

BAB V

KESIMPULAN DAN SARAN

5.1. Kesimpulan

Berdasarkan studi yang telah dilakukan pada rangka batang bidang pada bab sebelumnya, maka dapat disimpulkan beberapa hal pokok sebagai berikut :

- a. Studi ini telah berhasil membuat *program* komputer yang dapat digunakan untuk menganalisis garis pengaruh rangka batang bidang dengan nilai ekstrim akibat beban berjalan.
- b. Pada kasus rangka Warren statis tertentu dengan beban berjalan (kasus 1), untuk ordinat garis pengaruh gaya batang, kesalahannya relatif kecil bila dibandingkan dengan hasil Siswadi dkk (1999, hal 99) yaitu antara 0% sampai dengan 0,000195%, sedangkan antara SAP 2000 dengan hasil Siswadi dkk (1999, hal 99) mempunyai perbedaan kesalahan relatif kecil yaitu antara 0% sampai dengan 0,085807%. Dan untuk nilai ekstrim gaya batang, kesalahan relatif besar bila dibandingkan dengan SAP 2000 yaitu antara -0,000021% sampai dengan 20%.
- c. Pada kasus rangka Parker statis tertentu dengan beban berjalan (kasus 2), untuk ordinat garis pengaruh gaya batang, kesalahannya relatif besar bila dibandingkan dengan hasil McCormac (1984, hal 221) yaitu antara 0,000099% sampai dengan -2,563841%, sedangkan antara SAP 2000 dengan hasil McCormac (1984, hal 221) mempunyai perbedaan kesalahan relatif besar yaitu antara 0% sampai dengan -2,515130%. Dan untuk nilai ekstrim gaya

batang, kesalahan relatif besar bila dibandingkan dengan SAP 2000 yaitu antara 0,000019% sampai dengan 10,526551%.

- d. Pada kasus rangka Pratt statis tak tentu dengan beban berjalan (kasus 3), untuk ordinat garis pengaruh gaya batang, kesalahan relatif kecil bila dibandingkan dengan hasil Armenakas (1988, hal 216 – 218) yaitu antara 0% sampai dengan -0,154271%, sedangkan antara SAP 2000 dengan hasil Armenakas (1988, hal 216 – 218) mempunyai perbedaan kesalahan relatif kecil yaitu antara 0% sampai dengan -0,208333%. Untuk ordinat garis pengaruh reaksi tumpuan, kesalahan relatif kecil bila dibandingkan dengan hasil Armenakas (1988, hal 216) yaitu antara 0% sampai dengan 0,00015%, sedangkan antara SAP 2000 dengan hasil Armenakas (1988, hal 216) tidak mempunyai perbedaan kesalahan (0%). Untuk nilai ekstrim gaya batang, kesalahan relatif besar bila dibandingkan dengan hasil Armenakas (1988, hal 218) mempunyai perbedaan kesalahan relatif besar yaitu antara 0% sampai dengan -5,555322%, sedangkan antara SAP 2000 dengan hasil Armenakas (1988, hal 218) mempunyai perbedaan kesalahan relatif besar yaitu antara 0% sampai dengan -5,555556. Dan untuk nilai ekstrim reaksi tumpuan, kesalahan relatif kecil bila dibandingkan dengan SAP 2000 yaitu antara 0% sampai dengan 0,000164%.
- e. Pada kasus rangka Baltimore statis tak tentu dengan beban berjalan (kasus 4), bila semuanya dibandingkan dengan SAP 2000, untuk ordinat garis pengaruh gaya batang, kesalahan relatif kecil yaitu antara 0,00001% sampai dengan -0,121371%, untuk ordinat garis pengaruh reaksi tumpuan, kesalahan relatif kecil yaitu antara 0% sampai dengan 0,009216%, untuk nilai ekstrim gaya

- batang, kesalahan relatif kecil yaitu antara 0% sampai dengan -0,00074% sedangkan untuk nilai ekstrim reaksi tumpuan, kesalahan relatif besar yaitu antara 0% sampai dengan 7,007762%.
- f. Pada kasus rangka K statis tak tentu dengan beban berjalan (kasus 5), bila semuanya dibandingkan dengan SAP 2000, untuk ordinat garis pengaruh gaya batang, kesalahan relatif kecil yaitu antara -0,00002% sampai dengan -0,163913%, untuk ordinat garis pengaruh reaksi tumpuan, kesalahan relatif kecil yaitu antara 0% sampai dengan -0,00002%, untuk nilai ekstrim gaya batang, kesalahan relatif kecil yaitu antara 0% sampai dengan 0,000269% sedangkan untuk nilai ekstrim reaksi tumpuan, kesalahan relatif besar yaitu antara 0% sampai dengan 14,085803%.
- g. Pada kasus rangka Parker statis tak tentu dengan beban berjalan (kasus 6), bila semuanya dibandingkan dengan SAP 2000, untuk ordinat garis pengaruh gaya batang, kesalahan relatif kecil yaitu antara 0% sampai dengan 0,276283%, untuk ordinat garis pengaruh reaksi tumpuan, kesalahan relatif kecil yaitu antara 0% sampai dengan 0,337103%, untuk nilai ekstrim gaya batang, kesalahan relatif kecil yaitu antara 0% sampai dengan 0,00021% sedangkan untuk nilai ekstrim reaksi tumpuan, kesalahan relatif besar yaitu antara 0,000017% sampai dengan 1,889524%.
- h. Perbedaan nilai ekstrim gaya batang (pada *point* b dan c) dan nilai ekstrim reaksi tumpuan (pada *point* e, f dan g) yang relatif besar dikarenakan pada SAP 2000 jika beban bekerja di daerah positif pada garis pengaruh hanya berpengaruh pada reaksi maksimum dan tidak berpengaruh pada reaksi

minimum. Begitu juga jika beban bekerja di daerah negatif pada garis pengaruh hanya berpengaruh pada reaksi minimum dan tidak berpengaruh pada reaksi maksimum, sehingga beban yang bekerja di daerah maksimum dan di daerah minimum tidak saling mengurangi atau menambah.

- i. Perbedaan nilai ekstrim gaya batang (pada *point d*) dan ordinat garis pengaruh gaya batang (pada *point c*) yang relatif besar dikarenakan pembulatan nilai ordinat pada hasil McCormac (1984, hal 221) dan hasil Armenakas (1988, hal 218) yang berpengaruh pada hasil akhir yang sangat tergantung pada ketelitian yang digunakan.

5.2. Saran

Program garis pengaruh rangka batang bidang yang telah dibuat dapat dikembangkan lagi untuk hal-hal sebagai berikut :

- a. *Program* ini dapat dikembangkan untuk jenis struktur rangka yang lain.

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LAMPIRAN A**LISTING PROGRAM GARIS PENGARUH RANGKA BATANG BIDANG**

```

'Modul
Option Explicit
Public MD As Integer
Public ND As Integer, N As Integer, NDJ As Integer
Public j As Integer, x() As Single, y() As Single, NB As Integer
Public JJ() As Single, JK() As Single, AX() As Single, NBI As Integer, XCL As Single
Public YCL As Single, EL() As Single, CX() As Single, CY() As Single, JRL() As Integer
Public K As Integer, N1 As Integer, ID() As Integer, SFF() As Single, SCM As Single
Public I2 As Integer, IR As Integer, IC As Integer, ITEM As Integer, c As Single
Public SMS() As Single, IM() As Single, i As Integer, I1 As Integer
Public A() As Single, J1 As Integer, J2 As Integer, SUM As Single, TEMP As Single
Public AJ() As Single, AE() As Single, AR() As Single
Public B() As Single, AMD() As Single, AM() As Single, DF() As Single, Z() As Single
Public DJ() As Single, AC() As Single, JE As Integer
Public LML() As Single, AML() As Single, K1 As Integer, K2 As Integer, U() As Single
Public nomorfile As Integer
Public GrafBtg() As Single
Public GrafR() As Single
Public hitam As Long
Public merah As Long
Public biru As Long
Public hijau As Long
Public kuning As Long
Public merahmuda As Long
Public ColorMerata As Long
Public ColorNumTtkKumpul As Long
Public ColorNumBatang As Long
Public ColorNumBeban As Long
Public pengali As Long
Public pengali2 As Long
Public radius As Integer
Public maxy2 As Long
Public beginleft As Single
Public beginbottom As Single
Public translasi As Integer
Public magnify As Integer
Public putih As Long
Public purple As Long
Public buttonface As Long
Public lebar As Long
Public selang As Single
Public selangTump As Single
Public ketinggian As Single
Public noclick As Boolean
Public Type BEBAN_JARAK
    Bbn(1000) As Single
    Jrk(1000) As Single
    jumlahBeban As Integer
    isBbnMerata As Boolean
    isSejajar As Boolean
    jrkAntarGroup As Single
    diatasGroup As Integer
End Type
Public TotalGroup As Integer
Public isMerataBottom As Boolean
Public ValueMerataBottom As Single
Public Const MAKSGROUP As Integer = 999
Public DiBebanJarak(MAKSGROUP) As BEBAN_JARAK
Public JR As Integer
Public xa As Single
Public xb As Single
Public xc As Single
Public YPosition2() As Single
Public YPosition3() As Single
Public terkini As Single

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Public terkanan As Single
Public Const PRESISI As Single = 0.01
Public Sub clearDtBebanJarak()
Dim i As Integer
Dim j As Integer
For i = 0 To MAKSGROUP - 1
DtBebanJarak(i).isBbnMerata = 0
For j = 0 To 99
DtBebanJarak(i).Bbn(j) = 0
DtBebanJarak(i).Jrk(j) = 0
Next j
DtBebanJarak(i).jumlahBeban = 0
DtBebanJarak(i).isSejajar = 0
Next i
End Sub
Public Sub stiff2()
ReDim SFF(N, NB)
ReDim IM(4)
ReDim SMS(4, 4)
For j = 1 To N
For K = 1 To NB
SFF(j, K) = 0
Next K
Next j
For i = 1 To Int(frmDS.M)
SCM = Int(frmDS.E) * AX(i) / EL(i)
SMS(1, 1) = SCM * CX(i) * CX(i)
SMS(1, 2) = SCM * CX(i) * CY(i)
SMS(1, 3) = -SMS(1, 1)
SMS(1, 4) = -SMS(1, 2)
SMS(2, 2) = SCM * CY(i) * CY(i)
SMS(2, 3) = -SMS(1, 2)
SMS(2, 4) = -SMS(2, 2)
SMS(3, 3) = SMS(1, 1)
SMS(3, 4) = SMS(1, 2)
SMS(4, 4) = SMS(2, 2)
IM(1) = 2 * JJ(i) - 1
IM(2) = 2 * JJ(i)
IM(3) = 2 * JK(i) - 1
IM(4) = 2 * JK(i)
For j = 1 To MD
I1 = IM(j)
If JRL(I1) > 0 Then
GoTo 2
Else
For K = j To MD
I2 = IM(K)
If JRL(I2) > 0 Then
GoTo 2
Else
IR = ID(I1)
IC = ID(I2)
If IR < IC Then
GoTo 1
Else
IITEM = IR
IR = IC
IC = IITEM
1: IC = IC - IR + 1
SFF(IR, IC) = SFF(IR, IC) + SMS(j, K)
End If
End If
2: Next K
End If
End If
Next j
Next i
End Sub
Public Sub banfac(N As Integer, NB As Integer, A() As Single, c As Single)
If A(1, 1) <= 0 Then ReDim B(N)

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For j = 2 To N
  J1 = j - 1
  J2 = j - NB + 1
  If J2 < 1 Then J2 = 1
  If J1 = 1 Then
    GoTo 3
  Else
    For i = 2 To J1
      I1 = i - 1
      If I1 < J2 Then GoTo 2
      SUM = A(i, j - i + 1)
      For K = J2 To I1
        SUM = SUM - A(K, i - K + 1) * A(K, j - K + 1)
      Next K
      A(i, j - i + 1) = SUM
    2: Next i
    3: SUM = A(j, 1)
    For K = J2 To J1
      TEMP = A(K, j - K + 1) / A(K, 1)
      SUM = SUM - TEMP * A(K, j - K + 1)
      A(K, j - K + 1) = TEMP
    Next K
    If SUM <= 0 Then ReDim B(N)
    A(j, 1) = SUM
  End If
Next j
End Sub

'Inputan data struktur
Option Explicit
Dim x1 As Long
Private Sub BLewat_Change()
  If Trim(BLewat.text) = "" Then
    Exit Sub
  End If
  If Val(BLewat.text) <= 0 Then
    BLewat = ""
    BLewat.SetFocus
  End If
End Sub
Private Sub BLewat_KeyPress(KeyAscii As Integer)
  If (Chr(KeyAscii) < "0" Or Chr(KeyAscii) > "9") And KeyAscii <> 8 And KeyAscii <> 13 Then
    KeyAscii = 0
  End If
  If KeyAscii = 13 And Not BLewat = "" Then
    FlexBtgLewat.Enabled = True
    FlexBtgLewat.SetFocus
    FlexBtgLewat.Rows = Int(BLewat) + 1
  End If
End Sub
Private Sub cmdClear_Click()
  NJ.text = ""
  M.text = ""
  NR.text = ""
  NRJ.text = ""
  E.text = ""
  BLewat = ""
  flexTtkKumpul.Rows = 2
  flexTtkKumpul.Cols = 3
  flexTtkKumpul.TextMatrix(1, 0) = ""
  flexTtkKumpul.TextMatrix(1, 1) = ""
  flexTtkKumpul.TextMatrix(1, 2) = ""
  flexKekangTtkKumpul.Rows = 2
  flexKekangTtkKumpul.Cols = 3
  flexKekangTtkKumpul.TextMatrix(1, 0) = ""
  flexKekangTtkKumpul.TextMatrix(1, 1) = ""
  flexKekangTtkKumpul.TextMatrix(1, 2) = ""
  flexInfoBtg.Rows = 2
  flexInfoBtg.Cols = 4

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flexInfoBtg.TextMatrix(1, 0) = ""
flexInfoBtg.TextMatrix(1, 1) = ""
flexInfoBtg.TextMatrix(1, 2) = ""
flexInfoBtg.TextMatrix(1, 3) = ""
FlexBtgLewat.Rows = 2
FlexBtgLewat.Cols = 1
FlexBtgLewat.TextMatrix(1, 0) = ""
NJ.SetFocus
flexTtkKumpul.Enabled = False
flexKekangTtkKumpul.Enabled = False
flexInfoBtg.Enabled = False
FlexBtgLewat.Enabled = False
End Sub
Private Sub cmdDtBbn_Click()
If NJ = "" Or M = "" Or NR = "" Or NRJ = "" Or E = "" Or BLewat = "" Then
    MsgBox "Data Parameter Struktural Belum Lengkap !", vbExclamation, "Peringatan"
Exit Sub
End If
Dim i As Integer
Dim j As Integer
For i = 1 To flexTtkKumpul.Rows - 1
    For j = 0 To flexTtkKumpul.Cols - 1
        If Trim(flexTtkKumpul.TextMatrix(i, j)) = "" Then
            MsgBox "Data Koordinat Titik Kumpul Belum Lengkap !", vbExclamation, "Peringatan"
            Exit Sub
        End If
    Next j
Next i
For i = 1 To flexKekangTtkKumpul.Rows - 1
    For j = 0 To flexKekangTtkKumpul.Cols - 1
        If Trim(flexKekangTtkKumpul.TextMatrix(i, j)) = "" Then
            MsgBox "Data Pengekang Titik Kumpul Belum Lengkap !", vbExclamation, "Peringatan"
            Exit Sub
        End If
    Next j
Next i
For i = 1 To flexInfoBtg.Rows - 1
    For j = 0 To flexInfoBtg.Cols - 1
        If Trim(flexInfoBtg.TextMatrix(i, j)) = "" Then
            MsgBox "Data Informasi Batang Belum Lengkap !", vbExclamation, "Peringatan"
            Exit Sub
        End If
    Next j
Next i
For i = 1 To FlexBtgLewat.Rows - 1
    For j = 0 To FlexBtgLewat.Cols - 1
        If Trim(FlexBtgLewat.TextMatrix(i, j)) = "" Then
            MsgBox "Data Batang yang Dilewati Belum Lengkap !", vbExclamation, "Peringatan"
            Exit Sub
        End If
    Next j
Next i
IsiVariabel
ReDim B(N)
ReDim Z(N)
ReDim DF(N)
ReDim DJ(ND)
stiff2
Call banfac(N, NB, SFF, c)
ReDim U(N, NB)
ReDim AMD(Int(M) + 5)
ReDim AM(Int(M) + 5)
frmDBB.txtGB.SetFocus
End Sub
Private Sub cmdGrafik_Click()
If NJ = "" Or M = "" Or NR = "" Or NRJ = "" Or E = "" Or BLewat = "" Then
    MsgBox "Data Parameter Struktural Belum Lengkap !", vbExclamation, "Peringatan"
    Exit Sub
End If

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```

Dim i As Integer
Dim j As Integer
For i = 1 To flexTtkKumpul.Rows - 1
  For j = 0 To flexTtkKumpul.Cols - 1
    If Trim(flexTtkKumpul.TextMatrix(i, j)) = "" Then
      MsgBox "Data Koordinat Titik Kumpul Belum Lengkap!", vbExclamation, "Peringatan"
      Exit Sub
    End If
  Next j
Next i
For i = 1 To flexKekangTtkKumpul.Rows - 1
  For j = 0 To flexKekangTtkKumpul.Cols - 1
    If Trim(flexKekangTtkKumpul.TextMatrix(i, j)) = "" Then
      MsgBox "Data Pengekang Titik Kumpul Belum Lengkap!", vbExclamation, "Peringatan"
      Exit Sub
    End If
  Next j
Next i
For i = 1 To flexInfoBtg.Rows - 1
  For j = 0 To flexInfoBtg.Cols - 1
    If Trim(flexInfoBtg.TextMatrix(i, j)) = "" Then
      MsgBox "Data Informasi Batang Belum Lengkap!", vbExclamation, "Peringatan"
      Exit Sub
    End If
  Next j
Next i
For i = 1 To FlexBtgLewat.Rows - 1
  For j = 0 To FlexBtgLewat.Cols - 1
    If Trim(FlexBtgLewat.TextMatrix(i, j)) = "" Then
      MsgBox "Data Batang yang Dilewati Belum Lengkap!", vbExclamation, "Peringatan"
      Exit Sub
    End If
  Next j
Next i
Isi Variabel
ReDim B(N)
ReDim Z(N)
ReDim DF(N)
ReDim DJ(ND)
stiff2
Call banfac(N, NB, SFF, c)
ReDim U(N, NB)
ReDim AMD(Int(M) + 5)
ReDim AM(Int(M) + 5)
TotalGroup = 0
isMerataBottom = False
frmGP.Frame1.Visible = False
End Sub
Private Sub E_Change()
If Trim(E.text) = "" Then
  Exit Sub
End If
If Val(E.text) <= 0 Then
  E = ""
  E.SetFocus
End If
End Sub
Private Sub E_KeyPress(KeyAscii As Integer)
If (Chr(KeyAscii) < "0" Or Chr(KeyAscii) > "9") And KeyAscii <> 8 And KeyAscii <> 13 Then
  KeyAscii = 0
End If
If KeyAscii = 13 And Not E = "" Then
  BLewat.SetFocus
End If
End Sub
Private Sub FlexBtgLewat_KeyPress(KeyAscii As Integer)
If Len(FlexBtgLewat.text) >= 8 And KeyAscii <> 8 Then
  KeyAscii = 0
  Exit Sub

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```

End If
If (Chr(KeyAscii) < "0" Or Chr(KeyAscii) > "9") And KeyAscii <> 8 Then
    KeyAscii = 0
End If
If KeyAscii <> 8 Then
    FlexBtgLewat.text = FlexBtgLewat.text + Chr(KeyAscii)
    If FlexBtgLewat.text = "0" Then
        FlexBtgLewat.text = ""
    End If
Else
    If FlexBtgLewat.text = "" Then
        FlexBtgLewat.text = ""
    Else
        FlexBtgLewat.text = Left(FlexBtgLewat.text, Len(FlexBtgLewat.text) - 1)
    End If
End If
End Sub
Private Sub FlexBtgLewat_MouseDown(Button As Integer, Shift As Integer, x As Single, y As Single)
If Button = 2 Then
    PopupMenu mnu
End If
End Sub
Private Sub flexInfoBtg_KeyPress(KeyAscii As Integer)
If Len(flexInfoBtg.text) >= 8 And KeyAscii <> 8 Then
    KeyAscii = 0
Exit Sub
End If
If flexInfoBtg.col = 1 Or flexInfoBtg.col = 2 Then
    If (Chr(KeyAscii) < "0" Or Chr(KeyAscii) > "9") And KeyAscii <> 8 Then
        KeyAscii = 0
    End If
    If KeyAscii <> 8 Then
        flexInfoBtg.text = flexInfoBtg.text + Chr(KeyAscii)
        If flexInfoBtg.text = "0" Then
            flexInfoBtg.text = ""
        End If
    Else
        If flexInfoBtg.text = "" Then
            flexInfoBtg.text = ""
        Else
            flexInfoBtg.text = Left(flexInfoBtg.text, Len(flexInfoBtg.text) - 1)
        End If
    End If
End If
If flexInfoBtg.col = 3 Then
    If Strings.InStr(1, flexInfoBtg.text, ".") > 0 And KeyAscii = 46 Then
        KeyAscii = 0
        Exit Sub
    End If
    If (Chr(KeyAscii) < "0" Or Chr(KeyAscii) > "9") And KeyAscii <> 46 And KeyAscii <> 8 Then
        KeyAscii = 0
    End If
    If KeyAscii <> 8 Then
        flexInfoBtg.text = flexInfoBtg.text + Chr(KeyAscii)
    Else
        If flexInfoBtg.text = "" Then
            flexInfoBtg.text = ""
        Else
            flexInfoBtg.text = Left(flexInfoBtg.text, Len(flexInfoBtg.text) - 1)
        End If
    End If
    If KeyAscii = 46 Then
        If flexInfoBtg.text = "." Then
            flexInfoBtg.text = "0."
        End If
    End If
End Sub
Private Sub flexInfoBtg_MouseDown(Button As Integer, Shift As Integer, x As Single, y As Single)

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If Button = 2 Then
    PopupMenu mnu
End If
End Sub
Private Sub flexKekangTtkKumpul_KeyPress(KeyAscii As Integer)
If Len(flexKekangTtkKumpul.text) >= 8 And KeyAscii <> 8 Then
    KeyAscii = 0
    Exit Sub
End If
If flexKekangTtkKumpul.col = 1 Then
    If ((Chr(KeyAscii) < "0" Or Chr(KeyAscii) > "1") And KeyAscii <> 8) Then
        KeyAscii = 0
    ElseIf (Chr(KeyAscii) = "0" Or Chr(KeyAscii) = "1") Then
        flexKekangTtkKumpul.text = ""
    End If
ElseIf flexKekangTtkKumpul.col = 2 Then
    If ((Chr(KeyAscii) < "0" Or Chr(KeyAscii) > "1") And KeyAscii <> 8) Then
        KeyAscii = 0
    ElseIf (Chr(KeyAscii) = "0" Or Chr(KeyAscii) = "1") Then
        flexKekangTtkKumpul.text = ""
    End If
ElseIf flexKekangTtkKumpul.col = 0 Then
    If ((Chr(KeyAscii) < "0" Or Chr(KeyAscii) > "9") And KeyAscii <> 8) Then
        KeyAscii = 0
    End If
End If
If KeyAscii <> 8 Then
    flexKekangTtkKumpul.text = flexKekangTtkKumpul.text + Chr(KeyAscii)
    If flexKekangTtkKumpul.col = 0 Then
        If flexKekangTtkKumpul.text = "0" Then
            flexKekangTtkKumpul.text = ""
        End If
    End If
End If
Else
    If flexKekangTtkKumpul.text = "" Then
        flexKekangTtkKumpul.text = ""
    Else
        flexKekangTtkKumpul.text = Left(flexKekangTtkKumpul.text, Len(flexKekangTtkKumpul.text) - 1)
    End If
End If
End Sub
Private Sub flexKekangTtkKumpul_MouseDown(Button As Integer, Shift As Integer, x As Single, y As Single)
If Button = 2 Then
    PopupMenu mnu
End If
End Sub
Private Sub flexTtkKumpul_KeyPress(KeyAscii As Integer)
If Len(flexTtkKumpul.text) >= 8 And KeyAscii <> 8 Then
    KeyAscii = 0
    Exit Sub
End If
If Len(flexTtkKumpul.text) > 0 And Chr(KeyAscii) = "-" Then
    KeyAscii = 0
    Exit Sub
End If
If Strings.InStr(1, flexTtkKumpul.text, ".") > 0 And KeyAscii = 46 Then
    KeyAscii = 0
    Exit Sub
End If
If Strings.InStr(1, flexTtkKumpul.text, "-") > 0 And KeyAscii = 45 Then
    KeyAscii = 0
    Exit Sub
End If
If (Chr(KeyAscii) < "0" Or Chr(KeyAscii) > "9") And KeyAscii <> 45 And KeyAscii <> 46 And KeyAscii <> 8 Then
    KeyAscii = 0
End If
If KeyAscii <> 8 Then
    flexTtkKumpul.text = flexTtkKumpul.text + Chr(KeyAscii)
Else

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If flexTtkKumpul.text = "" Then
    flexTtkKumpul.text = ""
Else
    flexTtkKumpul.text = Left(flexTtkKumpul.text, Len(flexTtkKumpul.text) - 1)
End If
End If
If KeyAscii = 46 Then
    If flexTtkKumpul.text = "." Then
        flexTtkKumpul.text = "0."
    ElseIf flexTtkKumpul.text = "-." Then
        flexTtkKumpul.text = "-0."
    End If
End If
End Sub
Private Sub flexTtkKumpul_MouseDown(Button As Integer, Shift As Integer, x As Single, y As Single)
If Button = 2 Then
    PopupMenu mnu
End If
End Sub
Private Sub Form_Activate()
NDJ = 2
flexTtkKumpul.TextMatrix(0, 0) = "Titik"
flexTtkKumpul.TextMatrix(0, 1) = "X"
flexTtkKumpul.TextMatrix(0, 2) = "Y"
flexKekangTtkKumpul.TextMatrix(0, 0) = "Titik"
flexKekangTtkKumpul.TextMatrix(0, 1) = "JR1"
flexKekangTtkKumpul.TextMatrix(0, 2) = "JR2"
flexInfoBtg.TextMatrix(0, 0) = "Batang"
flexInfoBtg.TextMatrix(0, 1) = "JJ"
flexInfoBtg.TextMatrix(0, 2) = "JK"
flexInfoBtg.TextMatrix(0, 3) = "AX"
FlexBtgLewat.TextMatrix(0, 0) = "Batang"
End Sub
Private Sub Form_Load()
flexTtkKumpul.Enabled = False
flexKekangTtkKumpul.Enabled = False
flexInfoBtg.Enabled = False
FlexBtgLewat.Enabled = False
End Sub
Private Sub Form_MouseDown(Button As Integer, Shift As Integer, x As Single, y As Single)
If Button = 2 Then
    PopupMenu mnu
End If
End Sub
Private Sub Form_Unload(Cancel As Integer)
End
End Sub
Private Sub M_Change()
If Trim(M.text) = "" Then
    Exit Sub
End If
If Val(M.text) <= 0 Then
    M = ""
    M.SetFocus
End If
End Sub
Private Sub M_KeyPress(KeyAscii As Integer)
x1 = Val(M.text)
If (Chr(KeyAscii) < "0" Or Chr(KeyAscii) > "9") And KeyAscii <> 8 And KeyAscii <> 13 Then
    KeyAscii = 0
End If
If KeyAscii = 13 And Not M = "" Then
    flexInfoBtg.Enabled = True
    flexInfoBtg.SetFocus
End If
If KeyAscii = 13 And x1 < 3 And x1 > 0 Then
    MsgBox "Jumlah Batang Minimal = 3!", vbExclamation, "Peringatan"
    M = ""
    M.SetFocus

```

```

ElseIf KeyAscii = 13 And Not x1 < 3 And x1 > 0 Then
  If NJ = "" And KeyAscii = 13 Then
    If flexTtkKumpul.text = "" And KeyAscii = 13 Then
      MsgBox "Koordinat Titik Kumpul Harus Diisi !", vbExclamation, "Peringatan"
      NJ.SetFocus
      M = ""
    End If
    MsgBox "Jumlah Titik Kumpul Harus Diisi !", vbExclamation, "Peringatan"
    NJ = ""
    NJ.SetFocus
    M = ""
  ElseIf flexTtkKumpul.text = "" And KeyAscii = 13 Then
    If NJ = "" And KeyAscii = 13 Then
      MsgBox "Jumlah Titik Kumpul Harus Diisi !", vbExclamation, "Peringatan"
      NJ = ""
      NJ.SetFocus
      M = ""
    End If
    MsgBox "Koordinat Titik Kumpul Harus Diisi !", vbExclamation, "Peringatan"
    NJ.SetFocus
    M = ""
  Else
    flexInfoBtg.Rows = Int(M) + 1
    flexInfoBtg.Cols = 4
    For j = 1 To Int(M)
      flexInfoBtg.TextMatrix(j, 0) = j
      flexInfoBtg.TextMatrix(j, 1) = ""
      flexInfoBtg.TextMatrix(j, 2) = ""
      flexInfoBtg.TextMatrix(j, 3) = ""
    Next j
    flexInfoBtg.Enabled = True
    flexInfoBtg.SetFocus
  End If
End If
End Sub
Private Sub mnuBF_Click()
mnuBukaFile_Click
End Sub
Private Sub mnuBukaFile_Click()
dlgfile.DialogTitle = "Open Data Struktur"
dlgfile.FileName = ""
dlgfile.Filter = "Text Document (*.txt)*.txt|"
dlgfile.DefaultExt = ".txt"
dlgfile.Flags = cdlOFNFileMustExist
If bukafile And dlgfile.FileName <> "" Then
  IsiVariabel
  cmdDtBbn.SetFocus
ElseIf dlgfile.FileName = "" Then
  Exit Sub
Else
  MsgBox "Format File Salah !", vbExclamation, "Peringatan"
  cmdClear_Click
End If
flexTtkKumpul.Enabled = True
flexKekangTtkKumpul.Enabled = True
flexInfoBtg.Enabled = True
FlexBtgLewat.Enabled = True
End Sub
Private Sub mnuC_Click()
cmdClear_Click
End Sub
Private Sub mnuDBB_Click()
cmdDtBbn_Click
End Sub
Private Sub mnuG_Click()
cmdGrafik_Click
End Sub
Private Sub mnuK_Click()
End

```

```

End Sub
Private Sub mnuKeluar_Click()
End
End Sub
Private Sub mnuS_Click()
mnuSave_Click
End Sub
Private Sub mnuSave_Click()
dlgfile.DialogTitle = "Save Data Struktur"
dlgfile.FileName = ""
dlgfile.Filter = "Text Document (*.txt)|*.txt|"
dlgfile.DefaultExt = ".txt"
dlgfile.Flags = cdlCCFullOpen
dlgfile.ShowSave
If dlgfile.FileName = "" Then
Exit Sub
End If
Open dlgfile.FileName For Output As #1
simpan
Close #1
Exit Sub
End Sub
Private Sub NJ_Change()
If Trim(NJ.text) = "" Then
Exit Sub
End If
If Val(NJ.text) <= 0 Then
NJ = ""
NJ.SetFocus
End If
End Sub
Private Sub NJ_KeyPress(KeyAscii As Integer)
x1 = Val(NJ.text)
If (Chr(KeyAscii) < "0" Or Chr(KeyAscii) > "9") And KeyAscii <> 8 And KeyAscii <> 13 Then
KeyAscii = 0
End If
If KeyAscii = 13 And x1 < 3 And x1 > 0 Then
MsgBox "Jumlah Titik Kumpul Minimal = 3 !", vbExclamation, "Peringatan"
NJ = ""
NJ.SetFocus
Elseif KeyAscii = 13 And Not x1 < 3 And x1 > 0 Then
ReDim x(Int(NJ))
ReDim y(Int(NJ))
flexTtkKumpul.Rows = Int(NJ) + 1
For K = 1 To Int(NJ)
flexTtkKumpul.TextMatrix(K, 0) = K
flexTtkKumpul.TextMatrix(K, 1) = ""
flexTtkKumpul.TextMatrix(K, 2) = ""
Next K
flexTtkKumpul.Enabled = True
flexTtkKumpul.SetFocus
End If
End Sub
Private Sub NR_Change()
If Trim(NR.text) = "" Then
Exit Sub
End If
If Val(NR.text) <= 0 Then
NR = ""
NR.SetFocus
End If
End Sub
Private Sub NR_KeyPress(KeyAscii As Integer)
x1 = Val(NR.text)
If (Chr(KeyAscii) < "0" Or Chr(KeyAscii) > "9") And KeyAscii <> 8 And KeyAscii <> 13 Then
KeyAscii = 0
End If
If KeyAscii = 13 And x1 < 3 And x1 > 0 Then
MsgBox "Jumlah Pengekang Tumpuan Minimal = 3 !", vbExclamation, "Peringatan"

```

```

NR = ""
NR.SetFocus
Elseif KeyAscii = 13 And Not NR = "" Then
  NRJ.SetFocus
End If
End Sub
Private Sub NRJ_Change()
If Trim(NRJ.text) = "" Then
  Exit Sub
End If
If Val(NRJ.text) <= 0 Then
  NRJ = ""
  NRJ.SetFocus
End If
End Sub
Private Sub NRJ_KeyPress(KeyAscii As Integer)
x1 = Val(NRJ.text)
If (Chr(KeyAscii) < "0" Or Chr(KeyAscii) > "9") And KeyAscii <> 8 And KeyAscii <> 13 Then
  KeyAscii = 0
End If
If KeyAscii = 13 And Not NRJ = "" Then
  flexKekangTitikKumpul.Enabled = True
  flexKekangTitikKumpul.SetFocus
End If
If KeyAscii = 13 And x1 = 1 Then
  MsgBox "Jumlah Titik Kumpul yang Dikekang Minimal = 2 !", vbExclamation, "Peringatan"
  NRJ = ""
  NRJ.SetFocus
Elseif KeyAscii = 13 And Not x1 < 2 And x1 > 0 Then
  If NJ = "" And KeyAscii = 13 Then
    If flexTitikKumpul.text = "" And KeyAscii = 13 Then
      MsgBox "Koordinat Titik Kumpul Harus Diisi !", vbExclamation, "Peringatan"
      NJ.SetFocus
      NRJ = ""
    End If
    If NR = "" And KeyAscii = 13 Then
      MsgBox "Jumlah Pengekang Tumpuan Harus Diisi !", vbExclamation, "Peringatan"
      NR = ""
      NR.SetFocus
      NRJ = ""
    End If
    MsgBox "Jumlah Titik Kumpul Harus Diisi !", vbExclamation, "Peringatan"
    NJ = ""
    NJ.SetFocus
    NRJ = ""
  Elseif flexTitikKumpul.text = "" And KeyAscii = 13 Then
    If NJ = "" And KeyAscii = 13 Then
      MsgBox "Jumlah Titik Kumpul Harus Diisi !", vbExclamation, "Peringatan"
      NJ = ""
      NJ.SetFocus
      NRJ = ""
    End If
    If NR = "" And KeyAscii = 13 Then
      MsgBox "Jumlah Pengekang Tumpuan Harus Diisi !", vbExclamation, "Peringatan"
      NR = ""
      NR.SetFocus
      NRJ = ""
    End If
    MsgBox "Koordinat Titik Kumpul Harus Diisi !", vbExclamation, "Peringatan"
    NJ.SetFocus
    NRJ = ""
  Elseif NR = "" And KeyAscii = 13 Then
    MsgBox "Jumlah Pengekang Tumpuan Harus Diisi !", vbExclamation, "Peringatan"
    NR = ""
    NR.SetFocus
    NRJ = ""
  End If
Else
  ND = NDJ * Int(NJ)
  N = ND - Int(NR)

```



```

ReDim JRL(ND)
flexKekangTtkKumpul.Rows = Int(NRJ) + 1
flexKekangTtkKumpul.Cols = 3
For j = 1 To ND
    JRL(j) = 0
Next j
For j = 1 To Int(NRJ)
    flexKekangTtkKumpul.TextMatrix(j, 0) = ""
    flexKekangTtkKumpul.TextMatrix(j, 1) = ""
    flexKekangTtkKumpul.TextMatrix(j, 2) = ""
Next j
End If
End Sub
Private Sub Timer1_Timer()
If Label1.Visible = False Then
    Label1.Visible = True
Else
    Label1.Visible = True And False
End If
End Sub
Function sdata() As Boolean
Dim tmp1 As Integer
Dim tmp2 As Integer
Dim tmp3 As Integer
Dim tmp4 As Integer
Dim tmp5 As Long
Dim xa As Single
Dim xb As Single
Dim xc As Single
On Error GoTo ErrHandle
Input #nomorfile, tmp1, tmp3, tmp5
NJ = tmp1
NR = tmp3
E = tmp5
flexTtkKumpul.Rows = Int(NJ) + 1
For K = 1 To Int(NJ)
Input #nomorfile, j, xa, xb
flexTtkKumpul.Row = K
flexTtkKumpul.col = 0
flexTtkKumpul.text = j
flexTtkKumpul.col = 1
flexTtkKumpul.text = xa
flexTtkKumpul.col = 2
flexTtkKumpul.text = xb
Next K
Input #nomorfile, tmp2
M = tmp2
flexInfoBtg.Rows = Int(M) + 1
For j = 1 To Int(M)
Input #nomorfile, i, xa, xb, xc
flexInfoBtg.Row = j
flexInfoBtg.col = 0
flexInfoBtg.text = i
flexInfoBtg.col = 1
flexInfoBtg.text = xa
flexInfoBtg.col = 2
flexInfoBtg.text = xb
flexInfoBtg.col = 3
flexInfoBtg.text = xc
Next j
Input #nomorfile, tmp4
NRJ = tmp4
flexKekangTtkKumpul.Rows = Int(NRJ) + 1
For j = 1 To Int(NRJ)
Input #nomorfile, K, xa, xb
flexKekangTtkKumpul.Row = j
flexKekangTtkKumpul.col = 0
flexKekangTtkKumpul.text = K

```

```

flexKekangTtkKumpul.col = 1
flexKekangTtkKumpul.text = xa
flexKekangTtkKumpul.col = 2
flexKekangTtkKumpul.text = xb
Next j
Input #nomorfile, K
BLewat.text = K
FlexBtgLewat.Rows = K + 1
For j = 1 To Int(BLewat)
Input #nomorfile, xa
FlexBtgLewat.TextMatrix(j, 0) = xa
Next j
sdata = True
Exit Function
ErrHandle:
sdata = False
End Function
Function bukafile() As Boolean
dlgfile.DialogTitle = "Open Data Struktur"
dlgfile.ShowOpen
nomorfile = FreeFile
If dlgfile.FileName = "" Then
bukafile = False
Exit Function
End If
Open dlgfile.FileName For Input As nomorfile
bukafile = sdata
Close nomorfile
End Function
Sub simpan()
Print #1, Tab(2); NJ; Tab(10); NR; Tab(19); E
For K = 1 To Int(NJ)
j = (flexTtkKumpul.TextMatrix(K, 0))
xa = (flexTtkKumpul.TextMatrix(K, 1))
xb = (flexTtkKumpul.TextMatrix(K, 2))
Print #1, j; Tab(9); xa; Tab(18); xb
Next K
Print #1, Tab(2); M
For j = 1 To Int(M)
i = (flexInfoBtg.TextMatrix(j, 0))
xa = (flexInfoBtg.TextMatrix(j, 1))
xb = (flexInfoBtg.TextMatrix(j, 2))
xc = (flexInfoBtg.TextMatrix(j, 3))
Print #1, i; Tab(9); xa; Tab(18); xb; Tab(24); xc
Next j
Print #1, Tab(2); NRJ
For j = 1 To Int(NRJ)
K = (flexKekangTtkKumpul.TextMatrix(j, 0))
xa = (flexKekangTtkKumpul.TextMatrix(j, 1))
xb = (flexKekangTtkKumpul.TextMatrix(j, 2))
Print #1, K; Tab(9); xa; Tab(18); xb
Next j
Print #1, Tab(2); BLewat
For j = 1 To Int(BLewat)
xa = (FlexBtgLewat.TextMatrix(j, 0))
Print #1, xa
Next j
End Sub
Sub IsiVariabel()
ReDim x(Int(NJ))
ReDim y(Int(NJ))
For K = 1 To Int(NJ)
j = K
j = flexTtkKumpul.TextMatrix(j, 0)
x(j) = flexTtkKumpul.TextMatrix(j, 1)
y(j) = flexTtkKumpul.TextMatrix(j, 2)
Next K
MD = 2 * NDJ
NB = 0

```

```

ReDim JJ(Int(M))
ReDim JK(Int(M))
ReDim AX(Int(M))
ReDim EL(Int(M))
ReDim CX(Int(M))
ReDim CY(Int(M))
For j = 1 To Int(M)
  i = j
  JJ(i) = flexInfoBtg.TextMatrix(j, 1)
  JK(i) = flexInfoBtg.TextMatrix(j, 2)
  AX(i) = flexInfoBtg.TextMatrix(j, 3)
  NBI = NDJ * (Abs(JK(i) - JJ(i)) + 1)
  If NBI > NB Then NB = NBI
  XCL = x(JK(i)) - x(JJ(i))
  YCL = y(JK(i)) - y(JJ(i))
  EL(i) = Sqr(XCL * XCL + YCL * YCL)
  CX(i) = XCL / EL(i)
  CY(i) = YCL / EL(i)
Next j
ND = NDJ * Int(NJ)
N = ND - Int(NR.text)
ReDim JRL(ND)
For j = 1 To ND
  JRL(j) = 0
Next j
For j = 1 To Int(NRJ)
  K = flexKekangTtkKumpul.TextMatrix(j, 0)
  JRL(2 * K - 1) = flexKekangTtkKumpul.TextMatrix(j, 1)
  JRL(2 * K) = flexKekangTtkKumpul.TextMatrix(j, 2)
Next j
N1 = 0
ReDim ID(ND)
For j = 1 To ND
  N1 = N1 + JRL(j)
  If JRL(j) > 0 Then
    ID(j) = N + N1
  Else
    ID(j) = j - N1
  End If
Next j
N = ND - Int(NR)
ReDim A(N, NB)
End Sub
Public Sub bansol(N As Integer, NB As Integer, U() As Single, Z() As Single)
For i = 1 To N
  j = i - NB + 1
  If i <= NB Then j = 1
  SUM = AC(i)
  K1 = i - 1
  If j > K1 Then GoTo 1
  For K = j To K1
    SUM = SUM - U(K, i - K + 1) * Z(K)
  Next K
1: Z(i) = SUM
Next i
For i = 1 To N
  Z(i) = Z(i) / U(i, 1)
Next i
For I1 = 1 To N
  i = N - I1 + 1
  j = i + NB - 1
  If j > N Then j = N
  SUM = Z(i)
  K2 = i + 1
  If K2 > j Then GoTo 2
  For K = K2 To j
    SUM = SUM - U(i, K - i + 1) * Z(K)
  Next K
2: Z(i) = SUM

```

```

Next I1
End Sub

'Input data beban berjalan
Option Explicit
Public NLJ As Single
Public NLM As Single
Dim canChange As Boolean
Dim x2 As Long
Dim isSukses As Boolean
Private Sub chkMerata_Click()
ShowOrNotTxtBM
isMerataBottom = chkMerata.Value
End Sub
Private Sub cmbNamaP_Click()
cmbTipeJ.Clear
cmbNomorP.Clear
If cmbNamaP.ListIndex = 0 Then
    cmbTipeJ.AddItem "Jalan Raya", 0
Elseif cmbNamaP.ListIndex = 1 Then
    cmbTipeJ.AddItem "Jalan Raya", 0
    cmbTipeJ.AddItem "Kereta Api", 1
End If
End Sub
Private Sub cmbNomorP_Click()
Dim i As Integer
LSyarat.Caption = ""
Select Case cmbNamaP.ListIndex
Case 0:
    Select Case cmbNomorP.ListIndex
    Case 0:
        ClearAll
        TotalGroup = 1
        txtGB.text = Val(TotalGroup)
        DtBebanJarak(1).jumlahBeban = 3
        DtBebanJarak(1).Bbn(1) = 5
        DtBebanJarak(1).Bbn(2) = 20
        DtBebanJarak(1).Bbn(3) = 20
        DtBebanJarak(1).Jrk(1) = 0
        DtBebanJarak(1).Jrk(2) = 4
        DtBebanJarak(1).Jrk(3) = 5
        IsiVariabelBeban
        flexBeban.Enabled = True
        flexJarak.Enabled = True
        txtBM = ""
        chkMerata.Value = 0
        ShowOrNotTxtBM
    Case 1:
        ClearAll
        TotalGroup = 2
        txtGB.text = Val(TotalGroup)
        DtBebanJarak(1).jumlahBeban = 2
        DtBebanJarak(2).jumlahBeban = 2
        DtBebanJarak(1).Bbn(1) = 2.5
        DtBebanJarak(1).Bbn(2) = 5
        DtBebanJarak(1).Jrk(1) = 0
        DtBebanJarak(1).Jrk(2) = 3.1
        DtBebanJarak(2).Bbn(1) = 2.5
        DtBebanJarak(2).Bbn(2) = 5
        DtBebanJarak(2).Jrk(1) = 0
        DtBebanJarak(2).Jrk(2) = 3.1
        IsiVariabelBeban
        flexBeban.Enabled = True
        flexJarak.Enabled = True
        txtBM = ""
        chkMerata.Value = 0
        ShowOrNotTxtBM
        LSyarat.Caption = "Jarak minimal antar group = 4.9"
    End Select
End Select

```

Case 1:

Select Case cmbTipeJ.ListIndex

Case 0:

Select Case cmbNomorP.ListIndex

Case 0:

```

ClearAll
TotalGroup = 1
txtGB.text = Val(TotalGroup)
DtBebanJarak(1).jumlahBeban = 3
DtBebanJarak(1).Bbn(1) = 20
DtBebanJarak(1).Bbn(2) = 20
DtBebanJarak(1).Bbn(3) = 20
DtBebanJarak(1).Jrk(1) = 0
DtBebanJarak(1).Jrk(2) = 1
DtBebanJarak(1).Jrk(3) = 4
IsiVaribelBeban
flexBeban.Enabled = True
flexJarak.Enabled = True
ValueMerataBottom = 1.2
chkMerata.Value = 1
ShowOrNotTxtBM
txtBM.text = ValueMerataBottom

```

Case 1:

```

ClearAll
TotalGroup = 1
txtGB.text = Val(TotalGroup)
DtBebanJarak(1).jumlahBeban = 3
DtBebanJarak(1).Bbn(1) = 15
DtBebanJarak(1).Bbn(2) = 15
DtBebanJarak(1).Bbn(3) = 15
DtBebanJarak(1).Jrk(1) = 0
DtBebanJarak(1).Jrk(2) = 1
DtBebanJarak(1).Jrk(3) = 4
IsiVaribelBeban
flexBeban.Enabled = True
flexJarak.Enabled = True
ValueMerataBottom = 0.9
chkMerata.Value = 1
ShowOrNotTxtBM
txtBM.text = ValueMerataBottom

```

Case 2:

```

ClearAll
TotalGroup = 1
txtGB.text = Val(TotalGroup)
DtBebanJarak(1).jumlahBeban = 3
DtBebanJarak(1).Bbn(1) = 10
DtBebanJarak(1).Bbn(2) = 10
DtBebanJarak(1).Bbn(3) = 10
DtBebanJarak(1).Jrk(1) = 0
DtBebanJarak(1).Jrk(2) = 1
DtBebanJarak(1).Jrk(3) = 4
IsiVaribelBeban
flexBeban.Enabled = True
flexJarak.Enabled = True
ValueMerataBottom = 0.6
chkMerata.Value = 1
ShowOrNotTxtBM
txtBM.text = ValueMerataBottom

```

End Select

Case 1:

Select Case cmbNomorP.ListIndex

Case 0:

```

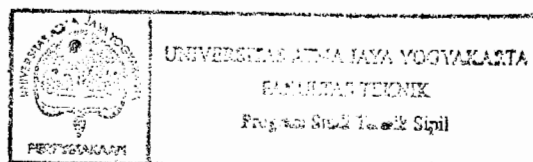
ClearAll
TotalGroup = 2
txtGB.text = Val(TotalGroup)
DtBebanJarak(1).jumlahBeban = 3
DtBebanJarak(2).jumlahBeban = 3
DtBebanJarak(1).Bbn(1) = 15
DtBebanJarak(1).Bbn(2) = 15

```

```

DtBebanJarak(1).Bbn(3) = 15
DtBebanJarak(1).Jrk(1) = 0
DtBebanJarak(1).Jrk(2) = 1.5
DtBebanJarak(1).Jrk(3) = 1.5
DtBebanJarak(2).Bbn(1) = 15
DtBebanJarak(2).Bbn(2) = 15
DtBebanJarak(2).Bbn(3) = 15
DtBebanJarak(2).Jrk(1) = 0
DtBebanJarak(2).Jrk(2) = 1.5
DtBebanJarak(2).Jrk(3) = 1.5
IsiVaribelBeban
flexBeban.Enabled = True
flexJarak.Enabled = True
ValueMerataBottom = 8
chkMerata.Value = 1
ShowOrNotTxtBM
txtBM.text = ValueMerataBottom
LSyarat.Caption = "Jarak minimal antar group = 14"
Case 1:
ClearAll
TotalGroup = 2
txtGB.text = Val(TotalGroup)
DtBebanJarak(1).jumlahBeban = 3
DtBebanJarak(2).jumlahBeban = 3
DtBebanJarak(1).Bbn(1) = 25
DtBebanJarak(1).Bbn(2) = 25
DtBebanJarak(1).Bbn(3) = 25
DtBebanJarak(1).Jrk(1) = 0
DtBebanJarak(1).Jrk(2) = 1.5
DtBebanJarak(1).Jrk(3) = 1.5
DtBebanJarak(2).Bbn(1) = 25
DtBebanJarak(2).Bbn(2) = 25
DtBebanJarak(2).Bbn(3) = 25
DtBebanJarak(2).Jrk(1) = 0
DtBebanJarak(2).Jrk(2) = 1.5
DtBebanJarak(2).Jrk(3) = 1.5
IsiVaribelBeban
flexBeban.Enabled = True
flexJarak.Enabled = True
txtBM = ""
chkMerata.Value = 0
ShowOrNotTxtBM
LSyarat.Caption = "Jarak antar group antara 3.5 sampai 6"
Case 2:
ClearAll
TotalGroup = 1
txtGB.text = Val(TotalGroup)
DtBebanJarak(1).jumlahBeban = 1
DtBebanJarak(1).Bbn(1) = 27
DtBebanJarak(1).Jrk(1) = 0
IsiVaribelBeban
flexBeban.Enabled = True
txtBM = ""
chkMerata.Value = 0
ShowOrNotTxtBM
End Select
End Select
End Select
For i = 1 To TotalGroup
flexGB.TextMatrix(i, 2) = DtBebanJarak(i).jumlahBeban
Next i
If TotalGroup = 1 Then
flexJarakGroup.Enabled = False
flexJarakGroup.Rows = 2
flexJarakGroup.Cols = 2
flexJarakGroup.TextMatrix(1, 0) = ""
flexJarakGroup.TextMatrix(1, 1) = ""
End If
End Sub

```



```

Private Sub cmbTipeJ_Click()
cmbNomorP.Clear
If cmbNamaP.ListIndex = 0 And cmbTipeJ.ListIndex = 0 Then
    cmbNomorP.AddItem "1", 0
    cmbNomorP.AddItem "2", 1
ElseIf cmbNamaP.ListIndex = 1 And cmbTipeJ.ListIndex = 0 Then
    cmbNomorP.AddItem "Klase 60", 0
    cmbNomorP.AddItem "Klase 45", 1
    cmbNomorP.AddItem "Klase 30", 2
ElseIf cmbNamaP.ListIndex = 1 And cmbTipeJ.ListIndex = 1 Then
    cmbNomorP.AddItem "1", 0
    cmbNomorP.AddItem "2", 1
    cmbNomorP.AddItem "3", 2
End If
End Sub
Private Sub cmdClear_Click()
ClearAll
cmbNamaP.ListIndex = -1
cmbTipeJ.ListIndex = -1
cmbNomorP.ListIndex = -1
End Sub
Sub ClearAll()
txtGB = ""
clearDtBebanJarak
Dim i As Integer
For i = 1 To flexBeban.Rows - 1
flexBeban.TextMatrix(i, 0) = ""
flexBeban.TextMatrix(i, 1) = ""
Next i
For i = 1 To flexBebanM.Rows - 1
flexBebanM.TextMatrix(i, 0) = ""
Next i
For i = 1 To flexJarak.Rows - 1
flexJarak.TextMatrix(i, 0) = ""
flexJarak.TextMatrix(i, 1) = ""
Next i
For i = 1 To flexJarakM.Rows - 1
flexJarakM.TextMatrix(i, 0) = ""
Next i
For i = 1 To flexJarakGroup.Rows - 1
flexJarakGroup.TextMatrix(i, 0) = ""
flexJarakGroup.TextMatrix(i, 1) = ""
Next i
flexGB.Rows = 2
flexGB.Cols = 3
flexGB.TextMatrix(1, 0) = ""
flexGB.TextMatrix(1, 1) = ""
flexGB.TextMatrix(1, 2) = ""
flexJarakGroup.Rows = 2
flexJarakGroup.Cols = 2
flexJarakGroup.TextMatrix(1, 0) = ""
flexJarakGroup.TextMatrix(1, 1) = ""
flexBeban.Rows = 2
flexBeban.Cols = 2
flexBeban.TextMatrix(1, 0) = ""
flexBeban.TextMatrix(1, 1) = ""
flexBebanM.Rows = 2
flexBebanM.Cols = 1
flexBebanM.TextMatrix(1, 0) = ""
flexJarak.Rows = 2
flexJarak.Cols = 2
flexJarak.TextMatrix(1, 0) = ""
flexJarak.TextMatrix(1, 1) = ""
flexJarakM.Rows = 2
flexJarakM.Cols = 1
flexJarakM.TextMatrix(1, 0) = ""
txtGB.SetFocus
oBT.Value = False
oBM.Value = False

```

```

oBT.Enabled = False
oBM.Enabled = False
chkMerata.Value = Unchecked
txtBM = ""
chkMerata.Visible = False
ShowOrNotTxtBM
flexGB.Enabled = False
flexBeban.Enabled = False
flexJarak.Enabled = False
flexBebanM.Enabled = False
flexJarakM.Enabled = False
flexJarakGroup.Enabled = False
End Sub
Private Sub cmdGrafik_Click()
If txtGB = "" Then
    MsgBox "Jumlah Group Beban Harus Diisi!", vbExclamation, "Peringatan"
    txtGB.SetFocus
    Exit Sub
ElseIf chkMerata.Value = 1 Then
    If txtBM = "" Then
        MsgBox "Nilai Beban Merata Harus Diisi!", vbExclamation, "Peringatan"
        txtBM.SetFocus
        Exit Sub
    End If
    If txtBM = 0 Then
        MsgBox "Nilai Beban Merata Tidak Boleh = 0!", vbExclamation, "Peringatan"
        txtBM = ""
        txtBM.SetFocus
        Exit Sub
    End If
End If
Dim i As Integer
Dim j As Integer
For i = 1 To flexJarakGroup.Rows - 1
    For j = 0 To flexJarakGroup.Cols - 1
        If Trim(flexJarakGroup.TextMatrix(i, 1)) = "0" Then
            MsgBox "Jarak Antar Group Tidak Boleh = 0!", vbExclamation, "Peringatan"
            Exit Sub
        End If
    Next j
Next i
For i = 1 To TotalGroup
    If Not DtBebanJarak(i).isBbnMerata And DtBebanJarak(i).jumlahBeban = 0 Then
        MsgBox "Jumlah Gandar Beban Terpusat Group ke " & i & " Tidak Boleh = 0!", vbExclamation, "Peringatan"
        Exit Sub
    End If
Next i
For i = 1 To TotalGroup
    If DtBebanJarak(i).isBbnMerata Then
        If DtBebanJarak(i).Bbn(1) = 0 Then
            MsgBox "Nilai Beban Merata Group ke " & i & " Tidak Boleh = 0!", vbExclamation, "Peringatan"
            Exit Sub
        End If
        If DtBebanJarak(i).Jrk(2) = 0 Then
            MsgBox "Panjang Beban Merata Group ke " & i & " Tidak Boleh = 0!", vbExclamation, "Peringatan"
            Exit Sub
        End If
    Else
        For j = 1 To DtBebanJarak(i).jumlahBeban - 1
            If DtBebanJarak(i).Bbn(j) = 0 Then
                MsgBox "Nilai Beban Gandar Group ke " & i & " Tidak Boleh = 0!", vbExclamation, "Peringatan"
                Exit Sub
            End If
            If DtBebanJarak(i).Jrk(j + 1) = 0 Then
                MsgBox "Jarak Antar Gandar Group ke " & i & " Tidak Boleh = 0!", vbExclamation, "Peringatan"
                Exit Sub
            End If
        Next j
        If DtBebanJarak(i).Bbn(j) = 0 Then

```



```

        MsgBox "Nilai Beban Gandar Group ke " & i & " Tidak Boleh = 0 !", vbExclamation, "Peringatan"
    Exit Sub
End If
End If
Next i
isMerataBottom = chkMerata.Visible And chkMerata.Value
TotalGroup = txtGB
frmGP.Frame1.Visible = True
frmGP.Show
End Sub
Private Sub cmdBackStr_Click()
    frmDS.NJ.SetFocus
End Sub
Private Sub fJB_MouseDown(Button As Integer, Shift As Integer, x As Single, y As Single)
    If Button = 2 Then
        PopupMenu mnu
    End If
End Sub
Private Sub flexBeban_MouseDown(Button As Integer, Shift As Integer, x As Single, y As Single)
    If Button = 2 Then
        PopupMenu mnu
    End If
End Sub
Private Sub flexBebanM_KeyPress(KeyAscii As Integer)
    If Len(flexBebanM.text) >= 8 And KeyAscii <> 8 Then
        KeyAscii = 0
        Exit Sub
    End If
    If Strings.InStr(1, flexBebanM.text, ".") > 0 And KeyAscii = 46 Then
        KeyAscii = 0
        Exit Sub
    End If
    If (Chr(KeyAscii) < "0" Or Chr(KeyAscii) > "9") And KeyAscii <> 46 And KeyAscii <> 8 Then
        KeyAscii = 0
    ElseIf KeyAscii <> 8 Then
        If flexBebanM.text = "0" Then
            flexBebanM.text = Chr(KeyAscii)
        Else
            flexBebanM.text = flexBebanM.text + Chr(KeyAscii)
        End If
    Else
        flexBebanM.text = Left(flexBebanM.text, Len(flexBebanM.text) - 1)
        If flexBebanM.text = "" Then
            flexBebanM.text = "0"
        End If
    End If
    If Trim(flexBebanM.text) <> "" Then
        If KeyAscii = 46 Then
            If flexBebanM.text = "." Then
                flexBebanM.text = "0."
            End If
        End If
        DtBebanJarak(Int(flexGB.Row)).Bbn(flexBebanM.Row) = flexBebanM.text
    End If
End Sub
Private Sub flexBebanM_MouseDown(Button As Integer, Shift As Integer, x As Single, y As Single)
    If Button = 2 Then
        PopupMenu mnu
    End If
End Sub
Private Sub flexGB_Click()
    flexGB_EnterCell
End Sub
Private Sub flexGB_MouseDown(Button As Integer, Shift As Integer, x As Single, y As Single)
    If Button = 2 Then
        PopupMenu mnu
    End If
End Sub
Private Sub flexJarak_MouseDown(Button As Integer, Shift As Integer, x As Single, y As Single)

```

```

If Button = 2 Then
    PopupMenu mnu
End If
End Sub
Private Sub flexJarakGroup_KeyPress(KeyAscii As Integer)
If Len(flexJarakGroup.text) >= 8 And KeyAscii <> 8 Then
    KeyAscii = 0
    Exit Sub
End If
If Strings.InStr(1, flexJarakGroup.text, ".") > 0 And KeyAscii = 46 Then
    KeyAscii = 0
    Exit Sub
End If
If (Chr(KeyAscii) < "0" Or Chr(KeyAscii) > "9") And KeyAscii <> 46 And KeyAscii <> 8 Then
    KeyAscii = 0
ElseIf KeyAscii <> 8 Then
    If flexJarakGroup.text = "0" Then
        flexJarakGroup.text = Chr(KeyAscii)
    Else
        flexJarakGroup.text = flexJarakGroup.text + Chr(KeyAscii)
    End If
Else
    flexJarakGroup.text = Left(flexJarakGroup.text, Len(flexJarakGroup.text) - 1)
    If flexJarakGroup.text = "" Then
        flexJarakGroup.text = "0"
    End If
End If
If Trim(flexJarakGroup.text) <> "" Then
    If KeyAscii = 46 Then
        If flexJarakGroup.text = "." Then
            flexJarakGroup.text = "0."
        End If
    End If
End If
isSukses = buildBeban
End Sub
Private Sub flexJarakGroup_MouseDown(Button As Integer, Shift As Integer, x As Single, y As Single)
If Button = 2 Then
    PopupMenu mnu
End If
End Sub
Private Sub flexJarakM_KeyPress(KeyAscii As Integer)
If Len(flexJarakM.text) >= 8 And KeyAscii <> 8 Then
    KeyAscii = 0
    Exit Sub
End If
If Strings.InStr(1, flexJarakM.text, ".") > 0 And KeyAscii = 46 Then
    KeyAscii = 0
    Exit Sub
End If
If (Chr(KeyAscii) < "0" Or Chr(KeyAscii) > "9") And KeyAscii <> 46 And KeyAscii <> 8 Then
    KeyAscii = 0
ElseIf KeyAscii <> 8 Then
    If flexJarakM.text = "0" Then
        flexJarakM.text = Chr(KeyAscii)
    Else
        flexJarakM.text = flexJarakM.text + Chr(KeyAscii)
    End If
Else
    flexJarakM.text = Left(flexJarakM.text, Len(flexJarakM.text) - 1)
    If flexJarakM.text = "" Then
        flexJarakM.text = "0"
    End If
End If
If Trim(flexJarakM.text) <> "" Then
    If KeyAscii = 46 Then
        If flexJarakM.text = "." Then
            flexJarakM.text = "0."
        End If
    End If
End If

```

```

    End If
    DtBebanJarak(Int(flexGB.Row)).Jrk(flexJarakM.Row + 1) = flexJarakM.text
End If
End Sub
Private Sub flexJarakM_MouseDown(Button As Integer, Shift As Integer, x As Single, y As Single)
If Button = 2 Then
    PopupMenu mnu
End If
End Sub
Private Sub Form_Activate()
canChange = True
flex1
ShowOrNotTxtBM
End Sub
Private Sub Form_Load()
flex2
End Sub
Function flex2() As Boolean
flexGB.Enabled = False
flexBeban.Enabled = False
flexJarak.Enabled = False
flexBebanM.Enabled = False
flexJarakM.Enabled = False
flexBebanM.Visible = False
flexJarakM.Visible = False
flexJarakGroup.Enabled = False
oBT.Enabled = False
oBM.Enabled = False
chkMerata.Visible = False
End Function
Private Sub Form_MouseDown(Button As Integer, Shift As Integer, x As Single, y As Single)
If Button = 2 Then
    PopupMenu mnu
End If
End Sub
Private Sub mnuBF_Click()
mnuBukaFile_Click
End Sub
Private Sub mnuBukaFile_Click()
dlgfile.DialogTitle = "Open Data Beban Berjalan"
dlgfile.FileName = ""
dlgfile.Filter = "Text Document (*.txt)|*.txt|"
dlgfile.DefaultExt = ".txt"
dlgfile.Flags = cdiOFNFileMustExist
dlgfile.ShowOpen
nomorfile = FreeFile
If dlgfile.FileName = "" Then
Exit Sub
End If
Open dlgfile.FileName For Input As nomorfile
isSukses = True
If Not BukaSemuaBeban Then
    MsgBox "Format File Salah!", vbExclamation, "Peringatan"
    cmdClear_Click
    flex1
    Exit Sub
End If
If Not isSukses Then
    MsgBox "Format File Salah!", vbExclamation, "Peringatan"
    cmdClear_Click
    flex1
    Exit Sub
End If
Close nomorfile
IsiVariabelBeban
If TotalGroup = 0 Then
    MsgBox "Format File Salah!", vbExclamation, "Peringatan"
    cmdClear_Click
    flex1

```

```

Exit Sub
End If
End Sub
Function flex1() As Boolean
flexGB.TextMatrix(0, 0) = "Group Ke"
flexGB.TextMatrix(0, 1) = "Jenis Beban"
flexGB.TextMatrix(0, 2) = "Jumlah Gandar"
flexGB.ColWidth(1) = 1250
flexGB.ColWidth(2) = 1250
flexJarakGroup.TextMatrix(0, 0) = "Group"
flexJarakGroup.TextMatrix(0, 1) = "Jarak"
flexJarakGroup.FixedRows = 1
flexBeban.TextMatrix(0, 0) = "Gandar Ke"
flexBeban.TextMatrix(0, 1) = "Nilai Beban"
flexBeban.ColWidth(1) = 1250
flexBebanM.TextMatrix(0, 0) = "Nilai Beban"
flexBebanM.ColWidth(0) = 1250
flexJarak.TextMatrix(0, 0) = "Gandar"
flexJarak.TextMatrix(0, 1) = "Jarak"
flexJarakM.TextMatrix(0, 0) = "Panjang Beban"
flexJarakM.ColWidth(0) = 1500
End Function
Function BukaSemuaBeban() As Boolean
Dim tmp As Long
On Error GoTo ErrHandle
Input #nomorfile, tmp
Input #nomorfile, ValueMerataBottom
canChange = False
txtGB = tmp
For i = 1 To txtGB
Input #nomorfile, tmp
DtBebanJarak(i).isBbnMerata = tmp
If DtBebanJarak(i).isBbnMerata Then
Input #nomorfile, DtBebanJarak(i).Jrk(1)
Input #nomorfile, DtBebanJarak(i).Bbn(1)
Input #nomorfile, DtBebanJarak(i).Jrk(2)
Else
Input #nomorfile, DtBebanJarak(i).jumlahBeban
For j = 1 To DtBebanJarak(i).jumlahBeban
Input #nomorfile, DtBebanJarak(i).Bbn(j)
Input #nomorfile, DtBebanJarak(i).Jrk(j)
Next j
End If
Input #nomorfile, DtBebanJarak(i + 1).jrkAntarGroup
Next i
If ValueMerataBottom = 0 Then
chkMerata.Value = 0
Else
chkMerata.Value = 1
End If
isMerataBottom = (ValueMerataBottom <> 0)
ShowOrNotTxtBM
canChange = True
BukaSemuaBeban = True
Exit Function
ErrHandle:
BukaSemuaBeban = False
End Function
Private Sub mnuC_Click()
cmdClear_Click
End Sub
Private Sub mnuDS_Click()
cmdBackStr_Click
End Sub
Private Sub mnuG_Click()
cmdGrafik_Click
End Sub
Private Sub mnuK_Click()
End

```

```

End Sub
Private Sub mnuKeluar_Click()
End
End Sub
Private Sub mnuS_Click()
mnuSave_Click
End Sub
Private Sub mnuSave_Click()
dlgfile.DialogTitle = "Save Data Beban Berjalan"
dlgfile.FileName = ""
dlgfile.Filter = "Text Document (*.txt)|*.txt|"
dlgfile.DefaultExt = ".txt"
dlgfile.Flags = cdICCFullOpen
dlgfile.ShowSave
If dlgfile.FileName = "" Then
Exit Sub
End If
Open dlgfile.FileName For Output As #1
SimpanSemuaBeban
Close #1
Exit Sub
End Sub
Sub SimpanSemuaBeban()
If isMerataBottom Then
Print #1, Tab(2); txtGB; Tab(12); ValueMerataBottom
Else
Print #1, Tab(2); txtGB; Tab(12); 0
End If
For i = 1 To txtGB
If DtBebanJarak(i).isBbnMerata Then
Print #1, Tab(2); "1"
Else
Print #1, Tab(2); "0"; Tab(4); DtBebanJarak(i).jumlahBeban
End If
If DtBebanJarak(i).isBbnMerata Then
Print #1, DtBebanJarak(i).Jrk(1); Tab(4); DtBebanJarak(i).Bbn(1); Tab(12); DtBebanJarak(i).Jrk(2)
Else
For j = 1 To DtBebanJarak(i).jumlahBeban
Print #1, Tab(4); DtBebanJarak(i).Bbn(j); Tab(12); DtBebanJarak(i).Jrk(j)
Next j
End If
Print #1, Tab(8); DtBebanJarak(i + 1).jrkAntarGroup
Next i
End Sub
Private Sub oBM_Click()
DtBebanJarak(Int(flexGB.Row)).isBbnMerata = oBM.Value
isSukses = buildBeban
flexBeban.Visible = False
flexJarak.Visible = False
flexBebanM.Visible = True
flexJarakM.Visible = True
flexBebanM.Enabled = True
flexJarakM.Enabled = True
Label4.Caption = "NILAI BEBAN MERATA"
Label5.Caption = "PANJANG BEBAN MERATA"
flexGB.TextMatrix(flexGB.Row, 1) = "Merata"
flexGB.TextMatrix(flexGB.Row, 2) = "0"
End Sub
Private Sub oBT_Click()
DtBebanJarak(Int(flexGB.Row)).isBbnMerata = oBM.Value
isSukses = buildBeban
flexBeban.Visible = True
flexJarak.Visible = True
flexBebanM.Visible = False
flexJarakM.Visible = False
Label4.Caption = "DATA BEBAN GANDAR TIAP GROUP"
Label5.Caption = "DATA JARAK ANTAR GANDAR"
flexGB.TextMatrix(flexGB.Row, 1) = "Terpusat"
End Sub

```

```

Private Sub txtBM_Change()
If Trim(txtBM.text) = "" Then
Exit Sub
End If
ValueMerataBottom = Val(Trim(txtBM.text))
End Sub
Private Sub txtBM_KeyPress(KeyAscii As Integer)
If Strings.InStr(1, txtBM, ".") > 0 And KeyAscii = 46 Then
KeyAscii = 0
Exit Sub
End If
If (Chr(KeyAscii) < "0" Or Chr(KeyAscii) > "9") And KeyAscii <> 46 And KeyAscii <> 8 Then
KeyAscii = 0
End If
If KeyAscii = 46 And txtBM.text = "" Then
txtBM.text = "0"
txtBM.SelStart = Len(txtBM.text)
End If
End Sub
Private Sub Timer1_Timer()
If Label1.Visible = False Then
Label1.Visible = True
Else
Label1.Visible = True And False
End If
End Sub
Sub IsiVariabelBeban()
flexGB.Enabled = True
flexBeban.Enabled = True
flexJarak.Enabled = True
flexBebanM.Enabled = True
flexJarakM.Enabled = True
flexJarakGroup.Enabled = True
oBM.Enabled = True
oBT.Enabled = True
TotalGroup = txtGB
flexGB.Rows = txtGB + 1
flexJarakGroup.Rows = txtGB + 1
For i = 1 To txtGB
If DtBebanJarak(i) isBbnMerata Then
flexGB.TextMatrix(i, 1) = "Merata"
Else
flexGB.TextMatrix(i, 1) = "Terpusat"
End If
flexGB.TextMatrix(i, 0) = i
flexGB.TextMatrix(i, 2) = DtBebanJarak(i).jumlahBeban
If DtBebanJarak(i) isBbnMerata Then
flexJarakM.TextMatrix(1, 0) = DtBebanJarak(i).Jrk(1)
flexBebanM.TextMatrix(1, 0) = DtBebanJarak(i).Bbn(1)
Else
flexBeban.Rows = DtBebanJarak(i).jumlahBeban + 1
flexJarak.Rows = DtBebanJarak(i).jumlahBeban
If flexBeban.Rows = 2 Then
flexJarak.Enabled = False
flexJarak.Rows = 2
flexJarak.Cols = 2
flexJarak.TextMatrix(1, 0) = ""
flexJarak.TextMatrix(1, 1) = ""
End If
For j = 1 To DtBebanJarak(i).jumlahBeban
flexBeban.TextMatrix(j, 0) = j
flexBeban.TextMatrix(j, 1) = DtBebanJarak(i).Bbn(j)
Next j
For j = 2 To DtBebanJarak(i).jumlahBeban
flexJarak.TextMatrix(j - 1, 0) = j - 1 & " ke " & j
flexJarak.TextMatrix(j - 1, 1) = DtBebanJarak(i).Jrk(j)
Next j
End If
flexJarakGroup.TextMatrix(i, 1) = DtBebanJarak(i + 1).jrkAntarGroup

```

```

Next i
flexGB.Row = i - 1
isSukses = buildBeban
If txtGB = "1" Then
    flexJarakGroup.Enabled = False
    flexJarakGroup.Rows = 2
    flexJarakGroup.Cols = 2
    flexJarakGroup.TextMatrix(1, 0) = ""
    flexJarakGroup.TextMatrix(1, 1) = ""
Else
    flexJarakGroup.Enabled = True
    flexJarakGroup.Rows = txtGB
End If
txtBM.text = ValueMerataBottom
End Sub
Private Sub txtGB_Change()
Dim KeyAscii As Integer
If Trim(txtGB.text) = "" Then
    ClearAll
    ShowOrNotTxtBM
    Exit Sub
End If
If Val(txtGB.text) <= 0 Then
    txtGB = ""
    txtGB.SetFocus
    flexGB.Enabled = False
    flexBeban.Enabled = False
    flexJarak.Enabled = False
    flexBebanM.Enabled = False
    flexJarakM.Enabled = False
    flexJarakGroup.Enabled = False
    oBM.Enabled = False
    oBT.Enabled = False
    chkMerata.Visible = False
    ShowOrNotTxtBM
Else
    flexGB.Enabled = True
    flexBeban.Enabled = True
    flexJarak.Enabled = True
    flexBebanM.Enabled = True
    flexJarakM.Enabled = True
    flexJarakGroup.Enabled = True
    oBM.Enabled = True
    oBT.Enabled = True
    chkMerata.Visible = True
    chkMerata.Value = 0
    ShowOrNotTxtBM
    flexGB.Rows = Int(txtGB) + 1
    For i = 1 To Int(txtGB)
        If DtBebanJarak(i).isBbnMerata Then
            flexGB.TextMatrix(i, 1) = "Merata"
        Else
            flexGB.TextMatrix(i, 1) = "Terpusat"
        End If
        flexGB.TextMatrix(i, 0) = i
        flexGB.TextMatrix(i, 2) = 0
    Next i
    flexJarakGroup.Rows = Int(txtGB)
    For i = 1 To Int(txtGB) - 1
        flexJarakGroup.TextMatrix(i, 1) = 0
    Next i
    oBT.Value = True
isSukses = buildBeban
    TotalGroup = Int(txtGB)
End If
End Sub
Private Sub txtGB_KeyPress(KeyAscii As Integer)
If (Chr(KeyAscii) <= "0" Or Chr(KeyAscii) > "9") And KeyAscii <> 8 And KeyAscii <> 13 Then
    KeyAscii = 0

```

```

End If
If KeyAscii = 8 And Len(txtGB.text) = 1 Then
    cmdClear_Click
End If
End Sub
Private Sub flexJarak_KeyPress(KeyAscii As Integer)
If Len(flexJarak.text) >= 8 And KeyAscii <> 8 Then
    KeyAscii = 0
    Exit Sub
End If
If Strings.InStr(1, flexJarak.text, ".") > 0 And KeyAscii = 46 Then
    KeyAscii = 0
    Exit Sub
End If
If (Chr(KeyAscii) < "0" Or Chr(KeyAscii) > "9") And KeyAscii <> 46 And KeyAscii <> 8 Then
    KeyAscii = 0
ElseIf KeyAscii <> 8 Then
    If flexJarak.text = "0" Then
        flexJarak.text = Chr(KeyAscii)
    Else
        flexJarak.text = flexJarak.text + Chr(KeyAscii)
    End If
End If
Else
    flexJarak.text = Left(flexJarak.text, Len(flexJarak.text) - 1)
    If flexJarak.text = "" Then
        flexJarak.text = "0"
    End If
End If
End If
If Trim(flexJarak.text) <> "" Then
    If KeyAscii = 46 Then
        If flexJarak.text = "." Then
            flexJarak.text = "0."
        End If
    End If
    DtBebanJarak(Int(flexGB.Row)).Jrk(flexJarak.Row + 1) = flexJarak.text
End If
End Sub
Private Sub flexBeban_KeyPress(KeyAscii As Integer)
If Len(flexBeban.text) >= 8 And KeyAscii <> 8 Then
    KeyAscii = 0
    Exit Sub
End If
If Strings.InStr(1, flexBeban.text, ".") > 0 And KeyAscii = 46 Then
    KeyAscii = 0
    Exit Sub
End If
If (Chr(KeyAscii) < "0" Or Chr(KeyAscii) > "9") And KeyAscii <> 46 And KeyAscii <> 8 Then
    KeyAscii = 0
ElseIf KeyAscii <> 8 Then
    If flexBeban.text = "0" Then
        flexBeban.text = Chr(KeyAscii)
    Else
        flexBeban.text = flexBeban.text + Chr(KeyAscii)
    End If
End If
Else
    flexBeban.text = Left(flexBeban.text, Len(flexBeban.text) - 1)
    If flexBeban.text = "" Then
        flexBeban.text = "0"
    End If
End If
End If
If Trim(flexBeban.text) <> "" Then
    If KeyAscii = 46 Then
        If flexBeban.text = "." Then
            flexBeban.text = "0."
        End If
    End If
    DtBebanJarak(Int(flexGB.Row)).Bbn(flexBeban.Row) = flexBeban.text
End If
End Sub

```



```

Private Sub flexGB_EnterCell()
isSukses = buildBeban
If DtBebanJarak(Int(flexGB.Row)).isBbnMerata Then
oBM.Value = True
Else
oBT.Value = True
End If
End Sub
Private Sub flexGB_KeyPress(KeyAscii As Integer)
If Len(flexGB.text) >= 3 And KeyAscii < 8 Then
KeyAscii = 0
Exit Sub
End If
If (Chr(KeyAscii) < "0" Or Chr(KeyAscii) > "9") And KeyAscii < 8 Then
KeyAscii = 0
ElseIf flexGB.col = 2 And oBM.Value = True Then
KeyAscii = 0
ElseIf KeyAscii < 8 Then
If flexGB.text = "0" Then
flexGB.text = Chr(KeyAscii)
Else
flexGB.text = flexGB.text + Chr(KeyAscii)
End If
Else
flexGB.text = Left(flexGB.text, Len(flexGB.text) - 1)
If flexGB.text = "" Then
flexGB.text = "0"
End If
End If
End Sub
Private Function buildBeban() As Boolean
Dim i As Long
On Error GoTo ERRH
If Int(flexGB.TextMatrix(flexGB.Row, 2)) > 0 Then
flexBeban.Rows = Int(flexGB.TextMatrix(flexGB.Row, 2)) + 1
flexBeban.Enabled = True
Else
flexBeban.Rows = 2
flexBeban.Cols = 2
flexBeban.TextMatrix(1, 0) = ""
flexBeban.TextMatrix(1, 1) = ""
flexBeban.Enabled = False
End If
If Int(flexGB.TextMatrix(flexGB.Row, 2)) > 1 Then
flexJarak.Rows = Int(flexGB.TextMatrix(flexGB.Row, 2))
flexJarak.Enabled = True
Else
flexJarak.Rows = 2
flexJarak.Cols = 2
flexJarak.TextMatrix(1, 0) = ""
flexJarak.TextMatrix(1, 1) = ""
flexJarak.Enabled = False
End If
If Int(txtGB) > 1 Then
flexJarakGroup.Rows = Int(txtGB)
flexJarakGroup.Enabled = True
Else
flexJarakGroup.Rows = 2
flexJarakGroup.Cols = 2
flexJarakGroup.TextMatrix(1, 0) = ""
flexJarakGroup.TextMatrix(1, 1) = ""
flexJarakGroup.Enabled = False
End If
DtBebanJarak(Int(flexGB.Row)).jumlahBeban = Int(flexGB.TextMatrix(flexGB.Row, 2))
For i = 1 To Int(flexGB.TextMatrix(flexGB.Row, 2))
flexBeban.TextMatrix(i, 0) = i
flexBeban.TextMatrix(i, 1) = DtBebanJarak(Int(flexGB.Row)).Bbn(i)
Next i

```

```

For i = 1 To Int(flexGB.TextMatrix(flexGB.Row, 2)) - 1
    flexJarak.TextMatrix(i, 0) = i & " ke " & (i + 1)
    flexJarak.TextMatrix(i, 1) = DtBebanJarak(Int(flexGB.Row)).Jrk(i + 1)
Next i
For i = 1 To Int(txtGB) - 1
    flexJarakGroup.TextMatrix(i, 0) = i & " ke " & (i + 1)
Next i
DtBebanJarak(Int(flexJarakGroup.Row + 1)).jrkAntarGroup = Val(flexJarakGroup.TextMatrix(flexJarakGroup.Row, 1))
oBM.Value = DtBebanJarak(Int(flexGB.Row)).isBbnMerata
oBT.Value = Not oBM.Value
If oBM.Value Then
    flexJarakM.Rows = 2
    flexBebanM.Rows = 2
    flexBebanM.TextMatrix(1, 0) = DtBebanJarak(Int(flexGB.Row)).Bbn(1)
    flexJarakM.TextMatrix(1, 0) = DtBebanJarak(Int(flexGB.Row)).Jrk(2)
End If
chkMerata.Visible = True
For i = 1 To TotalGroup
    If DtBebanJarak(i).isBbnMerata Then
        chkMerata.Visible = False
    End If
Next i
ShowOrNotTxtBM
buildBeban = True
Exit Function
ERRH:
buildBeban = False
End Function
Private Sub ShowOrNotTxtBM()
    txtBM.Visible = chkMerata.Visible And chkMerata.Value
    Label6.Visible = txtBM.Visible
End Sub

'Output hitungan
Option Explicit
Public withBeban As Boolean
Dim MaxBebanBatang As Single
Dim MinBebanBatang As Single
Dim MaxBebanTumpuan As Single
Dim MinBebanTumpuan As Single
Private Type SBebanBatang
    index As Integer
    Max As Single
    Min As Single
End Type
Private Type SBebanTumpuan
    index As Integer
    Max As Single
    Min As Single
End Type
Dim SBBatang() As SBebanBatang
Dim SBTumpuan() As SBebanTumpuan
Const PRESISIMERATA As Single = 0.25
Const SEPERBERAPA As Single = 0.5
Const SEPERBERAPATUMPUAN As Single = 0.2
Dim SELANGSTANDARDGRAFIK As Single
Dim SELANGSTANDARDBEBAN As Single
Dim MinYRangka As Single
Dim MaxYRangka As Single
Dim MinXRangka As Single
Dim TinggiMax As Single
Dim PanjangMax As Single
Dim zoomtumpuan As Single
Dim pjgVert As Single
Dim highForAll As Single
Dim TinggiBeban As Single
Dim HapusMaxBatang As Boolean
Dim HapusMinBatang As Boolean
Dim HapusMaxTump As Boolean

```

```

Dim HapusMinTump As Boolean
Private Sub cmbbatang_KeyPress(KeyAscii As Integer)
If KeyAscii = 13 And Not noclick Then DrawHasilAll True, False
End Sub
Private Sub cmdBackBbn_Click()
Unload Me
isMerataBottom = True
frmDBB.txtGB.SetFocus
End Sub
Private Sub cmdBackStr_Click()
Unload Me
frmDS.NJ.SetFocus
End Sub
Private Sub cmdDown_Click()
Dim tmp As Single
tmp = -MinYRangka * pengali2 + ((highForAll + TinggiBeban + pjgVert) * pengali2) + 150
If beginbottom <= tmp Then
MsgBox "Geser Bawah Sudah Maksimal!", vbExclamation, "Peringatan"
Exit Sub
End If
beginbottom = beginbottom - 150
DrawHasilAll True, True
End Sub
Private Sub cmdLeft_Click()
Dim tmp As Single
tmp = terkiri * pengali2 + 150
If beginleft <= tmp Then
MsgBox "Geser Kiri Sudah Maksimal!", vbExclamation, "Peringatan"
Exit Sub
End If
beginleft = beginleft - 150
DrawHasilAll True, True
End Sub
Private Sub cmdPerbesarSelang_Click()
If SELANGSTANDARDBEBAN = -10 And SELANGSTANDARDGRAFIK = -10 Then
Exit Sub
End If
SELANGSTANDARDBEBAN = SELANGSTANDARDBEBAN - 1
SELANGSTANDARDGRAFIK = SELANGSTANDARDGRAFIK - 1
DrawHasilAll True, True
End Sub
Private Sub cmdPerkecilSelang_Click()
If SELANGSTANDARDBEBAN = -1 And SELANGSTANDARDGRAFIK = -1 Then
Exit Sub
End If
SELANGSTANDARDBEBAN = SELANGSTANDARDBEBAN + 1
SELANGSTANDARDGRAFIK = SELANGSTANDARDGRAFIK + 1
DrawHasilAll True, True
End Sub
Private Sub cmdRight_Click()
Dim tmp As Single
tmp = picBatang.Width - 150
If beginleft + PanjangMax * pengali2 >= tmp Then
MsgBox "Geser Kanan Sudah Maksimal!", vbExclamation, "Peringatan"
Exit Sub
End If
beginleft = beginleft + 150
DrawHasilAll True, True
End Sub
Private Sub cmdTabelBtg_Click()
If cmdTabelBtg.Caption = ">>" Then
FlexHGrafik.Visible = False
picBatang.Width = 11175
cmdTabelBtg.Left = 11400
cmdTabelBtg.Caption = "<<"
cmdTabelBtg.ToolTipText = "Buka Tabel"
Else
FlexHGrafik.Visible = True
picBatang.Width = 8655

```

```

cmdTabelBtg.Left = 8880
cmdTabelBtg.Caption = ">>"
cmdTabelBtg.ToolTipText = "Tutup Tabel"
End If
DrawHasilAll True, False
End Sub
Private Sub cmdTabelTump_Click()
If cmdTabelTump.Caption = ">>" Then
FlexGtitikKumpul.Visible = False
picTump.Width = 11175
cmdTabelTump.Left = 11400
cmdTabelTump.Caption = "<<"
cmdTabelTump.ToolTipText = "Buka Tabel"
Else
FlexGtitikKumpul.Visible = True
picTump.Width = 8655
cmdTabelTump.Left = 8880
cmdTabelTump.Caption = ">>"
cmdTabelTump.ToolTipText = "Tutup Tabel"
End If
DrawHasilAll False, True
End Sub
Private Sub cmdUp_Click()
Dim tmp As Single
tmp = MaxYRangka * pengali2 + 150
If beginbottom >= picBatang.Height - tmp Then
MsgBox "Geser Atas Sudah Maksimal!", vbExclamation, "Peringatan"
Exit Sub
End If
beginbottom = beginbottom + 150
DrawHasilAll True, True
End Sub
Private Sub FlexGtitikKumpul_MouseDown(Button As Integer, Shift As Integer, x As Single, y As Single)
If Button = 2 Then
PopupMenu mnu
End If
End Sub
Private Sub FlexHGrafik_MouseDown(Button As Integer, Shift As Integer, x As Single, y As Single)
If Button = 2 Then
PopupMenu mnu
End If
End Sub
Private Sub Form_Activate()
SELANGSTANDARDBEBAN = -2
SELANGSTANDARDGRAFIK = -2
Dim i As Integer
Dim j As Integer
Dim jumlah_batang As String
Dim jumlah, E1, f1, g1, w1 As Single
Dim A(250, 250), titik1, titik2 As Single
selang = 0
jumlah = (frmDS.NJ.text)
For i = 1 To jumlah
For j = 1 To 2
A(i, j) = frmDS.flexTtkKumpul.TextMatrix(i, j)
Next j
Next i
jumlah_batang = (frmDS.M.text)
TinggiMax = 0
titik1 = (frmDS.flexInfoBtg.TextMatrix(1, 1))
titik2 = (frmDS.flexInfoBtg.TextMatrix(1, 2))
E1 = A(titik1, 1)
f1 = A(titik1, 2)
MinYRangka = f1
MinXRangka = E1
MaxYRangka = f1
terkanan = E1
terkiri = E1
For i = 1 To jumlah_batang

```

```

titik1 = (frmDS.flexInfoBtg.TextMatrix(i, 1))
titik2 = (frmDS.flexInfoBtg.TextMatrix(i, 2))
E1 = A(titik1, 1)
f1 = A(titik1, 2)
g1 = A(titik2, 1)
w1 = A(titik2, 2)
If MinYRangka > f1 Then MinYRangka = f1
If MinYRangka > w1 Then MinYRangka = w1
If MaxYRangka < f1 Then MaxYRangka = f1
If MaxYRangka < w1 Then MaxYRangka = w1
If MinXRangka > E1 Then MinYRangka = E1
If MinXRangka > g1 Then MinYRangka = g1
If E1 < terkiri Then terkiri = E1
If g1 < terkiri Then terkiri = g1
If E1 > terkanan Then terkanan = E1
If g1 > terkanan Then terkanan = g1
If TinggiMax < Abs(f1 - w1) Then
TinggiMax = Abs(f1 - w1)
End If
Next i
PanjangMax = terkanan - terkiri
ketinggian = TinggiMax * SEPERBERAPA
zoomtumpuan = TinggiMax * SEPERBERAPATUMPUAN
FlexHGrafik.TextMatrix(0, 0) = "Titik"
FlexHGrafik.TextMatrix(0, 1) = "Nilai"
FlexHGrafik.ColWidth(0) = 500
FlexHGrafik.ColWidth(1) = 1250
FlexGtitikKumpul.TextMatrix(0, 0) = "Titik"
FlexGtitikKumpul.TextMatrix(0, 1) = "Nilai"
FlexGtitikKumpul.ColWidth(0) = 500
FlexGtitikKumpul.ColWidth(1) = 1250
Dim CountKMerata As Integer
Dim BbnMerata() As Single
ReDim BbnMerata(TotalGroup)
Dim mytmp As Single
Dim pglMrt As Single
pglMrt = zoomtumpuan * 0.5
pgjVert = 0
CountKMerata = 0
For i = 1 To TotalGroup
If DtbBebanJarak(i).isBbnMerata Then
    BbnMerata(CountKMerata) = DtbBebanJarak(i).Bbn(1)
    CountKMerata = CountKMerata + 1
End If
Next i
For j = 0 To CountKMerata - 2
For i = 0 To CountKMerata - 2
    If BbnMerata(i) > BbnMerata(i + 1) Then
        mytmp = BbnMerata(i)
        BbnMerata(i) = BbnMerata(i + 1)
        BbnMerata(i + 1) = mytmp
    End If
End If
Next i
Next j
TinggiBeban = 0
selang = 0
If TotalGroup > 0 Then
    TinggiBeban = -SELANGSTANDARDBEBAN * zoomtumpuan
    If CountKMerata > 0 Then
        pgjVert = zoomtumpuan + (CountKMerata - 1) * pglMrt
    Else
        pgjVert = zoomtumpuan
    End If
End If
If isMerataBottom Then pgjVert = pgjVert + zoomtumpuan
maxy2 = picTump.Height
picBatang.BackColor = putih
picTump.BackColor = putih
Dim tebal As Long

```

```

tebal = 2
picBatang.DrawWidth = tebal
picTump.DrawWidth = tebal
lebar = tebal * 15
noclick = True
banguncomboR
bangunComboBatang
noclick = False
Dim MAKSgrafikBatang As Single
Dim MINgrafikBatang As Single
Dim MAKSgrafikTump As Single
Dim MINgrafikTump As Single
Dim terlewati As Boolean
Dim ji As Integer
titik1 = (frmDS.flexInfoBtg.TextMatrix(1, 1))
MAKSgrafikBatang = GrafBtg(titik1, cmbbatang.List(0))
MINgrafikBatang = MAKSgrafikBatang
For j = 0 To cmbbatang.ListCount - 1
    For i = 1 To jumlah_batang
        titik1 = (frmDS.flexInfoBtg.TextMatrix(i, 1))
        titik2 = (frmDS.flexInfoBtg.TextMatrix(i, 2))
        E1 = A(titik1, 1)
        f1 = A(titik1, 2)
        g1 = A(titik2, 1)
        w1 = A(titik2, 2)
        terlewati = False
        For ji = 1 To Int(frmDS.BLewat)
            If i = frmDS.FlexBtgLewat.TextMatrix(ji, 0) Then terlewati = True
        Next ji
        If terlewati Then
            If MAKSgrafikBatang > GrafBtg(titik1, cmbbatang.List(j)) Then MAKSgrafikBatang = GrafBtg(titik1,
cmbbatang.List(j))
            If MAKSgrafikBatang > GrafBtg(titik2, cmbbatang.List(j)) Then MAKSgrafikBatang = GrafBtg(titik2,
cmbbatang.List(j))
            If MINgrafikBatang < GrafBtg(titik1, cmbbatang.List(j)) Then MINgrafikBatang = GrafBtg(titik1,
cmbbatang.List(j))
            If MINgrafikBatang < GrafBtg(titik2, cmbbatang.List(j)) Then MINgrafikBatang = GrafBtg(titik2,
cmbbatang.List(j))
        End If
    Next i
Next j
Dim keduanyaBtg As Boolean
keduanyaBtg = False
For j = 0 To cmbbatang.ListCount - 1
    For i = 1 To jumlah_batang
        titik1 = (frmDS.flexInfoBtg.TextMatrix(i, 1))
        titik2 = (frmDS.flexInfoBtg.TextMatrix(i, 2))
        E1 = A(titik1, 1)
        f1 = A(titik1, 2)
        g1 = A(titik2, 1)
        w1 = A(titik2, 2)
        terlewati = False
        For ji = 1 To Int(frmDS.BLewat)
            If i = frmDS.FlexBtgLewat.TextMatrix(ji, 0) Then terlewati = True
        Next ji
        If terlewati Then
            If MAKSgrafikBatang = GrafBtg(titik1, cmbbatang.List(j)) And MINgrafikBatang = GrafBtg(titik2,
cmbbatang.List(j)) Then keduanyaBtg = True
            If MINgrafikBatang = GrafBtg(titik1, cmbbatang.List(j)) And MAKSgrafikBatang = GrafBtg(titik2,
cmbbatang.List(j)) Then keduanyaBtg = True
        End If
    Next i
Next j
titik1 = (frmDS.flexInfoBtg.TextMatrix(1, 1))
MAKSgrafikTump = GrafBtg(titik1, cmbR.List(0))
MINgrafikTump = MAKSgrafikTump
For j = 0 To cmbR.ListCount - 1
    For i = 1 To jumlah_batang
        titik1 = (frmDS.flexInfoBtg.TextMatrix(i, 1))

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```

titik2 = (frmDS.flexInfoBtg.TextMatrix(i, 2))
E1 = A(titik1, 1)
f1 = A(titik1, 2)
g1 = A(titik2, 1)
w1 = A(titik2, 2)
terlewati = False
For ji = 1 To Int(frmDS.BLewat)
  If i = frmDS.FlexBtgLewat.TextMatrix(ji, 0) Then terlewati = True
Next ji
If terlewati Then
  If MAKSgrafikTump > GrafR(titik1, cmbR.List(j)) Then MAKSgrafikTump = GrafR(titik1, cmbR.List(j))
  If MAKSgrafikTump > GrafR(titik2, cmbR.List(j)) Then MAKSgrafikTump = GrafR(titik2, cmbR.List(j))
  If MINgrafikTump < GrafR(titik1, cmbR.List(j)) Then MINgrafikTump = GrafR(titik1, cmbR.List(j))
  If MINgrafikTump < GrafR(titik2, cmbR.List(j)) Then MINgrafikTump = GrafR(titik2, cmbR.List(j))
End If
Next i
Next j
Dim keduanyaTump
keduanyaTump = False
For j = 0 To cmbR.ListCount - 1
  For i = 1 To jumlah_batang
    titik1 = (frmDS.flexInfoBtg.TextMatrix(i, 1))
    titik2 = (frmDS.flexInfoBtg.TextMatrix(i, 2))
    E1 = A(titik1, 1)
    f1 = A(titik1, 2)
    g1 = A(titik2, 1)
    w1 = A(titik2, 2)
    terlewati = False
    For ji = 1 To Int(frmDS.BLewat)
      If i = frmDS.FlexBtgLewat.TextMatrix(ji, 0) Then terlewati = True
    Next ji
    If terlewati Then
      If MAKSgrafikTump = GrafR(titik1, cmbR.List(j)) And MINgrafikTump = GrafR(titik2, cmbR.List(j)) Then
        keduanyaTump = True
      If MINgrafikTump = GrafR(titik1, cmbR.List(j)) And MAKSgrafikTump = GrafR(titik2, cmbR.List(j)) Then
        keduanyaTump = True
      End If
    Next i
  Next j
  selangTump = selang + SELANGSTANDARDGRAFIK * zoomtumpuan + MAKSgrafikTump * ketinggian -
  MINgrafikTump * ketinggian
  selang = (selang + (SELANGSTANDARDGRAFIK * zoomtumpuan) + (MAKSgrafikBatang * ketinggian) -
  (MINgrafikBatang * ketinggian))
  Dim highForBtg As Single
  If keduanyaBtg Then
    highForBtg = -MAKSgrafikBatang * ketinggian + MINgrafikBatang * ketinggian - SELANGSTANDARDGRAFIK *
    zoomtumpuan
  ElseIf Abs(MAKSgrafikBatang) > Abs(MINgrafikBatang) Then
    highForBtg = -(MAKSgrafikBatang * ketinggian) - (SELANGSTANDARDGRAFIK * zoomtumpuan)
  Else
    highForBtg = MINgrafikBatang * ketinggian - SELANGSTANDARDGRAFIK * zoomtumpuan
  End If
  Dim highForTump As Single
  If keduanyaTump Then
    highForTump = -MAKSgrafikTump * ketinggian + MINgrafikTump * ketinggian - SELANGSTANDARDGRAFIK *
    zoomtumpuan
  ElseIf Abs(MAKSgrafikTump) > Abs(MINgrafikTump) Then
    highForTump = -MAKSgrafikTump * ketinggian - SELANGSTANDARDGRAFIK * zoomtumpuan
  Else
    highForTump = MINgrafikTump * ketinggian - SELANGSTANDARDGRAFIK * zoomtumpuan
  End If
  If Abs(highForBtg) > Abs(highForTump) Then
    highForAll = highForBtg
  Else
    highForAll = highForTump
  End If
  If (picBatang.Width / PanjangMax) < (picBatang.Height / (TinggiMax - MAKSgrafikBatang * ketinggian +
  MINgrafikBatang * ketinggian - SELANGSTANDARDGRAFIK * zoomtumpuan + TinggiBeban + pigVert)) Then
    pengali2 = picBatang.Width * 0.8 / PanjangMax

```

```

Else
    pengali2 = picBatang.Height * 0.8 / (TinggiMax - MAKSGratikBatang * ketinggian + MINGratikBatang * ketinggian -
    SELANGSTANDARDGRAFIK * zoomtumpuan + TinggiBeban + pjgVert)
End If
beginleft = -50
beginbottom = 0
beginleft = (beginleft - MinXRangka * pengali2) + (picBatang.Width - PanjangMax * pengali2) / 2
beginbottom = (beginbottom - MinYRangka * pengali2) + (picBatang.Height / 2) + (((TinggiMax + highForAll +
TinggiBeban + pjgVert) * pengali2) - (((TinggiMax + highForAll + TinggiBeban + pjgVert) * pengali2) / 2) - (TinggiMax
* pengali2))
isiArrayGraf
SSTab1_Click 0
noclick = True
optMax Value = True
noclick = False
End Sub
Private Sub Form_Load()
    pengali = 500
    pengali2 = 400
    radius = 5
    translasi = 120
    magnify = 10
    beginbottom = 500
    beginleft = 100
    hitam = RGB(0, 0, 0)
    biru = RGB(0, 0, 255)
    hijau = &HC000&
    ColorNumTtkKumpul = RGB(100, 0, 0)
    ColorNumBatang = RGB(0, 200, 200)
    ColorNumBeban = &HFF00FF
    kuning = RGB(255, 255, 0)
    merah = RGB(255, 0, 0)
    merahmuda = &HFF00FF
    ColorMerata = &H8080FF
    putih = RGB(255, 255, 255)
    purple = &HFF8080
    buttonface = &H800000F
    selang = 1
    ketinggian = 1
    noclick = True
    banguncomboR
    bangunComboBatang
    noclick = False
    isiArrayGraf
End Sub
Private Sub DrawHasilAll(ByVal findBatang As Boolean, ByVal findTumpuan As Boolean)
    Dim axawal As Single
    Dim axakhir As Single
    Dim tengahy As Single
    Dim tengahx As Single
    Dim axawaltmp As Single
    Dim axakhirtmp As Single
    Dim dispx1 As Single
    Dim dispy1 As Single
    Dim dispx2 As Single
    Dim dispy2 As Single
    Dim mm As Single
    Dim p1 As Single
    Dim p2 As Single
    Dim lebar1kar As Single
    lebar1kar = 55
    Dim terlewati As Boolean
    If findBatang Then picBatang.Cls
    If findTumpuan Then picTump.Cls
    Dim x, i, j, L, ii As Integer
    Dim jumlah_batang As String
    Dim B, c, d, p, q, jumlah, E, f, g, h, E1, f1, g1, w1, et, gt, ft, ht As Single
    Dim A(250, 250), K(250, 250), titik1, titik2, kumpul(4)
    Dim countIndex2 As Integer, countIndex3 As Integer

```



```

Dim posisicount As Integer
Dim ci As Integer
Dim tertinggiBeban As Single
Dim tertinggiTumpuan As Single
Dim panjangVert As Single
Dim pengaliMerata As Single
panjangVert = zoomtumpuan * pengali2
pengaliMerata = 0.2 * panjangVert
posisicount = 0
countIndex2 = 0
countIndex3 = 0
E = 0
f = 0
g = 0
h = 0
jumlah = (frmDS.NJ.text)
x = 0
For i = 1 To jumlah
For j = 1 To 2
A(i, j) = frmDS.flexTtkKumpul.TextMatrix(i, j)
Next j
Next i
jumlah_batang = (frmDS.M.text)
tertinggiBeban = 0
tertinggiTumpuan = 0
For i = 1 To jumlah_batang
x = x + 1
titik1 = (frmDS.flexInfoBtg.TextMatrix(i, 1))
titik2 = (frmDS.flexInfoBtg.TextMatrix(i, 2))
E1 = A(titik1, 1)
f1 = A(titik1, 2)
g1 = A(titik2, 1)
w1 = A(titik2, 2)
terlewati = False
For j = 1 To Int(frmDS.BLewat)
If i = frmDS.FlexBtgLewat.TextMatrix(j, 0) Then terlewati = True
Next j
If terlewati Then
If tertinggiBeban > GrafBtg(titik1, cmbbatang.text) Then tertinggiBeban = GrafBtg(titik1, cmbbatang.text)
If tertinggiBeban > GrafBtg(titik2, cmbbatang.text) Then tertinggiBeban = GrafBtg(titik2, cmbbatang.text)
If tertinggiTumpuan > GrafR(titik1, cmbR.text) Then tertinggiTumpuan = GrafR(titik1, cmbR.text)
If tertinggiTumpuan > GrafR(titik2, cmbR.text) Then tertinggiTumpuan = GrafR(titik2, cmbR.text)
End If
Lingkar picBatang, (E1) * pengali2, maxy2 - (f1) * pengali2, 1 * radius, merahmuda
Lingkar picBatang, (g1) * pengali2, maxy2 - (w1) * pengali2, 1 * radius, merahmuda
Lingkar picTump, (E1) * pengali2, maxy2 - (f1) * pengali2, 1 * radius, merahmuda
Lingkar picTump, (g1) * pengali2, maxy2 - (w1) * pengali2, 1 * radius, merahmuda
Next i
ketinggian = TinggiMax * SEPERBERAPA
jumlah = (frmDS.NRJ.text)
For i = 1 To jumlah
For j = 1 To 2
K(i, j) = frmDS.flexKekangTtkKumpul.TextMatrix(i, j)
Next j
kumpul(i) = frmDS.flexKekangTtkKumpul.TextMatrix(i, 0)
If K(i, 1) = 1 And K(i, 2) = 1 And K(i, 3) = 1 Then
p = A(kumpul(i), 1)
q = A(kumpul(i), 2)
Garis picBatang, (p - 1) * pengali2, maxy2 - q * pengali2, (p + 1) * pengali2, maxy2 - q * pengali2, hijau
Garis picBatang, (p + 1) * pengali2, maxy2 - q * pengali2, p * pengali2, maxy2 - (q - 0.5) * pengali2, hijau
Garis picBatang, (p - 1) * pengali2, maxy2 - (q - 0.5) * pengali2, p * pengali2, maxy2 - q * pengali2, hijau
Garis picBatang, (p - 2) * pengali2, maxy2 - (q - 0.5) * pengali2, (p - 1) * pengali2, maxy2 - q * pengali2, hijau
Garis picTump, (p - 1) * pengali2, maxy2 - q * pengali2, (p + 1) * pengali2, maxy2 - q * pengali2, hijau
Garis picTump, (p + 1) * pengali2, maxy2 - q * pengali2, p * pengali2, maxy2 - (q - 0.5) * pengali2, hijau
Garis picTump, (p - 1) * pengali2, maxy2 - (q - 0.5) * pengali2, p * pengali2, maxy2 - q * pengali2, hijau
Garis picTump, (p - 2) * pengali2, maxy2 - (q - 0.5) * pengali2, (p - 1) * pengali2, maxy2 - q * pengali2, hijau
Else
If K(i, 1) = 1 And K(i, 2) = 1 And K(i, 3) = 0 Then
p = A(kumpul(i), 1)

```

```

q = A(kumpul(i), 2)
Garis picBatang, (p - zoomtumpuan) * pengali2, maxy2 - (q - zoomtumpuan) * pengali2, p * pengali2, maxy2 - q *
pengali2, hijau
Garis picBatang, p * pengali2, maxy2 - q * pengali2, (p + zoomtumpuan) * pengali2, maxy2 - (q - zoomtumpuan) *
pengali2, hijau
Garis picBatang, (p + zoomtumpuan) * pengali2, maxy2 - (q - zoomtumpuan) * pengali2, (p - zoomtumpuan) * pengali2,
maxy2 - (q - zoomtumpuan) * pengali2, hijau
Garis picTump, (p - zoomtumpuan) * pengali2, maxy2 - (q - zoomtumpuan) * pengali2, p * pengali2, maxy2 - q * pengali2,
hijau
Garis picTump, p * pengali2, maxy2 - q * pengali2, (p + zoomtumpuan) * pengali2, maxy2 - (q - zoomtumpuan) *
pengali2, hijau
Garis picTump, (p + zoomtumpuan) * pengali2, maxy2 - (q - zoomtumpuan) * pengali2, (p - zoomtumpuan) * pengali2,
maxy2 - (q - zoomtumpuan) * pengali2, hijau
Else
p = A(kumpul(i), 1)
q = A(kumpul(i), 2)
Lingkarn picBatang, p * pengali2, maxy2 - (q - zoomtumpuan * 0.5) * pengali2, zoomtumpuan * pengali2 * 0.5, hijau
Garis picBatang, (p - zoomtumpuan) * pengali2, maxy2 - (q - zoomtumpuan) * pengali2, (p + zoomtumpuan) * pengali2,
maxy2 - (q - zoomtumpuan) * pengali2, hijau
Lingkarn picTump, p * pengali2, maxy2 - (q - zoomtumpuan * 0.5) * pengali2, zoomtumpuan * pengali2 * 0.5, hijau
Garis picTump, (p - zoomtumpuan) * pengali2, maxy2 - (q - zoomtumpuan) * pengali2, (p + zoomtumpuan) * pengali2,
maxy2 - (q - zoomtumpuan) * pengali2, hijau
End If
End If
Next i
titik1 = (frmDS.flexInfoBtg.TextMatrix(1, 1))
titik2 = (frmDS.flexInfoBtg.TextMatrix(1, 2))
terkiri = A(titik1, 1)
terkanan = terkiri
For i = 1 To jumlah_batang
    titik1 = (frmDS.flexInfoBtg.TextMatrix(i, 1))
    titik2 = (frmDS.flexInfoBtg.TextMatrix(i, 2))
    E = A(titik1, 1)
    f = A(titik1, 2)
    g = A(titik2, 1)
    h = A(titik2, 2)
    terlewati = False
    For j = 1 To Int(frmDS.BLewat)
        If i = frmDS.FlexBtgLewat.TextMatrix(j, 0) Then terlewati = True
    Next j
    If terlewati Then
        If E < terkiri Then terkiri = E
        If g < terkiri Then terkiri = g
        If E > terkanan Then terkanan = E
        If g > terkanan Then terkanan = g
    End If
Next i
FlexHGrafik.Rows = jumlah_batang * 2 + 1
FlexHGrafik.Cols = 2
FlexGtitikKumpul.Rows = jumlah_batang * 2 + 1
FlexGtitikKumpul.Cols = 2
Dim countTerlewat As Integer
countTerlewat = 0
ReDim YPosition2((terkanan - terkiri) / PRESISI * 2 + 200)
ReDim YPosition3((terkanan - terkiri) / PRESISI * 2 + 200)
For i = 1 To jumlah_batang
    titik1 = (frmDS.flexInfoBtg.TextMatrix(i, 1))
    titik2 = (frmDS.flexInfoBtg.TextMatrix(i, 2))
    E = A(titik1, 1)
    f = A(titik1, 2)
    g = A(titik2, 1)
    h = A(titik2, 2)
    terlewati = False
    For j = 1 To Int(frmDS.BLewat)
        If i = frmDS.FlexBtgLewat.TextMatrix(j, 0) Then terlewati = True
    Next j
    If terlewati Then
        Dim ypers As Single
        Dim xpers As Single

```

```

Dim y1pers As Single, y2pers As Single, x1pers As Single, x2pers As Single
Dim xcount As Long
Dim grad As Single
x1pers = E
x2pers = g
y1pers = GrafBtg(titik1, cmbbatang.text)
y2pers = GrafBtg(titik2, cmbbatang.text)
grad = (y2pers - y1pers) / (x2pers - x1pers)
If Int(E) < Int(g) Then
  For xcount = Round(E / PRESISI) To Round(g / PRESISI)
    xpers = xcount * PRESISI
    ypers = grad * (xpers - x1pers) + y1pers
    YPosition2(xcount) = ypers
    countIndex2 = countIndex2 + 1
  Next xcount
Else
  For xcount = Round(g / PRESISI) To Round(E / PRESISI)
    xpers = xcount * PRESISI
    ypers = grad * (xpers - x1pers) + y1pers
    YPosition2(xcount) = ypers
    countIndex2 = countIndex2 + 1
  Next xcount
End If
countIndex2 = xcount
y1pers = GrafR(titik1, cmbR.text)
y2pers = GrafR(titik2, cmbR.text)
grad = (y2pers - y1pers) / (x2pers - x1pers)
If Int(E) < Int(g) Then
  For xcount = Round(E / PRESISI) To Round(g / PRESISI)
    xpers = xcount * PRESISI
    ypers = grad * (xpers - x1pers) + y1pers
    YPosition3(xcount) = ypers
    countIndex3 = countIndex3 + 1
  Next xcount
Else
  For xcount = Round(g / PRESISI) To Round(E / PRESISI)
    xpers = xcount * PRESISI
    ypers = grad * (xpers - x1pers) + y1pers
    YPosition3(xcount) = ypers
    countIndex3 = countIndex3 + 1
  Next xcount
End If
countIndex3 = xcount
End If
Next i
Dim tt As Single
Dim tinggi As Single
Dim tinggiAsli As Single
Dim MessBebanMax As Single
Dim MessBebanMin As Single
Dim MessBebanMaxMrt As Single
Dim MessBebanMinMrt As Single
Dim MaxBeban As Single
Dim MinBeban As Single
Dim xscan As Single
Dim x1posMin As Single, x1posMax As Single
Dim panjangBatang As Single
Dim Group As Integer
Dim MaxMin As String
Dim BbnMerata() As Single
ReDim BbnMerata(TotalGroup)
Dim CountKMerata As Integer
Dim mytmp As Single
If optMax.Value Then
  MaxMin = "Max"
Else
  MaxMin = "Min"
End If
CountKMerata = 0

```

```

For i = 1 To TotalGroup
If DtBebanJarak(i).isBbnMerata Then
  BbnMerata(CountKMerata) = DtBebanJarak(i).Bbn(1)
  CountKMerata = CountKMerata + 1
End If
Next i
For j = 0 To CountKMerata - 2
For i = 0 To CountKMerata - 2
  If BbnMerata(i) > BbnMerata(i + 1) Then
    mytmp = BbnMerata(i)
    BbnMerata(i) = BbnMerata(i + 1)
    BbnMerata(i + 1) = mytmp
  End If
Next i
Next j
selang = 0
If TotalGroup > 0 Then
  If CountKMerata > 0 Then
    selang = SELANGSTANDARDBEBAN * zoomtumpuan - (CountKMerata - 1) * pengaliMerata / pengali2
  Else
    selang = SELANGSTANDARDBEBAN * zoomtumpuan
  End If
End If
If findBatang Then
  panjangBatang = 0
  StatBar.Panels(1).text = "Mencari " & MaxMin & " Batang ke " & cmbbatang.text & "..."
  If mnuSave.Checked Then
    StatBar.Panels(1).text = "Simpan Nilai Ekstrim Batang ke " & cmbbatang.text & "..."
  End If
For Group = 1 To TotalGroup
  If DtBebanJarak(Group).isBbnMerata Then
    panjangBatang = panjangBatang + DtBebanJarak(Group).Jrk(2)
  Else
    For i = 1 To DtBebanJarak(Group).jumlahBeban
      panjangBatang = panjangBatang + DtBebanJarak(Group).Jrk(i)
    Next i
  End If
  panjangBatang = panjangBatang + DtBebanJarak(Group + 1).jrkAntarGroup
Next Group
For xscan = terkiri - panjangBatang To terkanan Step PRESISI
  ProgressValue (xscan - (terkiri - panjangBatang)) * 100 / (terkanan - (terkiri - panjangBatang))
  MessBebanMax = 0
  MessBebanMin = 0
  x = Round(xscan, 2)
  For Group = 1 To TotalGroup
    If DtBebanJarak(Group).isBbnMerata Then
      MessBebanMaxMrt = 0
      MessBebanMinMrt = 0
      For tt = x To x + DtBebanJarak(Group).Jrk(2) Step PRESISI
        If tt < 0 Or tt > terkanan Then
          tinggiAsli = 0
        Else
          tinggiAsli = YPosition2(tt / PRESISI)
        End If
        MessBebanMaxMrt = MessBebanMaxMrt + tinggiAsli * PRESISI
        MessBebanMinMrt = MessBebanMinMrt + tinggiAsli * PRESISI
      Next tt
      MessBebanMax = MessBebanMax + MessBebanMaxMrt * DtBebanJarak(Group).Bbn(1)
      MessBebanMin = MessBebanMin + MessBebanMinMrt * DtBebanJarak(Group).Bbn(1)
      x = x + DtBebanJarak(Group).Jrk(2)
    Else
      For tt = 1 To DtBebanJarak(Group).jumlahBeban
        x = x + DtBebanJarak(Group).Jrk(tt)
        If x < 0 Or x > terkanan Then
          tinggiAsli = 0
        Else
          tinggiAsli = YPosition2(x / PRESISI)
        End If
        MessBebanMax = MessBebanMax + tinggiAsli * DtBebanJarak(Group).Bbn(tt)
      Next tt
    End If
  Next Group

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    MessBebanMin = MessBebanMin + tinggiAsli * DtBebanJarak(Group).Bbn(tt)
  Next tt
  End If
  x = x + DtBebanJarak(Group + 1).jrkAntarGroup
Next Group
If xscan = terkiri Then
  MaxBeban = MessBebanMax
  MinBeban = MessBebanMin
  x1posMax = xscan
  x1posMin = xscan
Else
  If MessBebanMax > MaxBeban Then
    MaxBeban = MessBebanMax
    x1posMax = xscan
  End If
  If MessBebanMin < MinBeban Then
    MinBeban = MessBebanMin
    x1posMin = xscan
  End If
End If
Next xscan
Dim tmpmax As Single, tmpmin As Single
Dim pjgVerMrt As Integer
tmpmax = x1posMax
tmpmin = x1posMin
panjangBatang = 0
If (optMax.Value And Not HapusMaxBatang) Or (optMin.Value And Not HapusMinBatang) Then
  For Group = 1 To TotalGroup
    If DtBebanJarak(Group).isBbnMerata Then
      tmpmax = x1posMax + panjangBatang
      tmpmin = x1posMin + panjangBatang
      For j = 0 To CountKMerata - 1
        If BbnMerata(j) = DtBebanJarak(Group).Bbn(1) Then
          pjgVerMrt = j * pengaliMerata
        Exit For
      End If
      Next j
      For i = 0 To DtBebanJarak(Group).Jrk(2) Step PRESISIMERATA
        If optMax.Value And MaxBeban < 0 Then
          panahbawah picBatang, (tmpmax + i) * pengali2, maxy2 - (selang) * pengali2 + panjangVert - MinYRangka *
          pengali2, ColorMerata
          Garis picBatang, (tmpmax + i) * pengali2, maxy2 - (selang) * pengali2 - pjgVerMrt - MinYRangka * pengali2,
          (tmpmax + i) * pengali2, maxy2 - (selang) * pengali2 + panjangVert - MinYRangka * pengali2, ColorMerata
        Elseif optMin.Value And MinBeban < 0 Then
          panahbawah picBatang, (tmpmin + i) * pengali2, maxy2 - (selang) * pengali2 + panjangVert - MinYRangka *
          pengali2, ColorMerata
          Garis picBatang, (tmpmin + i) * pengali2, maxy2 - (selang) * pengali2 - pjgVerMrt - MinYRangka * pengali2,
          (tmpmin + i) * pengali2, maxy2 - (selang) * pengali2 + panjangVert - MinYRangka * pengali2, ColorMerata
        End If
      Next i
      If optMax.Value And MaxBeban < 0 Then
        drawText picBatang, (tmpmax + DtBebanJarak(Group).Jrk(2) / 2) * pengali2 - lebar1kar *
        Len(Trim(Str(DtBebanJarak(Group).Bbn(1))))), maxy2 - (selang) * pengali2 - pjgVerMrt - 225 - MinYRangka * pengali2,
        DtBebanJarak(Group).Bbn(1), ColorNumBeban, 1
        panahbawah picBatang, (tmpmax + DtBebanJarak(Group).Jrk(2)) * pengali2, maxy2 - (selang) * pengali2 +
        panjangVert - MinYRangka * pengali2, ColorMerata
        Garis picBatang, (tmpmax + DtBebanJarak(Group).Jrk(2)) * pengali2, maxy2 - (selang) * pengali2 - pjgVerMrt -
        MinYRangka * pengali2, (tmpmax + DtBebanJarak(Group).Jrk(2)) * pengali2, maxy2 - (selang) * pengali2 + panjangVert -
        MinYRangka * pengali2, ColorMerata
        Garis picBatang, (tmpmax) * pengali2, maxy2 - (selang) * pengali2 - pjgVerMrt - MinYRangka * pengali2,
        (tmpmax + DtBebanJarak(Group).Jrk(2)) * pengali2, maxy2 - (selang) * pengali2 - pjgVerMrt - MinYRangka * pengali2,
        ColorMerata
      Elseif optMin.Value And MinBeban < 0 Then
        drawText picBatang, (tmpmin + DtBebanJarak(Group).Jrk(2) / 2) * pengali2 - lebar1kar *
        Len(Trim(Str(DtBebanJarak(Group).Bbn(1))))), maxy2 - (selang) * pengali2 - pjgVerMrt - 225 - MinYRangka * pengali2,
        DtBebanJarak(Group).Bbn(1), ColorNumBeban, 1
        panahbawah picBatang, (tmpmin + DtBebanJarak(Group).Jrk(2)) * pengali2, maxy2 - (selang) * pengali2 +
        panjangVert - MinYRangka * pengali2, ColorMerata

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    Garis picBatang, (tmpmin + DtBebanJarak(Group).Jrk(2)) * pengali2, maxy2 - (selang) * pengali2 - pjgVerMrt -
    MinYRangka * pengali2, (tmpmin + DtBebanJarak(Group).Jrk(2)) * pengali2, maxy2 - (selang) * pengali2 + panjangVert -
    MinYRangka * pengali2, ColorMerata
    Garis picBatang, (tmpmin) * pengali2, maxy2 - (selang) * pengali2 - pjgVerMrt - MinYRangka * pengali2,
    (tmpmin + DtBebanJarak(Group).Jrk(2)) * pengali2, maxy2 - (selang) * pengali2 - pjgVerMrt - MinYRangka * pengali2,
    ColorMerata
    End If
    panjangBatang = panjangBatang + DtBebanJarak(Group).Jrk(2)
    Else
    For i = 1 To DtBebanJarak(Group).jumlahBeban
    panjangBatang = panjangBatang + DtBebanJarak(Group).Jrk(i)
    tmpmax = x1posMax + panjangBatang
    tmpmin = x1posMin + panjangBatang
    If optMax.Value And MaxBeban < 0 Then
    drawText picBatang, (tmpmax) * pengali2 - lebar1kar * Len(Trim(Str(DtBebanJarak(Group).Bbn(i))))), maxy2 -
    (selang) * pengali2 - 225 - MinYRangka * pengali2, DtBebanJarak(Group).Bbn(i), ColorNumBeban, 1
    panahbawah picBatang, (tmpmax) * pengali2, maxy2 - (selang) * pengali2 + panjangVert - MinYRangka *
    pengali2, biru
    Garis picBatang, (tmpmax) * pengali2, maxy2 - (selang) * pengali2 - MinYRangka * pengali2, (tmpmax) *
    pengali2, maxy2 - (selang) * pengali2 + panjangVert - MinYRangka * pengali2, biru
    Garis picBatang, (tmpmax - DtBebanJarak(Group).Jrk(i)) * pengali2, maxy2 - (selang) * pengali2 - MinYRangka
    * pengali2, (tmpmax) * pengali2, maxy2 - (selang) * pengali2 - MinYRangka * pengali2, biru
    Elseif optMin.Value And MinBeban < 0 Then
    drawText picBatang, (tmpmin) * pengali2 - lebar1kar * Len(Trim(Str(DtBebanJarak(Group).Bbn(i))))), maxy2 -
    (selang) * pengali2 - 225 - MinYRangka * pengali2, DtBebanJarak(Group).Bbn(i), ColorNumBeban, 1
    panahbawah picBatang, (tmpmin) * pengali2, maxy2 - (selang) * pengali2 + panjangVert - MinYRangka *
    pengali2, biru
    Garis picBatang, (tmpmin) * pengali2, maxy2 - (selang) * pengali2 - MinYRangka * pengali2, (tmpmin) *
    pengali2, maxy2 - (selang) * pengali2 + panjangVert - MinYRangka * pengali2, biru
    Garis picBatang, (tmpmin - DtBebanJarak(Group).Jrk(i)) * pengali2, maxy2 - (selang) * pengali2 - MinYRangka
    * pengali2, (tmpmin) * pengali2, maxy2 - (selang) * pengali2 - MinYRangka * pengali2, biru
    End If
    Next i
    End If
    panjangBatang = panjangBatang + DtBebanJarak(Group + 1).jrkAntarGroup
    Next Group
    End If
    MaxBebanBatang = MaxBeban
    MinBebanBatang = MinBeban
    End If
    MaxBeban = 0
    MinBeban = 0
    If findTumpuan Then
    panjangBatang = 0
    StatBar.Panels(1).text = "Mencari " & MaxMin & " Tumpuan ke " & cmbR.text & "..."
    If mnuSave.Checked Then
    StatBar.Panels(1).text = "Simpan Nilai Ekstrim Tumpuan ke " & cmbR.text & "..."
    End If
    For Group = 1 To TotalGroup
    If DtBebanJarak(Group).isBbnMerata Then
    panjangBatang = panjangBatang + DtBebanJarak(Group).Jrk(2)
    Else
    For i = 1 To DtBebanJarak(Group).jumlahBeban
    panjangBatang = panjangBatang + DtBebanJarak(Group).Jrk(i)
    Next i
    End If
    panjangBatang = panjangBatang + DtBebanJarak(Group + 1).jrkAntarGroup
    Next Group
    For xscan = terkiri - panjangBatang To terkanan Step PRESISI
    ProgressValue (xscan - (terkiri - panjangBatang)) * 100 / (terkanan - (terkiri - panjangBatang))
    MessBebanMax = 0
    MessBebanMin = 0
    x = Round(xscan, 2)
    For Group = 1 To TotalGroup
    If DtBebanJarak(Group).isBbnMerata Then
    MessBebanMaxMrt = 0
    MessBebanMinMrt = 0
    For tt = x To x + DtBebanJarak(Group).Jrk(2) Step PRESISI
    If tt < 0 Or tt > terkanan Then

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    tinggiAsli = 0
  Else
    tinggiAsli = YPosition3(tt / PRESISI)
  End If
  MessBebanMaxMrt = MessBebanMaxMrt + tinggiAsli * PRESISI
  MessBebanMinMrt = MessBebanMinMrt + tinggiAsli * PRESISI
Next tt
MessBebanMax = MessBebanMax + MessBebanMaxMrt * DtBebanJarak(Group).Bbn(1)
MessBebanMin = MessBebanMin + MessBebanMinMrt * DtBebanJarak(Group).Bbn(1)
x = x + DtBebanJarak(Group).Jrk(2)
Else
  For tt = 1 To DtBebanJarak(Group).jumlahBeban
    x = x + DtBebanJarak(Group).Jrk(tt)
    If x < 0 Or x > tekanan Then
      tinggiAsli = 0
    Else
      tinggiAsli = YPosition3(x / PRESISI)
    End If
    MessBebanMax = MessBebanMax + tinggiAsli * DtBebanJarak(Group).Bbn(tt)
    MessBebanMin = MessBebanMin + tinggiAsli * DtBebanJarak(Group).Bbn(tt)
  Next tt
End If
x = x + DtBebanJarak(Group + 1).jrkAntarGroup
Next Group
If xscan = terkiri Then
  MaxBeban = MessBebanMax
  MinBeban = MessBebanMin
  x1posMax = xscan
  x1posMin = xscan
Else
  If MessBebanMax > MaxBeban Then
    MaxBeban = MessBebanMax
    x1posMax = xscan
  End If
  If MessBebanMin < MinBeban Then
    MinBeban = MessBebanMin
    x1posMin = xscan
  End If
End If
Next xscan
tmpmax = x1posMax
tmpmin = x1posMin
panjangBatang = 0
If (optMax.Value And Not HapusMaxTump) Or (optMin.Value And Not HapusMinTump) Then
  For Group = 1 To TotalGroup
    If DtBebanJarak(Group).isBbnMerata Then
      tmpmax = x1posMax + panjangBatang
      tmpmin = x1posMin + panjangBatang
      For j = 0 To CountKMerata - 1
        If BbnMerata(j) = DtBebanJarak(Group).Bbn(1) Then
          pjgVerMrt = j * pengaliMerata
          Exit For
        End If
      Next j
      For i = 0 To DtBebanJarak(Group).Jrk(2) Step PRESISIMERATA
        If optMax.Value And MaxBeban < 0 Then
          panahbawah picTump, (tmpmax + i) * pengali2, maxy2 - MinYRangka * pengali2 - (selang) * pengali2 +
          panjangVert, ColorMerata
          Garis picTump, (tmpmax + i) * pengali2, maxy2 - MinYRangka * pengali2 - (selang) * pengali2 - pjgVerMrt,
          (tmpmax + i) * pengali2, maxy2 - MinYRangka * pengali2 - (selang) * pengali2 + panjangVert, ColorMerata
        Elseif optMin.Value And MinBeban < 0 Then
          panahbawah picTump, (tmpmin + i) * pengali2, maxy2 - MinYRangka * pengali2 - (selang) * pengali2 +
          panjangVert, ColorMerata
          Garis picTump, (tmpmin + i) * pengali2, maxy2 - MinYRangka * pengali2 - (selang) * pengali2 - pjgVerMrt,
          (tmpmin + i) * pengali2, maxy2 - MinYRangka * pengali2 - (selang) * pengali2 + panjangVert, ColorMerata
        End If
      Next i
      If optMax.Value And MaxBeban < 0 Then

```

```

drawText picTump, (tmpmax + DtBebanJarak(Group).Jrk(2) / 2) * pengali2 - lebar1kar *
Len(Trim(Str(DtBebanJarak(Group).Bbn(1))))), maxy2 - (selang) * pengali2 - pjgVerMrt - 225 - MinYRangka * pengali2,
DtBebanJarak(Group).Bbn(1), ColorNumBeban, 1
panahbawah picTump, (tmpmax + DtBebanJarak(Group).Jrk(2)) * pengali2, maxy2 - MinYRangka * pengali2 -
(selang) * pengali2 + panjangVert, ColorMerata
Garis picTump, (tmpmax + DtBebanJarak(Group).Jrk(2)) * pengali2, maxy2 - MinYRangka * pengali2 - (selang)
* pengali2 - pjgVerMrt, (tmpmax + DtBebanJarak(Group).Jrk(2)) * pengali2, maxy2 - MinYRangka * pengali2 - (selang) *
pengali2 + panjangVert, ColorMerata
Garis picTump, (tmpmin + DtBebanJarak(Group).Jrk(2)) * pengali2, maxy2 - MinYRangka * pengali2 - (selang) * pengali2 - pjgVerMrt,
(tmpmin + DtBebanJarak(Group).Jrk(2)) * pengali2, maxy2 - MinYRangka * pengali2 - (selang) * pengali2 - pjgVerMrt,
ColorMerata
Elseif optMin.Value And MinBeban <> 0 Then
drawText picTump, (tmpmin + DtBebanJarak(Group).Jrk(2) / 2) * pengali2 - lebar1kar *
Len(Trim(Str(DtBebanJarak(Group).Bbn(1))))), maxy2 - (selang) * pengali2 - pjgVerMrt - 225 - MinYRangka * pengali2,
DtBebanJarak(Group).Bbn(1), ColorNumBeban, 1
panahbawah picTump, (tmpmin + DtBebanJarak(Group).Jrk(2)) * pengali2, maxy2 - MinYRangka * pengali2 -
(selang) * pengali2 + panjangVert, ColorMerata
Garis picTump, (tmpmin + DtBebanJarak(Group).Jrk(2)) * pengali2, maxy2 - MinYRangka * pengali2 - (selang)
* pengali2 - pjgVerMrt, (tmpmin + DtBebanJarak(Group).Jrk(2)) * pengali2, maxy2 - MinYRangka * pengali2 - (selang) *
pengali2 + panjangVert, ColorMerata
Garis picTump, (tmpmin) * pengali2, maxy2 - MinYRangka * pengali2 - (selang) * pengali2 - pjgVerMrt,
(tmpmin + DtBebanJarak(Group).Jrk(2)) * pengali2, maxy2 - MinYRangka * pengali2 - (selang) * pengali2 - pjgVerMrt,
ColorMerata
End If
panjangBatang = panjangBatang + DtBebanJarak(Group).Jrk(2)
Else
For i = 1 To DtBebanJarak(Group).jumlahBeban
panjangBatang = panjangBatang + DtBebanJarak(Group).Jrk(i)
tmpmax = x1posMax + panjangBatang
tmpmin = x1posMin + panjangBatang
If optMax.Value And MaxBeban <> 0 Then
drawText picTump, (tmpmax) * pengali2 - lebar1kar * Len(Trim(Str(DtBebanJarak(Group).Bbn(i))))), maxy2 -
(selang) * pengali2 - 225 - MinYRangka * pengali2, DtBebanJarak(Group).Bbn(i), ColorNumBeban, 1
panahbawah picTump, (tmpmax) * pengali2, maxy2 - MinYRangka * pengali2 - (selang) * pengali2 +
panjangVert, biru
Garis picTump, (tmpmax) * pengali2, maxy2 - MinYRangka * pengali2 - (selang) * pengali2, (tmpmax) *
pengali2, maxy2 - MinYRangka * pengali2 - (selang) * pengali2 + panjangVert, biru
Garis picTump, (tmpmax - DtBebanJarak(Group).Jrk(i)) * pengali2, maxy2 - MinYRangka * pengali2 - (selang)
* pengali2, (tmpmax) * pengali2, maxy2 - MinYRangka * pengali2 - (selang) * pengali2, biru
Elseif optMin.Value And MinBeban <> 0 Then
drawText picTump, (tmpmin) * pengali2 - lebar1kar * Len(Trim(Str(DtBebanJarak(Group).Bbn(i))))), maxy2 -
(selang) * pengali2 - 225 - MinYRangka * pengali2, DtBebanJarak(Group).Bbn(i), ColorNumBeban, 1
panahbawah picTump, (tmpmin) * pengali2, maxy2 - MinYRangka * pengali2 - (selang) * pengali2 +
panjangVert, biru
Garis picTump, (tmpmin) * pengali2, maxy2 - MinYRangka * pengali2 - (selang) * pengali2, (tmpmin) *
pengali2, maxy2 - MinYRangka * pengali2 - (selang) * pengali2 + panjangVert, biru
Garis picTump, (tmpmin - DtBebanJarak(Group).Jrk(i)) * pengali2, maxy2 - MinYRangka * pengali2 - (selang)
* pengali2, (tmpmin) * pengali2, maxy2 - MinYRangka * pengali2 - (selang) * pengali2, biru
End If
Next i
End If
panjangBatang = panjangBatang + DtBebanJarak(Group + 1).jrkAntarGroup
Next Group
End If
MaxBebanTumpuan = MaxBeban
MinBebanTumpuan = MinBeban
End If
If isMerataBottom Then
MessBebanMaxMrt = 0
MessBebanMinMrt = 0
For tt = terkiri To terkanan Step PRESISI
If tt < 0 Or tt > terkanan Then
tinggiAsli = 0
Else
tinggiAsli = YPosition2(tt / PRESISI)
End If
If tinggiAsli > 0 Then
MessBebanMaxMrt = MessBebanMaxMrt + tinggiAsli * PRESISI
Elseif tinggiAsli < 0 Then

```



```

MessBebanMinMrt = MessBebanMinMrt + tinggiAsli * PRESISI
End If
Next tt
MaxBebanBatang = MaxBebanBatang + MessBebanMaxMrt * ValueMerataBottom
MinBebanBatang = MinBebanBatang + MessBebanMinMrt * ValueMerataBottom
MessBebanMaxMrt = 0
MessBebanMinMrt = 0
For tt = terkiri To terkanan Step PRESISI
  If tt < 0 Or tt > terkanan Then
    tinggiAsli = 0
  Else
    tinggiAsli = YPosition3(tt / PRESISI)
  End If
  If tinggiAsli > 0 Then
    MessBebanMaxMrt = MessBebanMaxMrt + tinggiAsli * PRESISI
  Elseif tinggiAsli < 0 Then
    MessBebanMinMrt = MessBebanMinMrt + tinggiAsli * PRESISI
  End If
Next tt
MaxBebanTumpuan = MaxBebanTumpuan + MessBebanMaxMrt * ValueMerataBottom
MinBebanTumpuan = MinBebanTumpuan + MessBebanMinMrt * ValueMerataBottom
Dim isawalB As Boolean, isawalT As Boolean
isawalB = True
isawalT = True
Dim titikKiriB As Single, titikKananB As Single
Dim titikKiriT As Single, titikKananT As Single
Dim minus As Boolean, plus As Boolean
Dim minusT As Boolean, plusT As Boolean
titikKiriB = -1
titikKananB = -1
titikKiriT = -1
titikKananT = -1
For tt = terkiri To terkanan Step PRESISIMERATA
  If (optMax.Value And Not HapusMaxBatang) Or (optMin.Value And Not HapusMinBatang) Then
    minus = (Round(YPosition2(tt / PRESISI), 3) < 0)
    plus = (Round(YPosition2(tt / PRESISI), 3) > 0)
    If optMin.Value And Not minus And titikKiriB <> -1 Then
      titikKananB = tt
      drawText picBatang, ((titikKananB + titikKiriB) / 2) * pengali2 - lebar1kar *
Len(Trim(Str(ValueMerataBottom))), maxy2 - (selang) * pengali2 + panjangVert * 2 - MinYRangka * pengali2,
ValueMerataBottom, ColorNumBeban, 1
      titikKiriB = -1
    End If
    If optMax.Value And Not plus And titikKiriB <> -1 Then
      titikKananB = tt
      drawText picBatang, ((titikKananB + titikKiriB) / 2) * pengali2 - lebar1kar *
Len(Trim(Str(ValueMerataBottom))), maxy2 - (selang) * pengali2 + panjangVert * 2 - MinYRangka * pengali2,
ValueMerataBottom, ColorNumBeban, 1
      titikKiriB = -1
    End If
    If optMin.Value And Round(YPosition2(tt / PRESISI), 3) < 0 Then
      panahbawah picBatang, (tt) * pengali2, maxy2 - MinYRangka * pengali2 - (selang) * pengali2 + panjangVert
* 2, ColorMerata
      Garis picBatang, (tt) * pengali2, maxy2 - MinYRangka * pengali2 - (selang) * pengali2 + panjangVert, (tt) *
pengali2, maxy2 - MinYRangka * pengali2 - (selang) * pengali2 + panjangVert * 2, ColorMerata
      If isawalB Then
        isawalB = Not isawalB
      Else
        Garis picBatang, (tt - PRESISIMERATA) * pengali2, maxy2 - MinYRangka * pengali2 - (selang) *
pengali2 + panjangVert, (tt) * pengali2, maxy2 - MinYRangka * pengali2 - (selang) * pengali2 + panjangVert,
ColorMerata
      End If
      If titikKiriB = -1 Then titikKiriB = tt
      Elseif optMax.Value And Round(YPosition2(tt / PRESISI), 3) > 0 Then
        panahbawah picBatang, (tt) * pengali2, maxy2 - MinYRangka * pengali2 - (selang) * pengali2 + panjangVert
* 2, ColorMerata
        Garis picBatang, (tt) * pengali2, maxy2 - MinYRangka * pengali2 - (selang) * pengali2 + panjangVert, (tt) *
pengali2, maxy2 - MinYRangka * pengali2 - (selang) * pengali2 + panjangVert * 2, ColorMerata
        If isawalB Then

```

```

isawalB = Not isawalB
Else
  Garis picBatang, (tt - PRESISIMERATA) * pengali2, maxy2 - MinYRangka * pengali2 - (selang) *
  pengali2 + panjangVert, (tt) * pengali2, maxy2 - MinYRangka * pengali2 - (selang) * pengali2 + panjangVert,
  ColorMerata
End If
If titikKiriB = -1 Then titikKiriB = tt
End If
End If
If (optMax.Value And Not HapusMaxTump) Or (optMin.Value And Not HapusMinTump) Then
  minusT = (Round(YPosition3(tt / PRESISI), 3) < 0)
  plusT = (Round(YPosition3(tt / PRESISI), 3) > 0)
  If optMin.Value And Not minusT And titikKiriT <> -1 Then
    titikKananT = tt
    drawText picTump, ((titikKananT + titikKiriT) / 2) * pengali2 - lebar1kar *
  Len(Trim(Str(ValueMerataBottom))), maxy2 - (selang) * pengali2 + panjangVert * 2 - MinYRangka * pengali2,
  ValueMerataBottom, ColorNumBeban, 1
  titikKiriT = -1
  End If
  If optMax.Value And Not plusT And titikKiriT <> -1 Then
    titikKananT = tt
    drawText picTump, ((titikKananT + titikKiriT) / 2) * pengali2 - lebar1kar *
  Len(Trim(Str(ValueMerataBottom))), maxy2 - (selang) * pengali2 + panjangVert * 2 - MinYRangka * pengali2,
  ValueMerataBottom, ColorNumBeban, 1
  titikKiriT = -1
  End If
  If optMin.Value And Round(YPosition3(tt / PRESISI), 3) < 0 Then
    panahbawah picTump, (tt) * pengali2, maxy2 - MinYRangka * pengali2 - (selang) * pengali2 + panjangVert *
  2, ColorMerata
    Garis picTump, (tt) * pengali2, maxy2 - MinYRangka * pengali2 - (selang) * pengali2 + panjangVert, (tt) *
    pengali2, maxy2 - MinYRangka * pengali2 - (selang) * pengali2 + panjangVert * 2, ColorMerata
    If isawalT Then
      isawalT = Not isawalT
    Else
      Garis picTump, (tt - PRESISIMERATA) * pengali2, maxy2 - MinYRangka * pengali2 - (selang) * pengali2
    + panjangVert, (tt) * pengali2, maxy2 - MinYRangka * pengali2 - (selang) * pengali2 + panjangVert, ColorMerata
    End If
    If titikKiriT = -1 Then titikKiriT = tt
    ElseIf optMax.Value And Round(YPosition3(tt / PRESISI), 3) > 0 Then
      panahbawah picTump, (tt) * pengali2, maxy2 - MinYRangka * pengali2 - (selang) * pengali2 + panjangVert *
    2, ColorMerata
      Garis picTump, (tt) * pengali2, maxy2 - MinYRangka * pengali2 - (selang) * pengali2 + panjangVert, (tt) *
      pengali2, maxy2 - MinYRangka * pengali2 - (selang) * pengali2 + panjangVert * 2, ColorMerata
      If isawalT Then
        isawalT = Not isawalT
      Else
        Garis picTump, (tt - PRESISIMERATA) * pengali2, maxy2 - MinYRangka * pengali2 - (selang) * pengali2
    + panjangVert, (tt) * pengali2, maxy2 - MinYRangka * pengali2 - (selang) * pengali2 + panjangVert, ColorMerata
      End If
      If titikKiriT = -1 Then titikKiriT = tt
    End If
  End If
Next tt
If (optMax.Value And Not HapusMaxBatang) Or (optMin.Value And Not HapusMinBatang) Then
  If titikKiriB <> -1 Then
    titikKananB = tt
    drawText picBatang, ((titikKananB + titikKiriB) / 2) * pengali2 - lebar1kar * Len(Trim(Str(ValueMerataBottom))),
    maxy2 - (selang) * pengali2 + panjangVert * 2 - MinYRangka * pengali2, ValueMerataBottom, ColorNumBeban, 1
    End If
    If optMin.Value And Round(YPosition2(terkanan / PRESISI), 3) < 0 Then
      panahbawah picBatang, (terkanan) * pengali2, maxy2 - MinYRangka * pengali2 - (selang) * pengali2 +
    panjangVert * 2, ColorMerata
      Garis picBatang, (terkanan) * pengali2, maxy2 - MinYRangka * pengali2 - (selang) * pengali2 + panjangVert,
    (terkanan) * pengali2, maxy2 - MinYRangka * pengali2 - (selang) * pengali2 + panjangVert * 2, ColorMerata
      ElseIf optMax.Value And Round(YPosition2(terkanan / PRESISI), 3) > 0 Then
      panahbawah picBatang, (terkanan) * pengali2, maxy2 - MinYRangka * pengali2 - (selang) * pengali2 +
    panjangVert * 2, ColorMerata
      Garis picBatang, (terkanan) * pengali2, maxy2 - MinYRangka * pengali2 - (selang) * pengali2 + panjangVert,
    (terkanan) * pengali2, maxy2 - MinYRangka * pengali2 - (selang) * pengali2 + panjangVert * 2, ColorMerata

```

```

End If
End If
If (optMax.Value And Not HapusMaxTump) Or (optMin.Value And Not HapusMinTump) Then
  If titikKiriT <> -1 Then
    titikKananT = tt
    drawText picTump, ((titikKananT + titikKiriT) / 2) * pengali2 - lebar1kar * Len(Trim(Str(ValueMerataBottom))),
maxy2 - (selang) * pengali2 + panjangVert * 2 - MinYRangka * pengali2, ValueMerataBottom, ColorNumBeban, 1
  End If
  If optMin.Value And Round(YPosition3(terkanan / PRESISI), 3) < 0 Then
    panahbawah picTump, (terkanan) * pengali2, maxy2 - MinYRangka * pengali2 - (selang) * pengali2 +
panjangVert * 2, ColorMerata
    Garis picTump, (terkanan) * pengali2, maxy2 - MinYRangka * pengali2 - (selang) * pengali2 + panjangVert,
(terkanan) * pengali2, maxy2 - MinYRangka * pengali2 - (selang) * pengali2 + panjangVert * 2, ColorMerata
  ElseIf optMax.Value And Round(YPosition3(terkanan / PRESISI), 3) > 0 Then
    panahbawah picTump, (terkanan) * pengali2, maxy2 - MinYRangka * pengali2 - (selang) * pengali2 +
panjangVert * 2, ColorMerata
    Garis picTump, (terkanan) * pengali2, maxy2 - MinYRangka * pengali2 - (selang) * pengali2 + panjangVert,
(terkanan) * pengali2, maxy2 - MinYRangka * pengali2 - (selang) * pengali2 + panjangVert * 2, ColorMerata
  End If
End If
End If
If TotalGroup > 0 Then
  selang = selang - panjangVert / pengali2
  If isMerataBottom Then selang = selang - panjangVert / pengali2
End If
selangTump = selang + SELANGSTANDARDGRAFIK * zoomtumpuan + tertinggiTumpuan * ketinggian
selang = selang + SELANGSTANDARDGRAFIK * zoomtumpuan + tertinggiBeban * ketinggian
For i = 1 To jumlah_batang
  titik1 = (frmDS.flexInfoBtg.TextMatrix(i, 1))
  titik2 = (frmDS.flexInfoBtg.TextMatrix(i, 2))
  E = A(titik1, 1)
  f = A(titik1, 2)
  g = A(titik2, 1)
  h = A(titik2, 2)
  terlewat = False
  For j = 1 To Int(frmDS.BLewat)
    If i = frmDS.FlexBtgLewat.TextMatrix(j, 0) Then terlewat = True
  Next j
  If terlewat Then
    x1pers = E
    x2pers = g
    y1pers = GrafBtg(titik1, cmbbatang.text)
    y2pers = GrafBtg(titik2, cmbbatang.text)
    grad = (y2pers - y1pers) / (x2pers - x1pers)
    If Int(E) < Int(g) Then
      Dim col As Long
      For xcount = Round(E / PRESISI) To Round(g / PRESISI)
        xpers = xcount * PRESISI
        ypers = grad * (xpers - x1pers) + y1pers
        YPosition2(xcount) = ypers
        countIndex2 = countIndex2 + 1
        If ypers < 0 Then
          col = merah
        Else
          col = kuning
        End If
        Garis picBatang, xpers * pengali2, maxy2 - MinYRangka * pengali2 - selang * pengali2, xpers * pengali2,
maxy2 - MinYRangka * pengali2 - (selang - ypers * ketinggian) * pengali2, col
      Next xcount
    Else
      For xcount = Round(g / PRESISI) To Round(E / PRESISI)
        xpers = xcount * PRESISI
        ypers = grad * (xpers - x1pers) + y1pers
        YPosition2(xcount) = ypers
        countIndex2 = countIndex2 + 1
        If ypers < 0 Then
          col = merah
        Else
          col = kuning
        End If
      Next xcount
    End If
  End If
End For

```

```

End If
  Garis picBatang, xpers * pengali2, maxy2 - MinYRangka * pengali2 - selang * pengali2, xpers * pengali2,
maxy2 - MinYRangka * pengali2 - (selang - ypers * ketinggian) * pengali2, col
Next xcount
End If
countIndex2 = xcount
y1pers = GrafR(titik1, cmbR.text)
y2pers = GrafR(titik2, cmbR.text)
grad = (y2pers - y1pers) / (x2pers - x1pers)
If Int(E) < Int(g) Then
  For xcount = Round(E / PRESISI) To Round(g / PRESISI)
    xpers = xcount * PRESISI
    ypers = grad * (xpers - x1pers) + y1pers
    YPosition3(xcount) = ypers
    countIndex3 = countIndex3 + 1
    If ypers < 0 Then
      col = merah
    Else
      col = kuning
    End If
    Garis picTump, xpers * pengali2, maxy2 - MinYRangka * pengali2 - selangTump * pengali2, xpers * pengali2,
maxy2 - MinYRangka * pengali2 - (selangTump - ypers * ketinggian) * pengali2, col
  Next xcount
Else
  For xcount = Round(g / PRESISI) To Round(E / PRESISI)
    xpers = xcount * PRESISI
    ypers = grad * (xpers - x1pers) + y1pers
    YPosition3(xcount) = ypers
    countIndex3 = countIndex3 + 1
    If ypers < 0 Then
      col = merah
    Else
      col = kuning
    End If
    Garis picTump, xpers * pengali2, maxy2 - MinYRangka * pengali2 - selangTump * pengali2, xpers * pengali2,
maxy2 - MinYRangka * pengali2 - (selangTump - ypers * ketinggian) * pengali2, col
  Next xcount
End If
countIndex3 = xcount
End If
Next i
ci = 0
For i = 1 To jumlah_batang
  x = x + 1
  titik1 = (frmDS.flexInfoBtg.TextMatrix(i, 1))
  titik2 = (frmDS.flexInfoBtg.TextMatrix(i, 2))
  E = A(titik1, 1)
  f = A(titik1, 2)
  g = A(titik2, 1)
  h = A(titik2, 2)
  et = E
  ft = f
  gt = g
  ht = h
  Garis picBatang, (E) * pengali2, maxy2 - (f) * pengali2, (g) * pengali2, maxy2 - (h) * pengali2, hitam + i
  Garis picTump, (E) * pengali2, maxy2 - (f) * pengali2, (g) * pengali2, maxy2 - (h) * pengali2, hitam + i
terlewat = False
For j = 1 To Int(frmDS.BLewat)
  If i = frmDS.FlexBtgLewat.TextMatrix(j, 0) Then terlewat = True
Next j
If terlewat Then
  countTerlewat = countTerlewat + 1
  Garis picBatang, (E) * pengali2, maxy2 - MinYRangka * pengali2 - selang * pengali2, (g) * pengali2, maxy2 -
MinYRangka * pengali2 - selang * pengali2, purple
  Garis picBatang, (E) * pengali2, maxy2 - MinYRangka * pengali2 - (selang - GrafBtg(titik1, cmbbatang.text) *
ketinggian) * pengali2, (g) * pengali2, maxy2 - MinYRangka * pengali2 - (selang - GrafBtg(titik2, cmbbatang.text) *
ketinggian) * pengali2, butonface

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Garis picTump, (E) * pengali2, maxy2 - MinYRangka * pengali2 - selangTump * pengali2, (g) * pengali2, maxy2 -
MinYRangka * pengali2 - selangTump * pengali2, purple
Garis picTump, (E) * pengali2, maxy2 - MinYRangka * pengali2 - (selangTump - GrafR(titik1, cmbR.text) * ketinggian)
* pengali2, (g) * pengali2, maxy2 - MinYRangka * pengali2 - (selangTump - GrafR(titik2, cmbR.text) * ketinggian) *
pengali2, buttonface
Dim withtitik As Boolean
Dim cada As Integer
withtitik = True
For cada = 1 To ci
  If FlexHGrafik.TextMatrix(cada, 0) = titik1 Then withtitik = False
Next cada
If withtitik Then
  ci = ci + 1
  FlexHGrafik.TextMatrix(ci, 0) = titik1
  FlexHGrafik.TextMatrix(ci, 1) = GrafBtg(titik1, cmbbatang.text)
  FlexGtitikKumpul.TextMatrix(ci, 0) = titik1
  FlexGtitikKumpul.TextMatrix(ci, 1) = GrafR(titik1, cmbR.text)
End If
withtitik = True
For cada = 1 To ci
  If FlexHGrafik.TextMatrix(cada, 0) = titik2 Then withtitik = False
Next cada
If withtitik Then
  ci = ci + 1
  FlexHGrafik.TextMatrix(ci, 0) = titik2
  FlexHGrafik.TextMatrix(ci, 1) = GrafBtg(titik2, cmbbatang.text)
  FlexGtitikKumpul.TextMatrix(ci, 0) = titik2
  FlexGtitikKumpul.TextMatrix(ci, 1) = GrafR(titik2, cmbR.text)
End If
Lingkar picBatang, (E) * pengali2, maxy2 - MinYRangka * pengali2 - (selang - GrafBtg(titik1, cmbbatang.text) *
ketinggian) * pengali2, 10, merahmuda
Lingkar picBatang, (g) * pengali2, maxy2 - MinYRangka * pengali2 - (selang - GrafBtg(titik2, cmbbatang.text) *
ketinggian) * pengali2, 10, merahmuda
Lingkar picTump, (E) * pengali2, maxy2 - MinYRangka * pengali2 - (selangTump - GrafR(titik1, cmbR.text) *
ketinggian) * pengali2, 10, merahmuda
Lingkar picTump, (g) * pengali2, maxy2 - MinYRangka * pengali2 - (selangTump - GrafR(titik2, cmbR.text) *
ketinggian) * pengali2, 10, merahmuda
If terkiri = E Or terkanan = E Then
  Garis picBatang, (E) * pengali2, maxy2 - MinYRangka * pengali2 - selang * pengali2, (E) * pengali2, maxy2 -
MinYRangka * pengali2 - (selang - GrafBtg(titik1, cmbbatang.text) * ketinggian) * pengali2, buttonface
  Garis picTump, (E) * pengali2, maxy2 - MinYRangka * pengali2 - selangTump * pengali2, (E) * pengali2, maxy2 -
MinYRangka * pengali2 - (selangTump - GrafR(titik1, cmbR.text) * ketinggian) * pengali2, buttonface
End If
If terkiri = g Or terkanan = g Then
  Garis picBatang, (g) * pengali2, maxy2 - MinYRangka * pengali2 - selang * pengali2, (g) * pengali2, maxy2 -
MinYRangka * pengali2 - (selang - GrafBtg(titik2, cmbbatang.text) * ketinggian) * pengali2, buttonface
  Garis picTump, (g) * pengali2, maxy2 - MinYRangka * pengali2 - selangTump * pengali2, (g) * pengali2, maxy2 -
MinYRangka * pengali2 - (selangTump - GrafR(titik2, cmbR.text) * ketinggian) * pengali2, buttonface
End If
End If
Lingkar picBatang, (E) * pengali2, maxy2 - (f) * pengali2, 0.1 * radius, merahmuda
Lingkar picTump, (E) * pengali2, maxy2 - (f) * pengali2, 0.1 * radius, merahmuda

Lingkar picBatang, (g) * pengali2, maxy2 - (h) * pengali2, 0.1 * radius, merahmuda
Lingkar picTump, (g) * pengali2, maxy2 - (h) * pengali2, 0.1 * radius, merahmuda
drawText picBatang, (et) * pengali2, maxy2 - (ft) * pengali2, titik1, ColorNumTtkKumpul, 1
Dim ytenang As Single
Dim xtenang As Single
ytengah = (maxy2 - (ft) * pengali2 + maxy2 - (ht) * pengali2) / 2
xtengah = (et * pengali2 + (gt) * pengali2) / 2
drawText picBatang, xtengah, ytengah, i, ColorNumBatang, 1
drawText picBatang, (gt) * pengali2, maxy2 - (ht) * pengali2, titik2, ColorNumTtkKumpul, 1
drawText picTump, (et) * pengali2, maxy2 - (ft) * pengali2, titik1, ColorNumTtkKumpul, 1
drawText picTump, xtengah, ytengah, i, ColorNumBatang, 1
drawText picTump, (gt) * pengali2, maxy2 - (ht) * pengali2, titik2, ColorNumTtkKumpul, 1
Next i
FlexHGrafik.Rows = ci + 1
FlexGtitikKumpul.Rows = ci + 1

```

```

JustShowHasil
End Sub
Private Sub banguncomboR()
Dim i As Integer
cmbR.Clear
ReDim SBTumpuan(Int(frmDS.NRJ))
For i = 1 To Int(frmDS.NRJ)
cmbR.AddItem frmDS.flexKekangTtkKumpul.TextMatrix(i, 0), i - 1
SBTumpuan(i - 1).index = frmDS.flexKekangTtkKumpul.TextMatrix(i, 0)
Next i
cmbR.ListIndex = 0
End Sub
Private Sub bangunComboBatang()
Dim i As Integer
cmbbatang.Clear
ReDim SBBatang(Int(frmDS.M))
For i = 1 To Int(frmDS.M)
cmbbatang.AddItem frmDS.flexInfoBtg.TextMatrix(i, 0), i - 1
SBBatang(i - 1).index = frmDS.flexInfoBtg.TextMatrix(i, 0)
Next i
cmbbatang.ListIndex = 0
End Sub
Private Sub isiArrayGraf()
Dim ii As Integer
frmDBB.NLJ = "1"
frmDBB.NLM = "0"
ReDim GrafBtg(Int(frmDS.M), Int(frmDS.M))
ReDim GrafR(Int(frmDS.M), Int(frmDS.M))
For ii = 1 To Int(frmDS.M)
frmDBB.flexAksi.TextMatrix(1, 0) = ii
frmDBB.flexAksi.TextMatrix(1, 1) = 0
frmDBB.flexAksi.TextMatrix(1, 2) = -1
IsiVaribelBeban
loads2
K2 = K2 + 1000
ReDim AR(K2 * 2)
Call frmDS.bansol(N, NB, SFF, DF)
resul2
For j = 1 To Int(frmDS.M)
GrafBtg(ii, j) = frmDBB.flexGUB.TextMatrix(i, 3)
Next j
For j = 1 To Int(frmDS.NRJ)
GrafR(ii, frmDBB.flexRT.TextMatrix(j, 0)) = frmDBB.flexRT.TextMatrix(j, 2)
Next j
Next ii
Exit Sub
End Sub
Private Sub Garis(pic As PictureBox, x1 As Single, y1 As Single, x2 As Single, y2 As Single, warna As Long)
pic.Line (Round(x1 + beginleft), Round(y1 - beginbottom))-(Round(x2 + beginleft), Round(y2 - beginbottom)), warna
End Sub
Private Sub panahbawah(pic As PictureBox, ByVal x As Single, ByVal y As Single, ByVal warna As Long)
Dim xint As Integer
Dim yint As Integer
xint = 50
yint = 50
Garis pic, x - xint, y - yint, x, y, warna
Garis pic, x + xint, y - yint, x, y, warna
End Sub
Private Sub Lingkaran(pic As PictureBox, x As Single, y As Single, rad As Single, warna As Long)
pic.Circle (Round(x + beginleft), Round(y - beginbottom)), rad, warna
End Sub
Private Sub drawText(pic As PictureBox, ByVal x As Single, ByVal y As Single, ByVal text As String, ByVal warna As Long, ByVal ukuran As Integer)
pic.ForeColor = warna
pic.FontSize = ukuran
pic.CurrentY = y - beginbottom
pic.CurrentX = x + beginleft
pic.FontBold = True
pic.Print text

```

```

End Sub
Private Sub cmbR_Click()
HapusMaxBatang = False
HapusMinBatang = False
HapusMaxTump = False
HapusMinTump = False
If Not noclick Then DrawHasilAll False, True
End Sub
Sub loads2()
ReDim AC(ND)
If frmDBB.NLM = 0 Then GoTo 2
For i = 1 To Int(frmDS.M)
If LML(i) = 0 Then GoTo 1
J1 = 2 * JJ(i) - 1
J2 = 2 * JJ(i)
K1 = 2 * JK(i) - 1
K2 = 2 * JK(i)
AE(J1) = AE(J1) - CX(i) * AML(1, i) + CY(i) * AML(2, i)
AE(J2) = AE(J2) - CY(i) * AML(1, i) - CX(i) * AML(2, i)
AE(K1) = AE(K1) - CX(i) * AML(3, i) + CY(i) * AML(4, i)
AE(K2) = AE(K2) - CY(i) * AML(3, i) - CX(i) * AML(4, i)
1: Next i
2: For j = 1 To ND
JR = ID(j)
AC(JR) = AJ(j) + AE(j)
Next j
End Sub
Sub resul2()
Dim ii As Integer
j = N + 1
For K = 1 To ND
JE = ND - K + 1
If JRL(JE) = 0 Then GoTo 1
DJ(JE) = 0
GoTo 2
1: j = j - 1
DJ(JE) = DF(j)
2: Next K
frmDBB.flexPTK.Rows = Int(frmDS.NJ) + 1
frmDBB.flexPTK.TextMatrix(0, 0) = "Titik"
frmDBB.flexPTK.TextMatrix(0, 1) = "DJ1"
frmDBB.flexPTK.TextMatrix(0, 2) = "DJ2"
For j = 1 To Int(frmDS.NJ)
frmDBB.flexPTK.TextMatrix(j, 0) = j
frmDBB.flexPTK.TextMatrix(j, 1) = DJ(2 * j - 1)
frmDBB.flexPTK.TextMatrix(j, 2) = DJ(2 * j)
Next j
frmDBB.flexGUB.Rows = Int(frmDS.M) + 1
frmDBB.flexGUB.TextMatrix(0, 0) = "Batang"
frmDBB.flexGUB.TextMatrix(0, 1) = "AM1"
frmDBB.flexGUB.TextMatrix(0, 2) = "AM2"
frmDBB.flexGUB.TextMatrix(0, 3) = "AM3"
frmDBB.flexGUB.TextMatrix(0, 4) = "AM4"
For i = 1 To Int(frmDS.M)
J1 = 2 * JJ(i) - 1
J2 = 2 * JJ(i)
K1 = 2 * JK(i) - 1
K2 = 2 * JK(i)
SCM = Int(frmDS.E) * AX(i) / EL(i)
AMD(1) = SCM * ((DJ(J1) - DJ(K1)) * CX(i) + (DJ(J2) - DJ(K2)) * CY(i))
AMD(2) = 0
AML(3) = -AML(1)
AMD(4) = 0
For j = 1 To MD
AM(j) = AML(j, i) + AMD(j)
Next j
If JRL(J1) = 1 Then AR(J1) = AR(J1) + CX(i) * AMD(1)
If JRL(J2) = 1 Then AR(J2) = AR(J2) + CY(i) * AMD(1)
If JRL(K1) = 1 Then AR(K1) = AR(K1) + CX(i) * AMD(3)

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```

If JRL(K2) = 1 Then AR(K2) = AR(K2) + CY(i) * AMD(3)
frmDBB.flexGUB.TextMatrix(i, 0) = i
frmDBB.flexGUB.TextMatrix(i, 1) = AM(1)
frmDBB.flexGUB.TextMatrix(i, 2) = AM(2)
frmDBB.flexGUB.TextMatrix(i, 3) = AM(3)
frmDBB.flexGUB.TextMatrix(i, 4) = AM(4)
Next i
For j = 1 To ND
If JRL(j) = 0 Then GoTo 7
AR(j) = AR(j) - AJ(j) - AE(j)
7: Next j
ii = 0
frmDBB.flexRT.Rows = Int(frmDS.NJ) + 1
frmDBB.flexRT.TextMatrix(0, 0) = "Titik"
frmDBB.flexRT.TextMatrix(0, 1) = "AR1"
frmDBB.flexRT.TextMatrix(0, 2) = "AR2"
For j = 1 To Int(frmDS.NJ)
J1 = 2 * j - 1
J2 = 2 * j
N1 = JRL(J1) + JRL(J2)
If N1 = 0 Then GoTo 8
ii = ii + 1
frmDBB.flexRT.TextMatrix(ii, 0) = j
frmDBB.flexRT.TextMatrix(ii, 1) = AR(J1)
frmDBB.flexRT.TextMatrix(ii, 2) = AR(J2)
8: Next j
frmDBB.flexRT.Rows = ii + 1
End Sub
Private Sub cmbbatang_Click()
HapusMaxBatang = False
HapusMinBatang = False
HapusMaxTump = False
HapusMinTump = False
If Not noclick Then DrawHasilAll True, False
End Sub
Private Sub cmdZoomIn_Click()
Dim tmpPjg As Single
Dim tmpTg As Single
Dim pengaliBef As Single
Dim LAfter As Single
Dim LBefore As Single
Dim BgnLeftBef As Single
Dim BgnBottomBef As Single
Dim tmp1 As Single
Dim tmp2 As Single
Dim tmp3 As Single
Dim tmp4 As Single
pengaliBef = pengali2
tmpPjg = (PanjangMax * pengali2) / 2
tmpTg = (((TinggiMax + highForAll + TinggiBeban + pjgVert) * pengali2) - (((TinggiMax + highForAll + TinggiBeban +
pjgVert) * pengali2) / 2) - (TinggiMax * pengali2))
BgnLeftBef = beginleft
BgnBottomBef = beginbottom
pengali2 = pengali2 * 1.1
tmpPjg = ((PanjangMax * pengali2) / 2) - tmpPjg
tmpTg = (((TinggiMax + highForAll + TinggiBeban + pjgVert) * pengali2) - (((TinggiMax + highForAll + TinggiBeban +
pjgVert) * pengali2) / 2) - (TinggiMax * pengali2)) - tmpTg
beginleft = beginleft - tmpPjg
LAfter = (TinggiMax + highForAll + TinggiBeban + pjgVert) * pengali2
LBefore = (TinggiMax + highForAll + TinggiBeban + pjgVert) * pengaliBef
If MaxYRangka > 0 Then
beginbottom = beginbottom + tmpTg + 2
Else
beginbottom = beginbottom + ((LAfter - LBefore) / 2) + 5
End If
tmp1 = MaxYRangka * pengali2 + 150
tmp2 = terkiri * pengali2 + 150
tmp3 = picBatang.Width - 150
tmp4 = -MinYRangka * pengali2 + ((highForAll + TinggiBeban + pjgVert) * pengali2) + 150

```



```

If beginbottom >= picBatang.Height - tmp1 Or beginleft <= tmp2 Or beginleft + PanjangMax * pengali2 >= tmp3 _
Or beginbottom <= tmp4 Then
    beginleft = BgnLeftBef
    beginbottom = BgnBottomBef
    pengali2 = pengali2 / 1.1
    MsgBox "Zoom In Sudah Maksimal!", vbExclamation, "Peringatan"
    Exit Sub
End If
DrawHasilAll True, True
End Sub
Private Sub cmdZoomOut_Click()
    Dim tmpPjg As Single
    Dim tmpTg As Single
    Dim pengaliBef As Single
    Dim LAfter As Single
    Dim LBefore As Single
    pengaliBef = pengali2
    tmpPjg = (PanjangMax * pengali2) / 2
    tmpTg = (((TinggiMax + highForAll + TinggiBeban + pjgVert) * pengali2) - (((TinggiMax + highForAll + TinggiBeban +
    pjgVert) * pengali2) / 2) - (TinggiMax * pengali2))
    pengali2 = pengali2 * (1 / 1.1)
    tmpPjg = ((PanjangMax * pengali2) / 2) - tmpPjg
    tmpTg = (((TinggiMax + highForAll + TinggiBeban + pjgVert) * pengali2) - (((TinggiMax + highForAll + TinggiBeban +
    pjgVert) * pengali2) / 2) - (TinggiMax * pengali2)) - tmpTg
    beginleft = beginleft - tmpPjg
    LAfter = (TinggiMax + highForAll + TinggiBeban + pjgVert) * pengali2
    LBefore = (TinggiMax + highForAll + TinggiBeban + pjgVert) * pengaliBef
    If MaxYRangka > 0 Then
        beginbottom = beginbottom + tmpTg - 2
    Else
        beginbottom = beginbottom + ((LAfter - LBefore) / 2) - 5
    End If
    DrawHasilAll True, True
End Sub
Private Sub titik(pic As PictureBox, x As Single, y As Single, warna As Long)
    pic.PSet (Round(x + beginleft), Round(y - beginbottom)), warna
End Sub
Private Sub JustShowHasil()
    Select Case SSTab1.Tab
    Case 0:
        If optMax.Value And Not HapusMaxBatang Then
            If MaxBebanBatang < 0 Then
                MaxBebanBatang = 0
                txtEkstrim.text = MaxBebanBatang
                HapusMaxBatang = True
                DrawHasilAll True, False
            Else
                txtEkstrim.text = MaxBebanBatang
            End If
        Else
            If optMin.Value And Not HapusMinBatang Then
                If MinBebanBatang > 0 Then
                    MinBebanBatang = 0
                    txtEkstrim.text = MinBebanBatang
                    HapusMinBatang = True
                    DrawHasilAll True, False
                Else
                    txtEkstrim.text = MinBebanBatang
                End If
            End If
        End If
    Case 1:
        If optMax.Value And Not HapusMaxTump Then
            If MaxBebanTumpuan < 0 Then
                MaxBebanTumpuan = 0
                txtEkstrim.text = MaxBebanTumpuan
                HapusMaxTump = True
                DrawHasilAll False, True
            Else
            End If
        End If
    End Select

```

```

        txtEkstrim.text = MaxBebanTumpuan
    End If
Elseif optMin.Value And Not HapusMinTump Then
    If MinBebanTumpuan > 0 Then
        MinBebanTumpuan = 0
        txtEkstrim.text = MinBebanTumpuan
        HapusMinTump = True
        DrawHasilAll False, True
    Else
        txtEkstrim.text = MinBebanTumpuan
    End If
End If
End Select
End Sub
Private Sub Form_MouseDown(Button As Integer, Shift As Integer, x As Single, y As Single)
If Button = 2 Then
    PopupMenu mnu
End If
End Sub
Private Sub Frame1_MouseDown(Button As Integer, Shift As Integer, x As Single, y As Single)
If Button = 2 Then
    PopupMenu mnu
End If
End Sub
Private Sub mnuDBB_Click()
cmdBackBbn_Click
End Sub
Private Sub mnuDS_Click()
cmdBackStr_Click
End Sub
Private Sub mnuK_Click()
End
End Sub
Private Sub mnuKeluar_Click()
End
End Sub
Private Sub mnuS_Click()
mnuSave_Click
End Sub
Private Sub mnuSave_Click()
If Frame1.Visible = False Then
    MsgBox "Tidak Ada Data Beban Berjalan !", vbExclamation, "Peringatan"
    Exit Sub
End If
dlgfile.DialogTitle = "Save Nilai Ekstrim"
dlgfile.FileName = ""
dlgfile.Filter = "Text Document (*.txt)|*.txt"
dlgfile.DefaultExt = ".txt"
dlgfile.Flags = cdlCCFullOpen
dlgfile.ShowSave
nomorfile = FreeFile
If dlgfile.FileName = "" Then
    Exit Sub
End If
Open dlgfile.FileName For Output As nomorfile
Print #1,
Print #1, Tab(2), "Nilai Ekstrim Gaya Batang"
Print #1, Tab(2), "BATANG"; Tab(12), "MAX"; Tab(28), "MIN"
For i = 1 To Int(frmDS.M)
    cmbbatang.text = SBBatang(i - 1).index
    DrawHasilAll True, False
    SBBatang(i - 1).Max = MaxBebanBatang
    SBBatang(i - 1).Min = MinBebanBatang
Print #1, Tab(2), SBBatang(i - 1).index; Tab(12), SBBatang(i - 1).Max; Tab(28), SBBatang(i - 1).Min
Next i
Print #1,
Print #1, Tab(2), "Nilai Ekstrim Reaksi Tumpuan"
Print #1, Tab(2), "TITIK"; Tab(12), "MAX"; Tab(28), "MIN"
For i = 1 To Int(frmDS.NRJ)

```

```

cmbR.text = SBTumpuan(i - 1).index
DrawHasilAll False, True
SBTumpuan(i - 1).Max = MaxBebanTumpuan
SBTumpuan(i - 1).Min = MinBebanTumpuan
Print #1, Tab(2); SBTumpuan(i - 1).index; Tab(12); SBTumpuan(i - 1).Max; Tab(28); SBTumpuan(i - 1).Min
Next i
Close nomorfile
MsgBox "Data Nilai Ekstrim Telah Tersimpan!", vbInformation, "Informasi"
End Sub
Private Sub optMax_Click()
DrawHasilAll True, True
End Sub
Private Sub optMin_Click()
DrawHasilAll True, True
End Sub
Private Sub picBatang_MouseDown(Button As Integer, Shift As Integer, x As Single, y As Single)
If Button = 2 Then
    PopupMenu mnu
End If
End Sub
Private Sub picTump_MouseDown(Button As Integer, Shift As Integer, x As Single, y As Single)
If Button = 2 Then
    PopupMenu mnu
End If
End Sub
Private Sub SStab1_Click(PreviousTab As Integer)
If SStab1.Tab = 0 Then
cmdTabelBtg.Visible = True
Else
cmdTabelBtg.Visible = False
End If
cmdTabelTump.Visible = Not cmdTabelBtg.Visible
JustShowHasil
End Sub
Sub IsiVariabelBeban()
ReDim AJ(2 * Int(frmDS.M) + 2)
NDJ = 2
ND = NDJ * Int(frmDS.NJ)
ReDim AE(ND)
If frmDBB.NLJ <> 0 Then
For j = 1 To frmDBB.NLJ
    K = frmDBB.flexAksi.TextMatrix(j, 0)
    AJ(2 * K - 1) = frmDBB.flexAksi.TextMatrix(j, 1)
    AJ(2 * K) = frmDBB.flexAksi.TextMatrix(j, 2)
Next j
End If
ReDim AML(Int(frmDS.M) + 5, Int(frmDS.M) + 5)
If frmDBB.NLM = 0 Then Exit Sub
ReDim LML(Int(frmDS.M))
For j = 1 To frmDBB.NLM
    i = frmDBB.flexLoad.TextMatrix(j, 0)
    AML(1, i) = frmDBB.flexLoad.TextMatrix(j, 1)
    AML(2, i) = frmDBB.flexLoad.TextMatrix(j, 2)
    AML(3, i) = frmDBB.flexLoad.TextMatrix(j, 3)
    AML(4, i) = frmDBB.flexLoad.TextMatrix(j, 4)
    LML(i) = 1
Next j
End Sub
Private Sub ProgressValue(ByVal nilai As Integer)
Dim i As Integer
Dim txt As String
txt = ""
For i = 1 To nilai
txt = txt & "I"
Next i
For i = nilai To 100
txt = txt & " "
Next i
StatBar.Panels(2).text = nilai & "%"

```

```
StatBar.Panels(3).text = txt
End Sub
Private Sub SStab1_MouseDown(Button As Integer, Shift As Integer, x As Single, y As Single)
If Button = 2 Then
    PopupMenu mnu
End If
End Sub
Private Sub Timer1_Timer()
If Label2.Visible = False Then
    Label2.Visible = True
Else
Label2.Visible = True And False
End If
End Sub
```



LAMPIRAN B**KASUS 1****B.1. DATA INPUT PROGRAM GARIS PENGARUH RANGKA BATANG BIDANG****Data Struktural**

7	3	1000000	
1	0	0	
2	8	0	
3	16	0	
4	24	0	
5	4	-4	
6	12	-4	
7	20	-4	
11			
1	1	5	0.2
2	1	2	0.2
3	2	3	0.2
4	2	6	0.2
5	5	6	0.2
6	5	2	0.2
7	6	3	0.2
8	7	3	0.2
9	4	7	0.2
10	3	4	0.2
11	6	7	0.2
2			
1	1	1	
4	0	1	
3			
2			
3			
10			

Data Beban Berjalan

1	0
0	2
	8
	10
	8
0	

B.2. DATA OUTPUT PROGRAM GARIS PENGARUH RANGKA BATANG BIDANG

Nilai Ekstrim Gaya Batang

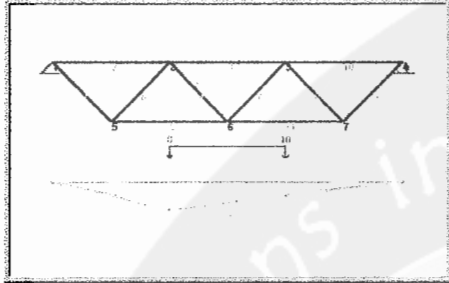
BATANG	MAX	MIN
1	12.25653	0
2	0	-8.666651
3	0	-17.99999
4	3.771236	-4.714046
5	17.33333	0
6	0	-12.25652
7	4.714048	-3.771237
8	0	-13.19933
9	13.19933	0
10	0	-9.33333
11	18.66666	0

Nilai Ekstrim Reaksi Tumpuan

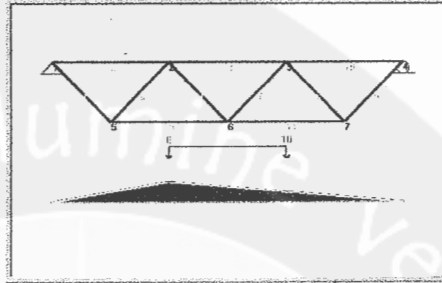
TITIK	MAX	MIN
1	14.66667	0
4	15.33333	0

B.3. TAMPILAN GARIS PENGARUH DAN POSISI BEBAN BERJALAN UNTUK GAYA BATANG

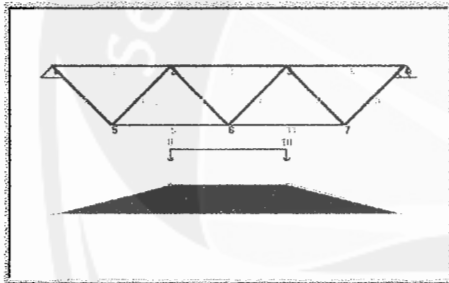
Batang 1 (Posisi Nilai Maksimum)



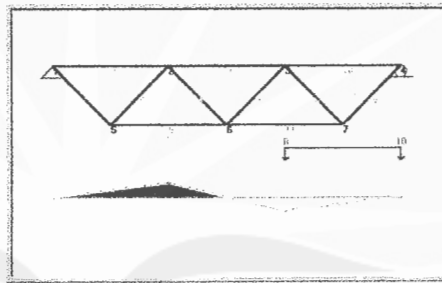
Batang 2 (Posisi Nilai Minimum)



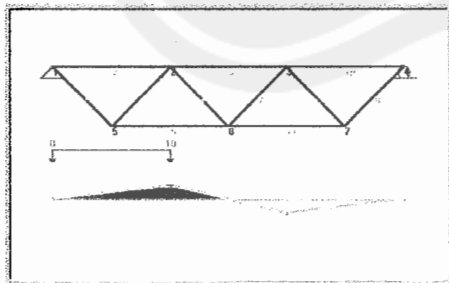
Batang 3 (Posisi Nilai Minimum)



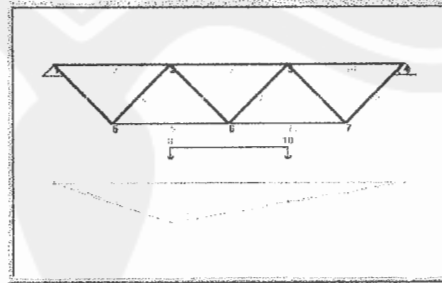
Batang 4 (Posisi Nilai Maksimum)



Batang 4 (Posisi Nilai Minimum)



Batang 5 (Posisi Nilai Maksimum)



LAMPIRAN C

KASUS 1C.1. DATA INPUT PROGRAM SAP 2000 UNTUK MENGANALISIS GARIS
PENGARUH RANGKA BATANG BIDANG

SYSTEM DATA

STEADY STATE LOAD FREQUENCY - - - - - 0.0000E+00
 LENGTH UNITS - - - - - M
 FORCE UNITS - - - - - KN
 UP DIRECTION - - - - - +Z
 GLOBAL DEGREES OF FREEDOM - - - - - ALL
 PAGINATION BY - - - - - LINES
 NUMBER OF LINES PER PAGE - - - - - 59
 INCLUDE WARNING MESSAGES IN OUTPUT FILE - - Y

GENERATED JOINT COORDINATES

JOINT	X	Y	Z
1	0.000	0.000	0.000
2	8.000	0.000	0.000
3	16.000	0.000	0.000
4	24.000	0.000	0.000
5	4.000	0.000	-4.000
6	12.000	0.000	-4.000

RESTRAINT DATA

JOINT	U1	U2	U3	R1	R2	R3
1	U1	U2	U3	R1	R2	R3
2		U2		R1	R2	R3
3		U2		R1	R2	R3
4		U2	U3	R1		R3
5		U2		R1	R2	R3
6		U2		R1	R2	R3
7		U2		R1	R2	R3

TEMPERATURE DEPENDENT DATA

MATERIAL PROPERTIES

MAT LABEL	TEMP	MODULUS OF ELASTICITY			SHEAR MODULI		
		E1	E2	E3	G12	G13	G23
1FR	0.00	0.100E+07	0.100E+07	0.100E+07	0.385E+06	0.385E+06	0.385E+06
STEEL	0.00	0.200E+09	0.200E+09	0.200E+09	0.769E+08	0.769E+08	0.769E+08
CONC	0.00	0.248E+08	0.248E+08	0.248E+08	0.103E+08	0.103E+08	0.103E+08

FRAME SECTION PROPERTY DATA - PRISMATIC

SECTION LABEL	AXIAL AREA	TORSIONAL CONSTANT	MOMENTS OF INERTIA		SHEAR A2	AREAS A3
			I33	I22		
1	0.200E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

FRAME ELEMENT DATA

ELEMENT LABEL	JOINT END-I	JOINT END-J	ELEMENT LENGTH	END-OFFSET-LENGTHS		RIGID-END FACTOR	NUMBER OF SEGMENTS
				END-I	END-J		

1	1	5	5.657	0.000	0.000	0.0000	4
2	1	2	8.000	0.000	0.000	0.0000	4
3	2	3	8.000	0.000	0.000	0.0000	4
4	2	6	5.657	0.000	0.000	0.0000	4
5	5	6	8.000	0.000	0.000	0.0000	4
6	5	2	5.657	0.000	0.000	0.0000	4
7	6	3	5.657	0.000	0.000	0.0000	4
8	3	7	5.657	0.000	0.000	0.0000	4
9	7	4	5.657	0.000	0.000	0.0000	4
10	3	4	8.000	0.000	0.000	0.0000	4
11	6	7	8.000	0.000	0.000	0.0000	4

BRIDGE DATA

LANE	ELT	ECCEN	ELT	ECCEN	ELT	ECCEN	ELT	ECCEN
LANE1	2	0.0	3	0.0	10	0.0		

BRIDGE VEHICLE LOAD DATA

VEHICLE LABEL				GEN1				
VEHICLE TYPE				GEN				
USE FOR NEGATIVE MOMENTS				YES				
USE FOR VERTICAL FORCES				YES				
USE FOR OTHER RESPONSES				YES				
UNIFORM LOAD		AXLE DISTANCES		AXLE WEIGHT	FLOATING PX	AXLE WEIGHTS PM		PXM
		MIN	MAX					
0.00		8.00	8.00	8.00				
0.00		8.00	8.00	10.00				
0.00					0.00	0.00		0.00

BRIDGE VEHICLE CLASS DATA

CLASS LABEL	VEHICLE LABEL	SCALE FACTOR
VECL1	GEN1	1.000

MOVING LOADS DATA

QUICK RESPONSE CALCULATION = 0
 CALCULATE CORRESPONDING VALUES = YES
 TRUCK INFLUENCE TOLERANCE = 0.10E-03

MOVE LABEL	REDUCTION FACTORS	VEHICLE CLASS	SCALE FACTOR	LANES LOADED MIN	LANES LOADED MAX	LANE LABEL
MOVE1	0.100E+01	VECL1	0.100E+01	0	ALL	LANE1

BRIDGE RESPONSE DATA

NO MOVING LOAD RESPONSE CALCULATED FOR JOINT DISPLACEMENTS

NO MOVING LOAD RESPONSE CALCULATED FOR JOINT SPRINGS

MOVING LOAD RESPONSE WILL BE CALCULATED FOR ALL JOINT REACTIONS

MOVING LOAD RESPONSE WILL BE CALCULATED FOR ALL FRAME ELEMENTS

INPUT COMPLETE

**C.2. DATA OUTPUT PROGRAM SAP 2000 UNTUK MENGANALISIS GARIS
PENGARUH RANGKA BATANG BIDANG**

RESTRAINT FORCES (REACTIONS)

FORCES AND MOMENTS ACTING ON JOINTS, IN GLOBAL COORDINATES

MOVE MOVE1 ----- MAX

JOINT	FX	FY	FZ	MX	MY	MZ
1	.000000	.000000	15.333333	.000000	.000000	.000000
4	.000000	.000000	15.333333	.000000	.000000	.000000

MOVE MOVE1 ----- MIN

JOINT	FX	FY	FZ	MX	MY	MZ
1	.000000	.000000	.000000	.000000	.000000	.000000
4	.000000	.000000	.000000	.000000	.000000	.000000

FRAME ELEMENT INTERNAL FORCES

ELEM 1 ===== LENGTH = 5.656854

MOVE MOVE1 ----- MAX

REL DIST	P	V2	V3	T	M2	M3
0.00000	13.199327	.000000	.000000	.000000	.000000	.000000
0.25000	13.199327	.000000	.000000	.000000	.000000	.000000
0.50000	13.199327	.000000	.000000	.000000	.000000	.000000
0.75000	13.199327	.000000	.000000	.000000	.000000	.000000
1.00000	13.199327	.000000	.000000	.000000	.000000	.000000

ELEM 2 ===== LENGTH = 8.000000

MOVE MOVE1 ----- MIN

REL DIST	P	V2	V3	T	M2	M3
0.00000	-9.333333	-10.000000	.000000	.000000	.000000	.000000
0.25000	-9.333333	-7.500000	.000000	.000000	.000000	.000000
0.50000	-9.333333	-5.000000	.000000	.000000	.000000	.000000
0.75000	-9.333333	-2.500000	.000000	.000000	.000000	.000000
1.00000	-9.333333	.000000	.000000	.000000	.000000	.000000

ELEM 3 ===== LENGTH = 8.000000

MOVE MOVE1 ----- MIN

REL DIST	P	V2	V3	T	M2	M3
0.00000	-18.000000	-10.000000	.000000	.000000	.000000	.000000
0.25000	-18.000000	-7.500000	.000000	.000000	.000000	.000000
0.50000	-18.000000	-5.000000	.000000	.000000	.000000	.000000
0.75000	-18.000000	-2.500000	.000000	.000000	.000000	.000000
1.00000	-18.000000	.000000	.000000	.000000	.000000	.000000

ELEM 4 ===== LENGTH = 5.656854

MOVE MOVE1 ----- MAX

REL DIST	P	V2	V3	T	M2	M3
0.00000	4.714045	.000000	.000000	.000000	.000000	.000000
0.25000	4.714045	.000000	.000000	.000000	.000000	.000000
0.50000	4.714045	.000000	.000000	.000000	.000000	.000000
0.75000	4.714045	.000000	.000000	.000000	.000000	.000000
1.00000	4.714045	.000000	.000000	.000000	.000000	.000000

MOVE MOVE1 ----- MIN

REL DIST	P	V2	V3	T	M2	M3
0.00000	-4.714045	.000000	.000000	.000000	.000000	.000000
0.25000	-4.714045	.000000	.000000	.000000	.000000	.000000

```

0.50000  -4.714045  .000000  .000000  .000000  .000000  .000000
0.75000  -4.714045  .000000  .000000  .000000  .000000  .000000
1.00000  -4.714045  .000000  .000000  .000000  .000000  .000000
    
```

```

ELEM      5 ===== LENGTH = 8.000000
    
```

```

MOVE  MOVE1 ----- MAX
    
```

```

REL DIST      P          V2          V3          T          M2          M3
0.00000  18.666667  .000000  .000000  .000000  .000000  .000000
0.25000  18.666667  .000000  .000000  .000000  .000000  .000000
0.50000  18.666667  .000000  .000000  .000000  .000000  .000000
0.75000  18.666667  .000000  .000000  .000000  .000000  .000000
1.00000  18.666667  .000000  .000000  .000000  .000000  .000000
    
```



LAMPIRAN D

KASUS 2D.1. DATA INPUT PROGRAM GARIS PENGARUH RANGKA BATANG BIDANG

Data Struktural

12	3	60000	
1	0	0	
2	30	0	
3	60	0	
4	90	0	
5	120	0	
6	150	0	
7	180	0	
8	30	15	
9	60	25	
10	90	30	
11	120	25	
12	150	15	
21			
1	1	2	0.15
2	2	3	0.15
3	3	4	0.15
4	4	5	0.15
5	5	6	0.15
6	6	7	0.15
7	1	8	0.15
8	8	9	0.15
9	9	10	0.15
10	10	11	0.15
11	11	12	0.15
12	12	7	0.15
13	2	8	0.15
14	3	8	0.15
15	3	9	0.15
16	4	9	0.15
17	4	10	0.15
18	4	11	0.15
19	5	11	0.15
20	5	12	0.15
21	6	12	0.15
2			
1	1	1	
7	0	1	
6			
1			
2			
3			
4			
5			
6			

Data Beban Berjalan

1	0
0	2
	5
	7
	0
	30

D.2. DATA OUTPUT PROGRAM GARIS PENGARUH RANGKA BATANG BIDANG

Nilai Ekstrim Gaya Batang

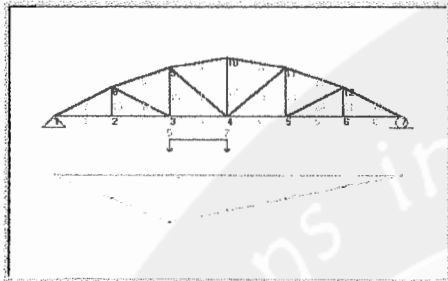
BATANG	MAX	MIN
1	17.66671	0
2	17.66671	0
3	16.40004	0
4	17.2	0
5	18.33331	0
6	18.3333	0
7	0	-19.75196
8	0	-17.28713
9	0	-15.71382
10	0	-15.71382
11	0	-18.13038
12	0	-20.49725
13	6.999993	0
14	3.055956	-6.782743
15	8.233339	-0.9666615
16	3.774945	-7.419741
17	5.166666	0
18	4.035306	-6.638695
19	7.366647	-1.033344
20	3.205058	-5.292002
21	6.999993	0

Nilai Ekstrim Reaksi Tumpuan

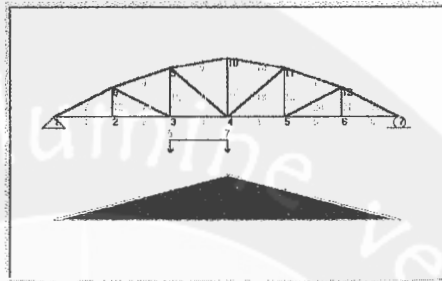
TITIK	MAX	MIN
1	10.83334	0
7	11.16666	0

D.3. TAMPILAN GARIS PENGARUH DAN POSISI BEBAN BERJALAN UNTUK GAYA BATANG

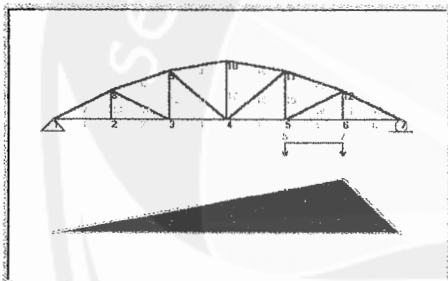
Batang 3 (Posisi Nilai Maksimum)



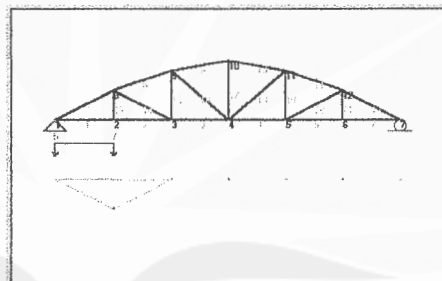
Batang 9 (Posisi Nilai Minimum)



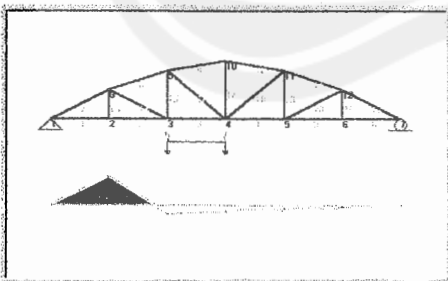
Batang 12 (Posisi Nilai Minimum)



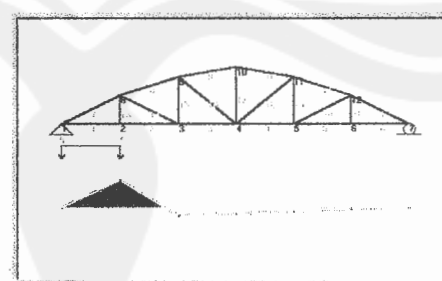
Batang 13 (Posisi Nilai Maksimum)



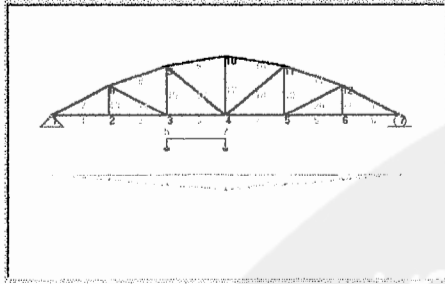
Batang 14 (Posisi Nilai Maksimum)



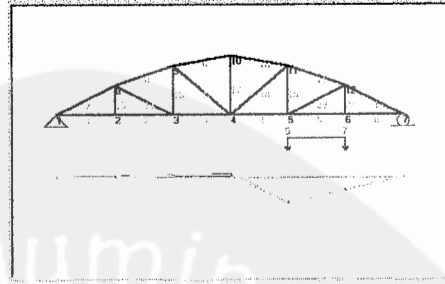
Batang 14 (Posisi Nilai Minimum)



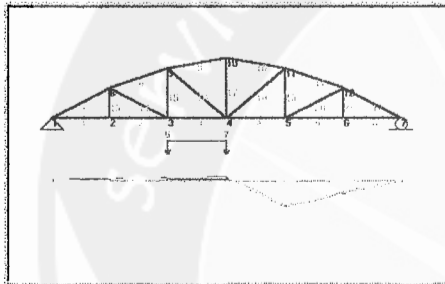
Batang 17 (Posisi Nilai Maksimum)



Batang 19 (Posisi Nilai Maksimum)



Batang 19 (Posisi Nilai Minimum)



LAMPIRAN E

KASUS 2

**E.1. DATA INPUT PROGRAM SAP 2000 UNTUK MENGANALISIS GARIS
PENGARUH RANGKA BATANG BIDANG**

SYSTEM DATA

STEADY STATE LOAD FREQUENCY - - - - - 0.0000E+00

LENGTH UNITS - - - - - FT

FORCE UNITS - - - - - KIP

UP DIRECTION - - - - - +Z

GLOBAL DEGREES OF FREEDOM - - - - - ALL

PAGINATION BY - - - - - LINES

NUMBER OF LINES PER PAGE - - - - - 59

INCLUDE WARNING MESSAGES IN OUTPUT FILE - - - - - Y

GENERATED JOINT COORDINATES

JOINT	X	Y	Z
1	0.000	0.000	0.000
2	30.000	0.000	0.000
3	60.000	0.000	0.000
4	90.000	0.000	0.000
5	120.000	0.000	0.000
6	150.000	0.000	0.000
7	180.000	0.000	0.000
8	30.000	0.000	15.000
9	60.000	0.000	25.000
10	90.000	0.000	30.000
11	120.000	0.000	25.000
12	150.000	0.000	15.000

RESTRAINT DATA

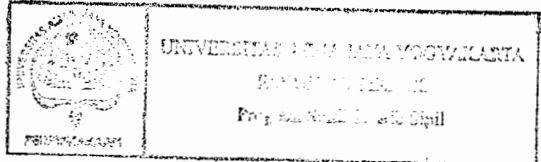
JOINT	U1	U2	U3	R1	R2	R3
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						

TEMPERATURE DEPENDENT DATA

MATERIAL PROPERTIES

MAT LABEL	TEMP	MODULUS OF ELASTICITY			SHEAR MODULII		
		E1	E2	E3	G12	G13	G23
1FR	0.00	0.600E+05	0.600E+05	0.600E+05	0.231E+05	0.231E+05	0.231E+05
STEEL	0.00	0.418E+07	0.418E+07	0.418E+07	0.161E+07	0.161E+07	0.161E+07
CONC	0.00	0.518E+06	0.518E+06	0.518E+06	0.216E+06	0.216E+06	0.216E+06

FRAME SECTION PROPERTY DATA - PRISMATIC



SECTION LABEL	AXIAL AREA	TORSIONAL CONSTANT	MOMENTS OF INERTIA		SHEAR AREA	AREAS
			I33	I22	A2	A3
1	0.150E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

FRAME ELEMENT DATA

ELEMENT LABEL	JOINT END-I	JOINT END-J	ELEMENT LENGTH	END-OFFSET-LENGTHS END-I	END-OFFSET-LENGTHS END-J	RIGID-END FACTOR	NUMBER OF SEGMENTS
1	1	2	30.000	0.000	0.000	0.0000	4
2	2	3	30.000	0.000	0.000	0.0000	4
3	3	4	30.000	0.000	0.000	0.0000	4
4	4	5	30.000	0.000	0.000	0.0000	4
5	5	6	30.000	0.000	0.000	0.0000	4
6	6	7	30.000	0.000	0.000	0.0000	4
7	1	8	33.541	0.000	0.000	0.0000	4
8	8	9	31.623	0.000	0.000	0.0000	4
9	9	10	30.414	0.000	0.000	0.0000	4
10	10	11	30.414	0.000	0.000	0.0000	4
11	11	12	31.623	0.000	0.000	0.0000	4
12	12	7	33.541	0.000	0.000	0.0000	4
13	2	8	15.000	0.000	0.000	0.0000	4
14	3	8	33.541	0.000	0.000	0.0000	4
15	3	9	25.000	0.000	0.000	0.0000	4
16	4	9	39.051	0.000	0.000	0.0000	4
17	4	10	30.000	0.000	0.000	0.0000	4
18	4	11	39.051	0.000	0.000	0.0000	4
19	5	11	25.000	0.000	0.000	0.0000	4
20	5	12	33.541	0.000	0.000	0.0000	4
21	6	12	15.000	0.000	0.000	0.0000	4

BRIDGE DATA

LANE	ELT	ECCEN	ELT	ECCEN	ELT	ECCEN	ELT	ECCEN
LANE1	1	0.0	2	0.0	3	0.0	4	0.0
	5	0.0	6	0.0				

BRIDGE VEHICLE LOAD DATA

VEHICLE LABEL GEN1
 VEHICLE TYPE GEN
 USE FOR NEGATIVE MOMENTS YES
 USE FOR VERTICAL FORCES YES
 USE FOR OTHER RESPONSES YES

UNIFORM LOAD	AXLE DISTANCES		AXLE WEIGHT	FLOATING AXLE WEIGHTS		
	MIN	MAX		PX	PM	PXM
0.00	30.00	30.00	5.00			
0.00	30.00	30.00	7.00			
0.00				0.00	0.00	0.00

BRIDGE VEHICLE CLASS DATA

CLASS LABEL	VEHICLE LABEL	SCALE FACTOR
VECL1	GEN1	1.000

MOVING LOADS DATA

QUICK RESPONSE CALCULATION = 0
 CALCULATE CORRESPONDING VALUES = YES
 TRUCK INFLUENCE TOLERANCE = 0.10E-03

MOVE LABEL	REDUCTION FACTORS	VEHICLE CLASS	SCALE FACTOR	LANES LOADED		LANE LABEL
				MIN	MAX	

```
MOVE1  
    0.100E+01      VECL1 0.100E+01      0  ALL  LANE1  
  
B R I D G E   R E S P O N S E   D A T A  
  
NO MOVING LOAD RESPONSE CALCULATED FOR JOINT DISPLACEMENTS  
NO MOVING LOAD RESPONSE CALCULATED FOR JOINT SPRINGS  
MOVING LOAD RESPONSE WILL BE CALCULATED FOR ALL JOINT REACTIONS  
MOVING LOAD RESPONSE WILL BE CALCULATED FOR ALL FRAME ELEMENTS  
I N P U T   C O M P L E T E
```



**E.2. DATA OUTPUT PROGRAM SAP 2000 UNTUK MENGANALISIS GARIS
PENGARUH RANGKA BATANG BIDANG**

RE STRAINT FORCES (REACTIONS)

FORCES AND MOMENTS ACTING ON JOINTS, IN GLOBAL COORDINATES

MOVE MOVE1 ----- MAX

JOINT	FX	FY	FZ	MX	MY	MZ
1	.000000	.000000	11.166667	.000000	.000000	.000000
7	.000000	.000000	11.166667	.000000	.000000	.000000

MOVE MOVE1 ----- MIN

JOINT	FX	FY	FZ	MX	MY	MZ
1	.000000	.000000	.000000	.000000	.000000	.000000
7	.000000	.000000	.000000	.000000	.000000	.000000

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

ELEM 3 ===== LENGTH = 30.000000

MOVE MOVE1 ----- MAX

REL DIST	P	V2	V3	T	M2	M3
0.00000	17.200000	.000000	.000000	.000000	.000000	.000000
0.25000	17.200000	1.750000	.000000	.000000	.000000	39.375000
0.50000	17.200000	3.500000	.000000	.000000	.000000	52.500000
0.75000	17.200000	5.250000	.000000	.000000	.000000	39.375000
1.00000	17.200000	7.000000	.000000	.000000	.000000	.000000

ELEM 9 ===== LENGTH = 30.413813

MOVE MOVE1 ----- MIN

REL DIST	P	V2	V3	T	M2	M3
0.00000	-15.713803	.000000	.000000	.000000	.000000	.000000
0.25000	-15.713803	.000000	.000000	.000000	.000000	.000000
0.50000	-15.713803	.000000	.000000	.000000	.000000	.000000
0.75000	-15.713803	.000000	.000000	.000000	.000000	.000000
1.00000	-15.713803	.000000	.000000	.000000	.000000	.000000

ELEM 12 ===== LENGTH = 33.541020

MOVE MOVE1 ----- MIN

REL DIST	P	V2	V3	T	M2	M3
0.00000	-20.497290	.000000	.000000	.000000	.000000	.000000
0.25000	-20.497290	.000000	.000000	.000000	.000000	.000000
0.50000	-20.497290	.000000	.000000	.000000	.000000	.000000
0.75000	-20.497290	.000000	.000000	.000000	.000000	.000000
1.00000	-20.497290	.000000	.000000	.000000	.000000	.000000

ELEM 13 ===== LENGTH = 15.000000

MOVE MOVE1 ----- MAX

REL DIST	P	V2	V3	T	M2	M3
0.00000	7.000000	.000000	.000000	.000000	.000000	.000000
0.25000	7.000000	.000000	.000000	.000000	.000000	.000000
0.50000	7.000000	.000000	.000000	.000000	.000000	.000000
0.75000	7.000000	.000000	.000000	.000000	.000000	.000000
1.00000	7.000000	.000000	.000000	.000000	.000000	.000000

ELEM 14 ===== LENGTH = 33.541020

MOVE MOVE1 ----- MAX

REL DIST	P	V2	V3	T	M2	M3
0.00000	3.205031	.000000	.000000	.000000	.000000	.000000
0.25000	3.205031	.000000	.000000	.000000	.000000	.000000
0.50000	3.205031	.000000	.000000	.000000	.000000	.000000
0.75000	3.205031	.000000	.000000	.000000	.000000	.000000
1.00000	3.205031	.000000	.000000	.000000	.000000	.000000

MOVE MOVE1 ----- MIN

REL DIST	P	V2	V3	T	M2	M3
0.00000	-6.782740	.000000	.000000	.000000	.000000	.000000
0.25000	-6.782740	.000000	.000000	.000000	.000000	.000000
0.50000	-6.782740	.000000	.000000	.000000	.000000	.000000
0.75000	-6.782740	.000000	.000000	.000000	.000000	.000000
1.00000	-6.782740	.000000	.000000	.000000	.000000	.000000

ELEM 17 ===== LENGTH = 30.000000

MOVE MOVE1 ----- MAX

REL DIST	P	V2	V3	T	M2	M3
0.00000	5.166667	.000000	.000000	.000000	.000000	.000000
0.25000	5.166667	.000000	.000000	.000000	.000000	.000000
0.50000	5.166667	.000000	.000000	.000000	.000000	.000000
0.75000	5.166667	.000000	.000000	.000000	.000000	.000000
1.00000	5.166667	.000000	.000000	.000000	.000000	.000000

ELEM 19 ===== LENGTH = 25.000000

MOVE MOVE1 ----- MAX

REL DIST	P	V2	V3	T	M2	M3
0.00000	8.233333	.000000	.000000	.000000	.000000	.000000
0.25000	8.233333	.000000	.000000	.000000	.000000	.000000
0.50000	8.233333	.000000	.000000	.000000	.000000	.000000
0.75000	8.233333	.000000	.000000	.000000	.000000	.000000
1.00000	8.233333	.000000	.000000	.000000	.000000	.000000

MOVE MOVE1 ----- MIN

REL DIST	P	V2	V3	T	M2	M3
0.00000	-1.033333	.000000	.000000	.000000	.000000	.000000
0.25000	-1.033333	.000000	.000000	.000000	.000000	.000000
0.50000	-1.033333	.000000	.000000	.000000	.000000	.000000
0.75000	-1.033333	.000000	.000000	.000000	.000000	.000000
1.00000	-1.033333	.000000	.000000	.000000	.000000	.000000

LAMPIRAN F

KASUS 3F.1. DATA INPUT PROGRAM GARIS PENGARUH RANGKA BATANG BIDANG

Data Struktural

30	5	10000000	
1	0	0	
2	2	3	
3	2	0	
4	4	3	
5	4	0	
6	6	3	
7	6	0	
8	8	3	
9	8	0	
10	10	3	
11	10	0	
12	12	0	
13	14	0	
14	14	3	
15	16	0	
16	16	3	
17	18	0	
18	18	3	
19	20	0	
20	22	3	
21	22	0	
22	24	3	
23	24	0	
24	26	3	
25	26	0	
26	28	3	
27	28	0	
28	30	3	
29	30	0	
30	32	0	
55			
1	1	2	0.25
2	1	3	0.25
3	3	2	0.25
4	3	5	0.25
5	5	2	0.25
6	2	4	0.25
7	5	4	0.25
8	5	7	0.25
9	4	7	0.25
10	4	6	0.25
11	7	6	0.25
12	7	9	0.25
13	7	8	0.25
14	6	8	0.25
15	9	8	0.25
16	9	11	0.25
17	9	10	0.25
18	8	10	0.25
19	11	10	0.25
20	12	10	0.25
21	11	12	0.25
22	12	13	0.25
23	13	15	0.25
24	15	17	0.25
25	17	19	0.25
26	19	21	0.25
27	21	23	0.25
28	23	25	0.25
29	25	27	0.25

30	27	29	0.25
31	29	30	0.25
32	14	16	0.25
33	16	18	0.25
34	20	22	0.25
35	22	24	0.25
36	24	26	0.25
37	26	28	0.25
38	12	14	0.25
39	13	14	0.25
40	15	14	0.25
41	15	16	0.25
42	15	18	0.25
43	17	18	0.25
44	19	18	0.25
45	19	20	0.25
46	21	20	0.25
47	20	23	0.25
48	23	22	0.25
49	22	25	0.25
50	25	24	0.25
51	25	26	0.25
52	27	26	0.25
53	27	28	0.25
54	29	28	0.25
55	28	30	0.25
4			
1	1	1	
11	0	1	
21	0	1	
30	0	1	
16			
2			
4			
8			
12			
16			
21			
22			
23			
24			
25			
26			
27			
28			
29			
30			
31			

Data Beban Berjalan

1	0
0	3
50	0
50	1.5
50	1.5
0	

F.2. DATA OUTPUT PROGRAM GARIS PENGARUH RANGKA BATANG BIDANG

Nilai Ekstrim Gaya Batang

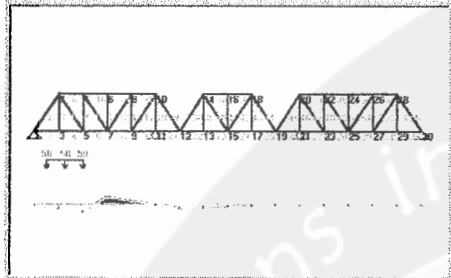
BATANG	MAX	MIN
1	29.29506	-117.1803
2	64.9997	-16.24985
3	75.00001	-8.881785E-07
4	64.9997	-16.24985
5	81.12479	-29.29507
6	32.49995	-94.99985
7	37.50006	-37.49991
8	94.99966	-32.49983
9	45.06934	-45.06941
10	48.74996	-94.99979
11	0	0
12	64.99976	-64.99983
13	81.12476	-9.013922
14	48.74996	-94.99979
15	7.500062	-67.49983
16	6.907176E-05	-81.24982
17	117.1802	-5.633947E-07
18	64.99997	-64.99986
19	2.81247E-06	-146.25
20	146.4755	-2.816777E-06
21	6.907176E-05	-81.24982
22	56.25004	-1.332268E-04
23	56.25004	-1.24345E-04
24	56.25003	-1.278977E-04
25	56.25005	-1.172395E-04
26	5.861975E-05	-81.24986
27	5.861975E-05	-81.24986
28	64.99989	-64.99986
29	94.99992	-32.49991
30	64.99992	-16.24995
31	64.99993	-16.24995
32	3.375078E-05	-74.99995
33	1.953992E-05	-74.99997
34	64.99999	-64.99995
35	48.74998	-94.99998
36	48.74997	-94.99997
37	32.49997	-94.99998
38	1.313209E-05	-101.4061
39	75	0
40	56.3367	-18.77892
41	1.332268E-06	-1.421086E-05
42	56.33673	-18.77891
43	75	0
44	9.751668E-06	-101.4061
45	146.4755	-1.323341E-06
46	6.331032E-06	-146.2499
47	117.1804	-8.367963E-07
48	7.500005	-67.50002
49	81.12492	-9.013865
50	0	0
51	45.06937	-45.06939
52	37.49999	-37.49999
53	81.1249	-29.29508
54	75	-8.881785E-07
55	29.29507	-117.1803

Nilai Ekstrim Reaksi Tumpuan

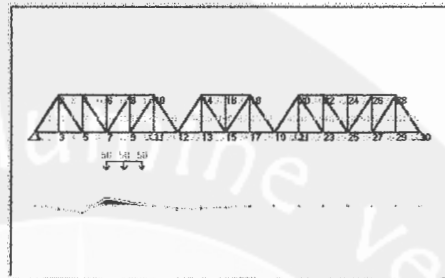
TITIK	MAX	MIN
1	127.5	-24.37496
11	161.25	-2.81247E-06
21	161.2499	-6.331032E-06
30	127.5	-24.37496

F.3. TAMPILAN GARIS PENGARUH DAN POSISI BEBAN BERJALAN UNTUK GAYA BATANG DAN REAKSI TUMPUAN

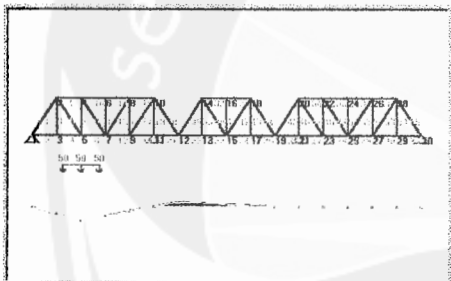
Batang 7 (Posisi Nilai Maksimum)



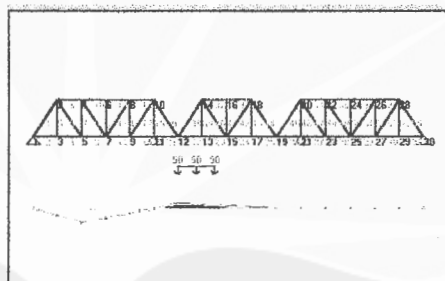
Batang 7 (Posisi Nilai Minimum)



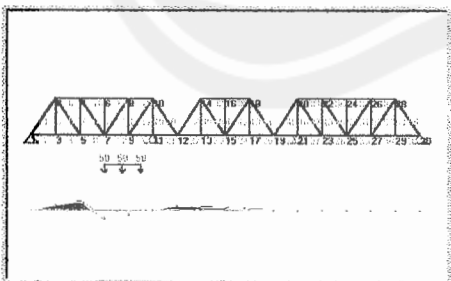
Batang 8 (Posisi Nilai Maksimum)



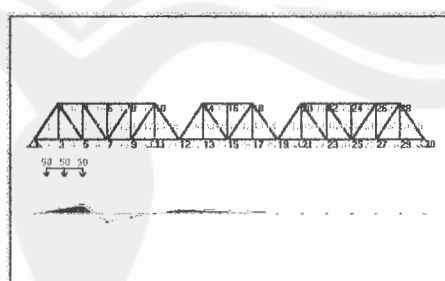
Batang 8 (Posisi Nilai Minimum)



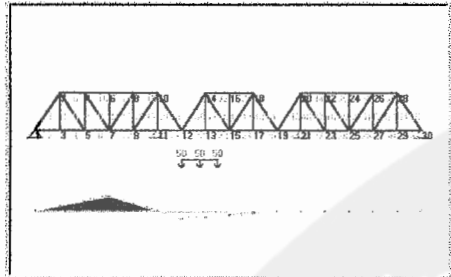
Batang 9 (Posisi Nilai Maksimum)



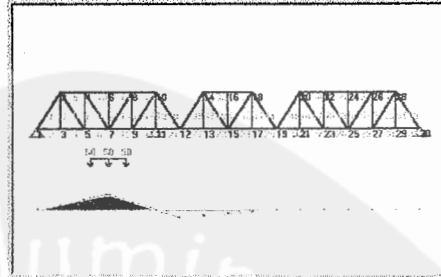
Batang 9 (Posisi Nilai Minimum)



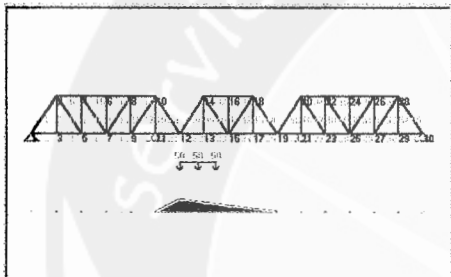
Batang 10 (Posisi Nilai Maksimum)



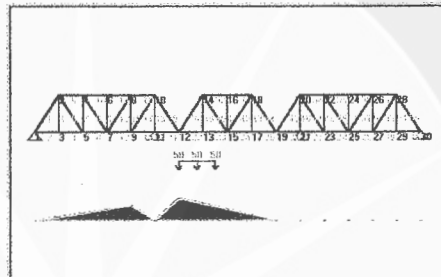
Batang 10 (Posisi Nilai Minimum)



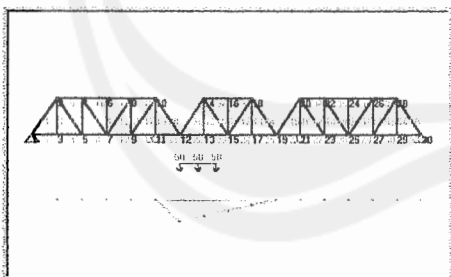
Batang 16 (Posisi Nilai Minimum)



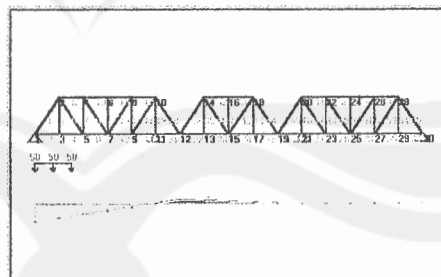
Batang 19 (Posisi Nilai Minimum)



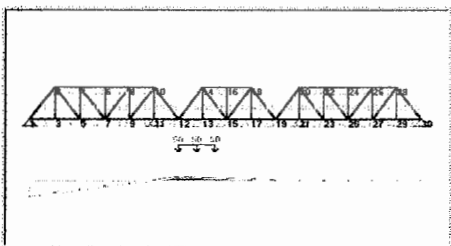
Batang 20 (Posisi Nilai Maksimum)



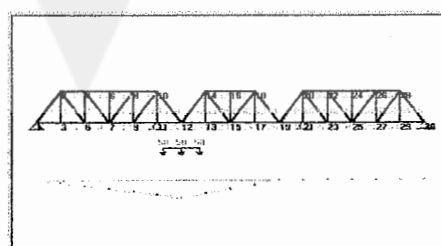
Tumpuan 1 (Posisi Nilai Maksimum)



Tumpuan 1 (Posisi Nilai Minimum)



Tumpuan 11 (Posisi Nilai Maksimum)



LAMPIRAN G

KASUS 3G.1. DATA INPUT PROGRAM SAP 2000 UNTUK MENGANALISIS GARIS
PENGARUH RANGKA BATANG BIDANG

SYSTEM DATA

STEADY STATE LOAD FREQUENCY - - - - - 0.0000E+00
 LENGTH UNITS - - - - - M
 FORCE UNITS - - - - - KN
 UP DIRECTION - - - - - +Z
 GLOBAL DEGREES OF FREEDOM - - - - - ALL
 PAGINATION BY - - - - - LINES
 NUMBER OF LINES PER PAGE - - - - - 59
 INCLUDE WARNING MESSAGES IN OUTPUT FILE - - - - - Y

GENERATED JOINT COORDINATES

JOINT	X	Y	Z
1	0.000	0.000	0.000
2	2.000	0.000	3.000
3	2.000	0.000	0.000
4	4.000	0.000	3.000
5	4.000	0.000	0.000
6	6.000	0.000	3.000
7	6.000	0.000	0.000
8	8.000	0.000	3.000
9	8.000	0.000	0.000
10	10.000	0.000	3.000
11	10.000	0.000	0.000
12	12.000	0.000	0.000
13	14.000	0.000	0.000
14	14.000	0.000	3.000
15	16.000	0.000	0.000
16	16.000	0.000	3.000
17	18.000	0.000	0.000
18	18.000	0.000	3.000
19	20.000	0.000	0.000
20	22.000	0.000	3.000
21	22.000	0.000	0.000
22	24.000	0.000	3.000
23	24.000	0.000	0.000
24	26.000	0.000	3.000
25	26.000	0.000	0.000
26	28.000	0.000	3.000
27	28.000	0.000	0.000
28	30.000	0.000	3.000
29	30.000	0.000	0.000
30	32.000	0.000	0.000

RESTRAINT DATA

JOINT	U1	U2	U3	R1	R2	R3
1				R1		R3
2		U2		R1	R2	R3
3		U2		R1	R2	R3
4		U2		R1	R2	R3
5		U2		R1	R2	R3
6		U2		R1	R2	R3
7		U2		R1	R2	R3
8		U2		R1	R2	R3
9		U2		R1	R2	R3

10	U2		R1	R2	R3
11	U2	U3	R1		R3
12	U2		R1	R2	R3
13	U2		R1	R2	R3
14	U2		R1	R2	R3
15	U2		R1	R2	R3
16	U2		R1	R2	R3
17	U2		R1	R2	R3
18	U2		R1	R2	R3
19	U2		R1	R2	R3
20	U2		R1	R2	R3
21	U2	U3	R1		R3
22	U2		R1	R2	R3
23	U2		R1	R2	R3
24	U2		R1	R2	R3
25	U2		R1	R2	R3
26	U2		R1	R2	R3
27	U2		R1	R2	R3
28	U2		R1	R2	R3
29	U2		R1	R2	R3
30	U2	U3	R1		R3

TEMPERATURE DEPENDENT DATA

MATERIAL PROPERTIES

MAT LABEL	TEMP	MODULUS OF ELASTICITY			SHEAR MODULI		
		E1	E2	E3	G12	G13	G23
1FR	0.00	0.100E+08	0.100E+08	0.100E+08	0.385E+07	0.385E+07	0.385E+07
STEEL	0.00	0.200E+09	0.200E+09	0.200E+09	0.769E+08	0.769E+08	0.769E+08
CONC	0.00	0.248E+08	0.248E+08	0.248E+08	0.103E+08	0.103E+08	0.103E+08

FRAME SECTION PROPERTY DATA - PRISMATIC

SECTION LABEL	AXIAL AREA	TORSIONAL CONSTANT	MOMENTS OF INERTIA		SHEAR A2	AREAS A3
			I33	I22		
1	0.250E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

FRAME ELEMENT DATA

ELEMENT LABEL	JOINT END-I	JOINT END-J	ELEMENT LENGTH	END-OFFSET-LENGTHS		RIGID-END FACTOR	NUMBER OF SEGMENTS
				END-I	END-J		
1	1	2	3.606	0.000	0.000	0.0000	4
2	1	3	2.000	0.000	0.000	0.0000	4
3	3	2	3.000	0.000	0.000	0.0000	4
4	3	5	2.000	0.000	0.000	0.0000	4
5	5	2	3.606	0.000	0.000	0.0000	4
6	2	4	2.000	0.000	0.000	0.0000	4
7	5	4	3.000	0.000	0.000	0.0000	4
8	5	7	2.000	0.000	0.000	0.0000	4
9	7	4	3.606	0.000	0.000	0.0000	4
10	4	6	2.000	0.000	0.000	0.0000	4
11	7	6	3.000	0.000	0.000	0.0000	4
12	7	9	2.000	0.000	0.000	0.0000	4
13	7	8	3.606	0.000	0.000	0.0000	4
14	6	8	2.000	0.000	0.000	0.0000	4
15	9	8	3.000	0.000	0.000	0.0000	4
16	9	11	2.000	0.000	0.000	0.0000	4
17	9	10	3.606	0.000	0.000	0.0000	4
18	8	10	2.000	0.000	0.000	0.0000	4
19	11	10	3.000	0.000	0.000	0.0000	4
20	10	12	3.606	0.000	0.000	0.0000	4
21	11	12	2.000	0.000	0.000	0.0000	4
22	12	13	2.000	0.000	0.000	0.0000	4
23	13	15	2.000	0.000	0.000	0.0000	4
24	15	17	2.000	0.000	0.000	0.0000	4

25	17	19	2.000	0.000	0.000	0.0000	4
26	19	21	2.000	0.000	0.000	0.0000	4
27	21	23	2.000	0.000	0.000	0.0000	4
28	23	25	2.000	0.000	0.000	0.0000	4
29	25	27	2.000	0.000	0.000	0.0000	4
30	27	29	2.000	0.000	0.000	0.0000	4
31	29	30	2.000	0.000	0.000	0.0000	4
32	14	16	2.000	0.000	0.000	0.0000	4
33	16	18	2.000	0.000	0.000	0.0000	4
34	20	22	2.000	0.000	0.000	0.0000	4
35	22	24	2.000	0.000	0.000	0.0000	4
36	24	26	2.000	0.000	0.000	0.0000	4
37	26	28	2.000	0.000	0.000	0.0000	4
38	12	14	3.606	0.000	0.000	0.0000	4
39	13	14	3.000	0.000	0.000	0.0000	4
40	15	14	3.606	0.000	0.000	0.0000	4
41	15	16	3.000	0.000	0.000	0.0000	4
42	15	18	3.606	0.000	0.000	0.0000	4
43	17	18	3.000	0.000	0.000	0.0000	4
44	19	18	3.606	0.000	0.000	0.0000	4
45	19	20	3.606	0.000	0.000	0.0000	4
46	20	21	3.000	0.000	0.000	0.0000	4
47	23	20	3.606	0.000	0.000	0.0000	4
48	22	23	3.000	0.000	0.000	0.0000	4
49	22	25	3.606	0.000	0.000	0.0000	4
50	25	24	3.000	0.000	0.000	0.0000	4
51	25	26	3.606	0.000	0.000	0.0000	4
52	27	26	3.000	0.000	0.000	0.0000	4
53	27	28	3.606	0.000	0.000	0.0000	4
54	29	28	3.000	0.000	0.000	0.0000	4
55	28	30	3.606	0.000	0.000	0.0000	4

BRIDGE DATA

LANE	ELT	ECCEN	ELT	ECCEN	ELT	ECCEN	ELT	ECCEN
LANE1	2	0.0	4	0.0	8	0.0	12	0.0
	16	0.0	21	0.0	22	0.0	23	0.0
	24	0.0	25	0.0	26	0.0	27	0.0
	28	0.0	29	0.0	30	0.0	31	0.0

BRIDGE VEHICLE LOAD DATA

VEHICLE LABEL GEN1
 VEHICLE TYPE GEN
 USE FOR NEGATIVE MOMENTS YES
 USE FOR VERTICAL FORCES YES
 USE FOR OTHER RESPONSES YES

UNIFORM LOAD	AXLE DISTANCES		AXLE WEIGHT	FLOATING AXLE WEIGHTS		
	MIN	MAX		PX	PM	PXM
0.00	1.50	1.50	50.00			
0.00	1.50	1.50	50.00			
0.00	1.50	1.50	50.00			
0.00				0.00	0.00	0.00

BRIDGE VEHICLE CLASS DATA

CLASS LABEL	VEHICLE LABEL	SCALE FACTOR
VECL1	GEN1	1.000

MOVING LOADS DATA

QUICK RESPONSE CALCULATION = 0
 CALCULATE CORRESPONDING VALUES = YES
 TRUCK INFLUENCE TOLERANCE = 0.10E-03

MOVE REDUCTION VEHICLE SCALE LANES LOADED LANE

LABEL	FACTORS	CLASS	FACTOR	MIN	MAX	LABEL
MOVE1	0.100E+01					
		VECL1	0.100E+01	0	ALL	LANE1

BRIDGE RESPONSE DATA

NO MOVING LOAD RESPONSE CALCULATED FOR JOINT DISPLACEMENTS

NO MOVING LOAD RESPONSE CALCULATED FOR JOINT SPRINGS

MOVING LOAD RESPONSE WILL BE CALCULATED FOR ALL JOINT REACTIONS

MOVING LOAD RESPONSE WILL BE CALCULATED FOR ALL FRAME ELEMENTS

INPUT COMPLETE



**G.2. DATA OUTPUT PROGRAM SAP 2000 UNTUK MENGANALISIS GARIS
PENGARUH RANGKA BATANG BIDANG**

RESTRAINT FORCES (REACTIONS)

FORCES AND MOMENTS ACTING ON JOINTS, IN GLOBAL COORDINATES

MOVE MOVE1 ----- MAX

JOINT	FX	FY	FZ	MX	MY	MZ
1	.000000	.000000	127.500000	.000000	.000000	.000000
11	.000000	.000000	161.250000	.000000	.000000	.000000

MOVE MOVE1 ----- MIN

JOINT	FX	FY	FZ	MX	MY	MZ
1	.000000	.000000	-24.375000	.000000	.000000	.000000

FRAME ELEMENT INTERNAL FORCES

ELEM 7 ===== LENGTH = 3.000000

MOVE MOVE1 ----- MAX

REL DIST	P	V2	V3	T	M2	M3
0.00000	37.500000	.000000	.000000	.000000	.000000	.000000
0.25000	37.500000	.000000	.000000	.000000	.000000	.000000
0.50000	37.500000	.000000	.000000	.000000	.000000	.000000
0.75000	37.500000	.000000	.000000	.000000	.000000	.000000
1.00000	37.500000	.000000	.000000	.000000	.000000	.000000

MOVE MOVE1 ----- MIN

REL DIST	P	V2	V3	T	M2	M3
0.00000	-37.500000	.000000	.000000	.000000	.000000	.000000
0.25000	-37.500000	.000000	.000000	.000000	.000000	.000000
0.50000	-37.500000	.000000	.000000	.000000	.000000	.000000
0.75000	-37.500000	.000000	.000000	.000000	.000000	.000000
1.00000	-37.500000	.000000	.000000	.000000	.000000	.000000

ELEM 8 ===== LENGTH = 2.000000

MOVE MOVE1 ----- MAX

REL DIST	P	V2	V3	T	M2	M3
0.00000	95.000000	.000000	.000000	.000000	.000000	.000000
0.25000	95.000000	12.500000	.000000	.000000	.000000	18.750000
0.50000	95.000000	25.000000	.000000	.000000	.000000	25.000000
0.75000	95.000000	37.500000	.000000	.000000	.000000	18.750000
1.00000	95.000000	62.500000	.000000	.000000	.000000	.000000

MOVE MOVE1 ----- MIN

REL DIST	P	V2	V3	T	M2	M3
0.00000	-32.500000	-62.500000	.000000	.000000	.000000	.000000
0.25000	-32.500000	-37.500000	.000000	.000000	.000000	.000000
0.50000	-32.500000	-25.000000	.000000	.000000	.000000	.000000
0.75000	-32.500000	-12.500000	.000000	.000000	.000000	.000000
1.00000	-32.500000	.000000	.000000	.000000	.000000	.000000

ELEM 9 ===== LENGTH = 3.605551

MOVE MOVE1 ----- MAX

REL DIST	P	V2	V3	T	M2	M3
0.00000	45.069391	.000000	.000000	.000000	.000000	.000000
0.25000	45.069391	.000000	.000000	.000000	.000000	.000000
0.50000	45.069391	.000000	.000000	.000000	.000000	.000000
0.75000	45.069391	.000000	.000000	.000000	.000000	.000000

1.00000 45.069391 .000000 .000000 .000000 .000000 .000000

MOVE MOVE1 ----- MIN

REL DIST	P	V2	V3	T	M2	M3
0.00000	-45.069391	.000000	.000000	.000000	.000000	.000000
0.25000	-45.069391	.000000	.000000	.000000	.000000	.000000
0.50000	-45.069391	.000000	.000000	.000000	.000000	.000000
0.75000	-45.069391	.000000	.000000	.000000	.000000	.000000
1.00000	-45.069391	.000000	.000000	.000000	.000000	.000000

ELEM 10 ===== LENGTH = 2.000000

MOVE MOVE1 ----- MAX

REL DIST	P	V2	V3	T	M2	M3
0.00000	48.750000	.000000	.000000	.000000	.000000	.000000
0.25000	48.750000	.000000	.000000	.000000	.000000	.000000
0.50000	48.750000	.000000	.000000	.000000	.000000	.000000
0.75000	48.750000	.000000	.000000	.000000	.000000	.000000
1.00000	48.750000	.000000	.000000	.000000	.000000	.000000

MOVE MOVE1 ----- MIN

REL DIST	P	V2	V3	T	M2	M3
0.00000	-95.000000	.000000	.000000	.000000	.000000	.000000
0.25000	-95.000000	.000000	.000000	.000000	.000000	.000000
0.50000	-95.000000	.000000	.000000	.000000	.000000	.000000
0.75000	-95.000000	.000000	.000000	.000000	.000000	.000000
1.00000	-95.000000	.000000	.000000	.000000	.000000	.000000

ELEM 16 ===== LENGTH = 2.000000

MOVE MOVE1 ----- MIN

REL DIST	P	V2	V3	T	M2	M3
0.00000	-81.250000	-62.500000	.000000	.000000	.000000	.000000
0.25000	-81.250000	-37.500000	.000000	.000000	.000000	.000000
0.50000	-81.250000	-25.000000	.000000	.000000	.000000	.000000
0.75000	-81.250000	-12.500000	.000000	.000000	.000000	.000000
1.00000	-81.250000	.000000	.000000	.000000	.000000	.000000

ELEM 19 ===== LENGTH = 3.000000

MOVE MOVE1 ----- MIN

REL DIST	P	V2	V3	T	M2	M3
0.00000	-146.250000	.000000	.000000	.000000	.000000	.000000
0.25000	-146.250000	.000000	.000000	.000000	.000000	.000000
0.50000	-146.250000	.000000	.000000	.000000	.000000	.000000
0.75000	-146.250000	.000000	.000000	.000000	.000000	.000000
1.00000	-146.250000	.000000	.000000	.000000	.000000	.000000

ELEM 20 ===== LENGTH = 3.605551

MOVE MOVE1 ----- MAX

REL DIST	P	V2	V3	T	M2	M3
0.00000	146.475521	.000000	.000000	.000000	.000000	.000000
0.25000	146.475521	.000000	.000000	.000000	.000000	.000000
0.50000	146.475521	.000000	.000000	.000000	.000000	.000000
0.75000	146.475521	.000000	.000000	.000000	.000000	.000000
1.00000	146.475521	.000000	.000000	.000000	.000000	.000000

LAMPIRAN H

KASUS 4H.1. DATA INPUT PROGRAM GARIS PENGARUH RANGKA BATANG BIDANG

Data Struktural

14	4	1000000	
1	0	0	
2	3	0	
3	6	0	
4	9	0	
5	12	0	
6	0	4	
7	3	4	
8	6	4	
9	9	4	
10	12	4	
11	1.5	2	
12	4.5	2	
13	7.5	2	
14	10.5	2	
25			
1	1	2	0.35
2	2	3	0.35
3	3	4	0.35
4	4	5	0.35
5	6	7	0.35
6	7	8	0.35
7	8	9	0.35
8	9	10	0.35
9	1	6	0.35
10	2	7	0.35
11	3	8	0.35
12	4	9	0.35
13	5	10	0.35
14	1	11	0.35
15	11	7	0.35
16	7	12	0.35
17	12	3	0.35
18	3	13	0.35
19	13	9	0.35
20	9	14	0.35
21	14	5	0.35
22	11	2	0.35
23	2	12	0.35
24	13	4	0.35
25	4	14	0.35
3			
1	1	1	
3	0	1	
5	0	1	
4			
1			
2			
3			
4			

Data Beban Berjalan

1	0	
0	2	
	9	0
	11	3
	0	

H.2. DATA OUTPUT PROGRAM GARIS PENGARUH RANGKA BATANG BIDANG

Nilai Ekstrim Gaya Batang

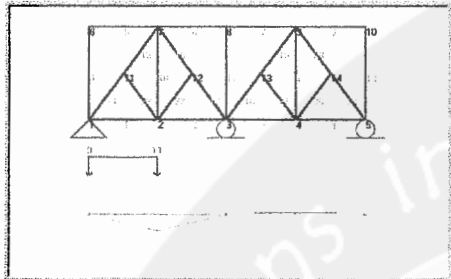
BATANG	MAX	MIN
1	3.85467	-0.2703292
2	3.854673	-0.2703294
3	3.854671	-0.27033
4	3.854673	-0.2703277
5	0	0
6	0.5406552	0
7	0.5406552	0
8	0	-2.917962E-07
9	0	0
10	11	-1.094236E-07
11	0	0
12	11	-1.231015E-07
13	0	0
14	0.4505459	-6.424456
15	0.4505458	-6.424453
16	0	-7.325544
17	0	-7.325546
18	0	-7.325547
19	0	-7.325547
20	0.4505465	-6.424454
21	0.4505463	-6.424456
22	5.546774E-06	-1.872554E-08
23	4.297404E-06	0
24	2.550757E-08	-3.051683E-07
25	5.546541E-07	0

Nilai Ekstrim Reaksi Tumpuan

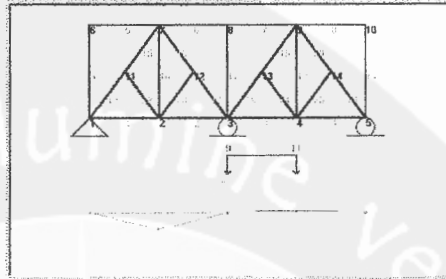
TITIK	MAX	MIN
1	14.13956	-0.3604368
3	16.08981	0
5	15.2051	-0.360437

H.3. TAMPILAN GARIS PENGARUH DAN POSISI BEBAN BERJALAN UNTUK GAYA BATANG DAN REAKSI TUMPUAN

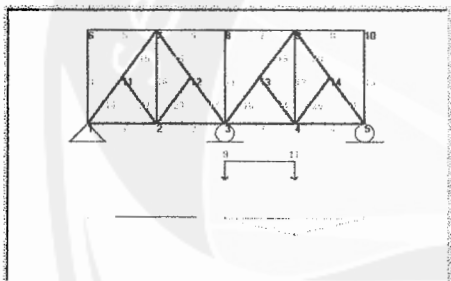
Batang 1 (Posisi Nilai Maksimum)



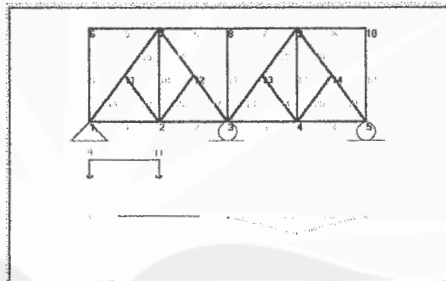
Batang 1 (Posisi Nilai Minimum)



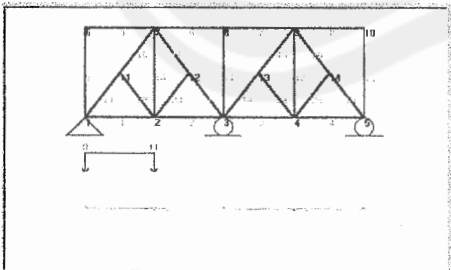
Batang 3 (Posisi Nilai Maksimum)



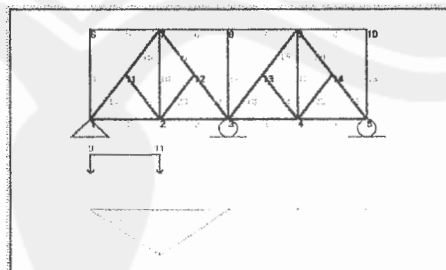
Batang 3 (Posisi Nilai Minimum)



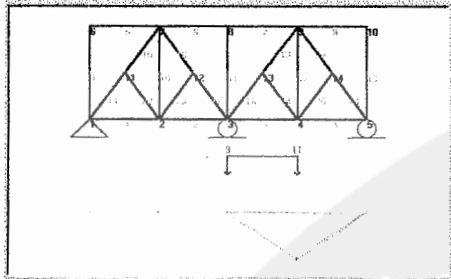
Batang 6 (Posisi Nilai Maksimum)



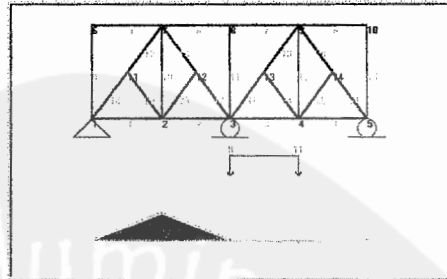
Batang 10 (Posisi Nilai Maksimum)



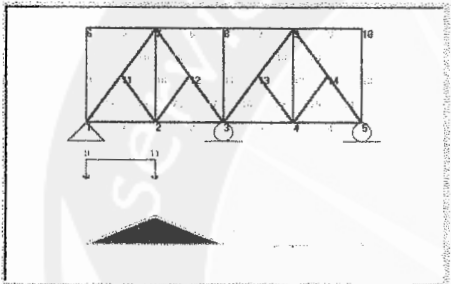
Batang 12 (Posisi Nilai Maksimum)



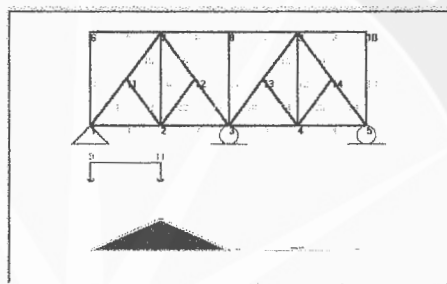
Batang 14 (Posisi Nilai Maksimum)



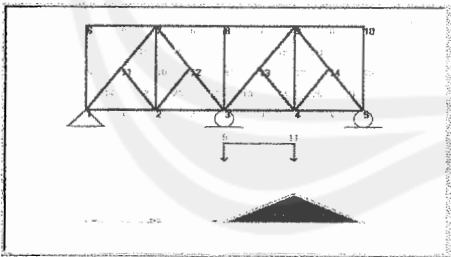
Batang 14 (Posisi Nilai Minimum)



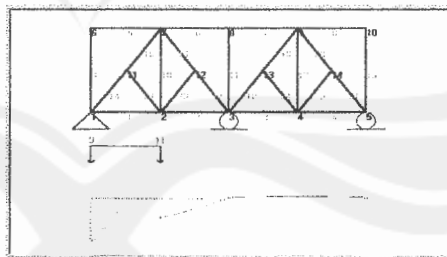
Batang 16 (Posisi Nilai Minimum)



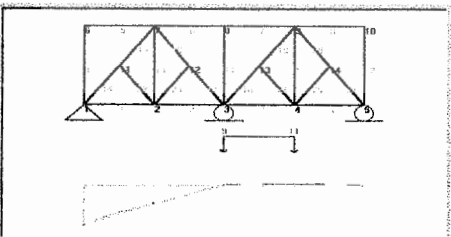
Batang 18 (Posisi Nilai Minimum)



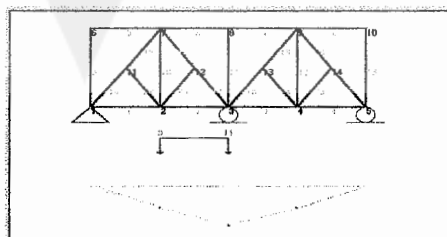
Tumpuan 1 (Posisi Nilai Maksimum)



Tumpuan 1 (Posisi Nilai Minimum)



Tumpuan 3 (Posisi Nilai Maksimum)



LAMPIRAN I

KASUS 4I.1. DATA INPUT PROGRAM SAP 2000 UNTUK MENGANALISIS GARIS
PENGARUH RANGKA BATANG BIDANG

SYSTEM DATA

STEADY STATE LOAD FREQUENCY - - - - - 0.0000E+00
 LENGTH UNITS - - - - - M
 FORCE UNITS - - - - - KN
 UP DIRECTION - - - - - +Z
 GLOBAL DEGREES OF FREEDOM - - - - - ALL
 PAGINATION BY - - - - - LINES
 NUMBER OF LINES PER PAGE - - - - - 59
 INCLUDE WARNING MESSAGES IN OUTPUT FILE - - - - - Y

GENERATED JOINT COORDINATES

JOINT	X	Y	Z
1	0.000	0.000	0.000
2	3.000	0.000	0.000
3	6.000	0.000	0.000
4	9.000	0.000	0.000
5	12.000	0.000	0.000
6	0.000	0.000	4.000
7	3.000	0.000	4.000
8	6.000	0.000	4.000
9	9.000	0.000	4.000
10	12.000	0.000	4.000
11	1.500	0.000	2.000
12	4.500	0.000	2.000
13	7.500	0.000	2.000
14	10.500	0.000	2.000

RESTRAINT DATA

JOINT	U1	U2	U3	R1	R2	R3
1				R1		R3
2		U2		R1	R2	R3
3		U2	U3	R1		R3
4		U2		R1	R2	R3
5		U2	U3	R1		R3
6		U2		R1	R2	R3
7		U2		R1	R2	R3
8		U2		R1	R2	R3
9		U2		R1	R2	R3
10		U2		R1	R2	R3
11		U2		R1	R2	R3
12		U2		R1	R2	R3
13		U2		R1	R2	R3
14		U2		R1	R2	R3

TEMPERATURE DEPENDENT DATA

MATERIAL PROPERTIES

MAT LABEL	TEMP	MODULUS OF ELASTICITY			SHEAR MODULI I		
		E1	E2	E3	G12	G13	G23
1FR	0.00	0.100E+07	0.100E+07	0.100E+07	0.385E+06	0.385E+06	0.385E+06
STEEL	0.00	0.200E+09	0.200E+09	0.200E+09	0.769E+08	0.769E+08	0.769E+08

CONC 0.00 0.248E+08 0.248E+08 0.248E+08 0.103E+08 0.103E+08 0.103E+08

FRAME SECTION PROPERTY DATA - PRISMATIC

SECTION LABEL	AXIAL AREA	TORSIONAL CONSTANT	MOMENTS OF INERTIA		SHEAR AREA	AREAS
			I33	I22	A2	A3
1	0.350E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

FRAME ELEMENT DATA

ELEMENT LABEL	JOINT END-I	JOINT END-J	ELEMENT LENGTH	END-OFFSET-LENGTHS END-I	END-OFFSET-LENGTHS END-J	RIGID-END FACTOR	NUMBER OF SEGMENTS
1	1	2	3.000	0.000	0.000	0.0000	4
2	2	3	3.000	0.000	0.000	0.0000	4
3	3	4	3.000	0.000	0.000	0.0000	4
4	4	5	3.000	0.000	0.000	0.0000	4
5	6	7	3.000	0.000	0.000	0.0000	4
6	7	8	3.000	0.000	0.000	0.0000	4
7	8	9	3.000	0.000	0.000	0.0000	4
8	9	10	3.000	0.000	0.000	0.0000	4
9	1	6	4.000	0.000	0.000	0.0000	4
10	2	7	4.000	0.000	0.000	0.0000	4
11	3	8	4.000	0.000	0.000	0.0000	4
12	4	9	4.000	0.000	0.000	0.0000	4
13	5	10	4.000	0.000	0.000	0.0000	4
14	1	11	2.500	0.000	0.000	0.0000	4
15	11	7	2.500	0.000	0.000	0.0000	4
16	7	12	2.500	0.000	0.000	0.0000	4
17	12	3	2.500	0.000	0.000	0.0000	4
18	3	13	2.500	0.000	0.000	0.0000	4
19	13	9	2.500	0.000	0.000	0.0000	4
20	9	14	2.500	0.000	0.000	0.0000	4
21	14	5	2.500	0.000	0.000	0.0000	4
22	11	2	2.500	0.000	0.000	0.0000	4
23	2	12	2.500	0.000	0.000	0.0000	4
24	13	4	2.500	0.000	0.000	0.0000	4
25	4	14	2.500	0.000	0.000	0.0000	4

BRIDGE DATA

LANE	ELT	ECCEN	ELT	ECCEN	ELT	ECCEN	ELT	ECCEN
LANE1	1	0.0	2	0.0	3	0.0	4	0.0

BRIDGE VEHICLE LOAD DATA

VEHICLE LABEL	VEHICLE TYPE	GEN1	GEN	USE FOR NEGATIVE MOMENTS	USE FOR VERTICAL FORCES	USE FOR OTHER RESPONSES	GEN1	GEN	YES	YES	YES
		GEN1	GEN	YES	YES	YES					
UNIFORM LOAD	AXLE DISTANCES MIN	AXLE DISTANCES MAX	AXLE WEIGHT	FLOATING AXLE WEIGHTS PX	FLOATING AXLE WEIGHTS PM	FLOATING AXLE WEIGHTS PXM					
0.00	3.00	3.00	9.00								
0.00	3.00	3.00	11.00								
0.00				0.00	0.00	0.00					

BRIDGE VEHICLE CLASS DATA

CLASS LABEL	VEHICLE LABEL	SCALE FACTOR
VECL1	GEN1	1.000

MOVING LOADS DATA

QUICK RESPONSE CALCULATION = 0
CALCULATE CORRESPONDING VALUES = YES
TRUCK INFLUENCE TOLERANCE = 0.10E-03

MOVE LABEL	REDUCTION FACTORS	VEHICLE CLASS	SCALE FACTOR	LANES MIN	LOADED MAX	LANE LABEL
------------	-------------------	---------------	--------------	-----------	------------	------------

MOVE1	0.100E+01	VECL1	0.100E+01	0	ALL	LANE1
-------	-----------	-------	-----------	---	-----	-------

BRIDGE RESPONSE DATA

NO MOVING LOAD RESPONSE CALCULATED FOR JOINT DISPLACEMENTS

NO MOVING LOAD RESPONSE CALCULATED FOR JOINT SPRINGS

MOVING LOAD RESPONSE WILL BE CALCULATED FOR ALL JOINT REACTIONS

MOVING LOAD RESPONSE WILL BE CALCULATED FOR ALL FRAME ELEMENTS

INPUT COMPLETE

**I.2. DATA OUTPUT PROGRAM SAP 2000 UNTUK MENGANALISIS GARIS
PENGARUH RANGKA BATANG BIDANG**

RESTRAINT FORCES (REACTIONS)

FORCES AND MOMENTS ACTING ON JOINTS, IN GLOBAL COORDINATES

MOVE MOVE1 ----- MAX

JOINT	FX	FY	FZ	MX	MY	MZ
1	.000000	.000000	15.205097	.000000	.000000	.000000
3	.000000	.000000	16.089806	.000000	.000000	.000000
5	.000000	.000000	15.205097	.000000	.000000	.000000

MOVE MOVE1 ----- MIN

JOINT	FX	FY	FZ	MX	MY	MZ
1	.000000	.000000	-0.360437	.000000	.000000	.000000
5	.000000	.000000	-0.360437	.000000	.000000	.000000

FRAME ELEMENT INTERNAL FORCES

ELEM 1 ===== LENGTH = 3.000000

MOVE MOVE1 ----- MAX

REL DIST	P	V2	V3	T	M2	M3
0.00000	3.854672	.000000	.000000	.000000	.000000	.000000
0.25000	3.854672	2.750000	.000000	.000000	.000000	6.187500
0.50000	3.854672	5.500000	.000000	.000000	.000000	8.250000
0.75000	3.854672	8.250000	.000000	.000000	.000000	6.187500
1.00000	3.854672	11.000000	.000000	.000000	.000000	.000000

MOVE MOVE1 ----- MIN

REL DIST	P	V2	V3	T	M2	M3
0.00000	-0.270328	-11.000000	.000000	.000000	.000000	.000000
0.25000	-0.270328	-8.250000	.000000	.000000	.000000	.000000
0.50000	-0.270328	-5.500000	.000000	.000000	.000000	.000000
0.75000	-0.270328	-2.750000	.000000	.000000	.000000	.000000
1.00000	-0.270328	.000000	.000000	.000000	.000000	.000000

ELEM 2 ===== LENGTH = 3.000000

MOVE MOVE1 ----- MAX

REL DIST	P	V2	V3	T	M2	M3
0.00000	3.854672	.000000	.000000	.000000	.000000	.000000
0.25000	3.854672	2.750000	.000000	.000000	.000000	6.187500
0.50000	3.854672	5.500000	.000000	.000000	.000000	8.250000
0.75000	3.854672	8.250000	.000000	.000000	.000000	6.187500
1.00000	3.854672	11.000000	.000000	.000000	.000000	.000000

MOVE MOVE1 ----- MIN

REL DIST	P	V2	V3	T	M2	M3
0.00000	-0.270328	-11.000000	.000000	.000000	.000000	.000000
0.25000	-0.270328	-8.250000	.000000	.000000	.000000	.000000
0.50000	-0.270328	-5.500000	.000000	.000000	.000000	.000000
0.75000	-0.270328	-2.750000	.000000	.000000	.000000	.000000
1.00000	-0.270328	.000000	.000000	.000000	.000000	.000000

ELEM 3 ===== LENGTH = 3.000000

MOVE MOVE1 ----- MAX

REL DIST	P	V2	V3	T	M2	M3
0.00000	3.854672	.000000	.000000	.000000	.000000	.000000

0.25000	3.854672	2.750000	.000000	.000000	.000000	6.187500
0.50000	3.854672	5.500000	.000000	.000000	.000000	8.250000
0.75000	3.854672	8.250000	.000000	.000000	.000000	6.187500
1.00000	3.854672	11.000000	.000000	.000000	.000000	.000000

MOVE MOVE1 ----- MIN

REL DIST	P	V2	V3	T	M2	M3
0.00000	-0.270328	-11.000000	.000000	.000000	.000000	.000000
0.25000	-0.270328	-8.250000	.000000	.000000	.000000	.000000
0.50000	-0.270328	-5.500000	.000000	.000000	.000000	.000000
0.75000	-0.270328	-2.750000	.000000	.000000	.000000	.000000
1.00000	-0.270328	.000000	.000000	.000000	.000000	.000000

ELEM 4 ===== LENGTH = 3.000000

MOVE MOVE1 ----- MAX

REL DIST	P	V2	V3	T	M2	M3
0.00000	3.854672	.000000	.000000	.000000	.000000	.000000
0.25000	3.854672	2.750000	.000000	.000000	.000000	6.187500
0.50000	3.854672	5.500000	.000000	.000000	.000000	8.250000
0.75000	3.854672	8.250000	.000000	.000000	.000000	6.187500
1.00000	3.854672	11.000000	.000000	.000000	.000000	.000000

MOVE MOVE1 ----- MIN

REL DIST	P	V2	V3	T	M2	M3
0.00000	-0.270328	-11.000000	.000000	.000000	.000000	.000000
0.25000	-0.270328	-8.250000	.000000	.000000	.000000	.000000
0.50000	-0.270328	-5.500000	.000000	.000000	.000000	.000000
0.75000	-0.270328	-2.750000	.000000	.000000	.000000	.000000
1.00000	-0.270328	.000000	.000000	.000000	.000000	.000000

ELEM 6 ===== LENGTH = 3.000000

MOVE MOVE1 ----- MAX

REL DIST	P	V2	V3	T	M2	M3
0.00000	0.540655	.000000	.000000	.000000	.000000	.000000
0.25000	0.540655	.000000	.000000	.000000	.000000	.000000
0.50000	0.540655	.000000	.000000	.000000	.000000	.000000
0.75000	0.540655	.000000	.000000	.000000	.000000	.000000
1.00000	0.540655	.000000	.000000	.000000	.000000	.000000

ELEM 7 ===== LENGTH = 3.000000

MOVE MOVE1 ----- MAX

REL DIST	P	V2	V3	T	M2	M3
0.00000	0.540655	.000000	.000000	.000000	.000000	.000000
0.25000	0.540655	.000000	.000000	.000000	.000000	.000000
0.50000	0.540655	.000000	.000000	.000000	.000000	.000000
0.75000	0.540655	.000000	.000000	.000000	.000000	.000000
1.00000	0.540655	.000000	.000000	.000000	.000000	.000000

ELEM 10 ===== LENGTH = 4.000000

MOVE MOVE1 ----- MAX

REL DIST	P	V2	V3	T	M2	M3
0.00000	11.000000	.000000	.000000	.000000	.000000	.000000
0.25000	11.000000	.000000	.000000	.000000	.000000	.000000
0.50000	11.000000	.000000	.000000	.000000	.000000	.000000
0.75000	11.000000	.000000	.000000	.000000	.000000	.000000
1.00000	11.000000	.000000	.000000	.000000	.000000	.000000

ELEM 12 ===== LENGTH = 4.000000

MOVE MOVE1 ----- MAX

REL DIST	P	V2	V3	T	M2	M3
0.00000	11.000000	.000000	.000000	.000000	.000000	.000000
0.25000	11.000000	.000000	.000000	.000000	.000000	.000000
0.50000	11.000000	.000000	.000000	.000000	.000000	.000000
0.75000	11.000000	.000000	.000000	.000000	.000000	.000000
1.00000	11.000000	.000000	.000000	.000000	.000000	.000000

ELEM 14 ===== LENGTH = 2.500000

MOVE MOVE1 ----- MAX

REL DIST	P	V2	V3	T	M2	M3
0.00000	0.450546	.000000	.000000	.000000	.000000	.000000
0.25000	0.450546	.000000	.000000	.000000	.000000	.000000
0.50000	0.450546	.000000	.000000	.000000	.000000	.000000
0.75000	0.450546	.000000	.000000	.000000	.000000	.000000
1.00000	0.450546	.000000	.000000	.000000	.000000	.000000

MOVE MOVE1 ----- MIN

REL DIST	P	V2	V3	T	M2	M3
0.00000	-6.424454	.000000	.000000	.000000	.000000	.000000
0.25000	-6.424454	.000000	.000000	.000000	.000000	.000000
0.50000	-6.424454	.000000	.000000	.000000	.000000	.000000
0.75000	-6.424454	.000000	.000000	.000000	.000000	.000000
1.00000	-6.424454	.000000	.000000	.000000	.000000	.000000

ELEM 15 ===== LENGTH = 2.500000

MOVE MOVE1 ----- MAX

REL DIST	P	V2	V3	T	M2	M3
0.00000	0.450546	.000000	.000000	.000000	.000000	.000000
0.25000	0.450546	.000000	.000000	.000000	.000000	.000000
0.50000	0.450546	.000000	.000000	.000000	.000000	.000000
0.75000	0.450546	.000000	.000000	.000000	.000000	.000000
1.00000	0.450546	.000000	.000000	.000000	.000000	.000000

MOVE MOVE1 ----- MIN

REL DIST	P	V2	V3	T	M2	M3
0.00000	-6.424454	.000000	.000000	.000000	.000000	.000000
0.25000	-6.424454	.000000	.000000	.000000	.000000	.000000
0.50000	-6.424454	.000000	.000000	.000000	.000000	.000000
0.75000	-6.424454	.000000	.000000	.000000	.000000	.000000
1.00000	-6.424454	.000000	.000000	.000000	.000000	.000000

ELEM 16 ===== LENGTH = 2.500000

MOVE MOVE1 ----- MIN

REL DIST	P	V2	V3	T	M2	M3
0.00000	-7.325546	.000000	.000000	.000000	.000000	.000000
0.25000	-7.325546	.000000	.000000	.000000	.000000	.000000
0.50000	-7.325546	.000000	.000000	.000000	.000000	.000000
0.75000	-7.325546	.000000	.000000	.000000	.000000	.000000
1.00000	-7.325546	.000000	.000000	.000000	.000000	.000000

ELEM 17 ===== LENGTH = 2.500000

MOVE MOVE1 ----- MIN

REL DIST	P	V2	V3	T	M2	M3
0.00000	-7.325546	.000000	.000000	.000000	.000000	.000000
0.25000	-7.325546	.000000	.000000	.000000	.000000	.000000
0.50000	-7.325546	.000000	.000000	.000000	.000000	.000000
0.75000	-7.325546	.000000	.000000	.000000	.000000	.000000
1.00000	-7.325546	.000000	.000000	.000000	.000000	.000000

ELEM 18 ===== LENGTH = 2.500000

MOVE MOVE1 ----- MIN

REL DIST	P	V2	V3	T	M2	M3
0.00000	-7.325546	.000000	.000000	.000000	.000000	.000000
0.25000	-7.325546	.000000	.000000	.000000	.000000	.000000
0.50000	-7.325546	.000000	.000000	.000000	.000000	.000000
0.75000	-7.325546	.000000	.000000	.000000	.000000	.000000
1.00000	-7.325546	.000000	.000000	.000000	.000000	.000000

ELEM 19 ===== LENGTH = 2.500000

MOVE MOVE1 ----- MIN

REL DIST	P	V2	V3	T	M2	M3
0.00000	-7.325546	.000000	.000000	.000000	.000000	.000000
0.25000	-7.325546	.000000	.000000	.000000	.000000	.000000
0.50000	-7.325546	.000000	.000000	.000000	.000000	.000000
0.75000	-7.325546	.000000	.000000	.000000	.000000	.000000
1.00000	-7.325546	.000000	.000000	.000000	.000000	.000000

ELEM 20 ===== LENGTH = 2.500000

MOVE MOVE1 ----- MAX

REL DIST	P	V2	V3	T	M2	M3
0.00000	0.450546	.000000	.000000	.000000	.000000	.000000
0.25000	0.450546	.000000	.000000	.000000	.000000	.000000
0.50000	0.450546	.000000	.000000	.000000	.000000	.000000
0.75000	0.450546	.000000	.000000	.000000	.000000	.000000
1.00000	0.450546	.000000	.000000	.000000	.000000	.000000

MOVE MOVE1 ----- MIN

REL DIST	P	V2	V3	T	M2	M3
0.00000	-6.424454	.000000	.000000	.000000	.000000	.000000
0.25000	-6.424454	.000000	.000000	.000000	.000000	.000000
0.50000	-6.424454	.000000	.000000	.000000	.000000	.000000
0.75000	-6.424454	.000000	.000000	.000000	.000000	.000000
1.00000	-6.424454	.000000	.000000	.000000	.000000	.000000

ELEM 21 ===== LENGTH = 2.500000

MOVE MOVE1 ----- MAX

REL DIST	P	V2	V3	T	M2	M3
0.00000	0.450546	.000000	.000000	.000000	.000000	.000000
0.25000	0.450546	.000000	.000000	.000000	.000000	.000000
0.50000	0.450546	.000000	.000000	.000000	.000000	.000000
0.75000	0.450546	.000000	.000000	.000000	.000000	.000000
1.00000	0.450546	.000000	.000000	.000000	.000000	.000000

MOVE MOVE1 ----- MIN

REL DIST	P	V2	V3	T	M2	M3
0.00000	-6.424454	.000000	.000000	.000000	.000000	.000000
0.25000	-6.424454	.000000	.000000	.000000	.000000	.000000
0.50000	-6.424454	.000000	.000000	.000000	.000000	.000000
0.75000	-6.424454	.000000	.000000	.000000	.000000	.000000
1.00000	-6.424454	.000000	.000000	.000000	.000000	.000000

LAMPIRAN J

KASUS 5

J.1. DATA INPUT PROGRAM GARIS PENGARUH RANGKA BATANG BIDANG

Data Struktural

14	4	10000000	
1	0	0	
2	4	0	
3	8	0	
4	12	0	
5	16	0	
6	0	4	
7	4	4	
8	8	4	
9	12	4	
10	16	4	
11	0	2	
12	4	2	
13	12	2	
14	16	2	
25			
1	1	2	0.3
2	2	3	0.3
3	3	4	0.3
4	4	5	0.3
5	6	7	0.3
6	7	8	0.3
7	8	9	0.3
8	9	10	0.3
9	6	11	0.3
10	11	1	0.3
11	7	12	0.3
12	12	2	0.3
13	8	3	0.3
14	9	13	0.3
15	13	4	0.3
16	10	14	0.3
17	14	5	0.3
18	7	11	0.3
19	11	2	0.3
20	8	12	0.3
21	12	3	0.3
22	8	13	0.3
23	13	3	0.3
24	9	14	0.3
25	14	4	0.3
3			
1	1	1	
3	0	1	
5	0	1	
4			
1			
2			
3			
4			

Data Beban Berjalan

1	0
0	2
	4
	6
0	4

J.2. DATA OUTPUT PROGRAM GARIS PENGARUH RANGKA BATANG BIDANG

Nilai Ekstrim Gaya Batang

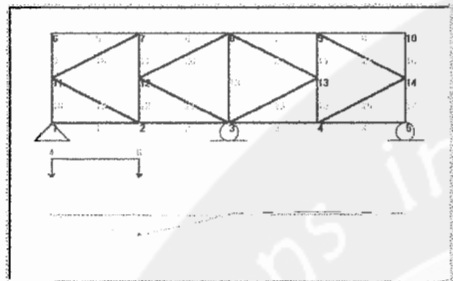
BATANG	MAX	MIN
1	1.628998E-06	0
2	2.703061	-0.2969392
3	2.703059	-0.2969401
4	2.557954E-07	-2.557954E-07
5	0	0
6	0.2969401	-2.703061
7	0.2969398	-2.703059
8	1.278977E-07	0
9	0	0
10	0.2969401	-2.70306
11	1.351531	-0.1484701
12	4.648469	0
13	0	-1.796941
14	1.351531	-0.1484699
15	4.648469	0
16	0	0
17	0.2969401	-2.70306
18	0.3319891	-3.022113
19	3.022113	-0.3319891
20	3.686091	0
21	0	-3.686092
22	3.686089	0
23	0	-3.686089
24	0.3319889	-3.022111
25	3.022112	-0.3319891

Nilai Ekstrim Reaksi Tumpuan

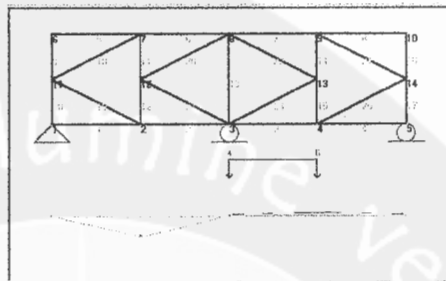
TITIK	MAX	MIN
1	6.70306	-0.2969401
3	8.395921	0
5	7.80204	-0.2969401

J.3. TAMPILAN GARIS PENGARUH DAN POSISI BEBAN BERJALAN UNTUK GAYA BATANG DAN REAKSI TUMPUAN

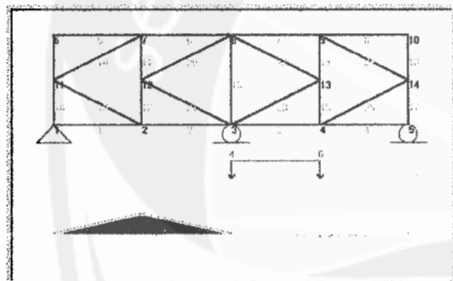
Batang 2 (Posisi Nilai Maksimum)



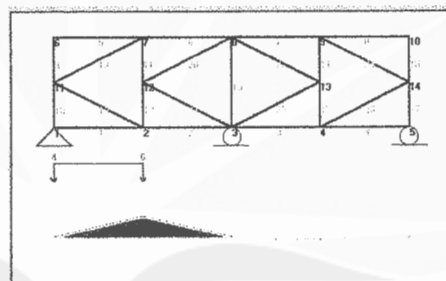
Batang 2 (Posisi Nilai Minimum)



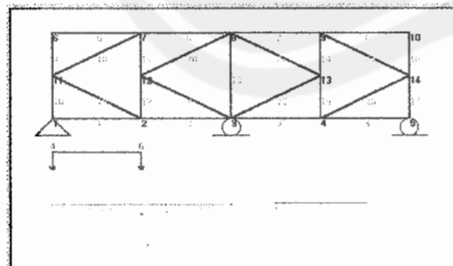
Batang 6 (Posisi Nilai Maksimum)



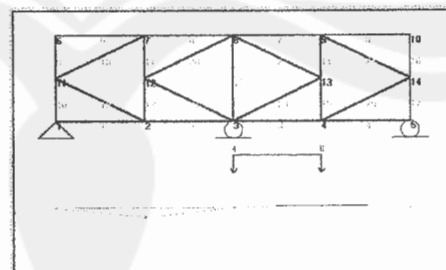
Batang 6 (Posisi Nilai Minimum)



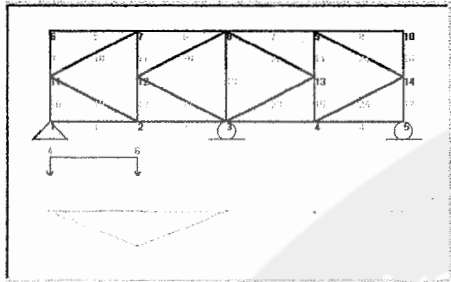
Batang 11 (Posisi Nilai Maksimum)



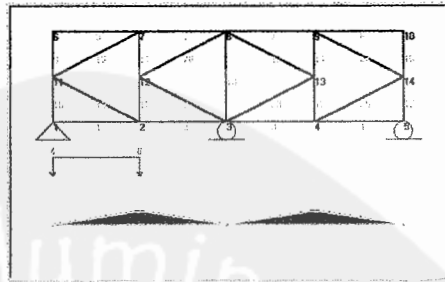
Batang 11 (Posisi Nilai Minimum)



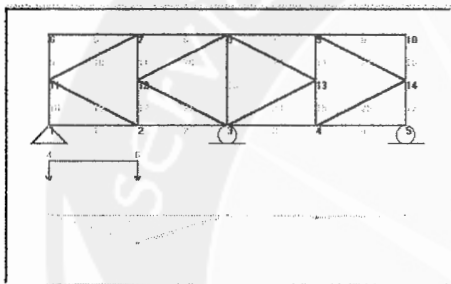
Batang 12 (Posisi Nilai Maksimum)



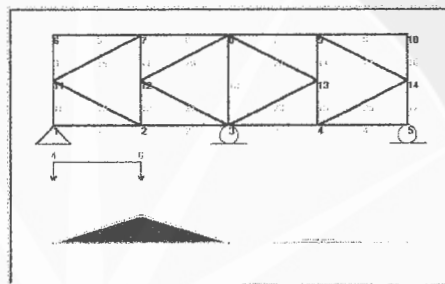
Batang 13 (Posisi Nilai Minimum)



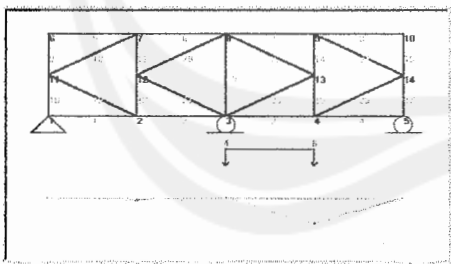
Batang 20 (Posisi Nilai Maksimum)



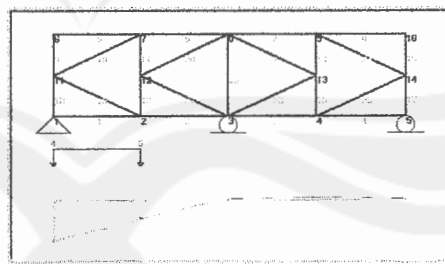
Batang 21 (Posisi Nilai Minimum)



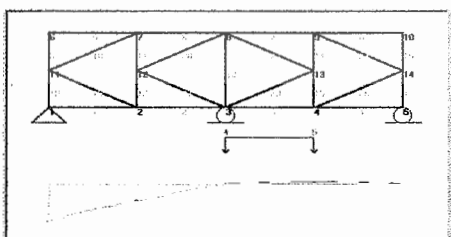
Batang 22 (Posisi Nilai Maksimum)



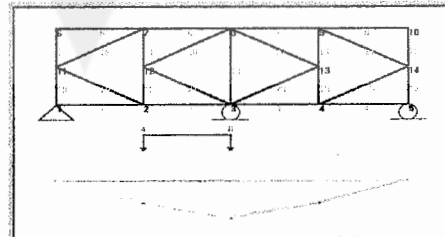
Tumpuan 1 (Posisi Nilai Maksimum)



Tumpuan 1 (Posisi Nilai Minimum)



Tumpuan 3 (Posisi Nilai Maksimum)



LAMPIRAN K

KASUS 5

K.1. DATA INPUT PROGRAM SAP 2000 UNTUK MENGANALISIS GARIS
PENGARUH RANGKA BATANG BIDANG

SYSTEM DATA

STEADY STATE LOAD FREQUENCY - - - - - 0.0000E+00
 LENGTH UNITS - - - - - M
 FORCE UNITS - - - - - KN
 UP DIRECTION - - - - - +Z
 GLOBAL DEGREES OF FREEDOM - - - - - ALL
 PAGINATION BY - - - - - LINES
 NUMBER OF LINES PER PAGE - - - - - 59
 INCLUDE WARNING MESSAGES IN OUTPUT FILE - - - - - Y

GENERATED JOINT COORDINATES

JOINT	X	Y	Z
1	0.000	0.000	0.000
2	4.000	0.000	0.000
3	8.000	0.000	0.000
4	12.000	0.000	0.000
5	16.000	0.000	0.000
6	0.000	0.000	4.000
7	4.000	0.000	4.000
8	8.000	0.000	4.000
9	12.000	0.000	4.000
10	16.000	0.000	4.000
11	0.000	0.000	2.000
12	4.000	0.000	2.000
13	12.000	0.000	2.000
14	16.000	0.000	2.000

RESTRAINT DATA

JOINT	U1	U2	U3	R1	R2	R3
1				R1		R3
2		U2		R1	R2	R3
3		U2	U3	R1		R3
4		U2		R1	R2	R3
5		U2	U3	R1		R3
6		U2		R1	R2	R3
7		U2		R1	R2	R3
8		U2		R1	R2	R3
9		U2		R1	R2	R3
10		U2		R1	R2	R3
11		U2		R1	R2	R3
12		U2		R1	R2	R3
13		U2		R1	R2	R3
14		U2		R1	R2	R3

TEMPERATURE DEPENDENT DATA

MATERIAL PROPERTIES

MAT LABEL	TEMP	MODULUS OF ELASTICITY			SHEAR MODULI		
		E1	E2	E3	G12	G13	G23
1FR	0.00	0.100E+08	0.100E+08	0.100E+08	0.385E+07	0.385E+07	0.385E+07
STEEL	0.00	0.200E+09	0.200E+09	0.200E+09	0.769E+08	0.769E+08	0.769E+08

CONC 0.00 0.248E+08 0.248E+08 0.248E+08 0.103E+08 0.103E+08 0.103E+08

FRAME SECTION PROPERTY DATA - PRISMATIC

SECTION LABEL	AXIAL AREA	TORSIONAL CONSTANT	MOMENTS OF INERTIA		SHEAR AREA	AREAS
			I33	I22	A2	A3
1	0.300E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

FRAME ELEMENT DATA

ELEMENT LABEL	JOINT END-I	JOINT END-J	ELEMENT LENGTH	END-OFFSET-LENGTHS END-I	END-OFFSET-LENGTHS END-J	RIGID-END FACTOR	NUMBER OF SEGMENTS
1	1	2	4.000	0.000	0.000	0.0000	4
2	2	3	4.000	0.000	0.000	0.0000	4
3	3	4	4.000	0.000	0.000	0.0000	4
4	4	5	4.000	0.000	0.000	0.0000	4
5	6	7	4.000	0.000	0.000	0.0000	4
6	7	8	4.000	0.000	0.000	0.0000	4
7	8	9	4.000	0.000	0.000	0.0000	4
8	9	10	4.000	0.000	0.000	0.0000	4
9	6	11	2.000	0.000	0.000	0.0000	4
10	11	1	2.000	0.000	0.000	0.0000	4
11	7	12	2.000	0.000	0.000	0.0000	4
12	12	2	2.000	0.000	0.000	0.0000	4
13	8	3	4.000	0.000	0.000	0.0000	4
14	9	13	2.000	0.000	0.000	0.0000	4
15	13	4	2.000	0.000	0.000	0.0000	4
16	10	14	2.000	0.000	0.000	0.0000	4
17	14	5	2.000	0.000	0.000	0.0000	4
18	7	11	4.472	0.000	0.000	0.0000	4
19	11	2	4.472	0.000	0.000	0.0000	4
20	8	12	4.472	0.000	0.000	0.0000	4
21	12	3	4.472	0.000	0.000	0.0000	4
22	8	13	4.472	0.000	0.000	0.0000	4
23	13	3	4.472	0.000	0.000	0.0000	4
24	9	14	4.472	0.000	0.000	0.0000	4
25	14	4	4.472	0.000	0.000	0.0000	4

BRIDGE DATA

LANE	ELT	ECCEN	ELT	ECCEN	ELT	ECCEN	ELT	ECCEN
LANE1	1	0.0	2	0.0	3	0.0	4	0.0

BRIDGE VEHICLE LOAD DATA

VEHICLE LABEL	VEHICLE TYPE	USE FOR NEGATIVE MOMENTS	USE FOR VERTICAL FORCES	USE FOR OTHER RESPONSES	GEN1	GEN	YES	YES	YES
					GEN1	GEN	YES	YES	YES
UNIFORM LOAD	AXLE DISTANCES MIN	AXLE DISTANCES MAX	AXLE WEIGHT	FLOATING AXLE WEIGHTS PX	AXLE WEIGHTS PM	AXLE WEIGHTS PXM			
0.00	4.00	4.00	4.00						
0.00	4.00	4.00	6.00						
0.00				0.00	0.00	0.00			0.00

BRIDGE VEHICLE CLASS DATA

CLASS LABEL	VEHICLE LABEL	SCALE FACTOR
VECL1	GEN1	1.000

MOVING LOADS DATA

QUICK RESPONSE CALCULATION = 0
 CALCULATE CORRESPONDING VALUES = YES
 TRUCK INFLUENCE TOLERANCE = 0.10E-03

MOVE LABEL	REDUCTION FACTORS	VEHICLE CLASS	SCALE FACTOR	LANES MIN	LOADED MAX	LANE LABEL
------------	-------------------	---------------	--------------	-----------	------------	------------

MOVE1	0.100E+01	VECL1	0.100E+01	0	ALL	LANE1
-------	-----------	-------	-----------	---	-----	-------

BRIDGE RESPONSE DATA

NO MOVING LOAD RESPONSE CALCULATED FOR JOINT DISPLACEMENTS

NO MOVING LOAD RESPONSE CALCULATED FOR JOINT SPRINGS

MOVING LOAD RESPONSE WILL BE CALCULATED FOR ALL JOINT REACTIONS

MOVING LOAD RESPONSE WILL BE CALCULATED FOR ALL FRAME ELEMENTS

INPUT COMPLETE



**K.2. DATA OUTPUT PROGRAM SAP 2000 UNTUK MENGANALISIS GARIS
PENGARUH RANGKA BATANG BIDANG**

RESTRAINT FORCES (REACTIONS)

FORCES AND MOMENTS ACTING ON JOINTS, IN GLOBAL COORDINATES

MOVE MOVE1 ----- MAX

JOINT	FX	FY	FZ	MX	MY	MZ
1	.000000	.000000	7.802040	.000000	.000000	.000000
3	.000000	.000000	8.395920	.000000	.000000	.000000
5	.000000	.000000	7.802040	.000000	.000000	.000000

MOVE MOVE1 ----- MIN

JOINT	FX	FY	FZ	MX	MY	MZ
1	.000000	.000000	-0.296940	.000000	.000000	.000000
5	.000000	.000000	-0.296940	.000000	.000000	.000000

FRAME ELEMENT INTERNAL FORCES

ELEM 2 ===== LENGTH = 4.000000

MOVE MOVE1 ----- MAX

REL DIST	P	V2	V3	T	M2	M3
0.00000	2.703060	.000000	.000000	.000000	.000000	.000000
0.25000	2.703060	1.500000	.000000	.000000	.000000	4.500000
0.50000	2.703060	3.000000	.000000	.000000	.000000	6.000000
0.75000	2.703060	4.500000	.000000	.000000	.000000	4.500000
1.00000	2.703060	6.000000	.000000	.000000	.000000	.000000

MOVE MOVE1 ----- MIN

REL DIST	P	V2	V3	T	M2	M3
0.00000	-0.296940	-6.000000	.000000	.000000	.000000	.000000
0.25000	-0.296940	-4.500000	.000000	.000000	.000000	.000000
0.50000	-0.296940	-3.000000	.000000	.000000	.000000	.000000
0.75000	-0.296940	-1.500000	.000000	.000000	.000000	.000000
1.00000	-0.296940	.000000	.000000	.000000	.000000	.000000

ELEM 3 ===== LENGTH = 4.000000

MOVE MOVE1 ----- MAX

REL DIST	P	V2	V3	T	M2	M3
0.00000	2.703060	.000000	.000000	.000000	.000000	.000000
0.25000	2.703060	1.500000	.000000	.000000	.000000	4.500000
0.50000	2.703060	3.000000	.000000	.000000	.000000	6.000000
0.75000	2.703060	4.500000	.000000	.000000	.000000	4.500000
1.00000	2.703060	6.000000	.000000	.000000	.000000	.000000

MOVE MOVE1 ----- MIN

REL DIST	P	V2	V3	T	M2	M3
0.00000	-0.296940	-6.000000	.000000	.000000	.000000	.000000
0.25000	-0.296940	-4.500000	.000000	.000000	.000000	.000000
0.50000	-0.296940	-3.000000	.000000	.000000	.000000	.000000
0.75000	-0.296940	-1.500000	.000000	.000000	.000000	.000000
1.00000	-0.296940	.000000	.000000	.000000	.000000	.000000

ELEM 6 ===== LENGTH = 4.000000

MOVE MOVE1 ----- MAX

REL DIST	P	V2	V3	T	M2	M3
0.00000	0.296940	.000000	.000000	.000000	.000000	.000000
0.25000	0.296940	.000000	.000000	.000000	.000000	.000000

0.50000	0.296940	.000000	.000000	.000000	.000000	.000000
0.75000	0.296940	.000000	.000000	.000000	.000000	.000000
1.00000	0.296940	.000000	.000000	.000000	.000000	.000000

MOVE MOVE1 ----- MIN

REL DIST	P	V2	V3	T	M2	M3
0.00000	-2.703060	.000000	.000000	.000000	.000000	.000000
0.25000	-2.703060	.000000	.000000	.000000	.000000	.000000
0.50000	-2.703060	.000000	.000000	.000000	.000000	.000000
0.75000	-2.703060	.000000	.000000	.000000	.000000	.000000
1.00000	-2.703060	.000000	.000000	.000000	.000000	.000000

ELEM 7 ===== LENGTH = 4.000000

MOVE MOVE1 ----- MAX

REL DIST	P	V2	V3	T	M2	M3
0.00000	0.296940	.000000	.000000	.000000	.000000	.000000
0.25000	0.296940	.000000	.000000	.000000	.000000	.000000
0.50000	0.296940	.000000	.000000	.000000	.000000	.000000
0.75000	0.296940	.000000	.000000	.000000	.000000	.000000
1.00000	0.296940	.000000	.000000	.000000	.000000	.000000

MOVE MOVE1 ----- MIN

REL DIST	P	V2	V3	T	M2	M3
0.00000	-2.703060	.000000	.000000	.000000	.000000	.000000
0.25000	-2.703060	.000000	.000000	.000000	.000000	.000000
0.50000	-2.703060	.000000	.000000	.000000	.000000	.000000
0.75000	-2.703060	.000000	.000000	.000000	.000000	.000000
1.00000	-2.703060	.000000	.000000	.000000	.000000	.000000

ELEM 10 ===== LENGTH = 2.000000

MOVE MOVE1 ----- MAX

REL DIST	P	V2	V3	T	M2	M3
0.00000	0.296940	.000000	.000000	.000000	.000000	.000000
0.25000	0.296940	.000000	.000000	.000000	.000000	.000000
0.50000	0.296940	.000000	.000000	.000000	.000000	.000000
0.75000	0.296940	.000000	.000000	.000000	.000000	.000000
1.00000	0.296940	.000000	.000000	.000000	.000000	.000000

MOVE MOVE1 ----- MIN

REL DIST	P	V2	V3	T	M2	M3
0.00000	-2.703060	.000000	.000000	.000000	.000000	.000000
0.25000	-2.703060	.000000	.000000	.000000	.000000	.000000
0.50000	-2.703060	.000000	.000000	.000000	.000000	.000000
0.75000	-2.703060	.000000	.000000	.000000	.000000	.000000
1.00000	-2.703060	.000000	.000000	.000000	.000000	.000000

ELEM 11 ===== LENGTH = 2.000000

MOVE MOVE1 ----- MAX

REL DIST	P	V2	V3	T	M2	M3
0.00000	1.351530	.000000	.000000	.000000	.000000	.000000
0.25000	1.351530	.000000	.000000	.000000	.000000	.000000
0.50000	1.351530	.000000	.000000	.000000	.000000	.000000
0.75000	1.351530	.000000	.000000	.000000	.000000	.000000
1.00000	1.351530	.000000	.000000	.000000	.000000	.000000

MOVE MOVE1 ----- MIN

REL DIST	P	V2	V3	T	M2	M3
0.00000	-0.148470	.000000	.000000	.000000	.000000	.000000
0.25000	-0.148470	.000000	.000000	.000000	.000000	.000000
0.50000	-0.148470	.000000	.000000	.000000	.000000	.000000
0.75000	-0.148470	.000000	.000000	.000000	.000000	.000000

1.00000 -0.148470 .000000 .000000 .000000 .000000 .000000

ELEM 12 ===== LENGTH = 2.000000

MOVE MOVE1 ----- MAX

REL DIST	P	V2	V3	T	M2	M3
0.00000	4.648470	.000000	.000000	.000000	.000000	.000000
0.25000	4.648470	.000000	.000000	.000000	.000000	.000000
0.50000	4.648470	.000000	.000000	.000000	.000000	.000000
0.75000	4.648470	.000000	.000000	.000000	.000000	.000000
1.00000	4.648470	.000000	.000000	.000000	.000000	.000000

ELEM 13 ===== LENGTH = 4.000000

MOVE MOVE1 ----- MIN

REL DIST	P	V2	V3	T	M2	M3
0.00000	-1.796940	.000000	.000000	.000000	.000000	.000000
0.25000	-1.796940	.000000	.000000	.000000	.000000	.000000
0.50000	-1.796940	.000000	.000000	.000000	.000000	.000000
0.75000	-1.796940	.000000	.000000	.000000	.000000	.000000
1.00000	-1.796940	.000000	.000000	.000000	.000000	.000000

ELEM 14 ===== LENGTH = 2.000000

MOVE MOVE1 ----- MAX

REL DIST	P	V2	V3	T	M2	M3
0.00000	1.351530	.000000	.000000	.000000	.000000	.000000
0.25000	1.351530	.000000	.000000	.000000	.000000	.000000
0.50000	1.351530	.000000	.000000	.000000	.000000	.000000
0.75000	1.351530	.000000	.000000	.000000	.000000	.000000
1.00000	1.351530	.000000	.000000	.000000	.000000	.000000

MOVE MOVE1 ----- MIN

REL DIST	P	V2	V3	T	M2	M3
0.00000	-0.148470	.000000	.000000	.000000	.000000	.000000
0.25000	-0.148470	.000000	.000000	.000000	.000000	.000000
0.50000	-0.148470	.000000	.000000	.000000	.000000	.000000
0.75000	-0.148470	.000000	.000000	.000000	.000000	.000000
1.00000	-0.148470	.000000	.000000	.000000	.000000	.000000

ELEM 15 ===== LENGTH = 2.000000

MOVE MOVE1 ----- MAX

REL DIST	P	V2	V3	T	M2	M3
0.00000	4.648470	.000000	.000000	.000000	.000000	.000000
0.25000	4.648470	.000000	.000000	.000000	.000000	.000000
0.50000	4.648470	.000000	.000000	.000000	.000000	.000000
0.75000	4.648470	.000000	.000000	.000000	.000000	.000000
1.00000	4.648470	.000000	.000000	.000000	.000000	.000000

ELEM 17 ===== LENGTH = 2.000000

MOVE MOVE1 ----- MAX

REL DIST	P	V2	V3	T	M2	M3
0.00000	0.296940	.000000	.000000	.000000	.000000	.000000
0.25000	0.296940	.000000	.000000	.000000	.000000	.000000
0.50000	0.296940	.000000	.000000	.000000	.000000	.000000
0.75000	0.296940	.000000	.000000	.000000	.000000	.000000
1.00000	0.296940	.000000	.000000	.000000	.000000	.000000

MOVE MOVE1 ----- MIN

REL DIST	P	V2	V3	T	M2	M3
0.00000	-2.703060	.000000	.000000	.000000	.000000	.000000
0.25000	-2.703060	.000000	.000000	.000000	.000000	.000000

```
0.50000 -2.703060 .000000 .000000 .000000 .000000 .000000
0.75000 -2.703060 .000000 .000000 .000000 .000000 .000000
1.00000 -2.703060 .000000 .000000 .000000 .000000 .000000
```

ELEM 18 ===== LENGTH = 4.472136

MOVE MOVE1 ----- MAX

```
REL DIST      P      V2      V3      T      M2      M3
0.00000  0.331989 .000000 .000000 .000000 .000000 .000000
0.25000  0.331989 .000000 .000000 .000000 .000000 .000000
0.50000  0.331989 .000000 .000000 .000000 .000000 .000000
0.75000  0.331989 .000000 .000000 .000000 .000000 .000000
1.00000  0.331989 .000000 .000000 .000000 .000000 .000000
```

MOVE MOVE1 ----- MIN

```
REL DIST      P      V2      V3      T      M2      M3
0.00000 -3.022113 .000000 .000000 .000000 .000000 .000000
0.25000 -3.022113 .000000 .000000 .000000 .000000 .000000
0.50000 -3.022113 .000000 .000000 .000000 .000000 .000000
0.75000 -3.022113 .000000 .000000 .000000 .000000 .000000
1.00000 -3.022113 .000000 .000000 .000000 .000000 .000000
```

ELEM 19 ===== LENGTH = 4.472136

MOVE MOVE1 ----- MAX

```
REL DIST      P      V2      V3      T      M2      M3
0.00000  3.022113 .000000 .000000 .000000 .000000 .000000
0.25000  3.022113 .000000 .000000 .000000 .000000 .000000
0.50000  3.022113 .000000 .000000 .000000 .000000 .000000
0.75000  3.022113 .000000 .000000 .000000 .000000 .000000
1.00000  3.022113 .000000 .000000 .000000 .000000 .000000
```

MOVE MOVE1 ----- MIN

```
REL DIST      P      V2      V3      T      M2      M3
0.00000 -0.331989 .000000 .000000 .000000 .000000 .000000
0.25000 -0.331989 .000000 .000000 .000000 .000000 .000000
0.50000 -0.331989 .000000 .000000 .000000 .000000 .000000
0.75000 -0.331989 .000000 .000000 .000000 .000000 .000000
1.00000 -0.331989 .000000 .000000 .000000 .000000 .000000
```

ELEM 20 ===== LENGTH = 4.472136

MOVE MOVE1 ----- MAX

```
REL DIST      P      V2      V3      T      M2      M3
0.00000  3.686091 .000000 .000000 .000000 .000000 .000000
0.25000  3.686091 .000000 .000000 .000000 .000000 .000000
0.50000  3.686091 .000000 .000000 .000000 .000000 .000000
0.75000  3.686091 .000000 .000000 .000000 .000000 .000000
1.00000  3.686091 .000000 .000000 .000000 .000000 .000000
```

ELEM 21 ===== LENGTH = 4.472136

MOVE MOVE1 ----- MIN

```
REL DIST      P      V2      V3      T      M2      M3
0.00000 -3.686091 .000000 .000000 .000000 .000000 .000000
0.25000 -3.686091 .000000 .000000 .000000 .000000 .000000
0.50000 -3.686091 .000000 .000000 .000000 .000000 .000000
0.75000 -3.686091 .000000 .000000 .000000 .000000 .000000
1.00000 -3.686091 .000000 .000000 .000000 .000000 .000000
```

ELEM 22 ===== LENGTH = 4.472136

MOVE MOVE1 ----- MAX

```
REL DIST      P      V2      V3      T      M2      M3
```

0.00000	3.686091	.000000	.000000	.000000	.000000	.000000
0.25000	3.686091	.000000	.000000	.000000	.000000	.000000
0.50000	3.686091	.000000	.000000	.000000	.000000	.000000
0.75000	3.686091	.000000	.000000	.000000	.000000	.000000
1.00000	3.686091	.000000	.000000	.000000	.000000	.000000

ELEM 23 ===== LENGTH = 4.472136

MOVE MOVE1 ----- MIN

REL DIST	P	V2	V3	T	M2	M3
0.00000	-3.686091	.000000	.000000	.000000	.000000	.000000
0.25000	-3.686091	.000000	.000000	.000000	.000000	.000000
0.50000	-3.686091	.000000	.000000	.000000	.000000	.000000
0.75000	-3.686091	.000000	.000000	.000000	.000000	.000000
1.00000	-3.686091	.000000	.000000	.000000	.000000	.000000

ELEM 24 ===== LENGTH = 4.472136

MOVE MOVE1 ----- MAX

REL DIST	P	V2	V3	T	M2	M3
0.00000	0.331989	.000000	.000000	.000000	.000000	.000000
0.25000	0.331989	.000000	.000000	.000000	.000000	.000000
0.50000	0.331989	.000000	.000000	.000000	.000000	.000000
0.75000	0.331989	.000000	.000000	.000000	.000000	.000000
1.00000	0.331989	.000000	.000000	.000000	.000000	.000000

MOVE MOVE1 ----- MIN

REL DIST	P	V2	V3	T	M2	M3
0.00000	-3.022113	.000000	.000000	.000000	.000000	.000000
0.25000	-3.022113	.000000	.000000	.000000	.000000	.000000
0.50000	-3.022113	.000000	.000000	.000000	.000000	.000000
0.75000	-3.022113	.000000	.000000	.000000	.000000	.000000
1.00000	-3.022113	.000000	.000000	.000000	.000000	.000000

ELEM 25 ===== LENGTH = 4.472136

MOVE MOVE1 ----- MAX

REL DIST	P	V2	V3	T	M2	M3
0.00000	3.022113	.000000	.000000	.000000	.000000	.000000
0.25000	3.022113	.000000	.000000	.000000	.000000	.000000
0.50000	3.022113	.000000	.000000	.000000	.000000	.000000
0.75000	3.022113	.000000	.000000	.000000	.000000	.000000
1.00000	3.022113	.000000	.000000	.000000	.000000	.000000

MOVE MOVE1 ----- MIN

REL DIST	P	V2	V3	T	M2	M3
0.00000	-0.331989	.000000	.000000	.000000	.000000	.000000
0.25000	-0.331989	.000000	.000000	.000000	.000000	.000000
0.50000	-0.331989	.000000	.000000	.000000	.000000	.000000
0.75000	-0.331989	.000000	.000000	.000000	.000000	.000000
1.00000	-0.331989	.000000	.000000	.000000	.000000	.000000

LAMPIRAN L

KASUS 6L.1. DATA INPUT PROGRAM GARIS PENGARUH RANGKA BATANG BIDANG

Data Struktural

12	5	1000000
1	0	0
2	6	0
3	12	0
4	18	0
5	24	0
6	30	0
7	36	0
8	6	3
9	12	5
10	18	6
11	24	5
12	30	3

21			
1	1	2	0.4
2	2	3	0.4
3	3	4	0.4
4	4	5	0.4
5	5	6	0.4
6	6	7	0.4
7	1	8	0.4
8	8	9	0.4
9	9	10	0.4
10	10	11	0.4
11	11	12	0.4
12	12	7	0.4
13	2	8	0.4
14	3	8	0.4
15	3	9	0.4
16	4	9	0.4
17	4	10	0.4
18	4	11	0.4
19	5	11	0.4
20	5	12	0.4
21	6	12	0.4
4			
1	1	1	
3	0	1	
5	0	1	
7	0	1	
6			
1			
2			
3			
4			
5			
6			

Data Beban Berjalan

1		10
0	2	
	12	0
	14	6
	0	

L.2. DATA OUTPUT PROGRAM GARIS PENGARUH RANGKA BATANG BIDANG

Nilai Ekstrim Gaya Batang

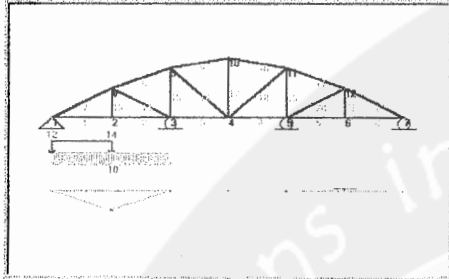
BATANG	MAX	MIN
1	49.26553	-5.702799
2	49.26553	-5.702799
3	0	-35.50852
4	1.490116E-09	-35.50854
5	49.26554	-5.702805
6	49.26554	-5.70279
7	6.375925	-55.0805
8	37.42929	0
9	26.81203	-35.97634
10	26.81204	-35.97634
11	37.4293	0
12	6.375923	-55.08051
13	73.99999	0
14	0	-89.35113
15	8.338907	-53.84016
16	64.4691	-12.02008
17	11.82895	-8.815741
18	64.46912	-12.02009
19	8.3389	-53.84016
20	0	-89.3511
21	73.99998	-2.980232E-09

Nilai Ekstrim Reaksi Tumpuan

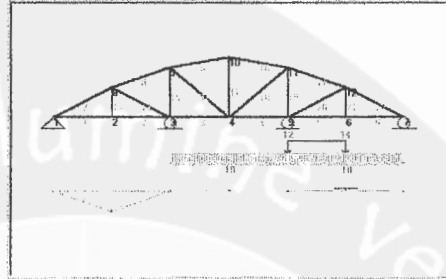
TITIK	MAX	MIN
1	66.68277	-2.851402
3	162.5019	-7.891307
5	162.1099	-7.891307
7	68.01701	-2.8514

L.3. TAMPILAN GARIS PENGARUH DAN POSISI BEBAN BERJALAN UNTUK GAYA BATANG DAN REAKSI TUMPUAN

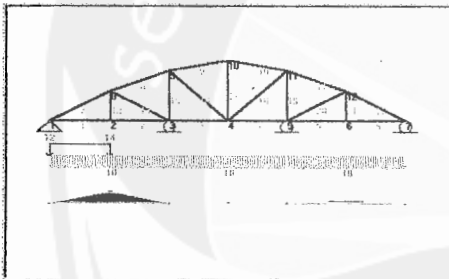
Batang 1 (Posisi Nilai Maksimum)



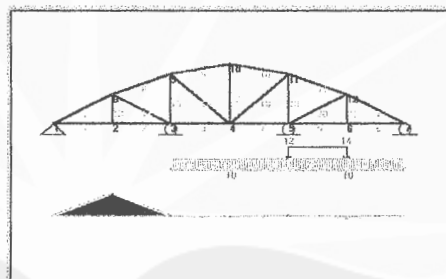
Batang 1 (Posisi Nilai Minimum)



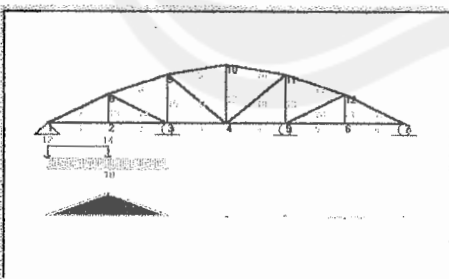
Batang 3 (Posisi Nilai Minimum)



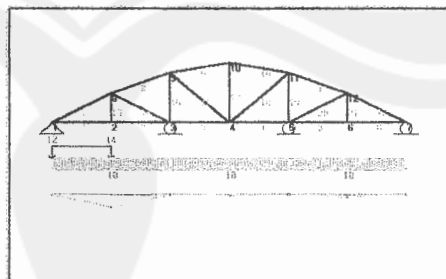
Batang 7 (Posisi Nilai Maksimum)



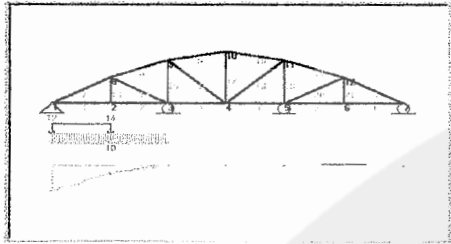
Batang 7 (Posisi Nilai Minimum)



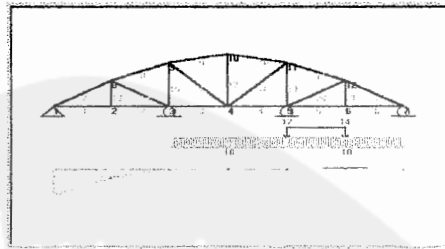
Batang 8 (Posisi Nilai Maksimum)



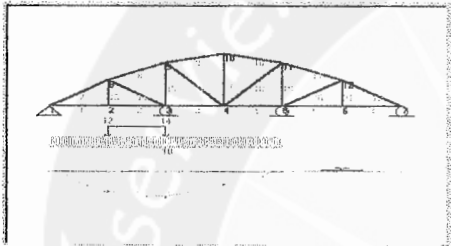
Tumpuan 1 (Posisi Nilai Maksimum)



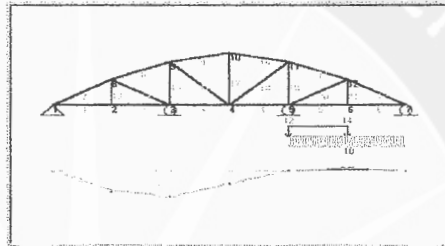
Tumpuan 1 (Posisi Nilai Minimum)



Tumpuan 3 (Posisi Nilai Maksimum)



Tumpuan 3 (Posisi Nilai Minimum)



LAMPIRAN M

KASUS 6

M.1. DATA INPUT PROGRAM SAP 2000 UNTUK MENGANALISIS GARIS
PENGARUH RANGKA BATANG BIDANG

SYSTEM DATA

STEADY STATE LOAD FREQUENCY - - - - - 0.0000E+00
 LENGTH UNITS - - - - - M
 FORCE UNITS - - - - - KN
 UP DIRECTION - - - - - +Z
 GLOBAL DEGREES OF FREEDOM - - - - - ALL
 PAGINATION BY - - - - - LINES
 NUMBER OF LINES PER PAGE - - - - - 59
 INCLUDE WARNING MESSAGES IN OUTPUT FILE - - - - - Y

GENERATED JOINT COORDINATES

JOINT	X	Y	Z
1	0.000	0.000	0.000
2	6.000	0.000	0.000
3	12.000	0.000	0.000
4	18.000	0.000	0.000
5	24.000	0.000	0.000
6	30.000	0.000	0.000
7	36.000	0.000	0.000
8	6.000	0.000	3.000
9	12.000	0.000	5.000
10	18.000	0.000	6.000
11	24.000	0.000	5.000
12	30.000	0.000	3.000

RESTRAINT DATA

JOINT	U1	U2	U3	R1	R2	R3
1				R1		R3
2		U2		R1	R2	R3
3		U2	U3	R1		R3
4		U2		R1	R2	R3
5		U2	U3	R1		R3
6		U2		R1	R2	R3
7		U2	U3	R1		R3
8		U2		R1	R2	R3
9		U2		R1	R2	R3
10		U2		R1	R2	R3
11		U2		R1	R2	R3
12		U2		R1	R2	R3

TEMPERATURE DEPENDENT DATA

MATERIAL PROPERTIES

MAT LABEL	TEMP	MODULUS OF ELASTICITY			SHEAR MODULII		
		E1	E2	E3	G12	G13	G23
1FR	0.00	0.100E+07	0.100E+07	0.100E+07	0.385E+06	0.385E+06	0.385E+06
STEEL	0.00	0.200E+09	0.200E+09	0.200E+09	0.769E+08	0.769E+08	0.769E+08
CONC	0.00	0.248E+08	0.248E+08	0.248E+08	0.103E+08	0.103E+08	0.103E+08

FRAME SECTION PROPERTY DATA - PRISMATIC

SECTION LABEL	AXIAL AREA	TORSIONAL CONSTANT	MOMENTS OF INERTIA		SHEAR AREA	AREAS
			I33	I22	A2	A3
1	0.400E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

FRAME ELEMENT DATA

ELEMENT LABEL	JOINT END-I	JOINT END-J	ELEMENT LENGTH	END-OFFSET-LENGTHS		RIGID-END FACTOR	NUMBER OF SEGMENTS
				END-I	END-J		
1	1	2	6.000	0.000	0.000	0.0000	4
2	2	3	6.000	0.000	0.000	0.0000	4
3	3	4	6.000	0.000	0.000	0.0000	4
4	4	5	6.000	0.000	0.000	0.0000	4
5	5	6	6.000	0.000	0.000	0.0000	4
6	6	7	6.000	0.000	0.000	0.0000	4
7	1	8	6.708	0.000	0.000	0.0000	4
8	8	9	6.325	0.000	0.000	0.0000	4
9	9	10	6.083	0.000	0.000	0.0000	4
10	10	11	6.083	0.000	0.000	0.0000	4
11	11	12	6.325	0.000	0.000	0.0000	4
12	12	7	6.708	0.000	0.000	0.0000	4
13	2	8	3.000	0.000	0.000	0.0000	4
14	3	8	6.708	0.000	0.000	0.0000	4
15	3	9	5.000	0.000	0.000	0.0000	4
16	4	9	7.810	0.000	0.000	0.0000	4
17	4	10	6.000	0.000	0.000	0.0000	4
18	4	11	7.810	0.000	0.000	0.0000	4
19	5	11	5.000	0.000	0.000	0.0000	4
20	5	12	6.708	0.000	0.000	0.0000	4
21	6	12	3.000	0.000	0.000	0.0000	4

BRIDGE DATA

LANE	ELT	ECCEN	ELT	ECCEN	ELT	ECCEN	ELT	ECCEN
LANE1	1	0.0	2	0.0	3	0.0	4	0.0
	5	0.0	6	0.0				

BRIDGE VEHICLE LOAD DATA

VEHICLE LABEL GEN1
 VEHICLE TYPE GEN
 USE FOR NEGATIVE MOMENTS YES
 USE FOR VERTICAL FORCES YES
 USE FOR OTHER RESPONSES YES

UNIFORM LOAD	AXLE DISTANCES		AXLE WEIGHT	FLOATING AXLE WEIGHTS		
	MIN	MAX		PX	PM	PXM
10.00	36.00	36.00	0.00			
10.00	6.00	6.00	12.00			
10.00	6.00	6.00	14.00			
10.00	36.00	36.00	0.00			
0.00				0.00	0.00	0.00

BRIDGE VEHICLE CLASS DATA

CLASS LABEL	VEHICLE LABEL	SCALE FACTOR
VECL1	GEN1	1.000

MOVING LOADS DATA

QUICK RESPONSE CALCULATION = 0
 CALCULATE CORRESPONDING VALUES = YES
 TRUCK INFLUENCE TOLERANCE = 0.10E-03

MOVE LABEL	REDUCTION FACTORS	VEHICLE CLASS	SCALE FACTOR	LANES MIN	LOADED MAX	LANE LABEL
MOVE1	0.100E+01	VECL1	0.100E+01	0	ALL	LANE1

BRIDGE RESPONSE DATA

NO MOVING LOAD RESPONSE CALCULATED FOR JOINT DISPLACEMENTS

NO MOVING LOAD RESPONSE CALCULATED FOR JOINT SPRINGS

MOVING LOAD RESPONSE WILL BE CALCULATED FOR ALL JOINT REACTIONS

MOVING LOAD RESPONSE WILL BE CALCULATED FOR ALL FRAME ELEMENTS

INPUT COMPLETE



**M.2. DATA OUTPUT PROGRAM SAP 2000 UNTUK MENGANALISIS GARIS
PENGARUH RANGKA BATANG BIDANG**

RESTRAINT FORCES (REACTIONS)

FORCES AND MOMENTS ACTING ON JOINTS, IN GLOBAL COORDINATES

MOVE MOVE1 ----- MAX

JOINT	FX	FY	FZ	MX	MY	MZ
1	.000000	.000000	67.967023	.000000	.000000	.000000
3	.000000	.000000	162.501928	.000000	.000000	.000000
5	.000000	.000000	162.501928	.000000	.000000	.000000
7	.000000	.000000	67.967023	.000000	.000000	.000000

MOVE MOVE1 ----- MIN

JOINT	FX	FY	FZ	MX	MY	MZ
1	.000000	.000000	-2.851401	.000000	.000000	.000000
3	.000000	.000000	-7.891313	.000000	.000000	.000000
5	.000000	.000000	-7.891313	.000000	.000000	.000000
7	.000000	.000000	-2.851401	.000000	.000000	.000000

FRAME ELEMENT INTERNAL FORCES

ELEM 1 ===== LENGTH = 6.000000

MOVE MOVE1 ----- MAX

REL DIST	P	V2	V3	T	M2	M3
0.00000	49.265547	.000000	.000000	.000000	.000000	.000000
0.25000	49.265547	5.375000	.000000	.000000	.000000	49.500000
0.50000	49.265547	14.500000	.000000	.000000	.000000	66.000000
0.75000	49.265547	27.375000	.000000	.000000	.000000	49.500000
1.00000	49.265547	44.000000	.000000	.000000	.000000	.000000

MOVE MOVE1 ----- MIN

REL DIST	P	V2	V3	T	M2	M3
0.00000	-5.702802	-44.000000	.000000	.000000	.000000	.000000
0.25000	-5.702802	-27.375000	.000000	.000000	.000000	.000000
0.50000	-5.702802	-14.500000	.000000	.000000	.000000	.000000
0.75000	-5.702802	-5.375000	.000000	.000000	.000000	.000000
1.00000	-5.702802	.000000	.000000	.000000	.000000	.000000

ELEM 2 ===== LENGTH = 6.000000

MOVE MOVE1 ----- MAX

REL DIST	P	V2	V3	T	M2	M3
0.00000	49.265547	.000000	.000000	.000000	.000000	.000000
0.25000	49.265547	5.375000	.000000	.000000	.000000	49.500000
0.50000	49.265547	14.500000	.000000	.000000	.000000	66.000000
0.75000	49.265547	27.375000	.000000	.000000	.000000	49.500000
1.00000	49.265547	44.000000	.000000	.000000	.000000	.000000

MOVE MOVE1 ----- MIN

REL DIST	P	V2	V3	T	M2	M3
0.00000	-5.702802	-44.000000	.000000	.000000	.000000	.000000
0.25000	-5.702802	-27.375000	.000000	.000000	.000000	.000000
0.50000	-5.702802	-14.500000	.000000	.000000	.000000	.000000
0.75000	-5.702802	-5.375000	.000000	.000000	.000000	.000000
1.00000	-5.702802	.000000	.000000	.000000	.000000	.000000

ELEM 3 ===== LENGTH = 6.000000

MOVE MOVE1 ----- MIN

REL DIST	P	V2	V3	T	M2	M3
0.00000	-35.508553	-44.000000	.000000	.000000	.000000	.000000
0.25000	-35.508553	-27.375000	.000000	.000000	.000000	.000000
0.50000	-35.508553	-14.500000	.000000	.000000	.000000	.000000
0.75000	-35.508553	-5.375000	.000000	.000000	.000000	.000000
1.00000	-35.508553	.000000	.000000	.000000	.000000	.000000

ELEM 4 ===== LENGTH = 6.000000

MOVE MOVE1 ----- MIN

REL DIST	P	V2	V3	T	M2	M3
0.00000	-35.508553	-44.000000	.000000	.000000	.000000	.000000
0.25000	-35.508553	-27.375000	.000000	.000000	.000000	.000000
0.50000	-35.508553	-14.500000	.000000	.000000	.000000	.000000
0.75000	-35.508553	-5.375000	.000000	.000000	.000000	.000000
1.00000	-35.508553	.000000	.000000	.000000	.000000	.000000

ELEM 5 ===== LENGTH = 6.000000

MOVE MOVE1 ----- MAX

REL DIST	P	V2	V3	T	M2	M3
0.00000	49.265547	.000000	.000000	.000000	.000000	.000000
0.25000	49.265547	5.375000	.000000	.000000	.000000	49.500000
0.50000	49.265547	14.500000	.000000	.000000	.000000	66.000000
0.75000	49.265547	27.375000	.000000	.000000	.000000	49.500000
1.00000	49.265547	44.000000	.000000	.000000	.000000	.000000

MOVE MOVE1 ----- MIN

REL DIST	P	V2	V3	T	M2	M3
0.00000	-5.702802	-44.000000	.000000	.000000	.000000	.000000
0.25000	-5.702802	-27.375000	.000000	.000000	.000000	.000000
0.50000	-5.702802	-14.500000	.000000	.000000	.000000	.000000
0.75000	-5.702802	-5.375000	.000000	.000000	.000000	.000000
1.00000	-5.702802	.000000	.000000	.000000	.000000	.000000

ELEM 6 ===== LENGTH = 6.000000

MOVE MOVE1 ----- MAX

REL DIST	P	V2	V3	T	M2	M3
0.00000	49.265547	.000000	.000000	.000000	.000000	.000000
0.25000	49.265547	5.375000	.000000	.000000	.000000	49.500000
0.50000	49.265547	14.500000	.000000	.000000	.000000	66.000000
0.75000	49.265547	27.375000	.000000	.000000	.000000	49.500000
1.00000	49.265547	44.000000	.000000	.000000	.000000	.000000

MOVE MOVE1 ----- MIN

REL DIST	P	V2	V3	T	M2	M3
0.00000	-5.702802	-44.000000	.000000	.000000	.000000	.000000
0.25000	-5.702802	-27.375000	.000000	.000000	.000000	.000000
0.50000	-5.702802	-14.500000	.000000	.000000	.000000	.000000
0.75000	-5.702802	-5.375000	.000000	.000000	.000000	.000000
1.00000	-5.702802	.000000	.000000	.000000	.000000	.000000

ELEM 7 ===== LENGTH = 6.708204

MOVE MOVE1 ----- MAX

REL DIST	P	V2	V3	T	M2	M3
0.00000	6.375927	.000000	.000000	.000000	.000000	.000000
0.25000	6.375927	.000000	.000000	.000000	.000000	.000000
0.50000	6.375927	.000000	.000000	.000000	.000000	.000000
0.75000	6.375927	.000000	.000000	.000000	.000000	.000000
1.00000	6.375927	.000000	.000000	.000000	.000000	.000000

MOVE MOVE1 ----- MIN

REL DIST	P	V2	V3	T	M2	M3
0.00000	-55.080556	.000000	.000000	.000000	.000000	.000000
0.25000	-55.080556	.000000	.000000	.000000	.000000	.000000
0.50000	-55.080556	.000000	.000000	.000000	.000000	.000000
0.75000	-55.080556	.000000	.000000	.000000	.000000	.000000
1.00000	-55.080556	.000000	.000000	.000000	.000000	.000000

ELEM 8 ===== LENGTH = 6.324555

MOVE MOVE1 ----- MAX

REL DIST	P	V2	V3	T	M2	M3
0.00000	37.429301	.000000	.000000	.000000	.000000	.000000
0.25000	37.429301	.000000	.000000	.000000	.000000	.000000
0.50000	37.429301	.000000	.000000	.000000	.000000	.000000
0.75000	37.429301	.000000	.000000	.000000	.000000	.000000
1.00000	37.429301	.000000	.000000	.000000	.000000	.000000

ELEM 9 ===== LENGTH = 6.082763

MOVE MOVE1 ----- MAX

REL DIST	P	V2	V3	T	M2	M3
0.00000	26.812030	.000000	.000000	.000000	.000000	.000000
0.25000	26.812030	.000000	.000000	.000000	.000000	.000000
0.50000	26.812030	.000000	.000000	.000000	.000000	.000000
0.75000	26.812030	.000000	.000000	.000000	.000000	.000000
1.00000	26.812030	.000000	.000000	.000000	.000000	.000000

MOVE MOVE1 ----- MIN

REL DIST	P	V2	V3	T	M2	M3
0.00000	-35.976334	.000000	.000000	.000000	.000000	.000000
0.25000	-35.976334	.000000	.000000	.000000	.000000	.000000
0.50000	-35.976334	.000000	.000000	.000000	.000000	.000000
0.75000	-35.976334	.000000	.000000	.000000	.000000	.000000
1.00000	-35.976334	.000000	.000000	.000000	.000000	.000000

ELEM 10 ===== LENGTH = 6.082763

MOVE MOVE1 ----- MAX

REL DIST	P	V2	V3	T	M2	M3
0.00000	26.812030	.000000	.000000	.000000	.000000	.000000
0.25000	26.812030	.000000	.000000	.000000	.000000	.000000
0.50000	26.812030	.000000	.000000	.000000	.000000	.000000
0.75000	26.812030	.000000	.000000	.000000	.000000	.000000
1.00000	26.812030	.000000	.000000	.000000	.000000	.000000

MOVE MOVE1 ----- MIN

REL DIST	P	V2	V3	T	M2	M3
0.00000	-35.976334	.000000	.000000	.000000	.000000	.000000
0.25000	-35.976334	.000000	.000000	.000000	.000000	.000000
0.50000	-35.976334	.000000	.000000	.000000	.000000	.000000
0.75000	-35.976334	.000000	.000000	.000000	.000000	.000000
1.00000	-35.976334	.000000	.000000	.000000	.000000	.000000

ELEM 11 ===== LENGTH = 6.324555

MOVE MOVE1 ----- MAX

REL DIST	P	V2	V3	T	M2	M3
0.00000	37.429301	.000000	.000000	.000000	.000000	.000000
0.25000	37.429301	.000000	.000000	.000000	.000000	.000000
0.50000	37.429301	.000000	.000000	.000000	.000000	.000000
0.75000	37.429301	.000000	.000000	.000000	.000000	.000000
1.00000	37.429301	.000000	.000000	.000000	.000000	.000000

ELEM 12 ===== LENGTH = 6.708204

MOVE MOVE1 ----- MAX

REL DIST	P	V2	V3	T	M2	M3
0.00000	6.375927	.000000	.000000	.000000	.000000	.000000
0.25000	6.375927	.000000	.000000	.000000	.000000	.000000
0.50000	6.375927	.000000	.000000	.000000	.000000	.000000
0.75000	6.375927	.000000	.000000	.000000	.000000	.000000
1.00000	6.375927	.000000	.000000	.000000	.000000	.000000

MOVE MOVE1 ----- MIN

REL DIST	P	V2	V3	T	M2	M3
0.00000	-55.080556	.000000	.000000	.000000	.000000	.000000
0.25000	-55.080556	.000000	.000000	.000000	.000000	.000000
0.50000	-55.080556	.000000	.000000	.000000	.000000	.000000
0.75000	-55.080556	.000000	.000000	.000000	.000000	.000000
1.00000	-55.080556	.000000	.000000	.000000	.000000	.000000

ELEM 13 ===== LENGTH = 3.000000

MOVE MOVE1 ----- MAX

REL DIST	P	V2	V3	T	M2	M3
0.00000	74.000000	.000000	.000000	.000000	.000000	.000000
0.25000	74.000000	.000000	.000000	.000000	.000000	.000000
0.50000	74.000000	.000000	.000000	.000000	.000000	.000000
0.75000	74.000000	.000000	.000000	.000000	.000000	.000000
1.00000	74.000000	.000000	.000000	.000000	.000000	.000000

ELEM 14 ===== LENGTH = 6.708204

MOVE MOVE1 ----- MIN

REL DIST	P	V2	V3	T	M2	M3
0.00000	-89.351143	.000000	.000000	.000000	.000000	.000000
0.25000	-89.351143	.000000	.000000	.000000	.000000	.000000
0.50000	-89.351143	.000000	.000000	.000000	.000000	.000000
0.75000	-89.351143	.000000	.000000	.000000	.000000	.000000
1.00000	-89.351143	.000000	.000000	.000000	.000000	.000000

ELEM 15 ===== LENGTH = 5.000000

MOVE MOVE1 ----- MAX

REL DIST	P	V2	V3	T	M2	M3
0.00000	8.338905	.000000	.000000	.000000	.000000	.000000
0.25000	8.338905	.000000	.000000	.000000	.000000	.000000
0.50000	8.338905	.000000	.000000	.000000	.000000	.000000
0.75000	8.338905	.000000	.000000	.000000	.000000	.000000
1.00000	8.338905	.000000	.000000	.000000	.000000	.000000

MOVE MOVE1 ----- MIN

REL DIST	P	V2	V3	T	M2	M3
0.00000	-53.840172	.000000	.000000	.000000	.000000	.000000
0.25000	-53.840172	.000000	.000000	.000000	.000000	.000000
0.50000	-53.840172	.000000	.000000	.000000	.000000	.000000
0.75000	-53.840172	.000000	.000000	.000000	.000000	.000000
1.00000	-53.840172	.000000	.000000	.000000	.000000	.000000

ELEM 16 ===== LENGTH = 7.810250

MOVE MOVE1 ----- MAX

REL DIST	P	V2	V3	T	M2	M3
0.00000	64.469116	.000000	.000000	.000000	.000000	.000000
0.25000	64.469116	.000000	.000000	.000000	.000000	.000000
0.50000	64.469116	.000000	.000000	.000000	.000000	.000000
0.75000	64.469116	.000000	.000000	.000000	.000000	.000000
1.00000	64.469116	.000000	.000000	.000000	.000000	.000000

MOVE MOVE1 ----- MIN

REL DIST	P	V2	V3	T	M2	M3
0.00000	-12.020088	.000000	.000000	.000000	.000000	.000000
0.25000	-12.020088	.000000	.000000	.000000	.000000	.000000
0.50000	-12.020088	.000000	.000000	.000000	.000000	.000000
0.75000	-12.020088	.000000	.000000	.000000	.000000	.000000
1.00000	-12.020088	.000000	.000000	.000000	.000000	.000000

ELEM 17 ===== LENGTH = 6.000000

MOVE MOVE1 ----- MAX

REL DIST	P	V2	V3	T	M2	M3
0.00000	11.828946	.000000	.000000	.000000	.000000	.000000
0.25000	11.828946	.000000	.000000	.000000	.000000	.000000
0.50000	11.828946	.000000	.000000	.000000	.000000	.000000
0.75000	11.828946	.000000	.000000	.000000	.000000	.000000
1.00000	11.828946	.000000	.000000	.000000	.000000	.000000

MOVE MOVE1 ----- MIN

REL DIST	P	V2	V3	T	M2	M3
0.00000	-8.815741	.000000	.000000	.000000	.000000	.000000
0.25000	-8.815741	.000000	.000000	.000000	.000000	.000000
0.50000	-8.815741	.000000	.000000	.000000	.000000	.000000
0.75000	-8.815741	.000000	.000000	.000000	.000000	.000000
1.00000	-8.815741	.000000	.000000	.000000	.000000	.000000

ELEM 18 ===== LENGTH = 7.810250

MOVE MOVE1 ----- MAX

REL DIST	P	V2	V3	T	M2	M3
0.00000	64.469116	.000000	.000000	.000000	.000000	.000000
0.25000	64.469116	.000000	.000000	.000000	.000000	.000000
0.50000	64.469116	.000000	.000000	.000000	.000000	.000000
0.75000	64.469116	.000000	.000000	.000000	.000000	.000000
1.00000	64.469116	.000000	.000000	.000000	.000000	.000000

MOVE MOVE1 ----- MIN

REL DIST	P	V2	V3	T	M2	M3
0.00000	-12.020088	.000000	.000000	.000000	.000000	.000000
0.25000	-12.020088	.000000	.000000	.000000	.000000	.000000
0.50000	-12.020088	.000000	.000000	.000000	.000000	.000000
0.75000	-12.020088	.000000	.000000	.000000	.000000	.000000
1.00000	-12.020088	.000000	.000000	.000000	.000000	.000000

ELEM 19 ===== LENGTH = 5.000000

MOVE MOVE1 ----- MAX

REL DIST	P	V2	V3	T	M2	M3
0.00000	8.338905	.000000	.000000	.000000	.000000	.000000
0.25000	8.338905	.000000	.000000	.000000	.000000	.000000
0.50000	8.338905	.000000	.000000	.000000	.000000	.000000
0.75000	8.338905	.000000	.000000	.000000	.000000	.000000
1.00000	8.338905	.000000	.000000	.000000	.000000	.000000

MOVE MOVE1 ----- MIN

REL DIST	P	V2	V3	T	M2	M3
0.00000	-53.840172	.000000	.000000	.000000	.000000	.000000
0.25000	-53.840172	.000000	.000000	.000000	.000000	.000000
0.50000	-53.840172	.000000	.000000	.000000	.000000	.000000
0.75000	-53.840172	.000000	.000000	.000000	.000000	.000000
1.00000	-53.840172	.000000	.000000	.000000	.000000	.000000

ELEM 20 ===== LENGTH = 6.708204

MOVE MOVE1 ----- MIN

REL DIST	P	V2	V3	T	M2	M3
0.00000	-89.351143	.000000	.000000	.000000	.000000	.000000
0.25000	-89.351143	.000000	.000000	.000000	.000000	.000000
0.50000	-89.351143	.000000	.000000	.000000	.000000	.000000
0.75000	-89.351143	.000000	.000000	.000000	.000000	.000000
1.00000	-89.351143	.000000	.000000	.000000	.000000	.000000

ELEM 21 ===== LENGTH = 3.000000

MOVE MOVE1 ----- MAX

REL DIST	P	V2	V3	T	M2	M3
0.00000	74.000000	.000000	.000000	.000000	.000000	.000000
0.25000	74.000000	.000000	.000000	.000000	.000000	.000000
0.50000	74.000000	.000000	.000000	.000000	.000000	.000000
0.75000	74.000000	.000000	.000000	.000000	.000000	.000000
1.00000	74.000000	.000000	.000000	.000000	.000000	.000000