JAPAN INTERNATIONAL COOPERATION AGENCY
PUBLIC WORKS DEPARTMENT
MINISTRY OF WORKS, MALAYSIA

THE STUDY
ON
THE STANDARDIZATION OF BRIDGE DESIGN
IN
MALAYSIA

FINAL REPORT

VOLUME IV (2/2)

STANDARD DRAWINGS
FOR
SUBSTRUCTURE

AUGUST 1996

JAPAN BRIDGE & STRUCTURE INSTITUTE, INC., TOKYO
PACIFIC CONSULTANTS INTERNATIONAL, TOKYO

Substructure

1. Outline

The "Drawings" were prepared for easy understanding by visual aspect of standordized bridge design which could be used practically for actual bridge designing with high accuracy by engineers as many as possible whole in Malaysia.

2. Specifficaiton Applied

Malaysian specifications applied for these Drawings are "Guidelines for Presentation of Engineering Drawings" and "Guide Book for Bridge Drawings". Considering any drawing practice in Malaysia, these specificaitons were applied as much as possible, however, Japanese Standards were also applied in the case these Malaysian specifications were not able to be applied.

For superstructure CADD (Computer Aided Design and Drawing) programme system were used for the Drwaings, and the Drowings of substructure were made by Auto CAD (manual operation) bosed on calculation results.

3. Design Conditions

Matters that require attention for use of the Drawings are a range of its application and design conditions. Applicable instruction under the following categories shall be carefully read before use.

1. Total cross section
2. Stucture type and application span length
3. Naming of standard drawings
4. Markings, dimensions and general notes for structure drawings

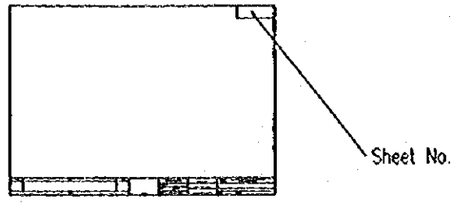
4. Composition of the Drawings

Drawings cover the substructure type of Inverted T-wall Abutment, T-Type Pier and Multiple Column Pier.

5. Usage

5.1 Reference Method for Specific Drawing

These Drawings consist of 'general dimensions' and 'bar arrangement', and each sheet has a number which identify its type (design condition) at upper right. Therefore, applicable standardized drawings can be found by its number. Example is shown below.



Example for Substructure

Naming of standard Drowings.

Legend

T - 10.0 - 28.0 - 0 - G1 - E

- E — Foundation
- G1 — Type of Drawing
- 0 — Skew
- 28.0 — Span length
- 10.0 — Structure height
- T — Type of Substructure

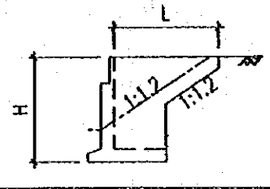
Type of Substructure	Type of Drawing	Foundation
T : T-Type Pier	G1 : General Dimensions	E : End Bearing
A : Abutment	B1 : Bar Arrangement	F : Friction
M : Multiple Column		S : Sprend Foundation
		B : Bored Pile

Abutment		T-Type Pier		Multiple Column	
Sheet No	Drawing Name	Sheet No	Drawing Name	Sheet No	Drawing Name
1	A- 6.0-10.0- 0-G1-E	23	T-10.0-16.0- 0-G1-E	41	M-10.0-16.0- 0-G1-E
2	- do - -B1-E	24	- do - -B1-E	42	- do - -B1-E
3	- do - -G1-F	25	- do - -G1-F	43	- do - -G1-F
4	- do - -B1-F	26	- do - -B1-F	44	- do - -B1-F
5	A- 6.0-16.0- 0-G1-E	27	T-10.0-28.0- 0-G1-E	45	M-10.0-28.0- 0-G1-E
6	- do - -B1-E	28	- do - -B1-E	46	- do - -B1-E
7	A- 6.0-28.0- 0-G1-E	29	- do - -G1-F	47	- do - -G1-F
8	- do - -B1-E	30	- do - -B1-F	48	- do - -B1-F

6. Instruction

1) The pile foundation (PC spun pile, diameter 0.6m) proposed in the Standard Design is only a sample design. Although the pile was selected from its recent popular use and the ground condition was assumed to represent the typical geological feature in Malaysia, the Standard Design can not answer every local problems. In general, for the design of founddation, the design porameters should be decided individually according to each bridge construction site, and the Standard Design will help the design process as a reference.

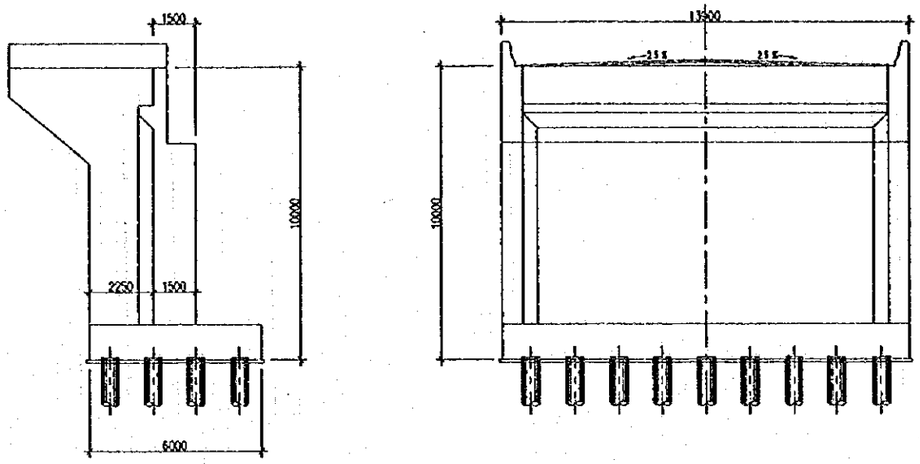
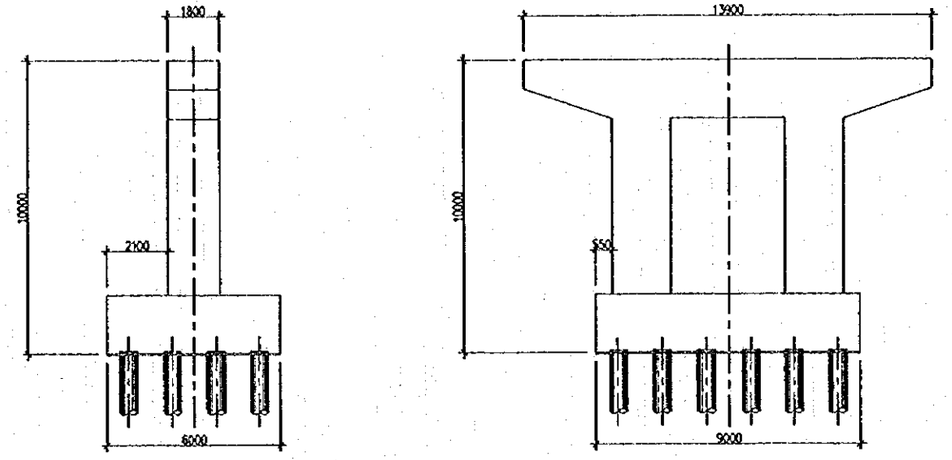
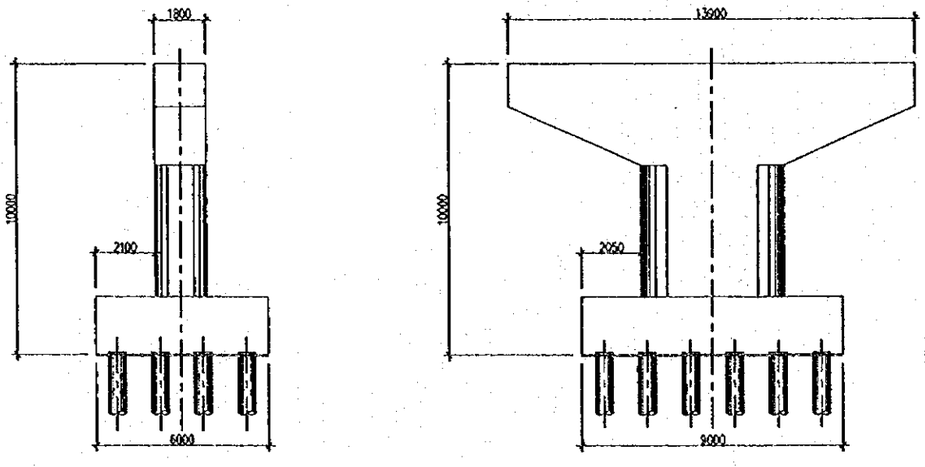
2) Standardized drawings for wingwall of aboutment were prepared for 3 types shown in the table below. If applicable dimension can not be found in the Drawings, drawings of general dimensions and bar arrangement shall be made bosed on design calculations referring to the Drawings.



(m)

Type	H	L
1	10.0	5.0
2	8.0	5.0
3	6.0	3.0

Tarikh	Butiran	Rujukan	UNIT JAMBATAN	PENGARAH JALAN	JABATAN KERJA RAYA MALAYSIA CAWANGAN JALAN
			DIREKABENTUK:		
			DILUKIS: DISEMAK:	JURUTERA PENGUASA KANAN	
PINDAAN		UKURAN	DILULUSKAN: PENOLONG PENGARAH (K)	PENOLONG PENGARAH KANAN (J)	TARIKH: SK: LUKISAN:

Type	Abutment	Multiple Column Pier
Cross Section		
Type	T-type Pier	
Cross Section		

Tarikh	Butiran	Rujukan

PINDAAN

UKURAN

UNIT JAMBATAN

DIREKABENTUK:

DILUKIS: DISEMAK:

DILULUSKAN: PENOLONG PENGARAH (JT)

PENGARAH JALAN

JURUTERA PENGUASA KANAN

PENOLONG PENGARAH KANAN (J)

JABATAN KERJA RAYA MALAYSIA
CAWANGAN JALAN

TARIKH: BIL. LUKISAN:

Preparation of Standard Drawings

	Type	Height (m)	Skew (degree)	Span length (m) 10	16	22	28	32	35	45	Foundation
Standard Drawings	Abutment	6	0	◎	○		◎				○ : End Bearing only ◎ : End Bearing and Friction
			15				○				
			30				○				
		8	0						○		
			15								
			30								
		10	0						○	◎	
			15								
			30								
	T-type Pier	10	0		◎		◎				○ : End Bearing only ◎ : End Bearing and Friction
			15				○				
			30				○				
		15	0				○				
			15								
			30								
		20	0							◎	
			15								
			30								
	Multiple Column Pier	10	0		◎		◎				○ : End Bearing only ◎ : End Bearing and Friction
			15				○				
			30				○				
		15	0				○				
			15								
			30								
		20	0							◎	
			15								
			30								
Sample Drawings	Abutment	8	0					○			Spread
		12	0					○			End Bearing
	T-type Pier	30	0					○			End Bearing
		30	0					○			Friction
		30	0					○			Bored Pile
	Multiple Pier	20	0					○			Bored Pile

Perkara	Butiran	Rujukan

PINDAAN

UKURAN

UNIT JAMBATAN

DISEDIAKAN OLEH:

DILUKIS: DISEMAK:

DILULUSKAN PENOLONG PENGARAH (Jr)

PENGARAH JALAN

JURUTERA PENGUASA KAWASAN

PENOLONG PENGARAH KANAN (J)

JABATAN KERJA RAYA MALAYSIA
CAWANGAN JALAN

TARIKH: SKL: TIADA

Naming of Standard Drawings.

Legend

T - 10.0 - 28.0 - 0 - G1 - E

- E — Foundation
- G1 — Type of Drawing
- 0 — Skew
- 28.0 — Span length
- 10.0 — Structure height
- T — Type of Substructure

Type of Substructure
T : T-Type Pier
A : Abutment
M : Multiple Column

Type of Drawing
G1 : General Dimensions
B1 : Bar Arrangement

Foundation
E : End Bearing
F : Friction
S : Spread Foundation
B : Bored Pile

Abutment		T-Type Pier		Multiple Column		Sample Drawings		Structure Type	
Sheet No	Drawing Name	Sheet No	Drawing Name	Sheet No	Drawing Name	Sheet No	Drawing Name	Sheet No	Drawing Name
1	A- 6.0-10.0- 0-G1-E	23	T-10.0-16.0- 0-G1-E	41	M-10.0-16.0- 0-G1-E	59	A- 8.0-32.0- 0-G1-S	71	WIN- 6.0- 3.0-0.5
2	- do - -B1-E	24	- do - -B1-E	42	- do - -B1-E	60	- do - -B1-S	72	WIN- 8.0- 5.0-0.7
3	- do - -G1-F	25	- do - -G1-F	43	- do - -G1-F	61	A-12.0-32.0- 0-G1-E	73	WIN-10.0- 5.0-0.7
4	- do - -B1-F	26	- do - -B1-F	44	- do - -B1-F	62	- do - -B1-E	74	APR- R5-12.5-5.0
5	A- 6.0-16.0- 0-G1-E	27	T-10.0-28.0- 0-G1-E	45	M-10.0-28.0- 0-G1-E	63	T-30.0-32.0- 0-G1-E	75	APR- R5-12.9-5.0
6	- do - -B1-E	28	- do - -B1-E	46	- do - -B1-E	64	- do - -B1-E	76	BORED PILE
7	A- 6.0-28.0- 0-G1-E	29	- do - -G1-F	47	- do - -G1-F	65	- do - -G1-F		
8	- do - -B1-E	30	- do - -B1-F	48	- do - -B1-F	66	- do - -B1-F		
9	- do - -G1-F	31	T-10.0-28.0-15-G1-E	49	M-10.0-28.0-15-G1-E	67	- do - -G1-B		
10	- do - -B1-F	32	- do - -B1-E	50	- do - -B1-E	68	- do - -B1-B		
11	A- 6.0-28.0-15-G1-E	33	T-10.0-28.0-30-G1-E	51	M-10.0-28.0-30-G1-E	69	M-20.0-32.0- 0-G1-B		
12	- do - -B1-E	34	- do - -B1-E	52	- do - -B1-E	70	- do - -B1-B		
13	A- 6.0-28.0-30-G1-E	35	T-15.0-28.0- 0-G1-E	53	M-15.0-28.0- 0-G1-E				
14	- do - -B1-E	36	- do - -B1-E	54	- do - -B1-E				
15	A- 8.0-35.0- 0-G1-E	37	T-20.0-45.0- 0-G1-E	55	M-20.0-45.0- 0-G1-E				
16	- do - -B1-E	38	- do - -B1-E	56	- do - -B1-E				
17	A-10.0-35.0- 0-G1-E	39	- do - -G1-F	57	- do - -G1-F				
18	- do - -B1-E	40	- do - -B1-F	58	- do - -B1-F				
19	A-10.0-45.0- 0-G1-E								
20	- do - -B1-E								
21	- do - -G1-F								
22	- do - -B1-F								

WIN - 6.0 - 3.0 - 0.5

- 0.5 — Wing thickness
- 3.0 — Wall Length
- 6.0 — Abutment height
- WIN — Structure Type

APR - R5 - 12.5 - 5.0

- 5.0 — Length
- 12.5 — Width
- R5 — Road Class
- APR — Structure Type

Tarikh	Butiran	Rujukan		UNIT JAMBATAN	PENGARAH JALAN	JABATAN KERJA RAYA MALAYSIA CAWANGAN JALAN
				DIREKABENTUK:		
				DILUKIS: DISEMAK:	JURUTERA PENGUASA KANAN	
PINDAAN			UKURAN	DILULUSKAN: PENOLONG PENGARAH (JI)	PENOLONG PENGARAH KANAN (J)	TARIKH: NO. LUKISAN:

MARKINGS, DIMENSIONS AND GENERAL NOTES FOR STRUCTURE DRAWINGS

The following notes shall be taken into account as applicable when reading the drawings.

They are summarized here for ease of reference, some of the notes are already mentioned in the Specification.

1. Geometrical standard for R5/U5 & R3/U3 shall comply with JKR guide on geometric design of roads.

2. Design Load Standard shall comply with B037/88 : 1989.

3. All dimensions as shown on the drawings are in mm unless otherwise stated.

4. Concrete for structural members

   Grade of concrete for structural members shall be as follows:

   Table 1. Grade of Concrete

Grade of Concrete	Structural Members
40	Reinforced Concrete
60	Prestressed Concrete Spun Pile
30	Bored Pile

5. Reinforcement

   (1) Bending, cutting, hook and anchoring shall comply with BS4466 as well as BS5400.

   (2) Spacing, splicing and development reinforcement shall comply with BS5400.

   (3) Minimum lap splice length of reinforcement shall be 250 + 150(mm) where D is a nominal diameter (mm) of reinforcement.

   (4) The location of lap splices on the longitudinal reinforcement is tentatively given in the Standard Drawing assuming the standard length of a reinforcement to be 9 and 12m. Designers are required to specify the splice location in such manner as not to concentrate splices in a section and to avoid the section of large bending moment.

   (5) Maximum length of a reinforcement shall not exceed 12m in general.

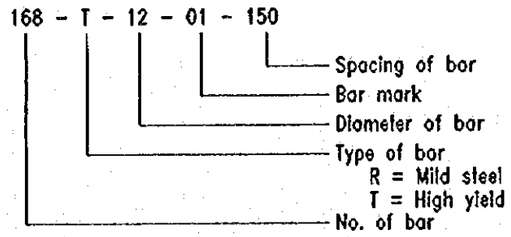
   (6) Cross sectional area, unit weight etc. shall comply with BS4461, 1966.

(7) Concrete Cover for reinforcement bars.

Table 2. Concrete Cover

Structural Members	Concrete Cover (mm)
Abutment and Walls	50
Piers	50
Footing	70
Piles	70

(8) Legend

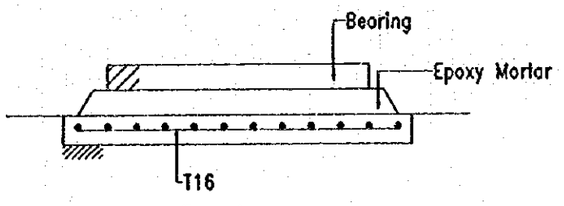


T = Top
B = Bottom
A.S = Alterotely staggered
L.V = Length varies

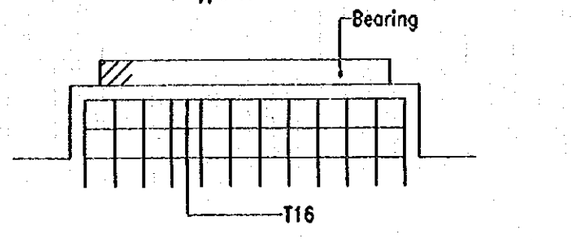
6. Reinforcement for Bridge Bearing Seats

   In order to distribute Reactions from superstructures, bridge bearing seat shall be reinforced by using reinforceing bars T16.

   Type A (Plain Type), Type B (Bending Type) are commonly adopted.



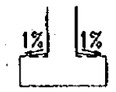
Type A



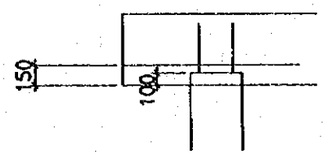
Type B

7. Pile cap

   (1) Crossfall on the pile cap shall be 1% for drainage. (In Calculation of section and drawing this crossfall is neglected.)



   (2) Lower renforing bar of pile cap is located the 150mm level from bottom of the pile cap.
   Pile head is embedded in to the pile cap up to 100mm.



Tarikh	Butiran	Rujukan

PINDAAN

UKURAN

UNIT JAMBATAN

DIREKABENTUK:

DILUKIS: DISEMAK:

DILULUSKAN: PENOLONG PENGARAH (JJ)

PENGARAH JALAN

JURUTERA PENGUASA KANAN

PENOLONG PENGARAH KANAN (J)

JABATAN KERJA RAYA MALAYSIA
CAWANGAN JALAN

TARIKH: BIL. LUKISAN:

MARKINGS, DIMENSIONS AND GENERAL NOTES FOR STRUCTURE DRAWINGS

8. Pile

(1) PC Spun piles

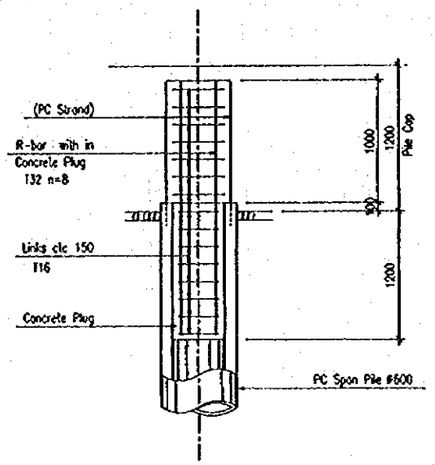
Anchorage depth in pile caps shall be 1000mm complying with JKR Note (L = 32 x d, d = diameter of bars).

Reinforcement shall be taken place embedding into the concrete plague due to its manufacturing constraint. Achorage bars shall be over T32-8.

(2) Bored piles

The onchorage depth shall be complied with JKR Note as the same as PC spun piles. Main reinforcing bars shall be extended by extra 1000mm longer than the anchorage length.

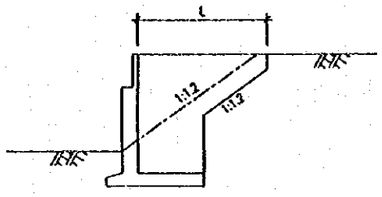
Pile head concrete shall be chipped to eliminate laitance concrete sufficiently.



9. Wing Walls

Wing walls of l=5m and l=3m shall be adopted and shown as samples in the Standard Design. Gradient of a wing edge shall be 1 : 1.2 which is complied with Japanese Standard (Front Gradient of an Embankment). Shape of wing wall shall be determined based on particular conditions of each embankment, but its design cannot be standardized. Therefore drawings for wing walls were prepared just for references.

L=8m is a practical limit for the wing wall length. However, long wing wall is not recommendable due to its uneconomical point which is caused by thick member to be used. In this case, different type shall be considered such as retaining walls practically.

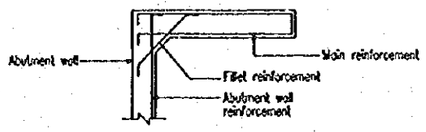


10. Fillet for Wing Walls

Diagonal reinforcements.

Sufficient reinforcement is required because horizontal forces such as a rolling compaction tend to cause displacement of the wall.

Furthermore, working forces effected on wing walls also affect on paropets, therefore, haunches must be reinforced sufficiently.

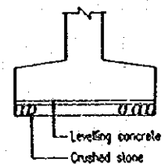


10. Lean concrete

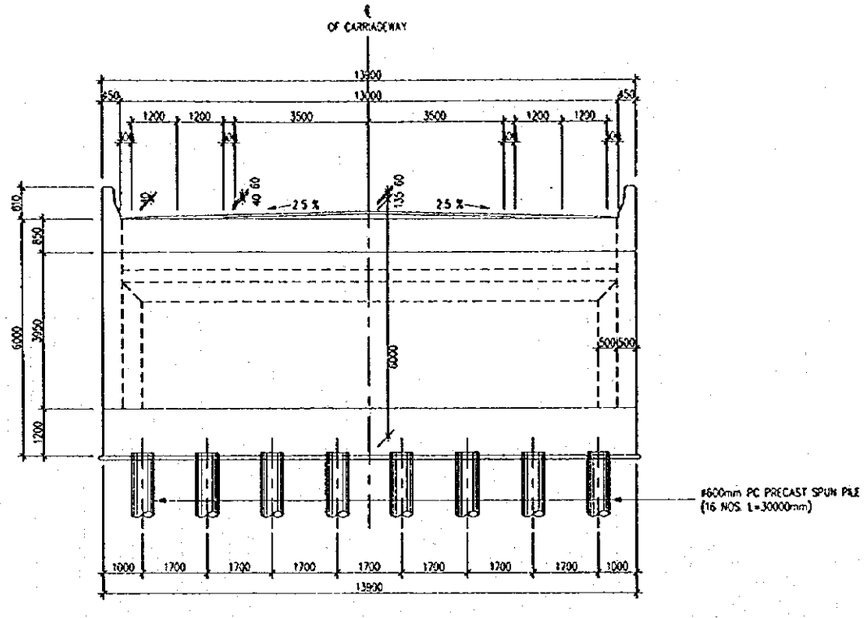
Ground surface shall be finished by levelling concrete for distributing reactions from the structure and for formation level

Thickness of crushed stone shall be l=200mm and levelling concrete for l=100mm generally.

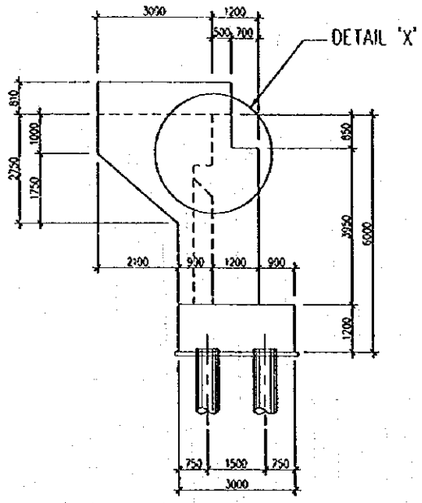
In case of pile foundation, the same manner shall be adopted.



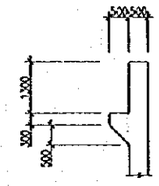
Tarikh	Butiran	Rujukan		UNIT JAMBATAN	PENGARAH JALAN	JABATAN KERJA RAYA MALAYSIA CAWANGAN JALAN
				DIREKABENTUK:		
PINDAAN			UKURAN	DILUKIS: DISEMAK:	JURUTERA PENGURUSA KANAN	
				DILULUSKAN: PENOLONG PENGARAH (P)	PENOLONG PENGARAH KANAN (J)	TARIKH: Bil. LUKISAN:



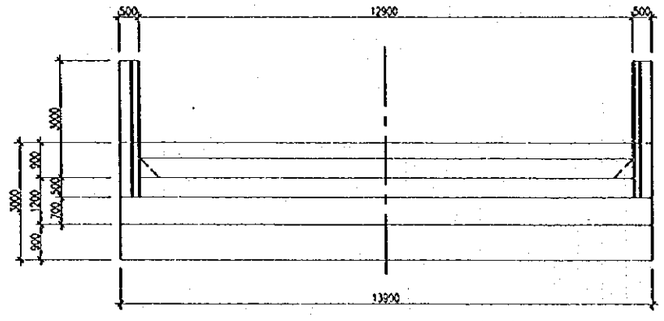
FRONT ELEVATION
SCALE 1 : 75



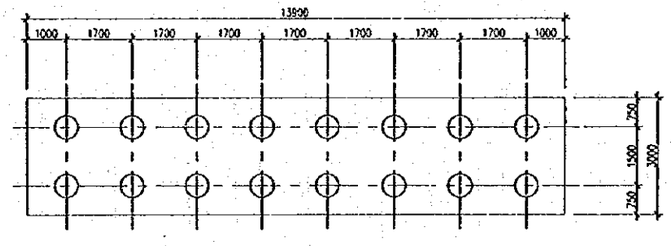
SIDE ELEVATION
SCALE 1 : 75



DETAIL 'X'
SCALE 1 : 25

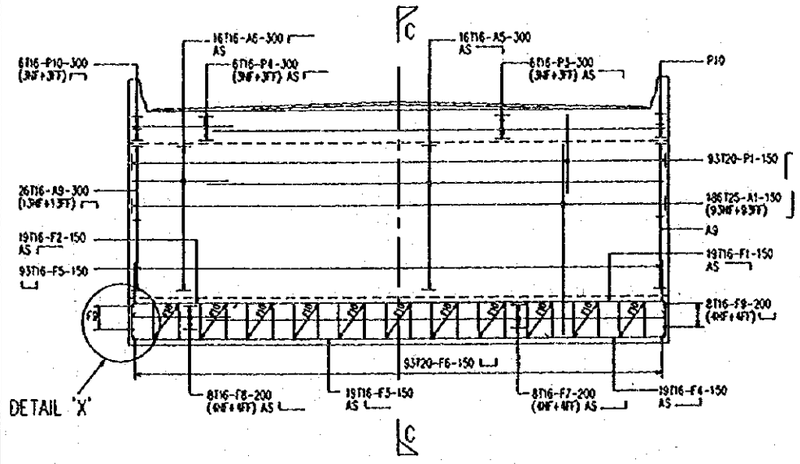


PLAN
SCALE 1 : 75

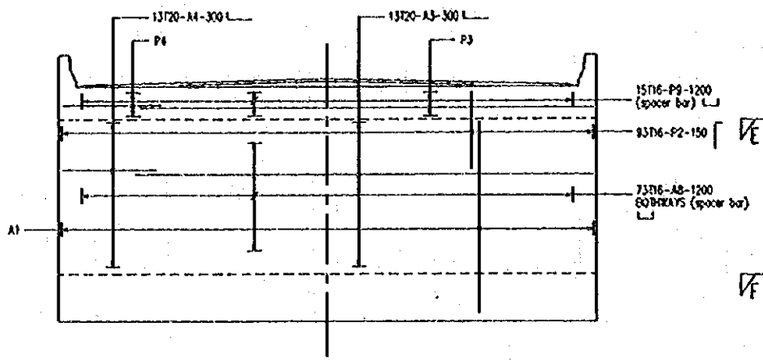


PILE ARRANGEMENT
SCALE 1 : 75

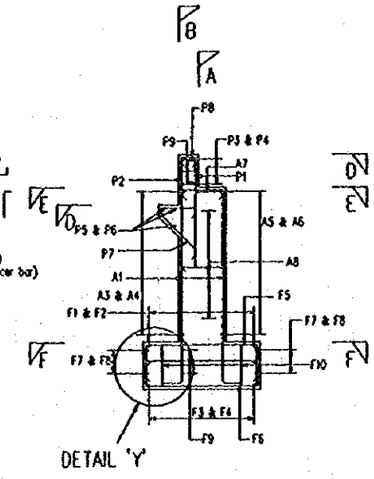
Tarikh	Butiran	Rujukan				
			UNIT JAMBATAN	PENGARAH JALAN	JABATAN KERJA RAYA MALAYSIA CAWANGAN JALAN	
PINDAAN			UKURAN	DIREKABENTUK:	JURUTERA PENDUASA KANAN	ABUTMENT - GENERAL VIEW
				DILUKIS: DISEMAK:		
				DILULUSKAN: PENOLONG PENGARAH (JJ)	PENOLONG PENGARAH KANAN (J)	TARIKH: BIL. LUKISAN:



