



**BANGLADESH WATER DEVELOPMENT BOARD**

# **STANDARD DESIGN MANUAL**

**VOLUME- III, IV, V : STANDARD LAYOUT OF STRUCTURE, GATES AND  
STANDARD DETAILING**

**Prepared by:**

**STANDARD DESIGN MANUAL COMMITTEE  
OF  
BANGLADESH WATER DEVELOPMENT BOARD**

**OFFICE OF THE  
CHIEF ENGINEER DESIGN  
BANGLADESH WATER DEVELOPMENT BOARD  
72, GREEN ROAD, DHAKA.**

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VOLUME-III : STANDARD LAYOUT PLAN OF  
HYDRAULIC STRUCTURE

## STANDARD LAYOUT PLAN OF HYDRAULIC STRUCTURE

### DRAINAGE REGULATOR

<u>DWG. NO.</u>	<u>TITLE OF DRAWING</u>
TL-DR-01	DRAINAGE REGULATOR TYPE-I, 1-VENT
TL-DR-02	DRAINAGE REGULATOR TYPE-I, 2-VENT
TL-DR-03	DRAINAGE REGULATOR TYPE-I, 3-VENT
TL-DR-04	DRAINAGE REGULATOR TYPE-II, 1-VENT
TL-DR-05	DRAINAGE REGULATOR TYPE-II, 2-VENT
TL-DR-06	DRAINAGE REGULATOR TYPE-II, 3-VENT
TL-DR-07	DRAINAGE REGULATOR TYPE-III, 1-VENT
TL-DR-08	DRAINAGE REGULATOR TYPE-III, 2-VENT
TL-DR-09	DRAINAGE REGULATOR TYPE-III, 3-VENT

### DRAINAGE - CUM - FLUSHING REGULATOR

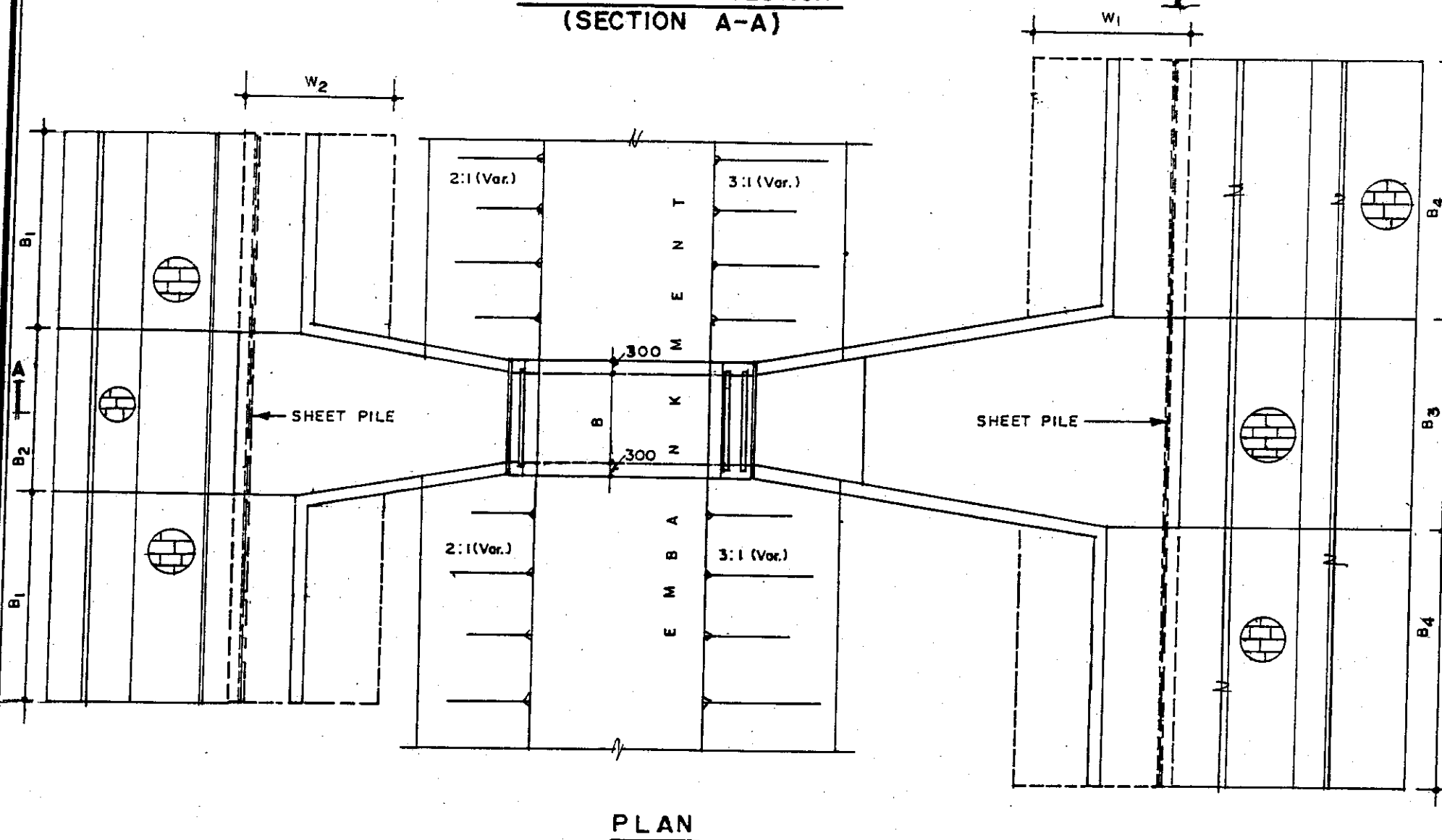
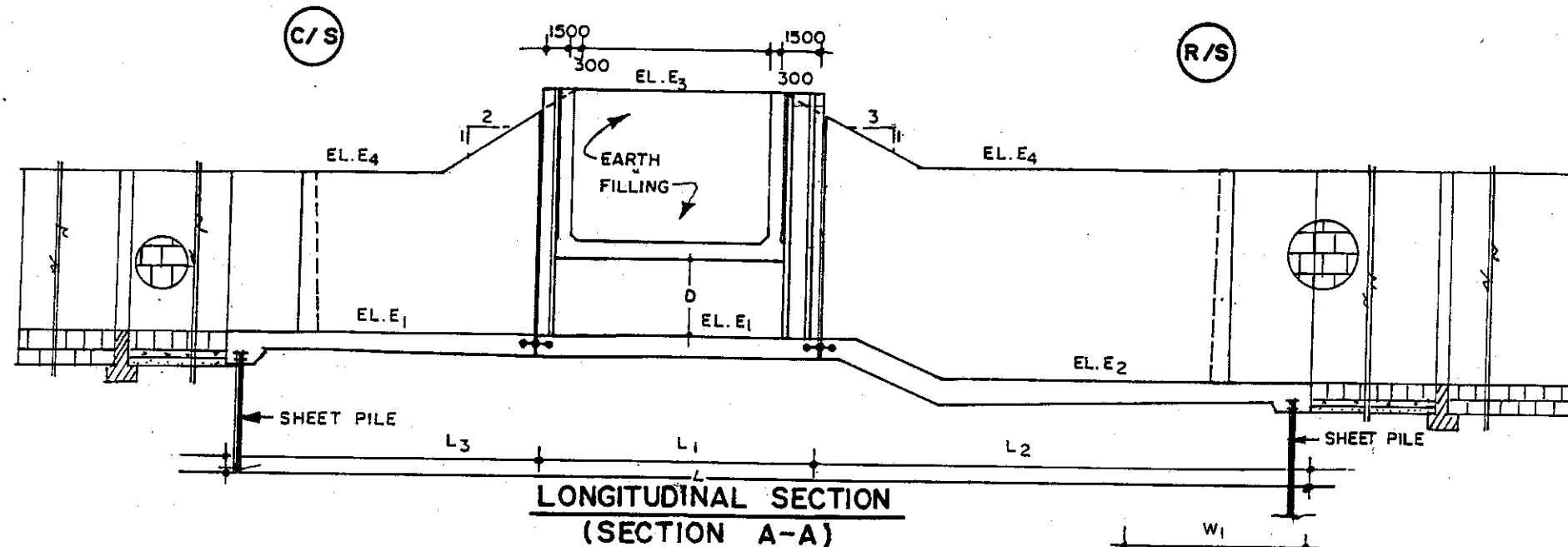
TL-DCFR-01	DRAINAGE CUM FLUSHING REGULATOR, 1-VENT
TL-DCFR-02	DRAINAGE CUM FLUSHING REGULATOR, 2-VENT
TL-DCFR-03	DRAINAGE CUM FLUSHING REGULATOR, 3-VENT

### BRIDGE CUM WATER CONTROL STRUCTURE

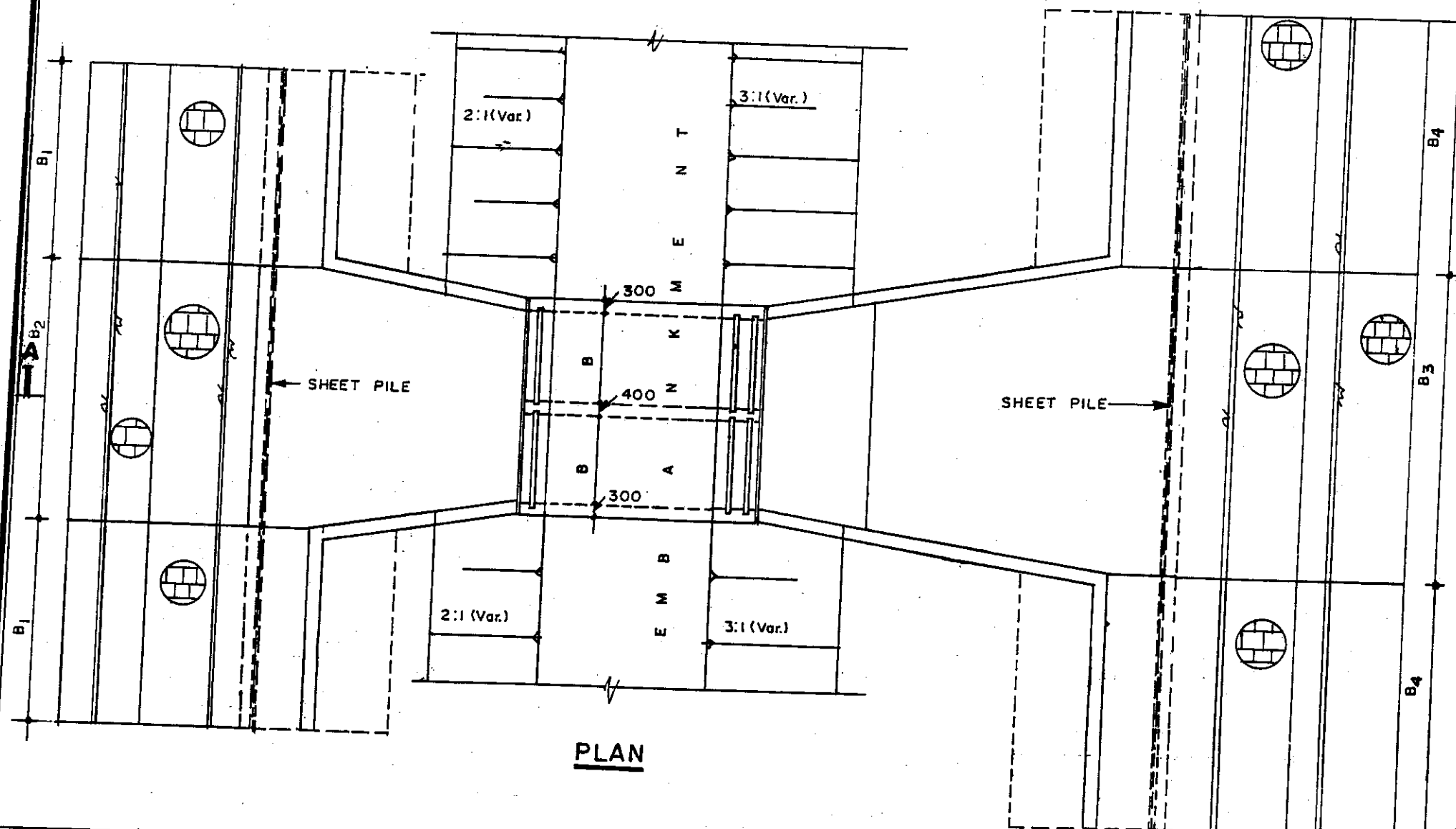
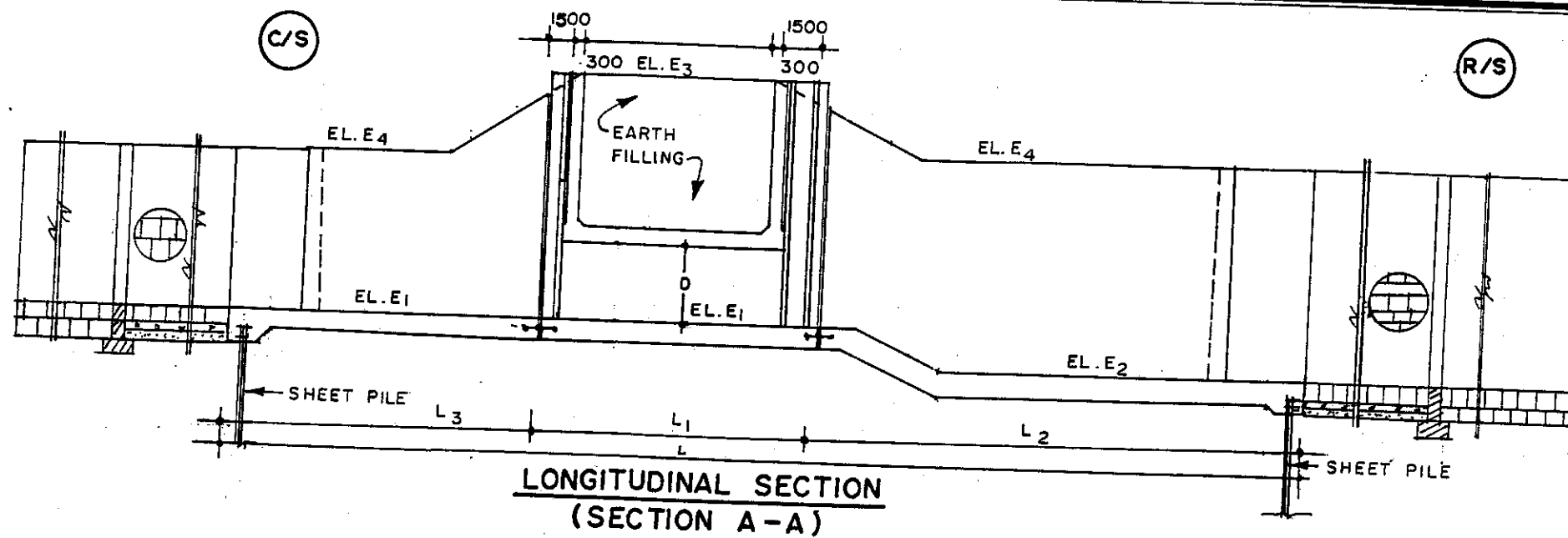
TL-BCWCS-01	BRIDGE -CUM- WATER CONTROL STRUCTURE, 1-VENT
TL-BCWCS-02	BRIDGE - CUM- WATER CONTROL STRUCTURE, 2-VENT
TL-BCWCS-03	BRIDGE -CUM- WATER CONTROL STRUCTURE, 3-VENT

### IRRIGATION STRUCTURE

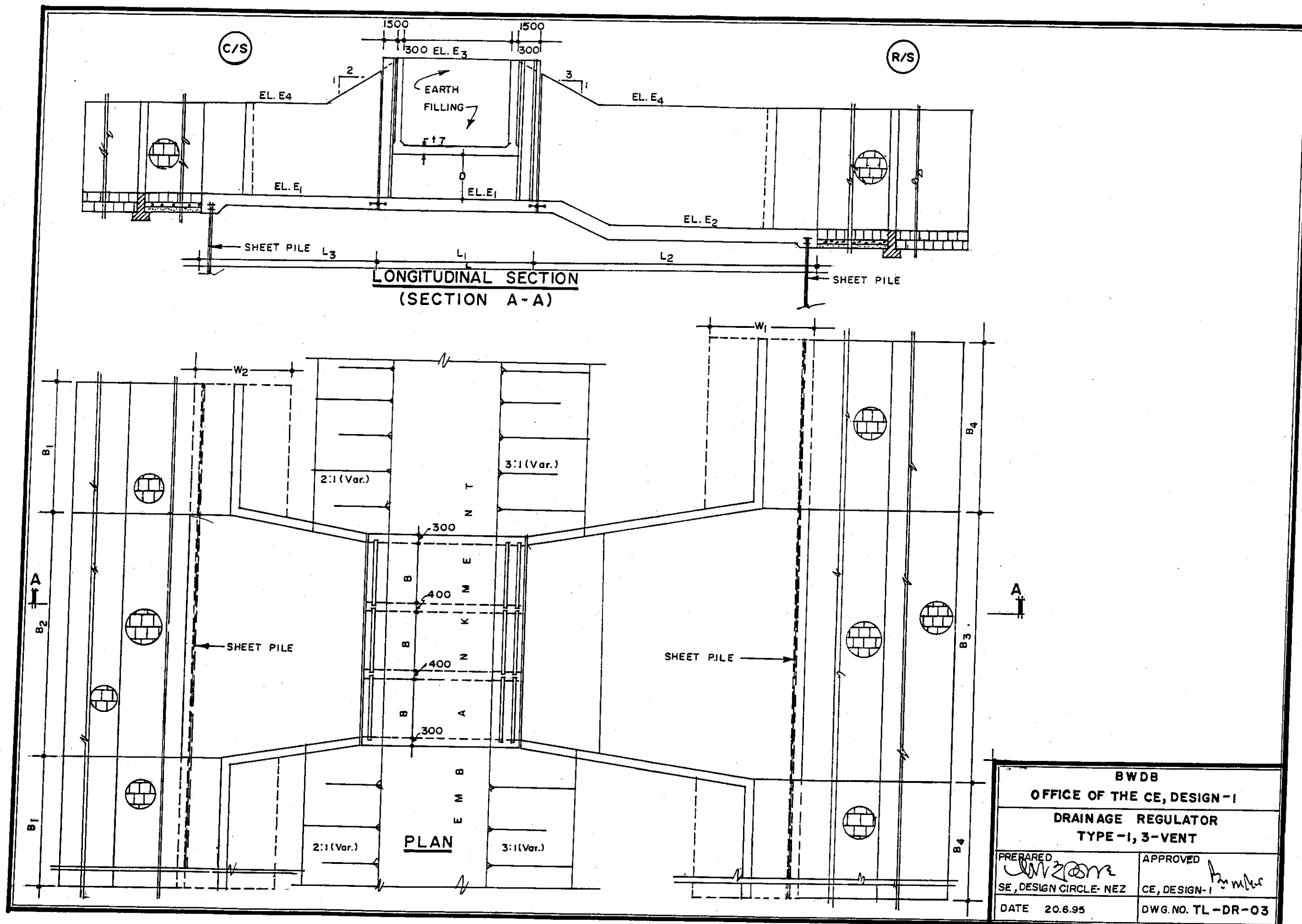
<u>DWG. NO.</u>	<u>TITLE OF DRAWING</u>
TDHR-SBT-01	SECONDARY/TERTIARY HEAD REGULATOR (SUBMERGED BOX TYPE)
TDHR-SBT-02	-DO-
TDHR-SBT-03	-DO-
TDHR-PT-01	HEAD REGULATOR (PIPE TYPE)
TDHR-PT-02	-DO-
TDCS-01	CHECK STRUCTURE ON SECONDARY/TERTIARY CANAL
TDCS-02	-DO-
TDBS-01	ONE VENT BOX SYPHON
TDBS-02	-DO-
TDBS-03	-DO-
TDPS-01	PIPE SYPHON UNDER SECONDARY/TERTIARY CANAL
TDPS-02	-DO-
TDPS-03	-DO-
TDFT-01	FIELD TURNOUT
TDFT-02	-DO-



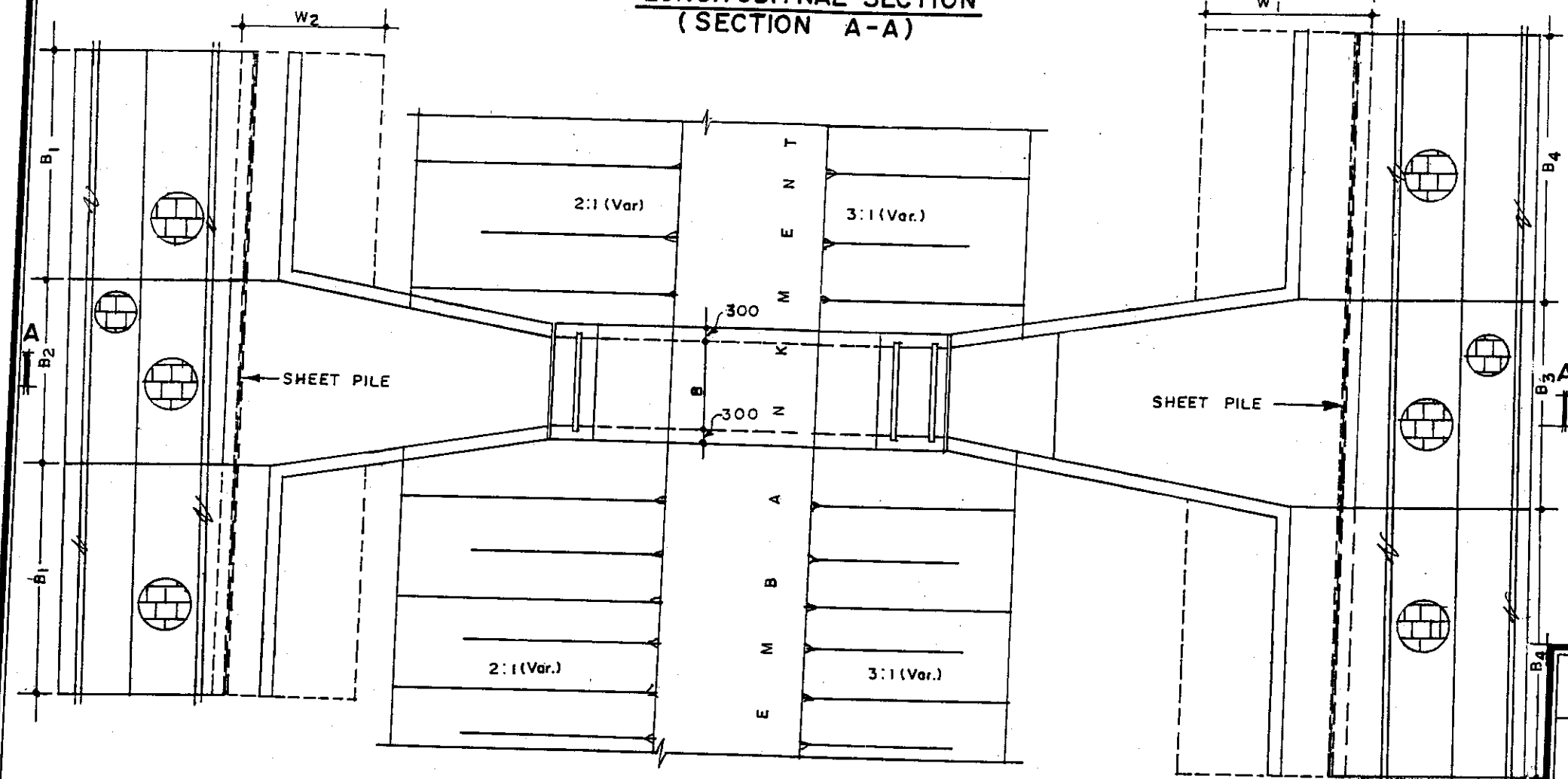
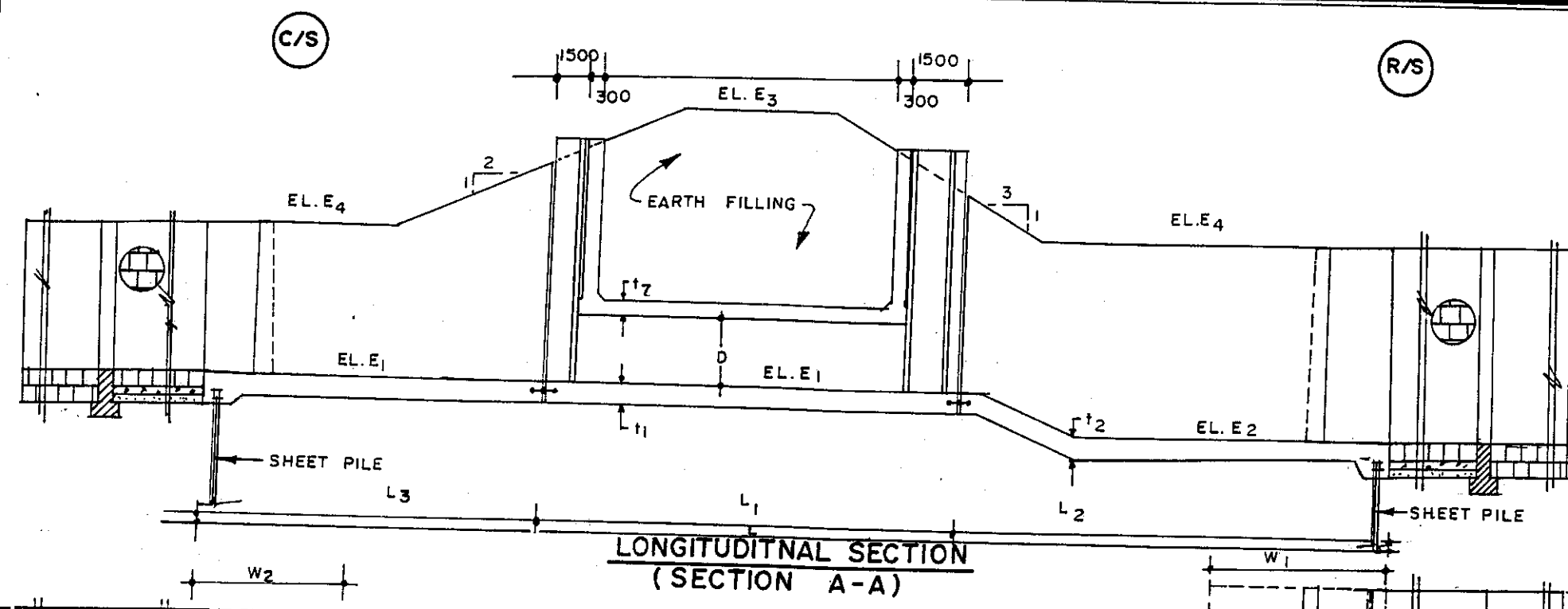
BWDB	
OFFICE OF THE CE, DESIGN-1	
DRAINAGE REGULATOR	
TYPE-I, I-VENT	
PREPARED W. K. 002	APPROVED M. N. 002
SE. DESIGN CIRCLE-NEZ	CE. DESIGN-1
DATE 20.6.95	DWG. NO. TL-DR-01



BWDB	
OFFICE OF THE CE, DESIGN-1	
DRAINAGE REGULATOR	
TYPE - I, 2-VENT	
PREPARED <i>[Signature]</i>	APPROVED <i>[Signature]</i>
SE, DESIGN- CIRCLE-NEZ	CE, DESIGN-1
DATE 20.6.95	DWG. NO. TL-DR-02

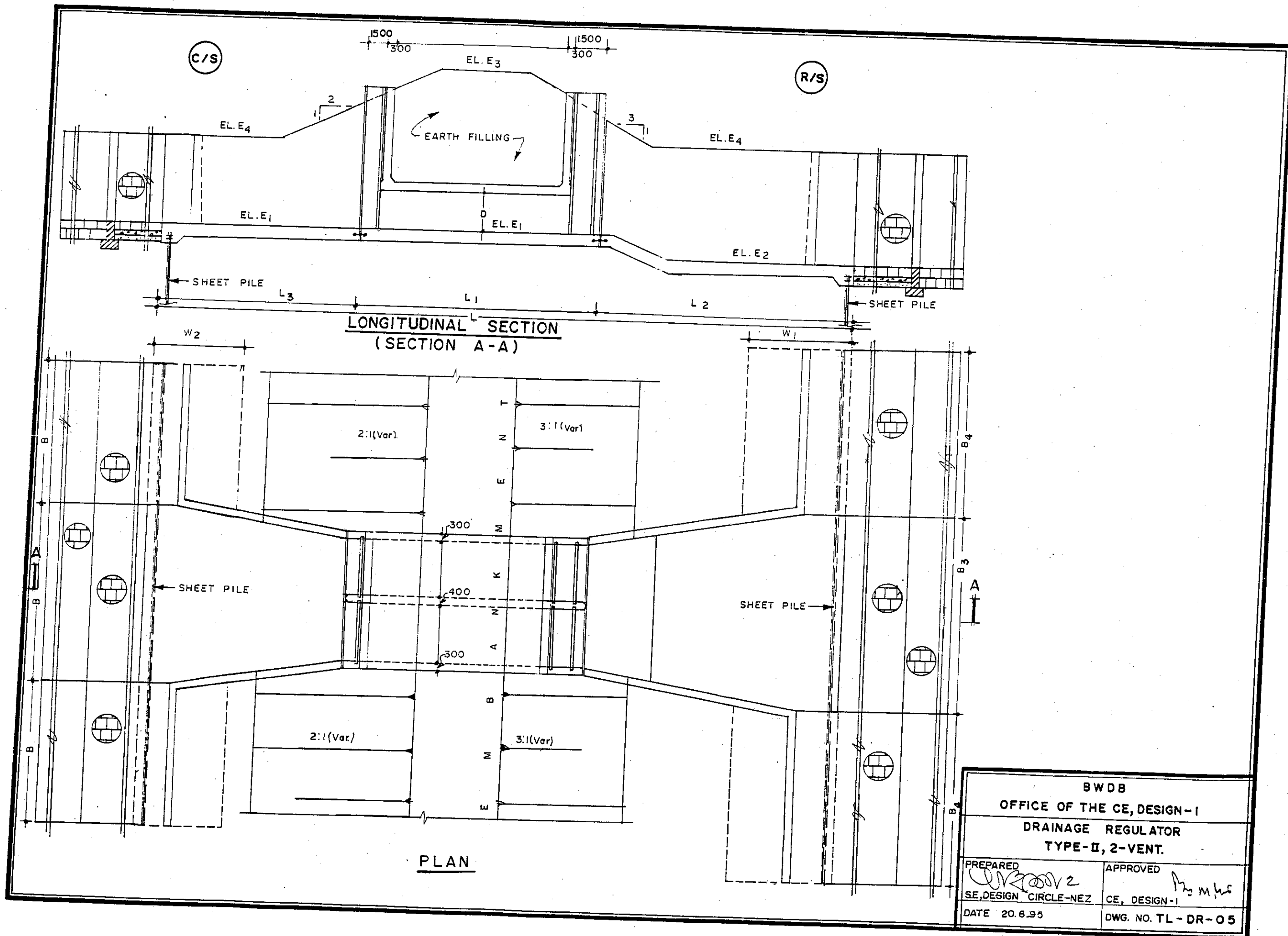


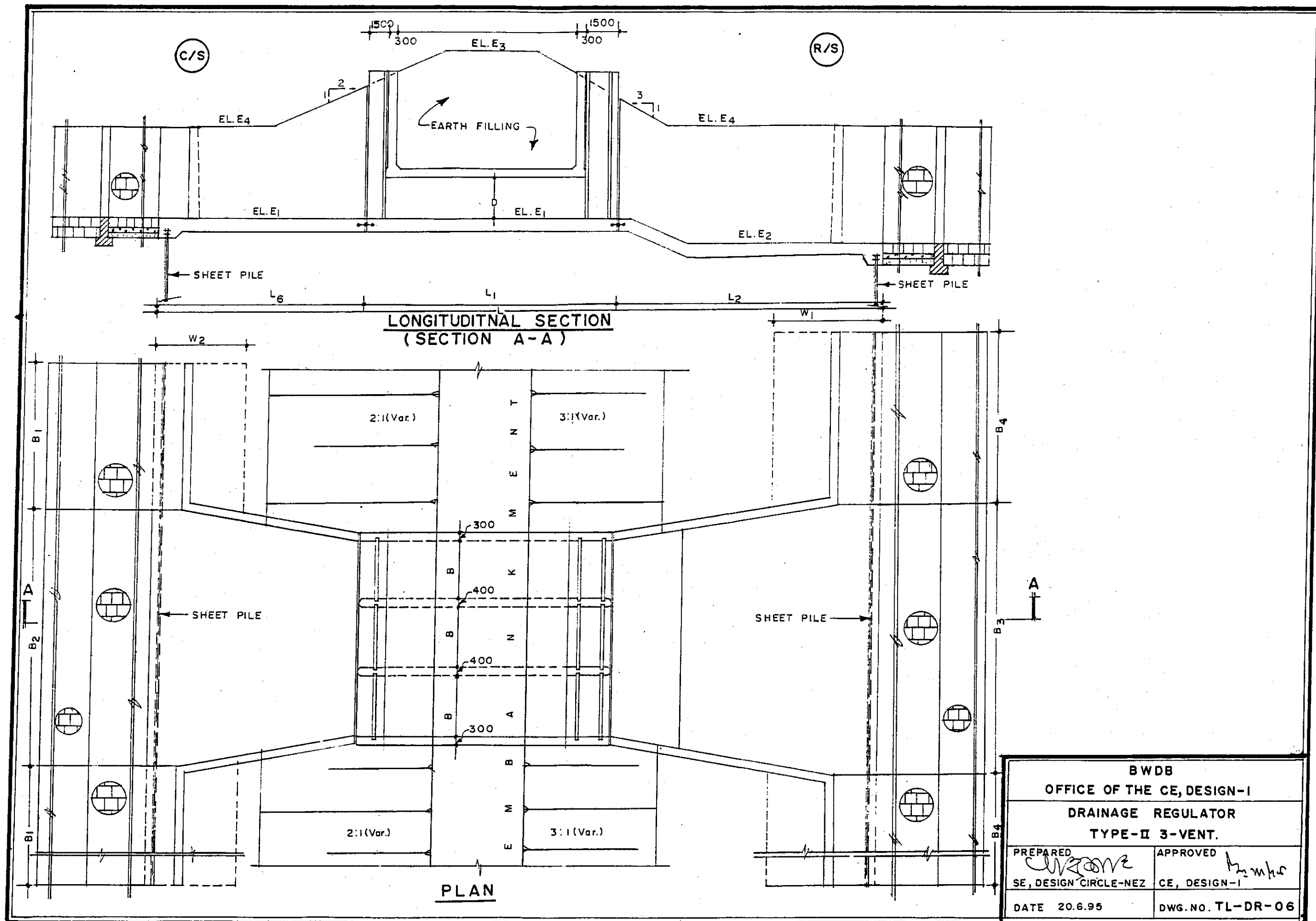
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DRAINAGE REGULATOR TYPE-I, 3-VENT	
PREPARED <i>[Signature]</i> SE, DESIGN CIRCLE- NEZ	APPROVED <i>[Signature]</i> CE, DESIGN-I
DATE 20.6.95	DWG. NO. TL-DR-03

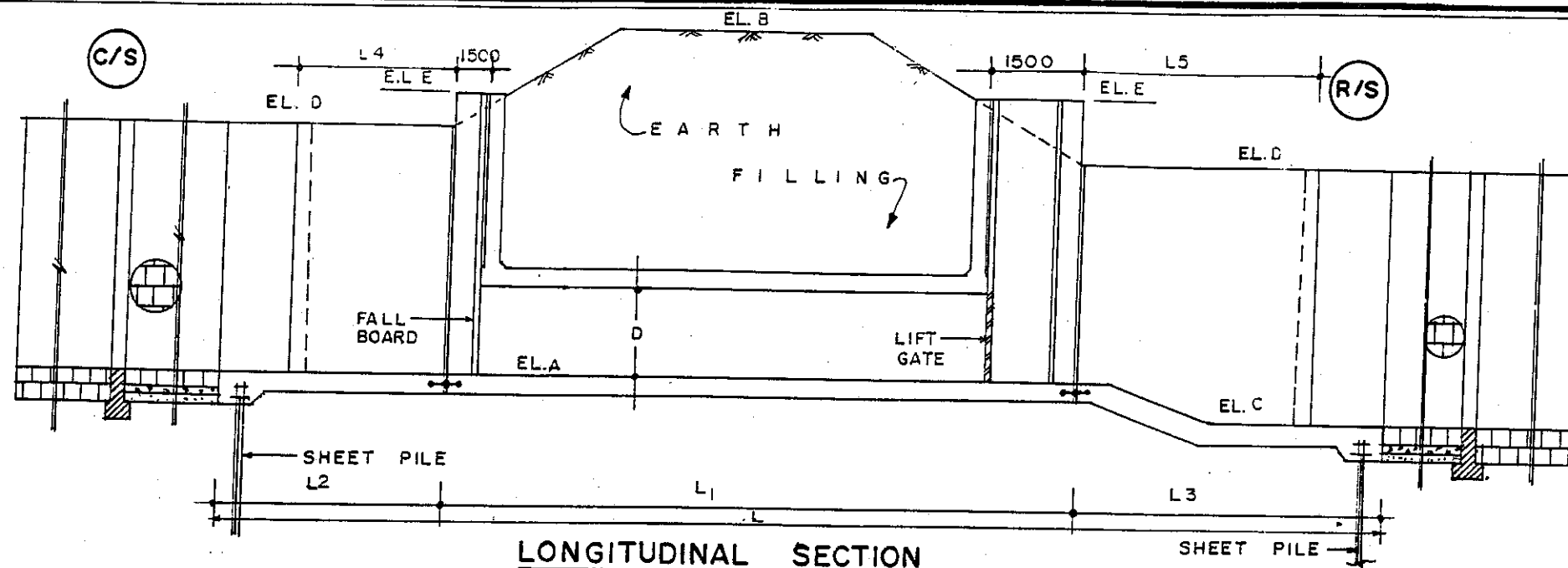


<b>BWDB</b>	
<b>OFFICE OF THE GE, DESIGN-I</b>	
<b>DRAINAGE REGULATOR</b>	
<b>TYPE-II, I-VENT</b>	
PREPARED <i>[Signature]</i> SE, DESIGN CIRCLE-NEZ	APPROVED <i>[Signature]</i> C.E., DESIGN-I
DATE 20.6.95	DWG. NO. TL-DR-04

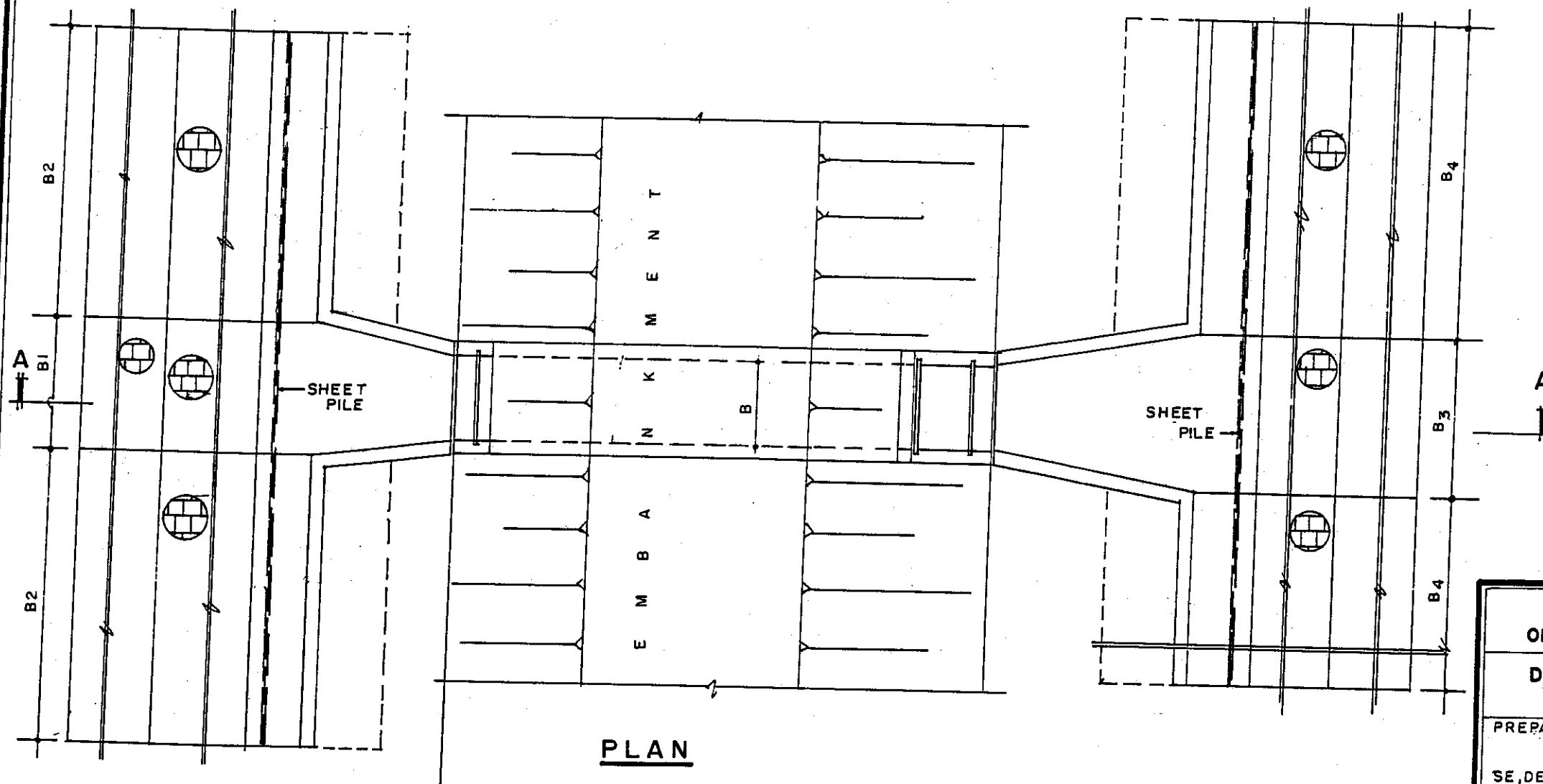






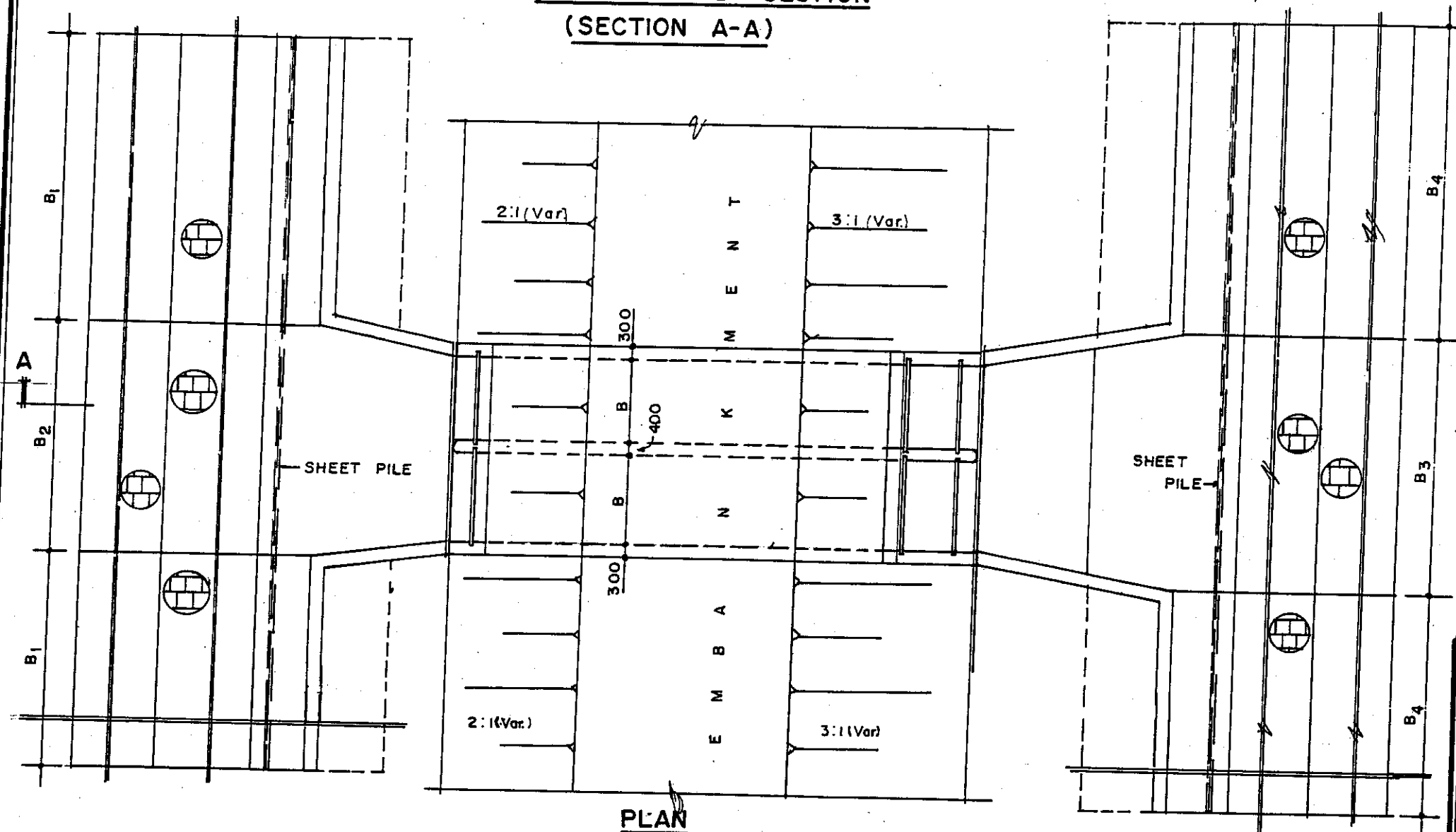
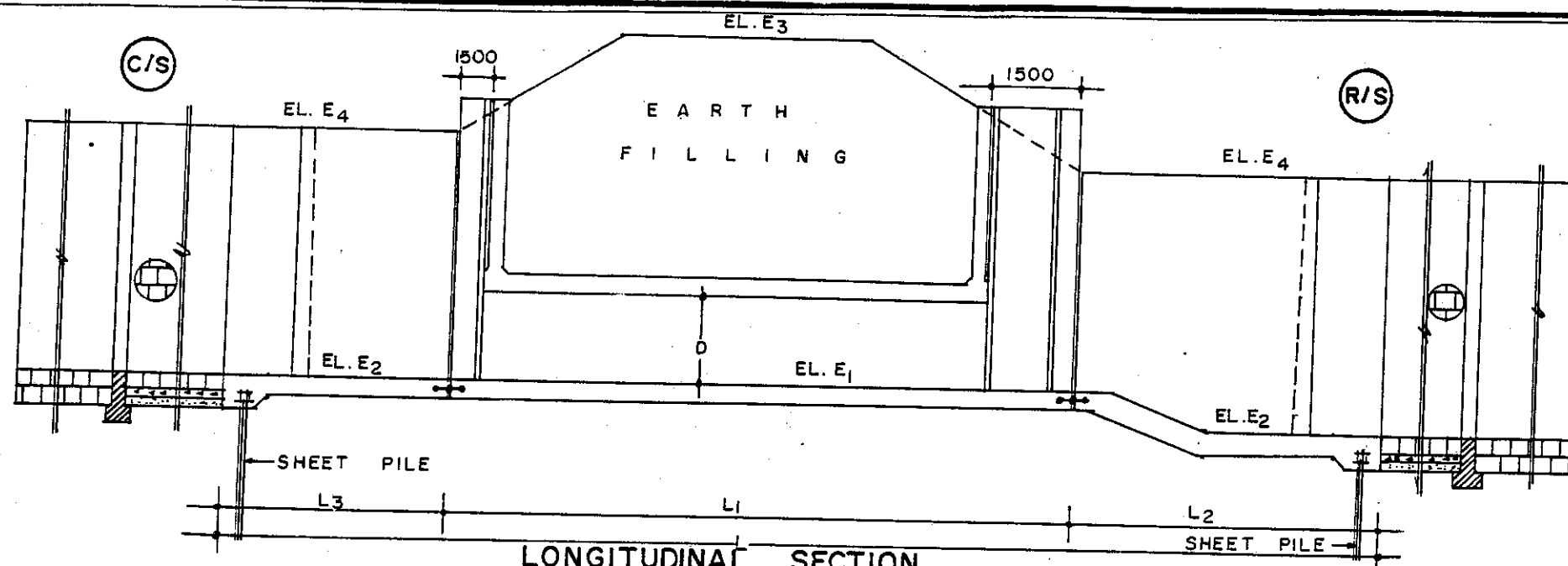


**LONGITUDINAL SECTION  
(SECTION A-A)**

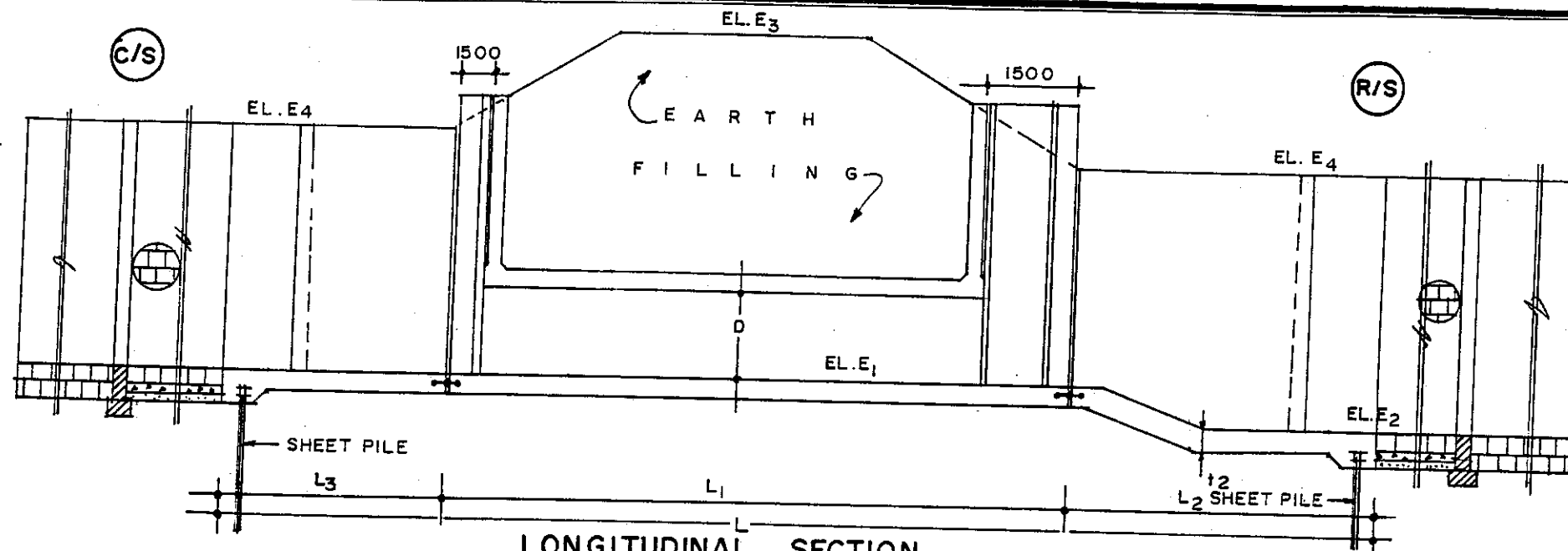


**PLAN**

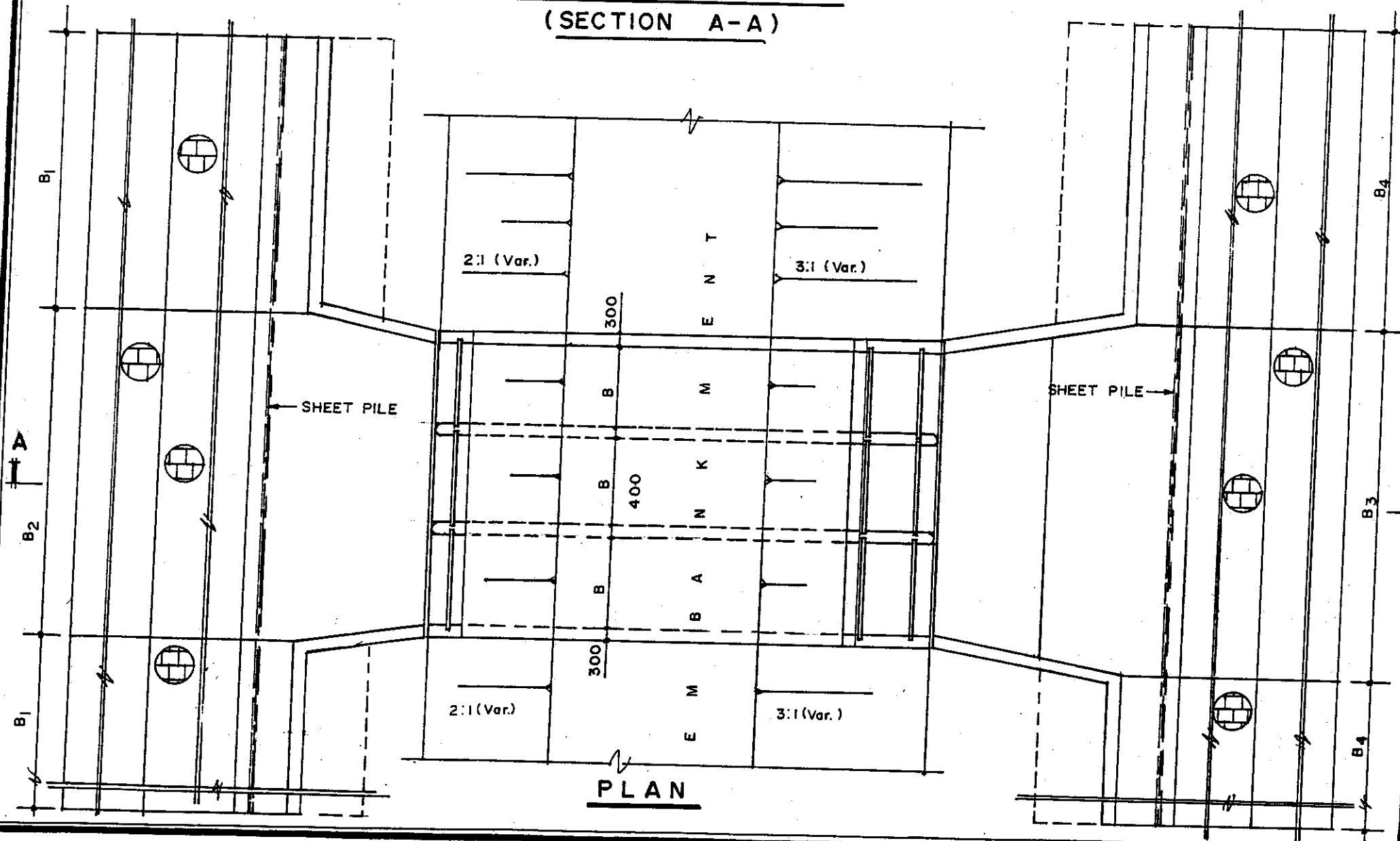
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DRAINAGE REGULATOR TYPE III, I-VENT	
PREPARED <i>[Signature]</i> SE, DESIGN CIRCLE-NEZ	APPROVED <i>[Signature]</i> CE, DESIGN - I
DATE 20.6.95	DWG. No. TL-DR-07



BWDB OFFICE OF THE CE, DESIGN-I	
DRAINAGE REGULATOR TYPE III, 2-VENT	
PREPARED <i>[Signature]</i>	APPROVED <i>[Signature]</i>
SE, DESIGN CIRCLE-NEZ	CE, DESIGN-I
DATE 20.6.95	DWG. NO. TL.DR-08

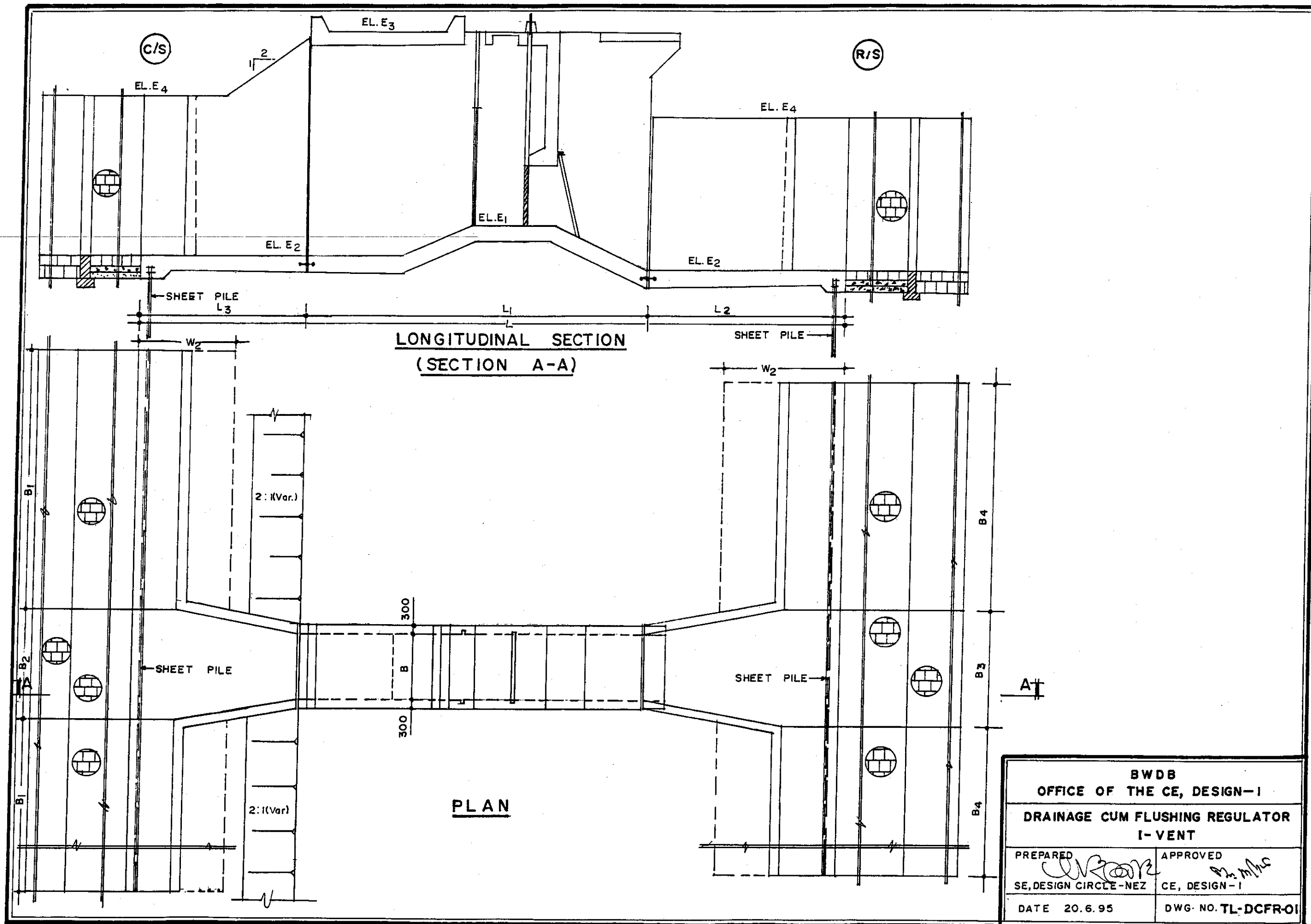


LONGITUDINAL SECTION  
(SECTION A-A)

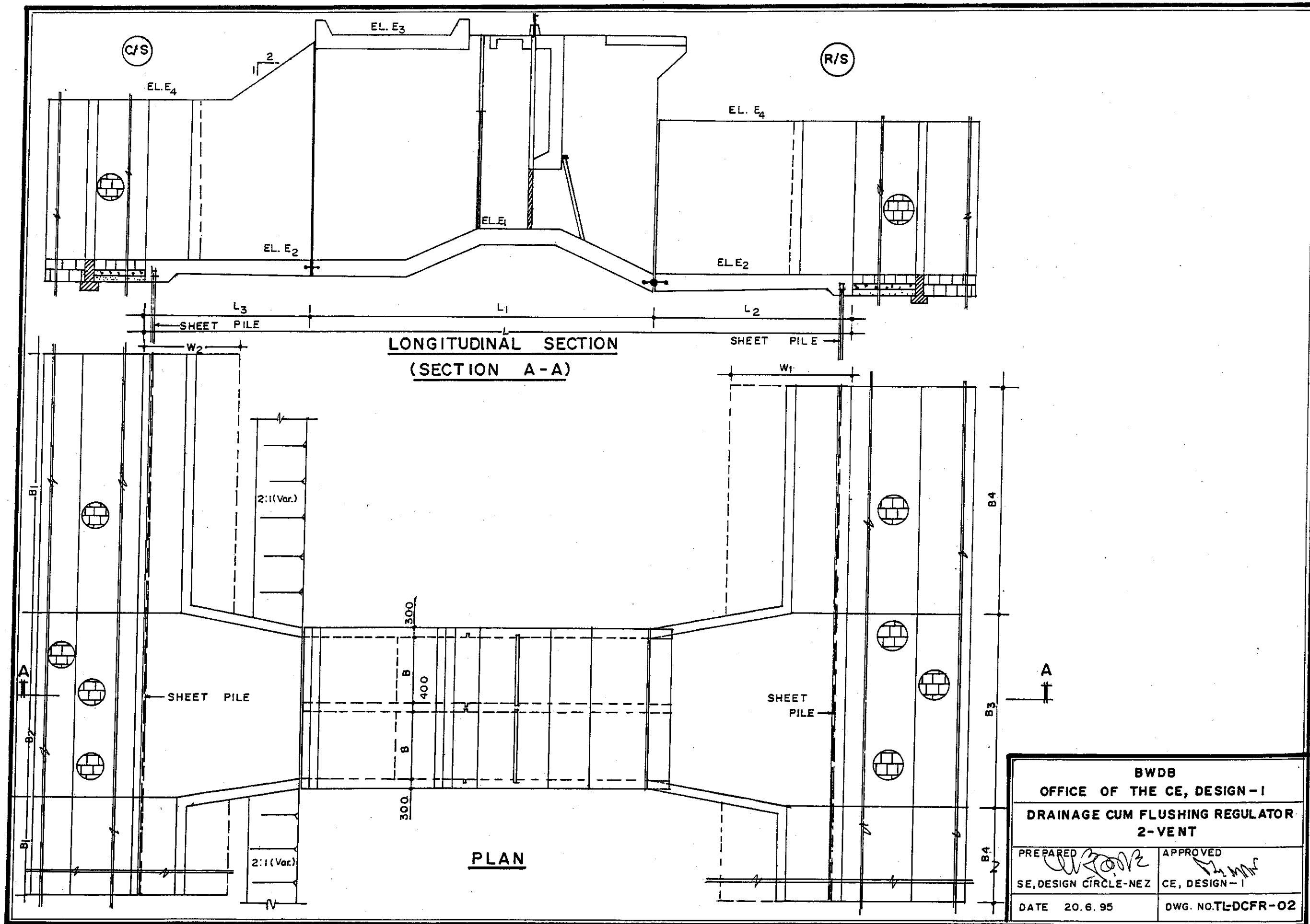


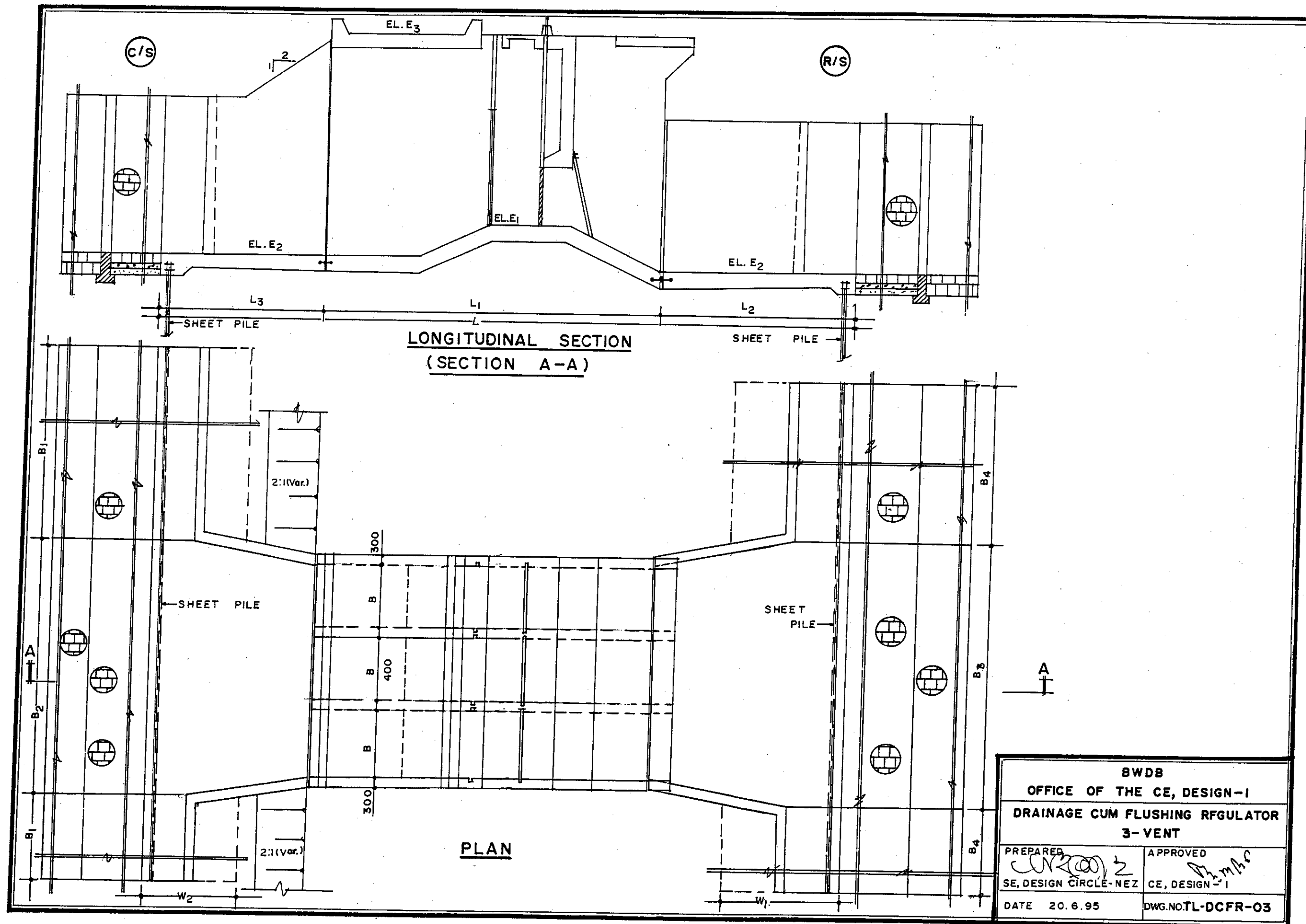
PLAN

BWDB OFFICE OF THE CE, DESIGN - I	
DRAINAGE REGULATOR TYPE-III, 3-VENT	
PREPARED <i>W. S. S. S.</i>	APPROVED <i>A. S. S. S.</i>
SE, DESIGN CIRCLE-NEZ	CE, DESIGN - I
DATE 20.6.95	DWG-NO.TL-DR-09



