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      EQUIVALENCE (VECT,X)
      IF (JVS.NE.(JVS*3))STOP ERROR IN DIMENSION OF JV (SEE T.DIERING)
      IVAL=1
      DO 20 NL=1,NLUMP
        LND=LINDR(NL)
        IF (LND.EQ.NIL)GO TO 20
        KODE=LICOR(NL)
        IF (KODE.LE.NIL)GO TO 20
        IF (LND.NE.1)GO TO 10
        IF ((LND.GT.LIM)CALL LIMPQ(LBDF,IBDF,ISTAR,2)
          1F(KODE,LT,6)GO TO 2
          DO 1 J=1,3
            DO 1 J=1,3
              LBDF=LBDF+2
              SUM(I)=SUM(I)+LBDF*(TLUMP(J,NL)+BDF*(LBDF-1)*ULUMP(J,NL)
            GO TO 20
          GO TO 20
        CALL IELCAL(KODE,IBC)
        DO 503 I=1,3
          DO 503 J=1,3
            IBDF=IBDF+1
            IB=IBC(I)
            GO TO (11,12,11,12),IB
          11 SUM(I)=SUM(I)+LBDF*(LBDF)*ULUMP(J,NL)
          12 SUM(I)=SUM(I)+IBDF*(LBDF)*TLUMP(J,NL)
          503 CONTINUE
          GO TO 20
        10 IF (LND.EQ.3)GO TO 14
      LOAD UP VECTOR
      CALL LRVVEC(VECT(IVAL),ULUMP(1,NL),TLUMP(1,NL),KODE,IVAL)
      GO TO 20
    14 CALL LDECK(NL,1)
      NIMEL(NL)=NIMEL
      EQ 16 N=1,NIMEL
      KODE=KOD(N)
      CALL LRVVEC(VECT(IVAL),U(1,N),T(1,N),KODE,IVAL)
    16 CONTINUE
    20 CONTINUE
      RETURN
      END
*****
PARAMETER JO=13,JJ=89,JY=700
SUBROUTINE MODREN(MODUL)
  C
  COMMON X(3,JY),ALUMP(JJ),XLUMP(3,JJ),DLUMP(3,JJ),LKOD(JJ),LMOD(JJ),
    * IFACE(JJ),TLUMP(3,JJ),ULUMP(3,JJ),
    2 NDIR(3,3),NMULT(3,3),XSYM,YSYM,ZSYM,ISYM,NSYM(5),PRIMO(3,3),PRIMI(3,3),
    3 EMOU(5),FR(5),E,5,V,V1,V2,V3,V4,V5,V6,V7,V8,V9,CK,C1,C2NS,IBC(3),
    4 TRANS,TRANZ,TRANZ1,TRANZ2,TRMNL,TRMNL1,WSHT(11),GCOORD(3,11),
    5 NCODE,ALTER,NLUMP,NIMEL,NIMEL,NB,ISTAR,IBDF,LIM,NEL1F,NINDR,NMOD,
    6 ONE,NIL,TWO,THIRD,HALF,ZERO,11,12,13,P1,ALT(3,3,3),DELTA(3,3),OMEGA,
    7 TT(9),DU(9),JHEAD,IRITE,A,B,C,R,RSQ,ICHAN,ISSM(20),XCOM(3),
    8 DEL,AMIN,AMAX,CURV,KATT,KATE,ALFAT,ISMAP,R1,K2,R3,R4,K1,K2,K3
  SET ELASTIC MODULI AND RELATED CONSTANTS. (EINCMARKS)

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```

E=EMOD(MODUL)
V=F*(MODUL)
G=E/(1+NU)
CMV=UNE-V
CMTV=CMV*V
F=4
FV=F*V
FF=F*PI
V1=CMV/(F*(ONE+V))
V7=CMTV/CMV
V2=CMV/(F*CMV)
V3=3./CMV
V4=(G.-F*V)/(F*CMV)
C1=V/(1+MOD*F)
CM3=(CMV/(F*F))
V5=V3*V
V6=(ONE-F*V)/CMTV
V7=V3*V
V8=V3*5./3.
V9=V7/3
CD=CM*2.*G
KELUM
END

```

PARAMETER JU=13, JI=39, JY=700
SUBROUTINE MODSET(MODUL)

DATA

```

COMMON X(3,JV), ALUMP(JU), XLUMP(3,JU), DLUMC(3,JU), LCMO(JU), LCMO(JU),
* IFACE(JUO), TLUMP(3,JU), ULUMP(3,JU),
1. NUDIG(3,3), NBLIT(3,3), XSYM, YSYM, ZSYM, ISYM, NEYM(5), PRIMO(3,3), PRIM1(3,3),
2. EMO(5,3), PRISO, E, G, V, V1, V2, V3, V4, V5, V6, V7, V8, V9, CK, CD, CONCS, LJC(3),
3. IRANZ, IRANZ1, IRANZ2, IRANL, IRANL1, WATR(11), CGORD(3,11),
4. NUDENITER, NLUMF, NUDML, NUDML1, LIP, NCL1P, NUDMO,
5. ONE, NIL, TWO, THIRD, HALF, ZERO, 11, 12, 13, P1, ALT(3,3,3), DELT(4(3,3),3), CUECA,
6. IT(3), JUC(3), INEAD, INTE, A, B, C, R, RESD, ICHAD, ISM(20), XCOM(3),
7. DEL, ALMIN, AMPX, CLRW, KAT, RATE, ALGRT, ISMAP, R1, K2, K3, R4, K1, K2, K3
SET ELASTIC MODULI AND RELATED CONSTANTS.

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三

$$E = E_{1450}(\text{MOCK})$$

12-13-2000

VERMONT, 3

$$G = E / (1 + \mu_0 \cdot (I_{NE} + V))$$

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0141V-6INF-71JCEV

UNIT-V-ENGINE-1 WORK

F=4

$$F_V = F_{xy}$$

FILE 217

11-11-11

$$YI=ONE/(F*(ONE-V))$$
$$VF = \text{GIMTV} / \text{GIMV}$$

WILLIAM L. HAY

 $V_2 = (V_1 - 1) \cdot 10^4$

V3-31.704TV

$$V_9 = (3 - 1)V / (1 + 1) = 1 \text{ MV}$$

ALMA MATER

$$CH=V1/(1+UHF)$$

CONSUMABLE (HFG)

REFLECTION

RECEIVED
FBI

END

此乃一極端之論也

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1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	

Table 1. Mean values of the variables measured in the 1000 subjects

100

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C      GENERATE NODAL COORDINATES WHEN POSSIBLE
C
C      SUBROUTINE NODGEN(X,NODE,NB,IREAD,IRITE)
C      DIMENSION X(3,NB)
C      NIL=0
C      HALF=0.5
C      IREAD(IREAD) NSTAR,NSTOP
C
C      MODE = 1 FOR NODAL POINTS
C      MODE = 2 FOR MIDPOINT NODES
C      MODE = 3 FOR CIRCUMFODAL POINTS
C      MODE = 4 FOR LINES OF NODES
C      MODE = 5 FOR PLANES OF NODES (NOT YET OPERATIONAL)
C
C      TYPE "GROUPS OF NODAL COORDINATES ARE NOW READ IN "
5      HEAD(IREAD,NB),MODE
      IF(NB.NE.NIL.OR.MODE.LE.0.OR.MODE.GT.5)GO TO 60
      TYPE "WILL READ ",NB," LINES OF MIDL",MODE," DATA"
      GO TO (10,20,30,40,50),MODE
10      CONTINUE
      DO 1 N=1,NB
      READ(IREAD)NB,(X(J,NB),J=1,3)
      IF(NB.GT.MODE)MODE=NB
1      TYPE "PT NODE",NB
      GO TO 5
20      CONTINUE
      DO 11 N=1,NB
      READ(IREAD)NB,N1,N2
      TYPE "H HOLE",NB
      IF(NB.GT.MODE)MODE=NB
      DO 11 J=1,3
11      X(J,NB)=HALF*(X(J,N1)+X(J,N2))
      GO TO 5
40      CONTINUE
      DO 21 N1,N=1,NB
      READ(IREAD)NB,NB
      IF(NB.GT.MODE)MODE=NB
      NSEG=NB-NB
      IF(NSEG.LE.NIL)STOP LINE NODE ERROR
      NEM=NBEG-1
      NN=NB
      DO 21 N=1,NEM
      NN=NN+1
      TYPE "GEN LINE NODE ",NN
      IF(NN.GT.MODE)MODE=NN
      DO 22 J=1,3
22      X(J,NB)=X(J,NB)+(FLOAT(N)/FLOAT(NSEG))*(X(J,NB)-X(J,NN))
21      CONTINUE
      GO TO 5
C
C      PUT IN ARRAY GEN HERE LATER
C
C
50      CONTINUE
30      CONTINUE
      DO 41 N=1,NB
      READ(IREAD)NB,N1,N2,N3,N4
      IF(NN.GT.MODE)MODE=NB

```



```

SUBROUTINE MULT1(X,N,IMUL)
DIMENSION IX(1)
NN=N*IMUL
DO 1 I=1,NN
1 IX(I)=0
RETURN
END

*****

SUBROUTINE PRIN(Z,INTE)

CALCULATE PRINCIPAL STRESSES

DIMENSION COEF(4),U(3),Z(3),X(3),DV(3)
DIMENSION DIP(3),DIPD(3),DIR(3,3)
I=1
I2=2
I3=3
I00D=33
DO 1 I=1,3
DO 1 J=1,3
Z(I,J)=Z(I,I,J)
1 CONTINUE

CALCULATE CUBIC POLYNOMIAL

COEF(1)=-1
COEF(2)=0
DO 2 I=1,3
2 COEF(2)=COEF(2)+Z(I,1)
COEF(3)=-Z(1,1)*Z(2,2)+Z(3,3)-Z(Z,2)*Z(3,3)
COEF(3)=COEF(3)+Z(2,1)*Z(2,1)*Z(1,3)*Z(1,3)
COEF(4)=Z(1,1)*Z(2,2)*Z(3,3)+Z(Z,1,2)*Z(Z,3)*Z(1,3)
COEF(4)=COEF(4)-Z(1,1)*Z(2,3)*Z(2,2)+Z(1,3)*Z(3,3)*Z(1,2)**2

CALCULATE QUADRATIC POLYNOMIAL

DV(1)=3.*COEF(1)
DV(2)=2.*COEF(2)
DV(3)=COEF(3)

TAKE INITIAL GUESS.

X(1)=2000
X(2)=-2000
DO 4 I=1,3
1F(1 EQ 3)X(3)=COEF(2)-X(1)-X(2)
4 CONTINUE
DO 5 N=1,800
AT=X(1)
TOP=COEF(1)*AT**3+COEF(2)*AT*AT+COEF(3)*AT+COEF(4)
EOT=DV(1)*AT*AT+DV(2)*AT+DV(3)
IF(EOT.NE 0.) GO TO 7
X(1)=X(1)*1.01
WRITE(10,102)
102 FORMAT(' DENOM = 0')
GO TO 6

```

```

7 CONTINUE
  RAT=TOP/LEOT
  X(1)=X(1)-RAT
  TOL=ABS(COEF(2))*0.00001
  IF(ABS(RAT).LT.TOL) GO TO 8
5 CONTINUE
  WRITE(16,14) PRINCIPAL STRESS ERROR
161 FORMAT(1X,14" PRINCIPAL STRESS ERROR")
8 CONTINUE
4 CONTINUE
  SUM=0
  DO 9 I=1,3
    SUM=SUM+X(I)
9 CONTINUE
  WRITE(10,105) SUM, COEF(2)
105 FORMAT(" FINAL TRACE =",F12.4, " INITIAL TRACE WAS",F12.4,/)
  TO 11 N=1,3
  A1=Z(1,1)-X(N)
  A2=Z(1,2)
  A4=Z(2,2)-X(N)
  A5=Z(1,3)
  A6=Z(2,3)
  A3=X(N)-Z(3,3)
  DET1=ABS(A1*A4-A2*A3)
  DET2=ABS(A1*A6-A2*A5)
  DET3=ABS(A2*A6-A3*A5)
  DET=AMAX1(DET1,DET2,DET3)
  IT=3
  IF(DET.EQ.DET1) IT=1
  IF(DET.EQ.DET2) IT=2
  IF(A2.EQ.0.) IT=2
  IF(A5.EQ.0.) IT=1
  IF(IT.NE.1) GO TO 51
  A1=A1-A6*COEF(2)+A2*A3*COEF(2)-A5*A3
  COEF(2)=(A1*A5-A5*A3)/(A2*A2-A1*A4)
  COEF(1)=(A3-A4*COEF(2))/A2
51 CONTINUE
  IF(IT.NE.2) GO TO 52
  A1=A3-A6*COEF(2)+A2*A5*COEF(2)-A5*A5
  COEF(2)=(A1*A3-A3*A5)/(A2*A5-A1*A6)
  COEF(1)=(A3-A6*COEF(2))/A5
52 CONTINUE
  IF(IT.NE.3) GO TO 53
  A2=A3-A6*COEF(2)+A4*A5*COEF(2)-A6*A5
  COEF(2)=(A2*A3-A6*A5)/(A4*A5-A2*A6)
  COEF(1)=(A3-A6*COEF(2))/A5
53 CONTINUE
  NR=SIGN(1.+COEF(1)*COEF(1)+COEF(2)*COEF(2))
  COEF(1)=COEF(1)/NR
  COEF(2)=COEF(2)/NR
  COEF(3)=-1./NR
  WRITE(10,134)X(1),I=1,3, NR, IT, DET, TOL
134 FORMAT(4F10.3,14,ZF10.4)
  DO 11 K=1,3
    DIR(N,K)=COEF(K)
11 CONTINUE
  PI=3.14159
  DO 17 I=1,3
    DIPD(I)=ATAN2(DIR(1,2),DIR(1,1))*180./PI
    DIP(I)=ATAN(DIR(1,3)/SQRT(1.-DIR(1,3)**2))*180./PI

```

```

17 CONTINUE
WRITE BINARY (3) X, DIP, DIPD
WRITE(IRITE,201)I,X(2),DIP(2),DIPD(2),I2,X(3),DIP(3),DIPD(3)
1 I2,X(1),DIP(1),DIPD(1)
C WRITE(IRITE,201)(X(1),DIP(1),DIPD(1),I=1,3)
C 201 FORMAT(/" MAX TENSILE ="F10.3" DIP ="F6.1" DIP DIR ="F6.1"/
1 " MIN TENSILE ="F10.3" DIP ="F6.1" DIP DIR ="F6.1"/
2 " INTERMEDIATE ="F10.3" DIP ="F6.1" DIP DIR ="F6.1"/
201 FORMAT(1X,"SIG="I" "F7.2" DIP ="F5.0" DIR ="F5.0,3X))
RETURN
END

*****
C OPEN THE MAJOR IEM STORAGE FILES
C
SUBROUTINE SETFILE
CALL OPEN(1,"BEMDATA",1,IER)
IF(IER.NE.1)TYPE "BEMDATA OPEN ER",IER
CALL OPEN(2,"LUMSTOR.BE",3,IER)
IF(IER.NE.1)TYPE "LUMSTOR OPEN ER",IER
CALL OPEN(3,"VECT.BE",3,IER)
IF(IER.NE.1)TYPE "VECT OP ER",IER
CALL OPEN(4,"DIAGEL.BE",3,IER)
IF(IER.NE.1)TYPE "DIAGEL OP ER",IER
CALL OPEN(5,"COSINE.BE",3,IER)
IF(IER.NE.1)TYPE "COSINE OPEN ERROR",IER
RETURN
END

