DIVISION IV

OPERATION MANUAL

FOR

COMPUTER-AIDED DESIGN PROGRAMME

DIVISION IV OPERATION MANUAL FOR COMPUTER-AIDED DESIGN PROGRAMME

CONTENTS

1. General

1.1 Data File

This program deals with the following data files:

(1) Design Analysis Input Data File

(2) Design Analysis Result Data File

(3) Work File

Fig.1 below illustrate the outline of the program system

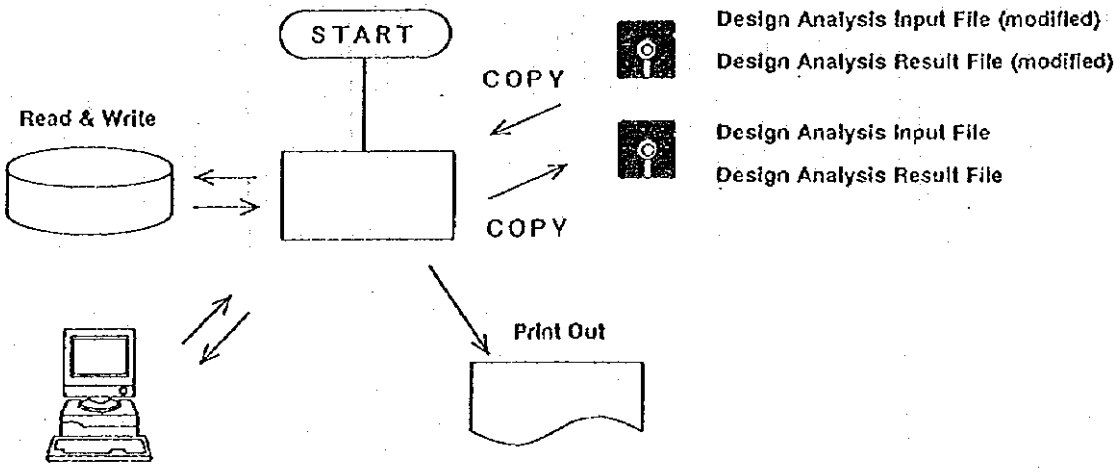


Fig. 1 Program System

1.2 Input Operation

The total input operation system of the program is explained in Fig.2. The sequence of the operations shown in the system by numbering on each file name, are as follows:

(1) Input common data.

(2) Perform structure analysis (grid structure).

(3) Input data and perform design analysis for main beam.

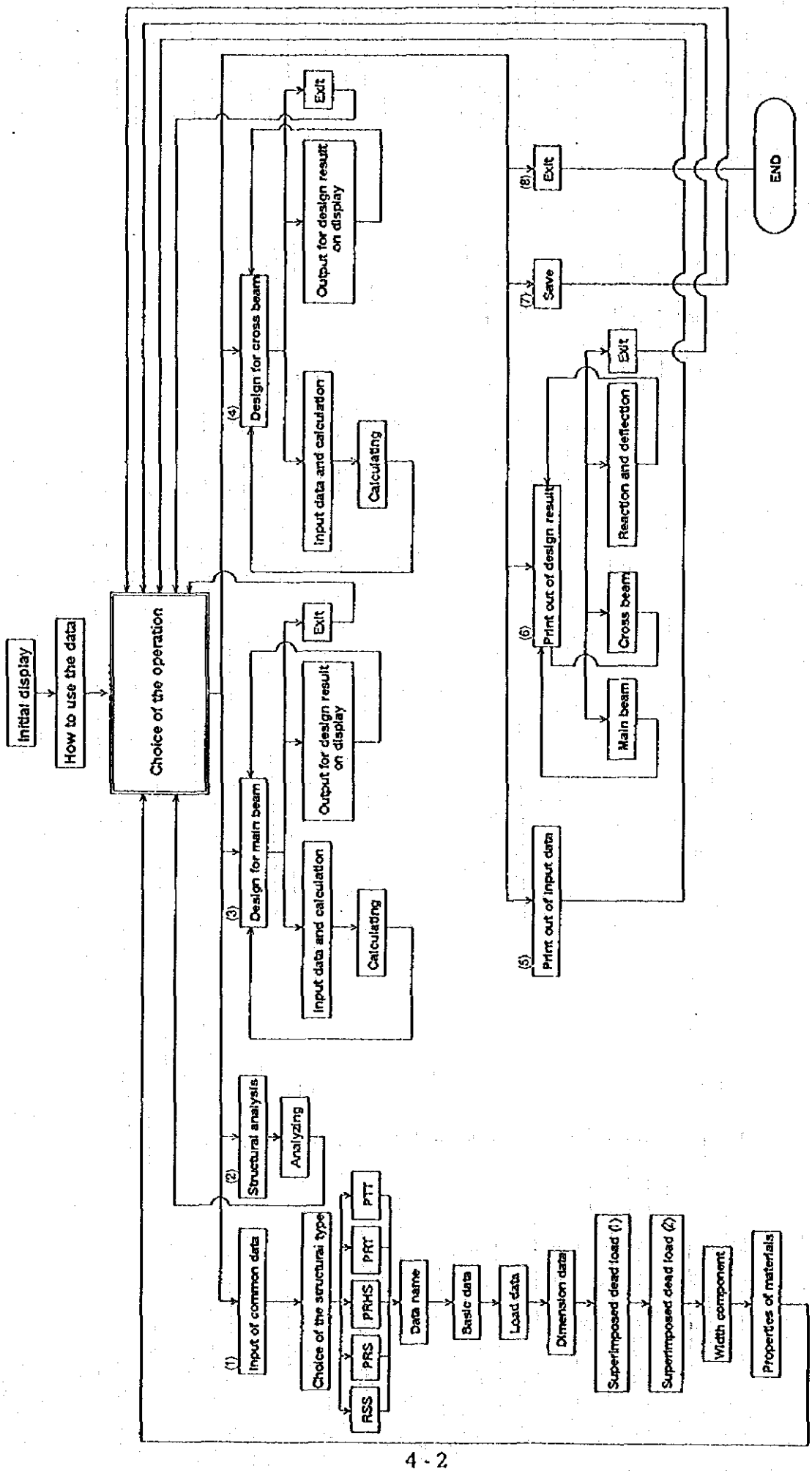
(4) Input data and perform design analysis for cross beam.

(5) Print input data.

(6) Output analysis results for main beam, cross beam, and support reaction force.

(7) Save if required.

Fig.2 Flow Chart for Superstructure Design Program



1.3 Basics for Key Operation for Input

The following basic input key operations are required on display unit.

(1) Hit Return Key

Push return key.

(2) Menu Number?

Input the menu number which you want to proceed.

(3) Change the data (Y/N)?

If you want to change the data initially displayed, input "Y" and then point the cursor to the first data.

If you do not change, input "N". Then the screen turns to next page.

(4) When preparing new data, you need attention to the data shown on the input items, because the initial values used in the standard design sometimes appear.

2. Sequence of Operation Displays

The copies of the actual computer displays are attached on the next page with some help explanations. For explanation, the operation symbols that are shown as A to G, but these symbols will not be appeared on the actual screen.

Group

A ..... Initial Display

B ..... How to Use the Data

C ..... Choice of the Operation

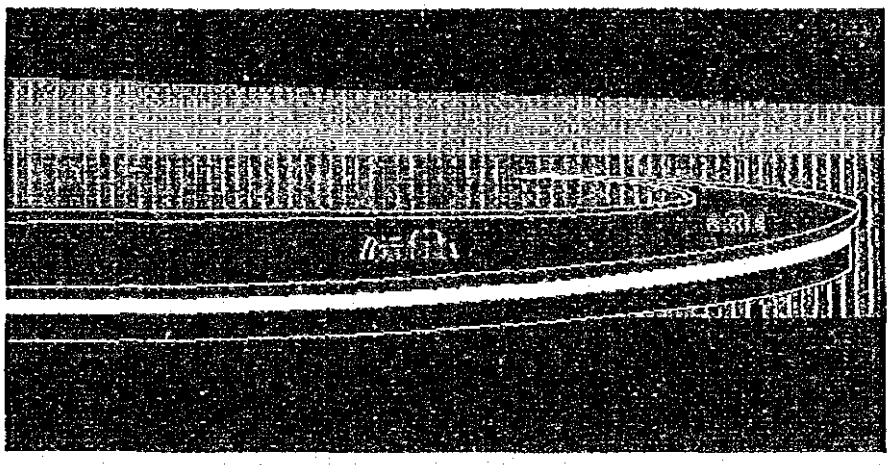
D .... Input of Common Data

E ..... Design for Main Beam

F ..... Design for Cross Beam

G ..... Print Out of Design Result

A. Initial Display



```
[ Standard bridge design program based on British Standards ]
        --- ver 1.0  1996 ---
            JKR Bridge Unit

Press any key to continue
```

B. How to Use the Data

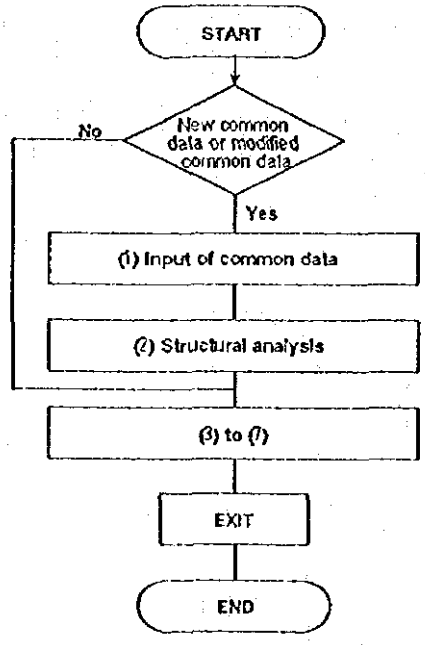
```
THE STANDARDIZATION OF BRIDGE DESIGN

I N

MALAYSIA

[ HOW TO USE THE DATA ]

(1) Use the data on the Hard Disk

(2) Use the data on the Flexible Disk
    (copy from FFD to HD)

(3) Create new data

Menu number? :
```

When select (2), insert a floppy disk for the design analysis input data file (design analysis result data file).

C. Choice of the Operation

```
(( Choice of the operation ))

  (1) Input of common Data
  (2) Structural analysis
  (3) Design of main beam
  (4) Design of cross beam
  (5) Print out of input data
  (6) Print out of design result
  (7) Save the data to Flexible Disk [ HD TO FPD ]"
  (8) Exit

Menu number? : 1
```

Note) When you prepare a new common data or to modify the common data, you have to proceed to operation (2), the performance of structure analysis, immediately after inputting common data. In case you proceed to operation (3) to (7) by skipping over operation (2), the result of grid structure analysis is not ensured.



D.1 Choice of the Structural Type

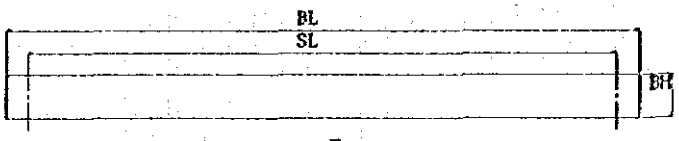
```
[ Choice of the structural type ]

     (1) Reinforced concrete slab [ RSS ]
     (2) Pretensioned solid slab  [ PRS ]
     (3) Pretensioned hollow slab [ PRHS ]
     (4) Pretensioned I-beam      [ PRI ]
     (5) Posttensioned I-beam     [ PTI ]

     Note : Yellow words are general abbreviation.


Menu number? : 1
```

D.2 Data Name

```
[ Reinforced concrete slab ]


Project Name(Max30) : RCSS-10-RS-30


Change the data ( Y/N )? N
```

D.3.1 Basic Data (RSS)

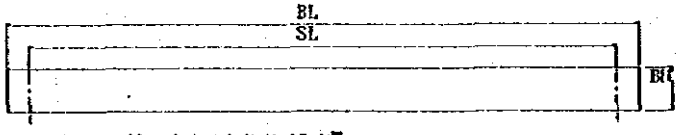
```
                [ Reinforced concrete slab ]

(( Design basic data ))

      Beam length                    BL  :   10.400 ( m )
      Span length                    SL  :   10.000 ( m )
      Beam height                    BH  :    0.750 ( m )
      Effective width                W   :   13.000 ( m )
      Skew(Max 30deg)                    :   30.000 (deg)
```




```
      Change the data ( Y/N )? N
```

D.3.2 Basic Data (PRS, PRHS, PRT, PTT)

```
                [ Pretensioned solid slab ]

(( Design basic data ))

      Beam length                    BL  :   10.500 ( m )
      Span length                    SL  :   10.000 ( m )
      Beam height                    BH  :    0.650 ( m )
      Effective width                W   :   13.000 ( m )
      Nos. of main beam                  :      18 (nos.)
      Space of main beam                 :    0.760 ( m )
      Nos. of intermediate cross beam(Max5) :       2 (nos.)
      Skew(Max 30deg)                    :   30.000 (deg)
```



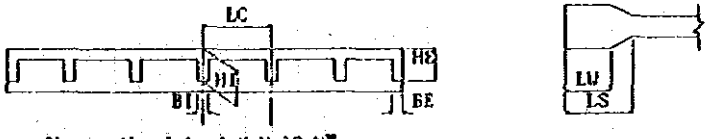

```
      Change the data ( Y/N )? N
```

D.4 Load Data

```
                [ Reinforced concrete slab ]

(( Load data ))

      Basic Live load

          HA only             : To be considered
          HA + HB (U1)        : U1= 30
          HB (U2) only        : U2= 45

      Nos.of Notional lanes   :  4


      Change the data ( Y/N )? N
```

D.5 Shape of Cross Beam (only PC beam)

```
                [ Posttensioned T-beam ]

(( Shape of cross beam and starting point of widening for main beam ))

      Distance of intermediate cross beam        LC :   15.000 ( m )
      Width of intermediate cross beam           BI :    0.350 ( m )
      Height of intermediate cross beam          HI :    2.600 ( m )
      Width of end cross beam                    BE :    0.500 ( m )
      Height of end cross beam                   HE :    2.600 ( m )
      Starting point of widening for main beam   LS :    1.525 ( m )
      Length of widened main beam                LW :    1.000 ( m )
```




```
      Change the data ( Y/N )? N
```

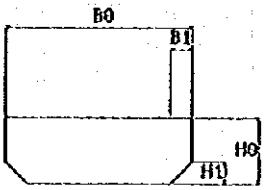
For PTT type beam, LS and LW shall be show length.

D.6.1 Dimension Data (RSS)

[Reinforced concrete slab]

((Dimension data))

B0 (cm)	1390.0	H0 (cm)	75.0
B1 (cm)	40.0	H1 (cm)	40.0



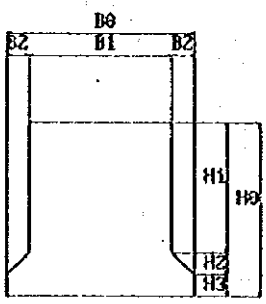
Change the data (Y/N)? N

D.6.2 Dimension Data (PRS)

[Pretensioned solid slab]

((Dimension data))

B0 (cm)	70.0	H0 (cm)	65.0
B1 (cm)	64.0	H1 (cm)	55.0
B2 (cm)	3.0	H2 (cm)	3.0
		H3 (cm)	7.0

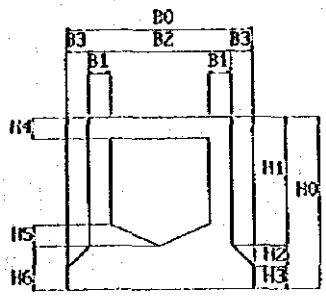


Change the data (Y/N)? N

D.6.3 Dimension Data (PRHS)

```
                    [ Pretensioned hollow slab ]

(( Dimension data ))
```

B0 (cm)	70.0	H0 (cm)	100.0
B1 (cm)	12.0	H1 (cm)	90.0
B2 (cm)	64.0	H2 (cm)	3.0
B3 (cm)	3.0	H3 (cm)	7.0
		H4 (cm)	14.0
		H5 (cm)	11.0
		H6 (cm)	12.0

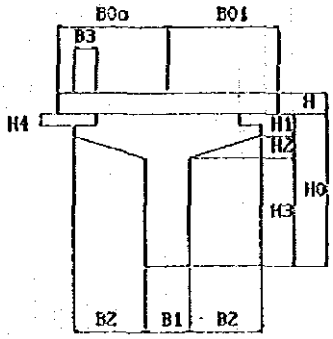



```
Change the data ( Y/N )? N
```

D.6.4 Dimension Data (PRT)

```
                    [ Pretensioned T-beam ]

(( Dimension data ))
```

B0I(cm)	64.0	H (cm)	20.0
B0o(cm)	40.0	H0 (cm)	140.0
B1 (cm)	30.0	H1 (cm)	16.0
B2 (cm)	25.0	H2 (cm)	3.5
B3 (cm)	9.0	H3 (cm)	120.5
		H4 (cm)	3.0



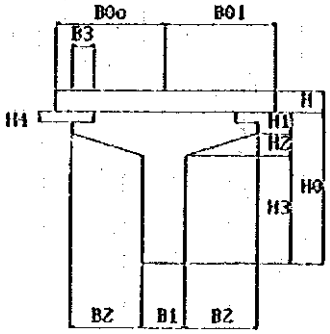

```
note : B0I : half length of intermediate slab
       B0o : length of cantilever slab

Change the data ( Y/N )? N
```

D.6.5.1 Dimension Data at Midspan (PTT)

[Posttensioned I-beam]

((Dimension data at midspan))

B01(cm)	105.0	H (cm)	20.0
B0o(cm)	50.0	H0 (cm)	285.0
B1 (cm)	36.0	H1 (cm)	20.0
B2 (cm)	32.0	H2 (cm)	10.0
B3 (cm)	9.0	H3 (cm)	255.0
		H4 (cm)	3.0



note : B01 : half length of intermediate slab
B0o : length of cantilever slab

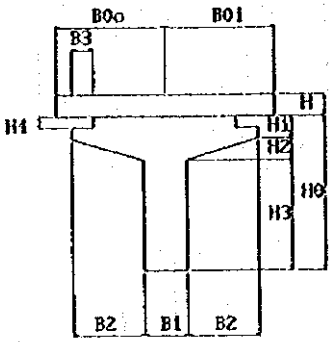
Change the data (Y/N)? N

D.6.5.2 Dimension Data at End (PTT)

[Posttensioned I-beam]

((Dimension data at end))

B01(cm)	105.0	H (cm)	20.0
B0o(cm)	50.0	H0 (cm)	285.0
B1 (cm)	55.0	H1 (cm)	20.0
B2 (cm)	22.5	H2 (cm)	7.0
B3 (cm)	9.0	H3 (cm)	250.0
		H4 (cm)	3.0



note : B01 : half length of intermediate slab
B0o : length of cantilever slab

Change the data (Y/N)? N

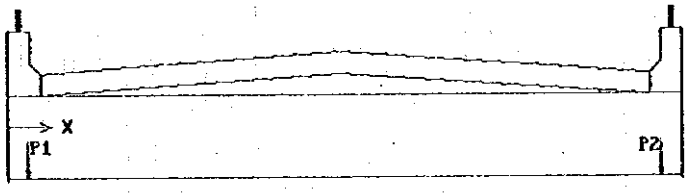
D.7 Superimposed Dead Load (concentrated load)

[Reinforced concrete slab]

((Superimposed dead load (concentrated load)))

Nos.of concentrated load(Max10) : N= 2

SDi or SD2	Vertical load(kN/m)	Position X(m)
SD= 1	P 1= 7.315	X 1= 0.160
SD= 1	P 2= 7.315	X 2= 13.740



Change the data (Y/N)? N

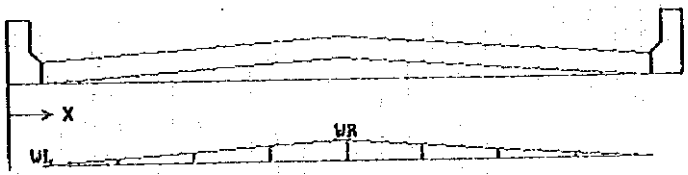
D.8 Superimposed Dead Load (distributed load)

[Reinforced concrete slab]

((Superimposed dead load (distributed load)))

Nos.of distributed load (Max10) : N= 7

SDi or SD2	Vertical load(kN/m2) Left side		Right side		Position X(m) Left side		Right side	
SD= 1	WL 1=	1.000	WR 1=	3.375	XL 1=	3.150	XR 1=	6.950
SD= 1	WL 2=	3.375	WR 2=	1.000	XL 2=	6.950	XR 2=	10.750
SD= 2	WL 3=	0.000	WR 3=	0.920	XL 3=	9.450	XR 3=	0.750
SD= 2	WL 4=	0.920	WR 4=	2.300	XL 4=	0.750	XR 4=	3.150
SD= 2	WL 5=	1.380	WR 5=	1.380	XL 5=	3.150	XR 5=	10.750
SD= 2	WL 6=	2.300	WR 6=	0.920	XL 6=	10.750	XR 6=	13.150
SD= 2	WL 7=	0.920	WR 7=	0.000	XL 7=	13.150	XR 7=	13.450



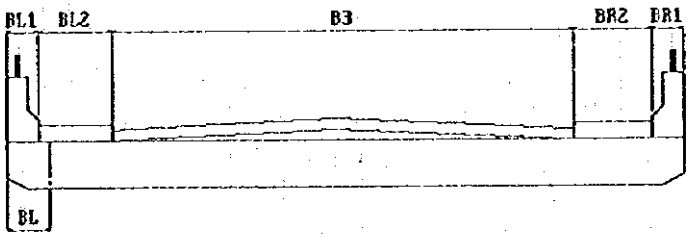
Change the data (Y/N)? N

D.9 Width Component

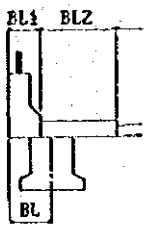
[Reinforced concrete slab]

((Width Component))

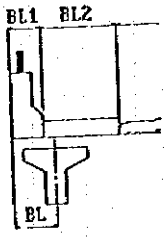
Distance between edge of parapet and outside beam	BL :	1.055 (m)
Width of parapet(left side)	BL1 :	0.450 (m)
Width of parapet(right side)	BR1 :	0.450 (m)
Width of footway(left side)	BL2 :	0.000 (m)
Width of footway(right side)	BR2 :	0.000 (m)
Width of carriageway	B3 :	13.000 (m)



Change the data (Y/N)? N



PRS, PRHS



PRT, PTT

• RC···BL = 1/2 {(B3 + BL1 + BL2 + BR1 + BR2) - 9/10 (BO - 2 B1)}

D.10.1 Properties of Materials - Concrete (RSS)

[Reinforced concrete slab]

((Properties of materials))

(1)Concrete

	unit	Main beam
Grade	(N/mm2)	40
Characteristic strength	(N/mm2)	40
Modulus of elasticity	(kN/mm2)	31.00
Compressive stress	(N/mm2)	16.00
Design crack width	(mm)	0.25
V , Vtu	(N/mm2)	4.75
Vtmin	(N/mm2)	0.42

Note : V : Ultimate shear stress Vtu : Ultimate torsional stress
Vtmin : Minimum Ultimate torsional shear stress
for which reinforcement is required

Change the data (Y/N)? N

D.10.2 Properties of Materials - Concrete (PRS, PRHS, PRT, PTT)

[Pretensioned solid slab]

((Properties of materials))

(1)Concrete

		unit	Main beam	Cast in situ
Grade		(N/mm2)	50	40
Characteristic strength		(N/mm2)	50	40
Modulus of elasticity		(kN/mm2)	34.00	31.00
Compressive stress		(N/mm2)	20.00	16.00
Flexural tensile stress	at transfer	(N/mm2)	1.00	1.00
	class 2 Pretension	(N/mm2)	3.20	2.90
	class 2 Posttension	(N/mm2)	2.55	2.30
V , Vlu		(N/mm2)	4.75	4.75
Vlmin		(N/mm2)	0.42	0.42

Note : V : Ultimate shear stress Vlu : Ultimate torsional stress
Vlmin ; Minimum Ultimate torsional shear stress
for which reinforcement is required
Change the data (Y/N)? N

D.11 Properties of Materials - PC tendon (PRS, PRHS, PRT, PTT)

[Pretensioned solid slab]

((Properties of materials))

(2)PC tendon

Longitudinal tendon (1=T12.7,2=T15.2) : 1
Transversal tendon (3=4K15,4=7K13) : 3

		unit	Longi.	Trans.
PC tendon		----	T12.7	4K15
Characteristic strength		(N/mm2)	1860	1860
Modulus of elasticity		(kN/mm2)	196	196
During stressing		(N/mm2)	1488	1488
Immediately after anchoring	Pretensioned	(N/mm2)	1395	1395
	Posttensioned	(N/mm2)	1302	1302

Change the data (Y/N)? N

D.12 Properties of Materials - Reinforcement

(Reinforced concrete slab)

((Properties of materials))

(2)Reinforcement

	unit	Y460
Characteristic strength	(N/mm2)	460
Modulus of elasticity	(kN/mm2)	200
Compression	(N/mm2)	345
Tension	(N/mm2)	345

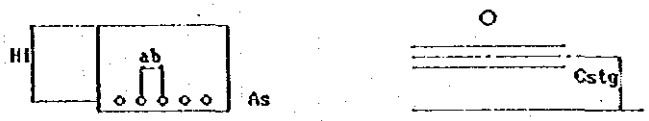
Change the data (Y/N)? N

E.1 Choice of the Design of Main Beam

```
                [ Reinforced concrete slab ]

(( Choice of the Design of main beam ))

          (1) Input Data and Design Calculation

          (2) Output of design result on display

          (3) Exit




          Menu number? : 1
```