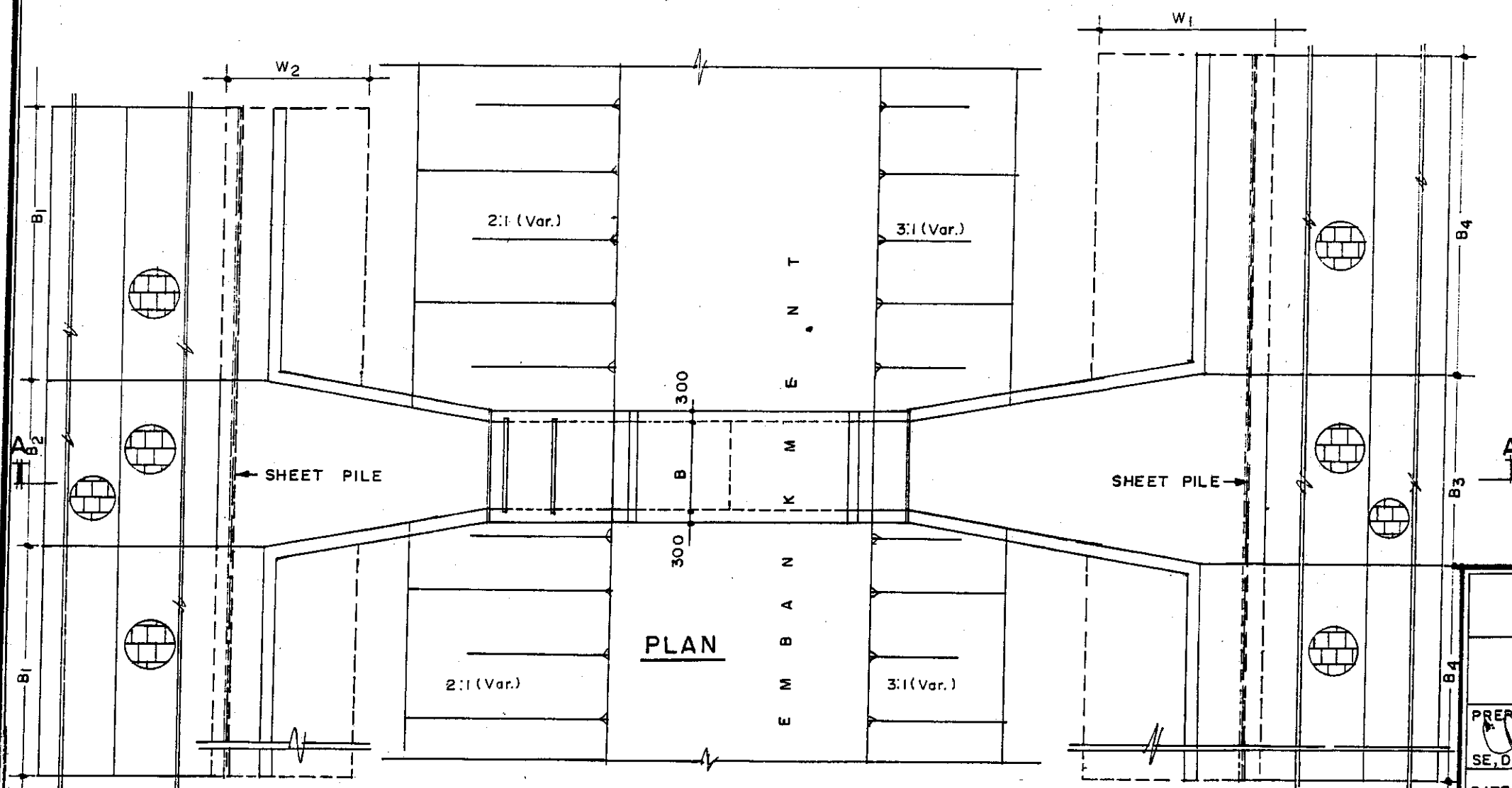
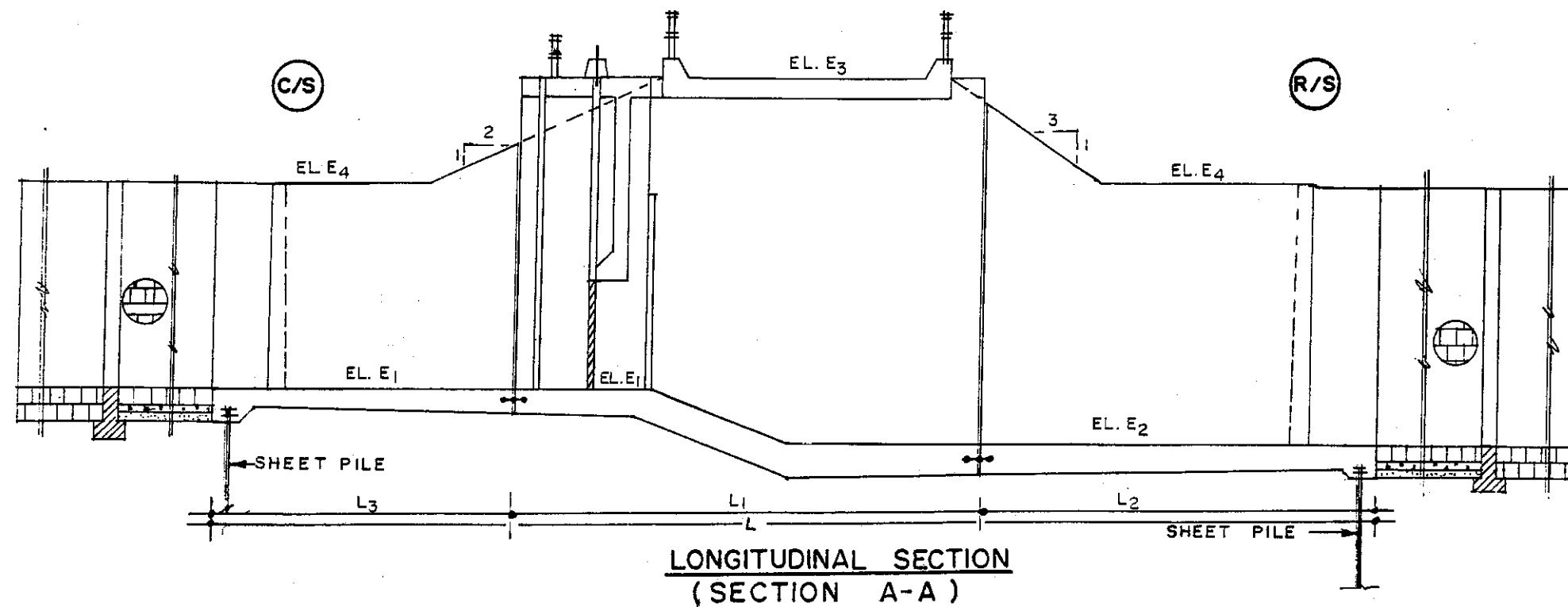
BWDB OFFICE OF THE CE, DESIGN-I	
DRAINAGE CUM FLUSHING REGULATOR I-VENT	
PREPARED SE, DESIGN CIRCLE-NEZ	APPROVED CE, DESIGN-I
DATE 20.6.95	DWG. NO. TL-DCFR-01



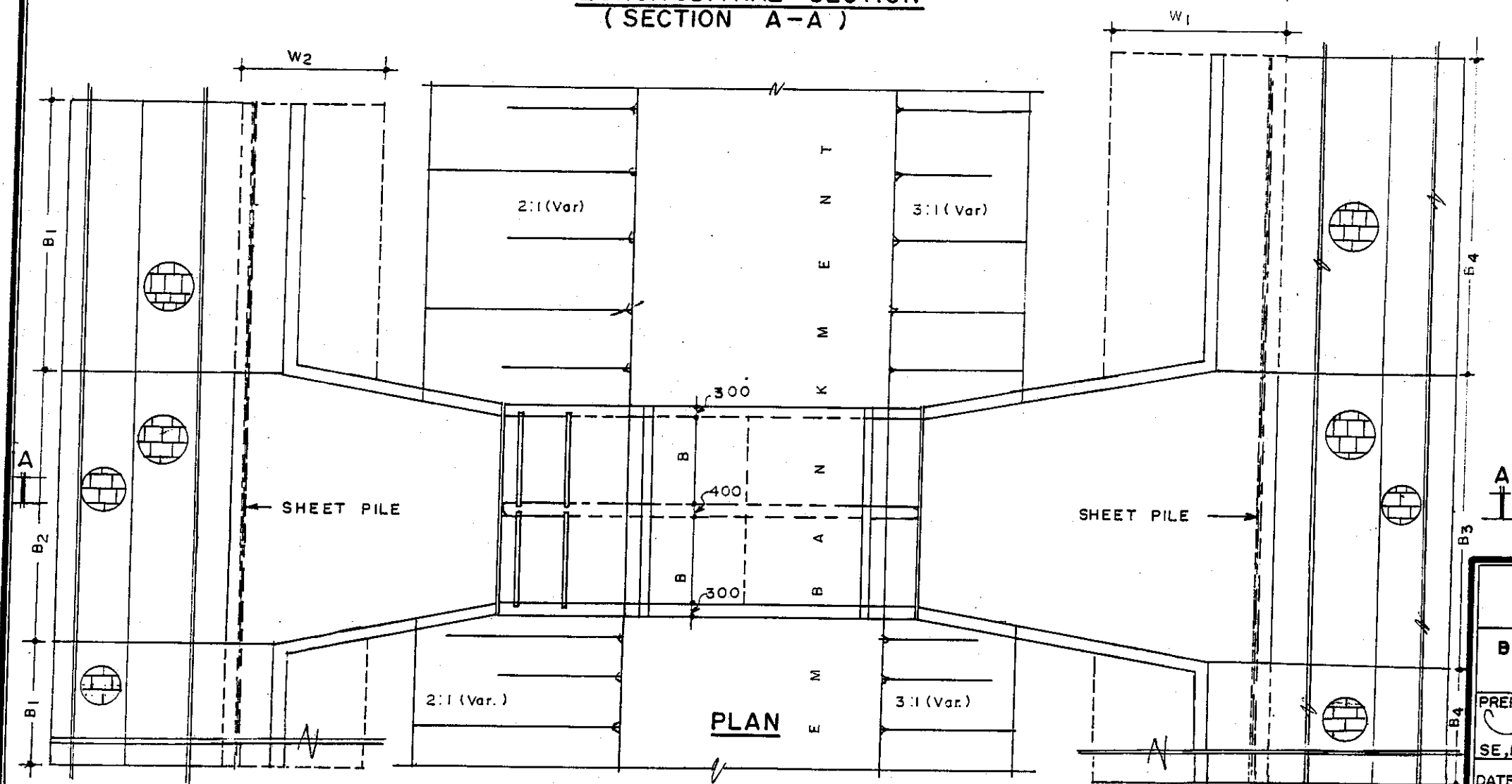
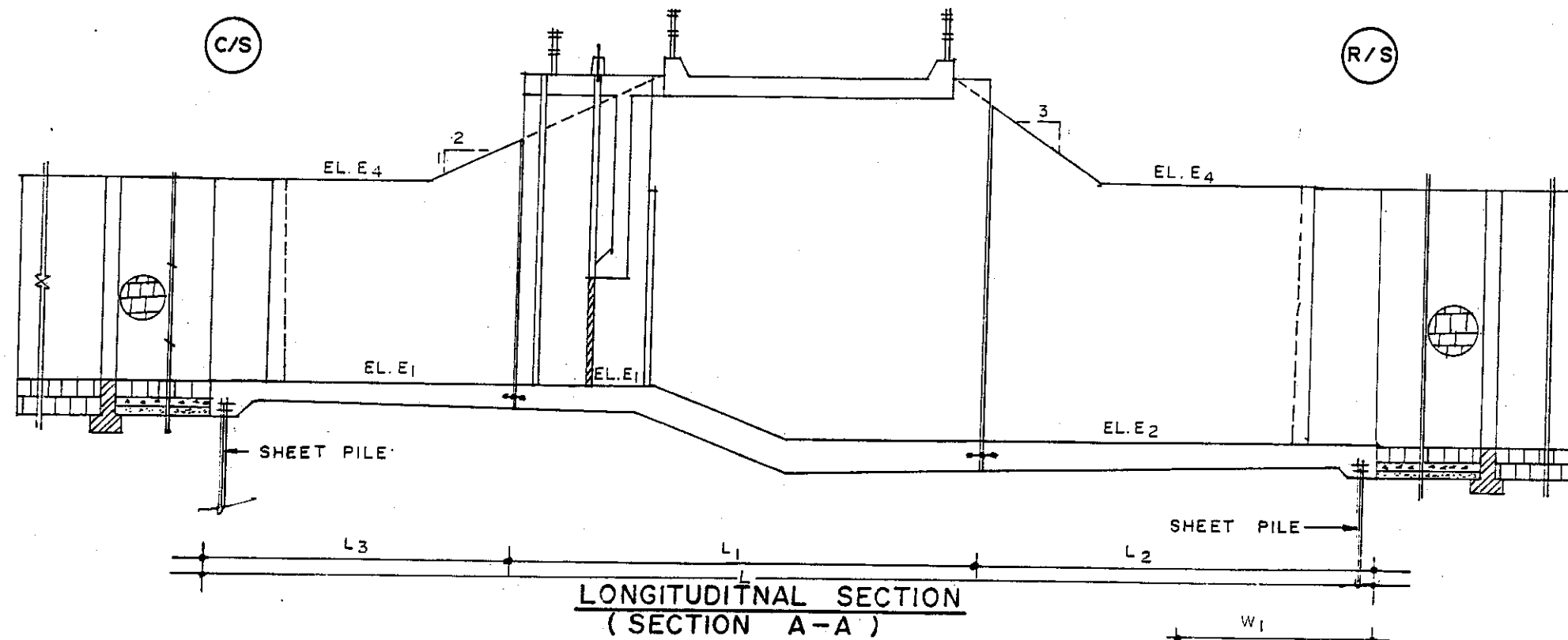



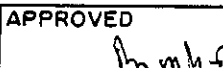
BWDB	
OFFICE OF THE CE, DESIGN-1	
DRAINAGE CUM FLUSHING REGULATOR	
3-VENT	
PREPARED <i>[Signature]</i> SE, DESIGN CIRCLE-NEZ	APPROVED <i>[Signature]</i> CE, DESIGN-1
DATE 20.6.95	DWG.NO.TL-DCFR-03

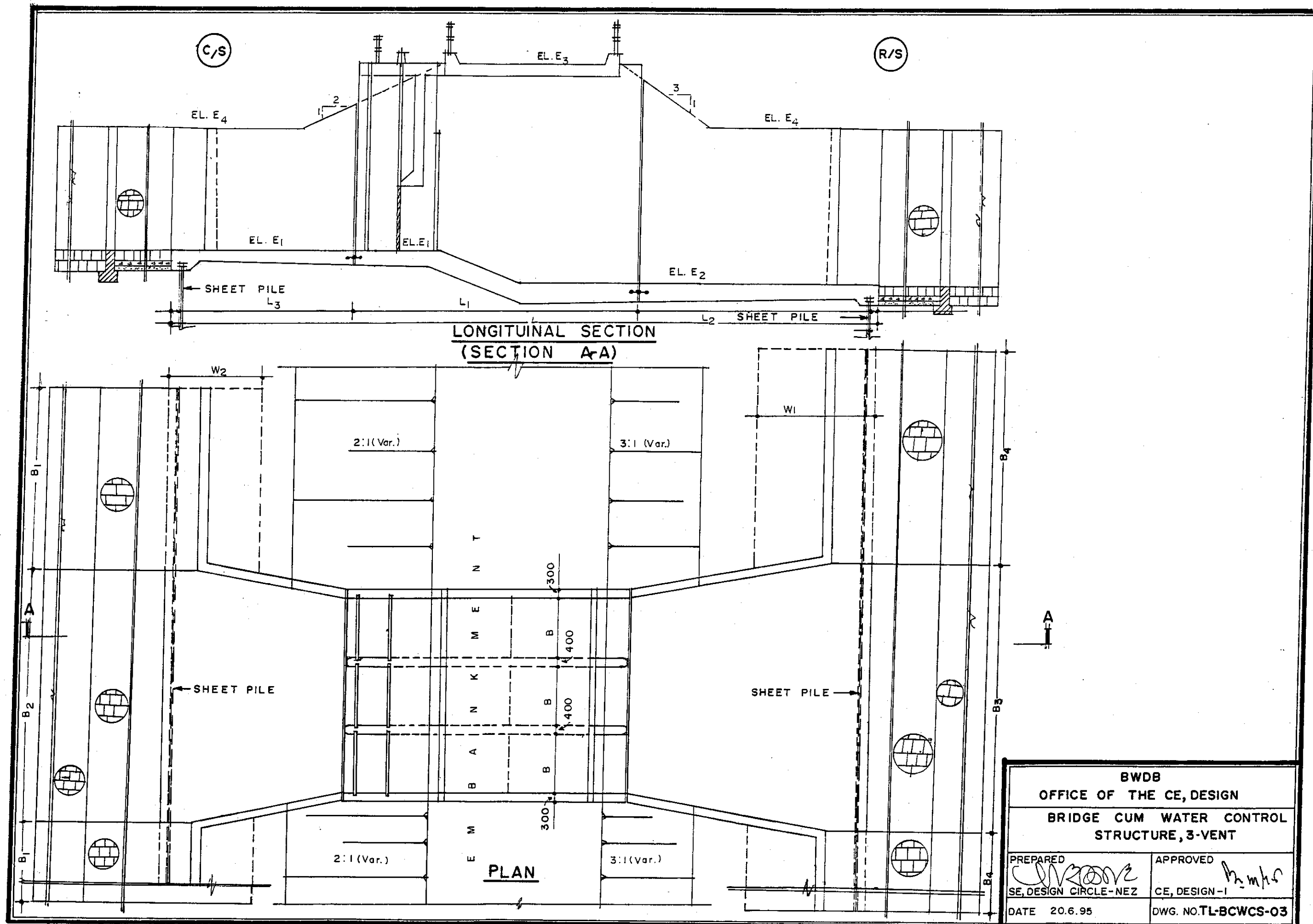




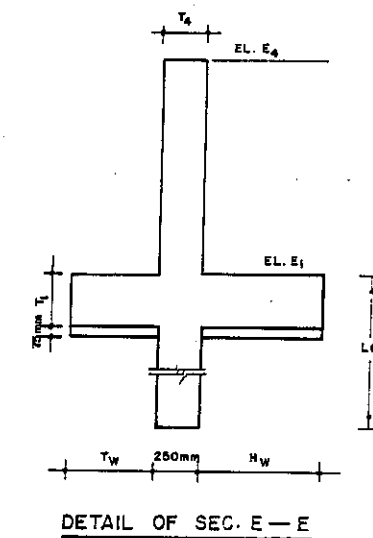
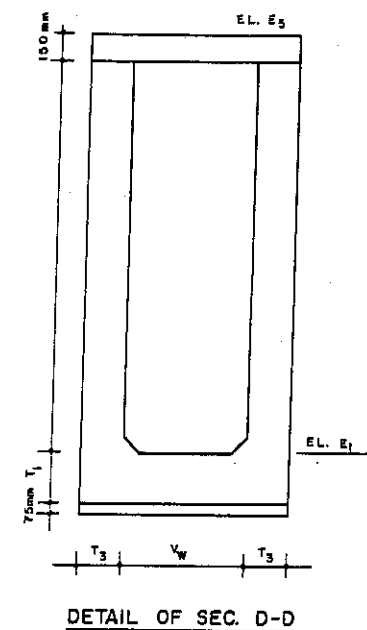
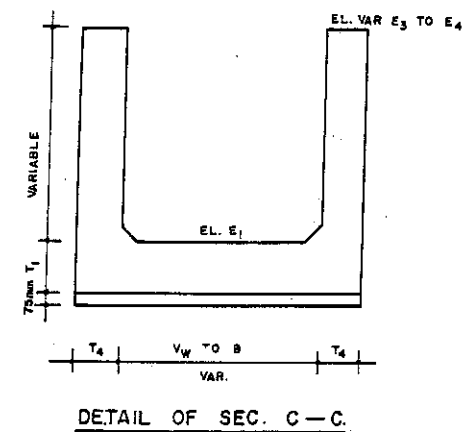
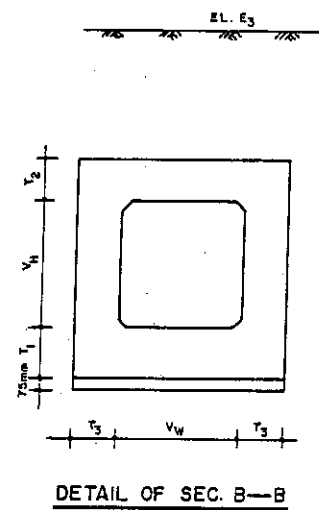
<b>BWDB</b> <b>OFFICE OF THE CE, DESIGN-I</b> <b>BRIDGE CUM WATER CONTROL</b> <b>STRUCTURE, I- VENT</b>	
<b>PREPARED</b>  SE, DESIGN CIRCLE-NEZ	<b>APPROVED</b>  CE, DESIGN-I
<b>DATE</b> 20.6.95	<b>DWG. NO.</b> TL-BCWCS-01



<b>BWDB</b> <b>OFFICE OF THE CE, DESIGN-1</b> <b>BRIDGE CUM WATER CONTROL</b> <b>STRUCTURE 2-VENT</b>	
<b>PREPARED</b>  <b>SE, DESIGN CIRCLE-NEZ</b>	<b>APPROVED</b>  <b>CE, DESIGN-1</b>
<b>DATE</b> 20.6.95	<b>DWG. NO.</b> TL-BCWCS-02







BWDB OFFICE OF THE CE, DESIGN	
TYPICAL DRAWING OF SECONDARY/TERTIARY HEAD REGULATOR (SUBMERGED BOX TYPE)	
PREPARED: <i>[Signature]</i> SE, DESIGN CIRCLE-VI	APPROVED: <i>[Signature]</i> CE, DESIGN-I
DATE: 19-6-95.	DWG. NO: TDHR-SBT-002

# NOMENCLATURE OF DIFFERENT PARAMETERS


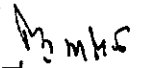
1.	VENT WIDTH	: $V_W$
2.	VENT HEIGHT	: $V_H$
3.	THICKNESS OF BASE SLAB.	: $T_1$
4.	THICKNESS OF TOP SLAB	: $T_2$
5.	THICKNESS OF ABUTMENT	: $T_3$
6.	THICKNESS OF WINGWALLS	: $T_4$
7.	LENGTH OF UPSTREAM CUT-OFF	: $LC_1$
8.	LENGTH OF DOWNSTREAM CUT-OFF	: $LC_2$
9.	WIDTH OF SECONDARY/TERTIARY CANAL.	: $B$
10.	ELEVATION OF UPSTREAM BED/ PARENT CANAL BED	: $E_1$
11.	ELEVATION OF DOWNSTREAM BED	: $E_2$
12.	ELEVATION OF PARENT CANAL EMBANKMENT TOP	: $E_3$
13.	ELEVATION OF SECONDARY/TERTIARY CANAL EMBANKMENT TOP	: $E_4$
14.	ELEVATION OF OPERATION DECK.	: $E_5$

# NOTE

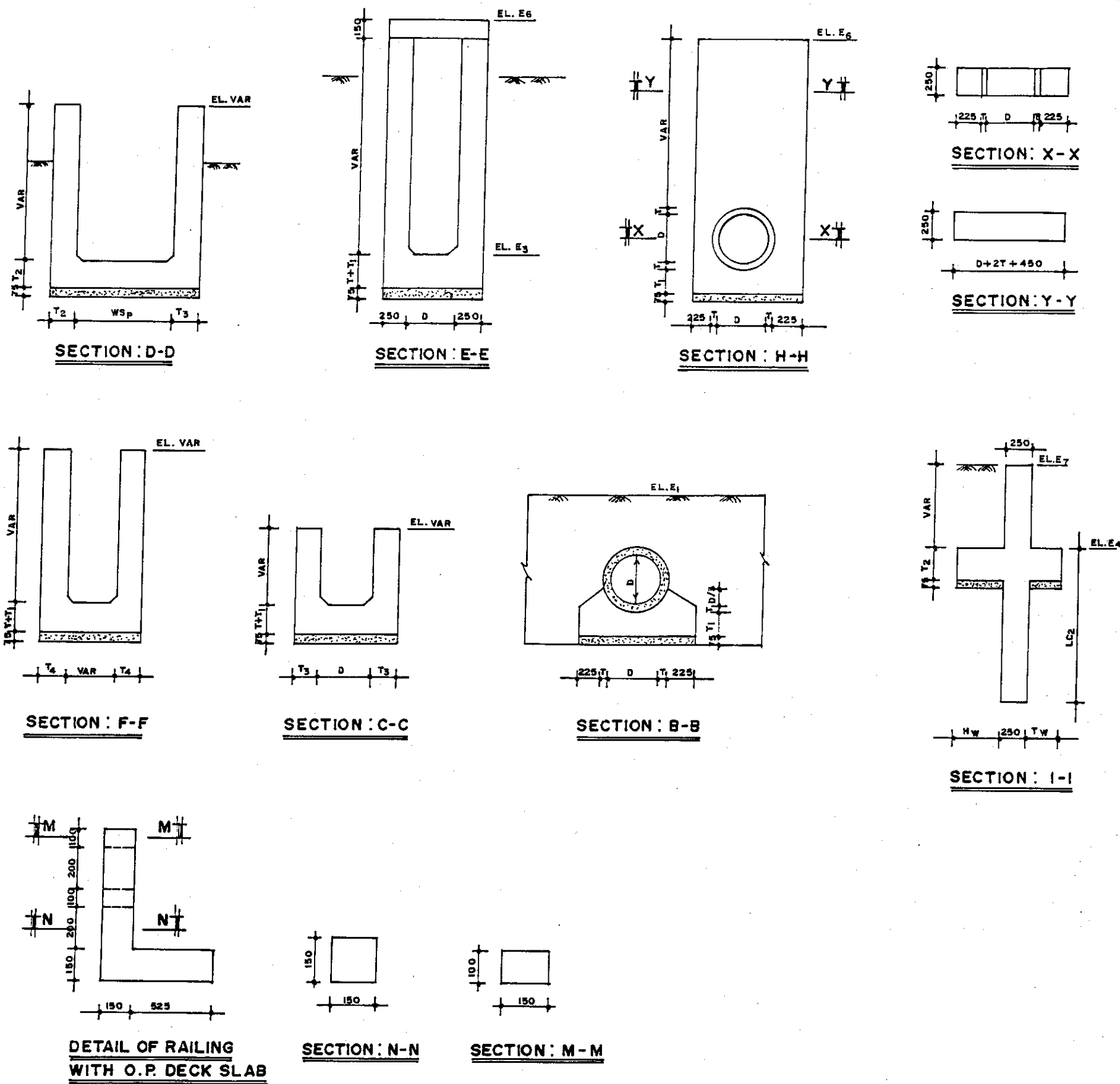
- THIS TYPICAL DRAWING OF HEAD REGULATOR IS APPLICABLE WHEN THE DIFFERENCE OF HEAD BETWEEN UPSTREAM F.S.L AND DOWNSTREAM F.S.L IS EQUAL TO OR LESS THAN 0.30m AND THE DIFFERENCE BETWEEN UPSTREAM & DOWNSTREAM BED LEVEL IS EQUAL TO OR LESS THAN 0.30m.

BWDB  
OFFICE OF THE CE, DESIGN.

TYPICAL DRAWING OF SECONDARY/TERTIARY  
HEAD REGULATOR(SUBMERGED BOX TYPE)

PREPARED  SE, DESIGN CIRCLE-VI	APPROVED  CE, DESIGN-I
DATE: 19-6-95.	DWG NO:-TDHR-SBT-003



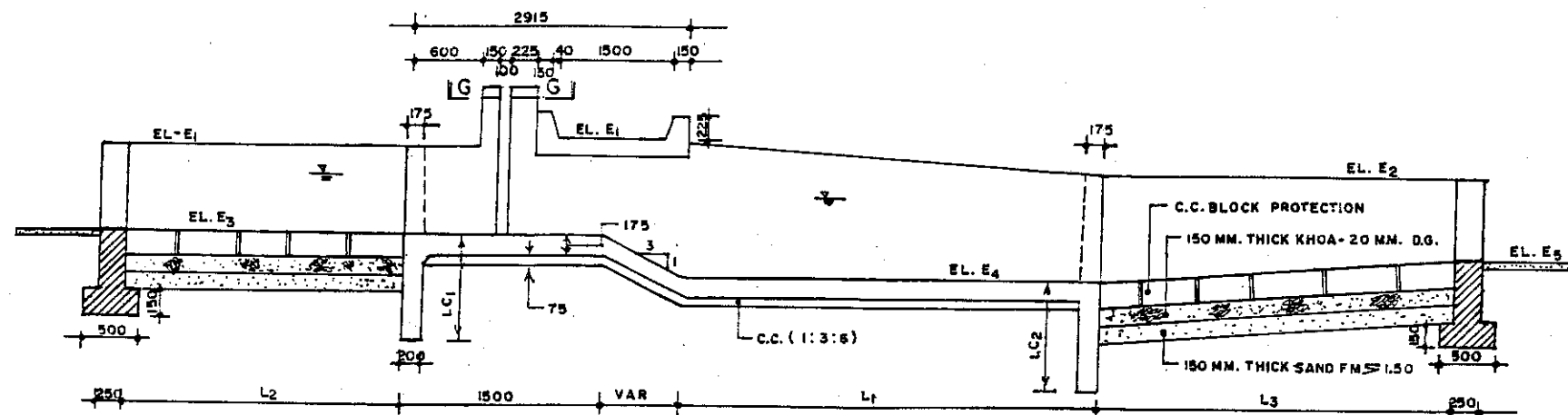


**NOMENCLATURE OF DIFFERENT PARAMETERS**

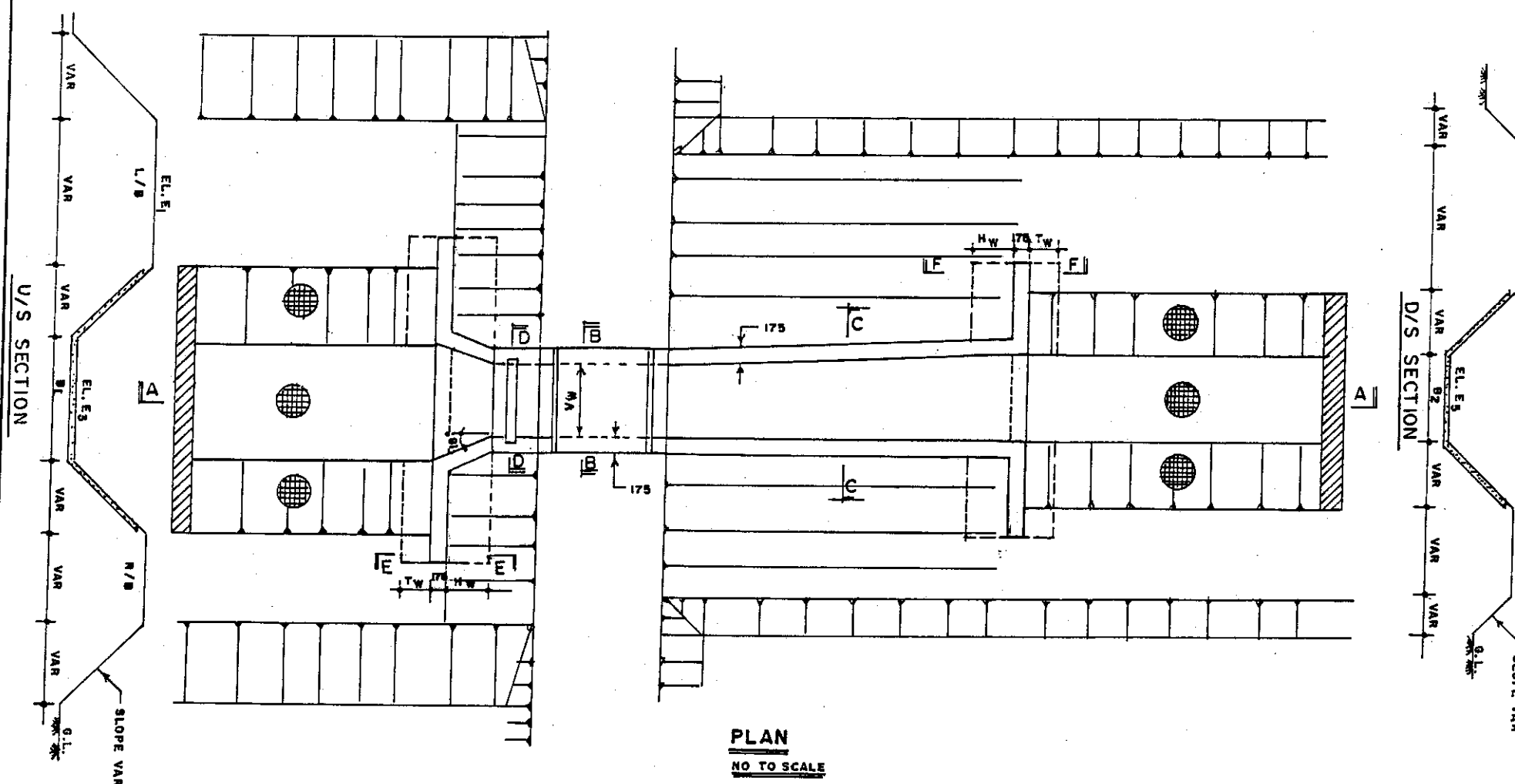
1. DIAMETER OF PIPE : D
2. THICKNESS OF PIPE : T
3. NUMBER OF PIPE : N
4. LENGTH OF STILLING POOL : L<sub>1</sub>
5. WIDTH OF STILLING POOL : WSP
6. LENGTH OF UPSTREAM BLOCK PROTECTION : L<sub>2</sub>
7. LENGTH OF DOWNSTREAM BLOCK PROTECTION : L<sub>2</sub>
8. DEPTH OF UPSTREAM CUT-OFF : LC<sub>1</sub>
9. DEPTH OF DOWNSTREAM CUT-OFF : LC<sub>2</sub>
10. THICKNESS OF FLOOR BELOW PIPE : T<sub>1</sub>
11. THICKNESS OF D/S STILLING POOL FLOOR : T<sub>2</sub>
12. THICKNESS OF SIDE WALL OF D/S STILLING POOL : T<sub>3</sub>
13. THICKNESS OF SIDE WALL AT U/S U-TYPE TRANSITION : T<sub>4</sub>
14. WIDTH OF HEEL SLAB OF RETURN WALL : H<sub>W</sub>
15. WIDTH OF TOE SLAB OF RETURN WALL : T<sub>W</sub>
16. ELEVATION OF EMBANKMENT TOP OF PARENT CANAL : E<sub>1</sub>
17. ELEVATION OF UP STREAM CANAL BED : E<sub>2</sub>
18. INVERT ELEVATION OF PIPE : E<sub>3</sub>
19. ELEVATION OF D/S STILLING POOL : E<sub>4</sub>
20. ELEVATION OF D/S CANAL BED : E<sub>5</sub>
21. ELEVATION OF OPERATION DECK SLAB : E<sub>6</sub>
22. ELEVATION OF EMBANKMENT TOP AT D/S : E<sub>7</sub>

BWDB OFFICE OF THE CE, DESIGN	
TYPICAL DRAWING OF HEAD REGULATOR (PIPE TYPE)	
PREPARED: SE, DESIGN CIRCLE-VI	APPROVED: CE, DESIGN-I
DATE: 19-6-95	DWG NO. TDHR-PT-002





SECTION A-A  
NOT TO SCALE



PLAN  
NOT TO SCALE

**NOTE :**

1. THIS TYPICAL PLAN AND SECTION OF CHECK STRUCTURE IS APPLICABLE FOR DISCHARGE LOWER 1.50 CUMEC AND HEAD DIFFERENCE NOT MORE THAN 0.91 M.
2. HEIGHT OF BARREL/HEIGHT OF WING WALL IS LIMITED TO 1.50 M.
3. THICKNESS OF BASE SLAB, SIDE WALL WILL BE 175 M.M. THICKNESS OF R.C. C. CUT-OFF WILL BE 200 M.M. & THE THICKNESS OF BRIDGE/OP DECK SLAB WILL BE 150 MM.
4. SINGLE LAYER REINFORCEMENT WILL BE USED AT BASE SLAB, SIDE WALL & TOP SLAB SATISFYING STRUCTURAL & TEMPERATURE REINFORCEMENT REQUIREMENT.
5. ALL DIMENSIONS SHOWN ARE IN MM.

BWDB  
OFFICE OF THE CE, DESIGN

TYPICAL DWG. OF CHECK STRUCTURE  
ON SECONDARY/TERTIARY CANAL

PREPARED :  
SE, DESIGN CIRCLE-VI

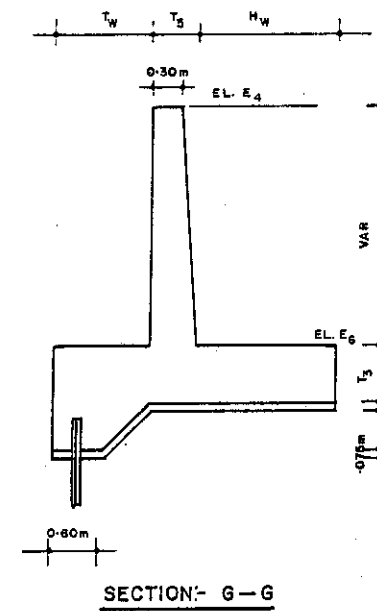
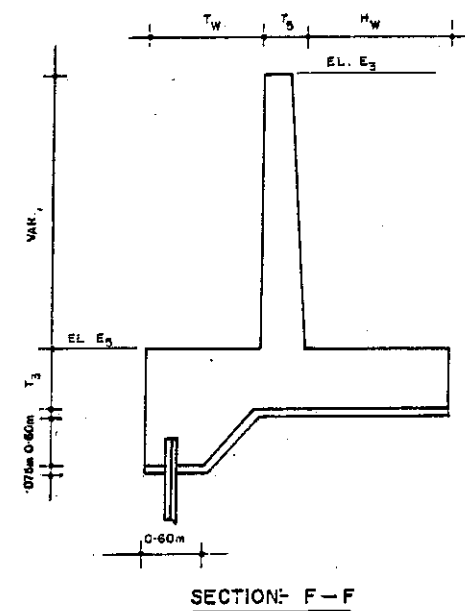
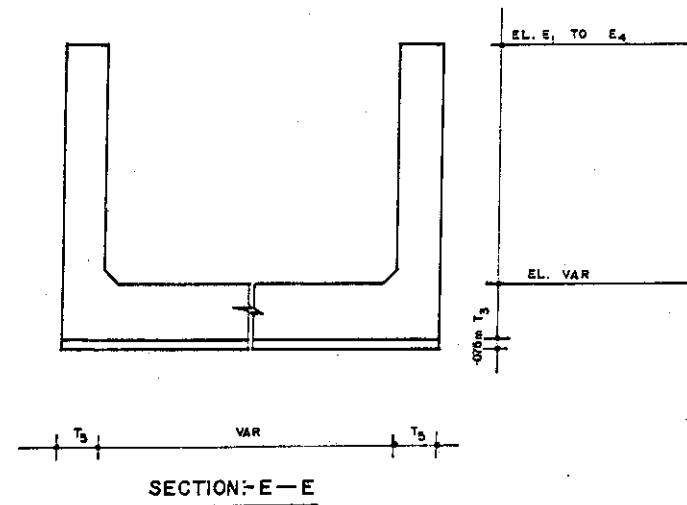
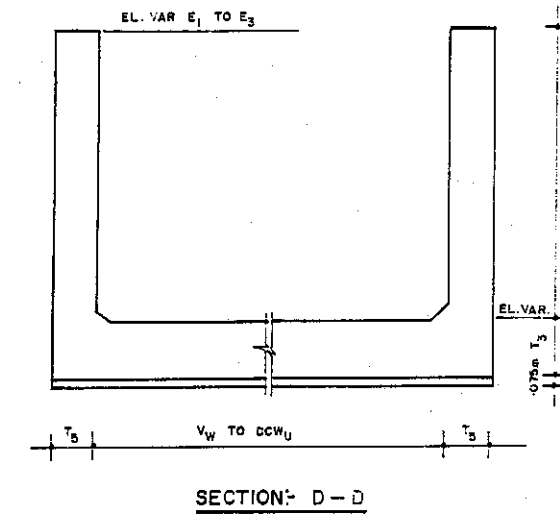
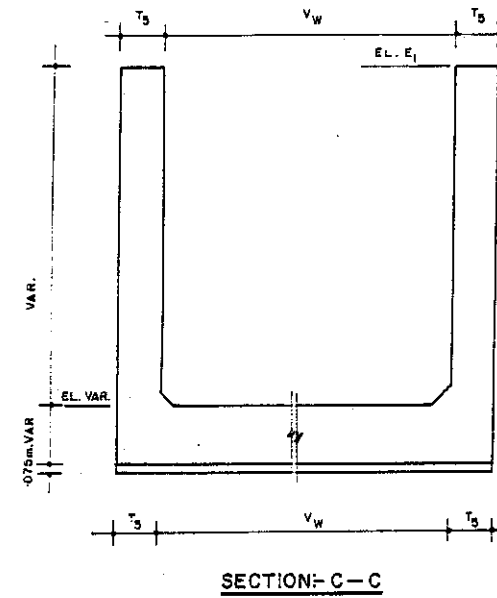
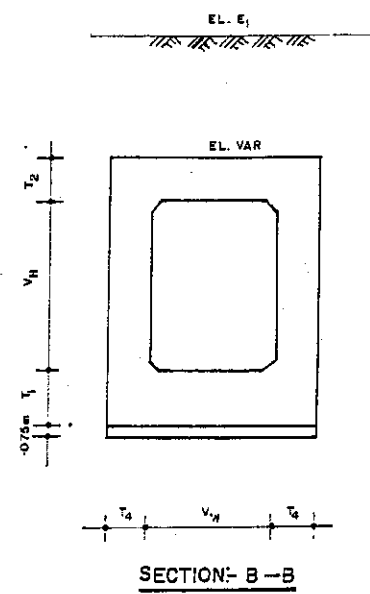
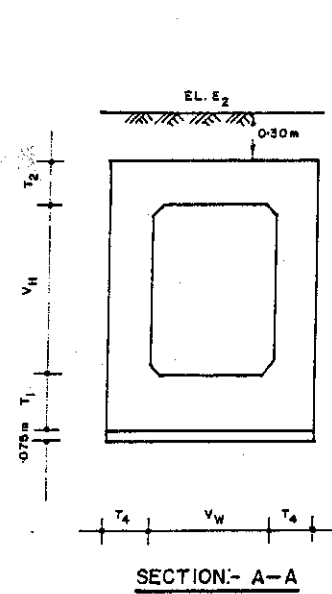
APPROVED :  
CE, DESIGN-I

DATE : 19-6-95.

DWG. NO. TDCS-001







BWDB OFFICE OF THE CE, DESIGN	
TYPICAL DRAWING OF ONE VENT BOX SYPHON	
PREPARED: SE, DESIGN CIRCLE-VI.	APPROVED: CE, DESIGN-I
DATE: 19-6-95	DWG. NO: TDBS-002

## BOX SYPHON

### NOMENCLATURE OF DIFFERENT PARAMETERS

1. WIDTH OF IRRIGATION CANAL.	: B
2. WIDTH OF EMBANKMENTS OF IRRIGATION CANAL.	: B <sub>1</sub> & B <sub>2</sub> (LEFT & RIGHT)
3. WIDTH OF DRAINAGE CHANNEL AT U/S.	: DCW <sub>U</sub>
4. WIDTH OF DRAINAGE CHANNEL AT D/S.	: DCW <sub>D</sub>
5. LENGTH OF STRAIGHT PORTION OF SYPHON BARREL.	: L <sub>1</sub>
6. LENGTH OF INCLINED PORTION OF SYPHON AT U/S SIDE.	: L <sub>2</sub>
7. LENGTH OF INCLINED PORTION OF SYPHON AT D/S SIDE.	: L <sub>3</sub>
8. LENGTH OF UPSTREAM C.C. BLOCK PROTECTION.	: L <sub>4</sub>
9. LENGTH OF DOWN STREAM C.C. BLOCK PROTECTION.	: L <sub>5</sub>
10. LENGTH OF UPSTREAM LAUNCHING APRON.	: L <sub>6</sub>
11. LENGTH OF DOWNSTREAM LAUNCHING APRON.	: L <sub>7</sub>
12. UPSTREAM CUT-OFF DEPTH.	: LC <sub>1</sub>
13. DOWNSTREAM CUT-OFF DEPTH.	: LC <sub>2</sub>
14. THICKNESS OF BOTTOM SLAB OF SYPHON BARREL.	: T <sub>1</sub>
15. THICKNESS OF TOP SLAB OF SYPHON BARREL.	: T <sub>2</sub>
16. THICKNESS OF BASE SLAB AT U/S & D/S TRANSITION.	: T <sub>3</sub>
17. THICKNESS OF SIDE WALL OF SYPHON BARREL	: T <sub>4</sub>
18. THICKNESS OF SIDE WALL AT U/S & D/S TRANSITION/ THICKNESS OF RETURN WALL.	: T <sub>5</sub>
19. ELEVATION OF LEFT/RIGHT BANK OF IRRIGATION CANAL.	: E <sub>1</sub>
20. ELEVATION OF CANAL BED OF IRRIGATION CANAL.	: E <sub>2</sub>
21. ELEVATION OF UPSTREAM SIDE BANK TOP OF DRAINAGE CHANNEL.	: E <sub>3</sub>
22. ELEVATION OF DOWNSTREAM SIDE BANK TOP OF DRAINAGE CHANNEL.	: E <sub>4</sub>
23. ELEVATION OF UPSTREAM SIDE BED OF DRAINAGE CHANNEL.	: E <sub>5</sub>
24. ELEVATION OF DOWNSTREAM SIDE BED OF DRAINAGE CHANNEL.	: E <sub>6</sub>

BWDB  
OFFICE OF THE CE, DESIGN

TYPICAL DRAWING OF ONE VENT  
BOX SYPHON

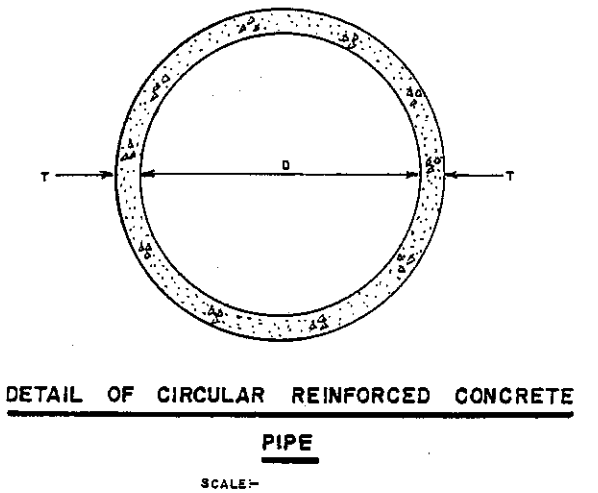
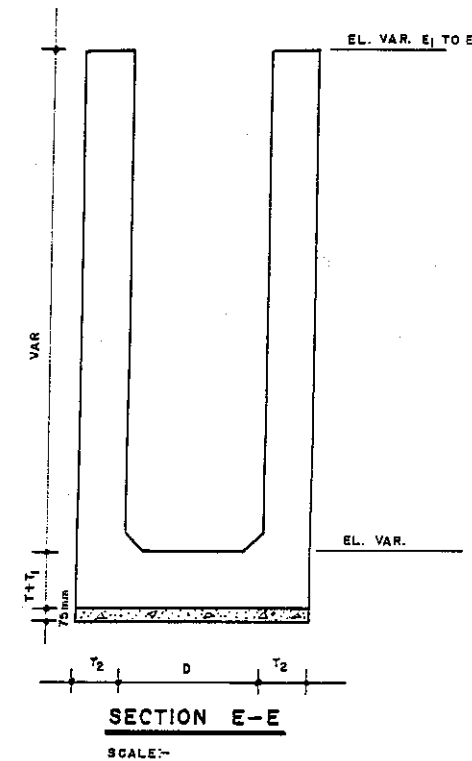
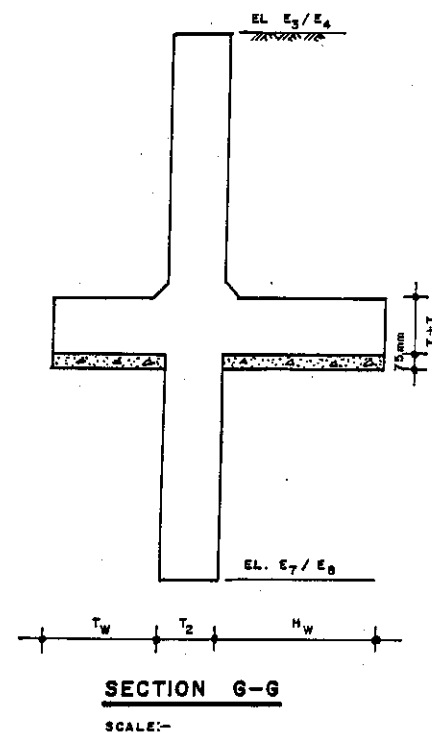
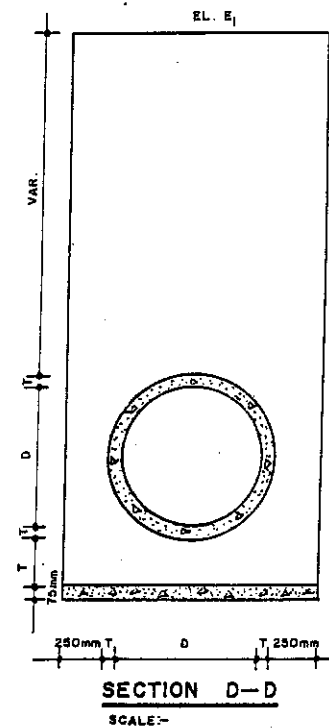
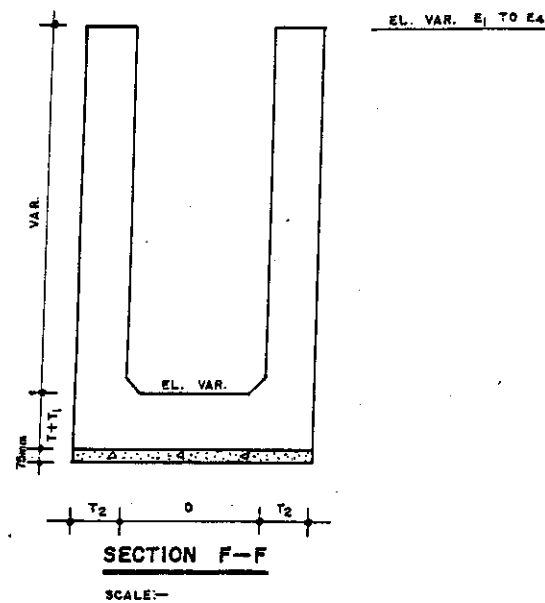
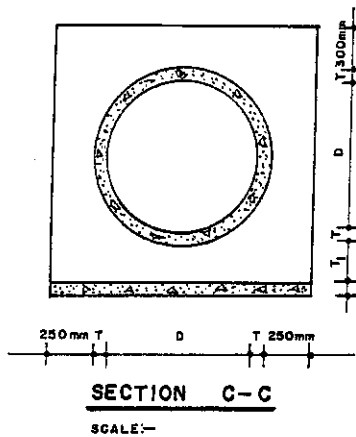
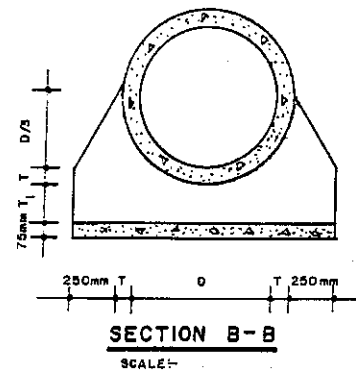
PREPARED:  
SE, DESIGN CIRCLE-VI.

APPROVED:  
CE, DESIGN -1

DATE: 19-6-95.

DWG. NO:-TDBS-003





BWDB OFFICE OF THE CE, DESIGN	
TYPICAL DRAWING OF PIPE SYPHON UNDER SECONDARY/TERTIARY CANAL.	
PREPARED: SE, DESIGN CIRCLE-VI	APPROVED: CE, DESIGN-I
DATE:- 19-6-95.	DWG. NO:- TDPS-002

## PIPE SYPHON

### NOMENCLATURE OF DIFFERENT PARAMETERS

1.	WIDTH OF IRRIGATION CANAL.	: B
2.	WIDTH OF EMBANKMENTS OF IRRIGATION CANAL.	: B <sub>1</sub> & B <sub>2</sub> (LEFT & RIGHT)
3.	WIDTH OF DRAINAGE CHANNEL AT U/S	: DCW <sub>U</sub>
4.	WIDTH OF DRAINAGE CHANNEL AT D/S.	: DCW <sub>D</sub>
5.	LENGTH OF UPSTREAM INCLINED PORTION OF SYPHON.	: L <sub>1</sub>
6.	LENGTH OF DOWNSTREAM INCLINED PORTION OF SYPHON.	: L <sub>2</sub>
7.	LENGTH OF UPSTREAM BLOCK PROTECTION.	: L <sub>3</sub>
8.	LENGTH OF DOWNSTREAM BLOCK PROTECTION.	: L <sub>4</sub>
9.	LENGTH OF UPSTREAM CUT-OFF.	: LC <sub>1</sub>
10.	LENGTH OF DOWNSTREAM CUT-OFF.	: LC <sub>2</sub>
11.	WIDTH OF HEEL SLAB OF RETURN WALL.	: H <sub>w</sub>
12.	WIDTH OF TOE SLAB OF RETURN WALL.	: T <sub>w</sub>
13.	INSIDE DIAMETER OF PIPE SYPHON.	: D
14.	SHELL THICKNESS OF PIPE.	: T
15.	THICKNESS OF FLOOR BELOW PIPE.	: T <sub>1</sub>
16.	ELEVATION OF LEFT/RIGHT BANK OF IRRIGATION CANAL.	: E <sub>1</sub>
17.	ELEVATION OF CANAL BED OF IRRIGATION CANAL	: E <sub>2</sub>
18.	ELEVATION OF UPSTREAM BANK TOP OF DRAINAGE CHANNEL.	: E <sub>3</sub>
19.	ELEVATION OF DOWNSTREAM BANK TOP OF DRAINAGE CHANNEL.	: E <sub>4</sub>
20.	ELEVATION OF UPSTREAM BED OF DRAINAGE CHANNEL.	: E <sub>5</sub>
21.	ELEVATION OF DOWNSTREAM BED OF DRAINAGE CHANNEL.	: E <sub>6</sub>

## NOTE

1. WHEN THE DIFFERENCE BETWEEN INVERT LEVEL OF SYPHON AND DRAINAGE BED IS LESS THAN 0.60 METRE, TRANSITION MAY BE DONE IN PUCCA FLOOR ONLY. C.C BLOCK PROTECTION WILL BE LEVELLED AT UPSTREAM/DOWNSTREAM DRAINAGE BED.
2. IN CASES WHEN THE IRRIGATION CANAL BED IS MUCH HIGHER THAN DRAINAGE BED, INVERT LEVEL OF SYPHON WILL BE AT SAME LEVEL WITH UPSTREAM/DOWNSTREAM DRAINAGE BED.

BWDB  
OFFICE OF THE CE, DESIGN

TYPICAL DRAWING OF PIPE SYPHON  
UNDER SECONDARY/TERTIARY CANAL

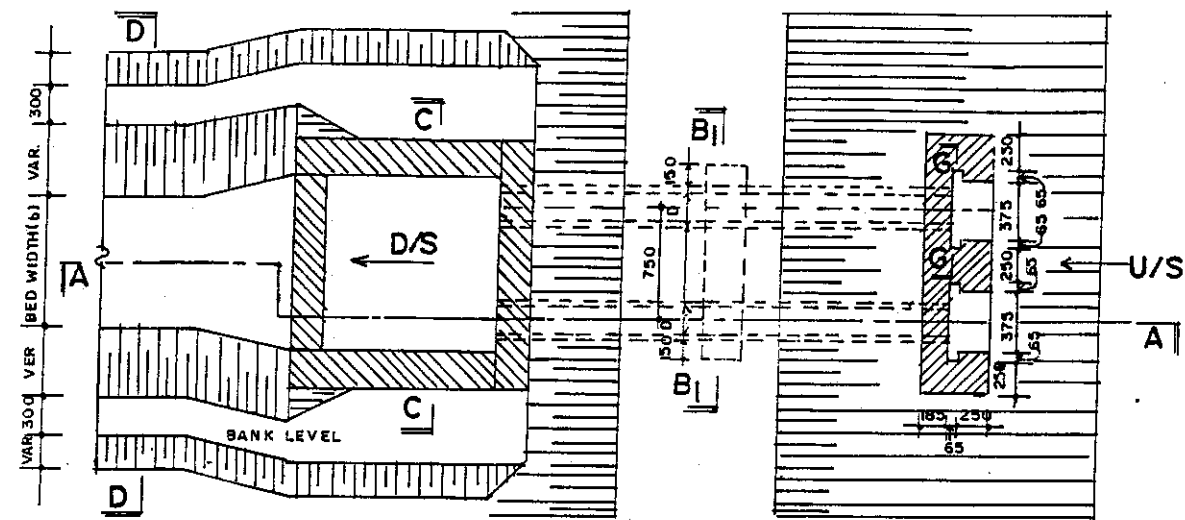
PREPARED:  
*[Signature]*  
SE, DESIGN CIRCLE-VI

APPROVED:  
*[Signature]*  
CE, DESIGN-I

DATE: 19-6-95

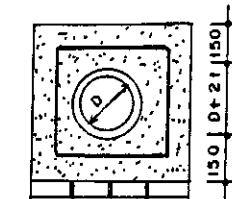
DWG. NO:- TDPS-003



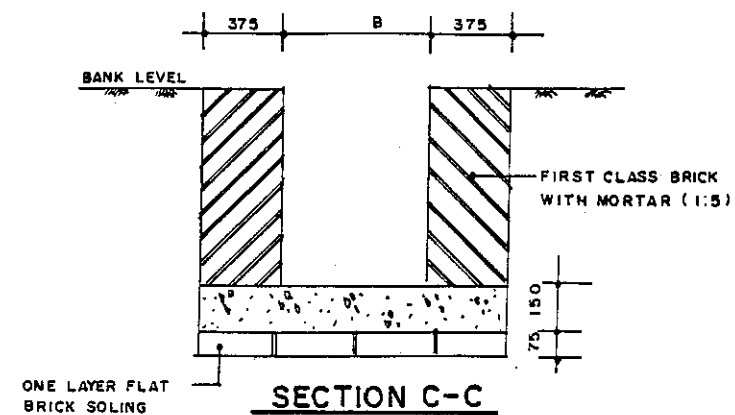


PLAN

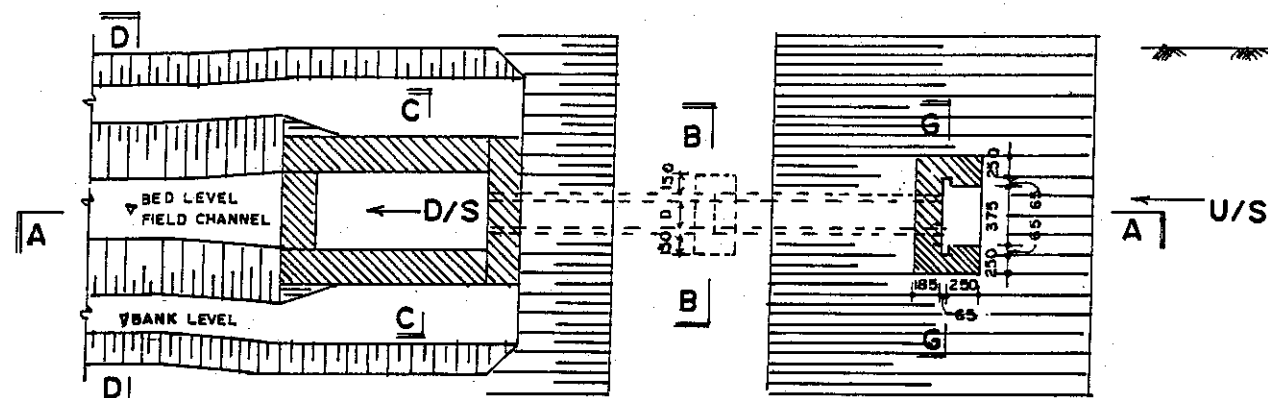
(DOUBLE PIPE TURNOUT, DISCHARGE MORE THAN 0.10 CUMEC)



SECTION B-B

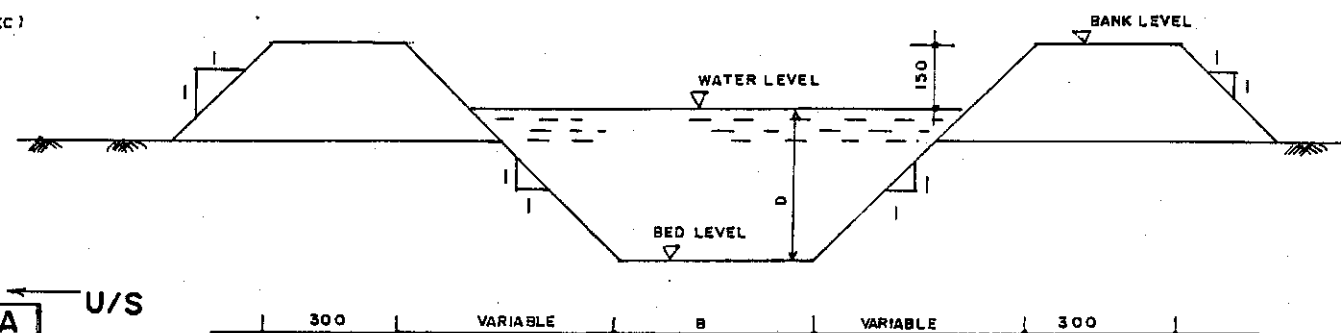


SECTION C-C

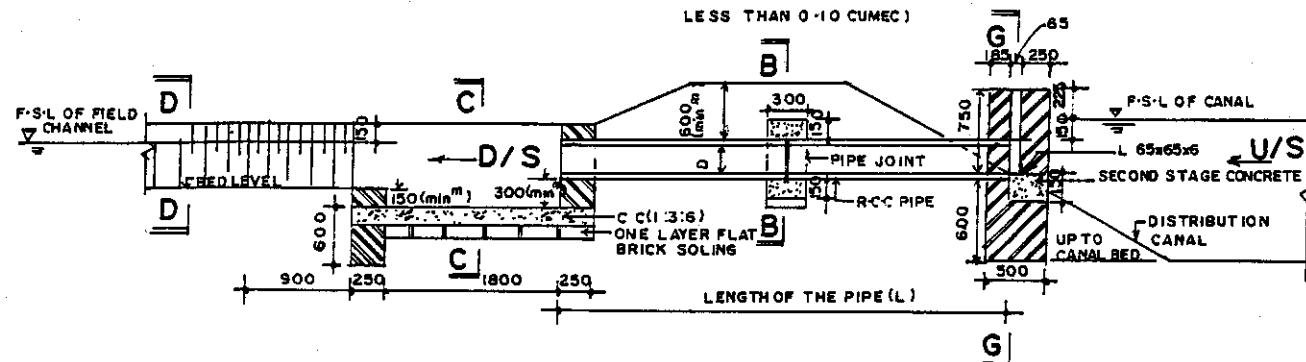


PLAN

(SINGLE PIPE TURNOUT DISCHARGE LESS THAN 0.10 CUMEC)

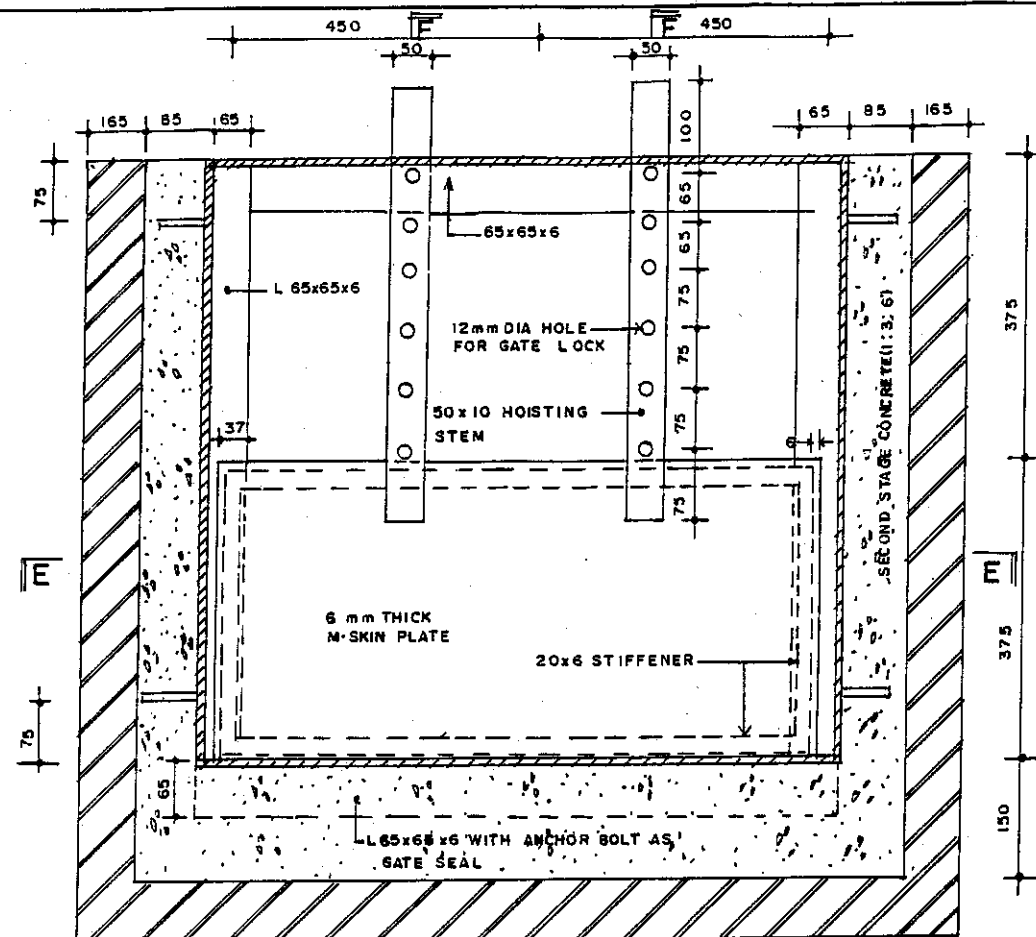


SECTION D-D

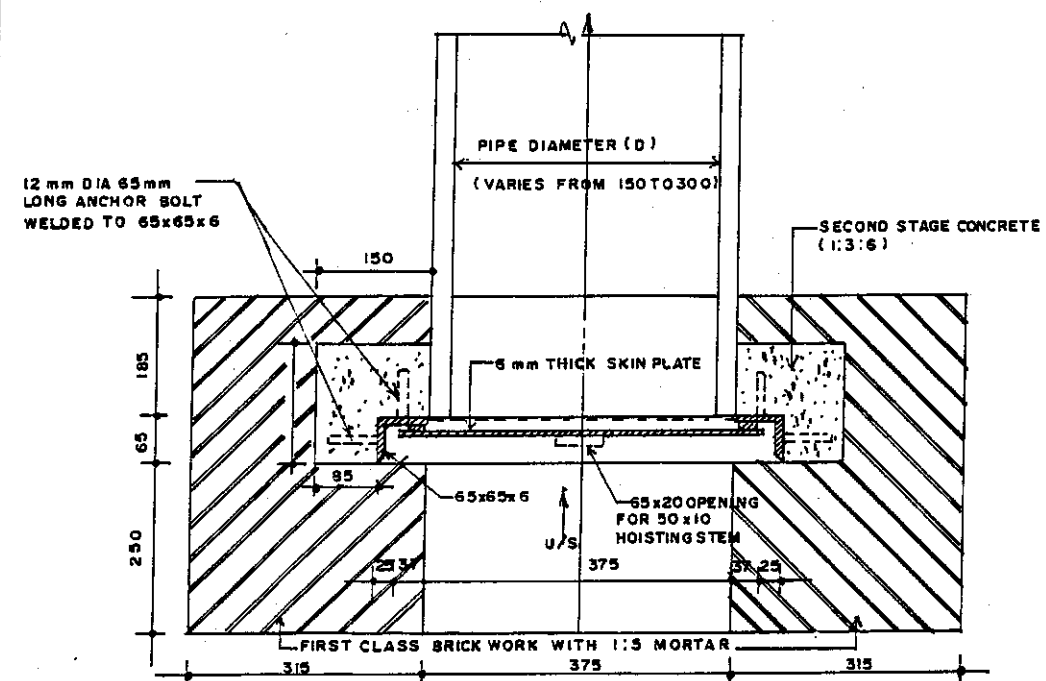


SECTION A-A

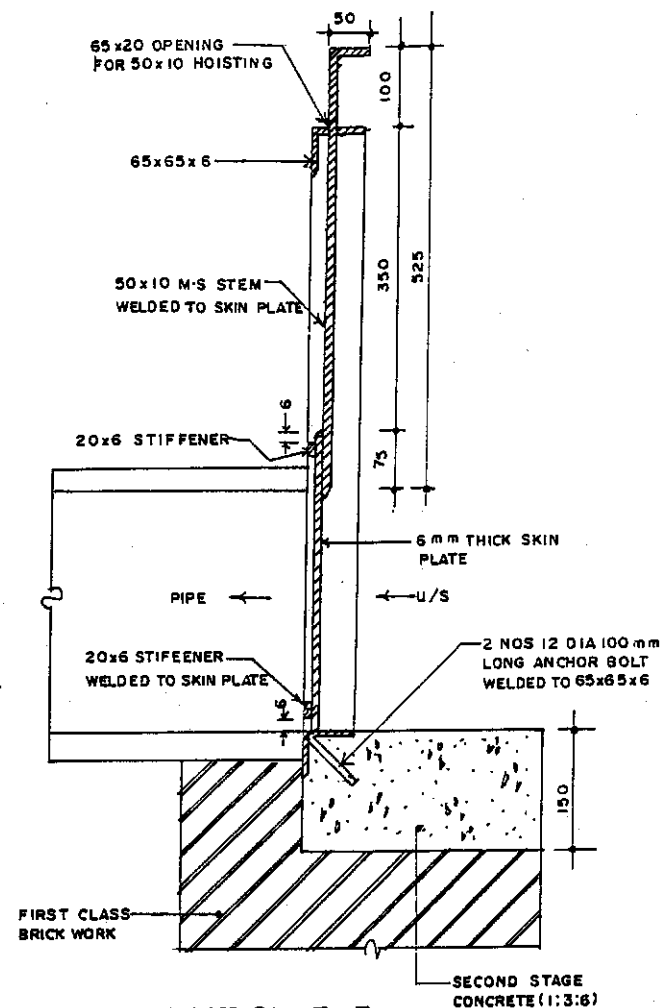
BWDB OFFICE OF THE CE, DESIGN	
TYPICAL DRAWING OF FIELD TURNOUT	
PREPARED: SE, DESIGN CIRCLE-VI	APPROVED: CE, DESIGN-I
DATE: 19-6-95	DWG. NO. TDFT-001



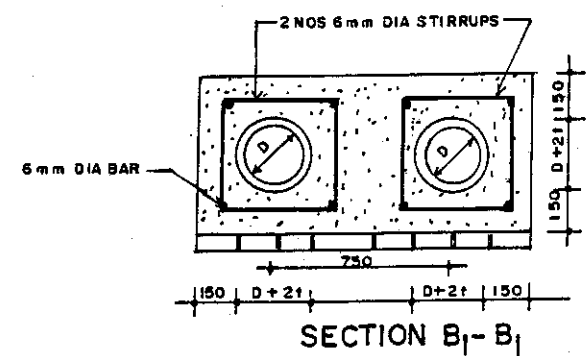
SECTIONAL ELEVATION FROM U/S (SECTION G-G)



SECTION E-E



SECTION F-F



SECTION B<sub>1</sub>-B<sub>1</sub>

DISCHARGE CUMEC	DIA OF PIPE (D) IN mm	BASIN WIDTH (B) IN mm
UP TO .03	150	750
.03 TO .05	200	
.05 TO .065	225	900
.065 TO .08	250	
.08 TO .10	300	
MORE THAN 0.10	TWO PIPES OF EQUAL DIA	1300

PIPE DIAMETER FOR DIFFERENT DISCHARGE

#### NOTES

1. EARTH FILLING SHALL BE COMPACTED TO 85% OF MAX<sup>M</sup> DRY DENSITY.
2. THE COMPLETE GATE ASSEMBLY IN ENDING LEAF, FRAME SEAL HOISTING STEM ETC. SHALL BE TRUE TO DRAWING.
3. METAL SURFACE TO BE PAINTED IN CONFORMITY WITH THE SPECIFICATION.
4. PIPE DIMENSIONS SHALL BE STANDARD (ASTM) SPECIFICATION.
5. 600mm MIN<sup>M</sup> SOIL COVERAGE ABOVE THE PIPE SHALL BE PROVIDED WHERE EMBANKMENT WIDTH LESS THAN 2400 mm AND 900 mm MIN<sup>M</sup> COVERAGE WHERE EMBANKMENT WIDTH 2400mm OR GREATER. IF NECESSARY EMBANKMENT HEIGHT MAY BE INCREASED. IN THAT CASE THE TOP WIDTH OF EMBANKMENT SHALL BE SAME AS PER DESIGNED LONG AND CROSS SECTION.
6. F.S.L AND DISCHARGE OF FIELD CHANNELS SHALL BE OBTAINED FROM LONG AND CROSS SECTION OF PARENT CANAL.
7. IF THE DISCHARGE OF ANY FIELD CHANNEL IS MORE THAN 0.10 CUMEC TWO PIPES OF SAME DIA SHALL BE USED.
8. DIMENSIONS SHOWN ARE IN mm.