*****
C
PARAMETER JQ=13,JL=29,JV=700,JVS=2100
COMMON X(3,JY),ALUMP(JU),XLUMP(3,JU),DLUMC(3,JU),LKOD(JU),LMOD(JU),
* IFACE(JU),TLUMP(3,JU),ULUMP(3,JU),
2 NDIR(8,3),NMULT(3,3),XSYM,YSYM,ZSYM,ISYM,NSYM(5),PRMO(3,3),PRMI(3,3),
3 EMDU(5),FN(5),E,G,V,V1,V2,V3,V4,V5,V6,V7,V8,V9,CK,CD,CONS,IBC(3),
4 TRANS,TRANZ,TRANZ1,TRANZ2,TRANZ,TRANL,WSH(11),COGRU(3,11),
5 MODE,NITER,NLUMP,NIMEL,NIDIM,ME,ISTAR,IBUF,LIM,NSLP,NUMOR,NMOD,
6 ONE,NIL,TWC,THIRD,HALF,ZERO,11,12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27,28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43,44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59,60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75,76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91,92,93,94,95,96,97,98,99,100,101,102,103,104,105,106,107,108,109,110,111,112,113,114,115,116,117,118,119,120,121,122,123,124,125,126,127,128,129,130,131,132,133,134,135,136,137,138,139,140,141,142,143,144,145,146,147,148,149,150,151,152,153,154,155,156,157,158,159,160,161,162,163,164,165,166,167,168,169,170,171,172,173,174,175,176,177,178,179,180,181,182,183,184,185,186,187,188,189,190,191,192,193,194,195,196,197,198,199,200,201,202,203,204,205,206,207,208,209,210,211,212,213,214,215,216,217,218,219,220,221,222,223,224,225,226,227,228,229,230,231,232,233,234,235,236,237,238,239,240,241,242,243,244,245,246,247,248,249,250,251,252,253,254,255,256,257,258,259,260,261,262,263,264,265,266,267,268,269,270,271,272,273,274,275,276,277,278,279,280,281,282,283,284,285,286,287,288,289,290,291,292,293,294,295,296,297,298,299,300,301,302,303,304,305,306,307,308,309,310,311,312,313,314,315,316,317,318,319,320,321,322,323,324,325,326,327,328,329,330,331,332,333,334,335,336,337,338,339,340,341,342,343,344,345,346,347,348,349,350,351,352,353,354,355,356,357,358,359,360,361,362,363,364,365,366,367,368,369,370,371,372,373,374,375,376,377,378,379,380,381,382,383,384,385,386,387,388,389,390,391,392,393,394,395,396,397,398,399,400,401,402,403,404,405,406,407,408,409,410,411,412,413,414,415,416,417,418,419,420,421,422,423,424,425,426,427,428,429,430,431,432,433,434,435,436,437,438,439,440,441,442,443,444,445,446,447,448,449,450,451,452,453,454,455,456,457,458,459,460,461,462,463,464,465,466,467,468,469,470,471,472,473,474,475,476,477,478,479,480,481,482,483,484,485,486,487,488,489,490,491,492,493,494,495,496,497,498,499,500,501,502,503,504,505,506,507,508,509,510,511,512,513,514,515,516,517,518,519,520,521,522,523,524,525,526,527,528,529,530,531,532,533,534,535,536,537,538,539,540,541,542,543,544,545,546,547,548,549,550,551,552,553,554,555,556,557,558,559,560,561,562,563,564,565,566,567,568,569,570,571,572,573,574,575,576,577,578,579,580,581,582,583,584,585,586,587,588,589,590,591,592,593,594,595,596,597,598,599,600,601,602,603,604,605,606,607,608,609,610,611,612,613,614,615,616,617,618,619,620,621,622,623,624,625,626,627,628,629,630,631,632,633,634,635,636,637,638,639,640,641,642,643,644,645,646,647,648,649,650,651,652,653,654,655,656,657,658,659,660,661,662,663,664,665,666,667,668,669,670,671,672,673,674,675,676,677,678,679,680,681,682,683,684,685,686,687,688,689,690,691,692,693,694,695,696,697,698,699,700,701,702,703,704,705,706,707,708,709,710,711,712,713,714,715,716,717,718,719,720,721,722,723,724,725,726,727,728,729,730,731,732,733,734,735,736,737,738,739,740,741,742,743,744,745,746,747,748,749,750,751,752,753,754,755,756,757,758,759,760,761,762,763,764,765,766,767,768,769,770,771,772,773,774,775,776,777,778,779,780,781,782,783,784,785,786,787,788,789,790,791,792,793,794,795,796,797,798,799,800,801,802,803,804,805,806,807,808,809,810,811,812,813,814,815,816,817,818,819,820,821,822,823,824,825,826,827,828,829,830,831,832,833,834,835,836,837,838,839,840,841,842,843,844,845,846,847,848,849,850,851,852,853,854,855,856,857,858,859,860,861,862,863,864,865,866,867,868,869,870,871,872,873,874,875,876,877,878,879,880,881,882,883,884,885,886,887,888,889,890,891,892,893,894,895,896,897,898,899,900,901,902,903,904,905,906,907,908,909,910,911,912,913,914,915,916,917,918,919,920,921,922,923,924,925,926,927,928,929,930,931,932,933,934,935,936,937,938,939,940,941,942,943,944,945,946,947,948,949,950,951,952,953,954,955,956,957,958,959,960,961,962,963,964,965,966,967,968,969,970,971,972,973,974,975,976,977,978,979,980,981,982,983,984,985,986,987,988,989,990,991,992,993,994,995,996,997,998,999,1000,1001,1002,1003,1004,1005,1006,1007,1008,1009,1010,1011,1012,1013,1014,1015,1016,1017,1018,1019,1020,1021,1022,1023,1024,1025,1026,1027,1028,1029,1030,1031,1032,1033,1034,1035,1036,1037,1038,1039,1040,1041,1042,1043,1044,1045,1046,1047,1048,1049,1050,1051,1052,1053,1054,1055,1056,1057,1058,1059,1060,1061,1062,1063,1064,1065,1066,1067,1068,1069,1070,1071,1072,1073,1074,1075,1076,1077,1078,1079,1080,1081,1082,1083,1084,1085,1086,1087,1088,1089,1090,1091,1092,1093,1094,1095,1096,1097,1098,1099,1100,1101,1102,1103,1104,1105,1106,1107,1108,1109,1110,1111,1112,1113,1114,1115,1116,1117,1118,1119,1120,1121,1122,1123,1124,1125,1126,1127,1128,1129,1130,1131,1132,1133,1134,1135,1136,1137,1138,1139,1140,1141,1142,1143,1144,1145,1146,1147,1148,1149,1150,1151,1152,1153,1154,1155,1156,1157,1158,1159,1160,1161,1162,1163,1164,1165,1166,1167,1168,1169,1170,1171,1172,1173,1174,1175,1176,1177,1178,1179,1180,1181,1182,1183,1184,1185,1186,1187,1188,1189,1190,1191,1192,1193,1194,1195,1196,1197,1198,1199,1200,1201,1202,1203,1204,1205,1206,1207,1208,1209,1210,1211,1212,1213,1214,1215,1216,1217,1218,1219,1220,1221,1222,1223,1224,1225,1226,1227,1228,1229,1230,1231,1232,1233,1234,1235,1236,1237,1238,1239,1240,1241,1242,1243,1244,1245,1246,1247,1248,1249,1250,1251,1252,1253,1254,1255,1256,1257,1258,1259,1260,1261,1262,1263,1264,1265,1266,1267,1268,1269,1270,1271,1272,1273,1274,1275,1276,1277,1278,1279,1280,1281,1282,1283,1284,1285,1286,1287,1288,1289,1290,1291,1292,1293,1294,1295,1296,1297,1298,1299,1300,1301,1302,1303,1304,1305,1306,1307,1308,1309,1310,1311,1312,1313,1314,1315,1316,1317,1318,1319,1320,1321,1322,1323,1324,1325,1326,1327,1328,1329,1330,1331,1332,1333,1334,1335,1336,1337,1338,1339,1340,1341,1342,1343,1344,1345,1346,1347,1348,1349,1350,1351,1352,1353,1354,1355,1356,1357,1358,1359,1360,1361,1362,1363,1364,1365,1366,1367,1368,1369,1370,1371,1372,1373,1374,1375,1376,1377,1378,1379,1380,1381,1382,1383,1384,1385,1386,1387,1388,1389,1390,1391,1392,1393,1394,1395,1396,1397,1398,1399,1400,1401,1402,1403,1404,1405,1406,1407,1408,1409,1410,1411,1412,1413,1414,1415,1416,1417,1418,1419,1420,1421,1422,1423,1424,1425,1426,1427,1428,1429,1430,1431,1432,1433,1434,1435,1436,1437,1438,1439,1440,1441,1442,1443,1444,1445,1446,1447,1448,1449,1450,1451,1452,1453,1454,1455,1456,1457,1458,1459,1460,1461,1462,1463,1464,1465,1466,1467,1468,1469,1470,1471,1472,1473,1474,1475,1476,1477,1478,1479,1480,1481,1482,1483,1484,1485,1486,1487,1488,1489,1490,1491,1492,1493,1494,1495,1496,1497,1498,1499,1500,1501,1502,1503,1504,1505,1506,1507,1508,1509,1510,1511,1512,1513,1514,1515,1516,1517,1518,1519,1520,1521,1522,1523,1524,1525,1526,1527,1528,1529,1530,1531,1532,1533,1534,1535,1536,1537,1538,1539,1540,1541,1542,1543,1544,1545,1546,1547,1548,1549,1550,1551,1552,1553,1554,1555,1556,1557,1558,1559,1560,1561,1562,1563,1564,1565,1566,1567,1568,1569,1570,1571,1572,1573,1574,1575,1576,1577,1578,1579,1580,1581,1582,1583,1584,1585,1586,1587,1588,1589,1590,1591,1592,1593,1594,1595,1596,1597,1598,1599,1600,1601,1602,1603,1604,1605,1606,1607,1608,1609,1610,1611,1612,1613,1614,1615,1616,1617,1618,1619,1620,1621,1622,1623,1624,1625,1626,1627,1628,1629,1630,1631,1632,1633,1634,1635,1636,1637,1638,1639,1640,1641,1642,1643,1644,1645,1646,1647,1648,1649,1650,1651,1652,1653,1654,1655,1656,1657,1658,1659,1660,1661,1662,1663,1664,1665,1666,1667,1668,1669,1670,1671,1672,1673,1674,1675,1676,1677,1678,1679,1680,1681,1682,1683,1684,1685,1686,1687,1688,1689,1690,1691,1692,1693,1694,1695,1696,1697,1698,1699,1700,1701,1702,1703,1704,1705,1706,1707,1708,1709,1710,1711,1712,1713,1714,1715,1716,1717,1718,1719,1720,1721,1722,1723,1724,1725,1726,1727,1728,1729,1730,1731,1732,1733,1734,1735,1736,1737,1738,1739,1740,1741,1742,1743,1744,1745,1746,1747,1748,1749,1750,1751,1752,1753,1754,1755,1756,1757,1758,1759,1760,1761,1762,1763,1764,1765,1766,1767,1768,1769,1770,1771,1772,1773,1774,1775,1776,1777,1778,1779,1780,1781,1782,1783,1784,1785,1786,1787,1788,1789,1790,1791,1792,1793,1794,1795,1796,1797,1798,1799,1800,1801,1802,1803,1804,1805,1806,1807,1808,1809,1810,1811,1812,1813,1814,1815,1816,1817,1818,1819,1820,1821,1822,1823,1824,1825,1826,1827,1828,1829,1830,1831,1832,1833,1834,1835,1836,1837,1838,1839,1840,1841,1842,1843,1844,1845,1846,1847,1848,1849,1850,1851,1852,1853,1854,1855,1856,1857,1858,1859,1860,1861,1862,1863,1864,1865,1866,1867,1868,1869,1870,1871,1872,1873,1874,1875,1876,1877,1878,1879,1880,1881,1882,1883,1884,1885,1886,1887,1888,1889,1890,1891,1892,1893,1894,1895,1896,1897,1898,1899,1900,1901,1902,1903,1904,1905,1906,1907,1908,1909,1910,1911,1912,1913,1914,1915,1916,1917,1918,1919,1920,1921,1922,1923,1924,1925,1926,1927,1928,1929,1930,1931,1932,1933,1934,1935,1936,1937,1938,1939,1940,1941,1942,1943,1944,1945,1946,1947,1948,1949,1950,1951,1952,1953,1954,1955,1956,1957,1958,1959,1960,1961,1962,1963,1964,1965,1966,1967,1968,1969,1970,1971,1972,1973,1974,1975,1976,1977,1978,1979,1980,1981,1982,1983,1984,1985,1986,1987,1988,1989,1990,1991,1992,1993,1994,1995,1996,1997,1998,1999,2000,2001,2002,2003,2004,2005,2006,2007,2008,2009,2010,2011,2012,2013,2014,2015,2016,2017,2018,2019,2020,2021,2022,2023,2024,2025,2026,2027,2028,2029,2030,2031,2032,2033,2034,2035,2036,2037,2038,2039,2040,2041,2042,2043,2044,2045,2046,2047,2048,2049,2050,2051,2052,2053,2054,2055,2056,2057,2058,2059,2060,2061,2062,2063,2064,2065,2066,2067,2068,2069,2070,2071,2072,2073,2074,2075,2076,2077,2078,2079,2080,2081,2082,2083,2084,2085,2086,2087,2088,2089,2090,2091,2092,2093,2094,2095,2096,2097,2098,2099,2100,2101,2102,2103,2104,2105,2106,2107,2108,2109,2110,2111,2112,2113,2114,2115,2116,2117,2118,2119,2120,2121,2122,2123,2124,2125,2126,2127,2128,2129,2130,2131,2132,2133,2134,2135,2136,2137,2138,2139,2140,2141,2142,2143,2144,2145,2146,2147,2148,2149,2150,2151,2152,2153,2154,2155,2156,2157,2158,2159,2160,2161,2162,2163,2164,2165,2166,2167,2168,2169,2170,2171,2172,2173,2174,2175,2176,2177,2178,2179,2180,2181,2182,2183,2184,2185,2186,2187,2188,2189,2190,2191,2192,2193,2194,2195,2196,2197,2198,2199,2200,2201,2202,2203,2204,2205,2206,2207,2208,2209,2210,2211,2212,2213,2214,2215,2216,2217,2218,2219,2220,2221,2222,2223,2224,2225,2226,2227,2228,2229,2230,2231,2232,2233,2234,2235,2236,2237,2238,2239,2240,2241,2242,2243,2244,2245,2246,2247,2248,2249,2250,2251,2252,2253,2254,2255,2256,2257,2258,2259,2260,2261,2262,2263,2264,2265,2266,2267,2268,2269,2270,2271,2272,2273,2274,2275,2276,2277,2278,2279,2280,2281,2282,2283,2284,2285,2286,2287,2288,2289,2290,2291,2292,2293,2294,2295,2296,2297,2298,2299,2300,2301,2302,2303,2304,2305,2306,2307,2308,2309,2310,2311,2312,2313,2314,2315,2316,2317,2318,2319,2320,2321,2322,2323,2324,2325,2326,2327,2328,2329,2330,2331,2332,2333,2334,2335,2336,2337,2338,2339,2340,2341,2342,2343,2344,2345,2346,2347,2348,2349,2350,2351,2352,2353,2354,2355,2356,2357,2358,2359,2360,2361,2362,2363,2364,2365,2366,2367,2368,2369,2370,2371,2372,2373,2374,2375,2376,2377,2378,2379,2380,2381,2382,2383,2384,2385,2386,2387,2388,2389,2390,2391,2392,2393,2394,2395,2396,2397,2398,2399,2400,2401,2402,2403,2404,2405,2406,2407,2408,2409,2410,2411,2412,2413,2414,2415,2416,2417,2418,2419,2420,2421,2422,2423,2424,2425,2426,2427,2428,2429,2430,2431,2432,2433,2434,2435,2436,2437,2438,2439,2440,2441,2442,2443,2444,2445,2446,2447,2448,2449,2450,2451,2452,2453,2454,2455,2456,2457,2458,2459,2460,2461,2462,2463,2464,2465,2466,2467,2468,2469,2470,2471,2472,2473,2474,2475,2476,2477,2478,2479,2480,2481,2482,2483,2484,2485,2486,2487,2488,2489,2490,2491,2492,2493,2494,2495,2496,2497,2498,2499,2500,2501,2502,2503,2504,2505,2506,2507,2508,2509,2510,2511,2512,2513,2514,2515,2516,2517,2518,2519,2520,2521,2522,2523,2524,2525,2526,2527,2528,2529,2530,2531,2532,2533,2534,2535,2536,2537,2538,2539,2540,2541,2542,2543,2544,2545,2546,2547,2548,2549,2550,2551,2552,2553,2554,2555,2556,2557,25
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CALL KRONQZ,IRITE,ION,TINC)
CALL SETFILE
CALL OPEN(6,"XSTOR.DE",3,IER)
IF(IER.NE.1)TYPE="XSTOR OF ER",IER
WRITE BINARY (6) X
RENAME 6

TENS=ZERO
IF(ISSM(14).EQ.11)TENS=9999.
NIL=0
DO 100 NIM=1,NITER
  NIL=0
  IF(NIM.EQ.2)DEL=DEL*AMAX
  AMAX=ZERO
  IERR=NIL
  ISTAR=ICHAN
  JOUT=JL
  IF(NIM.EQ.1)JOUT=1
  CALL DIMPO(1BUF,EUF,ISTAR,2)

B. E. SECTION

DO 511 MOD1=1,NMOD
  DO 511 ML=1,NLUMP
    TEMPORARY
    TYPE "ML",ML
    IF(LMOD(ML).NE.MOD1)GO TO 511
    KOL=LICOL(ML)
    IF(KOL.LE.NIL)GO TO 511
    CALL LDBLK(ML,1,2)
    CALL NULL(SUML,3)

    LUMP=LUMP
    CALL LUMSUM(SUML)
    TYPE ML,SUML

CALCULATE DETAILED SUMS.

DO 1 N=1,NIMELR
  READ BINARY (4) UDIAG
  READ BINARY (3) SUM
  DO 33 I=1,3
    SUM(I)=SUML(I)+SUM(I)
    CALL SUMELT(SUM,ML)
    TYPE "ELT",M,SUM
    IFF=IFACE(ML)
    IF(IFF.NE.NIL)CALL LDBLK(IFF,1,1)
    KODER=KODER(M)
    CALL IDLOAN(KODER,IND)
    DO 14 I=1,3
      IER=IER(I)
      IF(IER.NE.1)GO TO 504
      BIFF=OMEGASUM(I)/AMAX
      UR(I,M)=UR(I,M)+BIFF
      IF(KODER.NE.8)GO TO 505
      U(I,M)=UR(I,M)
    GO TO 505
504 IF(IER.NE.2)GO TO 505
      BIFF=OMEGASUM(1)/UDIAG(1)

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      TR(I,M)=TR(I,M)-DIF
      IF(KODER.NE.7)GO TO 505
      T(I,M)=-TR(I,M)
505 CONTINUE
      AFSIN=ABS(SIN(I))
      IF(ABS(SUM GT. AMAX)AMAX=ABS(SUM
      IF(DEL GE. ABS(SUM)GO TO 10
      IF(IEB GT. 2)GO TO 10
      JOUT=JOUT+1
      IF(JOUT LT. 10)WRITE(10,20) UR(I,M),TR(I,M),ABS(SUM,I,M
20 FORMAT(1X,3F16.5,1X),214)
10 CONTINUE
14 CONTINUE
      IF(NUM LT. NSLIP)GO TO 1
      IF(KODER LT. 7)GO TO 1
      READ EIBARY (8) LCO,M
      KODE 7 = INTACT FAULT (TRACTIONS SPECIFIED)
      KODE 8 = INTACT FAULT (DISPLACEMENTS SPECIFIED)
      KODE 9 = MINED WITH COMPLETE CLOSURE RESTRICTION
      KODE 11 = SHEAR FAILED INTERFACE
      KODE 10 = TENSILE FAILED INTERFACE
      LOAD TDIAG AND UDIAG
      DO 57 I=1,3
      UDIAG(I)=-SUM(I)*OMEGA/UDIAG(I)
57 TDIAG(I)=SUM(I)*OMEGA/THALF
      CALCULATE TRAC, DIS AND PRS
      DO 41 I=1,3
      PRS(I)=ZERO
      TRAC(I)=ZERO
      DIS(I)=ZERO
      SUMI=ZERO
      DO 53 J=1,3
      LCI=DCO(I,J)
      SUMU=SUMU+LCI*UDIAG(J)
      SUMI=SUMI+LCI*TDIAG(J)
      PRS(I)=PRS(I)+DCI*M(J)
      TRAC(I)=TRAC(I)+LCI*TR(J,M)
53 DIS(I)=DIS(I)+LCI*UR(J,M)-U(J,M)
      CHANGE IBC 3 AND 4 UNKNOWNNS.
      IEB=IBC(I)
      IF(IEB.EQ.3)DIS(I)=DIS(I)+SUMI
      IF(IEB.EQ.4)TRAC(I)=TRAC(I)+SUMU
      PRS(I)=TRAC(I)-PRS(I)
41 CONTINUE
      CHECK FOR FAILURE
      IF(KODER.EQ.7)GO TO 42
      IF(KODER.EQ.10)GO TO 47
      SHSTR=CMF-FHI*RES(3)
      SHEAR=SQRT(RES(1)**2+RES(2)**2)

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      IF(KODER.EQ.11)GO TO 43
      IF(SHEAR.GT.SMSIR)GO TO 43
      GO TO 45
43 IF(RES(3).GT.TENS)GO TO 44
      SHEAR FAILURE
      DIS(3)=ZERO
      TRAC(1)=(R*(1)*SHSTR/SHEAR)+PRS(1)
      TRAC(2)=(RES(2)*SHSTR/SHEAR)+PRS(2)
      KODER=11
      TYPE="S",M
      GO TO 45
      TENSILE FAILURE
44 CONTINUE
      KODER=10
      CALL LSLT(TRAC,PRS)
      TYPE="T",M
      GO TO 45
      TOTAL CLOSURE ELEMENTS
42 CONTINUE
      IF(DIS(3).LT.THICK)GO TO 45
      DIS(3)=THICK
      GO TO 45
47 CONTINUE
      CHECK FOR CLOSURE OF AN OPEN FAULT ELEMENT.
      IF(DIS(3).LT.ZERO)GO TO 45
      KODER=11??
      TYPE="CLOS-P",M
      DIS(3)=ZERO
      IF(RES(3).GT.ZERO)GO TO 45
      TRAC(3)=PRS(3)
45 CONTINUE
      BACK TRANSFORM TRAC AND DIS
      DO 50 J=1,3
      TR(M,J)=ZERO
      LINEM=ZERO
      DO 51 I=1,3
      ENEM=ONE+DCC(I,J)*DIS(I)
51 TR(M,J)=TR(M,J)+DCC(I,J)*TRAC(I)
      T(J,IFF)=-TR(M,J)
      UR(M,J)=U(J,IFF)+LINEM
50 CONTINUE
      N4=INDEX(M,4)
      IF(N4.NE.NIL)KODER=-KODER
      KODER(M)=KODER
      KOU(1FF)=KODER
1 CONTINUE
      CALL TUL(TULUMP(1,ML),TLUMP(1,ML),ALUMP(ML))
      CALL LBLK(ML,Z,Z)
      IF(1FF.NE.NIL)CALL LBLK(1FF,Z,1)
      IEM=IEM-2

```

