	-0.680075D+01	-0.906766D-01	-0.431794D-06	0.0

1 P R I N T O U T F O R T I M E S T E P 6 (AT TIME 0.6000D+01)

CONDITIONING OF THE COEFFICIENT MATRIX

LARGEST ELEMENT OF THE UNFACTORED STIFFNESS MATRIX = 0.14726D+08
SMALLEST ELEMENT OF THE UNFACTORED STIFFNESS MATRIX = 0.1 486D+07
LARGEST DIAGONAL ELEMENT OF THE FACTORIZED MATRIX = 0.89821D+07
SMALLEST DIAGONAL ELEMENT OF THE FACTORIZED MATRIX = 0.65395D+05

NO EQUILIBRIUM ITERATION IN THIS TIME STEP
STIFFNESS REFORMED FOR THIS TIME STEP

D I S P L A C E M E N T S

NODE	X-DISPLACEMENT	Y-DISPLACEMENT	Z-DISPLACEMENT	X(V1)-ROTATION	Y(V2)-ROTATION	Z(VN)-ROTATION
47	0.0	0.109727D+00	-0.319423D+00	0.0	0.0	0.0
48	0.0	0.171583D+00	-0.320.93D+00	0.0	0.0	0.0
49	0.0	0.232012D+00	-0.319663D+00	0.0	0.0	0.0

1S T R E S S C A L C U L A T I O N S F O R E L E M E N T G R O U P 1 (2/D CONTINUUM, (PLANE STRESS)

STRESSES ARE MEASURED IN GLOBAL COORDINATE SYSTEM

13									
	1	-0.112D+00	-0.178D+01	-0.573D+00	0.0	0.0	-0.189D+01	152.40	0.200D+01	1 CRACK
	2	-0.829D+00	-0.216D+01	-0.136D+01	0.0	0.0	-0.299D+01	152.87	0.200D+01	1 CRACK
	3	-0.463D+00	-0.218D+01	-0.115D+01	0.0	0.0	-0.264D+01	164.91	0.200D+01	1 CRACK
	4	-0.123D+01	-0.157D+01	-0.197D+01	0.0	0.0	-0.280D+01	159.87	0.200D+01	1 CRACK
14									
	1	-0.257D+00	-0.578D+00	-0.385D+00	0.0	0.0	-0.835D+00	146.33	0.193D+01	1 CRACK
	2	-0.150D+01	0.756D+00	-0.212D+01	0.0	0.0	-0.749D+00	161.49	0.200D+01	1 CRACK
	3	0.167D-01	0.117D+00	0.443D-01	0.0	0.0	0.134D+00	159.32	0.200D+01	1 CRACK
	4	-0.641D+00	-0.658D-01	-0.852D+00	0.0	0.0	-0.707D+00	159.10	0.200D+01	1 CRACK
15									
	1	0.750D+00	0.513D-01	-0.295D+00	0.0	0.858D+00	-0.568D-01	159.90	0.200D+01	NO CRACK
	2	0.251D-01	0.436D-01	0.331D-01	0.0	0.0	0.687D-01	142.84	0.200D+01	1 CRACK
	3	0.599D+00	0.159D+00	-0.125D+01	0.0	0.165D+01	-0.892D+00	139.98	0.193D+01	NO CRACK
	4	-0.437D+00	-0.125D+00	-0.433D+00	0.0	0.0	-0.562D+00	151.27	0.200D+01	1 CRACK
16									

	1	-0.836D-01	-0.416D+00	-0.123D+01	0.0	0.993D+00	-0.149D+01	138.85	0.188D+01	NO CRACK
	2	-0.442D+00	0.497D+00	-0.132D+01	0.0	0.143D+01	-0.137D+01	125.19	0.189D+01	NO CRACK
	3	-0.892D-01	-0.227D+00	-0.156D+01	0.0	0.140D+01	-0.172D+01	136.26	0.186D+01	NO CRACK
	4	-0.282D+00	-0.762D+00	-0.464D+00	0.0	0.0	-0.104D+01	148.66	0.191D+01	1 CRACK
17									
	1	0.272D+00	-0.850D+00	-0.150D+01	0.0	0.132D+01	-0.189D+01	145.22	0.184D+01	NO CRACK
	2	-0.277D+00	-0.143D+01	-0.159D+01	0.0	0.839D+00	-0.255D+01	144.96	0.179D+01	NO CRACK
	3	0.360D+00	-0.113D+01	-0.998D+00	0.0	0.859D+00	-0.163D+01	153.40	0.186D+01	NO CRACK
	4	0.933D+00	-0.180D+01	-0.688D+00	.0	0.110D+01	-0.197D+01	166.66	0.184D+01	NO CRACK
18									
	1	0.363D+00	-0.129D+01	-0.466D+00	0.0	0.485D+00	-0.141D+01	165.30	0.188D+01	NO CRACK
	2	0.660D+00	-0.186D+01	-0.718D+00	0.0	0.850D+00	-0.205D+01	165.17	0.183D+01	NO CRACK
	3	0.220D+00	-0.108D+01	-0.303D-01	0.0	0.221D+00	-0.108D+01	178.67	0.191D+01	NO CRACK
	4	-0.341D+00	-0.124D+01	0.367D+00	0.0	-0.210D+00	-0.137D+01	19.65	0.187D+01	NO CRACK

1S T R E S S C A L C U L A T I O N S F O R E L E M E N T G R O U P 2 (TRUSSES)

ELEMENT	LOCATION	STATE	FORCE	STRESS	STRAIN	PLASTIC STRAIN
1	1	ELASTIC	0.775628D+05	0.258543D+03	0.123116D-02	0.0
5	1	ELASTIC	0.179765D+04	0.599218D+01	0.285342D-04	0.0
7	1	ELASTIC	0.182534D+03	0.243379D+01	0.115895D-04	0.0
8	1	ELASTIC	-0.241331D+02	-0.321775D+00	-0.153226D-05	0.0
9	1	ELASTIC	-0.378281D+02	-0.504375D+00	-0.240179D-05	0.0
10	1	ELASTIC	0.211837D+04	0.282449D+02	0.134500D-03	0.0

1 P R I N T O U T F O R T I M E S T E P 7 (AT TIME 0.7000D+01)

CO[illegible]ONING OF THE COEFFICIENT MATRIX

LARGEST ELEMENT OF THE UNFACTORED STIFFNESS MATRIX = 0.14415D+08
SMALLEST ELEMENT OF THE UNFACTORED STIFFNESS MATRIX = 0.15484D+07
LARGEST DIAGONAL ELEMENT OF THE FACTORIZED MATRIX = 0.82191D+07
SMALLEST DIAGONAL ELEMENT OF THE FACTORIZED MATRIX = 0.56850D+05

NO EQUILIBRIUM ITERATION IN THIS TIME STEP
STIFFNESS REFORMED FOR THIS TIME STEP

D I S P L A C E M E N T S

NODE	X-DISPLACEMENT	Y-DISPLACEMENT	Z-DISPLACEMENT	X(V1)-ROTATION	Y(V2)-ROTATION	Z(VN)-ROTATION
47	0.0	0.170876D+00	-0.426851D+00	0.0	0.0	0.0
48	0.0	0.261172D+00	-0.429353D+00	0.0	0.0	0.0
49	0.0	0.345063D+00	-0.427855D+00	0.0	0.0	0.0