BWDB  
OFFICE OF THE CE, DESIGN

#### TYPICAL DRAWING OF FIELD TURNOUT

PREPARED :  
SE, DESIGN CIRCLE-VI

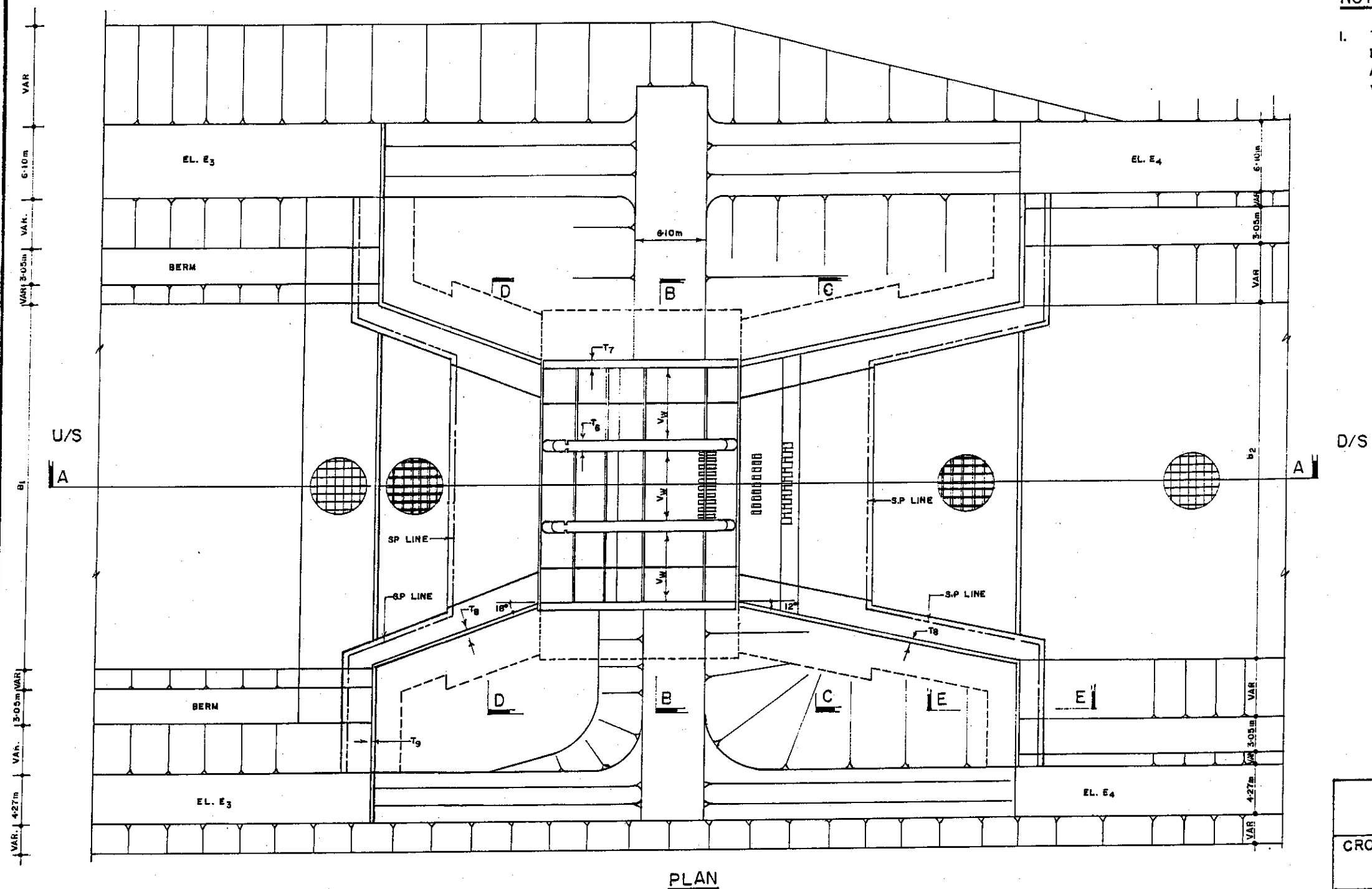
APPROVED :  
CE, DESIGN-I

DATE: 19-6-95.

DWG. NO. TDFT-002

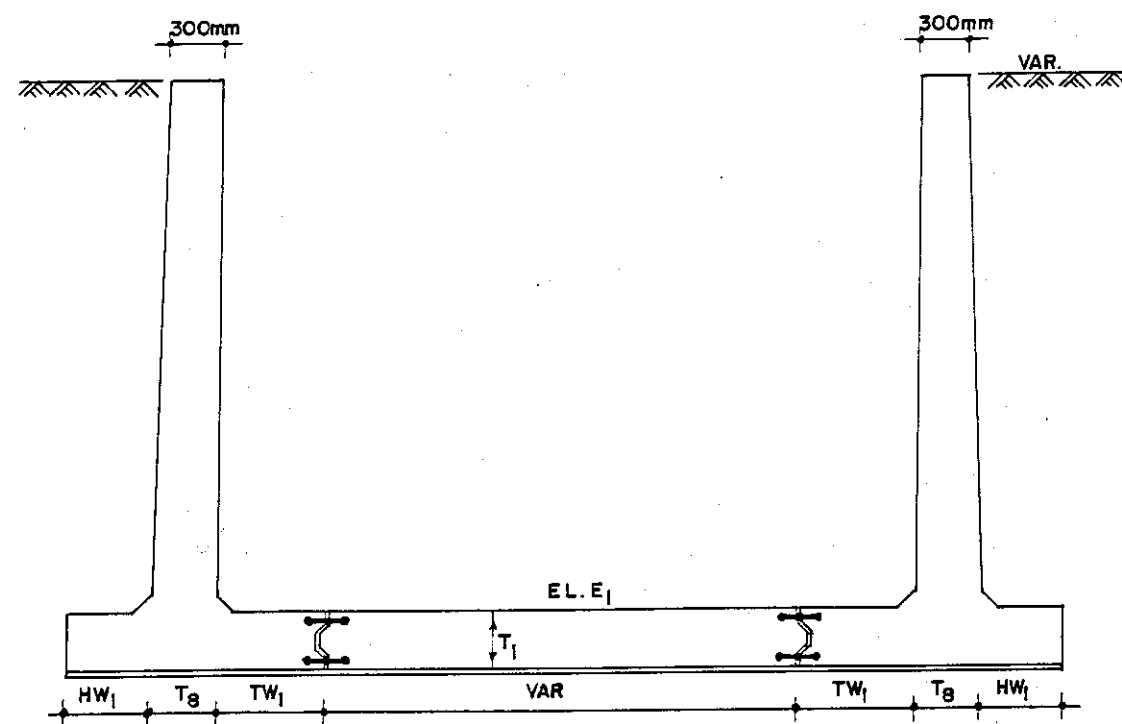
**NOTE :-**

- I. THIS TYPE OF CROSS REGULATOR WITH RADIAL GATE IS SUITABLE TO PROVIDE AT MAIN IRRIGATION CANAL AND THE VENT WIDTH IS BETWEEN 6.10m TO 3.66m.

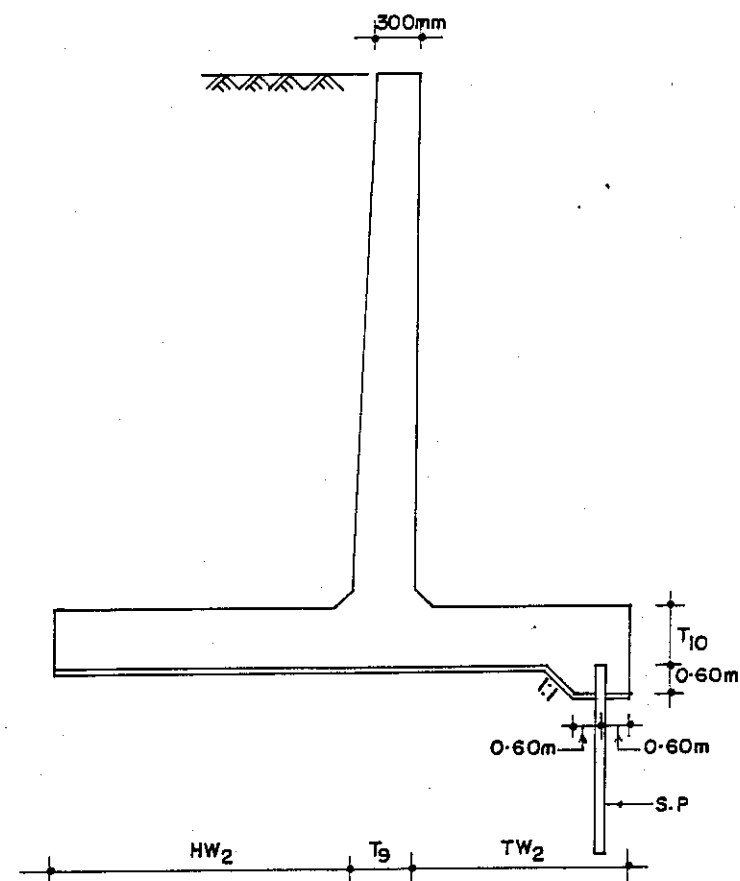


BWDB OFFICE OF THE CE, DESIGN	
CROSS REGULATOR WITH RADIAL GATE ON MAIN IRRIGATION CANAL PLAN OF CROSS REGULATOR.	
PREPARED <i>[Signature]</i> SE, DESIGN CIRCLE-VI	APPROVED <i>[Signature]</i> CE, DESIGN.
DATE:	DWG. NO: TD-CR-001





SECTION: D-D



SECTION: E-E

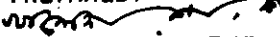
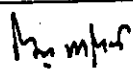
BWDB OFFICE OF THE CE, DESIGN	
CROSS REGULATOR WITH RADIAL GATE ON MAIN IRRIGATION CANAL SECTION DETAILS.	
PREPARED <i>[Signature]</i> SE, DESIGN CIRCLE-VI	APPROVED <i>[Signature]</i> CE, DESIGN
DATE:	DWG NO: TD-CR-003

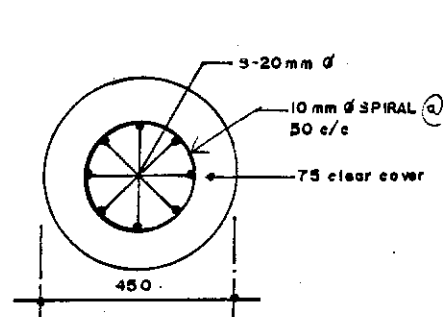
# NOMENCLATURE OF DIFFERENT PARAMETERS

1. WIDTH OF CANAL AT UPSTREAM	= B <sub>1</sub>
2. WIDTH OF CANAL AT DOWNSTREAM	= B <sub>2</sub>
3. WIDTH OF VENT	= V <sub>w</sub>
4. LENGTH OF UPSTREAM FLOOR	= L <sub>1</sub>
5. LENGTH OF DOWNSTREAM FLOOR	= L <sub>2</sub>
6. LENGTH OF STILLING BASIN	= L <sub>SB</sub>
7. LENGTH OF UPSTREAM C.C BLOCK PROTECTION.	= L <sub>3</sub>
8. LENGTH OF DOWNSTREAM C.C BLOCK PROTECTION.	= L <sub>4</sub>
9. LENGTH OF UPSTREAM LAUNCHING APRON	= L <sub>5</sub>
10. LENGTH OF DOWNSTREAM LAUNCHING APRON	= L <sub>6</sub>
11. THICKNESS OF UPSTREAM FLOOR.	= T <sub>1</sub>
12. THICKNESS OF CENTRAL FLOOR.	= T <sub>2</sub> TO T <sub>3</sub>
13. THICKNESS OF DOWNSTREAM FLOOR.	= T <sub>3</sub> TO T <sub>4</sub>
14. THICKNESS OF OPERATION DECK SLAB	= T <sub>5</sub>
15. THICKNESS OF PIER	= T <sub>6</sub>
16. THICKNESS OF ABUTMENT	= T <sub>7</sub>
17. THICKNESS OF WING WALL	= T <sub>8</sub>
18. THICKNESS OF RETURN WALL	= T <sub>9</sub>
19. WIDTH OF ABUTMENT TOE	= T <sub>w</sub>
20. WIDTH OF ABUTMENT HEEL	= H <sub>w</sub>
21. WIDTH OF WING WALL TOE	= T <sub>w1</sub>
22. WIDTH OF WING WALL HEEL.	= H <sub>w1</sub>
23. ELEVATION OF UPSTREAM CANAL BED.	= E <sub>1</sub>
24. ELEVATION OF DOWNSTREAM CANAL BED	= E <sub>2</sub>
25. ELEVATION OF UPSTREAM EMBANKMENT TOP.	= E <sub>3</sub>
26. ELEVATION OF DOWNSTREAM EMBANKMENT TOP	= E <sub>4</sub>
27. ELEVATION OF CREST.	= E <sub>5</sub>
28. ELEVATION OF OPERATION DECK SLAB	= E <sub>6</sub>
29. ELEVATION OF BRIDGE DECK SLAB	= E <sub>7</sub>

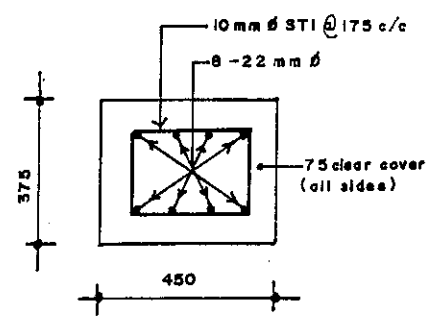
BWDB	
OFFICE OF THE CE, DESIGN	
CROSS REGULATOR WITH RADIAL GATE ON MAIN IRRIGATION CANAL NOMENCLATURE DETAILS.	
PREPARED <i>[Signature]</i> SE, DESIGN CIRCLE-VI	APPROVED <i>[Signature]</i> CE, DESIGN
DATE:	DWG NO: TD-CR-004.



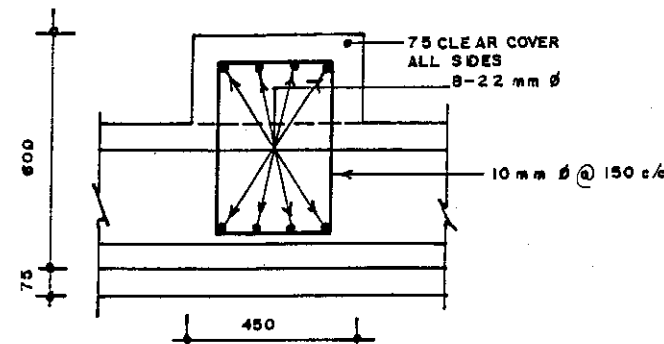
<p align="center"><b>BWDB</b>  <b>OFFICE OF THE CE, DESIGN</b></p>	
<p align="center"><b>TYPICAL DRAWING OF FOOT BRIDGE OVER MAIN  IRRIGATION CANAL  PLAN AND SECTION</b></p>	
<p><b>PREPARED:</b>   <b>SE, DESIGN CIRCLE-VI</b></p>	<p><b>APPROVED:</b>   <b>CE, DESIGN</b></p>
<p><b>DATE :</b></p>	<p><b>DWG. NO: TD-FB-001</b></p>



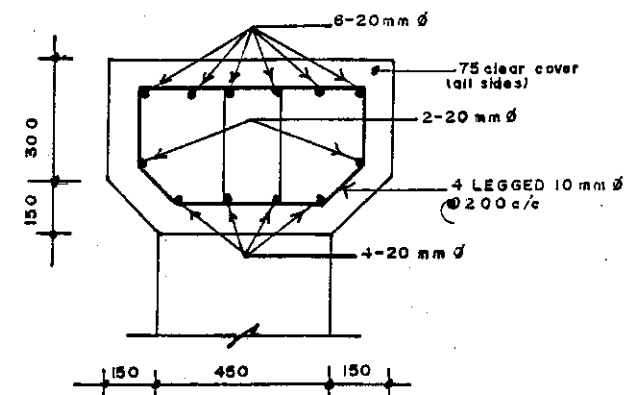
SECTION: 2-2



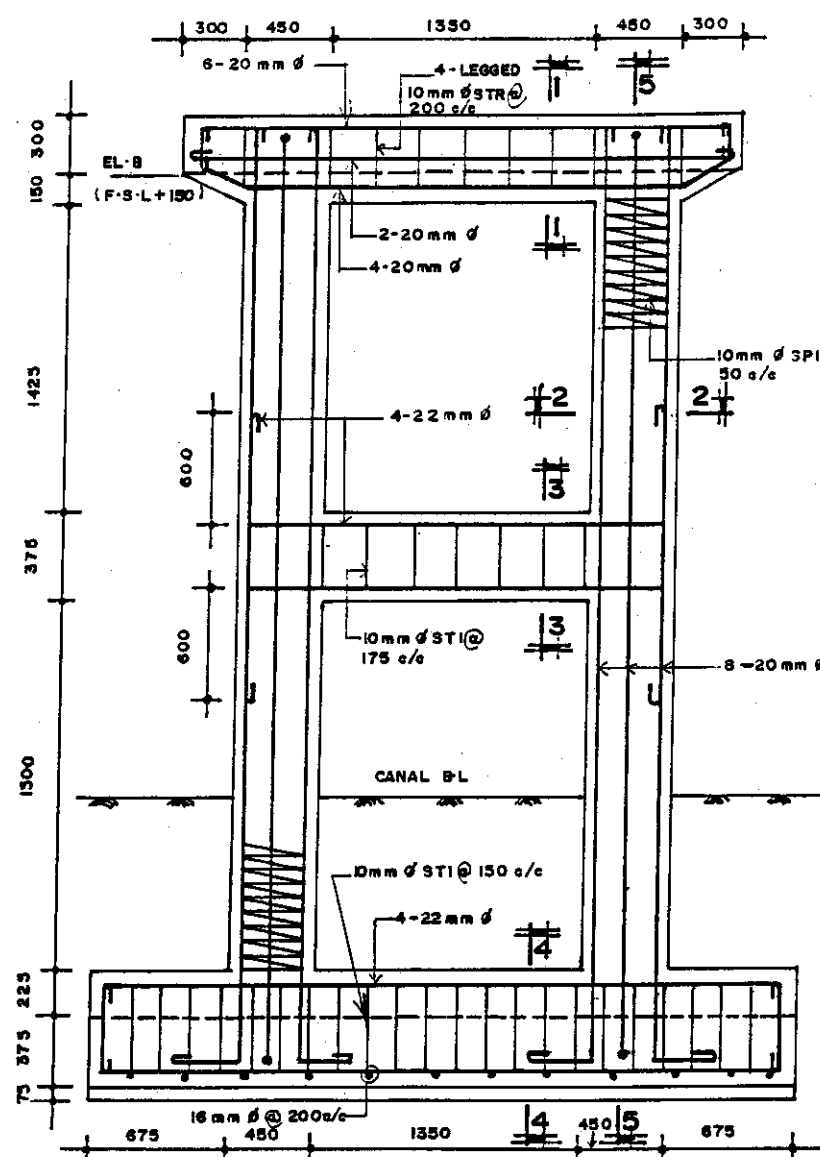
SECTION: 3-3  
TIE BEAM



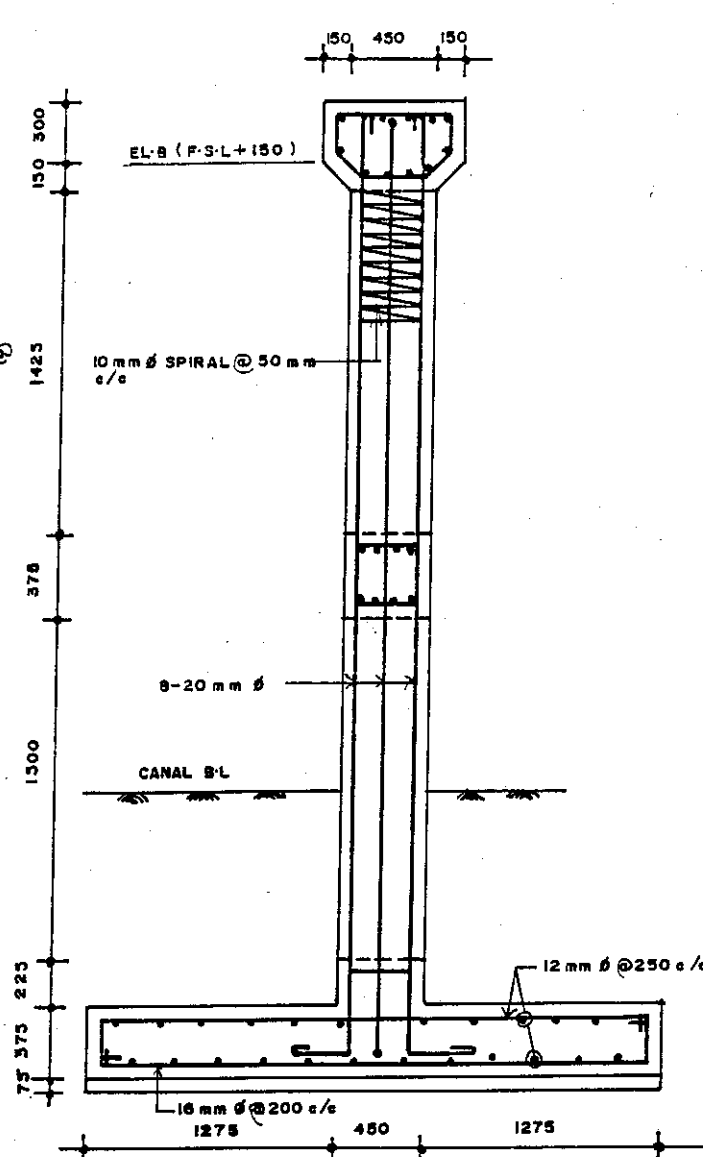
SECTION: 4-4  
FOUNDATION BEAM



SECTION: 1-1  
(PIER CAP)



REINF. DETAIL OF PIER



SECTION: 5-5

#### NOTES

1. THESE DRAWINGS HAVE BEEN PREPARED AS BRIDGES OVER IRRIGATION CANAL. H<sub>2</sub> WHEEL LOADING HAS BEEN TAKEN.
2. THE APPROACH OF THE ROAD SHALL MEET THE ABUTMENT TOP LEVEL WITH 1:50 SLOPE ON BOTH SIDES.
3. THE ROAD LEVEL SHALL BE ADJUSTED WITH THE EMBANKMENT TOP LEVEL WITH A SLOPE OF 1:50.
4. ANGLE OF FRICTION ( $\phi$ ) HAS BEEN TAKEN AS 26°. BACKFILL MATERIAL SHALL BE SAND HAVING THE SAME  $\phi$ .
5. THE STRENGTH OF CONCRETE  $f_c$  SHALL BE MINIMUM 20.00 N/mm<sup>2</sup> (CYLINDER STRENGTH) AFTER CURING FOR 28 DAYS FOR ALL R.C.C. WORKS.
6. THE YIELD STRENGTH OF M.S. BARS  $f_y$  SHALL BE 276.00 N/mm<sup>2</sup> OR ABOVE.
7. THE LAP LENGTH OF M.S. BARS SHALL BE 48 BAR DIAMETERS WITH HOOK AND NOT MORE THAN 30% OF BARS SHALL BE LAPPED AT ANY SECTION. SIDE BY SIDE LAPPING OF BARS SHALL BE AVOIDED WHERE CLEAR SPACE OF AT LEAST 1 1/2" CAN NOT BE MAINTAINED.
8. CLEAR COVER FOR REINFORCEMENT SHOWN IN THE SECTIONS SHALL BE MAINTAINED WHERE NOT MENTIONED 75mm CLEAR COVER SHALL BE PROVIDED.
9. 75mm LEAN CONCRETE (1:3:6) SHALL BE PROVIDED BELOW THE ABUTMENT AND PIER FOUNDATION SLAB.
10. THE FOUNDATION DESIGN IS TENTATIVE AND FOR BEARING CAPACITY OF 1.00 KG/cm<sup>2</sup>.

BWDB  
OFFICE OF THE CE, DESIGN

TYPICAL DRAWING OF FOOT BRIDGE OVER MAIN  
IRRIGATION CANAL  
SECTION DETAILS

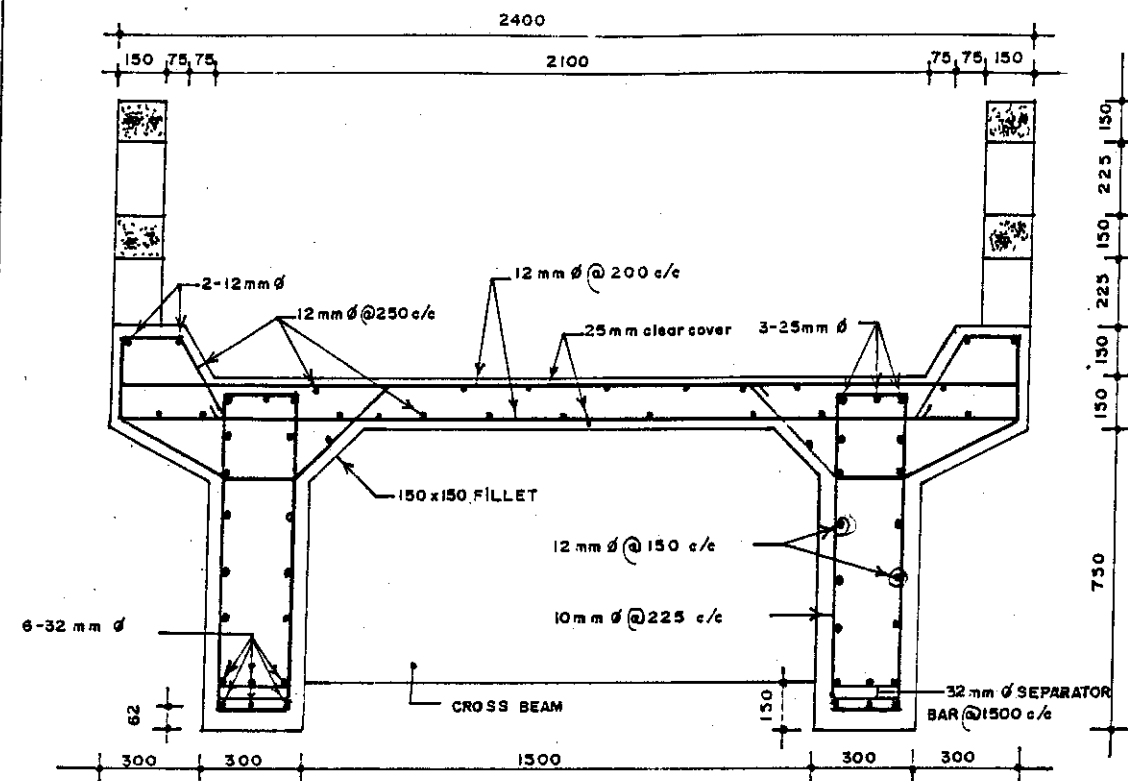
PREPARED:  
SE, DESIGN CIRCLE-VI

APPROVED:  
CE, DESIGN

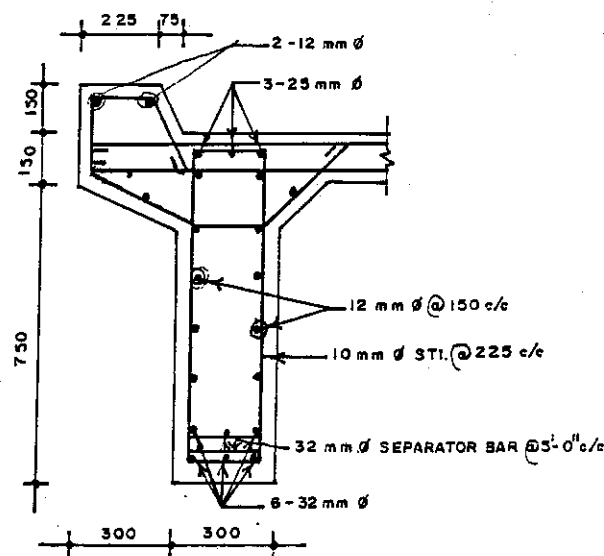
DATE:

DWG. NO: TD-FB-002

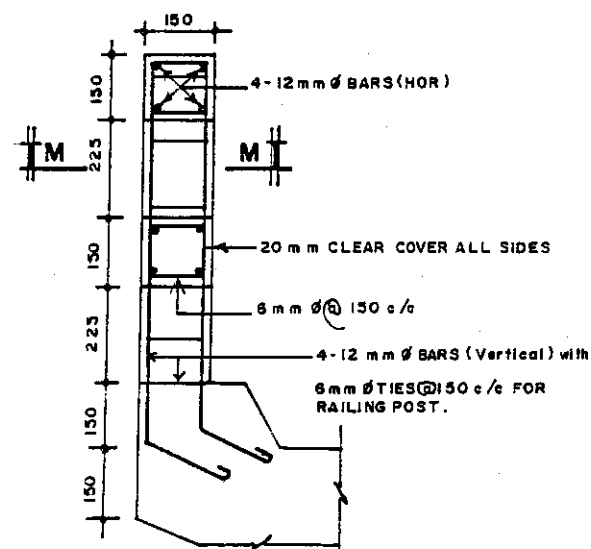




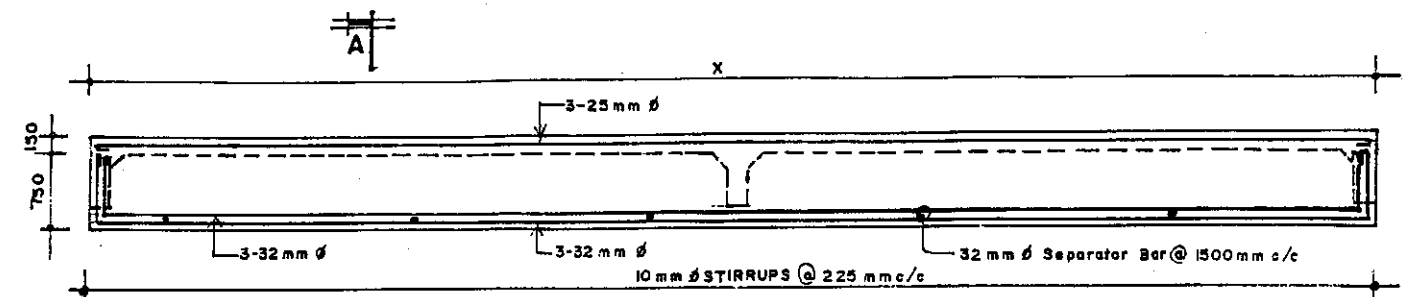
**REINF. DETAIL OF DECK SLAB**



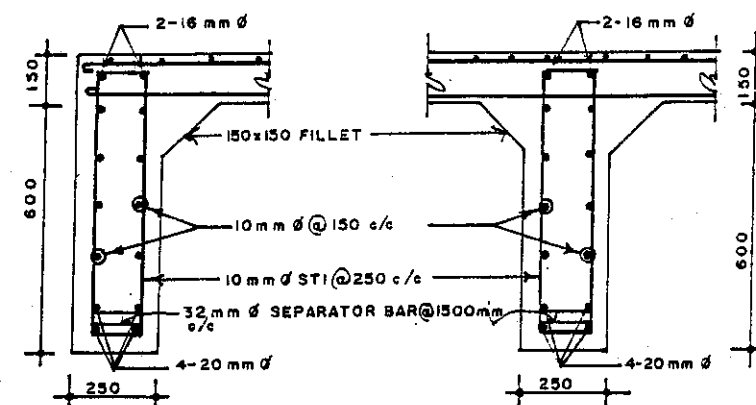
**SECTION : A-A**



**DETAIL OF RAILING BAR & POST**

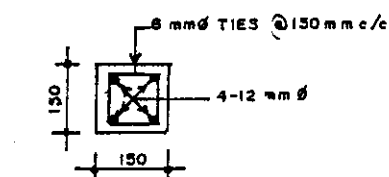


**REINF. DETAIL OF GIRDER**



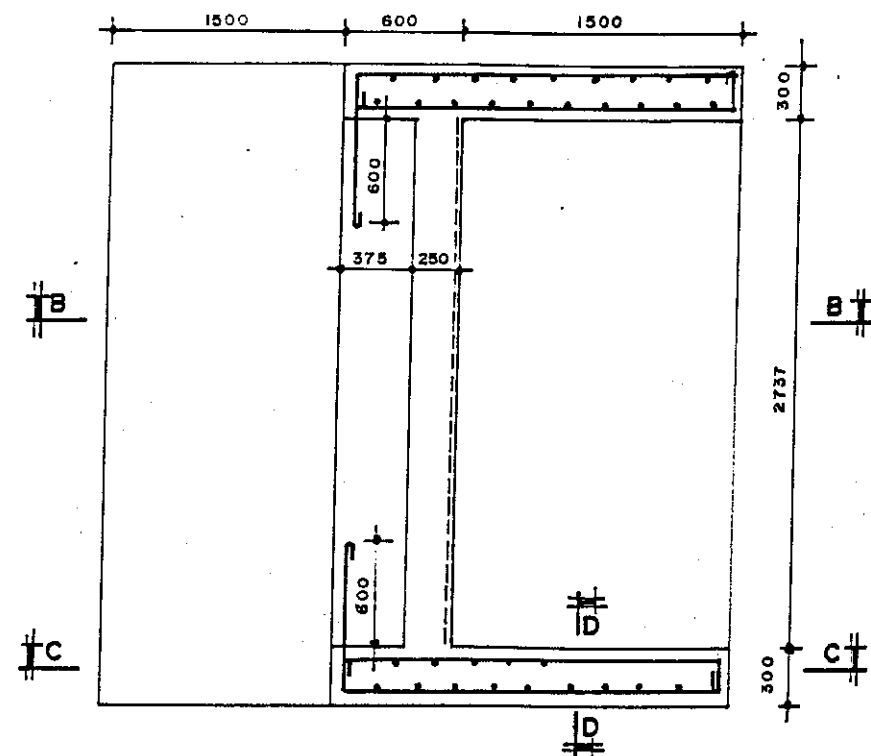
**END CROSS BEAM**

**MIDDLE CROSS BEAM**

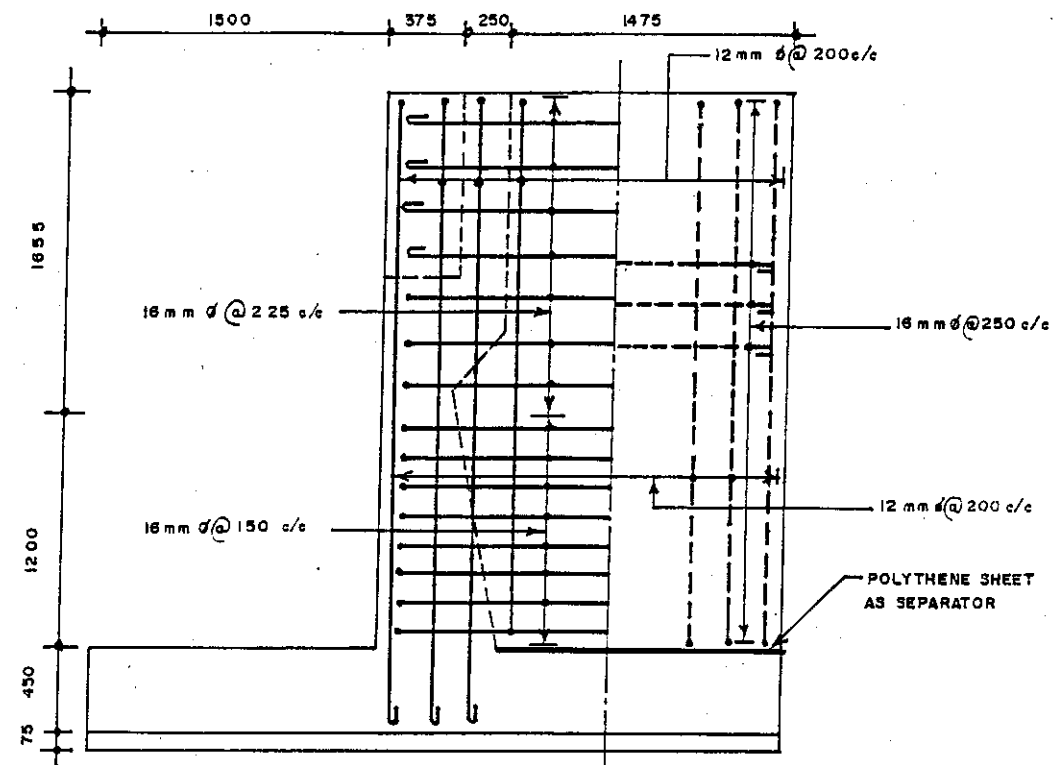


**SECTION : M-M**

BWDB OFFICE OF THE CE, DESIGN	
TYPICAL DRAWING OF FOOT BRIDGE OVER MAIN IRRIGATION CANAL SECTION DETAILS	
PREPARED: <i>[Signature]</i> SE, DESIGN CIRCLE-VI	APPROVED: <i>[Signature]</i> C.E., DESIGN
DATE: <i>[Blank]</i>	DWG. NO: TD-FB-003



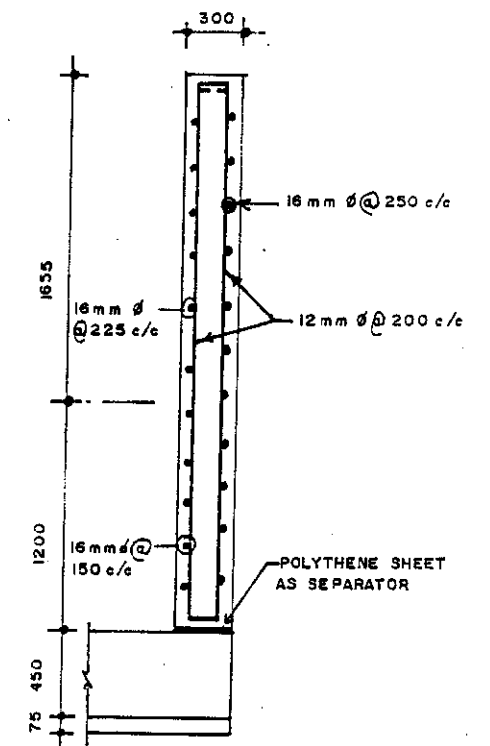
**PLAN OF ABUTMENT AND RETURN WALL  
SHOWING REINF DETAILS OF RETURN WALL**



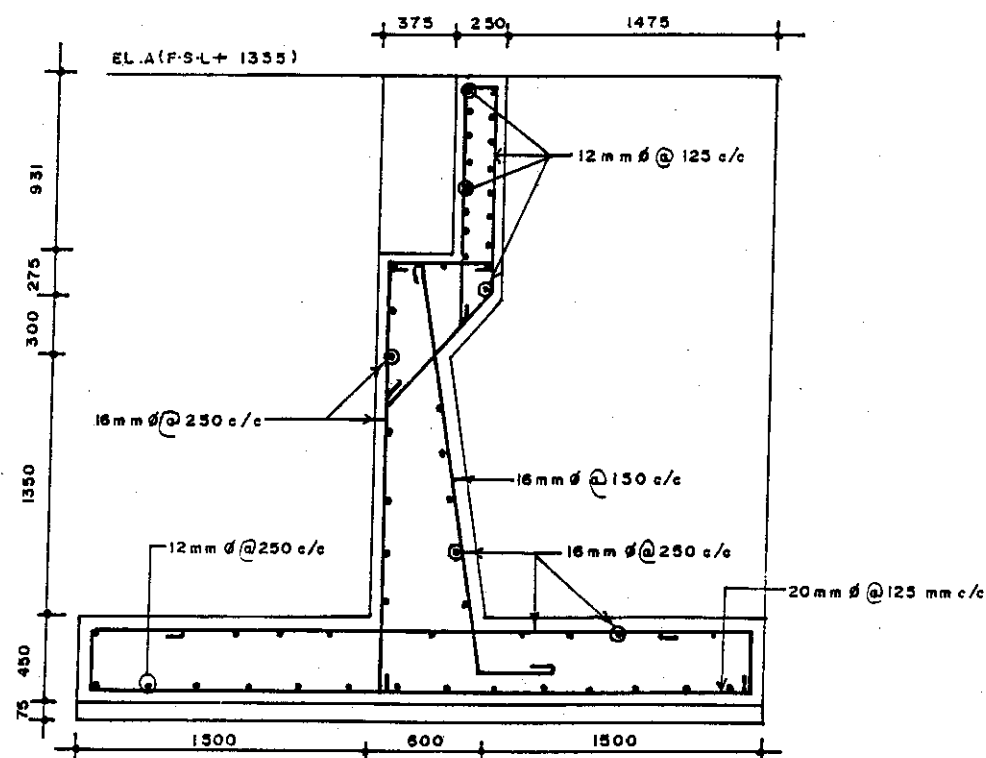
**INNER FACE OF  
RETURN WALL**

**OUTER FACE OF  
RETURN WALL**

**SECTION C-C  
NOT TO SCALE**



**SECTION : D-D**



**SECTION : B-B**

BWDB OFFICE OF THE CE, DESIGN	
TYPICAL DRAWING OF FOOT BRIDGE OVER MAIN IRRIGATION CANAL SECTION DETAILS	
PREPARED: <i>[Signature]</i> SE, DESIGN CIRCLE-VI	APPROVED: <i>[Signature]</i> CE, DESIGN
DATE:	DWG. NO: TD-FB-004

# **VOLUME-IV: DRAFTING & DETAILING STANDARD**

## STANDARD DETAILING OF STRUCTURE

### HYDRAULIC STRCTURE

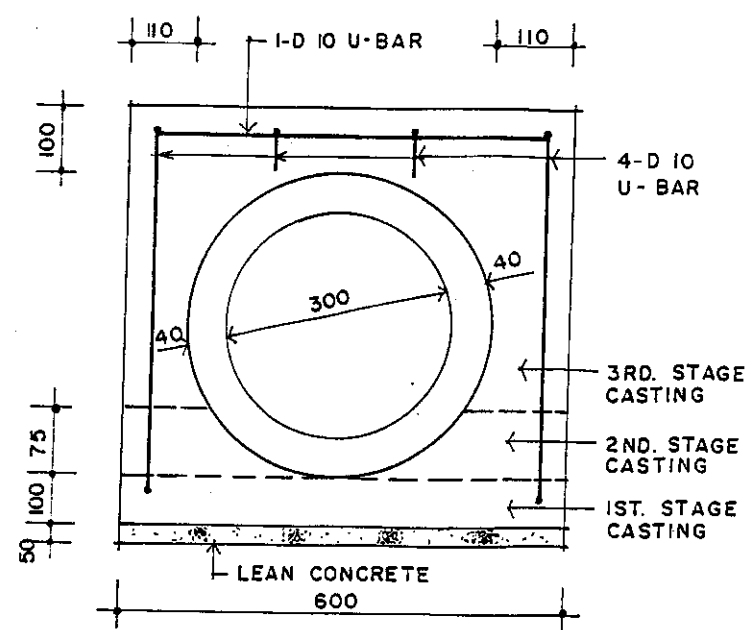
<u>DWG. NO.</u>	<u>TITLE OF DRAWING</u>
SD - 01	PIPE JOINT DETAILS (150mm, 300mm & 600mm DIA)
SD- 02	PIPE JOINT DETAILS (450mm, & 750 mm DIA)
SD- 03	PIPE JOINT DETAILS ( 900 mm DIA)
SD- 04	PIPE BEDDING DETAILS WITHOUT REINFORCEMENT
SD- 05	PIPE BEDDING DETAILS WITH REINFORCEMENT
SD- 06	PIPE REINFORCEMENT DETAILS
SD- 07	STILLING BASIN CHUTE BLOCK DETAILS (300, 400 & 500 mm HEIGHT)
SD- 08	STILLING BASIN CHUTE BLOCK DETAILS (600, 700 & 800 mm HEIGHT)
SD- 09	STILLING BASIN BAFFLE BLOCK DETAILS (300, 400 & 500 mm HEIGHT)
SD- 10	STILLING BASIN BAFFLE BLOCK DETAILS (600, 700 & 800 mm HEIGHT)
SD- 11	STILLING BASIN END SILL DETAILS
SD- 12	ECONOMICAL TRANSITION DETAILS (TYPE-I)
SD- 13	ECONOMICAL TRANSITION DETAILS (TYPE-II)
SD- 14	ECONOMICAL TRANSITION DETAILS (TYPE-III)
SD- 15	PROTECTIVE WORK DETAILS (PLAN)
SD- 16	PROTECTIVE WORK DETAILS (SECTION)

### HYDRAULIC STRCTURE

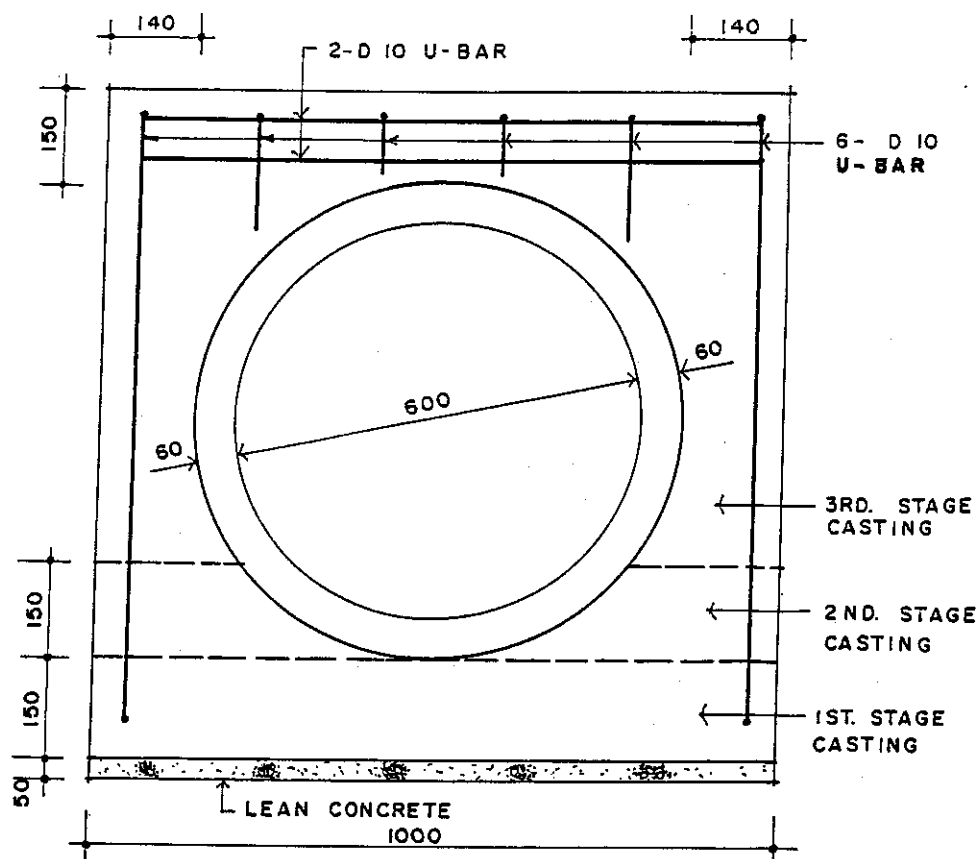
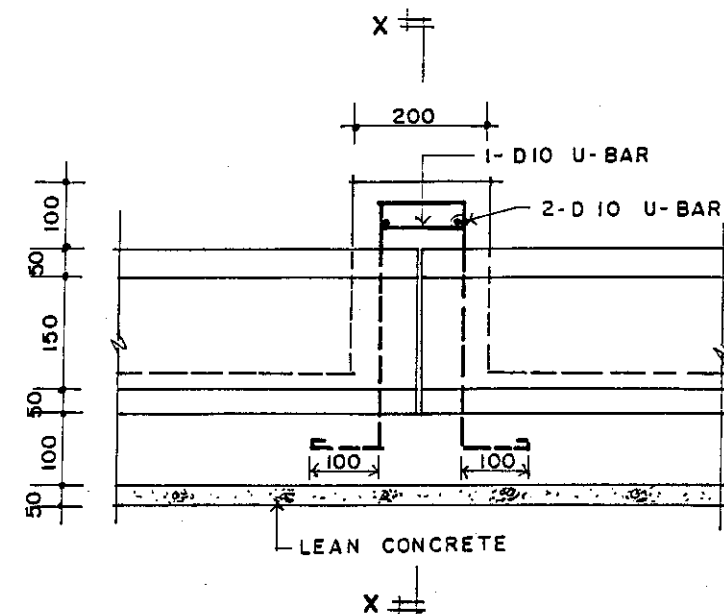
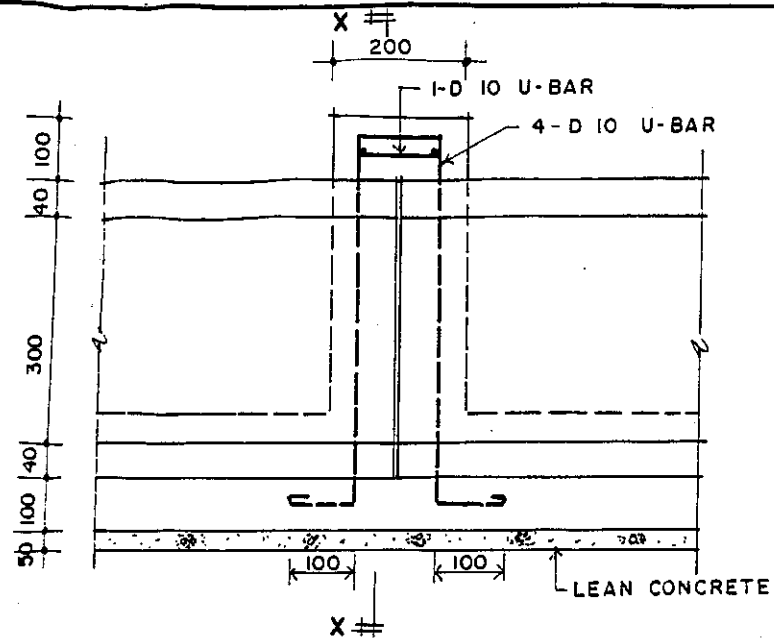
<u>DWG NO</u>	<u>TITLE OF DRAWING</u>
SD- 17	EXPANSION/ CONTRACTION JOINT DETAILS
SD- 18	FILTER DETAILS
SD- 19	GROOVE ARRANGEMENT DETAILS (VENT SIZE :1200mm X 1500mm, 900mm X 1200mm)
SD- 20	GROOVE ARRANGEMENT DETAILS (VENT SIZE :1500 mm X 1800 mm)
SD- 21	TYPICAL REINFORCEMENT DETAILS OF PIER ABUTMENT AND HEAD WALL (C/S FALL BOARD AND R/S VERTICAL LIFE GATE)
SD- 22	TYPICAL REINFORCEMENT DETAILS OF PIER, ABUTMENT AND HEAD WALL (C/S FALL BOARD & R/S FLAP GATE)
SD- 23	RUNG DETAILS
SD- 24	OPERATING SLAB AND RAILING DETAILS (I-VENT 1500 mm X 1800 mm)
SD- 25	PIPE RAILING DETAILS
SD- 26	SHEET PILE CAP AND RCC CUTOFF WALL DETAILS
SD- 27	TYPICAL DETAILS OF PRE-CAST RCC PILE ( SIZE : 350 mm X 350mm)
SD- 28	CAST-IN-SITU PILE REINFORCEMENT DETAILS (SIZE : 450 mm DIA)

### ROAD STRUCTURE

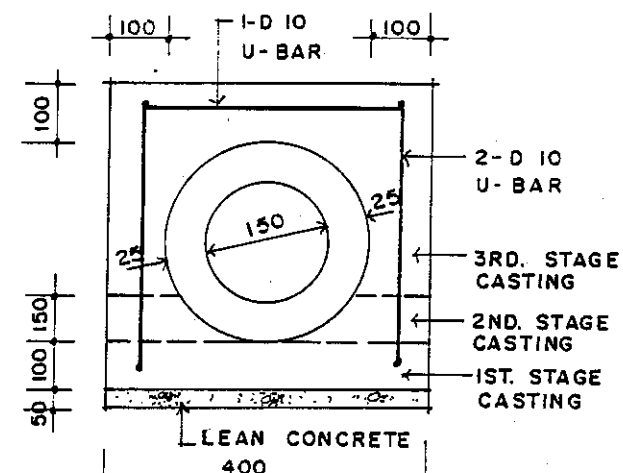
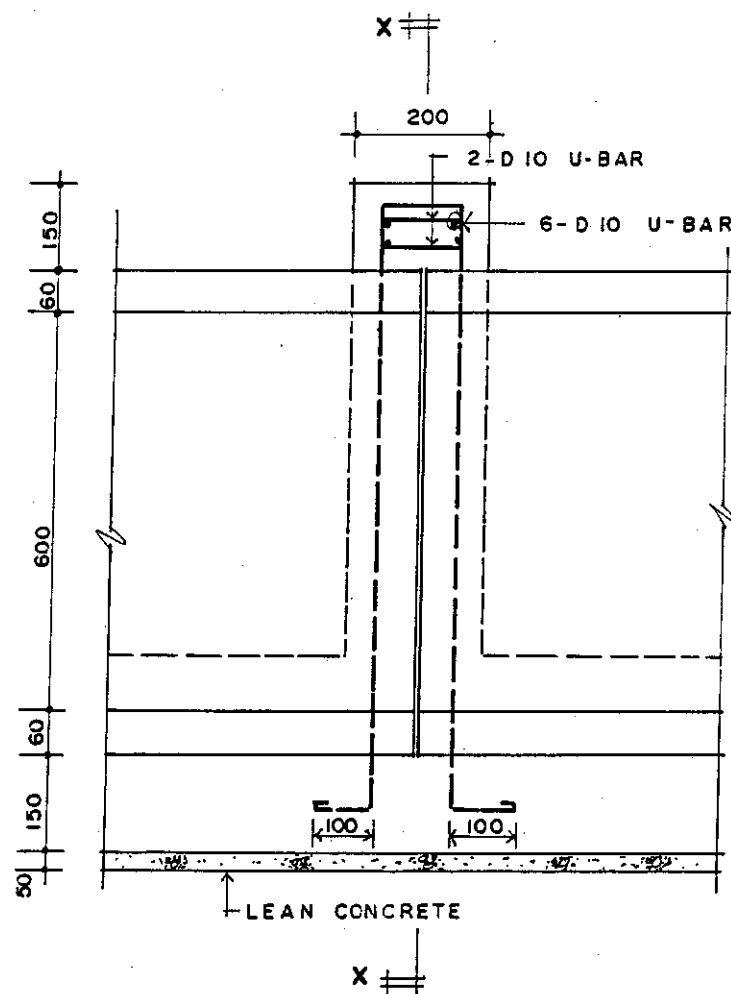
SD- 29	BRIDGE DECK JOINT DETAILS
SD- 30	TYPICAL BRIDGE METAL BEARINGS
SD- 31	ELASTOMERIC BEARING DETAILS (TYPICAL)



SECTION X-X



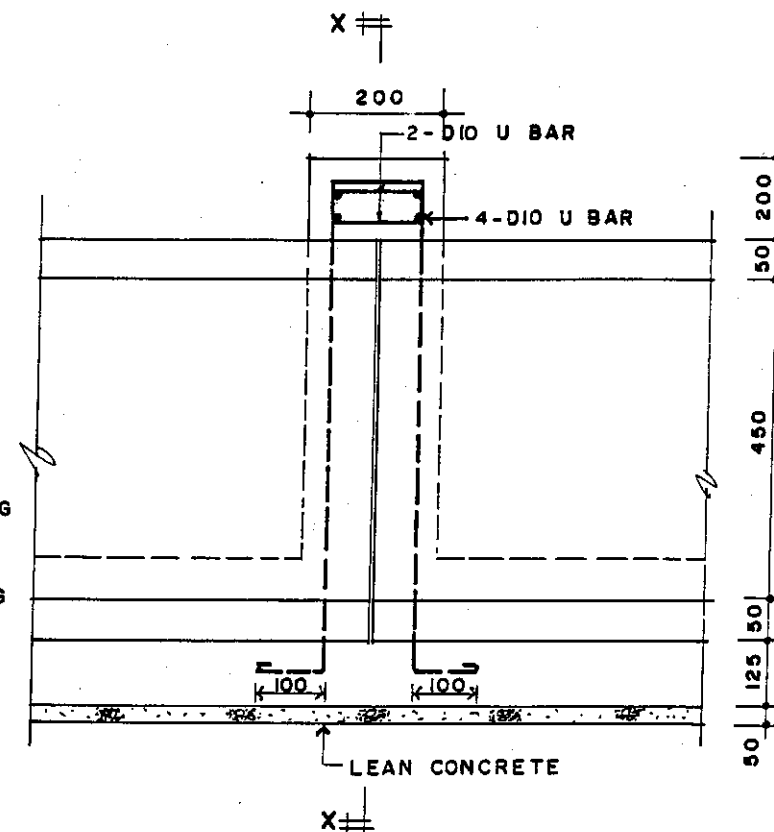
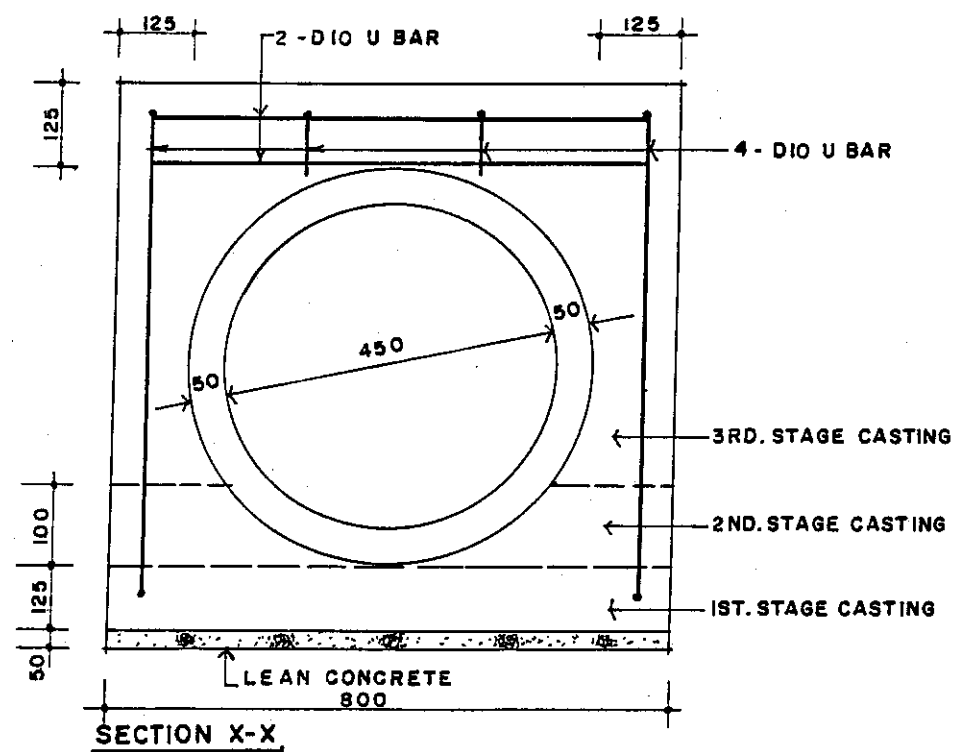
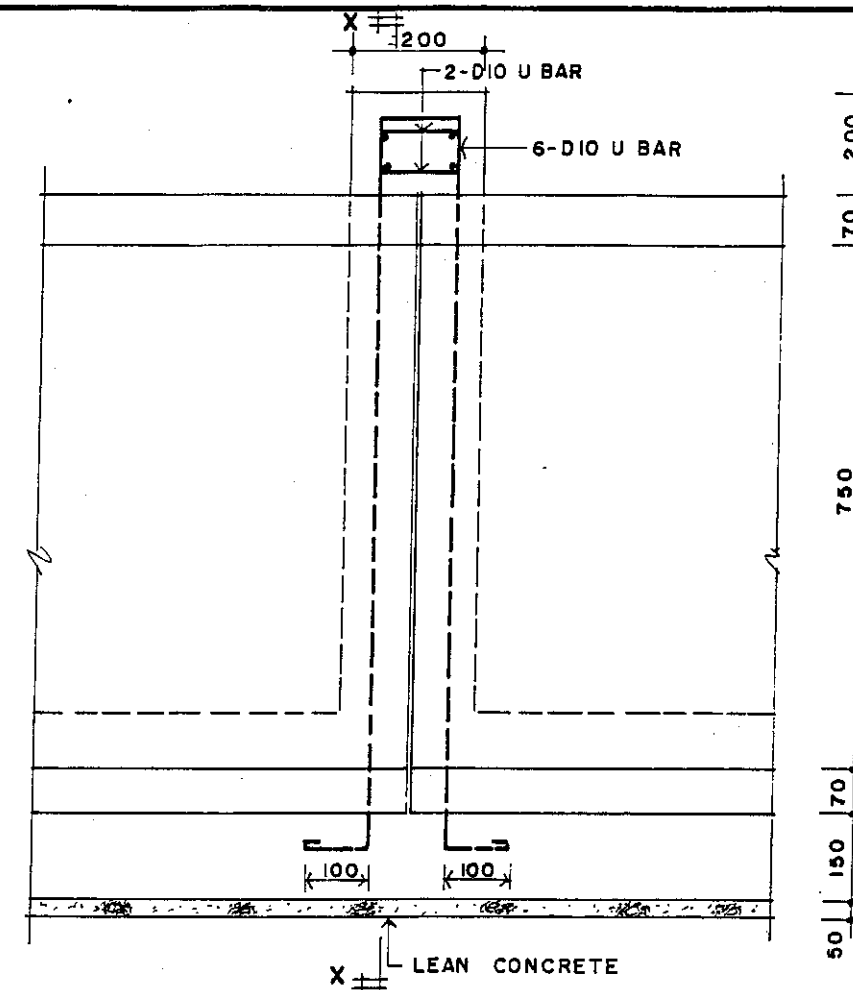
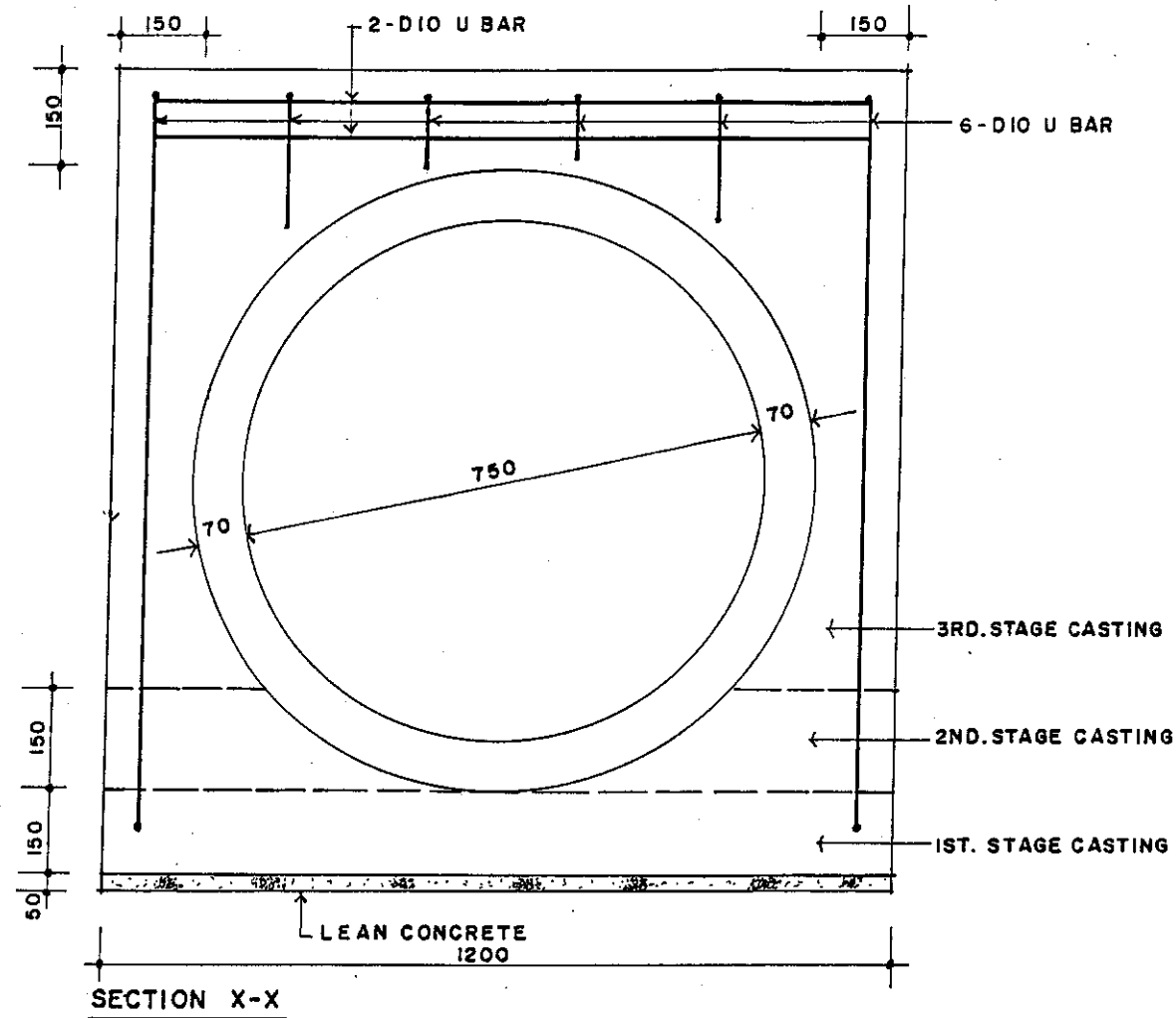
SECTION X-X



SECTION X-X

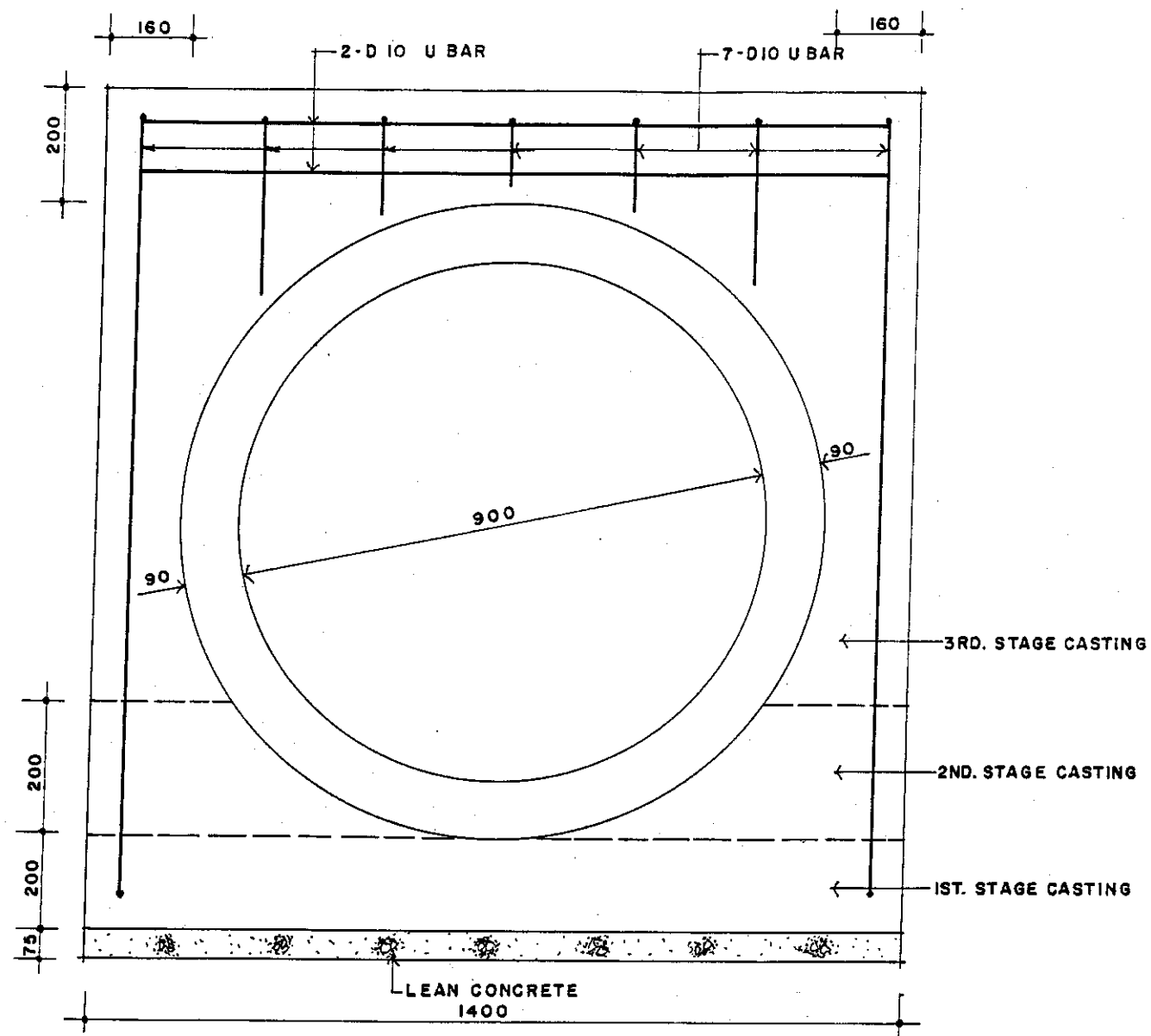
● ALL DIMENSIONS ARE IN mm.