```

      IF (NUM EQ 1) WRITE (IRITE, 666) ISTAR, (RUE(1), 1=1EM, 1RUE), (L1NDR(1)
      1, 1=1, NLUMP)
      666 FORMAT (1X, IS, 2X, 3F8.5, 2X, 9511)
      511 CONTINUE
      REMIND 2
      REMIND 3
      REMIND 4
      REMIND 5
      TYPE "DEL = ", DEL
      IF (NUM EQ 1) WRITE (IRITE, 449) ISTAR
      WRITE (IRITE, 448) NUM, JOUT, AMAX
      IF (JOUT EQ NIL) GO TO 101
      448 FORMAT (1X, 14" 113", 13" ELTS OUT", " MAX ER =", F10.5)
      449 FORMAT (7" LAST BLOCK ACCESSED =", 14, /)
      100 CONTINUE
      NUM=NUM+1
      101 CONTINUE
      IF (JOUT NE 0) WRITE (IRITE, 121) NUM, JOUT, AMAX
      121 FORMAT (" NO CONVERGENCE AFTER 14" ITERATIONS" 13" ELTS OUT"
      14" MAX DIFF =", F16.9)
      READ (INARC, 6) X
      CALL FROUND(S, IRITE, TON, TINC)
      ISUM=1
      CALL BACK
      STOP
      END
*****
      PARAMETER JU=13, JU=82, JV=700, JVS=2100
      SUBROUTINE SUPMELT(SUM, ML)
      JACD
      COMMON X(3, JV), ALUMP(JU), XLUMP(3, JU), DLUMP(3, JU), LKOB(JU), LKOB(JU),
      *
      1 IFACE(JU), TLUMP(3, JU), DLUMP(3, JU),
      2 NDI, 8), NMLT(3, 8), XSYM, YSYM, ZSYM, ISYM, NSYM(S), PRIMO(3, 3), PRIMT(3, 3),
      3 EM, PR(5), E, G, V, V1, V2, V3, V4, V5, V6, V7, V8, V9, C1, C2, CONS, JIC(3),
      4 TR, FRANTZ, TRANTZ, TRANTZ, TRANTZ, TRANTZ, TRANTZ, TRANTZ, TRANTZ, TRANTZ, TRANTZ,
      5 NODE, NITE, NLUMP, NDMEL, NDMEL, NDMEL, NDMEL, NDMEL, NDMEL, NDMEL, NDMEL, NDMEL,
      6 ONE, NIL, TWO, THREE, HALF, ZERO, 11, 12, 13, P1, ALT(3, 3), DELTA(3, 3), GREGEA,
      7 TT(3), JUT(3), ILEAD, IRITE, A, B, C, R, NSQ, ICHN, ISSU(20), XCOM(3),
      8 DEL, ARMIN, AIGMAX, CURV, RATT, RATT, ARKAT, ISMAP, RL, RZ, R3, R4, KL, KZ, K3
      COMMON /EM/ INDEX(4, JU), DEEL(3, JU), XCEL(3, JU), T(3, JU), U(3, JU), AREA(JU)
      E, IELT(JU), KOB(JU), LIND(JU), NDMEL, COH, PHI, THIK
      COMMON /RE/ INDEXT(4, JU), IELTR(3, JU), XCELTR(3, JU), TR(3, JU), UR(3, JU)
      R, AREAR(JU), IELTR(JU), KORR(JU), LINDR(JU), NDMELR, COHR, PHIR, THIKR
      COMMON /BU/ BUF(1152), NUML(JU)
      EVALUATE INFLUENCE OF NEARBY ELTS (FOR SOLUTION)
      DIMENSION SUM(1), DIS(1), TRAC(1), VECT(JV3)
      EQUIVALENCE (VECT, X)
      IVBL=1
      DO 3 NL=1, NLUMP
      KODE=LKOB(NL)
      IF (KODE LE NIL) GO TO 3
      LND=CLIND(NL)

```

```

IF(LND.LE.1)GO TO 3
IF(LND.EQ.3)GO TO 4
IF(IIBF.GT.LIMCALL)UMPO(IIBF,BUF,ISTAR,Z)
CALL SUBSOL(SUM,VECT(IVAL),IIBF,KODE,IIBF,IVAL)
GO TO 3
4 NIMEL=NIML(NL)
DO 6 N=1,NIMEL
IF(IIBF.GT.LIMCALL)UMPO(IIBF,BUF,ISTAR,Z)
IF(NL.NE.NL)GO TO 10
ISTAR=IVAL
CALL LOUVEC(VECT(ISTAR),UR(1,N),TR(1,N),KODE,ISTAR)
10 CALL SUBSOL(SUM,VECT(IVAL),IIBF,KODE,IIBF,IVAL)
5 CONTINUE
3 CONTINUE
RETURN
END

```

SUBSOL MATHESES LOUVEC

```

SUBROUTINE SUBSOL(SUM,VECT,BUF,KODE,IIBF,IVAL)
DIMENSION SUM(1),VECT(1),IIBF(1)
IF(KODE.GT.5)GO TO 5
DO 1 I=1,3
DO 1 J=1,3
IIBF=IIBF+1
1 SUM(I)=SUM(I)+IIBF(IIBF)*VECT(J)
IVAL=IVAL+3
RETURN
5 DO 2 I=1,3
DO 2 J=1,3
IIBF=IIBF+2
2 SUM(I)=SUM(I)+IIBF(IIBF-1)*VECT(J)+IIBF(IIBF)*VECT(J+3)
IVAL=IVAL+6
RETURN
END

```

PARAMETER JU=1, JV=3, JY=700, JY3=2100

SUMUP IS EQUIVALENT TO LOAD

SUBROUTINE SUMUP(SUM,DIS,TRAC,KODE)
JACD

```

COMMON X(3,JY),ALUMP(JU),XLUMP(JV),DLUMP(JY),LKOD(JU),LMOD(JV),
* IFAC(JU),IIBF(JV),IIBF(JY),IIBF(JY),
2 NDIR(3,3),NIML(3,3),XSYM,YSYM,ZSYM,ISYM,NSYM(3),PRIMO(3,3),PRIM(3,3),
3 ENDO(3),FR(3),E,B,V,V1,V2,V3,V4,V5,V6,V7,V8,V9,C6,C7,C8,C9,IBC(3),
4 TRAMS,TRANZ,TRANZ1,TRANZ2,TRANL,TRANL1,TRANL2,TRANL3,TRANL4,
5 NODE,NITER,ALUMP,NIMEL,NIML,NID,ISTAR,IIBF,LIM,NELIP,NUMOR,NIMD,
6 ONE,NIL,TWO,THIRD,HALF,ZERO,1,12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27,28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43,44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59,60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75,76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91,92,93,94,95,96,97,98,99,100,101,102,103,104,105,106,107,108,109,110,111,112,113,114,115,116,117,118,119,120,121,122,123,124,125,126,127,128,129,130,131,132,133,134,135,136,137,138,139,140,141,142,143,144,145,146,147,148,149,150,151,152,153,154,155,156,157,158,159,160,161,162,163,164,165,166,167,168,169,170,171,172,173,174,175,176,177,178,179,180,181,182,183,184,185,186,187,188,189,190,191,192,193,194,195,196,197,198,199,200,201,202,203,204,205,206,207,208,209,210,211,212,213,214,215,216,217,218,219,220,221,222,223,224,225,226,227,228,229,230,231,232,233,234,235,236,237,238,239,240,241,242,243,244,245,246,247,248,249,250,251,252,253,254,255,256,257,258,259,260,261,262,263,264,265,266,267,268,269,270,271,272,273,274,275,276,277,278,279,280,281,282,283,284,285,286,287,288,289,290,291,292,293,294,295,296,297,298,299,300,301,302,303,304,305,306,307,308,309,310,311,312,313,314,315,316,317,318,319,320,321,322,323,324,325,326,327,328,329,330,331,332,333,334,335,336,337,338,339,340,341,342,343,344,345,346,347,348,349,350,351,352,353,354,355,356,357,358,359,360,361,362,363,364,365,366,367,368,369,370,371,372,373,374,375,376,377,378,379,380,381,382,383,384,385,386,387,388,389,390,391,392,393,394,395,396,397,398,399,400,401,402,403,404,405,406,407,408,409,410,411,412,413,414,415,416,417,418,419,420,421,422,423,424,425,426,427,428,429,430,431,432,433,434,435,436,437,438,439,440,441,442,443,444,445,446,447,448,449,450,451,452,453,454,455,456,457,458,459,460,461,462,463,464,465,466,467,468,469,470,471,472,473,474,475,476,477,478,479,480,481,482,483,484,485,486,487,488,489,490,491,492,493,494,495,496,497,498,499,500,501,502,503,504,505,506,507,508,509,510,511,512,513,514,515,516,517,518,519,520,521,522,523,524,525,526,527,528,529,530,531,532,533,534,535,536,537,538,539,540,541,542,543,544,545,546,547,548,549,550,551,552,553,554,555,556,557,558,559,560,561,562,563,564,565,566,567,568,569,570,571,572,573,574,575,576,577,578,579,580,581,582,583,584,585,586,587,588,589,590,591,592,593,594,595,596,597,598,599,600,601,602,603,604,605,606,607,608,609,610,611,612,613,614,615,616,617,618,619,620,621,622,623,624,625,626,627,628,629,630,631,632,633,634,635,636,637,638,639,640,641,642,643,644,645,646,647,648,649,650,651,652,653,654,655,656,657,658,659,660,661,662,663,664,665,666,667,668,669,670,671,672,673,674,675,676,677,678,679,680,681,682,683,684,685,686,687,688,689,690,691,692,693,694,695,696,697,698,699,700,701,702,703,704,705,706,707,708,709,710,711,712,713,714,715,716,717,718,719,720,721,722,723,724,725,726,727,728,729,730,731,732,733,734,735,736,737,738,739,740,741,742,743,744,745,746,747,748,749,750,751,752,753,754,755,756,757,758,759,760,761,762,763,764,765,766,767,768,769,770,771,772,773,774,775,776,777,778,779,780,781,782,783,784,785,786,787,788,789,790,791,792,793,794,795,796,797,798,799,800,801,802,803,804,805,806,807,808,809,810,811,812,813,814,815,816,817,818,819,820,821,822,823,824,825,826,827,828,829,830,831,832,833,834,835,836,837,838,839,840,841,842,843,844,845,846,847,848,849,850,851,852,853,854,855,856,857,858,859,860,861,862,863,864,865,866,867,868,869,870,871,872,873,874,875,876,877,878,879,880,881,882,883,884,885,886,887,888,889,890,891,892,893,894,895,896,897,898,899,900,901,902,903,904,905,906,907,908,909,910,911,912,913,914,915,916,917,918,919,920,921,922,923,924,925,926,927,928,929,930,931,932,933,934,935,936,937,938,939,940,941,942,943,944,945,946,947,948,949,950,951,952,953,954,955,956,957,958,959,960,961,962,963,964,965,966,967,968,969,970,971,972,973,974,975,976,977,978,979,980,981,982,983,984,985,986,987,988,989,990,991,992,993,994,995,996,997,998,999,1000,1001,1002,1003,1004,1005,1006,1007,1008,1009,1010,1011,1012,1013,1014,1015,1016,1017,1018,1019,1020,1021,1022,1023,1024,1025,1026,1027,1028,1029,1030,1031,1032,1033,1034,1035,1036,1037,1038,1039,1040,1041,1042,1043,1044,1045,1046,1047,1048,1049,1050,1051,1052,1053,1054,1055,1056,1057,1058,1059,1060,1061,1062,1063,1064,1065,1066,1067,1068,1069,1070,1071,1072,1073,1074,1075,1076,1077,1078,1079,1080,1081,1082,1083,1084,1085,1086,1087,1088,1089,1090,1091,1092,1093,1094,1095,1096,1097,1098,1099,1100,1101,1102,1103,1104,1105,1106,1107,1108,1109,1110,1111,1112,1113,1114,1115,1116,1117,1118,1119,1120,1121,1122,1123,1124,1125,1126,1127,1128,1129,1130,1131,1132,1133,1134,1135,1136,1137,1138,1139,1140,1141,1142,1143,1144,1145,1146,1147,1148,1149,1150,1151,1152,1153,1154,1155,1156,1157,1158,1159,1160,1161,1162,1163,1164,1165,1166,1167,1168,1169,1170,1171,1172,1173,1174,1175,1176,1177,1178,1179,1180,1181,1182,1183,1184,1185,1186,1187,1188,1189,1190,1191,1192,1193,1194,1195,1196,1197,1198,1199,1200,1201,1202,1203,1204,1205,1206,1207,1208,1209,1210,1211,1212,1213,1214,1215,1216,1217,1218,1219,1220,1221,1222,1223,1224,1225,1226,1227,1228,1229,1230,1231,1232,1233,1234,1235,1236,1237,1238,1239,1240,1241,1242,1243,1244,1245,1246,1247,1248,1249,1250,1251,1252,1253,1254,1255,1256,1257,1258,1259,1260,1261,1262,1263,1264,1265,1266,1267,1268,1269,1270,1271,1272,1273,1274,1275,1276,1277,1278,1279,1280,1281,1282,1283,1284,1285,1286,1287,1288,1289,1290,1291,1292,1293,1294,1295,1296,1297,1298,1299,1300,1301,1302,1303,1304,1305,1306,1307,1308,1309,1310,1311,1312,1313,1314,1315,1316,1317,1318,1319,1320,1321,1322,1323,1324,1325,1326,1327,1328,1329,1330,1331,1332,1333,1334,1335,1336,1337,1338,1339,1340,1341,1342,1343,1344,1345,1346,1347,1348,1349,1350,1351,1352,1353,1354,1355,1356,1357,1358,1359,1360,1361,1362,1363,1364,1365,1366,1367,1368,1369,1370,1371,1372,1373,1374,1375,1376,1377,1378,1379,1380,1381,1382,1383,1384,1385,1386,1387,1388,1389,1390,1391,1392,1393,1394,1395,1396,1397,1398,1399,1400,1401,1402,1403,1404,1405,1406,1407,1408,1409,1410,1411,1412,1413,1414,1415,1416,1417,1418,1419,1420,1421,1422,1423,1424,1425,1426,1427,1428,1429,1430,1431,1432,1433,1434,1435,1436,1437,1438,1439,1440,1441,1442,1443,1444,1445,1446,1447,1448,1449,1450,1451,1452,1453,1454,1455,1456,1457,1458,1459,1460,1461,1462,1463,1464,1465,1466,1467,1468,1469,1470,1471,1472,1473,1474,1475,1476,1477,1478,1479,1480,1481,1482,1483,1484,1485,1486,1487,1488,1489,1490,1491,1492,1493,1494,1495,1496,1497,1498,1499,1500,1501,1502,1503,1504,1505,1506,1507,1508,1509,1510,1511,1512,1513,1514,1515,1516,1517,1518,1519,1520,1521,1522,1523,1524,1525,1526,1527,1528,1529,1530,1531,1532,1533,1534,1535,1536,1537,1538,1539,1540,1541,1542,1543,1544,1545,1546,1547,1548,1549,1550,1551,1552,1553,1554,1555,1556,1557,1558,1559,1560,1561,1562,1563,1564,1565,1566,1567,1568,1569,1570,1571,1572,1573,1574,1575,1576,1577,1578,1579,1580,1581,1582,1583,1584,1585,1586,1587,1588,1589,1590,1591,1592,1593,1594,1595,1596,1597,1598,1599,1600,1601,1602,1603,1604,1605,1606,1607,1608,1609,1610,1611,1612,1613,1614,1615,1616,1617,1618,1619,1620,1621,1622,1623,1624,1625,1626,1627,1628,1629,1630,1631,1632,1633,1634,1635,1636,1637,1638,1639,1640,1641,1642,1643,1644,1645,1646,1647,1648,1649,1650,1651,1652,1653,1654,1655,1656,1657,1658,1659,1660,1661,1662,1663,1664,1665,1666,1667,1668,1669,1670,1671,1672,1673,1674,1675,1676,1677,1678,1679,1680,1681,1682,1683,1684,1685,1686,1687,1688,1689,1690,1691,1692,1693,1694,1695,1696,1697,1698,1699,1700,1701,1702,1703,1704,1705,1706,1707,1708,1709,1710,1711,1712,1713,1714,1715,1716,1717,1718,1719,1720,1721,1722,1723,1724,1725,1726,1727,1728,1729,1730,1731,1732,1733,1734,1735,1736,1737,1738,1739,1740,1741,1742,1743,1744,1745,1746,1747,1748,1749,1750,1751,1752,1753,1754,1755,1756,1757,1758,1759,1760,1761,1762,1763,1764,1765,1766,1767,1768,1769,1770,1771,1772,1773,1774,1775,1776,1777,1778,1779,1780,1781,1782,1783,1784,1785,1786,1787,1788,1789,1790,1791,1792,1793,1794,1795,1796,1797,1798,1799,1800,1801,1802,1803,1804,1805,1806,1807,1808,1809,1810,1811,1812,1813,1814,1815,1816,1817,1818,1819,1820,1821,1822,1823,1824,1825,1826,1827,1828,1829,1830,1831,1832,1833,1834,1835,1836,1837,1838,1839,1840,1841,1842,1843,1844,1845,1846,1847,1848,1849,1850,1851,1852,1853,1854,1855,1856,1857,1858,1859,1860,1861,1862,1863,1864,1865,1866,1867,1868,1869,1870,1871,1872,1873,1874,1875,1876,1877,1878,1879,1880,1881,1882,1883,1884,1885,1886,1887,1888,1889,1890,1891,1892,1893,1894,1895,1896,1897,1898,1899,1900,1901,1902,1903,1904,1905,1906,1907,1908,1909,1910,1911,1912,1913,1914,1915,1916,1917,1918,1919,1920,1921,1922,1923,1924,1925,1926,1927,1928,1929,1930,1931,1932,1933,1934,1935,1936,1937,1938,1939,1940,1941,1942,1943,1944,1945,1946,1947,1948,1949,1950,1951,1952,1953,1954,1955,1956,1957,1958,1959,1960,1961,1962,1963,1964,1965,1966,1967,1968,1969,1970,1971,1972,1973,1974,1975,1976,1977,1978,1979,1980,1981,1982,1983,1984,1985,1986,1987,1988,1989,1990,1991,1992,1993,1994,1995,1996,1997,1998,1999,2000,2001,2002,2003,2004,2005,2006,2007,2008,2009,2010,2011,2012,2013,2014,2015,2016,2017,2018,2019,2020,2021,2022,2023,2024,2025,2026,2027,2028,2029,2030,2031,2032,2033,2034,2035,2036,2037,2038,2039,2040,2041,2042,2043,2044,2045,2046,2047,2048,2049,2050,2051,2052,2053,2054,2055,2056,2057,2058,2059,2060,2061,2062,2063,2064,2065,2066,2067,2068,2069,2070,2071,2072,2073,2074,2075,2076,2077,2078,2079,2080,2081,2082,2083,2084,2085,2086,2087,2088,2089,2090,2091,2092,2093,2094,2095,2096,2097,2098,2099,2100,2101,2102,2103,2104,2105,2106,2107,2108,2109,2110,2111,2112,2113,2114,2115,2116,2117,2118,2119,2120,2121,2122,2123,2124,2125,2126,2127,2128,2129,2130,2131,2132,2133,2134,2135,2136,2137,2138,2139,2140,2141,2142,2143,2144,2145,2146,2147,2148,2149,2150,2151,2152,2153,2154,2155,2156,2157,2158,2159,2160,2161,2162,2163,2164,2165,2166,2167,2168,2169,2170,2171,2172,2173,2174,2175,2176,2177,2178,2179,2180,2181,2182,2183,2184,2185,2186,2187,2188,2189,2190,2191,2192,2193,2194,2195,2196,2197,2198,2199,2200,2201,2202,2203,2204,2205,2206,2207,2208,2209,2210,2211,2212,2213,2214,2215,2216,2217,2218,2219,2220,2221,2222,2223,2224,2225,2226,2227,2228,2229,2230,2231,2232,2233,2234,2235,2236,2237,2238,2239,2240,2241,2242,2243,2244,2245,2246,2247,2248,2249,2250,2251,2252,2253,2254,2255,2256,2257,2258,2259,2260,2261,2262,2263,2264,2265,2266,2267,2268,2269,2270,2271,2272,2273,2274,2275,2276,2277,2278,2279,2280,2281,2282,2283,2284,2285,2286,2287,2288,2289,2290,2291,2292,2293,2294,2295,2296,2297,2298,2299,2300,2301,2302,2303,2304,2305,2306,2307,2308,2309,2310,2311,2312,2313,2314,2315,2316,2317,2318,2319,2320,2321,2322,2323,2324,2325,2326,2327,2328,2329,2330,2331,2332,2333,2334,2335,2336,2337,2338,2339,2340,2341,2342,2343,2344,2345,2346,2347,2348,2349,2350,2351,2352,2353,2354,2355,2356,2357,2358,2359,2360,2361,2362,2363,2364,2365,2366,2367,2368,2369,2370,2371,2372,2373,2374,2375,2376,2377,2378,2379,2380,2381,2382,2383,2384,2385,2386,2387,2388,2389,2390,2391,2392,2393,2394,2395,2396,2397,2398,2399,2400,2401,2402,2403,2404,2405,2406,2407,2408,2409,2410,2411,2412,2413,2414,2415,2416,2417,2418,2419,2420,2421,2422,2423,2424,2425,2426,2427,2428,2429,2430,2431,2432,2433,2434,2435,2436,2437,2438,2439,2440,2441,2442,2443,2444,2445,2446,2447,2448,2449,2450,2451,2452,2453,2454,2455,2456,2457,2458,2459,2460,2461,2462,2463,2464,2465,2466,2467,2468,2469,2470,2471,2472,2473,2474,2475,2476,2477,2478,2479,2480,2481,2482,2483,2484,2485,2486,2487,2488,2489,2490,2491,2492,2493,2494,2495,2496,2497,2498,2499,2500,2501,2502,2503,2504,2505,2506,2507,2508,2509,2510,2511,2512,2513,2514
```