E.2 Reinforcing Steel Arrangement (RSS)

```
                [ Reinforced concrete slab ]

(( Reinforcing steel arrangement ))

    Type of reinforcing steel                    :  Y460
    Cover of shear reinforcing steel        Cstg :  58.0 (mm)
    Kind of reinforcing steel(MaxS)              :  1
    Nos.    As(mm2)    Hi(mm)    ab(mm)  Dia.(mm)
      1     6433.6     668.0     125.0      32.0
```




```
Change the data ( Y/N )? N
```

E.3.1 Creep and Shrinkage Data for Main Beam (PC beam)

```
                ( Posttensioned I-beam )

  (( Creep and shrinkage data for main beam design ))

        At composite time Beam creep coefficient  :   0.50
                          Beam shrinkage          :   5.00 (1/100000)

        At creep end time Beam creep coefficient  :   2.00
                          Beam shrinkage          :  20.00 (1/100000)
                          Slab creep coefficient  :   2.20
                          Slab shrinkage          :  20.00 (1/100000)

           Change the data ( Y/N )? N
```

for PRS, PRHS, beam type

```
                ( Pretensioned solid slab )

  (( Creep and shrinkage data for main beam design ))

        At creep end time Beam creep coefficient  :   2.00
                          Beam shrinkage          :  25.00 (1/100000)

           Change the data ( Y/N )? N
```

E.3.2 Prestressing Data for Main Beam Design (PC beam)

```
                    [ Posttensioned I-beam ]

          (( Prestressing data for main beam design ))

          Initial prestress at jack                :  1350.0 (N/mm2)
          Relaxation of the tendon                 :     3.0 ( % )
          Slip or movement of tendons              :     5.0 ( mm )
          Coefficient of friction for length       :  0.0033 (1/m)
          Coefficient of friction for curvature    :     0.3 (1/rad)
          Nominal area                             : 1680.00 (mm2)
          Diameter of sheaths                      :    75.0 ( mm )



               Change the data ( Y/N )? N
```

for Pretensioned beam type

```
                    [ Pretensioned solid slab ]

          (( Prestressing data for main beam design ))

          Initial prestress at jack                  :  1350.0 (N/mm2)
          Relaxation of the tendon after prestressing :     3.0 ( % )
          Nominal area                               :   98.70 (mm2)



               Change the data ( Y/N )? N
```

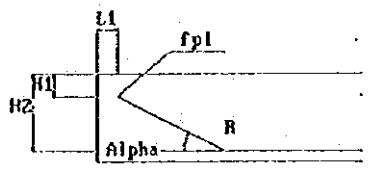
E.3.3 Longitudinal Prestressing Steel Arrangement (PC beam)

[Posttensioned T-beam]

((Longitudinal prestressing steel arrangement))

Type of prestressing steel : 2
Kind of prestressing steel(Max10) : 5

Nos.	L1(mm)	H1(mm)	H2(mm)	Alpha(o)	R(mm)	N(nos.)
1	150.0	350.0	2370.0	6.0	10000.0	1
2	150.0	850.0	2490.0	4.5	10000.0	1
3	150.0	1350.0	2610.0	4.5	10000.0	1
4	150.0	1850.0	2730.0	3.0	10000.0	1
5	150.0	2350.0	2730.0	3.0	10000.0	1



Change the data (Y/N)? N

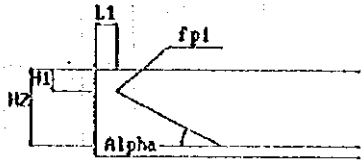
for Pretensioned PC beam type

[Pretensioned T-beam]

((Longitudinal prestressing steel arrangement))

Type of prestressing steel : 2
Kind of prestressing steel(Max10) : 10

Nos.	L1(mm)	H1(mm)	H2(mm)	Alpha(o)	N(nos.)
1	100.0	150.0	1050.0	5.5	2
2	100.0	215.0	1120.0	5.5	2
3	100.0	280.0	1190.0	5.5	2
4	100.0	345.0	1260.0	5.5	2
5	100.0	410.0	1330.0	5.5	2
6	100.0	1050.0	1050.0	0.0	2
7	100.0	1120.0	1120.0	0.0	2
8	100.0	1190.0	1190.0	0.0	2
9	100.0	1260.0	1260.0	0.0	2
10	100.0	1330.0	1330.0	0.0	2



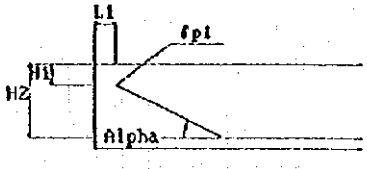
Change the data (Y/N)? N

[Pretensioned hollow slab]

((Longitudinal prestressing steel arrangement))

Type of prestressing steel : 2
Kind of prestressing steel(Max10) : 6

Nos.	L1(mm)	H1(mm)	H2(mm)	Alpha(o)	N(nos.)
1	100.0	70.0	70.0	0.0	2
2	100.0	800.0	800.0	0.0	2
3	100.0	865.0	865.0	0.0	2
4	2500.0	865.0	865.0	0.0	2
5	100.0	930.0	930.0	0.0	5
6	4000.0	930.0	930.0	0.0	4



Change the data (Y/N)? N

E.3.4 Data for Design of Shear and Torsion (PC beam)

*) PRT, PTT

```
[ Pretensioned T-beam ]

(( Data for design of shear and torsion ))

      Cover of shear reinforcing steel for main beam  Cstg :  50.0 ( mm )

      Cover of shear reinforcing steel for slab       Csts :  50.0 ( mm )

      Type of shear plane ( Type = 1 or 2 )                :     1

      Note : Cover is distance between center of
             shear reinforcement and concrete surface.
             Type of shear plane refer to BS5400 part4,7.4.2.3 .


      Change the data ( Y/N )? N
```

for PRS beam type

```
[ Pretensioned solid slab ]

(( Data for design of shear and torsion ))

      Cover of shear reinforcing steel for main beam  Cstg :  50.0 ( mm )


      Note : Cover is distance between center of
             shear reinforcement and concrete surface.


      Change the data ( Y/N )? N
```

No input for PRHS type.

E.4 Combination of Loads

```
                [ Reinforced concrete slab ]
(( Combination of loads ))
(Serviceability limit state)     Nos. of combination(Max5)     N= 3
        Nos.     D    SD1   SD2   HA  HA+HB   HB*   FL
          1    1.00  1.00  1.20  1.20  0.00  0.00  1.00
  S.L.S   2    1.00  1.00  1.20  0.00  1.10  0.00  1.00
          3    1.00  1.00  1.20  0.00  0.00  1.10  1.00

(Ultimate limit state)           Nos. of combination(Max5)     N= 3
        Nos.     D    SD1   SD2   HA  HA+HB   HB*   FL
          1    1.20  1.20  1.75  1.50  0.00  0.00  1.50
  U.L.S   2    1.20  1.20  1.75  0.00  1.30  0.00  1.50
          3    1.20  1.20  1.75  0.00  0.00  1.30  1.50

Note : rf3 should be taken as 1.1 at the ultimate limit state.

Where: P  : Effective prestressing          D  : Dead load
       SD1: Superimposed dead load except prenix dead load
       SD2: Prenix dead load                HA : Normal live loading
       HB : Abnormal live loading 30units   HB*: Abnormal live loading 45units

           Change the data ( Y/N )? N
```

for PC beam type

```
                [ Pretensioned solid slab ]
(( Combination of loads ))
(Serviceability limit state)     Nos. of combination(Max5)     N= 3
        Nos.     D    SD1   SD2   HA  HA+HB   HB*   FL  Class
          1    1.00  1.00  1.20  1.20  0.00  0.00  1.00   1
  S.L.S   2    1.00  1.00  1.20  0.00  1.10  0.00  1.00   1
          3    1.00  1.00  1.20  0.00  0.00  1.10  1.00   2

(Ultimate limit state)           Nos. of combination(Max5)     N= 3
        Nos.     D    SD1   SD2   HA  HA+HB   HB*   FL
          1    1.20  1.20  1.75  1.50  0.00  0.00  1.50
  U.L.S   2    1.20  1.20  1.75  0.00  1.30  0.00  1.50
          3    1.20  1.20  1.75  0.00  0.00  1.30  1.50

Note : 1) rfL for P,CR and SH should be given in accordance with BS5400 part4
          (4.1.2.1 and 4.2.3).
       2) rf3 should be taken as 1.1 at the ultimate limit state.
Where: P  : Effective prestressing          D  : Dead load
       SD1: Superimposed dead load except prenix dead load
       SD2: Prenix dead load                SH : Shrinkage
       CR : Creep                           HA : Normal live loading
       HB : Abnormal live loading 30units   HB*: Abnormal live loading 45units

           Change the data ( Y/N )? N
```

B.5 Choice of the Operation

```
[ Pretensioned solid slab ]
(1) Return to top of main beam data input
(2) Design Calculation



Menu number? : 2
```

E.6 Design Result - S. L. S

Design result

1.Main beam
1.1 Assessment for S.L.S(unit:N/mm2)
(1)G110

	unit	sec.1'	sec.2	sec.3	sec.4	sec.5	sec.6
w	(mm)	0.03	0.09	0.15	0.19	0.21	0.22
wcr(lim.)	(mm)	0.25	0.25	0.25	0.25	0.25	0.25
fc-u	(N/mm2)	1.50	4.02	6.28	7.78	8.63	9.01
fc-u(lim.)	(N/mm2)	16.00	16.00	16.00	16.00	16.00	16.00
fs	(N/mm2)	24.13	65.35	103.72	129.85	145.24	152.18
fs(lim.)	(N/mm2)	345.00	345.00	345.00	345.00	345.00	345.00

Press any key to continue

for PC Beam type

Design result

1.Main beam
1.1 Assessment for S.L.S(unit:N/mm2)
(1)G116

Lc.	Stage		sec.1'	sec.2	sec.3	sec.4	sec.5	sec.6	Limit	
1	1	fc(bu)	0.69	2.35	2.00	3.21	3.97	4.20	Comp	Tens
		fc(bl)	9.81	8.30	13.96	12.89	12.20	12.01	20.00	-1.00
	4	fc(bu)	1.83	5.71	8.36	11.22	13.31	13.85	Comp	Tens
		fc(bl)	7.45	4.02	5.93	3.49	1.71	1.25	20.00	0.00
2	1	fc(bu)	0.69	2.35	2.00	3.21	3.97	4.20	Comp	Tens
		fc(bl)	9.81	8.30	13.96	12.89	12.20	12.01	20.00	-1.00
	4	fc(bu)	2.60	6.19	9.12	11.78	13.95	14.15	Comp	Tens
		fc(bl)	7.31	3.59	5.25	2.99	1.14	0.98	20.00	0.00
3	1	fc(bu)	0.69	2.35	2.00	3.21	3.97	4.20	Comp	Tens
		fc(bl)	9.81	8.30	13.96	12.89	12.20	12.01	20.00	-1.00
	4	fc(bu)	2.01	6.26	9.34	11.00	13.04	12.76	Comp	Tens
		fc(bl)	7.27	3.52	5.05	3.68	1.95	2.22	20.00	-3.20

Press any key to continue

E.7 Design Result - U. L. S

1.2 Assessment for U.L.S

(1)GI 1

1)Flexural moment(unit:KNm)

	sec.1'	sec.2	sec.3	sec.4	sec.5	sec.6
rf3*M	561.7	1645.8	2902.9	3715.3	4181.4	4238.5
Mr	3799.7	4138.7	4664.9	5165.5	5615.1	5732.5
Mr/rf3*M	6.76	2.51	1.61	1.39	1.35	1.35

2)Shear and torsion

	unit	sec.1'	sec.2	sec.3	sec.4	sec.5	sec.6
v*vt	(N/mm2)	3.06	2.97	2.91	2.45	1.82	1.21
vtu(limit)	(N/mm2)	5.30	5.30	5.30	5.30	5.30	5.30
Asv/2*Ast	(mm2/m)	627.54	627.54	755.56	720.40	595.90	540.42
Asa	(mm2)	1076.52	957.77	759.76	568.50	391.26	217.76
Asa*AsL*L/2	(mm2)	1563.10	1517.07	1392.15	1190.62	919.13	613.32

(2)GI 2

1)Flexural moment(unit:KNm)

	sec.1'	sec.2	sec.3	sec.4	sec.5	sec.6
rf3*M	559.9	1683.0	2873.8	3631.7	4031.2	4029.7
Mr	3911.7	4291.7	4796.4	5276.2	5755.8	5843.2
Mr/rf3*M	7.01	2.55	1.67	1.45	1.43	1.45

2)Shear and torsion

	unit	sec.1'	sec.2	sec.3	sec.4	sec.5	sec.6
v*vt	(N/mm2)	3.04	2.90	2.91	2.49	1.86	1.26
vtu(limit)	(N/mm2)	5.30	5.30	5.30	5.30	5.30	5.30
Asv/2*Ast	(mm2/m)	583.50	583.50	746.83	719.31	530.59	512.07
Asa	(mm2)	1098.34	953.30	768.96	592.37	416.01	249.67
Asa*AsL*L/2	(mm2)	1552.21	1480.01	1391.08	1210.69	942.67	641.33

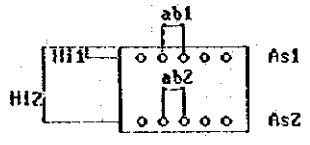
Press any key to continue

F.1 Choice of the Design of Cross Beam

```
                { Pretensioned solid slab }

(( Choice of the Design of cross beam ))

          (1) Input Data and Design Calculation

          (2) Output of design result on display

          (3) Exit




          Menu number? : 1
```

F.2 Reinforcing Steel Arrangement (RSS)

```
                { Reinforced concrete slab }

  Reinforcing steel arrangement ))

   Type of reinforcing steel                    :  Y460
   Cover of shear reinforcing steel          Ct :  50.0 (mm)
   Transversal reinforcing steel arrangement
          Nos.   As(mm2)    Hi(mm)    ab(mm)  Dia.(mm)
   Upper side  1    3216.0      58.0      62.5      16.0
   Lower side  2    1608.0     692.0     125.0      16.0
```




```
   Change the data ( Y/N )? N
```

F.3.1 Transversal Prestressing Steel Arrangement (PC beam)

```
                [ Pretensioned hollow slab ]

(( Transversal prestressing steel arrangement of cross beam ))

    Type of transversal prestressing steel    :  3
    Nominal area                              :  560.00 (mm2)
    Diameter of sheaths                       :    50.0 ( mm )
    Effective prestress                       :  1000.0  (N/mm2)
    [ At intermediate cross beam ]
    Kind of prestressing steel(Max3)          :  2
    Nos    Hi(mm)     N(nos.)
      1     420.0      3
      2     520.0      3


    [ At end cross beam ]
    Kind of prestressing steel(Max3)          :  2
    Nos.   Hi(mm)     N(nos.)
      1     420.0      2
      2     520.0      2


          Change the data ( Y/N )? N
```

F.3.2 Reinforcement Data (PRT, PTT)

```
                [ Pretensioned I-beam ]

(( Reinforcement data for cross beam design ))


  Cover of transversal reinforcement              Csms :   58.0 ( mm )

  Area of transversal reinforcement per 1m        As1 : 1340.0 (mm2/m)
   (upper side in slab)
  Area of transversal reinforcement per 1m        As2 : 1340.0 (mm2/m)
   (lower side in slab)
  Centre-to-centre distance                        ab :  150.0 ( mm )
   between transversal reinforcement
  Nominal diameter of transversal reinforcement   Dia :   16.0 ( mm )

  Cover of shear reinforcing steel for cross beam Cstg :   58.0 ( mm )

  Cover of shear reinforcing steel for slab       Csts :   58.0 ( mm )

Note: Cover is distance between center of reinforcement and concrete surface.

          Change the data ( Y/N )? N
```

F.4 Combination of Loads

```
                Reinforced concrete slab ]
(( Combination of loads ))
(Serviceability limit state)      Nos. of combination(Max5)     N= 3
        Nos.     D    SD1   SD2   HA  HA+HB   HB*   FL
          1    1.00  1.00  1.20  1.20  0.00  0.00  1.00
  S.L.S   2    1.00  1.00  1.20  0.00  1.10  0.00  1.00
          3    1.00  1.00  1.20  0.00  0.00  1.10  1.00


(Ultimate limit state)            Nos. of combination(Max5)     N= 3
        Nos.     D    SD1   SD2   HA  HA+HB   HB*   FL
          1    1.20  1.20  1.75  1.50  0.00  0.00  1.50
  U.L.S   2    1.20  1.20  1.75  0.00  1.30  0.00  1.50
          3    1.20  1.20  1.75  0.00  0.00  1.30  1.50


Note : rf3 should be taken as 1.1 at the ultimate limit state.


Where: P  ; Effective prestressing          D  ; Dead load
       SD1: Superimposed dead load except prenix dead load
       SD2: Prenix dead load                HA : Normal live loading
       HB : Abnormal live loading 30units  HB*: Abnormal live loading 45units


            Change the data ( Y/N )? N
```

F.5 Choice of the Operation

```
                { Reinforced concrete slab }

               (1) Return to top of cross beam data input

               (2) Design Calculation




                   Menu number? : 2
```

F.6 Design Result (RSS)

Design result

1.Cross beam

1.1 Assessment for S.L.S

	End cross beam		Intermediate cross beam	
	M(max)	M(min)	M(max)	M(min)
u	0.24	0.17	0.13	0.08
ucr(lim.)	0.25	0.25	0.25	0.25

1.2 Assessment for U.L.S

(1)Flexural moment(unit:KNm)

	End cross beam		Intermediate cross beam	
	M(max)	M(min)	M(max)	M(min)
rf3*M	170.6	290.0	132.3	199.6
Mr	264.6	512.4	378.1	732.0
Mr/rf3*M	1.55	1.77	2.86	3.67

(2)Shear and torsion

	unit	End cross beam	Intermediate cross beam
v+vt	(N/mm2)	1.57	0.82
vlu(limit)	(N/mm2)	4.75	4.75

Press any key to continue

F.7.1 Design Result - S. L. S (PC beam)

Design result

1.Cross beam

1.1 Assessment for S.L.S
(1)M(max)(unit:N/mm2)

Lc.		End Cross beam		Intermediate Cross beam		Limit	
		Mmax	Mmin	Mmax	Mmin	Comp.	Tens.
1	fc(bu)	1.51	0.43	1.61	0.45	16.00	0.00
	fc(bl)	0.86	1.88	0.40	1.64		
2	fc(bu)	1.60	0.34	1.62	0.37	16.00	0.00
	fc(bl)	0.78	2.01	0.47	1.72		
3	fc(bu)	1.74	0.07	1.92	0.43	16.00	-2.30
	fc(bl)	0.63	2.31	0.18	1.66		

Press any key to continue

for PRT, PTT beam type

Design result

1.Cross beam

1.1 Assessment for S.L.S
(1)M(max)(unit:N/mm2)

Lc.		End Cross beam	Intermediate Cross beam	Limit	
				Comp.	Tens.
1	fc(bu)	1.70	1.59	16.00	0.00
	fc(bl)	2.60	0.47		
2	fc(bu)	1.71	1.59	16.00	0.00
	fc(bl)	2.76	0.48		
3	fc(bu)	1.73	1.91	16.00	-2.30
	fc(bl)	2.67	-1.18		

(2)M(min)(unit:mm)

	End cross beam	Intermediate cross beam
w	0.02	0.09
wcr(lim.)	0.25	0.25

Press any key to continue

F.7.2 Design Result - U. L. S (PC beam)

1.2 Assessment for U.L.S
(1)Flexural moment(unit:KNm)

	End cross beam		Intermediate cross beam	
	M(max)	M(min)	M(max)	M(min)
rf3*M	227.8	413.1	500.0	414.0
Mr	1520.7	1481.4	2313.4	2259.1
Mr/rf3*M	6.68	3.59	3.93	5.46

(2)Shear and torsion

	unit	End cross beam	Intermediate cross beam
v+vt	(N/mm2)	1.30	0.95
vtu(limit)	(N/mm2)	4.75	4.75

Press any key to continue

for PRT, PTT beam type

1.2 Assessment for U.L.S
(1)Flexural moment(unit:KNm)

	End cross beam		Intermediate cross beam	
	M(max)	M(min)	M(max)	M(min)
rf3*M	82.6	161.0	2017.0	1184.2
Mr	1597.0	3397.7	2614.3	5217.9
Mr/rf3*M	19.32	21.11	1.30	4.41

(2)Shear and torsion

	unit	End cross beam	Intermediate cross beam
v+vt	(N/mm2)	1.83	1.84
vtu(limit)	(N/mm2)	4.75	4.75
Asv/2*Ast	(mm2/m)	702.3	665.4
Asa	(mm2)	65.5	729.1
Asa*AsL*L/2	(mm2)	825.8	729.1

Press any key to continue

G. Print out of Design Result

```
                    [ Reinforced concrete slab ]
   (( Print out of design result ))

                        (1) Print out of main beam
                        (2) Print out of cross beam
                        (3) Print out of reaction and deformation
                        (4) Exit



                   Menu number? : 1
```

3. List of Input Data

3.1 Common Data

		Display No.D.3 : Design basic data											Display No.D.5 : Shape of cross beam				
		BL (m)	SL (m)	BH (m)	EW (m)		NMB (nos.)		SMB (m)		NICB (nos.)	Skew (deg)	DICB (m)	WICB (m)	HICB (m)	WECB (m)	HECB (m)
					R5	R3	R5	R3	R5	R3							
	6	6.300	6.000	0.450					1.340	1.140	----		----	----	----	----	----
RCSS	8	8.400	8.000	0.600	13.000	11.000	10	10	1.310	1.110	----	15 or 30	----	----	----	----	----
	10	10.500	10.000	0.750					1.310	1.110	----		----	----	----	----	----
	6	6.300	6.000	0.400									2.000		0.330		0.330
PRSS	8	8.400	8.000	0.500	13.000	11.000	18	15	0.760	0.780	2	15 or 30	2.700	0.560	0.430	0.550	0.430
	10	10.500	10.000	0.650									3.500		0.580		0.580
	10	10.500	10.000	0.500							2		2.500		0.430		0.430
	12	12.500	12.000	0.600							3		3.000		0.530		0.530
PRHS	14	14.500	14.000	0.700							3		3.500		0.630		0.630
	16	16.600	16.000	0.800	13.000	11.000	18	15	0.760	0.780	3	15 or 30	4.000	0.560	0.730	0.550	0.730
	18	18.600	18.000	0.900							3		4.500		0.830		0.830
	20	20.700	20.000	1.000							4		4.000		0.930		0.930
	18	18.600	18.000	1.250							1		9.000		1.000		1.000
PRT	20	20.700	20.000	1.350	13.000	11.000	11	10	1.280	1.200	1	15 or 30	10.000	0.600	1.100	0.400	1.100
	22	22.700	22.000	1.400							1		11.000		1.150		1.150
	22	22.700	22.000	1.700							1		11.000		1.450		1.450
	25	25.700	25.000	1.800							1		12.500		1.550		1.550
	28	28.700	28.000	1.900							1		14.000		1.650		1.650
	30	30.700	30.000	2.000							1		15.000		1.750		1.750
PTT	32	32.800	32.000	2.100	13.000	11.000	7	6	2.100	2.100	1	15 or 30	16.000	0.350	1.850	0.500	1.850
	35	35.800	35.000	2.300							2		11.700		2.050		2.050
	38	38.900	38.000	2.550							2		12.700		2.300		2.300
	40	40.900	40.000	2.700							2		13.300		2.450		2.450
	42	42.900	42.000	2.800							2		14.000		2.550		2.550
	45	45.900	45.000	2.850							2		15.000		2.600		2.600

unit : (cm)

		Display No.D.6.1 : Dimension data				
		B0		B1	H0	H1
		R5	R3			
RCSS	6	1390.0	1190.0	25.0	45.0	25.0
	8			40.0	60.0	40.0
	10			40.0	75.0	40.0

unit : (cm)

		Display No.D.6.2 : Dimension data						
		B0	B1	B2	H0	H1	H2	H3
PRSS	6	70.0	64.0	3.0	40.0	30.0	3.0	7.0
	8				50.0	40.0		
	10				65.0	55.0		

unit : (cm)

		Display No.D.6.3 : Dimension data										
		B0	B1	B2	B3	H0	H1	H2	H3	H4	H5	H6
PRHS	10	70.0	12.0	64.0	3.0	50.0	40.0	3.0	7.0	14.0	11.0	12.0
	12					60.0	50.0					
	14					70.0	60.0					
	16					80.0	70.0					
	18					90.0	80.0					
	20					100.0	90.0					

unit : (cm)

		Display No.D.6.4 : Dimension data										
		B0i		B0o	B1	B2	B3	H	H0	H1	H2	H3	H4
		R5	R3										
PRT	18	64.0	60.0	40.0	30.0	25.0	9.0	20.0	125.0	16.0	3.5	105.5	3.0
	20								135.0			115.5	
	22								140.0			120.5	

unit : (cm)

		Display No.D.6.5 : Dimension data													
		B i	B0o	B1		B2		B3	H	H0	H1	H2		H3		H4
				Mid.	End	Mid.	End					Mid.	End	Mid.	End	
PTT	22	105.0	50.0	36.0	55.0	32.0	22.5	9.0	20.0	170.0	20.0	10.0	7.0	140.0	143.0	3.0
	25									180.0				150.0	153.0	
	28									190.0				160.0	163.0	
	30									200.0				170.0	173.0	
	32									210.0				180.0	183.0	
	35									230.0				200.0	203.0	
	38									255.0				225.0	228.0	
	40									270.0				240.0	243.0	
	42									280.0				250.0	253.0	
	45									285.0				255.0	258.0	