BWDB OFFICE OF THE CE, DESIGN	
PIPE JOINT DETAILS (150, 300 & 400 DIA)	
PREPARED: SE, DESIGN CIRCLE-V.	APPROVED: CE, DESIGN-I
DATE: 24-6-95	DWG. NO. SD-01

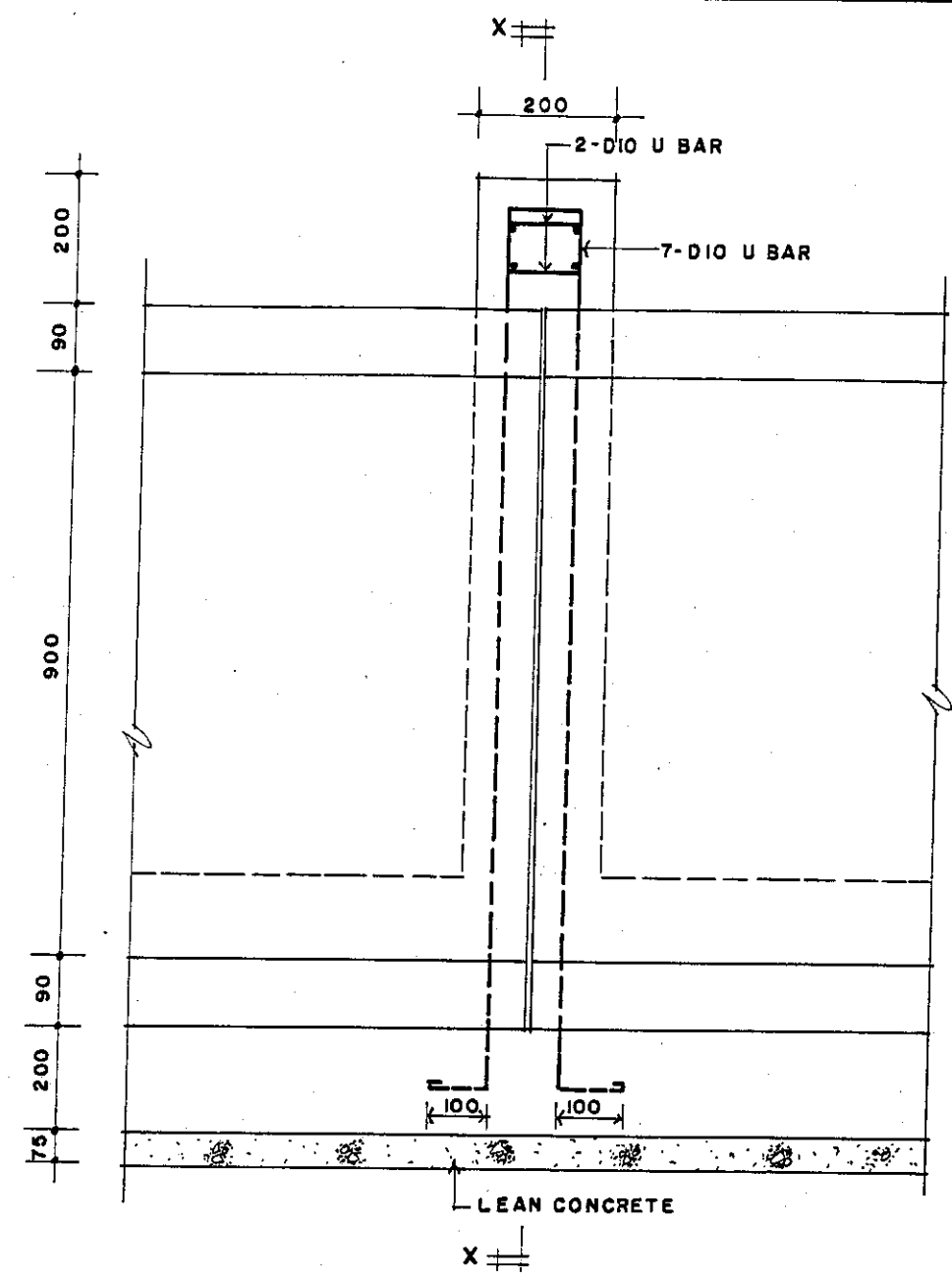


● ALL DIMENSIONS ARE IN mm.

BWDB OFFICE OF THE CE, DESIGN	
PIPE JOINT DETAILS ( 450 & 750 DIA )	
PREPARED: <i>[Signature]</i> SE, DESIGN CIRCLE-V	APPROVED: <i>[Signature]</i> CE, DESIGN-I.
DATE : 24-6-95	DWG. NO. SD-02

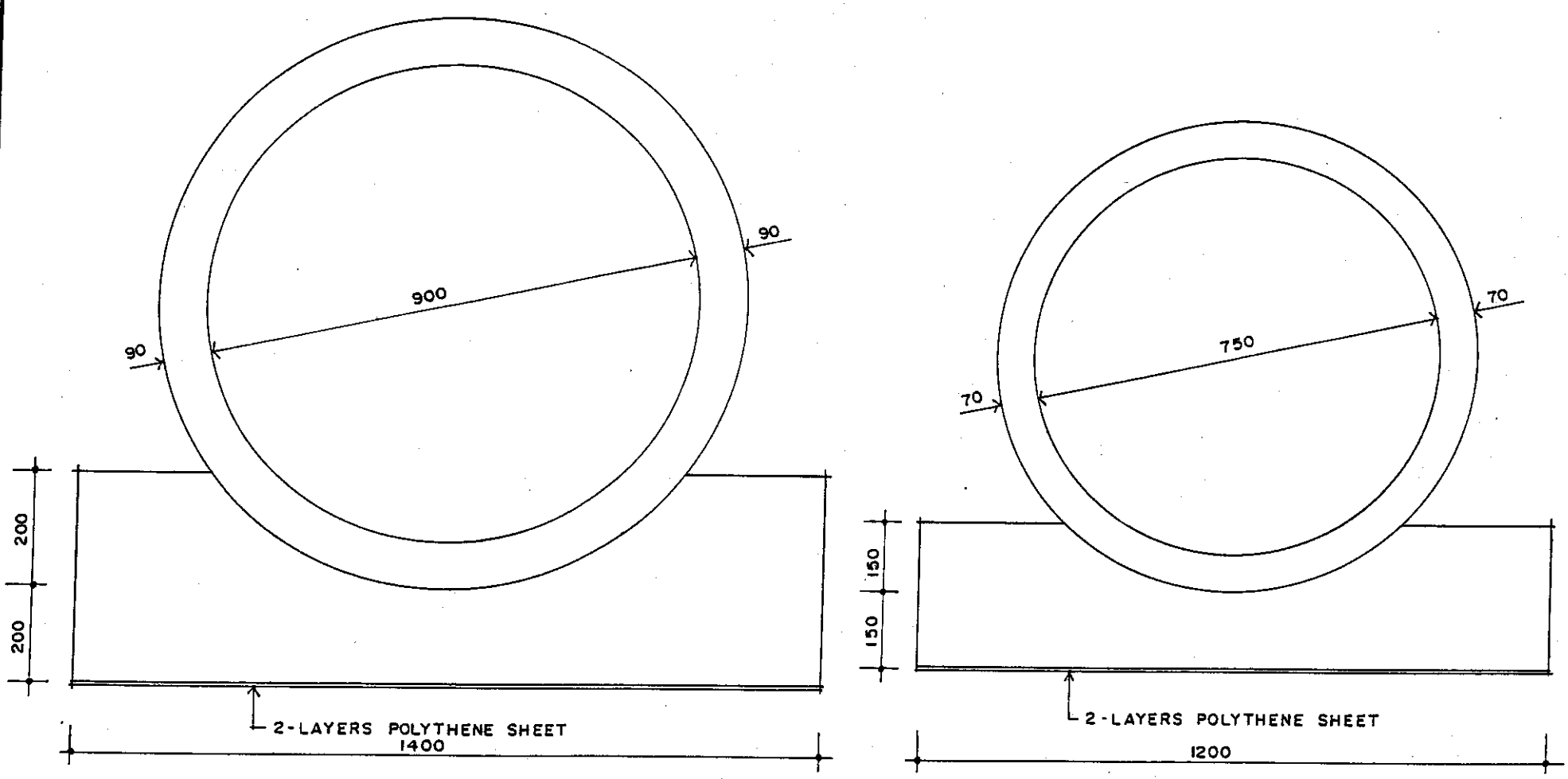
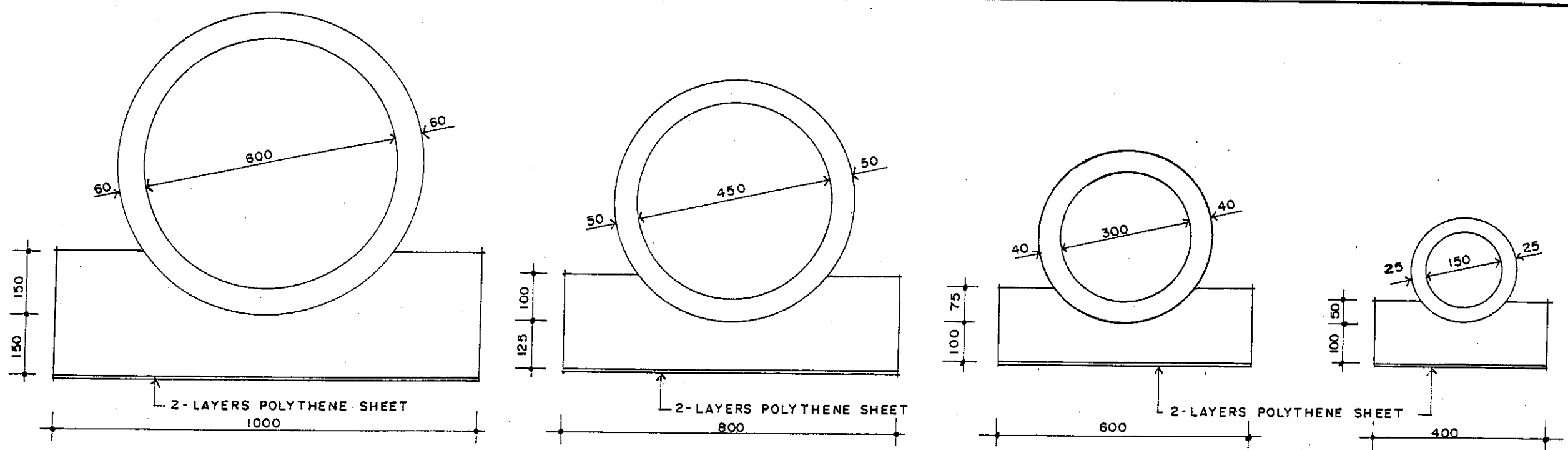


SECTION X-X



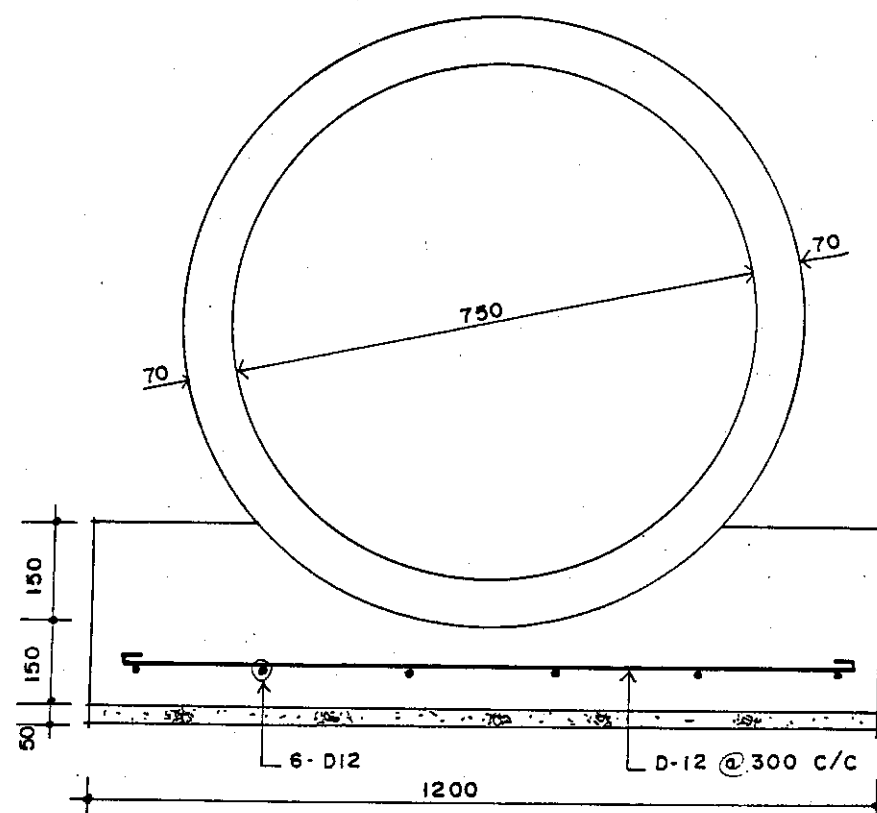
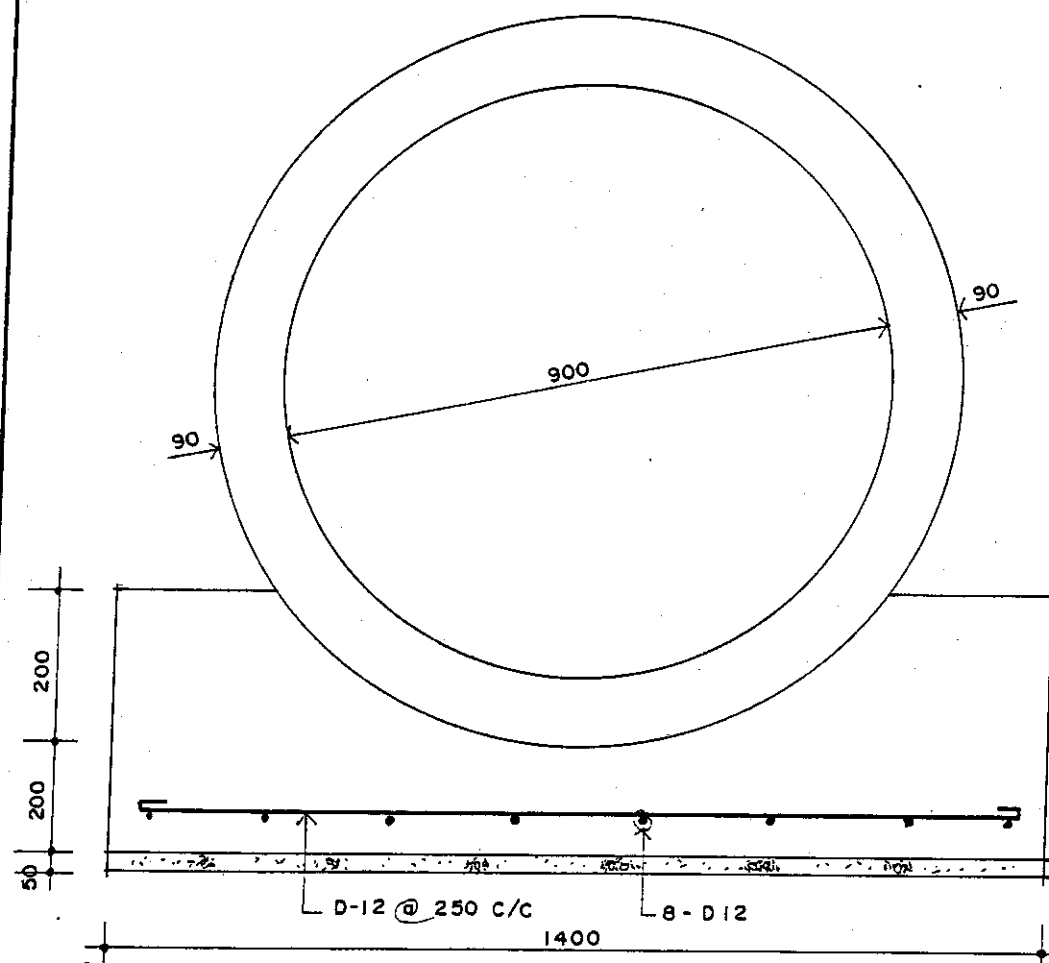
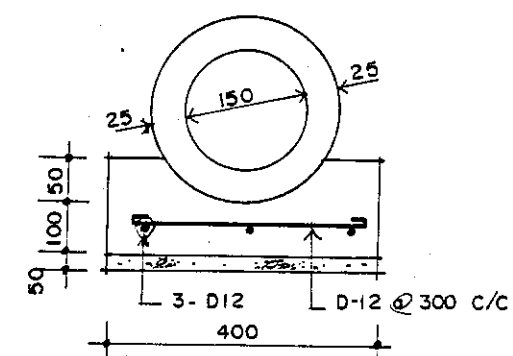
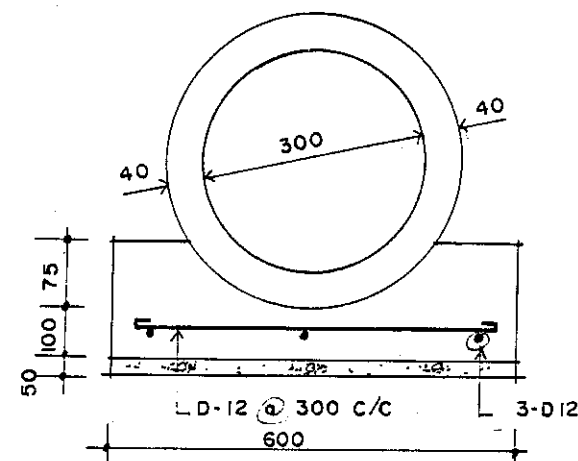
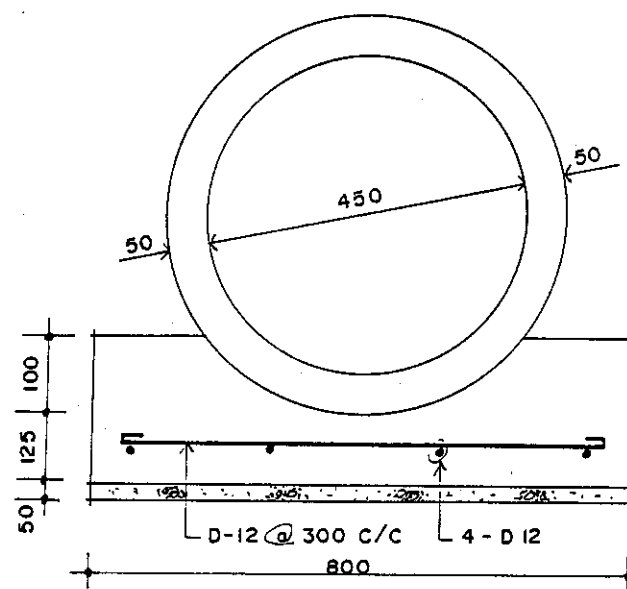
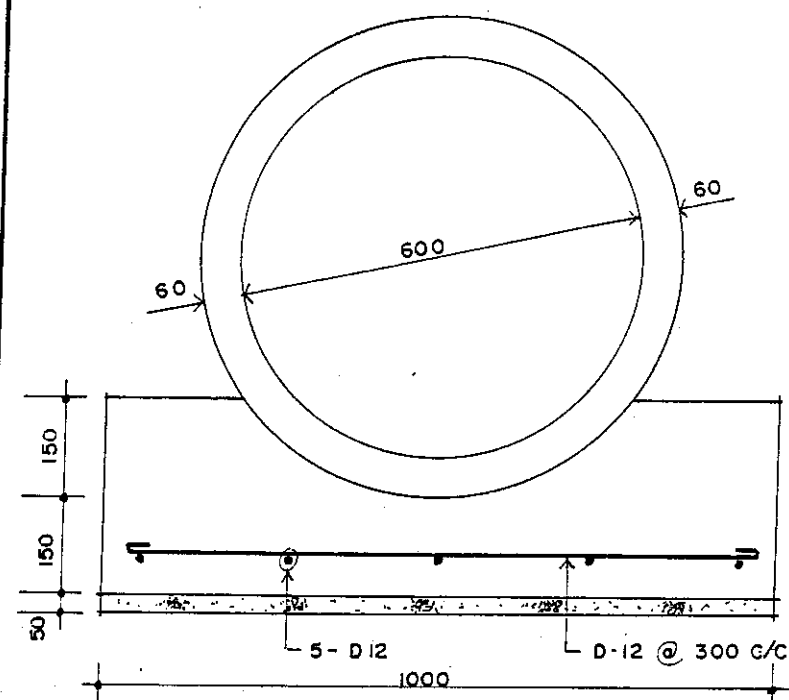
● ALL DIMENSIONS ARE IN mm.

BWDB	
OFFICE OF THE CE, DESIGN	
PIPE JOINT DETAILS ( 900 DIA )	
PREPARED, <i>[Signature]</i> SE, DESIGN CIRCLE-V.	APPROVED: <i>[Signature]</i> CE, DESIGN-I.
DATE : 24-6-95	DWG.NO. SD-03



BWDB OFFICE OF THE CE, DESIGN	
PIPE BEDDING DETAILS WITHOUT REINFORCEMENT	
PREPARED: SE, DESIGN CIRCLE-V	APPROVED: CE, DESIGN-I
DATE : 24-6-95	DWG. NO. SD-04





● ALL DIMENSIONS ARE IN mm.

SCALE: 1:10

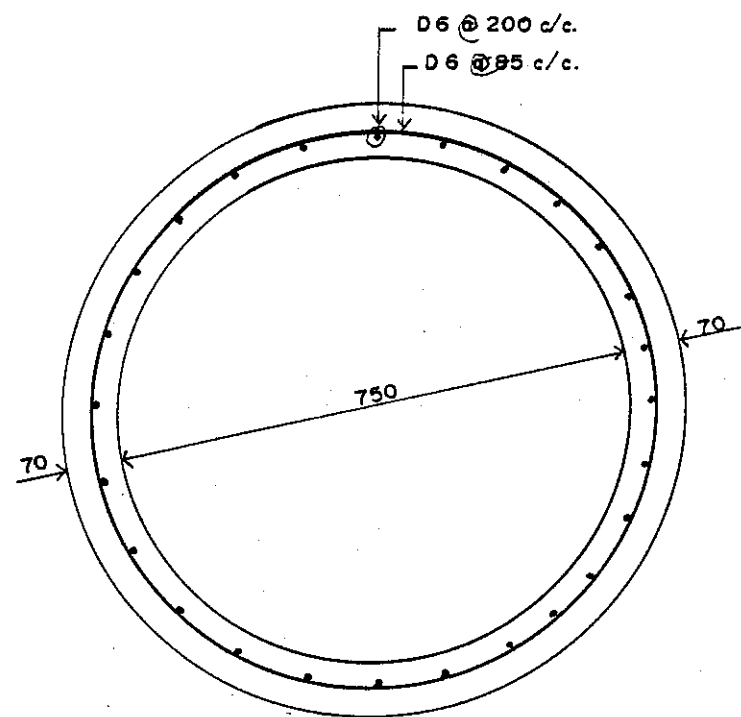
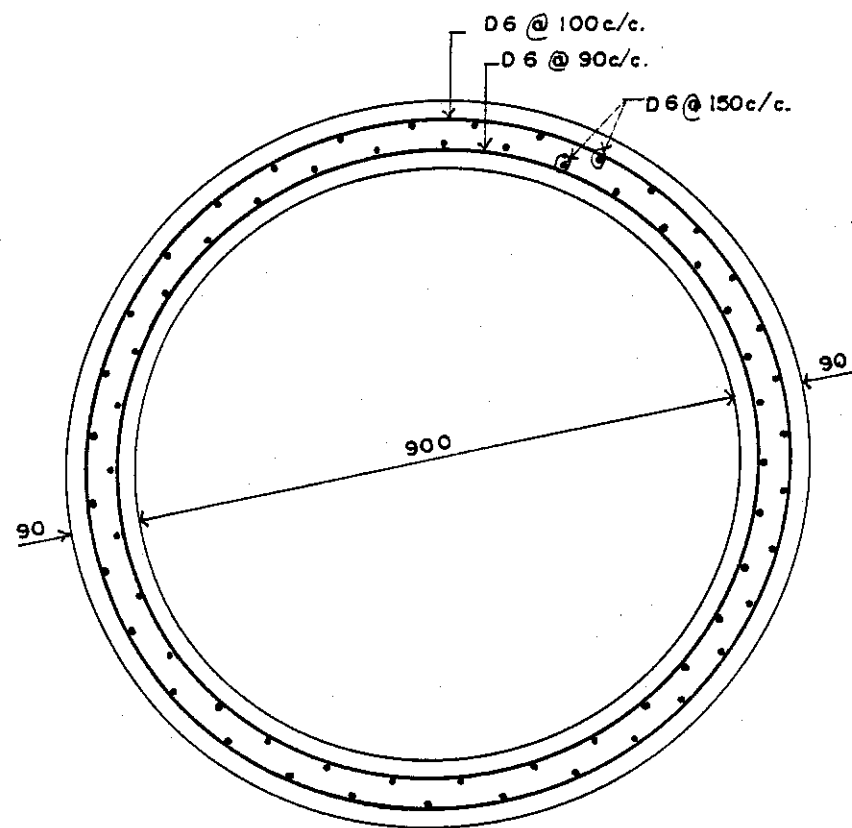
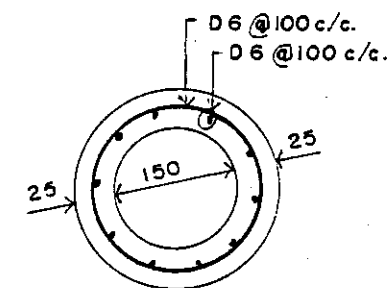
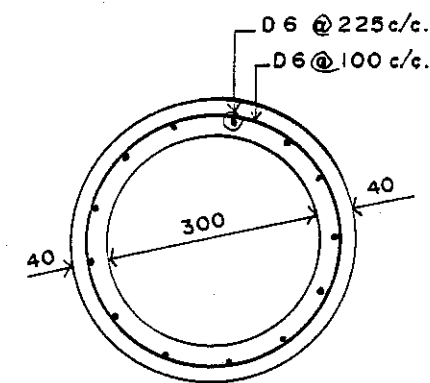
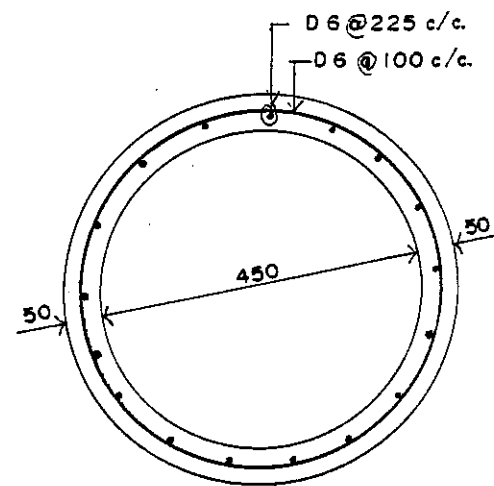
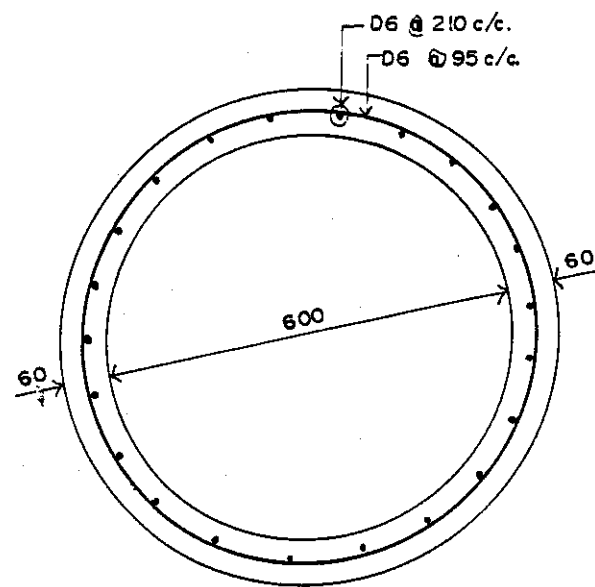
BWDB  
OFFICE OF THE CE, DESIGN  
PIPE BEDDING DETAILS  
WITH REINFORCEMENT

PREPARED:  
SE, DESIGN CIRCLE-V.

APPROVED  
CE, DESIGN-I

DATE: 24-6-95

DWG NO. SD-05



● ALL DIMENSIONS ARE IN mm

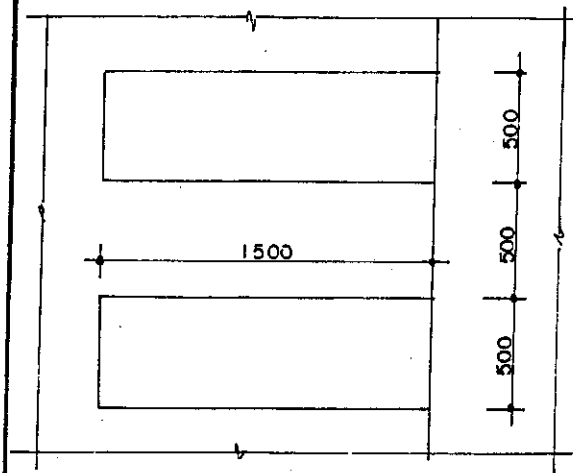
BWDB  
OFFICE OF THE CE, DESIGN  
PIPE REINFORCEMENT DETAILS.

PREPARED :  
SE, DESIGN CIRCLE - V.

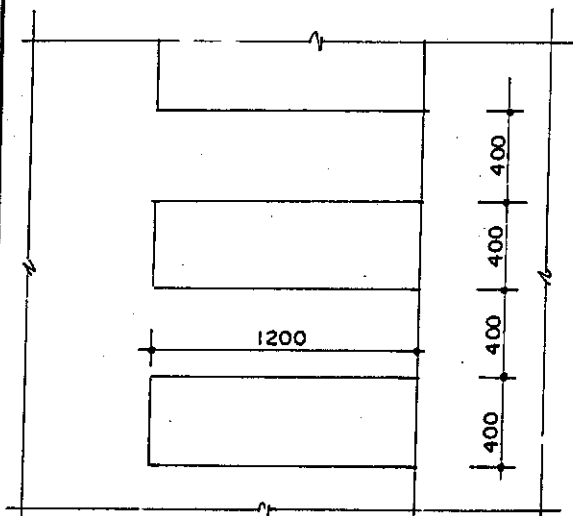
APPROVED :  
CE, DESIGN - I

DATE : 24-6-95

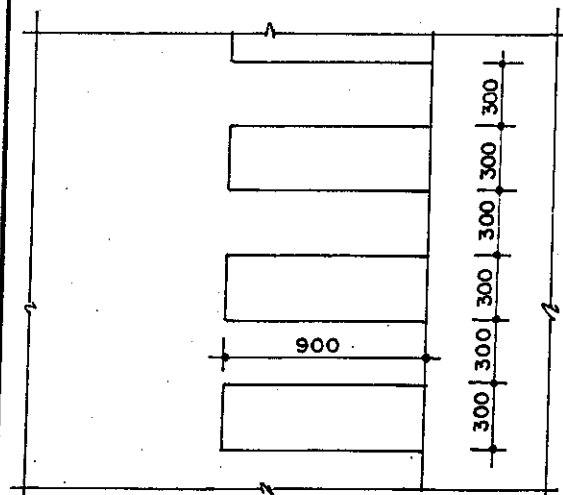
DWG. NO. SD-06



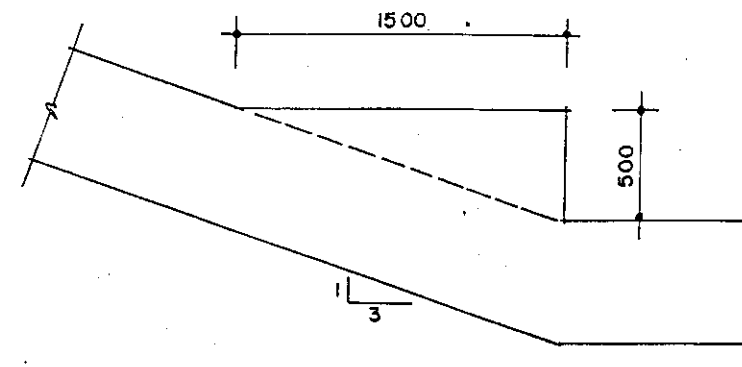
PART PLAN OF CHUTE BLOCK



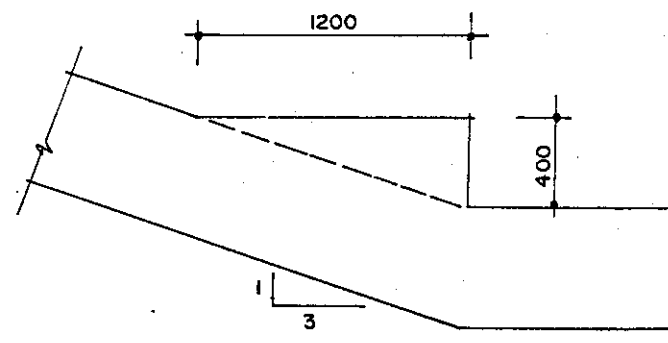
PART PLAN OF CHUTE BLOCK



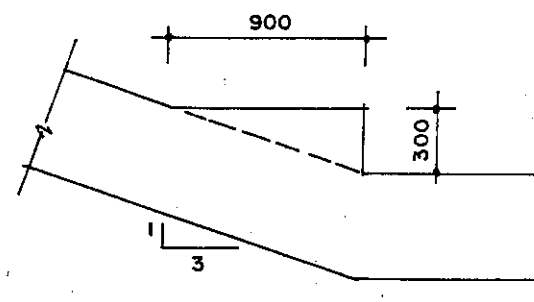
PART PLAN OF CHUTE BLOCK



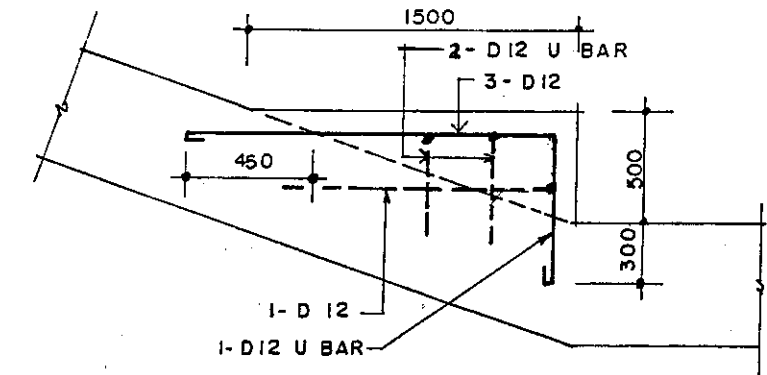
SEC. OF CHUTE BLOCK



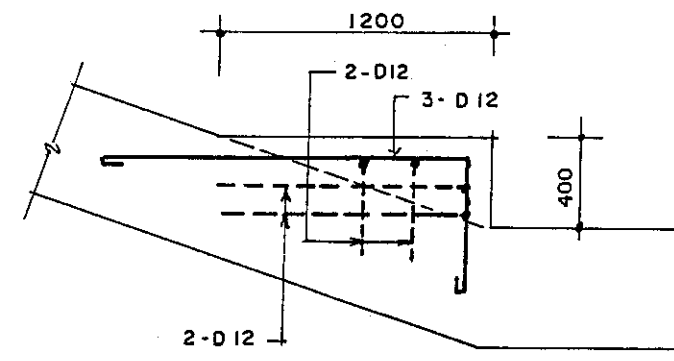
SEC. OF CHUTE BLOCK



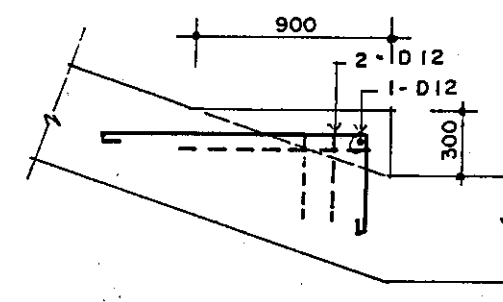
SEC. OF CHUTE BLOCK



REINF. DETAIL OF CHUTE BLOCK



REINF. DETAIL OF CHUTE BLOCK

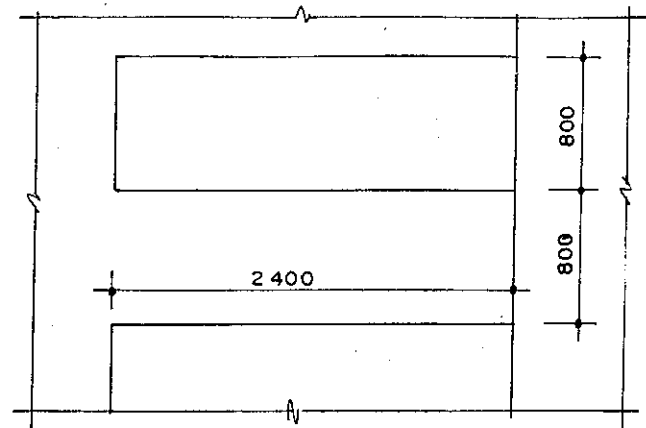


REINF. DETAIL OF CHUTE BLOCK

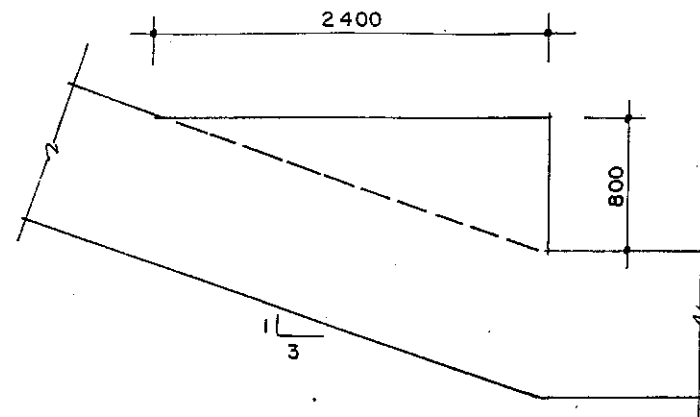
● ALL DIMENSIONS ARE IN mm.

SCALE: 1:30

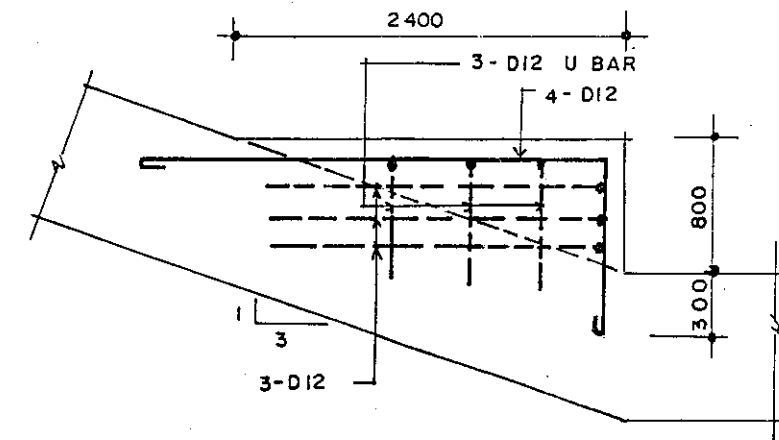
BWDB	
OFFICE OF THE CE, DESIGN	
STILLING BASIN CHUTE BLOCK DETAILS (300, 400 & 500mm)	
PREPARED: <i>[Signature]</i>	APPROVED: <i>[Signature]</i>
SE, DESIGN CIRCLE-V	CE, DESIGN-I
DATE: 24-6-95	DWG. NO. SD-07



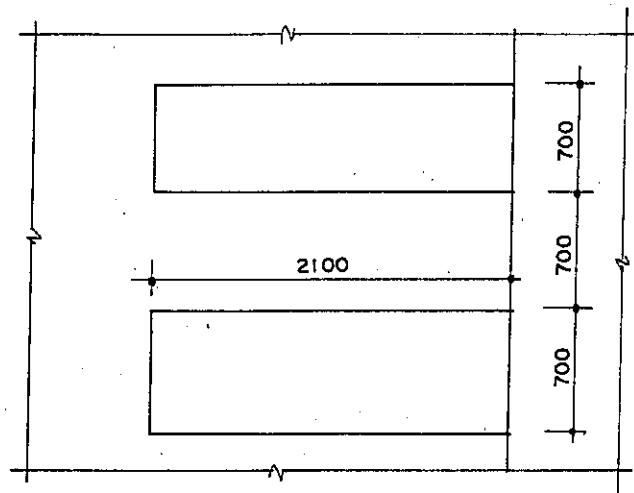
PART PLAN OF CHUTE BLOCK



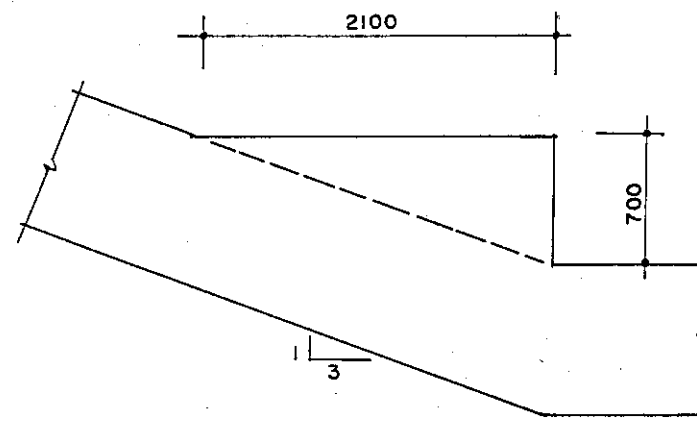
SEC. OF CHUTE BLOCK



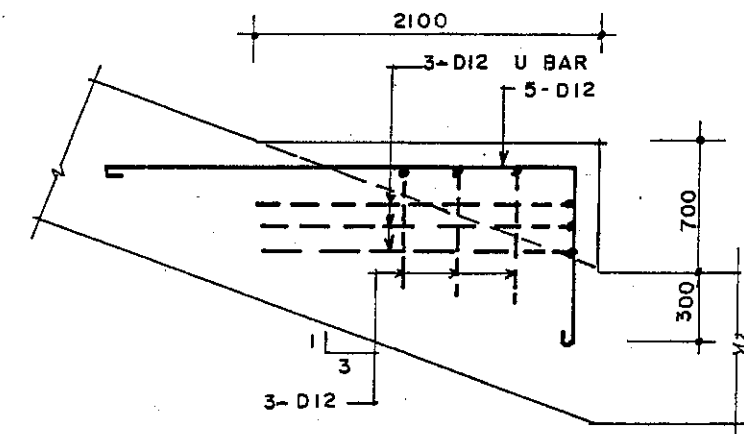
REINF. DETAIL OF CHUTE BLOCK



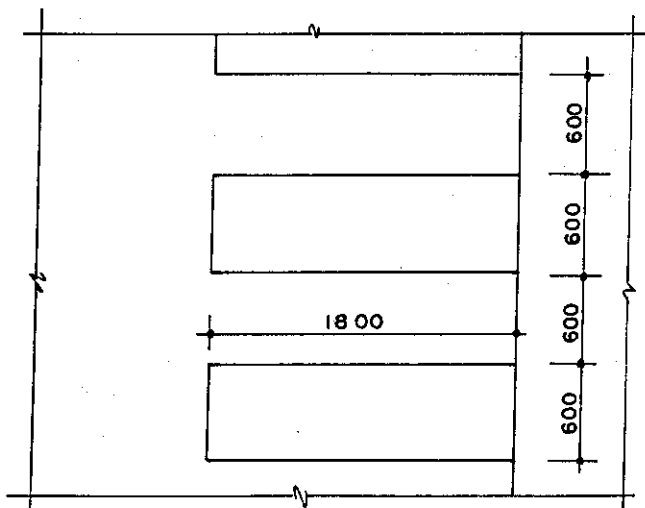
PART PLAN OF CHUTE BLOCK



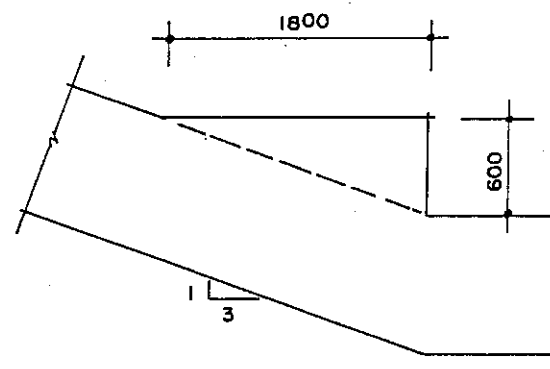
SEC. OF CHUTE BLOCK



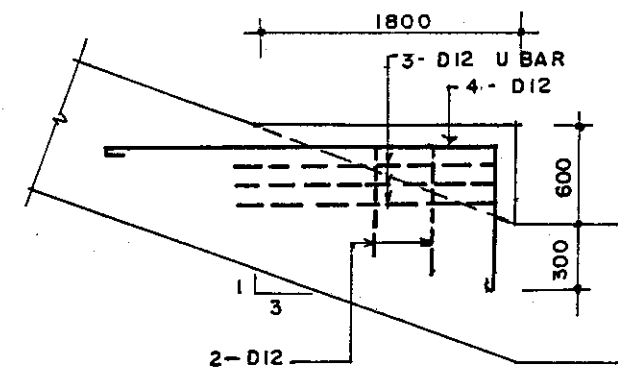
REINF. DETAIL OF CHUTE BLOCK



PART PLAN OF CHUTE BLOCK



SEC. OF CHUTE BLOCK

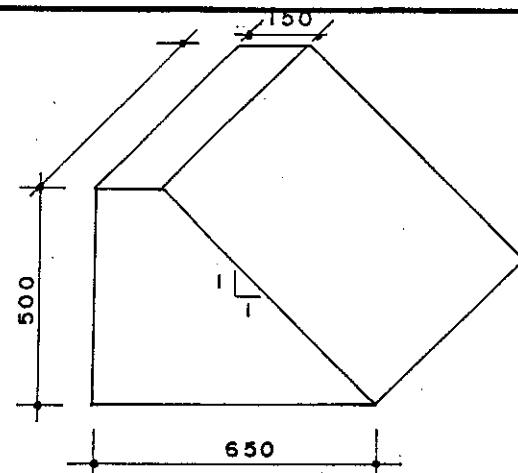


REINF. DETAIL OF CHUTE BLOCK

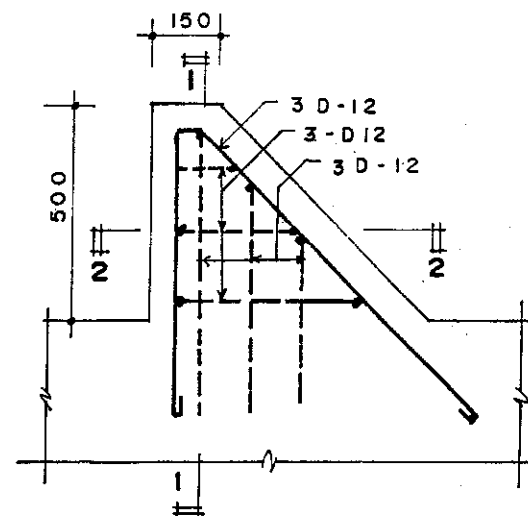
● ALL DIMENSIONS ARE IN mm.

SCALE: 1:40

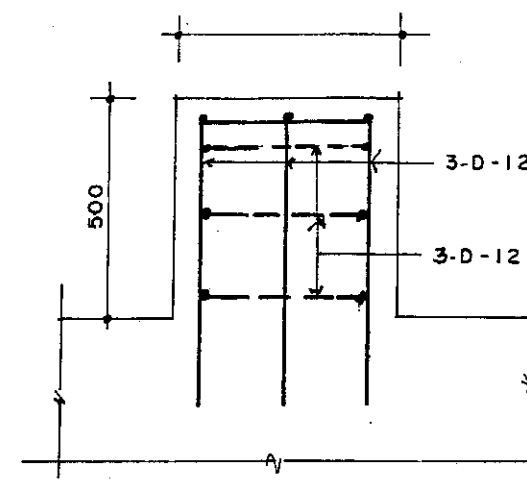
BWDB	
OFFICE OF THE CE, DESIGN	
STILLING BASIN CHUTE BLOCK	
DETAILS ( 600, 700 & 800mm )	
PREPARED: SE, DESIGN CIRCLE-V.	APPROVED: CE, DESIGN-I.
DATE: 24-6-95	DWG. NO. SD-08



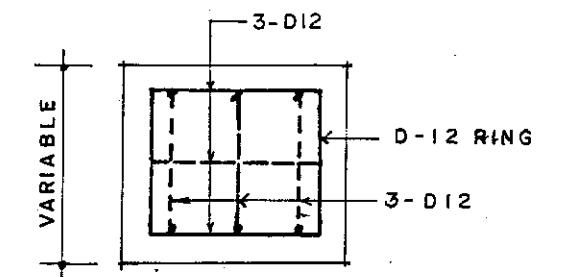
BAFFLE BLOCK DETAILS



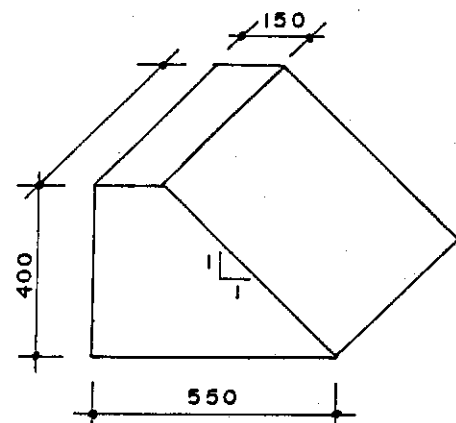
REINF. DET. OF BAFFLE BLOCK



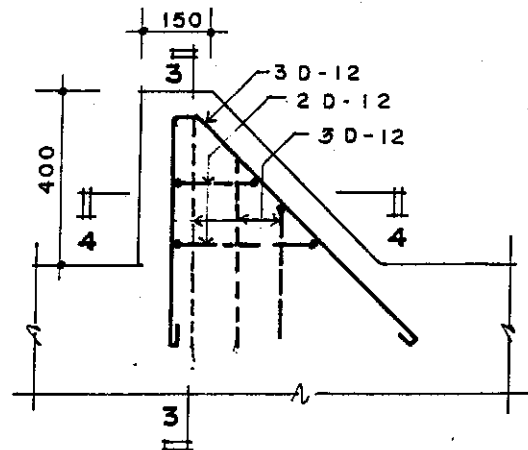
SECTION 1-1



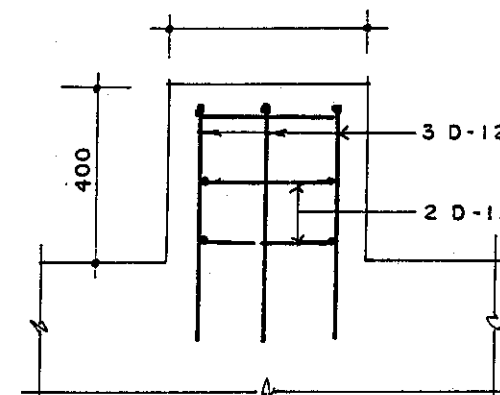
SECTION 2-2



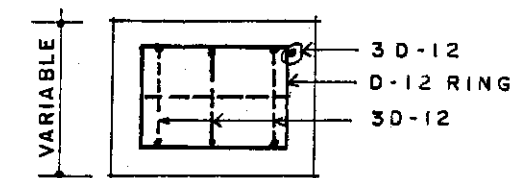
BAFFLE BLOCK DETAILS



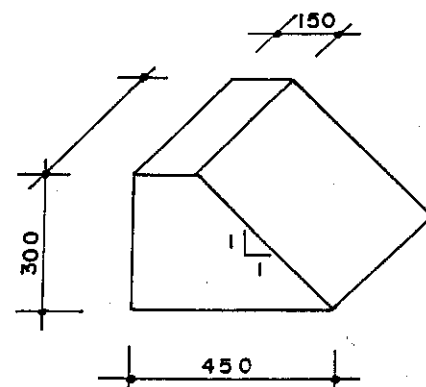
REINF. DET. OF BAFFLE BLOCK



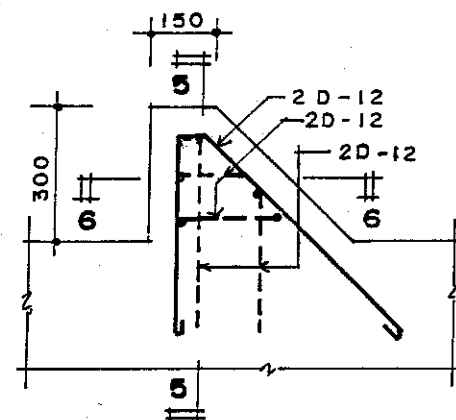
SECTION 3-3



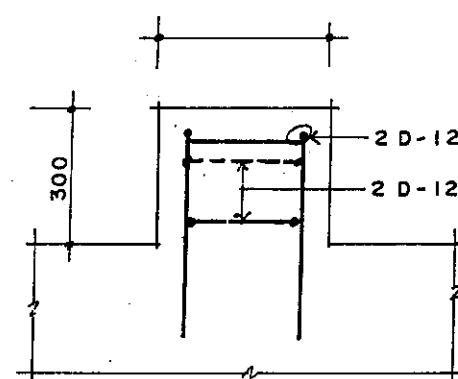
SECTION 4-4



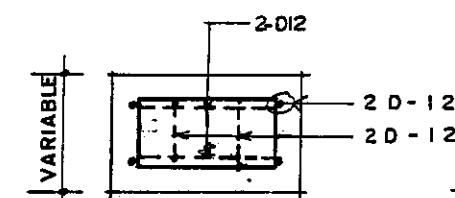
BAFFLE BLOCK DETAILS



REINF. DET. OF BAFFLE



SECTION 5-5

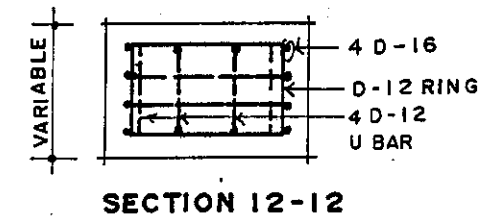
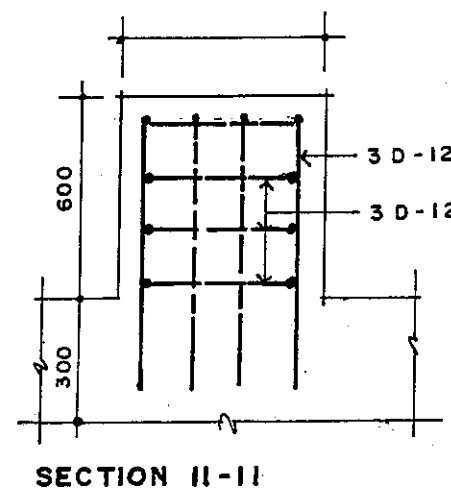
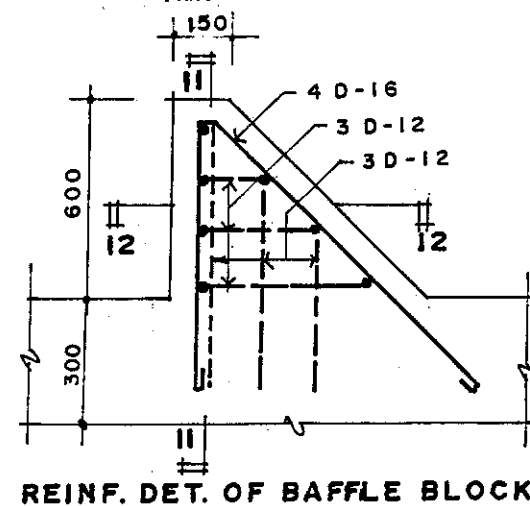
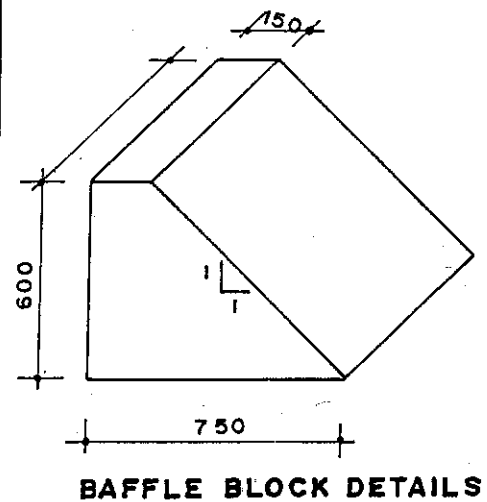
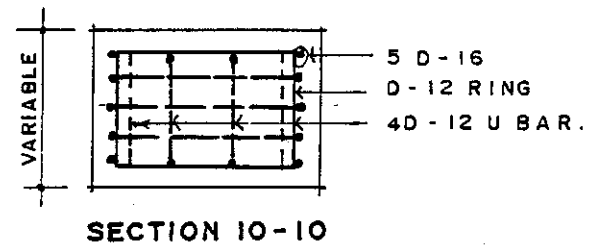
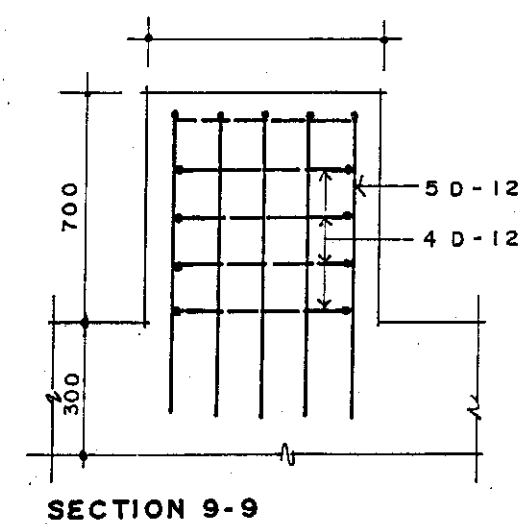
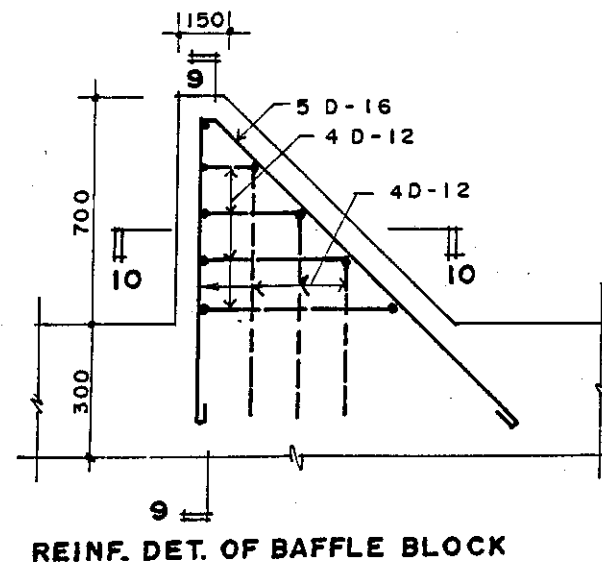
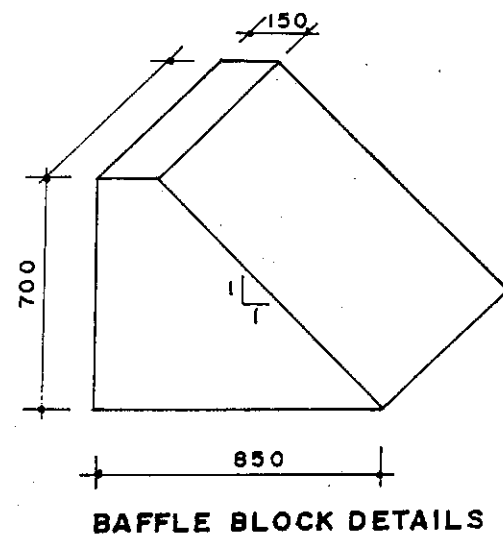
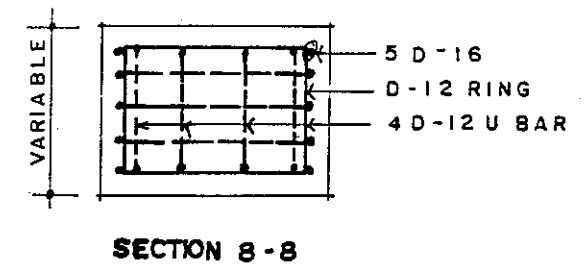
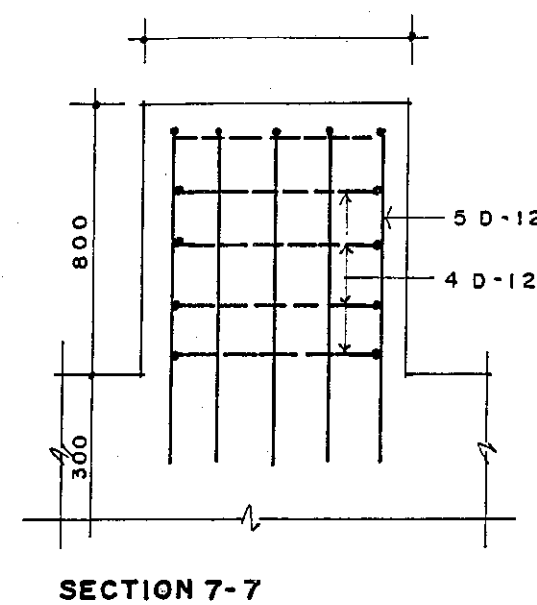
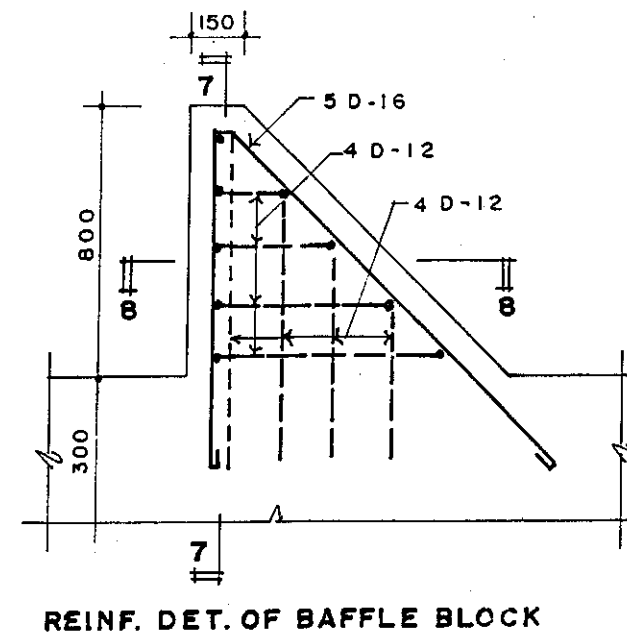
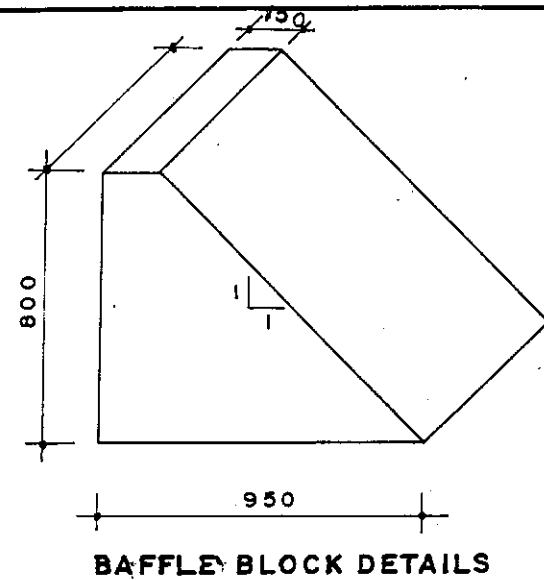


SECTION 6-6

● ALL DIMENSIONS ARE IN mm.

SCALE: 1:15

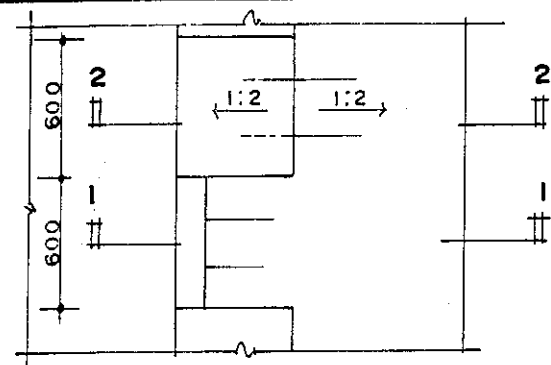
BWDB	
OFFICE OF THE CE, DESIGN	
STILLING BASIN BAFFLE BLOCK DETAILS ( 300, 400 & 500mm )	
PREPARED: SE, DESIGN CIRCLE -V.	APPROVED: CE, DESIGN
DATE: 24- 6- 95	DWG. NO. SD-09



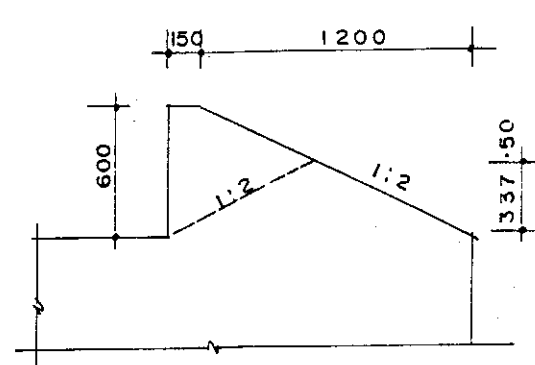
● ALL DIMENSIONS ARE IN mm.