```

IF (CODE.L6.6) GO TO 2
DO 1 I=1,3
DO 1 J=1,3
IBUF=1 IBUF+2
1 SUM(I)=SUM(I)+IBUF(1BUF)*TRAC(I)+IBUF(1BUF-1)*DIS(I)
RETURN
2 DO 503 I=1,3
DO 503 J=1,3
IBUF=1BUF+1
IB=1BC(I)
GO TO (11,12,11,12),IB
11 SUM(I)=SUM(I)+IBUF(1BUF)*DIS(I)
GO TO 503
12 SUM(I)=SUM(I)+IBUF(1BUF)*TRAC(I)
503 CONTINUE
RETURN
END

```

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*****
C
SUBROUTINE TO FIX SYMMETRY OF A VECTOR
C
SUBROUTINE SYM(X(XSYM,YSYM,ZSYM,NMUL,T,VECT)
DIMENSION NMUL(1),VECT(1)
IF (NMUL(1).NE.1) VECT(1)=XSYM-VECT(1)
IF (NMUL(2).NE.1) VECT(2)=YSYM-VECT(2)
IF (NMUL(3).NE.1) VECT(3)=ZSYM-VECT(3)
RETURN
END
*****

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C
TRANSFORM A TENSOR FROM GLOBAL TO LOCAL COORDS.
C
SUBROUTINE TGTOL(T,A)
DIMENSION T(3,3),A(3,3),S(3,3)
DO 1 K=1,3
DO 1 L=K,3
S(K,L)=0
DO 1 I=1,3
DO 1 J=1,3
1 S(K,L)=S(K,L)+A(K,I)*A(L,J)*T(I,J)
DO 2 K=1,3
DO 2 L=K,3
1(L,L)=S(K,L)
2 T(K,L)=S(K,L)
RETURN
END
*****

```

```

*****
C
PARAMETER JQ=13,JJ=89,JY=700,JV3=2100
SUBROUTINE TTRU(XED,XRD,WCK,WCR,DICD)
C
COMMON X(3,JY),ALUMP(JJ),XLUMP(3,JJ),DLUMP(3,JJ),LKOD(JJ),LMOD(JJ),
*
1FACE(JJ),TLUMP(3,JJ),ULUMP(3,JJ),
2 NDIR(3,8),NMUL(1(3,8),XSYM,YSYM,ZSYM,ISYM,NSYM(5),FRINO(3,3),FRIM(3,3),
3 EMBUS),PK(5),E,G,V,V1,V2,V3,V4,V5,V6,V7,V8,V9,CK,CN,CONS,IBC(3),

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4 TRANS,TRAN2,TRAN21,TRAN22,TRAN2L,TRAN2L,WRHT(11),CGOBD(3,11),
5 MOLE,ATLTER,MLUMP,NMINEL,NMINEL,NMINEL,ND,1STAG,1EQU,CLIM,NELI1,NMINGR,NMINO,
6 ONE,MIL,TWO,THIR,HALF,ZERO,11,12,13,PL,ALIT3,3,3),DELTA(3,3),OMEGA,
7 TT(3),UU(3),1UEAD,1UTLE,A,B,C,D,RSID,1CHAN,1SEM(20),XCOM(3),
8 DEL,ARMIN,ARMAX,CMOV,NATT,NATL,ANRAT,1SHAP,R1,R2,R3,R4,R1,K2,R3
9 DIMENSION XED(3),RCOM(3),XRD(3),DCO(3)
10 SUBROUTINE TO CALCULATE TT AND UU COEFFS.
11 DRINK=ZERO
12 DO 1 K=1,3
13   RCOM(K)=(XED(K)-XRD(K))/R
14   DRAIN=DRINK+RCOM(K)*DEO(K)
15   DO 2 I=1,3
16     II=4+I-3
17     RMULI=RMULT(I,1,1SYM)
18     RCI=RCOM(I)
19     RIV3=RCI*V3
20     RIV2=RCI*V2
21     DCI=DCO(I)
22     TT(11)=TT(11)+URUN*(1.+RIV3*RCI)*RMULI
23     UU(11)=UU(11)+(UCR*(V4+RIV2*RCI)*RMULI
24     IF(1.EQ.3)RETURN
25     IFI=1+I
26     DO 7 J=1+I,3
27       JJ=3+I-3+J
28       IJ=3*J-3+I
29       RCI=RCOM(I)
30       DCI=DCO(I)
31       RMULJ=RMULT(J,1,1SYM)
32       TF=(URJ*RCJ-DCJ*RCI)*WCK
33       TRIC=DRINK+RIV3*RCJ
34       TT(J1)=TT(J1)+(TFUNC+TF)*RMULJ
35       TT(1J)=TT(1J)+(TFUNC+TF)*RMULJ
36       FAC=UCR*RI*V2*RCJ
37       UU(J1)=UU(J1)+FAC*RMULJ
38       UU(1J)=UU(1J)+FAC*RMULJ
39       RETURN
40 END
*****
PARAMETER JK=13, JU=37, JV=700, JVB=Z100
SUBROUTINE TUL(U,LUMP,TLUMP,ALUMP)
C
COMMON /RE/ IMEXR(4,J0),ECEL(3,J0),XCEL(3,J0),TR(3,J0),UR(3,J0)
R,AREAR(J0),1LITR(J0),KOR(J0),LINR(J0),NUMELR,CMR,PLTR,THICK
C
DIMENSION TLUMP(1),ULUMP(1)
C
CALCULATE AND STORE LUMP DISPLACEMENTS AND DISPLACEMENTS.
C
DO 10 I=1,3
  ULUMP(I)=0.
10 TLUMP(I)=0
DO 1 N=1,NUMELR
  ARE=AREAR(N)/ALUMP
  DO 1 I=1,3

```

[illegible]

```

CALL SETFILE
TYPE="INFO UNIT"
DO 5 MND1=1,NMND
CALL MDOSET(MND1)
DO 4 NL=1,NLMDP
IF((LNMOD(NL), NE, MOD1)GO TO 4
IF(LKMOD(NL), LE, NL1)GO TO 4
CALL LINDLK(NL,1,1)
DO 4 M=1,NMDEL
TYPE="QDI ELT",M,NL
KODER=(MOD(N))
CALL LODIND(N1,N2,N3,N4,INDEX(1,M))
CALL ICDSP(N1,N2,N3,A,B,C,X,N1)
IF(KODER GE,7)CALL ICDSP(A,B,C,DO)
CALL LSET(XCOM,XCEL(1,M))
DEPTH=XCOM(3)

CALCULATE PRIM TRACTIONS ON ELT M
DO 3 I=1,3
DIAG(I)=ZERO
W(I)=ZERO
DO 52 J=1,3
52 W(I)=W(I)+(DEPTH*PRIM(I,J)+PRIMO(I,J))*DC(3,J)
3 CONTINUE
NR=3
IF(N4, NE, NIL)NR=4
DO 1 NROT=1,NR
L1=N1
L2=N2
IF(NROT EQ,1)GO TO 30
IF(NROT EQ,4)GO TO 20
IF(NROT EQ,2)L1=N3
IF(NROT EQ,2)L2=N1
IF(NROT EQ,3)L1=N2
IF(NROT EQ,3)L2=N3
GO TO 30
20 CONTINUE
IF(NROT, NE, 2)GO TO 31
L1=N4
L2=N1
GO TO 30
31 IF(NROT, NE, 3)GO TO 32
L1=N3
L2=N4
GO TO 30
32 L1=N2
L2=N3
30 CONTINUE
CALL DCDL(L2,L1,A1,B1,C1,X,N1)
E1(1)=A1
E1(2)=B1
E1(3)=C1
E2(1)=B*E1(3)-C*E1(2)
E2(2)=C*E1(1)-A*E1(3)
E2(3)=A*E1(2)-B*E1(1)

CALCULATE DISTANCES
U=ZERO

```

```

      UI=ZERO
      UJ=ZERO
      DO 2 L=1,3
        D=D+EZ(L)*(X(L,L1)-XCOM(L))
        D1=D+E1(L)*(X(L,L1)-XCOM(L))
        D2=D+E1(L)*(X(L,L2)-XCOM(L))
      2 CONTINUE

      R1=SQRT(DIST2(XCOM,X(1,L1)))
      R2=SQRT(DIST2(XCOM,X(1,L2)))
      DO 1 I=1,3
        J=1
        DIAG(I)=DIAG(I)-UVAL(U1,R1,D)+UVAL(U2,R2,D)
      1 CONTINUE
      WRITE BINARY (4) DIAG
      IF (CODER GE 7) WRITE BINARY (5) DE,M
      4 CONTINUE
      5 CONTINUE
      CALL RESET
      TYPE "EXIT UOI"
      RETURN
      END

```

```

      PARAMETER J0=13, J1=39, J2=700, J3=2100
      FUNCTION UVAL(U1,U2,D)

```

```

      JACT
      COMMON X(3,JV),ALUMP(JU),XLUMP(3,JU),DLUMP(3,JU),LKOD(JU),LMOD(JU),
      * IFACE(JU),TUMP(3,JU),LLUMP(3,JU),
      2 MDIR(3,3),NMULT(3,3),XSYM,YSYM,ZSYM,ISYM,NSYM(3),PRIMO(3,3),PRIM(3,3),
      3 EMD(3),FRT(3),E,G,V,V2,V3,V4,V5,V6,V7,V8,V9,CK,CD,ENGS,INC(3),
      4 TRANS,TRANZ,TRANZ1,TRANZ2,TRANL,TRANL1,WEHT(11),COORD(3,11),
      5 NOSE,NLTER,NLUMP,NLMEL,NLMEL,ND,ISTAR,IBUT,LIM,NELIP,NMPOB,NMOD,
      6 ONE,NIL,TWO,THIRD,HALF,ZERO,11,12,13,PI,ALT(3,3,3),DELTA(3,3),OMEGA,
      7 TT(3),UO(3),INEAD,IRITE,A,B,C,R,RSG,ICHAN,ISSM(20),XCOM(3),
      8 DEL,ANIN,AKMAX,CUV,KATT,FATL,FATL,ISSM,R1,R2,R3,R4,R5,R6,R7,R8,R9

```

```

      COMMON /E/ E1(3),E2(3),I,J

```

```

      EVALUATE U COEFFICIENTS

```

```

      T1=(D1/D)
      T2=U1/D
      T3=D1/U1
      UVAL=ZERO
      IF (I EQ J) UVAL=V4*ALOG(T1+T2)
      UVAL=UVAL+V2*(E1(I)*E1(J)*(ALOG(T1+T2)-T3)
      1 +E2(I)*E2(J)*T3-(E1(I)*E2(J)+E2(I)*E1(J))/T2)
      RETURN
      END

```

```

      SUBROUTINE TO FIND CENTROID OF AN ELEMENT
      SUBROUTINE XCEN(INDEX,X,XC,ND)
      DIMENSION INDEX(4),X(3,ND),XC(3)

```

```

CALL LCOORD(NOD1, NOD2, NOD3, NOD4, INDEX)
IF (NOD4.EQ.0) CALL XCEN1(NOD1, NOD2, NOD3, XC, X, ND)
IF (NOD4.NE.0) CALL XCEN2(NOD1, NOD2, NOD3, NOD4, XC, X, ND)
RETURN
END

```

```

C
C SUBROUTINE TO ESTIMATE CENTROID OF A NICE QUADRILATERAL
C

```

```

SUBROUTINE XCEN2(I, J, K, L, XNUM, X, ND)
  DIMENSION XNUM(3), X(3, ND)
  DO I = 1, 3
    1 XNUM(I) = (X(N, I) + X(N, J) + X(N, K) + X(N, L)) / 4.
  RETURN
END

```

```

C
C SUBROUTINE TO CALCULATE CENTROID OF A TRIANGLE
C

```

```

SUBROUTINE XCEN1(I, J, K, XNUM, X, ND)
  DIMENSION XNUM(3), X(3, ND)
  DO I = 1, 3
    1 XNUM(I) = (X(N, I) + X(N, J) + X(N, K)) / 3.
  RETURN
END

```

APPENDIX 3

PARTIAL LISTING OF PROGRAMME MBEM

[illegible]

1. 凡在本市行政区域内从事生产、经营活动的单位和个人，均应当依法缴纳地方教育附加。
 2. 地方教育附加的征收对象为缴纳增值税、消费税、营业税的单位和个人。
 3. 地方教育附加的征收比例为缴纳增值税、消费税、营业税税额的百分之二。
 4. 地方教育附加的征收机关为地方税务局。
 5. 地方教育附加的征收期限为纳税义务发生之日起。
 6. 地方教育附加的征收方式为按月征收。
 7. 地方教育附加的征收凭证为地方教育附加征收凭证。
 8. 地方教育附加的征收程序为：纳税人申报缴纳、税务机关核定征收。
 9. 地方教育附加的征收管理按照《中华人民共和国税收征收管理法》及其实施细则的有关规定执行。
 10. 地方教育附加的征收工作应当依法进行，不得随意变更征收对象、征收比例、征收期限、征收方式和征收程序。

[illegible]

```
CALL JOGETIME("MERN ",6)
CALL INIT
CALL SWAP("BEM1.SV",IER)
IF(IER.NE.1)TYPE="BEM1 SWAP ER",IER
IF(ESUM(1).NE.1)CALL SWAP("BEMINF.SV",IER)
IF(IER.NE.1)TYPE="BEMINF ER",IER
IF(ESUM(2).NE.1)CALL INI
```



```

1 E,V,V1,V2,V3,V4,V5,V6,V7,V8,V9,CONS,CK,CH,G,CONID,CTAN,THICK,ESCAN,OSCAN,COLL,PHI,
2 IBSZ,1CHAN,LIM,MUSK,IBUF,1STAR,IBF(11SZ),IBFAN,INTE,NELFL,NREG,IONE,ISSW(15),ISSW(15)
C
SUBPROGRAM TO OUTPUT THE RESULTS.
C
DIMENSION XE(3)
IF(ISSW(6).EQ.1)GO TO 2
WRITE(1,101)
DO 1 N=1,NEL1
CALL XEN(INE,X,N,X,XE)
1 WRITE(1,100)N,XE(1),I=1,3),(U(N,1),I=1,3),(T(N,1),I=1,3),
1KOD(N),AREA(N),IFACE(N),(IBC(N,K),K=1,3)
100 FORMAT(1X,15,1X,16,2,Z(F9,2,1X),3(F9,4,1X),3(F9,5,1X),16,4X,F9,2,16,
*3X,312,1X)
101 FORMAT(15"X-CORD"117"Y-CORD"127"Z-CORD"140"U-X"148"V-Y"160
1"V1-Z"170"1-X"180"1-Y"190"1-Z"199"KODE"1109"AREA"1116"IFACE 1BC",
*//)
CALL TT(INTE)
2 CONTINUE
CALL BACK
STOP
END
*****
C
C
C
COMMON KOD(220),IEC(220,3),T(220,3),U(220,3),AREA(220),IFACE(220),INDEX(220,4),
2 X(220,3),ALUM(150),XLUM(150,3),DIUM(50,3),LYND(50),LUMP(50,12),LKOD(50),LKOD(50),
3 NINE(25,25),DZ(25,25),DX(25,25),DY(25,25),OZT(25,25),
4 AK(9,9),EK(9,9),LCK(9,9),LMA(9,9),Z1ANG(9,9),X1ANG(9,9),Y1ANG(9,9),
5 PRIM(3,3),PRIM(3,3),ALPHA(3,3),UD(3,3),T1(3,3),INCHI(3,3),DELTA(3,3),ALT(3,3,3,3),
6 EI(3),EZ(3),H(3),IC(3),ISUB(3),XNUM(3),RCOM(3),SYM(3),FALL(3),ORIG(3),
7 EMOD(10),EEN(10),FAC(10),THETA,DEFT,INQ,ISYM,NLYM(10),NDIRS(8),NREL,T(8,3),
8 TRAND,TRAND1,TRAND,TRAND,TRAND,TRAND,TRAND,TRAND,TRAND,FAC,IBAH(11),COORD(11,3),
9 HOLE,MELT,PLUMB,HB,MM,NLSX,NLSY,NDIML,NDIMH,NIM,ISCAL,OSCAN,NORM,MELT,NL,NODD,NS,
* ZENG,ONE,IONE,11,12,13,THIRD HALF,TWO,NIHER,DRE64,D1,F1,A,B,C,R,ESG,EA,H,HL,
1 E,V,V1,V2,V3,V4,V5,V6,V7,V8,V9,CONS,CK,CH,G,CONID,CTAN,THICK,ESCAN,OSCAN,COLL,PHI,
2 IBSZ,1CHAN,LIM,MUSK,IBUF,1STAR,IBF(11SZ),IBFAN,INTE,NELFL,NREG,IONE,ISSW(15),ISSW(15)
C
SUBPROGRAM TO OUTPUT THE RESULTS.
C
DIMENSION XE(3)
IF(ISSW(6).EQ.1)GO TO 2
WRITE(1,102)
102 FORMAT(" RESULTS BELOW ARE IN GLOBAL COORDINATE SYSTEM",//)
WRITE(1,101)
DO 1 N=1,NEL1
CALL XEN(INE,X,N,XE)
DO 3 I=1,3
E2(I)=U(N,I)
E1(I)=T(N,I)
3 CONTINUE
CALL VLTOG(XE,ALPHA,ORIG)
CALL VLTOG(E1,ALPHA,FALL)
CALL VLTOG(E2,ALPHA,FALL)
1 WRITE(1,100)N,XE,E1,E2,E1,KOD(N),AREA(N),IFACE(N),(IBC(N,K),K=1,3)
100 FORMAT(1X,15,1X,16,2,Z(F9,2,1X),3(F9,4,1X),3(F9,5,1X),16,4X,F9,2,16,
*3X,312,1X)

```

```

101 FORMAT(15,"X-COORD",17,"Y-COORD",17,"Z-COORD",14,"U-X",15,"U-Y",16
1"U-Z",17,"T-X",15,"T-Y",17,"T-Z",15,"KOME",11,"AREA",11,"ARE INCH",
*/)
CALL TTT(IRITE)
2 CONTINUE
CALL BACK
STOP
END

```

3400

COMMON, KOD(22), IBC(220, 3), T(220, 3), U(220, 3), AREA(220), IFACE(220), INLEX(220, 4),
2 X(220, 3), ALMP(50), XLMP(50, 3), DIUMC(50, 3), LIND(50), LUMPQ(50, 12), LKDP(50), LMD(50),
3 MINE(25, 25), HZ(25, 25), UX(25, 25), DY(25, 25), OZT(25, 25),
4 AK(9, 9), EK(9, 9), EK(9, 9), EWA(9, 9), ZLARG(9, 9), XLARG(9, 9), YLARG(9, 9),
5 FRIM(3, 3), FRIM1(3, 3), ALPHA(3, 3), LU(3, 3), TT(3, 3), DINDM(3, 3), DILTA(3, 3), ALT(3, 3, 3),
6 EI(3), EZ(3), W(3), LC(3), ISUD(3), XNUM(3), RCOM(3), SYH(3), FALL(3), ERIG(3),
7 EMOD(10), DEN(10), FRI(10), THETA, DEPTH, RHO, ISYM, NCYM(10), NEIR(3, 3), NPAR, T(6, 3),
8 TRAH2, TRAH21, TRAH7, TRANS, TRAM1, TRAM1, TRAMUL, TRAMUL, TRAMUL, FAC, WGH(11), COORD(11, 3),
9 NODE, NELLT, ALMPR, HX, HM, NL SX, NL SY, NDIM1, NDIM2, NDIM3, ISMEL, JSMEL, ALMPR, NSL, IP, PL, MODPR, NS,
* ZERO, ONE, IONE, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738,

PROGRAM FOR BENCHMARK STRESSES AND DISPLACEMENTS.

```

DIMENSION XX(3), XEL(3), XC(3), DIS(3), TRAC(3), DCO(3), STRES(3,3), DX(24), GY(24), WGH(24)
EQUIVALENCE (XNM, XC), (STRES, T)
EQUIVALENCE (GX(1), BDF(1)), (GY(1), EHF(100)), (WGH(1), BDF(200))
WRITE(UNIT,190)

```

CONSTANTS.

```
TRAN43=TRAN42*2.  
TRANX=EW/3  
TRANZ1=TRANZ1*1.5
```

CALL OPEN(2,"GEN01",IER)
IF (IER.NE.1) TYPE "OPEN ER",IER

102 FORMAT(F11.3,2F12.3,14)

```

IXF=XX(11)/ZB(11)
IYF=XX(12)/ZM(11)
IF(ABX.GT.(EY+Z.))GO TO 70
XX(11)=(IXF+HALF)*EM
XX(12)=(IYF+HALF)*EW
IF(ABX.GT.1NANX)GO TO 70
WRITE(IR1E,106)PXC
X1=1NANX
IF(XX(13).LT.ZEND)XT=X1
XX(13)=XT
70 CONTINUE
2D=XX(13)
CALL HADDEEN(MODIE)

```

```

NS=NSYM(NODUL)
CALL NULL(W,FALL)
CALL TUG(TT,UB)
DO 3 NL=1,NLUMP
  ARI=ALLMR(NL)
  MOD2=LMDU(THL)
  IF (MOD 2, NE, MODUL) GO TO 3
  NEL=LKOUT(THL)
  DO 111 ISYM=1,NS

```

```

LOAD SYMMETRY CONSTANTS.

```

```

IDIR=NDIR(1SYM,NS)
NIL=0
IF (IDIR EQ NIL) GO TO 111
CALL LESET(NL,XEL,DCO)
RSQ=DISTZ(X,XEL)
RATIO=RSQ/ARL
IF (RATIO, LT, TRANL) GO TO 7
TYPE "LUMP", NL
R=SQRT(RSQ)

```

```

CALL TUL(NL,TRAC,DIS)
CALL SYMEX(FALL,NMULT,TRAC,1SYM)
CALL SYMEX(FALL,NMULT,DIS,1SYM)
CALL SIGEN(THAC,DIS,XX,XEL,ARL,DCO)
GO TO 111

```

```

7 CONTINUE
DO 6 NE=1,NEL
  NELUM(NL,NE)
  DO 52 L=1,3
    DIS(L)=U(NL,L)

```

```

2 TRAC(L)=T(N,L)
  NOD1=INDEX(N,1)
  NOD2=INDEX(N,2)
  NOD3=INDEX(N,3)
  NOD4=INDEX(N,4)
  CALL DCOSV(NOD1,NOD2,NOD3,DCG,X)
  AR=AREA(N)
  NR=1
  IF (KQU(N), GT, NIL) GO TO 50
  NR=2
  AR=AREAF(NOD1,NOD2,NOD3,X)

```

```

50 CONTINUE

```

```

CALL SYMEX(FALL,NMULT,DCO,1SYM)
CALL SYMEX(FALL,NMULT,TRAC,1SYM)
CALL SYMEX(FALL,NMULT,DIS,1SYM)
DO 11 NIG=1,NO
  IF (NIG EQ, 1) GO TO 53
  AR=AREAF(NOD1,NOD3,NOD4,X)
  NOD2=NOD4

```

```

53 CONTINUE

```

```

  NINTB=11
  NINTE=11
  M1=AR
  MINT=1
  NMINTI=1
  IN=MOD1
  JN=MOD2
  KN=MOD3

```

```

      CALL XCEN(NOD1,NOD2,NOD3,XC,X)
      CALL SYMFX(SYM,NMULT,XC,ISYM)
      RSQ=DIS2(X,XC)
      RATIO=RSQ/AR
      IF(RATIO.GE.1RAN5)GO TO 20
      MINT=3
      NINTE=8
      NINTE=10
      IF(RATIO.GE.1RAN7)GO TO 20
      MINT=7
      NINTE=1
      IF(RATIO.GE.1RAN21)GO TO 20
      MINT=21
      KN=NODE+1
      AR=AR/3.
      NINTE=3
      CALL XCEN(NOD1,NOD2,NOD3,XEL,X)
      X(KN,1)=XEL(1)
      X(KN,2)=XEL(2)
      X(KN,3)=XEL(3)
      IF(RATIO.GE.1RAN42)GO TO 20
      MINT=42
      NINTE=6
      AR=AR/2.
      KN=NODE+1
      UN=NODE+2
20 CONTINUE
      IF(MINT.GT.1)TYPE MINT,N,ISYM
      IF(MINT.GT.7)TYPE RATIO,NTQ
      DO 11 NTRI=1,NINTE
      IF(NNTRI.NE.6)GO TO 43
      IF(NTRI.EQ.1.OR.NTRI.EQ.6)IN=NOD1
      IF(NTRI.EQ.2.OR.NTRI.EQ.3)IN=NOD2
      IF(NTRI.EQ.4.OR.NTRI.EQ.5)IN=NOD3
      IF(NTRI.GT.2)GO TO 41
      DO 441 L=1,3
      441 X(JN,L)=(X(NOD1,L)+X(NOD2,L))*HALF
      GO TO 21
      41 IF(NTRI.GT.9)GO TO 42
      DO 442 L=1,3
      442 X(JN,L)=(X(NOD2,L)+X(NOD3,L))*HALF
      GO TO 21
      42 DO 443 L=1,3
      443 X(JN,L)=(X(NOD3,L)+X(NOD1,L))*HALF
      GO TO 21
43 CONTINUE
      IF(NTRI.EQ.1)GO TO 21
      IF(NTRI.EQ.2)IN=NOD3
      IF(NTRI.LT.3)GO TO 21
      IN=NOD1
      JN=NOD3
21 CONTINUE
      DO 11 NINTE=NINTE,NINTE
      IF(NINTE.EQ.11)GO TO 64
      M1=MGHT(NUM)*AR
      DO 26 L=1,3
      26 XNUM(L)=COORD(NUM,1)*X(IN,L)+COORD(NUM,2)*X(JN,L)+COORD(NUM,3)
      *X(KN,L)
      CALL SYMFX(SYM,NMULT,XNUM,ISYM)

```

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      RES=DI1STZ(RNUP,XX)
64 R=SQRT(RES)
      CALL STGEN(THAC,HS,XX,XC,M1,DCO)
11 CONTINUE
6 CONTINUE
111 CONTINUE
3 CONTINUE
      RNUP=15*HL*JSMAL
      HZ=HSH
      AR=4.*H2
      CALL GAUSS(GX,GY,HSH,H,AR)
      AR=4.*HL*HL
      TRND=2.*AR*HL
      TRND=9*AR
      TRND=3.*41*AR
      TRND=6.*25*AR
      TRNX=ELU/3.*5
      WRITE(UNIT,785)NK
785 FORMAT(/" ELNCH MARK STRING NUMBER"13" FOR STRESSES AND DISPLACEMENTS",/
1 " *****")
      SCALE X AND Y COORDS FROM BLOCK TO LOCAL COORDS.
      XE=(12*XB-11)*H
      YE=(12*YB-11)*H
      XE=(12*XE-11)*H
      YE=(12*YE-11)*H
245 FGMAT(/" POINT NO.",14," AT ROW=",14," COL=",14)
246 FGMAT(/" ZD UX",5X,"UY"6X"UZ"5X"MAX"5X"DIP
1 " DIP DIFD INT"5X"DIP DIP"6X"ups ") MIN"
      IP AND JP ARE BLOCK COORDS.
      IF=XX(11)/EW+ONE
      JF=XX(12)/EW+ONE
      IF(MODUL.NE.MODUL)GO TO 5
      AED DD CONTRIBUIONS.
      DO 60 K=1,NL,5X
      DO 60 L=1,NL,5X
      CALL LCOORD(XEL,K,L,HL)
      RSG=DIST2(XX,XEL)
      IF(RSG.LT.1*H2U)GO TO 61
      R=SQRT(RSG)
      DIS(11)=XLAR6(K,L)/RNUP
      DIS(12)=YLAR6(K,L)/RNUP
      DIS(13)=ZLAR6(K,L)/RNUP
      CALL S1GDD(THAC,HS,XX,XEL,ARL)
      GO TO 60
61 CONTINUE
      KB=(K-11)*JSMAL+11
      KE=(K+1)SMAL
      LB=(L-11)*JSMAL+11
      LE=(L+1)SMAL
      DO 62 I=KB,KE
      DO 62 J=LB,LE
      CALL LCOORD(XC,I,J,HI)
      RSG=DI1STZ(XX,XC)

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DIS(1)=DX(1,J)
DIS(12)=DY(1,J)
DIS(13)=DZ(1,J)
IF(RSQ LT .TRN4) GO 10 22
R=SQRT(RSQ)
CALL SIGMOD(IRAC,DIS,XX,XC,AR)
GO 10 62
22 IF(RSQ LE .TRN9) GO 10 24
IR=1
IE=4
GO 10 25
24 IF(RSQ LE .TRN49) GO 10 23
IE=5
IE=13
GO 10 25
23 IR=15
IE=63
TYPE "49",1,J
25 CONTINUE
XEL(3)=ZERO
DO 63 NI=1B,IE
W1=W8(NINT)
XEL(11)=XC(11)+GX(NINT)
XEL(12)=XC(12)+GY(NINT)
RQ=DISTZ(XX,XEL)
R=SQRT(RSQ)
TYPE "NINT=",NINT
CALL SIGMOD(IRAC,DIS,XX,XEL,W1)
63 CONTINUE
62 CONTINUE
60 CONTINUE
5 CONTINUE

C
C GET PRIMITIVE STRESSES.
C
CALL NULL(DC,XX)
CALL VLTG(DC,ALPHA,GRIG)
DEPTH=H0*2.81DC(3)
106 FORMAT(," POINT NUMBER "13" IS TOO CLOSE TO THE REEF PLANE")
WRITE(IRITE,245)KE,1XP,1YP
130 FORMAT(," LENGTH MARK TIME",," *****")
1 " STRESSES IN UNITS OF DENSITY*9.8/1000000",/
2 " STRESSES IN MPa AND DISPLACEMENTS IN METRES"
1 " IF DENSITY IS IN KG/M**3",/
3 " COMPRESSION IS +VE",/
1 " UX,UY,UZ ARE DISPLACEMENTS",/
3 " THE COORDINATE SYSTEM IS AS FOLLOWS",/
4 " Z AXIS NORMAL TO REEF PLANE (+VE UP)",/
5 " X AXIS IS +VE DOWN DIP",/
6 " Y AXIS IS TO THE RIGHT (ALONG STRIKE)",/
1 " VPS IS THE PRIMITIVE VERTICAL NORMAL STRESSES",/
6 " DIPD AND DIP RELATIVE TO ABOVE COORD SYSTEM",/
7 " ZD IS DIST FROM REEF PLANE TO BENCHMARK",/
C 991 FORMAT(1X,F10.2)
WRITE(IRITE,105)
105 FORMAT(," NO",T10"X",T18"Y",T26"Z",T36"U",T44"V",T52"W",T66"OXX"
1T76"OXY",T84"OXZ",T92"OYZ",T100"OYZ",T108"OZZ",/
WRITE(IRITE,101)KE,XX,W ((STRESS1,J),J=1,3),1=1,3)
101 FORM(11X,14,2X,3(F7.3,1X),2X,3(F7.4,1X),T65,6(F7.3,1X))
1F(SSH(8),EQ.1)DIPTH=-1

```

[illegible]

```

CALL MODSET(MOD1)
CALL LSET(ML, XNL, XLUMP)
NS=NSYM(MOD1)
DO 19 NL=1, NLUMP
  TYPE "NLUMP=", NL
  LIND(NL)=NIL
  MOD2=LMOD(NL)
  IF(MOD2.NE.MOD1)GO TO 19
  AKL=ALUMP(NL)
  CALL LSET(NL, A, L, "LUMP")
  RSG=DIS12(XNL, XNL)
  RATIO=RSG/ARL
  IF(RATIO.LT.1RANLL)GO TO 19
  LIND(NL)=1
  CALL TUDITT, UUD
  DO 18 ISYM=1, NS
    IDIR=NDIR(1SYM, NS)
    IF(IDIR.EQ.NIL)GO TO 18
    CALL LSET(ML, XEL, DLC)
    RSG=DIS12(XNL, XEL)
  LUMP=LUMP COEFFICIENTS.

R=30NT(RSG)
WCR=CK*ARL/RSG
WCR=ARL*CONG/R
TYPE "LUMP-LUMP", ML, NL, ISYM
CALL TUDIXEL, XNL, WCR, WCR, DLC)
18 CONTINUE
CALL LOAD
19 CONTINUE

INSERT DD LUMP COEFFS HERE LATER

DLC(1)=ZERO
DLC(2)=ZERO
DLC(3)=ONE
AR=4, ARH
IRN4=3, *AR
IRN2=1, *AR
IRN42=6, *AR
ARL=4, *ARL*HL
DO 70 K=1, HL, SX
  DO 70 L=1, HL, SY
    KIND(C, L)=NIL
    IF(MOD1.NE.MOD2)GO TO 70
    CALL LUDUXEL, K, L, HL)
    RSG=DIS12(XEL, XEL)
    RATIO=RSG/ARL
    IF(RATIO.LT.1RANLL)GO TO 70
    CALL DDT(XNL, XEL, ARL, D, C, IL, IL)
  TYPE "DD LUMP-LUMP", ML, K, L, RATIO
  KIND(C, L)=1ONE
70 CONTINUE

LUMP-ELT COEFFICIENTS.

TYPE "START 1 LOOP"
DO 1 ME=1, MEL
  M=LUMP0(ML, ME)

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      KODR=IABS(KOD(N))
      CALL NULL(TEMP,FALL)
      CALL XGEN(INDEX,M,X,XR)
      TYPE="3 LOOP NL=",NL
      DO 3 NL=1,NLUMP
        IF(LIND(NL).EQ.1)GO TO 3
        AIL=ALIMP(NL)
        MOD2=LIND(NL)
        IF(MOD2.NE.MOD1)GO TO 3
        NEL=LIND(NL)
        TYPE="IND LSET"
        CALL LSET(NL,XEL,XLIMP)
        USE XEL HERE TO GIVE ONE LIND VALUE ONLY
        RSG=DISIZ(XRL,XEL)
        RATIO=RSG/AIL
        IF(RATIO.LT.1/NANL)GO TO 7
        LIND(NL)=2
        CALL TIO(TT,UT)
        TYPE="5 5 L LUMP-ELT NL=",NL
        DO 9 ISYM=1,NS
          IDIR=NDIR(ISYM,NS)
          IF(IDIR.EQ.NIL)GO TO 9
          CALL LSET(NL,XEL,DLC)
          HSG=DISIZ(XIS,XEL)
          R=SGRT(RSG)
          WCI=CE*AIL/RSG
          WCR=AIL*CONSVI
          CALL TIO(XEL,XTC,WCK,WCR,DLC)
          9 CONTINUE
          CALL LGAP
          GO TO 3
        7 CONTINUE

      ELT-ELT COEFFICIENTS

      DO 6 NE=1,NEL
        N=LUMP(NL,NEL)
        KOME=IABS(KOD(N))
        CALL TIO(TT,UT)
        DO 11 ISYM=1,NS
          IDIR=NDIR(ISYM,NS)
          IF(IDIR.EQ.NIL)GO TO 11
          IF(M.NE.N)GO TO 30
          IF(1SYM.GT.1)GO TO 30
          CALL DISCO(M)
          GO TO 11
        30 CONTINUE
        MOD1=INDEX(N,1)
        MOD2=INDEX(N,2)
        MOD3=INDEX(N,3)
        MOD4=INDEX(N,4)
        CALL DCOSV(MOD1,MOD2,MOD3,DLC,X)
        CALL SYMFIX(FALL,NML,1,DLC,1SYM)
        AR=AREA(N)
        NR=1
        IF(KOD(N).GT.0)GO TO 50
        NR=2
        AR=AREAF(MOD1,MOD2,MOD3,X)
        50 CONTINUE
        DO 11 NIO=1,NIO

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IF(NTR1.EQ.1)GO TO 53
AR=AREA/(NOD1,NOD3,NOD4,X)
NOD2=NOD4
53 CONTINUE
CALL XELNT(NOD1,NOD2,NOD3,XC,X)
CALL SYMF1(XSYM,NOD1,XC,ISYM)
NINTE=11
NINTE=11
NUMRI=1
MINT=1
IN=NOD1
JN=NOD2
LN=NOD3
H1=AR
C
R30=DIS12(XC,XC)
RATIO=R30/AR
KCL=K30/20
IF(RATIO.LT.0.1)WRITE(1,100)RATIO,M,N,NIL
100 FORMAT(' CHECK EL1S TOO CLOSE RATIO,M,N,ER TYPE="F6.3,315')
IF(RATIO.GE.1)GO TO 20
MINT=3
NINTE=3
NINTE=10
IF(RATIO.GE.1)GO TO 20
MINT=7
NINTE=7
NINTE=1
IF(RATIO.GT.1)GO TO 20
MINT=21
LN=NODE+1
AR=AR/2
NUMRI=3
CALL XCENT(NC,NOD2,NOD3,XEL,X)
X(N,1)=XEL(1)
X(N,2)=XEL(2)
X(N,3)=XEL(3)
IF(RATIO.GT.1)GO TO 20
MINT=42
NUMRI=6
AR=AR/2
LN=NODE+1
JN=NODE+2
20 CONTINUE
C
SUBSECTION FOR NUMERICAL QUADRATURE
INFLUENCE OF ELEMENT N ON ELEMENT M (N,NE,M).
C
TYPE MINT,N
DO 11,NTRI=1,NUMRI
IF(NMTRI.NE.6)GO TO 43
IF(NTRI.EQ.1)OR NTRI.EQ.6)IN=NOD1
IF(NTRI.EQ.2)OR NTRI.EQ.3)IN=NOD2
IF(NTRI.EQ.4)OR NTRI.EQ.5)IN=NOD3
IF(NTRI.GT.2)GO TO 41
DO 44 L=1,13
441 X(JN,L)=(X(NOD1,L)+X(NOD2,L))*HALF
GO TO 21
41 IF(NTRI.GT.4)GO TO 42

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DO 442 L=1,13
442 X(JN,L)=(X(NOD2,L)+X(NOD3,L))*HALF
GO TO 21
42 DO 443 L=1,13
443 X(JN,L)=(X(NOD3,L)+X(NOD1,L))*HALF
GO TO 21
43 CONTINUE
IF(NTR1 EQ 1) GO TO 21
IF(NTR1 EQ 2) IN=NOD3
IF(NTR1 LT 3) GO TO 21
IN=NOD1
JN=NOD3
21 CONTINUE
DO 11 NUN=NINTB,NINTE
M1=MODJ(NUN)*AR
IF(NINIB EQ 1) GO TO 64
DO 24 L=1,13
24 XNIB(L)=COORD(NUN,1)*X(IN,L)+COORD(NUN,2)*X(JN,L)+COORD(NUN,3)
1*X(JN,L)
CALL SYMFX(SYM,NRALT,XNUN,ISYM)
RSO=DISIZ(XR,XNUM)
IF(RSO LT RCL) WRITE(IRITE,100)RATIO,M,N,IONE
64 R=SQRT(RSO)
INFL FOR FREE SURFACE ELEMENTS.
MCR=M1*CR/RSD
IF(CODE.EQ.KODS) GO TO 500
IF(CODE.EQ.S) GO TO 500
MCR=MCR/R
T1(3,1)=T1(3,1)+MCR*(XNUN(1)-XR(1))
T1(3,2)=T1(3,2)+MCR*(XNUN(2)-XR(2))
GO TO 11
500 CONTINUE
INFL FOR NORMAL ELEMENTS.
MCR=M1*CONS/R
CALL ITUD(XNUN,XR,MCR,MCR,DLC)
11 CONTINUE
111 CONTINUE
CALL LOAD1(N,TEMP,KODU)
6 CONTINUE
3 CONTINUE
TYPE "START DU LOOPS"
START DU LOOPS WITH BG AS EMITTERS.
IF(MOD1.NE.MODUD) GO TO 5
DLC(1)=ZERO
DLC(2)=ZERO
DLC(3)=ONE
ANL=4,4HL*HL
START LUMP LOOPS
AR=4,4HL
CALL GAUSS(GX,GY,MSH,H,AR)
DO 60 K=1,NL SX
DO 60 L=1,NL SY

```

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C      IF(KIND(G,L),EQ,1)GO TO 60
C      TYPE "DD,K,L",K,L
C      CALL LCOORD(XEL,K,L,HL)
C      XRL HERE TO GIVE ONE VALUE OF KIND
C      RSG=DIS12(XRL,XEL)
C      RATIO=RSQ/ARL
C      IF (RATIO LT .1)ANDU)GO TO 61
C      IJIND(G,L)=12
C      RSG=DIS12(XRL,XEL)
C      CALL DDTT(XRL,XEL,ARL,DLC,11,11)
C      GO TO 60
C      61 CONTINUE

C      ELT-ELI COEFS
C      KB=(E-1)*JSMAL+1
C      IE=(E-1)*JSMAL
C      LB=(E-1)*JSMAL+1
C      LE=L*JSMAL
C      DO 62 I=KB,IE
C      DO 62 J=LB,LE
C      TYPE "ELT-ELT I,J,M",I,J,M
C      CALL LCOORD(XEL,I,J,HD)
C      RSG=DIS12(XRL,XEL)
C      IF(RSG LT .1)ANDU)GO TO 22
C      CALL DDTT(XRL,XEL,ARL,DLC,11,11)
C      GO TO 62
C      22 IF(RSG LE .1)ANDU)GO TO 28
C      IB=1
C      IE=4
C      GO TO 25
C      25 IF(RSG LE .1)ANDU)GO TO 23
C      IB=5
C      IE=13
C      GO TO 25
C      23 IB=15
C      IE=63
C      25 TYPE IB
C      XC(3)=ZERO
C      1BE=IE-IB+1
C      IDUMF=NIL
C      DO 63 NINI=1E,1E
C      IDUMP=IDUMP+1
C      M1=MOD(NINI)
C      XC(1)=XEL(11)+GX(NINI)
C      XC(12)=XEL(12)+GY(NINI)
C      RSG=DIS12(XRL,XEL)
C      CALL DDTT(XRL,XEL,ARL,DLC,11,11)
C      63 CONTINUE
C      62 CONTINUE
C      60 CONTINUE
C      5 CONTINUE
C      WRITE BINARY (7) TEMP
C      1 CONTINUE
C      1BE=IB-2
C      WRITE(1RITE,200)1STAR,1EUF,(EUF(J),J=1BE,IBUF),1,IND
C      200 FORMAT(216,3F10,6,1X,6011)
C      WRITE BINARY (6) LIND,KIND
C      511 CONTINUE
C      LAST=1E/1AR-1

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```

*****
TYPE "END BEGIN"
CALL RESET
CALL BACK
STOP
END

*****
C
C CALCULATE TRANSFORMATION MATRIX FOR LOCAL COORD SYSTEM.
C
C ARRAY IS THE ORIGIN OF THE LOCAL SYSTEM IN GLOBAL COORDS.
C X IS A POINT ON THE LOCAL + X-AXIS, Y ON THE LOCAL + Y-AXIS
C A IS THE TRANSFORMATION MATRIX CONSISTING OF DIRECTION COSINES.
C EACH ROW CONSISTS OF TWO ROWS OF A LOCAL COORD AXIS REL TO GLOBAL AXES.
C
SUBROUTINE DCOSATO,X,Y,A)
DIMENSION O(3),X(3),Y(3),A(3,3)
RX=SQRT(DI3T2(O,X))
RY=SQRT(DI3T2(O,Y))
DO I I=1,3
  A(I,1)=(X(I)-O(I))/RX
  A(I,2)=(Y(I)-O(I))/RY
  A(3,1)=A(1,2)*A(2,3)-A(1,3)*A(2,2)
  A(3,2)=A(1,3)*A(2,2)-A(1,1)*A(2,3)
  A(3,3)=A(1,1)*A(2,2)-A(1,2)*A(2,1)
CHECK VALIDITY OF CHOICE
PRD=A(3,1)**2+A(3,2)**2+A(3,3)**2
TYPE "CROSS PRODUCT OF X- AND Y-AXES IS",PRD
RETURN
END

*****
C
C SUBPROGRAM TO CALCULATE INFL COEFFS FOR DD ELEMENTS.
C
C JACO
C
COMMON KOD(ZZO),IBC(ZZO,3),T(ZZO,3),U(ZZO,3),AREAT(ZZO),IFACE(ZZO),INTEX(ZZO,4),
2 X(ZZO,3),ALUMP(SO),XLUMP(SO,3),DLUMF(SO,3),LIND(SO),LIMFO(SO,12),LRDU(SO),LMDB(SO),
3 MRE(25,25),DX(25,25),DY(25,25),OZT(25,25),
4 AK(9,9),BK(9,9),DK(9,9),EMAF(9,9),ZLANG(9,9),XLANG(9,9),VLANG(9,9),
5 FRM(3,3),FRIM(3,3),ALPHA(3,3),HUC(3,3),TI(3,3),DHGM(3,3),DELTA(3,3),ALT(3,3,3),
6 E1(3),EZ(3),W(3),IC(3),ISM(3),XRDM(3),KIDM(3),SYM(3),FALL(3),GIG(3),
7 EMOD(10),DEN(10),FR(10),HEITA,DEPTH,HATH,ISYM,NSYM(10),NDR(8,8),JMTLT(4,3),
8 TRANZ2,TRANZ1,TRANZ,TRANS,TRANSL,TITML,TRANSL,TRANSD,FAC,WGH(11),CORRU(11,3),
9 NOUE,NEL,NLMD,MPL,MPLSX,M,SY,NDRML,NDRML,NDRM,1,JMAL,GJMAL,NUMOR,NLIAP,NIL,POBUD,NS,
* ZERO,GNE,IONE,I,IZ,IS,THIR,HALF,TWO,NIER,CHEGB,U,L,P,A,B,C,D,E,KSO,EM,H,HL,
1 E,V,VI,VZ,V3,V4,V5,V6,V7,V8,V9,CORS,C,C,C,G,C,CIAR,THICK,ESCAP,BSFA3,CCH,PHI,
2 IFST,ICHAR,LIM,INISK,IHF,ISTAR,EIF(1152),IREAD,INTL,NELL,NNECO,RHBE,ISSM(15),ISM(15)

C DIMENSION XEL(3),TEMP(3),DLC(3),XC(3),XRL(3),XE(3),XR(3)
EQUIVALENCE (XC,XRUM)

C IDICK=0
CALL OPEN(6,"LIND",3,IER)
IF(IER.NE.1)TYPE "LIND OP ER",IER
CALL OPEN(7,"RVECHD",3,IER)

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IF (IER.NE.1) TYPE "EXECUTED OK", IER
CALL MODSET(MODID)
NS=NSYN(MODID)
KODR=10NE
DO 511 K=1, NL SX
DO 511 L=1, NL SY
CALL LCOORD(XL, K, L, NL)

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LUMP=LUMP COEFFS.

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DO 19 NL=1, NLUMP
NL=0

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LIND(NL)=NIL
MOD2=LMOD(NL)
IF (MOD2.NE.MODID) GO TO 19
ARL=ALUMP(NL)
CALL LSET(NL, XEL, XLUMP)
RSG=DISIZ(XEL, NL)
RATIO=RSG/ARL
TYPE "EQUIP. K, L, NL, RATIO", K, L, NL, RATIO, ARL, TRANSL
IF (RATIO LT. TRANSL) GO TO 19
LIND(NL)=1
CALL TUD(1, NS)
DO 18 ISYM=1, NS
IDR=NDIR(1SYMN)
IF (IDR EQ. NIL) GO TO 10
CALL LSET(NL, XEL, FLC)
RSG=DISIZ(XEL, NL)
R=SGR(RSG)
CALL $DD(XEL, XEL, FLC, ARL)

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18 CONTINUE
CALL LEND
19 CONTINUE

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LUMP=ELT COEFFS

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KB=0E-11) $ISBL+1)
KE=K1SMAL
LB=0E-11) $ISBL+1)
LE=L1SMAL
DO 1 I=XEL, XE
DO 1 J=L1, LE
CALL LCOORD(XL, I, J, NL)
CALL MULT(TEMP, FILL)
DO 3 NL=1, NLUMP
IF (LIND(NL).EQ.1) GO TO 3
ARL=ALUMP(NL)
MOD2=LMOD(NL)
IF (MOD2.NE.MODID) GO TO 3
NEL=LK(NL)
CALL LSET(NL, XEL, XLUMP)
XEL NOT KN TO KEEP LIND SYMPT
RSG=DISIZ(XEL, NL)
RATIO=RSG/ARL
IF (RATIO LT. TRANSL) GO TO 7
TYPE "LUMP=ELT. K, L, NL, RATIO",
LIND(NL)=2
CALL TUD(1, NS)
DO 9 ISYM=1, NS
IDR=NDIR(1SYMN)

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      AR=AR/3.
      NUMTRI=3
      CALL XCENT (MOD1, MOD2, MOD3, XEL, X)
      X(KN, 1)=XEL(1)
      X(KN, 2)=XEL(2)
      X(KN, 3)=XEL(3)
      IF (PA110 GT. TRAM42) GO TO 20
      MINT=42
      NUMTRI=6
      AR=AR/2
      KN=MODE+1
      JN=MODE+2
20  CONTINUE
      IF (MINT GT. 1) TYPE MINT, N, ISYM
      DO 11 NTRI=1, NUMTRI
      IF (NUMTRI.NE. 6) GO TO 43
      IF (NTRI.EQ. 1 OR NTRI.EQ. 6) IN=MOD1
      IF (NTRI.EQ. 2 OR NTRI.EQ. 3) IN=MOD2
      IF (NTRI.EQ. 4 OR NTRI.EQ. 5) IN=MOD3
      IF (NTRI GT. 2) GO TO 41
      DO 441 LO=1, 3
441  X(JN, LO)=(X(MOD1, LO)+X(MOD2, LO))*HALF
      GO TO 21
41  IF (NTRI GT. 4) GO TO 42
      DO 442 LO=1, 3
442  X(JN, LO)=(X(MOD2, LO)+X(MOD3, LO))*HALF
      GO TO 21
42  DO 443 LO=1, 3
443  X(JN, LO)=(X(MOD3, LO)+X(MOD1, LO))*HALF
      GO TO 21
43  CONTINUE
      IF (NTRI.EQ. 1) GO TO 21
      IF (NTRI.EQ. 2) IN=MOD3
      IF (NTRI.LT. 3) GO TO 21
      IN=MOD1
      JN=MOD3
21  CONTINUE
      TYPE I, J, N, MINT
      DO 11 NUM=MINT, NINTE
      IF (NINTE.EQ. 1) GO TO 64
      M1=HIGH(NUM)*AR
      DO 24 LO=1, 3
24  XNUM(LO)=COORD(NUM, 1)*X(IN, LO)+COORD(NUM, 2)*X(JN, LO)+COORD(NUM, 3)
      1*X(KN, LO)
      CALL SYM1X (SYM, NML, J, XNUM, ISYM)
      KSO=DIST2(XR, XNUM)
64  R=SQRT(RSO)
      CALL SDOU(XR, XNUM, DLC, M1)
11  CONTINUE
111 CONTINUE
      CALL LOAD1 (N, TEMP, KORO)
6  CONTINUE
3  CONTINUE
      WRITE BINARY (7) TEMP
1  CONTINUE
      WRITE BINARY (6) LIND
511 CONTINUE
      CALL DUMP1 (IDUF, IDISC, BUF, ISTAR, 1)
      CALL RESET
      CALL BACK

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一、二、三、四、五、六、七、八、九、十、十一、十二、十三、十四、十五、十六、十七、十八、十九、二十、二十一、二十二、二十三、二十四、二十五、二十六、二十七、二十八、二十九、三十、三十一、三十二、三十三、三十四、三十五、三十六、三十七、三十八、三十九、四十、四十一、四十二、四十三、四十四、四十五、四十六、四十七、四十八、四十九、五十、五十一、五十二、五十三、五十四、五十五、五十六、五十七、五十八、五十九、六十、六十一、六十二、六十三、六十四、六十五、六十六、六十七、六十八、六十九、七十、七十一、七十二、七十三、七十四、七十五、七十六、七十七、七十八、七十九、八十、八十一、八十二、八十三、八十四、八十五、八十六、八十七、八十八、八十九、九十、九十一、九十二、九十三、九十四、九十五、九十六、九十七、九十八、九十九、一百。

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117 FORMAT(1X,"DD LAYOUT IS AS BELOW:",/)
      RETURN
      END
*****
      SUBROUTINE TO SOLVE FOR DD VALUES
      SUBROUTINE DUSOL(JOINT, VECT, AMAX)
      JACO
      COMMON KOD(220), IDC(220,3), T(220,3), U(220,3), AREA(220), IFACE(220), INTEX(220,4),
1 X(220,3), ALIMP(50), XLIMP(50,3), DLIMP(50,3), LIMP(50), LIMPQ(50,12), LKOD(50), LMOD(50),
2 MINE(25,25), DZ(25,25), DX(25,25), DY(25,25), OZT(25,25),
3 AK(9,9), BK(9,9), DK(9,9), LMA(9,9), ZLARG(9,9), XLARG(9,9), YLARG(9,9),
4 PRIM(3,3), PRIM1(3,3), ALPHA(3,3), LU(3,3), TT(3,3), INCON(3,3), DELTA(3,3), ALT(3,3,3),
5 EI(3), EZ(3), W(3), DC(3), ISUB(3), XMIN(3), INCOM(3), SYM(3), FALL(3), ORIG(3),
6 EMUD(10), DEN(10), PR(10), THETA, DEPTH, RHO, ISYM, NEYM(10), NDIR(3,3), NWRLT(3,3),
7 TRAND2, TRAND1, TRAND7, TRANS, TRANML, TRANL, TRAND, TRANDD, FAC, WGT(11), CORR(11,3),
8 NODE, NELLT, LUMP, NN, NN, NL, SX, NL, SY, NDJL, NDJIN, NDJL, ISMAL, JSMAL, NIMOR, NELLP, NIL, MODUL, NS,
9 ZERO, ONE, IONE, I1, I2, I3, THIRD, HALF, TWO, NITER, OMEGA, DEL, P1, A, B, C, R, NSQ, EW, H, HL,
1 E, V, V1, V2, V3, V4, V5, V6, V7, V8, V9, COMS, CK, CL, G, COMD, CFAR, THIK, ESEAM, GSEAM, COIL, PHI,
2 IDFSZ, ICHAN, LIM, ICHSK, IEUF, ISTAR, IAP(1152), INEAD, IRITE, NELEL, NNELO, KOLE, ISSU(15), ISM(15)
      DIMENSION VECT(220,3), TRAC(3), DIS(3), SUM(3), SUML(3), TEMP(3)
      SIGN CHANGES IN THIS SUBROUTINE TO GIVE TENSION + CONVENTION
      CHANGES ABOVE C.....*
      TYPE "INTO DUSOL"
      DC(1)=ZETIO
      DC(2)=ZERO
      DC(3)=ONE
      IFLT=2H+
      IMIN=2HM
      ISOL=2H
      ISHR=2H+
      ITOT=2HC
      ILEN=2H1
      RSMAL=FLOAT(1CHAL)
      CFAR=RCHAL**3
      DO 511, K=1, NL, SX
      KB=(K-1ONE)*ISMAL+1ONE
      KE=K*1SMAL
      DO 511, L=1, NL, SY
      LB=(L-1ONE)*JSMAL+1ONE
      LE=L*JSMAL
      READ BINARY (2) LIND
      TYPE "LIND", K, L
      LUMP=LUMP SUMS
      CALL INEL(SUML, FALL)
      DO 19, NL=1, NLUMP
      IF(LIND(NL), NE, 1) GO TO 19
      CALL TUB(NL, TRAC, DIS)
      CALL SUMUP(SUML, DIS, TRAC)
      TYPE NL, SUML, " LUMP SUMS"

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19 CONTINUE
SUMX=ZERO
SUMY=ZERO
SUMZ=ZERO
DO 50 IL=1,NLSX
  IDIFF=IABS(I-KL)+1ONE
  DO 50 LL=1,NLSY
    JDIFF=IABS(J-LL)+1ONE
    IF (JDIFF.GT.2)GO TO 51
    IF (JDIFF.LE.2)GO TO 51
51 XL=XLAG(ILL,LL)
    YL=YLAG(ILL,LL)
    ZL=ZLAG(ILL,LL)
    DCOEF=DNK(IDIFF,JDIFF)
    IF (KL.LT.1)DCOEF=-DCOEF
    IF (LL.LT.1)DCOEF=-DCOEF
    SUMX=SUMX+EMA(IDIFF,JDIFF)*XL-DCOEF*YL
    SUMY=SUMY+EMA(IDIFF,JDIFF)*YL-DCOEF*XL
    SUMZ=SUMZ+EMA(IDIFF,JDIFF)*ZL
50 CONTINUE
SUML(1)=-SUM(1)+SUMX/CFAR
SUML(2)=-SUM(2)+SUMY/CFAR
SUML(3)=-SUM(3)+SUMZ/CFAR
C.....*
C STACT INNER LOOPS.
DO 1 I=KB,KE
DO 1 J=LB,LE
  READ IJARY (13) TEMP
  TYPE "TEMP",TEMP
  CALL NUL(CUM,FALL)
  CALL SUMLET(SH,VECT,MODULO,KOTR,J)
  SUMX=SUM(1)-TEMP(1)+SUML(1)
  SUMY=SUM(2)-TEMP(2)+SUML(2)
  SUMZ=SUM(3)-TEMP(3)+SUML(3)
C.....*
DO 60 IL=1,NLSX
  IDIFF=IABS(I-KL)+1ONE
  DO 60 LL=1,NLSY
    JDIFF=IABS(J-LL)+1ONE
    IF (JDIFF.GT.2)GO TO 60
    IF (JDIFF.LE.2)GO TO 60
    IE=IL-1ONE
    JE=LL-1ONE
    JB=(IL-1ONE)*JSMAL+1ONE
    JEB=LL*JSMAL
    DO 62 II=IE,IE
      M=IABS(II-11)+1ONE
      DO 62 JJ=JB,JE
        N=IABS(JJ-11)+1ONE
        XL=DX(II,JJ)
        YL=DY(II,JJ)
        ZL=DZ(II,JJ)
        DCOEF=DNK(II,N)
        IF (II.LT.1)DCOEF=-DCOEF
        IF (JJ.LT.1)DCOEF=-DCOEF
        SUMX=SUMX+EMA(M,N)*XL-DCOEF*YL
        SUMY=SUMY+EMA(M,N)*YL-DCOEF*XL
        SUMZ=SUMZ+EMA(M,N)*ZL
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60 CONTINUE
WRITE(10,233)MINE(1,J),I,J
233 FORMAT(1X,A1,2I3)
027(1,J)=SUMZ
DENOMZ=DENMOMZ-ESLAP/THIK
DENOMZ=ERHATIONE,1ONE)
CALL LOGGR(XNUM,1,J,H)
CALL FKHINDVAL(PH,PRIM,ORIG,XNUM,DC,W,RHO,ISSW)
UNFINDED SEAN ELEMENT.

IF(MINE(1,J).NE.150L)GO TO 20
DENOMX=DENMOMX-ESLAP/THIK
DENOMZ=DENMOMZ-ESLAP/THIK
SUMX=SUMX-OSLAP*DX(1,J)/THIK
SUMY=SUMY-OSLAP*DY(1,J)/THIK
SUMZ=SUMZ-ESLAP*DZ(1,J)/THIK
027(1,J)=027(1,J)+W(3)
GO TO 100

20 CONTINUE
IF(MINE(1,J).NE.1M1N.AND.MINE(1,J).NE.1TOT)GO TO 40
SUMX=SUMX+W(1)
SUMY=SUMY+W(2)
SUMZ=SUMZ+W(3)
027(1,J)=SUMZ
40 CONTINUE
100 CONTINUE

INCREASE RELAXION FACTOR FOR DD ELEMENTS.
BX(1,J)=DX(1,J)-OMEGA*1.5*SUMX/DENOMX
BY(1,J)=DY(1,J)-OMEGA*1.5*SUMY/DENOMY
BZ(1,J)=DZ(1,J)-OMEGA*1.5*SUMZ/DENOMZ
CHECK FOR TOTAL CLOSURE
IF(MINE(1,J).EQ.1TOT)MINE(1,J)=1M1N
IF(BZ(1,J).LT.THIRSGO TO 13
BZ(1,J)=THIR
IF(MINE(1,J).EQ.1M1NMINE(1,J)=1TOT
GO TO 14
13 CONTINUE
AVE=(ABS(SUMX)+ABS(SUMY)+ABS(SUMZ))/2.5
IF(AVE.GT.5HAX)AMAX=AVE
IF(DEL.GT.AVE)GO TO 14
JOUT=JOUT+1ONE
IF(AVE.GT.(ELL*4.))TYPE="I,J,DZ,SUMX,Y,Z",I,J,BZ(1,J),SUMX,SUMY,SUMZ
14 CONTINUE
1 CONTINUE
S11 CONTINUE
TYPE="LEAVING DDOCL"
RETURN
END

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*****
SUBROUTINE TO CALCULATE AND DUMP DD INFL COEFFICIENT.
SUBROUTINE DDIT(XRD,XLD,ARO,DCO,ILUMP,IME)

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C      JACOBI
C
C      CATION (KED(220), IFC(220, 3), T(220, 3), U(220, 3), AREA(220), IFACE(220), INCR(220, 4),
1  X(220, 3), ALUMF(50), XLUMF(50, 3), DLUMC(50, 3), LIND(50), LUMPO(50, 12), LMOD(50),
2  HINE(25, 25), DZ(25, 25), DX(25, 25), DY(25, 25), GZT(25, 25),
3  AL(9, 9), EK(9, 9), UK(9, 9), LMA(9, 9), ZLANS(9, 9), XLANS(9, 9), YLANS(9, 9),
4  PLM(3, 3), FRM(13, 3), PLPHA(3, 3), DUC(3, 3), TT(3, 3), LINDM(3, 3), DELTA(3, 3), ALT(3, 3, 3),
5  EI(3), EZ(3), WC(3), DC(3), ISUB(3), XNIM(3), HKOM(3), SYM(3), FALL(3), DRIB(3),
6  EMD(10), DEN(10), FR(10), THETA, DEPTH, RHO, ISYM, NSYM(10), HDIR(8, 8), NMU(1(8, 3),
7  TKN42, TRANZ1, TRAN7, TRANS, TIRALL, TRALL, TRANLL, TRANUB, FAC, WGT(11, 3),
8  WIDE, NELL, NLUMF, NM, PM, NLGX, NLGY, NLIML, NDIRN, NDIR, ISMEL, JSMEL, NIMMO, NLIP, PIL, MCHRD, NS,
9  ZERO, ONE, LONE, 11, 12, IS, THIR, HALF, TWO, NINE, OMEGA, DEL, P1, A, B, C, R, NSG, EM, H, HL,
1  E, V, V1, V2, V3, V4, V5, V6, V7, V8, V9, CONS, COK, CD, G, COMD, G ANT, THIK, ESSEAG, GSEAG, CGH, PH1,
2  IFSZ, ICHAN, LIM, YDISK, IMAF, ISTAR, IUF(1152), IHEAD, IRITE, NELL, NRECO, KONE, ISSM(15), ISM(15)
C
C      DIMENSION XRD(3), XED(3), DCO(3)
1  IF(LUMF.NE.1)GO TO 5
2  CALL TUC(77, 00)
3  IF(LIUF.G1.LIM)CALL DUMPO(LIUF, IDISK, IUF, ISTAR, 1)
4  R=CONST(RCO)
5  WCR=ARRCR/RSQ
6  DO 1 I=1,3
1  RCOM(1)=(XED(I)-XRD(I))/R
2  DRON=WCR*RCOM(3)
3  DO 2 I=1,3
4  RCI=RCOM(1)
5  RIV=RCI*V3
6  DCI=DCO(1)
7  TT(1,1)=TT(1,1)+DRON*(1.+RIV*RCI)
8  IF(1.EQ.3)GO TO 4
9  IP1=1+IDRE
10 DO 2 J=IP1,3
11 RCI=RCOM(J)
12 DCJ=DCO(J)
13 TF=(DCI*RCJ-DCJ*RCI)*WCR
14 IFUNC=DRON*HIV*RCJ
15 TT(1, J)=TT(1, J)+TFUNC*TF
16 TT(J, 1)=TT(J, 1)+TFUNC*TF
17 CONTINUE
18 IF(IIMAP.L7, 13E)RETURN
19 DO 3 I=1,3
20 DO 3 J=1,3
21 IDUF=IDUF+1
22 IUF(1, IUF)=TT(1, J)
23 RETURN
24 END
C
C      *****
C
C      SET UP GAUSS QUADRATURE CONSTANTS AND WEIGHTS.
C
C      SUBROUTINE GAUSS(GX, GY, M, H, AR)
C      DIMENSION GX(64), GY(64), W(64), G(7), X(7)
C
C      CONSTANTS.
C
C      V1=0.57735014
C      V2=0.774644

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V3=0.0
M1=0.25*AR
M2=0.27777777
W3=0.444444
G(1)=0.249104H
G(2)=0.741938H
G(3)=0.463094H
G(4)=V3
G(5)=-G(3)
G(6)=-G(2)
G(7)=-G(1)
X(1)=0.1294872
X(2)=0.2797072
X(3)=0.5818372
X(4)=0.4179572
X(5)=X(3)
X(6)=X(2)
X(7)=X(1)

COORDS
C 4
GX(1)=V1
GY(1)=V1
GX(2)=V1
GY(2)=V1
GX(3)=V1
GY(3)=V1
GX(4)=V1
GY(4)=V1
C 9
GX(5)=V3
GY(5)=V3
GX(6)=V2
GY(6)=V2
GX(7)=V3
GY(7)=V3
GX(8)=V2
GY(8)=V2
GX(9)=V3
GY(9)=V3
GX(10)=V2
GY(10)=V2
GX(11)=V2
GY(11)=V2
GX(12)=V3
GY(12)=V3
GX(13)=V2
GY(13)=V2
GX(14)=V3
GY(14)=V3
C 49
NINT=14
DO 1 I=1,7
DO 1 J=1,7
NINT=NINT+1
GX(NINT)=G(1)
GY(NINT)=G(J)
1 N(NINT)=X(1)*X(J)*AR

```

[illegible]


```

9  NODE, NELL, NL, LPP, NN, MM, NLSX, NLSY, NMLP, NMLN, N:IM, IEMAL, JEMAL, NUNOR, NSLXF, NIL, NORUD, NS,
*  ZERO, ONE, TUNE, 1, 12, 13, THIN, HALF, TWO, NITER, OMEGA, ULL, PI, A, B, C, D, RSO, LM, H, HL,
1  E, V, V1, V2, V3, V4, V5, V6, V7, V8, V9, CONS, CH, S, COND, CF, GR, THIN, ECEAN, USL, AN, COH, PHL,
2  IESZ, ICHAM, LIM, IUSIS, IUR, ISTAR, IAP (1152), IHEAD, IITE, IELT, INECCO, KOME, ISSU(15), ISM(15)

SUBROUTINE TO INITIALIZE THE MATRICES

CALL EXEC(1,0)
NMLN=230
NMLN=215
NMLN=50
IESZ=1152
LIM=IMF52-13

ZERO=0.
NIL=0.
ONE=1.
TUNE=1.
TWO=2.
HALF=0.5
THIRD=1./3.
11=1
12=2
13=3

DO 20 I=1, IMF52
20  LUP(I)=ZERO
DO 21 I=1, NMLN
21  LIND(I)=NIL

DO 1 I=1, 3
FAL(I)=ZERO
EO 1 J=1, 3
DELTA(I, J)=ZERO
DELTA(I, 1)=ONE
DO 1 K=1, 3
1  AL1(I, J, K)=ZERO
AL1(I, 2, 3)=ONE
AL1(2, 3, 1)=ONE
AL1(3, 1, 2)=ONE
AL1(1, 3, 2)=-ONE
AL1(3, 2, 1)=-ONE
AL1(2, 1, 3)=-ONE
EO 2 I=1, NMLN
AMEA(I)=ZERO
ICOM(I)=NIL
IFAC(I)=NIL
INEX(1, 4)=NIL
DO 2 J=1, 3
U(I, J)=ZERO
T(I, J)=ZERO
IPLEX(I, J)=NIL
IEC(I, J)=NIL
2  CONTINUE
THIRD=ONE/3.
A1=0.05961567
A2=0.79742679
E1=0.47014206
E2=0.10138651
W1=0.225
W2=0.13239415

```

```

N3=0.12599218
C00ND(1,1)=THIRU
C00ND(1,2)=THIRU
C00ND(1,3)=THIRU
C00ND(2,1)=A1
C00ND(2,2)=B1
C00ND(2,3)=B1
C00ND(3,1)=B1
C00ND(3,2)=B1
C00ND(3,3)=B1
C00ND(4,1)=B1
C00ND(4,2)=B1
C00ND(4,3)=A1
C00ND(5,1)=A2
C00ND(5,2)=B2
C00ND(5,3)=B2
C00ND(6,1)=B2
C00ND(6,2)=A2
C00ND(6,3)=B2
C00ND(7,1)=B2
C00ND(7,2)=B2
C00ND(7,3)=A2
C00ND(8,1)=HALF
C00ND(8,2)=HALF
C00ND(8,3)=ZERO
C00ND(9,1)=HALF
C00ND(9,2)=ZERO
C00ND(9,3)=HALF
C00ND(10,1)=ZERO
C00ND(10,2)=HALF
C00ND(10,3)=HALF
C00ND(11,1)=THIRU
C00ND(11,2)=THIRU
C00ND(11,3)=THIRU
WGT(1)=M1
WGT(2)=M2
WGT(3)=M2
WGT(4)=M2
WGT(5)=M3
WGT(6)=M3
WGT(7)=M3
WGT(8)=THIRU
WGT(9)=THIRU
WGT(10)=THIRU
WGT(11)=ONE
DO 3 J=1,9
IF(J,LT,4)MPLT(J,JD)=ONE

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[illegible]

[illegible]

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2 10X"Y PLANE OF SYMMETRY = "F10.2/"
3 10X"Z PLANE OF SYMMETRY = "F10.2/"
4 10X"THICKNESS OF SPAN = "F10.2/"
5 10X"COLLECTION OF FAULT = "F10.2/"
6 10X"PHI OF FAULT = "F10.1/"
102 FORMAT(10X"NO OF ELEMENTS
1 10X"NO OF NODES
2 10X"NO OF LENSES
3 10X"NO OF LENSES
4 10X"STARTING DISK BLOCK = "F10.2/"
5 10X"TRANS FOR 4Z FT = "F10.2/"
6 10X"TRANS FOR 21 FT = "F10.2/"
7 10X"TRANS FOR 7 FT = "F10.2/"
8 10X"TRANS FOR 3 FT = "F10.2/"
9 10X"TRANS FOR LUMPING = "F10.2/"
,/)

C TRANL=TRANL*3.
TRANL=TRANL
TRANL=TRANL

C IF (LAYER.GT.10)STOP 1
WRITE(17,103)LAYER
113 FORMAT(" NO OF DIFFERENT ZONES ="14,/)
NHO=ZERO
NLT=0
MAXSYM=NIL
DO 104 I=1,LAYER
READ(17,104)J,EMOD(J),PR(J),DEN(J),NSYM(J)
IF(NSYM(J).GT.9)OR(NSYM(J).LE.0)STOP 22
IF(NSYM(J).GT.9)MAXSYM=NSYM(J)
IF(I.NE.0)STOP 2
NHO=NHO+DEN(J)
WRITE(17,105)EMOD(J),PR(J),DEN(J),1,NSYM(J)
104 CONTINUE
105 FORMAT(" E ="F10.2" POISSONS RATIO ="F6.2" NHO ="F10.4
1" ZONE NO ="14" SYMMETRY CODE ="14)
NHO=NHO/FLUAT(LAYER)
WRITE(17,106)NHO
106 FORMAT(" AVERAGE DENSITY USED FOR OVERBURDEN STRESS ="F10.4)

C SET RECURSIVE CONSTANTS.
PI=3.14159

C READ IN COORDINATES AND BOUNDARY CONDITIONS.
IF(NHOPR.LE.NIL)GO TO 4
CALL OPEN(2,"JBNH",3,IER)
IF(IER.NE.1)WRITE "BENCH OPEN ERROR",IER
IF(NHOPR.GT.200)NHOPR=200
DO 5 I=1,NHOPR
READ(17,107)XX,YY,ZZ,MODUL
WRITE(2,108)XX,YY,ZZ,MODUL
107 FORMAT(3F12.3,14)
5 CONTINUE
4 CONTINUE
NLEMP=NELT
NLEMP=NELT
NLEMP=NELT
IF(NELT.GT.NDIM)OR(NONE.GT.NDIM)OR(NLUMP.GT.NDIM)STOP 5

```

```

DO 1 NL=1,NLUMP
  TYPE NL,"=LUMP NO"
  READ(IREAD) LUMP, NMEL, MOD1, MOD2
  IF (MOD1 GT 10 OR MOD2 GT 10) STOP 3
  IF (NMEL GT 13) TYPE "ERROR 1", LUMP
  LCODE(LUMP)=NMEL
  IF (LUMP NE NL) STOP 4
  LMOD(LUMP)=MOD1
  IF (MOD2 EQ 0 OR MOD2 EQ MOD1) GO TO 60
  NM1=NLM1+1
  LMOD(NM1)=NMEL
  LMOD(NM1+1)=MOD2
  NM1L=1
60 CONTINUE
  DO 1 I=1,NMEL
    READ(IREAD) (INDEX(N,J),J=1,4), KODE
    IF (INDEX(N,4) NE NL AND KODE GT 1) KODE=-KODE
    IF (KODE(N) NE NL) TYPE "ERROR 2", N
    KOD(N)=KODE
    LUMP(NL,I)=N
  1 CONTINUE

  GENERATE SECOND ELEMENT AT INTERFACE
  IF (IMILL EQ 0) GO TO 1
  NTEMP=NTEMP+1
  IFACE(N)=NTEMP
  IFACE(NTEMP)=N
  KOD(NTEMP)=KODE
  LMOD(NTEMP,I)=NTEMP
  IPRN=3
  IF (KODE LT 0) IPRN=4
  IPRN=IPRN+1
  DO 61 J=1,NM1
61 INDEX(NTEMP,J)=INDEX(N,NM1-J)
  1 CONTINUE
  NLT=NTEMP
  NLUMP=NLT+1
  WRITE(IRITE,101) NTEMP, OMEGA, DEL, XSYM, YSYM, ZSYM, THICK, CPH, PHI
  IF (PHI GT 5) PHD=TRAN(PH/180, 0)
  WRITE(IRITE,102) NLT, NODE, NUMGR, NLUMP, ICHAN, TRANZ1,
    1, TRAN, TRANS, TRAIL
  IF (NMEL GT NM1 OR MOD1 GT NM1 OR MOD2 GT NM1) STOP 6
  SYM(1)=XSYM*100
  SYM(2)=YSYM*100
  SYM(3)=ZSYM*100
  DO 2 I=1,NODE
    TYPE "MODE = ", I
    READ(IREAD) NM, (X(I,J),J=1,3)
    IF (NM NE I) TYPE "ERROR 3", I, NM
  2 CONTINUE
  CALL BELL
  CALL GEOM1
  CALCULATE B.C.'S
  1 = SPECIFIED TRACTIONS.
  2 = SPECIFIED DISPLACEMENTS.
  3 = "
  4 = "
  5 = "
  X-DISP
  Y-DISP
  Z-DISP