1S T R E S S C A L C U L A T I O N S F O R E L E M E N T G R O U P 1 (2/D CONTINUUM) (PLANE STRESS,

STRESSES ARE MEASURED IN GLOBAL COORDINATE SYSTEM

13									
	1	-0.587D+00	-0.206D+01	-0.110D+01	0.0	0.0	-0.265D+01	152.49	0.200D+01	1 CRACK
	2	-0.918D-01	-0.206D+01	-0.617D+00	0.0	0.0	-0.215D+01	152.87	0.200D+01	1 CRACK
	3	-0.141D+01	-0.512D+00	-0.268D+01	0.0	0.0	-0.192D+01	164.91	0.200D+01	1 CRACK
	4	-0.355D+00	-0.204D+01	-0.859D+00	0.0	0.0	-0.240D+01	159.87	0.200D+01	1 CRACK
14									
	1	-0.228D+01	-0.181D+01	-0.231D+01	0.0	0.0	-0.409D+01	146.33	0.200D+01	1 CRACK
	2	-0.182D+01	-0.458D-01	-0.272D+01	0.0	0.0	-0.186D+01	161.49	0.200D+01	1 CRACK
	3	-0.624D+00	0.359D-01	-0.820D+00	0.0	0.0	-0.588D+00	159.32	0.200D+01	1 CRACK
	4	-0.241D+01	0.926D+00	-0.298D+01	0.0	0.0	-0.149D+01	159.10	0.200D+01	1 CRACK
15									
	1	0.159D+00	0.384D+00	0.248D+00	0.0	0.0	0.544D+00	147.22	0.200D+01	1 CRACK
	2	-0.238D+01	-0.802D+00	-0.187D+01	0.0	0.0	-0.318D+01	142.84	0.200D+01	1 CRACK
	3	0.286D-01	0.460D-01	0.363D-01	0.0	0.0	0.746D-01	141.74	0.200D+01	1 CRACK
	4	-0.820D+00	0.396D+00	-0.640D+00	0.0	0.0	-0.424D+00	151.27	0.200D+01	1 CRACK
16									
	1	0.527D+00	-0.708D+00	-0.664D+00	0.0	0.817D+00	-0.997D+00	156.45	0.192D+01	NO CRACK
	2	-0.462D+00	-0.280D+00	-0.360D+00	0.0	0.0	-0.742D+00	127.90	0.194D+01	1 CRACK
	3	0.369D+00	-0.374D+00	-0.148D+01	0.0	0.152D+01	-0.153D+01	142.06	0.187D+01	NO CRACK
	4	-0.501D+00	-0.447D+00	-0.548D+00	0.0	0.0	-0.948D+00	148.66	0.200D+01	1 CRACK
17									
	1	0.215D-01	-0.115D+01	-0.144D+01	0.0	0.990D+00	-0.211D+01	146.04	0.182D+01	NO CRACK
	2	-0.115D+01	-0.876D+00	-0.221D+01	0.0	0.120D+01	-0.323D+01	133.20	0.173D+01	NO CRACK
	3	0.290D+00	-0.126D+01	-0.115D+01	0.0	0.905D+00	-0.188D+01	151.94	0.184D+01	NO CRACK
	4	-0.142D+00	-0.229D+01	-0.570D+00	0.0	0.0	-0.243D+01	166.01	0.180D+01	1 CRACK
18									
	1	0.544D+00	-0.139D+01	-0.520D+00	0.0	0.675D+00	-0.152D+01	165.88	0.187D+01	NO CRACK
	2	0.586D+00	-0.257D+01	-0.534D+00	0.0	0.674D+00	-0.265D+01	170.64	0.178D+01	NO CRACK
	3	0.311D+00	-0.117D+01	0.544D-01	0.0	0.312D+00	-0.118D+01	2.09	0.190D+01	NO CRACK
	4	-0.248D+00	-0.104D+01	0.494D+00	0.0	-0.110D-01	-0.128D+01	25.65	0.189D+01	NO CRACK

1S T R E S S C A L C U L A T I O N S F O R E L E M E N T G R O U P 2 (T R U S S E S)

ELEMENT	LOCATION	STATE	FORCE	STRESS	STRAIN	PLASTIC STRAIN
1	1	ELASTIC	0.990147D+05	0.330049D+03	0.157166D-02	0.0
5	1	ELASTIC	0.193197D+05	0.643991D+02	0.306662D-03	0.0
7	1	ELASTIC	0.261049D+03	0.348066D+01	0.165746D-04	0.0
8	1	ELASTIC	0.199065D+03	0.265420D+01	0.126391D-04	0.0
9	1	ELASTIC	-0.158149D+03	-0.210865D+01	-0.100412D-04	0.0
10	1	ELASTIC	0.534144D+04	0.712193D+02	0.339139D-03	0.0

1 P R I N T O U T F O R T I M E S T E P 8 (AT TIME 0.8000D+01)

CONDITIONING OF THE COEFFICIENT MATRIX

LARGEST ELEMENT OF THE UNFACTORED STIFFNESS MATRIX = 0.14330D+08
SMALLEST ELEMENT OF THE UNFACTORED STIFFNESS MATRIX = 0.15535D+07
LARGEST DIAGONAL ELEMENT OF THE FACTORIZED MATRIX = 0.80914D+07
SMALLEST DIAGONAL ELEMENT OF THE FACTORIZED MATRIX = 0.51772D+05

NO EQUILIBRIUM ITERATION IN THIS TIME STEP
STIFFNESS REFORMED FOR THIS TIME STEP

D I S P L A C E M E N T S

NODE	X-DISPLACEMENT	Y-DISPLACEMENT	Z-DISPLACEMENT	X(V1)-ROTATION	Y(V2)-ROTATION	Z(VN)-ROTATION
47	0.0	0.257279D+00	-0.555001D+00	0.0	0.0	0.0
48	0.0	0.366691D+00	-0.553599D+00	0.0	0.0	0.0
49	0.0	0.412662D+00	-0.521964D+00	0.0	0.0	0.0

1S T R E S S C A L C U L A T I O N S F O R E L E M E N T G R O U P 1 (2/D CONTINUUM)
(PLANE STRESS)

STRESSES ARE MEASURED IN GLOBAL COORDINATE SYSTEM

13									
	1	-0.109D+01	-0.226D+01	-0.164D+01	0.0	0.0	-0.335D+01	152.49	0.200D+01	1 CRACK
	2	-0.825D+00	-0.160D+01	-0.121D+01	0.0	0.0	-0.242D+01	152.87	0.200D+01	1 CRACK
	3	-0.706D+00	-0.217D+00	-0.134D+01	0.0	0.0	-0.943D+00	164.91	0.200D+01	1 CRACK
	4	-0.518D+00	-0.488D+00	-0.796D+00	0.0	0.0	-0.301D+01	159.87	0.200D+01	1 CRACK
14									
	1	-0.151D+01	-0.189D+01	-0.177D+01	0.0	0.0	-0.340D+01	146.33	0.200D+01	1 CRACK
	2	-0.120D+01	-0.496D+00	-0.194D+01	0.0	0.0	-0.174D+01	161.49	0.200D+01	1 CRACK
	3	-0.713D+01	0.238D+01	-0.238D+01	0.0	0.0	0.215D+00	159.32	0.200D+01	1 CRACK
	4	-0.113D+01	-0.450D-01	-0.149D+01	0.0	0.0	-0.117D+01	159.10	0.200D+01	1 CRACK
15									
	1	-0.350D+01	-0.9[illegible]+00	-0.303D+01	0.0	0.0	-0.448D+01	147.22	0.200D+01	1 CRACK
	2	-0.303D+01	-0.1[illegible]+01	-0.251D+01	0.0	0.0	-0.436D+01	142.84	0.200D+01	1 CRACK
	3	-0.347D+00	-0.803D+00	-0.536D+00	0.0	0.0	-0.115D+01	141.74	0.200D+01	1 CRACK
	4	-0.381D+01	0.303D+01	-0.264D+01	0.0	0.0	-0.780D+00	151.27	0.200D+01	1 CRACK
16									
	1	-0.610D+00	-0.382D+00	-0.483D+00	0.0	0.0	-0.992D+00	128.38	0.192D+01	1 CRACK
	2	-0.183D+01	-0.226D+01	-0.217D+01	0.0	0.0	-0.409D+01	127.90	0.200D+01	1 CRACK
	3	-0.836D+00	-0.861D+00	-0.848D+00	0.0	0.0	-0.170D+01	135.43	0.186D+01	1 CRACK
	4	-0.142D+01	0.475D-01	-0.115D+01	0.0	0.0	-0.138D+01	148.66	0.200D+01	1 CRACK
17									
	1	0.156D+00	-0.286D+01	-0.117D+01	0.0	0.556D+00	-0.326D+01	161.11	0.173D+01	NO CRACK
	2	-0.167D+01	-0.116D+01	-0.287D+01	0.0	0.146D+01	-0.429D+01	132.48	0.164D+01	NO CRACK
	3	0.625D+00	-0.189D+01	-0.784D+00	0.0	0.849D+00	-0.212D+01	164.03	0.182D+01	NO CRACK
	4	-0.191D+00	-0.302D+01	-0.760D+00	0.0	0.0	-0.321D+01	166.01	0.200D+01	1 CRACK
18									
	1	0.544D+00	-0.140D+01	-0.941D-01	0.0	0.548D+00	-0.140D+01	177.23	0.188D+01	NO CRACK
	2	[illegible].872D-01	-0.308D+01	-0.503D+00	0.0	-0.492D-02	-0.316D+01	170.71	0.174D+01	NO CRACK
	3	0.330D+00	-0.128D+01	0.341D+00	0.0	0.512D+00	-0.310D+00	28.05	0.197D+01	NO CRACK
	4	0.119D+00	0.541D+06	0.774D+00	0.0	0.113D+01	-0.473D+00	52.62	0.196D+01	NO CRACK