SCALE: 1:20

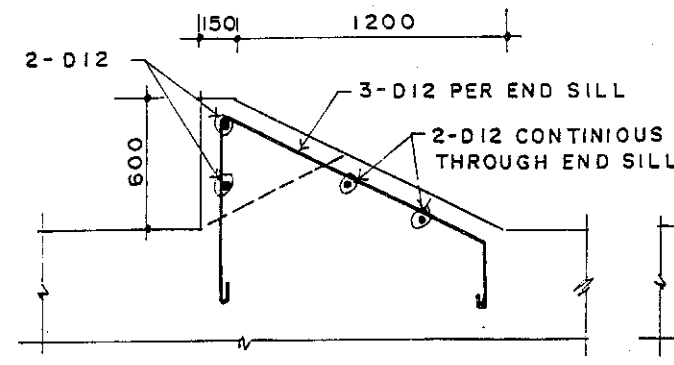
BWDB	
OFFICE OF THE CE, DESIGN	
STILLING BASIN BAFFLE BLOCK DETAILS ( 600, 700 & 800mm )	
PREPARED: SE, DESIGN CIRCLE-V.	APPROVED: CE, DESIGN
DATE: 24-6-95	DWG. NO. SD-10



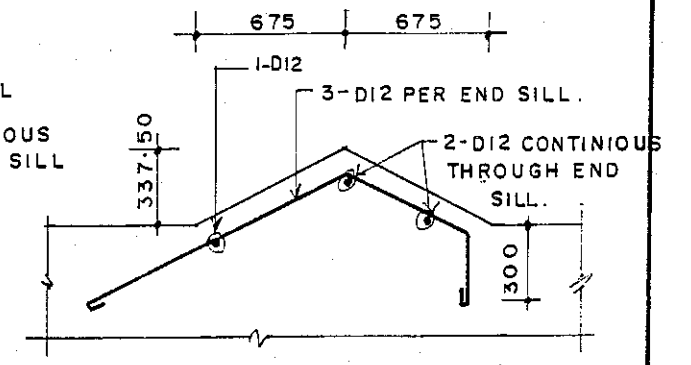
PART. PLAN OF END SILL



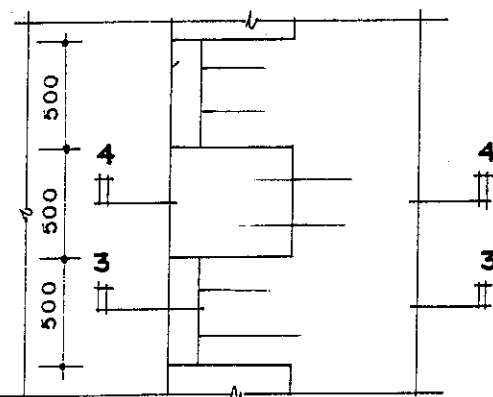
SECTION OF END SILL



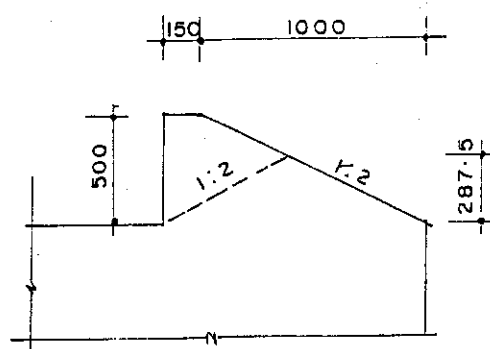
SECTION 1-1



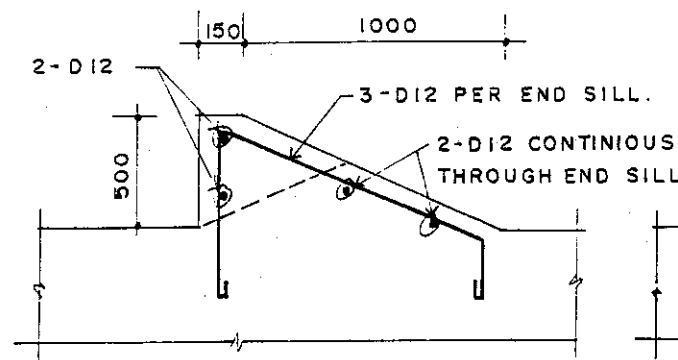
SECTION 2-2



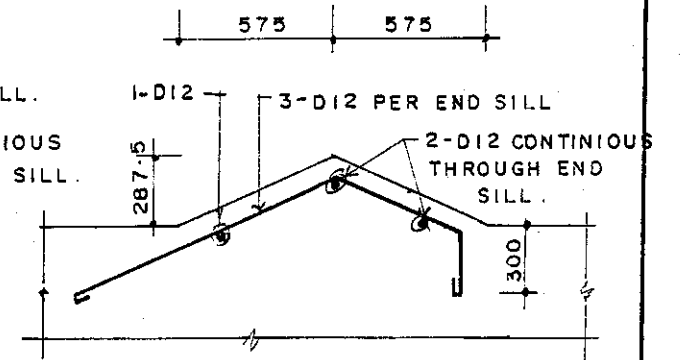
PART. PLAN OF END SILL.



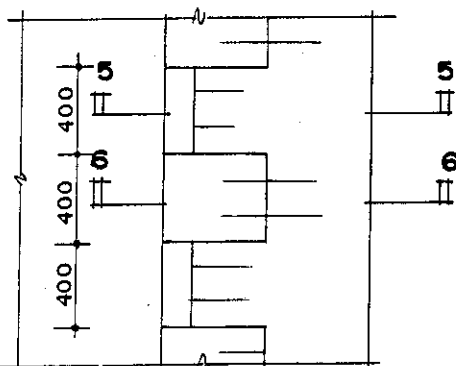
SECTION OF END SILL.



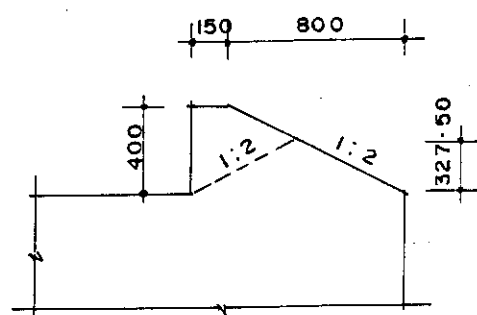
SECTION 3-3



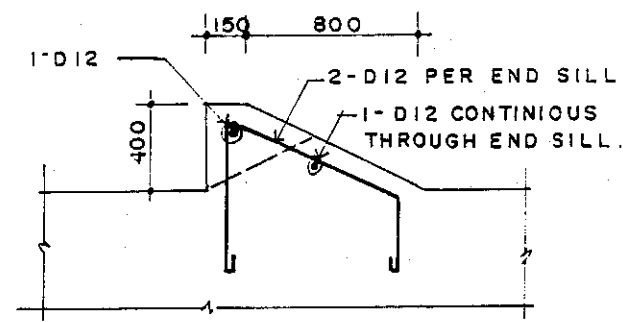
SECTION 4-4



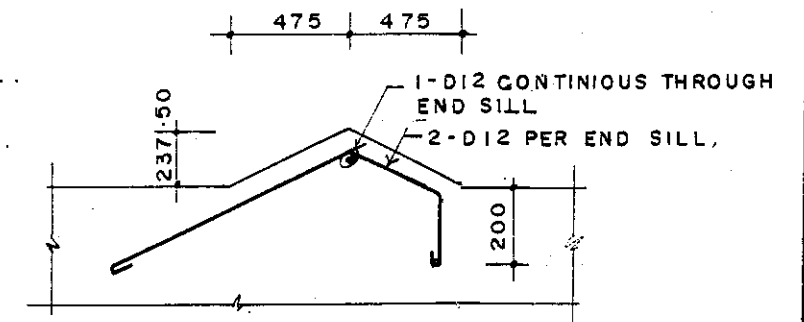
PART. PLAN OF END SILL.



SECTION OF END SILL

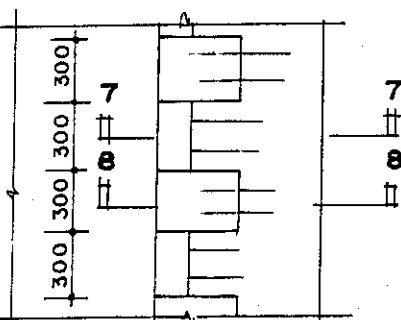


SECTION 5-5

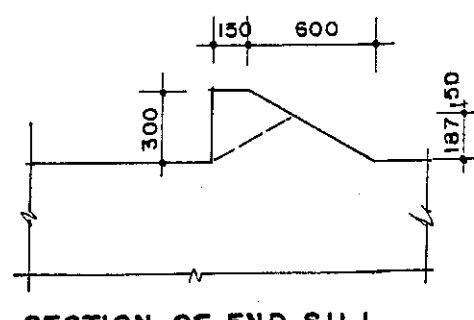


SECTION 6-6

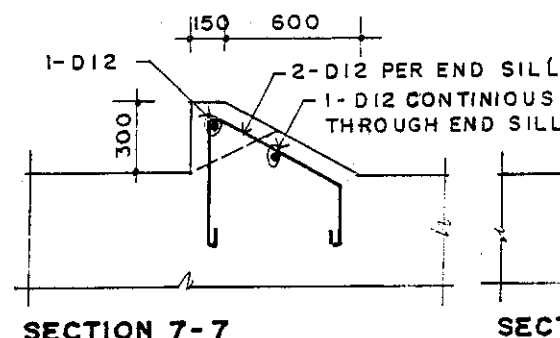
● ALL DIMENSIONS ARE IN mm.



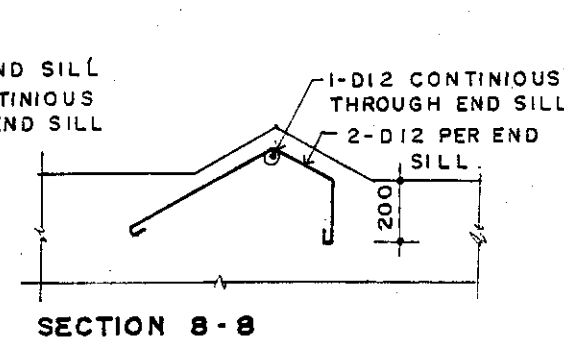
PART. PLAN OF END SILL.



SECTION OF END SILL.



SECTION 7-7



SECTION 8-8

SCALE: 1:30

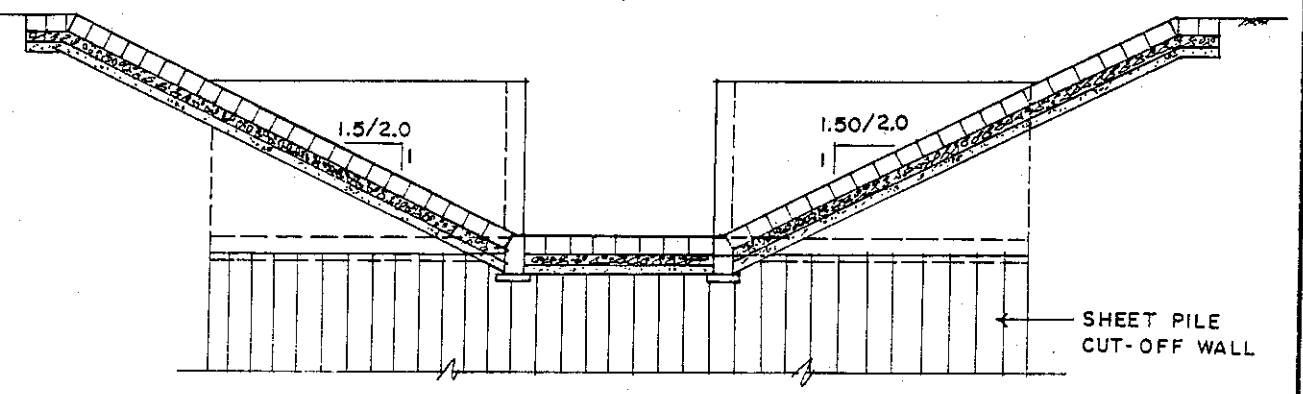
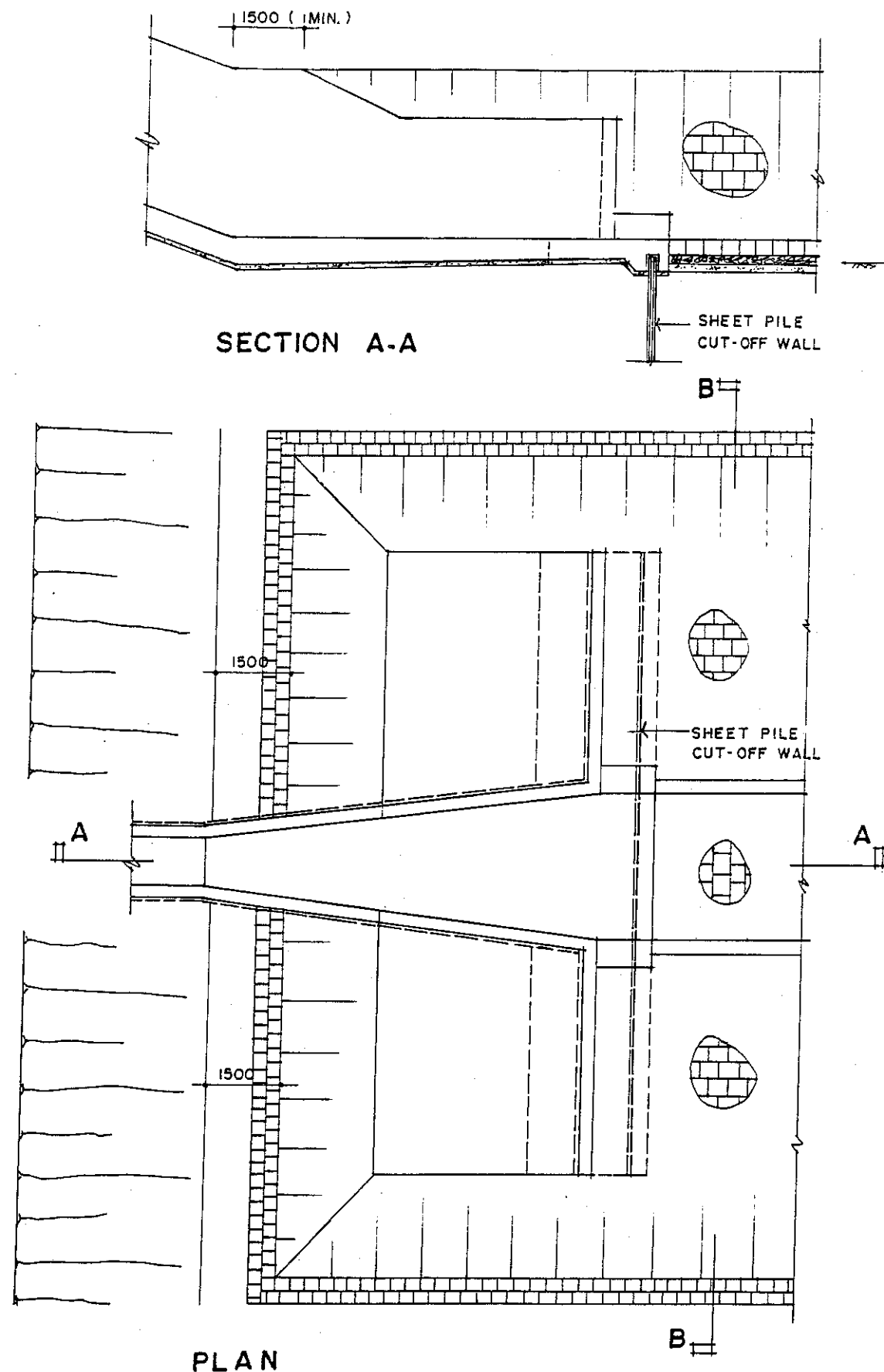
BWDB  
OFFICE OF THE CE, DESIGN  
STILLING BASIN END SILL  
DETAILS.

PREPARED:  
SE, DESIGN CIRCLE-V.

APPROVED:  
CE, DESIGN

DATE: 24-6-95

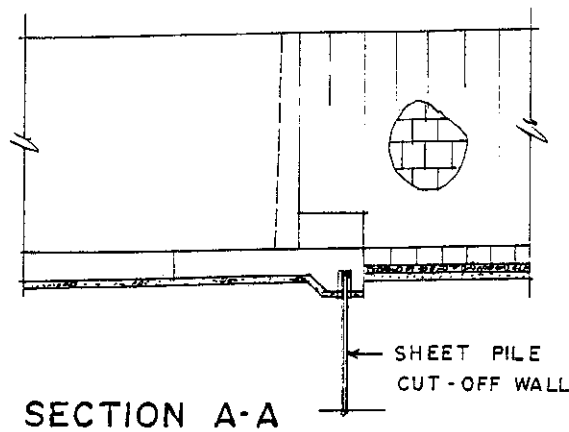
DWG. NO. SD-II



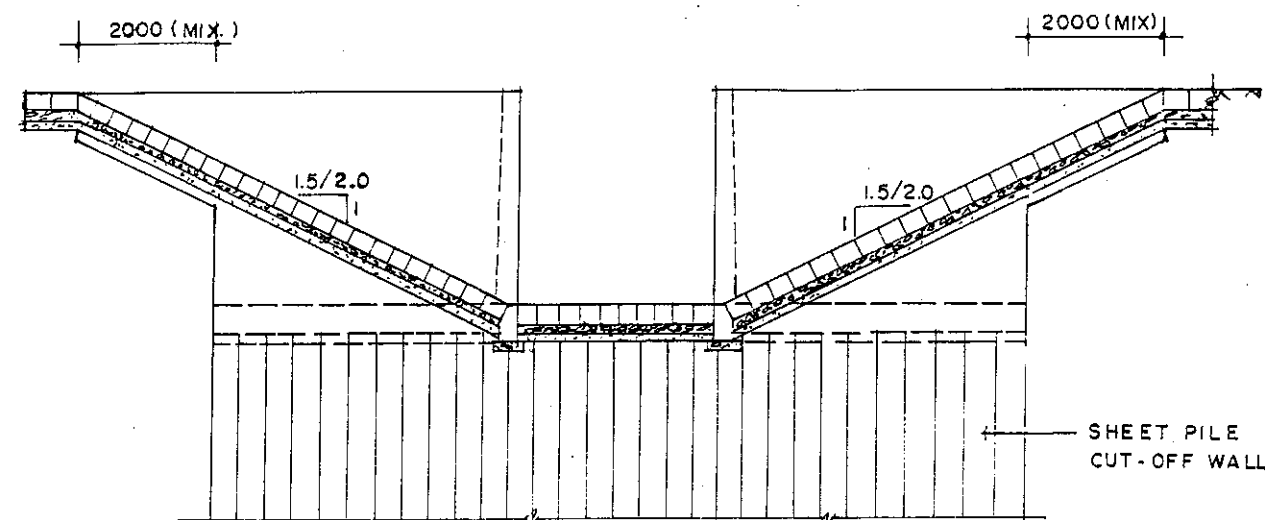
SCALE: 1:100

BWDB OFFICE OF THE CE, DESIGN	
ECONOMICAL TRANSITION DETAILS (TYPE-1)	
PREPARED: SE, DESIGN CIRCLE-V.	APPROVED: CE, DESIGN
DATE: 24-6-95	DWG. NO. 50-12

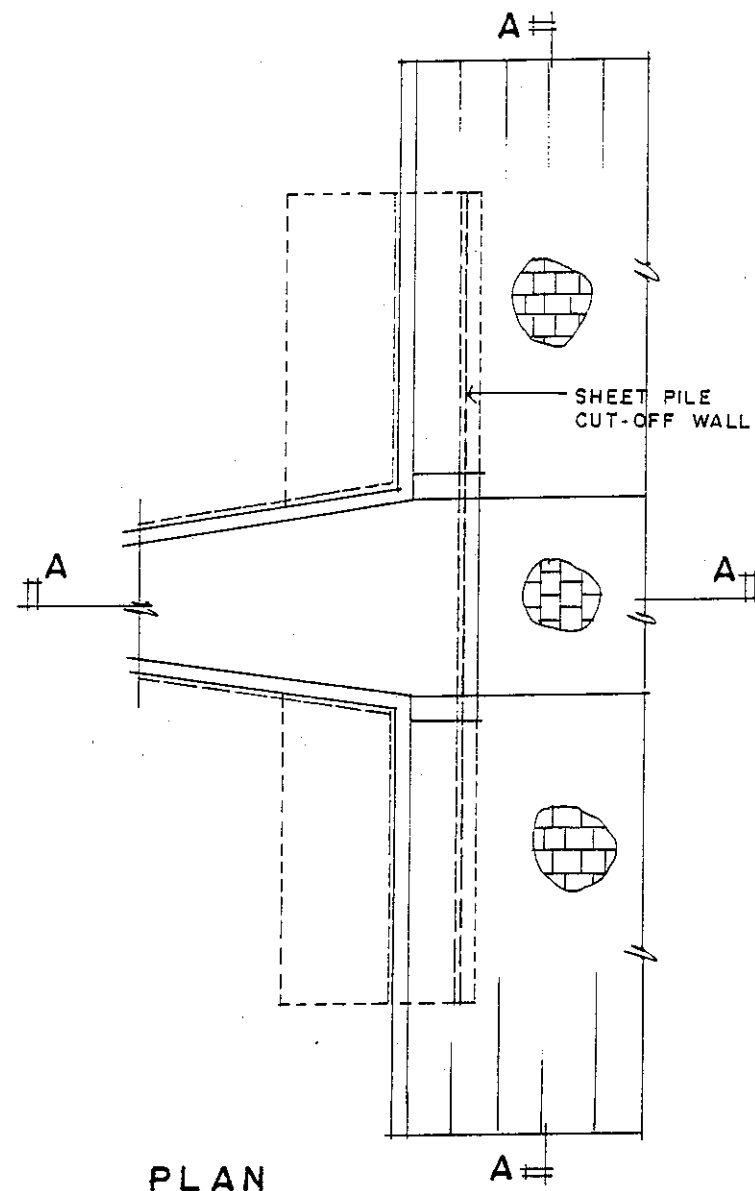




SECTION A-A



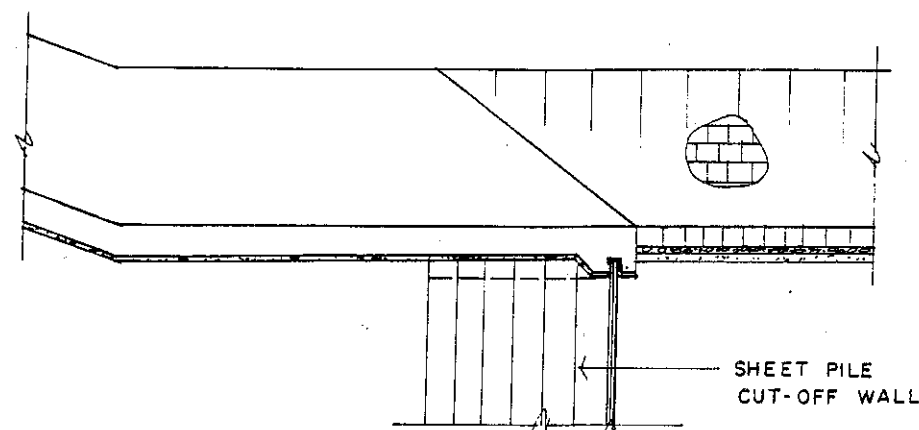
SECTION B-B



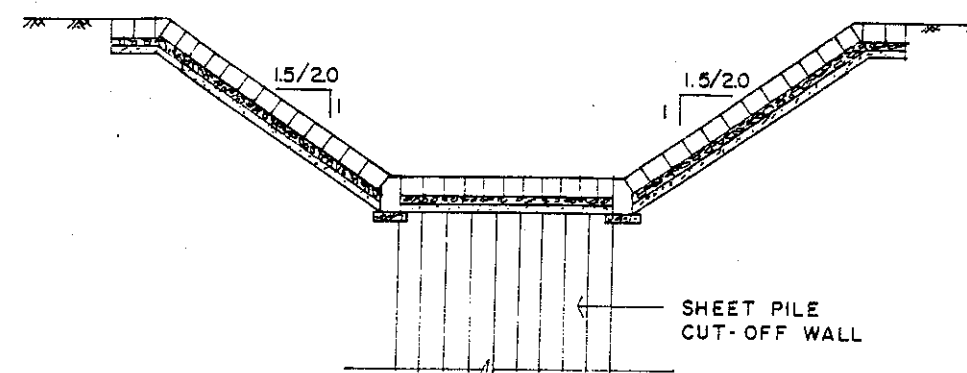
PLAN

SCALE: 1:100

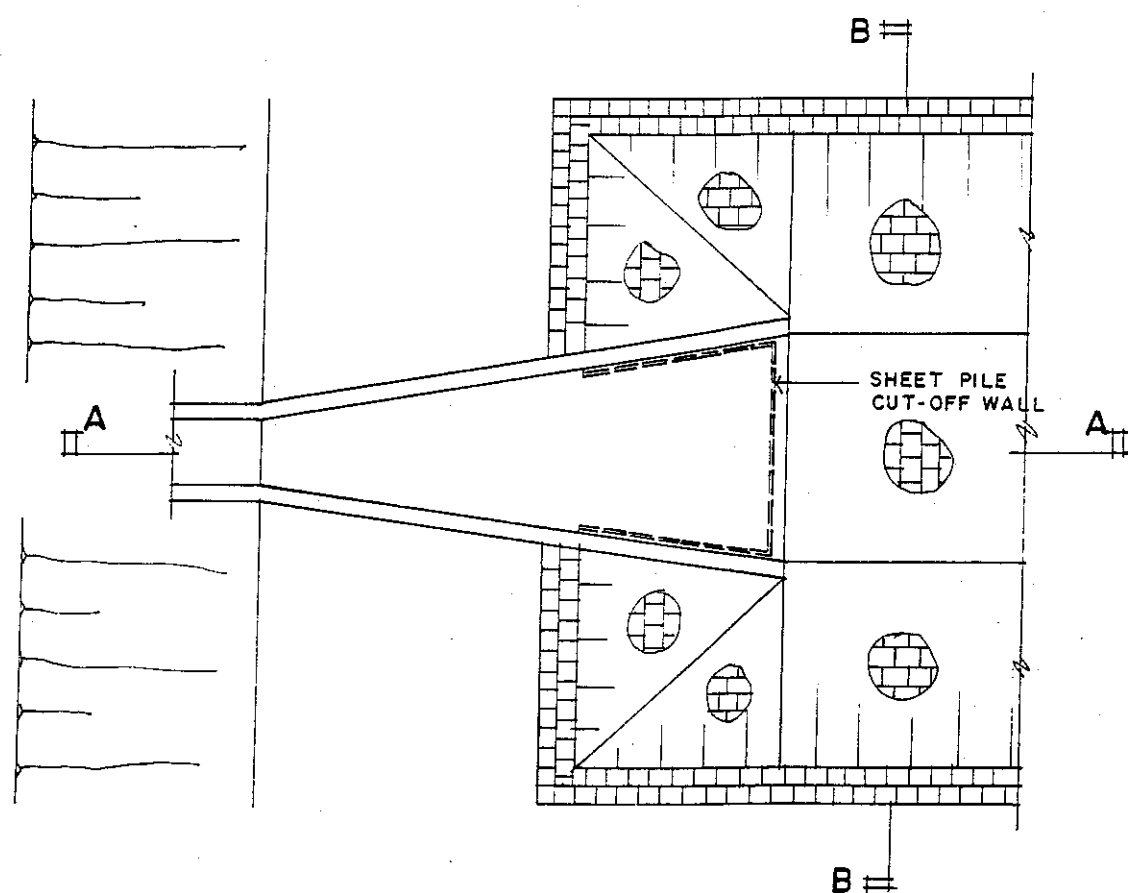
BWDB OFFICE OF THE CE, DESIGN	
ECONOMICAL TRANSITION DETAILS ( TYPE - II )	
PREPARED: SE, DESIGN CIRCLE-V.	APPROVED: CE, DESIGN
DATE: 24-6-95	DWG. NO SD-13



SECTION A-A



SECTION B-B

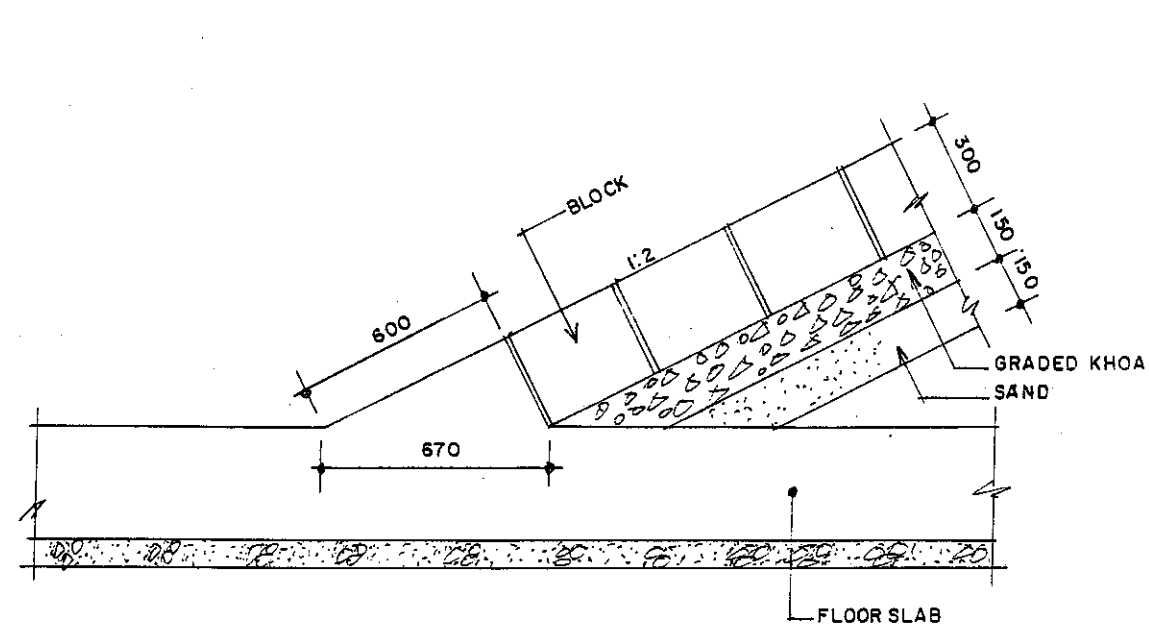


PLAN

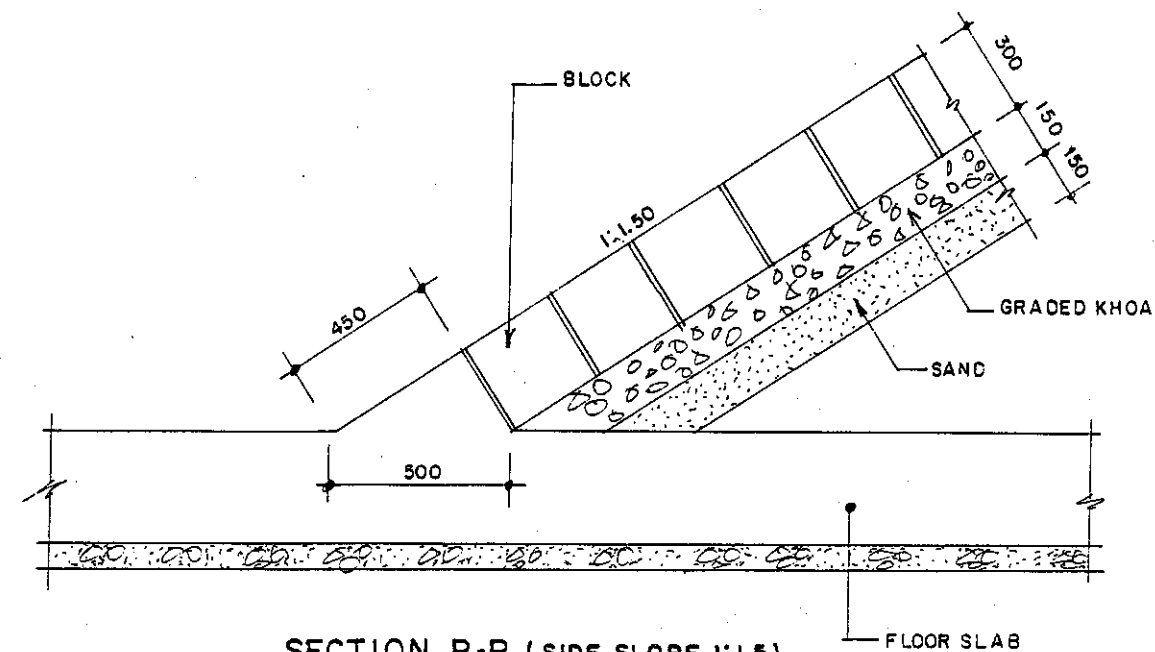
SCALE: 1:100

BWDB OFFICE OF THE CE, DESIGN	
ECONOMICAL TRANSITION DETAILS (TYPE - III)	
PREPARED: SE, DESIGN CIRCLE-V.	APPROVED: CE, DESIGN
DATE: 24-6-95	DWG. NO. SD-14

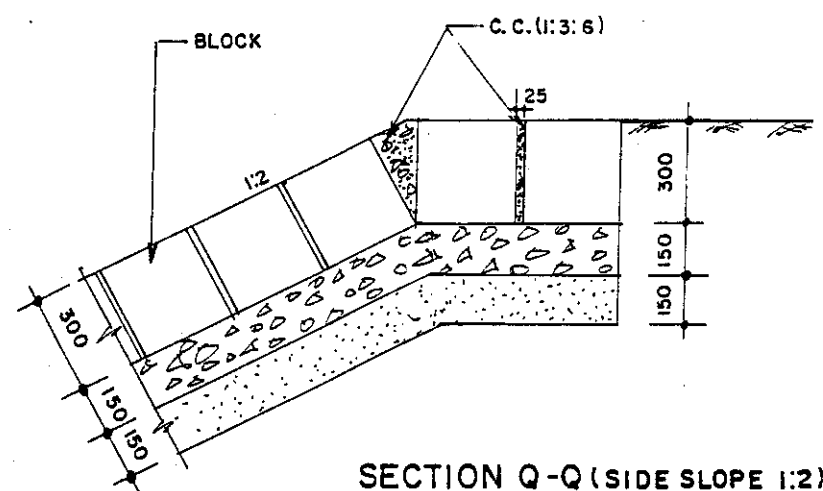




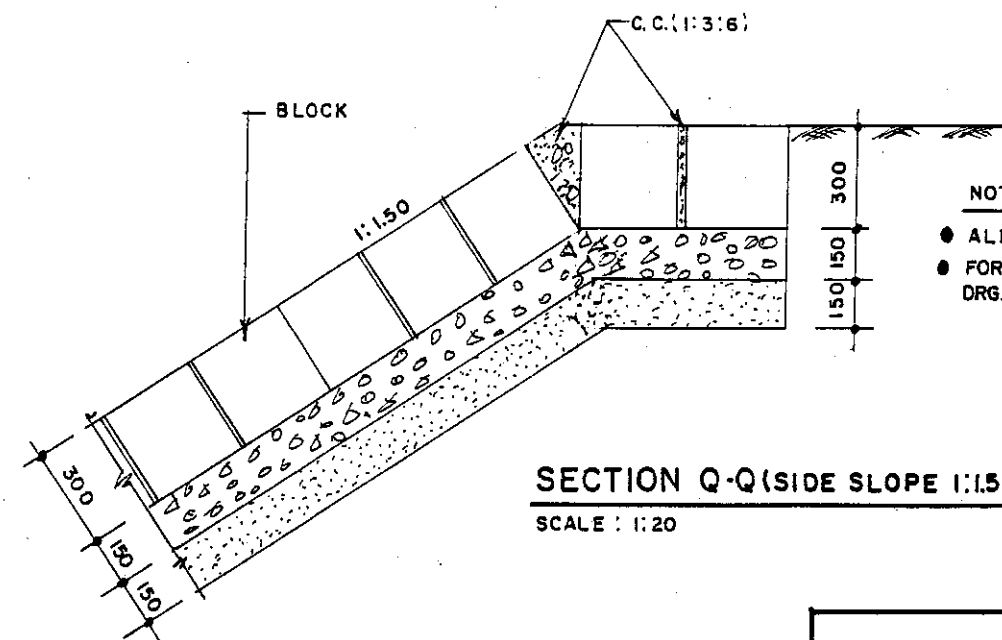
SECTION P-P (SIDE SLOPE 1:2)  
SCALE: 1:20



SECTION P-P (SIDE SLOPE 1:1.5)  
SCALE: 1:20



SECTION Q-Q (SIDE SLOPE 1:2)  
SCALE: 1:20

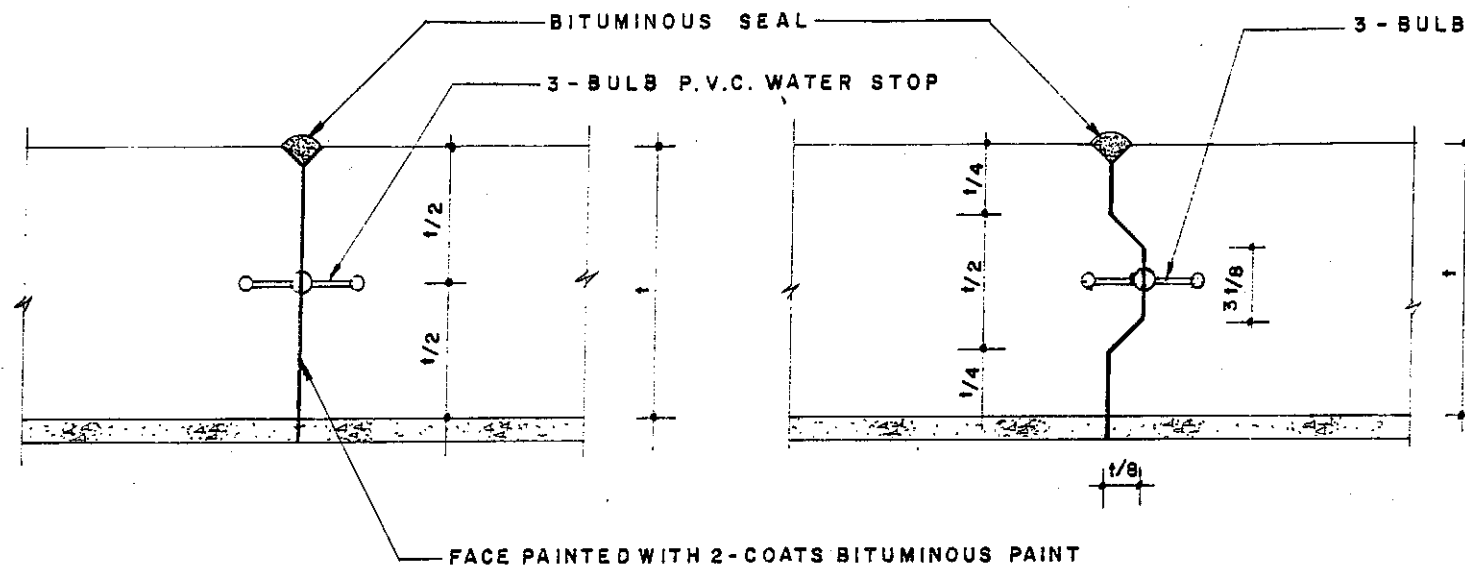


SECTION Q-Q (SIDE SLOPE 1:1.5)  
SCALE: 1:20

NOTE

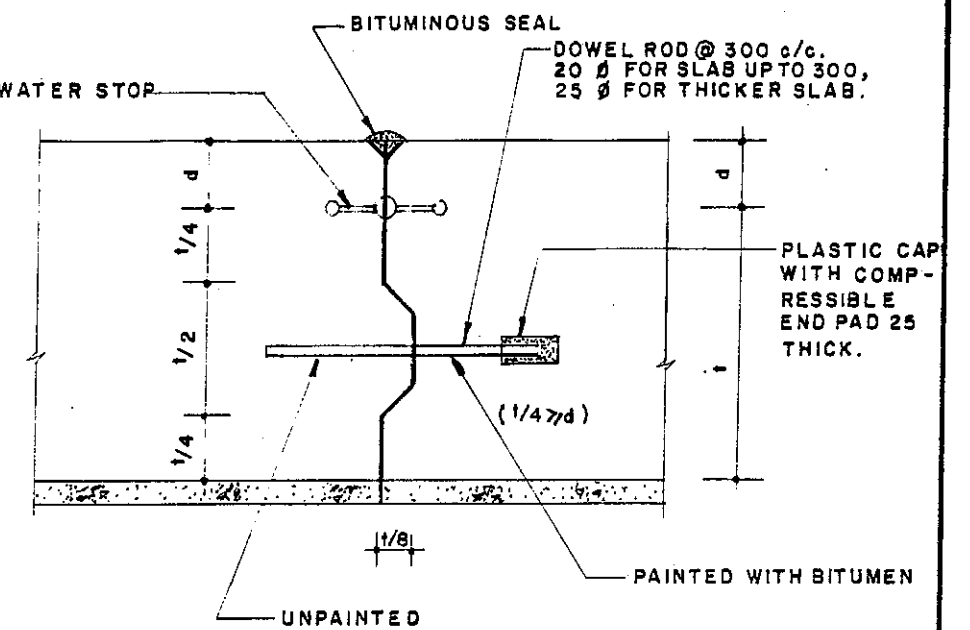
- ALL DIMENSIONS ARE IN MILLIMETER
- FOR LOCATION OF SECTIONS REFER DRG. NO. SD-16.

BWDB OFFICE OF THE CE, DESIGN	
PROTECTIVE WORK DETAILS (SECTIONS)	
PREPARED: <i>[Signature]</i> SE, DESIGN CIRCLE - V.	APPROVED: <i>[Signature]</i> CE, DESIGN
DATE: 24-6-95	DWG. NO. SD-16

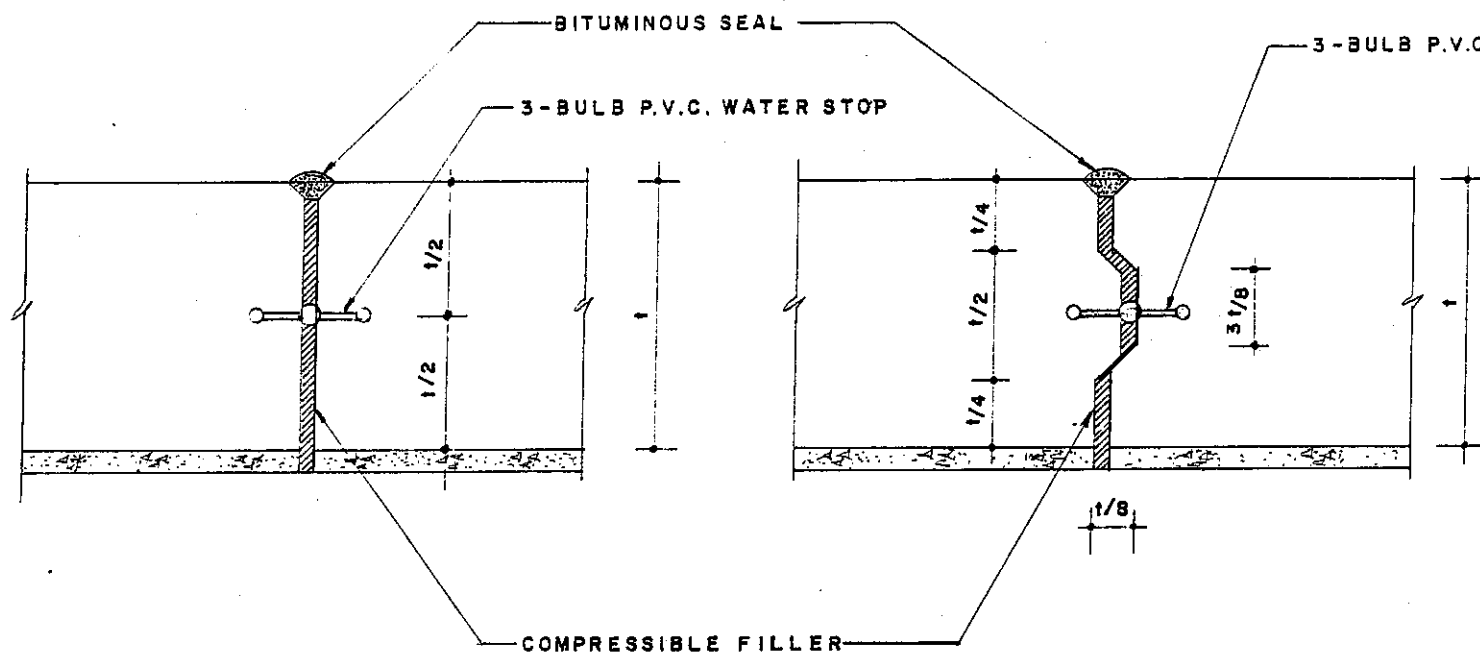


**SEALED & PLAIN CONTRACTION JOINT**  
(NO SHEARING ACTION IN JOINT)

**SEALED & KEYED CONTRACTION JOINT**  
(TYPICAL PROPORTION)

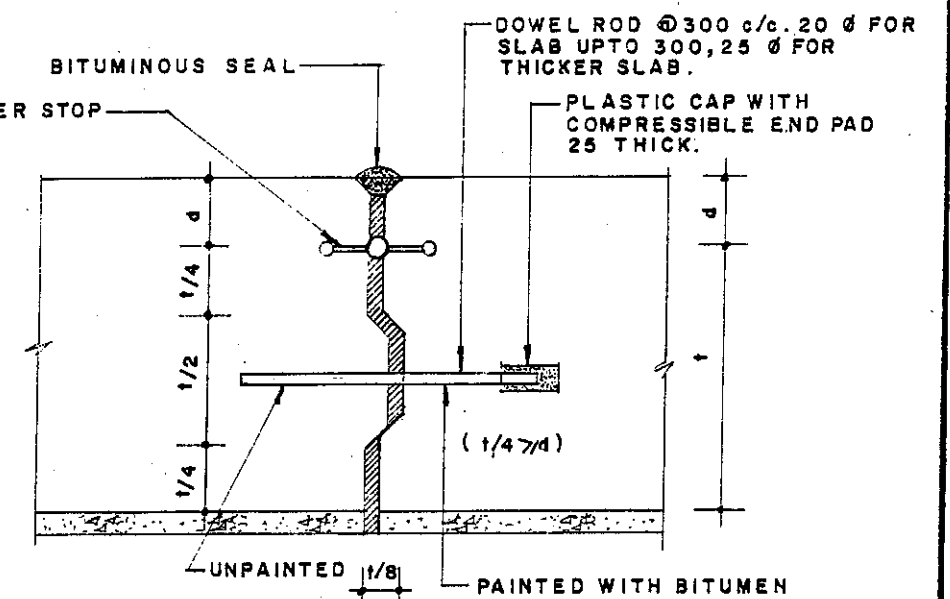


**SEALED, KEYED & DOWELLED CONTRACTION JOINT**



**SEALED & PLAIN EXPANSION JOINT**  
(NO SHEARING ACTION IN JOINT)

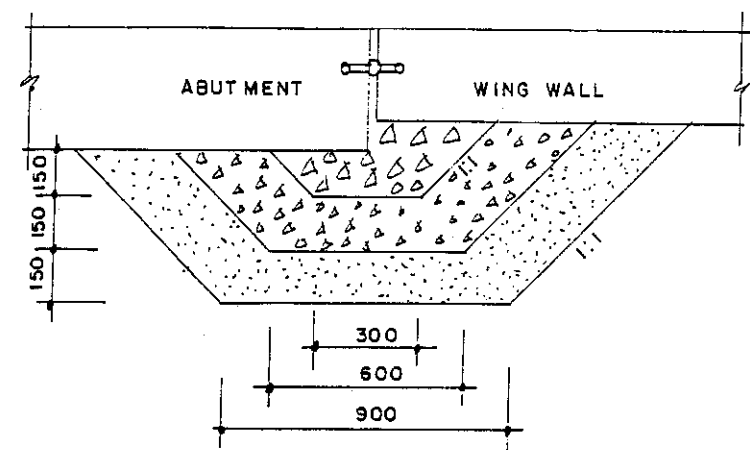
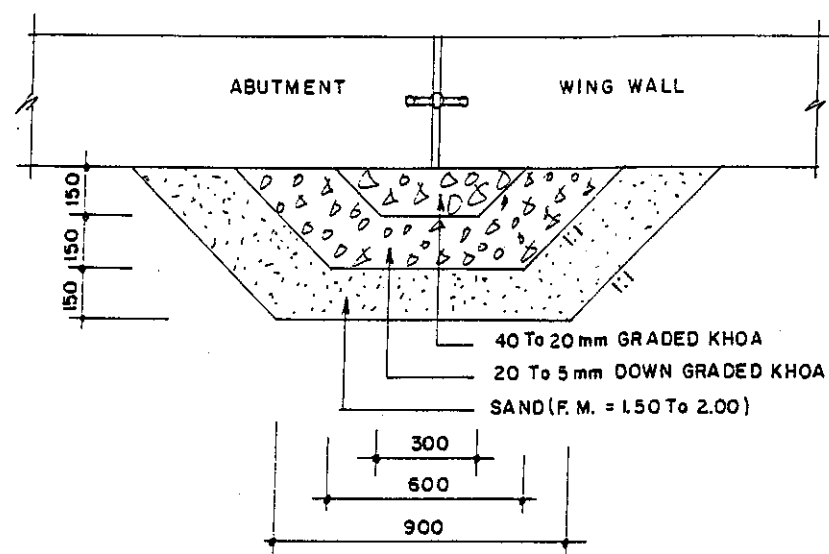
**SEALED & KEYED EXPANSION JOINT**  
(TYPICAL PROPORTION)



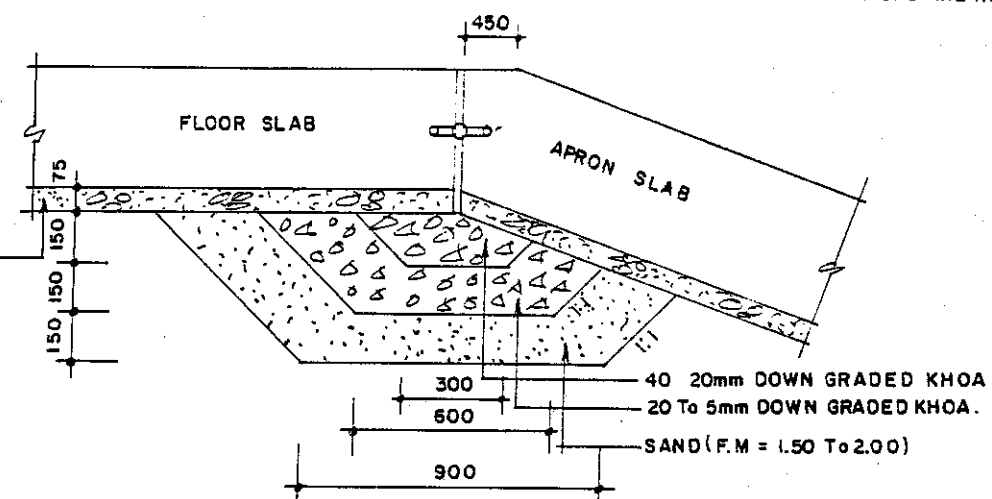
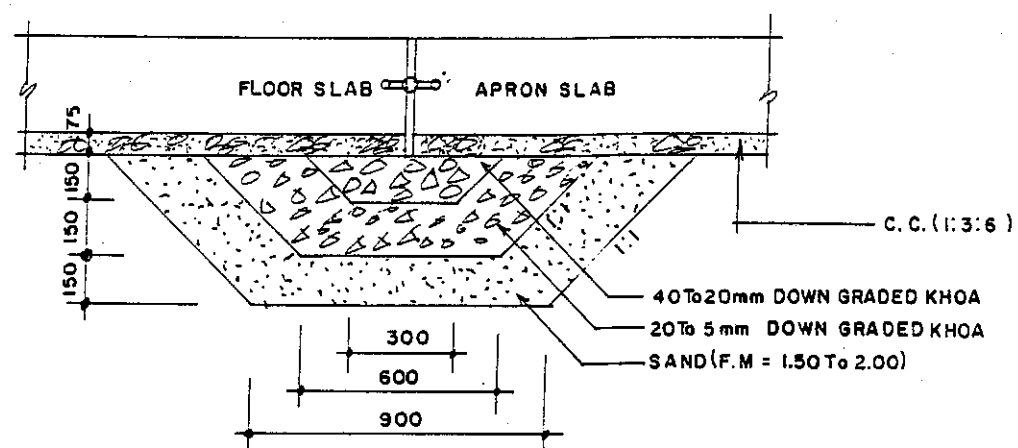
**SEALED, KEYED & DOWELLED EXPANSION JOINT**

NOTE : ALL DIMENSIONS ARE IN m.m.

BWDB	
OFFICE OF THE CE, DESIGN	
CONTRACTION AND EXPANSION JOINT DETAILS	
PREPARED SE, DESIGN CIRCLE-V.	APPROVED CE, DESIGN
DATE : 24-6-95.	DWG. NO. SD-17.



NOTE :  
ALL DIMENSIONS ARE IN MILLIMETER



SCALE : 1:20

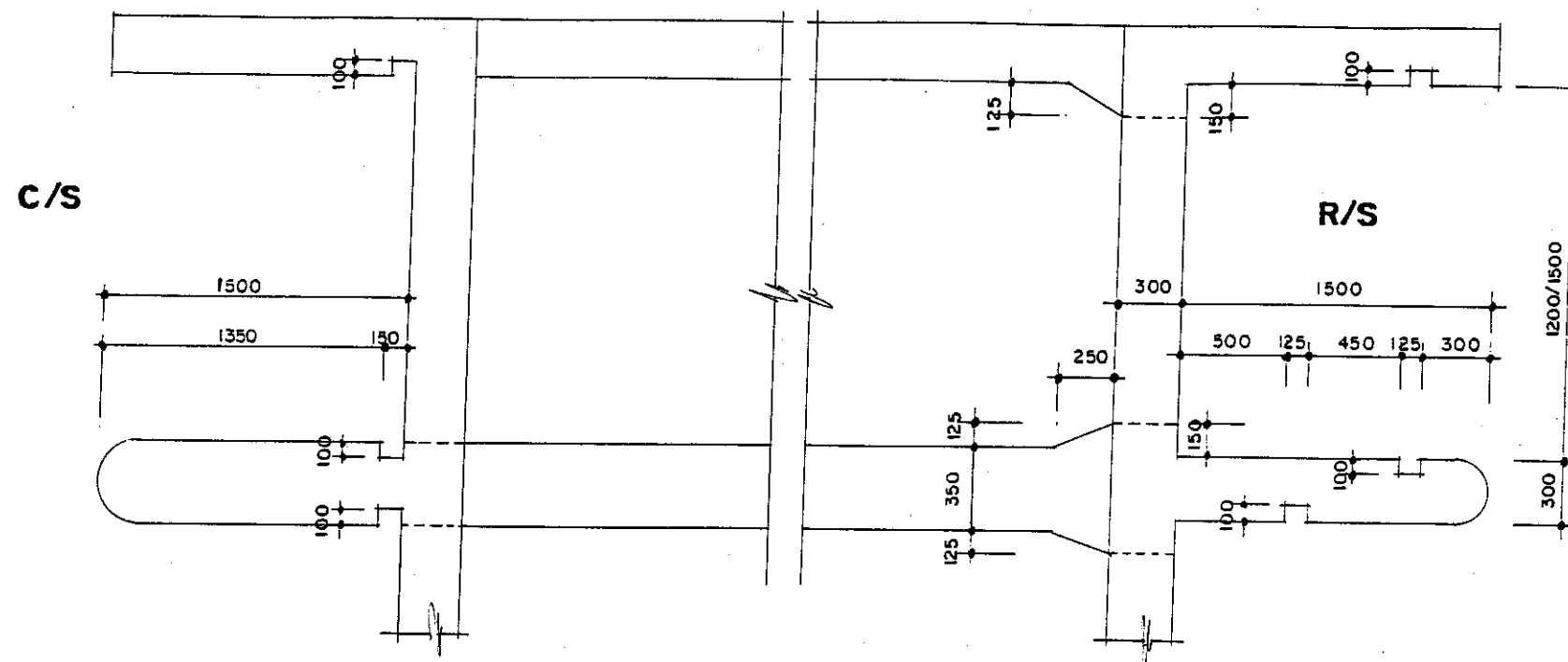
BWDB  
OFFICE OF THE CE, DESIGN  
FILTER DETAILS

PREPARED :  
SE, DESIGN CIRCLE - V.

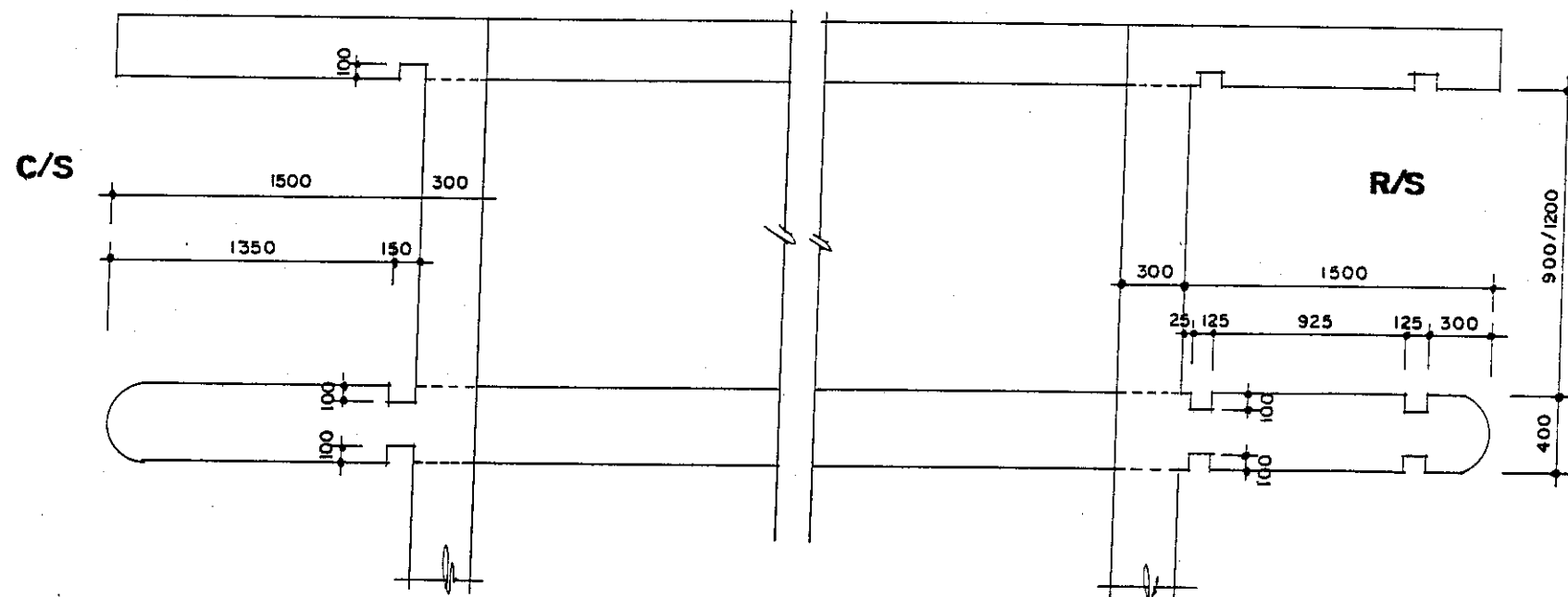
APPROVED :  
CE, DESIGN

DATE : 24-6-95

DWG. NO. SD-18



C/S FALL BOARD & R/S FLAP GATE



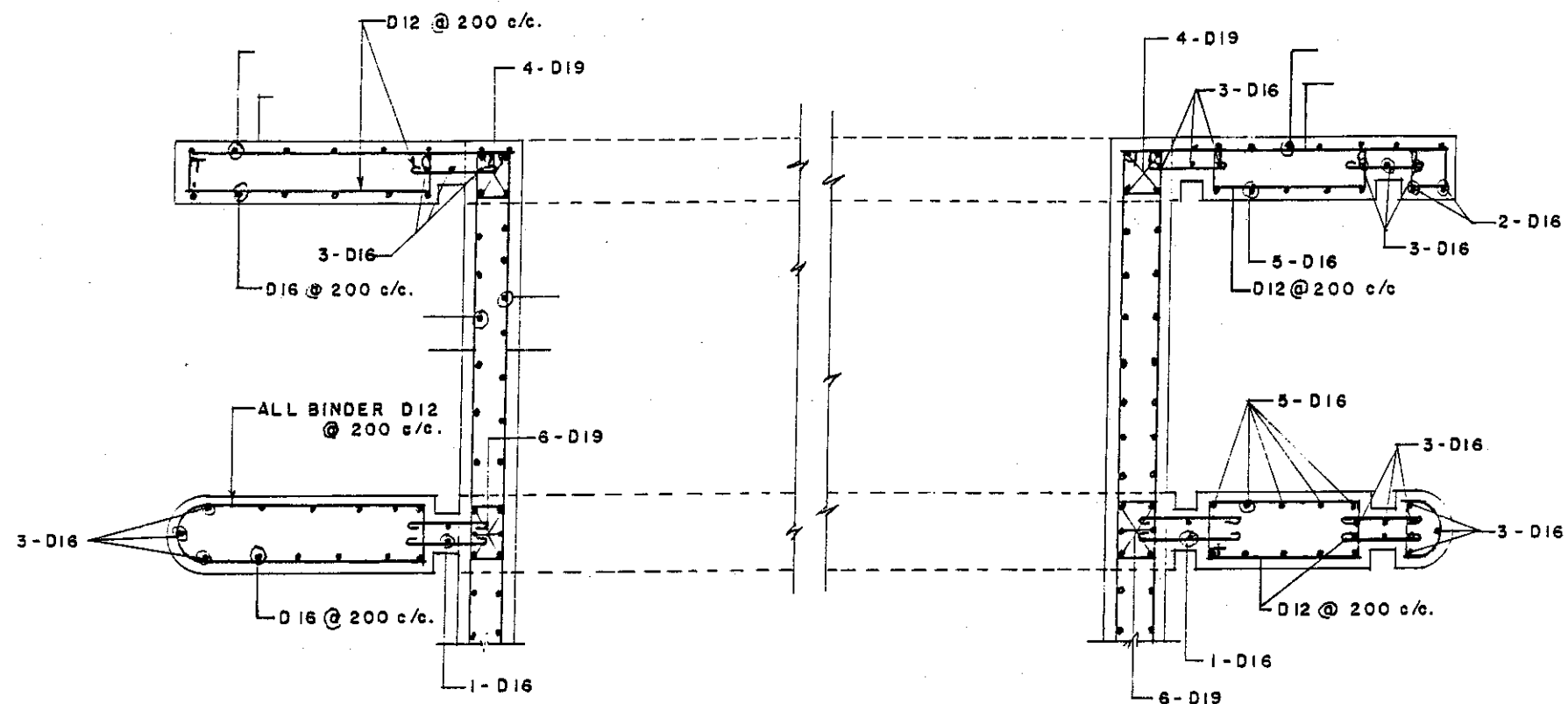
C/S FALL BOARD & R/S VERTICAL LIFT GATE

NOTE :  
ALL DIMENSIONS ARE IN MILLIMETER.