SECTION A - A
SCALE 1 : 25

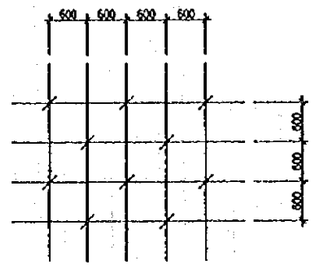


SECTION B - B
SCALE 1 : 25

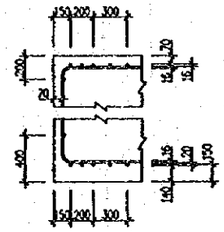


B A

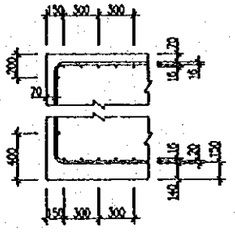
SECTION C - C
SCALE 1 : 25



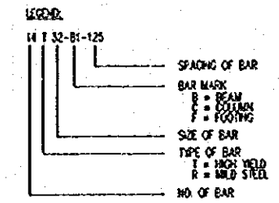
KEY PLAN
SPACER BAR ARRANGEMENT

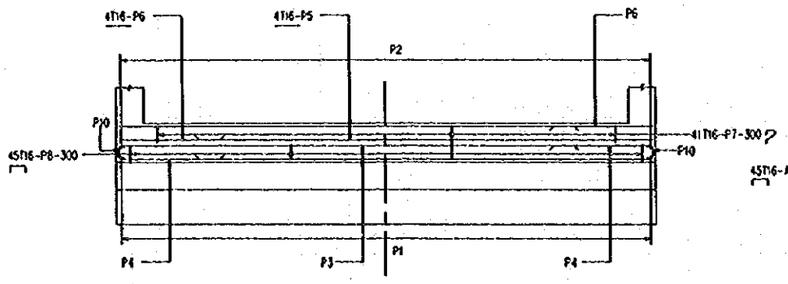


DETAIL 'X'
SCALE 1 : 25

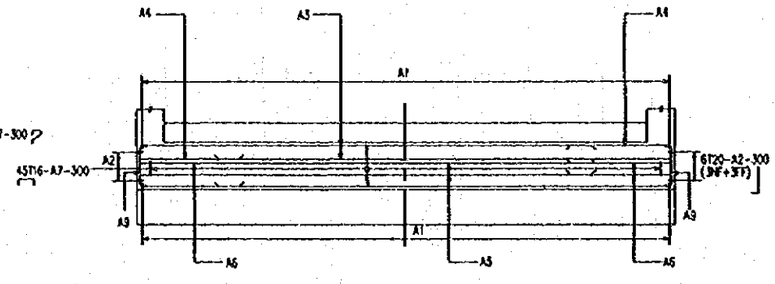


DETAIL 'Y'
SCALE 1 : 25

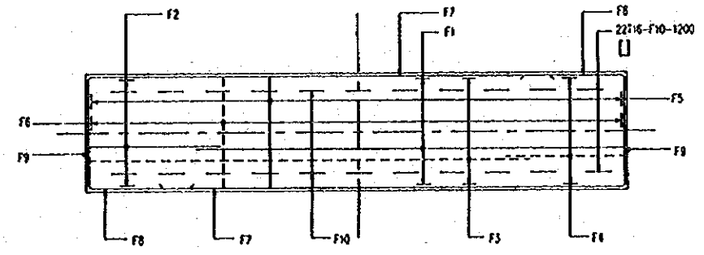




SECTION D - D
SCALE 1 : 25

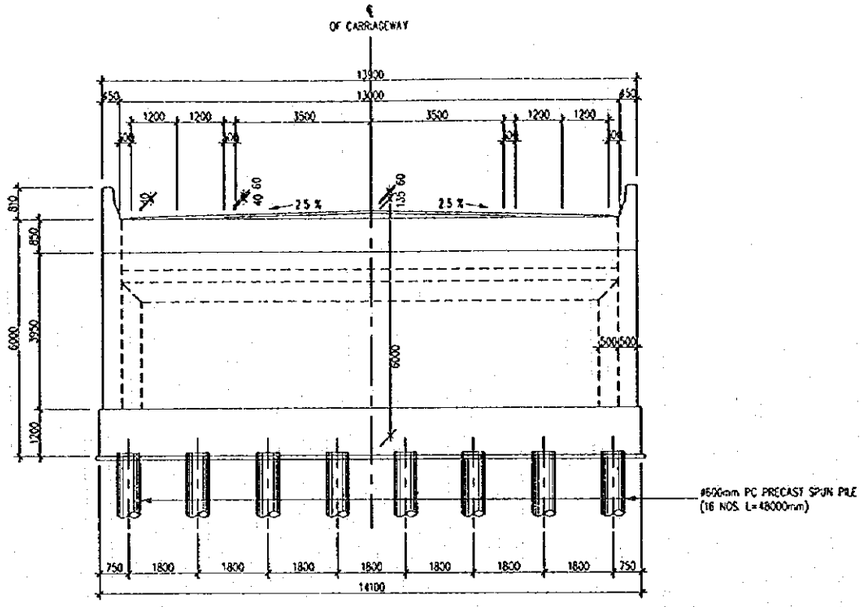


SECTION E - E
SCALE 1 : 25

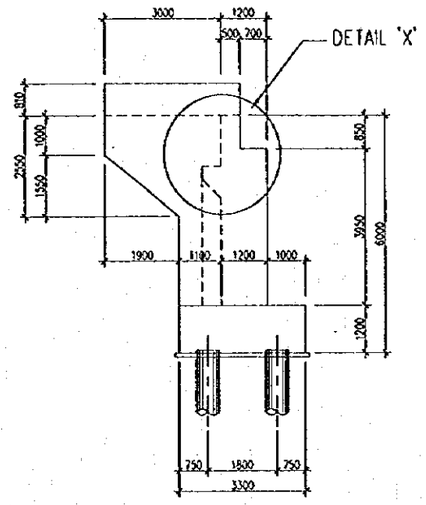


SECTION F - F
SCALE 1 : 25

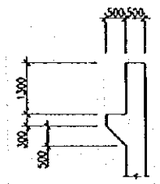
Tarikh	Butiran	Rujukan				
			UNIT JAMBATAN	PENGARAH JALAN	JABATAN KERJA RAYA MALAYSIA CAWANGAN JALAN	
PINDAAN			URUSAN	DIREKABENTUK:	JURUTERA PENGUASA KANAN	ABUTMENT - REINFORCEMENT
				DILUKIS: DISEMAK:	PENOLONG PENGARAH KANAN (J)	TARIKH: BIL. LUKISAN
				DILULUSKAN PENOLONG PENGARAH (J)		



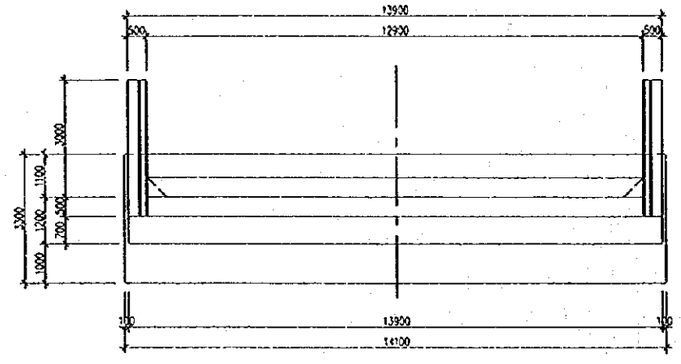
FRONT ELEVATION
SCALE 1 : 75



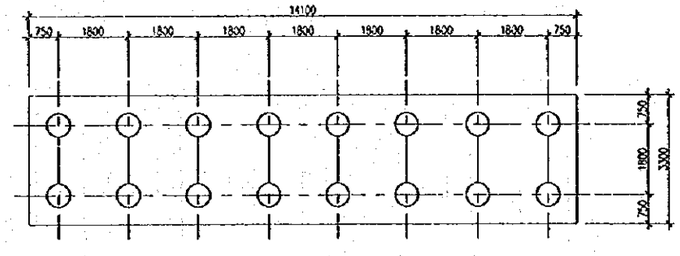
SIDE ELEVATION
SCALE 1 : 75



DETAIL 'X'
SCALE 1 : 75



PLAN
SCALE 1 : 75



PILE ARRANGEMENT
SCALE 1 : 75

Tarikh	Butiran	Rujukan
PINDAAN		

UKURAN

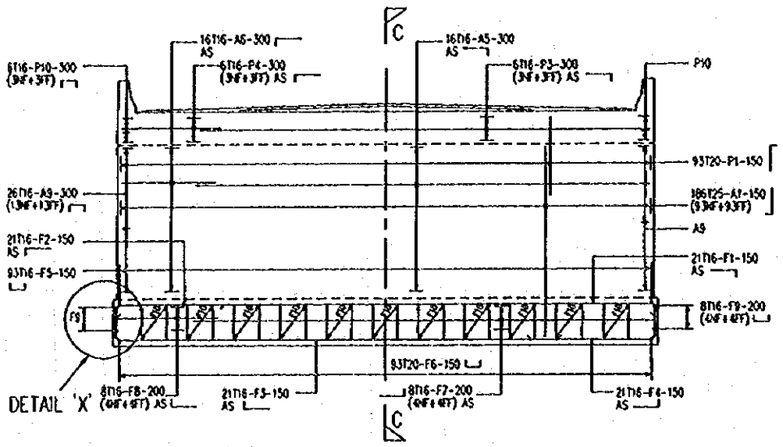
UNIT JAMBATAN
DIREKABENTUK:
DILUKIS: DISEMAK:
DILULUSKAN: PENOLONG PENGARAH (JJ)

PENGARAH JALAN
JURUTERA PENGUASA KANAN
PENOLONG PENGARAH KANAN (J)

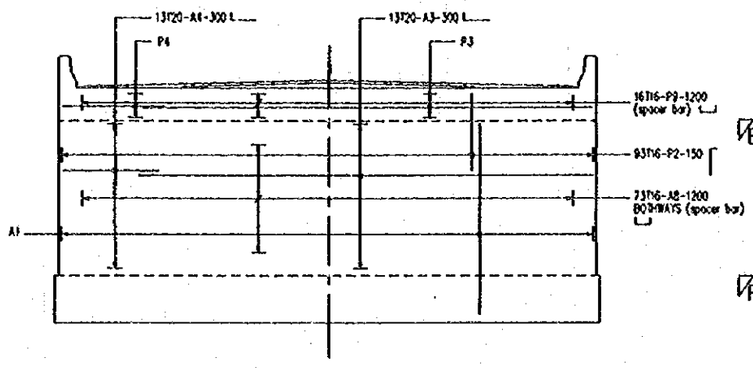
JABATAN KERJA RAYA MALAYSIA
CAWANGAN JALAN

ABUTMENT - GENERAL VIEW

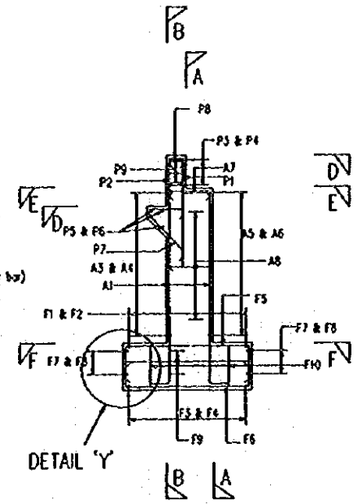
FAIL NO:
BIL. LUKISAN:



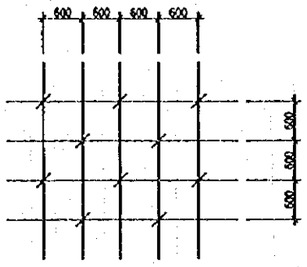
SECTION A - A
SCALE 1 : 75



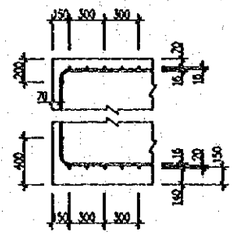
SECTION B - B
SCALE 1 : 75



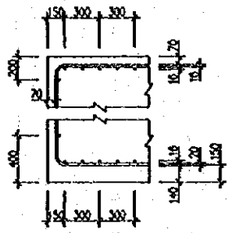
SECTION C - C
SCALE 1 : 75



KEY PLAN
SPACER BAR ARRANGEMENT

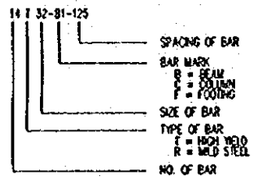


DETAIL 'X'
SCALE 1 : 25

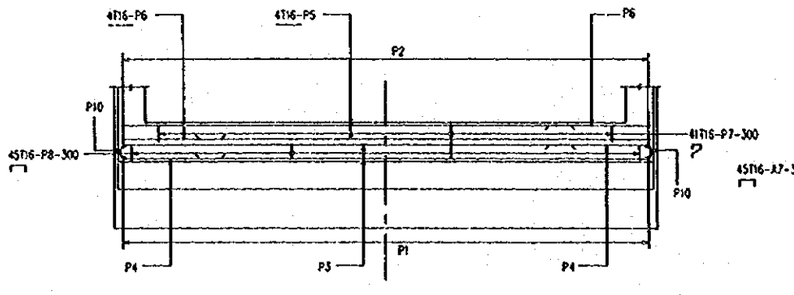


DETAIL 'Y'
SCALE 1 : 25

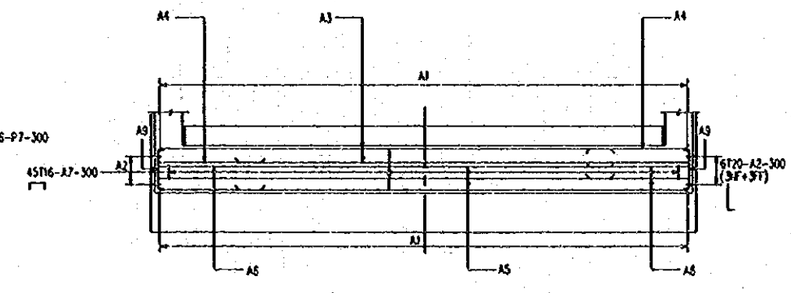
LEGEND:



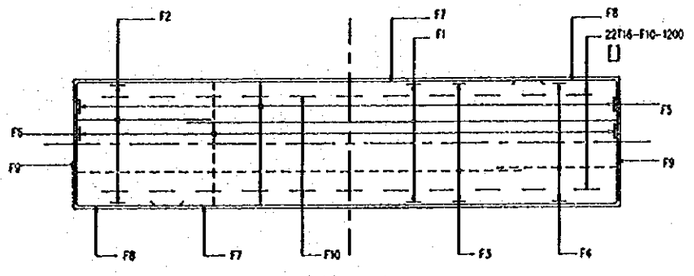
AS = ALTERNATELY STAGGERED
LV = LENGTH VARIES
NF = NEAR FACE
FF = FAR FACE



SECTION D - D
SCALE 1 : 75

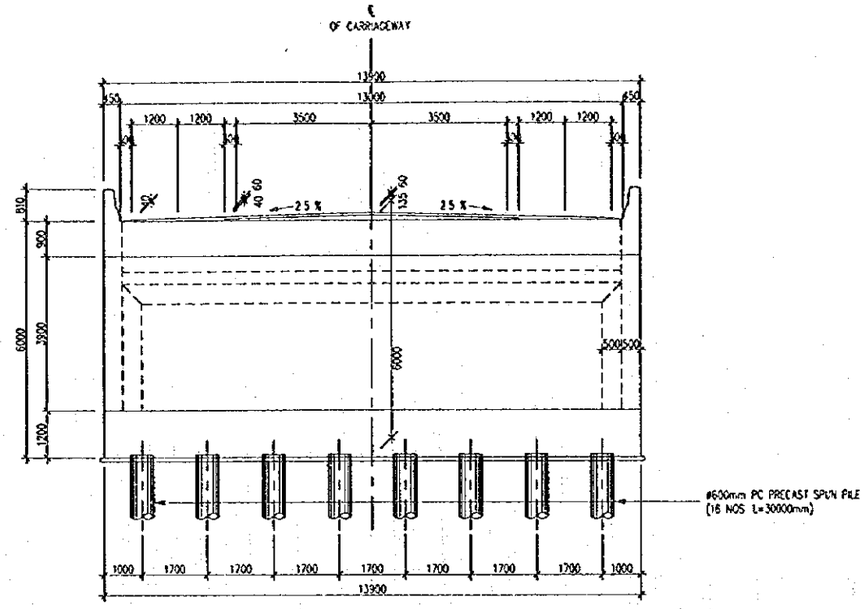


SECTION E - E
SCALE 1 : 25

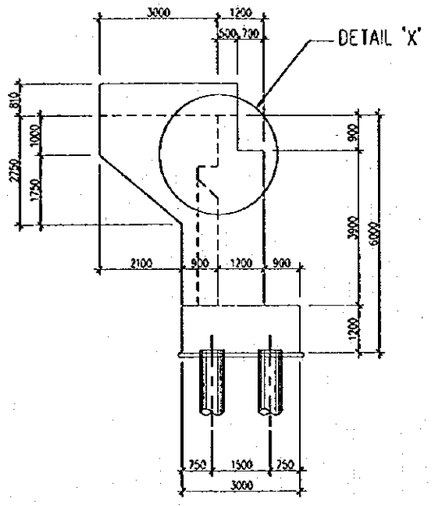


SECTION F - F
SCALE 1 : 25

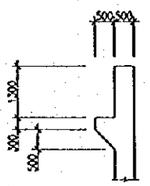
Tarikh	Butiran	Rujukan				
			UNIT JAMBATAN	PENGARAH JALAN	JABATAN KERJA RAYA MALAYSIA CAWANGAN JALAN	
			DIREKABENTUK:			
			DILUKIS:	DISEMAK:	JURUTERA PENGUASA KANAN	ABUTMENT - REINFORCEMENT
			DILULUSKAN: PENOLONG PENGARAH (A)		PENOLONG PENGARAH KANAN (J)	TARIKH: / NO. LUKISAN:
PINDAAN			UKURAN			



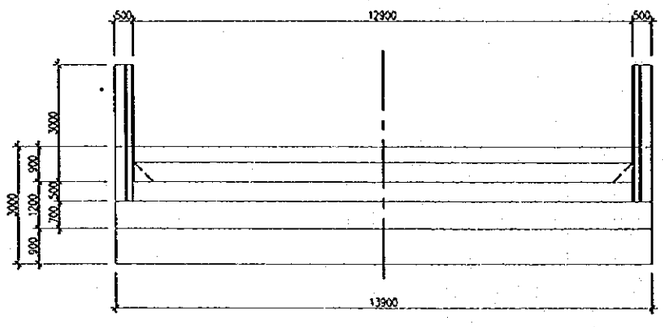
FRONT ELEVATION
SCALE 1 : 75



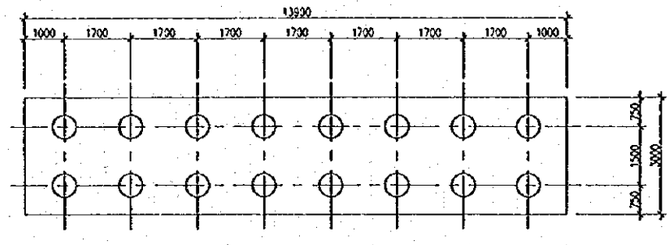
SIDE ELEVATION
SCALE 1 : 75



DETAIL 'X'
SCALE 1 : 75



PLAN
SCALE 1 : 75



PILE ARRANGEMENT
SCALE 1 : 75

Terbit	Butiran	Rujukan
PINDAAN		

LAKARAN

UNIT JAMBATAN

DIREKABENTUK:

DILUKIS: | DISEMAK:

DILULUSKAN: PENOLONG PENGARAH (JJ)

PENGARAH JALAN

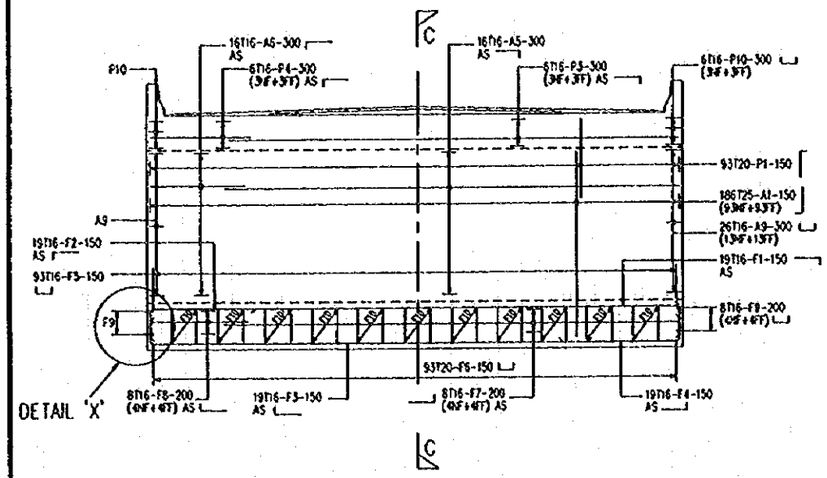
JURUTERA PENGUASA KANAN

PENOLONG PENGARAH KANAN (J)

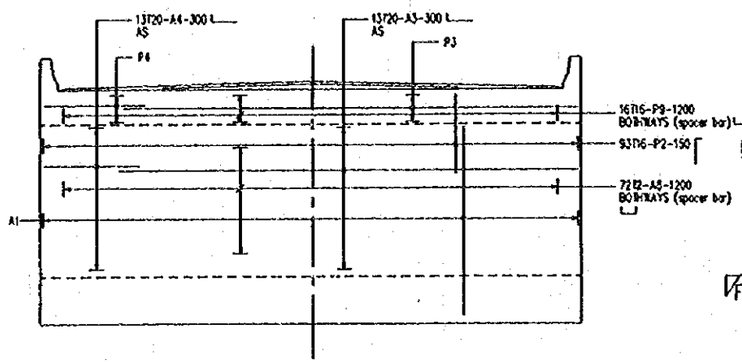
JABATAN KERJA RAYA MALAYSIA
CAWANGAN JALAN

ABUTMENT - GENERAL VIEW

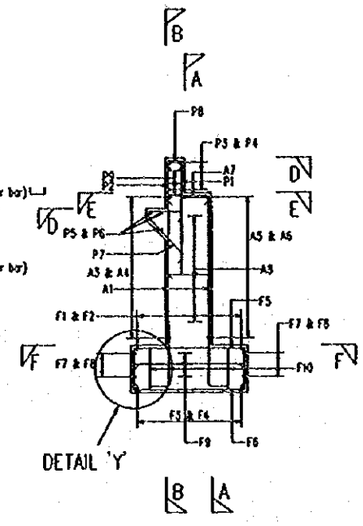
TARIKH: | BIL. LUKISAN:



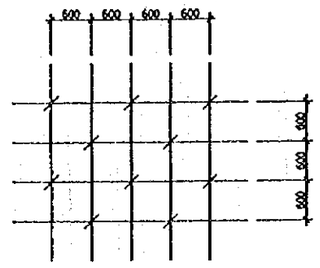
SECTION A - A
SCALE 1 : 25



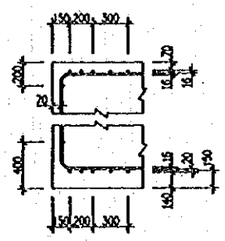
SECTION B - B
SCALE 1 : 25



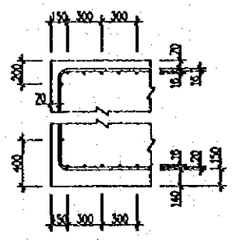
SECTION C - C
SCALE 1 : 25



KEY PLAN
SPACER BAR ARRANGEMENT



DETAIL 'X'
SCALE 1 : 25



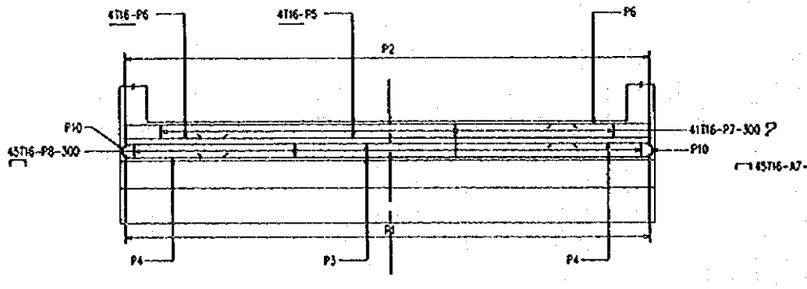
DETAIL 'Y'
SCALE 1 : 25

LEGEND:

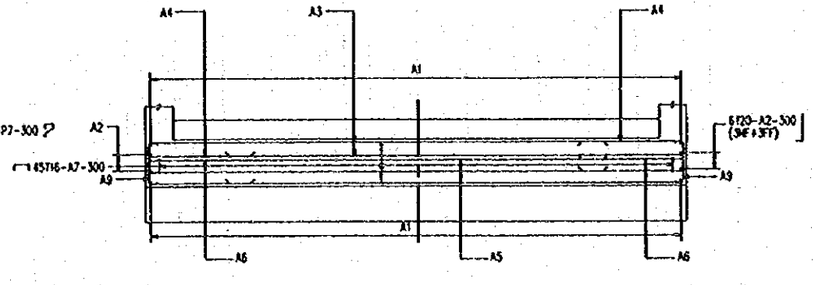
14 R 32-B1-125

- SPACING OF BAR
- BAR MARK
  - B = BEAM
  - C = COLUMN
  - F = FOOTING
- SIZE OF BAR
- TYPE OF BAR
  - T = HIGH YIELD
  - R = MILD STEEL
- NO. OF BAR

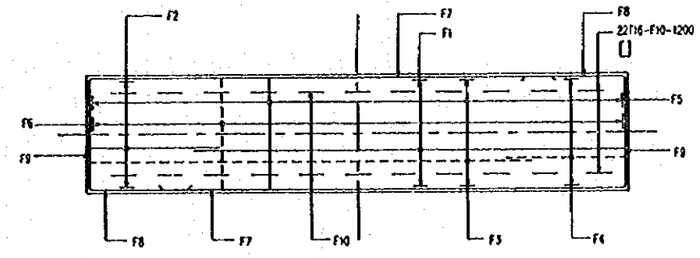
AS = ALTERNATELY STAGGERED
LV = LENGTH VARIES
NF = NEAR FACE
FF = FAR FACE



SECTION D - D
SCALE 1 : 25



SECTION E - E
SCALE 1 : 25



SECTION F - F
SCALE 1 : 25

Tarikh	Butiran	Rujukan
PINDAAN		UKURAN

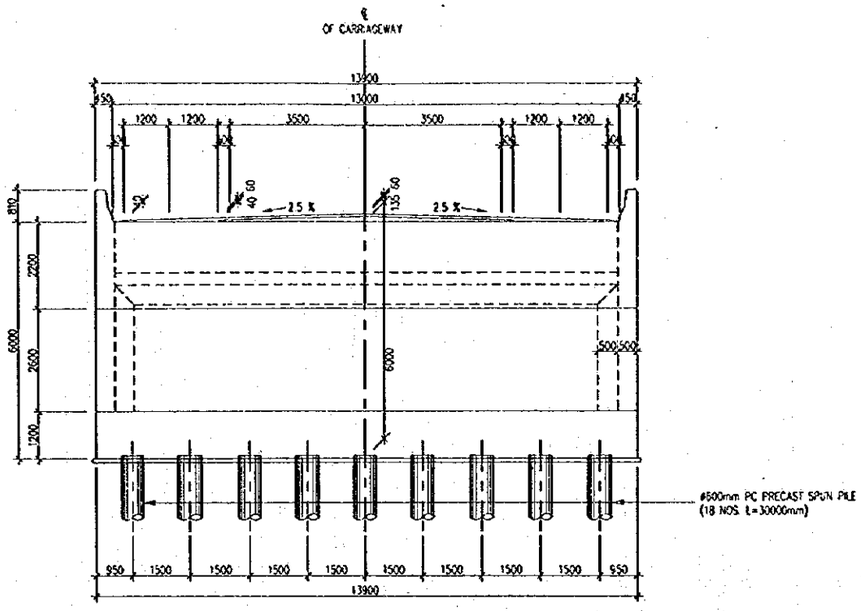
UNIT JAMBATAN
DIREKABENTUK:
DILUKIS: DISEMAK:
DILULUSKAN: PENOLONG PENGARAH (JI)

PENGARAH JALAN
JURUTERA PENGUASA KANAN
PENOLONG PENGARAH KANAN (J)

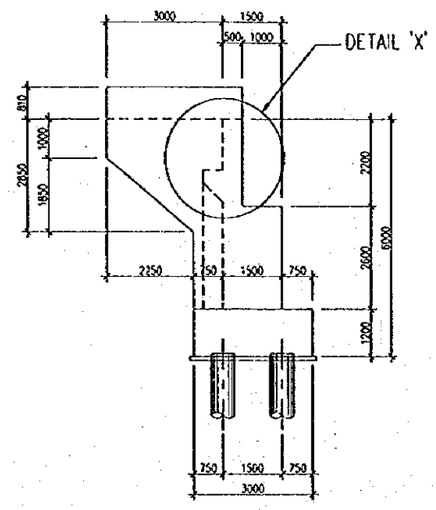
JABATAN KERJA RAYA MALAYSIA
CAWANGAN JALAN

ABUTMENT - REINFORCEMENT

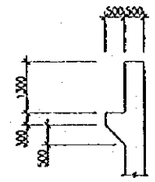
TAPAK: BIL. LUKISAN:



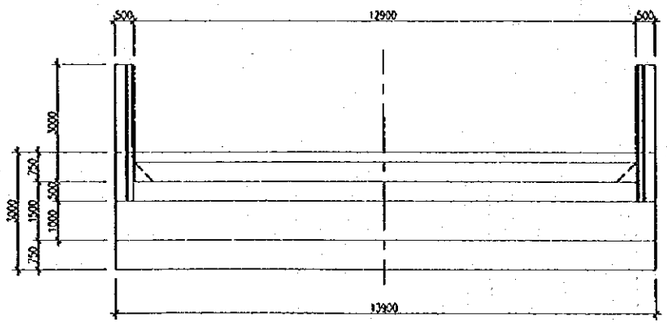
FRONT ELEVATION
SCALE 1 : 75



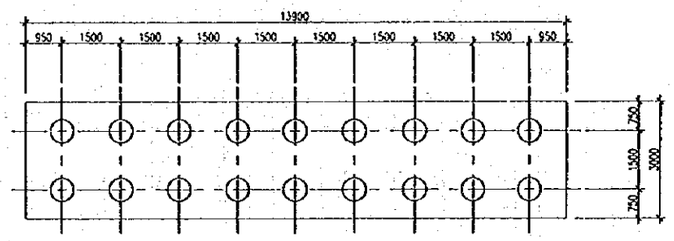
SIDE ELEVATION
SCALE 1 : 75



DETAIL 'X'
SCALE 1 : 75



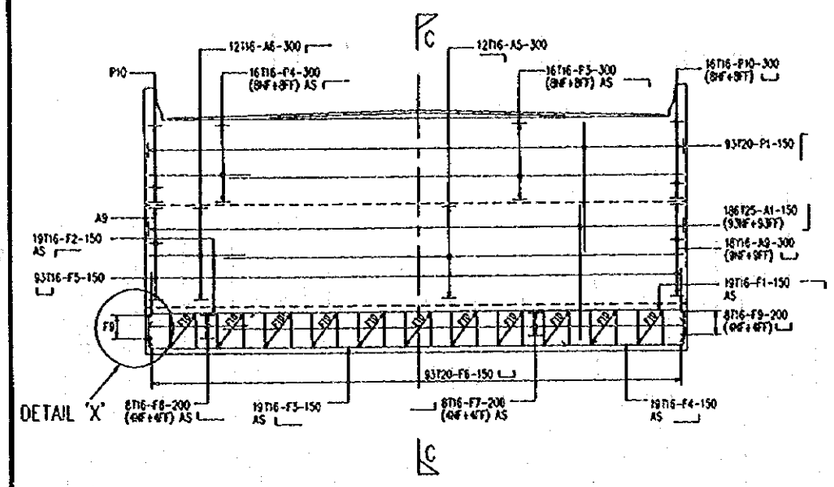
PLAN
SCALE 1 : 75



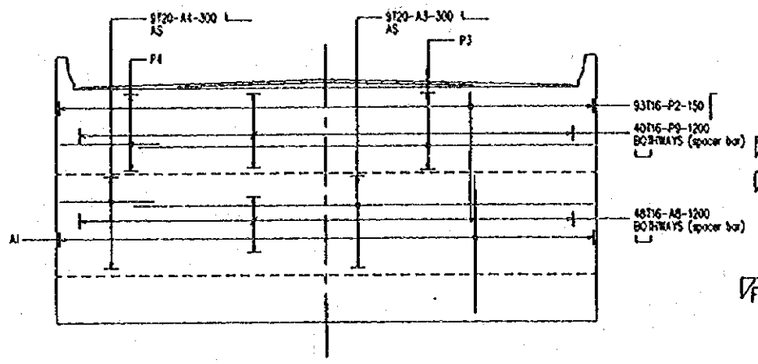
PILE ARRANGEMENT
SCALE 1 : 75

[CAD FILE: A3A2H-3D] REV. 04

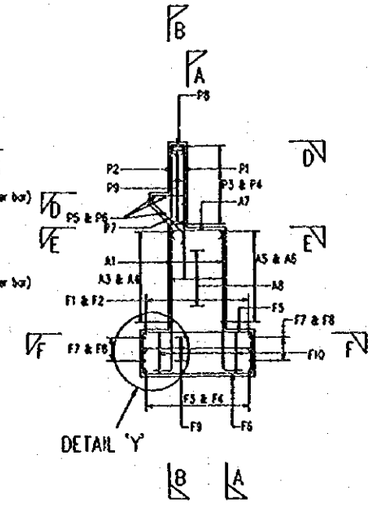
Tarikh	Butiran	Rujukan				
			UKURAN	UNIT JAMBATAN DIREKABENTUK:	PENGARAH JALAN	JABATAN KERJA RAYA MALAYSIA CAWANGAN JALAN
				DILUKIS: DISEMAK:	JURUTERA PENGUASA KANAN	
	PINDAAN			DILULUSKAN: PENOLONG PENGARAH (J)	PENOLONG PENGARAH KANAN (J)	ABUTMENT - GENERAL VIEW TARIKH: BIL. LUKISAN:



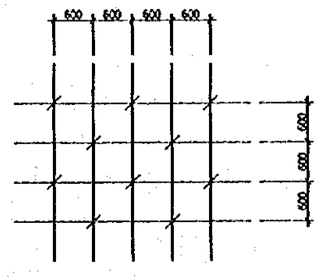
SECTION A - A
SCALE 1 : 75



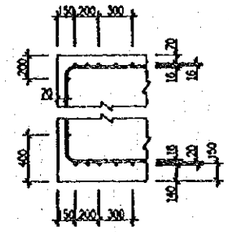
SECTION B - B
SCALE 1 : 75



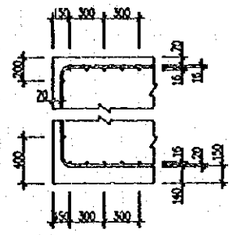
SECTION C - C
SCALE 1 : 75



KEY PLAN
SPACER BAR ARRANGEMENT



DETAIL 'X'
SCALE 1 : 25



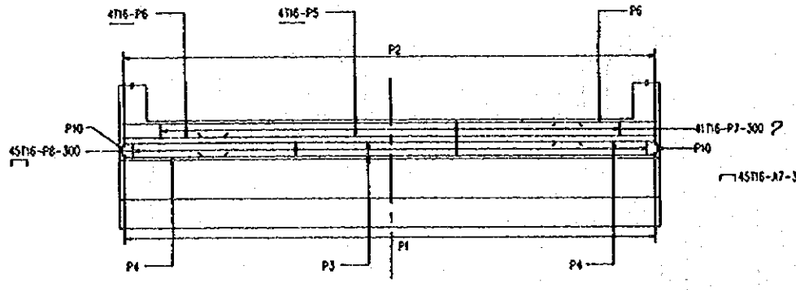
DETAIL 'Y'
SCALE 1 : 25

LEGEND:

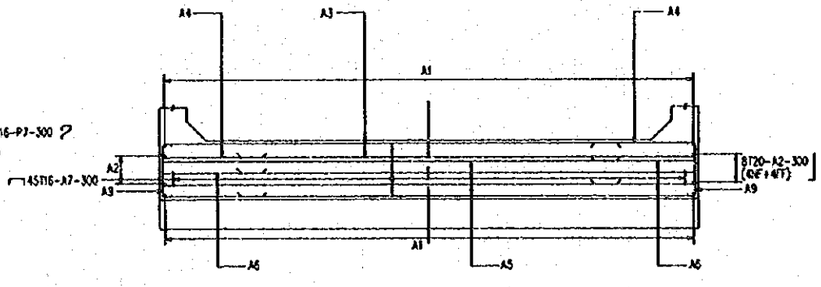
14 T 32-B1-125

- SPACING OF BAR
- BAR MARK (B = BEAM, W = WALL/ABUT, F = FOOTING)
- SIZE OF BAR
- TYPE OF BAR (T = HIGH YIELD, R = MILD STEEL)
- NO. OF BAR

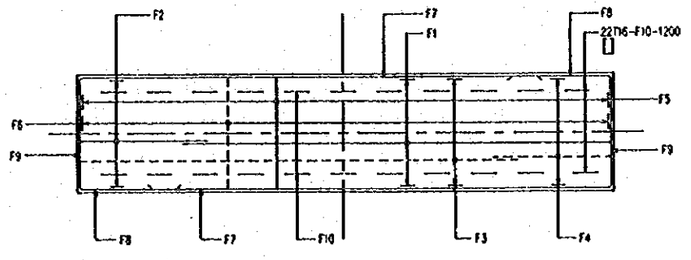
AS = ALTERNATELY STAGGERED
LV = LENGTH VARIES
NF = NEAR FACE
FF = FAR FACE



SECTION D - D
SCALE 1 : 75

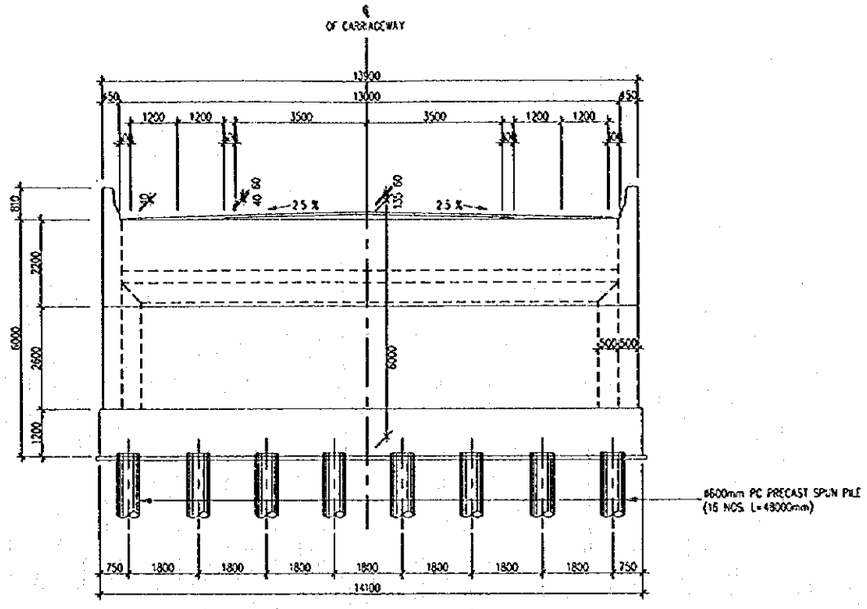


SECTION E - E
SCALE 1 : 75

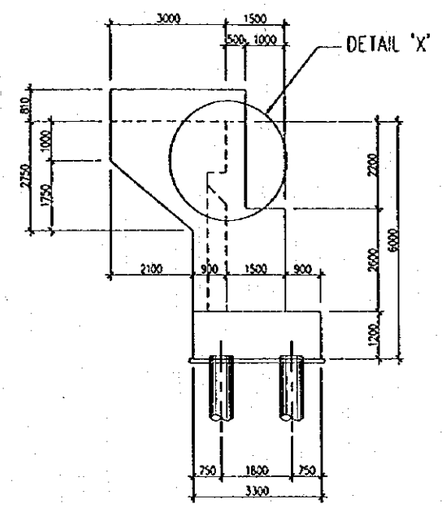


SECTION F - F
SCALE 1 : 75

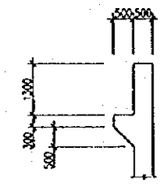
Tarikh	Butiran	Rujukan		UNIT JAMBATAN	PENGARAH JALAN	JABATAN KERJA RAYA MALAYSIA CAWANGAN JALAN
				DIREKABENTUK:		
				DILUKIS: DISEMAK:	JURUTERA PENGUASA KANAN	ABUTMENT - REINFORCEMENT
	PINDAAN		UKURAN	DILULUSKAN: PENOLONG PENGARAH (A)	PENOLONG PENGARAH KANAN (J)	TARIKH: SKL: LUKISAN:



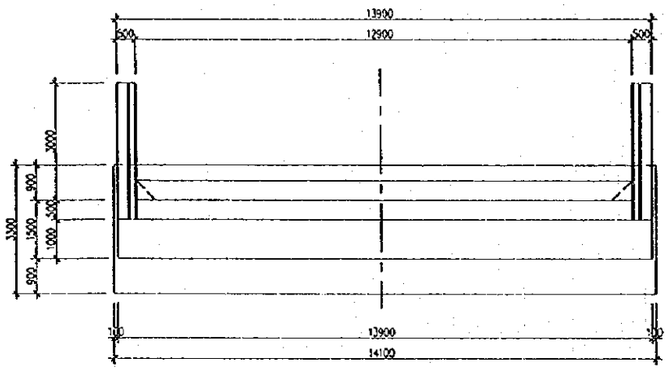
FRONT ELEVATION
SCALE 1 : 75



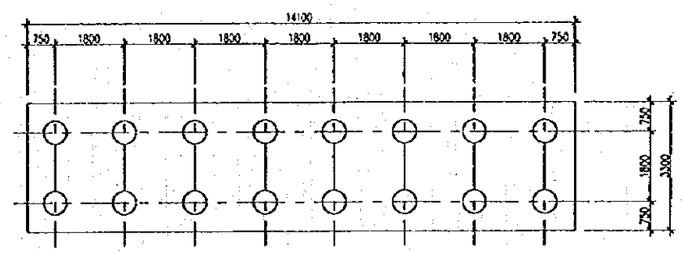
SIDE ELEVATION
SCALE 1 : 75



DETAIL 'X'
SCALE 1 : 25

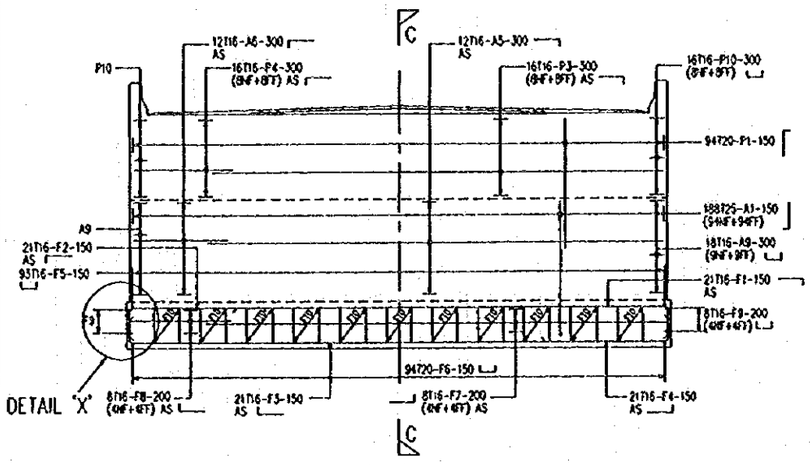


PLAN
SCALE 1 : 75

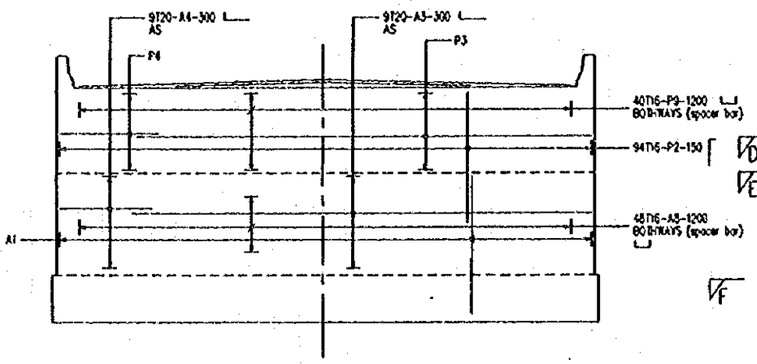


PILE ARRANGEMENT
SCALE 1 : 75

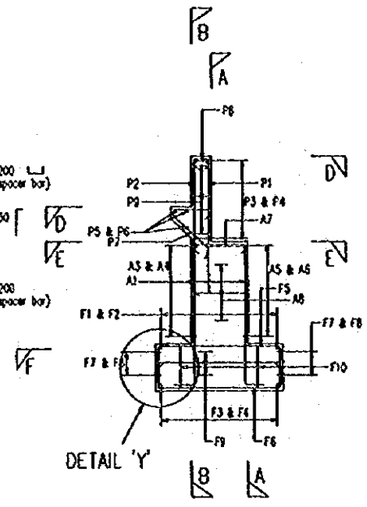
Tarikh	Butiran	Rujukan		UNIT JAMBATAN	PENGARAH JALAN	JABATAN KERJA RAYA MALAYSIA CAWANGAN JALAN
				DIREKABENTUK:		
				DILUKIS: DISEMAK:	JURUTERA PENGUASA KANAN	ABUTMENT - GENERAL VIEW
PINDAAN			UKURAN	DILULUSKAN: PENOLONG PENGARAH (J)	PENOLONG PENGARAH KANAN (J)	FAIL NO: BIL. LUKISAN:



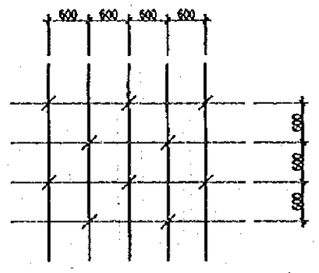
SECTION A – A
SCALE 1 : 25



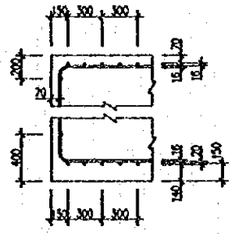
SECTION B – B
SCALE 1 : 25



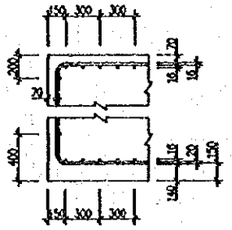
SECTION C – C
SCALE 1 : 25



KEY PLAN
SPACER BAR ARRANGEMENT



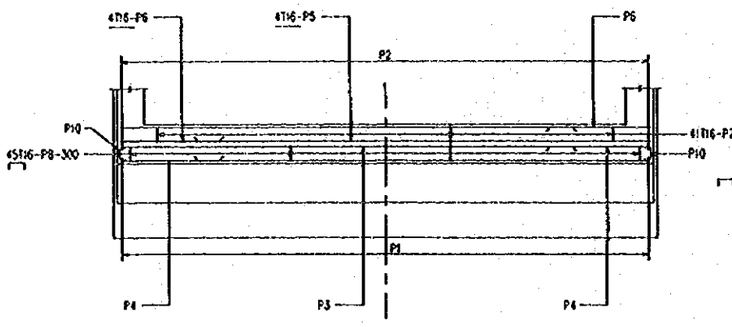
DETAIL 'X'
SCALE 1 : 25



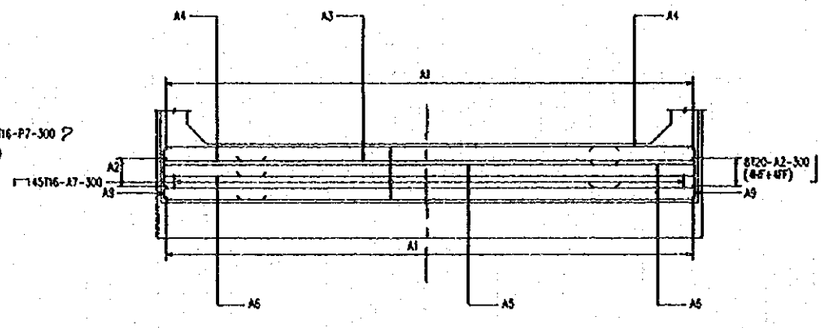
DETAIL 'Y'
SCALE 1 : 25

LEGEND:
14 T 32-B1-125
SPACING OF BAR
BAR MARK
B = BEAM
C = COLUMN
F = FOOTING
SIZE OF BAR
TYPE OF BAR
T = HIGH YIELD
R = MILD STEEL
NO. OF BAR

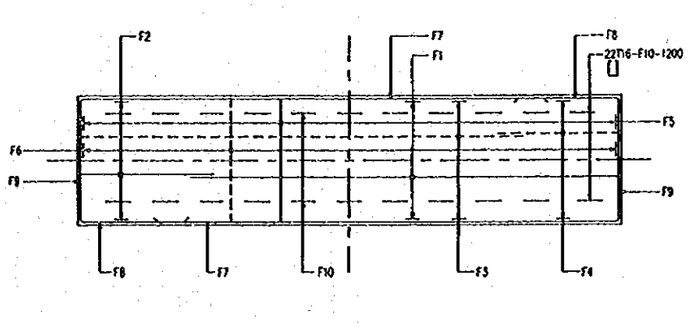
AS = ALTERNATELY STAGGERED
LV = LENGTH VARIES
NF = NEAR FACE
FF = FAR FACE



SECTION D – D
SCALE 1 : 25



SECTION E – E
SCALE 1 : 25



SECTION F – F
SCALE 1 : 25

Tarikh	Butiran	Rujukan

PINDAAN

UKURAN

UNIT JAMBATAN

DIREKABENTUK:

DILUKIS: DISEMAK:

DILULUSKAN PENOLONG PENGARAH (A)

PENGARAH JALAN

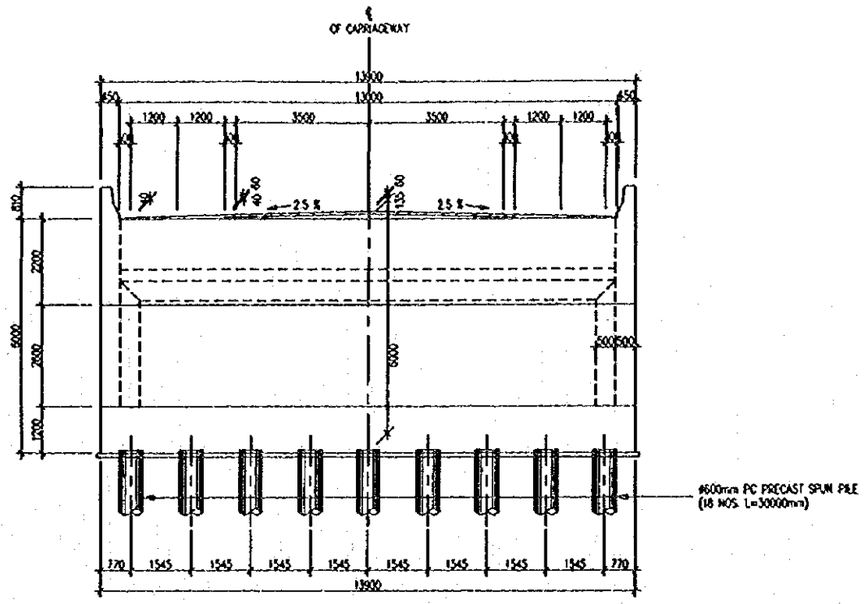
JURUTERA PENGUASA KANAN

PENOLONG PENGARAH KANAN (J)

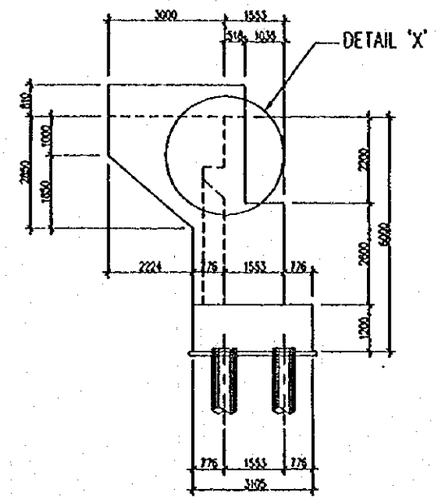
JABATAN KERJA RAYA MALAYSIA
CAWANGAN JALAN

ABUTMENT – REINFORCEMENT

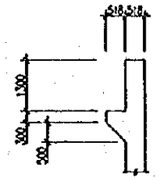
TARIKH: BIL. LUKISAN:



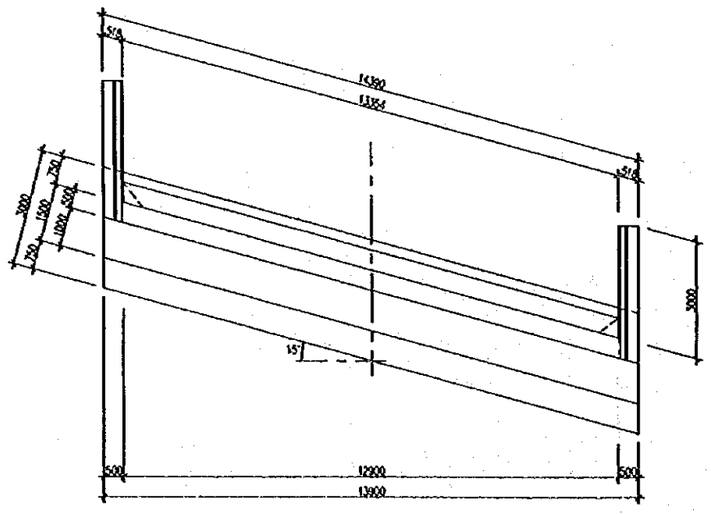
FRONT ELEVATION
SCALE 1 : 75



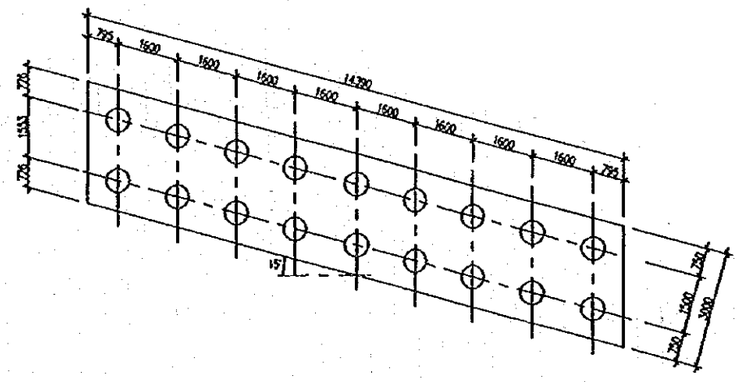
SIDE ELEVATION
SCALE 1 : 75



DETAIL 'X'
SCALE 1 : 75

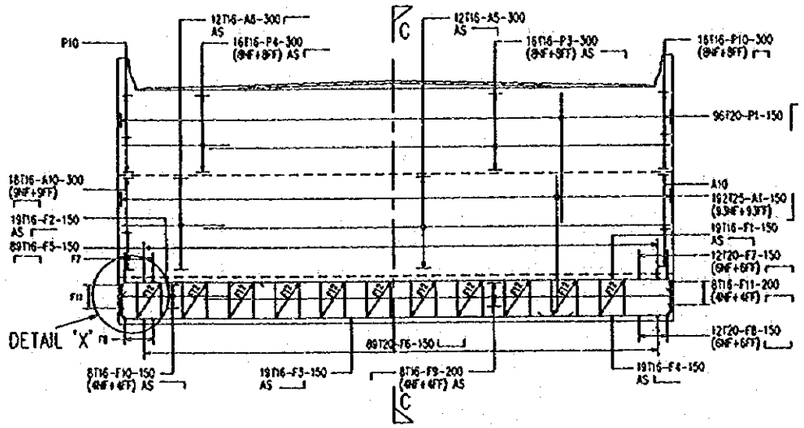


PLAN
SCALE 1 : 75

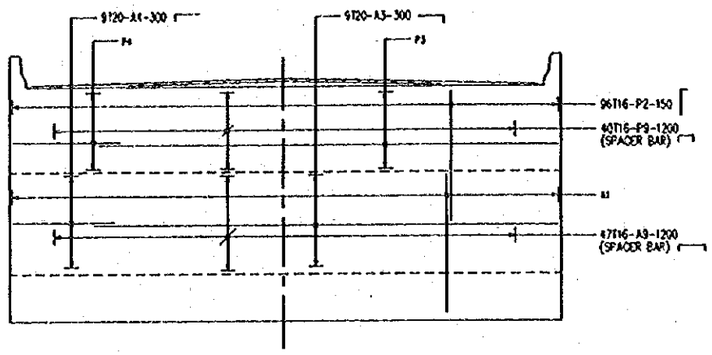


PILE ARRANGEMENT
SCALE 1 : 75

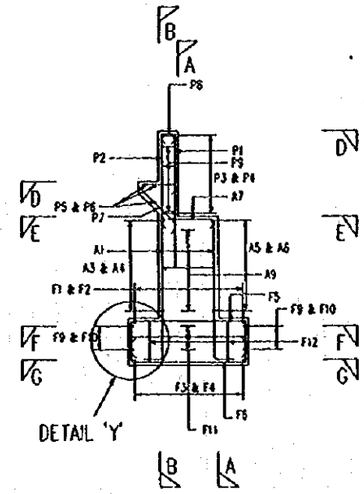
Tarikh	Butiran	Rujukan				
			UNIT JAMBATAN	PENGARAH JALAN	JABATAN KERJA RAYA MALAYSIA CAWANGAN JALAN	
PINDAAN			DISEDIAKAN OLEH:	JURUTERA PENGUASA KANAN	ABUTMENT - GENERAL VIEW	
			DILUKIS: DISEMAK:	PEMBANTU PENGARAH KANAN (J)	TARIKH:	SKL: 1:100/50
		UKURAN	DILULUSKAN: PEMBANTU PENGARAH (JJ)			



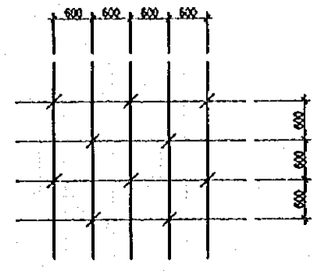
SECTION A - A
SCALE 1 : 25



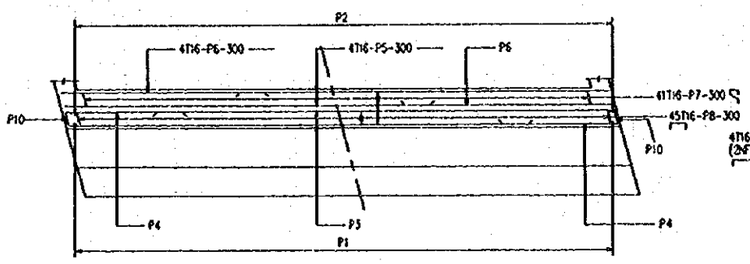
SECTION B - B
SCALE 1 : 25



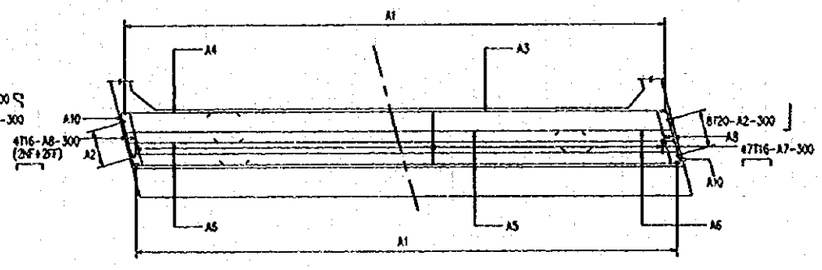
SECTION C - C
SCALE 1 : 25



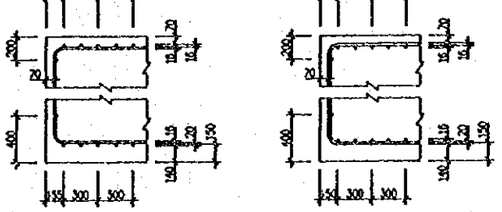
KEY PLAN
SPACER BAR ARRANGEMENT



SECTION D - D
SCALE 1 : 25

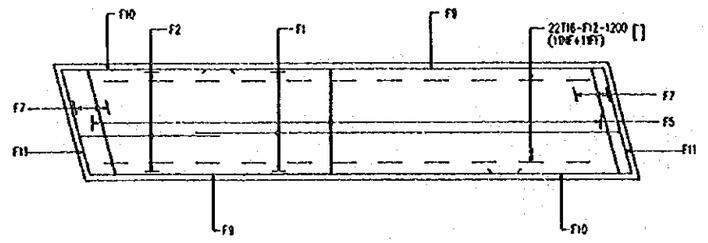


SECTION E - E
SCALE 1 : 25

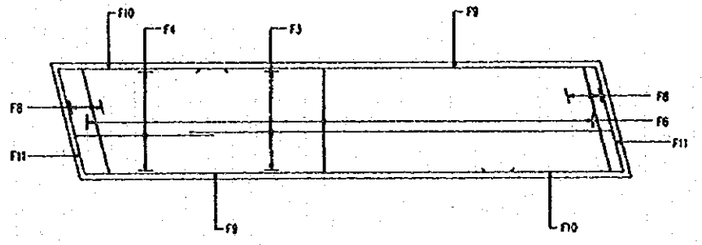


DETAIL 'X'
SCALE 1 : 25

DETAIL 'Y'
SCALE 1 : 25



SECTION F - F
SCALE 1 : 25

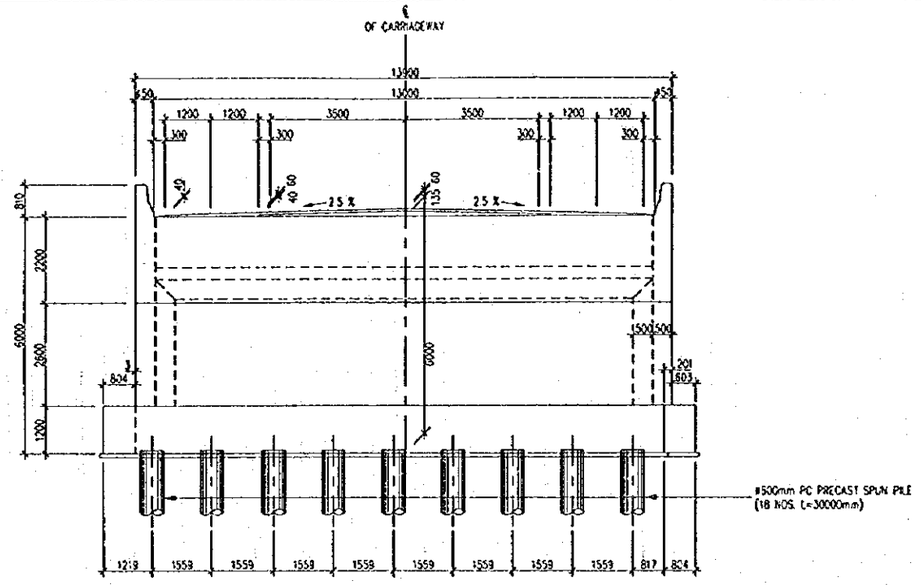


SECTION G - G
SCALE 1 : 25

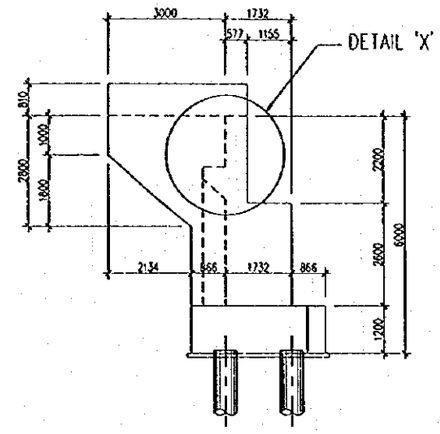
LEGEND:
14 Y 32-B1-125
SPACING OF BAR
BAR MARK
B = BEAM
C = COLUMN
F = FOOTING
SIZE OF BAR
TYPE OF BAR
Y = HIGH YIELD
R = MILD STEEL
NO. OF BAR