	D.4 : Load data			D.7 : Superimposed dead load (1)				Display No.D.8 : Superimposed dead load (2)					
	HB (U1)	HB (U2)	NNL	NCL	SDi	Pi (KN/m)	Xi (m)	NDL	SDi	WLi (KN/m2)	WRi (KN/m2)	XLi (m)	XRi (m)
R5	30	45	4	2	1	7.315	0.160	7	1	1.000	3.375	3.150	6.950
									1	3.375	1.000	6.950	10.750
									2	0.000	0.920	0.450	0.750
									2	0.920	2.300	0.750	3.150
					1	7.315	13.740		2	1.380	1.380	3.150	10.750
									2	2.300	0.920	10.750	13.150
									2	0.920	0.000	13.150	13.450
R3	30	45	4	2	1	7.315	0.160	7	1	0.688	2.750	2.650	5.950
									1	2.750	0.688	5.950	9.250
									2	0.000	0.920	0.450	0.750
									2	0.920	2.013	0.750	2.650
					1	7.315	11.740		2	1.380	1.380	2.650	9.250
									2	2.013	0.920	9.250	11.150
									2	0.920	0.000	11.150	11.450

unit : (m)

		Display No.D.9 : Width Component							
		DPB		WPL	WPR	WFL	WFR	WCW	
		R5	R3					R5	R3
RCSS	6	0.920	0.920	0.450	0.450	0.000	0.000	13.000	11.000
	8	1.055	1.055						
	10	1.055	1.055						
PRSS	6	0.490	0.490	0.450	0.450	0.000	0.000	13.000	11.000
	8								
	10								
PRHS	10	0.490	0.490	0.450	0.450	0.000	0.000	13.000	11.000
	12								
	14								
	16								
	18								
	20								
PRT	18	0.550	0.550	0.450	0.450	0.000	0.000	13.000	11.000
	20								
	22								
PTT	22	0.650	0.700	0.450	0.450	0.000	0.000	13.000	11.000
	25								
	28								
	30								
	32								
	35								
	38								
	40								
	42								
	45								

		Display No.D.10 : Properties of Materials (Concrete)																			
		Main beam										Cast in situ									
		Grade (N/mm2)	fcu (N/mm2)	Ec (KN/mm2)	fcac (N/mm2)	DCW (mm)	fcat(N/mm2) At tran	fcat(N/mm2) C2-Pre	fcat(N/mm2) C2-Pos	v , vtu (N/mm2)	vtmin (N/mm2)	Grade (N/mm2)	fcu (N/mm2)	Ec (KN/mm2)	fcac (N/mm2)	DCW (mm)	fcat(N/mm2) At tran	fcat(N/mm2) C2-Pre	fcat(N/mm2) C2-Pos	v , vtu (N/mm2)	vtmin (N/mm2)
RCSS	6 8 10	40	40	31.00	16.00	0.25	-----	-----	-----	4.75	0.42	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
PRSS	6 8 10	50	50	34.00	20.00	-----	1.00	3.20	2.55	4.75	0.42	40	40	31.00	16.00	-----	1.00	2.90	2.30	4.75	0.42
PRHS	10 12 14 16 18 20	50	50	34.00	20.00	-----	1.00	3.20	2.55	4.75	0.42	40	40	31.00	16.00	-----	1.00	2.90	2.30	4.75	0.42
PRT	18 20 22	50	50	34.00	20.00	-----	1.00	3.20	2.55	4.75	0.42	40	40	31.00	16.00	-----	1.00	2.90	2.30	4.75	0.42
PTT	22 25 28 30 32 35 38 40 42 45	50	50	34.00	20.00	-----	1.00	3.20	2.55	4.75	0.42	40	40	31.00	16.00	-----	1.00	2.90	2.30	4.75	0.42

		Display No.D.11 : Properties of Materials (PC tendon)												D.12 : Properties of Materials (Reinforcement)			
				Longitudinal tendon					Transversal tendon								
		Longi.	Trans.	fpu	Ep	fpa (N/mm2)			fpu	Ep	fpa (N/mm2)			fy	Es	fsa (N/mm2)	
				(N/mm2)	(KN/mm2)	At tran	AA-Pre	AA-Pos	(N/mm2)	(KN/mm2)	At tran	AA-Pre	AA-Pos	(N/mm2)	(KN/mm2)	Comp.	Tens.
RCSS	6 8 10	----	----	-----	-----	-----	----	----	----	----	-----	-----	-----	460	200	345	345
PRSS	6 8 10	1	3	1860	196	1488	1395	1302	1860	196	1488	1395	1302	460	200	345	345
PRHS	10 12 14 16 18 20	2	3	1860	196	1488	1395	1302	1860	196	1488	1395	1302	460	200	345	345
PRT	18 20 22	2	3	1860	196	1488	1395	1302	1860	196	1488	1395	1302	460	200	345	345
PTT	22 25 28 30 32 35	1	4	1860	196	1488	1395	1302	1860	196	1488	1395	1302	460	200	345	345
	38 40 42 45	2	4														

		Display No.E.2 : Re-bar Arrangement					
		Cstg (mm)	Kind of Re-bar	As (mm2)	Hi (mm)	ab (mm)	Dia. (mm)
RCSS	6	58.0	1	6433.6	368.0	125.0	32.0
	8				518.0		
	10				668.0		

		E.3.1 : Creep and Shrinkage data for Main beam						Display No.E.3.2 : Prestressing data for Main beam							E.3.4 : Shear & Torsion		
		At composite		At creep end				fpi	Relax.	Slip	CFL	CFC	NA	DS	Cstg	Csts	Shear
		BCC	BS	BCC	BS	SCC	SS	(N/mm2)	(%)	(mm)	(1/m)	(1/rad)	(mm2)	(mm)	(mm)	(mm)	planc
PRSS	6	-----	-----	2.00	25.00	-----	----	1350.0	3.0	----	----	----	98.70	----	58.0	----	----
	8																
	10																
PRHS	10	-----	----	2.00	25.00	----	----	1350.0	3.0	----	----	----	140.00	----	----	----	----
	12																
	14																
	16																
	18																
	20																
PRT	18	0.5	5.00	2.00	20.00	2.20	20.00	1250.0	3.0	----	----	----	140.00	----	58.0	58.0	1
	20							1350.0									
	22							1250.0									
PTT	22	0.50	5.00	2.00	20.00	2.20	20.00	1250.0	3.0	5.000	0.0033	0.3	1184.52	65.0	58.0	58.0	1
	25							1250.0									
	28							1350.0									
	30							1250.0									
	32							1290.0									
	35							1350.0									
	38							1300.0					1680.00	75.0			
	40							1350.0									
	42							1250.0									
	45							1350.0									

PRSS PC tendon data

		E.3.3 : Longitudinal prestressing steel arrangement						
		Kind of Tendon	L1 (mm)	H1 (mm)	H2 (mm)	Alpha (deg)	R (mm)	N (nos.)
PRSS	6	3 (2)	100.0	70.0	70.0	0.0	——	4
				265.0	265.0			2 (0)
				330.0	330.0			9
	8	3	100.0	70.0	70.0	0.0	——	4
				365.0	365.0			4 (2)
				430.0	430.0			9
	10	3	100.0	70.0	70.0	0.0	——	4
				515.0	515.0			4
				580.0	580.0			9

Note : ( ) value is for the case of 30 deg.

PRHS PC tendon data

		E.3.3 : Longitudinal prestressing steel arrangement						
		Kind of Tendon	L1 (mm)	H1 (mm)	H2 (mm)	Alpha (deg)	R (mm)	N (nos.)
PRHS	10	4	100.0	70.0	70.0	0.0	-----	2
			100.0	365.0	365.0			2
			100.0	430.0	430.0			5
			1500.0	4 0.0	430.0			4
	12	4	100.0	70.0	70.0	0.0	-----	2
			100.0	465.0	465.0			2
			100.0	530.0	530.0			5
			2000.0	530.0	530.0			4
	14	5 (4)	100.0	70.0	70.0	0.0	-----	2
			100.0	565.0	565.0			2
			1000.0	565.0	565.0			2 (0)
			100.0	630.0	630.0			5
			2500.0	630.0	630.0			4
	16	5	100.0	70.0	70.0	0.0	-----	2
			100.0	665.0	665.0			2
			1500.0	665.0	665.0			2
			100.0	730.0	730.0			5
			3000.0	730.0	730.0			4
	18	6 ((5))	100.0	70.0	70.0	0.0	——	2
			100.0	700.0	700.0			2 ((0))
			100.0	765.0	765.0			2
			2000.0	765.0	765.0			2
			100.0	830.0	830.0			5
			3500.0	830.0	830.0			4
	20	6	100.0	70.0	70.0	0.0	-----	2
			100.0	800.0	800.0			2
			100.0	865.0	865.0			2
			2500.0	865.0	865.0			2
			100.0	930.0	930.0			5
			4000.0	930.0	930.0			4

Note : ( ) value is for the case of R5-15 deg , R5-30 deg and R3-30 deg.
(( )) value is for the case of 30 deg.

PRT PC tendon data

		Display No.E.3.3 : Longitudinal prestressing steel arrangement													
		Bend up							Debonded						
		Kind of Tendon	L1 (mm)	H1 (mm)	H2 (mm)	Alpha (deg)	R (mm)	N (nos.)	Kind of Tendon	L1 (mm)	H1 (mm)	H2 (mm)	Alpha (deg)	R (mm)	N (nos.)
PRT	18	8	100.0	200.0	880.0	5.0 (6.0)	----	2	9	100.0	70.0	70.0	0.0	----	2
				300.0	980.0			2		100.0	880.0	880.0			2
				400.0	1080.0			2		7200.0	880.0	880.0			2 (0)
				500.0	1180.0			2		100.0	980.0	980.0			2
				880.0	880.0	0.0		2		5400.0	980.0	980.0			2
				980.0	980.0			2		100.0	1080.0	1080.0			2
				1080.0	1080.0			2		3600.0	1080.0	1080.0			2
				1180.0	1180.0			2		100.0	1180.0	1180.0			2
				----	----			----		1800.0	1180.0	1180.0			2
	20	8	100.0	200.0	980.0	5.5	----	2	9	100.0	70.0	70.0	0.0	----	2
				300.0	1080.0			2		100.0	980.0	980.0			2
				400.0	1180.0			2		8000.0	980.0	980.0			2
				500.0	1280.0			2		100.0	1080.0	1080.0			2
				980.0	980.0	0.0		2		6000.0	1080.0	1080.0			2
				1080.0	1080.0			2		100.0	1180.0	1180.0			2
				1180.0	1180.0			2		4000.0	1180.0	1180.0			2
				1280.0	1280.0			2		100.0	1280.0	1280.0			2
				----	----			----		2000.0	1280.0	1280.0			2
	22	10	100.0	150.0	1050.0	5.5	----	2	10	100.0	70.0	70.0	0.0	----	2
				220.0	1120.0			2		100.0	1050.0	1050.0			4
				290.0	1190.0			2		100.0	1120.0	1120.0			2
				360.0	1260.0			2		8800.0	1120.0	1120.0			2
				430.0	1330.0			2		100.0	1190.0	1190.0			2
				1050.0	1050.0	0.0		2		6600.0	1190.0	1190.0			2
				1120.0	1120.0			2		100.0	1260.0	1260.0			2
				1190.0	1190.0			2		4400.0	1260.0	1260.0			2
				1260.0	1260.0			2		100.0	1330.0	1330.0			2
				1330.0	1330.0			2		2200.0	1330.0	1330.0			2

Note : ( ) value is for the case of R3.

PTT PC tendon data

		Display No.E.3.3 : Longitudinal prestressing steel arrangement						
		Kind of Tendon	L1 (mm)	H1 (mm)	H2 (mm)	Alpha (deg)	R (mm)	N (nos.)
PTT	22	3	150.0	300.0	1310.0	6.0	10000.0	1
				800.0	1440.0	4.5		1
				1300.0	1570.0	3.0		1
	25	4	150.0	200.0	1300.0	6.0	10000.0	1
				600.0	1430.0	5.0		1
				1000.0	1560.0	4.0		1
				1400.0	1690.0	3.0		1
	28	4	150.0	300.0	1460.0	5.5	10000.0	1
				700.0	1570.0	4.5		1
				1100.0	1680.0	3.5		1
				1500.0	1790.0	2.5		1
	30	5	150.0	250.0	1440.0	5.5	10000.0	1
				600.0	1580.0	4.5		1
				950.0	1720.0	3.5		1
				1300.0	1860.0	2.5		1
				1650.0	1860.0	2.5		1
	32	5	150.0	250.0	1620.0	5.5	10000.0	1
				650.0	1740.0	4.5		1
				1050.0	1860.0	3.5		1
				1450.0	1980.0	2.5		1
				1850.0	1980.0	2.5		1
	35	5	150.0	250.0	1890.0	6.0	10000.0	1
				700.0	1990.0	5.0		1
				1150.0	2090.0	4.0		1
				1600.0	2190.0	3.0		1
				2050.0	2190.0	3.0		1
PTT	38	4	150.0	300.0	2190.0	6.0	10000.0	1
				900.0	2310.0	5.0		1
				1500.0	2430.0	4.0		1
				2100.0	2430.0	3.0		1
	40	4	150.0	300.0	2390.0	6.5	10000.0	1
				900.0	2490.0	5.5		1
				1500.0	2590.0	4.5		1
				2100.0	2590.0	3.5		1
	42	5	150.0	300.0	2320.0	6.0	10000.0	1
				800.0	2440.0	5.0		1
				1300.0	2560.0	5.0		1
				1800.0	2680.0	4.0		1
				2300.0	2680.0	4.0		1
	45	5	150.0	350.0	2370.0	5.5	10000.0	1
				850.0	2490.0	4.5		1
				1350.0	2610.0	4.5		1
				1850.0	2730.0	3.5		1
				2350.0	2730.0	3.5		1

		Display No.E.4 : Combination of Loads								
		Nos.	D	SD1	SD2	HA	HA+HB	HB*	FL	Class
SLS	1	3	1.00	1.00	1.20	1.20	——	——	1.00	1
	2		1.00	1.00	1.20	——	1.10	——	1.00	1
	3		1.00	1.00	1.20	——	——	1.10	1.00	2
ULS	1	3	1.20	1.20	1.75	1.50	——	——	1.50	——
	2		1.20	1.20	1.75	——	1.30	——	1.50	——
	3		1.20	1.20	1.75	——	——	1.30	1.50	——

3.3 Design Data for Cross Beam

		Display No.F.2 : Re-bar Arrangement					
		Location	Ct (mm)	As (mm2)	Hi (mm)	ab (mm)	Dia. (mm)
RCSS	6	Upper	58.0	3216.0	58.0	62.5	16.0
		Lower		1608.0	392.0	125.0	
	8	Upper	58.0	3216.0	58.0	62.5	16.0
		Lower		1608.0	542.0	125.0	
	10	Upper	58.0	3216.0	58.0	62.5	16.0
		Lower		1608.0	692.0	125.0	

		Display No.F.3.2 : Reinforcement data						
		Csms (mm)	As1 (mm2/m)	As2 (mm2/m)	ab (mm)	Dia. (mm)	Cstg (mm)	Csts (mm)
PRT	18	58.0	1340.0	1340.0	150.0	16.0	58.0	58.0
	20							
	22							
PTT	22	58.0	1340.0	1340.0	150.0	16.0	58.0	58.0
	25							
	28							
	30							
	32							
	35							
	38							
	40							
	42							
	45							

PRSS . PRHS and PRT Transversal PC tendon data

		Display No.F.3.1 : Transversal prestressing steel arrangement								
					At intermediate CB			At end cross beam		
		NA (mm2)	DS (mm)	fpe (N/mm2)	Kind of PC	Hi (mm)	N (nos.)	Kind of PC	Hi (mm)	N (nos.)
PRSS	6	560.0	50.0	1000.0	1	160.0	3	1	160.0	2
	8	560.0	50.0	1000.0	2	120.0	2	1	210.0	2
						300.0	2			
	10	560.0	50.0	1000.0	2	210.0	2	1	300.0	2
						390.0	2			
PRHS	10	560.0	50.0	1000.0	2	120.0	2	2	120.0	2
						320.0	2		320.0	2
	12	560.0	50.0	1000.0	2	170.0	2	2	170.0	2
						370.0	2		370.0	2
	14	560.0	50.0	1000.0	2	220.0	3	2	220.0	2
						420.0	3		420.0	2
	16	560.0	50.0	1000.0	2	270.0	3	2	270.0	2
						470.0	3		470.0	2
	18	560.0	50.0	1000.0	2	320.0	3	2	320.0	2
						520.0	3		520.0	2
	20	560.0	50.0	1000.0	2	370.0	3	2	370.0	2
						570.0	3		570.0	2
PRT	18	560.0	50.0	1000.0	2	500.0	2	2	500.0	1
						680.0	2		680.0	1
	20	560.0	50.0	1000.0	2	600.0	2	2	600.0	1
						780.0	2		780.0	1
	22	560.0	50.0	1000.0	2	660.0	2	2	660.0	1
						840.0	2		840.0	1

DIVISION V

OPERATION MANUAL

FOR

COMPUTER-AIDED DRAWING PROGRAMME

DIVISION V OPERATION MANUAL FOR COMPUTER-AIDED DRAWING PROGRAMME

CONTENTS

1. General

1.1 Data Files

This program deals with the following data files.

(1) Input Data File for Design Analysis

(2) Input Data File for Drawing Program

(3) Drawing File (DXF-file)

(4) Work File

The dealing concept of the above program is illustrated in Fig. 1 below.

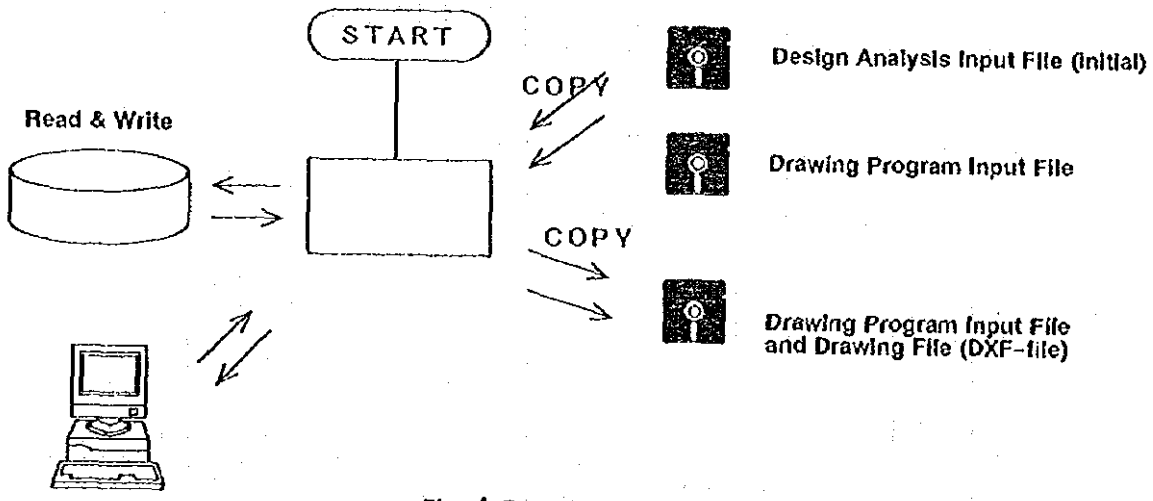


Fig. 1 Program Dealing Concept

The drawing file will be drawn up on floppy disk, in the form of DXF-file which can be read in common by the CAD systems available in market, as shown in the following table.

The file will be input by each CAD system and output on a plotter or other appliance after being added or modified, if required.

Table

	RCSS	PRSS	PRHS	PRT	PTT
MALAYS1.DXF	○	○	○	○	○
MALAYS2.DXF		○	○	○	○
MALAYS3.DXF					○

1.2 Outline of Input

Fig. 2 shows the outline of input.

Completing the input data (1) to (5), the DXF-file is to be produced in (6) and saved to floppy disk in (7).

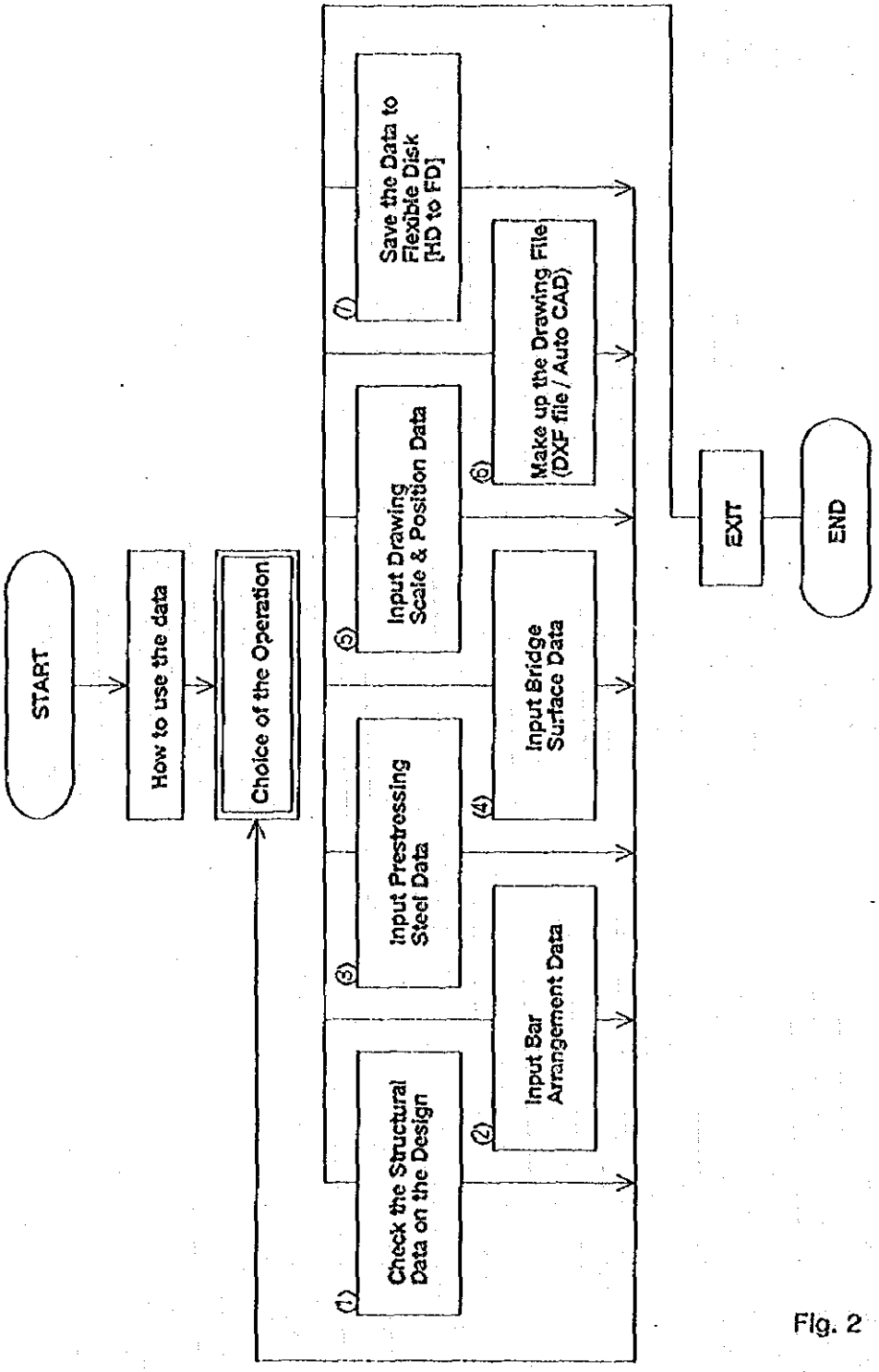


Fig. 2 Outline of Input

1.3 Basics of Key Operation for Input

The following basic input key operations are required on display unit.

(1) Hit Return Key

Push return key.

(2) Change the data (Y/N)?

If you want to change the data initially displayed, input "Y" and then point the cursor to the first data.

If you do not change, input "N". Then the screen turns to next page.

(3) Repeat (Y/N)?

For the input of bar arrangement data, if you input the next group data, input "Y" and then point the cursor to the first data.

If you do not input further, input "N". Then the screen confirms your input and proceed to next input.

(4) Clear (Y/N)?

To change the group data of bar arrangement already input, if you want to delete all the bar arrangement data at the location concerned, input "Y".

If you want to change the existing data, input "N" and then change the data.

(5) For the input of bar arrangement data, if you input "0" on the data "Dia", the group data is not entered.

(6) When you prepare new data, you need attention to the data shown on the input items, because the initial values used in the standard design sometimes appear.

2. Sequence of Operation Displays

The copies of the actual computer displays are attached from the next page in order with some help explanations. For explanation, the operation displays are A to H but which do not show up on the actual screen.

Group

A ..... How to Use the Data

B ..... Choice of the Operation

C ..... Check the Structural Data on the Design

D ..... Input Bar Arrangement Data

D.1 ..... Reinforced-Concrete Slab (RCSS)

D.2 ..... Pretension Solid Slab and Hollow Slab (PRSS, PRHS)

D.3 ..... Pretension and Posttention Composite Beam (PRT, PTT)

E ..... Input Prestressing Steel Data

F ..... Input Bridge Surface Data

G ..... Input Scale & Position Data

H ..... Save the Data to Flexible Disk [HA to FD]

A.1 How to Use the Data

```
THE STANDARDIZATION OF BRIDGE DESIGN

IN

MALAYSIA

( HOW TO USE THE DATA )

(1) Use the data on the Hard Disk

(2) Use the data on the Flexible Disk
    (copy from FPD to HD)

(3) Create new data

  Menu number? : 1
```

If select (1) for "menu number?;", the program proceeds to Section B. If select (2) or (3), proceeds to Section A.2.

A.2 Set the Input Data Flexible Disk

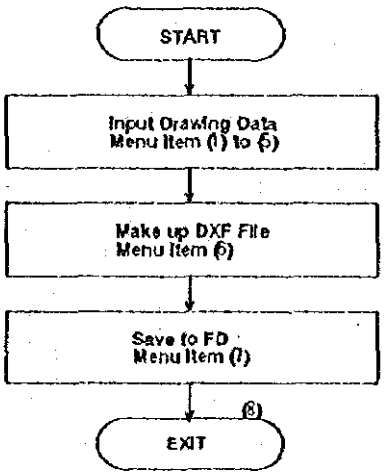
```
  ********************************************************
  ********************************************************
  ********************************************************
  ***** Please Set Input Data Flexible Disk ************
  ********************************************************
Press any key to continue . . .
```

Inserting the following floppy disk, then push enter key.

For modification : existing drawing input data
For new data : design analysis input data

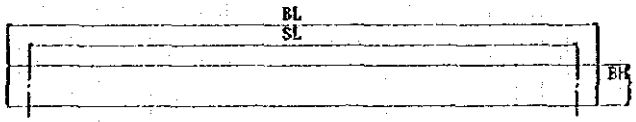
B.1 Choice of the Operation

```
                    [ Pretensioned solid slab ]
(( Choice of the operation ))
          (1) Check the Structural data on the design
          (2) Bar Arrangement data
          (3) Prestressing Steel data
          (4) Bridge Surface data
          (5) Drawing Scale & position data
          (6) Make up the drawing file (DXF file / Auto CAD)
          (7) Save the data to Flexible Disk [ HD to FD ]
          (8) Exit

                    Menu number? : 8
```



C.1 Check the Structural Data on the Design

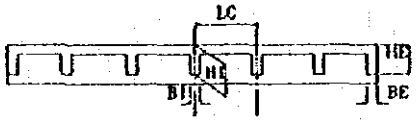
```
                [ Pretensioned T-beam ]

(( Design basic data ))

      Beam length                          BL  :   18.600 ( m )
      Span length                          SL  :   18.000 ( m )
      Beam height                          BH  :    1.050 ( m )
      Effective width                      W   :   13.000 ( m )
      Nos. of main beam                        :      11 (nos.)
      Space of main beam                       :    1.280 ( m )
      Nos. of intermediate cross beam(Max5)    :       1 (nos.)
      Skew(Max 30deg)                          :   0.000 (deg)
```




```
Hit Return Key
```

C.2

```
                [ Pretensioned T-beam ]

(( Shape of cross beam and starting point of widening for main beam ))

      Distance of intermediate cross beam      LC :   9.000 ( m )
      Width of intermediate cross beam         BI :   0.600 ( m )
      Height of intermediate cross beam        HI :   0.850 ( m )
      Width of end cross beam                  BE :   0.400 ( m )
      Height of end cross beam                 HE :   0.850 ( m )
```



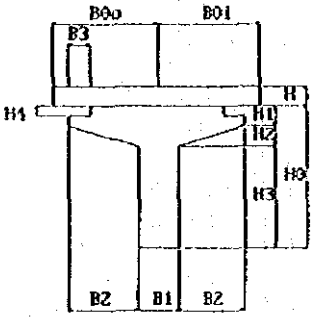

```
Hit Return Key
```

C.3

[Pretensioned T-beam]

((Dimension data))

B0i(cm)	64.0	H (cm)	20.0
B0o(cm)	10.0	H0 (cm)	105.0
B1 (cm)	30.0	H1 (cm)	16.0
B2 (cm)	25.0	H2 (cm)	3.5
B3 (cm)	9.0	H3 (cm)	65.5
		H4 (cm)	3.0



note : B0i : half length of intermediate slab
B0o : length of cantilever slab

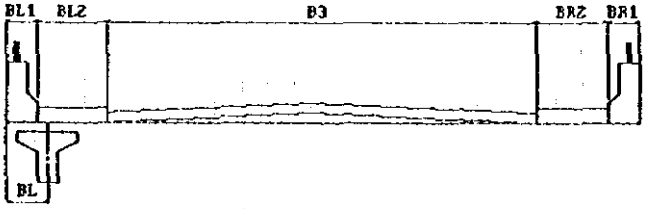
Hit Return Key

C.4

[Pretensioned T-beam]

((Width Component))

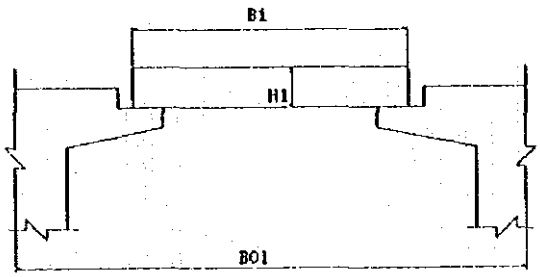
Distance between edge of parapet and outside beam	BL :	0.600 (m)
Width of parapet(left side)	BL1 :	0.450 (m)
Width of parapet(right side)	BR1 :	0.450 (m)
Width of footway(left side)	BL2 :	0.000 (m)
Width of footway(right side)	BR2 :	0.000 (m)
Width of carriageway	B3 :	13.000 (m)



Hit Return Key

C.5 Dimension of Precast Concrete Deck Form

```
                ( Pretensioned T-beam )
(( Dimension data ))

     B01 : 1280.0 (mm) B1 :   600.0 (mm)
     H1  :   70.0 (mm)
```

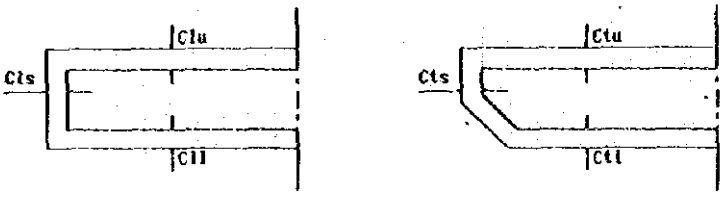



```
Change the data ( Y/N )? _
```

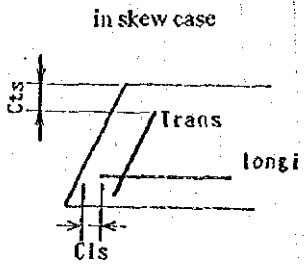
This data is required only for Pre-tension and Post-tension Composite T-beams.

D.1.1 Cover Data

```
                    [ Reinforced concrete slab ]
(( Cover data ))
  (1) longitudinal reinforcement          (2) Transversal reinforcement

      Clu  : 62.0    (mm)                     Clu  : 50.0    (mm)
      Cll  : 62.0    (mm)                     Cll  : 50.0    (mm)
      Cls  : 50.0    (mm)                     Cts  : 50.0    (mm)
```



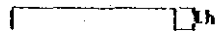

```
Change the data ( Y/N )? N
```



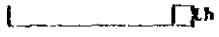
Input data for net concrete cover (both longitudinal and transverse directions).

D.1.2 Bar Data of Longitudinal Reinforcement (upper & lower)

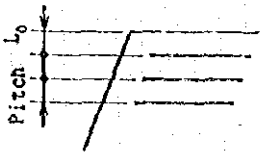
```
                    [ Reinforced concrete slab ]
(( Bar data of longitudinal reinforcement ))

 < upper side >                          350.0(mm)
Lh          :   100.0 (mm)
Dia         :    12 (mm)
L0          :    68.0 (mm)
Pitch       :   141.0 (mm)
Nos. of bar :     3 (Nos.)

 repeat (Y/N) ? N
```



< lower side >



in skew case

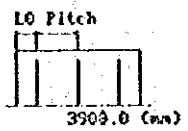


"Lh", "L0" and "Pich" shall be input on half the beam width following the illustration displayed, first for top and then for bottom.

[Notes]
1. The number of bar-pitch groups shall be maximum 5, except for the bars on the under-side of overhang haunch where maximum 10 groups.
2. For every bar-pitch group, the first bar location of any group shall be measured by "L0" the distance from the beam edge.

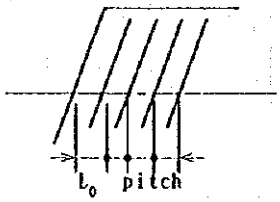
D.1.3 Bar Data of Transversal Reinforcement (upper & lower)

```
                    [ Reinforced concrete slab ]
(( Bar data of Transversal reinforcement ))

 < upper side >                          300.0(mm)
Lh          :   100.0 (mm)

Dia         :     12 (mm)
L0          :     50.0 (mm)
Pitch       :    125.0 (mm)
Nos. of bar :      3 (Nos.)
Nos. of lap :      1
length of lap:   450.0 (mm)
L10         :  9000.0 (mm)

repeat (Y/N) ? Y
```



< lower side >

in skew case



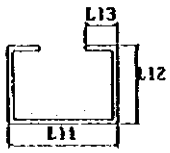
Input data for transverse bar arrangement (both upper and lower) shall be input on half the beam width following the illustration displayed, first for top and then for bottom.

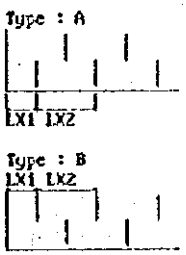
[Notes] 1. The number of bar-pitch groups shall be maximum 5.

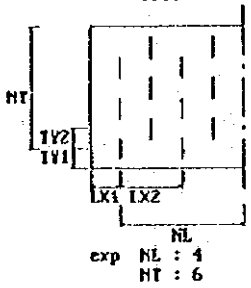
2. For every bar-pitch group, the first bar location of any group shall be measured by "L0" the distance beam edge.

D.1.4 Bar Data of Link

```
                    [ Reinforced concrete slab ]
(( Bar data of Link ))

Dia          :    16 (mm)          NL          :     9
length of bar                      LX1         :   580.0 (mm)
  L11        :   560.0 (mm)        LX2         :   900.0 (mm)
  L12        :   500.0 (mm)        NT          :    25
  L13        :   100.0 (mm)        TY1         :   742.0 (mm)
Type         :     B               TY2         :   516.0 (mm)
```

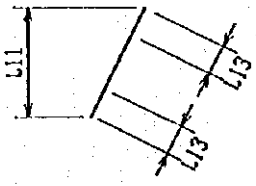


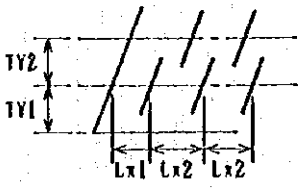





```
exp  NL : 4
     NT : 6

Change the data ( Y/N )? N
```

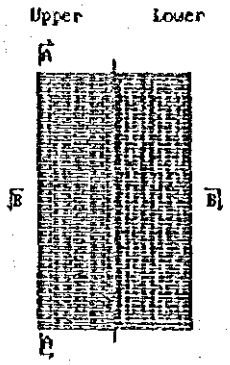
in skew case





D.1.5 Check of Bar Data (plan)

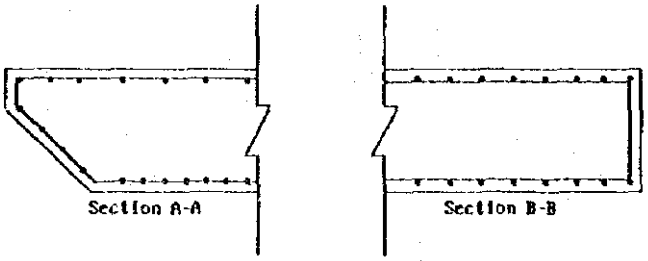
[Reinforced concrete slab]
((Check of bar data)) Plan



Hit Return Key

D.1.6 Check of Bar Data (detail)

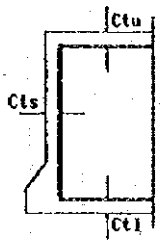
[Reinforced concrete slab]
((Check of bar data)) Detail



Hit Return Key

D.2.1 Cover Data

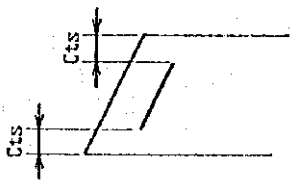
```
                    [ Pretensioned solid slab ]
(( Cover data ))

                                    Transversal direction

                                     Ctu :     50.0 (mm)
                                     Ctl :     50.0 (mm)
                                     Cts :     50.0 (mm)
```




```
Change the data ( Y/N )? N
```

Input the net concrete covers of link bars.

in skew case



D.2.2 Shape of Link

```
                    [ Pretensioned solid slab ]
(( Shape of link ))

    Type  : A
```

Type A

Type B

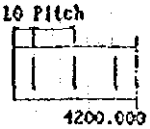
```
Change the data ( Y/N )? N
```

- Selection of Link Bars

Select either of two types displayed.

D.2.3 Arrangement of Link

```
                    [ Pretensioned solid slab ]
(( Arrangement of link ))
```




```
                    0.000 (mm)                    4200.000 (mm)
LF          :   100.0 (mm)
```

```
Dia         :     10 (mm)
L0          :   50.0 (mm)
Pitch       :  100.0 (mm)
Nos. of bar :     42 (Nos.)
```

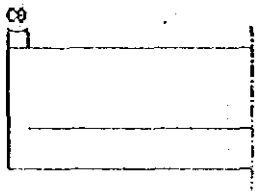

```
Change the data ( Y/N )? N
```

• Input Data for Link Bars

"LF", "L0" and "Pich" shall be input on half the beam width following the illustration displayed.

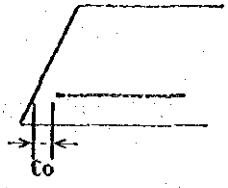
D.2.4 Longitudinal Bar Covering Data

```
                    ( Pretensioned solid slab )
(( Covering data ))
     longitudinal direction
     C0  :    50.0 (mm)
```



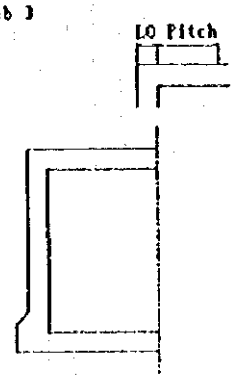

```
Change the data ( Y/N )? N
```

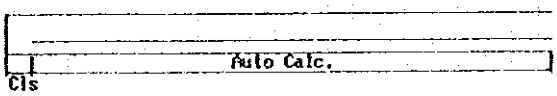
in skew case



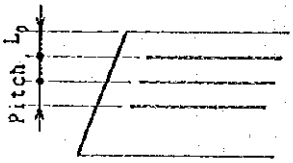
D.2.5 Bar Data of Longitudinal Reinforcement (upper, lower, flank)

```
                    [ Pretensioned solid slab ]
(( Bar data of longitudinal rainforcement ))

 < upper side >

Dia          :      0 (mm)
L0           :    0.0 (mm)
Pitch        :    0.0 (mm)
Nos. of bar  :      0 (Nos.)
Nos. of lap  :      0

 repeat (Y/N) ? N
```





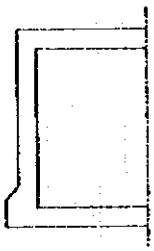
in skew case



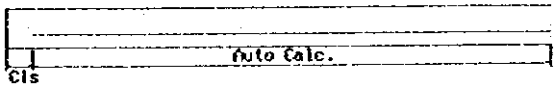
Input Data for Longitudinal Bars (all for upper, lower and side faces)

"LF", "L0" and "Pich" shall be input by following as illustrated as below, first for top, next for bottom, and then for sides.

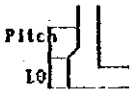
```
                    [ Pretensioned solid slab ]
(( Bar data of longitudinal rainforcement ))

 < lower side >

Dia          :      0 (mm)
L0           :    0.0 (mm)
Pitch        :    0.0 (mm)
Nos. of bar  :      0 (Nos.)
Nos. of lap  :      0

 repeat (Y/N) ? N
```

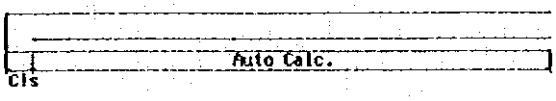


[Notes]
1. The number of bar-pitch groups shall be maximum 5.
2. For every bar-pitch group, the first bar location of any group shall be measured by "L0" the distance from the beam edge, from left to right and from bottom to top.




```
                    [ Pretensioned solid slab ]
(( Bar data of longitudinal rainforcement ))

 < flank     >

Dia          :      0 (mm)
L0           :    0.0 (mm)
Pitch        :    0.0 (mm)
Nos. of bar  :      0 (Nos.)
Nos. of lap  :      0
```






```
Change the data ( Y/N )? N
```

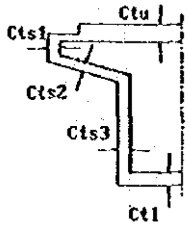
D.3.1 Cover Data of Link

[Pretensioned T-beam]

((Cover data))

Transversal reinforcement

```
Ctu :   50.0 (mm)
Ctl :   50.0 (mm)
Cts1:   50.0 (mm)
Cts2:   50.0 (mm)
Cts3:   50.0 (mm)
```

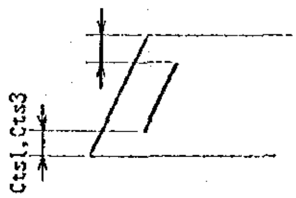


Change the data (Y/N)?

• Input Data for Link Bars

Input data by following as illustrated in the right figure.

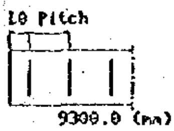
in skew case



D.3.2 Arrangement of Link

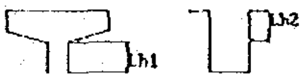
[Pretensioned T-beam]

((Arrangement of link))



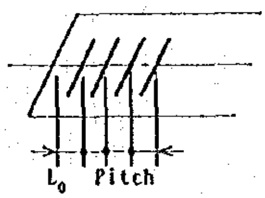
0.0(mm)

```
Lh1          :   100.0 (mm)
Lh2          :   100.0 (mm)
Dia          :      12 (mm)
L0           :    50.0 (mm)
Pitch        :   125.0 (mm)
Nos. of bar  :       3 (Nos.)
```



Change the data (Y/N)?

in skew case



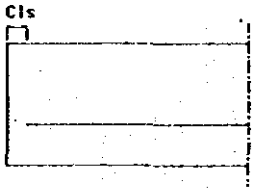
"Lh1", "Lh2", "L0", and "Pich" shall be input on half the beam width following the illustration displayed.

[Notes]

1. The number of bar-pitch groups shall be maximum 5.
2. For every bar-pitch group, the first bar location of any group shall be measured by "L0" the distance from the beam edge.

D.3.3 Cover Data of Longitudinal Reinforcement

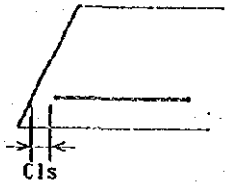
```
                [ Pretensioned T-beam ]
(( Cover data ))

    longitudinal reinforcement

     Cls :     50.0 (mm)
```




```
Change the data ( Y/N )? Y
```

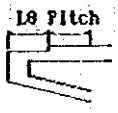
Input data for net concrete of longitudinal bars.

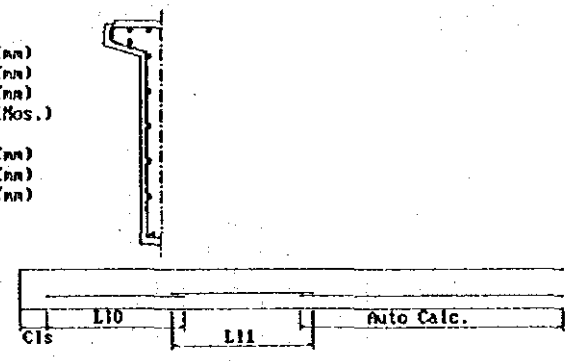
in skew case



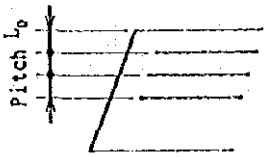
D.3.4 Bar Data of Longitudinal Reinforcement (flange upper & lower, beam lower, flank)

```
                [ Posttensioned T-beam ]
(( Bar data of longitudinal reinforcement ))

 < Flange upper side >

Dia          :     16 (mm)
L0           :   70.0 (mm)
Pitch        :  160.0 (mm)
Nos. of bar  :      2 (Nos.)
Nos. of lap  :      2
length of lap:  550.0 (mm)
L10          : 12000.0 (mm)
L11          : 12000.0 (mm)

  repeat (Y/N) ? N
```





in skew case



"L0" and "Pitch" shall be input by following the illustration displayed in the order of flange upper-side, flange under-side, web bottom, and web side-face. For the web side-face, completing the input of longitudinal data, "LX1" and "LX2" shall be input.

[Notes]
1. Number of lap splices for longitudinal bar shall be maximum 3.
2. For every bar-pitch group, the first bar location of any group shall be measured by "L0" the distance from the beam edge, from left to right and from bottom to top.

Flange lower side

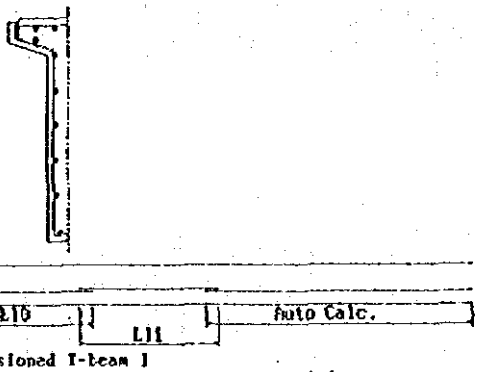
[Posttensioned T-beam]

((Bar data of longitudinal reinforcement))

< Flange lower side >

Dia : 16 (mm)
L0 : 70.0 (mm)
Pitch : 160.0 (mm)
Nos. of bar : 2 (Nos.)
Nos. of lap : 2
length of lap: 550.0 (mm)
L10 : 12000.0 (mm)
L11 : 12000.0 (mm)

repeat (Y/N) ? Y



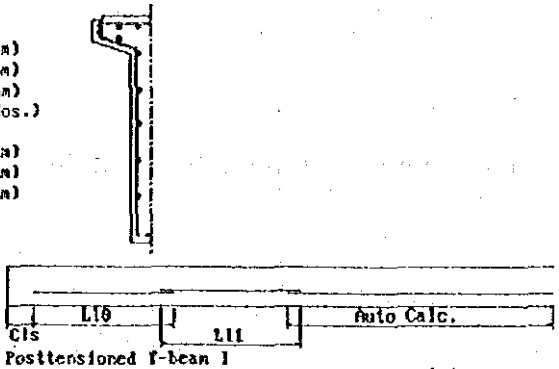
Beam lower side

[Posttensioned T-beam]

((Bar data of longitudinal reinforcement))

< Beam lower side >

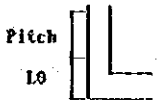
Dia : 25 (mm)
L0 : 105.5 (mm)
Pitch : 0.0 (mm)
Nos. of bar : 1 (Nos.)
Nos. of lap : 2
length of lap: 775.0 (mm)
L10 : 12000.0 (mm)
L11 : 12000.0 (mm)



Flank

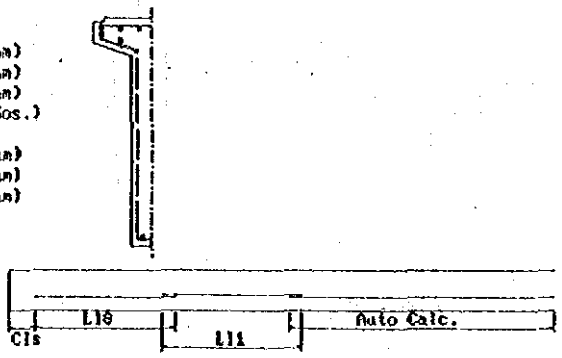
[Posttensioned T-beam]

((Bar data of longitudinal reinforcement))



< Flank >

Dia : 12 (mm)
L0 : 350.0 (mm)
Pitch : 300.0 (mm)
Nos. of bar : 5 (Nos.)
Nos. of lap : 2
length of lap: 450.0 (mm)
L10 : 12000.0 (mm)
L11 : 12000.0 (mm)



[Posttensioned T-beam]

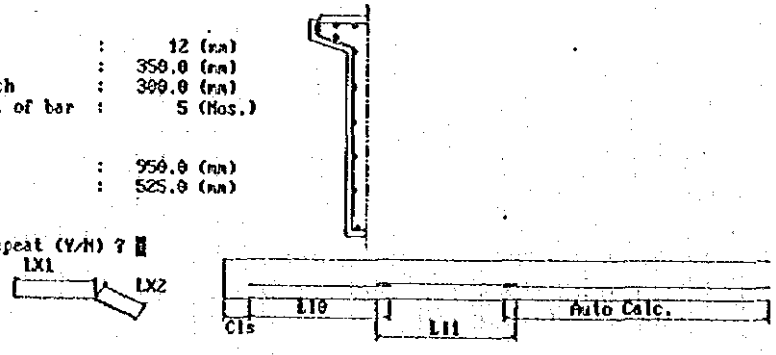
((Bar data of longitudinal reinforcement))

< Flank >

Dia : 12 (mm)
L0 : 350.0 (mm)
Pitch : 300.0 (mm)
Nos. of bar : 5 (Nos.)

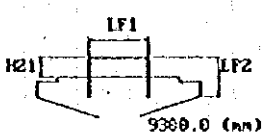
Lx1 : 950.0 (mm)
Lx2 : 525.0 (mm)

repeat (Y/N) ? Y

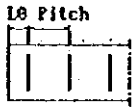


D.3.5 Arrangement of Shear Connector

```
                    [ Pretensioned T-beam ]
(( Arrangement of Shear connector ))
```

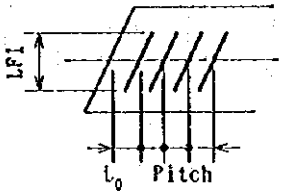



```
HZ1          :   150.0 (mm)
LF1          :   422.0 (mm)
LF2          :   278.0 (mm)
Dia          :    16 (mm)
L0           :    50.0 (mm)
Pitch        :   125.0 (mm)
Nos. of bar  :     3 (Nos.)
```




```
Change the data ( Y/N )? Y
```

in skew case

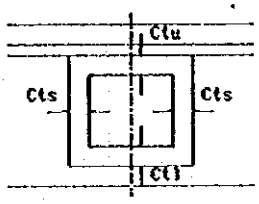


"HZ1", "LF1", "LF2", "L0" and "Pich" shall be input by following the illustration displayed.

[Notes]
1. The number of bar-pitch groups shall be maximuns 5.
2. The bars placed leftward beyond the distance "L0 + Pitch X Number of Bars" of the bar-pitch group input, shall be "the second shear connector bars".

D.3.6 Intermediate Cross Beam - Cover Data

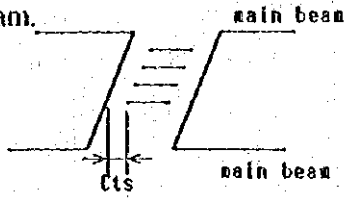
```
                    [ Pretensioned T-beam ]
(( Cross beam )) cover data
   [ At intermediate cross beam ]
                                  Transversal reinforcement

                                  Ctu :    50.0 (mm)
                                  Ctl :    50.0 (mm)
                                  Cts :    50.0 (mm)
```




```
Change the data ( Y/N )? Y
```

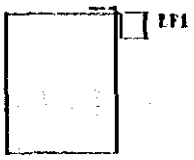
Input data for net concrete covers of link bars of intermediate cross beam.

in skew case



D.3.7 Arrangement of Link

```
                [ Pretensioned T-beam ]
(( Cross beam )) arrangement of link
  [ At intermediate cross beam ]


LF1          :  20.0   (mm)
Dia          :    10   (mm)

Nos. of bar  :     5   (Nos.)
```




```
Change the data ( Y/N )? Y
```

D.3.8 Longitudinal Reinforcement of Cross Beam (upper & lower side, flank)

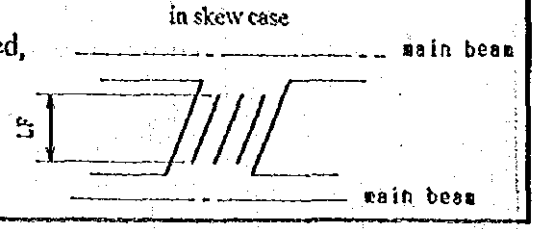
```
                [ Pretensioned T-beam ]
(( Cross beam )) longitudinal
 [ At intermediate beam ]


  < Upper side >
LF           :    0.0 (mm)
Dia          :      0 (mm)

Nos. of bar  :      0 (Nos.)
```

< Lower side >
< Flank >

LF

```
Change the data ( Y/N )? Y
```

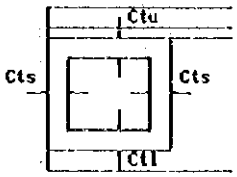
"LF" shall be input by following the illustration displayed, in the order of top, bottom and sides.



The input procedure here is the same as that of the intermediate cross-beam.

◎ Cover data

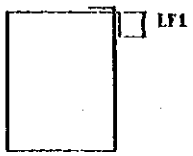
```
                    [ Pretensioned T-beam ]
(( Cross beam )) cover data
   [ At end cross beam ]

                                        Transversal reinforcement

                                        Ctu :     50.0 (mm)
                                        Ctl :     50.0 (mm)
                                        Cts :     50.0 (mm)
```




```
Change the data ( Y/N )? N
```

◎ Arrangement of link

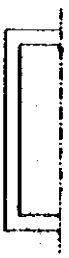
```
                    [ Pretensioned T-beam ]
(( Cross beam )) arrangement of link
   [ At end cross beam ]

LF1          :   20.0   (mm)

Dia          :     10   (mm)

Nos. of bar  :      5   (Nos.)
```

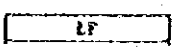



```
Change the data ( Y/N )? N
```

◎ Longitudinal reinforcement

```
                    [ Pretensioned T-beam ]
(( Cross beam )) longitudinal
 [ At end cross beam ]

  < Upper side >
LF           :   880.0 (mm)

Dia          :     10 (mm)

Nos. of bar  :      1 (Nos.)
```

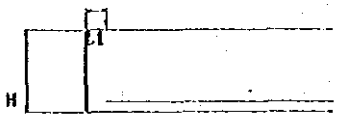


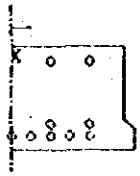



```
Change the data ( Y/N )? N
```

E.1.1 Longitudinal Prestressing Steel Arrangement (PRSS, PRHS)

```
                    [ Pretensioned solid slab ]
(( Longitudinal prestressing steel arrangement ))

    Type of prestressing steel          :  1
    Kind of prestressing steel(Max10)   :  5

Nos. L1(mm) H (mm)          N(nos.) X1(mm) X2(mm) X3(mm) X4(mm) X5(mm)
  1   100.0   70.0              4   122.5   245.0
  2   100.0  375.0              4   122.5   245.0
  3   100.0  430.0              2   245.0
  4   750.0  430.0              3     0.0   122.5
  5  1500.0  430.0              4    61.3   183.8
```

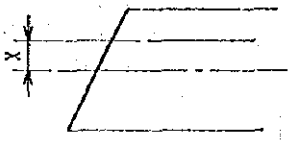





```
Change the data ( Y/N )? Y
```

shows input items

in skew case

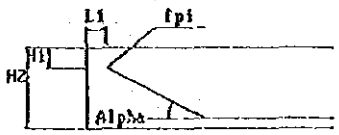


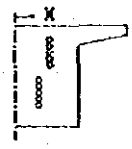
Depending on the number of cables in each layer, the input items differ (input of the distance "x" on half the beam width).

When the number of cables is odd number, "x" shall be input with "0.0".

E.1.2 Longitudinal Prestressing Steel Arrangement (PRT)

```
                    [ Pretensioned T-beam ]
(( Longitudinal prestressing steel arrangement ))

    Type of prestressing steel          :  2
    Kind of prestressing steel(Max10)   :  10

Nos. L1(mm) H1(mm) H2(mm) Alpha(o)      N(nos.) X1(mm) X2(mm) X3(mm) X4(mm)
  1   100.0  150.0  570.0    5.0           2    60.0
  2   100.0  215.0  635.0    5.0           2    80.0
  3   100.0  280.0  700.0    5.0           2    80.0
  4   100.0  345.0  765.0    5.0           2    80.0
  5   100.0  410.0  830.0    5.0           2    80.0
  6   100.0  570.0  570.0    0.0           2    53.3
  7   100.0  635.0  635.0    0.0           2    53.3
  8   100.0  700.0  700.0    0.0           2    53.3
  9   100.0  765.0  765.0    0.0           2    53.3
 10   100.0  830.0  830.0    0.0           2    53.3
```

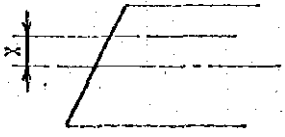





```
Change the data ( Y/N )? Y
```

shows input items

in skew case

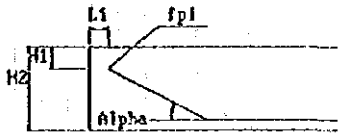


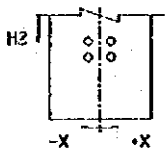
Depending on the number of cables in each layer, the input items differ (input of the distance "x1" on half the beam width).

When the number of cables is odd number, "x1" shall be input with "0.0".

E.1.3 Longitudinal Prestressing Steel Arrangement (PTT)

```
                [ Posttensioned T-beam ]
(( Longitudinal prestressing steel arrangement ))

    Type of prestressing steel          :  1
    Kind of prestressing steel(Max10)   :  4

Nos. Li(mm) Hi(mm) H2(mm) Alpha(o)    R(mm)  N(nos.)  X(mm)
  1   150.0  200.0 1390.0    6.0       10.0      1     59.0
  2   150.0  500.0 1390.0    5.0       10.0      1    -59.0
  3   150.0  800.0 1490.0    1.0       10.0      1    -59.0
  4   150.0 1100.0 1490.0    3.0       10.0      1     59.0
```

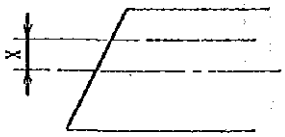





```
Change the data ( Y/N )? Y
```

shows input items

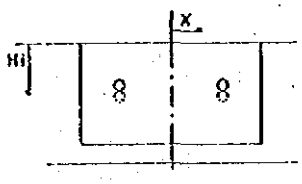
in skew case



Depending on the number of cables in each layer, the input items differ (input of the distance "x" for all cables.)

E.2 Transversal Prestressing Steel Arrangement (intermediate cross beam)

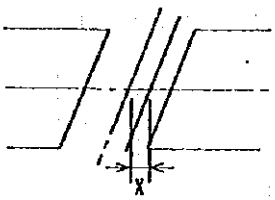
```
                [ Pretensioned T-beam ]
(( Transversal prestressing steel Arrangement of cross bean ))

    Type of transversal prestressing steel          :  3
    Nominal area                                    :  1184.59 (mm2)
    Diameter of sheaths                             :    75.0  (mm)
    Effective prestress                             :  1360.0  (N/mm2)
    [ At intermediate cross bean ]
    Kind of prestressing steel(Max3)                :  2
    Nos    Hi(mm)     N(nos.)  X1(mm)  X2(mm)  X3(mm)  X4(mm)
       1     350.0        2     170.0
       2     450.0        2     170.0
```




```
Change the data ( Y/N )? Y
```

shows input items

in skew case

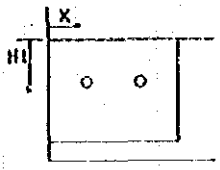


Depending on the number of cables in each layer, the input items differ (input of the distance "x" on half the beam width).

When the number of cables in odd number, "x" shall be input with "0.0".

E.3 Transversal Prestressing Steel Arrangement (end cross beam)

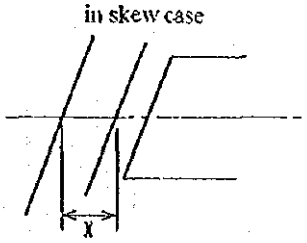
```
                [ Pretensioned T-beam ]
(( Transversal prestressing steel Arrangement of cross beam ))

   Type of transversal prestressing steel          : 3
   Nominal area                                    : 1184.50 (mm2)
   Diameter of sheaths                             :   75.0  (mm)
   Effective prestress                             : 1360.0  (N/mm2)
   [ At end cross beam ]
   Kind of prestressing steel(Max3)                : 1
   Nos    H1(mm)     H(nos.)  X1(mm)  X2(mm)  X3(mm)  X4(mm)
     1     350.0        2     115.0   285.0
```




```
Change the data ( Y/N )? Y
```

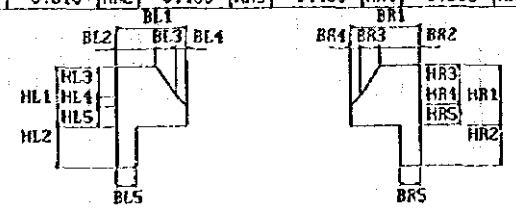
shows input items

Depending on the number of cables in each layer, the input items differ (input of the distance "x" for all cables).



F.1 Parapet Data

```
                    ( Pretensioned solid slab )

(( Parapet data ))

        Left Side  (m)
 BL1  0.450  BL2  0.275  BL3  0.050  BL4  0.125  BL5  0.140
 HL1  0.810  HL2  0.430  HL3  0.430  HL4  0.255  HL5  0.125

        Right Side  (m)
 BR1  0.450  BR2  0.275  BR3  0.050  BR4  0.125  BR5  0.140
 HR1  0.810  HR2  0.430  HR3  0.430  HR4  0.255  HR5  0.125
```



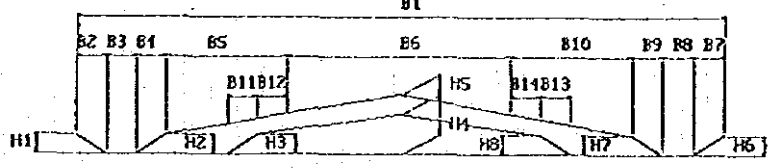

```
        Change the data ( Y/N )? Y
```

To change the data, input the dimensions by following the illustration displayed.

[Notes] To input new data, the following inputs are in dispensable.
PRSS, PRHS BL5, BR5
PRT, PTT BL5, HL5, BR5, HR5

F.2 Carriageway Data

```
                    ( Pretensioned solid slab )

(( Carriageway data ))

 B1  13.000  B5  7.000  H4  0.135  H5  0.060

        Left Side  (m)
 B2  0.000  B3  0.000  B4  0.300  B5  2.700  B11  0.000  B12  0.300
 H1  0.000  H2  0.040  H3  0.040

        Right Side  (m)
 B7  0.000  B8  0.000  B9  0.300  B10  2.700  B13  0.000  B14  0.300
 H6  0.000  H7  0.040  H8  0.040
```




```
        Change the data ( Y/N )? Y
```

To change the data, input the dimensions by following the illustration displayed.

F.3 Footway Data

[Pretensioned T-beam]

((Footway data))

Left Side (m)

SW1	0.000	SW2	0.000		
SH1	0.000	SH2	0.000	SH3	0.000

Right Side (m)

SW3	0.000	SW4	0.000		
SH4	0.000	SH5	0.000	SH5	0.000

Change the data (Y/N)? N

To change the data, input the dimensions by following the illustration displayed.

G.1 Draw Scale Data

```
                    [ Reinforced concrete slab ]
(( Draw Scale data ))

        Elevation                    1: 40
        Plan                         1: 40
        Cross section                1: 40
        Details of link              1: 20
        Details at "A"               1: 10


          Change the data ( Y/N )? Y
```

To change the data, input the scale for each drawing.

While, the input items differ in each beam type.

G.2 Arrangement of Drawing Data

```
                [ Reinforced concrete slab ]
(( Arrangement of Drawing data ))     General View

      Kind of Drawing              X(mm)     Y(mm)
        Elevation                  300.0     498.6
        Plan                       300.0     258.6
        Cross Section              685.0     258.6
        Details of link            515.0     120.0
        Details at "A"             500.0     240.0

  Note :  X,Y : the origin is the left end of botton line on drawing area


          Change the data ( Y/N )? Y
```

To change the data, input the layout coordinates for each drawing.

While, the input items differ in each beam type.

H.1 Save Drawing Input Data

```
**************************************************
**************************************************
**************************************************
**************************************************
***** Please Set Drawing Data Flexible Disk *****
**************************************************
Press any key to continue . . .
```

Inserting the floppy disk for drawing input data, push enter key.

H.2 Save DXF-File

```
Change Flexible Disk for DXF-FILE
```

Completing the save of input data, the above screen comes out. Then push enter key after the following operations:

1) Normal ; Keep the floppy disk for drawing input data set.
2) When the DXF-file is big ; Change floppy disk.

3. List of Input Data

3.1 Bar and Prestressing Steel Data

Drawing Data for RCSS (1)

			R5			R3		
			RCSS-6	RCSS-8	RCSS-10	RCSS-6	RCSS-8	RCSS-10
Display No. D.1.1 Cover data	Longitudinal	Clu	66.0	66.0	66.0	66.0	66.0	66.0
		Cll	66.0	66.0	66.0	66.0	66.0	66.0
		Cls	50.0	50.0	50.0	50.0	50.0	50.0
	Transversal	Ctu	50.0	50.	50.0	50.0	50.0	50.0
		Ctl	50.0	50.0	50.0	50.0	50.0	50.0
		Cts	50.0	50.0	50.0	50.0	50.0	50.0
Display No. D.1.2 Bar Data of Longitudinal Re-bar	Upper side(1)	Lh	150.0	150.0	150.0	150.0	150.0	150.0
		Dia	12	12	12	12	12	12
		L0	72.0	72.0	72.0	72.0	72.0	72.0
		Pitch	209.3	209.3	209.3	209.3	209.3	209.3
		Nos. of bar	4	4	4	4	4	4
	Upper side(2)	Lh	150.0	150.0	150.0	150.0	150.0	150.0
		Dia	12	12	12	12	12	1
		L0	950.0	950.0	950.0	950.0	950.0	950.0
		Pitch	250.0	250.0	250.0	250.0	250.0	250.0
		Nos. of bar	25	25	25	21	21	21
	Lower side(1)	Lh	0.0	0.0	0.0	0.0	0.0	0.0
		Dia	32	32	32	32	32	32
		L0	82.0	82.0	82.0	82.0	82.0	82.0
		Pitch	109.0	125.0	125.0	109.0	125.0	125.0
		Nos. of bar	2	3	3	2	3	3
	Lower side(2)	Lh	150.0	150.0	150.0	150.0	150.0	150.0
		Dia	32	32	32	32	32	32
		L0	300.0	450.0	450.0	300.0	450.0	450.0
		Pitch	100.0	125.0	125.0	100.0	125.0	125.0
		Nos. of bar	5	53	53	5	45	45
	Lower side(3)	Lh	150.0	---	---	150.0	---	---
		Dia	32	---	---	32	---	---
		L0	825.0	---	---	825.0	---	---
		Pitch	125.0	---	---	125.0	---	---
		Nos. of bar	50	---	--	42	---	---

Drawing data for RC S (2)

			R5			R3		
			RCSS-6	RCSS-8	RCSS-10	RCSS-6	RCSS-8	RCSS-10
Display No. D.1.3 Bar Data of Transversal Re-bar	Upper side(1)	Lh	100.0	100.0	100.0	100.0	100.0	100.0
		Dia	16	16	16	16	16	16
		L0	50.0	50.0	50.0	50.0	50.0	50.0
		Pitch	75.0	75.0	75.0	75.0	75.0	75.0
		Nos. of bar	19	19	19	19	19	19
		Nos. of lap	1	1	1	1	1	1
		Length of lap	550.0	550.0	550.0	550.0	550.0	550.0
		L10	9000.0	9000.0	9000.0	9000.0	9000.0	9000.0
	Upper side(2)	Lh	100.0	100.0	100.0	100.0	100.0	100.0
		Dia	16	16	16	16	16	16
		L0	1500.0	1500.0	1500.0	1500.0	1500.0	1500.0
		Pitch	150.0	150.0	150.0	150.0	150.0	150.0
		Nos. of bar	12	19	26	12	19	26
		Nos. of lap	1	1	1	1	1	1
		Length of lap	550.0	550.0	550.0	550.0	550.0	550.0
		L11	9000.0	9000.0	9000.0	9000.0	9000.0	9000.0
	Lower side(1)	Lh	100.0	100.0	100.0	100.0	100.0	100.0
		Dia	16	16	16	16	16	16
		L0	50.0	50.0	50.0	50.0	50.0	50.0
		Pitch	75.0	75.0	75.0	75.0	75.0	75.0
		Nos. of bar	19	19	19	19	19	19
		Nos. of lap	1	1	1	1	1	1
		Length of lap	550.0	550.0	550.0	550.0	550.0	550.0
		L11	9000.0	9000.0	9000.0	9000.0	9000.0	9000.0
	Lower side(2)	Lh	100.0	100.0	100.0	100.0	100.0	100.0
		Dia	16	16	16	16	16	16
		L0	1500.0	1500.0	1500.0	1500.0	1500.0	1500.0
		Pitch	150.0	150.0	150.0	150.0	150.0	150.0
		Nos. of bar	12	19	26	12	19	26
		Nos. of lap	1	1	1	1	1	1
		Length of lap	550.0	550.0	550.0	550.0	550.0	550.0
		L11	9000.0	9000.0	9000.0	9000.0	9000.0	9000.0
Display No. D.1.4 Bar Data of Link	Link	Dia	16	16	16	16	16	16
		L11	630.0	630.0	630.0	630.0	630.0	630.0
		L12	350.0	500.0	650.0	350.0	500.0	650.0
		L13	150.0	150.0	150.0	150.0	150.0	150.0
		Type	B	B	B	B	B	B
		NL	21	28	35	21	28	35
		LX1	150.0	150.0	150.0	150.0	150.0	150.0
		LX2	300.0	300.0	300.0	300.0	300.0	300.0
		NT	25	25	25	21	21	21
		TY1	950.0	950.0	950.0	950.0	950.0	950.0
		TY2	500.0	500.0	500.0	500.0	500.0	500.0

Drawing Data for PRSS

			15 deg			30 deg		
			PRSS-6	PRSS-8	PRSS-10	PRSS-6	PRSS-8	PRSS-10
Display No. D.2.1 Cover data	Transversal	Ctu	50.0	50.0	50.0	50.0	50.0	50.0
		Ctl	50.0	50.0	50.0	50.0	50.0	50.0
		Cts	50.0	50.0	50.0	50.0	50.0	50.0
D.2.2 Shape of Link		Type	A	A	A	A	A	A
Display No. D.2.3 Arrangement of Link	Link (1)	LF	150.0	150.0	150.0	150.0	150.0	150.0
		Dia	12	12	12	12	12	12
		L0	50.0	50.0	50.0	50.0	50.0	50.0
		Pitch	100.0	100.0	100.0	100.0	100.0	100.0
		Nos. of bar	32	42	53	23	33	53
	Link (2)	LF	---	---	---	150.0	150.0	---
		Dia	---	---	---	12	12	---
		L0	---	---	---	2340.0	3345	---
		Pitch	---	---	---	90.0	95.0	---
		Nos. of bar	---	---	---	10	10	---
D.2.4 Longi. Bar Cover data		Co	50.0	50.0	50.0	50.0	50.0	50.0
Display No. D.2.5 Bar Data of Longitudinal Re-bar	Upper side	Dia	10	10	10	10	10	10
		L0	220.0	220.0	220.0	220.0	220.0	220.0
		Pitch	100.0	100.0	100.0	100.0	100.0	100.0
		Nos.of bar	2	2	2	2	2	2
		Nos. of lap	0	0	0	0	0	0
	Lower side	Dia	0	0	0	0	0	0
		L0	0.0	0.0	0.0	0.0	0.0	0.0
		Pitch	0.0	0.0	0.0	0.0	0.0	0.0
		Nos.of bar	0	0	0	0	0	0
		Nos. of lap	0	0	0	0	0	0
	Flank	Dia	10	10	10	10	10	10
		L0	200.0	200.0	200.0	200.0	200.0	200.0
		Pitch	100.0	210.0	300.0	100.0	210.0	300.0
		Nos.of bar	2	2	2	2	2	2
		Nos. of lap	0	0	0	0	0	0
Display No. E.1.1 Longitudinal PC tendon Arrangement	No.1	x1	183.8	183.8	183.8	183.8	183.8	183.8
		x2	245.0	245.0	245.0	245.0	245.0	245.0
	No.2	x1	245.0	183.8	183.8	---	245.0	183.8
		x2	---	245.0	245.0	---	---	245.0
	No.3	x1	0.0	0.0	0.0	0.0	0.0	0.0
		x2	61.3	61.3	61.3	61.3	61.3	61.3
		x3	122.5	122.5	122.5	122.5	122.5	122.5
		x4	183.8	183.8	183.8	183.8	183.8	183.8
		x5	245.0	245.0	245.0	245.0	245.0	245.0
E.2 Trans. PC Arrange. (Intermediate cross beam)		No.1 x	0.0	130.0	130.0	0.0	130.0	130.0
		No.2 x	180.0	130.0	130.0	180.0	130.0	130.0
E.3 Trans. PC Arrange. (End cross beam)		No.1 x	200.0	200.0	200.0	200.0	200.0	200.0
		No.2 x	400.0	400.0	400.0	400.0	400.0	400.0

Drawing Data for PRHS

			PRHS-10	PRHS-12	PRHS-14	PRHS-16	PRHS-18	PRHS-20
Display No. D.2.1 Cover data	Transversal	Ctu	50.0	50.0	50.0	50.0	50.0	50.0
		Ctl	50.0	50.0	50.0	50.0	50.0	50.0
		Cts	50.0	50.0	50.0	50.0	50.0	50.0
D.2.2 Shape of Link		Type	A	A	A	A	A	A
Display No. D.2.3 Arrangement of Link	Link (1)	LF	150.0	150.0	150.0	150.0	150.0	150.0
		Dia	10	10	10	10	10	10
		L0	50.0	50.0	50.0	50.0	50.0	50.0
		Pitch	100.0	100.0	100.0	100.0	100.0	100.0
		Nos. of bar	53	63	73	83	93	104
D2.4 Longi. Bar Cover data		Co	50.0	50.0	50.0	50.0	50.0	50.0
Display No. D.2.5 Bar Data of Longitudinal Re-bar	Upper side	Dia	10	10	10	10	10	10
		L0	220.0	220.0	220.0	220.0	220.0	220.0
		Pitch	100.0	100.0	100.0	100.0	100.0	100.0
		Nos.of bar	2	2	2	2	2	2
		Nos. of lap	0	1	1	1	1	1
		Length of lap	---	400.0	400.0	400.0	400.0	400.0
		L10	---	9000.0	9000.0	12000.0	12000.0	12000.0
	Lower side	Dia	0	0	0	0	0	0
		L0	0.0	0.0	0.0	0.0	0.0	0.0
		Pitch	0.0	0.0	0.0	0.0	0.	0.0
		Nos.of bar	0	0	0	0	0	0
		Nos. of lap	0	0	0	0	0	0
	Flank	Dia	10	10	10	10	10	10
		L0	180.0	180.0	180.0	180.0	300.0	350.0
		Pitch	150.0	150.0	200.0	250.0	200.0	200.0
		Nos.of bar	3	3	3	3	3	3
		Nos. of lap	0	1	1	1	1	1
		Length of lap	---	400.0	400.0	400.0	400.0	400.0
		L10	---	9000.0	9000.0	12000.0	12000.0	12000.0
Display No. E.1.1 Longitudinal PC tendon Arrangement	No.1	x	245.0	245.0	245.0	245.0	245.0	245.0
	No.2	x	245.0	245.0	245.0	245.0	245.0	245.0
	No.3	x	---	---	---	183.8	183.8	183.8
	No.4	x	---	---	---	245.0	245.0	245.0
	No.5	x1	0.0	0.0	0.0	0.0	0.0	0.0
		x2	122.5	122.5	122.5	122.5	122.5	122.5
		x3	245.0	245.0	245.0	245.0	245.0	245.0
	No.6	x1	61.3	61.3	61.3	61.3	61.3	61.3
		x2	183.8	183.8	183.8	183.8	183.8	183.8
Display No. E.2 Trans. PC arrangement (Intermediate cross beam)		No.1 x1	130.0	130.0	0.0	0.0	0.0	0.0
		No.1 x2	---	---	180.0	180.0	180.0	180.0
		No.2 x1	130.0	130.0	0.0	0.0	0.0	0.0
		No.2 x2	---	---	180.0	180.0	180.0	180.0
Display No. E.3 Trans. PC arrangement (End cross beam)		No.1 x1	200.0	200.0	200.0	200.0	200.0	200.0
		No.1 x2	400.0	400.0	400.0	400.0	400.0	400.0
		No.2 x1	200.0	200.0	200.0	200.0	200.0	200.0
		No.2 x2	400.0	400.0	400.0	400.0	400.0	400.0

Drawing Data for PRT (I)

			Bend up			Debonded		
			PRT-18	PRT-20	PRT-22	PRT-18	PRT-20	PRT-22
Display No. C.5 Dimension of Deck Form		B0i	1280.0	1280.0	1280.0	1280.0	1280.0	1280.0
		B1	600.0	600.0	600.0	600.0	600.0	600.0
		H1	30.0	30.0	30.0	30.0	30.0	30.0
Display No. D.3.1 Cover Data of Link	Transversal	Ctu	50.0	50.0	50.0	50.0	50.0	50.0
		Ctl	50.0	50.0	50.0	50.0	50.0	50.0
		Cts1	50.0	50.0	50.0	50.0	50.0	50.0
		Cts2	50.0	50.0	50.0	50.0	50.0	50.0
		Cts3	50.0	50.0	50.0	50.0	50.0	50.0
Display No. D.3.2 Arrangement of Link	Link (1)	Lh1	150.0	150.0	150.0	150.0	150.0	150.0
		Lh2	150.0	150.0	150.0	150.0	150.0	150.0
		Dia	12	12	12	12	12	12
		L0	50.0	50.0	50.0	50.0	50.0	50.0
		Pitch	125.0	100.0	100.0	125.0	100.0	100.0
		Nos. of bar	3	2	3	3	2	3
	Link (2)	Lh1	150.0	150.0	150.0	150.0	150.0	150.0
		Lh2	150.0	150.0	150.0	150.0	150.0	150.0
		Dia	12	12	12	12	12	12
		L0	450.0	300.0	400.0	450.0	300.0	400.0
		Pitch	150.0	150.0	150.0	150.0	150.0	150.0
		Nos. of bar	60	68	74	60	68	74

Drawing data for PRT (2)

			Bend up			Debonded		
			PRT-18	PRT-20	PRT-22	PRT-18	PRT-20	PRT-22
D.3.3 Cover of Longi. bar		Cls	50.0	50.0	50.0	50.0	50.0	50.0
Display No. D.3.4 Bar Data of Longitudinal Re-bar	Flange upper side	Dia	12	12	12	12	12	12
		L0	70.0	70.0	70.0	70.0	70.0	70.0
		Pitch	125.0	125.0	125.0	125.0	125.0	125.0
		Nos. of bar	3	3	3	3	3	3
		Nos. of lap	1	1	1	1	1	1
		Length of lap	450.0	450.0	450.0	450.0	450.0	450.0
		L11	12000.0	12000.0	12000.0	12000.0	12000.0	12000.0
	Flange lower side	Dia	12	12	12	12	12	12
		L0	70.0	70.0	70.0	70.0	70.0	70.0
		Pitch	125.0	125.0	125.0	125.0	125.0	125.0
		Nos. of bar	2	2	2	2	2	2
		Nos. of lap	1	1	1	1	1	1
		Length of lap	450.0	450.0	450.0	450.0	450.0	450.0
		L11	12000.0	12000.0	12000.0	12000.0	12000.0	12000.0
	Beam lower side	Dia	0	0	0	0	0	0
		L0	0.0	0.0	0.0	0.0	0.0	0.0
		Pitch	0.0	0.0	0.0	0.0	0.0	0.0
		Nos. of bar	0	0	0	0	0	0
		Nos. of lap	0	0	0	0	0	0
		Length of lap	0.0	0.0	0.0	0.0	0.0	0.0
		L11	0.0	0.0	0.0	0.0	0.0	0.0
	Flank (1)	Dia	12	12	12	12	12	12
		L0	100.0	100.0	100.0	100.0	100.0	100.0
		Pitch	0.0	0.0	0.0	0.0	0.0	0.0
		Nos. of bar	1	1	1	1	1	1
		Nos. of lap	1	1	1	1	1	1
		Length of lap	450.0	450.0	450.0	450.0	450.0	450.0
		L11	12000.0	12000.0	12000.0	12000.0	12000.0	12000.0
	Flank (2)	Dia	12	12	12	12	12	12
		L0	530.0	450.0	450.0	530.0	450.0	450.0
		Pitch	180.0	300.0	300.0	180.0	300.0	300.0
		Nos. of bar	3	3	3	3	3	3
		Nos. of lap	1	1	1	1	1	1
		Length of lap	450.0	450.0	450.0	450.0	450.0	450.0
		L11	12000.0	12000.0	12000.0	12000.0	12000.0	12000.0

Drawing Data for PRT (3)

			Bend up			Debonded		
			PRT-18	PRT-20	PRT-22	PRT-18	PRT-20	PRT-22
Display No. D.3.5 Arrangement of Shear Connecter	Shear Connecter (1)	HZ1	140.0	140.0	140.0	140.0	140.0	140.0
		LF1	450.0	450.0	450.0	450.0	450.0	450.0
		LF2	280.0	280.0	280.0	280.0	280.0	280.0
		Dia	16	16	16	16	16	16
		L0	5. .0	50.0	50.0	50.0	50.0	50.0
		Pitch	125.0	100.0	100.0	125.0	100.0	100.0
		Nos. of bar	3	2	3	3	2	3
	Shear Connecter (2)	HZ1	140.0	140.0	140.0	140.0	140.0	140.0
		LF1	450.0	450.0	450.0	450.0	450.0	450.0
		LF2	280.0	280.0	280.0	280.0	280.0	280.0
		Dia	16	16	16	16	16	16
		L0	450.0	300.0	400.0	450.0	300.0	400.0
		Pitch	150.0	150.0	150.0	150.0	150.0	150.0
		Nos. of bar	12	20	23	12	20	23
	Shear Connecter (3)	HZ1	140.0	140.0	140.0	140.0	140.0	140.0
		LF1	450.0	450.0	450.0	450.0	450.0	450.0
		LF2	280.0	280.0	280.0	280.0	280.0	280.0
		Dia	12	12	12	12	12	12
		L0	2250.0	330 .0	3850.0	2250.0	3300.0	3850.0
		Pitch	150.0	150.0	150.0	150.0	150.0	150.0
		Nos. of bar	18	14	15	18	14	15
	Shear Connecter (4)	HZ1	140.0	140.0	140.0	140.0	140.0	140.0
		LF1	450.0	450.0	450.0	450.0	450.0	450.0
		LF2	280.0	280.0	280.0	280.0	280.0	280.0
		Dia	10	10	10	10	10	10
		L0	4950.0	5400.0	6100.0	4950.0	5400.0	6100.0
		Pitch	150.0	150.0	150.0	150.0	150.0	150.0
		Nos. of bar	12	14	20	12	14	20
	Shear Connecter (5)	HZ1	140.0	140.0	140.0	140.0	140.0	140.0
		LF1	450.0	450.0	450.0	450.0	450.0	450.0
		LF2	280.0	280.0	280.0	280.0	280.0	280.0
		Dia	10	10	10	10	10	10
		L0	6900.0	7650.0	9250.0	6900.0	7650.0	9250.0
		Pitch	300.0	300.0	300.0	300.0	300.0	300.0
		Nos. of bar	9	10	8	9	10	8

Drawing Data for PRT (4)

			Bend up			Debonded		
			PRT-18	PRT-20	PRT-22	PRT-18	PRT-20	PRT-22
Display No. D.3.6 Cover Data of (Intermediate cross beam)		Ctu	50.0	50.0	50.0	50.0	50.0	50.0
		Ctl	50.0	50.0	50.0	50.0	50.0	50.0
		Cts	50.0	50.0	50.0	50.0	50.0	50.0
Display No. D.3.7 Arrangement of Link (Intermediate cross beam)		LF1	100.0	100.0	100.0	100.0	100.0	100.0
		Dia	12	12	12	12	12	12
		Nos. of bar	7	7	7	7	7	7
Display No. D.3.8 Longitudinal Re-bar of Intermediate cross beam	Upper side	LF1	0.0	0.0	0.0	0.0	0.0	0.0
		Dia	0	0	0	0	0	0
		Nos. of bar	0	0	0	0	0	0
	Lower side	LF1	0.0	0.0	0.0	0.0	0.0	0.0
		Dia	0	0	0	0	0	0
		Nos. of bar	0	0	0	0	0	0
	Flank	LF	880.0	880.0	880.0	880.0	880.0	880.0
		Dia	10	10	10	10	10	10
		Nos. of bar	5	5	5	5	5	5
Display No. D.3.9 Re-bar Arrangement of End cross beam	Cover data	Ctu	50.0	50.0	50.0	50.0	50.0	50.0
		Ctl	50.0	50.0	50.0	50.0	50.0	50.0
		Cts	50.0	50.0	50.0	50.0	50.0	50.0
	Link	LF1	100.0	100.0	100.0	100.0	100.0	100.0
		Dia	12	12	12	12	12	12
		Nos. of bar	7	7	7	7	7	7
	Longi. re-bar upper side	LF	0.0	0.0	0.0	0.0	0.0	0.0
		Dia	0	0	0	0	0	0
		Nos. of bar	0	0	0	0	0	0
	Longi. re-bar lower side	LF	0.0	0.0	0.0	0.0	0.0	0.0
		Dia	0	0	0	0	0	0
		Nos. of bar	0	0	0	0	0	0
	Longi. re-bar flank	LF	880.0	880.0	880.0	880.0	880.0	880.0
		Dia	10	10	10	10	10	10
		Nos. of bar	5	5	5	5	5	5
Display No. E.1.2 Longitudinal PC tendon Arrangement	No.1	x	26.25	26.25	26.25	80.0	26.25	26.25
	No.2	x	26.25	26.25	26.25	80.0	26.25	26.25
	No.3	x	26.25	26.25	26.25	80.0	26.25	26.25
	No.4	x	80.0	26.25	26.25	80.0	26.25	26.25
	No.5	x	80.0	80.0	26.25	26.25	80.0	26.25
	No.6	x	80.0	80.0	80.0	26.25	80.0	80.0
	No.7	x	26.25	80.0	80.0	26.25	80.0	80.0
	No.8	x	80.0	80.0	80.0	26.25	80.0	80.0
	No.9	x	---	---	80.0	80.0	---	80.0
	No.10	x	---	---	80.0	---	---	80.0
E.2 Trans. PC Arange. (Intermediate cross beam)		No.1 x	150.0	150.0	150.0	150.0	150.0	150.0
		No.2 x	150.0	150.0	150.0	150.0	150.0	150.0
E.3 Trans. PC Arange. (End cross beam)		No.1 x	125.0	200.0	200.0	125.0	200.0	200.0
		No.2 x	275.0	200.0	200.0	275.0	200.0	200.0

Drawing Data for PTT (1)

			PTT-22	PTT-25	PTT-28	PTT-30	PTT-32
Display No. C.5 Dimension of Deck Form		B0i	2100.0	2100.0	2100.0	2100.0	2100.0
		B1	1220.0	1220.0	1220.0	1220.0	1220.0
		H1	30.0	30.0	30.0	30.0	30.0
Display No. D.3.1 Cover Data of Link	Trnasversal	Ctu	50.0	50.0	50.0	50.0	50.0
		Ctl	50.0	50.0	50.0	50.0	50.0
		Cts1	50.0	50.0	50.0	50.0	50.0
		Cts2	50.0	50.0	50.0	50.0	50.0
		Cts3	50.0	50.0	50.0	50.0	50.0
Display No. D.3.2 Arrangement of Link	Link (1)	Lh1	150.0	150.0	150.0	150.0	150.0
		Lh2	150.0	150.0	150.0	150.0	150.0
		Dia	12	12	12	12	12
		L0	50.0	50.0	50.0	50.0	50.0
		Pitch	100.0	100.0	100.0	150.0	150.0
		Nos. of bar	3	3	3	103	110
	Link (2)	Lh1	150.0	150.0	150.0	---	---
		Lh2	150.0	150.0	150.0	---	---
		Dia	12	12	12	---	---
		L0	400.0	400.0	400.0	---	---
		Pitch	150.0	150.0	150.0	---	---
		Nos. of bar	74	84	94	---	---

Drawing Data for PTT (2)

			PTT-22	PTT-25	PTT-28	PTT-30	PTT-32
D.3.3 Cover of Longi. bar		Cls	50.0	50.0	50.0	50.0	50.0
Display No. D.3.4 Bar Data of Longitudinal Re-bar	Flange upper side	Dia	12	12	12	12	12
		L0	70.0	70.0	70.0	70.0	70.0
		Pitch	160.0	160.0	160.0	160.0	160.0
		Nos. of bar	3	3	3	3	3
		Nos. of lap	1	2	2	2	2
		Length of lap	450.0	450.0	450.0	450.0	450.0
		L10	12000.0	12000.0	12000.0	12000.0	12000.0
		L11	---	9000.0	9000.0	12000.0	12000.0
	Flange lower side	Dia	12	1	12	12	12
		L0	70.0	70.0	70.0	70.0	70.0
		Pitch	160.0	160.0	160.0	160.0	160.0
		Nos. of bar	2	2	2	2	2
		Nos. of lap	2	2	2	2	2
		Length of lap	450.0	450.0	450.0	450.0	450.0
		L10	12000.0	12000.0	12000.0	12000.0	12000.0
		L11	9000.0	9000.0	9000.0	12000.0	12000.0
	Beam lower side	Dia	0	0	0	0	0
		L0	0.0	0.0	0.0	0.0	0.0
		Pitch	0.0	0.0	0.0	0.0	0.0
		Nos. of bar	0	0	0	0	0
		Nos. of lap	0	0	0	0	0
		Length of lap	0.0	0.0	0.0	0.0	0.0
		L10	0.0	0.0	0.0	0.0	0.0
		L11	0.0	0.0	0.0	0.0	0.0
		Lx1	0.0	0.0	0.0	0.0	0.0
		Lx2	0.0	0.0	0.0	0.0	0.0
	Flank (1)	Dia	12	12	12	12	12
		L0	70.0	70.0	70.0	70.0	70.0
		Pitch	0.0	0.0	0.0	0.0	0.0
		Nos. of bar	1	1	1	1	1
		Nos. of lap	1	2	2	2	2
		Length of lap	450.0	450.0	450.0	450.0	450.0
		L10	12000.0	12000.0	12000.0	12000.0	12000.0
		L11	---	9000.0	9000.0	12000.0	12000.0
		Lx1	950.0	950.0	950.0	950.0	950.0
		Lx2	525.0	525.0	525.0	525.0	525.0
	Flank (2)	Dia	12	12	12	12	12
		L0	370.0	370.0	370.0	370.0	370.0
		Pitch	300.0	300.0	300.0	300.0	300.0
		Nos. of bar	4	5	5	5	5
		Nos. of lap	1	2	2	2	2
		Length of lap	450.0	450.0	450.0	450.0	450.0
		L10	12000.0	12000.0	12000.0	12000.0	12000.0
		L11	---	9000.0	9000.0	12000.0	12000.0
		Lx1	950.0	950.0	950.0	950.0	950.0
		Lx2	525.0	525.0	525.0	525.0	525.0
	Flank (3)	Dia	---	---	---	---	2
		L0	---	---	---	---	1770.0
		Pitch	---	---	---	---	0.0
		Nos. of bar	---	---	---	---	1
		Nos. of lap	---	---	---	---	2
		Length of lap	---	---	---	---	450.0
		L10	---	---	---	---	12000.0
		L11	---	---	---	---	12000.0
		Lx1	---	---	---	---	950.0
		Lx2	---	---	---	---	525.0

Drawing Data for PTT (3)

			PTT-22	PTT-25	PTT-28	PTT-30	PTT-32
isplay No. D.3.5 Arrangement of Shear Connecter	Shear Connecter (1)	HZ1	140.0	140.0	140.0	140.0	140.0
		LF1	580.0	580.0	580.0	580.0	580.0
		LF2	360.0	360.0	360.0	360.0	360.0
		Dia	16	16	16	16	16
		L0	50.0	50.0	50.0	50.0	50.0
		Pitch	100.0	100.0	100.0	150.0	150.0
		Nos. of bar	3	3	3	43	56
	Shear Connecter (2)	HZ1	140.0	140.0	140.0	140.0	140.0
		LF1	580.0	580.0	580.0	580.0	580.0
		LF2	360.0	360.0	360.0	360.0	360.0
		Dia	16	16	16	16	16
		L0	400.0	400.0	400.0	6500.0	8450.0
		Pitch	150.0	150.0	150.0	150.0	150.0
		Nos. of bar	24	26	38	30	22
	Shear Connecter (3)	HZ1	140.0	140.0	140.0	140.0	140.0
		LF1	580.0	580.0	580.0	580.0	580.0
		LF2	360.0	360.0	360.0	360.0	360.0
		Dia	16	16	16	12	12
		L0	4000.0	4300.0	6100.0	11000.0	11750.0
		Pitch	150.0	150.0	150.0	150.0	15 .0
		Nos. of bar	20	25	28	15	32
	Shear Connecter (4)	HZ1	140.0	140.0	140.0	140.0	140.0
		LF1	580.0	580.0	580.0	580.0	260.0
		LF2	360.0	360.0	360.0	360.0	420.0
		Dia	12	12	12	10	16
		L0	7000.0	8050.0	10300.0	13250.0	50.0
		Pitch	150.0	150.0	150.0	150.0	150.0
		Nos. of bar	15	16	14	15	56
	Shear Connecter (5)	HZ1	140.0	140.0	140.0	140.0	---
		LF1	580.0	580.0	580.0	260.0	
		LF	360.0	360.0	360.0	420.0	---
		Dia	10	10	10	16	---
		L0	9250.0	10450.0	12400.0	50.0	---
		Pitch	150.0	150.0	150.0	150.0	---
		Nos. of bar	15	17	14	43	---
	Shear Connecter (6)	HZ1	140.0	140.0	140.0	---	---
		LF1	260.0	260.0	260.0		
		LF2	420.0	420.0	420.0	---	---
		Dia	16	16	16	---	---
		L0	50.0	50.0	50.0	---	---
		Pitch	100.0	100.0	100.0	---	---
		Nos. of bar	3	3	3	---	---
	Shear Connecter (7)	HZ1	140.0	140.0	140.0	---	---
		LF1	260.0	260.0	260.0		
		LF2	420.0	420.0	420 0	---	---
		Dia	16	16	16	---	---
		L0	400.0	400.0	400.0	---	---
		Pitch	150.0	150.0	150.0	---	---
		Nos. of bar	24	26	38	---	---

Drawing Data for PTT (4)

			PTT-22	PTT-25	PTT-28	PTT-30	PTT-32
Display No. D.3.6 Cover Data of (Intermediate cross beam)		Ctu	50.0	50.0	50.0	50.0	50.0
		Ctl	50.0	50.0	50.0	50.0	50.0
		Cts	50.0	50.0	50.0	50.0	50.0
Display No. D.3.7 Arrangement of Link (Intermediate cross beam)		LF1	100.0	100.0	100.0	100.0	100.0
		Dia	10	10	10	10	10
		Nos. of bar	12	12	12	12	12
Display No. D.3.8 Longitudinal Re-bar of Intermediate cross beam	Upper side	LF1	0.0	0.0	0.0	0.0	0.0
		Dia	0	0	0	0	0
		Nos. of bar	0	0	0	0	0
	Lower side	LF1	0.0	0.0	0.0	0.0	0.0
		Dia	0	0	0	0	0
		Nos. of bar	0	0	0	0	0
	Flank	LF	1640.0	1640.0	1640.0	1640.0	1640.0
		Dia	10	10	10	10	10
		Nos. of bar	6	6	6	7	7
Display No. D.3.9 Re-bar Arrangement of End cross beam	Cover data	Ctu	50.0	50.0	50.0	50.0	50.0
		Ctl	50.0	50.0	50.0	50.0	50.0
		Cts	50.0	50.0	50.0	50.0	50.0
	Link	LF1	100.0	100.0	100.0	100.0	100.0
		Dia	16	16	16	16	16
		Nos. of bar	11	11	11	11	11
	Longi. re-bar Upper side	LF1	0.0	0.0	0.0	0.0	0.0
		Dia	0	0	0	0	0
		Nos. of bar	0	0	0	0	0
	Longi. re-bar Lower side	LF1	0.0	0.0	0.0	0.0	0.0
		Dia	0	0	0	0	0
		Nos. of bar	0	0	0	0	0
	Longi. re-bar Flank	LF	1450.0	1450.0	1450.0	1450.0	1450.0
		Dia	12	12	12	12	12
		Nos. of bar	6	6	6	7	7
Di play No. E.1.2 Longitudinal PC tendon Arrangement	No.1	x	0.0	0.0	0.0	0.0	0.0
	No.2	x	0.0	0.0	0.0	0.0	0.0
	No.3	x	0.0	0.0	0.0	0.0	0.0
	No.4	x	---	0.0	0.0	-60.0	-60.0
	No.5	x	---	---	---	60.0	60.0
E.2 Trans. PC Arrange. (Intermediate cross beam)		No.1 x	0.0	0.0	0.0	0.0	0.0
		No.2 x	0.0	0.0	0.0	0.0	0.0
E.3 Trans. PC Arrange. (End cross beam)		No.1 x	250.0	250.0	250.0	250.0	250.0
		No.2 x	---	---	---	---	---

Drawing Data for PTT (5)

			PTT-35	PTT-38	PTT-40	PTT-42	PTT-45
Display No. C.5 Dimension of Deck Form		B0i	2100.0	2100.0	2100.0	2100.0	2100.0
		B1	1220.0	1220.0	1220.0	1220.0	1220.0
		H1	30.0	30.0	30.0	30.0	30.0
Display No. D.3.1 Cover Data of Link	Trnasversal	Ctu	50.0	50.0	50.0	50.0	50.0
		Ctl	50.0	50.0	50.0	50.0	50.0
		Cts1	50.0	50.0	50.0	50.0	50.0
		Cts2	50.0	50.0	50.0	50.0	50.0
		Cts3	50.0	50.0	50.0	50.0	50.0
Display No. D.3.2 Arrangement of Link	Link (1)	Lh1	150.0	150.0	150.0	150.0	150.0
		Lh2	150.0	150.0	150.0	150.0	150.0
		Dia	12	12	12	12	12
		L0	50.0	50.0	50.0	50.0	50.0
		Pitch	150.0	100.0	150.0	100.0	125.0
		Nos. of bar	120	3	137	2	3
	Link (2)	Lh1	---	150.0	---	150.0	150.0
		Lh2	---	150.0	---	150.0	150.0
		Dia	---	12	---	12	12
		L0	---	400.0	---	300.0	450.0
		Pitch	---	150.0	---	150.0	150.0
		Nos. of bar	---	128	---	142	151

Drawing Data for PTT (6)

			PTT-35	PTT-38	PTT-40	PTT-42	PTT-45
D.3.3 Cover of Longi. bar		Cls	50.0	50.0	50.	50.0	50.0
Display D.3.4 Bar Data of Longitudinal Re-bar	Flange upper side	Dia	12	12	12	12	12
		L0	70.0	70.0	70.0	70.0	70.0
		Pitch	160.0	160.0	160.0	160.0	160.0
		Nos. of bar	3	3	3	3	3
		Nos. of lap	3	3	3	3	3
		Length of lap	450.0	450.0	450.0	450.0	450.0
		L10	12000.0	12000.0	12000.0	12000.0	12000.0
		L11	12000.0	12000.0	12000.0	12000.0	12000.0
		L12	9000.0	9000.0	12000.0	12000.0	12000.0
	Flange lower side	Dia	12	12	12	12	12
		L0	70.0	70.0	70.0	70.0	70.0
		Pitch	160.0	160.0	160.0	160.0	160.0
		Nos. of bar	2	2	2	2	2
		Nos. of lap	3	3	3	3	3
		Length of lap	450.0	450.0	450.0	450.0	450.0
		L10	12000.0	12000.0	12000.0	12000.0	12000.0
		L11	12000.0	12000.0	12000.0	12000.0	12000.0
		L12	9000.0	9000.0	12000.0	12000.0	12000.0
	Beam lower side	Dia	0	0	0	0	0
		L0	0.0	0.0	0.0	0.0	0.0
		Pitch	0.0	0.0	0.0	0.0	0.0
		Nos. of bar	0	0	0	0	0
		Nos. of lap	0	0	0	0	0
		Length of lap	0.0	0.0	0.0	0.0	0.0
		L10	0.0	0.0	0.0	0.0	0.0
		L11	0.0	0.0	0.0	0.0	0.0
		L12	0.0	0.0	0.0	0.0	0.0
		Lx1	0.0	0.0	0.0	0.0	0.0
		Lx2	0.0	0.0	0.0	0.0	0.0
	Flank (1)	Dia	12	12	12	12	12
		L0	70.0	70.0	70.0	70.0	70.0
		Pitch	0.0	0.0	0.0	0.0	0.0
		Nos. of bar	1	1	1	1	1
		Nos. of lap	3	3	3	3	3
		Length of lap	450.0	450.0	450.0	450.0	450.0
		L10	12000.0	12000.0	12000.0	12000.0	12000.0
		L11	12000.0	12000.0	12000.0	12000.0	12000.0
		L12	9000.0	9000.0	12000.0	12000.0	12000.0
		Lx1	950.0	950.0	950.0	950.0	950.0
		Lx2	525.0	525.0	525.0	525.0	525.0
	Flank (2)	Dia	12	12	12	12	12
		L0	370.0	370.0	370.0	370.0	370.0
		Pitch	300.0	300.0	300.0	300.0	300.0
		Nos. of bar	6	7	7	8	8
		Nos. of lap	3	3	3	3	3
		Length of lap	450.0	450.0	450.0	450.0	450.0
		L10	12000.0	12000.0	12000.0	12000.0	12000.0
		L11	12000.0	12000.0	12000.0	12000.0	12000.0
		L12	9000.0	9000.0	12000.0	12000.0	12000.0
		Lx1	950.0	950.0	950.0	950.0	950.0
		Lx2	525.0	525.0	525.0	525.0	525.0
	Flank (3)	Dia	---	---	12	---	---
		L0	---	---	2370.0	---	---
		Pitch	---	---	0.0	---	---
		Nos. of bar	---	---	1	---	---
		Nos. of lap	---	---	3	---	---
		Length of lap	---	---	450.0	---	---
		L10	---	---	12000.0	---	---
		L11	---	---	12000.0	---	---
		L12	---	---	12000.0	---	---
		Lx1	---	---	950.0	---	---
		Lx2	---	---	525.0	---	---

Drawing Data for PTT (7)

			PTT-35	PTT-38	PTT-40	PTT-42	PTT-45
Display No. D.3.5 Arrangement of Shear Connecter	Shear Connecter (1)	HZ1	140.0	140.0	140.0	140.0	140.0
		LF1	580.0	580.0	580.0	580.0	580.0
		LF2	360.0	360.0	360.0	360.0	360.0
		Dia	16	20	20	20	20
		L0	50.0	50.0	50.0	50.0	50.0
		Pitch	150.0	100.0	150.0	100.0	125.0
		Nos. of bar	68	3	22	2	3
	Shear Connecter (2)	HZ1	140.0	140.0	140.0	140.0	140.0
		LF1	580.0	580.0	580.0	580.0	580.0
		LF2	360.0	360.0	360.0	360.0	360.0
		Dia	16	20	16	20	20
		L0	10250.0	400.0	3350.0	300.0	450.0
		Pitch	150.0	150.0	150.0	150.0	150.0
		Nos. of bar	32	19	61	24	33
	Shear Connecter (3)	HZ1	140.0	140.0	140.0	140.0	140.0
		LF1	580.0	580.0	580.0	580.0	580.0
		LF2	360.0	360.0	360.0	360.0	360.0
		Dia	12	16	16	16	16
		L0	15050.0	3250.0	12500.0	3900.0	5400.0
		Pitch	150.0	150.0	150.0	150.0	150.0
		Nos. of bar	20	55	34	64	64
	Shear Connecter (4)	HZ1	140.0	140.0	140.0	140.0	140.0
		LF1	260.0	580.0	580.0	5 0.0	580.0
		LF2	420.0	360.0	360.0	360.0	360.0
		Dia	16	16	12	16	16
		L0	50.0	11500.0	17600.0	13500.0	15000.0
		Pitch	150.0	150.0	15 .0	150.0	150.0
		Nos. of bar	68	34	20	34	34
	Shear Connecter (5)	HZ1	---	140.0	140.0	140.0	140.0
		LF1	---	580.0	260.0	580.0	580.0
		LF2	---	360.0	420.0	360.0	360.0
		Dia	---	12	16	12	12
		L0	---	16600.0	50.0	18600.0	20100.0
		Pitch	---	150.0	150.0	150.0	150.0
		Nos. of bar	---	2	22	20	20
	Shear Connecter (6)	HZ1	---	140.0	140.0	140.0	140.0
		LF1	---	260.0	260.0	260.0	260.0
		LF2	---	420.0	420.0	420.0	420.0
		Dia	---	16	16	16	16
		L0	---	50.0	3350.0	50.0	50.0
		Pitch	---	100.0	150.0	100.0	125.0
		Nos. of bar	---	3	61	2	3
	Shear Connecter (7)	HZ1	---	140.0	---	140.0	140.0
		LF1	---	260.0	---	260.0	260.0
		LF2	---	420.0	---	420.0	420.0
		Dia	---	16	---	16	16
		L0	---	400.0	---	300.0	450.0
		Pitch	---	150.0	---	150.0	150.0
		Nos. of bar	---	19	---	24	33
	Shear Connecter (8)	HZ1	---	140.0	---	140.0	140.0
		LF1	---	260.0	---	260.0	260.0
		LF2	---	420.0	---	420.0	420.0
		Dia	---	16	---	16	16
		L0	---	3250.0	---	3900.0	5400.0
		Pitch	---	150.0	---	150.0	150.0
		Nos. of bar	---	55	---	64	64

Drawing Data for PTT (8)

			PTT-35	PTT-38	PTT-40	PTT-42	PTT-45
Display No. D.3.6 Cover Data of (Intermediate cross beam)		Ctu	50.0	50.0	50.0	50.0	50.0
		Ctl	50.0	50.0	50.0	50.0	50.0
		Cts	50.0	50.0	50.0	50.0	50.0
Display No. D.3.7 Arrangement of Link (Intermediate cross beam)		LF1	100.0	100.0	100.0	100.0	100.0
		Dia	10	10	10	10	10
		Nos. of bar	12	12	12	12	12
Display No. D.3.8 Longitudinal Re-bar of Intermediate cross beam	Upper side	LF1	0.0	0.0	0.0	0.0	0.0
		Dia	0	0	0	0	0
		Nos. of bar	0	0	0	0	0
	Lower side	LF1	0.0	0.0	0.0	0.0	0.0
		Dia	0	0	0	0	0
		Nos. of bar	0	0	0	0	0
	Flank	LF	1640.0	1640.0	1640.0	1640.0	1640.0
		Dia	10	10	10	10	10
		Nos. of bar	7	7	8	8	8
Display No. D.3.9 Re-bar Arrangement of End cross beam	Cover data	Ctu	50.0	50.0	50.0	50.0	50.0
		Ctl	50.0	50.0	50.0	50.0	50.0
		Cts	50.0	50.0	50.0	50.0	50.0
	Link	LF1	100.0	100.0	100.0	100.0	100.0
		Dia	16	16	12	12	12
		Nos. of bar	11	11	11	11	11
	Longi. re-bar Upper side	LF1	0.0	0.0	0.0	0.0	0.0
		Dia	0	0	0	0	0
		Nos. of bar	0	0	0	0	0
	Longi. re-bar Lower side	LF1	0.0	0.0	0.0	0.0	0.0
		Dia	0	0	0	0	0
		Nos. of bar	0	0	0	0	0
	Longi. re-bar Flank	LF1	1450.0	1450.0	1450.0	1450.0	1450.0
		Dia	12	1	12	12	12
		Nos. of bar	7	7	8	8	8
Display No. E.1.2 Longitudinal PC tendon Arrangement	No.1	x	0.0	0.0	0.0	0.0	0.0
	No.2	x	0.0	0.0	0.0	0.0	0.0
	No.3	x	0.0	0.0	-60.0	-60.0	0.0
	No.4	x	-60.0	-60.0	60.0	60.0	-60.0
	No.5	x	60.0	60.0	---	---	60.0
E.2 Trans. PC Arrange. (Intermediate cross beam)		No.1 x	0.0	0.0	0.0	0.0	0.0
		No.2 x	0.0	0.0	0.0	0.0	0.0
E.3 Trans. PC Arrange. (End cross beam)		No.1 x	250.0	250.0	250.0	250.0	250.0
		No.2 x	---	---	---	---	---

DIVISION VI

OPERATION MANUAL

FOR

QUANTITY CALCULATION

DIVISION VI OPERATION MANUAL FOR QUANTITY CALCULATION

CONTENTS

1. Outline

The quantity calculation for superstructure is automatically done by CADD programme system for the standard design using the input data.

2. Contents of quantity calculation

1) The out-put shows the quantity calculation for every items.

2) The formula used for the calculation is shown in [ ].

3) All dimensions shown in the calculation sheets are in metric.

4) Three decimal places in round figures are taken in the calculation.

3. Operation of calculation

The calculation is carried out according to the flowchart as follows:-

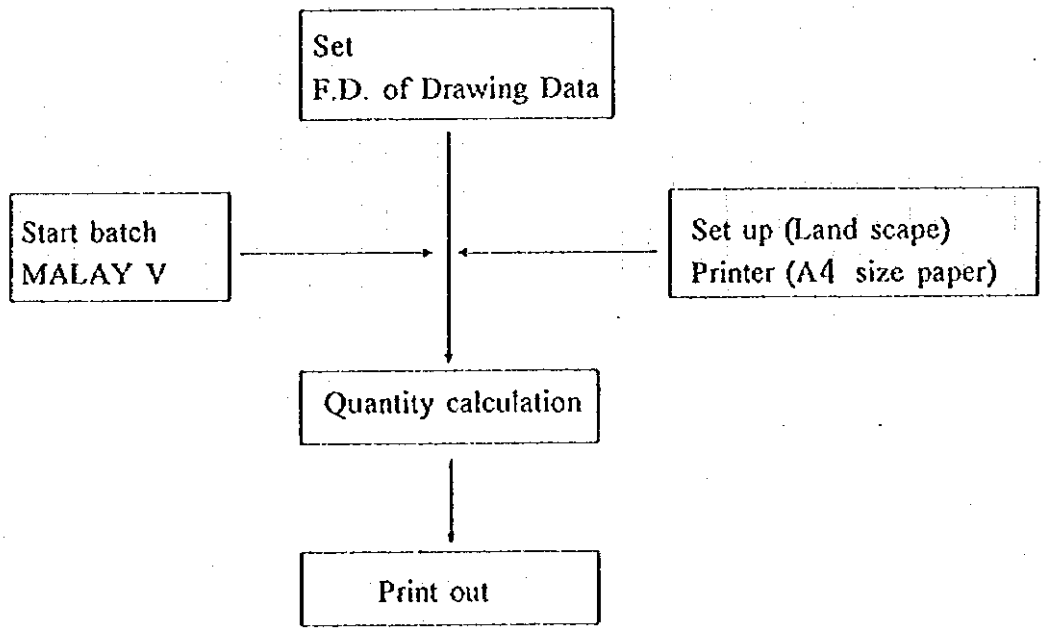


Fig. 1 Operation of calculation

DIVISION VII

OPERATION MANUAL

FOR

SUBSTRUCTURE DESIGN

DIVISION VII OPERATION MANUAL FOR SUBSTRUCTURE DESIGN

CONTENTS

1. General

This operation manual is prepared for the following programs for substructure design.

(1) FPDNN2 (FP) : Stability analysis for pile foundation

(2) BSDANM (BS) : Sectional analysis for RC members

(3) TMATS (TM) : Frame analysis

1.1 Data File

These programs deal with the following data files:

(1) Design Analysis Input Data File

(2) Design Analysis Result Data File

(3) Work File

Fig.1 below illustrate the outline of the program system

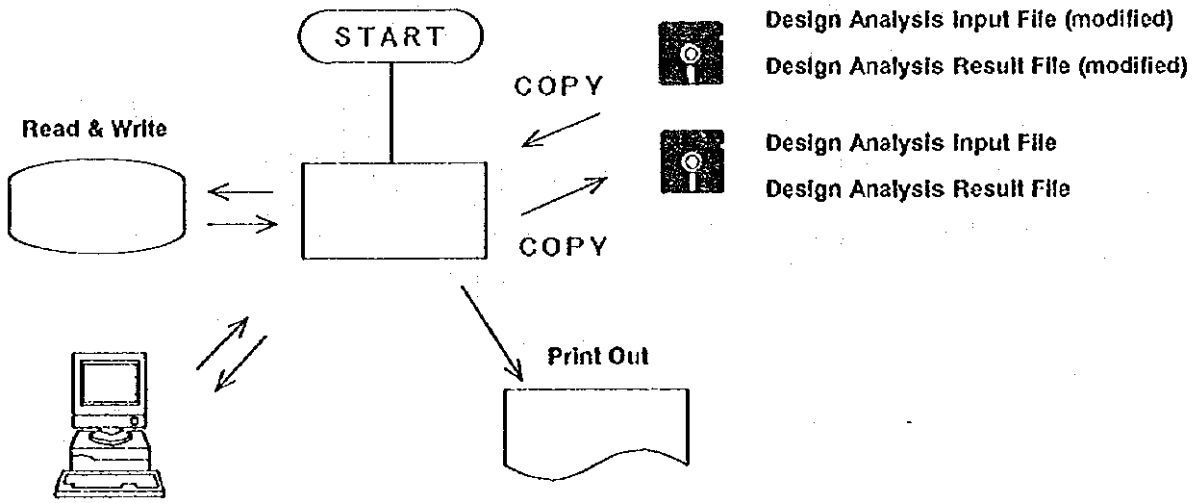


Fig. 1 Program System

1.2 Input Operation

Fig. 2 (a), (b), and (c) show the outline of input.

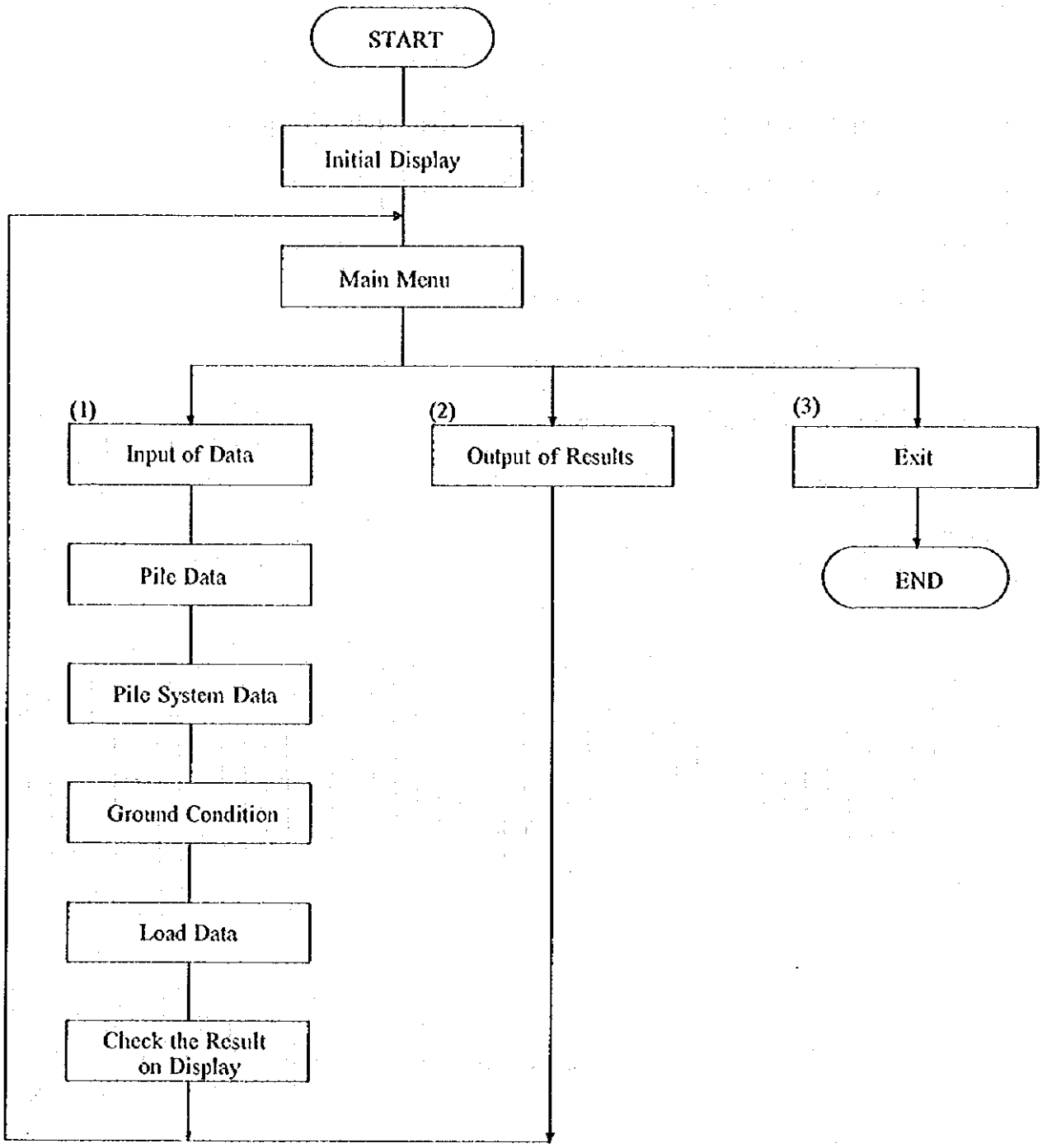


Fig. 2. (a) Outline of Input (FPDNN2)

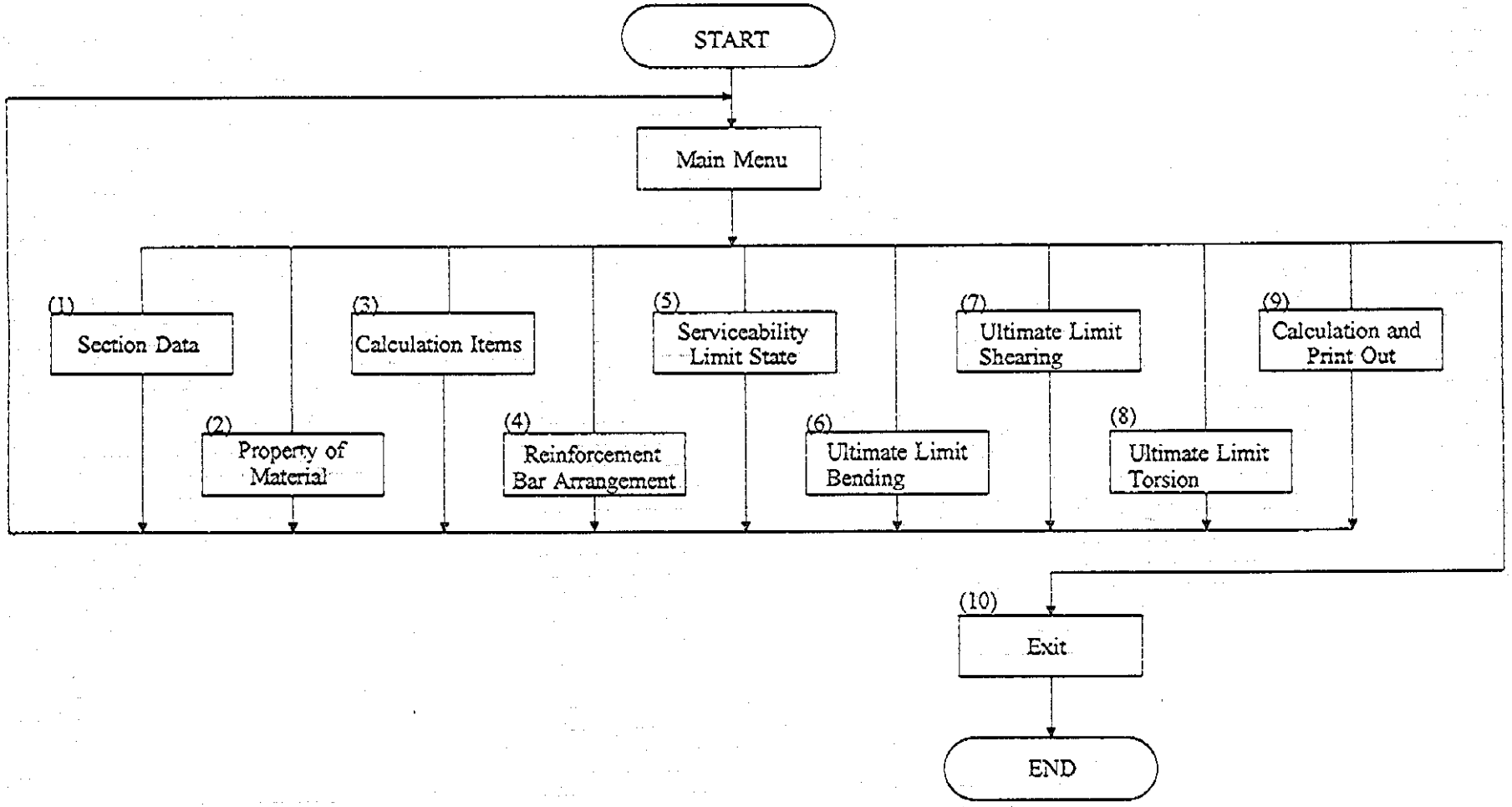


Fig. 2. (b) Outline of Input (BSDANM)

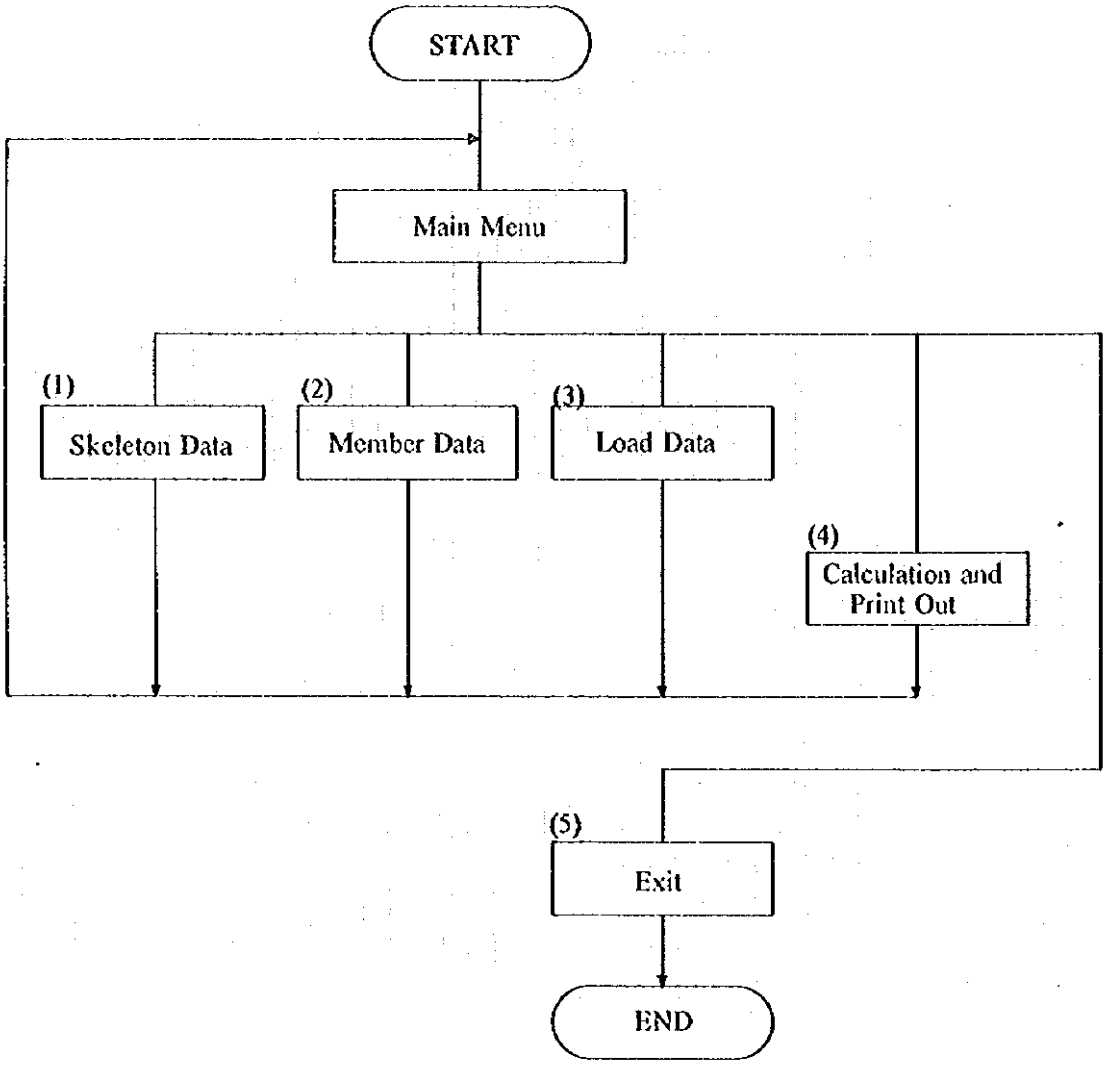


Fig. 2. (c) Outline of Input (TMATS)

1.3 Basics for Key Operation for Input

The following basic input key operations are required on display unit.

(1) In case choosing menu item or operation.

Close the items by arrow key.

Thereafter push return (enter) key.

(2) Same Data Input (No/Yes).....FPDNN2

If you change the data, choose "No" by arrow key.

If you do not change the data, choose "Yes".

(3) Confirm? (No/Yes).....BSDANM, TMATS

If you change the data, choose "No" by arrow key.

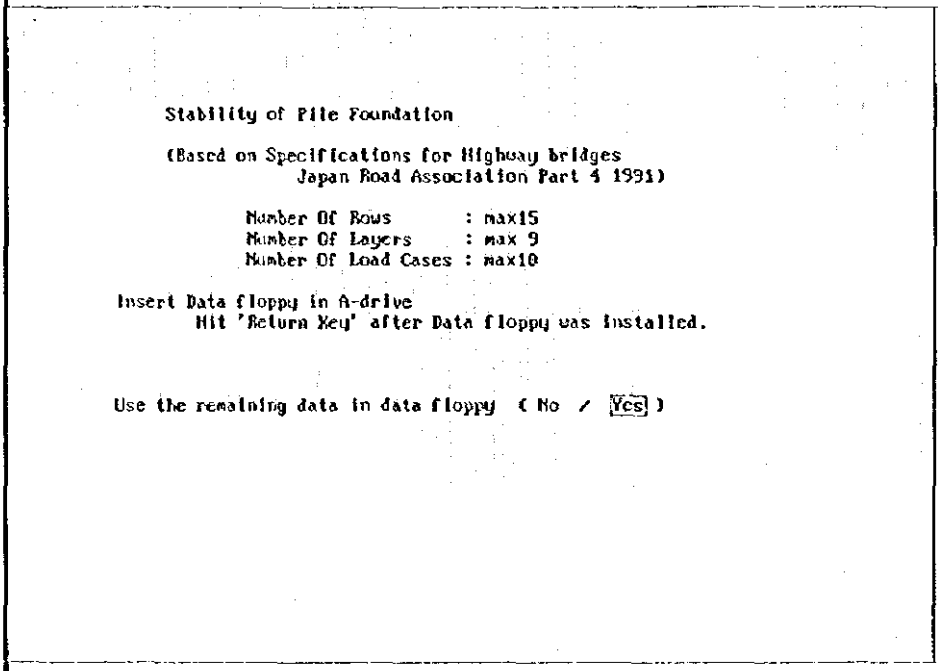
If you do not change the data, choose "Yes".

2. Sequence of Operation Displays

The copies of the actual computer displays are attached on the next page with some help explanations.

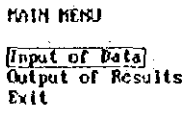
Group		
FP - A	.....	Initial Display
FP - B	.....	Main Menu
FP - C.1	.....	Pile Data
FP - C.2	.....	Pile System Data
FP - C.3	.....	Ground Condition
FP - C.4	.....	Load Data
FP - C.5	.....	Calculation
FP - C.6	.....	Check the Result on Display
BS - A	.....	Main Menu
BS - B	.....	Section Data
BS - C	.....	Property of Material
BS - D	.....	Calculation items
BS - E	.....	Reinforcement Bar Arrangement
BS - F	.....	Serviceability Limit State
BS - G	.....	Ultimate Limit State Bending
BS - H	.....	Ultimate Limit State Shearing
BS - I	.....	Ultimate Limit State Torsion
TM - A	.....	Main Menu
TM - B	.....	Skeleton Data
TM - C	.....	Member Data
TM - D	.....	Load Data
TM - E	.....	Calculation and Print Out

FP - A　　Initial Display



When you deal with new data, please select "No". When you deal with data in a floppy disk, please select "Yes".

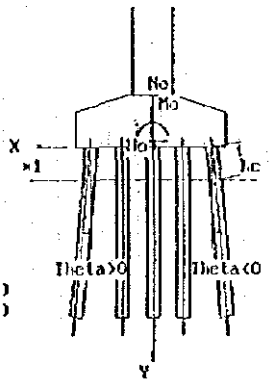
FP - B　　Main Menu



When you deal with data input and calculation, please select "Input of Data". When you want results printed out, please select "Output of Results".

FP - C.1 Pile Data

```
        Stability of Pile Foundation
        M-H20L45/15E-LONG1
   ** Pile Data **
Pile type                Driven PC pile
   D      (m)    =              0.6
   E   (KN/m2)   =       36000000.0
   Ap     (m2)   =          0.15800
   I      (m4)   =         0.005100
   Tt     (mm)   =            -----
   Tt'    (mm)   =            -----

Dimensions
 D    :Diameter
 E    :Modulus of Elasticity
 Ap   :Area of Pile shaft
 I    :Moment of Inertia

 Tt   :Thickness                    (Steel pile only)
 Tt'  :Corrosion margin              (Steel pile only)

  Same Data Input ( No / Yes )
```

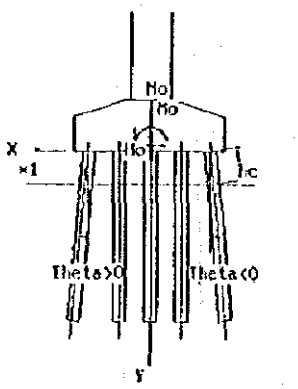


Input order for the data is as follows:

1) Name of Data
2) Pile type
3) Pile Dimension

FP - C.2 Pile System Data

```
** Pile system **        Number of row   4  (Maximum 15)

Row Number    X(m)       Y(m)     Theta(deg.)
  1)  9       2.250      0.000      0.000
  2)  9       0.750      0.000      0.000
  3)  9      -0.750      0.000      0.000
  4)  9      -2.250      0.000      0.000

  Same Data Input ( No / Yes )
```

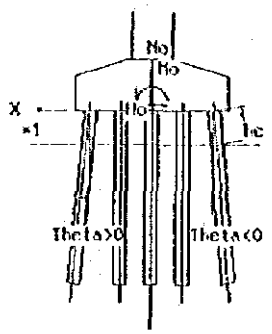


Input order for the data is as follows:

1) Number of row
2) Data of each pile row (a number of piles for each row shall be entered in the "number".)

FP - C.3 Ground Condition

```
** Ground condition **
      Input of Spring    Input Alfa*E0    Input K Value
                                          ( Maximum 9 )
Row No.      1      Free head (m)    0.00      Number of layer  2

       (m)              (N/mm2)              (N/mm3)
     Layer
     Depth            Alfa*E0              K Value
  1  27.000            4.900000             0.0047628
  2   3.000           98.000000             0.0953344



     1/Beta     (m)       =          4.0031
     Ave.AlfaE0 (N/mm2)   =            4.90
     Bh         (m)       =          1.5498
     Kv         (N/mm)    =      238894.60(If Kv=-1, Calculate automatically)
     Kr         (KN/rad)  =             0.0
     Pile Tip Condition IS=    Free   Pinned    Fix
     The data of every row=    same           different
  Same Data Input ( No  /  Yes )
```



hc=Free head

Input order for the data is as follows:

1) Input of spring
2) Row No.
3) Free head
4) Number of layer
5) data for each soil layer
6) Kv
7) Kr
8) Pile tip condition
9) The data of every row (if each ground condition is different, choose "different" and input in second row).

FP - C.4 Load Data

```
** Load Data **  Number of Case  10 (Maximum 10)

     Case name                    NO(KN)     HO(KN)     MO(KNm)

 1)  NM1 LC1                    32479.00       0.00        0.00
 2)  NM2 LC2                    27821.00     464.00     6631.00
 3)  NM3 LC4                    29121.00     589.00    11784.00
 4)  SV0 DL                     27588.00       0.00        0.00
 5)  SV1 LC1                    33333.00       0.00        0.00
 6)  SV2 LC2                    27988.00     464.00     6631.00
 7)  SV3 LC4                    29288.00     589.00    11784.00
 8)  UT1 LC1                    40312.00       0.00        0.00
 9)  UT2 LC2                    33813.00     650.00     9284.00
10)  UT3 LC4                    35468.00     737.00    14730.00



  Same Data Input ( No  /  Yes )
```

Input order for the data is as follows:

1) Number of case
2) Data for each load case

FP - C.5 Calculation

```
Stability of Pile Foundation * calculation in progress on *
```

When you see the above display after all the data are input, calculation is now on a procedure.

FP - C.6 Check the Result on Display

```
** Verification of Foundation **
                    PNmax(KN)   PNmin(KN)   Mt(KNm)    Ht(KN)   Delta(cm)
 1) NM1 LC1           902.19      902.19       0.00       0.00        0.00
 2) NM2 LC2           930.07      615.54     -12.39      12.89        0.17
 3) NM3 LC4          1078.58      539.25      -9.75      16.36        0.24
 4) SV0 DL            777.44      777.44       0.00       0.00        0.00
 5) SV1 LC1           925.92      925.92       0.00       0.00        0.00
 6) SV2 LC2           934.71      620.18     -12.39      12.89        0.17
 7) SV3 LC4          1083.22      543.89      -9.75      16.36        0.24
 8) UT1 LC1          1120.61     1120.61       0.00       0.00        0.00
 9) UT2 LC2          1160.28      719.88     -17.36      18.06        0.24
10) UT3 LC4          1322.34      648.11     -12.22      20.47        0.30
     FV(KN)   FH(KN)  Mn(KNm)    Ln(m)
 1)                     0.00   30.000
 2)                    16.62    3.000
 3)                    21.09    3.000
 4)                     0.00   30.000
 5)                     0.00   30.000
 6)                    16.62    3.000
 7)                    21.09    3.000
 8)                     0.00   30.000
 9)                    23.28    3.000
10)                    26.39    3.000
Stability of Pile system?   ( No / Yes )
Calculation of Pile body?   ( No / Yes )
```

At the completion of the calculation, a part of the results is on the display.
When the result is OK, please select "Yes" for "Stability of Pile System?".
When you want sectional force at each depth of pile printed out, please select "Yes" for "Calculation of Pile Body?".

BS - A　Main Menu

```
BSDANM

Main menu
 1. Section Data
 2. Property of Material
 3. Calculation Items
 4. Reinforcement bar Arrangement
 5. Serviceability Limit State
 6. Ultimate Limit State Bending
 7. Ultimate Limit State Shearing
 8. Torsional Resistance
 9. Calculation
10. Exit
```

Please select "9. Calculation" for calculation and print out.
After input every item, display is back to the above.

BS - B　Section Data

```
** 1.Section data **

TITL:TEST

Select section types
 1. Rectangular
 2. I-section
 3. Box
 4. Round
 5. Round tube
 6. Elliptical
 7. Others
 8. Exit
```

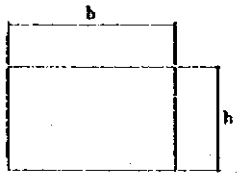
Lower edge of the section shall be "tension" when bending moment is loaded.

BS - B.1 Rectangular

1. Rectangular

Width b(mm) 1800.000

Hight h(mm) 3500.000

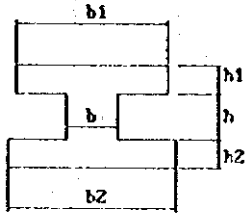


Confirm ? (No / Yes)

BS - B.2 I-Section

2. I-section

Width (mm)		Hight (mm)	
b =	0.000	h =	0.000
b1 =	0.000	h1 =	0.000
b2 =	0.000	h2 =	0.000

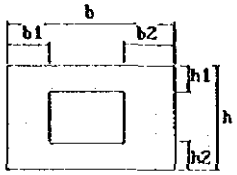


Confirm ? (No / Yes)

BS - B.3 Box Section

3. Box

Width (mm)		Hight (mm)	
b =	0.000	h =	0.000
b1 =	0.000	h1 =	0.000
b2 =	0.000	h2 =	0.000

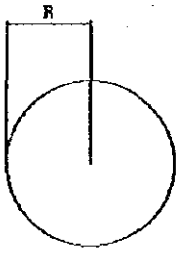


Confirm ? (No / Yes)

BS - B.4 Round

1. Round

Radius R(mm) 0.000



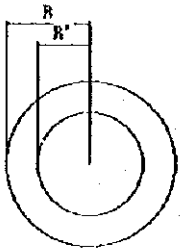
Confirm ? (No / Yes)

BS - B.5 Round Tube

5. Round tube

Radius R(mm) 0.000

Inner R'(mm) 0.000



Confirm ? (No / Yes)

BS - B.6 Elliptical

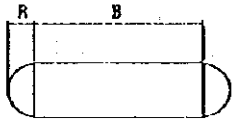
6. Elliptical

Select type (A-type / B-type)

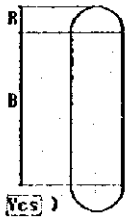
Radius R(mm) 0.000

Width B(mm) 0.000

A-Type



B-Type



Confirm ? (No / Yes)

For normal type of pier, check for longitudinal direction is "A-type", and transverse direction for "B-type".

BS - B.7 Others

```
7. Others
   Node numbers
      Left  20  Max.20                    Right  20  Max.20
   *** Left hand side *** (mm)          *** Right hand side *** (mm)
   L- 1  X=    0.000  Y=    0.000       R- 1  X=    0.000  Y=    0.000
   L- 2  X=    0.000  Y=    0.000       R- 2  X=    0.000  Y=    0.000
   L- 3  X=    0.000  Y=    0.000       R- 3  X=    0.000  Y=    0.000
   L- 4  X=    0.000  Y=    0.000       R- 4  X=    0.000  Y=    0.000
   L- 5  X=    0.000  Y=    0.000       R- 5  X=    0.000  Y=    0.000
   L- 6  X=    0.000  Y=    0.000       R- 6  X=    0.000  Y=    0.000
   L- 7  X=    0.000  Y=    0.000       R- 7  X=    0.000  Y=    0.000
   L- 8  X=    0.000  Y=    0.000       R- 8  X=    0.000  Y=    0.000
   L- 9  X=    0.000  Y=    0.000       R- 9  X=    0.000  Y=    0.000
   L-10  X=    0.000  Y=    0.000       R-10  X=    0.000  Y=    0.000
   L-11  X=    0.000  Y=    0.000       R-11  X=    0.000  Y=    0.000
   L-12  X=    0.000  Y=    0.000       R-12  X=    0.000  Y=    0.000
   L-13  X=    0.000  Y=    0.000       R-13  X=    0.000  Y=    0.000
   L-14  X=    0.000  Y=    0.000       R-14  X=    0.000  Y=    0.000
   L-15  X=    0.000  Y=    0.000       R-15  X=    0.000  Y=    0.000
   L-16  X=    0.000  Y=    0.000       R-16  X=    0.000  Y=    0.000
   L-17  X=    0.000  Y=    0.000       R-17  X=    0.000  Y=    0.000
   L-18  X=    0.000  Y=    0.000       R-18  X=    0.000  Y=    0.000
   L-19  X=    0.000  Y=    0.000       R-19  X=    0.000  Y=    0.000
   L-20  X=    0.000  Y=    0.000       R-20  X=    0.000  Y=    0.000
                          Confirm ?  ( No  /  Yes )
```

Normally, this item is not to be used.

BS - C Property of Material

```
** 2. Property of Material **

 * Concrete

   Young Modulus          Characteristic cubic strength of concrete

        Ec=  31.0 (KN/mm2)          fcu =  40.0 (N/mm2)

 * Reinforcing bar

   Young Modulus          Characteristic strength of reinforcement

        Es= 200.0 (KN/mm2)          fy = 460.0 (N/mm2)

 * Link

   Characteristic strength of Link

        frc= 460.0 (N/mm2)

                          Confirm ?  ( No  /  Yes )
```

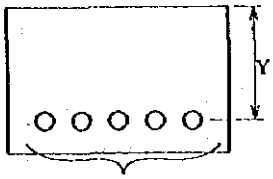
BS - D　Calculation Items

```
** 3. Calculation Items **
        Serviceability bending moment    Yes / No
        Ultimate bending moment          Yes / No
        Ultimate shearing force          Yes / No
        Torsional strength               Yes / No
Calculation of torsion is based on an eqivalent area of design section

                        Confirm ?  ( No  /  Yes )
```

Please select calculation item for your needs.
Please check of bending moment over and over, and then check for shearing force and tortional strength.

BS - E　Reinforcement Bar Arrangement

```
** 4. Reinforcement bar Arrangement **
   Number of re-bar      1   max/20
Area of re-bar(mm2)            Y-fore(mm)
          9648.000               3418.000

                        Confirm ?  ( No  /  Yes )
Section data ( 501. of Main menu ) shall be given before hand.
```

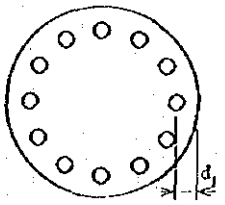


Area of re-bar

This input display shall be used for items other than Round, Round Tube, or Elliptical.

BS - E.1 Reinforcement Bar Arrangement (Round or Round Tube)

```
** 4.1 Reinforcement bar Arrangement **

      Type Round or Type Round tube
         As(mm2)          d(mm)
           0.000          0.000
           0.000          0.000

                    Confirm ?  ( No  /  Yes )
Section data ( NO1. of Main menu ) shall be given before hand.
```



As = n1As1

n1: number of re-bar in circumference

As1: area for a re-bar

BS - E.2 Reinforcement Bar Arrangement (Elliptical)

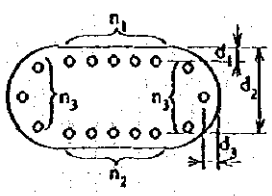
```
** 4.2 Type Elliptical
      Straight part (Reinforcement bar of ellipse section)
      As(mm2)          d(mm)
        0.000          0.000
        0.000          0.000
        0.000          0.000
        0.000          0.000

      Curve part
      As(mm2)          d(mm)
        0.000          0.000
        0.000          0.000

                    Confirm ?  ( No  /  Yes )
Section data ( NO1. of Main menu ) shall be given before hand.
```

A-type

As = n1As1

As = n2As2

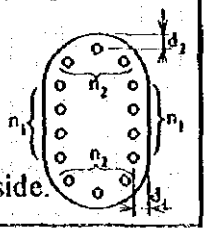
As = n3As3



B-type

As = n1As1

As = n2As2



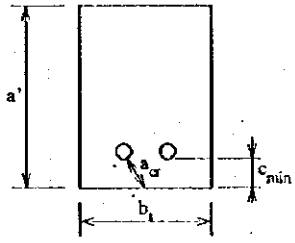
ni is the number of re-bar at one side.

BS - F Serviceability Limit State

```
** 5. Serviceability Limit State **

 * Moment due to permanent load
        Mg    =   7000.00 (KNm)
 * Moment due to live loads
        Mq    =   2000.00 (KNm)
 * Normal force due to permanent load
        Ng    =      0.00 (KN)
 * Normal force due to live load
        Nq    =      0.00 (KN)
 * Crack Width
        Wcr.  =      0.25 (mm)
 * The level where cracking is checked
        a'    =   3500.00 (mm)
 * The distance from the point crack occurred to the surface of the nearest
   bars which controls the crack width
        acr   =     95.10 (mm)
 * The required nominal cover
        Cmin  =     66.00 (mm)
 * Width of section
        bt    =   1800.00 (mm)
 * Tension reinforcement
        As    =   9648.00 (mm)
                          Confirm ?  ( No  /  Yes )
```

$M \geq 0$

N : Compression is positive.



BS - G Ultimate Limit State (Bending)

```
** 6. Ultimate Limit state Bending **

 * M = 10000.00 (KNm)

 * N =     0.00 (KN)

                          Confirm ?  ( No  /  Yes )
```

$M \geq 0$

N : Compression is positive.

BS - H　Ultimate Limit State (Shearing)

```
** 7. Ultimate Limit Shearing **

** Maximun Shear Stress
 * Width of Section
   b =   1800.00 (mm)
 * Position of Longitudinal Tensile Steel
   Ys=   3418.00 (mm)
 * Shearing force(max)
   V =   1000.00 (KN)

** Shear Reinforcement
 * Width of Section
   bu=   1800.00 (mm)
 * Position of Longitudinal Tensile re-bar
   Ys=   3418.00 (mm)
 * Longitudinal re-bar
   As=   9648.00 (mm2)
 * Shearing force
   V =   1000.00 (KN)
 * Normal force
   N =      0.00 (KN)
                          Confirm ?  ( No / Yes )
```

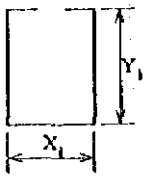
$S \geqq 0$

N : Compression is positive.

BS - I　Ultimate Limit State (Torsion)

```
** 8. Torsional Resistance **

** Torsional Reinforcing bar
   For Rectangular section input web only
      Web                Up-flange          Botton-flange
 * X1 =    0.00 (mm)   X1 =    0.00 (mm)   X1 =    0.00 (mm)
 * Y1 =    0.00 (mm)   Y1 =    0.00 (mm)   Y1 =    0.00 (mm)

** Maximum shear stress
 * Width of section
   bu=    0.00 (mm)
 * Hight of section
   ys=    0.00 (mm)
 * Torsional Moment and Shearing force
   T =    0.00 (KNm)
   V =    0.00 (KN)

                          Confirm ?  ( No / Yes )
```

◎Link



$T \geqq 0,\ S \geqq 0$

Box　　: Omit to input x1, y1

Rectangle　: Input x1 and y1 for web only

I-Section　: Input all x1 and all y1

TM - A　Main Menu

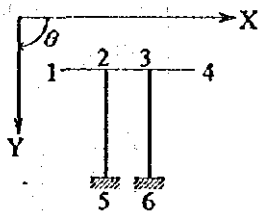
```
FRAME ANALYSIS

Title:MC1
Contents of calculation
 MAIN MENU

     1.Skelton Data  Max.No.          20
     2.Member  Data  Max.No.          30
     3.Load    Data  Max.No.          40
     4.Calculation and Print out
     5.Exit
```

After input the title, select the item from any of above.

TM - B　Skeleton Data

```
1.Skelton Data
 'Input node data and support conditions'
 Numbers of nodes  18
                                Support condition X direction Free:0 Fix:1
                                                  Y direction Free:0 Fix:1
                                                  Rotation    Free:0 Fix:1
Node.No      X(m)      Y(m)   XYR    MAX: 1/18
    [1]     0.000     0.000   000
     2      0.673     0.000   000
     3      2.847     0.000   000
     4      3.000     0.000   000
     5      4.000     0.000   000
     6      5.000     0.000   000
     7      5.021     0.000   000
     8      7.195     0.000   000
     9      9.369     0.000   000
    10      9.390     0.000   000
    11     10.390     0.000   000
    12     11.390     0.000   000
    13     11.543     0.000   000
    14     13.717     0.000   000
    15     14.390     0.000   000

                          Confirm ?  ( No  /  Yes )
 Go to Next (2.Member data) then hit 'Return Key'
 Go to First page then hit 'Tab Key'
```

Global coordinate

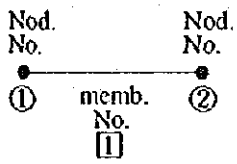


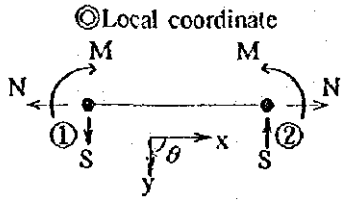
Please input the number of connecting point, coordinates of connecting point, and support condition. The number of connecting point shall begin with 1 and avoid the repetition of the same number.

```
  2.Member Data
(1) 'Input sectional data of each members
    No.of Unit section 4    (0(Zero)also be applicable then go to(2))
   Unit Sec.No.  Area(m2)   Inertia(m4)  Modulus of elasticity(KN/m2)
         1         1.800       0.150  31000000.0
         2         2.700       0.510  31000000.0
         3         3.600       1.200  31000000.0
         4       100.000    1000.000  31000000.0

(2)No.of Members      17          MAX:17/17
   Nod. Nod. Memb. Unit Sec.     (m2)        (m4)       (KN/m2)
     No   No   No       No       Area      Inertia  Modulus of elasticity
     11   12   11        4      0.000       0.000        0.0
     12   13   12        3      0.000       0.000        0.0
     13   14   13        2      0.000       0.000        0.0
     14   15   14        1      0.000       0.000        0.0
      5   16   15        3      0.000       0.000        0.0
     11   17   16        3      0.000       0.000        0.0
      8   18   17        4      0.000       0.000        0.0


                                Confirm ?  ( No  /  Yes )
   Go to Next (3.Load data) then hit 'Return Key'
   Go to First page then hit 'Tab Key'
```

In the case that no section data can be found in Unit Sec., please input "0" in Unit Sec. first and input data directly in columns A, I, E, on right side.

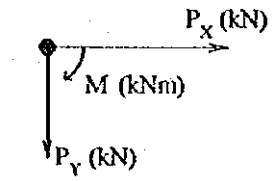
Please input connecting point of members, sectional area, geometrical moment of inertia, and Youngs modulus of elasticity. "Memb. No." stands for number of members. Please begin with 1 and avoid the repetition of the same number.



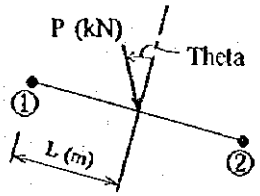


```
3.Load Data
No.of Data13

Input Case No   1


Load type IP
   IP-10:Nodal concentrated load
         C1:Px(KN),C2:Py(KN),C3:M(KNm)
   IP-20:Member concentrated load
         C1:P(KN),C2:L(m),C3:Theta(degree)
   IP-30:Member distributed load
         C1:q1(KN/m),C2:q2(KN/m),C3:L1(m),C4:L2(m),C5:Theta(degree)
   IP-40:Temperature
         C1:Temperature(degree),C2:Coef. of thermal expansion *10E-6
 No.of loads              7   SUPER DL                    NOW: 3- 7: 7
   0-end 1-end          TypeIP      C1       C2       C3       C4       C5
     7     0              10       0.00  1026.00    0.000    0.000    0.000
     8     0              10       0.00  1026.00    0.000    0.000    0.000
     9     0              10       0.00  1026.00    0.000    0.000    0.000
    13     0              10       0.00  1025.00    0.000    0.000    0.000
    14     0              10       0.00   957.00    0.000    0.000    0.000

Go to Next (4.Calculation and Print out) then hit 'Return Key'
Go to First page then hit 'Tab Key'
```

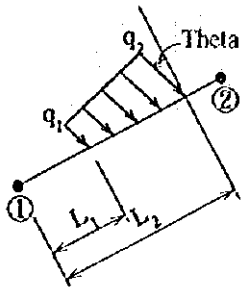
IP-10 Global dimention



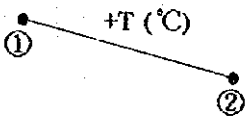
IP-20 Local direction



IP-30 Local direction



IP-40 Local direction



```
4.Print Data
'Select print out nodes (for Reaction and deflection)
Number of print out nodes     -1(If Input -1 then print all the nodes.)
Print out Node



'Select print out members (for member forces)
Number of print out members   -1(If Input -1 then print all the members.)
Print out Member



                    Confirm ? ( No / Yes )
```

Usually all the members are to be printed out. Please input "-1" for "Number of print out nodes" and "Number of print out members".

JICA