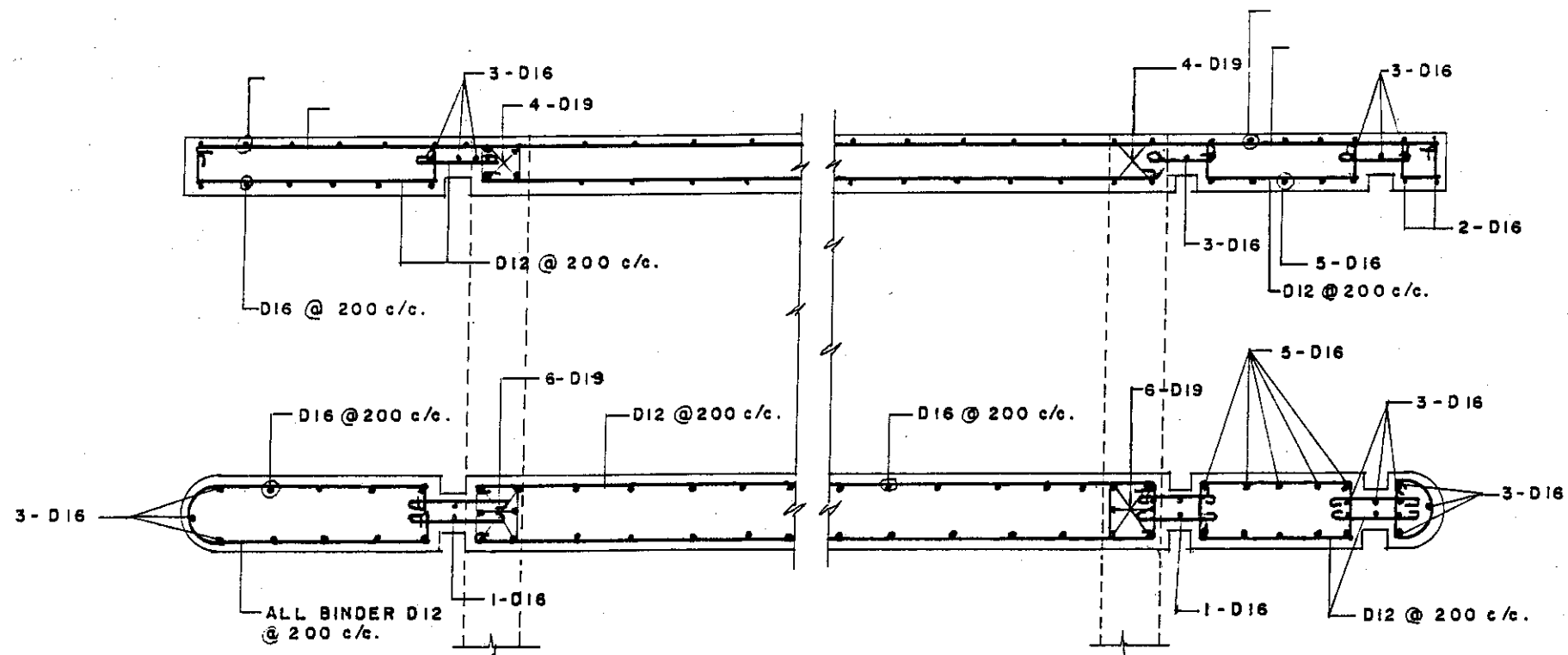
BWDB	
OFFICE OF THE CE, DESIGN	
GROOVE ARRANGEMENT DETAILS (VENT SIZE: 1200x1500 & 900x1200)	
PREPARED: <i>[Signature]</i> SE. DESIGN CIRCLE-V.	APPROVED: <i>[Signature]</i> CE. DESIGN
DATE : 24-6-95	DWG. NO. SD-19





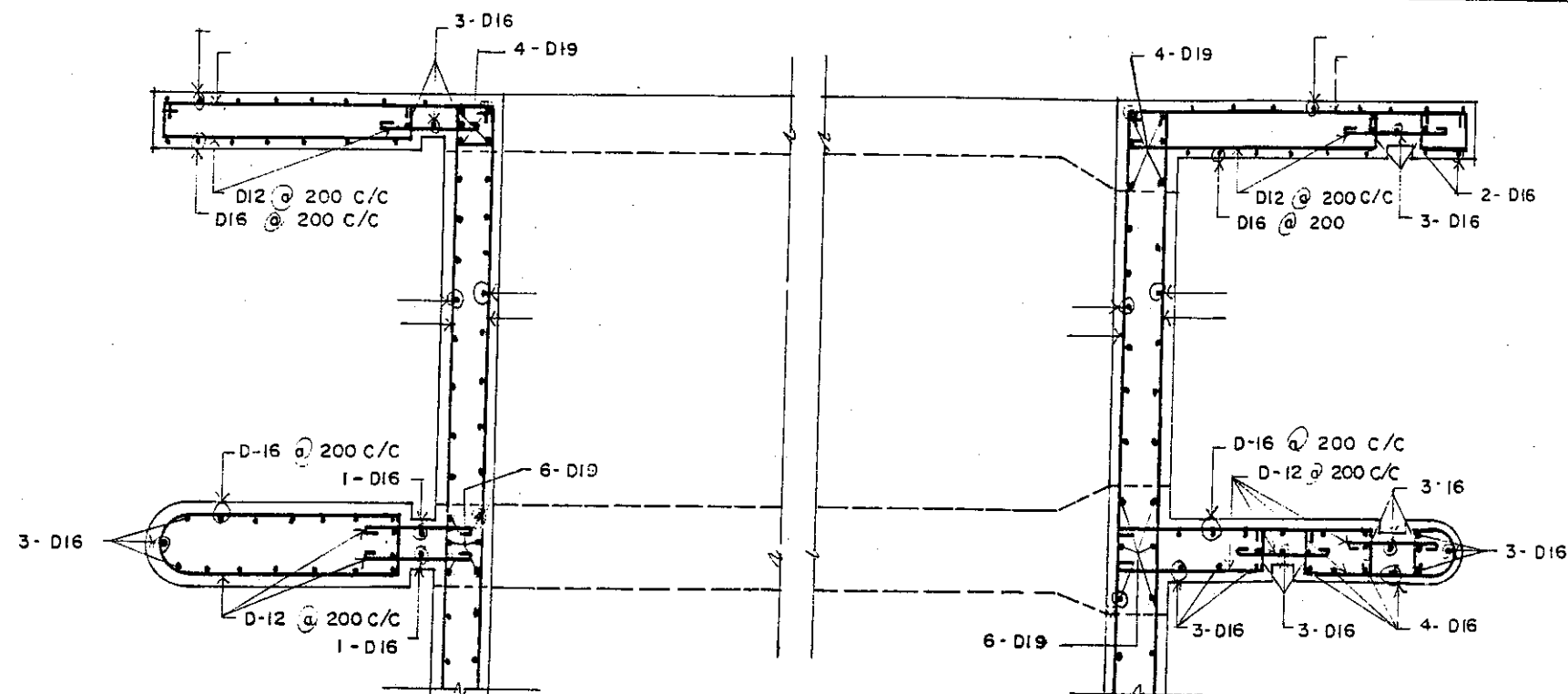


REINF. DETAILS OF EXTENDED PIER/ABUTMENT & HEAD WALL  
(ABOVE TOP SLAB OF CONDUIT)

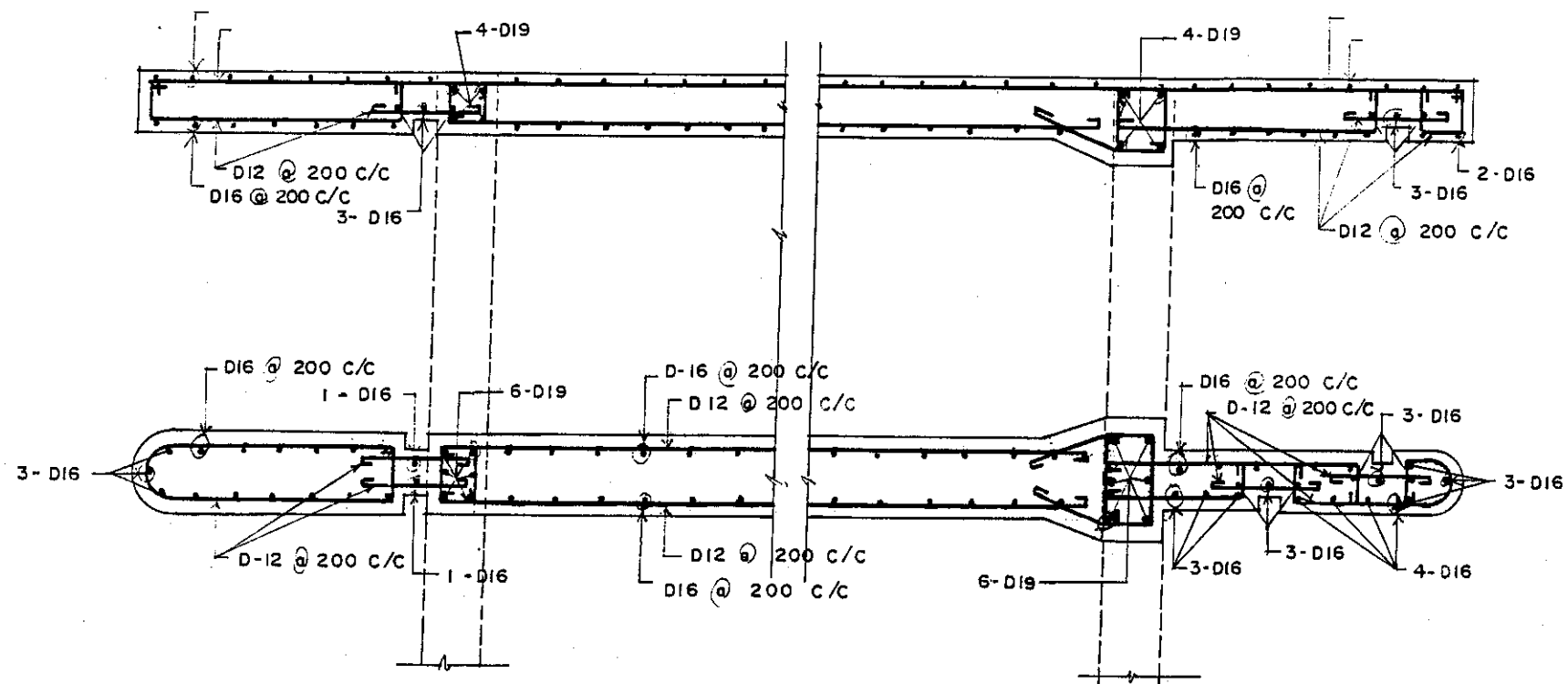


REINF. DETAILS OF PIER & ABUTMENT  
(BELOW TOP SLAB OF CONDUIT)

BWDB	
OFFICE OF THE CE, DESIGN	
TYPICAL REINF. DETAILS OF PIER, ABUTMENT & HEAD WALL (C/S FALL BOARD & R/S VERTICAL LIFT GATE)	
PREPARED: <i>[Signature]</i>	APPROVED: <i>[Signature]</i>
SE, DESIGN CIRCLE-V.	CE, DESIGN
DATE: 24-6-95	DWG. NO. SD-21

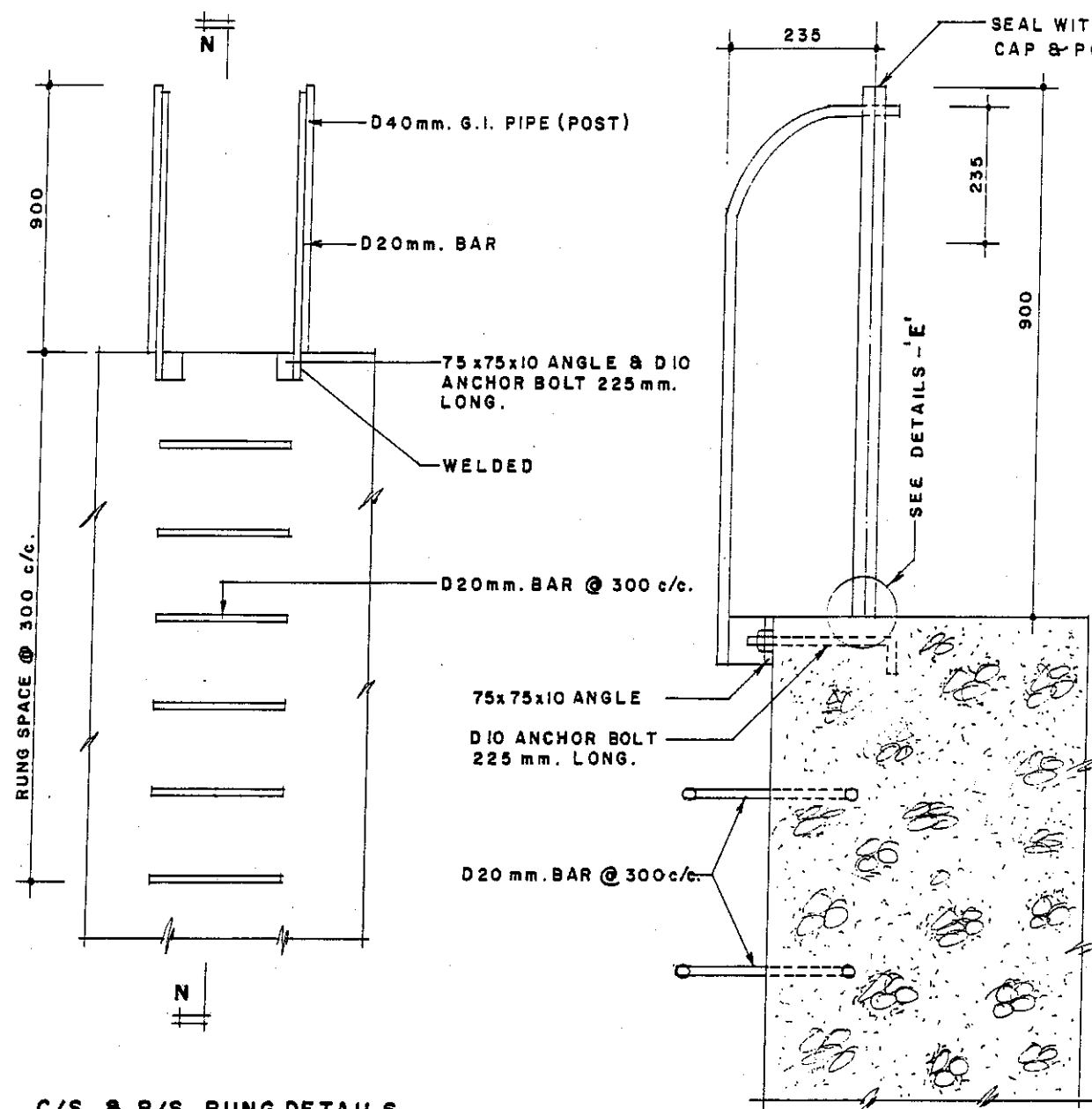


REINF. EXTENDED OF EXTENDED PIER/ABUTMENT & HEAD WALL  
(ABOVE TOP SLAB OF CONDUIT)



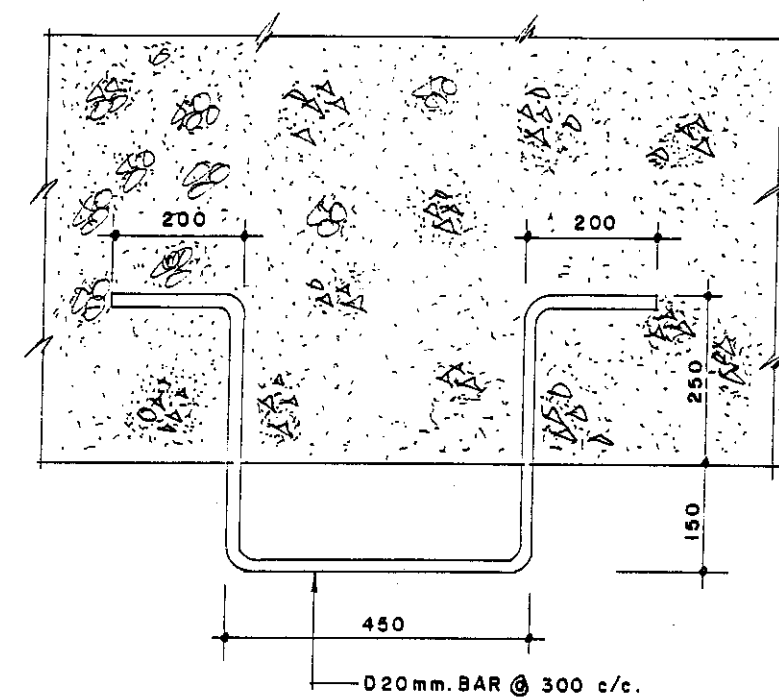
REINF. DETAILS OF PIER & ABUTMENT  
(BELOW TOP SLAB OF CONDUIT)

BWDB OFFICE OF THE CE, DESIGN	
TYPICAL REINF. DETAILS OF PIER, ABUTMENT & HEAD WALL (C/S FALL BOARD & R/S FLAP GATE)	
PREPARED: <i>[Signature]</i> SE, DESIGN CIRCLE - V.	APPROVED: <i>[Signature]</i> CE, DESIGN
DATE: 24-6-95	DWG. NO. SD-22

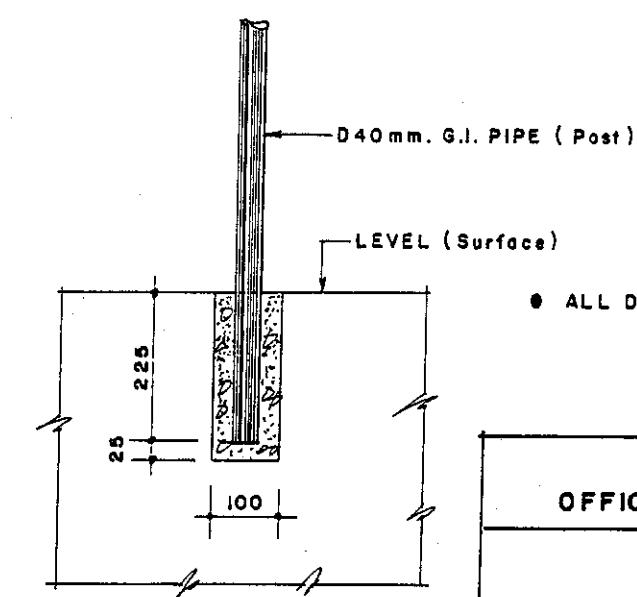


C/S. & R/S. RUNG DETAILS  
SCALE: 1:20

SECTION: Z-Z  
SCALE: 1:10



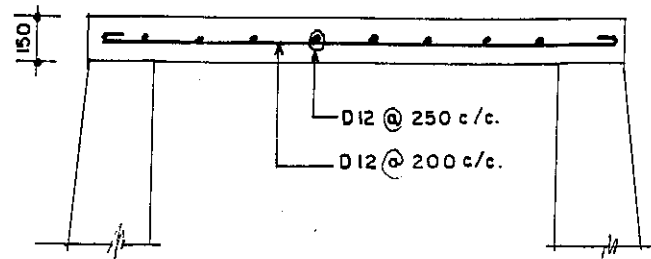
RUNG DETAILS  
SCALE: 1:10



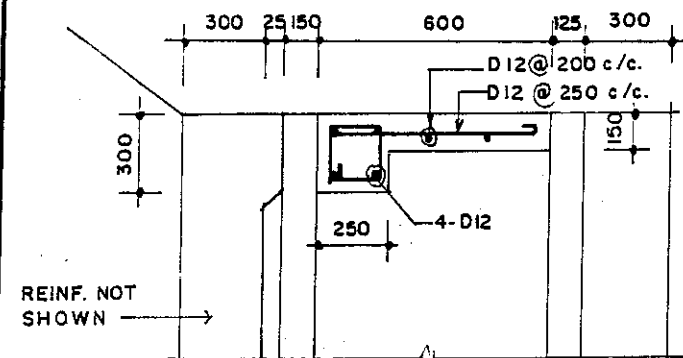
DETAILS: 'E' (POST ANCHOR)  
SCALE: 1:10

● ALL DIMENSIONS ARE IN mm.

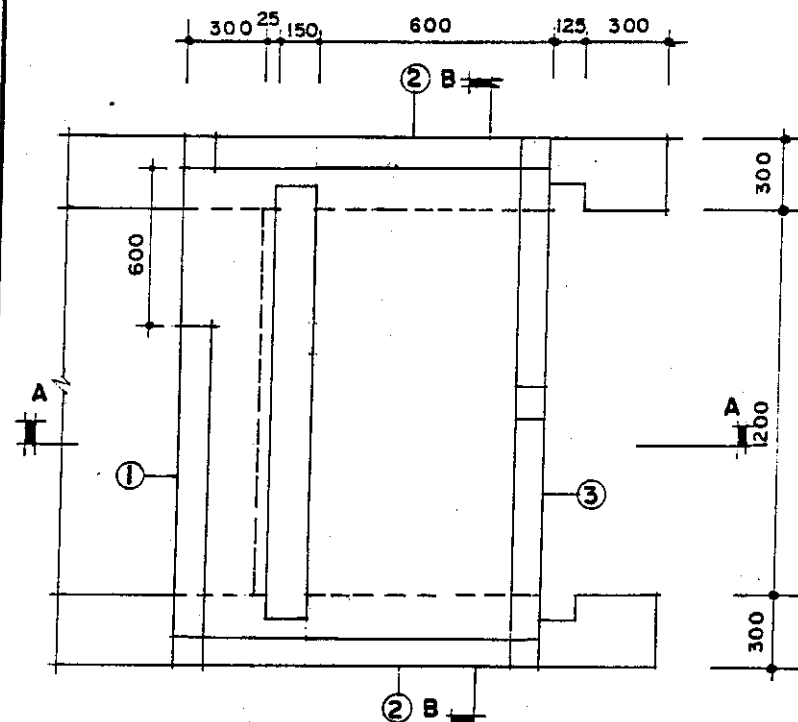
BWDB OFFICE OF THE CE, DESIGN	
RUNG DETAILS	
PREPARED: <i>[Signature]</i> SE. DESIGN CIRCLE-V.	APPROVED: <i>[Signature]</i> CE. DESIGN
DATE: 24-6-95	DWG. NO. SD-23



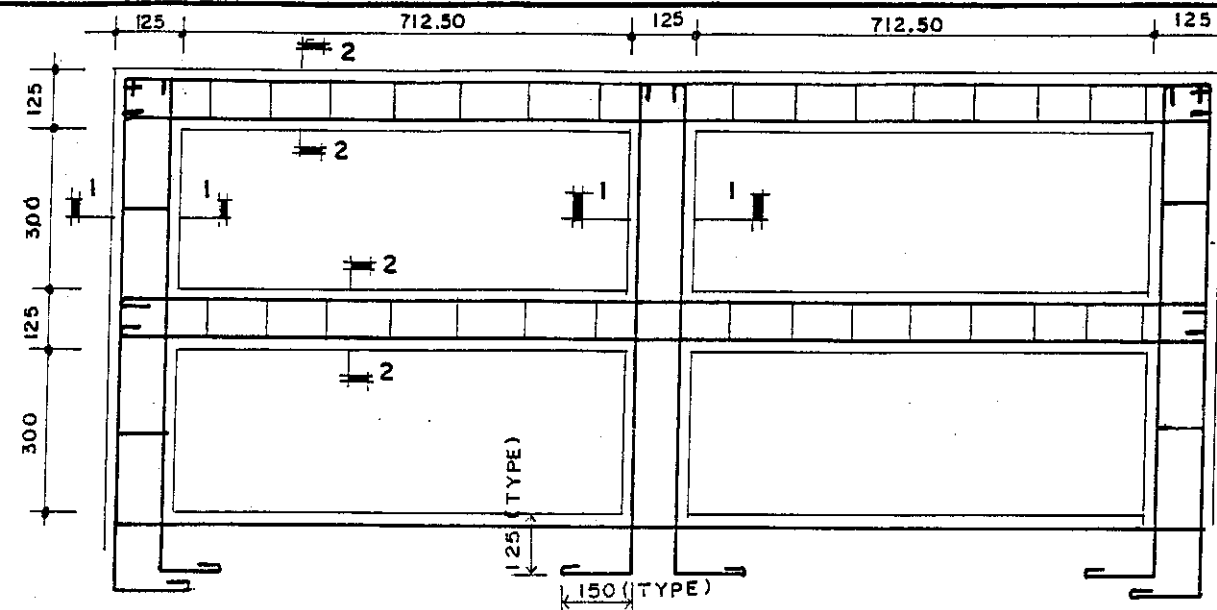
SECTION B-B



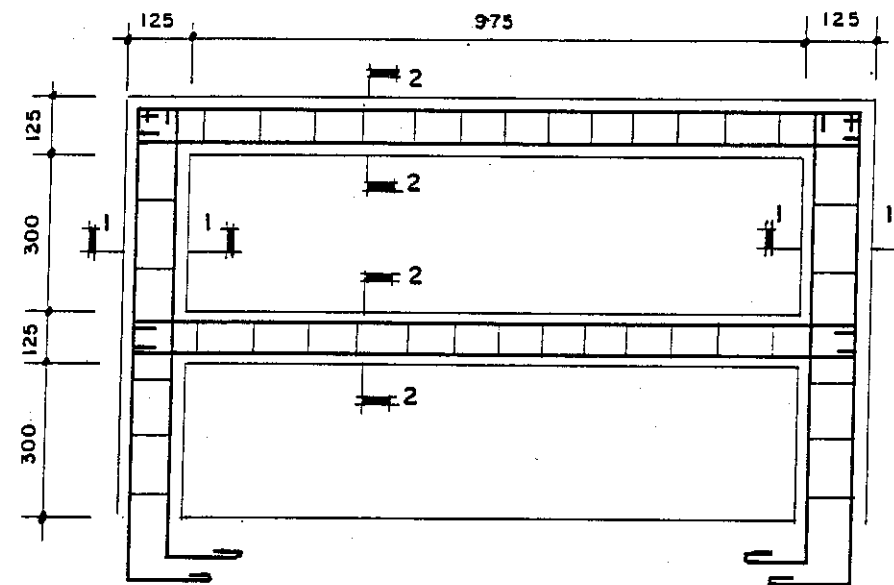
SECTION A-A



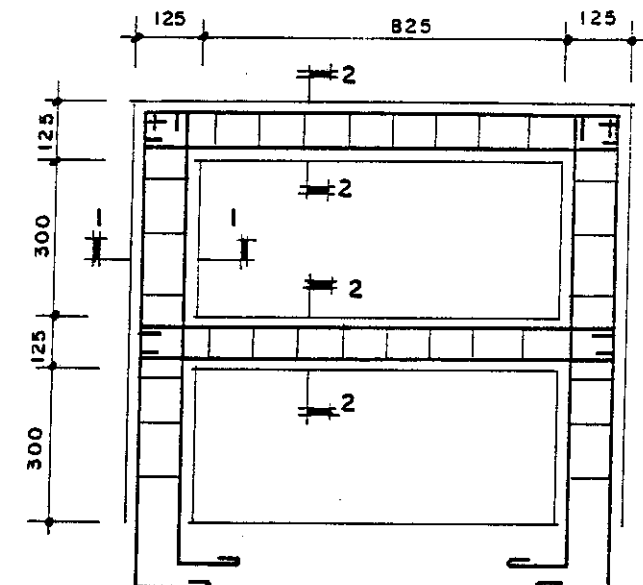
PLAN OF OPERATING SLAB  
FOR VERTICAL GATE



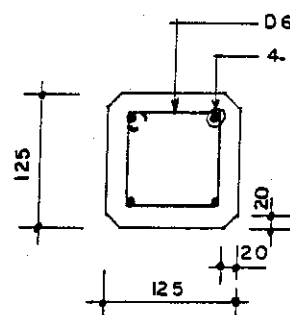
RAILING DETAIL NO-3



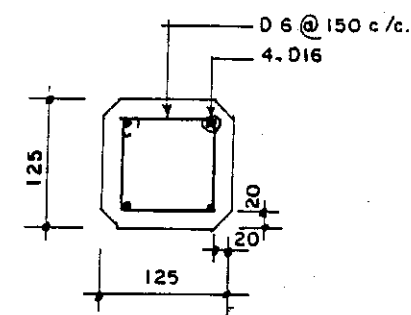
RAILING DETAIL NO-1



RAILING DETAIL NO-2



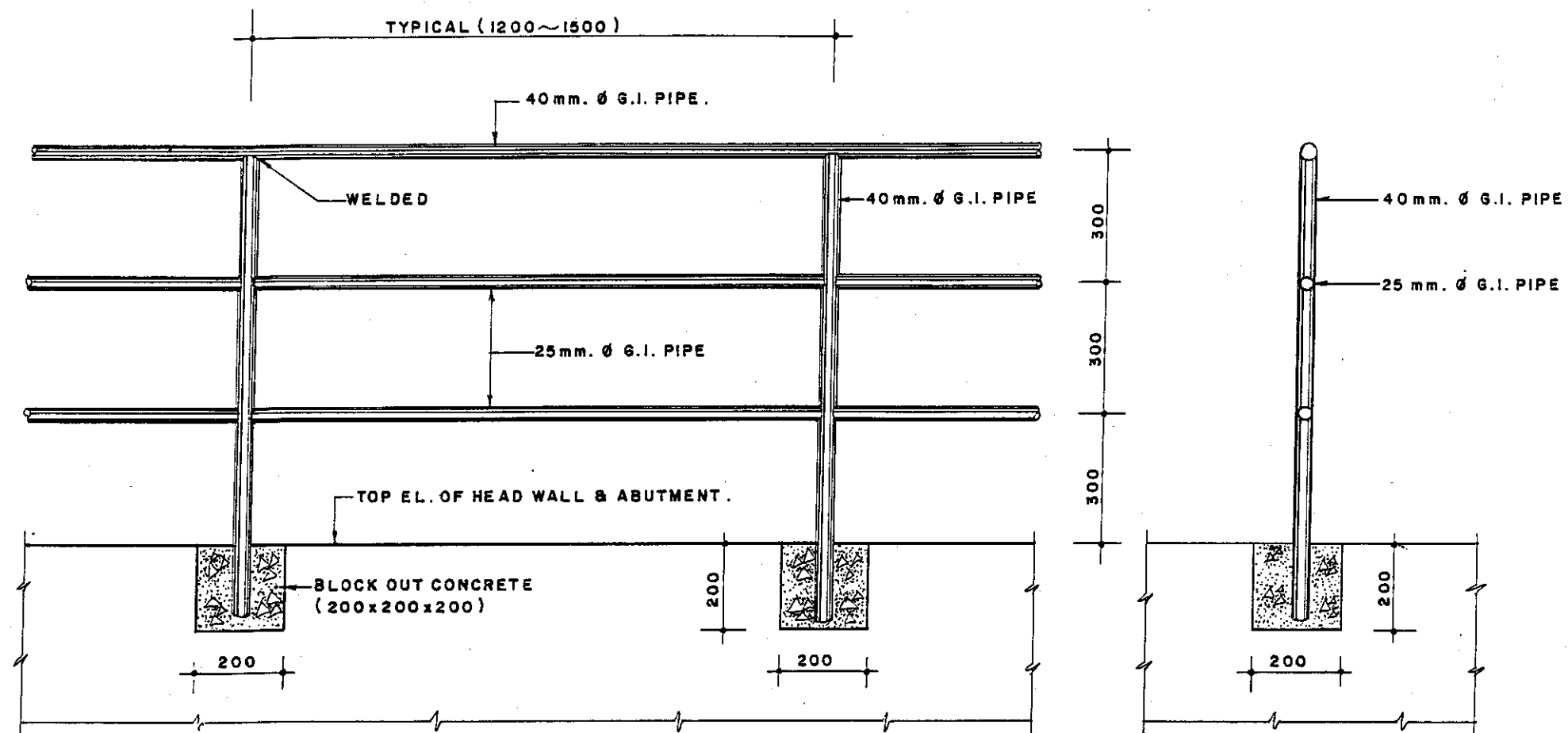
SECTION 1-1



SECTION 2-2

NOTE :  
ALL DIMENSIONS ARE IN mm.

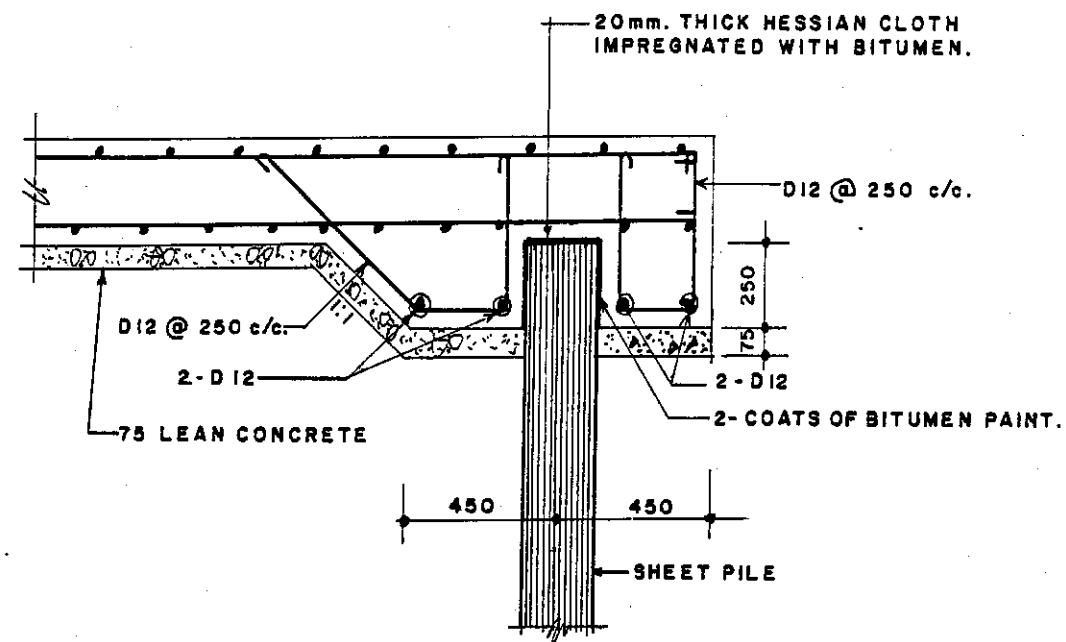
NOT TO SCALE	
BWDB	
OFFICE OF THE CE, DESIGN	
OPERATING SLAB & RAILING DETAILS (1-VENT 1500mm x 1800mm)	
PREPARED : SE, DESIGN CIRCLE-V.	APPROVED : CE, DESIGN
DATE : 24-6-95	DWG. NO. SO-24



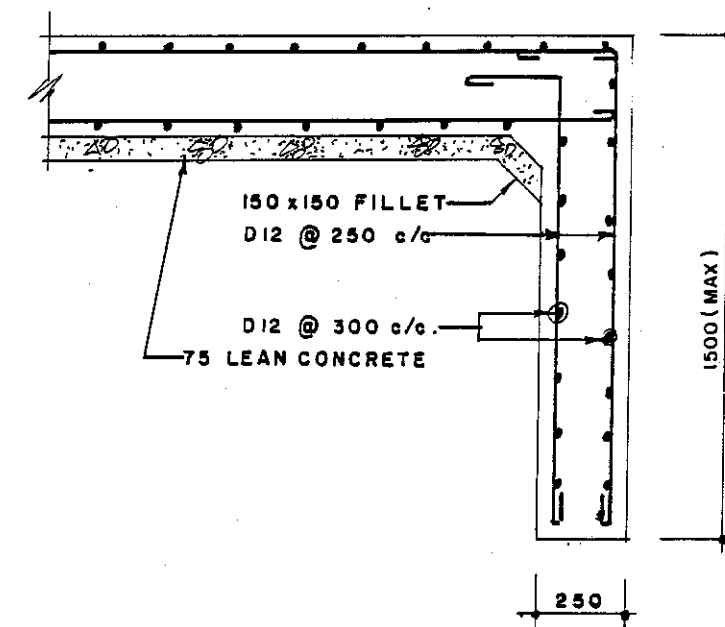
DETAILS OF HAND RAILING  
SCALE : 1 : 10

● ALL DIMENSIONS ARE IN mm.

BWDB OFFICE OF THE CE, DESIGN	
PIPE RAILING DETAILS	
PREPARED : <i>[Signature]</i> SE, DESIGN CIRCLE - V,	APPROVED : <i>[Signature]</i> CE, DESIGN
DATE : 24-6-95	DWG. NO. SO-25



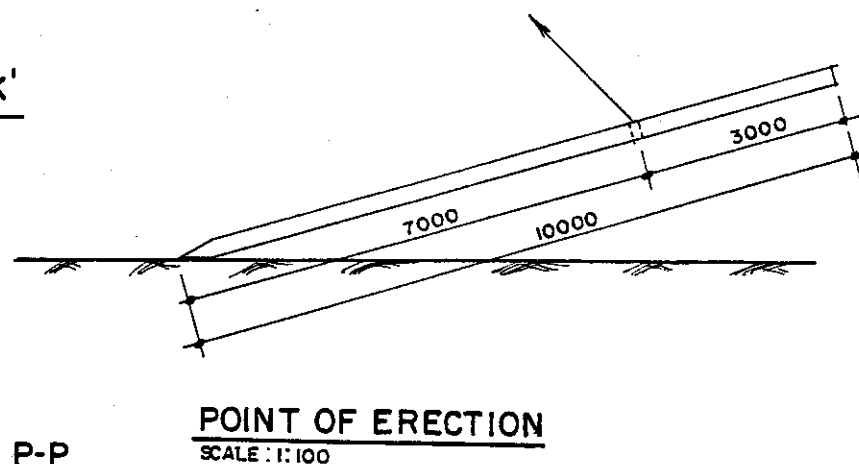
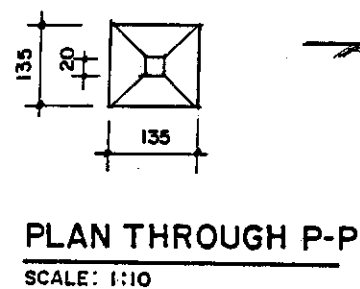
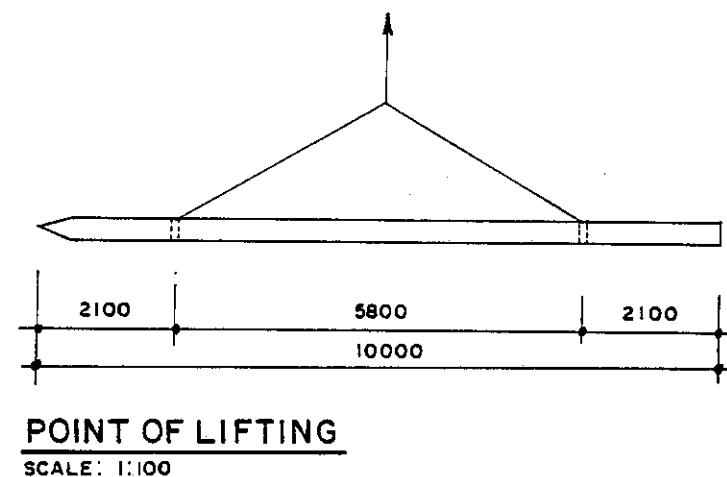
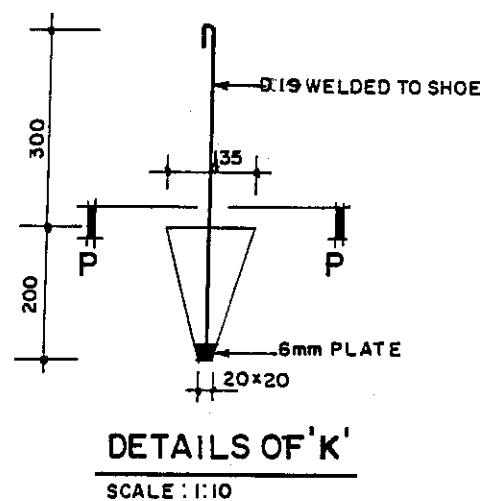
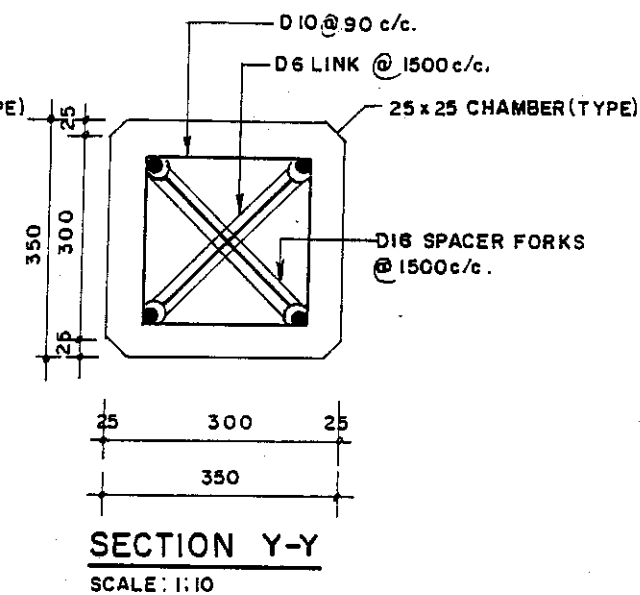
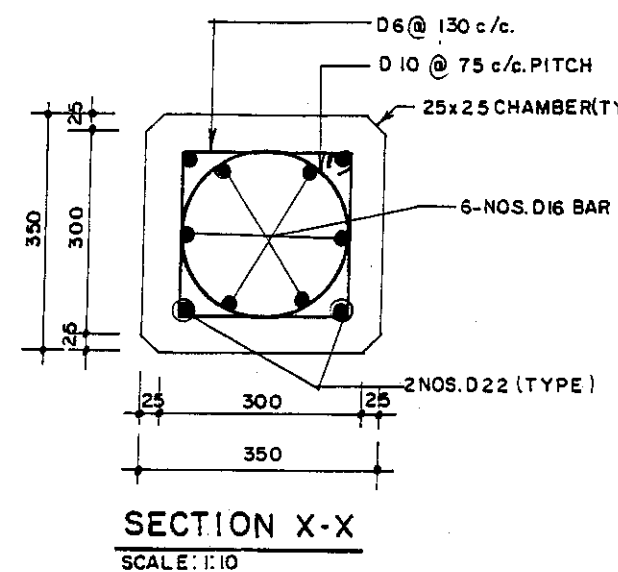
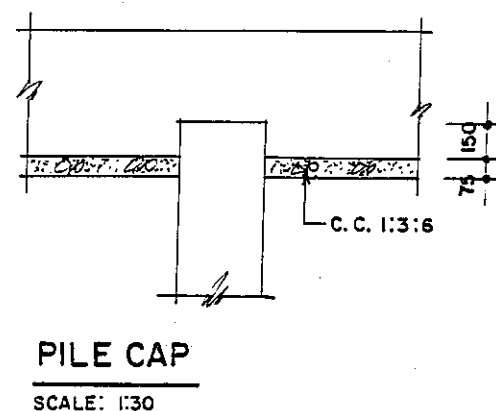
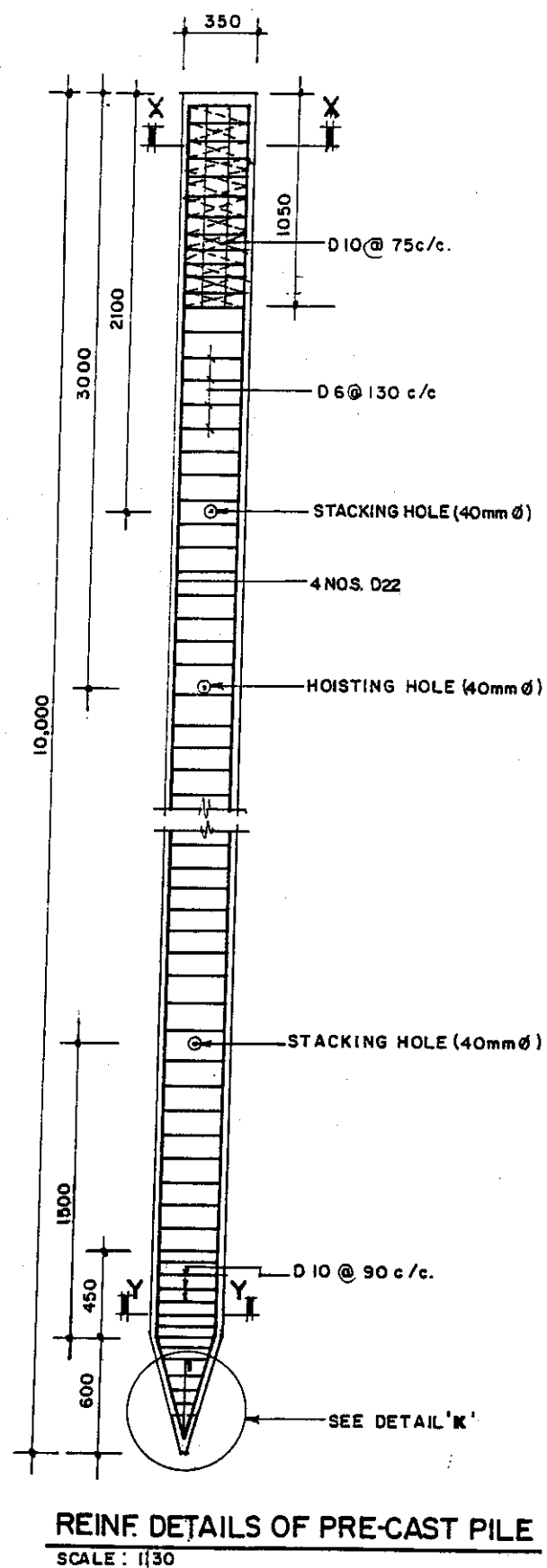
DETAILS OF SHEET PILE CAP  
SCALE: 1:20



DETAILS OF R.C.C. CUT-OFF WALL  
SCALE: 1:20

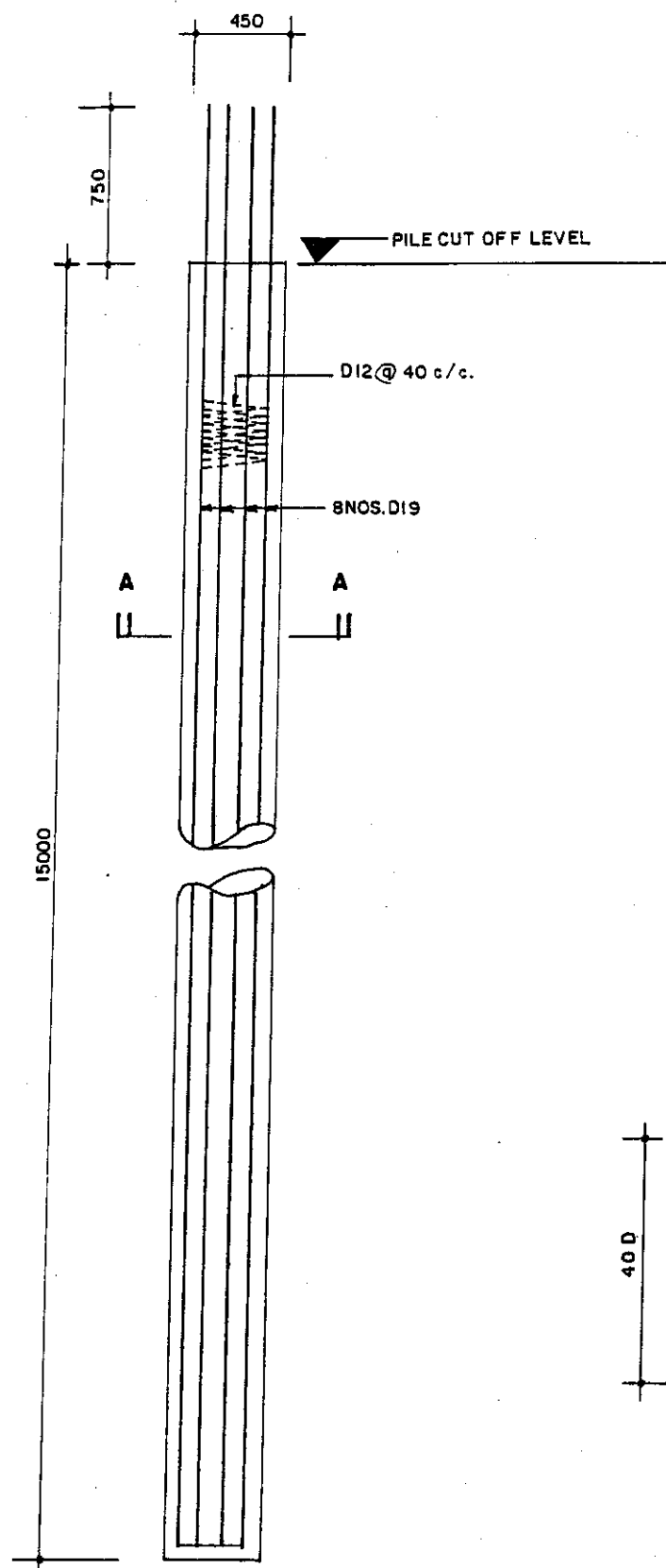
● ALL DIMENSIONS ARE IN mm.

BWDB OFFICE OF THE CE, DESIGN	
SHEET PILE CAP AND R.C.C. CUT OFF WALL DETAILS	
PREPARED : SE, DESIGN CIRCLE-V.	APPROVED : CE, DESIGN
DATE : 24-6-95	DWG.NO. SD-26



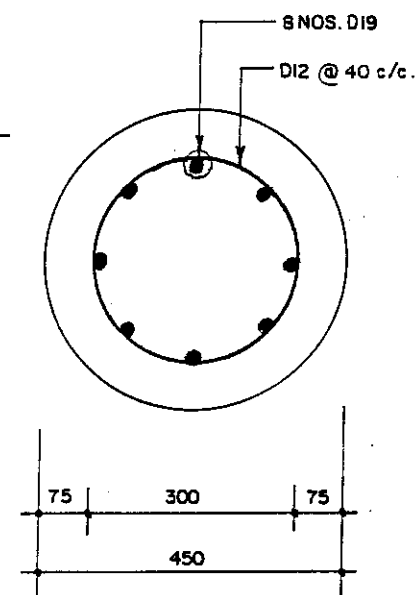
NOTE:  
ALL DIMENSIONS ARE IN MILLIMETER

BWDB OFFICE OF THE CE, DESIGN	
TYPICAL DETAILS OF PRE-CAST R.C.C. PILE (SIZE = 350x350)	
PREPARED: SE, DESIGN CIRCLE - V.	APPROVED: CE, DESIGN
DATE: 24-6-95	DWG. NO. SD-27



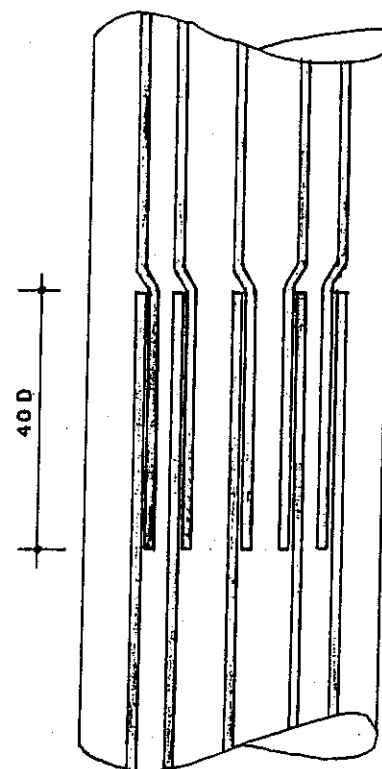
**CAST-IN SITU PILE REINF.DETAILS**

SCALE : 1:30



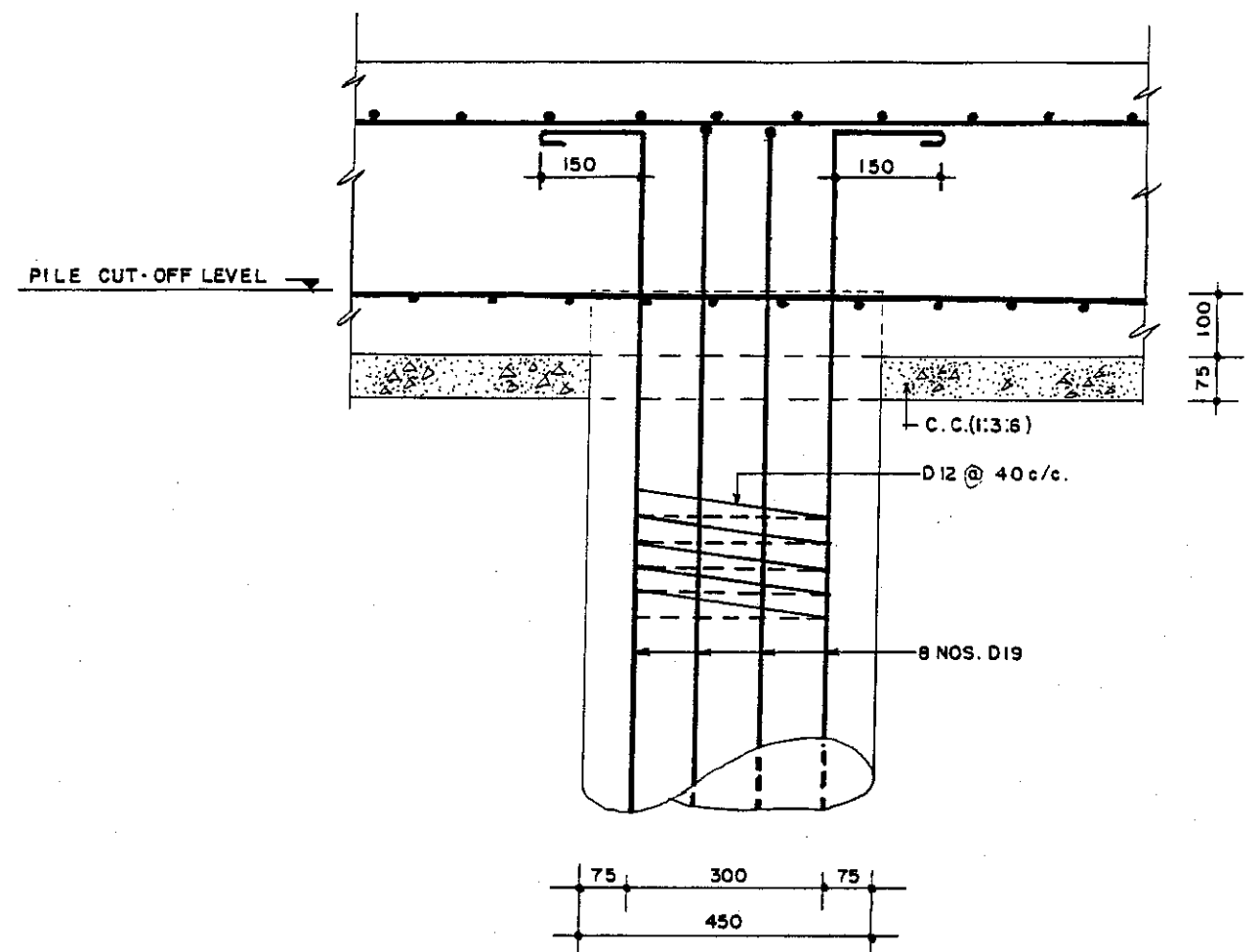
**SECTION A-A**

SCALE : 1:10



**DETAILS OF BAR LAPPING**

SCALE : 1 : 10



**REINF. DETAILS OF PILE CAP**

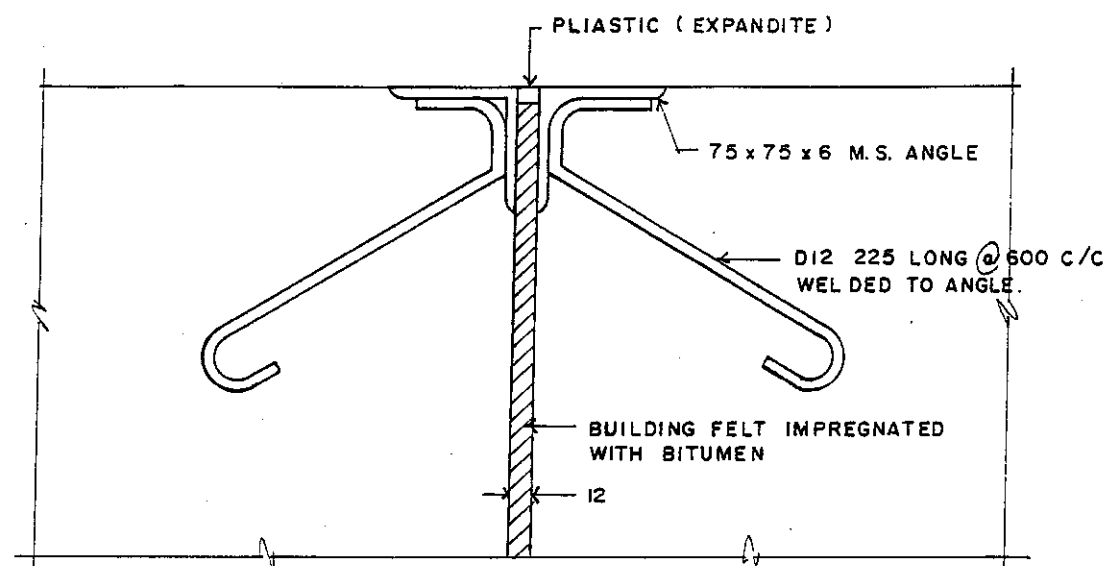
SCALE : 1:10

**NOTE :**

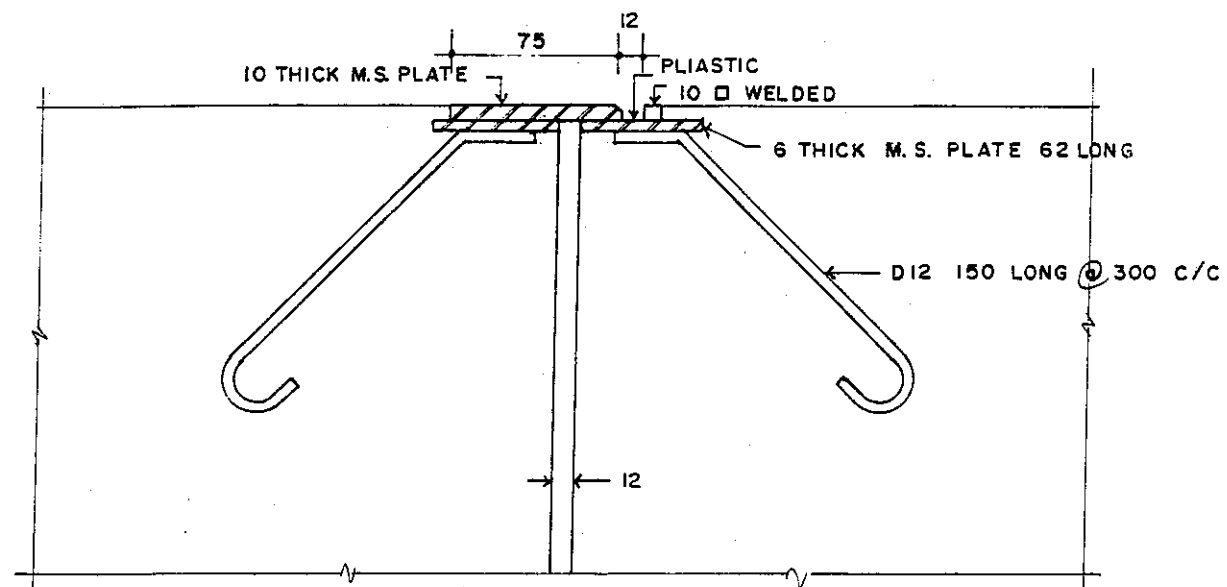
ALL DIMENSIONS ARE IN MILLIMETER

<b>BWDB</b> <b>OFFICE OF THE CE, DESIGN</b>	
<b>CAST-IN-SITU PILE REINF.DETAILS</b> <b>(SIZE = 450mm DIA)</b>	
<b>PREPARED :</b> 	<b>APPROVED :</b> 
<b>SE, DESIGN CIRCLE-V.</b>	<b>CE, DESIGN</b>
<b>DATE : 24- 6- 95</b>	<b>DWG.NO. SD-28</b>

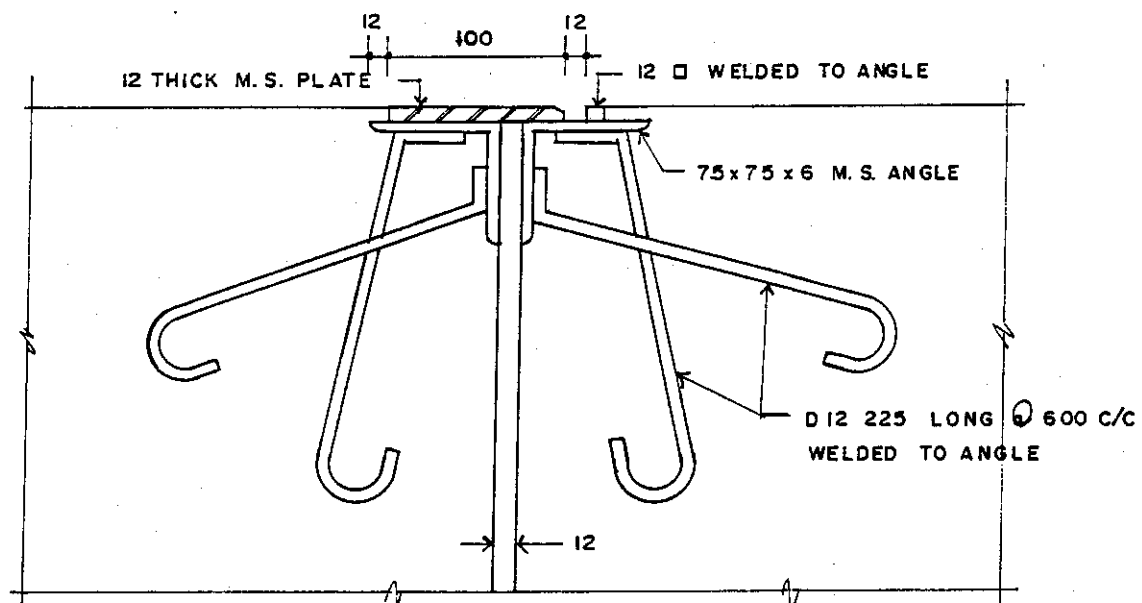




JOINT IN HINGED END



JOINT IN CURB



JOINT IN EXPANSION END

● ALL DIMENSIONS ARE IN mm.

SCALE : 1:15

**BWDB**  
OFFICE OF THE CE, DESIGN

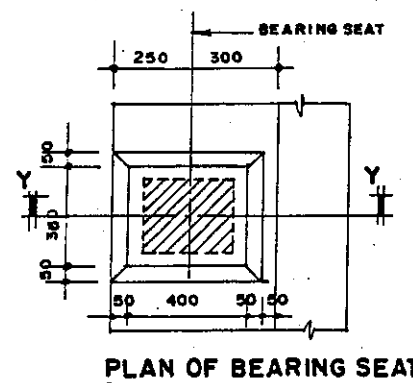
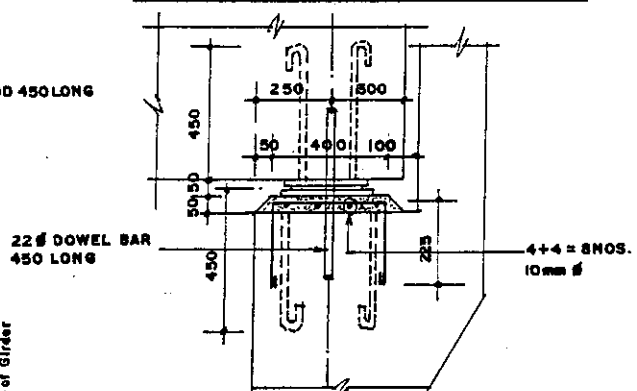
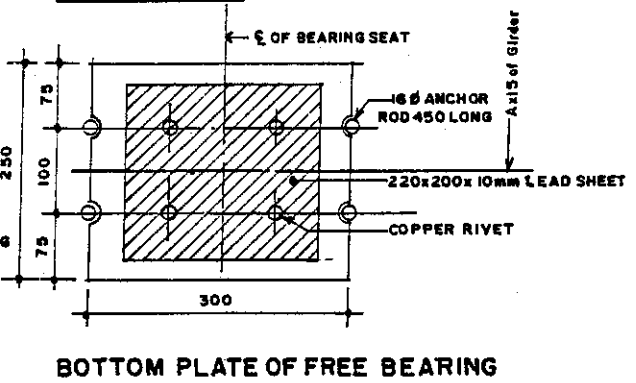
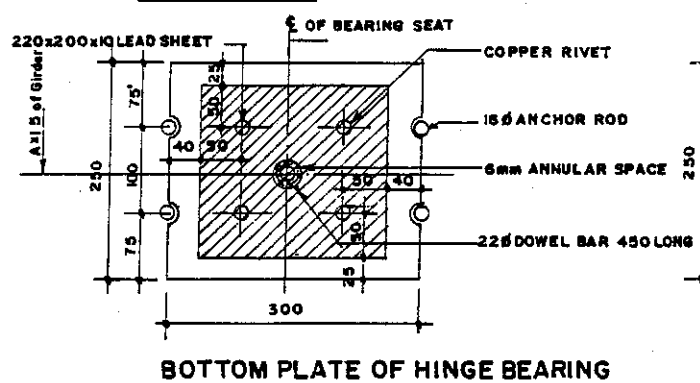
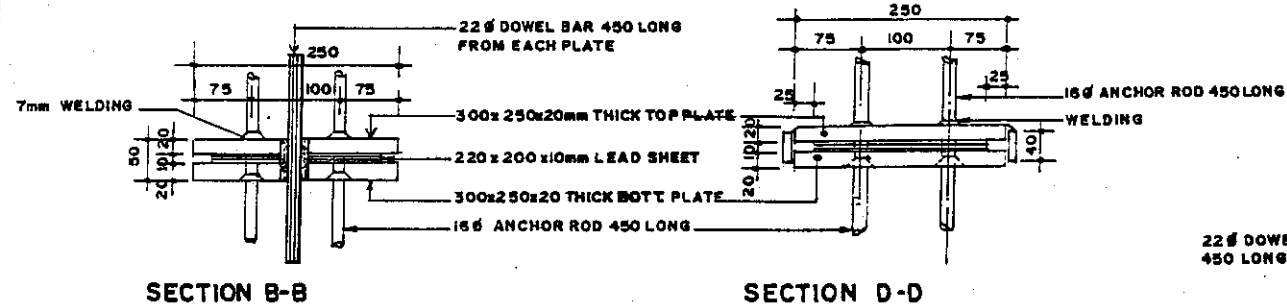
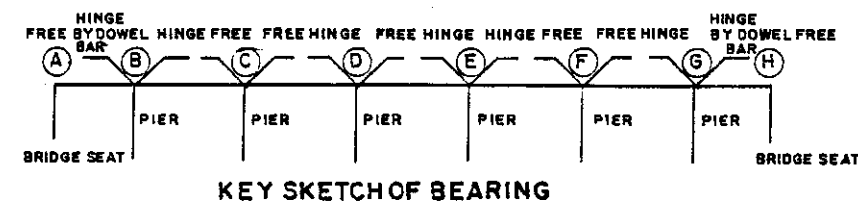
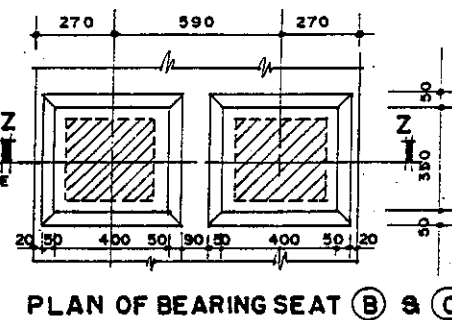
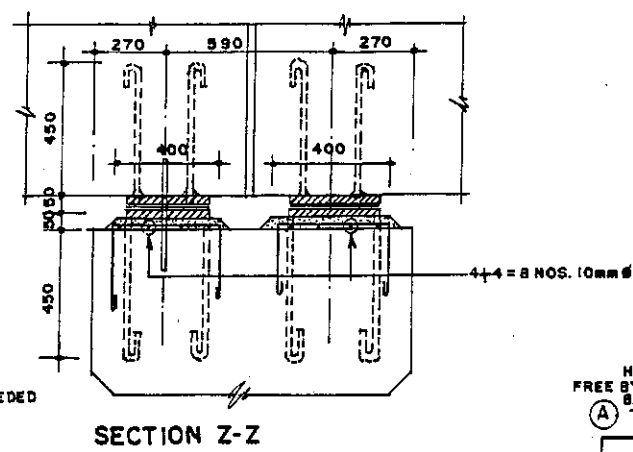
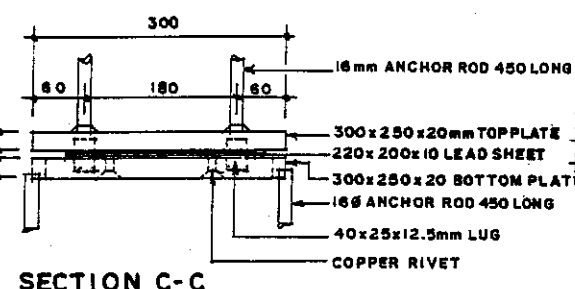
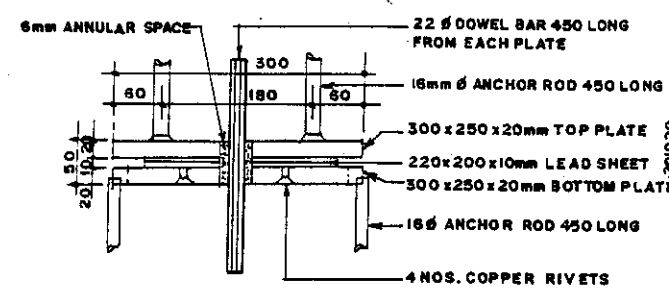
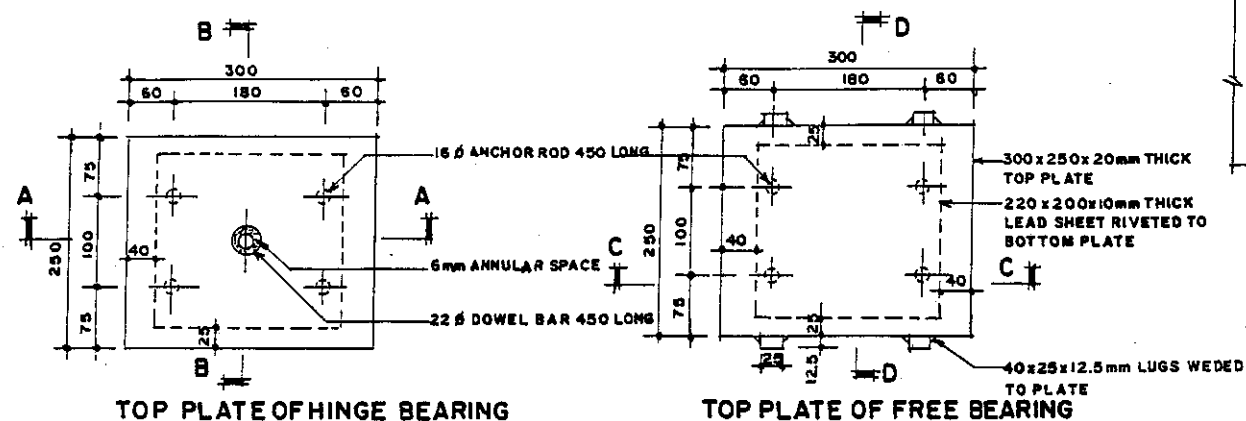
**BRIDGE DECK JOINT DETAILS**

PREPARED :  
SE, DESIGN CIRCLE-V.

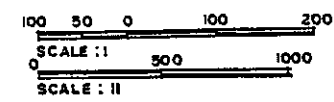
APPROVED :  
CE, DESIGN

DATE : 24-6-95

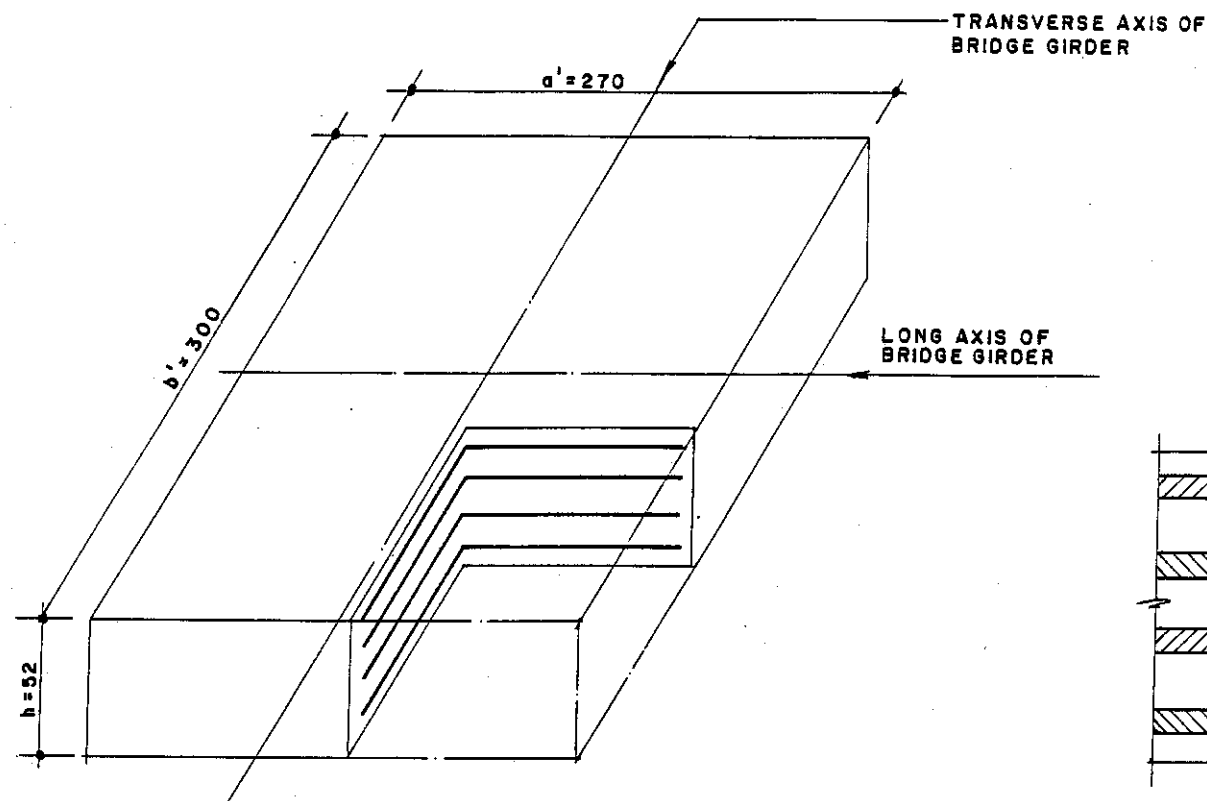
DWG. NO. SD-29



NOTE :  
ALL DIMENSIONS ARE IN MILLIMETER



BWDB OFFICE OF THE CE, DESIGN	
TYPICAL BRIDGE METAL BEARINGS	
PREPARED : <i>[Signature]</i> SE, DESIGN CIRCLE - V.	APPROVED : <i>[Signature]</i> CE, DESIGN
DATE : 24-6-95	DWG. NO. SD-30

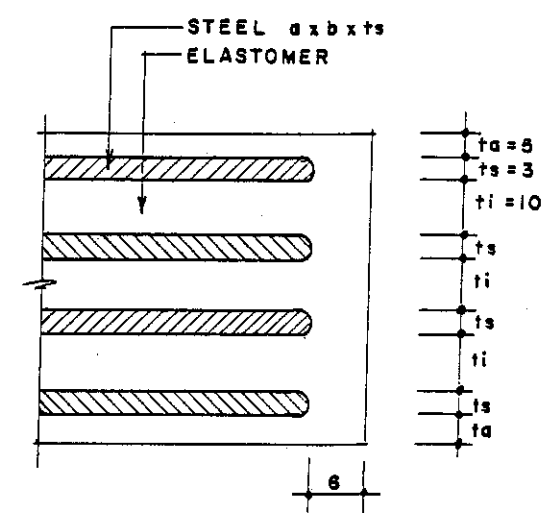


REINFORCED ELASTOMERIC BEARING

$$a = (a' - 12) \text{ mm.}$$

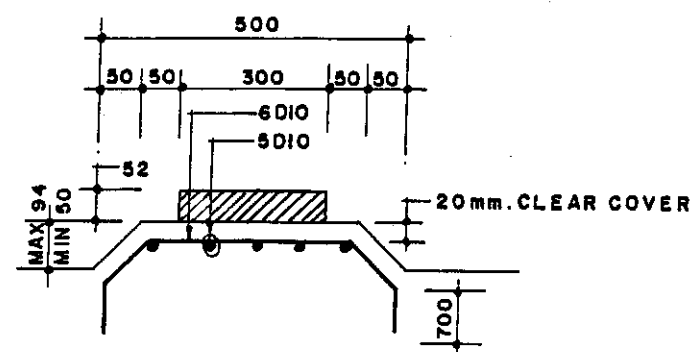
$$b = (b' - 12) \text{ mm.}$$

$$t_a = 0.5 + t_i \text{ mm.}$$



CROSS SEC. OF BEARING

● ALL DIMENSIONS ARE IN mm.