AS = ALTERNATELY STAGGERED
LV = LENGTH VARIES
NF = NEAR FACE
FF = FAR FACE

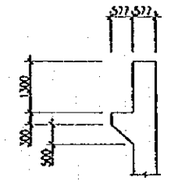
Tarikh	Butiran	Rujukan		UNIT JAMBATAN	PENGARAH JALAN	JABATAN KERJA RAYA MALAYSIA CAWANGAN JALAN
				DIREKABENTUK:		
				DILUKIS: DISEMAK:	JURUTERA PENGUASA KANAN	ABUTMENT - REINFORCEMENT
				DILULUSKAN PEMBANTU PENGARAH (A)	PEMBANTU PENGARAH KANAN (J)	TARIKH: NO. LUKISAN:
PINDAAN			UKURAN			



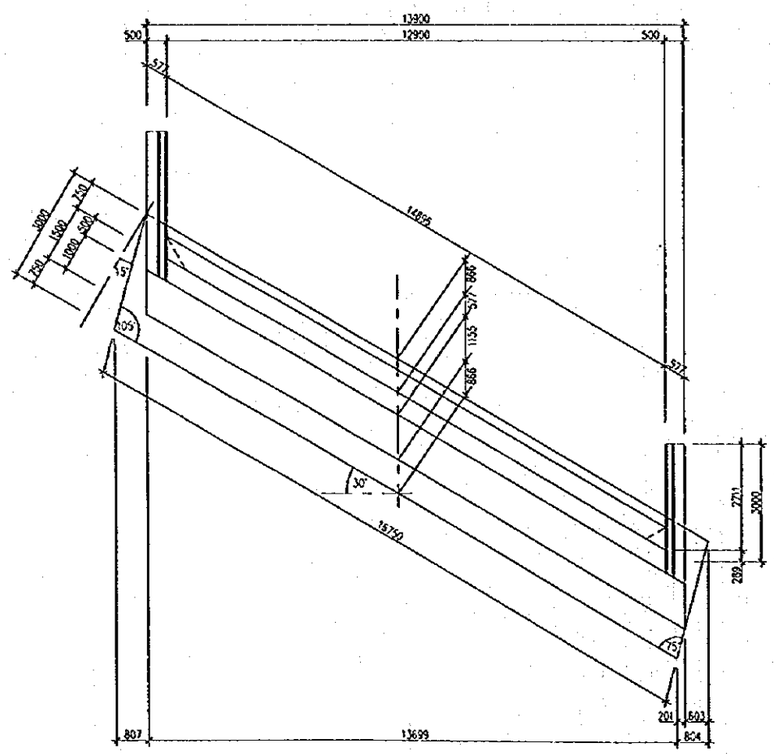
FRONT ELEVATION
SCALE 1 : 75



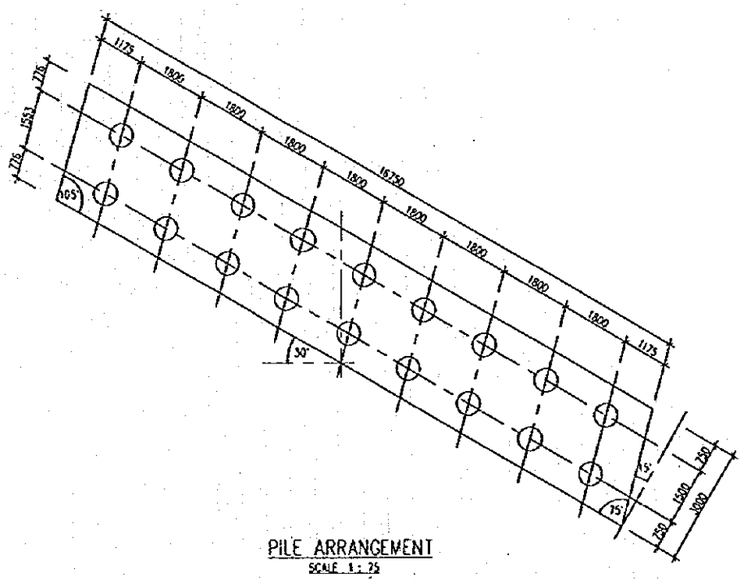
SIDE ELEVATION
SCALE 1 : 75



DETAIL 'X'
SCALE 1 : 75



PLAN
SCALE 1 : 75



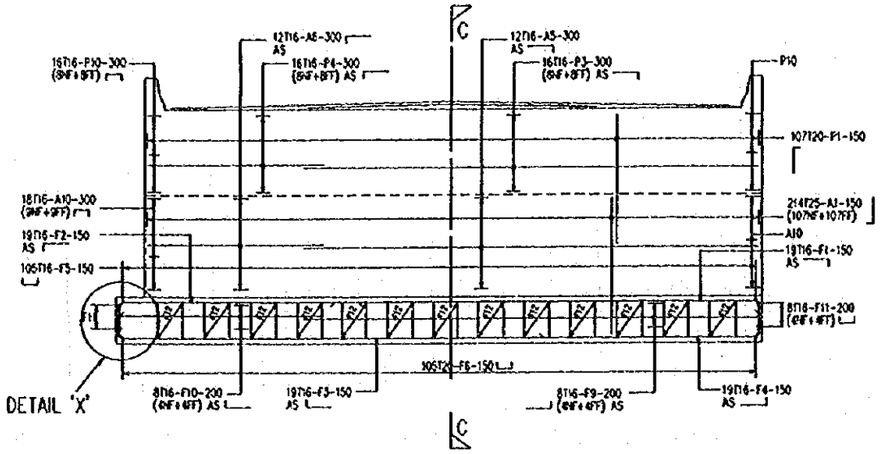
PILE ARRANGEMENT
SCALE 1 : 75

[DID NOT APPROVE] REF. 01

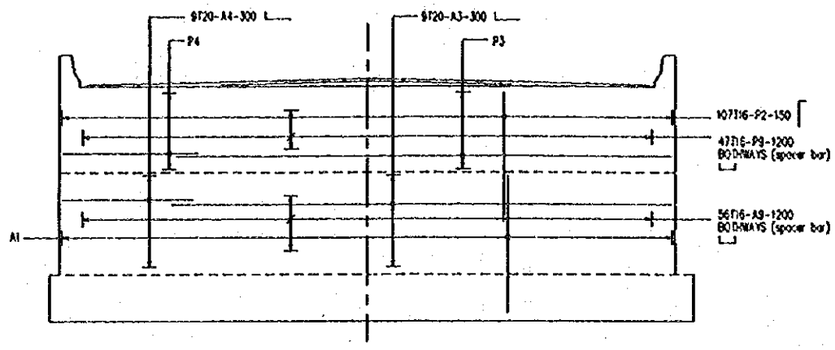
Tarikh	Butiran	Rujukan
PINDAAN		

UKURAN

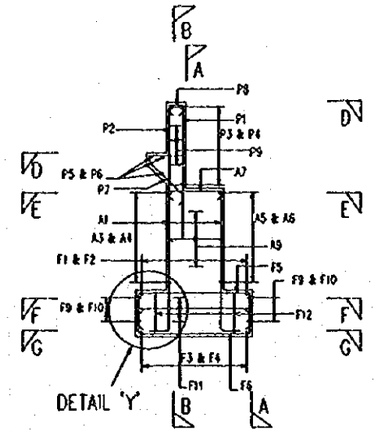
UNIT JAMBATAN		PENGARAH JALAN	JABATAN KERJA RAYA MALAYSIA CAWANGAN JALAN
DIREKABENTUK:			
DILUKIS:	DISEMAK:	JURUTERA PENGUASA KANAN	ABUTMENT - GENERAL VIEW
DILULUSKAN: PENOLONG PENGARAH (JT)		PENOLONG PENGARAH KANAN (J)	TARIKH: / BIL. LUKISAN:



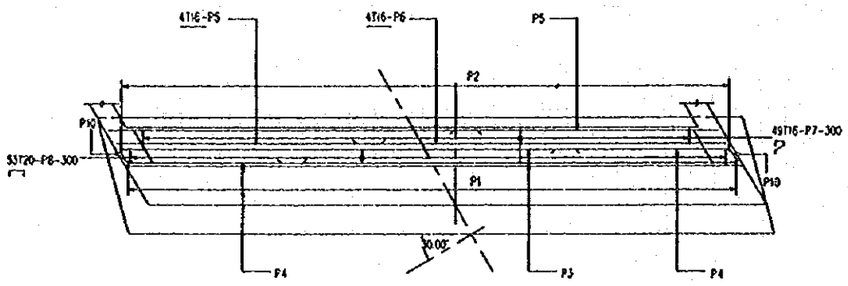
SECTION A - A
SCALE 1 : 25



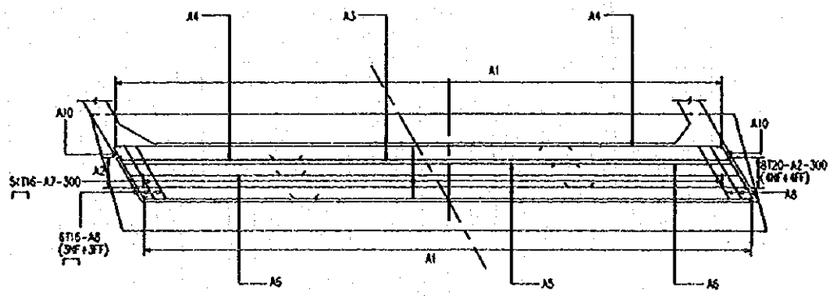
SECTION B - B
SCALE 1 : 25



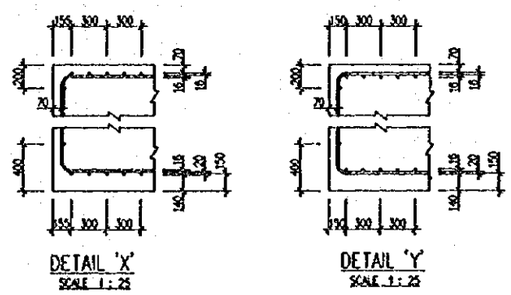
SECTION C - C
SCALE 1 : 25

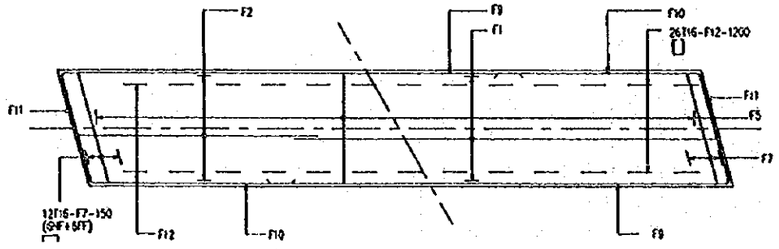


SECTION D - D
SCALE 1 : 25

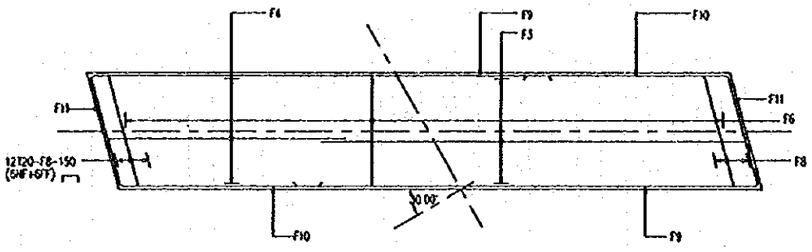


SECTION E - E
SCALE 1 : 25

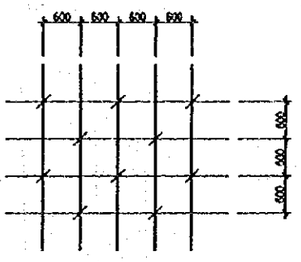




SECTION F - F
SCALE 1 : 25



SECTION G - G
SCALE 1 : 25

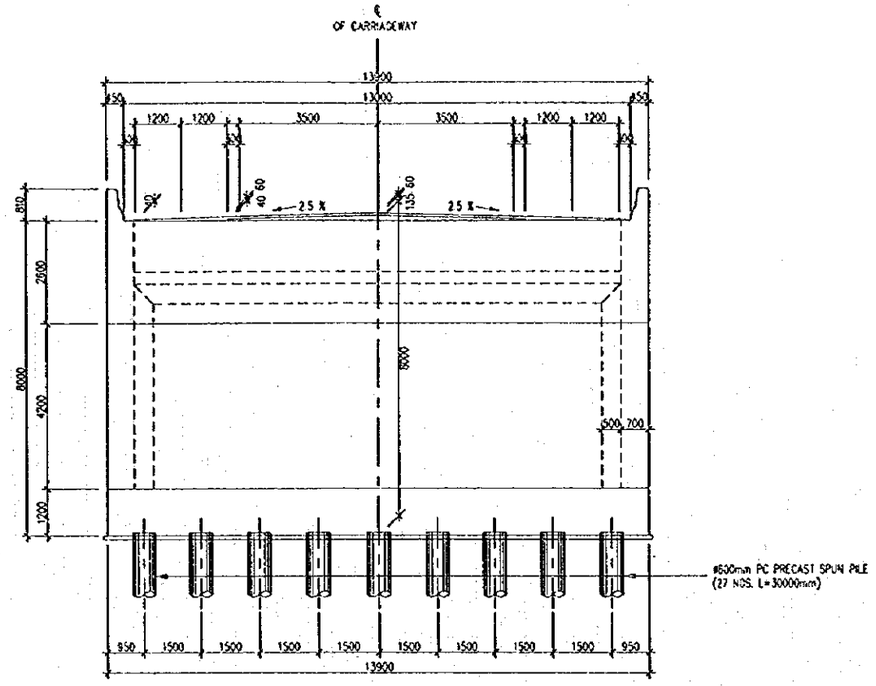


KEY PLAN
SPACER BAR ARRANGEMENT

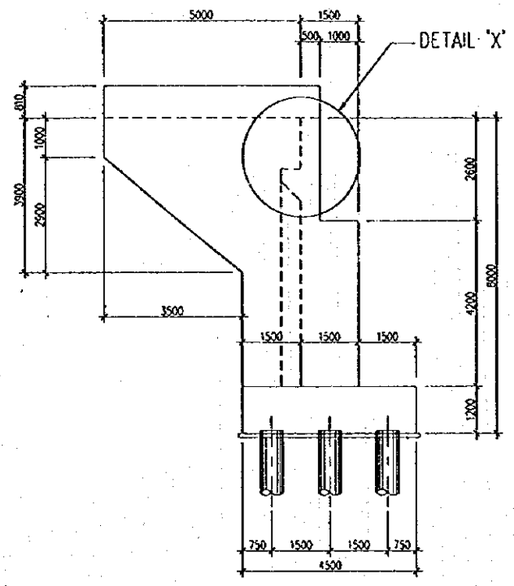
LEGEND:
14 T 32-B1-125
SPACING OF BAR
BAR MARK
B = BEAM
C = COLUMN
F = FOOTING
SIZE OF BAR
TYPE OF BAR
T = HIGH YIELD
R = MILD STEEL
NO. OF BAR

AS = ALTERNATELY STAGGERED
LV = LENGTH VARIES
NF = NEAR FACE
FF = FAR FACE

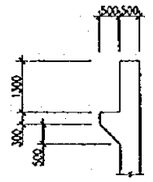
Tarikh	Butiran	Rujukan				
			UNIT JAMBATAN	PENGARAH JALAN	JABATAN KERJA RAYA MALAYSIA CAWANGAN JALAN	
			DIREKABENTUK:			
			DILUKIS: DISEMAK:	JURUTERA PENGUASA KANAN	ABUTMENT - REINFORCEMENT	
			DILULUSKAN PENOLONG PENGARAH (JR)	PENOLONG PENGARAH KANAN (J)	TARIKH:	BIL. LUKISAN:
PINDAAN			UKURAN			



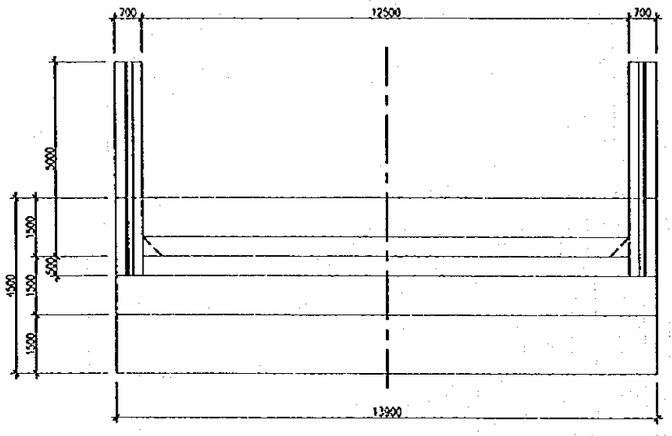
FRONT ELEVATION
SCALE 1 : 75



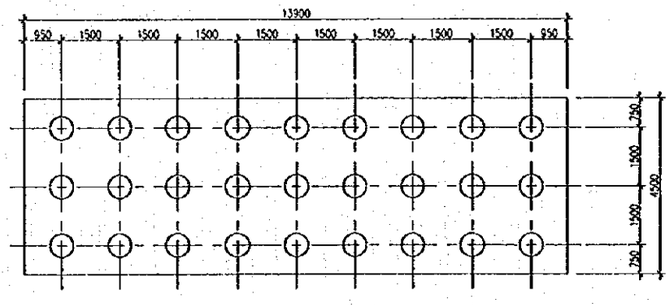
SIDE ELEVATION
SCALE 1 : 75



DETAIL 'X'
SCALE 1 : 75



PLAN
SCALE 1 : 75



PILE ARRANGEMENT
SCALE 1 : 75

Tarikh	Butiran	Rujukan
PINDAAN		

UKURAN

UNIT JAMBATAN

DIREKABENTUK:

DILUKIS: DISEMAK:

DILULUSKAN: PENOLONG PENGARAH (JT)

PENGARAH JALAN

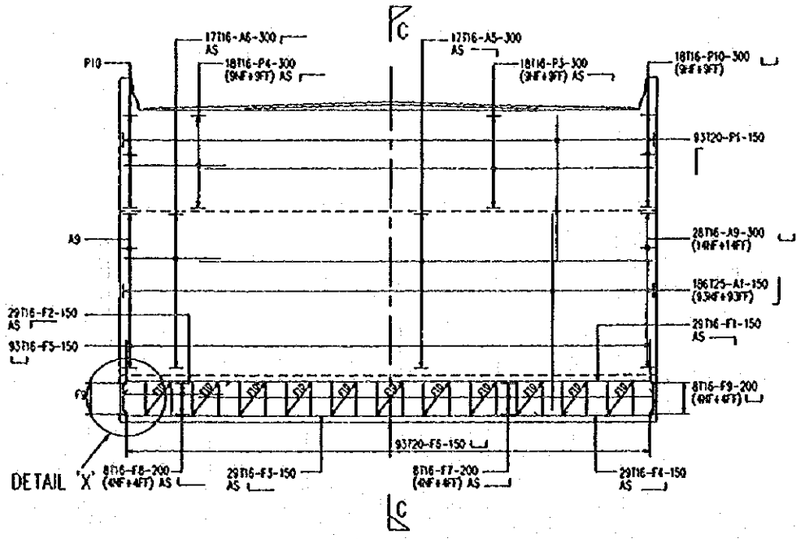
JURUTERA PENGUASA KANAN

PENOLONG PENGARAH KANAN (J)

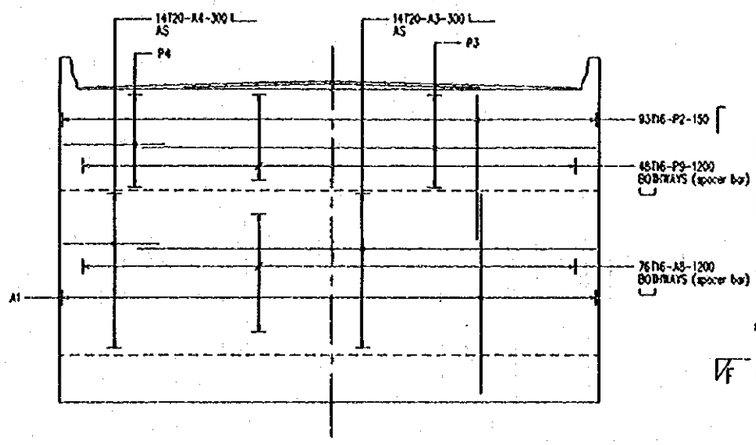
JABATAN KERJA RAYA MALAYSIA
CAWANGAN JALAN

ABUTMENT - GENERAL VIEW

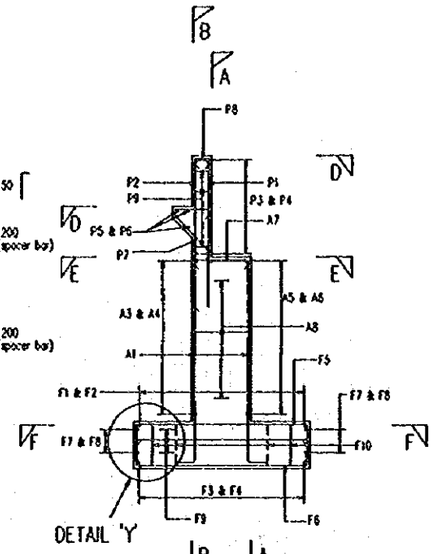
TARIKH: BIL. LUKISAN:



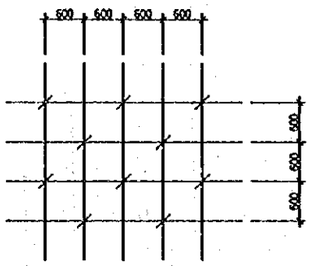
SECTION A - A
SCALE 1 : 25



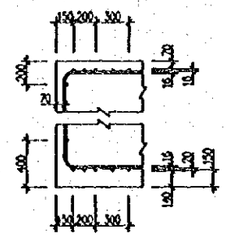
SECTION B - B
SCALE 1 : 25



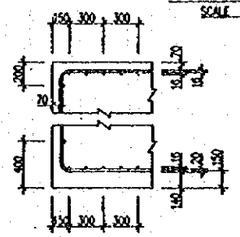
SECTION C - C
SCALE 1 : 25



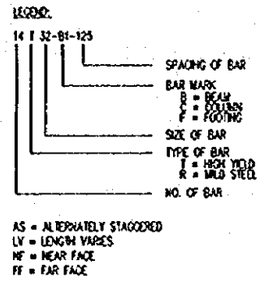
KEY PLAN
SPACER BAR ARRANGEMENT

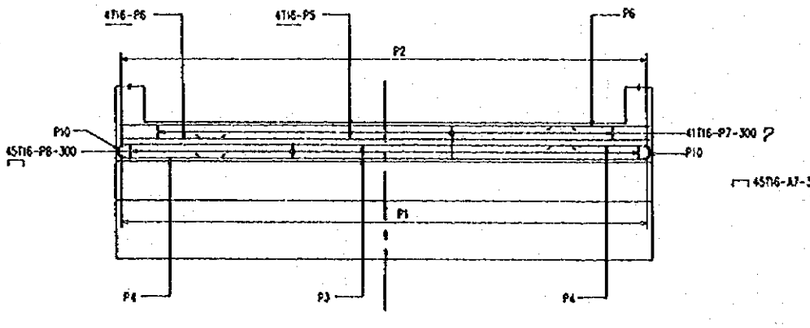


DETAIL 'X'
SCALE 1 : 25

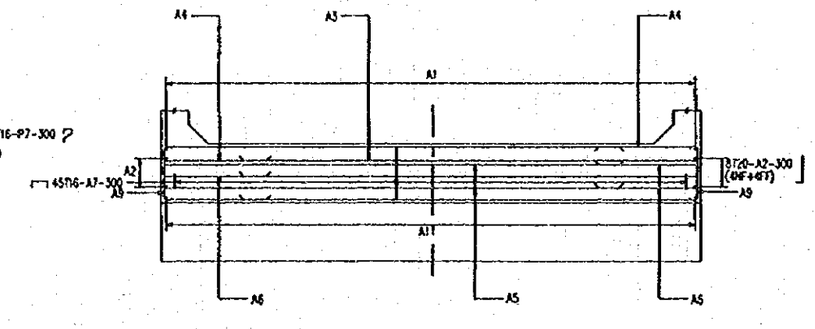


DETAIL 'Y'
SCALE 1 : 25

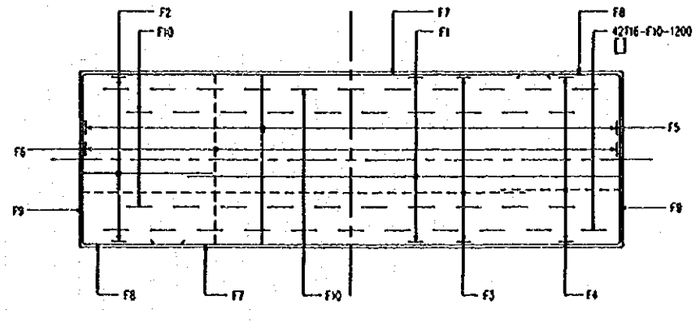




SECTION D - D
SCALE 1 : 25



SECTION E - E
SCALE 1 : 25



SECTION F - F
SCALE 1 : 25

Tarikh	Butiran	Rujukan
PINDAAN		

UKURAN

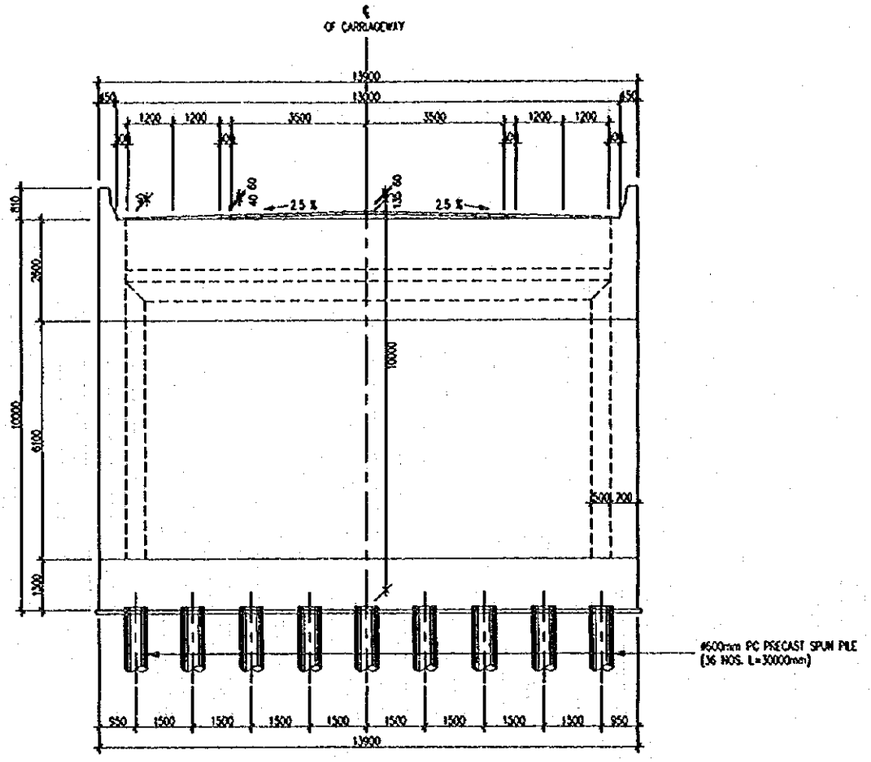
UNIT JAMBATAN
DISEMAK/DIPERIKSA OLEH:
DILUKIS: DISEMAK:
DILULUSKAN: PENOLONG PENGARAH (A)

PENGARAH JALAN
JURUTERA PENGUASA KANAN
PENOLONG PENGARAH KANAN (A)

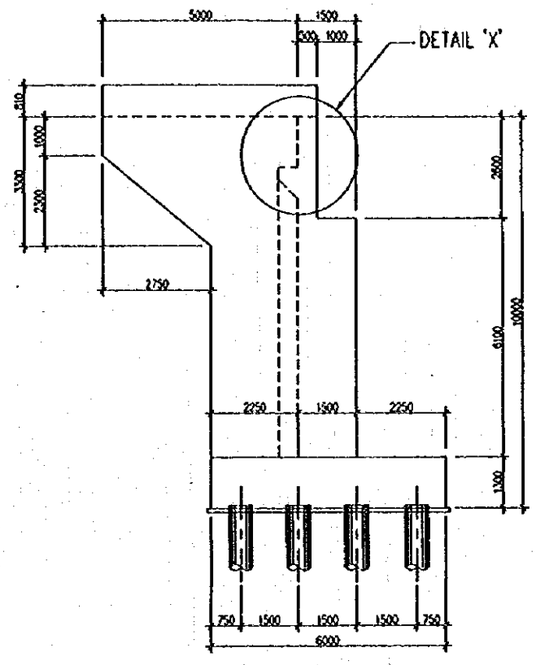
JABATAN KERJA RAYA MALAYSIA
CAWANGAN JALAN

ABUTMENT - REINFORCEMENT

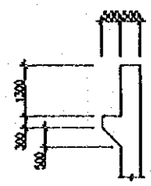
TARIKH: DILUKIS:



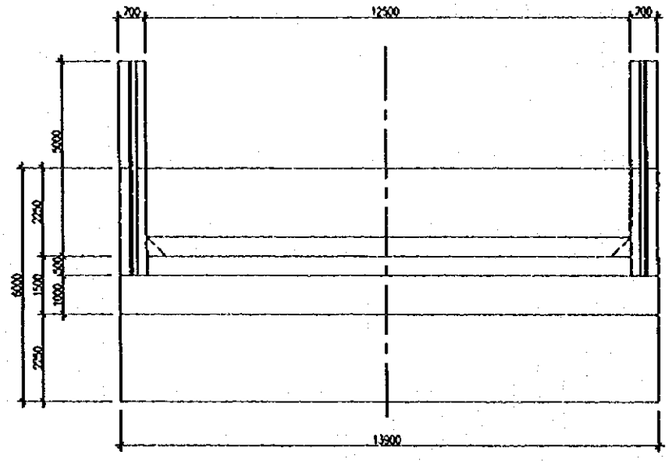
FRONT ELEVATION
SCALE 1 : 75



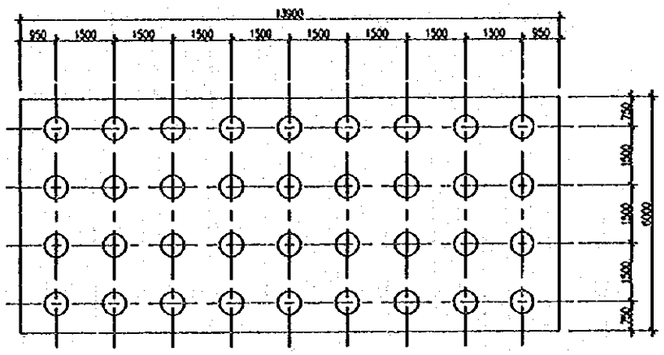
SIDE ELEVATION
SCALE 1 : 75



DETAIL 'X'
SCALE 1 : 75



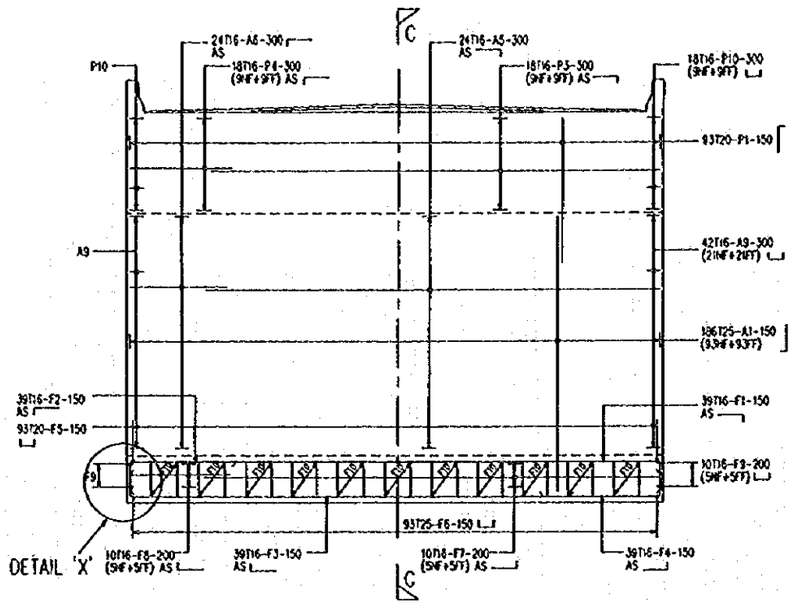
PLAN
SCALE 1 : 75



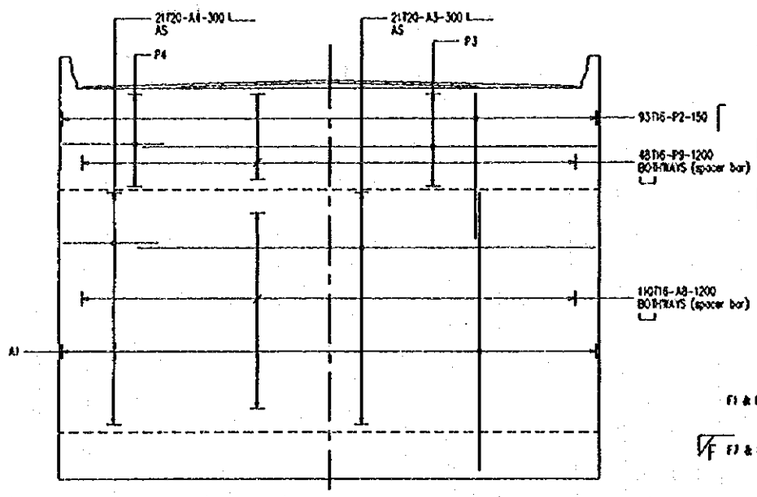
PILE ARRANGEMENT
SCALE 1 : 75

Tarikh	Butiran	Rujukan				
			UKURAN	UNIT JAMBATAN DISEDIAKAN OLEH: DILUKIS: DISEMAK: DILULUSKAN: PENOLONG PENGARAH (JI)	PENGARAH JALAN JURUTERA PENGUASA KANAN PENOLONG PENGARAH KANAN (J)	JABATAN KERJA RAYA MALAYSIA CAWANGAN JALAN ABUTMENT – GENERAL VIEW TARIKH: BIL. LUKISAN:

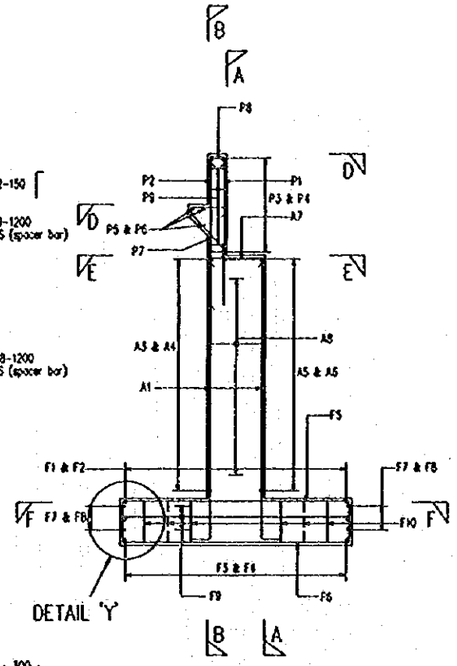
PINDAAN



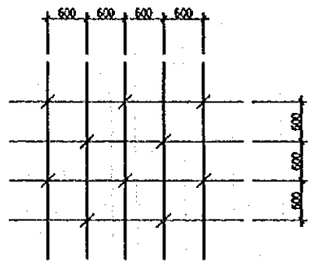
SECTION A – A
SCALE 1 : 25



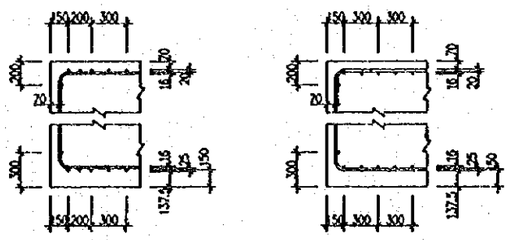
SECTION B – B
SCALE 1 : 25



SECTION C – C
SCALE 1 : 25



KEY PLAN
SPACER BAR ARRANGEMENT

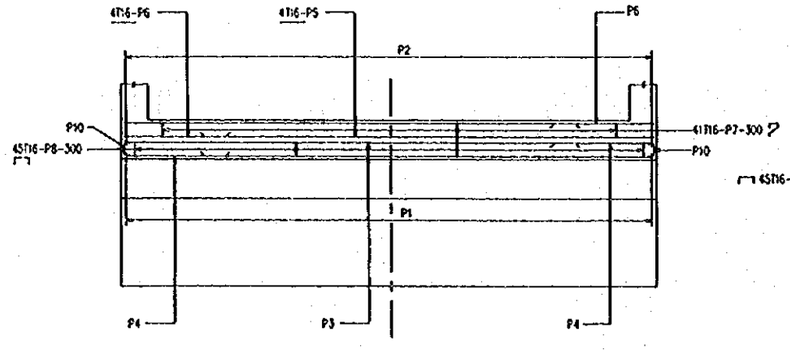


DETAIL 'X'
SCALE 1 : 25

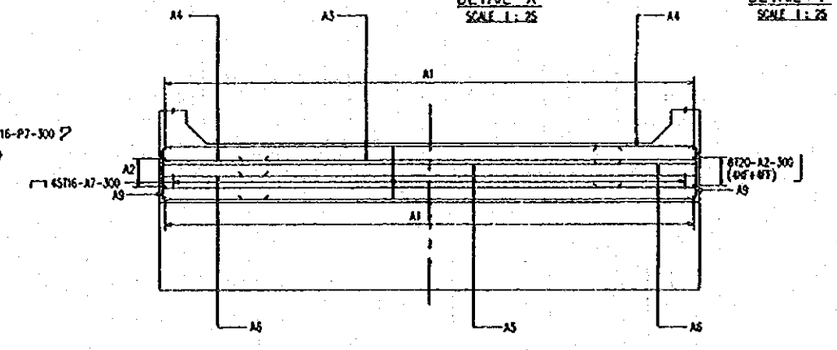
DETAIL 'Y'
SCALE 1 : 25

LEGEND:
14 T 32-B1-125
SPACING OF BAR
BAR MARK
B = BEAM
C = COLUMN
F = FOOTING
SIZE OF BAR
TYPE OF BAR
T = HIGH YIELD
R = MILD STEEL
NO. OF BAR

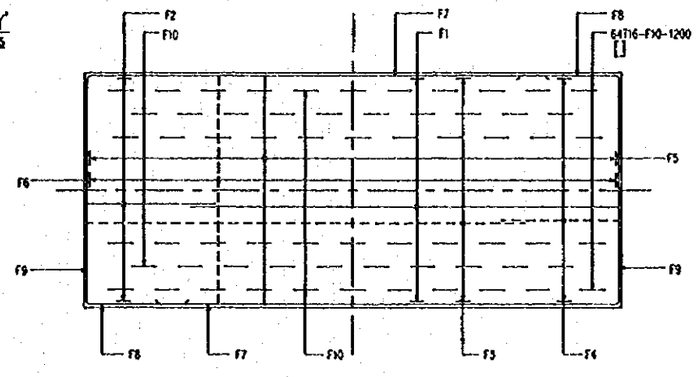
AS = ALTERNATELY STAGGERED
LV = LENGTH VARIES
NF = NEAR FACE
FF = FAR FACE



SECTION D – D
SCALE 1 : 25



SECTION E – E
SCALE 1 : 25



SECTION F – F
SCALE 1 : 25

Tarikh	Butiran	Rujukan
PINDAAN		

UKURAN

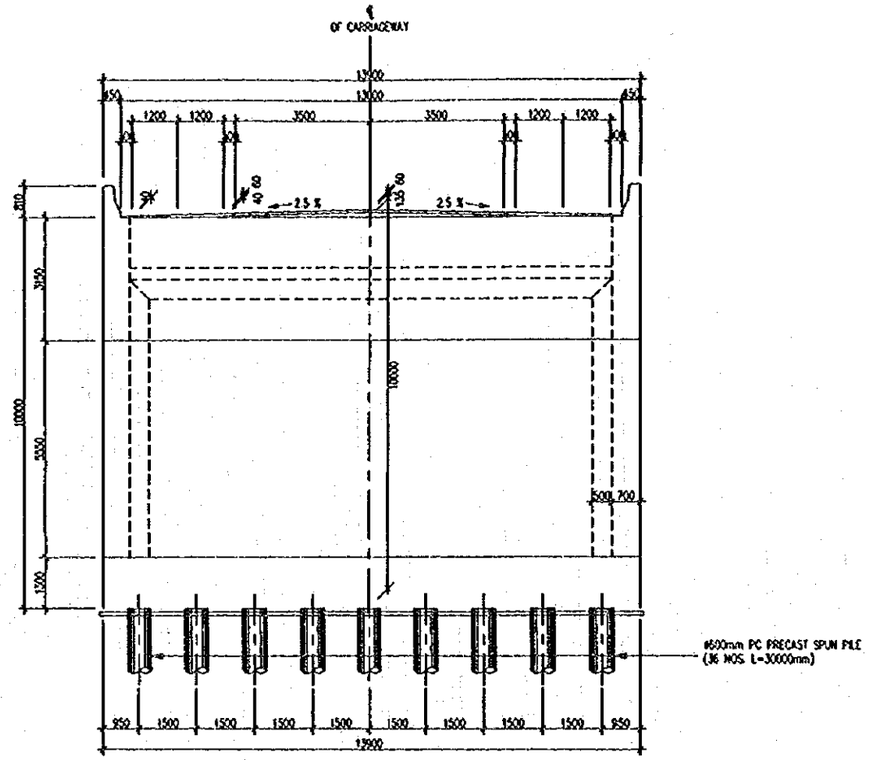
UNIT JAMBATAN
DIREKABENTUK:
DILUKIS: DISEMAK:
DILULUSKAN PENOLONG PENGARAH (JI)

PENGARAH JALAN
JURUTERA PENGUASA KANAN
PENOLONG PENGARAH KANAN (J)

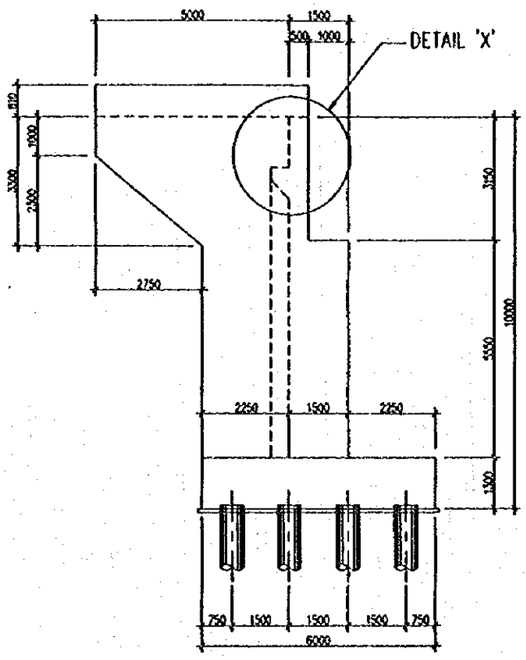
JABATAN KERJA RAYA MALAYSIA
CAWANGAN JALAN

ABUTMENT – REINFORCEMENT

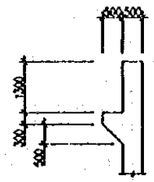
TARIKH: BIL. LUKISAN:



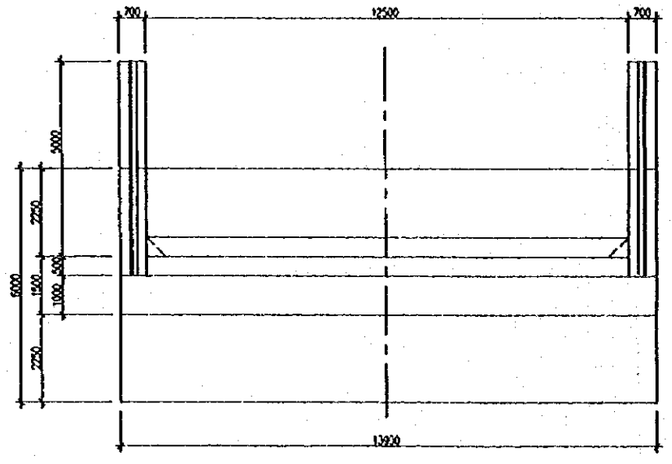
FRONT ELEVATION
SCALE 1 : 75



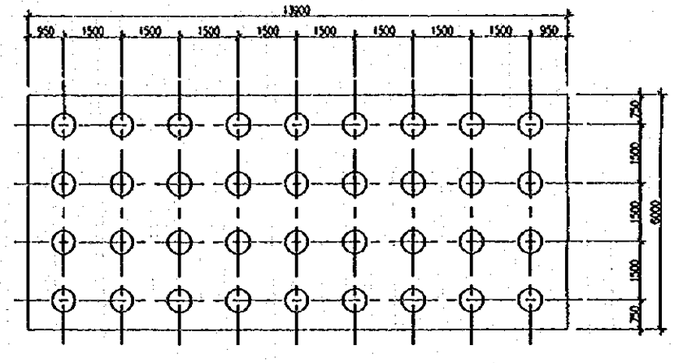
SIDE ELEVATION
SCALE 1 : 75



DETAIL 'X'
SCALE 1 : 25

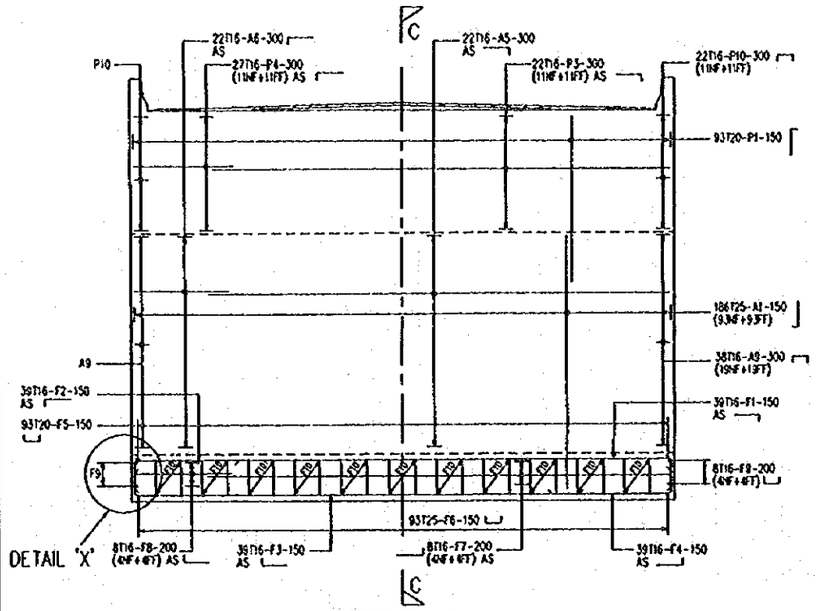


PLAN
SCALE 1 : 75

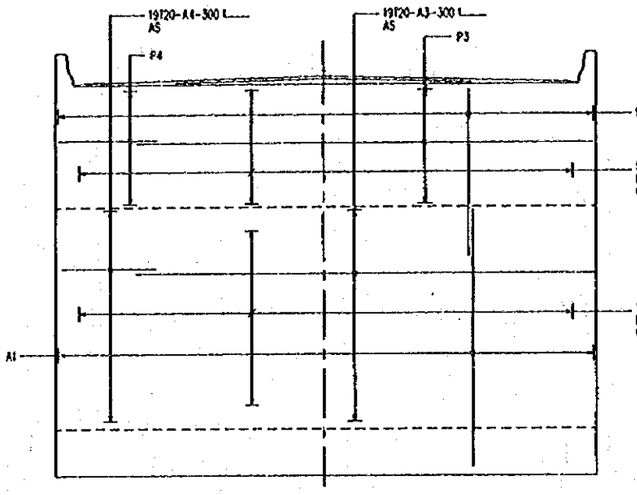


PILE ARRANGEMENT
SCALE 1 : 75

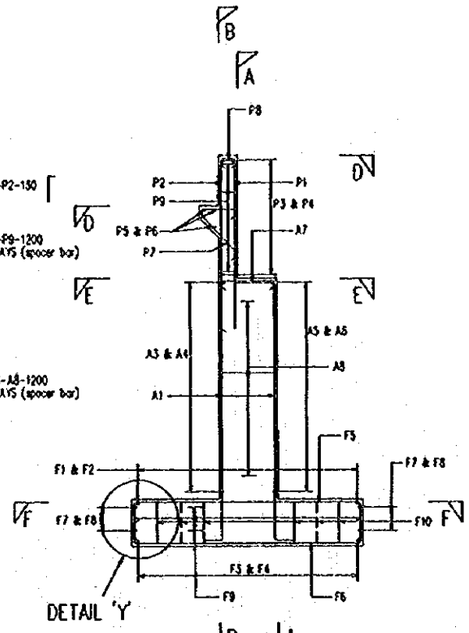
Tarikh	Butiran	Rujukan		UNIT JAMBATAN	PENGARAH JALAN	JABATAN KERJA RAYA MALAYSIA CAWANGAN JALAN
				DIREKABENTUK:		
				DILUKIS: DISEMAK:	JURUTERA PENGUASA KANAN	ABUTMENT - GENERAL VIEW
PINDAAN			UKURAN	DILULUSKAN: PENOLONG PENGARAH (JI)	PENOLONG PENGARAH KANAN (J)	TARIKH: SK: LUKISAN:



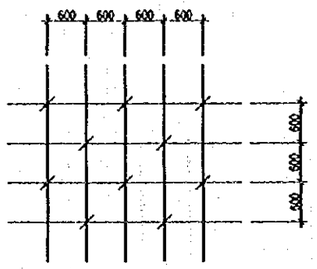
SECTION A - A
SCALE 1 : 75



SECTION B - B
SCALE 1 : 75



SECTION C - C
SCALE 1 : 75

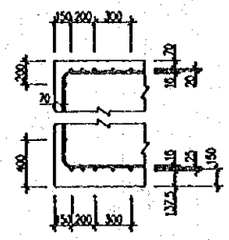


KEY PLAN
SPACER BAR ARRANGEMENT

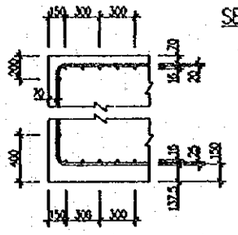
LEGEND:

14 T 32-B1-125
- SPACING OF BAR
- BAR MARK B = BEAM C = COLUMN F = FOOTING
- SIZE OF BAR
- TYPE OF BAR T = HIGH YIELD R = MILD STEEL
- NO. OF BAR

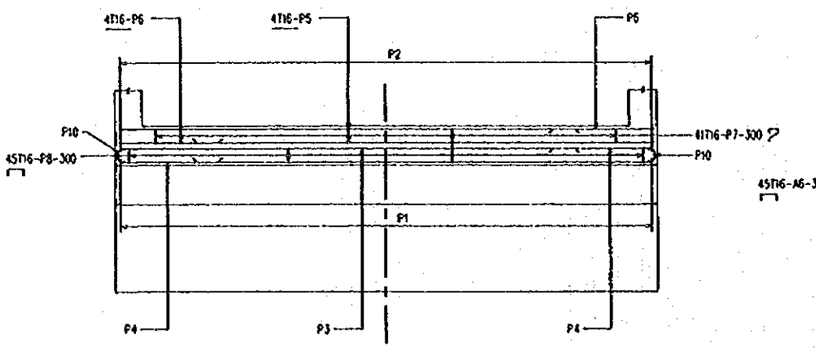
AS = ALTERNATELY STAGGERED
LV = LENGTH VARIES
NF = NEAR FACE
FF = FAR FACE



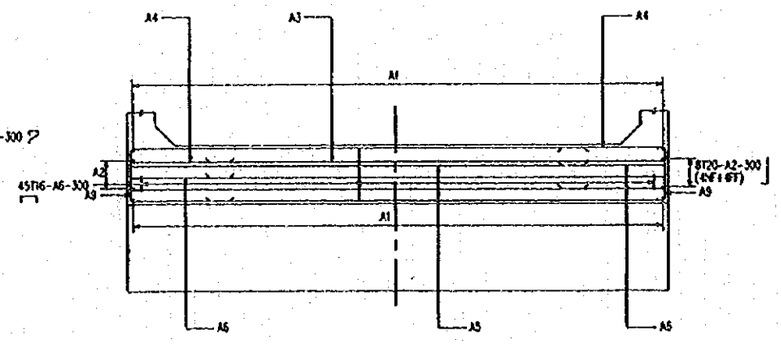
DETAIL 'X'
SCALE 1 : 25



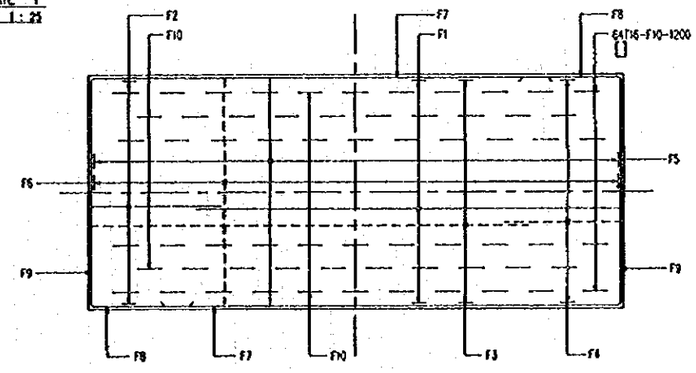
DETAIL 'Y'
SCALE 1 : 25



SECTION D - D
SCALE 1 : 75



SECTION E - E
SCALE 1 : 75



SECTION F - F
SCALE 1 : 75

Tarikh	Butiran	Rujukan
PINDAAN		

UKURAN

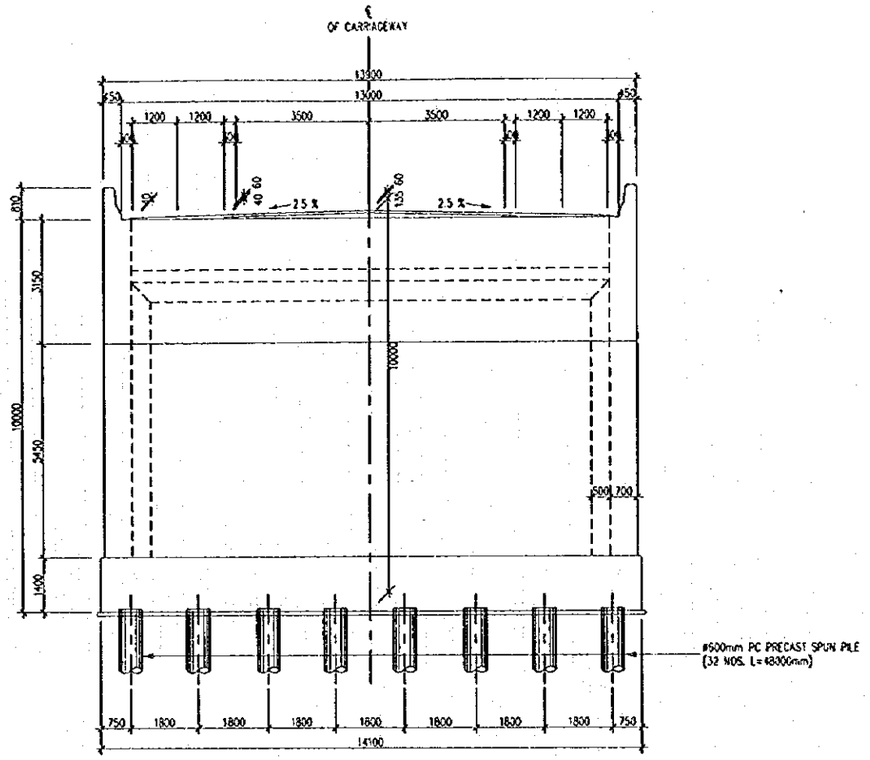
UNIT JAMBATAN
DIREKABENTUK:
DILUKIS: DISEMAK:
DILULUSKAN PEMBANTU PENGARAH (JI)

PENGARAH JALAN
JURUTERA PENGUASA KANAN
PEMBANTU PENGARAH KANAN (J)

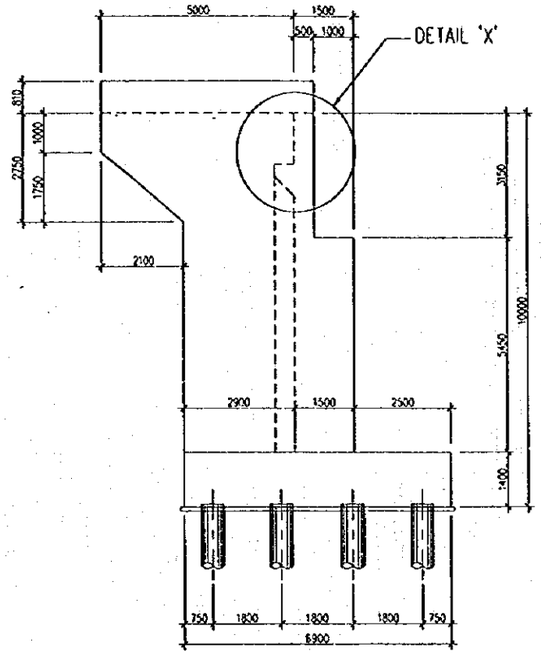
JABATAN KERJA RAYA MALAYSIA
CAWANGAN JALAN

ABUTMENT - REINFORCEMENT

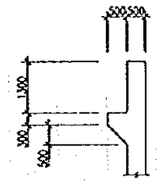
TAPAK: BIL: LUKISAN:



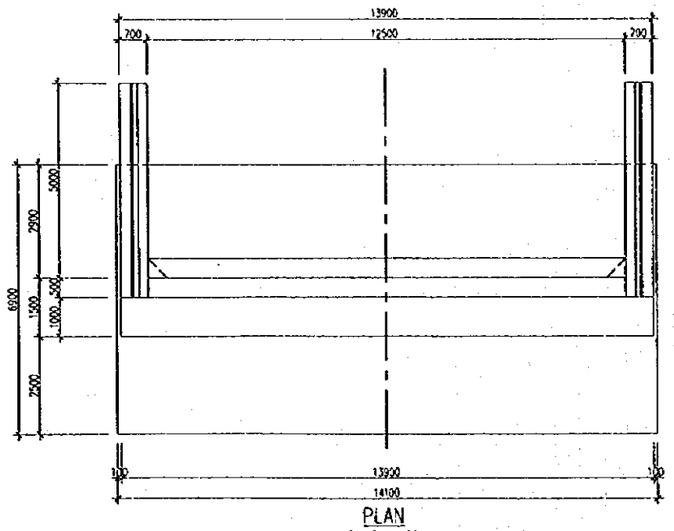
FRONT ELEVATION
SCALE 1 : 75



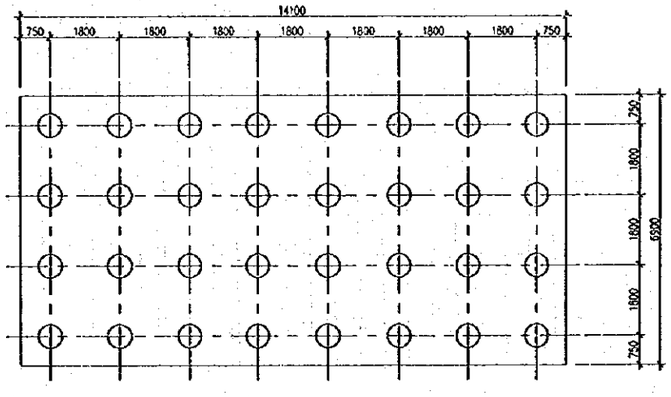
SIDE ELEVATION
SCALE 1 : 75



DETAIL 'X'
SCALE 1 : 75

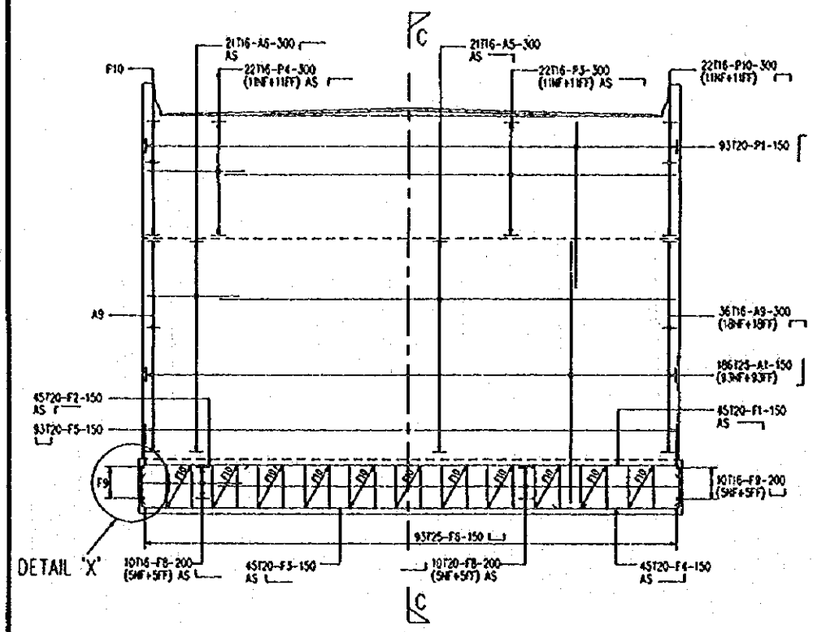


PLAN
SCALE 1 : 75

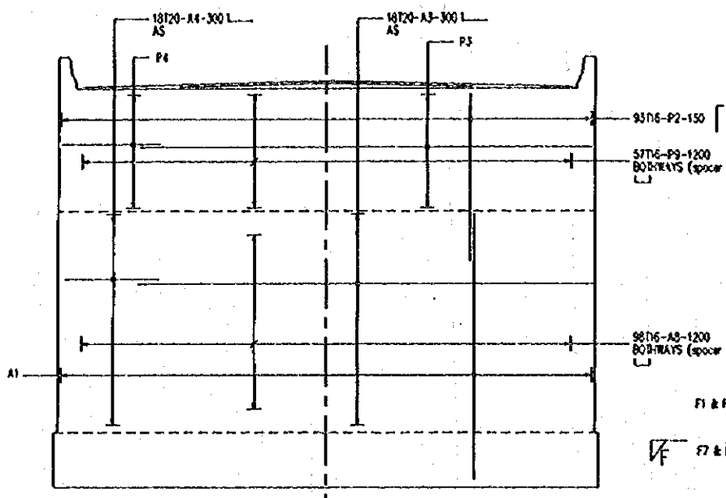


PILE ARRANGEMENT
SCALE 1 : 75

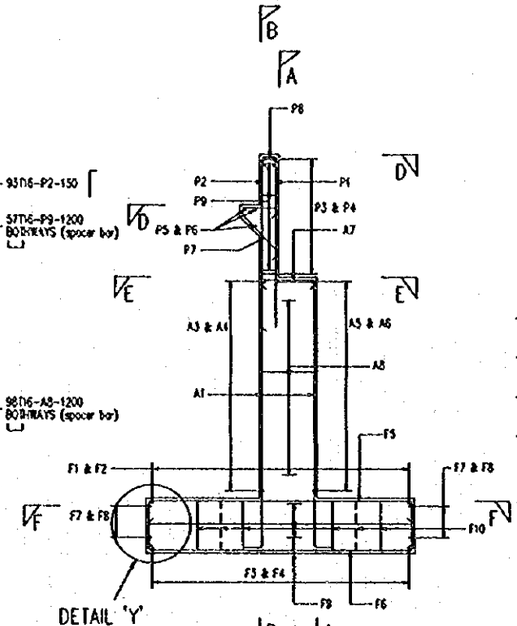
Tarikh	Butiran	Rujukan		UNIT JAMBATAN	PENGARAH JALAN	JABATAN KERJA RAYA MALAYSIA CAWANGAN JALAN
				DIREKABENTUK:		
				DILUKIS: DISEMAK:	JURUTERA PENGUASA KANAN	ABUTMENT - GENERAL VIEW
	PINDAAN		UKURAN	DILULUSKAN: PENOLONG PENGARAH (JI)	PENOLONG PENGARAH KANAN (J)	TARIKH: NO. LUKISAN:



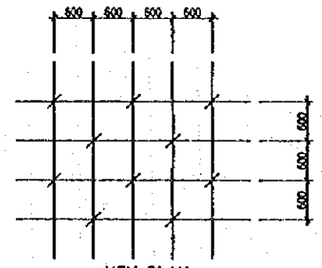
SECTION A – A
SCALE 1 : 25



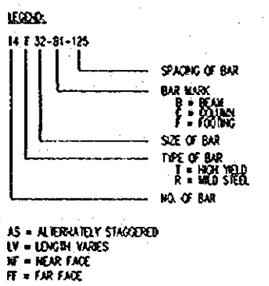
SECTION B – B
SCALE 1 : 25

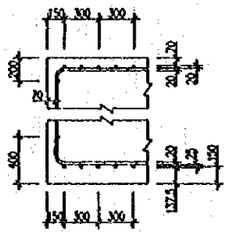


SECTION C – C
SCALE 1 : 25

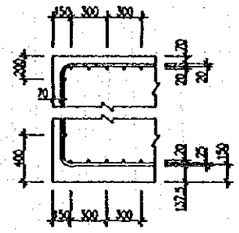


KEY PLAN
SPACER BAR ARRANGEMENT

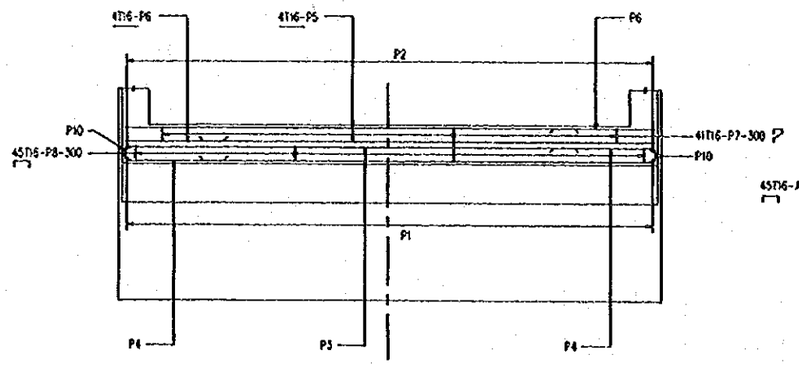




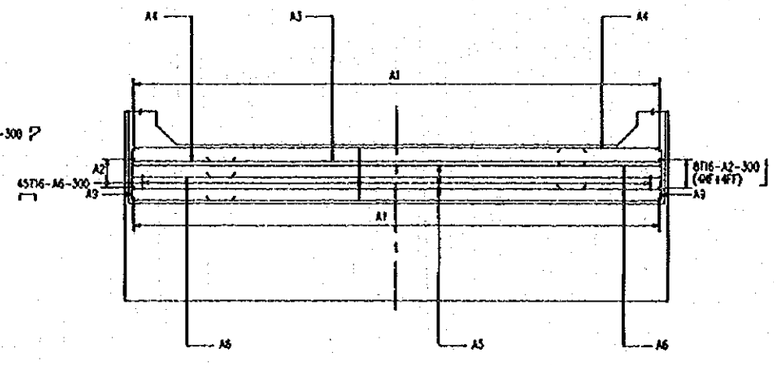
DETAIL 'X'
SCALE 1 : 25



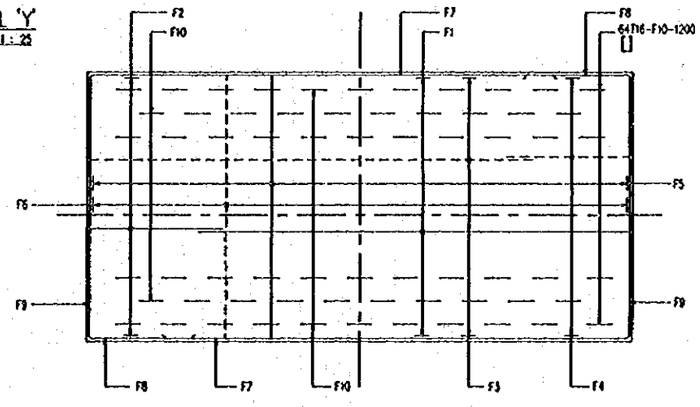
DETAIL 'Y'
SCALE 1 : 25



SECTION D – D
SCALE 1 : 25

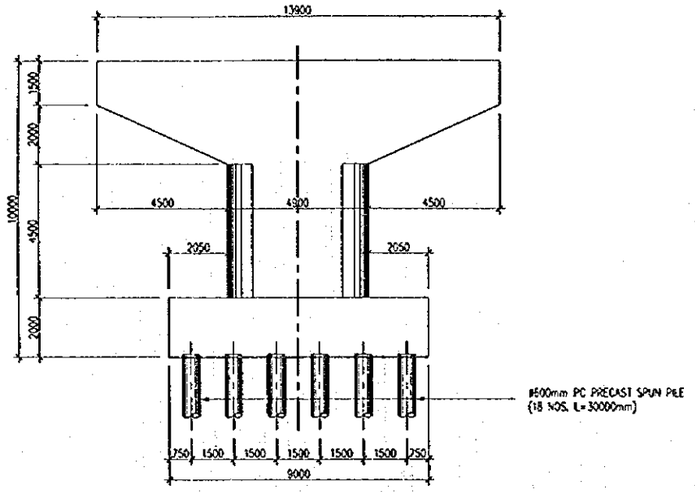


SECTION E – E
SCALE 1 : 25

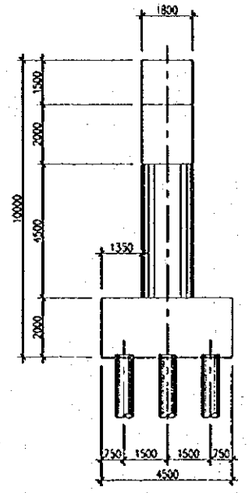


SECTION F – F
SCALE 1 : 25

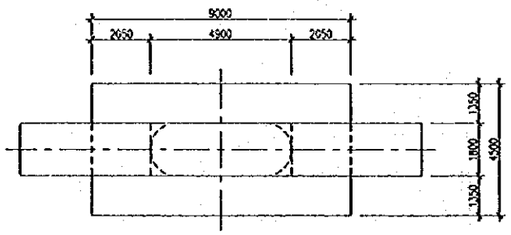
Tarikh	Butiran	Rujukan		UNIT JAMBATAN	PENGARAH JALAN	JABATAN KERJA RAYA MALAYSIA CAWANGAN JALAN
				DIREKABENTUK:		
				DILUKIS: DISEMAK:	JURUTERA PENGUASA KANAN	ABUTMENT – REINFORCEMENT
	PINDAAN		UKURAN	DILULUSKAN: PENOLONG PENGARAH (JT)	PENOLONG PENGARAH KANAN (J)	TARIKH: BIL. LUKISAN:



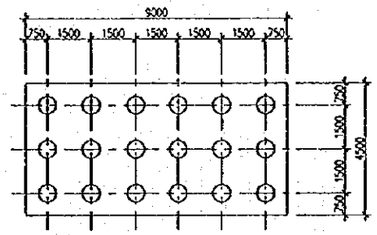
FRONT ELEVATION
SCALE 1 : 100



SIDE ELEVATION
SCALE 1 : 100



PLAN
SCALE 1 : 100



PILE ARRANGEMENT
SCALE 1 : 100

Tarikh	Butiran	Rujukan
PADAAN		

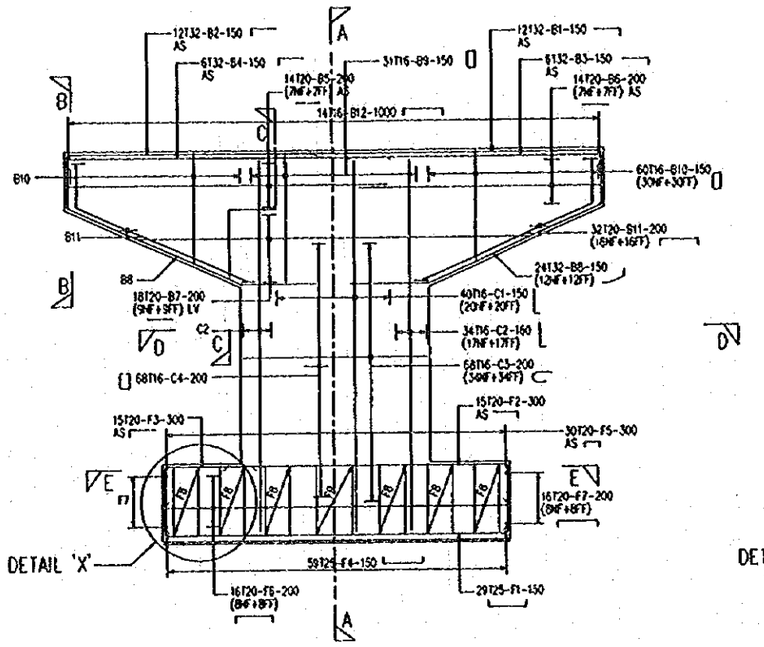
UKURAN

UNIT JAMBATAN		PENGARAH JALAN
DIREKABENTUK:		
DILUKIS:	DISEMAK:	JURUTERA PENGUASA KANAN
DILULUSKAN: PENOLONG PENGARAH (JI)		PENOLONG PENGARAH KANAN (J)

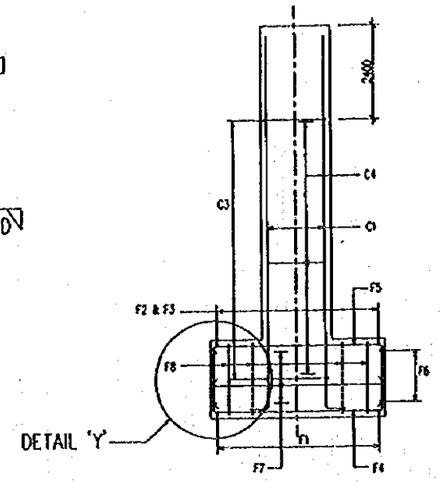
JABATAN KERJA RAYA MALAYSIA
CAWANGAN JALAN

PIER TYPE T - GENERAL VIEW

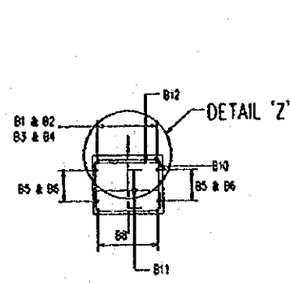
TARIKH: | BIL. LUKISAN:



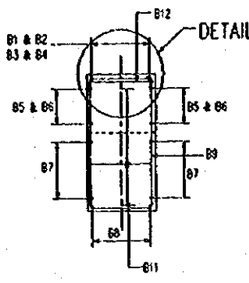
SECTIONAL ELEVATION
SCALE 1 : 75



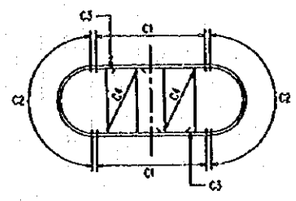
SECTION A - A
SCALE 1 : 75



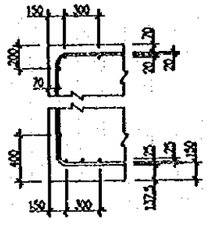
SECTION B - B
SCALE 1 : 75



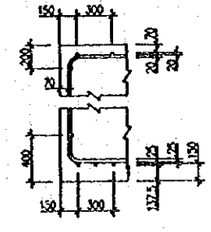
SECTION C - C
SCALE 1 : 75



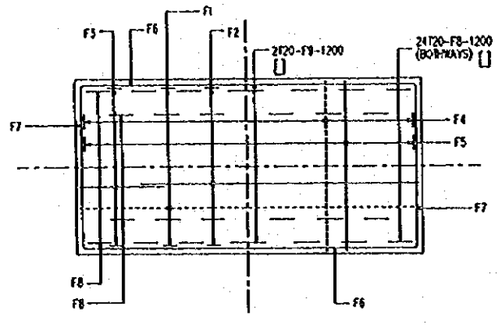
SECTION D - D
SCALE 1 : 75



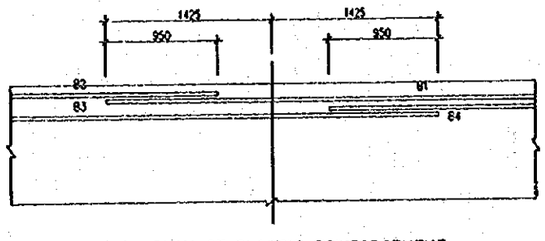
DETAIL 'X'
SCALE 1 : 25



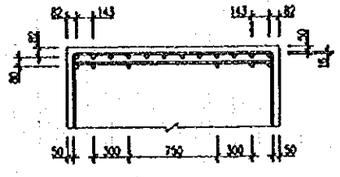
DETAIL 'Y'
SCALE 1 : 25



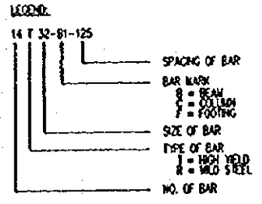
SECTION E - E
SCALE 1 : 75



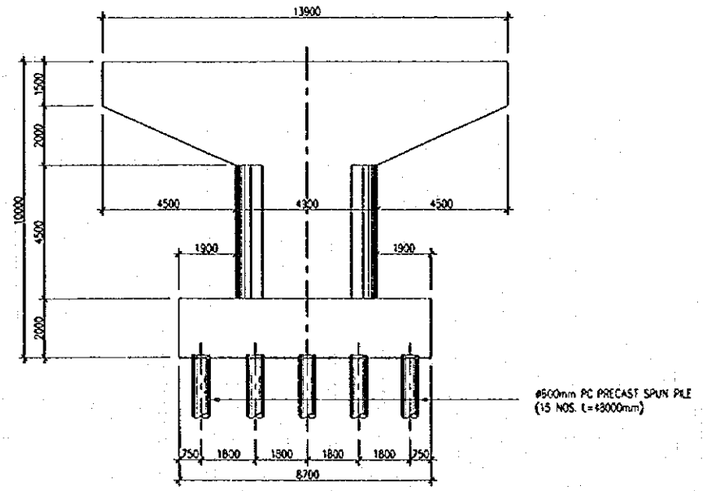
KEY PLAN OF PLACING REINFORCEMENT
SCALE 1 : 25



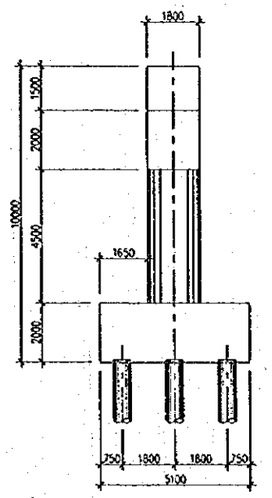
DETAIL 'Z'
SCALE 1 : 25



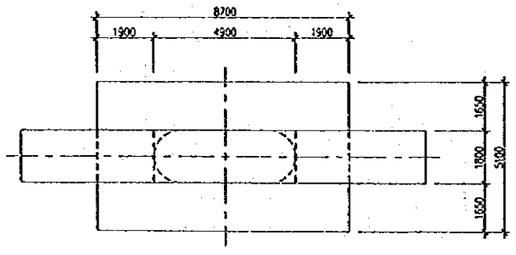
Tarikh	Butiran	Rujukan	UNIT JAMBATAN	PENGARAH JALAN	JABATAN KERJA RAYA MALAYSIA CAWANGAN JALAN
			DIREKABENTUK:	JURUTERA PENGUASA KANAN	T-BEAM - REINFORCEMENT
PINDAAN		UKURAN	DILUKIS: DISEMAK:	PENOLONG PENGARAH KANAN (J)	TARIKH: NO. LUKISAN:
			DILULUSKAN PENOLONG PENGARAH (J1)		



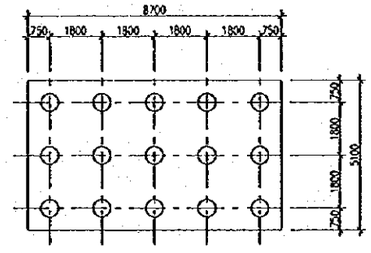
FRONT ELEVATION
SCALE 1 : 100



SIDE ELEVATION
SCALE 1 : 100

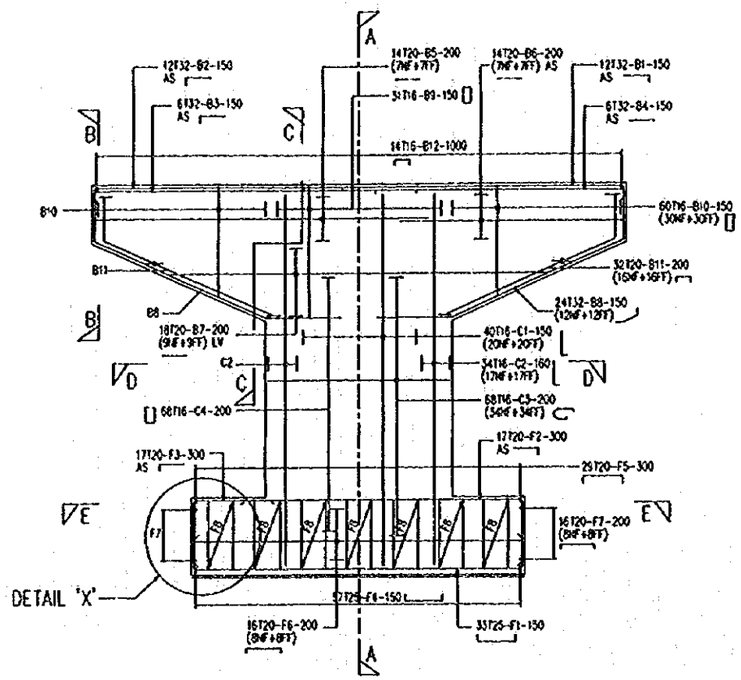


PLAN
SCALE 1 : 100

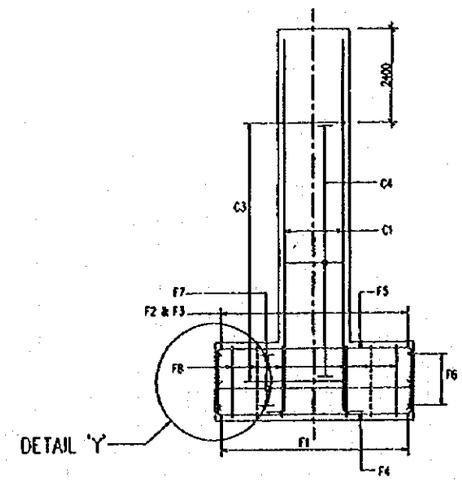


PILE ARRANGEMENT
SCALE 1 : 100

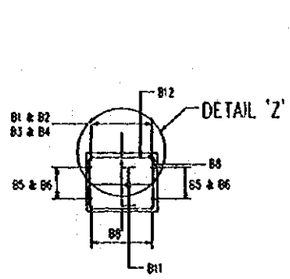
Tarikh	Butiran	Rujukan		UNIT JAMBATAN	PENGARAH JALAN	JABATAN KERJA RAYA MALAYSIA CAWANGAN JALAN
				DIREKABENTUK:		
				DILUKIS: DISEMAK:	JURUTERA PENGUASA KANAN	
PINDAAN			UKURAN	DILULUSKAN: PENOLONG PENGARAH (JJ)	PENOLONG PENGARAH KANAN (JJ)	PIER TYPE T - GENERAL VIEW
						FAIL: BIL. LUKISAN:



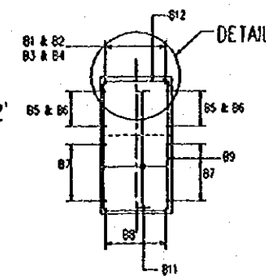
SECTIONAL ELEVATION
SCALE 1 : 75



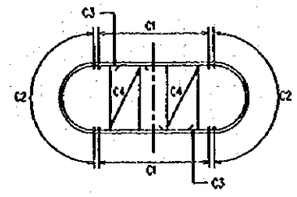
SECTION A - A
SCALE 1 : 75



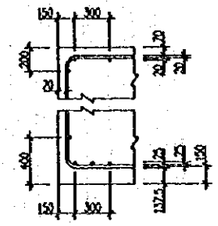
SECTION B - B
SCALE 1 : 75



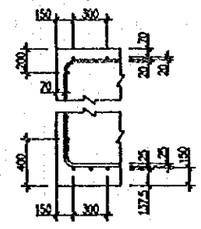
SECTION C - C
SCALE 1 : 75



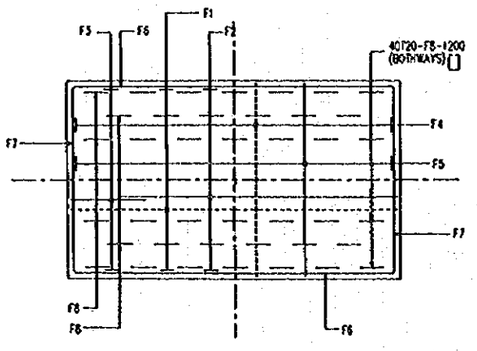
SECTION D - D
SCALE 1 : 75



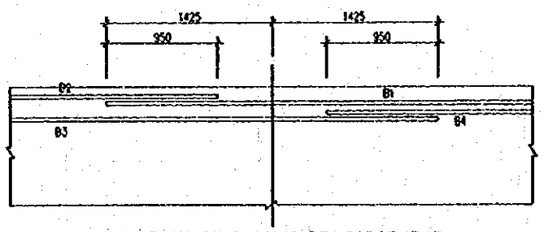
DETAIL 'X'
SCALE 1 : 25



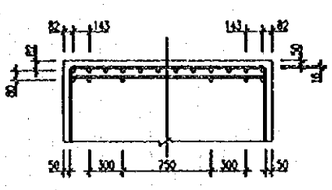
DETAIL 'Y'
SCALE 1 : 25



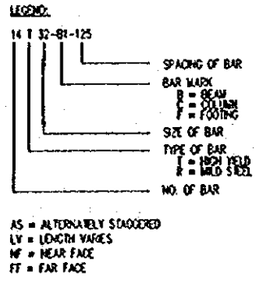
SECTION E - E
SCALE 1 : 75



KEY PLAN OF PLACING REINFORCEMENT
SCALE 1 : 25

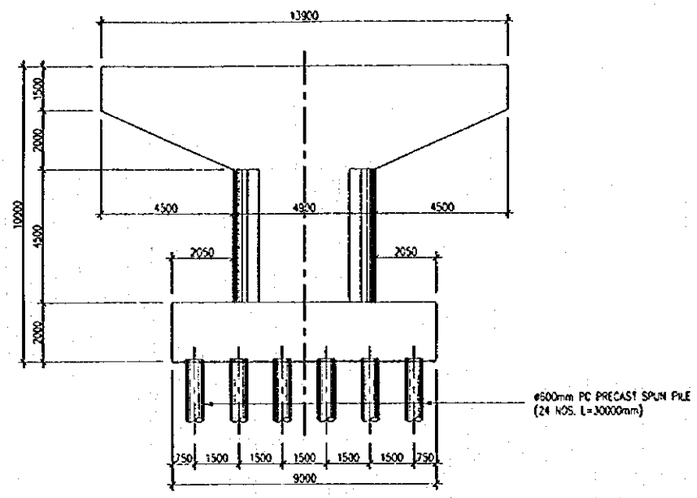


DETAIL 'Z'
SCALE 1 : 25

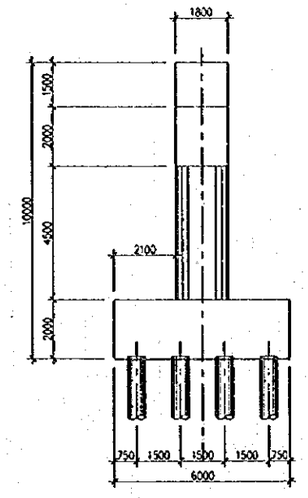


AS = ALTERNATELY STAGGERED
LV = LENGTH VARIES
NF = NEAR FACE
FF = FAR FACE

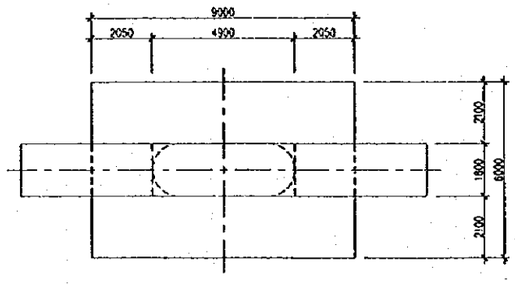
Tarikh	Butiran	Rujukan		UNIT JAMBATAN	PENGARAH JALAN	JABATAN KERJA RAYA MALAYSIA CAWANGAN JALAN
				DIREKABENTUK:		
				DILUKIS: DISEMAK:	JURUTERA PENGUASA KANAN	T-BEAM - REINFORCEMENT
PINDAAN			UKURAN	DILULUSKAN PENOLONG PENGARAH (JI)	PENOLONG PENGARAH KANAN (J)	TARIKH: LUKISAN:



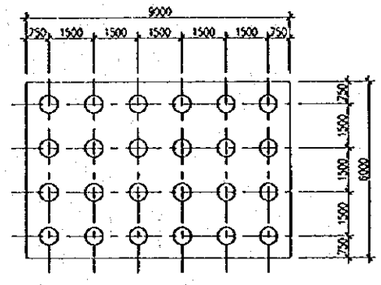
FRONT ELEVATION
SCALE 1 : 100



SIDE ELEVATION
SCALE 1 : 100



PLAN
SCALE 1 : 100



PILE ARRANGEMENT
SCALE 1 : 100

Tarikh	Butiran	Rujukan
PINDAAN		

UKURAN

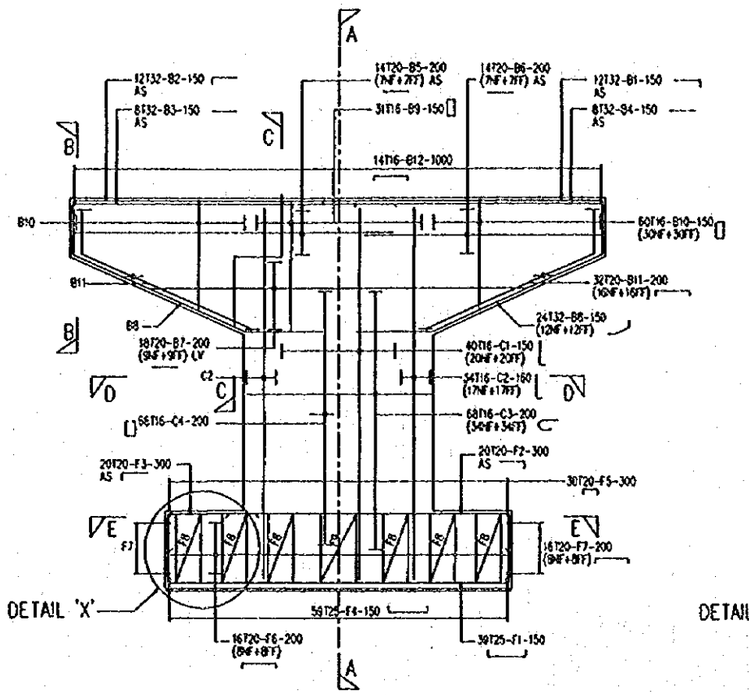
UNIT JAMBATAN	
DIREKABENTUK:	
DILUKIS:	DISEMAK:
DILULUSKAN: PENOLONG PENGARAH (J)	

PENGARAH JALAN
JURUTERA PENGUASA KANAN
PENOLONG PENGARAH KANAN (J)

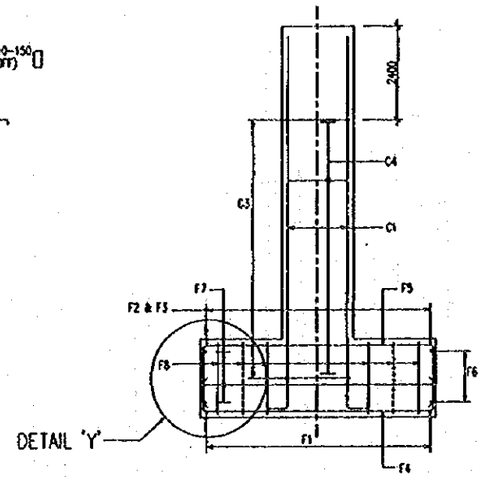
JABATAN KERJA RAYA MALAYSIA
CAWANGAN JALAN

PIER TYPE T – GENERAL VIEW

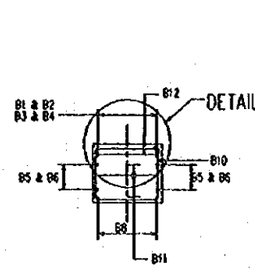
TARIKH: | BIL. LUKISAN:



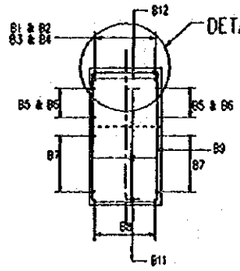
SECTIONAL ELEVATION
SCALE 1 : 25



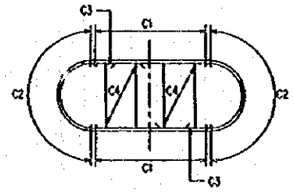
SECTION A - A
SCALE 1 : 25



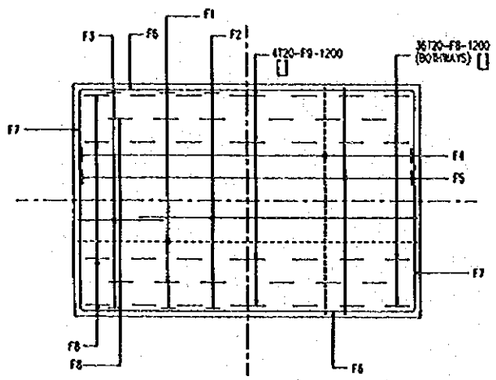
SECTION B - B
SCALE 1 : 25



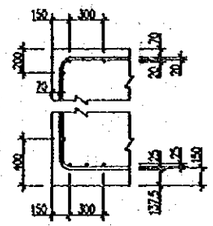
SECTION C - C
SCALE 1 : 25



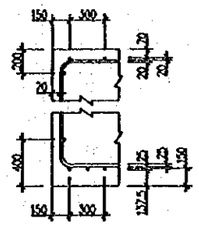
SECTION D - D
SCALE 1 : 25



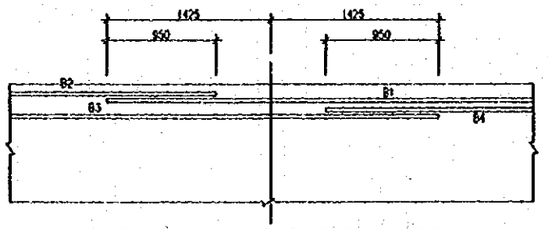
SECTION E - E
SCALE 1 : 25



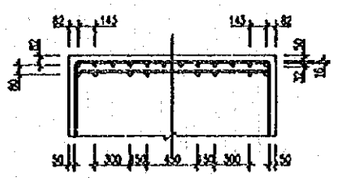
DETAIL 'X'
SCALE 1 : 25



DETAIL 'Y'
SCALE 1 : 25



KEY PLAN OF PLACING REINFORCEMENT
SCALE 1 : 25



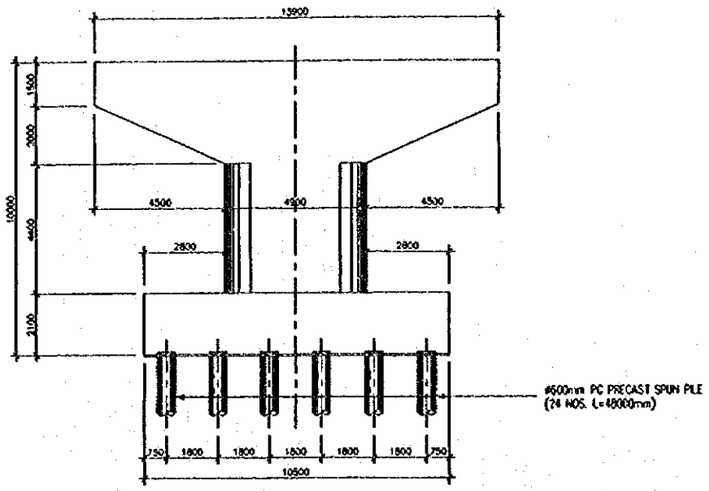
DETAIL 'Z'
SCALE 1 : 25

LEGEND:

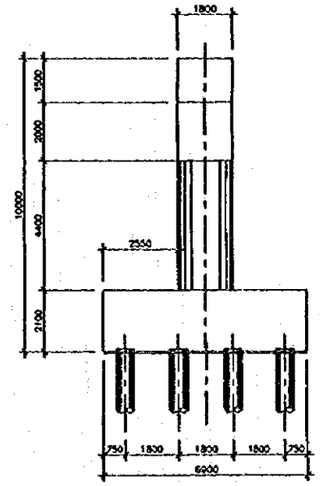
14 T 32-B1-125
- SPACING OF BAR
- BAR MARK: B = BEAM, C = COLUMN, F = FOOTING
- SIZE OF BAR
- TYPE OF BAR: T = HIGH YIELD, R = MILD STEEL
- NO. OF BAR

AS = ALTERNATELY STAGGERED
LV = LENGTH VARIES
NF = NEAR FACE
FF = FAR FACE

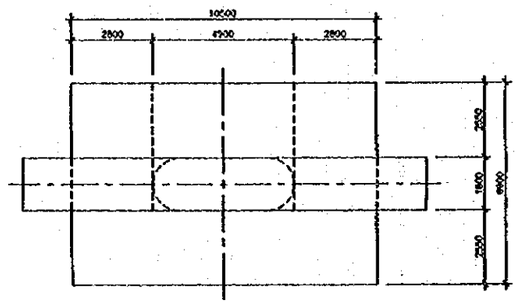
Tarikh	Butiran	Rujukan		UNIT JAMBATAN	PENGARAH JALAN	JABATAN KERJA RAYA MALAYSIA CAWANGAN JALAN
				DIREKABENTUK:		
				DILUKIS: / DISEMAK:	JURUTERA PERKHIDMATAN KANAN	T-BEAM - REINFORCEMENT
PINDAAN			UKURAN	DILULUSKAN PENOLONG PENGARAH (JJ)	PENOLONG PENGARAH KANAN (J)	TARIKH: / BIL. LUKISAN:



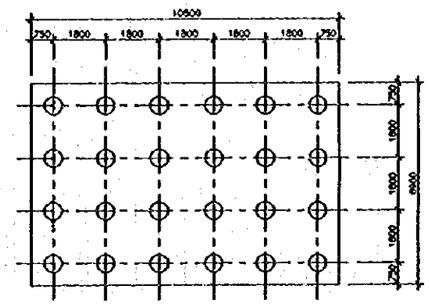
FRONT ELEVATION
SCALE 1 : 100



SIDE ELEVATION
SCALE 1 : 100

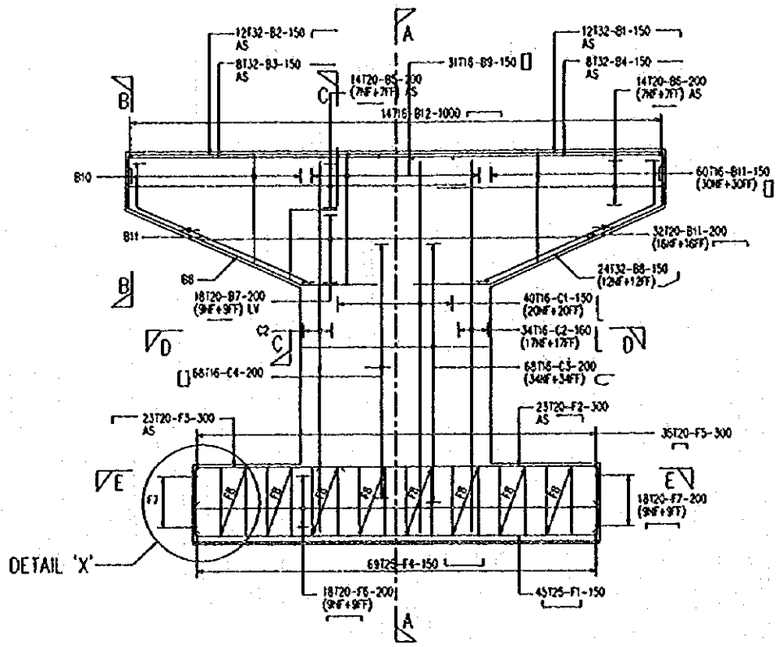


PLAN
SCALE 1 : 100



PILE ARRANGEMENT
SCALE 1 : 100

Tarikh	Butiran	Rujukan		UNIT JAMBATAN	PENGARAH JALAN	JABATAN KERJA RAYA MALAYSIA CAWANGAN JALAN
				DIREKADDITUK:		
				DILUKIS: DISEMAK:	JURUTERA PENGUASA KANAN	PIER TYPE T - GENERAL VIEW
PINDAAN			UKURAN	DILULUSKAN PENOLONG PENGARAH (A)	PENOLONG PENGARAH KANAN (J)	TARIKH: SK: LUKISAN



SECTIONAL ELEVATION
SCALE 1 : 75

SECTION A - A
SCALE 1 : 75

SECTION B - B
SCALE 1 : 25

SECTION C - C
SCALE 1 : 25

SECTION D - D
SCALE 1 : 25

DETAIL 'X'
SCALE 1 : 25

DETAIL 'Y'
SCALE 1 : 25

SECTION E - E
SCALE 1 : 25

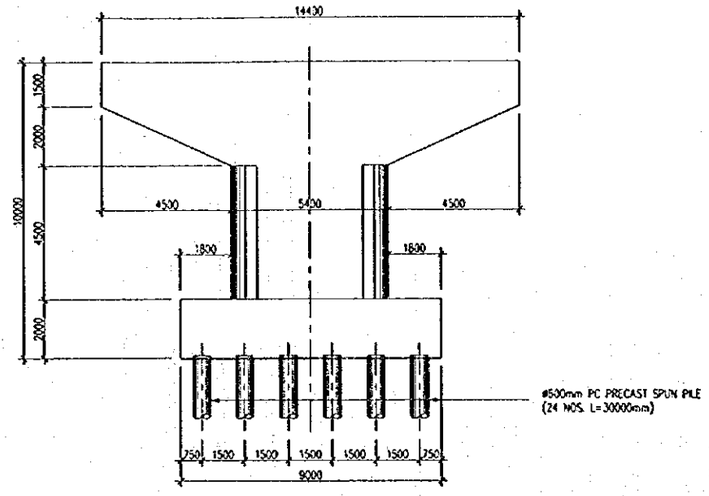
KEY PLAN OF PLACING REINFORCEMENT
SCALE 1 : 25

DETAIL 'Z'
SCALE 1 : 25

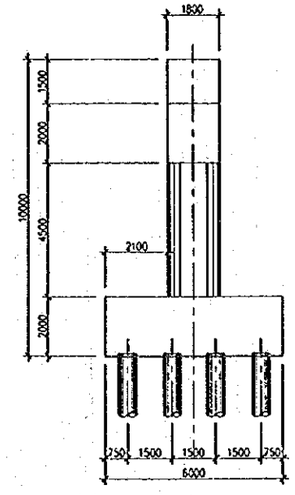
LEGEND:
H T 32-B1-125
- SPACING OF BAR
- BAR MARK (B = BEAM, C = COLUMN, F = FOOTING)
- SIZE OF BAR
- TYPE OF BAR (H = HIGH YIELD, R = MILD STEEL)
- NO. OF BAR

AS = ALTERNATELY STAGGERED
LV = LENGTH VARIES
NF = NEAR FACE
FF = FAR FACE

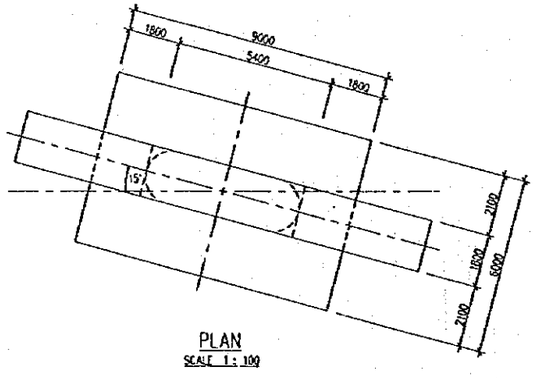
Tarikh	Butiran	Rujukan	UNIT JAMBATAN	PENGARAH JALAN	JABATAN KERJA RAYA MALAYSIA CAWANGAN JALAN
PINDAAN		UKURAN	DIREKABENTUK:	JURUTERA PENGUASA KANAN	T-BEAM - REINFORCEMENT
			DILUKIS: DISEMAK:	PENOLONG PENGARAH KANAN (J)	TARIKH: No. LUKISAN:
			DILULUSKAN: PENOLONG PENGARAH (A)		



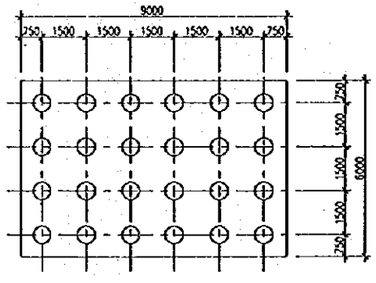
FRONT ELEVATION
SCALE 1 : 100



SIDE ELEVATION
SCALE 1 : 100



PLAN
SCALE 1 : 100



PILE ARRANGEMENT
SCALE 1 : 100

Tarikh	Butiran	Rujukan
PINDAAN		

UKURAN

UNIT JAMBATAN

DIREKABENTUK:

DILUKIS: | DISEMAK:

DILULUSKAN: PENOLONG PENGARAH (JJ)

PENGARAH JALAN

JURUTERA PENDUASA KANAN

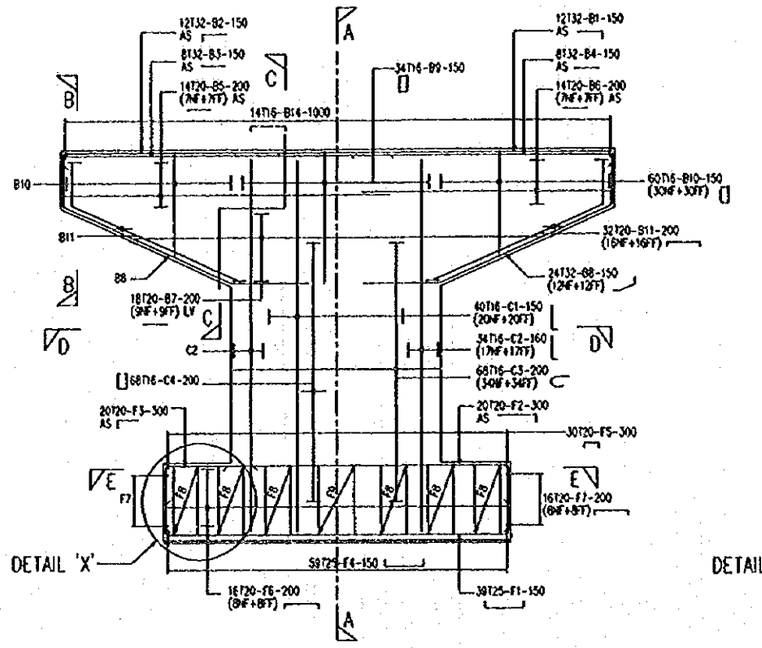
PENOLONG PENGARAH KANAN (J)

JABATAN KERJA RAYA MALAYSIA
CAWANGAN JALAN

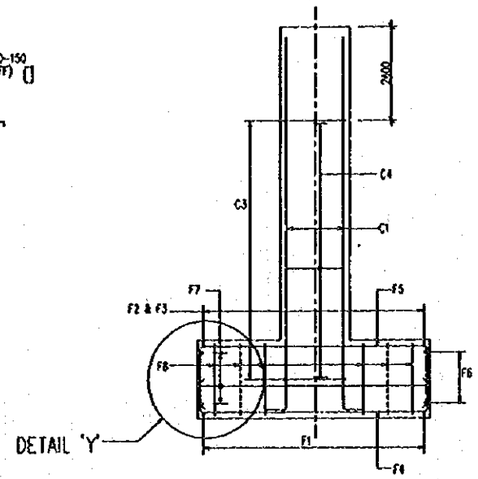
PIER TYPE T - GENERAL VIEW

TARIKH:

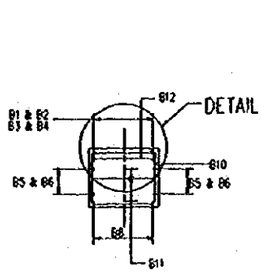
BIL. LUKISAN:



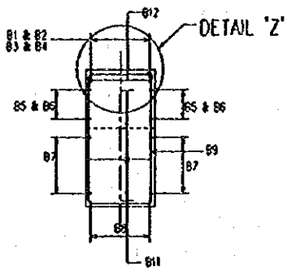
SECTIONAL ELEVATION
SCALE 1 : 75



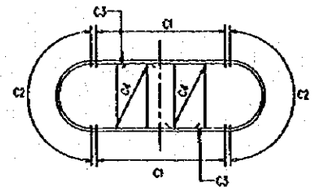
SECTION A - A
SCALE 1 : 75



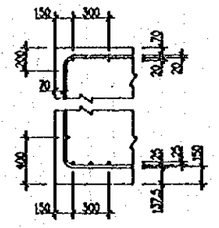
SECTION B - B
SCALE 1 : 75



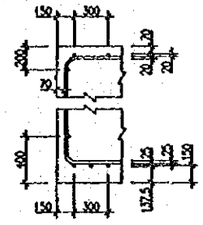
SECTION C - C
SCALE 1 : 75



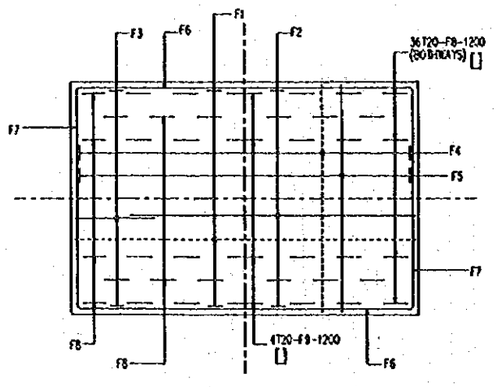
SECTION D - D
SCALE 1 : 75



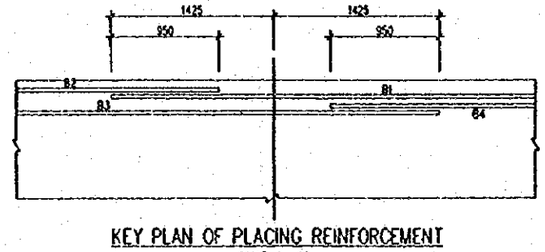
DETAIL 'X'
SCALE 1 : 25



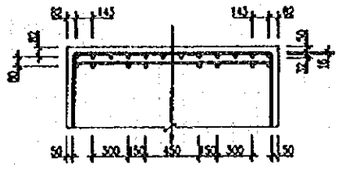
DETAIL 'Y'
SCALE 1 : 25



SECTION E - E
SCALE 1 : 25



KEY PLAN OF PLACING REINFORCEMENT
SCALE 1 : 25

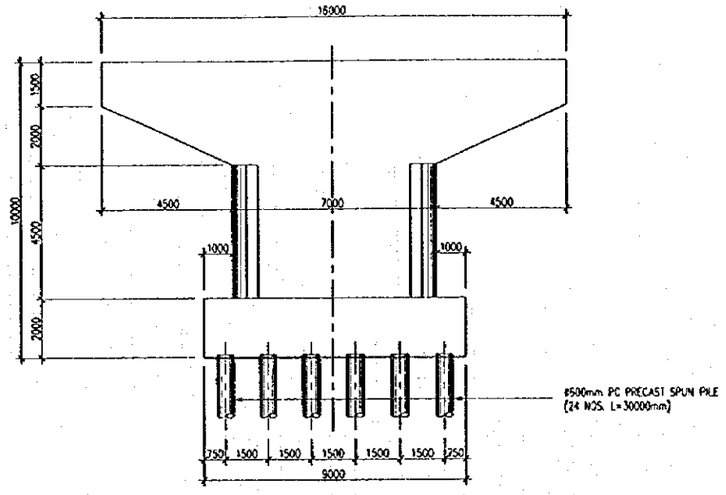


DETAIL 'Z'
SCALE 1 : 25

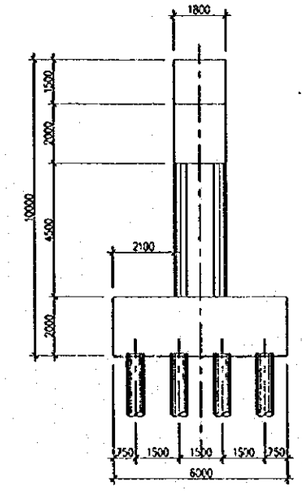
LEGEND:
14 T 32-B1-125
SPACING OF BAR
BAR MARK
B = BEAM
C = COLUMN
F = FOOTING
SIZE OF BAR
TYPE OF BAR
T = HIGH YIELD
R = MILD STEEL
NO. OF BAR

AS = ALTERNATELY STAGGERED
LV = LENGTH VARIES
NF = NEAR FACE
FF = FAR FACE

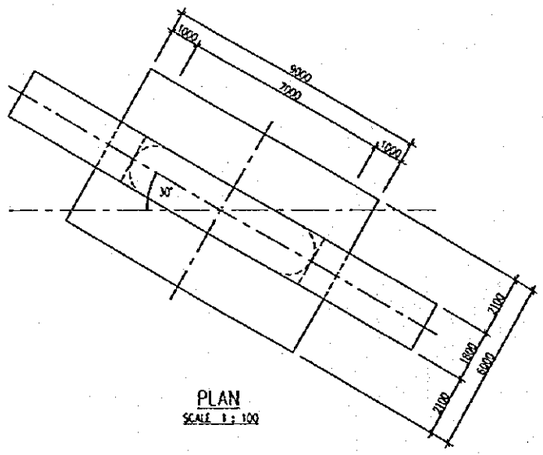
Tarikh	Butiran	Rujukan		UNIT JAMBATAN	PENGARAH JALAN	JABATAN KERJA RAYA MALAYSIA CAWANGAN JALAN
				DIREKABENTUK:		
				DILUKIS: DISEMAK:	JURUTERA PENGUASA KANAN	T-BEAM - REINFORCEMENT
PINDAAN			UKURAN	DILULUSKAN: PENOLONG PENGARAH KANAN (J)	PENOLONG PENGARAH KANAN (J)	TARIKH: SK: DISEMAK:



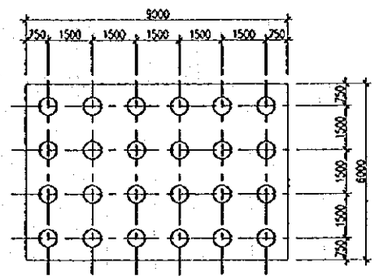
FRONT ELEVATION
SCALE 1 : 100



SIDE ELEVATION
SCALE 1 : 100



PLAN
SCALE 1 : 100



PILE ARRANGEMENT
SCALE 1 : 100

Tarikh	Butiran	Rujukan
PINDAAN		

UKURAN

UNIT JAMBATAN

DIREKABENTUK:

DILUKIS: | DISEMAK:

DILULUSKAN: PENOLONG PENGARAH (JJ)

PENGARAH JALAN

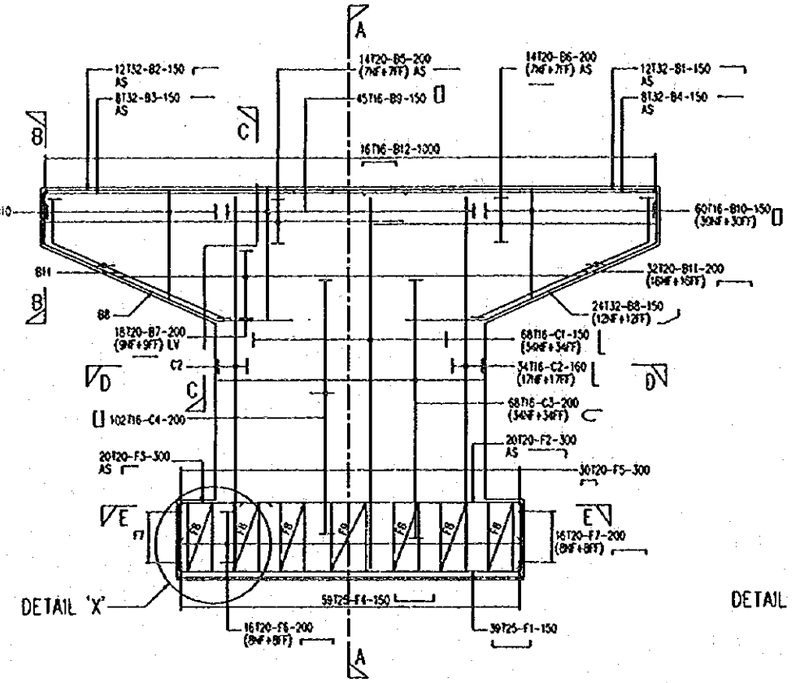
JURUTERA PENGUASA KANAN

PENOLONG PENGARAH KANAN (JJ)

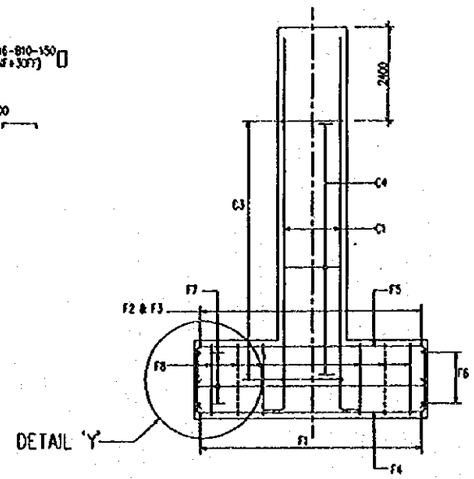
JABATAN KERJA RAYA MALAYSIA
CAWANGAN JALAN

PIER TYPE T - GENERAL VIEW

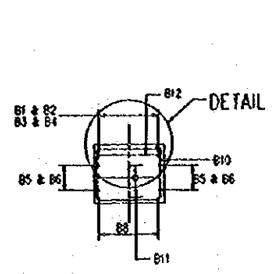
TARIKH: | BIL. LUKISAN:



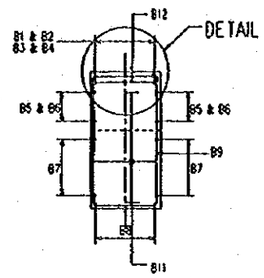
SECTIONAL ELEVATION
SCALE 1 : 75



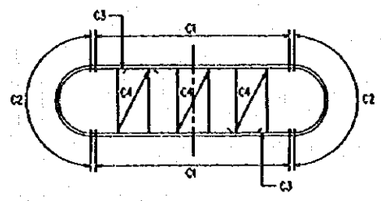
SECTION A - A
SCALE 1 : 75



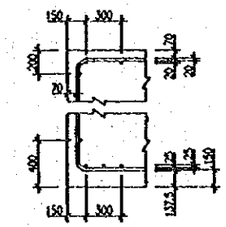
SECTION B - B
SCALE 1 : 75



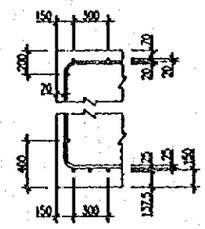
SECTION C - C
SCALE 1 : 75



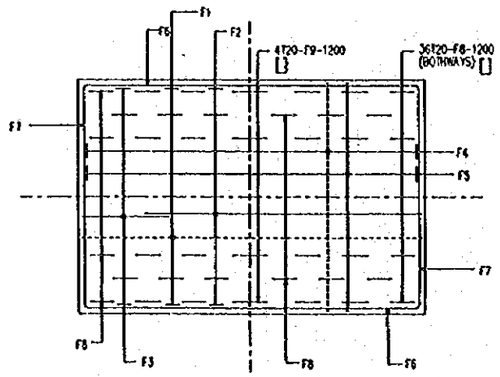
SECTION D - D
SCALE 1 : 75



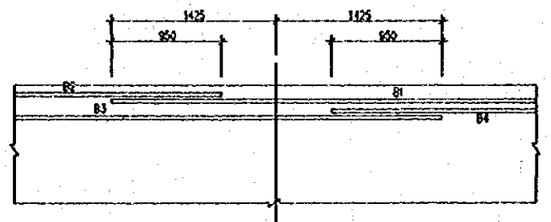
DETAIL 'X'
SCALE 1 : 25



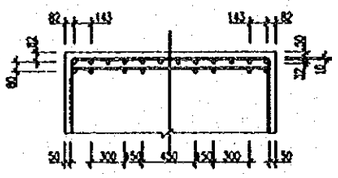
DETAIL 'Y'
SCALE 1 : 25



SECTION E - E
SCALE 1 : 75

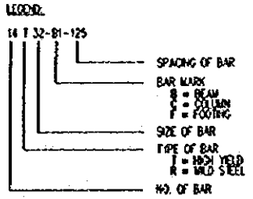


KEY PLAN OF PLACING REINFORCEMENT
SCALE 1 : 25



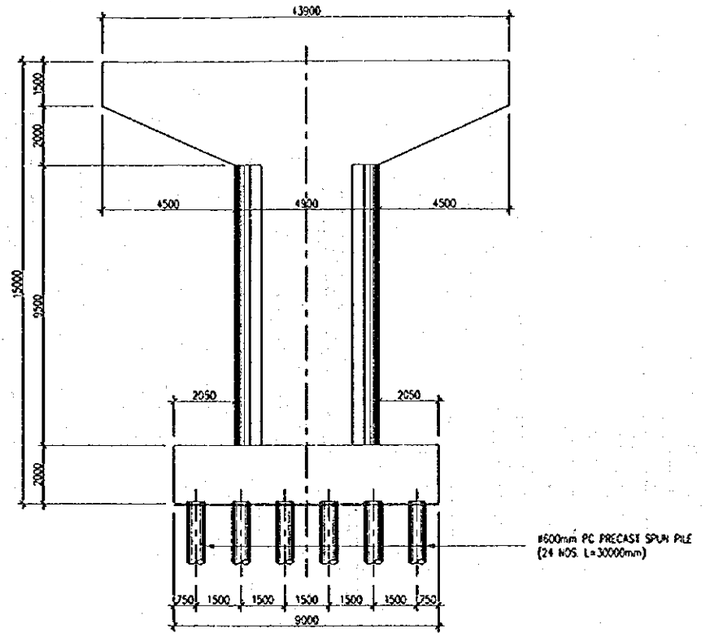
DETAIL 'Z'
SCALE 1 : 25

LEGEND:

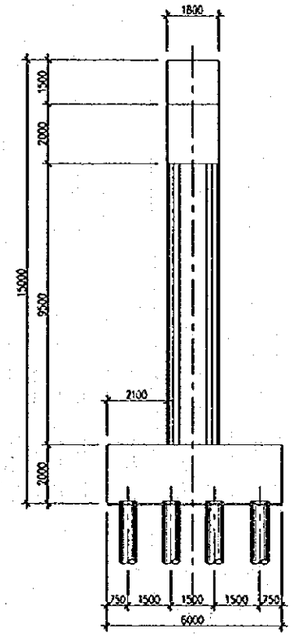


AS = ALTERNATELY STAGGERED
LV = LENGTH VARIES
NF = NEAR FACE
FF = FAR FACE

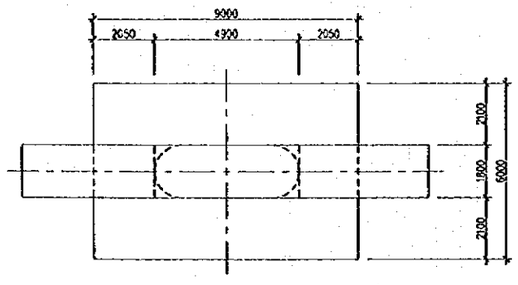
Tarikh	Butiran	Rujukan		UNIT JABATAN	PENGARAH JALAN	JABATAN KERJA RAYA MALAYSIA CAWANGAN JALAN
				DIREKABENTUK:		
				DILUKIS: DISEMAK:	JURUTERA PENGUASA KANAN	T-BEAM - REINFORCEMENT
PINDAAN			UKURAN	DILULUSKAN: PENOLONG PENGARAH (A)	PENOLONG PENGARAH KANAN (J)	TARIKH: NO. LUKISAN:



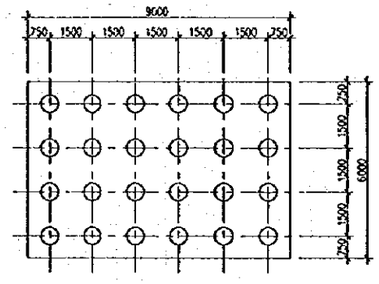
FRONT ELEVATION
SCALE 1 : 100



SIDE ELEVATION
SCALE 1 : 100



PLAN
SCALE 1 : 100



PILE ARRANGEMENT
SCALE 1 : 100

Tarikh	Butiran	Rujukan
PINDAAN		

UKURAN

UNIT JAMBATAN

DIREKABENTUK:

DILUKIS: DISEMAK:

DILULUSKAN: PENOLONG PENGARAH (JP)