1S T R E S S C A L C U L A T I O N S F O R E L E M E N T G R O U P 2 (T R U S S E S)

ELEMENT	LOCATION	STATE	FORCE	STRESS	STRAIN	PLASTIC STRAIN
1	1	ELASTIC	0.118097D+06	0.393655D+03	0.187455D-02	0.0
5	1	ELASTIC	0.502627D+05	0.167542D+03	0.797821D-03	0.0
7	1	ELASTIC	-0.274566D+02	-0.366089D+00	-0.174328D-05	0.0

8	1	ELASTIC	0.364909D+03	0.486545D+01	0.231688D-04	0.0
9	1	ELASTIC	0.520329D+04	0.693773D+02	0.330368D-03	0.0
10	1	ELASTIC	0.644269D+04	0.859025D+02	0.409059D-03	0.0

1 P R I N T O U T F O R T I M E S T E P 9 (AT TIME 0.9000D+01)

CONDITIONING OF THE COEFFICIENT MATRIX

LARGEST ELEMENT OF THE UNFACTORED STIFFNESS MATRIX = 0.150900+08
SMALLEST ELEMENT OF THE UNFACTORED STIFFNESS MATRIX = 0. 59570+07
LARGEST DIAGONAL ELEMENT OF THE FACTORIZED MATRIX = 0.84894D+07
SMALLEST DIAGONAL ELEMENT OF THE FACTORIZED MATRIX = 0.45739D+05

NO EQUILIBRIUM ITERATION IN THIS TIME STEP
STIFFNESS REFORMED FOR THIS TIME STEP

D I S P L A C E M E N T S

NODE	X-DISPLACEMENT	Y-DISPLACEMENT	Z-DISPLACEMENT	X(V1)-ROTATION	Y(V2)-ROTATION	Z(VN)-ROTATION
47	0.0	0.333013D+00	-0.674793D+00	0.0	0.0	0.0
48	0.0	0.418845D+00	-0.641694D+00	0.0	0.0	0.0
49	0.0	0.482359D+00	-0.615247D+00	0.0	0.0	0.0

1S T R E S S C A L C U L A T I O N S F O R E L E M E N T G R O U P 1 (2/D CONTINUUM)
(PLANE STRESS)

STRESSES ARE MEASURED IN GLOBAL COORDINATE SYSTEM

13									
	1	-0.683D+00	-0.192D+01	-0.116D+01	0.0	0.0	-0.260D+01	152.49	0.200D+01	1 CRACK
	2	-0.515D+00	-0.129D+01	-0.834D+00	0.0	0.0	-0.181D+01	152.87	0.200D+01	1 CRACK
	3	-0.378D+00	-0.488D+00	-0.766D+00	0.0	0.0	-0.866D+00	164.91	0.200D+01	1 CRACK
	4	-0.242D+00	-0.629D+00	-0.445D+00	0.0	0.0	-0.870D+00	159.87	0.200D+01	1 CRACK
14									
	1	-0.105D+01	-0.229D+01	-0.155D+01	0.0	0.0	-0.334D+01	146.33	0.200D+01	1 CRACK
	2	-0.104D+01	-0.120D+01	-0. 75D+01	0.0	0.0	-0.224D+01	161.49	0.200D+01	1 CRACK
	3	-0.313D+01	0.992D+00	-0. 96D+01	0.0	0.0	-0.214D+01	159.32	0.200D+01	1 CRACK
	4	-0.157D+01	0.132D+01	-0.181D+01	0.0	0.0	-0.254D+00	159.10	0.200D+01	1 CRACK
15									
	1	-0.341D+01	-0.590D+00	-0.284D+01	0.0	.0	-0.400D+01	147.22	0.200D+01	1 CRACK
	2	-0.257D+01	-0.132D+01	-0.220D+01	0.0	0.0	-0.389D+01	142.84	0.200D+01	1 CRACK
	3	-0.234D+01	-0.402D+00	-0.164D+01	0.0		-0.274D+01	141.74	0.200D+01	1 CRACK
	4	-0.333D+01	0.115D+01	-0.254D+01	0.0		-0.198D+01	151.27	0.200D+01	1 CRACK
16									
	1	-0.[illegible]	0.367D+01	-0.304D+01	0.0	0.0	-0.549D+01	128.38	0.200D+01	1 CRACK
	2		07D+01	-0.327D+01	0.0	0.0	-0.640D+01	127.90	0.200D+01	1 CRACK
	3		0501	-0.157D+0	0.0	0.0	-0.315D+01	135.43	0.200D+01	1 CRACK
	4		-01	-0.246D+01	0.0	0.0	-0.306D+01	148.66	0.200D+01	1 CRACK
17									
	1		+01	-0.169D+01	0.0	0.360D+00	-0.303D+01	136.74	0.175D+01	NO CRACK
	2		0D+01	-0.261D+01	0.0	0.0	-0.523D+01	133.79	0.156D+01	1
	3		8D+01	-0.932D+00	0.0	0.508D-01	-0.257D+01	157.29	0.179D+01	NO
	4		4D+01	-0.295D+00	0.0	0.0	-0.290D+01	166.01	0.200D+01	1 C

- 29 -

18									
	1	0.132D+00	-0.475D+00	-0.320D+00	0.0	0.269D+00	-0.612D+00	156.72	0.195D+01	NO CRACK
	2	-0.428D+00	-0.221D+01	-0.463D+00	0.0	-0.315D+00	-0.232D+01	166.23	0.178D+01	NO CRACK
	3	0.285D+00	0.407D+00	0.203D+00	0.0	0.559D+00	0.134D+00	53.40	0.200D+01	NO CRACK
	4	-0.163D+01	0.539D+00	-0.356D+00	0.0	0.596D+00	-0.169D+01	99.08	0.186D+01	NO CRACK

1S T R E S S C A L C U L A T I O N S F O R E L E M E N T G R O U P 2 (TRUSSES)

ELEMENT	LOCATION	STATE	FORCE	STRESS	STRAIN	PLASTIC STRAIN
1	1	*PLASTIC	0.126000D+06	0.420000D+03	0.211300D-02	0.112996D-03
5	1	ELASTIC	.736418D+05	0.245539D+03	0.116923D-02	0.0
7	1	ELASTIC	0.264195D+03	0.352259D+01	0.167743D-04	0.0
8	1	ELASTIC	0.536955D+04	0.715940D+02	0.340924D-03	0.0
9	1	ELASTIC	0.937862D+04	0.125048D+03	0.595468D-03	0.0
10	1	ELASTIC	0.738635D+04	0.984846D+02	0.468978D-03	0.0

1S O L U T I O N T I M E L O G (IN SEC)

FOR PROBLEM

REINFORCED CONCRETE SHEAR ANALYSIS 1

INPUT PHASE	35.00
SUBSTRUCTURES INPUT PHASE	0.0
ASSEMBLAGE OF LINEAR STIFFNESS, EFFECTIVE STIFFNESS, MASS MATRICES AND LOAD VECTORS	1.00
FREQUENCY ANALYSIS	0.0
INITI CALCULATIONS FOR MODE SUPERPOSITION ANALYSIS	1.00
TRIANGULARIZATION OF LINEAR (EFFECTIVE) STIFFNESS MATRIX	0.0

STEP-BY-STEP SOLUTION (9 TIME STEPS)

CALCULATION OF EFFECTIVE LOAD VECTORS	0.0
UPDATING EFFECTIVE STIFFNESS MATRICES AND LOAD VECTORS FOR NONLINEARITIES	132.00
SOLUTION OF EQUATIONS	112.00
EQUILIBRIUM ITERATIONS	0.0
DIVERGENCE PROCEDURE	0.0
CALCULATION AND PRINTING OF DISPLACEMENTS, VELOCITIES, AND ACCELERATIONS	9.00
CALCULATION AND PRINTING OF STRESSES	23.00

- 30 -

STEP-BY-STEP TOTAL	291.00
CALCULATION AND PRINTING OF SUBSTRUCTURE INTERNAL RESPONSES	0.0
TOTAL SOLUTION TIME (SEC). . .	328.00

APPENDIX G

SAMPLE LINEAR FINITE ELEMENT ANALYSIS

A typical example of a linear finite element analysis of the remaining approximately triangular diagonally stressed portion of a concrete structural element is given in this Appendix. The finite element mesh representation for this plane stress analysis is given in Figure G1. As the displacements and stresses in this residual portion of the reinforced concrete structural element are all relatively small, the stresses being less than the tensile capacity of the concrete in general, a linear finite element analysis described the physical problem adequately. ADINA was again used in these analyses, which were undertaken in order to derive a hypothetical equivalent prismatic beam for the structural element for the formulation of the simplistic model for shear.

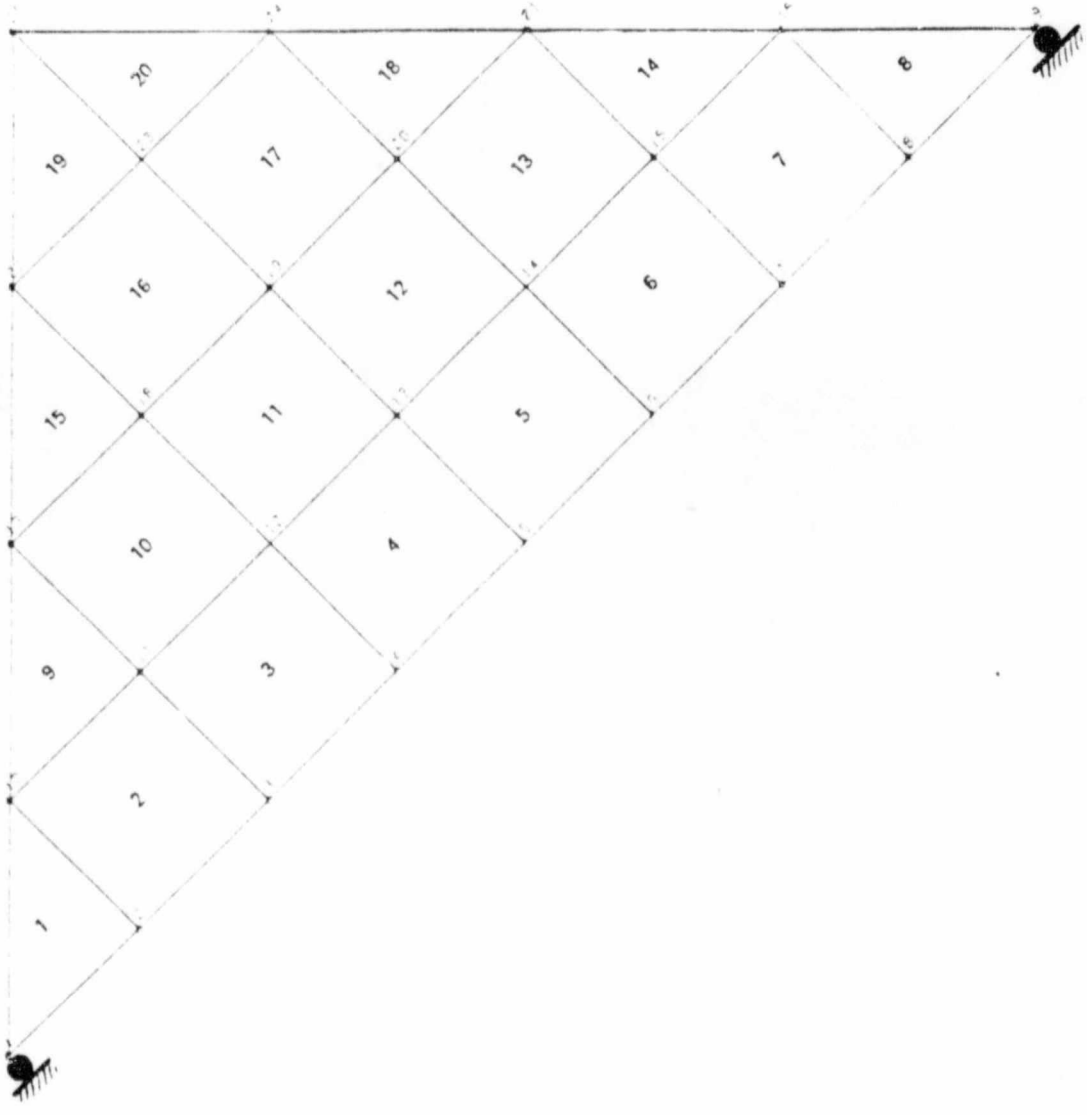

FIGURE G1 FINITE ELEMENT MESH REPRESENTATION OF APPROXIMATE SHAPE OF CONCRETE FREE BODY AFTER FORMATION OF DIAGONAL SHEAR CRACK.

ADINA input data for linear analysis

```
REINFORCED CONCRETE SHEAR ANALYSIS 3
   2510J0111    1    0    1    1    1.0        0.0        1
                     1
     7



     1    1    1    1    0    0
     1    1    1                        1



     1    2
     1    2
          0.0         0.0         1.0       200.0
     1              1    1                                0.          0.
     2                                                  200.          0.          1
     8                                                  100.          0.
     9              0    1                              100.          0.
    10                                                  200.        200.          1
    16                                                  100.        200.
    17                                                  400.        400.          1
    21                                                 1200.        400.
    22                                                  600.        600.          1
    24                                                 1000.        600.
    25                                                  800.        800.

   2  20    0         2    0    4
    124.0000E+6
 25000.0          0.15
     1     4     1     1                              130.0
    10     1     2     2
     2     4     1     1     1                        130.0
    11    10     2     3
     7     4     1     1     1                        130.0
    16    15     7     8
     8     4     1     1                              130.0
    16     8     9     9
     9     4     1     1                              130.0
    17    10    11    11
    10     4     1     1                              130.0
    18    17    11    12
    13     4     1     1                              130.0
    21    20    14    15
    14     4     1     1                              130.0
    21    15    16    16
    15     4     1     1                              130.0
    22    17    18    18
    16     4     1     1                              130.0
    23    22    18    19
    17     4     1     1                              130.0
    24    23    19    20
    18     4     1     1                              130.0
    24    21    21    21
    19     4     1     1                              130.0
    25    22    23    23
    20     4     1     1                              130.0



    25    23    24    24
     2     3     1          1.0         0.0
     3     3     1          1.0         0.0
     4     3     1          1.0         0.0
     5     3     1          1.0         0.0
     6     3     1          1.0         0.0
     7     3     1          1.0         0.0
     8     3     1          1.0         0.0
STOP
```

ADINA output for linear analysis

```
                                A FINITE ELEMENT PROGRAM FOR
                        AUTOMATIC DYNAMIC INCREMENTAL NONLINEAR ANALYSIS

          AAAAAAAAA     DDDDDDDD       EEEEEEEEEE    NN        NN    AAAAAAAAA
         AAAAAAAAAAA    DDDDDDDDD      EEEEEEEEEE    NNN       NN   AAAAAAAAAAA
         AA       AA    DD      DD     EE            NNNN      NN   AA       AA
         AA       AA    DD       DD    EE            NN NN     NN   AA       AA
         AA       AA    DD       DD    EE            NN  NN    NN   AA       AA
         AAAAAAAAAAA    DD       DD    EE            NN   NN   NN   AAAAAAAAAAA
         AAAAAAAAAAA    DD       DD    EE            NN    NN  NN   AAAAAAAAAAA
         AA       AA    DD       DD    EE            NN     NN NN   AA       AA
         AA       AA    DD       DD    EE            NN      NNN   AA       AA
         AA       AA    DD      DD     EE            NN       NN   AA       AA
         AA       AA    DDDDDDDDD      EEEEEEEEEE    NN        N   AA       AA
         AA       AA    DDDDDDDD       EEEEEEEEEE    NN            AA       AA

                                    VERSION - 1981.6
                            REFERENCE - ADINA ENGINEERING REPORT AE 81-1


                        THIS PROGRAM IS IN ITS ENTIRETY PROPRIETARY TO
                              AND IS SUPPORTED AND MAINTAINED BY

                                    ADINA ENGINEERING AB   (SWEDEN)
                                    ADINA ENGINEERING INC  (USA)

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TELEX 40630 ADINA S                                   TELEX 951-772 ADINA US WTMN
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```
1REINFORCED CONCRETE SHEAR ANALYSIS 3

 M A S T E R  C O N T R O L  C A R D S

 CARD NUMBER 1
     NUMBER OF NODAL POINTS . . . . . (NUMNP)  =   25
     MASTER X-TRANSLATION CODE . . . . . (IDOF(1)) =    1
     MASTER Y-TRANSLATION CODE . . . . . (IDOF(2)) =    0
     MASTER Z-TRANSLATION CODE . . . . . (IDOF(3)) =    0
     MASTER X-ROTATION    CODE . . . . . (IDOF(4)) =    1
     MASTER Y-ROTATION    CODE . . . . . (IDOF(5)) =    1
     MASTER Z-ROTATION    CODE . . . . . (IDOF(6)) =    1
     NUMBER OF LINEAR ELEMENT GROUPS . . . . . (NEGL)   =    1
     NUMBER OF NONLINEAR ELEMENT GROUPS . . . . (NEGNL)  =    0
     SOLUTION MODE . . . . . (MODEX)  =    1
        EQ.0, DATA CHECK
        EQ.1, EXECUTION
        EQ.2, RESTART
     NUMBER OF TIME STEPS . . . . . (NSTEP)  =    1
     TIME STEP INCREMENT . . . . . (DT)     = 0.1000D+01
     TIME AT SOLUTION START . . . . . (TSTART) = 0.0
     FLAG FOR WRITING INPUT DATA IN CARD IMAGE AND/OR
       GENERATED FORM . . . . . (IDATWR) =    1
        EQ.0, BOTH CARD IMAGE LISTING AND DETAILED
              OUTPUT OF INPUT DATA
        EQ.1, ONLY DETAILED OUTPUT OF INPUT DATA
        EQ.2, ONLY A CARD IMAGE LISTING OF INPUT DATA
        GT.2, NO DETAILED OUTPUT NOR CARD IMAGE
              LISTING OF INPUT DATA
     NUMBER OF INDEPENDENT SUBSTRUCTURES . . (NSUBST)    0
     NUMBER OF SKEW (R,S,T) REFERENCE SYSTEMS. (NSKEWS)  =    0
     NUMBER OF MID-SURFACE SYSTEMS . . . . . (NMIDSS)  =    0

 CARD NUMBER 2
     RESTART SAVE INTERVAL . . . . . (IRINT)   = 9999
```

TEMPERATURE TAPE FLAG . . . . . (ITP9C) = 0
EQ.0, TEMPERATURE TAPE NOT USED.
EQ.1, TEMPERATURE TAPE USED
EQ.2, TEMPERATURES SPECIFIED
VIA INPUT DATA CARDS

PREPROCESSOR INPUT CONTROL PARAMETER . . . .(INPORT) = 0
EQ.0, NO PREPROCESSOR TAPE USED
EQ.1, NODAL AND ELEMENT INFORMATION READ FROM UNIT59
EQ.2, ABOVE INFORMATION AND ID ARRAY READ FROM UNIT59

PORTHOLE PARAMETER . . . . . (JNPORT) = 1
EQ.0, PORTHOLE NOT WRITTEN
EQ.1, PORTHOLE WRITTEN

CARD NUMBER 3

NUMBER OF CONCENTRATED LOAD CARDS . . . . . (NLOAD) = 7

NUMBER OF 2/D PRESSURE LOAD SETS. . . . . (NPE2) = 0

NUMBER OF 3/D PRESSURE LOAD SETS . . . . . (NPE3) = 0

NUMBER OF BEAM DISTRIBUTED LOAD SETS . . . (NPBM) = 0

NUMBER OF ISO/BEAM DISTRIBUTED LOAD SETS . (NPISB) = 0

NUMBER OF PLATE DISTRIBUTED LOAD SETS . . . (NPPL) = 0

NUMBER OF SHELL DISTRIBUTED LOAD SETS . . . (NPSH) = 0

MASS PROPORTIONAL LOADING CODE. . . . . (IDGRAV) = 0
EQ.0, NO LOADING
EQ.1, LUMPED MASS LOADING

NUMBER OF PRESCRIBED DISPLACEMENTS. . . . . (NPDIS) = 0

NUMBER OF NODAL TEMPERATURE CARDS . . . . . (NTEMP) = 0

NUMBER OF DISPLACEMENT CONSTRAINT EQUATIONS (NDISCE) = 0

MAX NUMBER OF INDEPENDENT DISPLACEMENTS
IN ANY CONSTRAINT EQUATION . . . . . (NIDM) = 0

CARD NUMBER 4

MASS MATRIX CODE . . . . . (IMASS) = 0
EQ.0, NO MASS EFFECTS
EQ.1, LUMPED MASS
EQ.2, CONSISTENT MASS

DAMPING MATRIX CODE . . . . . (IDAMP) = 0
EQ.0, NO DAMPING

EQ.*, DAMP NO INCLUDED

CONCENTRATED NODAL MASSES CODE. . . . . .(IMASSN) = 0
EQ.0, NO CONCENTRATED NODAL MASSES
EQ.1, CONCENTRATED NODAL MASSES PRESENT

CARD NUMBER 5

FREQUENCIES SOLUTION CODE . . . . . .(IEIG) = 0
EQ.0, NO FREQUENCIES SOLUTION
EQ.1, FREQUENCIES AND MODE SHAPES
ARE DETERMINED

FLAG INDICATING FREQUENCY SOLUTION TYPE . . (IESTYP) = 0
EQ.0, DETERMINANT SEARCH METHOD
EQ.1, BATHE'S SUBSPACE ITERATION METHOD

NUMBER OF EIGENPAIRS TO BE CALCULATED. . . . .(NEREQ) = 0
EQ.0, DEFAULT SET TO 1 IF IEIG.GT.0

NUMBER OF VECTORS USED FOR SUBSPACE ITERATION . .(NQ) = 0
EQ.0, SET TO MIN. (2*NEREQ, NEREQ + 8)
(NOT APPLICABLE IF IESTYP.EQ.0)

NUMBER OF MODE SHAPES TO BE PRINTED. . . . . .(NPOF) = 0

INTERMEDIATE PRINT-OUT CONTROL PARAMETER. . . (IEPR) = 0
EQ.0, NO PRINTING
EQ.1, PRINT

FLAG INDICATING PRESENCE OF RIGID BODY MODES. .(IRBM) = 0
EQ.0, NO ZERO FREQUENCIES ARE PRESENT

RIGID BODY MODE SHIFT APPLIED. . . . . .(RBMSH) = 0.0

CUT-OFF CIRCULAR FREQUENCY. . . . . .(COFQ) = 0.1000+09
EQ.0., DEFAULT SET TO 1.D+08

CARD NUMBER 6

FLAG FOR MODE SUPERPOSITION ANALYSIS . . . (IMODES) = 0
EQ.0, STATIC ANALYSIS OR DIRECT TIME INTEGRATION
EQ.1, MODE SUPERPOSITION ANALYSIS PERFORMED

TIME INTEGRATION CODE . . . . . (IOPE) = 0
EQ.1, WILSON'S THETA METHOD
EQ.2, NEWMARK'S METHOD
EQ.3, CENTRAL DIFFERENCE METHOD

NUMBER OF MODES TO BE USED FOR MODE
SUPERPOSITION ANALYSIS . . . . . .(NMODES) = 0

FLAG FOR INCLUDING MODAL DAMPING EFFECTS . (IMDAMP) = 0
EQ.0, NO MODAL DAMPING EFFECTS

EQ.1, MODAL DAMPING FACTORS ARE INPUT

CARD NUMBER 7

NO. OF BLOCKS OF EFFECTIVE STIFFNESS REFORMATION TIME STEPS . . . . . (NSREFB) = 0
EQ.0, NO STIFFNESS REFORMATION

NO. OF BLOCKS OF EQUILIBRIUM ITERATION TIME STEPS . . . . . (NEQITB) = 0
EQ.0, NO EQUILIBRIUM ITERATION PERFORMED

EQUILIBRIUM ITERATION METHOD . . . . . (METHOD) = 1
EQ.1, MODIFIED NEWTON ITERATION
EQ.2, BFGS MATRIX UPDATING

ACCELERATION SCHEME FOR ITERATION . . . . . (IATKEN) = 0
EQ.0, NO ACCELERATION
EQ.1, AITKEN ACCELERATION

MAXIMUM NUMBER OF EQUILIBRIUM ITERATIONS PERMITTED . . . . . (ITEMAX) = 15

NO. OF LOAD STEP DIVISIONS ALLOWED IN DIVERGENCE PROCEDURE . . . . . (NLSTPD) = 0
NLSTPD IS CURRENTLY SET TO ZERO
(DIVERGENCE PROCEDURE IN THIS VERSION NOT ACTIVE)

DISPLACEMENT CONVERGENCE TOLERANCE . . . . . (DTOL) = 0.10000D+01

FORCE CONVERGENCE TOLERANCE . . . . . (RTOL) = 0.10000D+01

LINE SEARCH CONVERGENCE TOLERANCE . . . . . (STOL) = 0.50000D+00

REFERENCE LOAD FOR CONVERGENCE . . . . . (RNORM) = 0.0

CARD NUMBER 8

MASTER CONTROL PARAMETER FOR PRINT-OUT . . . . . (IOUTPT) = 1
EQ.0, PRINT RESPONSES AT ALL TIME STEPS AND AT ALL NODES
EQ.1, BLOCKS OF PRINT-OUT TIME STEPS AND NODAL POINTS ARE INPUT LATER

NO. OF BLOCKS OF TIME STEPS FOR NODAL AND ELEMENT ASSOCIATED QUANTITIES PRINT-OUT . . . . . (NPEIB) = 1

NUMBER OF BLOCKS OF NODAL PRINTOUT . . . . . (NPB) = 1

DISPLACEMENT PRINTOUT CODE . . . . . (IDC) = 1
EQ.0, NO PRINTING OF DISPLACEMENTS
EQ.1, PRINT DISPLACEMENTS

VELOCITY PRINTOUT CODE . . . . . (IVC) = 0
EQ.0, NO PRINTING OF VELOCITIES

- 5 -

EQ.1, PRINT VELOCITIES

ACCELERATION PRINTOUT CODE . . . . . (IAC) = 0
EQ.0, NO PRINTING OF ACCELERATIONS
EQ.1, PRINT ACCELERATIONS

FLAG FOR PRINTING STORAGE INFORMATION . . . . (ISTPRT) = 0
EQ.0, DO NOT PRINT
EQ.1, PRINT

CARD NUMBER 9

FLAG FOR SAVING INPUT DATA ON TAPE . . . . . (INPUTSV) = 1
EQ.0, WRITE ONLY MAIN HEADER
EQ.1, WRITE ALL INPUT DATA ON PORTHOLE

NO. OF BLOCKS OF TIME STEPS FOR SAVING NODAL RESPONSES ON TAPE . . . . . (NODSVB) = 1
EQ.0, NO ACTION

NO. OF BLOCKS OF TIME STEPS FOR SAVING ELEMENT RESPONSES ON TAPE . . . . . (ELMSVB) = 1
EQ.0, NO ACTION

NODE DATA TAPE NUMBER . . . . . (LUNODE) = 60

TRUSS/BEAM TAPE NUMBER . . . . . (LU1) = 60

2/D CONTINUUM TAPE NUMBER . . . . . (LU2) = 60

3/D CONTINUUM AND SHELL TAPE NUMBER . . . . (LU3) = 60

DISPLACEMENT SAVE CODE . . . . . (IDC) = 1
EQ.0, NO SAVING OF DISPLACEMENTS
EQ.1, SAVE DISPLACEMENTS ON PORTHOLE

VELOCITY SAVE CODE . . . . . (IVC) = 0
EQ.0, NO SAVING OF VELOCITIES
EQ.1, SAVE VELOCITIES ON PORTHOLE

ACCELERATION SAVE CODE . . . . . (IAC) = 0
EQ.0, NO SAVING OF ACCELERATIONS
EQ.1, SAVE ACCELERATIONS ON PORTHOLE

TEMPERATURE SAVE CODE . . . . . (ITC) = 0
EQ.0, NO SAVING OF TEMPERATURES
EQ.1, SAVE TEMPERATURES ON PORTHOLE

* THIS IS A LINEAR STATIC ANALYSIS *

1 S O L U T I O N D E T A I L C A R D S

- 6 -

BLOCK DEFINITION CARDS FOR PRINT-OUT TIME STEPS

(NOT APPLICABLE, IF IOUTPT.EQ.0 ON MASTER CONTROL CARD 8)

BLOCK 1

FIRST STEP OF THIS BLOCK . . . . (IPRIB(1, 1))= 1
LAST STEP OF THIS BLOCK . . . . (IPRIB(2, 1))= 1
INCREMENT IN TIME STEP . . . . (IPRIB(3, 1))= 1

BLOCK DEFINITION CARDS FOR PRINT-OUT NODAL POINTS

(NOT APPLICABLE, IF IOUTPT.EQ.0 ON MASTER CONTROL CARD 8)

BLOCK 1

FIRST NODE OF THIS BLOCK . . . . (IPNODE(1, 1))= 1
LAST NODE OF THIS BLOCK . . . . (IPNODE(2, 1))= 25
INCREMENT IN NODE NUMBER . . . . (IPNODE(3, 1))= 1

BLOCK DEFINITION CARDS OF TIME STEPS FOR SAVING NODAL RESPONSES

BLOCK 1

FIRST STEP OF THIS BLOCK . . . . (INODB(1, 1))= 1
LAST STEP OF THIS BLOCK . . . . (INODB(2, 1))= 1
INCREMENT IN TIME STEP . . . . (INODB(3, 1))= 1

BLOCK DEFINITION CARDS OF TIME STEPS FOR SAVING ELEMENT RESPONSES

BLOCK 1

FIRST STEP OF THIS BLOCK . . . . (IELMB(1, 1))= 1
LAST STEP OF THIS BLOCK . . . . (IELMB(2, 1))= 1
INCREMENT IN TIME STEP . . . . (IELMB(3, 1))= 1

1T I M E F U N C T I O N D A T A

NUMBER OF TIME FUNCTIONS (NTIFN) = 1

MAX NUMBER OF POINTS IN TIME FUNCTIONS (NPTM) = 2

TIME FUNCTION NUMBER = 1
NUMBER OF TIME POINTS = 2

TIME VALUE	FUNCTION
0.0	0.0
1.00000	0.20000000D+03

1N O D A L P O I N T D A T A

INPUT NODAL DATA

IT	NODE	BOUNDARY CONDITION CODES (IN COORDINATE SYSTEM NRST)						NODAL POINT COORDINATES (IN COORDINATE SYSTEM IT)					
		X	Y	Z	XX	YY	ZZ	X	Y	Z	XN	NRST	MIDS
	1	0	1	1	0	0	0	0.0	0.0	0.0	0	0	0
	2	0	0	0	0	0	0	0.0	200.0000	0.0	1	0	0
	8	0	0	0	0	0	0	0.0	1400.0000	0.0	0	0	0
	9	0	0	1	0	0	0	0.0	1600.0000	0.0	0	0	0
	10	0	0	0	0	0	0	0.0	200.0000	200.0000	1	0	0
	14	0	0	0	0	0	0	0.0	1400.0000	200.0000	0	0	0
	17	0	0	0	0	0	0	0.0	400.0000	400.0000	1	0	0
	21	0	0	0	0	0	0	0.0	1200.0000	400.0000	0	0	0
	22	0	0	0	0	0	0	0.0	600.0000	600.0000	1	0	0
	24	0	0	0	0	0	0	0.0	1000.0000	600.0000	0	0	0
	25	0	0	0	0	0	0	0.0	800.0000	800.0000	0	0	0

GENERATED NODAL DATA

NODE	BOUNDARY CONDITION CODES (IN COORDINATE SYSTEM NRST)						NODAL POINT COORDINATES (IN GLOBAL XYZ COORD SYSTEM)				DIRECTIONS OF V1 AND V2					
	X	Y	Z	XX	YY	ZZ	X	Y	Z	NRST	(V1,X)	(V1,Y)	(V1,Z)	(V2,X)	(V2,Y)	(V2
1	1	1	1	1	1	1	0.0	0.0	0.0	0						
2	1	0	0	1	1	1	0.0	200.0000	0.0	0						
3	1	0	0	1	1	1	0.0	400.0000	0.0	0						
4	1	0	0	1	1	1	0.0	600.0000	0.0	0						
5	1	0	0	1	1	1	0.0	800.0000	0.0	0						
6	1	0	0	1	1	1	0.0	1000.0000	0.0	0						
7	1	0	0	1	1	1	0.0	1200.0000	0.0	0						
8	1	0	0	1	1	1	0.0	1400.0000	0.0	0						
9	1	0	1	1	1	1	0.0	1600.0000	0.0	0						
10	1	0	0	1	1	1	0.0	200.0000	200.0000	0						
11	1	0	0	1	1	1	0.0	400.0000	200.0000	0						
12	1	0	0	1	1	1	0.0	600.0000	200.0000	0						
13	1	0	0	1	1	1	0.0	800.0000	200.0000	0						
14	1	0	0	1	1	1	0.0	1000.0000	200.0000	0						
15	1	0	0	1	1	1	0.0	1200.0000	200.0000	0						
16	1	0	0	1	1	1	0.0	1400.0000	200.0000	0						
17	1	0	0	1	1	1	0.0	400.0000	400.0000	0						
18	1	0	0	1	1	1	0.0	600.0000	400.0000	0						
19	1	0	0	1	1	1	0.0	800.0000	400.0000	0						
20	1	0	0	1	1	1	0.0	1000.0000	400.0000	0						
21	1	0	0	1	1	1	0.0	1200.0000	400.0000	0						
22	1	0	0	1	1	1	0.0	600.0000	600.0000	0						
23	1	0	0	1	1	1	0.0	800.0000	600.0000	0						
24	1	0	0	1	1	1	0.0	1000.0000	600.0000	0						

25	1	0	0	1	1	1	0	0	800.0000	800.0000	0

EQUATION NUMBERS

N	X	Y	Z	XX (V1)	YY (V2)	ZZ (VN)
1	0	0	0	0	0	0
2	0	1	2	0	0	0
3	0	3	4	0	0	0
4	0	5	6	0	0	0
5	0	7	8	0	0	0
6	0	9	10	0	0	0
7	0	11	12	0	0	0
8	0	13	14	0	0	0
9	0	15	0	0	0	0
10	0	16	17	0	0	0
11	0	18	19	0	0	0
12	0	20	21	0	0	0
13	0	22	23	0	0	0
14	0	24	25	0	0	0
15	0	26	27	0	0	0
16	0	28	29	0	0	0
17	0	30	31	0	0	0
18	0	32	33	0	0	0
19	0	34	35	0	0	0
20	0	36	37	0	0	0
21	0	38	39	0	0	0
22	0	40	41	0	0	0
23	0	42	43	0	0	0
24	0	44	45	0	0	0
25	0	46	47	0	0	0

I N I T I A L C O N D I T I O N S

INITIAL CONDITIONS CODE (ICON) = 0
EQ.0, ZERO INITIAL CONDITIONS
EQ.1, INITIAL CONDITIONS ARE READ
(BUT RESTART OVER-RIDES ICON)

INITIAL CONDITIONS PRINT-OUT CODE (IPRIC) = 0
EQ.0, DO NOT PRINT
EQ.1, PRINT

INITIAL TEMPERATURES CODE (ICONT) = 0
EQ.0, INITIAL TEMPERATURES ARE NOT
READ FROM INPUT
EQ.1, INITIAL TEMPERATURES ARE READ FROM INPUT

INITIAL TEMPERATURES PRINT-OUT CODE (IPRIT) = 0
EQ.0, DO NOT PRINT INITIAL TEMPERATURES
EQ.1, PRINT INITIAL TEMPERATURES

E L E M E N T G R O U P D A T A

E L E M E N T G R O U P .... = 1 (LINEAR)

E L E M E N T D E F I N I T I O N

ELEMENT TYPE .....(NPAR(1)). . = 2
EQ.1, TRUSS ELEMENTS
EQ.2, 2-DIM ELEMENTS
EQ.3, 3-DIM ELEMENTS
EQ.4, BEAM ELEMENTS
EQ.5, ISO/BEAM ELEMENTS
EQ.6, PLATE ELEMENTS
EQ.7, SHELL ELEMENTS
EQ.8,9,10, EMPTY
EQ.11, 2-DIM FLUID ELEMENTS
EQ.12, 3-DIM FLUID ELEMENTS

NUMBER OF ELEMENTS . . ..(NPAR(2)) . . = 20

TYPE OF ANALYSIS .....(NPAR(3)) . . = 0
EQ.0, LINEAR
EQ.1, MATERIAL NONLINEARITY ONLY
EQ.2, TOTAL LAGRANGIAN FORMULATION
EQ.3, UPDATED LAGRANGIAN FORMULATION

ELEMENT BIRTH AND DEATH OPTIONS . . . .(NPAR(4)). . = 0
EQ.0, OPTION NOT ACTIVE
EQ.1, BIRTH OPTION ACTIVE
EQ.2, DEATH OPTION ACTIVE

ELEMENT SUBTYPE .....(NPAR(5)). . = 2
EQ.0, AXISYMMETRIC ELEMENTS
EQ.1, PLANE STRAIN ELEMENTS
EQ.2, PLANE STRESS ELEMENTS
EQ.3, PLANE STRESS ELEMENTS IN 3/D

SKEW COORDINATE SYSTEM
REFERENCE INDICATOR .....(NPAR(6)). . = 0
EQ.0, ALL ELEMENT NODES
USE THE GLOBAL SYSTEM ONLY
EQ.1, ELEMENT NODES REFER
TO SKEW COORDINATE SYSTEM

MAX NUMBER OF NODES DESCRIBING
ANY ONE ELEMENT .....(NPAR(7)). . = 4

DEGENERATION INDICATOR .....(NPAR(8)). . = 0
EQ.0, NO DEGENERATION OR NO CORRECTION
FOR SPATIAL ISOTROPY
EQ.1, SPATIAL ISOTROPY CORRECTIONS APPLIED
TO SPECIALLY DEGENERATED
8-NODE ELEMENTS

NUMBER OF INTEGRATION POINTS FOR
ELEMENT STIFFNESS GENERATION. . . .(NPAR(10)). . = 2

NUMBER OF STRESS OUTPUT TABLES . . . .(NPAR(13)). . = 0

EQ.0, PRINT AT INTEGRATION POINTS

M A T E R I A L D E F I N I T I O N

MATERIAL MODEL . . . . . .(NPAR(15)). . = 1
EQ. 1, LINEAR ELASTIC ISOTROPIC
EQ. 2, LINEAR ELASTIC ORTHOTROPIC
EQ. 3, THERMOELASTIC MODEL
EQ. 4, NON-LINEAR CURVE DESCRIPTION MODEL
EQ. 5, CONCRETE CRACKING MODEL
EQ. 6, (EMPTY)
EQ. 7, DRUCKER PRAGER (CAP) MODEL
EQ. 8, ELASTIC-PLASTIC WITH ISOTROPIC HARDENING
EQ. 9, ELASTIC-PLASTIC WITH KINEMATIC HARDENING
EQ.10, ELASTIC-PLASTIC WITH CREEP (ISOTROPIC)
EQ.11, ELASTIC-PLASTIC WITH CREEP (KINEMATIC)
EQ.12, (EMPTY)
EQ.13, INCOMPRESSIBLE ELASTIC (MOONEY-RIVLIN)
EQ.14, (EMPTY)

NUMBER OF DIFFERENT SETS OF MATERIAL
CONSTANTS . . . . . .(NPAR(16)). . = 1

NUMBER OF MATERIAL CONSTANTS PER SET. .(NPAR(17)). . = 2

DIMENSION OF STORAGE ARRAY (WA)
PER INTEGRATION POINT . . . . . .(NPAR(20)). . = 0

S T O R A G E I N F O R M A T I O N

LENGTH OF ARRAY NEEDED FOR STORING ELEMENT GROUP
DATA (GROUP 1). . . . . .(MIDEST). . = 646

MATERIAL CONSTANTS SET NUMBER 1

DEN .....(DENSITY).. = 0.240000D-04

E .....(PROP(1)).. = 0.250000D+05
VNU .....(PROP(2)).. = 0.150000D+00

ELEMENT INFORMATION

M	IE	IPS	MTYP	KG	BET	THIC	ETIME	INTLOC INTEGRATION	NODE1	NODE2	NODE3 GLOBAL	NODE4 COORDINATES	NODE5	NODE6	NODE7	NODE8
								POINT		X	Y	Z				
1	4	1	1	1	0.0	130.000	0.0	0	10	1	2	2	0	0	0	0
2	4	1	1	1	0.0	130.000	0.0	0	11	10	2	3	0	0	0	0
3	4	1	1	1	0.0	130.000	0.0	0	12	11	3	4	0	0	0	0
4	4	1	1	1	0.0	130.000	0.0	0	13	12	4	5	0	0	0	0
5	4	1	1	1	0.0	130.000	0.0	0	14	13	5	6	0	0	0	0
6	4	1	1	1	0.0	130.000	0.0	0	15	14	6	7	0	0	0	0
7	4	1	1	1	0.0	130.000	0.0	0	16	15	7	8	0	0	0	0
8	4	1	1	1	0.0	130.000	0.0	0	16	8	9	9	0	0	0	0
9	4	1	1	1	0.0	130.000	0.0	0	17	10	11	11	0	0	0	0
10	4	1	1	1	0.0	130.000	0.0	0	18	17	11	12	0	0	0	0
11	4	1	1	1	0.0	130.000	0.0	0	19	18	12	13	0	0	0	0
12	4	1	1	1	0.0	130.000	0.0	0	20	19	13	14	0	0	0	0
13	4	1	1	1	0.0	130.000	0.0	0	21	20	14	15	0	0	0	0
14	4	1	1	1	0.0	130.000	0.0	0	21	15	16	16	0	0	0	0
15	4	1	1	1	0.0	130.000	0.0	0	22	17	18	18	0	0	0	0
16	4	1	1	1	0.0	130.000	0.0	0	23	22	18	19	0	0	0	0
17	4	1	1	1	0.0	130.000	0.0	0	24	23	19	20	0	0	0	0
18	4	1	1	1	0.0	130.000	0.0	0	24	20	21	21	0	0	0	0
19	4	1	1	1	0.0	130.000	0.0	0	25	22	21	23	0	0	0	0
20	4	1	1	1	0.0	130.000	0.0	0	25	23	24	24	0	0	0	0

1TOTAL SYSTEM DATA

NUMBER OF EQUATIONS . . . . . .(NEQ) = 47

NUMBER OF MATRIX ELEMENTS . . . . . .(NWK) = 542

MAXIMUM HALF BANDWIDTH . . . . . .(MA) = 9

MEAN HALF BANDWIDTH . . . . . .(MAM) = 12

MAXIMUM BLOCK LENGTH . . . . . .(ISTOR) = 542

NUMBER OF BLOCKS . . . . . .(NBLOCK) = 1

MAXIMUM TOTAL STORAGE AVAILABLE . . . . . .(MTOT) = 40000

NUMBER OF COLUMNS PER BLOCK AND 1ST COUPLING BLOCK

NUMBER OF BLOCK = 1
NUMBER OF COLUMNS PER BLOCK = 47
FIRST COUPLING BLOCK = 1

1 A P P L I E D L O A D S D A T A

C O N C E N T R A T E D L O A D S D A T A

	NODE	DIRECTION	LOAD CURVE	LOAD CURVE MULTIPL	APPLIVAL TIME	NODE GENERATION
0	2	3	1	0.10000D+01	0.0	0
0	3	3	1	0.10000D+01	0.0	0
0	4	3	1	0.10000D+01	0.0	0
0	5	3	1	0.10000D+01	0.0	0
0	6	3	1	0.10000D+01	0.0	0
0	7	3	1	0.10000D+01	0.0	0
0	8	3	1	0.10000D+01	0.0	0

* E N D O F D A T A P R I N T *

CONDITIONING OF THE COEFFICIENT MATRIX

LARGEST ELEMENT OF THE UNFACTORED STIFFNESS MATRIX = 0.789640+07
SMALLEST ELEMENT OF THE UNFACTORED STIFFNESS MATRIX = 0.141300+07
LARGEST DIAGONAL ELEMENT OF THE FACTORIZED MATRIX = 0.56613D+07
SMALLEST DIAGONAL ELEMENT OF THE FACTORIZED MATRIX = 0.221890+06

TIMING INFORMATION FOR THE SOLUTION OF EQUATIONS FOR THE FIRST STEP

TIME AT ENTERING THE EQUATION SOLVER = 38408.00
TIME AT THE END OF SOLUTION OF EQUATIONS = 38408.00

1 P R I N T O U T F O R T I M E S T E P 1 (AT TIME 0.1000D+01)

NO EQUILIBRIUM ITERATION IN THIS TIME STEP
STIFFNESS REFORMED FOR THIS TIME STEP

D I S P L A C E M E N T S

NODE	X-DISPLACEMENT	Y-DISPLACEMENT	Z-DISPLACEMENT	X(V1)-ROTATION	Y(V2)-ROTATION	Z(VN)-ROTATION
1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	-0.313501D-04	0.283153D-02	0.0	0.0	0.0
3	0.0	-0.710391D-03	0.407 [illegible]75D-02	0.0	0.0	0.0
4	0.0	-0.138775D-02	0.475154D-02	0.0	0.0	0.0
5	0.0	-0.15C300[illegible]-02	0.488562D-02	0.0	0.0	0.0
6	0.0	-0.193825D-02	0.475154D-02	0.0	0.0	0.0

- 13 -

7	0.0	-0.241561D-02	0.426773D-02	0.0	0.0	0.0
8	0.0	-0.309665D-02	0.283153D-02	0.0	0.0	0.0
9	0.0	-0.312600D-02	0.0	0.0	0.0	0.0
10	0.0	-0.187211D-02	0.304053D-02	0.0	0.0	0.0
11	0.0	-0.155129D-02	0.421106[illegible]-02	0.0	0.0	0.0
12	0.0	-0.152036D-02	0.473990D-02	0.0	0.0	0.0
13	0.0	-0.156300D-02	0.483604D-02	0.0	0.0	0.0
14	0.0	-0.160564D-02	0.473990D-02	0.0	0.0	0.0
15	0.0	-0.157470D-02	0.421106D-02	0.0	0.0	0.0
16	0.0	-0.125389D-02	0.304053D-02	0.0	0.0	0.0
17	0.0	-0.193920D-02	0.430816D-02	0.0	0.0	0.0
18	0.0	-0.172945D-02	0.462069D-02	0.0	0.0	0.0
19	0.0	-0.156300D-02	0.473378D-02	0.0	0.0	0.0
20	0.0	-0.140055D-02	0.462069D-02	0.0	0.0	0.0
21	0.0	-0.118680D-02	0.430816D-02	0.0	0.0	0.0
22	0.0	-0.165519D-02	0.463099D-02	0.0	0.0	0.0
23	0.0	-0.156300D-02	0.464733D-02	0.0	0.0	0.0
24	0.0	-0.146681D-02	0.463099D-02	0.0	0.0	0.0
25	0.0	-0.156300D-02	0.462791D-02	0.0	0.0	0.0

1 S T R E S S C A L C U L A T I O N S F O R E L E M E N T G R O U P 1 (2/D CONTINUUM)
(PLANE STRESS)

STRESSES ARE MEASURED IN GLOBAL COORDINATE SYSTEM

ELEMENT NUMBER	OUTPUT LOCATION	STRESSYY	STRESSZZ	STRESSYZ	STRESSXX	SIGMA-P+	SIGMA-P-	ANGLE
1								
	1	0.30360-16	0.26130-01	0.53850-01	0.0	0.6847D-01	-0.4235D-01	51.82
	2	0.30370-16	0.26130-01	0.53850-01	0.0	0.6847D-01	-0.4235D-01	51.82
	3	0.29860-16	0.26130-01	0.53850-01	0.0	0.6847D-01	-0.4235D-01	51.82
	4	0.30280-16	0.26130-01	0.53850-01	0.0	0.6847D-01	-0.4235D-01	51.82
2								
	1	-0.5688D-01	0.3057D-01	-0.1355D-01	0.0	0.1320D-01	-0.5950D-01	-79.05
	2	0.1659D-01	0.2165D-01	-0.2189D-01	0.0	0.4131D-01	-0.2725D-02	-48.07
	3	-0.5982D-01	-0.9660D-02	0.1782D-01	0.0	-0.3412D-02	-0.6545D-01	72.47
	4	0.1399D-01	0.2013D-02	0.9482D-02	0.0	0.1922D-01	-0.3197D-02	28.88
3								
	1	-0.4830D-01	-0.1369D-01	-0.1329D-01	0.0	-0.9174D-02	-0.5281D-01	-71.23
	2	-0.1077D-01	-0.8061D-02	0.1253D-01	0.0	0.3191D-02	-0.2202D-01	-48.08
	3	-0.4803D-01	-0.1191D-01	0.2657D-02	0.0	-0.1171D-01	-0.4822D-01	85.82
	4	-0.1050D-01	-0.6276D-02	0.3416D-02	0.0	-0.4372D-02	-0.1240D-01	60.87
4								
	1	-0.3970D-01	-0.1052D-01	-0.7189D-02	0.0	-0.8846D-02	-0.4137D-01	-76.88
	2	-0.1514D-01	-0.6837D-02	-0.7788D-02	0.0	-0.2164D-02	-0.1982D-01	-59.03
	3	-0.3991D-01	-0.1193D-01	0.3247D-02	0.0	-0.1156D-01	-0.4028D-01	83.47
	4	-0.1535D-01	-0.8246D-02	0.2649D-02	0.0	-0.7367D-02	-0.1623D-01	71.65
5								
	1	-0.3991D-01	-0.1193D-01	-0.3247D-02	0.0	-0.1156D-01	-0.4028D-01	-83.47
	2	-0.1535D-01	-0.8246D-02	-0.2649D-02	0.0	-0.7367D-02	-0.1623D-01	-71.65
	3	-0.3970D-01	-0.1052D-01	0.7189D-02	0.0	-0.8846D-02	-0.4137D-01	76.88
	4	-0.1514D-01	-0.6837D-02	0.7788D-02	0.0	-0.2164D-02	-0.1982D-01	59.03
6								
	1	-0.4803D-01	-0.1191D-01	-0.2657D-02	0.0	-0.1171D-01	-0.4822D-01	-85.82
	2	-0.1050D-01	-0.6276D-02	-0.3416D-02	0.0	-0.4372D-02	-0.1240D-01	-60.87
	3	-0.4830D-01	-0.1369D-01	0.1329D-01	0.0	-0.9174D-02	-0.5281D-01	71.23
	4	-0.1077D-01	-0.8061D-02	0.1253D-01	0.0	0.3191D-02	-0.2202D-01	48.08

- 14 -