DETAILS OF BEARING SEAT

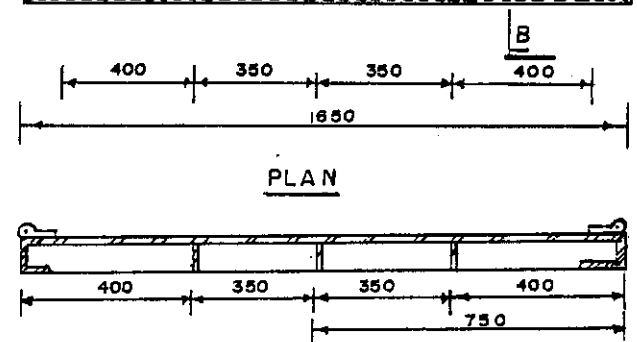
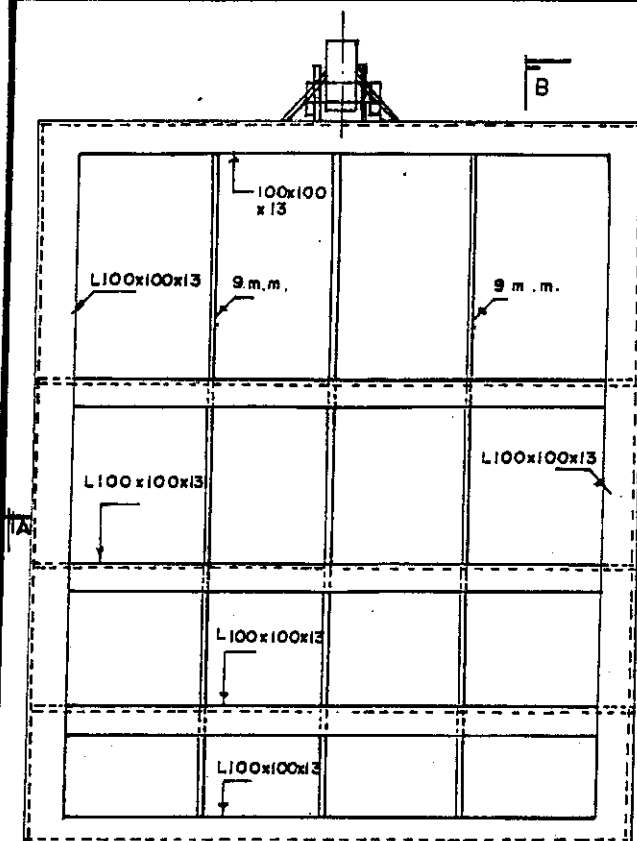
NOT TO SCALE

BWDB OFFICE OF THE CE, DESIGN	
TYPICAL ELASTOMERIC BEARING DETAILS	
PREPARED: <i>[Signature]</i> SE. DESIGN CIRCLE - V.	APPROVED: <i>[Signature]</i> CE. DESIGN
DATE: 24-6-95	DWG. NO. SD-31

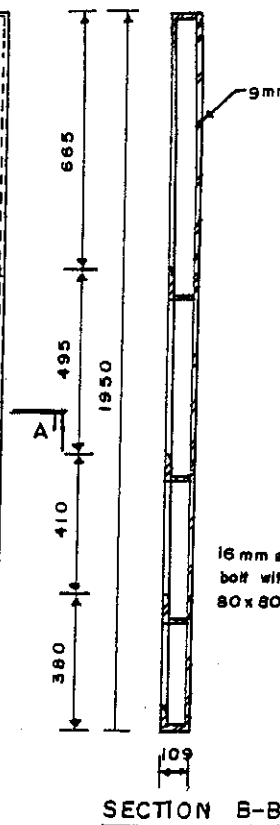
# VOLUME-V: STANDARD DRAWINGS OF HYDRAULIC GATES

## STANDARD LAYOUT OF GATES, EMBEDDED PARTS AND BLOCKOUT

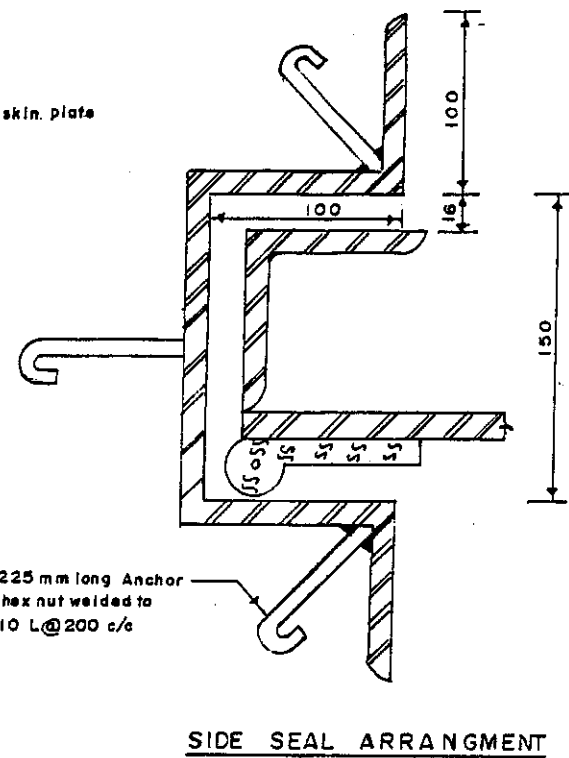
<u>DRAWING NO</u>	<u>TITLE OF DRAWING</u>	<u>DRAWING NO</u>	<u>TITLE OF DRAWING</u>
DS-1-001	: Vertical Lift Gate (1500mm x 1800mm); Design Head 2.5m	DS-10-001	: Vertical Lift Gate on Irrigation Pipe Sluice Dia 900mm
DS-2-001	: Vertical Lift Gate (1500mm x 1800mm); Design Head 1.5m	DS-11-003	: Radial Gate (5000 x 4680)
DS-3-001	: Vertical Lift Gate (1200mm x 1500mm); Design Head 2.5m	DS-12-003	: Hoisting System, Pedestal Stearing Wheel Type (5 Sheet)
DS-4-001	: Vertical Lift Gate (1200mm x 1500mm); Design Head 1.5m	DS-13-004	: Hoisting System, Pedestal Crank Type (4 Sheet)
DS-5-001	: Vertical Lift Gate (900mm x 1200mm); Design Head 2.5m	DS-14-001	: Hoisting System for Flap Gate (3 Ton)
DS-6-001	: Vertical Lift Gate (900mm x 1200mm); Design Head 1.5m	DS-15-001	: Embedded Part & Gate Groove
DS-7-001	: Flap Gate (1500mm x 1800mm); Design Head 1.5 to 2.5m	DS-15A-001	: Embedded Part & Gate Groove for Vertical Lift Gate on Pipe Sluice Dia 300mm, 450mm & 600mm
DS-8-001	: Typical Flap Gate (1200mm x 1500mm) & Design Head 1.5m to 2.5m (900mm x 1200mm)	DS-16-001	: Operation Deck Blockout for Hoisting System Pedestal Type
DS-8A-001	: Typical Flap Gate on Pipe Sluice Dia 900mm & 1200mm	DS-17-001	: Operation Deck Blockout for Hoisting System of Flap Gate
DS-8B-001	: Typical Flap Gate on Pipe Sluice Dia 300mm, 450mm & 600mm	DS-18-001	: Operation Deck Blockout Detail for Rope & Drum Type Hoisting System
DS-9-001	: Vertical Life Gate for Irrigation Pipe Sluice Dia 450mm & 600mm		



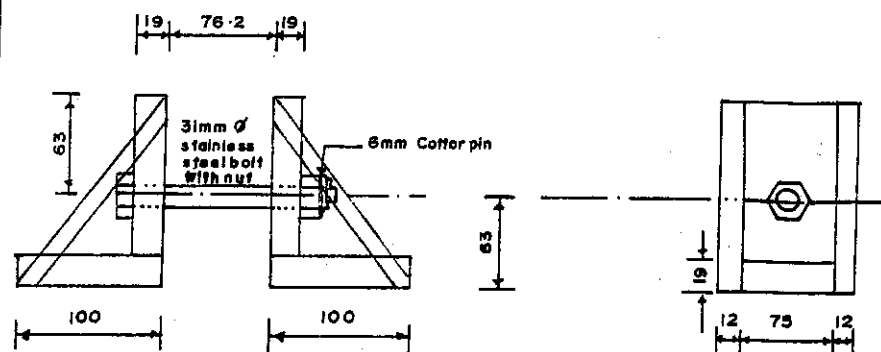
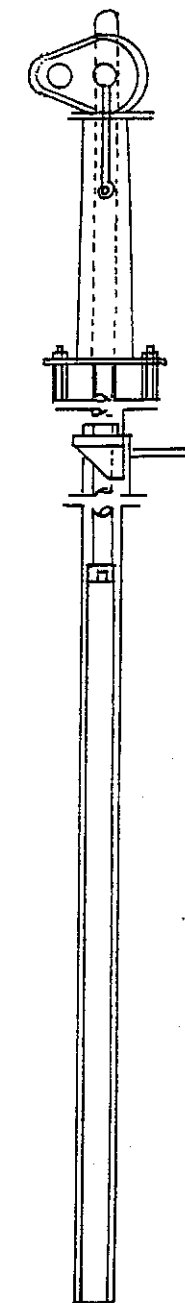
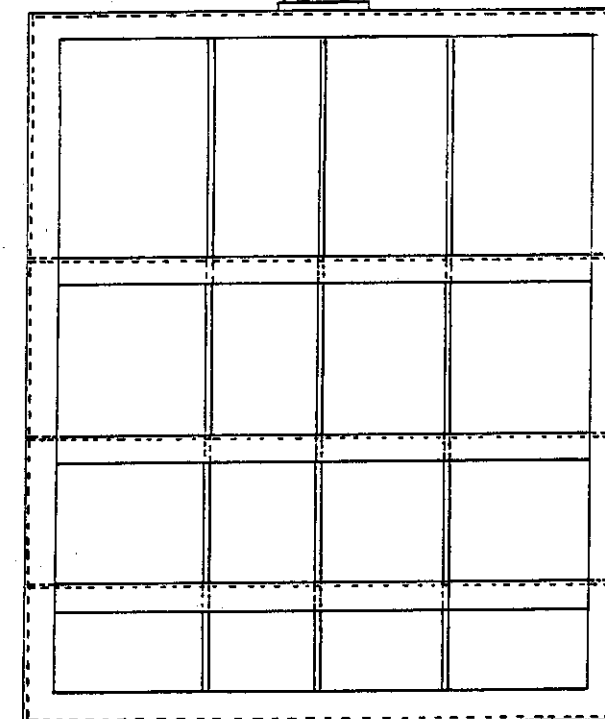
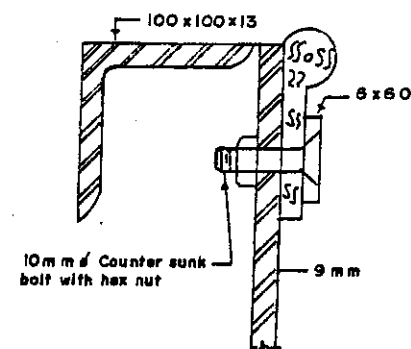
PLAN



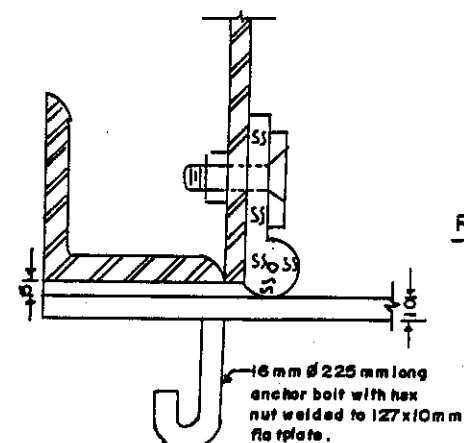
SECTION B-B



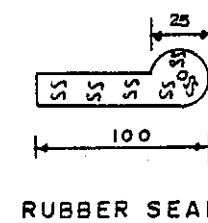
SIDE SEAL ARRANGMENT



FIXING ARRANGEMENT



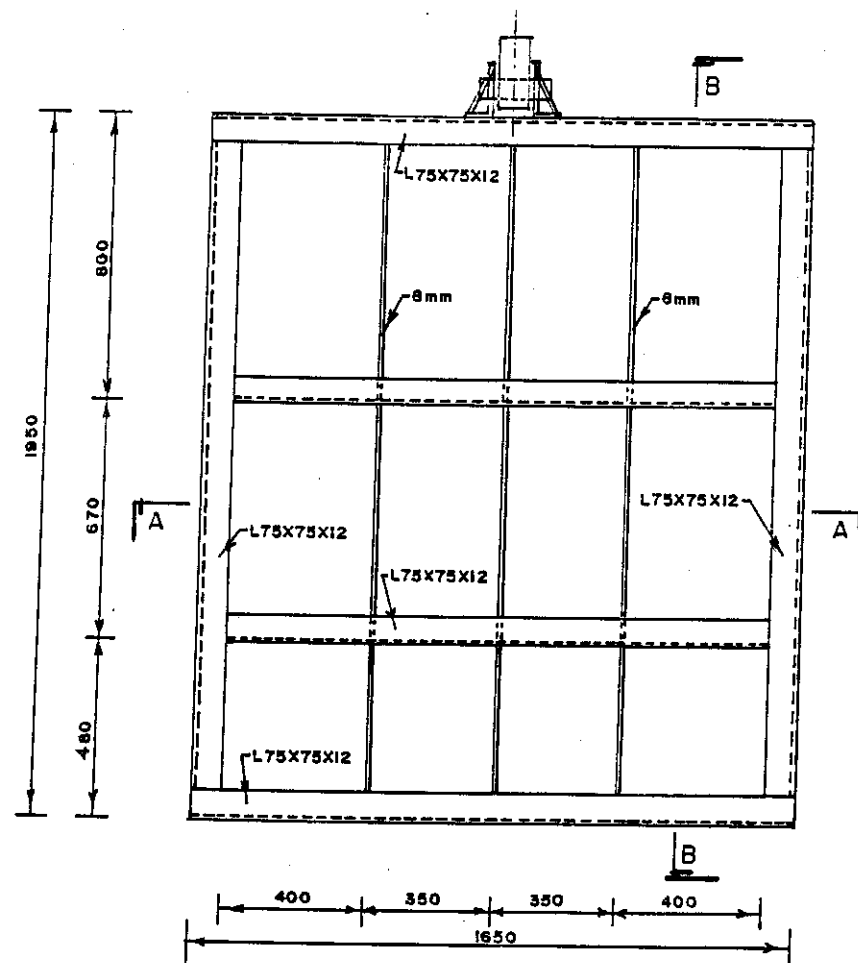
BOTTOM SEAL ARRANGEMENT



RUBBER SEAL

ALL DIMENSIONS ARE IN MILLI METRE.

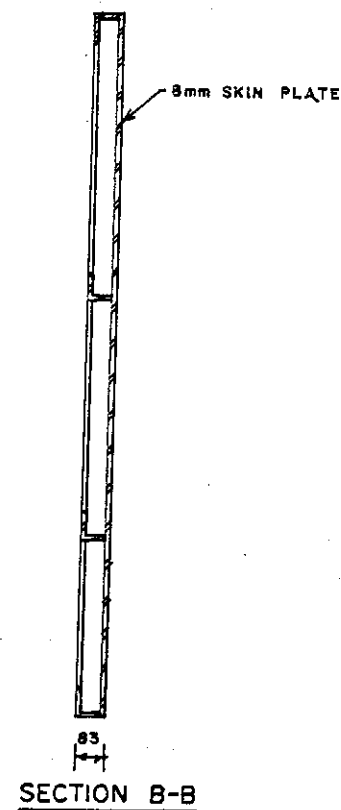
BWDB	
OFFICE OF THE CE. DESIGN	
VERTICAL LIFT GATE	
SIZE- 1500mmX1800mm	
DESIGN HEAD-2.5 m	
PREPARED SE. DESIGN CIRCLE-3 DATE	APPROVED C.E. DESIGN DWB, NO. DS-1-001



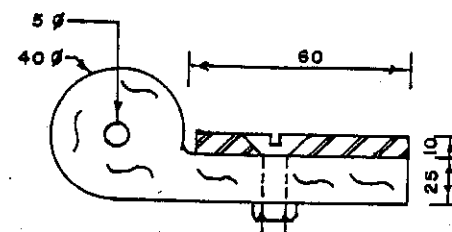
PLAN



SECTION A-A



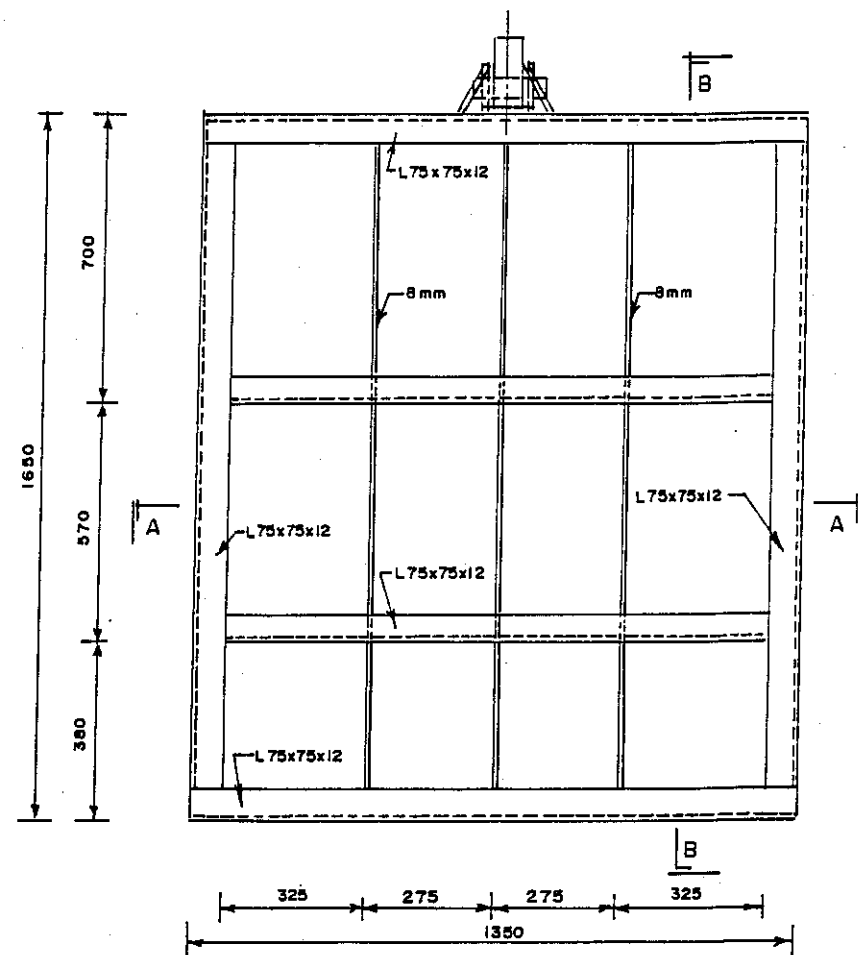
SECTION B-B



SEAL DETAIL

ALL DIMENSIONS ARE IN MILLI METRE.

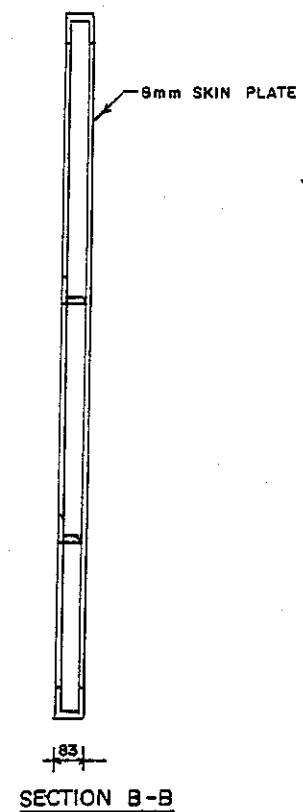
BWDB OFFICE OF THE CE, DESIGN	
VERTICAL LIFT GATE SIZE-1500mmX1800mm DESIGN HEAD-1.5 m	
PREPARED SE DESIGN CIRCLE-3	APPROVED CE DESIGN
DATE:-	DWG-NO-DS-2-001



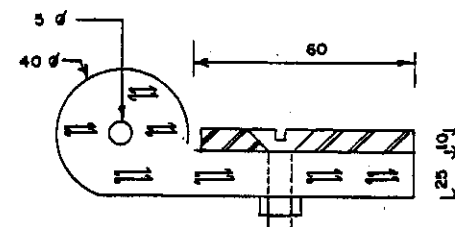
PLAN



SECTION A-A



SECTION B-B

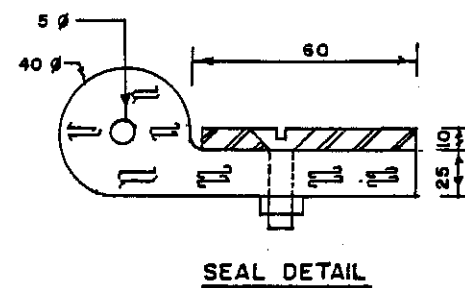
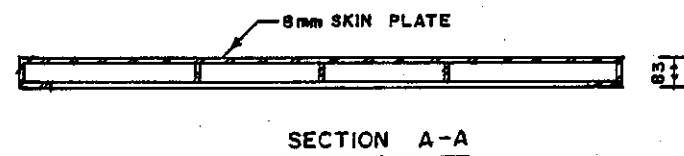
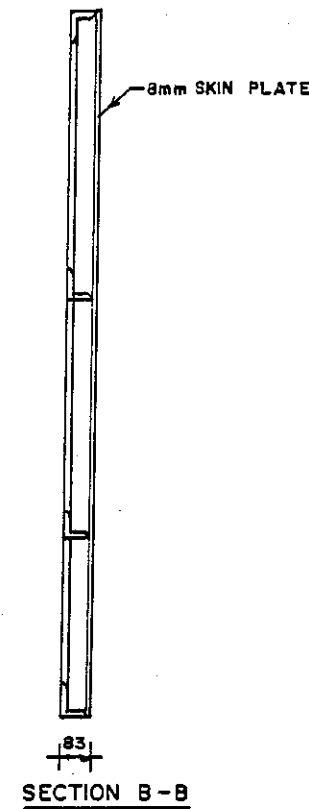
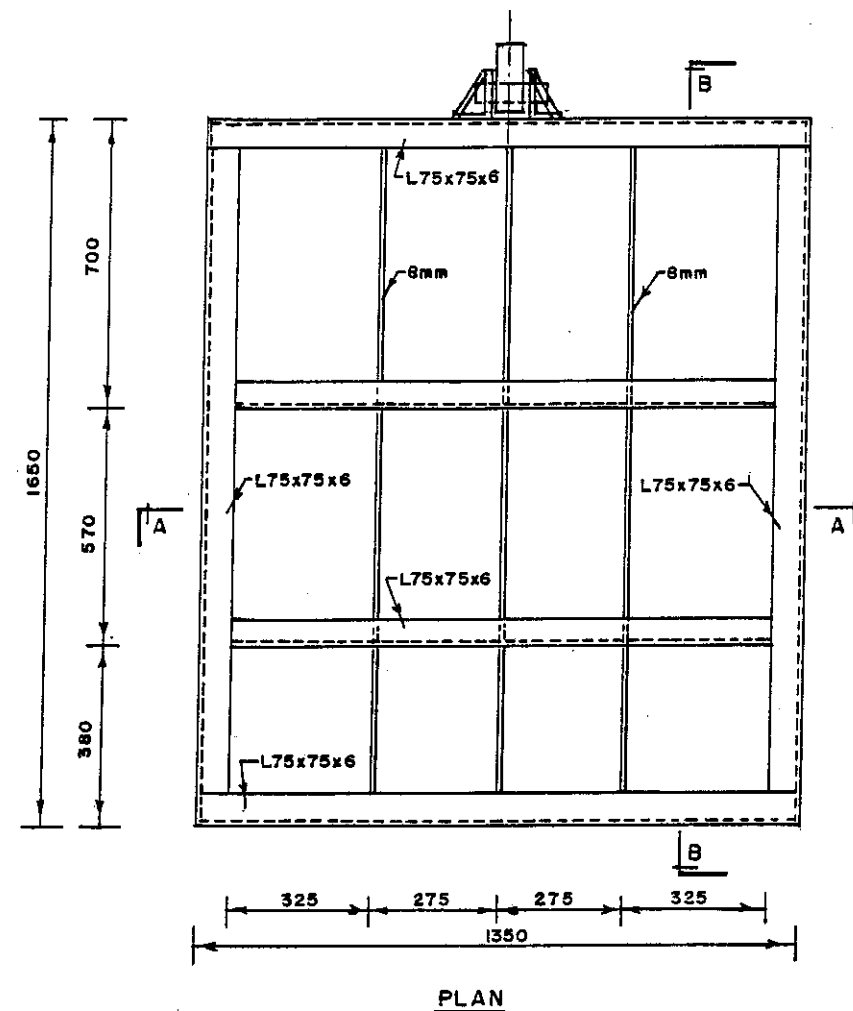


SEAL DETAIL

ALL DIMENSIONS ARE IN MILLI METRE.

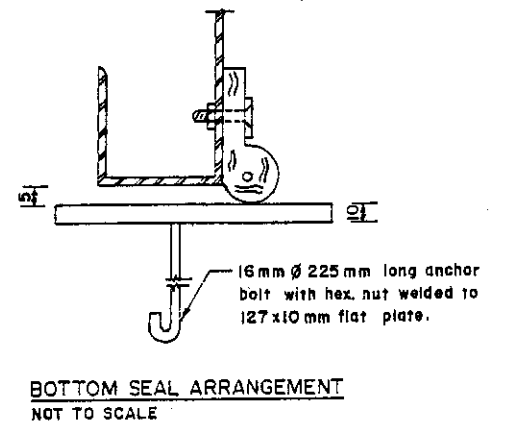
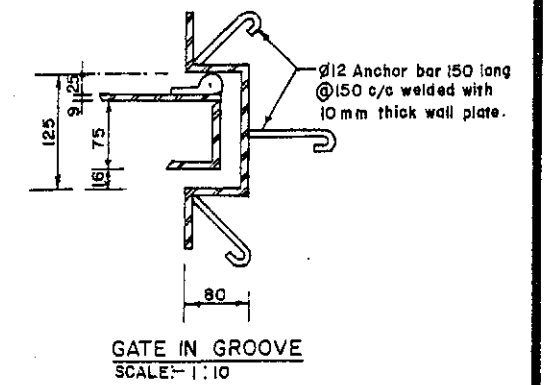
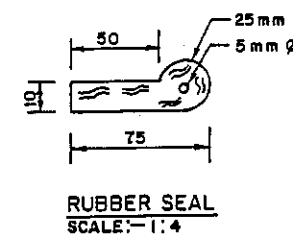
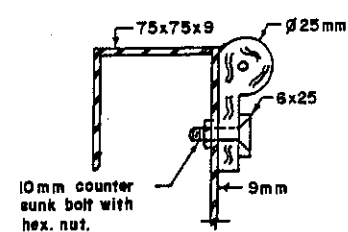
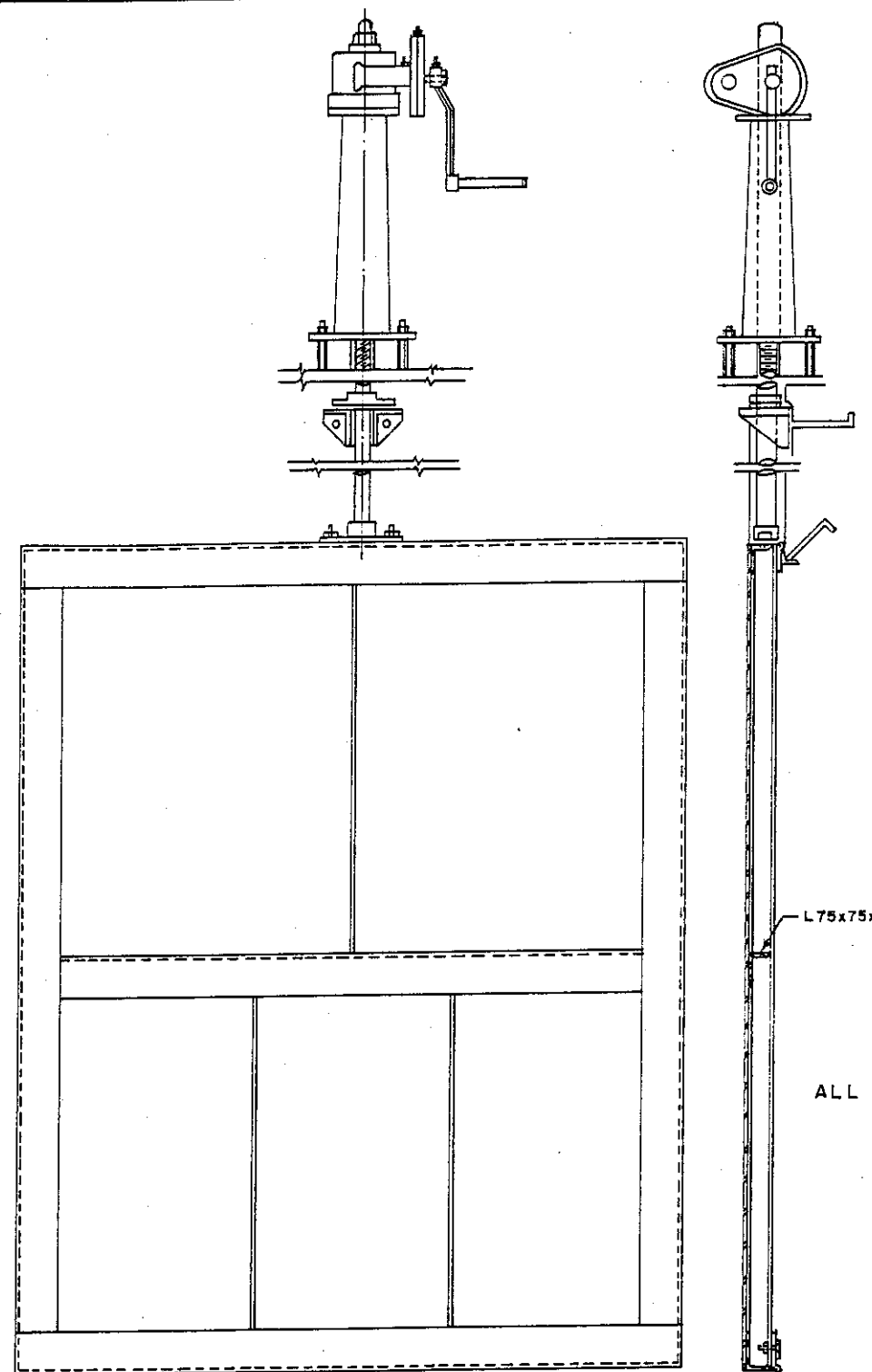
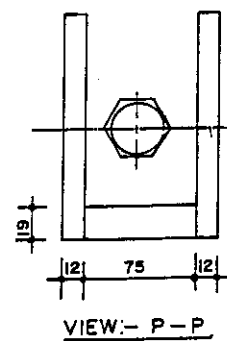
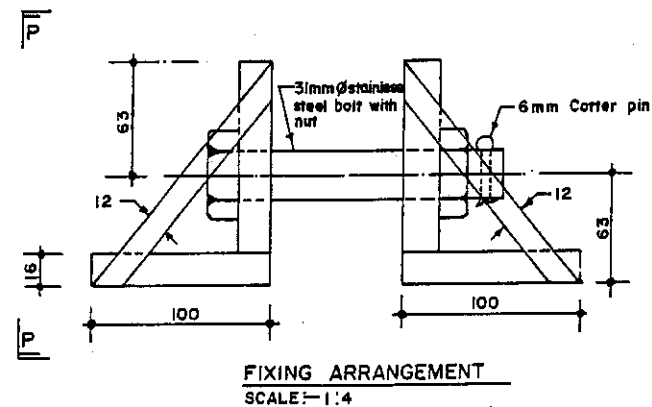
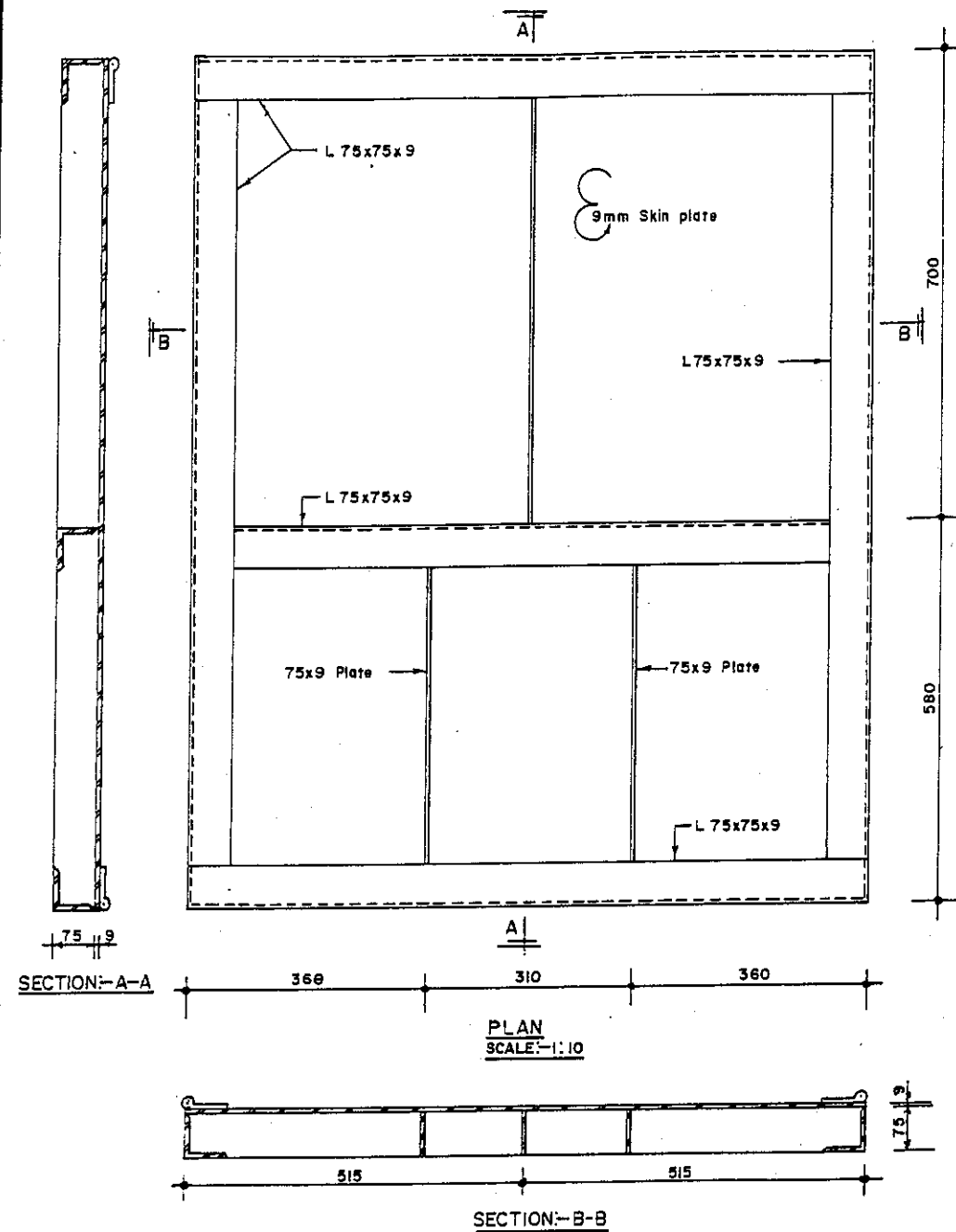
BWDB OFFICE OF THE CE, DESIGN	
VERTICAL LIFT GATE SIZE - 1200mmX1500mm DESIGN HEAD - 2.5 m	
PREPARED SE, DESIGN, CIRCLE - 3	APPROVED CE, DESIGN
DATE :-	DWG. NO. DS-3-001





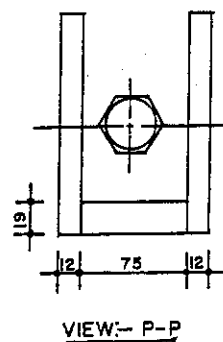
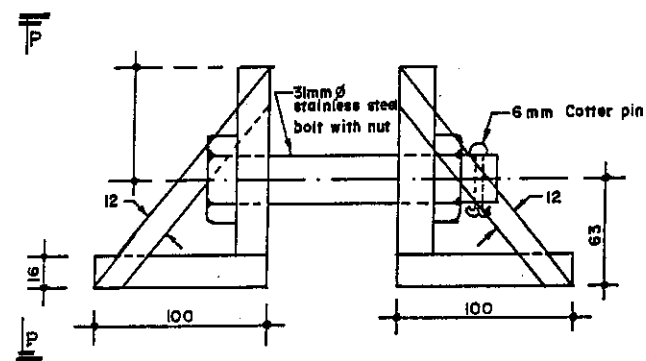
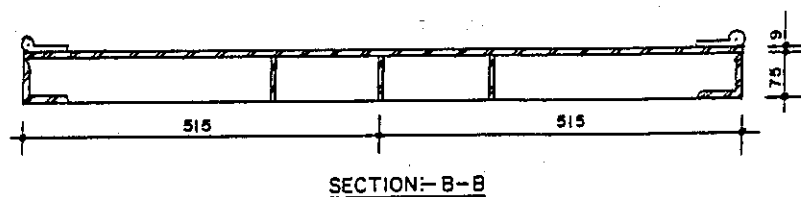
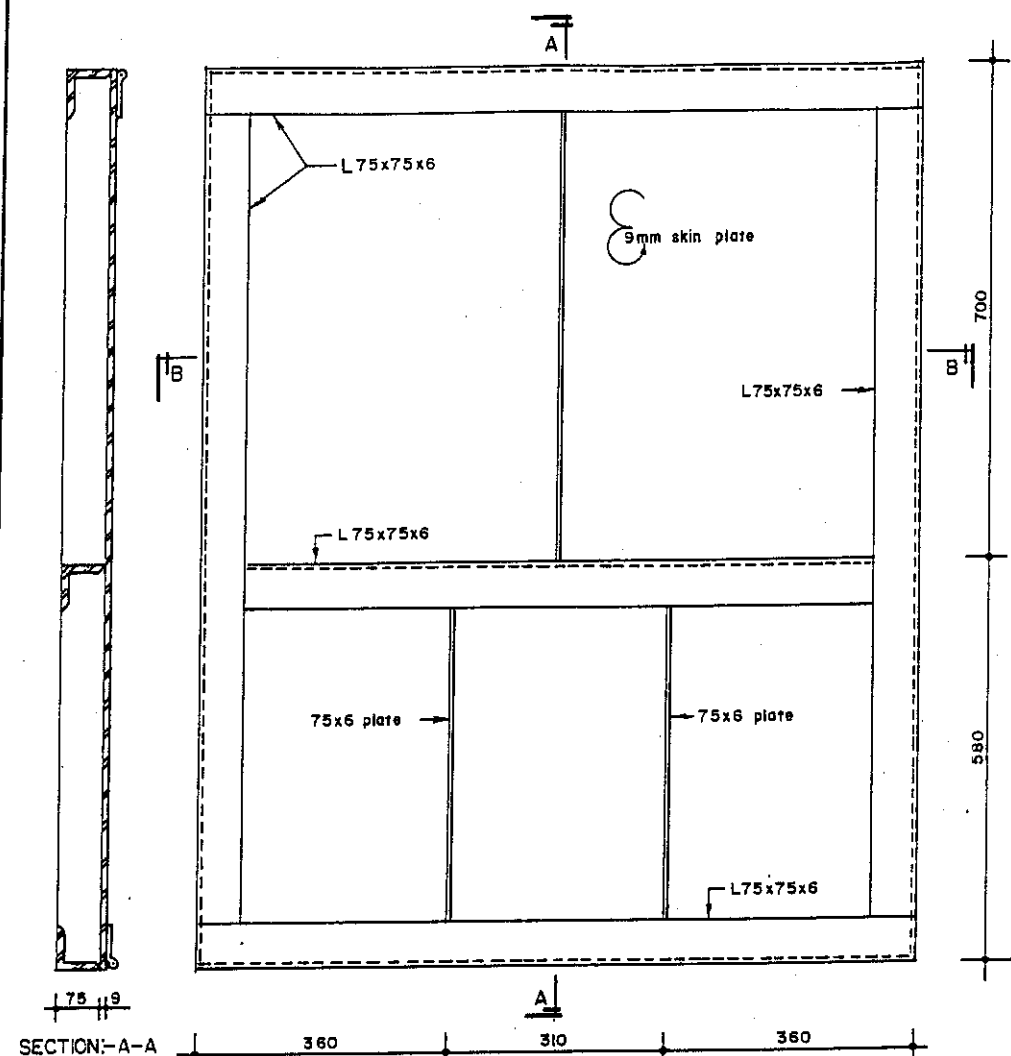
ALL DIMENSIONS ARE IN MILLI METRE .

BWDB	
OFFICE OF THE CE, DESIGN	
VERTICAL LIFT GATE	
SIZE - 1200mmX1500mm	
DESIGN HEAD 1.5 m	
PREPARED	APPROVED
SE, DESIGN CIRCLE - 3	CE, DESIGN
DATE	DWG.NO - DS-4-001

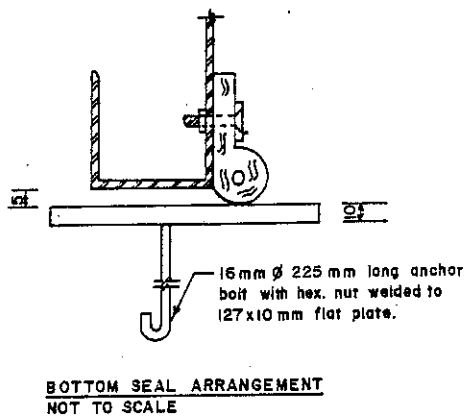
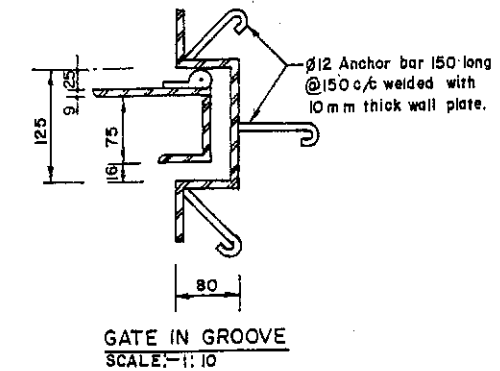
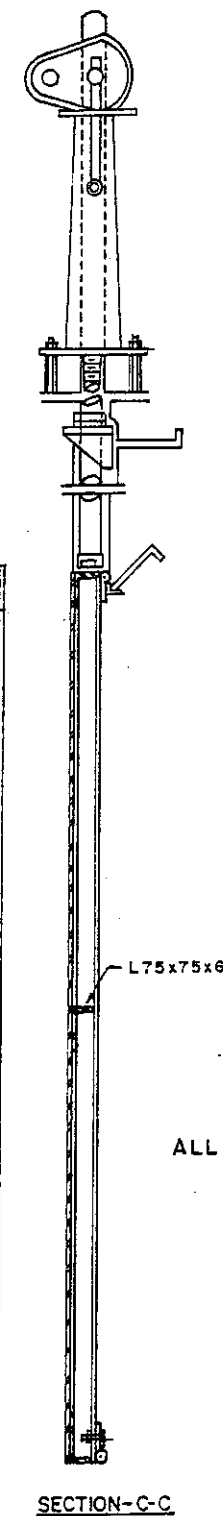
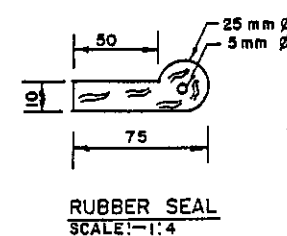
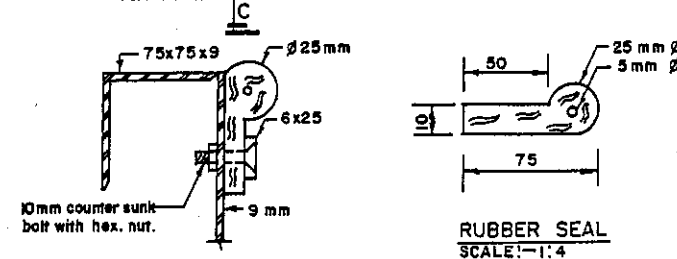


ALL DIMENSIONS ARE IN MILLI METRE.

BWDB OFFICE OF THE CE, DESIGN VERTICAL LIFT GATE SIZE-900mmX1200mm DESIGN HEAD 2.5 m	
PREPARED <i>[Signature]</i> SE, DESIGN CIRCLE - 3 DATE	APPROVED <i>[Signature]</i> CE, DESIGN DWG.NO-DS-5-001

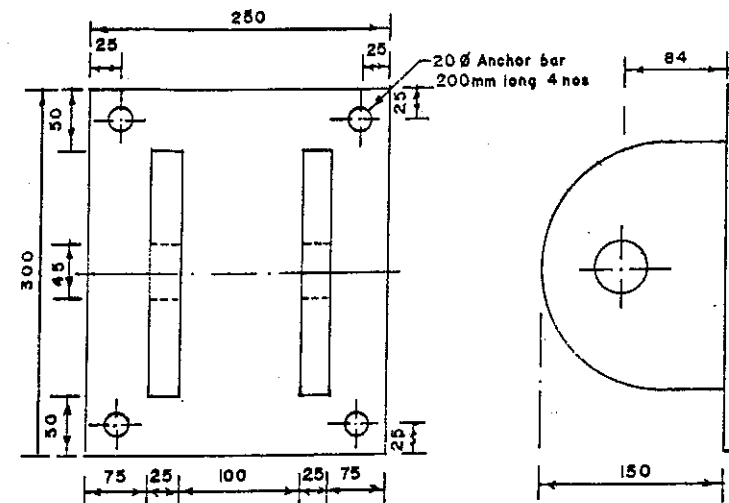


GENERAL ARRANGEMENT OF THE GATE  
SCALE:-1:10

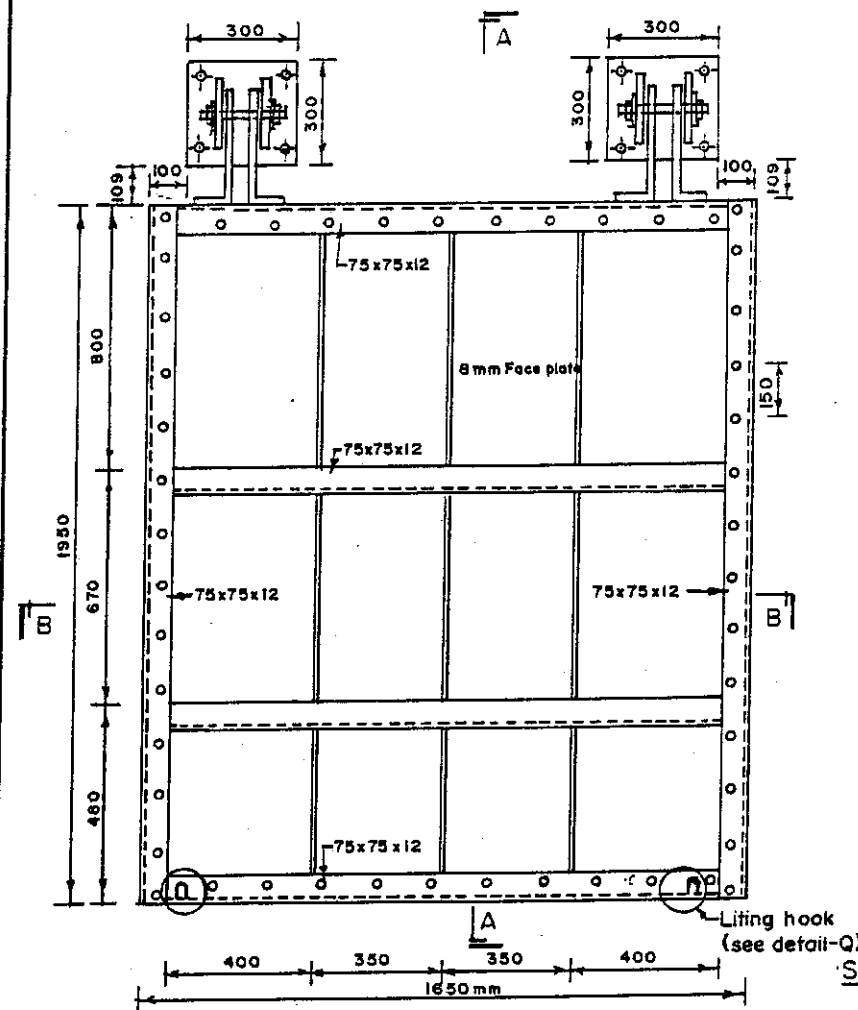
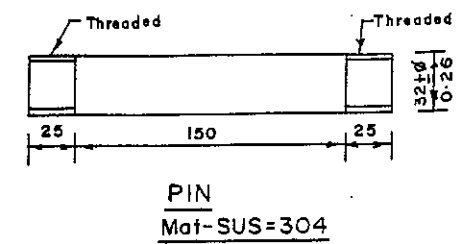
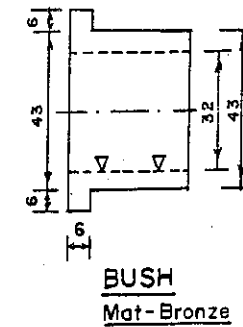


ALL DIMENSIONS IN ARE MILLI METRE.

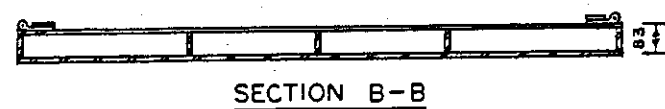
BWDB OFFICE OF THE CE, DESIGN	
VERTICAL LIFT GATE SIZE - 900mm X 1200mm DESIGN HEAD 1.5 m	
PREPARED SE, DESIGN CIRCLE - 3	APPROVED CE, DESIGN
DATE	DWG.NO-DS-6-001



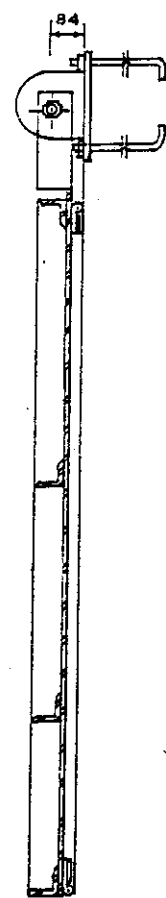
HINGE (WALL SIDE)



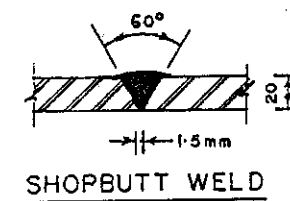
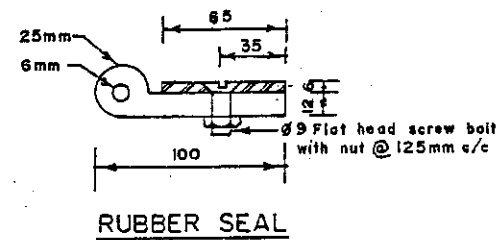
GATE ELEVATION



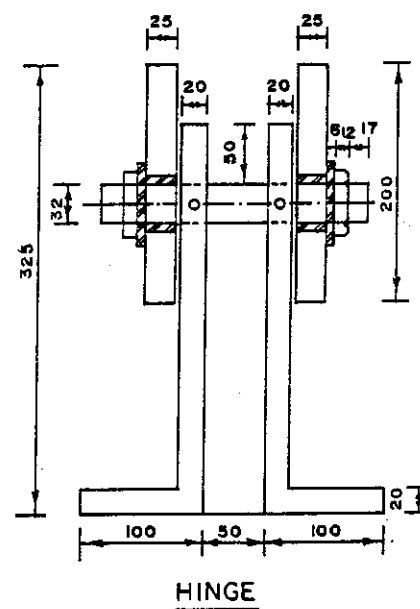
SECTION B-B



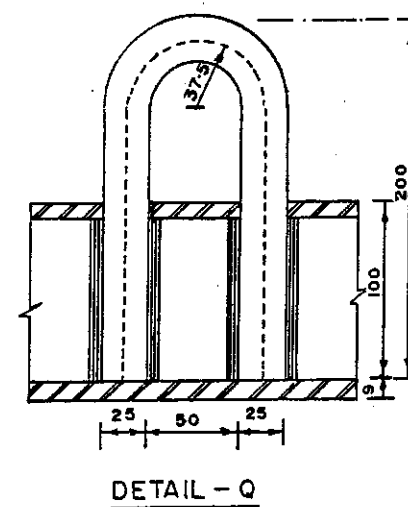
SECTION A-A



ALL DIMENSIONS ARE IN MILLI METRE.

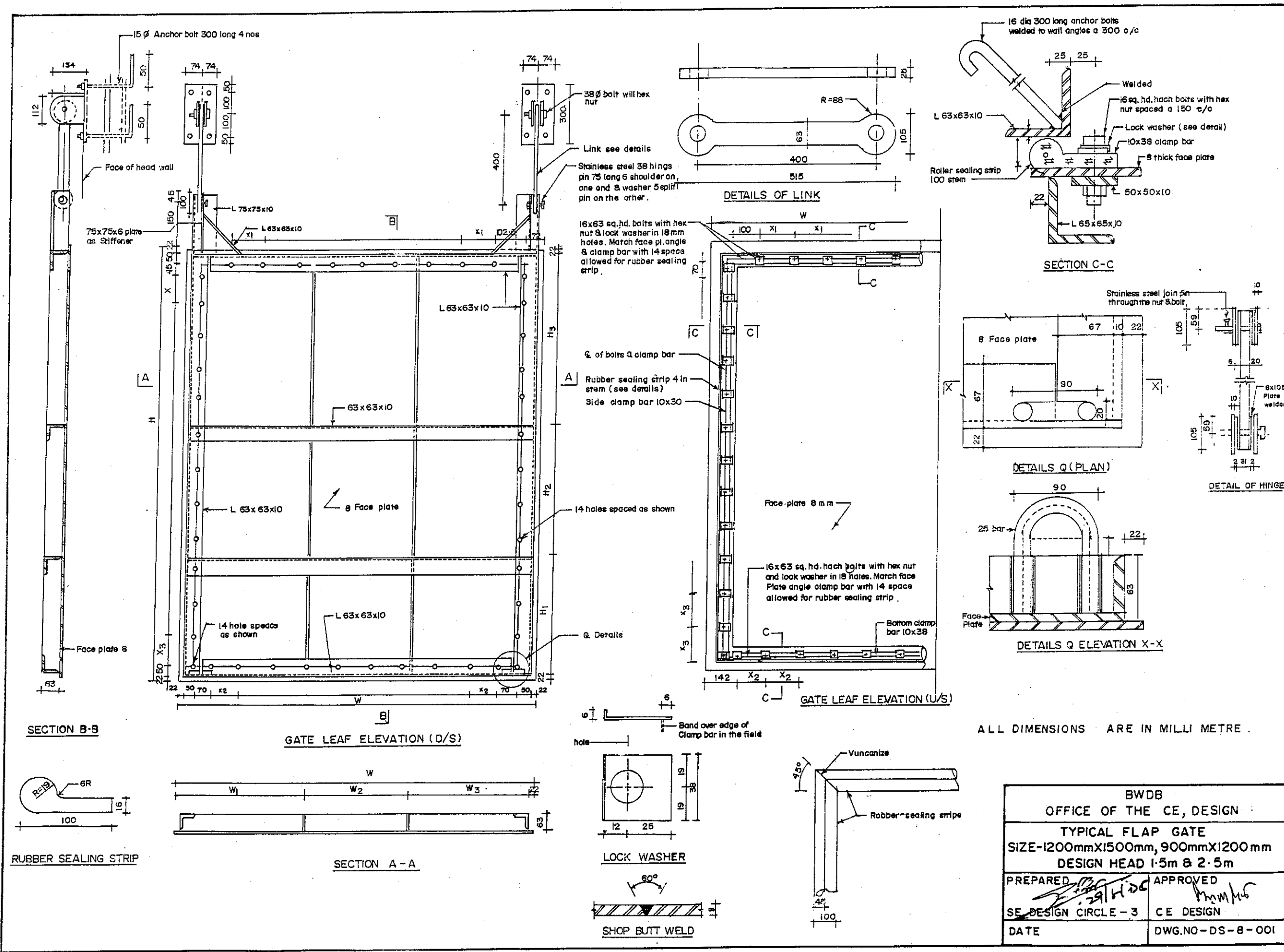


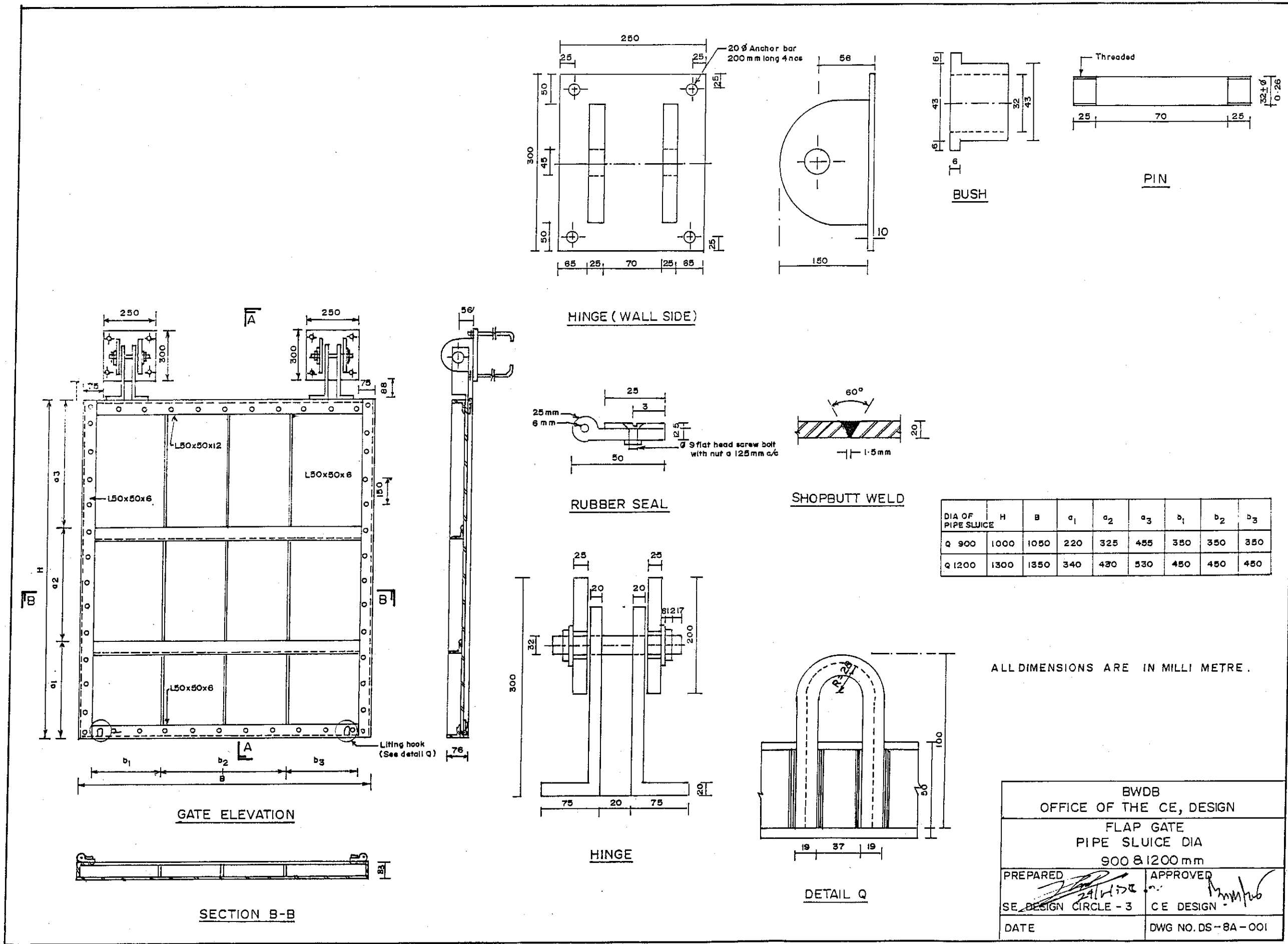
HINGE



DETAIL - Q

BWDB OFFICE OF THE CE, DESIGN	
FLAP GATE SIZE - 1500mm X 1800mm DESIGN HEAD 1.5m & 2.5m	
PREPARED SE DESIGN CIRCLE-3	APPROVED CE DESIGN
DATE	DWG.NO - DS-7-001

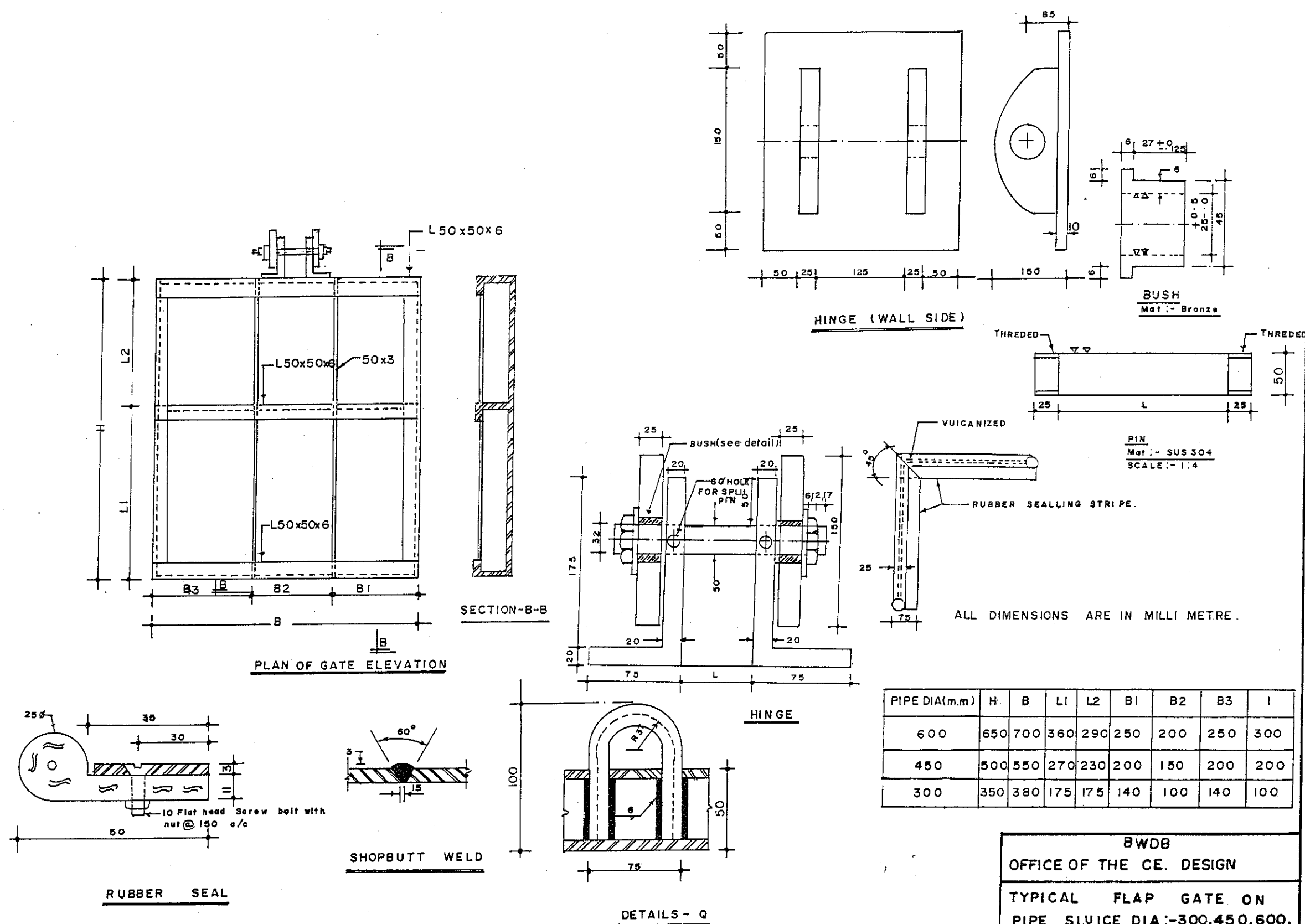




DIA OF PIPE SLUICE	H	B	a <sub>1</sub>	a <sub>2</sub>	a <sub>3</sub>	b <sub>1</sub>	b <sub>2</sub>	b <sub>3</sub>
Q 900	1000	1050	220	325	455	350	350	350
Q 1200	1300	1350	340	430	530	450	450	450

ALL DIMENSIONS ARE IN MILLI METRE.