PENGARAH JALAN

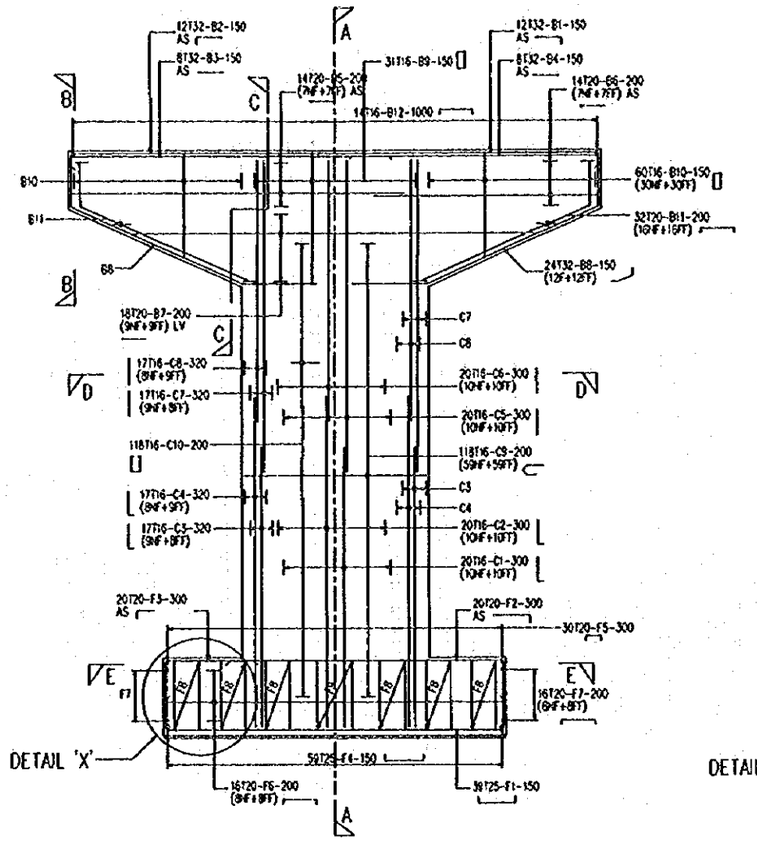
JURUTERA PENGUASA KANAN

PENOLONG PENGARAH KANAN (J)

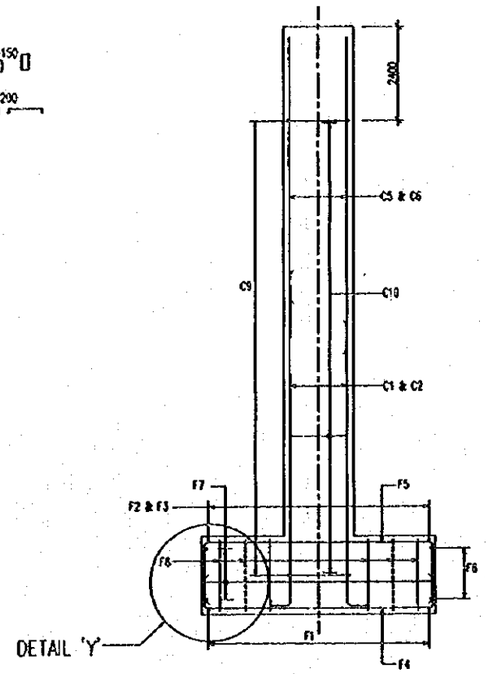
JABATAN KERJA RAYA MALAYSIA
CAWANGAN JALAN

PIER TYPE T - GENERAL VIEW

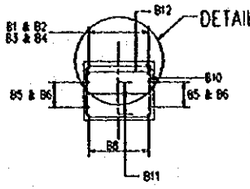
TARIKH: SK LUKISAN:



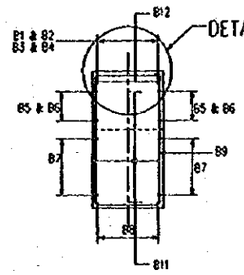
SECTIONAL ELEVATION
SCALE 1 : 25



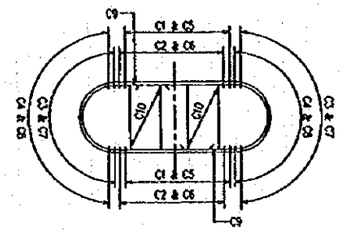
SECTION A - A
SCALE 1 : 25



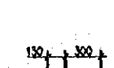
SECTION B - B
SCALE 1 : 25



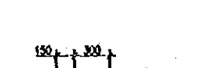
SECTION C - C
SCALE 1 : 25



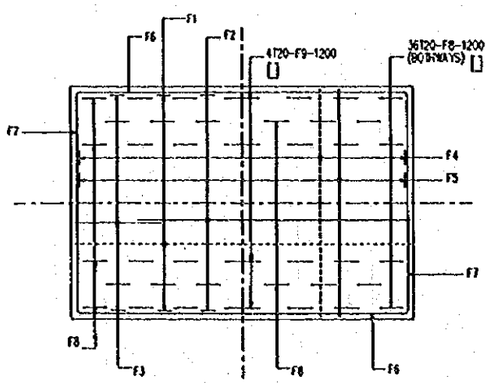
SECTION D - D
SCALE 1 : 25



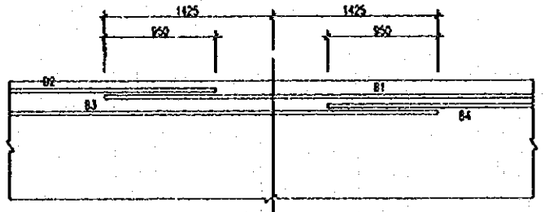
DETAIL 'X'
SCALE 1 : 25



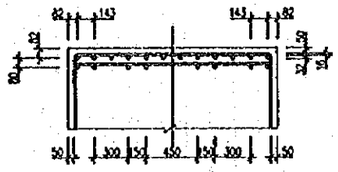
DETAIL 'Y'
SCALE 1 : 25



SECTION E - E
SCALE 1 : 25



KEY PLAN OF PLACING REINFORCEMENT
SCALE 1 : 25



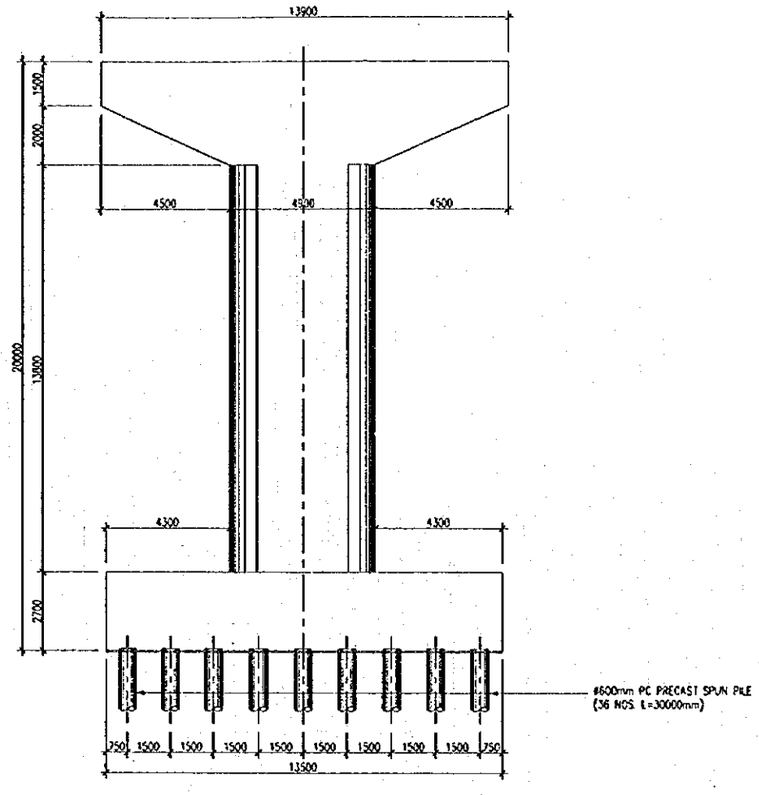
DETAIL 'Z'
SCALE 1 : 25

LEGEND:

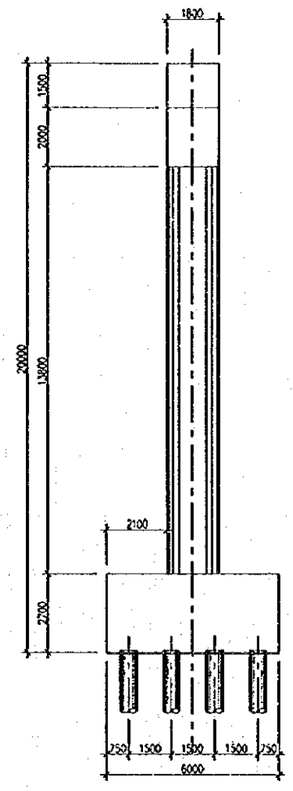
14 T 32-B1-125
- SPACING OF BAR
- BAR MARK (B = BEAM, C = COLUMN, F = FOOTING)
- SIZE OF BAR
- TYPE OF BAR (T = HIGH YIELD, R = MILD STEEL)
- NO. OF BAR

AS = ALTERNATELY STAGGERED
LV = LENGTH VARIES
NF = NEAR FACE
FF = FAR FACE

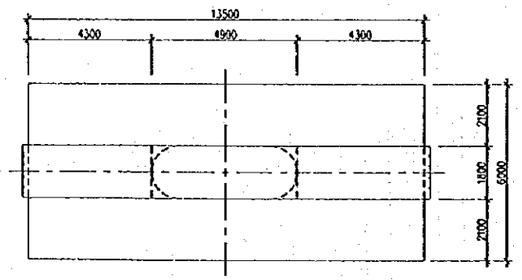
Tarikh	Butiran	Rujukan		UNIT JAMBATAN		JABATAN KERJA RAYA MALAYSIA CAWANGAN JALAN
				DIREKABENTUK:	PENGARAH JALAN	
				DILUKIS: / DISEMAK:	JURUTERA PENGUASA KANAN	T-BEAM - REINFORCEMENT
PINDAAN			UKURAN	DILULUSKAN: PENOLONG PENGARAH (JR)	PENOLONG PENGARAH KANAN (J)	TARIKH: / SK. LUKISAN:



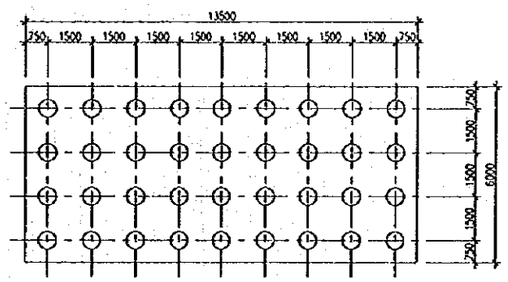
FRONT ELEVATION
SCALE 1 : 100



SIDE ELEVATION
SCALE 1 : 100



PLAN
SCALE 1 : 100



PILE ARRANGEMENT
SCALE 1 : 100

Tarikh	Butiran	Rujukan
PINDAAN		

UKURAN

UNIT JAMBATAN

DIREKABENTUK:

DILUKIS: DISEMAK:

DILULUSKAN: PENOLONG PENGARAH (JI)

PENGARAH JALAN

JURUTERA PENGUASA KANAN

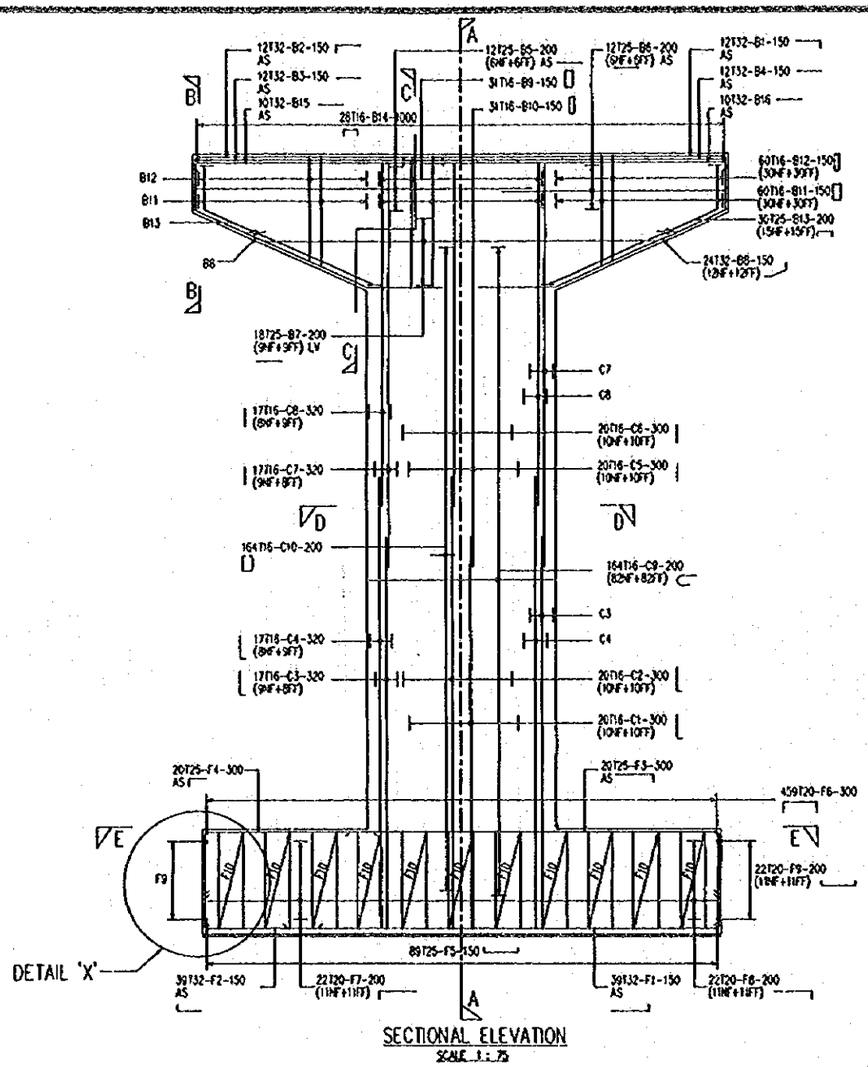
PENOLONG PENGARAH KANAN (J)

JABATAN KERJA RAYA MALAYSIA
CAWANGAN JALAN

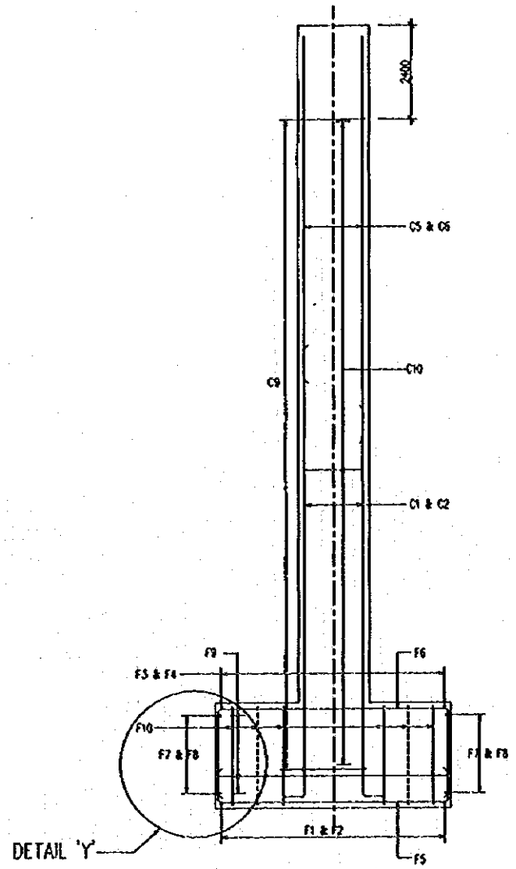
PIER TYPE I - GENERAL VIEW

TARIKH:

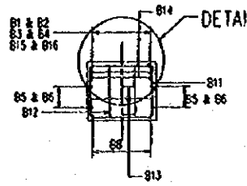
BIL. LUKISAN:



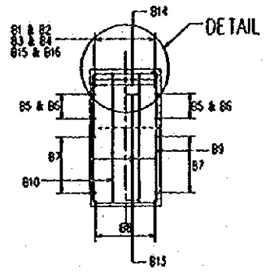
SECTIONAL ELEVATION
SCALE 1 : 75



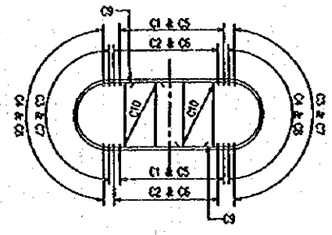
SECTION A - A
SCALE 1 : 75



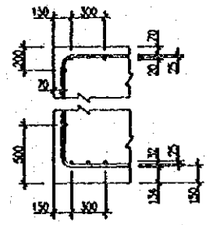
SECTION B - B
SCALE 1 : 75



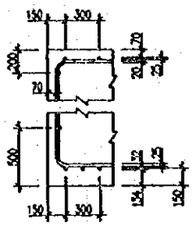
SECTION C - C
SCALE 1 : 75



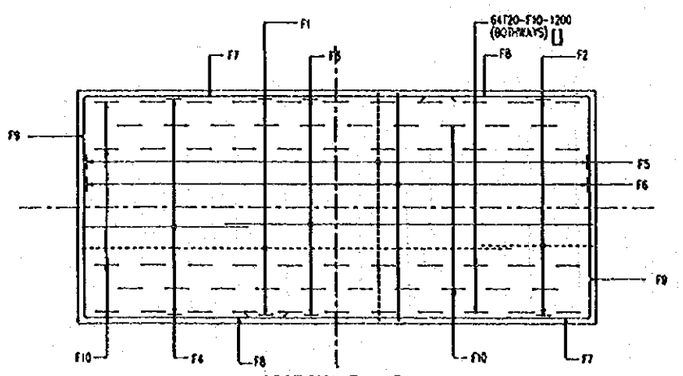
SECTION D - D
SCALE 1 : 75



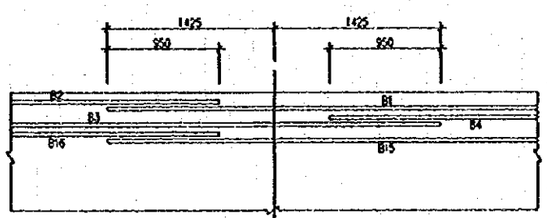
DETAIL 'X'
SCALE 1 : 25



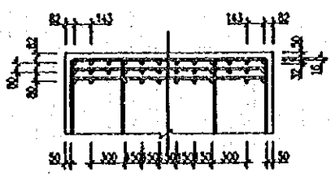
DETAIL 'Y'
SCALE 1 : 25



SECTION E - E
SCALE 1 : 75

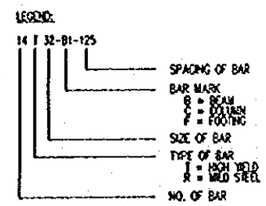


KEY PLAN OF PLACING REINFORCEMENT
SCALE 1 : 25



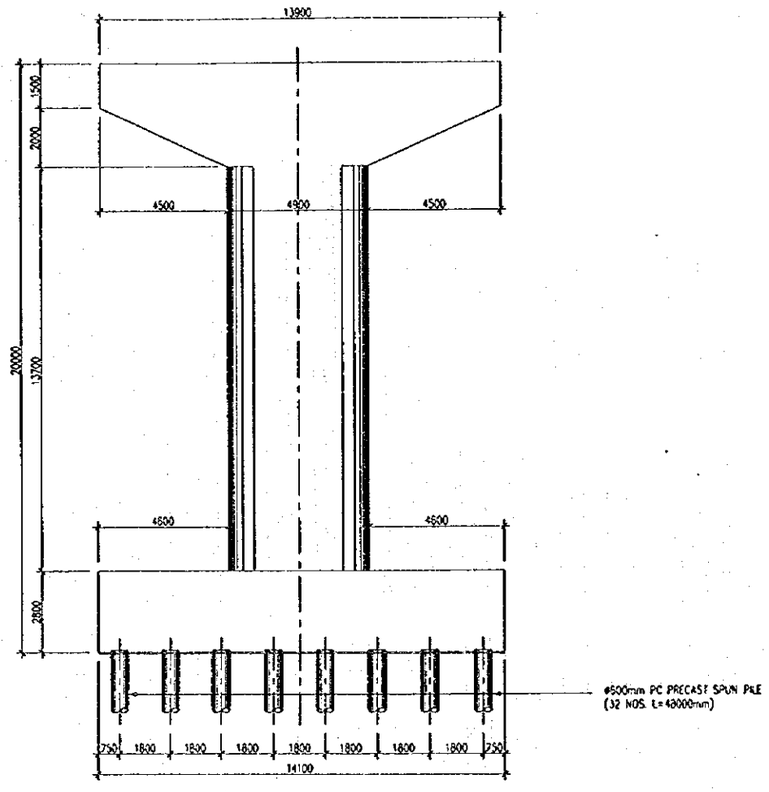
DETAIL 'Z'
SCALE 1 : 25

LEGEND:

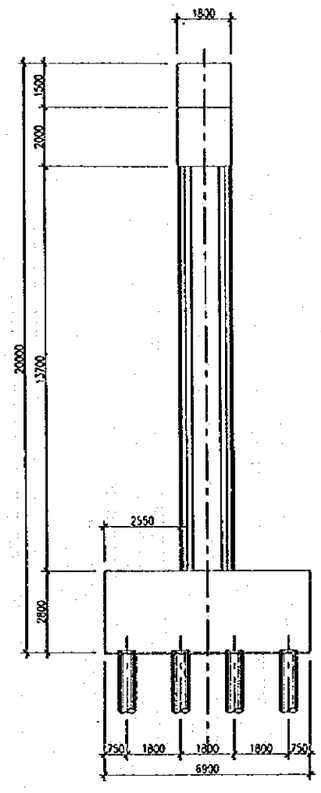


AS = ALTERNATELY STAGGERED
LV = LENGTH VARIES
NF = NEAR FACE
FF = FAR FACE

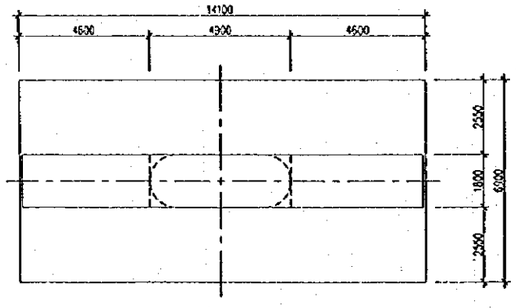
Tarikh	Butiran	Rujukan				
			UNIT JAMBATAN	PENGARAH JALAN	JABATAN KERJA RAYA MALAYSIA CAWANGAN JALAN	
PINDAAN			UKURAN	DISEDIAKAN OLEH: DILUKIS: DISEMAK: DILULUSKAN PENOLONG PENGARAH (JR)	JURUTERA PENGUASA KANAN PENOLONG PENGARAH KANAN (J)	T-BEAM - REINFORCEMENT TARIKH: NO. LUKISAN:



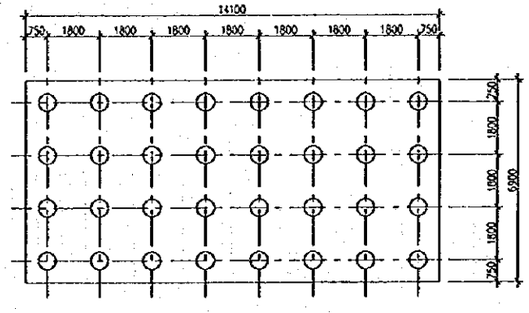
FRONT ELEVATION
SCALE 1 : 100



SIDE ELEVATION
SCALE 1 : 100



PLAN
SCALE 1 : 100



PILE ARRANGEMENT
SCALE 1 : 100

Tarikh	Butiran	Rujukan
PINDAAN		

UKURAN

UNIT JAMBATAN

DIREKABENTUK:

DILUKIS: DISEMAK:

DILULUSKAN: PENOLONG PENGARAH (JF)

PENGARAH JALAN

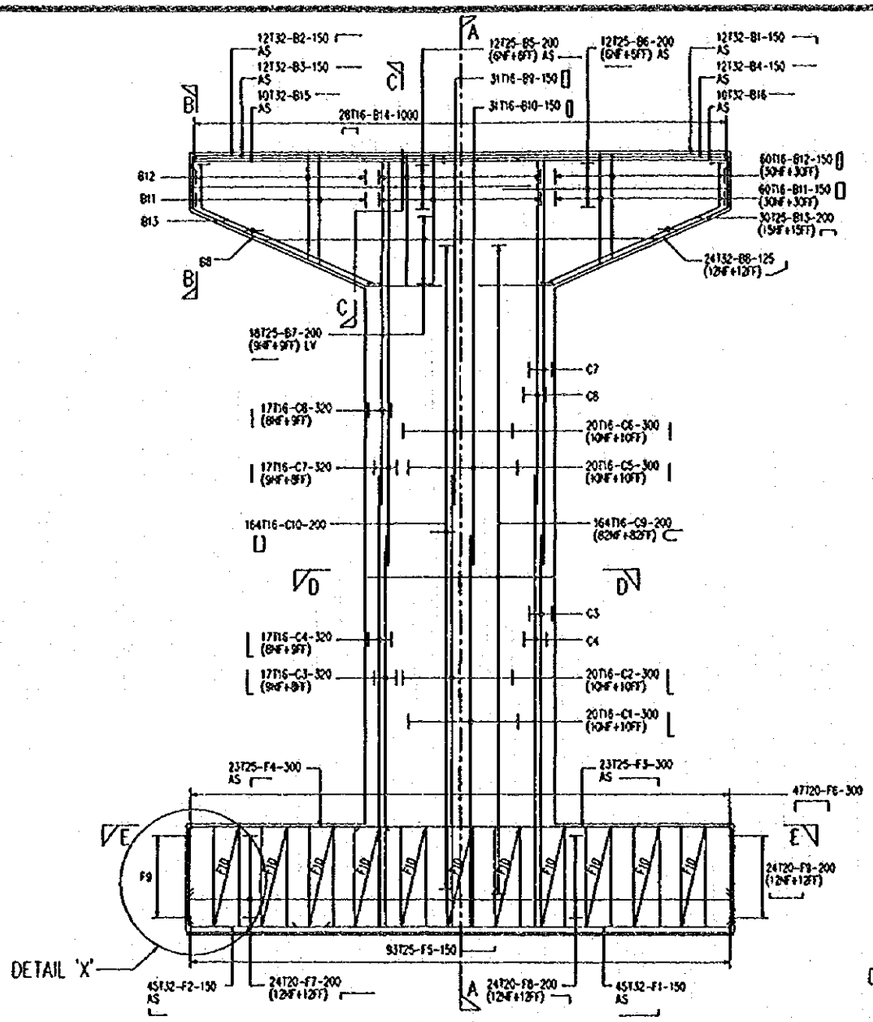
JURUTERA PENGUASA KANAN

PENOLONG PENGARAH KANAN (J)

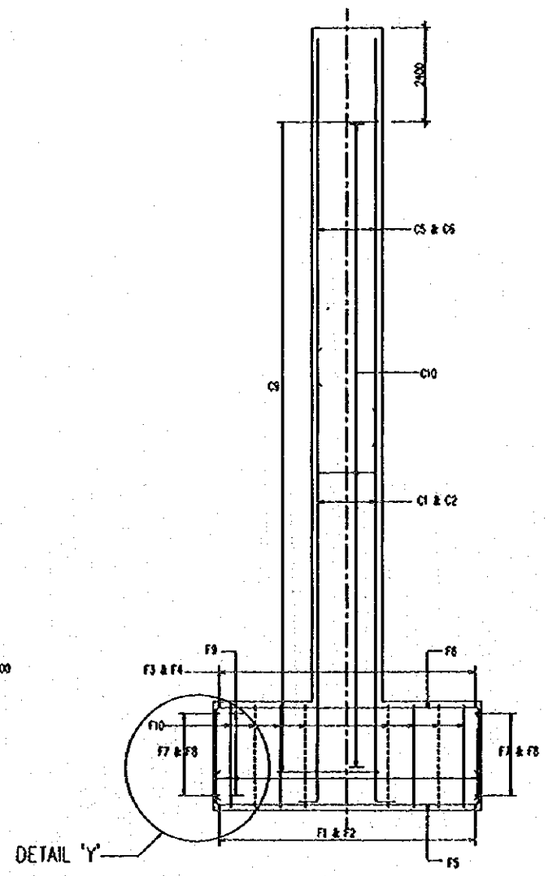
JABATAN KERJA RAYA MALAYSIA
CAWANGAN JALAN

PIER TYPE T - GENERAL VIEW

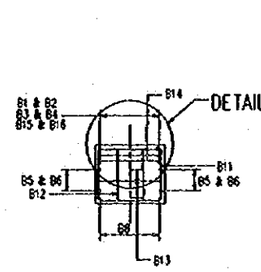
TARIKH: BIL. LUKISAN:



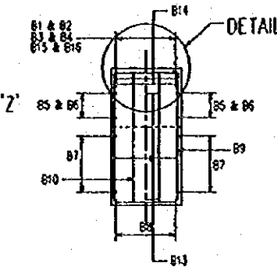
SECTIONAL ELEVATION
SCALE 1 : 25



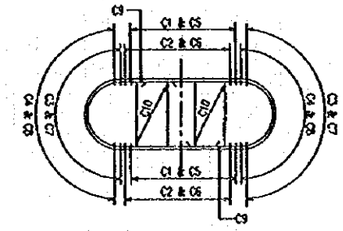
SECTION A - A
SCALE 1 : 25



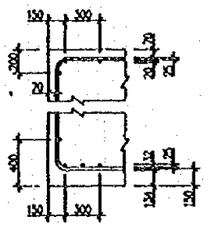
SECTION B - B
SCALE 1 : 25



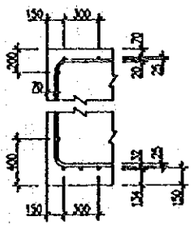
SECTION C - C
SCALE 1 : 25



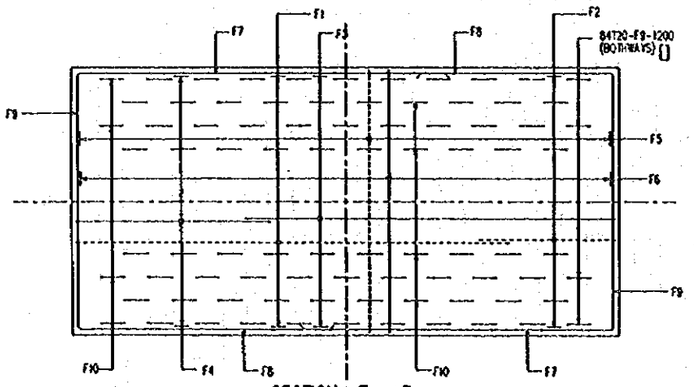
SECTION D - D
SCALE 1 : 25



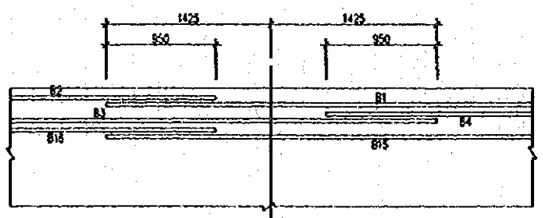
DETAIL 'X'
SCALE 1 : 25



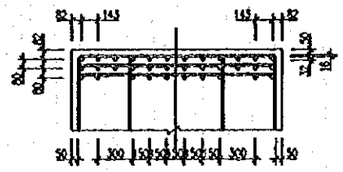
DETAIL 'Y'
SCALE 1 : 25



SECTION E - E
SCALE 1 : 25



KEY PLAN OF PLACING REINFORCEMENT
SCALE 1 : 25



DETAIL '2'
SCALE 1 : 25

LEGEND:

14 T 32-B1-125
- SPACING OF BAR
- BAR MARK: B = BEAM, C = COLUMN, F = FOOTING
- SIZE OF BAR
- TYPE OF BAR: T = HIGH YIELD, R = MILD STEEL
- NO. OF BAR

AS = ALTERNATELY STAGGERED
LV = LENGTH VARIES
NF = NEAR FACE
FF = FAR FACE

Tarikh	Butiran	Rujukan		UNIT JAMBATAN	PENGARAH JALAN	JABATAN KERJA RAYA MALAYSIA CAWANGAN JALAN
				DIREKABENTUK:		
				DILUKIS: DISEMAK:	JURUTERA PENYELIA RAKAN	T-BEAM - REINFORCEMENT
PINDAAN			UKURAN	DILULUSKAN: PENOLONG PENGARAH (A)	PENOLONG PENGARAH KANAN (A)	TARIKH: DILULUSKAN: