5.13.9. *Modal Story Drift* (Δ_{im})

Modal story drift dihitung dengan menggunakan rumus sebagai berikut :

$$\Delta_{im} = \frac{V_{im}}{0{,}9Kk_i} \quad \text{.....(5.19)}$$

Dimana :

V_{im} adalah *modal shear force*

K adalah faktor jenis struktur = 1

k_i adalah kekakuan struktur

Dari rumus dan data-data di atas, maka didapat :

- Mode 1 :

$$\Delta_{31} = \left(\frac{V_{31}}{(0.9 * K * k_3}\right)$$

$$= \left(\frac{5.831716789}{(0.9 * 1.0 * 701755.102)}\right)$$

$$= 0.000009233542161 \text{ m} = 0.009233542161 \text{ mm}$$

$$\Delta_{21} = \left(\frac{V_{21}}{(0.9 * K * k_2}\right)$$

$$= \left(\frac{10.67508242}{(0.9 * 1.0 * 701755.102)}\right)$$

$$= 0.00000169219659 \text{ m} = 0.01690219659 \text{ mm}$$

$$\Delta_{11} = \left(\frac{V_{11}}{(0.9 * K * k_1}\right)$$

$$= \left(\frac{13.3680104}{(0.9 * 1.0 * 701755.102)}\right)$$

$$= 0.00002116599487 \text{ m} = 0.02116599487 \text{ mm}$$

➢ Mode 2 :

$$\Delta_{32} = \left(\frac{V_{32}}{(0.9 * K * k_3)}\right)$$

$$= \left(\frac{-1.355691103}{(0.9 * 1.0 * 701755.102)}\right)$$

$$= -0.000002146508723 \text{ m} = -0.002146508723 \text{ mm}$$

$$\Delta_{22} = \left(\frac{V_{22}}{(0.9 * K * k_2}\right)$$

$$= \left(\frac{-0.6223612599}{(0.9 * 1.0 * 701755.102)}\right)$$

$$= -0.0000009854043213 \text{ m} = -0.0009854043213 \text{ mm}$$

$$\Delta_{12} = \left(\frac{V_{12}}{(0.9 * K * k_1}\right)$$

$$= \left(\frac{1.090609988}{(0.9 * 1.0 * 701755.102)}\right)$$

$$= 0.000001726797386 \text{ m} = 0.001726797386 \text{ mm}$$

➢ Mode 3 :

$$\Delta_{33} = \left(\frac{V_{33}}{(0.9 * K * k_3}\right)$$

$$= \left(\frac{0.2945590688}{(0.9 * 1.0 * 701755.102)}\right)$$

$$= 0.0000004663847151 \text{ m} = 0.0004663847151 \text{ mm}$$

$$\Delta_{23} = \left(\frac{V_{23}}{(0.9 * K * k_2)}\right)$$

$$= \left(\frac{-0.596653959}{(0.9 * 1.0 * 701755.102)}\right)$$

$= -0.0000005694696293 \text{ m} = -0.0005694696293\text{mm}$

$$\Delta_{13} = \left(\frac{V_{13}}{(0.9 * K * k_1}\right)$$

$$= \left(\frac{0.158019022}{(0.9 * 1.0 * 701755.102)}\right)$$

$= 0.0000002501965295 \text{ m} = 0.0002501965295 \text{ mm}$

➢ SRSS :

$$\Delta_3 = \sqrt{F_{31}^{\ 2} + F_{32}^{\ 2} + F_{33}^{\ 2}}$$

$$= \sqrt{0.009233542161^{\ 2} + (-0.002146508723)^{2} + 0.0004663847151^{\ 2}}$$

$=0.009491223063$ mm

$$\Delta_2 = \sqrt{F_{21}^{\ 2} + F_{22}^{\ 2} + F_{23}^{\ 2}}$$

$$= \sqrt{0.01690219659^{\ 2} + (-0.0009854043213)^{2} + (-0.0005694696293)^{2}}$$

$=0.01694047127$mm

$$\Delta_1 = \sqrt{\Delta_{11}^{\ 2} + \Delta_{12}^{\ 2} + \Delta_{13}^{\ 2}}$$

$$= \sqrt{0.02116599487^{\ 2} + 0.001726797386^{\ 2} + 0.0002501965295^{\ 2}}$$

$= 0.021237791$ mm

Tabel 5.23 *Modal Story Drift* (Δ_{im})

Level	Mode 1	Mode 2	Mode 3	Δ_i (mm)
3	0.009233542161	-0.002146508723	0.0004663847151	0.009491223063
2	0.01690219659	-0.0009854043213	-0.0005694696293	0.01694047127
1	0.02116599487	0.001726797386	0.0002501965295	0.021237791

5.13.10. *Modal Lateral Displacement* (d_{im})

Modal lateral displacement pada tingkat gedung ke-i dihitung dengan :

$$d_{im} = \sum_{j=1}^{i} \Delta_{jm} \quad \text{.....(5.20)}$$

Modal lateral displacement merupakan jumlah dari *modal story drift* yang berada di bawahnya. Hasilnya dapat dilihat sebagai berikut :

Tabel 5.24 *Modal Lateral Displacement* (d_{im})

Level	Mode 1	Mode 2	Mode 3	d_i (mm)
3	0.04730173362	-0.001405115658	0.000147116153	0.0472282744
2	0.03806819146	0.000741393647	-0.0003192730998	0.03807674881
1	0.02116599487	0.001726797386	0.0002501965295	0.021237791

5.14 Perbandingan Hasil ProgSIP 2001 dengan Hasil Manual

Pada perbandingan kedua hasil ini dipakai bangunan 3 tingkat.

5.14.1 *Modeshape*

Tabel 5.25 *Modeshape*

Level	*Modeshape*					
	Manual			ProgSIP 2001		
	Mode 1	Mode 2	Mode 3	Mode 1	Mode 2	Mode 3
3	2.234788	-0.816724	0.58495	2.2348001	-0.8170274	0.5832492
2	1.79855	0.428104	-1.25895	1.7985551	0.4277530	-1.2582724
1	1	1	1	1	1	1

5.14.2. *Modal Effective Mass* (M_{im})

Tabel 5.26 *Modal Effective Mass* (M_{im})

Mode	*Modal Effective Mass* (M_{im})	
	Manual	ProgSIP 2001
1	272.59695	272.5966799
2	22.23944	22.1922204
3	3.26254	3.2460408

5.14.3. *Modal Effective Height* (h_{im}*)

Tabel 5.27 *Modal Effective Height* (h_{im}*)

Mode	*Modal Effective Height* (h_{im}*)	
	Manual	ProgSIP 2001
1	7.82179	7.8218000
2	-2.87499	-2.8596000
3	2.07574	2.0413700

5.14.4. *Modal Seismic Force* (F_{im})

Tabel 5.28 *Modal Seismic Force* (F_{im})

Level	*Modal Seismic Force* (F_{im})					
	Manual			ProgSIP 2001		
	Mode 1	Mode 2	Mode 3	Mode 1	Mode 2	Mode 3
3	5.8317167	-1.3556911	0.29455906	5.8329751	-1.3549792	0.2932040
2	4.8433656	0.7333298	-0.65422446	4.8443982	0.7320718	-0.6527623
1	2.6929279	1.7129712	0.517768441	2.6934945	1.7114359	0.5187766

5.14.5. *Modal Shear Force* (V_{im})

Tabel 5.29 *Modal Shear Force* (V_{im})

Level	*Modal Shear Force* (V_{im})					
	Manual			ProgSIP 2001		
	Mode 1	Mode 2	Mode 3	Mode 1	Mode 2	Mode 3
3	5.8317167	-1.3556911	0.29455906	5.8329751	-1.3549792	0.2932040
2	10.675082	-0.62236125	-0.35966529	10.6773733	-0.6229074	-0.3595583
1	13.36801	1.0906099	0.158019022	13.3708678	1.0885285	0.1592183

5.14.6. *Modal Overtuning Moment* (M_{im})

Tabel 5.30 *Modal Overtuning Moment* (M_{im})

Level	*Modal Overtuning Moment* (M_{im})					
	Manual			ProgSIP 2001		
	Mode 1	Mode 2	Mode 3	Mode 1	Mode 2	Mode 3
3	0	0	0	0	0	0
2	20.411008	-4.744918	1.030956	20.4154127	-4.7424272	1.0262140
1	57.773797	-6.923183	-0.2278721	57.7862192	-6.9226031	-0.2322402
Base	104.56183	-3.106048	0.325194	104.5842563	-3.1127535	0.3250239

5.14.7. *Modal Story Drift* (Δ_{im})

Tabel 5.31 *Modal Story Drift* (Δ_{im})

Level	*Modal Story Drift* (Δ_{im})					
	Manual			ProgSIP 2001		
	Mode 1	Mode 2	Mode 3	Mode 1	Mode 2	Mode 3
3	0.0092335	-0.00214650	0.00046638	0.0092355	-0.0021454	0.0004642
2	0.0169021	-0.00098540	-0.00056946	0.0169058	-0.0009863	-0.0005693
1	0.0211659	0.00172679	0.00025019	0.0211705	0.0017235	0.0002521

5.14.8. *Modal Lateral Displacement* (d_{im})

Tabel 5.32 *Modal Lateral Displacement* (d_{im})

Level	*Modal Lateral Displacement* (d_{im})					
	Manual			ProgSIP 2001		
	Mode 1	Mode 2	Mode 3	Mode 1	Mode 2	Mode 3
3	0.0473017	-0.00140511	0.0001471	0.0473119	-0.0014081	0.0001470
2	0.0380681	0.00074139	-0.00031927	0.0380763	0.0007372	-0.0003172
1	0.0211659	0.00172679	0.00025019	0.0211705	0.0017235	0.0002521

BAB VI

KESIMPULAN DAN SARAN

6.1 Kesimpulan

Kesimpulan yang dapat diambil dari penelitian "Investigasi Derajat Kontribusi Mode dengan Kekakuan Kolom Cara Muto pada Bangunan Bertingkat Banyak" adalah sebagai berikut :

1. Pada bangunan bertingkat dengan kekakuan kolom prinsip Muto akan menghasilkan *pola goyangan/mode* yang lebih besar dibandingkan dengan bangunan yang mempunyai kekakuan kolom dengan prinsip jepit-jepit.
2. Pada bangunan bertingkat dengan kekakuan kolom prinsip Muto akan menghasilkan prosentase *Modal Effective Mass* yang lebih besar dibandingkan dengan bangunan yang mempunyai kekakuan kolom dengan prinsip jepit-jepit.
3. Pada bangunan bertingkat dengan kekakuan kolom prinsip Muto akan menghasilkan prosentase yaitu antara 12% sampai 50% dan kekakuan kolom dengan prinsip jepit-jepit akan menghasilkan prosentase 10% sampai 33.33%, grafiknya mulai dari bangunan 6 tingkat sampai bangunan 50 tingkat menurun dan dapat dilihat pada Tabel 5.11.

Untuk Struktur dengan kekakuan kolom cara Shear Building :

6 tingkat Modal Effective Mass sampai mode ke 2,

12 tingkat Modal Effective Mass sampai mode ke 3,

18 tingkat Modal Effective Mass sampai mode ke 3,

20 tingkat Modal Effective Mass sampai mode ke 3,

25 tingkat Modal Effective Mass sampai mode ke 3,

30 tingkat Modal Effective Mass sampai mode ke 3,

35 tingkat Modal Effective Mass sampai mode ke 4,

40 tingkat Modal Effective Mass sampai mode ke 4,

45 tingkat Modal Effective Mass sampai mode ke 5,

50 tingkat Modal Effective Mass sampai mode ke 5.

Untuk Struktur dengan kekakuan kolom cara Muto :

6 tingkat Modal Effective Mass sampai mode ke 3,

12 tingkat Modal Effective Mass sampai mode ke 4,

18 tingkat Modal Effective Mass sampai mode ke 4,

20 tingkat Modal Effective Mass sampai mode ke 4,

25 tingkat Modal Effective Mass sampai mode ke 4,

30 tingkat Modal Effective Mass sampai mode ke 4,

35 tingkat Modal Effective Mass sampai mode ke 5,

40 tingkat Modal Effective Mass sampai mode ke 5,

45 tingkat Modal Effective Mass sampai mode ke 6,

50 tingkat Modal Effective Mass sampai mode ke 6.

4. Pada perhitungan prosentase *Modal Effective Mass* sangat bergantung dengan besarnya dimensi kolom.
5. Pada *modal seismic force* dengan prinsip shear building lebih besar daripada *modal seismic force* dengan cara Muto.
6. Pada *modal lateral displacement* dengan prinsip Muto lebih besar daripada *modal lateral displacement* dengan prinsip shear building.

6.2 Saran

Dari hasil penelitian dan kesimpulan-kesimpulan yang didapat, saran yang dapat disampaikan peneliti adalah :

1. Perlu diadakan kembali penelitian pada perhitungan modeshape.
2. Perlu diadakan penelitian tentang pengaruh variasi massa.
3. Perlu diadakan penelitian pengaruh adanya Rigid Joint.
4. Perlu diadakan penelitian pada struktur dinding.

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LAMPIRAN

ProgSIP 2001 versi 2.0 for Windows

1. Pengenalan program

ProgSIP 2001 versi 2 adalah program untuk melihat pengaruh mode dengan kekakuan kolom jepit-jepit dan kekakuan kolom Muto pada bangunan bertingkat banyak.

2.Spesifikasi Hardware

Win98 atau yang lebih tinggi

AMD Duron 850 Mhz

AGP 3D Blaster Riva TNT 32 MB

SDRAM 256 MB

Monitor 15' GTC

Hardisk 20 GB Quantum Fireball

100 MB hardisk space

3. Perjanjian nama File

File Input :

*.TXT = Input File

File Output:

*. EGN = Hasil perhitungan Frekuensi Sudut, Frekuensi.

*. MDS = Hasil perhitungan Mode Shape.

*. MEH = Hasil perhitungan Modal Effective Height

*. MEM = Hasil perhitungan Modal Effective Mass.

*. MLD = Hasil perhitungan Modal Lateral Displacement.

*. MOM = Hasil perhitungan Modal Overtuning Moment.

*. MSC = Hasil perhitungan Modal Seismic Coeficient.

*. MSF = Hasil perhitungan Modal Seismic Force.

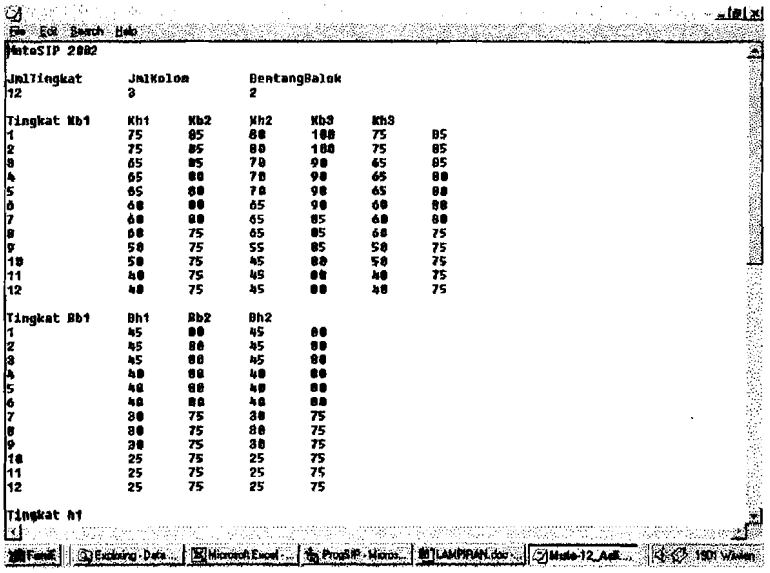
*. MShF = Hasil perhitungan Modal Shear Force.

*. MSD = Hasil perhitungan Modal Story Drift.

4. Cara Menjalankan ProgSIP 2001 versi 2.0

4.1 INPUT DATA STRUKTUR

Contoh Penulisan Input Data Struktur 12 Lantai, yaitu :



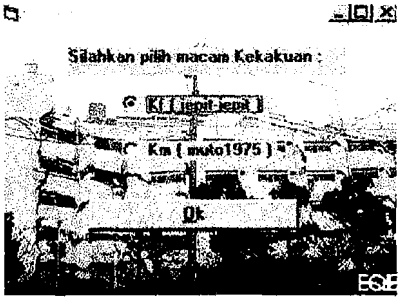
```
MatoSIP 2002

JmlTingkat      JmlKolom        BentangBalok
12              3               2

Tingkat Kb1     Kh1     Kb2     Kh2     Kb3     Kh3
1               75      85      80      100     75      85
2               75      85      80      100     75      85
3               65      85      70      90      65      85
4               65      80      70      90      65      80
5               65      80      70      90      65      80
6               60      80      65      90      60      80
7               60      80      65      85      60      80
8               60      75      65      85      60      75
9               50      75      55      85      50      75
10              50      75      45      80      50      75
11              40      75      40      80      40      75
12              40      75      45      80      40      75

Tingkat Bb1     Bh1     Bb2     Bh2
1               45      80      45      80
2               45      80      45      80
3               45      80      45      80
4               40      80      40      80
5               40      80      40      80
6               40      80      40      80
7               30      75      30      75
8               30      75      30      75
9               30      75      30      75
10              25      75      25      75
11              25      75      25      75
12              25      75      25      75

Tingkat Ht
```

Dalam menjalankan program yang diubah hanya angka saja.

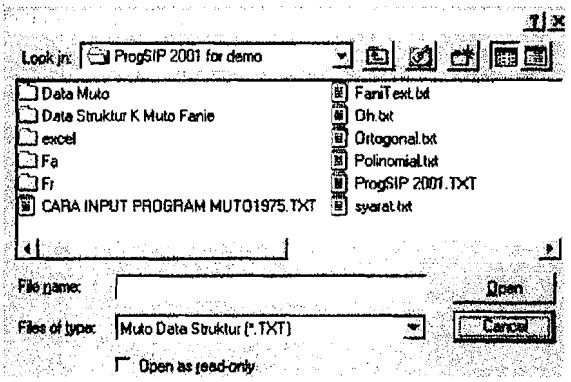
4.2 MENJALANKAN APLIKASI

Klik aplikasi ProgSIP 2001 versi 2.0, kemudian akan muncul tampilan seperti dibawah ini :

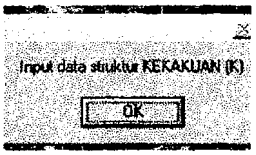
Setelah itu klik file-input data muto 1975 dan akan muncul gambar seperti dibawah ini :



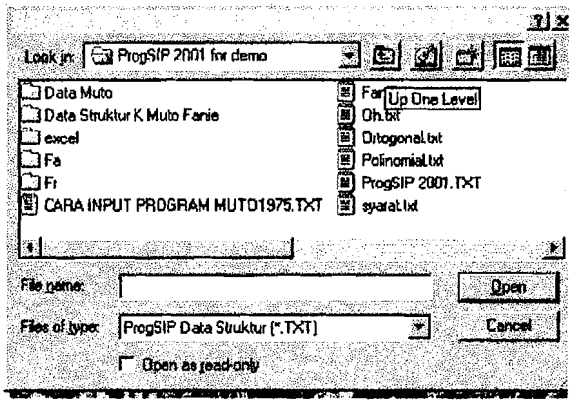
Setelah itu tekan OK dan akan keluar tampil dibawah ini :



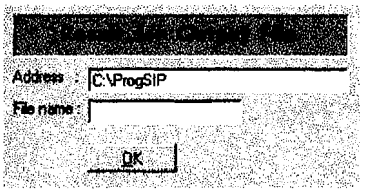
Setelah itu masuk ke Data Muto dan tekan Open dan setelah itu klik file-Input Data Kekakuan dan akan keluar pesan seperti dibawah ini :



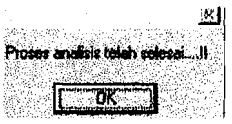
Klik OK dan selanjutnya akan keluar tampilan seperti dibawah ini :



Klik Folder Data Struktur K Muto Fanie dan tekan Open dan Setelah Itu Klik Proses dan akan keluar tampilan Save seperti dibawah ini :

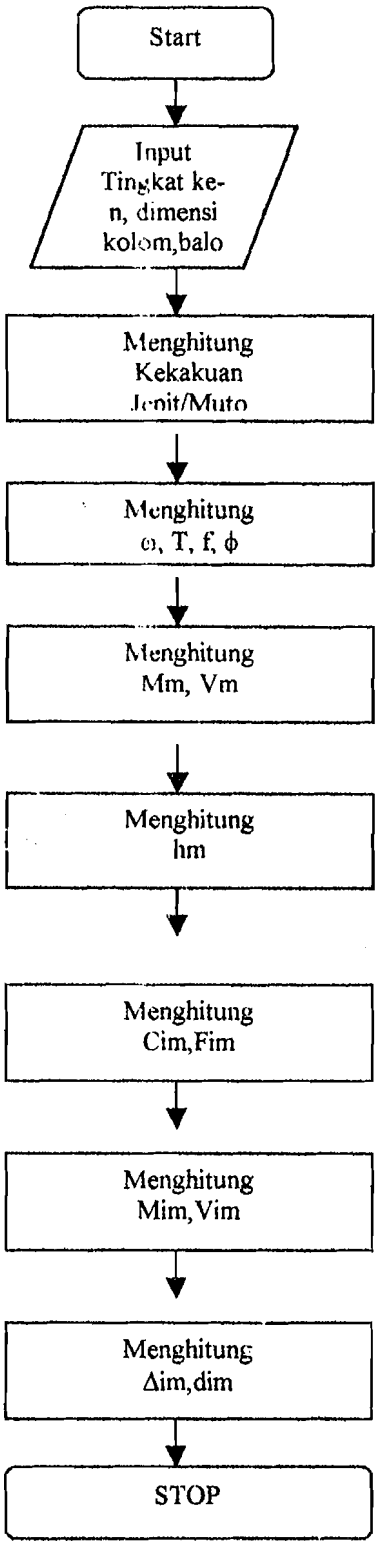


Lalu Klik Ok dan akan keluar pesan seperti dibawah ini :



Lalu Klik OK dan untuk melihat hasilnya klik analisis dan anda dapat melihat pada layar monitor.

4.3 Bagan Alir Global Program ProgSIP 2001 versi 2.0



4.4 Source Code Program

```
Public Filenumber As Integer, Ndof As Integer,
FileName As String, MaSs() As Single, KK() As
Single, Pt() As Single
Public Dampratio As Single, Tmax As Single, Dt As
Single, h() As Single
Public iq As Single, jw As Single
Public pg As Single, yt As Single
Public tpx() As Single
Public dxz As Single
Public kmnt As String
Sub Cetak_Hasil(CMass() As Single, CEigenVal() As
Single, Decomposed, Filenumber As Integer, Ndof As
Integer, ModeShp() As Single, ModeShp1() As Single)
' variabel u/ sorting
Dim A As Integer
Dim B As Integer
Dim btdx As Integer
Dim kvt As Single
On Error Resume Next
ReDim EE(Ndof) As Single
ReDim tpx(Ndof * Ndof)
CRLF = Chr$(13) + Chr$(10)
If Not Decomposed Then
  Dim NDoF2 As Integer
  NDoF2 = Ndof / 2
  For i = 1 To NDoF2
    j = Ndof - i + 1
    Swap CEigenVal(i), CEigenVal(j)
    For K = 1 To Ndof
      Swap ModeShp(K, i), ModeShp(K, j)
    Next K
  Next i
End If
frmProgressBar.ProgressBar.Max = Ndof
For i = 1 To Ndof
  frmProgressBar.ProgressBar.Value = i
  For j = 1 To Ndof
    Sum = 0
    For K = 1 To Ndof
      Sum = Sum + ModeShp(K, i) * CMass(K, j)
    Next K
    EE(j) = Sum
  Next j
  Sum = 0
  For j = 1 To Ndof
    Sum = Sum + EE(j) * ModeShp(j, i)
  Next j
  Sum = Sqr(Sum)
  For j = 1 To Ndof
    ModeShp(j, i) = ModeShp(j, i) / Sum
  Next j
Next i
frmProgressBar.ProgressBar.Value = 0
'logic modeshp
Dim qw As Single
Dim qe As Single
For i = 1 To Ndof
  qw = 1
  qe = qw
  For j = 1 To Ndof
    If ModeShp(j, i) * ModeShp(j + 1, i) >= 0 Then
      qw = qe
    ElseIf ModeShp(j, i) * ModeShp(j + 1, i) <= 0
Then
      qw = qw + 1
      qe = qw
    End If
    qe = qw
  Next j
  For j = 1 To Ndof
    ModeShp1(j, qe) = ModeShp(j, i)
  Next j
Next i
'STARTS sorting-1
btdx = Ndof
For A = 1 To btdx
  For B = A + 1 To btdx
    If CEigenVal(A) <= CEigenVal(B) Then GoTo
LompatTali 'Ascending
    kvt = CEigenVal(A)
    CEigenVal(A) = CEigenVal(B)
    CEigenVal(B) = kvt
LompatTali:
  Next B
Next A
'ENDS sorting-1
Dim u As Single
Dim DiKolom As Single
Dim Jarak As Integer
Dim sf As String
Dim phsm As Single
```

```
lngnd = Ndof
ReDim ModizShip(Ndof, Ndof)
' Proses saja 1
frmProgressBar.ProgressBar.Max = Ndof
dxz = 0
u = Ndof + 1
For i = 1 To Ndof
  frmProgressBar.ProgressBar.Value = i
  u = u - 1
  For j = 1 To Ndof
    If (ModeShp1(u, j) = 0) And (ModeShp1(1, j) = 0)
Then
    Else
      ModizShip(u, j) = (ModeShp1(u, j) /
ModeShp1(1, j)) 'asli
    End If
    'STARTS tambahan
    ' LEBIH BESAR dr NOL/SATU
    If ModizShip(u, j) <> 0 And ModizShip(u, j) <> 1
Then
      dxz = dxz + 1
      tpx(dxz) = ModizShip(u, j)
    End If
    'ENDS tambahan
  Next j
Next i
frmProgressBar.ProgressBar.Value = 0
lonadab = False
  For j = 1 To Ndof
    If (ModeShp1(Ndof, j) = 0) And (ModeShp1(1, j)
= 0) Then
      lonadab = True
    End If
  Next j
Dim pkjnbfszW As Boolean
pkjnbfszW = False
If Ndof >= pkjnbfsz Then pkjnbfszW = True
If pkjnbfszW Then lonadab = True
If lonadab Then
    If TanpaTmp Then
    'Debug.Print "TanpaTmp = true, Proses-
BuatTmp"
      'STARTS tambahan
      Dim w As Single
      w = 0
      For j = 1 To Ndof
        If (ModeShp1(Ndof, j) = 0) And
(ModeShp1(1, j) = 0) Then w = w + 1
      Next j
      qwrt = w
      'Debug.Print "Public "; qwrt
      Dim Sim() As Single
      ReDim Sim(w)
      w = 0
      For j = 1 To Ndof
        If (ModeShp1(Ndof, j) = 0) And
(ModeShp1(1, j) = 0) Then
          w = w + 1
          Sim(w) = j
        End If
      Next j
      For j = 1 To w
        Debug.Print w; j; Sim(j)
      Next j
      'ENDS tambahan
      '
      tdqpy
      '
      'BARU
      pg = 8
      yt = 9
      Dim dx As Single
      Dim sdh As Boolean
      Dim qtg As Single
      sdh = False
      For dx = 1 To w
        u = Ndof + 1
        frmProgressBar.ProgressBar.Max = Ndof
        For j = 1 To Ndof
          frmProgressBar.ProgressBar.Value = j
          u = u - 1
          ModizShip(u, Sim(dx)) = wqx(pg, yt)
          phsm = ModizShip(u, Sim(dx))
          ModizShip(u, Sim(dx)) = qxp(phsm)
          qtg = Sim(dx)
          ltkbd u, qtg
        Next j
        'sorting NDof NOL yg terakhir
        If (sdh = False) And (Sim(dx) = Ndof) Then
          sdh = True
          ModizShip(1, Sim(w)) = wqx(pg, yt)
          mm
```

```
            ModizShip(1, Sim(dx)) = 1
          End If
          frmProgressBar.ProgressBar.Value = 0
        Next dx
        '
        Dim bs As Boolean
        bs = False
        Dim pel As Boolean
        pel = False
        If Ndof Mod 2 = 0 Then pel = True
        sdh = False
        For dx = 1 To w
          bs = False
          u = Ndof + 1
          frmProgressBar.ProgressBar.Max = Ndof
          For j = 1 To Ndof
            frmProgressBar.ProgressBar.Value = j
            u = u - 1
            phsm = ModizShip(u, Sim(dx))
            If Sim(dx) <> Ndof Then
              ' bagian cek menjelang Mode terakhir
sekitar 2 Mode, selang-seling ADA dua yg SAMA
              If (Sim(dx) >= (Ndof - 2)) Then
                'STARTS selang-seling ADA dua yg
SAMA
                If bs = False Then
                  bs = True
                  Telp = 2
                  Sorak Sim(dx), w
                End If
                'ENDS selang-seling ADA dua yg
SAMA
              Else
                'STARTS menjauhi NDof selang-seling
dobel nya makin banyak, 3 dobel
                If bs = False Then
                  bs = True
                  Telp = 3
                  Sorak Sim(dx), w
                End If
                'ENDS menjauhi NDof selang-seling
dobel nya makin banyak, 3 dobel
              End If
            Else
              If pel Then
                If u Mod 2 <> 0 Then
                  ModizShip(u, Sim(dx)) = qxp(phsm)
                Else
                  ModizShip(u, Sim(dx)) = xjv(phsm)
                End If
              Else
                If u Mod 2 = 0 Then
                  ModizShip(u, Sim(dx)) = xjv(phsm)
                Else
                  ModizShip(u, Sim(dx)) = qxp(phsm)
                End If
              End If
            End If
          Next j
          frmProgressBar.ProgressBar.Value = 0
        Next dx
        BuatTmp
      Else
        BacalahTmp
      End If
    End If
    '-------------------------------------------------------------
------------------------- BacalDisk

    'Cetak saja  [bikin .MDS]
    sf = "####0.############0" '11 asli
    Jarak = 19 '23 '26 '29 '19 ' 23 '25 '29 asli 25
          Dim SelisihJarak As Integer
          Dim Spasinya As Integer
          Spasinya = 4
          ' mencari nilai u/ Jarak, yg sesuai bagi semua
kolom
          u = Ndof + 1
          For i = 1 To Ndof
            u = u - 1
            For j = 1 To Ndof
              If Len(Format(ModizShip(u, j), sf)) >
Jarak Then
                SelisihJarak =
Len(Format(ModizShip(u, j), sf)) - Jarak
                Jarak = Jarak + SelisihJarak +
Spasinya
              End If
            Next j
          Next i
    wess$ = frmSave.Text1
```

```
  Filenumber = FreeFile: Open frmSave.Text2 & "\" &
wess$ & ".MDS" For Output As #Filenumber
  CRLF = Chr$(13) + Chr$(10)
  Print #Filenumber, App.Title & " (Dapat dilihat pada
file *.MDS)"
  Print #Filenumber,
  Print #Filenumber, "MODE SHAPE"
  Print #Filenumber,
    For DiKolom = 1 To Ndof
      Print #Filenumber, Tab(Jarak * (DiKolom - 1));
"Mode " & Format(DiKolom, "00");
      If DiKolom = Ndof Then Print #Filenumber,
    Next DiKolom
  frmProgressBar.ProgressBar.Max = Ndof
  u = Ndof + 1
  For i = 1 To Ndof
    frmProgressBar.ProgressBar.Value = i
    u = u - 1
    For j = 1 To Ndof
        Print #Filenumber, Tab(Jarak * (j - 1));
Format(ModizShip(u, j), sf);
    Next j
    Print #Filenumber,
  Next i
  frmProgressBar.ProgressBar.Value = 0
  Print #Filenumber,
  Print #Filenumber, "Oleh: Fani Darmawan"
  Print #Filenumber, "Teknik Sipil UII, 1997"
  Print #Filenumber, "Alamat : Jl. Pamarican no.40
Banjar-JAWA BARAT 46321"
  Print #Filenumber, "Telp: 0265-742842"
  Print #Filenumber,
  Close #Filenumber
'Dapur
Dim bSdhAmbil As Boolean
bSdhAmbil = False
wess$ = frmSave.Text1
Filenumber = FreeFile: Open frmSave.Text2 & "\" &
wess$ & ".EGN" For Output As #Filenumber
Print #Filenumber, "ProgSIP 2001 (Dapat dilihat pada
file *.EGN)"
Print #Filenumber,
  frmProgressBar.ProgressBar.Value = Ndof
  For i = 1 To Ndof
    frmProgressBar.ProgressBar.Value = i
    CRLF = Chr$(13) + Chr$(10)
    Print #Filenumber, "MODE KE = " & i
    Print #Filenumber, "    Frekuensi Sudut(Omega) =
" & CEigenVal(i) & "  Rad/dt"
    F = CEigenVal(i) / (44 / 7)
    Print #Filenumber, "    Frekuensi = " & F & "  Hz"
    Print #Filenumber, "    Perioda = " & 1 / F & "  dt"
    Print #Filenumber,
    If bSdhAmbil = False Then
      NilaiT = 1 / F
      bSdhAmbil = True
    End If
  Next i
  frmProgressBar.ProgressBar.Value = 0
  Print #Filenumber, "Oleh: Fani Darmawan"
  Print #Filenumber, "Teknik Sipil UII, 1997"
  Print #Filenumber, "Alamat : Jl. Pamarican no.40
Banjar-JAWA BARAT 46321"
  Print #Filenumber, "Telp: 0265-742842"
  Print #Filenumber,
Close #Filenumber
Erase EE

  '  frmProgSIP.Caption = "Joni-Bas - WilGempa=" +
Str(WilGempa) _
  '    + ", rl=" + Format(rl, sf) + ", K_isian=" +
Format(K_isian, sf) + ", C=" + Format(c, sf) + ",
NilaiT=" + Format(NilaiT, sf)

'---------
 Hitung_C
'---------
End Sub
Sub Kekakuan_dan_Matrik_massa(CMass() As Single,
Ndof As Integer, StiffS() As Single)
ReDim StiffS(Ndof, Ndof), CMass(Ndof, Ndof)

frmProgressBar.ProgressBar.Max = Ndof
For B = 1 To Ndof
  frmProgressBar.ProgressBar.Value = B
  For K = 1 To Ndof
    If B = K Then
    If (K - 1 > 0) Then StiffS(B, K - 1) = -KK(B)
    If (K + 1 <= Ndof) Then StiffS(B, K + 1) = -
KK(B)
    If (B + 1) <= Ndof Then StiffS(B, K) = KK(B) +
KK(B + 1) Else StiffS(B, K) = KK(B)
```

```
    End If
  Next K
Next B
frmProgressBar.ProgressBar.Value = 0
For B = 1 To Ndof
  For K = 1 To Ndof
    If B = K Then CMass(B, K) = MaSs(B)
  Next K
Next B
For i = 2 To Ndof
  For j = 1 To i - 1
    StiffS(j, i) = StiffS(i, j)          ' Place a lower
triangular term into an upper triangular position.
    CMass(j, i) = CMass(i, j)
  Next j
Next i
End Sub
Sub Simetrik_standar(CMassU() As Single, CMass()
As Single, Decomposed, Ndof As Integer, StiffS() As
Single, u() As Single)
 CRLF = Chr$(13) + Chr$(10)
ReDim u(Ndof, Ndof), CMassU(Ndof, Ndof)
For i = 1 To Ndof
  For j = 1 To Ndof
    u(i, j) = StiffS(i, j)
  Next j
Next i
Decomposed = False
Decompose u(), Ndof, Singular
If Not Singular Then
  'frmNRMDoFS.txtInfo1.Text = "Stiffness Matrix
decomposed."
  For i = 1 To Ndof
    For j = 1 To Ndof
      CMassU(i, j) = CMass(i, j)
    Next j
  Next i
Else
  For i = 1 To Ndof
    For j = 1 To Ndof
      u(i, j) = CMass(i, j)
    Next j
  Next i
  Decomposed = True
  Decompose u(), Ndof, Singular
  If Not Singular Then
    'frmNRMDoFS.txtInfo1.Text =
frmNRMDoFS.txtInfo1.Text + CRLF + "Stiffness
Matrix not positive definite, Mass Matrix decomposed."
    For i = 1 To Ndof
      For j = 1 To Ndof
        CMassU(i, j) = StiffS(i, j)
      Next j
    Next i
  Else
    'frmNRMDoFS.txtInfo1.Text =
frmNRMDoFS.txtInfo1.Text + CRLF + "Stiffness
Matrix and Mass Matrix not positive definite, execution
terminated."
    Singular = True
    Exit Sub
  End If
End If
InvertMatrix u(), Ndof
frmProgressBar.ProgressBar.Max = Ndof
For i = 1 To Ndof
  frmProgressBar.ProgressBar.Value = i
  i1 = Ndof - i + 1
  For j = 1 To Ndof
    J1 = Ndof - j + 1
    Temp = 0
    For K = 1 To J1
      Temp = Temp + u(J1, K) * CMassU(i1, K)
    Next K
    CMassU(i1, J1) = Temp
  Next j
Next i
frmProgressBar.ProgressBar.Value = 0
For i = 1 To Ndof
  i1 = Ndof - i + 1
  For J1 = 1 To Ndof
    Temp = 0
    For K = 1 To i1
      Temp = Temp + CMassU(K, J1) * u(i1, K)
    Next K
    CMassU(i1, J1) = Temp
  Next J1
Next i
End Sub
Sub Cari_Eigen(A() As Single, n As Integer,
Eigenvalue() As Single, Eigenvector() As Single)
CRLF = Chr$(13) + Chr$(10)
```

```
'frmNRMDoFS.txtInfo1.Text =
frmNRMDoFS.txtInfo1.Text + CRLF + "ProgSIP 2001
succeded to analyze "
Static AIK() As Single: ReDim AIK(n)
ReDim Eigenvalue(n), Eigenvector(n, n)
SIGMA1 = 0
For i = 1 To n
  SIGMA1 = SIGMA1 + A(i, i) ^ 2
  Eigenvector(i, i) = 1
Next i
MaxIteration = 33
frmProgressBar.ProgressBar.Max = MaxIteration
For Iteration = 1 To MaxIteration
  frmProgressBar.ProgressBar.Value = Iteration
  For j = 1 To n - 1
    For K = j + 1 To n
      Q = Abs(A(j, j) - A(K, K))

      If (Q > TOLERANCE) Then
        If (Abs(A(j, K)) <= TOLERANCE) Then
GoTo ZeroOffDiagonalElement
        P = 2 * A(j, K) * Q / (A(j, j) - A(K, K))
        SPQ = Sqr(P ^ 2 + Q ^ 2)
        CosA = Sqr((1 + Q / SPQ) / 2)
        SinA = P / (2 * CosA * SPQ)
      Else
        CosA = 1 / Sqr(2)
        SinA = CosA
      End If
      For l = 1 To n
        EVKI = Eigenvector(l, j)
        Eigenvector(l, j) = EVKI * CosA +
Eigenvector(l, K) * SinA
        Eigenvector(l, K) = EVKI * SinA -
Eigenvector(l, K) * CosA
        If (l <= K) Then
          AIK(l) = A(j, l)
          A(j, l) = CosA * AIK(l) + SinA * A(l, K)
          If (l = K) Then A(K, l) = SinA * AIK(l) -
CosA * A(K, l)
        Else
          AIK1 = A(j, l)
          A(j, l) = CosA * AIK1 + SinA * A(K, l)
          A(K, l) = SinA * AIK1 - CosA * A(K, l)
        End If
      Next l
      AIK(K) = SinA * AIK(j) - CosA * AIK(K)
      For l = 1 To K
        If (l > j) Then
          A(l, K) = SinA * AIK(l) - CosA * A(l, K)
        Else
          AK1 = A(l, j)
          A(l, j) = CosA * AK1 + SinA * A(l, K)
          A(l, K) = SinA * AK1 - CosA * A(l, K)
        End If
      Next l
    Next K
  Next j
ZeroOffDiagonalElement:
  If K <= n Then A(j, K) = 0
  SIGMA2 = 0
  For j = 1 To n
    Eigenvalue(j) = A(j, j)
    SIGMA2 = SIGMA2 + Eigenvalue(j) ^ 2
  Next j
  'frmNRMDoFS.txtInfo1.Text =
frmNRMDoFS.txtInfo1.Text + CRLF + "Iteration
number " & Iteration & "."
  If (1 - SIGMA1 / SIGMA2 < TOLERANCE) Then
    Erase AIK
    'frmNRMDoFS.txtInfo1.Text =
frmNRMDoFS.txtInfo1.Text + CRLF + "Convergence
for determination of eigenpairs reached after " &
Iteration & " iterations."
    Converged = True
    Exit Sub
  End If
  SIGMA1 = SIGMA2
Next Iteration
frmProgressBar.ProgressBar.Value = 0
'frmNRMDoFS.txtInfo1.Text =
frmNRMDoFS.txtInfo1.Text + CRLF + "Determination
of eigenpairs fail to converge after " & MaxIteration &
" iterations. Execution terminated."
Converged = False
End Sub
Sub EigenVector_Transformasi(CEigenVal() As Single,
Decomposed, Ndof As Integer, ModeShp() As Single,
u() As Single)
If Decomposed Then
  For i = 1 To Ndof
    If CEigenVal(i) < TOLERANCE Then
```

```
        CEigenVal(i) = 0
      Else
        CEigenVal(i) = Sqr(CEigenVal(i))
      End If
    Next i
  Else
    For i = 1 To Ndof
      CEigenVal(i) = 1 / Sqr(CEigenVal(i))
    Next i
  End If
  For i = 1 To Ndof
    For j = 1 To Ndof
      Sum = 0
      For K = i To Ndof
        Sum = Sum + u(K, i) * ModeShp(K, j)
      Next K
      ModeShp(i, j) = Sum
    Next j
  Next i
  frmProgressBar.ProgressBar.Max = Ndof
  For i = 1 To Ndof
    frmProgressBar.ProgressBar.Value = i
    BIG = 0
    For j = 1 To Ndof
      C1 = Abs(ModeShp(j, i))
      C2 = Abs(BIG)
      If (C1 > C2) Then BIG = C1
    Next j
    For j = 1 To Ndof
      ModeShp(j, i) = ModeShp(j, i) / BIG
    Next j
  Next i
  frmProgressBar.ProgressBar.Value = 0
  End Sub
  Sub Displacement_Awal(CMass() As Single, StiffS()
  As Single, Ndof As Integer, NT As Single, Dt As
  Single, F() As Single, UA() As Single)
    ND1 = Ndof + 1
    ReDim X(Ndof, ND1) As Single
    frmProgressBar.ProgressBar.Max = Ndof
    NT1 = NT + 1
    For i = 1 To Ndof
      frmProgressBar.ProgressBar.Value = i
      X(i, ND1) = F(i, 1)
      For j = 1 To Ndof
        X(i, j) = CMass(i, j)
      Next j
    Next i
    frmProgressBar.ProgressBar.Value = 0
    SOLVER X, Ndof
    ReDim UA(Ndof, 1) As Single
    For i = 1 To Ndof
      UA(i, 1) = X(i, ND1)
    Next i
  End Sub
  Sub Damping1(ByVal Dampratio As Single,
  Filenumber As Integer, CMass() As Single, ByVal n As
  Single, DAMP() As Single, CEigenVal() As Single,
  DA() As Single)
    or j = 1 To n
      For K = 1 To n
        DAMP(K, j) = DAMP(K, j) + 2 * Dampratio *
  CEigenVal(frmNRMDoFS.DttxtInput1) * CMass(K, j)
      Next K
    Next j
  Print #Filenumber, "Damping Ratio = " & Dampratio
  Print #Filenumber, "Damping Matrix : "
  For i = 1 To n
    For j = 1 To n
      Print #Filenumber, Format(DAMP(j, i),
  "##0.###00"),
    Next j
    Print #Filenumber,
  Next i
  Close #Filenumber
  End Sub
  Sub Damping2(ByVal Dampratio As Single,
  Filenumber As Integer, StiffS() As Single, ByVal n As
  Single, DAMP() As Single, CEigenVal() As Single,
  DA() As Single)
    For j = 1 To n
      For K = 1 To n
        'DAMP(K, J) = DAMP(K, J) + 2 * (Dampratio /
  CEigenVal(frmNRMDoFS.DttxtInput2)) * StiffS(K, J)
      Next K
    Next j
  Print #Filenumber, "Damping Ratio = " & Dampratio
  Print #Filenumber, "Damping Matrix : "

  For i = 1 To n
    For j = 1 To n
```

```
      Print #Filenumber, Format(DAMP(j, i),
"##0.###00"),
    Next j
    Print #Filenumber,
Next i
Close #Filenumber
End Sub
Sub Damping3(ByVal Dampratio As Single,
Filenumber As Integer, StiffS() As Single, CMass() As
Single, ByVal n As Single, DAMP() As Single,
CEigenVal() As Single, DA() As Single)
  For j = 1 To n
    For K = 1 To n
      'DAMP(K, J) = DAMP(K, J) + (2 * Dampratio *
(CEigenVal(frmNRMDoFS.DttxtInput1) *
CEigenVal(frmNRMDoFS.DttxtInput2)) /
(CEigenVal(frmNRMDoFS.DttxtInput1) +
CEigenVal(frmNRMDoFS.DttxtInput2))) * CMass(K,
J) + (2 * Dampratio /
(CEigenVal(frmNRMDoFS.DttxtInput1) +
CEigenVal(frmNRMDoFS.DttxtInput2))) * StiffS(K, J)
    Next K
  Next j
'Print #Filenumber, "Rasio Redaman = " & Dampratio
'Print #Filenumber, "Matriks Redaman : "
For i = 1 To n
  For j = 1 To n
'     Print #Filenumber, Format(DAMP(J, i),
"##0.###00"),
  Next j
'  Print #Filenumber,
Next i
'Close #Filenumber
End Sub
Sub SOLVER(A() As Single, Ndof As Integer)
m = 1
EPS = 0.0000000001
NPLUSM = Ndof + m
frmProgressBar.ProgressBar.Max = Ndof
For K = 1 To Ndof
  frmProgressBar.ProgressBar.Value = K
  DET = DET * A(K, K)
  If Abs(A(K, K)) < EPS Then Exit Sub
  KP1 = K + 1
  For j = KP1 To NPLUSM
    A(K, j) = A(K, j) / A(K, K)
  Next j
  A(K, K) = 1
  For i = 1 To Ndof
    If i = K Or A(i, K) = 0 Then GoTo 9
    For j = KP1 To NPLUSM
      A(i, j) = A(i, j) - A(i, K) * A(K, j)
    Next j
    A(i, K) = 0
9:  Next i
Next K
frmProgressBar.ProgressBar.Value = 0
End Sub
Sub interpolate(Ndof As Integer, Tmax As Single, Dt
As Single, NEQ() As Single, F() As Single, P() As
Single, TC() As Single)
ReDim NEQ(Ndof) As Single, TC(Ndof) As Single
'NEQ(1) = 2
'NEQ(2) = 2
'TC(1) = 0
'TC(2) = 0.4
'P(1) = 10
'P(2) = 10
ANN = 0#
II = 1
For ID = 1 To Ndof
  NE = NEQ(ID)
  If NE = 0 Then GoTo 12
  If NE > Tmax / Dt Then NE = Tmax / Dt
  NT = TC(NE) / Dt
  NT1 = NT + 1
  NT2 = NT + 2
  F(ID, 1) = P(1)
  ANN = 0#
  II = 1
  For i = 2 To NT2
    AI = i - 1
    t = AI * Dt
    If t > TC(NE) Then GoTo 12
    If t < TC(II + 1) Then GoTo 9
    ANN = -TC(II + 1) + t - Dt
    II = II + 1
9:   ANN = ANN + Dt
    ReDim Preserve F(Ndof, NT2)
    F(ID, i) = P(II) + (P(II + 1) - P(II)) * ANN / (TC(II
+ 1) - TC(II))
  Next i
```

```
12: Next ID
End Sub
Option Base 0
' ALL form
Public Ingnd As Integer
Public qwrt As Integer
Public Telp As Integer
Public bProsesIsianSekaligus As Boolean
Public WilGempa As Integer
Public NilaiT As Double
Public bTanahLunak As Boolean
Public trewqbgt As Integer
Public lonadab As Boolean
Public pkjnbfsz As Integer

Dim npbtrw As Single

' form Options
Public bRubahselalu As Boolean

' struktur
Public c As Single
Public rf As Single

'frmMEMas
Public ModizShip() As Double '2D
Public JumlahTotal As Double
Public Vim() As Double '1D
Public RumusAtas() As Double '1D
Public RumusBawah() As Double '1D
Public RumusAperB() As Double '1D
Public JumlahMt As Double
Public EPersen() As Double
Public EPersenKum() As Double

'frmModSeiForce
Public Rum_Atas() As Double '2D
Public Rum_Bawah() As Double '1D
Public HasilCim() As Double '2D

'frmModSeiForce_Fim
Public HasilFim() As Double '2D
Public Fi_Ton() As Double '1D

'frmModShearForce
Public JumMode() As Double '2D
Public Vi_Ton() As Double '1D

'frmModStoryDrift
Public K_isian As Double
Public Simpangan() As Double '2D
Public AkarDrift() As Double '1D

'frmModOvertuningMoment
Public Mi_Ton() As Double '2D
Public Moment() As Double '1D
Public JumH As Double
Public JumHg() As Double '1D

'frmModLateralDisplacement
Public d() As Double '2D
Public Di() As Double '1D
'

'frmModEffecHei
Public MeEffeHei() As Double '1D
Public Rum_AtasHei() As Double '1D
Public Rum_BawahHei() As Double '1D
Public JumlahTotalHei As Double '1D
'
  '
  ' only testing
  Public TestProgram As Boolean
  '


Sub Proses_All()
Dim Y As Integer
Dim yn As Integer
Dim X As Integer
Dim i As Integer
Dim j As Integer
Dim u As Integer
Dim DiKolom As Single
Dim Ki_09_K As Double 'Single
Dim s As Single
Dim Vs As Double 'Single

  Ndof = Ingnd

  Clear_Dim ' dekalarasi u/ redim
  Clear_Var 'hapus variabel 1D
```

```
'--------------------------------
' rumus FORM MODAL EFFECTIVE MASS
'--------------------------------
'rumus frmMEMas - 1
For DiKolom = 1 To Ndof
  Ndof = lngnd
  u = Ndof + 1
  For i = 1 To Ndof
    RumusAtas(DiKolom) = RumusAtas(DiKolom) +
(ModizShip(i, DiKolom) * MaSs(i))
    RumusBawah(DiKolom) =
RumusBawah(DiKolom) + ((ModizShip(i, DiKolom) ^
2) * MaSs(i))
  Next i
  RumusAtas(DiKolom) = (RumusAtas(DiKolom) ^
2)
Next DiKolom
'
'rumus frmMEMas - 2
'jumlah massa = Mt
For i = 1 To Ndof
  JumlahMt = JumlahMt + MaSs(i)
Next i
'
'--------------------------------------
'rumus frmMEMas - 3
Vs = c * rI * K_isian * JumlahMt * 0.981
'
'--------------------------------------
'Dim sf
'  sf = "####0.############0" '11 asli
'  frmProgSTP.Caption = "Joni-Bas - WilGempa=" +
Str(WilGempa) _
'    + ", rI=" + Format(rI, sf) + ", K_isian=" +
Format(K_isian, sf) + ", C=" + Format(c, sf) +
", NilaiT=" + Format(NilaiT, sf)
'--------------------------------------
'
For DiKolom = 1 To Ndof
  If (RumusAtas(DiKolom) = 0) And
(RumusBawah(DiKolom) = 0) Then
    RumusAperB(DiKolom) = 0
  Else
    RumusAperB(DiKolom) = RumusAtas(DiKolom)
/ RumusBawah(DiKolom)
  End If
Next DiKolom
'
'rumus frmMEMas - 4
For DiKolom = 1 To Ndof
  JumlahTotal = JumlahTotal +
RumusAperB(DiKolom)
Next DiKolom
'
'rumus frmMEMas - 5
For DiKolom = 1 To Ndof
  If (RumusAperB(DiKolom) = 0) And (JumlahTotal
= 0) Then
    EPersen(DiKolom) = 0
  Else
    EPersen(DiKolom) = (RumusAperB(DiKolom) /
JumlahTotal) * 100
  End If
  Vim(DiKolom) = (Vs * EPersen(DiKolom)) / 100
Next DiKolom
'
'rumus frmMEMas - 6
frmProgressBar.ProgressBar.Max = Ndof
For Y = 1 To Ndof
  frmProgressBar.ProgressBar.Value = Y
  For yn = 1 To Y
    EPersenKum(Y) = EPersenKum(Y) +
EPersen(yn)
  Next yn
Next Y
frmProgressBar.ProgressBar.Value = 0
'end rumus FORM MODAL EFFECTIVE MASS



'--------------------------------------
' rumus FORM MODAL SEISMIC COEFFICIENT
'--------------------------------------
'rumus frmModSeiForce - 1
Ndof = lngnd
' // rumus atas
For i = 1 To Ndof
  For DiKolom = 1 To Ndof
    Rum_Atas(DiKolom, i) = (ModizShip(DiKolom,
i) * MaSs(DiKolom))
  Next DiKolom
Next i
' // rumus bawah
```

```
  For DiKolom = 1 To Ndof
    For i = 1 To Ndof
      Rum_Bawah(DiKolom) =
Rum_Bawah(DiKolom) + (ModizShip(i, DiKolom) *
MaSs(i))
    Next i
  Next DiKolom
  'rumus frmModSeiForce - 2
  frmProgressBar.ProgressBar.Max = Ndof
  u = Ndof + 1
  For i = 1 To Ndof
    frmProgressBar.ProgressBar.Value = i
    u = u - 1
    For j = 1 To Ndof
      If (Rum_Atas(u, j) = 0) And (Rum_Bawah(j) = 0)
Then
        HasilCim(u, j) = 0
      Else
        HasilCim(u, j) = Rum_Atas(u, j) /
Rum_Bawah(j)
      End If
    Next j
  Next i
  frmProgressBar.ProgressBar.Value = 0
  'end rumus FORM MODAL SEISMIC
COEFFICIENT


  '---------------------------------------
  ' rumus FORM MODAL SEISMIC FORCE (FIM)
  '---------------------------------------
  'rumus frmModSeiForce_Fim - 1
  frmProgressBar.ProgressBar.Max = Ndof
  Ndof = lngnd
  u = Ndof + 1
  For i = 1 To Ndof
    frmProgressBar.ProgressBar.Value = i
    u = u - 1
    For j = 1 To Ndof
      HasilFim(u, j) = HasilCim(u, j) * Vim(j)
    Next j
    For j = 1 To Ndof
      Fi_Ton(u) = Fi_Ton(u) + (HasilFim(u, j) ^ 2)
    Next j
  Next i
  frmProgressBar.ProgressBar.Value = 0
  'end rumus MODAL SEISMIC FORCE (FIM)


  '---------------------------------
  ' rumus FORM MODAL SHEAR FORCE (VIM)
  '---------------------------------
  'rumus frmModShearForce - 1
  ' rumus jumlah baris y
  u = Ndof + 1
  For Y = 1 To Ndof
    u = u - 1
    For X = 1 To Ndof
      For yn = u To Ndof
        JumMode(Y, X) = JumMode(Y, X) +
HasilFim(yn, X)
      Next yn
    Next X
  Next Y
  ' rumus
  u = Ndof + 1
  For Y = 1 To Ndof
    u = u - 1
    For X = 1 To Ndof
      Vi_Ton(u) = Vi_Ton(u) + (JumMode(u, X) ^ 2)
    Next X
  Next Y
  'end rumus MODAL SHEAR FORCE (VIM)


  '------------------------------
  ' rumus FORM MODAL STORY DRIFT
  '------------------------------
  'rumus frmModStoryDrift - 1
  u = Ndof + 1
  For Y = 1 To Ndof
    u = u - 1
    For X = 1 To Ndof
      Ki_09_K = KK(u) * 0.9 * K_isian
      Simpangan(u, X) = JumMode(Y, X) / Ki_09_K
      Simpangan(u, X) = Simpangan(u, X) * 1000
    Next X
  Next Y
  ' rumus
  u = Ndof + 1
  For Y = 1 To Ndof
    u = u - 1
```

```
    For X = 1 To Ndof
      AkarDrift(u) = AkarDrift(u) + (Simpangan(u, X) ^
2)
    Next X
  Next Y
  'end rumus FORM MODAL STORY DRIFT


  '-------------------------------------
  ' rumus FORM MODAL OVERTUNING MOMENT
  '-------------------------------------
  'rumus frmModOvertuningMoment - 1
  For Y = 1 To Ndof
    For yn = 1 To Y
      JumHg(Y) = JumHg(Y) + h(yn)
    Next yn
  Next Y
  'rumus frmModOvertuningMoment - 2
  u = Ndof + 1
  i = Ndof + 1
  For Y = 1 To Ndof
    For X = 1 To Ndof
      u = u - 1
      If u = 0 Then u = Ndof
      For yn = u To Ndof
        i = i - 1
        s = u - 1
        Mi_Ton(u, Y) = Mi_Ton(u, Y) + (HasilFim(i,
Y) * (JumHg(i) - JumHg(s)))
      Next yn
      i = Ndof + 1
      s = Ndof + 1
    Next X
  Next Y
  ' rumus
  u = Ndof + 1
  For Y = 1 To Ndof
    u = u - 1
    For X = 1 To Ndof
      Moment(u) = Moment(u) + (Mi_Ton(u, X) ^ 2)
    Next X
  Next Y
  'end rumus FORM MODAL OVERTUNING
MOMENT

  '-------------------------------------
  ' rumus FORM MODAL LATERAL
DISPLACEMENT
  '-------------------------------------
  'rumus frmModLaterallDisplacement - 1
  u = Ndof + 1
  For Y = 1 To Ndof
    u = u - 1
    For X = 1 To Ndof
      For yn = 1 To u
        d(u, X) = d(u, X) + Simpangan(yn, X)
      Next yn
    Next X
  Next Y
  ' mm
  u = Ndof + 1
  For Y = 1 To Ndof
    u = u - 1
    For X = 1 To Ndof
      Di(u) = Di(u) + (d(u, X) ^ 2)
    Next X
  Next Y
  'end rumus FORM MODAL LATERAL
DISPLACEMENT


  '-------------------------------------
  ' rumus FORM TABEL MODAL EFFECTIVE
HEIGHT
  '-------------------------------------
  'rumus frmModEffecHei - 1

  Ndof = lngnd
  ' // rumus atas
  For i = 1 To Ndof
    For DiKolom = 1 To Ndof
      Rum_AtasHei(i) = Rum_AtasHei(i) +
(JumHg(DiKolom) * ModizShip(DiKolom, i) *
MaSs(DiKolom))
    Next DiKolom
  Next i
  ' // rumus bawah
  For DiKolom = 1 To Ndof
    For i = 1 To Ndof
```

```
      Rum_BawahHei(DiKolom) =
Rum_BawahHei(DiKolom) + (ModizShip(i, DiKolom)
* MaSs(i))
    Next i
  Next DiKolom
  ' // rumus frmModEffecHei - 2
  For DiKolom = 1 To Ndof
    If (Rum_AtasHei(DiKolom) = 0) And
(Rum_BawahHei(DiKolom) = 0) Then
      MeEffeHei(DiKolom) = 0
    Else
      MeEffeHei(DiKolom) = Rum_AtasHei(DiKolom)
/ Rum_BawahHei(DiKolom)
    End If
  Next DiKolom
  ' // rumus frmModEffecHei - 3
  For DiKolom = 1 To Ndof
    JumlahTotalHei = JumlahTotalHei +
MeEffeHei(DiKolom)
  Next DiKolom
  'end rumus FORM TABEL MODAL EFFECTIVE
HEIGHT

  ' BAGIAN TULIS KE FILE
  TulisFile_All
End Sub

Function wqx(Pr1 As Single, Pr2 As Single) As Single
Dim wr1 As Single
Dim wr2 As Single
Dim ndfrb As Integer
  ndfrb = dxz - (lngnd * 10)
  'wr1 = Int(Rnd * (ndfrb - 1))
  wr1 = Int(trqj * (ndfrb - 1))

  If wr1 = 0 Then wr1 = wqx(pg, yt)
  If tpx(wr1) = 0 Then tpx(wr1) = wqx(pg, yt)

  wqx = tpx(wr1)

  'START sisipkan proc yg simpan nilai yg keluar agar
tidak muncul lagi
    tpx(wr1) = 0
  'END sisipkan proc yg simpan nilai yg keluar agar
tidak muncul lagi
End Function

Function xjv(Pr1 As Single) As Single
  xjv = Pr1 * -1
End Function

Function qxp(Pr1 As Single) As Single
Dim Hasil As Single
  Hasil = (Pr1 ^ 2)
  qxp = Sqr(Hasil)
End Function

Sub Clear_Dim()
  Ndof = lngnd

  'frmMEMas
  'ReDim ModizShip(Ndof, Ndof) As Single '2D
NGUNGSI ! ke Module1

  ReDim Vim(Ndof)
  ReDim RumusAtas(Ndof)
  ReDim RumusBawah(Ndof)
  ReDim RumusAperB(Ndof)

  'frmModSeiForce
  ReDim Rum_Atas(Ndof, Ndof)
  ReDim Rum_Bawah(Ndof)
  ReDim EPersen(Ndof)
  ReDim EPersenKum(Ndof)
  ReDim HasilCim(Ndof, Ndof)

  'frmModSeiForce_Fim
  ReDim HasilFim(Ndof, Ndof)
  ReDim Fi_Ton(Ndof)

  'frmModShearForce
  ReDim JumMode(Ndof, Ndof)
  ReDim Vi_Ton(Ndof)

  'frmModStoryDrift
  ReDim Simpangan(Ndof, Ndof)
  ReDim AkarDrift(Ndof)

  'frmModOvertuningMoment
  ReDim Mi_Ton(Ndof, Ndof)
  ReDim Moment(Ndof)
  ReDim JumHg(Ndof)
```

```
  'frmModLateralDisplacement
  ReDim d(Ndof, Ndof)
  ReDim Di(Ndof)

  'frmModEffecHei
  ReDim MeEffeHei(Ndof)
  ReDim Rum_AtasHei(Ndof)
  ReDim Rum_BawahHei(Ndof)
End Sub

Sub Clear_Var()
'frmMEMas
  JumlahTotal = 0
  JumlahMt = 0

'frmModOvertuningMoment
  JumH = 0

'frmModEffecHei
  JumlahTotalHei = 0
'Sorak
  npbtrw = 0
End Sub

Sub TulisFile_All()
Dim Y As Integer
Dim yn As Integer
Dim X As Integer
Dim i As Integer
Dim j As Integer
Dim u As Integer
Dim DiKolom As Single
Dim Ki_09_K As Single
Dim s As Single
Dim Vs As Single
Dim sf As String
Dim Spasi As String
Dim wess$
Dim Filenumber As Integer
Dim Jarak As Byte
Dim SimJarak As Byte
Dim bMem As Boolean
Dim bMsc As Boolean
Dim bMsf As Boolean
Dim bMshf As Boolean
Dim bMsd As Boolean
Dim bMom As Boolean
Dim bMld As Boolean
Dim SelisihJarak As Integer
Dim Spasinya As Integer

  ' cek
  bMem = True
  bMsc = True
  bMsf = True
  bMshf = True
  bMsd = True
  bMom = True
  bMld = True

      Jarak = 10
      Ndof = lngnd

      '--------------------------------
      ' dari FORM MODAL EFFECTIVE MASS
      '--------------------------------
     If bMem Then
      Jarak = 25
      sf = "####0.############0" '11
      wess$ = frmSave.Text1
      Filenumber = FreeFile
      Open frmSave.Text2 & "\" & wess$ & ".MEM"
For Output As #Filenumber
      Print #Filenumber, App.Title & " (Dapat dilihat
pada file *.MEM)"
      Print #Filenumber,
      Print #Filenumber, "Table Modal Effective
Mass"
      Print #Filenumber, GarisF(115)
      Print #Filenumber, "Mode"; Tab(Jarak); "Wm
(Kg)"; Tab(Jarak * 2); "Vm(ton)"; Tab(Jarak * 3);
"(%)"; Tab(Jarak * 4); "Kumulatif"
      Print #Filenumber, GarisF(115)
        For DiKolom = 1 To Ndof
          Print #Filenumber, Format(DiKolom, "00");
Tab(Jarak * 1); Format(RumusAperB(DiKolom), sf); _
            Tab(Jarak * 2); Format(Vim(DiKolom), sf);
Tab(Jarak * 3); Format(EPersen(DiKolom), sf);
Tab(Jarak * 4); Format(EPersenKum(DiKolom), sf)
        Next DiKolom
      Print #Filenumber, GarisF(115)
```

```
        Print #Filenumber, Tab(Jarak);
Format(JumlahTotal, sf)
        Print #Filenumber,
        Print #Filenumber, "Oleh: Fani Darmawan"
        Print #Filenumber, "Teknik Sipil UII, 1997"
        Print #Filenumber, "Alamat : Jl. Pamarican
no.40 Banjar-JAWA BARAT 46321"
        Print #Filenumber, "Telp: 0265-742842"
        Close #Filenumber
      End If



        '-------------------------------------
        ' dari FORM MODAL SEISMIC
COEFFICIENT
        '-------------------------------------
      If bMsc Then
        SimJarak = Jarak
        Jarak = 25
        sf = "####0.############0" '11
          Spasinya = 4
          ' mencari nilai u/ Jarak, yg sesuai bagi semua
kolom
          u = Ndof + 1
          For i = 1 To Ndof
            u = u - 1
            For j = 1 To Ndof
                If Len(Format(HasilCim(u, j), sf)) >
Jarak Then
                  SelisihJarak =
Len(Format(HasilCim(u, j), sf)) - Jarak
                  Jarak = Jarak + SelisihJarak +
Spasinya
                End If
            Next j
          Next i
        wess$ = frmSave.Text1
        Filenumber = FreeFile
        Open frmSave.Text2 & "\" & wess$ & ".MSC"
For Output As #Filenumber
        Print #Filenumber, App.Title & " (Dapat dilihat
pada file *.MSC)"
        Print #Filenumber,
        Print #Filenumber, "Tabel Modal Seismic
Coefficient"
        Print #Filenumber, GarisF((Jarak * Ndof) + 10)
        Print #Filenumber, "Level";
        For DiKolom = 1 To Ndof
          Print #Filenumber, Tab(Jarak * DiKolom);
"Mode " & Format(DiKolom, "00");
          If DiKolom = Ndof Then Print #Filenumber,
        Next DiKolom
        Print #Filenumber, GarisF((Jarak * Ndof) + 10)
        frmProgressBar.ProgressBar.Max = Ndof
        u = Ndof + 1
        For i = 1 To Ndof
          frmProgressBar.ProgressBar.Value = i
          u = u - 1
          Print #Filenumber, Format(u, "00");
          For j = 1 To Ndof
            Print #Filenumber, Tab(Jarak * j);
Format(HasilCim(u, j), sf);
          Next j
          Print #Filenumber,
        Next i
        frmProgressBar.ProgressBar.Value = 0
        Print #Filenumber, GarisF((Jarak * Ndof) + 10)
        Print #Filenumber,
        Print #Filenumber, "Oleh: Fani Darmawan"
        Print #Filenumber, "Teknik Sipil UII, 1997"
        Print #Filenumber, "Alamat : Jl. Pamarican
no.40 Banjar-JAWA BARAT 46321"
        Print #Filenumber, "Telp: 0265-742842"
        Close #Filenumber
      End If

      Jarak = SimJarak

        '---------------------------------
        ' dari FORM MODAL EFFECTIVE HEIGHT
        '---------------------------------
      If bMsc Then
        sf = "###0.####0"
        wess$ = frmSave.Text1
        Filenumber = FreeFile
        Open frmSave.Text2 & "\" & wess$ & ".MEH"
For Output As #Filenumber
        Print #Filenumber, App.Title & " (Dapat dilihat
pada file *.MEH)"
        Print #Filenumber,
        Print #Filenumber, "Tabel Modal Effective
Height"
```

```
        Print #Filenumber, GarisF(36)
        Print #Filenumber, "Mode"; Tab(Jarak); "h*(m)"
        Print #Filenumber, GarisF(36)
          For DiKolom = 1 To Ndof
            Print #Filenumber, Format(DiKolom, "00");
Tab(Jarak * 1); Format(MeElfeHei(DiKolom), sf)
          Next DiKolom
        Print #Filenumber, GarisF(36)
        Print #Filenumber, Tab(Jarak);
Format(JumlahTotalHei, sf)
        '------------------------------
        'Print #Filenumber,
        'Print #Filenumber, "Rumus Atas"
        '  For DiKolom = 1 To Ndof
        '    Print #Filenumber, Format(DiKolom, "00");
Tab(Jarak * 1); Format(Rum_AtasHei(DiKolom), sf)
        '  Next DiKolom
        'Print #Filenumber, "Rumus Bawah"
        '  For DiKolom = 1 To Ndof
        '    Print #Filenumber, Format(DiKolom, "00");
Tab(Jarak * 1); Format(Rum_BawahHei(DiKolom), sf)
        '  Next DiKolom
        '------------------------------
        Print #Filenumber,
        Print #Filenumber, "Oleh: Fani Darmawan"
        Print #Filenumber, "Teknik Sipil UII, 1997"
        Print #Filenumber, "Alamat : Jl. Pamarican
no.40 Banjar-JAWA BARAT 46321"
        Print #Filenumber, "Telp: 0265-742842"
        Close #Filenumber
      End If



        '-------------------------------------
        ' dari FORM MODAL SEISMIC FORCE (FIM)
        '-------------------------------------
      If bMsf Then
        SimJarak = Jarak
        Jarak = 25
        sf = "####0.############0" 'I I
          Spasinya = 4
          ' mencari nilai u/ Jarak, yg sesuai bagi semua
kolom
          u = Ndof + 1
          For i = 1 To Ndof
            u = u - 1
            For j = 1 To Ndof
              If Len(Format(HasilFim(u, j), sf)) >
Jarak Then
                SelisihJarak =
Len(Format(HasilFim(u, j), sf)) - Jarak
                Jarak = Jarak + SelisihJarak +
Spasinya
              End If
            Next j
          Next i
        wess$ = frmSave.Text1
        Filenumber = FreeFile
        Open frmSave.Text2 & "\" & wess$ & ".MSF"
For Output As #Filenumber
        Print #Filenumber, App.Title & " (Dapat dilihat
pada file *.MSF)"
        Print #Filenumber,
        Print #Filenumber, "Tabel Modal Seismic Force"
        Print #Filenumber, GarisF((Jarak * Ndof) + 32)
        Print #Filenumber, "Level";
        For DiKolom = 1 To Ndof
          Print #Filenumber, Tab(Jarak * DiKolom);
"Mode " & Format(DiKolom, "00");
          If DiKolom = Ndof Then Print #Filenumber,
Tab((Jarak * DiKolom) + Jarak); "Fi (ton)"
        Next DiKolom
        Print #Filenumber, GarisF((Jarak * Ndof) + 32)
        frmProgressBar.ProgressBar.Max = Ndof
        u = Ndof + 1
        For i = 1 To Ndof
          frmProgressBar.ProgressBar.Value = i
          u = u - 1
          Print #Filenumber, Format(u, "00");
          For j = 1 To Ndof
            Print #Filenumber, Tab(Jarak * j);
Format(HasilFim(u, j), sf);
          Next j
          Print #Filenumber, Tab((Jarak * Ndof) + 22);
Format(Sqr(Fi_Ton(u)), sf);
          Print #Filenumber,
        Next i
        frmProgressBar.ProgressBar.Value = 0
        Print #Filenumber, GarisF((Jarak * Ndof) + 32)
        Print #Filenumber,
        Print #Filenumber, "Oleh: Fani Darmawan"
        Print #Filenumber, "Teknik Sipil UII, 1997"
```

```
        Print #Filenumber, "Alamat : Jl. Pamarican
no.40 Banjar-JAWA BARAT 46321"
        Print #Filenumber, "Telp: 0265-742842"
        Close #Filenumber
      End If


        '-----------------------------------
        ' dari FORM MODAL SHEAR FORCE (VIM)
        '-----------------------------------
      If bMshf Then
        Jarak = 22 'asli 25
        sf = "####0.############0" '11
          Spasinya = 4
          ' mencari nilai u/ Jarak, yg sesuai bagi semua
kolom
          u = Ndof + 1
          For i = 1 To Ndof
            u = u - 1
            For j = 1 To Ndof
                If Len(Format(JumMode(i, j), sf)) >
Jarak Then
                  SelisihJarak =
Len(Format(JumMode(i, j), sf)) - Jarak
                  Jarak = Jarak + SelisihJarak +
Spasinya
                End If
            Next j
          Next i
        wess$ = frmSave.Text1
        Filenumber = FreeFile
        Open frmSave.Text2 & "\" & wess$ & ".MShF"
For Output As #Filenumber
        Print #Filenumber, App.Title & " (Dapat dilihat
pada file *.MShF)"
        Print #Filenumber,
        Print #Filenumber, "Modal Shear Force"
        Print #Filenumber, GarisF((Jarak * Ndof) + 32)
'asli 32
        Print #Filenumber, "Level";
        For DiKolom = 1 To Ndof
          Print #Filenumber, Tab(Jarak * DiKolom);
"Mode " & Format(DiKolom, "00");
          If DiKolom = Ndof Then Print #Filenumber,
Tab((Jarak * DiKolom) + 22); "Vi (ton)" 'asli 10
        Next DiKolom
        Print #Filenumber, GarisF((Jarak * Ndof) + 32)
'asli 32
        u = Ndof + 1
        For Y = 1 To Ndof
          u = u - 1
          Print #Filenumber, Format(u, "00");
          For X = 1 To Ndof
            Print #Filenumber, Tab(Jarak * X);
Format(JumMode(Y, X), sf);
          Next X
          Print #Filenumber, Tab((Jarak * Ndof) + 22);
Format(Sqr(Vi_Ton(Y)), sf); 'asli 22
          Print #Filenumber,
        Next Y
        Print #Filenumber, GarisF((Jarak * Ndof) + 32)
'asli 32
        Print #Filenumber,
        Print #Filenumber, "Oleh: Fani Darmawan"
        Print #Filenumber, "Teknik Sipil UII, 1997"
        Print #Filenumber, "Alamat : Jl. Pamarican
no.40 Banjar-JAWA BARAT 46321"
        Print #Filenumber, "Telp: 0265-742842"
        Close #Filenumber
      End If


        '-------------------------------
        ' dari FORM MODAL STORY DRIFT
        '-------------------------------
      If bMsd Then
        Jarak = 20
        sf = "######0.############0"
          Spasinya = 4
          ' mencari nilai u/ Jarak, yg sesuai bagi semua
kolom
          u = Ndof + 1
          For Y = 1 To Ndof
            u = u - 1
            For X = 1 To Ndof
                If Len(Format(Simpangan(u, X), sf)) >
Jarak Then
                  SelisihJarak =
Len(Format(Simpangan(u, X), sf)) - Jarak
                  Jarak = Jarak + SelisihJarak +
Spasinya
                End If
```

```
            Next X
          Next Y
        wess$ = frmSave.Text1
        Filenumber = FreeFile
        Open frmSave.Text2 & "\" & wess$ & ".MSD"
For Output As #Filenumber
        Print #Filenumber, App.Title & " (Dapat dilihat
pada file *.MSD)"
        Print #Filenumber,
        Print #Filenumber, "Tabel Modal Story Drift"
        Print #Filenumber, GarisF((Jarak * Ndof) +
Jarak + 13)
        Print #Filenumber, "Level";
        For DiKolom = 1 To Ndof
          If DiKolom = 1 Then
            Print #Filenumber, Tab(Jarak * DiKolom);
"Mode " & Format(DiKolom, "00");
          Else
            Print #Filenumber, Tab(Jarak * DiKolom);
"Mode " & Format(DiKolom, "00");
          End If
          If DiKolom = Ndof Then Print #Filenumber,
Tab((Jarak * DiKolom) + Jarak); "Si (mm)"
        Next DiKolom
        Print #Filenumber, GarisF((Jarak * Ndof) +
Jarak + 13)
        u = Ndof + 1
        For Y = 1 To Ndof
          u = u - 1
          Print #Filenumber, Format(u, "00");
          For X = 1 To Ndof
            If X = 1 Then
              Print #Filenumber, Tab(Jarak * X);
Format(Simpangan(u, X), sf);
            Else
              Print #Filenumber, Tab(Jarak * X);
Format(Simpangan(u, X), sf);
            End If
          Next X
          Print #Filenumber, Tab((Jarak * Ndof) +
Jarak); Format(Sqr(AkarDrift(u)), sf);
          Print #Filenumber,
        Next Y
        Print #Filenumber, GarisF((Jarak * Ndof) +
Jarak + 13)
        Print #Filenumber,
        Print #Filenumber, "Oleh: Fani Darmawan"
        Print #Filenumber, "Teknik Sipil UII, 1997"
        Print #Filenumber, "Alamat : Jl. Pamarican
no.40 Banjar-JAWA BARAT 46321"
        Print #Filenumber, "Telp: 0265-742842"
        Close #Filenumber
      End If


        '-----------------------------------
        ' dari FORM MODAL OVERTUNING
MOMENT
        '-----------------------------------
      If bMom Then
        Jarak = 25
        sf = "####0.############0" '11
          Spasinya = 4
          ' mencari nilai u/ Jarak, yg sesuai bagi semua
kolom
          u = Ndof + 1
          For i = 1 To Ndof
            u = u - 1
            For j = 1 To Ndof
              If u = Ndof Then
              Else
                For X = 1 To Ndof
                  If Len(Format(Mi_Ton(u + 1, X),
sf)) > Jarak Then
                    SelisihJarak =
Len(Format(Mi_Ton(u + 1, X), sf)) - Jarak
                    Jarak = Jarak + SelisihJarak +
Spasinya
                  End If
                Next X
              End If
            Next j
          Next i
        wess$ = frmSave.Text1
        Filenumber = FreeFile
        Open frmSave.Text2 & "\" & wess$ & ".MOM"
For Output As #Filenumber
        Print #Filenumber, App.Title & " (Dapat dilihat
pada file *.MOM)"
        Print #Filenumber,
        Print #Filenumber, "Tabel Modal Overtuning
Moment"
```

```
        Print #Filenumber, GarisF((Jarak * Ndof) +
Jarak + 7)
        Print #Filenumber, "Level";
        For DiKolom = 1 To Ndof
          Print #Filenumber, Tab(Jarak * DiKolom);
"Mode " & Format(DiKolom, "00");
          If DiKolom = Ndof Then Print #Filenumber,
Tab((Jarak * DiKolom) + Jarak); "Mi (tm)"
        Next DiKolom
        Print #Filenumber, GarisF((Jarak * Ndof) +
Jarak + 7)
        u = Ndof + 1
        For Y = 1 To Ndof + 1
          u = u - 1
          If u = 0 Then
            Print #Filenumber, "Base";
          Else
            Print #Filenumber, Format(u, "00");
          End If
          If u = Ndof Then
          Else
            For X = 1 To Ndof
              Print #Filenumber, Tab(Jarak * X);
Format(Mi_Ton(u + 1, X), sf);
            Next X
          End If
          If u <> Ndof Then
            Print #Filenumber, Tab((Jarak * Ndof) +
Jarak); Format(Sqr(Moment(u + 1)), sf)
          Else
            Print #Filenumber,
          End If
        Next Y
        Print #Filenumber, GarisF((Jarak * Ndof) +
Jarak + 7)
        Print #Filenumber,
        Print #Filenumber, "Oleh: Fani Darmawan"
        Print #Filenumber, "Teknik Sipil UII, 1997"
        Print #Filenumber, "Alamat : Jl. Pamarican
no.40 Banjar-JAWA BARAT 46321"
        Print #Filenumber, "Telp: 0265-742842"
        Close #Filenumber
      End If


      '---------------------------------------
      ' dari FORM MODAL LATERAL
DISPLACEMENT
      '---------------------------------------
    If bMld Then
      Jarak = 26
      sf = "######0.####################0" '27
        Spasinya = 4
        ' mencari nilai u/ Jarak, yg sesuai bagi semua
kolom
        u = Ndof + 1
        For i = 1 To Ndof
          u = u - 1
          For j = 1 To Ndof
            If Len(Format(d(u, j), sf)) > Jarak Then
              SelisihJarak = Len(Format(d(u, j), sf))
- Jarak
              Jarak = Jarak + SelisihJarak +
Spasinya
            End If
          Next j
        Next i
      wess$ = frmSave.Text1
      Filenumber = FreeFile
      Open frmSave.Text2 & "\" & wess$ & ".MLD"
For Output As #Filenumber
      Print #Filenumber, App.Title & " (Dapat dilihat
pada file *.MLD)"
      Print #Filenumber,
      Print #Filenumber, "Tabel Modal Lateral
Displacement"
      Print #Filenumber, GarisF((Jarak * Ndof) +
Jarak + 21)
      Print #Filenumber, "Level";
      For DiKolom = 1 To Ndof
        Print #Filenumber, Tab(Jarak * DiKolom);
"Mode " & Format(DiKolom, "00");
        If DiKolom = Ndof Then Print #Filenumber,
Tab((Jarak * DiKolom) + Jarak); "di (mm)"
      Next DiKolom
      Print #Filenumber, GarisF((Jarak * Ndof) +
Jarak + 21)
      frmProgressBar.ProgressBar.Max = Ndof
      u = Ndof + 1
      For i = 1 To Ndof
        frmProgressBar.ProgressBar.Value = i
        u = u - 1
```

```
        Print #Filenumber, Format(u, "00");
        For j = 1 To Ndof
          Print #Filenumber, Tab(Jarak * j);
Format(d(u, j), sf);
        Next j
        Print #Filenumber, Tab((Jarak * Ndof) +
Jarak); Format(Sqr(Di(u)), sf);
        Print #Filenumber,
      Next i
      frmProgressBar.ProgressBar.Value = 0
      Print #Filenumber, GarisF((Jarak * Ndof) +
Jarak + 21)
      Print #Filenumber,
      Print #Filenumber, "Oleh: Fani Darmawan"
      Print #Filenumber, "Teknik Sipil UII, 1997"
      Print #Filenumber, "Alamat : Jl. Pamarican
no.40 Banjar-JAWA BARAT 46321"
      Print #Filenumber, "Telp: 0265-742842"
      Close #Filenumber
    End If
End Sub

Function GarisF(Banyak As Integer) As String
Dim sGaris As String
Dim i As Integer
  For i = 1 To Banyak
    sGaris = sGaris & "-"
  Next i
  GarisF = sGaris
End Function

Sub BukaFile(sExt As String, KeText As TextBox)
Dim A$()
Dim wess$
  Dim n
  Dim filnum As Integer
  Dim i
  Dim Tmp$
  filnum = FreeFile

  frmProgressBar.Show
  wess$ = frmSave.Text1
  Open frmSave.Text2 & "\" & wess$ & sExt For Input
As #filnum
  Do Until EOF(1)
    n = n + 1
    frmProgressBar.ProgressBar.Max = n
    frmProgressBar.ProgressBar.Value = n
    ReDim Preserve A$(n + 37)
    Line Input #1, A$(n)
  Loop
  Close #1
  frmProgressBar.ProgressBar.Value = 0
  Unload frmProgressBar

  For i = 0 To n
    Tmp$ = Tmp$ + A$(i) + vbCrLf
  Next i
  KeText.Text = Tmp$
End Sub

Function NoNOL(Par As Byte) As Byte
Dim w As Integer
  w = Int(trqj * (Par - 1))
  If w = 0 Then w = NoNOL(Par)
  If w = 1 Then w = NoNOL(Par)
  NoNOL = w
End Function

Public Sub ltkbd(A As Single, B As Single)
  If A = 1 Then ModizShip(A, B) = 1
End Sub

Public Sub mrn()
Dim A As Integer
Dim B As Integer
Dim Ndof As Single
Dim btdx As Integer
Dim kvt As Single
  Ndof = lngnd
  btdx = Ndof
  For A = 1 To btdx
    For B = A + 1 To btdx
      If ModizShip(A, Ndof) <> 0 Then
        If ModizShip(A, Ndof) <= ModizShip(B, Ndof)
Then GoTo TaliSepatu
        kvt = ModizShip(A, Ndof)
        ModizShip(A, Ndof) = ModizShip(B, Ndof)
        ModizShip(B. Ndof) = kvt
      Else
        ModizShip(A, Ndof) = wqx(pg, yt)
      End If
```

```
TaliSepatu:
    Next B
  Next A
End Sub

Public Sub tdqpy()
Dim A As Integer
Dim B As Integer
Dim kvt As Single
Dim btdx As Integer
  btdx = dxz
  For A = 1 To btdx
    For B = A + 1 To btdx
      If tpx(A) >= tpx(B) Then GoTo MakanTali
'Descending
      kvt = tpx(A)
      tpx(A) = tpx(B)
      tpx(B) = kvt
MakanTali:
    Next B
  Next A
End Sub

Public Sub Sorak_X(ak As Single, nx As Single)
Dim Ndof As Single
Dim i As Single
Dim j As Single
Dim c As Single
Dim d As Single
Dim Ngitung As Single
Dim bStop As Boolean
Dim bSdhDuaPasang As Boolean
Dim phsm As Single
Dim u As Single
Dim mn As Single
Dim bPositif As Boolean
Dim KucingkuSdhTiada As Integer

  Dim n As Single
  Dim NilaiA As Single
  Dim NilaiB As Single
  Dim Nilai_A() As Single
  Dim Nilai_B() As Single
  Dim PosA() As Single
  Dim PosB() As Single
  Dim bDobelPositif As Boolean

ReDim Nilai_A(Ndof)
ReDim Nilai_B(Ndof)
ReDim PosA(Ndof)
ReDim PosB(Ndof)

Ndof = lngnd
mn = ak
For j = ak To mn

  bSdhDuaPasang = False
  bStop = False
  c = 0
  Ngitung = 0
  bPositif = True
  bDobelPositif = False
  KucingkuSdhTiada = 0
  n = 0
  d = d_nonol_2(Ndof, npbtrw)
  npbtrw = d 'public var
  u = Ndof + 1
  For i = 2 To Ndof

    u = u - 1
    bPositif = Not bPositif
    If bStop = False Then
      c = c + 1
      If c = d + KucingkuSdhTiada Then
        c = 0
        KucingkuSdhTiada = KucingkuSdhTiada + 1
        bPositif = Not bPositif
        bStop = True
      End If
    End If
    If bStop Then
      Ngitung = Ngitung + 1
      If Ngitung = 2 Then
        bStop = False
        Ngitung = 0
      End If
    End If
    If u = 3 Then bPositif = True
    'phsm = ModizShip(j,u)
    phsm = 13
    If bPositif Then
      ModizShip(j, u) = qxp(phsm)
    Else
```

```
        ModizShip(j, u) = xjv(phsm)
      End If
      ' test doang
      NilaiA = ModizShip(j, u - 1)
      NilaiB = ModizShip(j, u)
      If (((Sqr(NilaiA ^ 2)) = NilaiA) And ((Sqr(NilaiB
^ 2)) = NilaiB)) Or _
        ((Sqr(NilaiA ^ 2)) <> NilaiA) And ((Sqr(NilaiB
^ 2)) <> NilaiB) Then
        n = n + 1
      End If
      If ((Sqr(NilaiA ^ 2)) = NilaiA) And ((Sqr(NilaiB ^
2)) = NilaiB) Then
        Nilai_A(n) = NilaiA
        Nilai_B(n) = NilaiB
        bDobelPositif = True
        PosA(n) = u - 1
        PosB(n) = u
      End If
      If ((Sqr(NilaiA ^ 2)) <> NilaiA) And ((Sqr(NilaiB
^ 2)) <> NilaiB) Then
        Nilai_A(n) = NilaiA
        Nilai_B(n) = NilaiB
        bDobelPositif = False
        PosA(n) = u - 1
        PosB(n) = u
      End If
      ' test doang
    Next i
  Next j
    For j = 1 To n
    Next j

End Sub
'=

Public Sub Sorak_XXX(ak As Single, nx As Single)
Dim Ndof As Single
Dim i As Single
Dim j As Single
Dim c As Single
Dim d As Single
Dim Ngitung As Single
Dim Hit As Single
Dim pcl As Boolean
Dim pcl_Asli As Boolean
Dim bStop As Boolean
Dim bSdhDuaPasang As Boolean
Dim phsm As Single
Dim u As Single
Dim mn As Single

  Ndof = lngnd
  mn = ak

  For j = ak To mn
    ' inisialisasi ulang
    pcl = False
    If Ndof Mod 2 = 0 Then
      pcl = True
      pcl_Asli = True
    End If
    bSdhDuaPasang = False
    bStop = False
    'ends inisialisasi ulang
    '
    nx = nx + 1
    Select Case Ndof
      Case 1 To 20
        d = NoNOL(5 + nx)
      Case 21 To 40
        d = NoNOL(10 + nx)
      Case 41 To 60
        d = NoNOL(15 + nx)
      Case 61 To 80
        d = NoNOL(20 + nx)
      Case 81 To 100
        d = NoNOL(25 + nx)
    End Select
    c = 0
    Hit = 0
    Ngitung = 0
    For i = 2 To Ndof
      If Ndof > 7 Then
        If bStop = False Then
          c = c + 1
          If (c = d) And bSdhDuaPasang = False Then
            c = 0
            pcl = Not pcl
            If pcl <> pcl_Asli Then bStop = True
            Hit = Hit + 1
            If Hit = 2 Then bSdhDuaPasang = True
```

```
    End If
  End If
End If

phsm = ModizShip(i, j)
If pcl Then
  If i = 2 Then
    pcl = False
    ModizShip(i, j) = xjv(phsm)

  Else
    If i = 3 Then
      pcl = False
      ModizShip(i, j) = qxp(phsm)

    Else
      'asli
      If i Mod 2 <> 0 Then
        ModizShip(i, j) = xjv(phsm)
      Else
        ModizShip(i, j) = qxp(phsm)
      End If
    End If
  End If
Else
  If i = 2 Then
    pcl = False
    ModizShip(i, j) = xjv(phsm)
    'ModizShip(i, j) = xjv(333)
  Else
    If i = 3 Then
      pcl = False
      ModizShip(i, j) = qxp(phsm)
      'ModizShip(i, j) = qxp(111)
    Else
      'asli
      If i Mod 2 = 0 Then
        ModizShip(i, j) = xjv(phsm)
      Else
        ModizShip(i, j) = qxp(phsm)
      End If
    End If
  End If
End If
If bStop Then
  Ngitung = Ngitung + 1
    If Ngitung = 2 Then bStop = False
  End If
 Next i
Next j
'=============================

Dim NilP1 As Single
Dim NilP2 As Single
Dim NilP1_2 As Single
Dim NilP2_2 As Single
Dim NilN1 As Single
Dim NilN2 As Single
Dim NilN1_2 As Single
Dim NilN2_2 As Single
Dim bPosBerurutan As Boolean
Dim bNegBerurutan As Boolean
Dim bPosBerurutan_2 As Boolean
Dim bNegBerurutan_2 As Boolean
Dim PosN As Single
Dim PosP As Single
Dim PosN_2 As Single
Dim PosP_2 As Single
Dim NilaiA As Single
Dim NilaiB As Single
Dim bPosSudah As Boolean
Dim bNegSudah As Boolean
Dim SudahP As Single
Dim SudahN As Single

For j = ak To num
  ' baca
  NilP1 = 0
  NilP2 = 0
  NilP1_2 = 0
  NilP2_2 = 0
  NilN1 = 0
  NilN2 = 0
  NilN1_2 = 0
  NilN2_2 = 0
  PosP = 0
  PosN = 0
  PosP_2 = 0
  PosN_2 = 0
  bPosBerurutan = False
  bNegBerurutan = False
  bPosBerurutan_2 = False
  bNegBerurutan_2 = False
```

```
    bPosSudah = False
    bNegSudah = False
    If Ndof > 7 Then
      For i = 3 To Ndof
        NilaiA = ModizShip(i - 1, j)
        NilaiB = ModizShip(i, j)
        If ((Sqr(NilaiA ^ 2)) = NilaiA) And
((Sqr(NilaiB ^ 2)) = NilaiB) And bPosBerurutan =
False Then
          bPosBerurutan = True
          NilP1 = NilaiA
          NilP2 = NilaiB
          PosP = i
          bPosSudah = True
          SudahP = i
          'debug.Print "PosP = i"
        End If
        If ((Sqr(NilaiA ^ 2)) <> NilaiA) And
((Sqr(NilaiB ^ 2)) <> NilaiB) And bNegBerurutan =
False Then
          bNegBerurutan = True
          NilN1 = NilaiA
          NilN2 = NilaiB
          PosN = i
          bNegSudah = True
          SudahN = i
          'debug.Print "PosN = i"
        End If
        If ((Sqr(NilaiA ^ 2)) = NilaiA) And
((Sqr(NilaiB ^ 2)) = NilaiB) And bPosBerurutan_2 =
False _
            And bPosSudah And i <> SudahP Then
          bPosBerurutan_2 = True
          NilP1_2 = NilaiA
          NilP2_2 = NilaiB
          PosP_2 = i
          'debug.Print "PosP_2 = i"
        End If
        If ((Sqr(NilaiA ^ 2)) <> NilaiA) And
((Sqr(NilaiB ^ 2)) <> NilaiB) And bNegBerurutan_2 =
False _
            And bNegSudah And i <> SudahN Then
          bNegBerurutan_2 = True
          NilN1_2 = NilaiA
          NilN2_2 = NilaiB
          PosN_2 = i
          'debug.Print "PosN_2 = i"
        End If
      Next i
    End If
    '------
    ' BISA DIHAPUS
    'cetak
    If Ndof > 7 Then
      'debug.Print j; bPosBerurutan; " "; NilP1; NilP2;
PosP
      'debug.Print j; bNegBerurutan; " "; NilN1; NilN2;
PosN
      'debug.Print j; bPosBerurutan_2; " "; NilP1_2;
NilP2_2; PosP_2
      'debug.Print j; bNegBerurutan_2; " "; NilN1_2;
NilN2_2; PosN_2
      'debug.Print
    End If
    '------
    ' atur
    If (PosP <> 0) And (PosP_2 <> 0) Then
      If (Sqr(ModizShip(PosP_2, j) ^ 2)) =
ModizShip(PosP_2, j) Then '+
        'ModizShip(PosP_2, j) = ModizShip(PosP_2, j)
* -1
        ModizShip(PosP_2, j) = -1 * 7
      Else                                    '-
        'ModizShip(PosP_2, j)=Sqr
(ModizShip(PosN_2, j) ^ 2)
        ModizShip(PosP_2, j) = 7
      End If
    End If
    If (PosN <> 0) And (PosN_2 <> 0) Then
      If (Sqr(ModizShip(PosN_2, j) ^ 2)) =
ModizShip(PosN_2, j) Then '+
        'ModizShip(PosN_2, j) = ModizShip(PosN_2, j)
* -1
        ModizShip(PosN_2, j) = -1 * 7
      Else                                    '-
        'ModizShip(PosN_2, j)
=Sqr(ModizShip(PosN_2, j) ^ 2)
        ModizShip(PosN_2, j) = 7
      End If
    End If
```

```
    If bPosBerurutan = False And bNegBerurutan And
bPosBerurutan_2 = False And bNegBerurutan_2 =
False Then
        phsm = ModizShip(Ndof, ak)
        phsm = 13
        If (Sqr(ModizShip(Ndof, ak) ^ 2)) <>
ModizShip(Ndof, ak) Then    '+
          ModizShip(Ndof, ak) = qxp(phsm)   '+
        Else
          ModizShip(Ndof, ak) = xjv(phsm)   '-
        End If
        phsm = ModizShip(Ndof - 1, ak)
        If (Sqr(ModizShip(Ndof - 1, ak) ^ 2)) <>
ModizShip(Ndof - 1, ak) Then '+
          ModizShip(Ndof - 1, ak) = qxp(phsm) '+
        Else
          ModizShip(Ndof - 1, ak) = xjv(phsm) '-
        End If
    End If
    If bPosBerurutan And bNegBerurutan = False And
bPosBerurutan_2 = False And bNegBerurutan_2 =
False Then
'BELUM DI CEK LAGI LHO..... 24-JULI, 22-40-40
        phsm = ModizShip(Ndof, ak)
        phsm = 13
        If (Sqr(ModizShip(Ndof, ak) ^ 2)) <>
ModizShip(Ndof, ak) Then    '+
          ModizShip(Ndof, ak) = xjv(phsm)   '-
        Else
          ModizShip(Ndof, ak) = qxp(phsm)   '+
        End If
        phsm = ModizShip(Ndof - 1, ak)
        If (Sqr(ModizShip(Ndof - 1, ak) ^ 2)) <>
ModizShip(Ndof - 1, ak) Then '+
          ModizShip(Ndof - 1, ak) = xjv(phsm) '-
        Else
          ModizShip(Ndof - 1, ak) = qxp(phsm) '+
        End If
    End If

    '1-Aug-2001
    'If kqt <> Ndof Then
      phsm = ModizShip(Ndof, ak)
      'phsm = 13
      If pel_Asli Then
        If (Sqr(ModizShip(Ndof - 1, ak) ^ 2)) =
ModizShip(Ndof - 1, ak) Then '+
          ModizShip(Ndof, ak) = qxp(phsm) '+
        Else
          ModizShip(Ndof, ak) = xjv(phsm) '-
        End If
      Else
        If (Sqr(ModizShip(Ndof - 1, ak) ^ 2)) =
ModizShip(Ndof - 1, ak) Then '+
          ModizShip(Ndof, ak) = qxp(phsm) '+
        Else
          ModizShip(Ndof, ak) = xjv(phsm) '-
        End If
      End If
    'End If
  Next j
End Sub

Public Sub Sorak(ak As Single, nx As Single)
Dim Ndof As Single
Dim i As Single
Dim j As Single
Dim c As Single
Dim d As Single
Dim Ngitung As Single
Dim bStop As Boolean
Dim bSdhDuaPasang As Boolean
Dim phsm As Single
Dim u As Single
Dim mn As Single
Dim bPositif As Boolean
Dim KucingkuSdhTiada As Integer
  Dim n As Single
  Dim NilaiA As Single
  Dim NilaiB As Single
  Dim Nilai_A() As Single
  Dim Nilai_B() As Single
  Dim PosA() As Single
  Dim PosB() As Single
  Dim bDobelPositif As Boolean
  Ndof = lngnd
  ReDim Nilai_A(Ndof)
  ReDim Nilai_B(Ndof)
  ReDim PosA(Ndof)
  ReDim PosB(Ndof)
  '-------------------------
```

```
  Dim Suaka As Boolean
  Suaka = False
  mn = ak
  For j = ak To mn
    'Debug.Print "  For j ="; ak; "To "; mn & ", " & j;
ak; nx
    bSdhDuaPasang = False
    bStop = False
    c = 0
    Ngitung = 0
    bPositif = True
    bDobelPositif = False
    KucingkuSdhTiada = 0
    n = 0
    d = d_nonol_2(Ndof, npbtrw)
    npbtrw = d
    u = Ndof + 1
    For i = 2 To Ndof
      'Debug.Print "    For i = 1 To "; Ndof & ", " & i;
ak; nx
      u = u - 1
      bPositif = Not bPositif
      If Suaka = False Then
        If bStop = False Then
          c = c + 1
          If c = d + KucingkuSdhTiada Then
            c = 0
            KucingkuSdhTiada = KucingkuSdhTiada
+ 1
            bPositif = Not bPositif
            bStop = True
          End If
        End If
      End If
      If bStop Then
        Ngitung = Ngitung + 1
        If Ngitung = 2 Then
          bStop = False
          Ngitung = 0
        End If
      End If
      If i = 3 Then bPositif = True
      phsm = ModizShip(i, j)
      'phsm = 13
      If bPositif Then
        ModizShip(i, j) = qxp(phsm)
      Else
        ModizShip(i, j) = xjv(phsm)
      End If
      '-------------------------
      '0 dobel 0, 1 dobel 1, 2 dobel 2, 3 dobel 3,
      '4 dobel 3 dan 4, 5 dobel 3, 4 dan 5
      If n >= Telp Then Suaka = True
      '-------------------------
      ' test doang
      NilaiA = ModizShip(i - 1, j)
      NilaiB = ModizShip(i, j)
      If (((Sqr(NilaiA ^ 2)) = NilaiA) And ((Sqr(NilaiB
^ 2)) = NilaiB)) Or _
        ((Sqr(NilaiA ^ 2)) <> NilaiA) And ((Sqr(NilaiB
^ 2)) <> NilaiB) Then
        n = n + 1
      End If
      If ((Sqr(NilaiA ^ 2)) = NilaiA) And ((Sqr(NilaiB ^
2)) = NilaiB) Then
        Nilai_A(n) = NilaiA
        Nilai_B(n) = NilaiB
        bDobelPositif = True
        PosA(n) = i - 1
        PosB(n) = i
      End If
      If ((Sqr(NilaiA ^ 2)) <> NilaiA) And ((Sqr(NilaiB
^ 2)) <> NilaiB) Then
        Nilai_A(n) = NilaiA
        Nilai_B(n) = NilaiB
        bDobelPositif = False
        PosA(n) = i - 1
        PosB(n) = i
      End If
      ' test doang

    Next i
  Next j
  ' test doang
  'debug.Print "--- "; Ndof; ak; npbtrw; " ---- Dobelnya
"; n; " ---"
  For j = 1 To n
    'debug.Print "Nilai_A(" & j & ") "; Nilai_A(j);
PosA(j)
    'debug.Print "Nilai_B(" & j & ") "; Nilai_B(j);
PosB(j)
  Next j
```

```
  ' test doang
End Sub

Function NoNOL_2(Par As Integer) As Integer
Dim w As Integer
  Randomize
  w = Int(trqj * (Par - 1))
  If w = 0 Then w = NoNOL_2(Par)
  If w = 1 Then w = NoNOL_2(Par)
  If w = 2 Then w = NoNOL_2(Par)
  If w = 3 Then w = NoNOL_2(Par)
  NoNOL_2 = w
End Function

Public Function d_nonol_2(tg As Single, rwq As
Single) As Single
    Select Case tg
      Case 1 To 20
        d_nonol_2 = NoNOL_2(5)
      Case 21 To 40
        d_nonol_2 = NoNOL_2(10)
      Case 41 To 60
        d_nonol_2 = NoNOL_2(15)
      Case 61 To 80
        d_nonol_2 = NoNOL_2(20)
      Case 81 To 100
        d_nonol_2 = NoNOL_2(25)
    End Select
    If d_nonol_2 = rwq Then d_nonol_2 =
d_nonol_2(tg, rwq)
End Function

Public Function TanpaTmp() As Boolean
Dim sCek As String
Dim sC As String
  sC = kmnt & ".tmp"
  sCek = Dir(App.Path + "\" + sC)
  If sCek = "" Then
    TanpaTmp = True
  Else
    TanpaTmp = False
  End If
End Function

Public Sub BacalahTmp()
Dim u As Integer
Dim i As Integer
Dim j As Integer
Dim Ndof As Integer
Dim V As Variant
  Ndof = lngnd
  Filenumber = FreeFile
  Open App.Path & "\" & kmnt & ".tmp" For Input As
#Filenumber
  u = Ndof + 1
  For i = 1 To Ndof
    u = u - 1
    For j = 1 To Ndof
      Line Input #Filenumber, V
      ModizShip(u, j) = V
    Next j
  Next i
  Close #Filenumber
End Sub

Public Sub BuatTmp()
Dim u As Integer
Dim i As Integer
Dim j As Integer
Dim Ndof As Integer
Dim Filenumber As Integer
Dim sf As String
  Ndof = lngnd
  sf = "####0.############0" '11
  Filenumber = FreeFile
  Open App.Path & "\" & kmnt & ".tmp" For Output As
#Filenumber
  frmProgressBar.ProgressBar.Max = Ndof
  u = Ndof + 1
  For i = 1 To Ndof
    frmProgressBar.ProgressBar.Value = i
    u = u - 1
    For j = 1 To Ndof
      Print #Filenumber, Format(ModizShip(u, j), sf)
    Next j
  Next i
  Close #Filenumber
  frmProgressBar.ProgressBar.Value = 0
End Sub

Public Sub Hitung_C()
  If WilGempa = 1 Then
```

```
  If bTanahLunak Then
    If NilaiT <= 1 Then c = 0.13
    If NilaiT >= 2 Then c = 0.065
    If (NilaiT > 1) And (NilaiT < 2) Then
      c = 0.195 - (0.065 * NilaiT)
    End If
  Else
    If NilaiT <= 0.5 Then c = 0.09
    If NilaiT >= 2 Then c = 0.045
    If (NilaiT > 0.5) And (NilaiT < 2) Then
      c = (0.1575 - (0.045 * NilaiT)) / 1.5
    End If
  End If
End If

If WilGempa = 2 Then
  If bTanahLunak Then
    If NilaiT <= 1 Then c = 0.09
    If NilaiT >= 2 Then c = 0.045
    If (NilaiT > 1) And (NilaiT < 2) Then
      c = 0.135 - (0.045 * NilaiT)
    End If
  Else
    If NilaiT <= 0.5 Then c = 0.07
    If NilaiT >= 2 Then c = 0.035
    If (NilaiT > 0.5) And (NilaiT < 2) Then
      c = (0.1225 - (0.035 * NilaiT)) / 1.5
    End If
  End If
End If

If WilGempa = 3 Then
  If bTanahLunak Then
    If NilaiT <= 1 Then c = 0.07
    If NilaiT >= 2 Then c = 0.035
    If (NilaiT > 1) And (NilaiT < 2) Then
      c = 0.105 - (0.035 * NilaiT)
    End If
  Else
    If NilaiT <= 0.5 Then c = 0.05
    If NilaiT >= 2 Then c = 0.025
    If (NilaiT > 0.5) And (NilaiT < 2) Then
      c = (0.0875 - (0.025 * NilaiT)) / 1.5
    End If
  End If
End If

If WilGempa = 4 Then
  If bTanahLunak Then
    If NilaiT <= 1 Then c = 0.05
    If NilaiT >= 2 Then c = 0.025
    If (NilaiT > 1) And (NilaiT < 2) Then
      c = 0.075 - (0.025 * NilaiT)
    End If
  Else
    If NilaiT <= 0.5 Then c = 0.03
    If NilaiT >= 2 Then c = 0.015
    If (NilaiT > 0.5) And (NilaiT < 2) Then
      c = (0.0525 - (0.015 * NilaiT)) / 1.5
    End If
  End If
End If

If WilGempa = 5 Then
  If bTanahLunak Then
    If NilaiT <= 1 Then c = 0.03
    If NilaiT >= 2 Then c = 0.02
    If (NilaiT > 1) And (NilaiT < 2) Then
      c = 0.04 - (0.01 * NilaiT)
    End If
  Else
    c = 0.01
  End If
End If

If WilGempa = 6 Then
  c = 0
End If
End Sub
Option Base 0

Public KolomMe As Integer
Public BalokMe As Integer
Public NDOFMe As Integer
Public hMe() As Double
Public lMe() As Double

Public FileNameMe As String
Public FileNumberMe As Integer
Public lBalokMe() As Double
Public lBalokDivLMe() As Double
```

```
Public lKolDivHPlus2lKolDivHMe() As Double
Public CmDsrTepiMe() As Double
Public CmDsrTengahMe() As Double

Public CmDsrTengahAcDMe() As Double
Public CmDsrTengahAc2DMe() As Double
Public CmTepi4bMe() As Double
Public CmTepiMe() As Double

Public CmTengah4cMe() As Double
Public CmTengahAc4cMe() As Double

Public Kf12ElMe() As Double
Public KflIkw3Me() As Double
Public KfMe() As Double


' Penjumlahan KfMe
Public JumKfMe() As Double

Public JumDasarMe As Integer
Public JumBalokMe As Integer


Public InputPilihan As String
Public hmei() As Double

' 05 April 2002 16:58:23
Public Ortogonal() As Double
Public SumOrtogonal As Double

Sub Fanie_Dim()
  ReDim lKolomMe(NDOFMe, KolomMe)
  ReDim lBalokMe(NDOFMe, BalokMe)
  ReDim lKolomDivHMe(NDOFMe, KolomMe)
  ReDim lKolDivHPlus2lKolDivHMe(NDOFMe,
KolomMe)
  ReDim CmDsrTepiMe(NDOFMe, KolomMe)
' Cm dasar tengah
  ReDim CmDsrTengahAcMe(NDOFMe, KolomMe)
  ReDim CmDsrTengahMe(NDOFMe, KolomMe)
' Cm Tepi
  ReDim CmTepiAcMe(NDOFMe, JumTepiMe)
' Cm Tengah
  ReDim CmTengahApBpDpEMe(NDOFMe,
JumTengahMe)
  ReDim CmTengah4cMe(NDOFMe, JumTengahMe)
  ReDim CmTengahAc4cMe(NDOFMe,
JumTengahMe)
  ReDim CmTengahApBpDpE4cMe(NDOFMe,
JumTengahMe)
  'ReDim CmTengahMe(NDOFMe, JumTengahMe)
  ReDim CmTengahMe(NDOFMe, KolomMe)
' KfMe
  ReDim KfElMe(NDOFMe, KolomMe)
' Penjumlahan KfMe
  ReDim JumKfMe(NDOFMe)
  ReDim hmei(NDOFMe)
  End Sub

Sub Fanie_OpenFile(FileNameMe As String, NDOFMe
As Integer, KolomMe As Integer, BalokMe As Integer,
_
  KbMe() As Double, KhMe() As Double, BbMe() As
Double, BhMe() As Double, hMe() As Double, lMe()
As Double)

Dim FileNumberNya As Integer
Dim Temp As String
Dim Titles As String
Dim Y As Integer
Dim X As Integer
Dim n As Integer

FileNumberNya = FreeFile
Open FileNameMe For Input As #FileNumberNya
  Input #FileNumberNya, Temp
  ' Check file of type
  Select Case UCase(Left(Temp, 12))
  Case "MUTOSIP 2002"
    Line Input #FileNumberNya, Titles
    'Debug.Print "Titles 1 isinya="; Titles
    Input #FileNumberNya, Titles
    'Debug.Print "Titles 2 isinya="; Titles
    Input #FileNumberNya, NDOFMe, KolomMe,
BalokMe
    'Debug.Print "NDOF="; NDOFMe; ", Kolom=";
KolomMe; ", Balok="; BalokMe

    ReDim KbMe(NDOFMe, KolomMe),
KhMe(NDOFMe, KolomMe), BbMe(NDOFMe,
BalokMe), BhMe(NDOFMe, BalokMe),
```

```
hMe(NDOFMe), lMe(NDOFMe, BalokMe),
MassaDtMe(NDOFMe)

  For Y = 1 To NDOFMe
    Input #FileNumberNya, n
    For X = 1 To KolomMe
      Input #FileNumberNya, KbMe(Y, X), KhMe(Y,
X)
      'Debug.Print "y="; y; ", x="; x; KbMe(y, x);
KhMe(y, x)
    Next X
    'Debug.Print
  Next Y

  Line Input #FileNumberNya, Titles
  Input #FileNumberNya, Titles
  ' baca BalokMe
    'Debug.Print "y="; y; ", x="; x; BbMe(y, x);
BhMe(y, x)
    Next X
    'Debug.Print
  Next Y


  Line Input #FileNumberNya, Titles
    'Debug.Print "y="; y; ", x="; x; hMe(y)
  Next Y

  Line Input #FileNumberNya, Titles
  For X = 1 To BalokMe
    Input #FileNumberNya, lMe(Y, X)
    'Debug.Print "y="; y; ", x="; x; lMe(y, x)
    Next X
    'Debug.Print
  Next Y
  Line Input #FileNumberNya, Titles
  'Debug.Print "y="; y; ", x="; x; MassaDtMe(y)
  Next Y

 Case Else
  FileNameMe = ""
  'MsgBox "Unknown file format. Cleaning Screen...",
MB_ICONINFORMATION, "ProgSIP 2001 Graphics
Viewer Error"
 End Select
Close #FileNumberNya

' penentu jumlah KolomMe tengah, KolomMe kiri=1
KolomMe kanan=1
JumTengahMe = KolomMe - 2

' kiri kanan
JumTepiMe = 2

JumDasarMe = 1
End Sub



Sub Fanie_Proses_All()
Dim Y As Integer
Dim X As Integer

Dim K As Integer
Dim sf As String
Dim Tengah As Integer
Dim Posisi As Integer
Dim Posisi2 As Integer


 Print #FileNumberMe,
 Print #FileNumberMe, "Sub Fanie_Proses_All()"
 sf = "0###.######0"

 ' cari IKolomMe
 IKolomMe(Y, X) = (KbMe(Y, X) * (KhMe(Y, X) ^
3)) / 12
   IKolomDivHMe(Y, X) = IKolomMe(Y, X) /
hMe(Y)
   Print #FileNumberMe, "IKolomMe("; Y; ","; X;
")="; Format(IKolomMe(Y, X), sf); ",
IKolomDivHMe("; Y; ","; X; ")="; IKolomDivHMe(Y,
X) 'Format(IKolomDivHMe(y, x), Sf)
  Next X
 Next Y

 ' cari IBalokMe
 Print #FileNumberMe,
 Print #FileNumberMe, "Cari IBalokMe"
 For Y = 1 To NDOFMe
  For X = 1 To BalokMe
```

```
    IBalokMe(Y, X) = (BbMe(Y, X) * (BhMe(Y, X) ^
3)) / ")="; Format(IBalokMe(Y, X), sf); ",
IBalokDivLMe("; Y; ","; X; ")=";
Format(IBalokDivLMe(Y, X), sf)
   Next X
  Next Y

  ' ---------------------------------
  ' cari Cm Tingkat Dasar Tepi
  ' ---------------------------------
  Print #FileNumberMe,
  Print #FileNumberMe, "Cari
IKolDivHPlusIBalDivLMe,
IKolDivHPlus2IKolDivHMe"
     Posisi = KolomMe
     Posisi2 = BalokMe
    End If
    Print #FileNumberMe, Y; Posisi;
IKolomDivHMe(Y, Posisi), Y; Posisi2;
IBalokDivLMe(Y, Posisi2)
    'IKolDivHPlusIBalDivLMe(Y, Tepi) =
IKolomDivHMe(Y, Posisi) + IBalokDivLMe(Y,
Posisi2)
    IKolDivHPlusIBalDivLMe(Y, Tepi) = (0.5 *
IKolomDivHMe(Y, Posisi)) + IBalokDivLMe(Y,
Posisi2)
    IKolDivHPlus2IKolDivHMe(Y, Tepi) = (2 *
IKolomDivHMe(Y, Posisi)) + IBalokDivLMe(Y,
Posisi2)
    CmDsrTepiMe(Y, Tepi) =
IKolDivHPlusIBalDivLMe(Y, Tepi) /
IKolDivHPlus2IKolDivHMe(Y, Tepi)
   Next Tepi
  Next Y

  ' cetak hasil CmDsrTepiMe
  Print #FileNumberMe, "Cetak  For Y = 1 To 1
   For Tepi = 1 To JumTepiMe
    If Tepi = 1 Then
     Posisi = Tepi
    Else
     Posisi = KolomMe
    End If
    Print #FileNumberMe,
"IKolDivHPlusIBalDivLMe("; Y; ","; Tepi; ")=";
Format(IKolDivHPlusIBalDivLMe(Y, Tepi), sf); ",
IKolDivHPlus2IKolDivHMe("; Y; ","; Tepi; ")=";
Format(IKolDivHPlus2IKolDivHMe(Y, Tepi), sf)
   Next Tepi
  Next Y
  Print #FileNumberMe,

  Print #FileNumberMe, "CmDsrTepiMe, kiri dan
kanan"
  Print #FileNumberMe, "----------------------------"
  For Y = 1 To 1
   For Tepi = 1 To JumTepiMe
    If Tepi = 1 Then
     Posisi = Tepi
    Else
     Posisi = KolomMe
    End If
    Print #FileNumberMe, "CmDsrTepiMe("; Y; ",";
Tepi; ")="; Format(CmDsrTepiMe(Y, Tepi), sf)
   Next Tepi
  Next Y



  ' ---------------------------------
  ' cari Cm Tingkat Dasar Tengah
  ' ---------------------------------
  Print #FileNumberMe,
  Print #FileNumberMe, "Cari CmDsrTengahAcMe,
CmDsrTengahAcDMe, CmDsrTengahAc2DMe u/
CmDsrTengahMe"

  For Y = 1 To JumDasarMe
CmDsrTengahAcMe(Y, Tengah) + (0.5 *
IKolomDivHMe(Y, Tengah + 1))
    'CmDsrTengahAcDMe(Y, Tengah) =
CmDsrTengahAcMe(Y, Tengah) + IKolomDivHMe(Y,
Tengah + 1)
    CmDsrTengahAc2DMe(Y, Tengah) =
CmDsrTengahAcMe(Y, Tengah) + (2 *
IKolomDivHMe(Y, Tengah + 1))
    CmDsrTengahMe(Y, Tengah) =
CmDsrTengahAcDMe(Y, Tengah) /
CmDsrTengahAc2DMe(Y, Tengah)
    Print #FileNumberMe, Y; Tengah; "IBalokDivL=";
IBalokDivLMe(Y, Tengah), "IBalokDivL=";
```

```
IBalokDivLMe(Y, Tengah + 1), "IKolomDivH=";
IKolomDivHMe(Y, Tengah + 1)
    Print #FileNumberMe, Y; Tengah; "IBalokDivL=";
IBalokDivLMe(Y, Tengah), "IBalokDivL=";
IBalokDivLMe(Y, Tengah + 1), "2.IKolomDivH="; (2
* IKolomDivHMe(Y, Tengah + 1)) '
IKolomDivHMe(y, Tengah + 1)
    Print #FileNumberMe, Y; Tengah; ",
CmDsrTengahAc2DMe("; Y; ","; Tengah; ")=";
Format(CmDsrTengahAc2DMe(Y, Tengah), sf)
  Next Tengah
 Next Y

 'cetak hasil
 Print #FileNumberMe, "Cetak CmDsrTengahAcMe,
CmDsrTengahAcDMe, CmDsrTengahAc2DMe"
 For Y = 1 To JumDasarMe
  For Tengah = 1 To JumTengahMe
Format(CmDsrTengahAc2DMe(Y, Tengah), sf)
  Next Tengah
 Next Y

  'cetak hasil CmDsrTengahMe
 Print #FileNumberMe,
 Print #FileNumberMe, "CmDsrTengahMe, KolomMe
tengah="; JumTengahMe
 ("; Y; ","; X; ")="; Format(CmDsrTengahMe(Y, X),
sf)
  Next X
 Next Y



 ' ---------------------------------
 ' cari Cm Tingkat Tepi
 ' ---------------------------------
 Print #FileNumberMe,
 Print #FileNumberMe, "Cari CmTepiAcMe,
CmTepi4bMe, CmTepiAc4bMe, 1=kiri  2=kanan"
 '
 For Y = 2 To NDOFMe
  For Tepi = 1 To JumTepiMe
   If Tepi = 1 Then
    Posisi = Tepi
    Posisi2 = Tepi
   Else
    Posisi = KolomMe
    Posisi2 = BalokMe
   End If

   CmTepiAcMe(Y, Tepi) = IBalokDivLMe(Y - 1,
Posisi2) + IBalokDivLMe(Y, Posisi2)
   'Print #FileNumberMe, Format(IBalokDivLMe(y -
1, Posisi2), Sf), Format(IBalokDivLMe(y, Posisi2), Sf)
   CmTepi4bMe(Y, Tepi) = 4 * IKolomDivHMe(Y,
Posisi)
   'Print #FileNumberMe, Format(IKolomDivHMe(y,
Posisi), Sf)
   CmTepiAc4bMe(Y, Tepi) = CmTepiAcMe(Y,
Tepi) + CmTepi4bMe(Y, Tepi)
   CmTepiMe(Y, Tepi) = CmTepiAcMe(Y, Tepi) /
CmTepiAc4bMe(Y, Tepi)
  Next Tepi
  'Print #FileNumberMe,
 Next Y
 ' cetak hasil
 Print #FileNumberMe, "CmTepiAcMe, CmTepi4bMe,
CmTepiAc4bMe, 1=kiri  2=kanan"
 For Y = 2 To NDOFMe
  For Tepi = 1 To JumTepiMe
   Print #FileNumberMe, "CmTepiAcMe("; Y; ",";
TepiFormat(CmTepiAc4bMe(Y, Tepi), sf)
  Next Tepi
 Next Y
 ' cetak hasil CmTepiMe
 Print #FileNumberMe,
 Print #FileNumberMe, "CmTepiMe, 1=kiri  2=kanan"
 Print #FileNumberMe, "--------------------------"
 For Y = 2 To NDOFMe
  For Tepi = 1 To JumTepiMe
   Print #FileNumberMe, "CmTepiMe("; Y; ","; Tepi;
")="; Format(CmTepiMe(Y, Tepi), sf)
  Next Tepi
 Next Y



 ' ---------------------------------
 ' cari Cm Tingkat Tengah
 ' ---------------------------------
 Print #FileNumberMe,
```

3. Bangunan 18 Lantai (Kf)

Mode	Wm (Kg)	Vm(ton)	(%)	Kumulatif
1	1744.29	85.5937	76.56941	76.56941
2	277.5788	13.62101	12.18492	88.75433
3	98.56766	4.836792	4.326841	93.08117
4	55.50071	2.723464	2.436324	95.51749
5	30.9935	1.520875	1.360527	96.87802
6	17.80864	0.873884	0.781749	97.65977
7	13.84721	0.679494	0.607853	98.26762
8	8.070011	0.396002	0.354251	98.62187
9	6.533372	0.320598	0.286796	98.90867
10	5.10815	0.250661	0.224233	99.1329
11	4.190911	0.205651	0.183969	99.31687
12	3.948439	0.193753	0.173325	99.4902
13	2.657763	0.130419	0.116668	99.60686
14	1.837987	0.090191	0.080682	99.68755
15	2.189124	0.107422	0.096096	99.78364
16	2.969646	0.145723	0.130359	99.914
17	1.917139	0.094076	0.084157	99.99816
18	0.04195	0.002059	0.001841	100
	2278.051			

4. Bangunan 20 Lantai (Kf)

Mode	Wm (Kg)	Vm(ton)	(%)	Kumulatif
1	1939.247	92.6666	75.82102	75.82102
2	312.9688	14.95516	12.23651	88.05753
3	113.3811	5.417897	4.432994	92.49052
4	64.20219	3.067891	2.510188	95.00071
5	32.9169	1.572929	1.286991	96.2877
6	23.42183	1.119208	0.915751	97.20345
7	16.94471	0.8097	0.662507	97.86596
8	11.61936	0.555229	0.454296	98.32026
9	8.208942	0.392263	0.320955	98.64121
10	4.627621	0.22113	0.180932	98.82214
11	5.007065	0.239262	0.195767	99.01791
12	4.599105	0.219767	0.179817	99.19773
13	4.262271	0.203672	0.166647	99.36437
14	2.596503	0.124073	0.101519	99.46589
15	1.666177	0.079618	0.065144	99.53104
16	2.04936	0.097928	0.080126	99.61116
17	2.918849	0.139477	0.114122	99.72528
18	2.263534	0.108163	0.0885	99.81378
19	1.706458	0.081543	0.066719	99.8805
20	3.056349	0.146047	0.119498	100
	2557.664			

5. Bangunan 25 Lantai (Kf)

Mode	Wm (Kg)	Vm(ton)	(%)	Kumulatif
1	2403.663	106.4487	73.95002	73.95002
2	413.5802	18.31582	12.72402	86.67404
3	157.2114	6.962265	4.836694	91.51073
4	80.73848	3.575586	2.483964	93.9947
5	52.96059	2.345413	1.629362	95.62406
6	33.27046	1.473416	1.023584	96.64764
7	23.31239	1.032413	0.717219	97.36486
8	17.99173	0.796782	0.553525	97.91839
9	12.80704	0.567173	0.394016	98.3124
10	7.973876	0.353131	0.245321	98.55772
11	6.989468	0.309536	0.215035	98.77276
12	5.15302	0.228207	0.158536	98.93129
13	4.732413	0.20958	0.145595	99.07689
14	5.087793	0.225318	0.156529	99.23342
15	5.108266	0.226225	0.157159	99.39058
16	3.102775	0.13741	0.095459	99.48604
17	2.344331	0.103821	0.072125	99.55816
18	2.409126	0.106691	0.074118	99.63228
19	3.495519	0.154803	0.107542	99.73982
20	2.185689	0.096795	0.067244	99.80706
21	1.572399	0.069635	0.048376	99.85544
22	2.05322	0.090929	0.063168	99.91861
23	1.370337	0.060687	0.042159	99.96077
24	1.275111	0.05647	0.039229	100
25	0.000103	4.58E-06	3.18E-06	100
	3250.389			

6. Bangunan 30 Lantai (Kf)

Mode	Wm (Kg)	Vm(ton)	(%)	Kumulatif
1	4135.933	143.7775	72.11982	72.11982
2	773.0367	26.87308	13.47973	85.59955
3	315.6438	10.97273	5.503999	91.10355
4	149.4485	5.195279	2.60599	93.70954
5	97.25338	3.380819	1.695844	95.40538
6	58.55988	2.035717	1.021131	96.42651
7	41.59308	1.4459	0.725274	97.15179
8	28.87502	1.003783	0.503505	97.65529
9	22.49761	0.782084	0.392299	98.04759
10	17.28348	0.600826	0.301379	98.34897
11	12.05392	0.419031	0.210189	98.55916
12	11.56568	0.402058	0.201675	98.76084
13	7.745413	0.269254	0.13506	98.8959
14	8.480013	0.294791	0.147869	99.04376
15	7.307686	0.254037	0.127427	99.17119
16	7.314097	0.25426	0.127539	99.29873
17	7.409954	0.257592	0.12921	99.42794
18	4.598006	0.159841	0.080177	99.50812
19	4.009532	0.139383	0.069916	99.57803
20	2.745167	0.09543	0.047869	99.6259
21	3.904047	0.135716	0.068076	99.69398
22	3.174781	0.110365	0.05536	99.74934
23	5.023611	0.174636	0.087599	99.83694
24	3.056644	0.106258	0.0533	99.89024
25	1.329398	0.046214	0.023181	99.91342
26	1.033843	0.035939	0.018028	99.93144
27	1.339021	0.046548	0.023349	99.95479
28	1.269493	0.044131	0.022137	99.97693
29	0.736682	0.025609	0.012846	99.98978
30	0.58632	0.020382	0.010224	100
	5734.808			

7. Bangunan 35 Lantai (Kf)

Mode	Wm (Kg)	Vm(ton)	(%)	Kumulatif
1	5297.24	155.647	68.3341	68.3341
2	1062.78	31.2272	13.7098	82.0439
3	446.102	13.1076	5.75469	87.7986
4	231.976	6.81607	2.99248	90.7911
5	147.253	4.32669	1.89956	92.6906
6	121.192	3.56093	1.56337	94.254
7	86.3931	2.53846	1.11447	95.3685
8	70.9466	2.0846	0.91521	96.2837
9	46.7841	1.37464	0.60351	96.8872
10	40.0912	1.17799	0.51718	97.4044
11	25.6151	0.75264	0.33043	97.7348
12	15.236	0.44768	0.19654	97.9314
13	14.5856	0.42856	0.18815	98.1195
14	10.6974	0.31432	0.138	98.2575
15	11.5532	0.33946	0.14904	98.4065
16	9.96972	0.29294	0.12861	98.5351
17	9.16027	0.26915	0.11817	98.6533
18	10.3614	0.30445	0.13366	98.787
19	8.0704	0.23713	0.10411	98.8911
.	.	.	.	.
.	.	.	.	.
.	.	.	.	.
.	.	.	.	.
.	.	.	.	.
30	8.24839	0.24236	0.1064	99.8268
31	4.58242	0.13464	0.05911	99.8859
32	5.618	0.16507	0.07247	99.9584
33	1.83528	0.05393	0.02368	99.982
34	0.98887	0.02906	0.01276	99.9948
35	0.40389	0.01187	0.00521	100
	7751.96518			

8. Bangunan 40 Lantai (Kf)

Mode	Wm (Kg)	Vm(ton)	(%)	Kumulatif
1	6534.3	162.168	67.1901	67.1901
2	1433.49	35.5763	14.7401	81.9302
3	614.199	15.2432	6.31562	88.2459
4	302.503	7.50753	3.11055	91.3564
5	195.689	4.8566	2.01221	93.3686
6	135.334	3.35873	1.3916	94.7602
7	84.4255	2.09527	0.86812	95.6283
8	60.8666	1.51059	0.62587	96.2542
9	54.2055	1.34527	0.55738	96.8116
10	45.3965	1.12665	0.4668	97.2784
11	44.7138	1.10971	0.45978	97.7382
12	31.291	0.77658	0.32176	98.0599
13	19.4718	0.48325	0.20022	98.2601
14	16.8347	0.4178	0.17311	98.4332
15	12.7855	0.31731	0.13147	98.5647
16	12.6817	0.31474	0.1304	98.6951
17	11.8108	0.29312	0.12145	98.8166
18	12.5592	0.3117	0.12914	98.9457
19	12.5972	0.31264	0.12953	99.0752
.	.	.	.	.
.	.	.	.	.
.	.	.	.	.
.	.	.	.	.
.	.	.	.	.
.	.	.	.	.
36	3.51601	0.08726	0.03615	99.9279
37	1.3447	0.03337	0.01383	99.9417
38	1.36995	0.034	0.01409	99.9558
39	2.72101	0.06753	0.02798	99.9838
40	1.57748	0.03915	0.01622	100
	9725.0843			

9. Bangunan 45 Lantai (Kf)

Mode	Wm (Kg)	Vm(ton)	(%)	Kumulatif
1	7832.57	192.943	64.0809	64.0809
2	1791.86	44.1395	14.6598	78.7407
3	820.268	20.206	6.71089	85.4516
4	440.727	10.8566	3.60574	89.0574
5	282.361	6.95552	2.3101	91.3675
6	188.03	4.63182	1.53834	92.9058
7	132.794	3.27118	1.08644	93.9922
8	117.034	2.88295	0.9575	94.9497
9	103.359	2.54609	0.84562	95.7954
10	67.8526	1.67144	0.55513	96.3505
11	51.7644	1.27513	0.4235	96.774
12	41.3759	1.01923	0.33851	97.1125
13	41.8827	1.03171	0.34266	97.4552
14	39.6525	0.97677	0.32441	97.7796
15	26.7152	0.65809	0.21857	97.9981
16	21.4341	0.52799	0.17536	98.1735
17	20.8922	0.51465	0.17093	98.3444
18	17.9668	0.44258	0.14699	98.4914
19	17.6769	0.43544	0.14462	98.636
.	.	.	.	.
.	.	.	.	.
.	.	.	.	.
.	.	.	.	.
.	.	.	.	.
40	1.51054	0.03721	0.01236	99.9248
41	2.52454	0.06219	0.02065	99.9455
42	2.50167	0.06162	0.02047	99.966
43	1.93488	0.04766	0.01583	99.9818
44	1.42421	0.03508	0.01165	99.9934
45	0.80135	0.01974	0.00656	100
	12222.9278			

10. Bangunan 50 Lantai (Kf)

Mode	Wm (Kg)	Vm(ton)	(%)	Kumulatif
1	9209.56	226.319	61.9456	61.9456
2	2387.01	58.6592	16.0555	78.0011
3	1124	27.6215	7.56024	85.5613
4	582.317	14.3101	3.91679	89.4781
5	358.432	8.80825	2.4109	91.889
6	222.774	5.47453	1.49843	93.3874
7	199.996	4.91478	1.34522	94.7327
8	111.861	2.74891	0.7524	95.4851
9	82.3264	2.02312	0.55375	96.0388
10	65.9402	1.62044	0.44353	96.4823
11	64.5122	1.58535	0.43392	96.9163
12	57.842	1.42143	0.38906	97.3053
13	36.9275	0.90747	0.24838	97.5537
14	29.7073	0.73004	0.19982	97.7535
15	36.1281	0.88783	0.24301	97.9965
16	24.5095	0.60231	0.16486	98.1614
17	24.2351	0.59556	0.16301	98.3244
18	19.6167	0.48207	0.13195	98.4563
19	17.8354	0.43829	0.11996	98.5763
.	.	.	.	.
.	.	.	.	.
.	.	.	.	.
.	.	.	.	.
.	.	.	.	.
45	6.14776	0.15108	0.04135	99.9336
46	4.02397	0.09889	0.02707	99.9606
47	2.35686	0.05792	0.01585	99.9765
48	1.49788	0.03681	0.01008	99.9866
49	1.10129	0.02706	0.00741	99.994
50	0.89754	0.02206	0.00604	100
	14867.1859			

1. Bangunan 6 Lantai (Km)

Mode	Wm (Kg)	Vm(ton)	(%)	Kumulatif
1	439.9044	21.57731	74.57884	74.57884
2	70.06179	3.436531	11.87787	86.45671
3	22.53768	1.105473	3.820907	90.27762
4	12.17499	0.597183	2.064077	92.3417
5	13.30139	0.652433	2.25504	94.59674
6	31.87123	1.563284	5.403265	100
	589.8514			

2. Bangunan 12 Lantai (Km)

Mode	Wm (Kg)	Vm(ton)	(%)	Kumulatif
1	844.6561	24.7677	74.35394	74.35394
2	133.0938	3.902686	11.71607	86.07002
3	42.70668	1.25228	3.759412	89.82943
4	26.0452	0.763719	2.292724	92.12215
5	12.60446	0.369598	1.109554	93.23171
6	9.435441	0.276674	0.830589	94.0623
7	5.052043	0.14814	0.444725	94.50702
8	4.21338	0.123548	0.370898	94.87792
9	4.932391	0.144632	0.434192	95.31211
10	6.852326	0.20093	0.603201	95.91531
11	3.992828	0.117081	0.351483	96.26679
12	42.40898	1.243551	3.733205	100
	1135.994			

3. Bangunan 18 Lantai (Km)

Mode	Wm (Kg)	Vm(ton)	(%)	Kumulatif
1	1710.229	41.01482	73.3811	73.3811
2	256.7649	6.157754	11.01706	84.39817
3	99.11624	2.377012	4.252799	88.65097
4	42.21748	1.012462	1.811433	90.4624
5	29.61296	0.71018	1.270609	91.73301
6	20.39603	0.489139	0.875136	92.60814
7	13.13063	0.3149	0.563398	93.17154
8	9.418812	0.225883	0.404135	93.57568
9	7.06074	0.169331	0.302957	93.87863
10	5.610015	0.13454	0.24071	94.11934
11	4.72939	0.113421	0.202925	94.32227
12	5.39867	0.129471	0.231642	94.55391
13	6.220856	0.149189	0.266919	94.82083
14	4.14498	0.099405	0.177849	94.99868
15	3.930998	0.094273	0.168668	95.16735
16	4.009637	0.096159	0.172042	95.33939
17	53.62298	1.28599	2.300811	97.6402
18	54.99776	1.31896	2.359799	100
	2278.051			

4. Bangunan 20 Lantai (Km)

Mode	Wm (Kg)	Vm(ton)	(%)	Kumulatif
1	1912.657	46.42448	74.06697	74.06697
2	280.6077	6.810981	10.86644	84.9334
3	108.1371	2.624731	4.187572	89.12097
4	52.82105	1.282086	2.045477	91.16645
5	36.20339	0.878738	1.401964	92.56842
6	25.08065	0.608764	0.971239	93.53965
7	15.72285	0.381629	0.608862	94.14852
8	13.91352	0.337712	0.538796	94.68731
9	9.629184	0.233722	0.372887	95.0602
10	5.858392	0.142196	0.226864	95.28706
11	5.782711	0.140359	0.223933	95.511
12	4.531091	0.10998	0.175465	95.68646
13	5.658818	0.137352	0.219136	95.9056
14	5.985282	0.145276	0.231778	96.13738
15	4.320874	0.104877	0.167324	96.3047
16	4.122539	0.100063	0.159644	96.46434
17	3.987938	0.096796	0.154432	96.61878
18	53.85	1.307061	2.085323	98.7041
19	31.86617	0.773464	1.234006	99.9381
20	1.598339	0.038795	0.061895	100
	2557.664			

5. Bangunan 25 Lantai (Km)

Mode	Wm (Kg)	Vm(ton)	(%)	Kumulatif
1	2417.23	57.93845	72.60788	72.60788
2	361.3345	8.660807	10.85364	83.46152
3	150.3074	3.602709	4.514879	87.97639
4	78.89225	1.890964	2.369737	90.34613
5	38.02423	0.911401	1.142158	91.48829
6	29.20629	0.700044	0.877288	92.36558
7	21.91249	0.525219	0.6582	93.02378
8	15.33208	0.367494	0.46054	93.48432
9	11.74481	0.281511	0.352786	93.8371
10	8.740072	0.20949	0.262531	94.09964
11	8.01381	0.192083	0.240716	94.34035
12	4.979931	0.119364	0.149585	94.48994
13	5.169317	0.123903	0.155274	94.64521
14	3.997181	0.095808	0.120066	94.76528
15	4.63713	0.111147	0.139288	94.90456
16	4.984891	0.119483	0.149734	95.0543
17	4.310297	0.103313	0.129471	95.18377
18	3.147996	0.075454	0.094558	95.27833
19	3.048868	0.073078	0.091581	95.36991
20	3.243228	0.077737	0.097419	95.46733
21	1.855197	0.044467	0.055726	95.52305
22	4.02643	0.096509	0.120944	95.644
23	80.47013	1.928784	2.417133	98.06113
24	59.71885	1.431398	1.793814	99.85495
25	4.8291	0.115748	0.145055	100
	3250.389			

6. Bangunan 30 Lantai (Km)

Mode	Wm (Kg)	Vm(ton)	(%)	Kumulatif
1	4210.331	103.4816	73.48057	73.48057
2	655.018	16.09904	11.43166	84.91223
3	278.5748	6.846816	4.861812	89.77404
4	135.9357	3.341029	2.37241	92.14645
5	88.67557	2.179469	1.547605	93.69406
6	58.89626	1.447553	1.027884	94.72194
7	35.49512	0.8724	0.619477	95.34142
8	26.89716	0.661079	0.469421	95.81084
9	19.81177	0.486934	0.345764	96.1566
10	16.62158	0.408525	0.290087	96.44669
11	15.1786	0.37306	0.264904	96.71159
12	10.789	0.265172	0.188294	96.89989
13	10.94774	0.269074	0.191065	97.09095
14	8.101871	0.199128	0.141397	97.23235
15	6.797937	0.16708	0.118641	97.35099
16	5.916988	0.145428	0.103266	97.45426
17	4.834486	0.118822	0.084374	97.53863
18	5.362951	0.131811	0.093597	97.63223
19	5.947679	0.146182	0.103802	97.73603
20	4.567901	0.11227	0.079721	97.81575
21	4.17343	0.102575	0.072837	97.88859
22	4.624271	0.113655	0.080705	97.96929
23	2.854214	0.070151	0.049813	98.01911
24	5.022811	0.123451	0.08766	98.10677
25	4.282533	0.105256	0.074741	98.18151
26	5.607178	0.137813	0.097859	98.27937
27	86.89573	2.135724	1.516543	99.79591
28	5.27593	0.129672	0.092078	99.88799
29	3.934118	0.096693	0.06866	99.95665
30	2.484136	0.061055	0.043354	100
	5734.808			

7. Bangunan 35 Lantai (Km)

Mode	Wm (Kg)	Vm(ton)	(%)	Kumulatif
1	5641.56	133.969	70.3344	70.3344
2	939.449	22.3089	11.7123	82.0467
3	363.485	8.63159	4.53164	86.5783
4	190.831	4.53161	2.37912	88.9575
5	99.5633	2.3643	1.24127	90.1987
6	75.1419	1.78438	0.93681	91.1355
7	55.3134	1.31351	0.6896	91.8251
8	41.0822	0.97557	0.51218	92.3373
9	30.6706	0.72833	0.38238	92.7197
10	19.8514	0.47141	0.24749	92.9672
11	17.8305	0.42342	0.2223	93.1895
12	16.5008	0.39184	0.20572	93.3952
13	13.3956	0.3181	0.16701	93.5622
14	11.0765	0.26303	0.13809	93.7003
15	8.01411	0.19031	0.09991	93.8002
16	6.49502	0.15424	0.08097	93.8812
17	7.86364	0.18674	0.09804	93.9792
18	6.20948	0.14745	0.07741	94.0566
19	5.41361	0.12856	0.06749	94.1241
.	.	.	.	.
.	.	.	.	.
.	.	.	.	.
.	.	.	.	.
.	.	.	.	.
30	3.96493	0.09415	0.04943	99.8846
31	3.07831	0.0731	0.03838	99.923
32	3.64366	0.08653	0.04543	99.9684
33	2.45582	0.05832	0.03062	99.9991
34	0.044	0.00104	0.00055	99.9996
35	0.03198	0.00076	0.0004	100
	7751.96518			

8. Bangunan 40 Lantai (Km)

Mode	Wm (Kg)	Vm(ton)	(%)	Kumulatif
1	7047.84	167.886	70.2104	70.2104
2	1199.12	28.5641	11.9456	82.156
3	479.3	11.4174	4.77478	86.9308
4	231.905	5.5242	2.31024	89.241
5	127.5	3.03717	1.27016	90.5112
6	97.6035	2.325	0.97232	91.4835
7	70.7519	1.68537	0.70483	92.1884
8	51.0303	1.21559	0.50836	92.6967
9	36.5326	0.87024	0.36394	93.0607
10	32.5	0.77418	0.32376	93.3844
11	24.0832	0.57368	0.23992	93.6243
12	19.6035	0.46697	0.19529	93.8196
13	15.9671	0.38035	0.15906	93.9787
14	14.3946	0.34289	0.1434	94.1221
15	12.7965	0.30483	0.12748	94.2496
16	10.9357	0.2605	0.10894	94.3585
17	8.86128	0.21108	0.08828	94.4468
18	6.44564	0.15354	0.06421	94.511
19	7.66363	0.18255	0.07634	94.5873
.	.	.	.	.
.	.	.	.	.
.	.	.	.	.
.	.	.	.	.
.	.	.	.	.
35	3.39593	0.08089	0.03383	99.8838
36	2.93931	0.07002	0.02928	99.9131
37	2.87863	0.06857	0.02868	99.9418
38	2.76546	0.06588	0.02755	99.9694
39	1.73487	0.04133	0.01728	99.9866
40	1.34147	0.03195	0.01336	100
	9725.0843			

9. Bangunan 45 Lantai (Km)

Mode	Wm (Kg)	Vm(ton)	(%)	Kumulatif
1	8813.86	207.798	69.0148	69.0148
2	1543.62	36.3929	12.087	81.1018
3	592.077	13.959	4.63612	85.7379
4	296.555	6.99167	2.3221	88.06
5	189.512	4.468	1.48393	89.544
6	108.329	2.55399	0.84824	90.3922
7	85.7632	2.02198	0.67155	91.0637
8	69.0822	1.6287	0.54093	91.6047
9	45.8638	1.0813	0.35913	91.9638
10	44.881	1.05813	0.35143	92.3152
11	32.2284	0.75983	0.25236	92.5676
12	23.7829	0.56071	0.18623	92.7538
13	20.5888	0.48541	0.16122	92.915
14	17.8512	0.42086	0.13978	93.0548
15	15.6262	0.36841	0.12236	93.1772
16	12.883	0.30373	0.10088	93.278
17	13.0407	0.30745	0.10211	93.3802
18	9.48945	0.22373	0.0743	93.4545
19	8.79453	0.20734	0.06886	93.5233
.	.	.	.	.
.	.	.	.	.
.	.	.	.	.
.	.	.	.	.
.	.	.	.	.
40	2.11611	0.04989	0.01657	99.892
41	2.89009	0.06814	0.02263	99.9146
42	2.98824	0.07045	0.0234	99.938
43	3.49624	0.08243	0.02738	99.9654
44	2.58198	0.06087	0.02022	99.9856
45	1.83382	0.04323	0.01436	100
	12222.9278			

10. Bangunan 50 Lantai (Km)

Mode	Wm (Kg)	Vm(ton)	(%)	Kumulatif
1	10745.6	252.738	69.1765	69.1765
2	1830.92	43.0636	11.7869	80.9633
3	741.904	17.4497	4.77613	85.7395
4	347.646	8.17668	2.23803	87.9775
5	228.198	5.36726	1.46907	89.4466
6	157.365	3.70126	1.01307	90.4596
7	90.0239	2.11738	0.57954	91.0392
8	74.5063	1.7524	0.47965	91.5188
9	60.1512	1.41477	0.38723	91.9061
10	41.6396	0.97937	0.26806	92.1741
11	45.2582	1.06448	0.29136	92.4655
12	31.3936	0.73838	0.2021	92.6676
13	25.1003	0.59036	0.16159	92.8292
14	22.597	0.53148	0.14547	92.9746
15	18.2196	0.42853	0.11729	93.0919
16	16.8237	0.3957	0.10831	93.2002
17	15.9517	0.37519	0.10269	93.3029
18	13.5736	0.31925	0.08738	93.3903
19	12.1637	0.28609	0.07831	93.4686
.	.	.	.	.
.	.	.	.	.
.	.	.	.	.
.	.	.	.	.
.	.	.	.	.
45	2.36554	0.05564	0.01523	99.9194
46	3.13474	0.07373	0.02018	99.9396
47	3.08057	0.07246	0.01983	99.9594
48	2.47746	0.05827	0.01595	99.9754
49	2.12977	0.05009	0.01371	99.9891
50	1.69524	0.03987	0.01091	100
	14867.1859			

Hasil Perhitungan MDS, MSF, MLD

1. MDS

Untuk Shear Building

Tingkat	Mode 01	Mode 02	Mode 03
6	6.013744	-1.9398	1.088381
5	5.430366	-0.62683	-0.79724
4	4.320203	1.11041	-1.30164
3	3.173833	1.849282	0.010728
2	1.953062	1.672494	1.161708
1	1	1	1
0	0	0	0

Untuk Muto

Tingkat	Mode 01	Mode 02	Mode 03
6	13.4534	-4.48877	2.47249
5	11.83079	-0.80832	-2.8008
4	9.01928	3.195931	-2.15523
3	6.334384	4.313931	1.28215
2	3.704311	3.340364	2.657106
1	1	1	1
0	0	0	0

2. MSF

Untuk Shear Building

Tingkat	Mode 01	Mode 02	Mode 03
6	6.348931	-2.29138	1.076336
5	5.733037	-0.74044	-0.78842
4	4.560997	1.311668	-1.28724
3	3.350733	2.184458	0.010609
2	2.127827	2.038778	1.185573
1	1.089483	1.219004	1.020544
0	0	0	0

Untuk Muto

Tingkat	Mode 01	Mode 02	Mode 03
6	6.381006	-2.30516	1.062452
5	5.611396	-0.4151	-1.20353
4	4.277885	1.641232	-0.92612
3	3.004426	2.215368	0.550951
2	1.813131	1.770236	1.178279
1	0.489465	0.529953	0.443444
0	0	0	0

3. MLD

Untuk Shear Building

Tingkat	Mode 01	Mode 02	Mode 03
6	0.29562	-0.0153	0.00281
5	0.26694	-0.0049	-0.0021
4	0.21237	0.00875	-0.0034
3	0.15602	0.01458	2.8E-05
2	0.09601	0.01318	0.003
1	0.04916	0.00788	0.00258
0	0	0	0

Untuk Muto

Tingkat	Mode 01	Mode 02	Mode 03
6	1.79261	-0.0953	0.01688
5	1.5764	-0.0172	-0.0191
4	1.20178	0.06782	-0.0147
3	0.84403	0.09155	0.00875
2	0.49358	0.07089	0.01814
1	0.13325	0.02122	0.00683
0	0	0	0

4. MDS

Untuk Shear Building

Tingkat	Mode 01	Mode 02	Mode 03
12	12.6003	-5.0498	2.81842
11	12.3156	-4.2501	1.62993
10	11.6004	-2.4089	-0.6221
9	10.6246	-0.292	-2.2294
8	9.49857	1.58123	-2.4813
7	8.3378	2.90069	-1.639
6	7.13144	3.66617	-0.265
5	5.87287	3.89274	1.10835
4	4.60523	3.62447	2.01699
3	3.25435	2.89696	2.24513
2	1.98765	1.91344	1.7695
1	1	1	1
0	0	0	0

Untuk Muto

Tingkat	Mode 01	Mode 02	Mode 03
12	34.1977	-12.567	8.35181
11	33.4426	-10.628	4.82366
10	31.5449	-6.1503	-1.8576
9	28.8384	-0.7421	-6.8301
8	25.5593	4.28574	-7.515
7	21.6114	8.36586	-4.0843
6	18.0543	10.245	0.32682
5	14.8064	10.4803	3.83199
4	11.3218	9.38965	5.97881
3	7.81728	7.19475	5.99167
2	4.38624	4.28983	4.09438
1	1	1	1
0	0	0	0

5. MSF

Untuk Shear Building

Tingkat	Mode 01	Mode 02	Mode 03
12	4.06026	-1.6958	1.02307
11	6.14068	-2.2084	0.91549
10	5.78405	-1.2517	-0.3494
9	5.4961	-0.1574	-1.2991
8	4.91362	0.85243	-1.4459
7	4.31315	1.56374	-0.9551
6	3.6891	1.97641	-0.1544
5	3.03804	2.09856	0.64587
4	2.45844	2.01639	1.21293
3	1.73729	1.61166	1.35013
2	1.06108	1.06449	1.0641
1	0.53384	0.55633	0.60136
0	0	0	0

Untuk Muto

Tingkat	Mode 01	Mode 02	Mode 03
12	2.41888	-0.9789	0.57143
11	3.66021	-1.281	0.51068
10	3.4525	-0.7413	-0.1967
9	3.27462	-0.0928	-0.7502
8	2.90227	0.53594	-0.8254
7	2.45398	1.04617	-0.4486
6	2.05008	1.28116	0.0359
5	1.68127	1.31059	0.4209
4	1.32669	1.21173	0.67769
3	0.91603	0.92848	0.67915
2	0.51398	0.5536	0.46409
1	0.11718	0.12905	0.11335
0	0	0	0

6. MLD

Untuk Shear Building

Tingkat	Mode 01	Mode 02	Mode 03
12	0.75375	-0.0449	0.01018
11	0.73672	-0.0378	0.00588
10	0.69393	-0.0214	-0.0022
9	0.63556	-0.0026	-0.008
8	0.5682	0.01406	-0.009
7	0.49877	0.0258	-0.0059
6	0.4266	0.03261	-0.001
5	0.35131	0.03462	0.004
4	0.27548	0.03224	0.00728
3	0.19467	0.02577	0.00811
2	0.1189	0.01702	0.00639
1	0.05982	0.00889	0.00361
0	0	0	0

Untuk Muto

Tingkat	Mode 01	Mode 02	Mode 03
12	3.65509	-0.2116	0.04513
11	3.57438	-0.179	0.02607
10	3.37155	-0.1036	-0.01
9	3.08228	-0.0125	-0.0369
8	2.73181	0.07218	-0.0406
7	2.30985	0.14089	-0.0221
6	1.92967	0.17254	0.00177
5	1.58252	0.1765	0.02071
4	1.21009	0.15813	0.03231
3	0.83552	0.12117	0.03238
2	0.46881	0.07225	0.02213
1	0.10688	0.01684	0.0054
0	0	0	0

7. MDS

Untuk Shear Building

Tingkat	Mode 01	Mode 02	Mode 03
18	17.6993	-7.1884	4.60715
17	17.4786	-6.5791	3.57337
16	16.9262	-5.1218	1.32038
15	16.1659	-3.2784	-1.0334
14	15.2837	-1.3796	-2.7909
13	14.3618	0.32503	-3.6682
12	13.3856	1.82427	-3.7506
11	12.2672	3.19176	-3.116
10	11.1043	4.23055	-1.9436
9	9.82544	4.96915	-0.4061
8	8.66902	5.29229	0.94482
7	7.59713	5.29994	1.99074
6	6.46748	5.03374	2.76436
5	5.31413	4.50721	3.13204
4	4.11935	3.74192	3.06053
3	3.05203	2.90373	2.62497
2	1.99388	1.95842	1.88993
1	1	1	1
0	0	0	0

Untuk Muto

Tingkat	Mode 01	Mode 02	Mode 03
18	48.2669	-20.34	11.1422
17	47.6877	-18.698	8.68306
16	46.2383	-14.76	3.30983
15	44.1525	-9.5307	-2.5877
14	41.6107	-3.8548	-7.1938
13	38.5046	2.09717	-9.7711
12	35.6433	6.57375	-9.7222
11	32.9259	9.87386	-7.9802
10	29.9072	12.4756	-4.7884
9	26.759	14.1478	-0.924
8	23.5954	14.8628	2.81933
7	20.2776	14.6982	6.05253
6	17.0656	13.7575	8.13631
5	13.97	12.1737	8.90173
4	10.7663	9.95649	8.40103
3	7.54494	7.2758	6.73924
2	4.27657	4.23361	4.14612
1	1	1	1
0	0	0	0

8. MSF

Untuk Shear Building

Tingkat	Mode 01	Mode 02	Mode 03
18	5.46691	-2.4009	1.44653
17	8.20909	-3.3413	1.70599
16	7.9497	-2.6012	0.63037
15	7.59257	-1.665	-0.4934
14	7.17826	-0.7006	-1.3324
13	6.74527	0.16508	-1.7513
12	6.28679	0.92649	-1.7906
11	6.11858	1.72147	-1.5798
10	5.53855	2.28173	-0.9854
9	4.90069	2.6801	-0.2059
8	4.32389	2.85438	0.47903
7	3.78926	2.85851	1.00932
6	3.38718	2.85074	1.47166
5	2.78315	2.55255	1.6674
4	2.15741	2.11915	1.62933
3	1.59843	1.64446	1.39745
2	1.04425	1.10911	1.00614
1	0.52373	0.56633	0.53237
0	0	0	0

Untuk Muto

Tingkat	Mode 01	Mode 02	Mode 03
18	2.66664	-1.1351	0.65612
17	4.00613	-1.5866	0.77748
16	3.88436	-1.2525	0.29636
15	3.70914	-0.8087	-0.2317
14	3.49561	-0.3271	-0.6441
13	3.23468	0.17795	-0.8749
12	2.99431	0.5578	-0.8705
11	2.93746	0.88975	-0.7588
10	2.66814	1.1242	-0.4553
9	2.38728	1.27488	-0.0879
8	2.10505	1.33931	0.26809
7	1.80905	1.32448	0.57553
6	1.59866	1.30172	0.81238
5	1.30867	1.15187	0.88881
4	1.00856	0.94208	0.83881
3	0.70679	0.68843	0.67289
2	0.40062	0.40058	0.41398
1	0.09368	0.09462	0.09985
0	0	0	0

9. MLD

Untuk Shear Building

Tingkat	Mode 01	Mode 02	Mode 03
18	1.83823	-0.1188	0.02704
17	1.8153	-0.1087	0.02097
16	1.75793	-0.0847	0.00775
15	1.67896	-0.0542	-0.0061
14	1.58735	-0.0228	-0.0164
13	1.4916	0.00537	-0.0215
12	1.39021	0.03015	-0.022
11	1.27405	0.05275	-0.0183
10	1.15328	0.06992	-0.0114
9	1.02046	0.08213	-0.0024
8	0.90035	0.08747	0.00555
7	0.78903	0.0876	0.01168
6	0.6717	0.0832	0.01622
5	0.55192	0.07449	0.01838
4	0.42783	0.06184	0.01796
3	0.31698	0.04799	0.01541
2	0.20708	0.03237	0.01109
1	0.10386	0.01653	0.00587
0	0	0	0

Untuk Muto

Tingkat	Mode 01	Mode 02	Mode 03
18	7.41408	-0.4691	0.09919
17	7.32511	-0.4312	0.0773
16	7.10246	-0.3404	0.02947
15	6.78207	-0.2198	-0.023
14	6.39164	-0.0889	-0.064
13	5.91452	0.04836	-0.087
12	5.47502	0.1516	-0.0865
11	5.0576	0.22771	-0.071
10	4.59391	0.28771	-0.0426
9	4.11033	0.32627	-0.0082
8	3.62439	0.34276	0.0251
7	3.11476	0.33896	0.05388
6	2.62138	0.31727	0.07243
5	2.14587	0.28074	0.07925
4	1.65377	0.22961	0.07479
3	1.15895	0.16779	0.05999
2	0.6569	0.09763	0.03691
1	0.15361	0.02306	0.0089
0	0	0	0

Hasil Perhitungan Prosentase Kontribusi MDS, MSF, MLD

Tingkat	MDS (%)	MSF (%)	MLD (%)
6	10.5	57.1	51.7
12	14.9	51.3	50.4
18	15.9	50.6	50.2
20	16.1	50.5	50.1
25	17.2	50.3	50.1
30	18.7	50.2	50.1
35	20.1	50.1	50.03
40	21.9	50.1	50.03
45	22.8	50.05	50.01
50	25.9	50.05	50.01

TABEL %MSF 12 TINGKAT **SHEAR BUILDING**

Tingkat	% Modal Seismic Force		
	MDS 1	MDS 1-2	SRSS
12	89.8781	97.40190	100
11	93.1872	99.03022	100
10	97.5677	99.82616	100
9	97.2805	97.32036	100
8	94.6311	96.04461	100
7	92.0387	97.90095	100
6	88.0869	99.93198	100
5	81.0482	98.50439	100
4	72.2416	93.43251	100
3	63.6987	86.88746	100
2	57.6184	81.61598	100
1	54.5951	78.85231	100

TABEL %MSF 12 TINGKAT **MUTO**

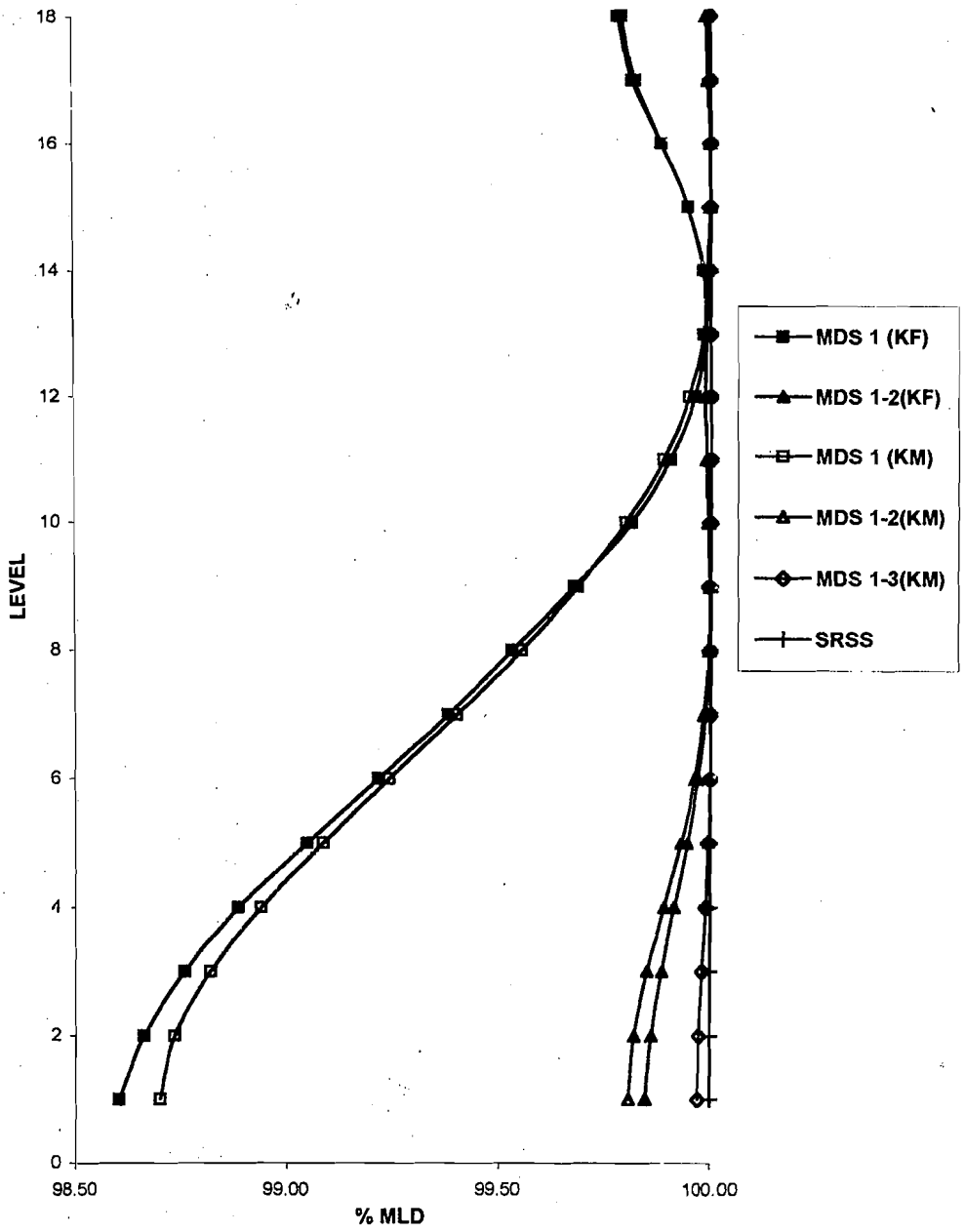
Tingkat	% Modal Seismic Force			
	MDS 1	MDS 1-2	MDS 1-3	SRSS
12	89.5269	96.58065	98.8692	100
11	93.5241	99.08625	99.9417	100
10	96.5724	98.77347	98.9265	100
9	96.1088	96.14739	98.6363	100
8	94.7032	96.30434	99.9999	100
7	88.8734	96.61256	97.9691	100
6	82.7272	97.55289	97.5636	100
5	77.1049	97.76383	99.6512	100
4	68.2431	92.42338	98.7788	100
3	57.985	82.56232	93.0844	100
2	50.6662	74.46569	87.3960	100
1	47.9127	71.27310	85.0166	100

TABEL %MSF 25 TINGKAT **MUTO**

Tingkat	% Modal Seismic Force			
	MDS 1	**MDS 1-2**	**MDS 1-3**	**SRSS**
25	87.3265	95.68478	98.6277	100
24	89.0476	96.88423	99.2024	100
23	92.3997	98.86838	99.9382	100
22	95.1098	99.62843	99.7514	100
21	96.1985	98.68095	98.8384	100
20	96.1144	96.89327	98.1953	100
19	95.7716	95.83355	98.4878	100
18	95.5218	95.63396	99.2371	100
17	95.0933	96.00469	99.9114	100
16	94.0186	96.46532	99.8665	100
15	92.2055	96.73964	99.0583	100
14	89.7704	96.88618	97.9357	100
13	87.2354	97.07282	97.2557	100
12	84.8821	97.38722	97.4352	100
11	82.3726	97.54152	98.3991	100
10	79.3099	96.86918	99.5468	100
9	75.2006	94.64501	99.9860	100
8	69.9204	90.54089	98.9820	100
7	64.35	85.40359	96.6770	100
6	59.2691	80.27187	93.8015	100
5	54.9496	75.66665	90.9047	100
4	51.5928	71.96286	88.4090	100
3	49.1199	69.17231	86.4454	100
2	47.5678	67.39600	85.1618	100
1	47.0027	66.74504	84.6857	100

TABEL %MLD 18 TINGKAT **SHEAR BUILDING**

Tingkat	% Modal Lateral Displacement		
	MDS 1	**MDS 1-2**	**SRSS**
18	99.7810	99.9892	100
17	99.8144	99.9934	100
16	99.8833	99.9990	100
15	99.9473	99.9993	100
14	99.9844	99.9947	100
13	99.9889	99.9896	100
12	99.9640	99.9875	100
11	99.9041	99.9897	100
10	99.8119	99.9951	100
9	99.6774	99.9997	100
8	99.5295	99.9981	100
7	99.3786	99.9892	100
6	99.2132	99.9713	100
5	99.0475	99.9456	100
4	98.8860	99.9138	100
3	98.7592	99.8847	100
2	98.6623	99.8603	100
1	98.6039	99.8446	100



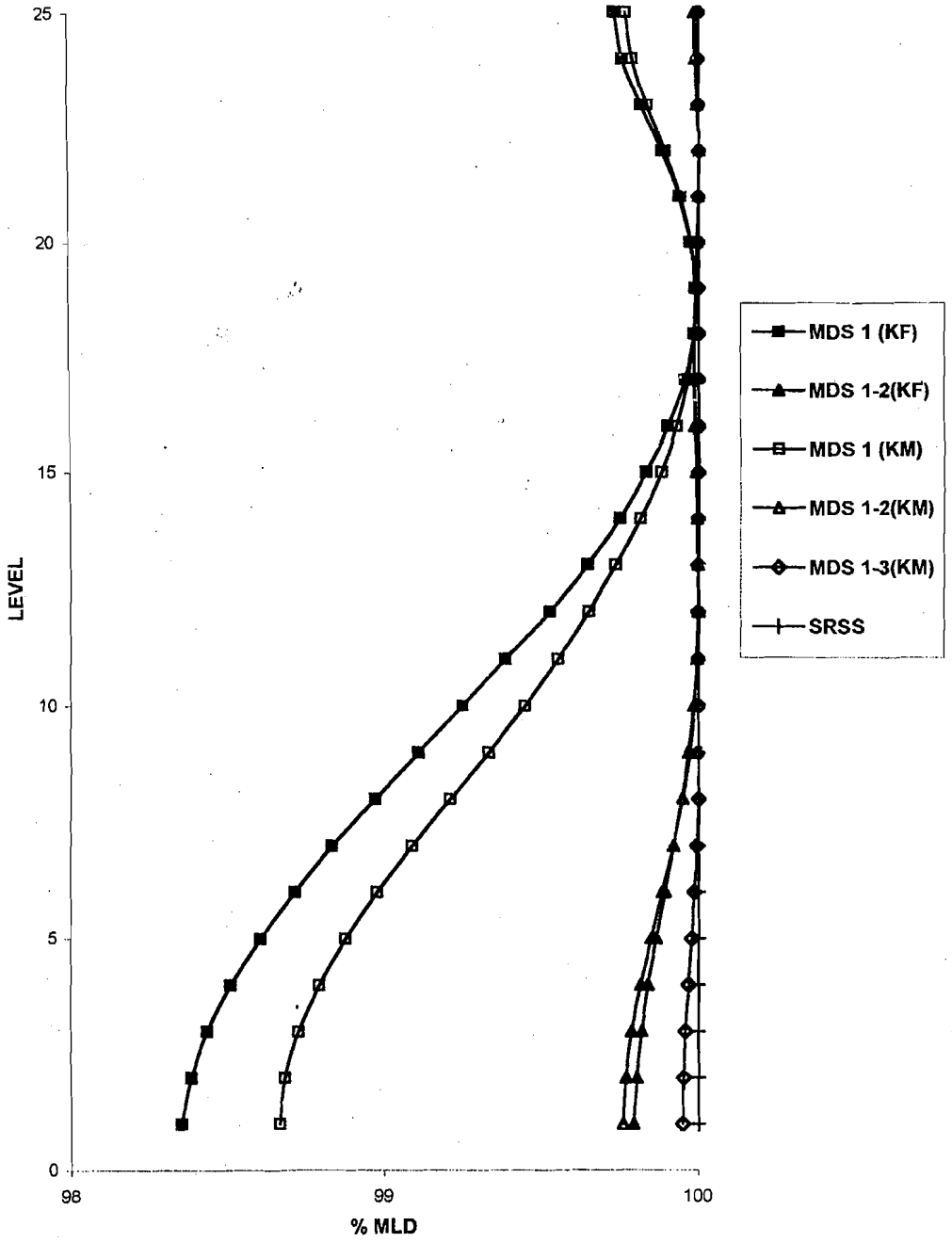
GAMBAR Perbandingan %MLD 18 tingkat **Shear Building** dan **Muto**

TABEL %MLD 25 TINGKAT **SHEAR BUILDING**

Tingkat	% Modal Lateral Displacement		
	MDS 1	**MDS 1-2**	**SRSS**
25	99.7311	99.9857	100
24	99.7578	99.9893	100
23	99.8172	99.9958	100
22	99.8824	99.9997	100
21	99.9366	99.9991	100
20	99.9714	99.9954	100
19	99.9875	99.9907	100
18	99.9833	99.9864	100
17	99.9562	99.9848	100
16	99.9016	99.9867	100
15	99.8310	99.9907	100
14	99.7497	99.9953	100
13	99.6484	99.9991	100
12	99.5295	99.9997	100
11	99.3893	99.9945	100
10	99.2508	99.9834	100
9	99.1098	99.9664	100
8	98.9729	99.9447	100
7	98.8343	99.9181	100
6	98.7139	99.8915	100
5	98.6027	99.8642	100
4	98.5064	99.8387	100
3	98.4318	99.8177	100
2	98.3786	99.8022	100
1	98.3477	99.7929	100

TABEL %MLD 25 TINGKAT **MUTO**

Tingkat	% Modal Lateral Displacement			
	MDS 1	**MDS 1-2**	**MDS 1-3**	**SRSS**
25	99.7671	99.9868	99.9985	100
24	99.7888	99.9902	99.9992	100
23	99.8371	99.9960	99.9999	100
22	99.8926	99.9993	99.9998	100
21	99.9410	99.9984	99.9990	100
20	99.9762	99.9941	99.9984	100
19	99.9884	99.9898	99.9986	100
18	99.9846	99.9872	99.9993	100
17	99.9655	99.9866	99.9999	100
16	99.9301	99.9880	99.9999	100
15	99.8801	99.9907	99.9991	100
14	99.8133	99.9939	99.9979	100
13	99.7355	99.9963	99.9971	100
12	99.6510	99.9969	99.9971	100
11	99.5551	99.9942	99.9981	100
10	99.4502	99.9864	99.9994	100
9	99.3359	99.9715	100.0000	100
8	99.2123	99.9477	99.9983	100
7	99.0912	99.9170	99.9936	100
6	98.9792	99.8827	99.9861	100
5	98.8780	99.8473	99.9766	100
4	98.7930	99.8145	99.9667	100
3	98.7255	99.7866	99.9575	100
2	98.6804	99.7672	99.9508	100
1	98.6634	99.7597	99.9481	100



GAMBAR Perbandingan %MLD 25 tingkat **Shear Building**dan **Muto**