```

```

6 = " B, C,
7 = INTERFAC ELEMENTS
8 = FREE SURFACE (ZERO TRACIONS)

IEC = 1 FOR TRACIONS , 2 FOR DISPLACEMENTS.

IF(ISSW(3), NE, 1)WRITE(INTE,180)
DO 3 N=1,NELT
  N1=INTEX(N,1)
  N2=INTEX(N,2)
  N3=INTEX(N,3)
  N4=INTEX(N,4)
  CALL DDCSV(N1,N2,N3,DC,X)
  IF(N4.EQ.NIL,CALL XCEN(N1,N2,N3,XE,X)
  IF(N4.NE.NIL,CALL XCEN(N1,N2,N3,N4,XE,X)
  CODE=IADS(KOD(N))
  Z=XE(3)
  DEPTH=Z*9.84NHU
  IF(ISSW(8), EQ, 1)DEPTH=1.
  IF(KODE.NE.9.AND.KODE.NE.1.AND.KODE.NE.8)GO TO 11
  IF(KODE.EQ.8.AND.(IC(3).LT.0.5))TYPE="DC ER FOR KOD 8 ELT",N
  IF(1)GUE EQ.8.AND.MAXSYM GT.1)STOP 7
  DO 22 I=1,3
    IEC(N,I)=1
    IEC(N,I)=0
    DO 21 J=1,3
      SIG(I,J)=DEPTH*PRIM(I,J)
    21 T(N,I)=SIG(I,J)*DC(J)+T(N,I)
    22 CONTINUE
    11 CONTINUE
    IF(KODE.NE.2)GO TO 12
    DO 31 I=1,3
      IEC(N,I)=Z
    31 U(N,I)=ZERO
    12 CONTINUE
    IF(KODE.LT.3.OR.KODE.GT.5)GO TO 14
    DO 41 I=1,3
      IEC(N,I)=1)UNE
    DO 41 J=1,3
      T(N,I)=0.
    IF(1.NE.(KODE-2))GO TO 41
    T(N,I)=ZERO
    IEC(N,I)=2
    41 CONTINUE
    14 CONTINUE
    IF(KODE.NE.6)GO TO 16
    READ(IREAD)ND,W,IB
    DO 26 I=1,3
      IF(1B(I).EQ.2)U(N,I)=W(I)
      IF(1B(I).EQ.1)T(N,I)=W(I)
      IEC(N,I)=1B(I)
    26 CONTINUE
    16 CONTINUE
    IF(KODE.LT.7.OR.KODE.EQ.8.OR.KODE.EQ.9)GO TO 17
    DO 27 I=1,3
      IEC(N,I)=2
    27 IEC(1)FACE(N),I)=11
    17 CONTINUE
    180 FORMAT(/15"ELT"112"X-CODRD"122"Y-CODRD"132"Z-CODRD"140"  NODE "
    1, " NUMBERS"153"AREA"167"DIR-X"177"DIR-Y"187"DIR-Z",10X, "E-C",
    11112"CODE",/)

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[illegible]

[illegible]

[illegible]

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C      P = PRIM STRESS, (NORMALIZED) IN LOCAL SYSTEM
C      A = TRANSFORMATION MATRIX
C      O = ORIGIN OF LOCAL SYSTEM
C      X = COORDS OF POINT IN LOCAL SYSTEM
C      IC= IC OF POINT IN LOCAL SYSTEM
C      W = TRAXATIONS IN LOCAL SYSTEM
C
SUBROUTINE PRIMO(A,P,O,X,DC,W,RHO,ISSM)
    DIMENSION A(3,3),P(3,3),O(3),ISSM(15),DC(3),W(3),X(3)
    CALL VLTOR(X,A,O)
    DEPTH=X(3)*RHO**3/81
    IF(ISSM(3).EQ.1)DEPTH=1.
    DO I=1,3
        W(I)=0
    DO J=1,3
        W(J)=W(J)+DEPTH*AP(I,J)*DC(J)
    RETURN
END
*****
C      SUBROUTINE RIDEI
C      IMOD
C
COMMON KOB(ZZO),IEC(ZZO,3),T(ZZO,3),U(ZZO,3),AREA(ZZO),IFACE(ZZO),INEX(ZZO,4),
    X(ZZO,3),ALINE(50),XLIME(50,3),DLINC(50,3),LIND(50),LUMPD(50,12),LKOD(50),LMOD(50),
    MINE(25,25),IX(25,25),BX(25,25),IV(25,25),OZT(25,25),
    AK(9,9),EK(9,9),HK(9,9),EM(9,9),Z1ANG(9,9),X1ANG(9,9),Y1ANG(9,9),
    FRIM(3,3),FRIMI(3,3),ALPHA(3,3),UD(3,3),T1(3,3),DNGRM(3,3),BELJAT(3,3),ALT(3,3,3),
    E1(3),E2(3),V1(3),UC(3),ISURF(3),XNUM(3),RCOM(3),SYM(3),FALL(3),CHIL(3),
    EMOD(10),DEN(10),PR(10),THEJA,DEPT,HNO,ISYM,NBYM(10),NHIR(3,3),NRUL(3,3),
    TKANAZ,TKANZI,TKANZY,TRANS,TRANKL,TRANL,TRANML,TRANNU,FAC,BEHN(11),COORD(11,3),
    NDULE,NELT,MLINE,MH,MH,NLSX,NLSY,NDIM,NLMM,NLUH,ISMA,JSMA,NUMBO,NELJP,NL,MODID,NS,
    ZIRO,ONE,TOME,11,12,13,THIRD,HALF,LWC,NITER,OMEGA,DEL,PI,A,B,C,R,KSR,EW,H,HL,
    EV,V1,V2,V3,V4,V5,V6,V7,V8,V9,CONS,CK,CI,G,CROLD,CTAN,THIK,ESERM,GSEAM,COL,PHT,
    1 IEFSZ,ICHAN,LJM,IMSK,IJUF,ISTAR,IUF(1152),INRAD,IRITE,NELLE,NRELO,RTHE,ISSM(15),ISM(15)
2   DIMENSION XAXIS(3),YAXIS(3)
C
C      SUBROUTINE TO HANDLE IN-AND OUTPUT.
C
C      MODID=1
C      TYPE "RIDEI."
READ(IKHEAD),ESEAM,GSEAM,NELLE,MH,MH,LWM
IER=1
IF(NELLE.GT.O)CALL OPEN1,"ONKEEF",3,IER
IF(IER.NE.1)TYPE "ONKEEF OP ER",IER
READ(IKHEAD)GRIG,XAXIS,YAXIS
IF(MH.LT.300)SM(12)=1
DEPTH=GRIG(3)
IF(NELLE.LE.O)GO TO 91
C 93 FORMAT(" NUMBER OF ON KEEF BENCHMARKS = ",14,)
DO 92 N=1,NELLE
    READ(IKHEAD)I,J
    WRITE(1,105)I,J
105 FORMAT(1X,214)
92 CONTINUE
91 CONTINUE

```

```

C      ISMAL=1.0M
C      LEMAL=1.0M
C      H=EW/2.
C      HE=114150ML
C
C      ML SX=MIN/ISMAL
C      ML SY=MIN/ISMAL
C      CALL MODLEN(MODLEN)
C
C      WRITE OUT VARIOUS CONSTANTS.
C
C      WRITE(1,103) SEAM, GSEAM, V, THICK, EW
C      WRITE(1,104) DEPTH
C      CONTINUE=6/4. #PI*(1.-V)40
C
C      103 FORMAT(//10X,"YOUNG'S MODULUS      =",F10.2,
C      1/10X,"SHEAR MODULUS      =",F10.2,
C      1/10X,"POISSON'S RATIO      =",F10.2,
C      1/10X,"STONE THICKNESS      =",F10.2,
C      1/10X,"SEAM WIDTH      =",F10.2)
C      130 FORMAT(1X,3F10.4)
C      131 FORMAT(1X,3F10.1)
C      215 FORMAT(1X,"DEPTH TO ORIGIN OF MINE COORD. SYSTEM IS ",F8.2,"M
C      1",F1)
C      221 FORMAT(//,"NORMAL MODULUS OF SEAM ELEMENTS =",F10.1,//
C      1" SHEAR MODULUS OF SEAM ELEMENTS =",F10.1,/)
C
C      CALCULATE THE TRANSFORMATION MATRIX FOR CHANGE OF AXES.
C
C      WRITE DATA FOR PRIMITIVE STRESS.
C
C      WRITE(1,101), 721)
C      WRITE(1,102), 132) ((PRIM(I,J), J=1,3), I=1,3)
C      CALL DCDGA(ORIG, XAXIS, YAXIS, ALPHA)
C      CALL TGTOL((TRIM,ALPHA))
C      WRITE(1,101), 722)
C      WRITE(1,101), 132) ((PRIM(I,J), J=1,3), I=1,3)
C      WRITE(1,101), 723)
C      WRITE(1,101), 132) ((ALPHA(I,J), J=1,3), I=1,3)
C
C      WRITE(1,101), 724) ORIG
C      724 FORMAT(//,"ORIGIN OF DISPLACEMENT DISCONTINUITY GRID IS",3F10.2)
C      WRITE(1,101), 725) XAXIS, YAXIS
C      725 FORMAT(//,"X - AND Y AXIS MARKERS FOR LOCAL COORD SYSTEM ARE",2F10.2)
C
C      SET UP BOUNDARY CONDITIONS.
C
C      132 FORMAT(3F8.4,2X)
C      721 FORMAT(//10X,"PRIMITIVE STRESS TENSOR IS GIVEN BY:",/)
C      722 FORMAT(//10X,"AFTER TRANSFORMATION TO MINE COORDINATES, THE STRESS
C      1 TENSOR IS:",/)
C      723 FORMAT(//10X,"THE TRANSFORMATION MATRIX IS ",/)
C
C      DD ELT-ELT CODES.
C
C      IADIM=3
C      DO 10 I=1,IADIM
C      PPI=FLDPA(2*I-1)
C      PNI=FLDPA(2*I-2)

```

FA=C(=O)N1C(=O)C(=O)C(=O)N1
FB=C(=O)N1C(=O)C(=O)C(=O)N1
FC=C(=O)N1C(=O)C(=O)C(=O)N1
FD=C(=O)N1C(=O)C(=O)C(=O)N1
FEA=C(=O)N1C(=O)C(=O)C(=O)N1
FEB=C(=O)N1C(=O)C(=O)C(=O)N1
FEC=C(=O)N1C(=O)C(=O)C(=O)N1
FED=C(=O)N1C(=O)C(=O)C(=O)N1

EVALUATE INFLUENCE COEFFICIENTS.

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2540

```
WC1C=-W1*CK/RSQ
WCR=W1*CCNS/R
WS=W1*CD/RS
WD=-WCI
DREDM=ZERU
```

```

DO 5 L=1,3
  RCOM(L)=(XC(L)-XX(L))/R
  EDCU=EDCN+RCOM(L)*DCO(L)
  UJ=UDEN*3
  DO 6 I=1,3
    RCI=RCOM(I)
    RIV3=RCI*V3
    RIV2=RCI*V2
    DCI=DCO(I)
    RI3=RCI*3
    DO 4 J=1,3
      RCJ=RCOM(J)
      UCJ=DCO(J)
      DIJ=DELTA(I,J)
      RIJ=RCI*RCJ
      DV6=DIJ*V6
      RVJ7=V7*(DCI*RCJ+DCJ*RCI)
      TUNJC=WDC*(DFON*(DIJ+RIV3*RCJ)+DCI*RCJ-TCJ*RCI)*DIS(J)
      U(I)=U(I)+UR*(DIJ+V4*RIV2*RCJ)*TKAC(J)-TUNJC
      IF(J.L1.1000 10 6
    SUM=ZERO
  DO 7 K=1,3
    RCI=RCOM(K)
    DIC=DCO(K)
    DIK=DELTA(I,K)
    DIK=DELTA(J,K)
    RIJ=RIJ+RCK
    DIJ=DIJ+RCJ+DIK*RCI
    DIJ=DIJ+DIJ*DIK+V3*RIJ*TKAC(K)
    DIJ=DIJ+DIJ*RCI
    SUM=SUM+V3*(DIJ*(DIJ+V3*RIJ*TKAC(K)+RVJ7*RCJ+3.*RIJ*DIK
    +TCJ*DIK+DCI*DIK+V6*DIK*DIJ)*DIS(K)+DK*U
  STRES(I,J)=STRES(I,J)-SUM
-3UM FOR COMP + CONVENTION
6 CONTINUE
RETURN
END

*****
SUBROUTINE SIGDUTHCAC,DIS,XX,XC,M1)
  JACO
  COMMON KOD(220),IEC(220,3),TI(220,3),U(220,3),AREA(220),IFACE(220),INDEX(220,4),
  2 X(220,3),ALUMF(50),XLUMF(50,3),ILUMC(50,3),LJIN(50),LUMPO(50,12),LKOD(50),LMOD(50),
  3 MINE(25,25),DZ(25,25),DX(25,25),DY(25,25),DZT(25,25),
  4 A(I,2,3),EI(2,3),DK(2,3),EHA(2,3),ZLARG(2,3),XLANG(2,3),YLANG(2,3),
  5 PRIM(3,3),PRIM(2,3),ALPHA(3,3),UU(3,3),TT(3,3),DINOM(3,3),DELTA(3,3),ALT(3,3,3),
  6 E(I(3),EZ(3),W(3),DC(3),ISUB(3),XNUM(3),FROM(3),SYM(3),FALL(3),ORIG(3),
  7 EMOD(10),DEN(10),PR(10),THETA,DEPTH,RHO,ISYM,NSYM(10),NDIR(3,3),NMULT(3,3),
  8 TRAN42,TRAN21,TRAN7,TRANS,TRANLL,TRANL,TRANUL,TRANUL,TRANUL,FAC,NGHT(11),COORD(11,3),
  9 NODE,NELT,NLUMP,MN,MN,NL SX,NL SV,NLUTM,NLUTM,NLUTM,NLUTM,ISMA,USMA,NUMOR,NSLIP,NIL,MODITE,NS,
  * ZERO,ONE,TWO,THREE,HALF,FOUR,FIVE,SIX,SEVEN,EIGHT,NINE,TEN,PI,A,B,C,R,REGO,EM,H,HL,
  2 E,V,V1,V2,V3,V4,V5,V6,V7,V8,V9,CONS,CK,CL,G,CONDI,CFAR,THIC,ESCAN,USEAM,COH,FHT,
  1 IERSZ,ICHAN,LJIN,DISK,IFUP,ISTAR,IAUF(1152),IHEAD,IRITE,NELL,NRECO,KODE,ISSM(15),ISU(15)

  SUMMATION FOR ENMEMARK VALUES.
  DIMENSION DIS(3),XX(3),XC(3),STRES(2,3)

```

```

EQUIVALENCE (STRES, TT)
K3=RRRQ
WCK=H1*UK/RSQ
+M1 FOR COMP + CONVENTION
MS=M1*CD/K3
SUMD=0.
SUMMR=0.
DO 1 I=1, 3
  RCON(I)=(XC(I)-XX(I))/R
  SUMD=SUMD+DIS(I)
1 SUMMR=SUMMR+RCON(I)*DIS(I)
  DRUN=RCUN(I)
  DIS=DIS(I)
  I3=1*DRUN
  WDRUN=WCK*DRUN
  V35=WCK*(V3*SUMMR+DRUN-DIS)
  WV6=W3*(V6*DIS-D3*SUMMR)
  WV7=W3*V7*SUMMR
  WVV9=W3*V9*SUMMR
  WV8=W3*(V8-DIS*SUMMR+V8)
  W(3)=W(3)+WCK*SUMMR
  WDRUN=WCK*DRUN
  DO 6 I=1, 3
    RCI=RCUN(I)
    W(1)=W(1)+WDRUN*DIS(I)+RCI*V35
    SUM1=WV9*DIS(I)+WV8*RCI
    SUMW=WV9*RCI
    DO 8 J=1, 3
      RCL=RCUN(J)
8 STRES(I, J)=STRES(I, J)+RCJ*SUM1+SUMW*DIS(J)
  FAC13=MS*DIS(1)+WV7*RCI
  STRES(1, 3)=STRES(1, 3)+FAC13
  STRES(3, 1)=STRES(3, 1)+FAC13
6 STRES(1, 1)=STRES(1, 1)-WV6
  RETURN
END

*****

SUBROUTINE SISU
  JACO
  COMMON KOD(220), IBC(220, 3), T(220, 3), U(220, 3), AREA(220), IFACE(220), INDEX(220, 4),
  X(220, 3), ALUM(50), XLUM(50, 3), LLUM(50, 3), LIND(50), LUMPO(50, 12), LKON(50), LROH(50),
  MINE(25, 25), UZ(25, 25), DX(25, 25), DV(25, 25), OZT(25, 25),
  4 AK(9, 9), BK(9, 9), EK(9, 9), ENA(9, 9), ZLARG(9, 9), XLARG(9, 9), VLANG(9, 9),
  5 FRIN(3, 3), PRIM(3, 3), ALPHA(3, 3), UU(3, 3), TT(3, 3), LINDM(3, 3), DELTA(3, 3), ALT(3, 3, 3),
  6 EL(3), EZ(3), W(3), DC(3), ISUB(3), XNUM(3), RCON(3), SYM(3), FALL(3), ORIG(3),
  7 EMOD(10), DEN(10), FR(10), THETA, DEPTH, RHD, ISYM, NSYM(10), NUTR(3, 8), NMULT(3, 3),
  8 TRN42, TRN421, TRN42, TRN42, TRN42, TRN42, TRN42, TRN42, TRN42, TRN42, TRN42, TRN42, TRN42, TRN42, TRN42, TRN42,
  9 NOLE, NELT, NLUMF, NRM, M4, NLSE, NLSE, NDIRM, NDIRM, NDIRM, NDIRM, NDIRM, NDIRM, NDIRM, NDIRM, NDIRM, NDIRM,
  4 ZLKO, ONE, IONE, 11, 12, 13, THIRD, HALF, TWO, NITER, ONEGA, DEL, PT, A, B, C, R, RSQ, EM, H, HL,
  1 E, V, V1, V2, V3, V4, V5, V6, V7, V8, V9, CONS, CK, CH, 6, CONU, CFAR, THIR, ESEAR, GSEAR, COU, PH,
  2 IEF52, ICHAM, LIM, IDISK, IBOF, ISTAR, EUF(1152), IREAN, INTE, NELE, NELE, NRECO, KOUF, ISSW(15), ISW(15)

WRITE(1,100) (ISW(I), I=3, 7)
100 FORMAT(' SWITCH CONTROLS ARE (0=NO 1=YES >1 IS SPECIFIED)', /
  3' ISW 3 : TO REAM CLOSURE VALUES FROM DISK', T65, I2, /

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Author Diering J A C

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