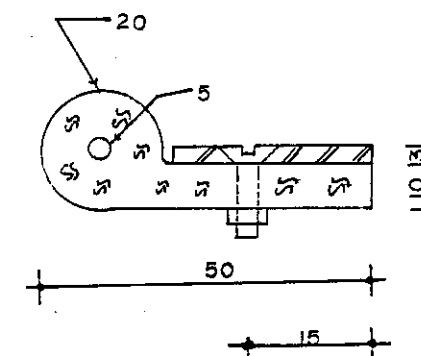
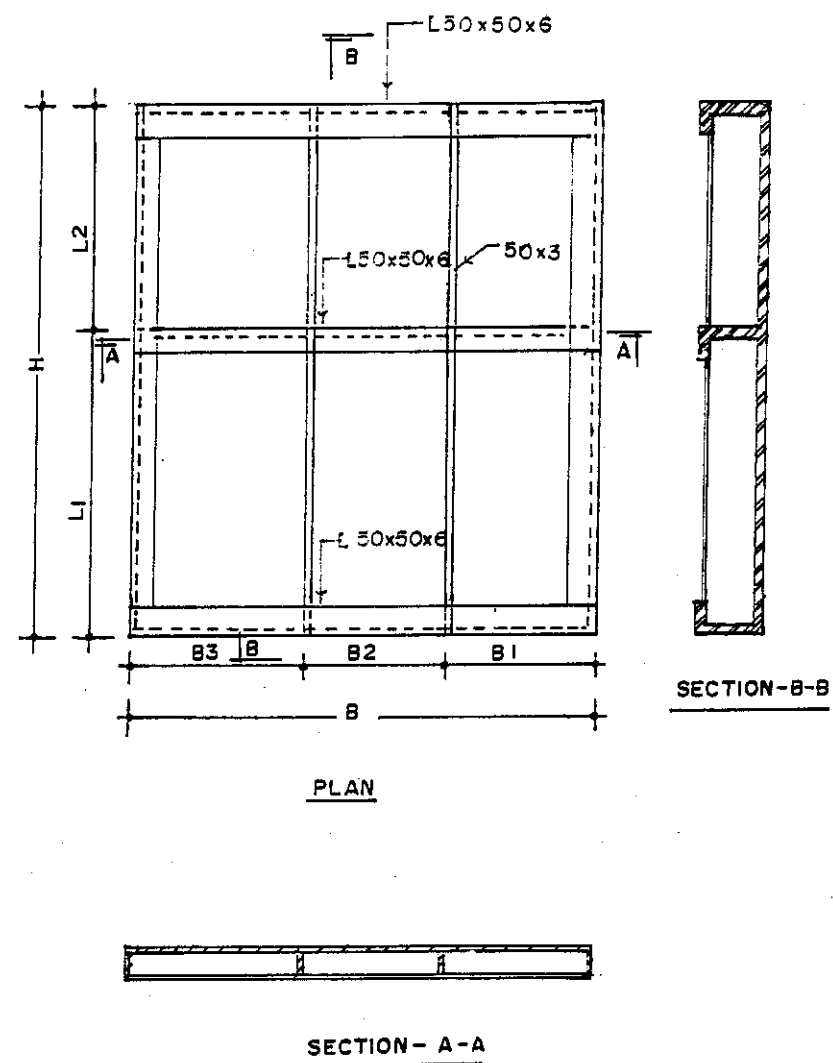
BWDB OFFICE OF THE CE, DESIGN	
FLAP GATE PIPE SLUICE DIA 900 & 1200 mm	
PREPARED <i>[Signature]</i> SE, DESIGN CIRCLE - 3	APPROVED <i>[Signature]</i> CE DESIGN
DATE	DWG NO. DS-8A-001



PIPE DIA(m.m)	H	B	L1	L2	B1	B2	B3	I
600	650	700	360	290	250	200	250	300
450	500	550	270	230	200	150	200	200
300	350	380	175	175	140	100	140	100

<p align="center"><b>BWDB</b></p> <p align="center"><b>OFFICE OF THE CE. DESIGN</b></p>	
<p align="center"><b>TYPICAL FLAP GATE ON PIPE SLUICE DIA:-300,450,600 m.m.</b></p>	
<p><b>PREPARED</b> <i>[Signature]</i></p> <p><b>SE. DESIGN CIRCLE - 3</b></p> <p><b>DATE: -</b></p>	<p><b>APPROVED</b> <i>[Signature]</i></p> <p><b>C.E. DESIGN</b></p> <p><b>DWB. NO. DS-SB-001</b></p>

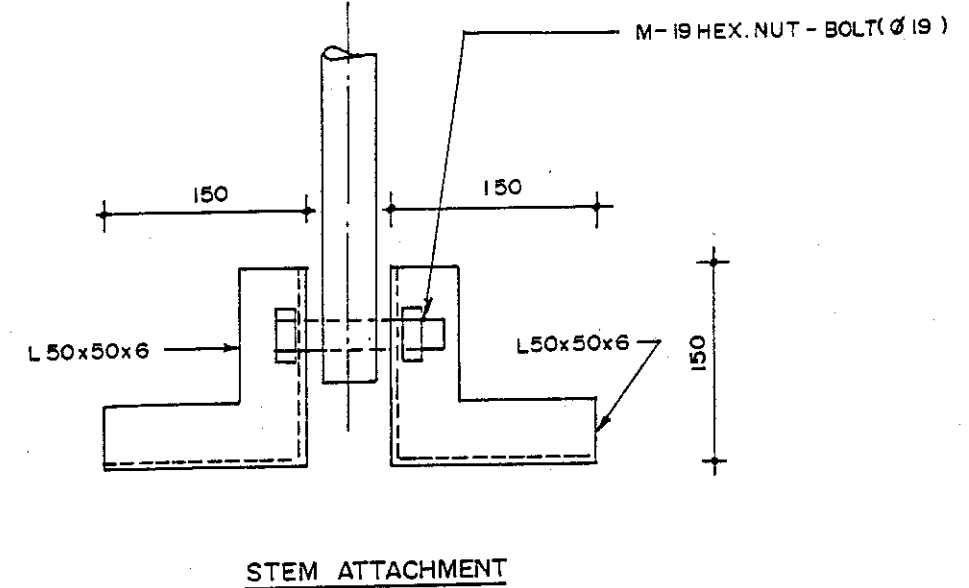
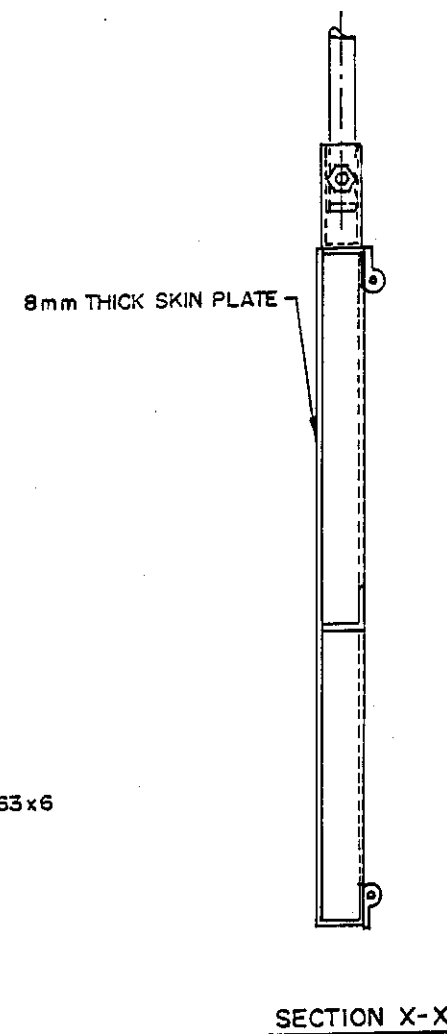
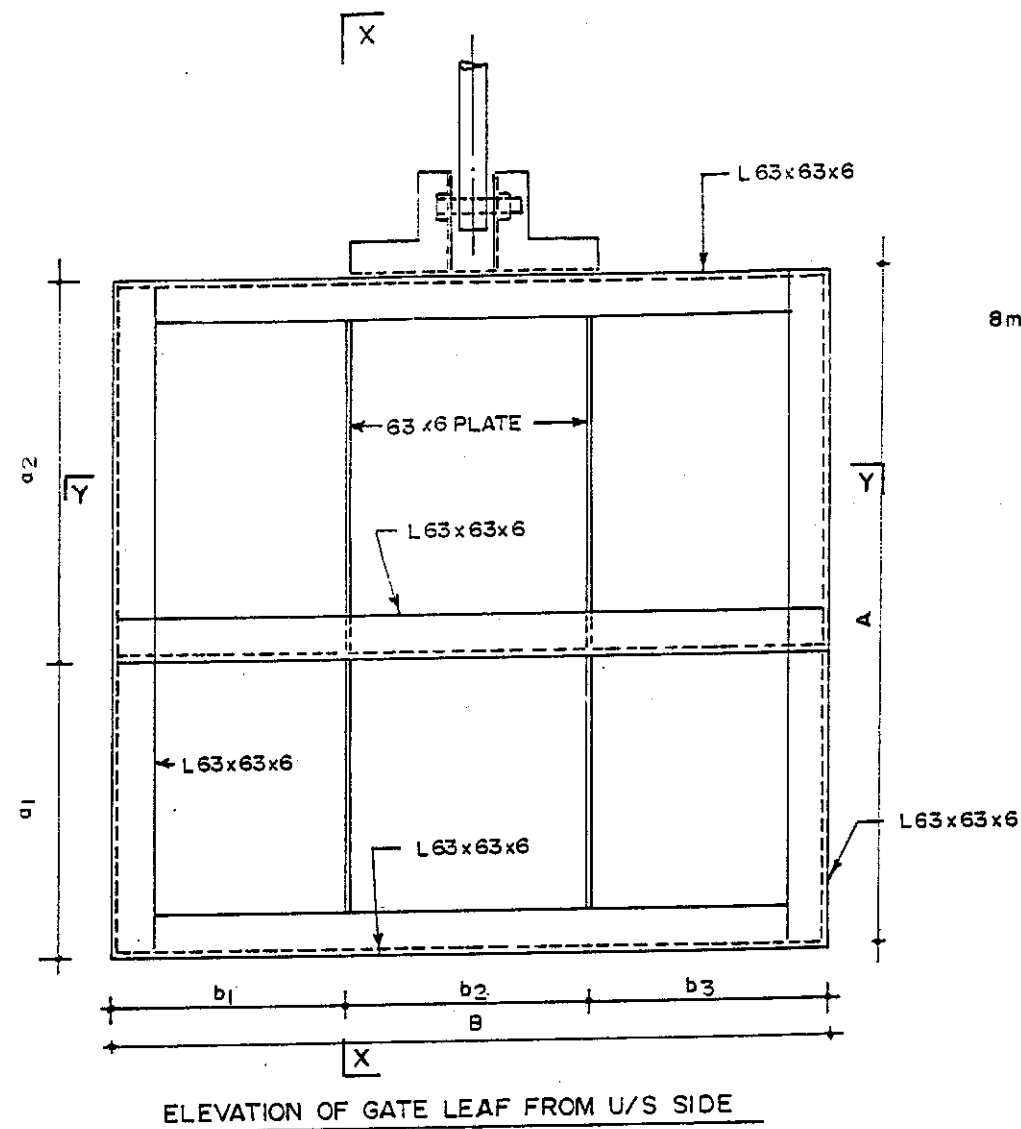
PIPE DIA(mm)	H	B	L1	L2	B1	B2	B3
600	650	700	360	290	250	200	250
450	500	550	270	230	200	150	200
300	350	380	175	175	140	100	140



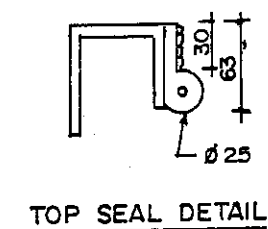
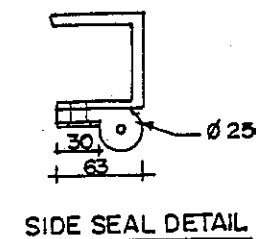
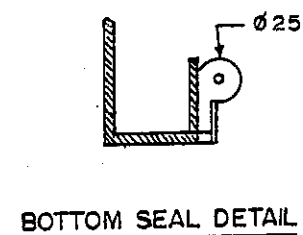
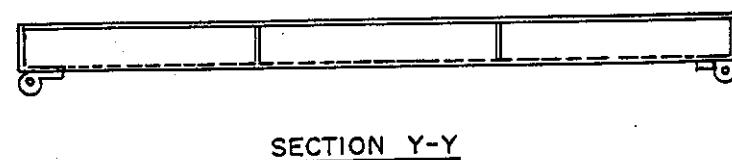
ALL DIMENSIONS ARE IN mm

BWDB OFFICE OF THE CE, DESIGN	
VERTICAL LIFT GATE FOR IRRIGATION ON PIPE SLUICE, DIA 300mm, 450mm & 600 mm	
PREPARED <i>[Signature]</i> SE. DESIGN CIRCLE-3	APPROVED <i>[Signature]</i> CE. DESIGN
DATE	DWG NO. D S-9-001



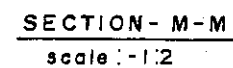
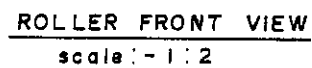
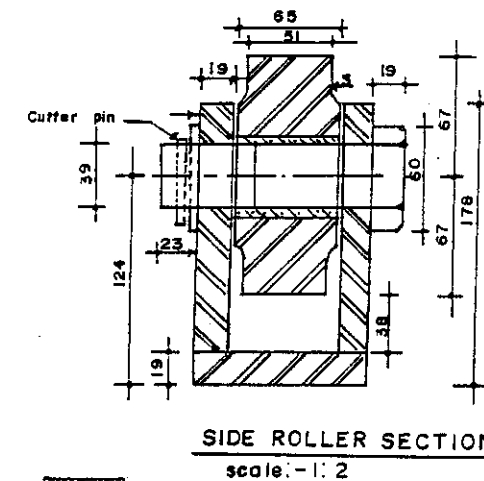
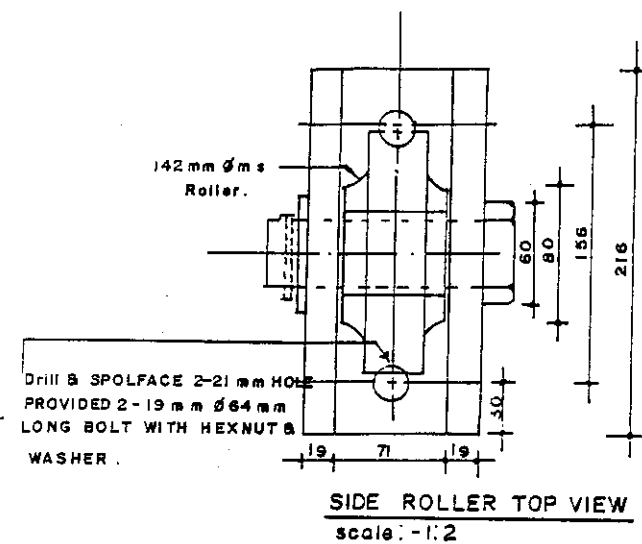
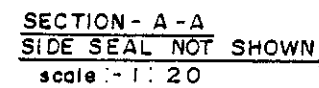
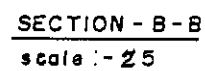
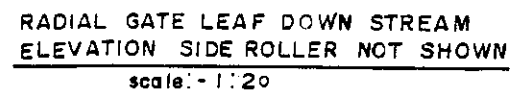


Dia of Pipe Sluice	A	B	a1	a2	b1	b2	b3
Q 900	1000	1050	440	560	350	350	350
Q 1200	1300	1350	580	720	450	450	450

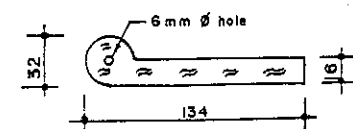
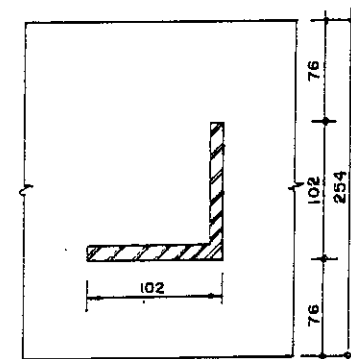
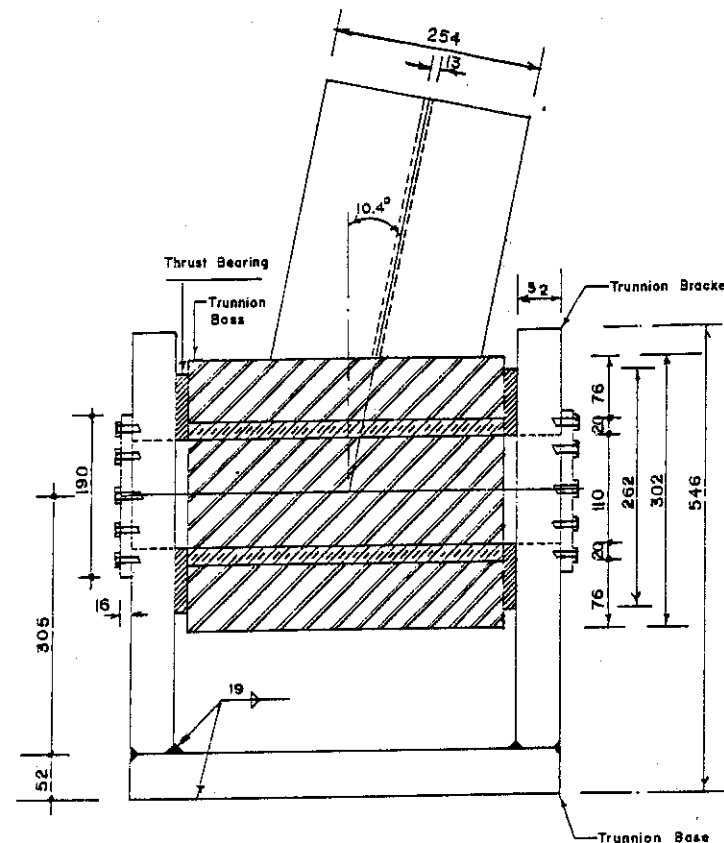
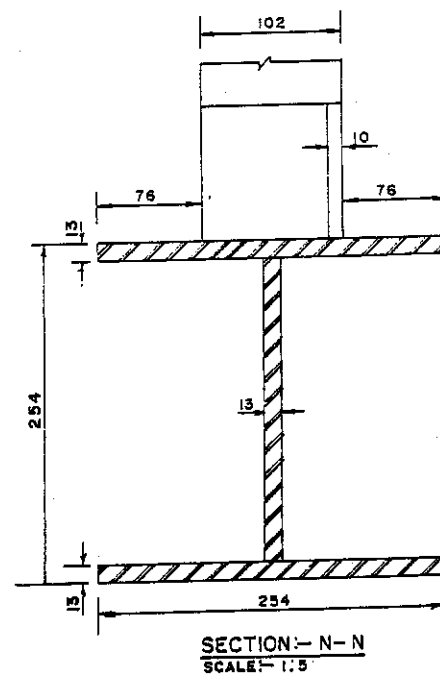
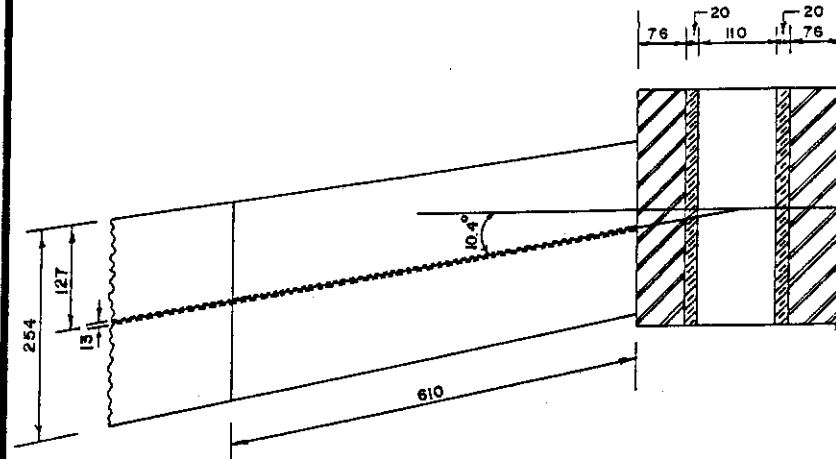
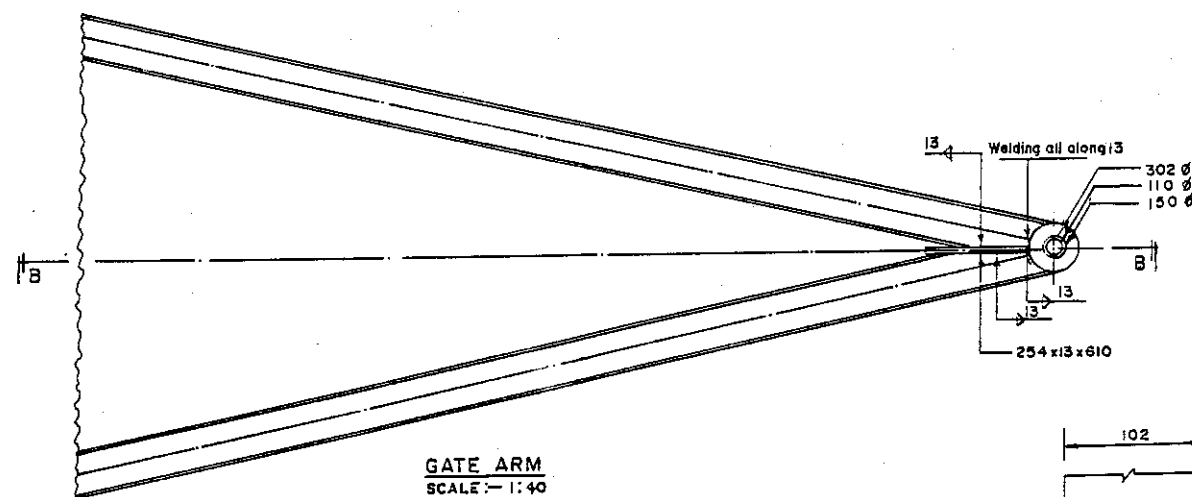
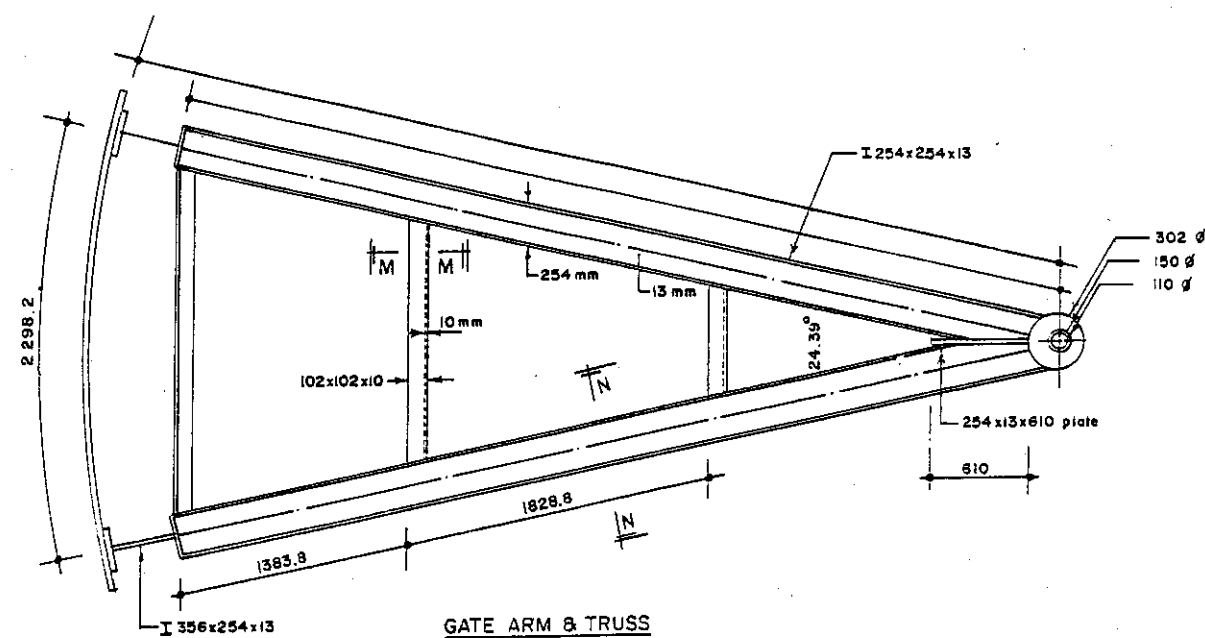


ALL DIMENSIONS ARE IN m. m.

BWD B	
OFFICE OF THE CE. DESIGN	
VERTICAL LIFT GATE ON IRRIGATION PIPE SLUICE, DIA 900 mm & 1200 mm	
PREPARED SE. DESIGN CIRCLE - 3 DATE	APPROVED C. E. DESIGN DWG NO DS-10-001



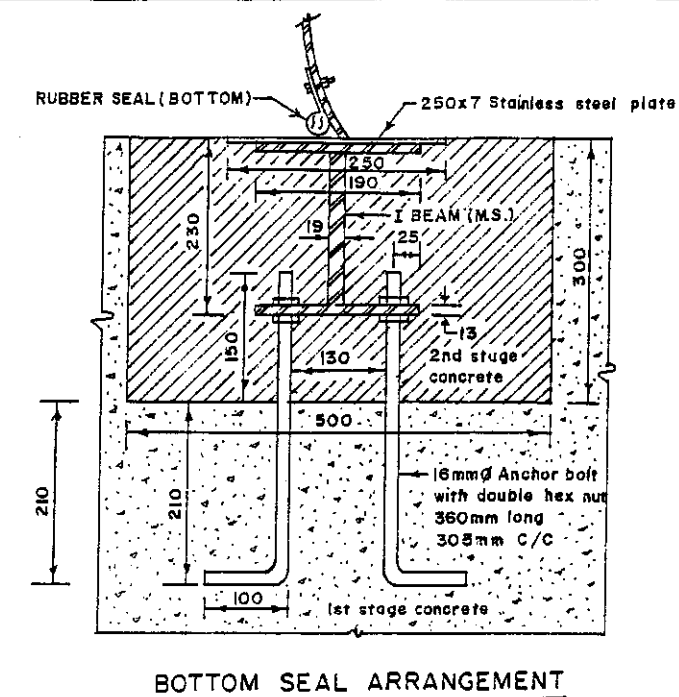
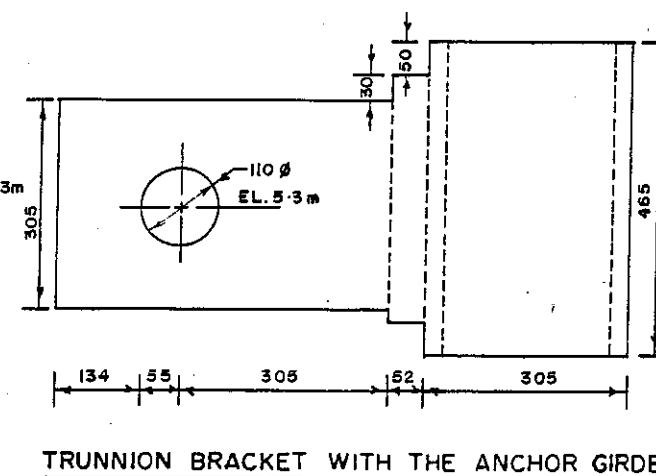
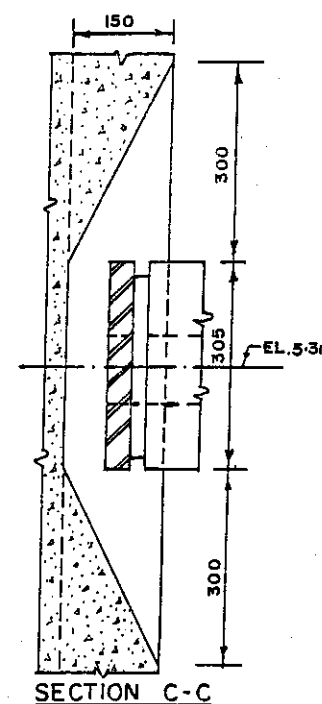
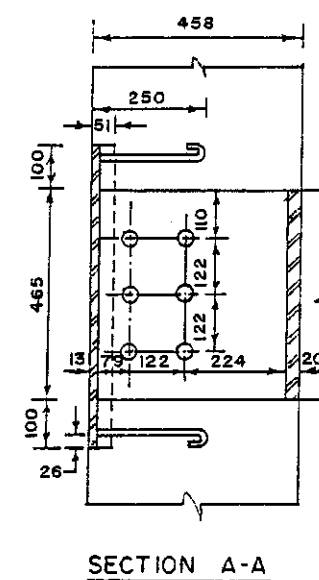
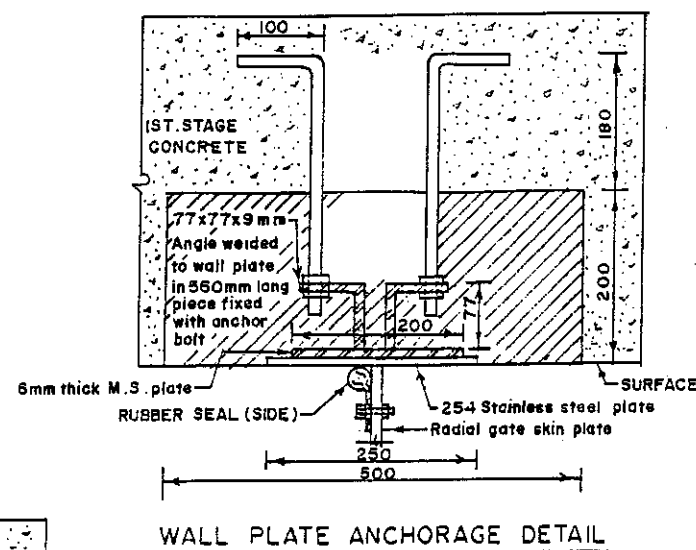
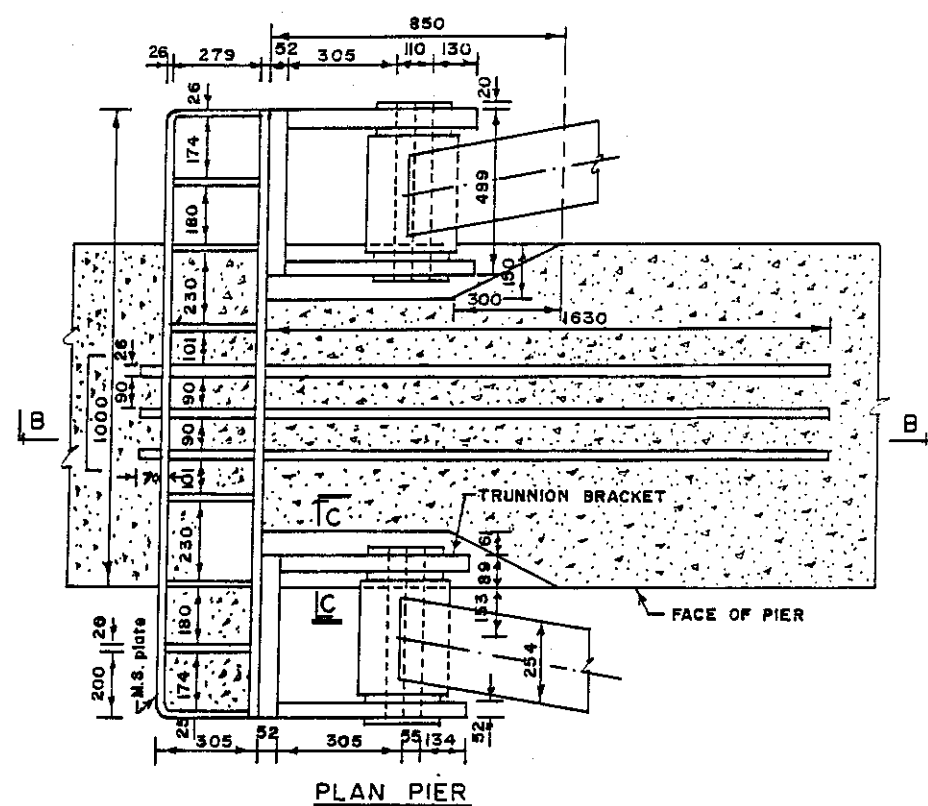
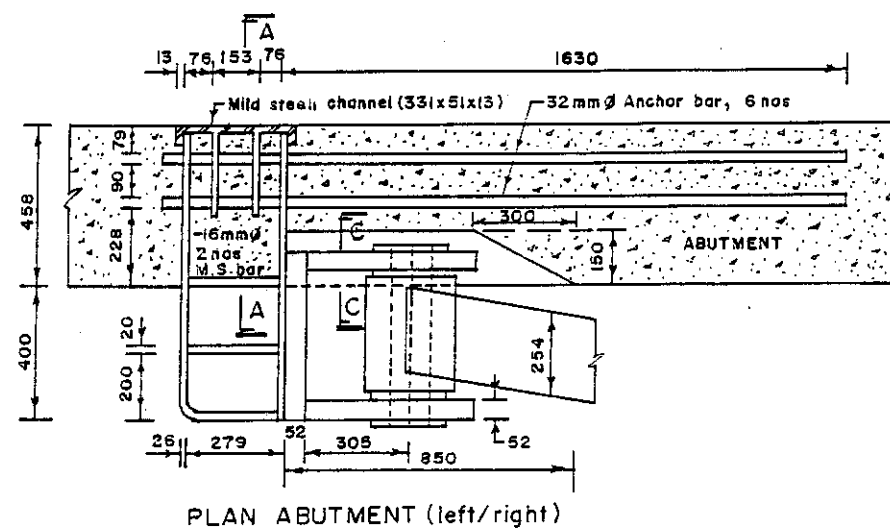
PREPARED <i>[Signature]</i>	APPROVED <i>[Signature]</i>
SE, DESIGN CIRCLE- 3	CE, DESIGN:
DATE	DWG. NO. DS-11-003 SHEET 1 OF 3



**BOTTOM & SIDE RUBBER SEAL**  
SCALE: 1:4

ALL DIMENSIONS ARE IN m.m.

BWDB OFFICE OF THE CE, DESIGN	
RADIAL GATE SIZE 5000mm X 4680mm	
PREPARED SE, DESIGN CIRCLE-3	APPROVED CE, DESIGN
DATE	DWG. NO- DS-11-003 SHEET 2 OF 3



ALL DIMENSIONS ARE IN m.m.

BWDB  
OFFICE OF THE CE, DESIGN

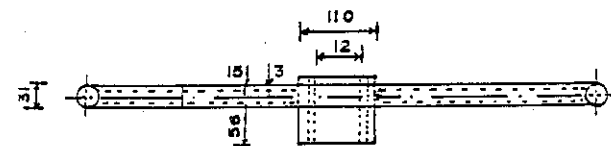
	RADIAL GATE
SIZE	5000mm X 4680mm

PREPARED *[Signature]*  
SE, DESIGN CIRCLE- 3

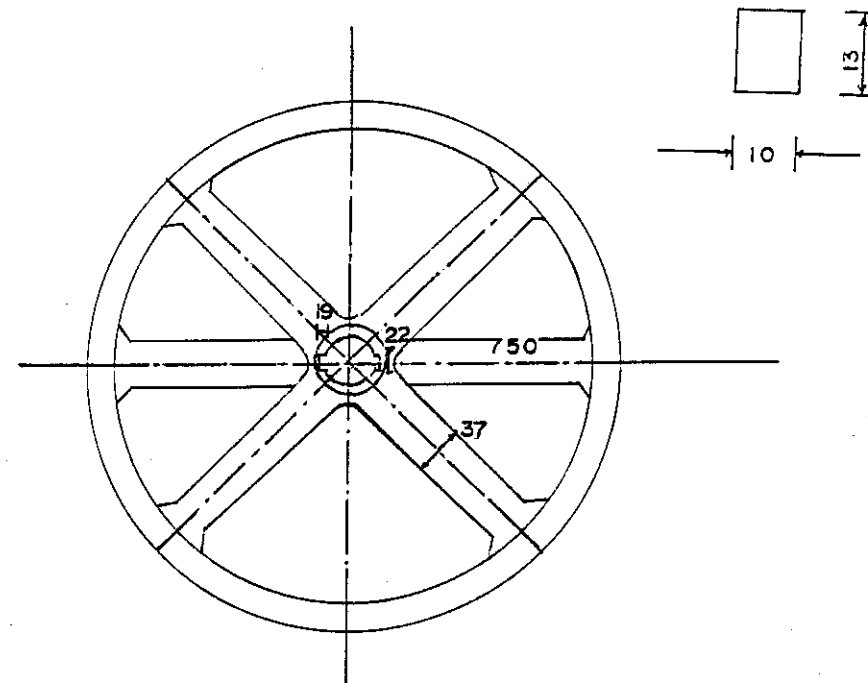
APPROVED *[Signature]*  
CE. DESIGN:

DATE \_\_\_\_\_

DWG.NO- DS-11-003  
SHEET 3 OF 3

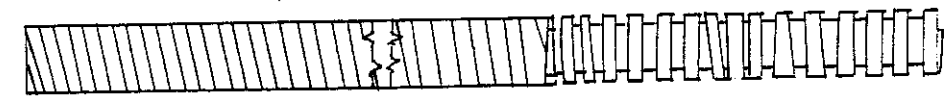


ELEVATION



PLAN

HAND WHEEL  
MATERIAL - C.I  
PART NO - 2  
QUANTITY - 1



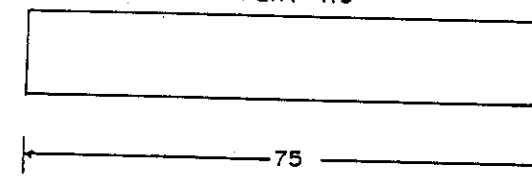
37 DIA. SQ. THREAD LIFT SCREW

MATERIAL - M.S

PART NO

QUANTITY - 1

TAPER :- 1:9



13x10 KEY  
MATERIAL - M.S  
PART NO - 1  
QUANTITY - 2

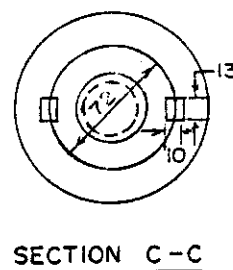
NOTE :-

L<sub>1</sub> = HEIGHT OF GATE

L<sub>2</sub> = VARIES ACCORDING TO ELEVATION  
OF OPERATING PLATFORM

ALL DIMENSIONS ARE IN MILLIMETRE.



BWDB OFFICE OF THE CE, DESIGN	
HOISTING SYSTEM PEDESTAL STEERING WHEEL TYPE	
PREPARED SE, DESIGN CIRCLE - 3	APPROVED CE, DESIGN
DATE	DWG. NO - DS-12-003 SHEET OF 3

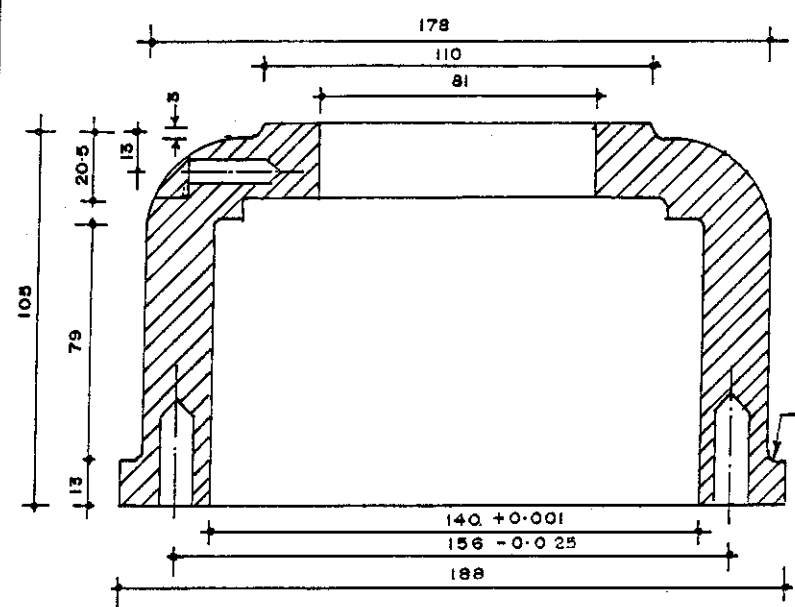


Technical drawing of a circular mechanical part, likely a flange or end view of a shaft. The drawing shows concentric circles representing different diameters. Key dimensions and features include:

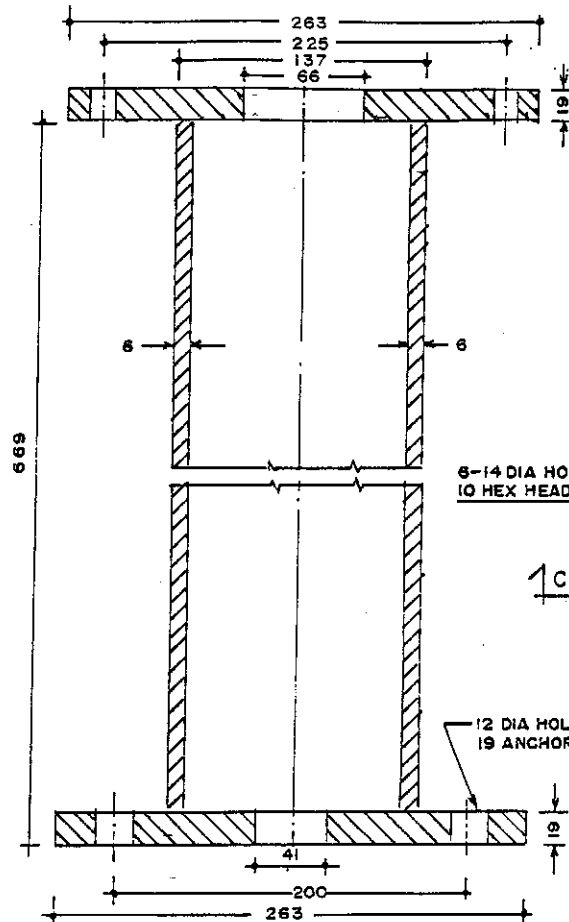
- Overall Diameter:** 263 (indicated by a dimension line at the bottom).
- Inner Diameter:** 156 (indicated by a dimension line between the two concentric circles).
- Radial Dimension:** 65 (indicated by a dimension line from the center to the outer edge of the inner circle).
- Mounting Holes:** Six holes are arranged in a circular pattern around the center. Each hole is represented by a circle with a crosshair.
- Center Mark:** A small circle with a crosshair at the center of the part.
- Section Lines:** Dashed lines radiating from the center to the mounting holes, indicating that the holes are through the part.

Technical drawing of a square plate with a side length of 263. The plate features a central hole with an outer diameter of 137 and an inner diameter of 37. There are also four corner holes, each with a diameter of 6. The distance between the center of the central hole and the center of any corner hole is 200.

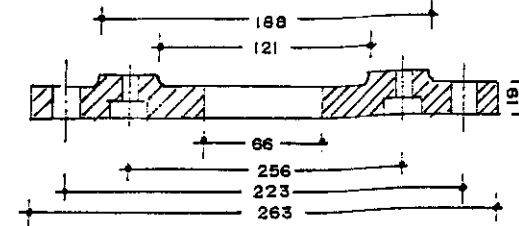
BWDB OFFICE OF THE CE, DESIGN	
HOISTING SYSTEM PEDESTAL STEERING WHEEL TYPE	
PREPARED  S.E. DESIGN CIRCLE-3	APPROVED  CE, DESIGN
DATE	DWG. NO. DS-12-003 SHEET-2 OF 3



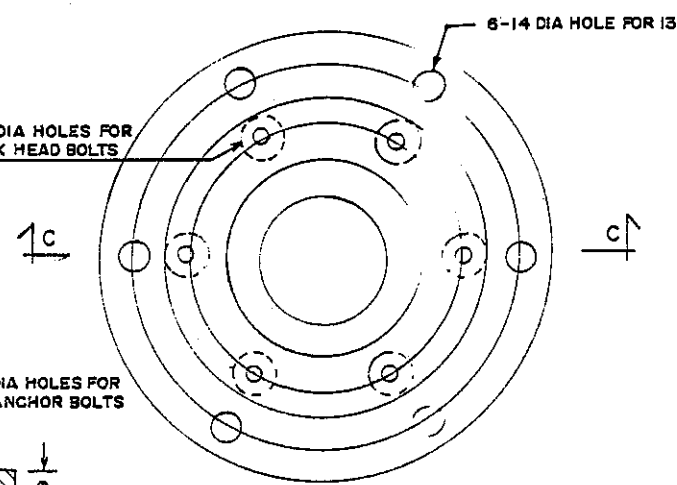
SECTION A-A



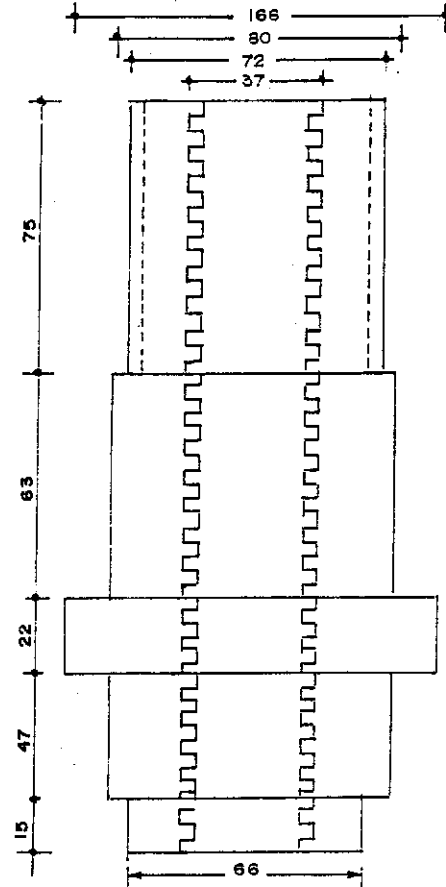
SECTION B-B



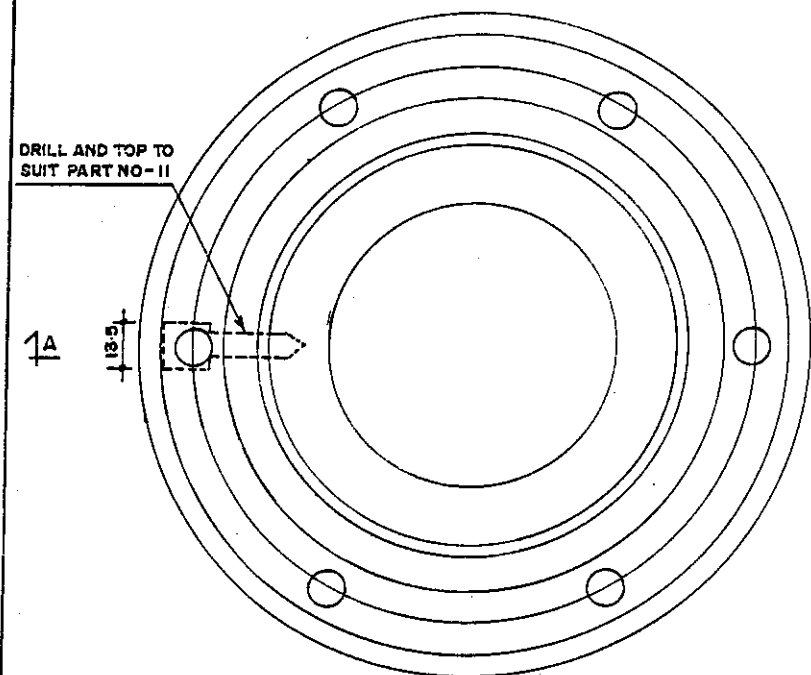
SECTION C-C



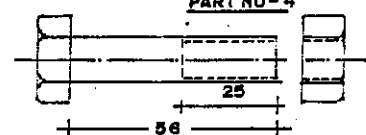
TOP PLAN  
BEARING COVER BOTTOM  
MATERIAL - C.I.  
PART NO - 9  
QUANTITY - 1



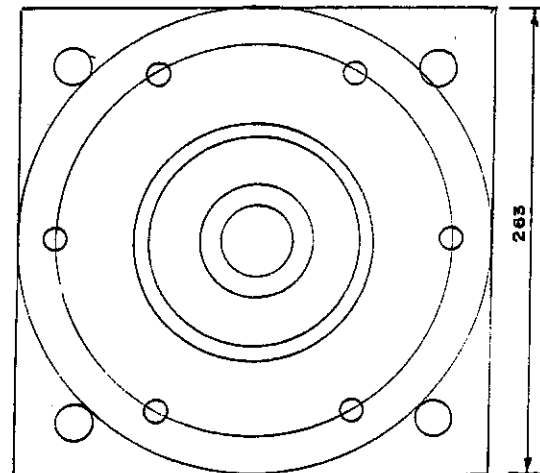
ELEVATION



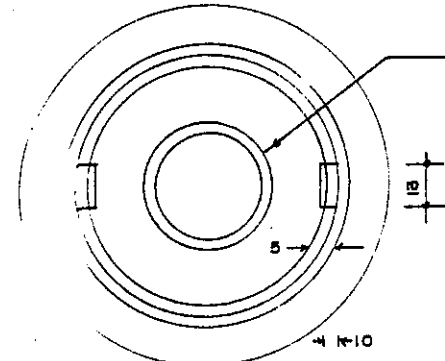
BOTTOM PLAN  
BEARING COVER TOP  
MATERIAL - C.I.  
PART NO - 4



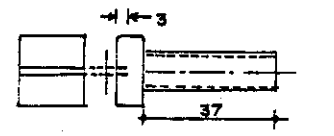
13 DIA HEX HEAD BOLT AND NUT



TOP PLAN  
PEDESTAL WELDED CONSTRUCTION  
MATERIAL - M.S.  
PART NO - 8  
QUANTITY - 1

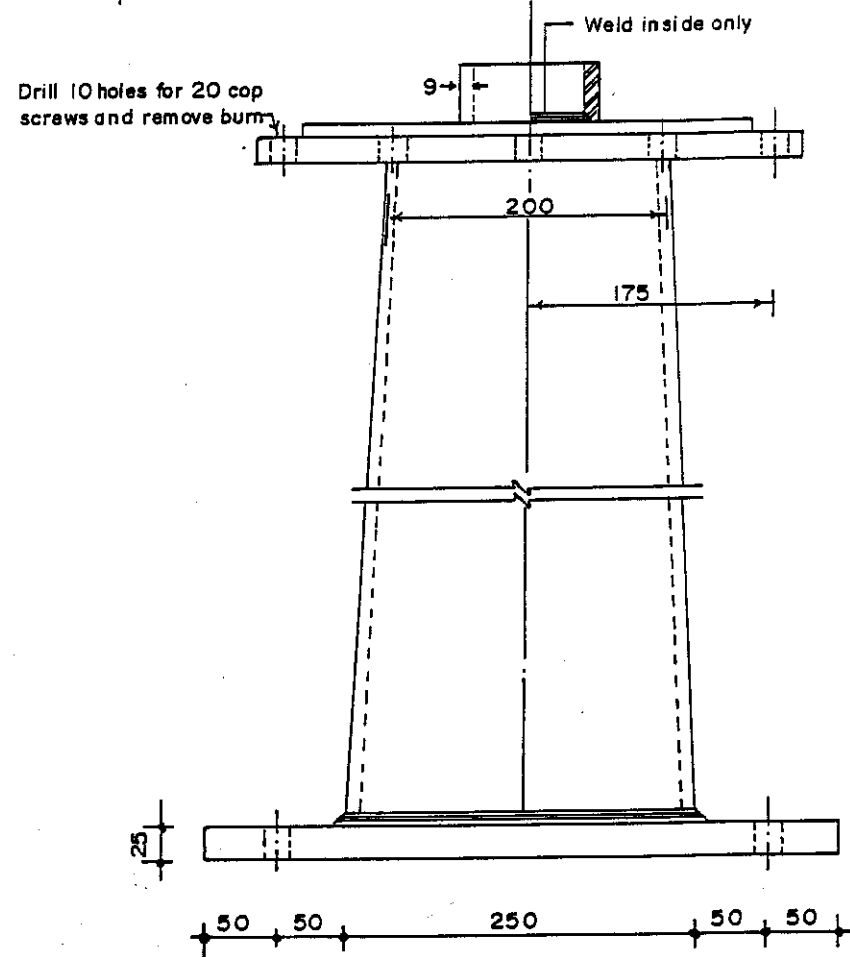
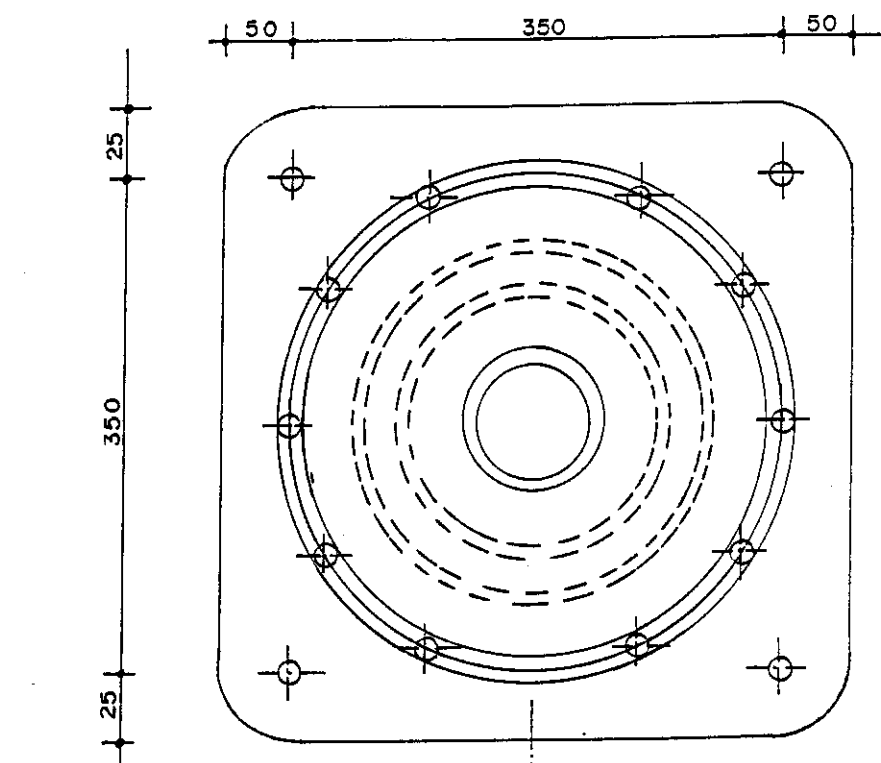


PLAN LIFT NUT  
MATERIAL BRONZE  
PART NO - 3  
QUANTITY - 1

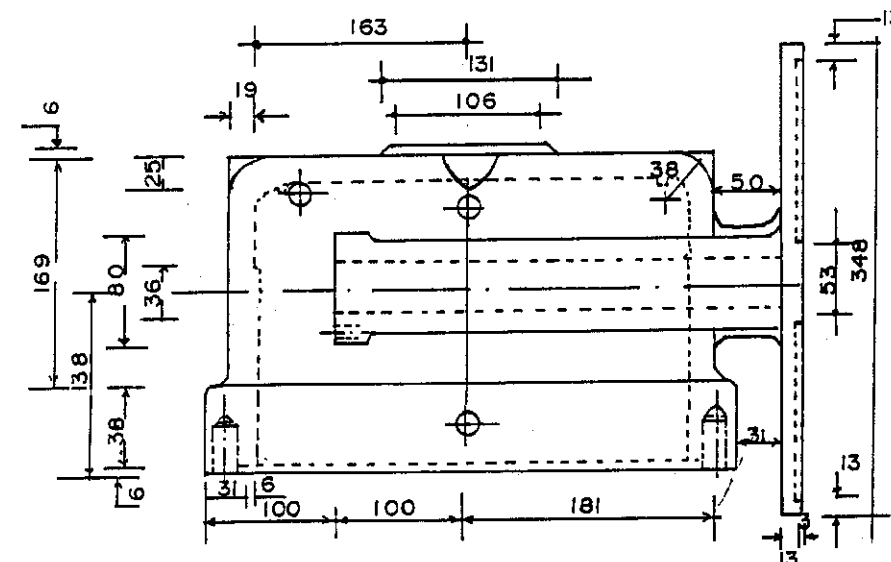
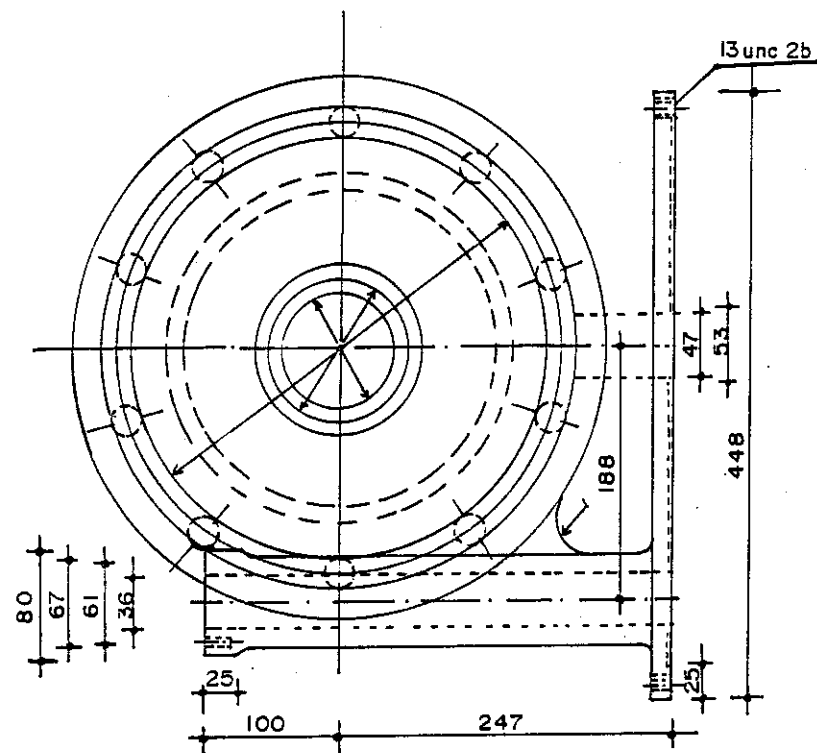


10 DIA SQ HEADSLOTTED BOLT

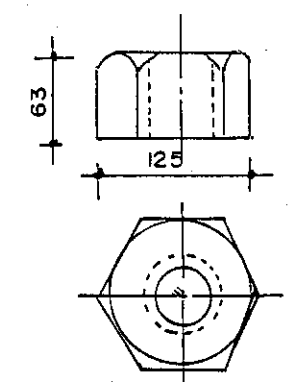
BWDB OFFICE OF THE CE, DESIGN	
HOISTING SYSTEM PEDESTAL STEERING WHEEL TYPE	
PREPARED S.E. DESIGN CIRCLE-3	APPROVED C.E. DESIGN
DATE	DS-12-003 SHEET-30F3



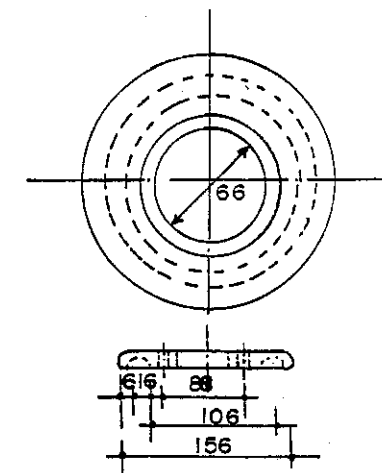
PEDESTAL



BOWL  
PARTS NO - 4  
MAT MS



Hex stop nut parts no 7  
mat. ms

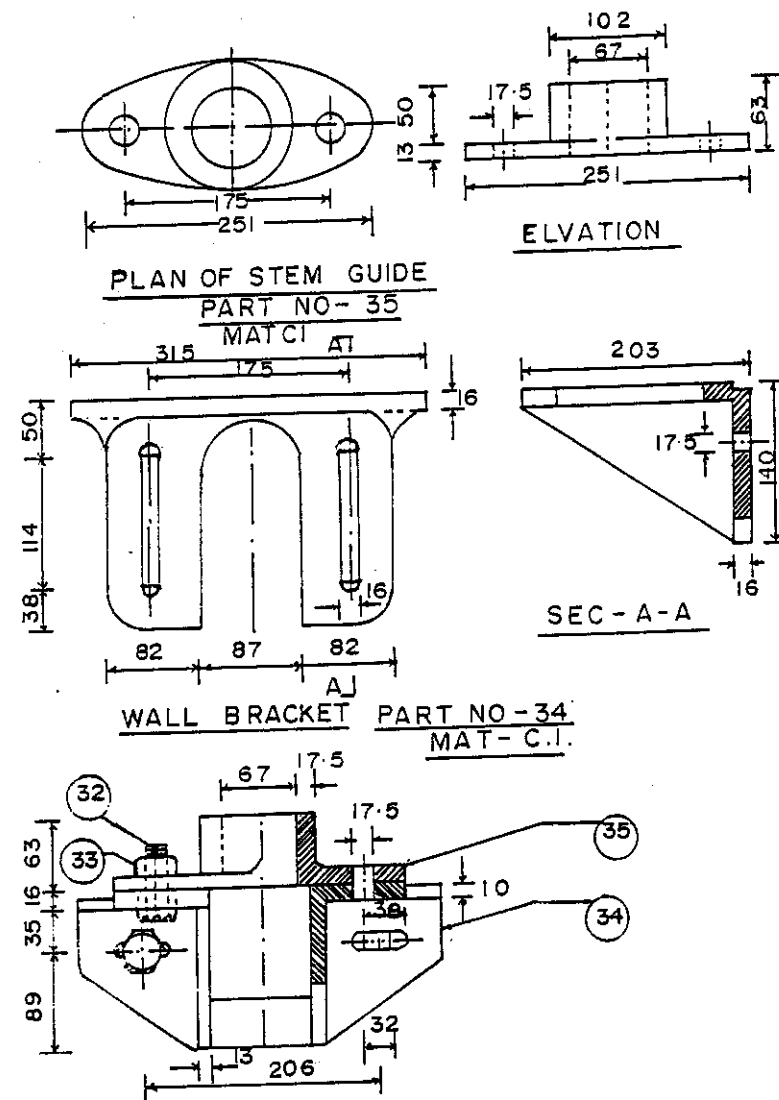


Rain shield part no-6  
mat. c.l.

ALL DIMENSIONS ARE IN MILLIMETRE.

BWDB OFFICE OF THE CE, DESIGN	
HOISTING SYSTEM PEDESTAL TYPE 5 TON.	
PREPARED. SE, DESIGN CIRCLE - 3	APPROVED. CE, DESIGN.
DATE :-	DS-13 - 004 DWG NO. SHEET-1 OF-4

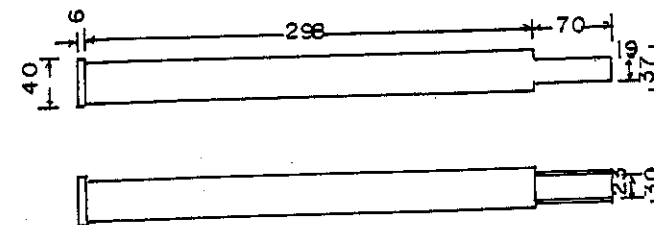




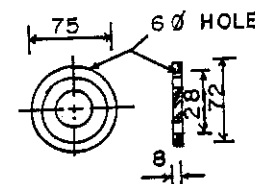
ASSEMBLY STEM GUIDE  
PART NO

6x17.5 HEX CAP SCREW  
PART NO-22  
MAT.M.S

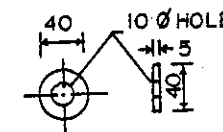
6x22 ALLEN HD SET SCREW  
PART NO-21  
MAT. M.S



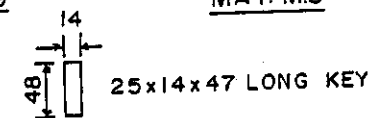
SHAFT  
PART NO 10  
MAT MS



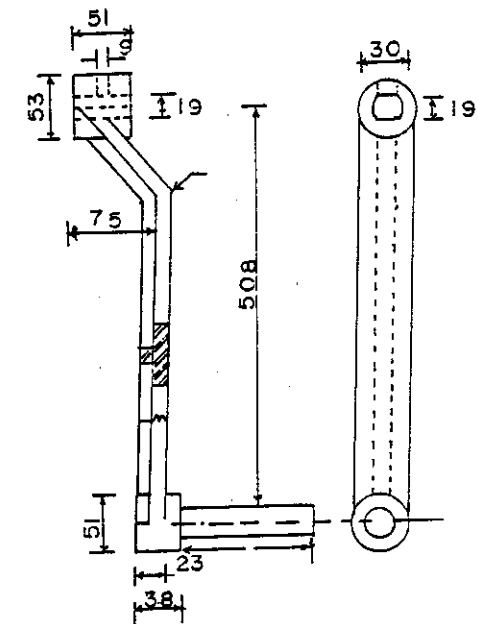
LOCK WASHER  
PART NO-29  
MAT. M.S



LOCK WASHER  
PART NO-28  
MAT. M.S

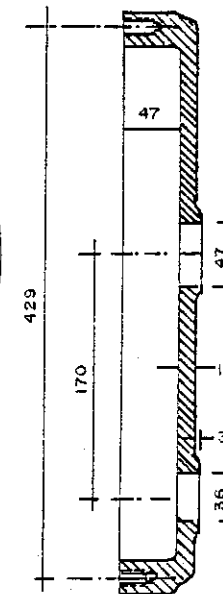
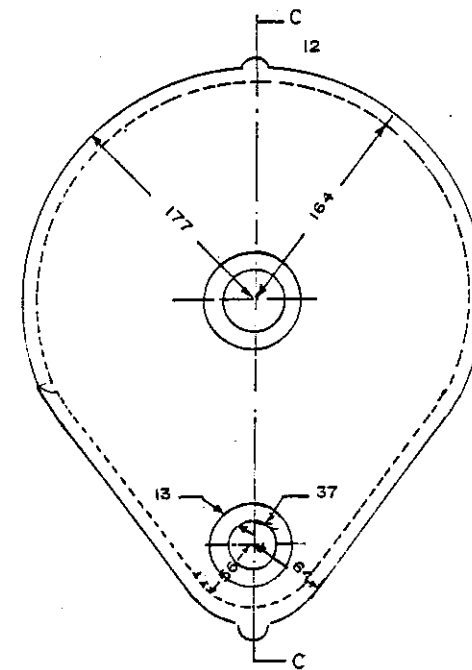
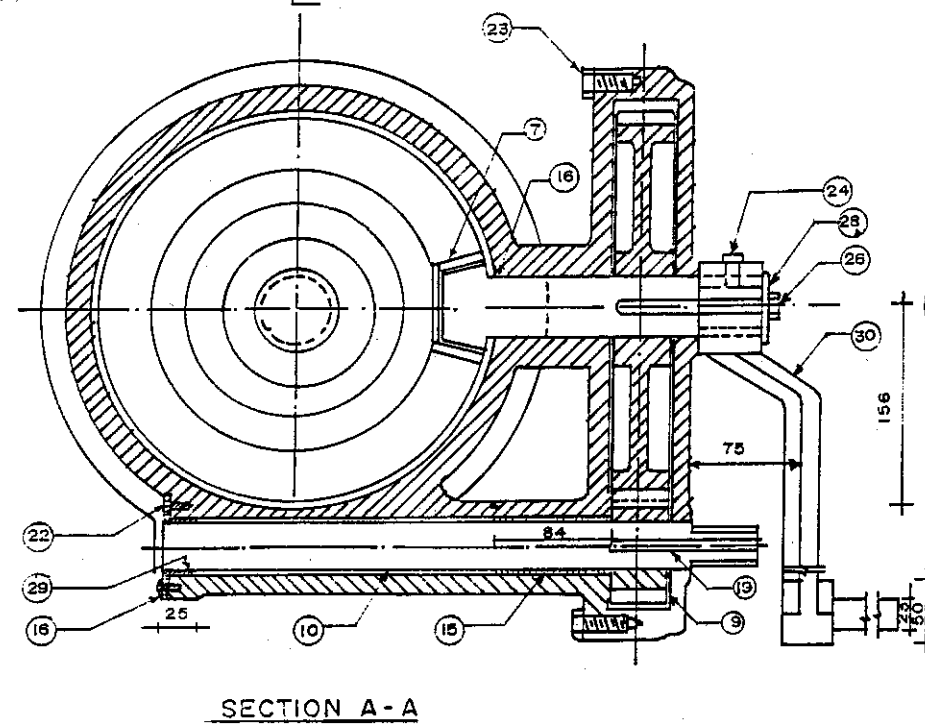
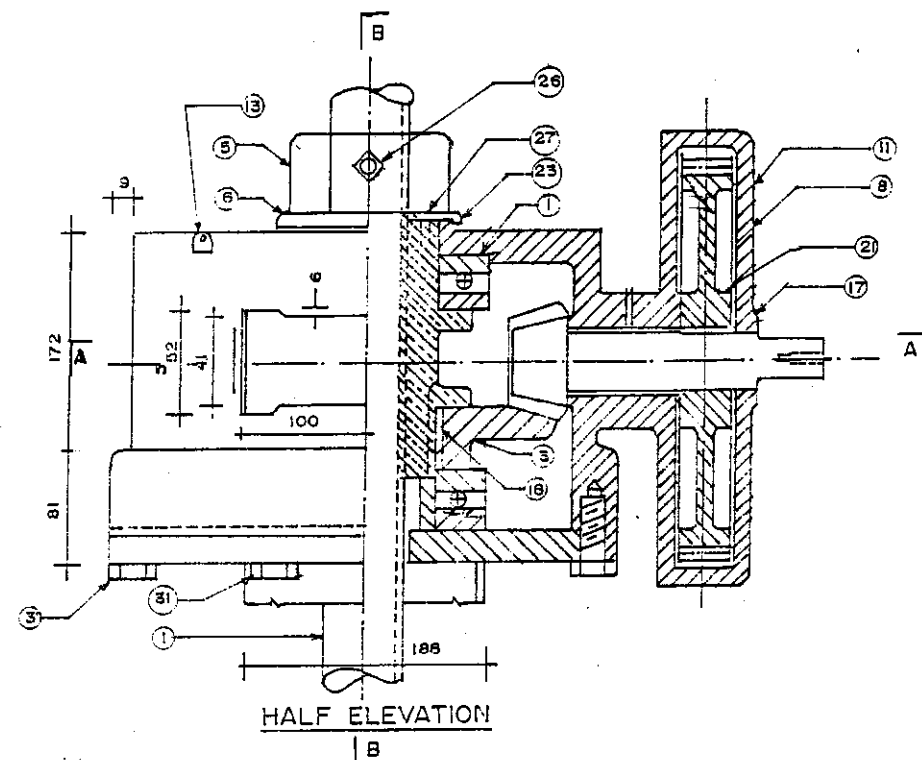


KEY  
PART NO-18  
MAT. M.S

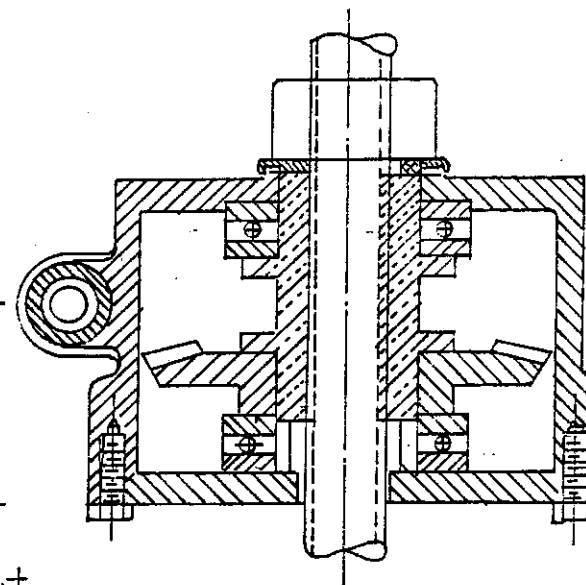


CRANK  
PART NO-23  
MATERIAL MILD STEEL

BWDB OFFICE OF THE CE, DESIGN	
HOISTING SYSTEM PEDESTAL TYPE 5 TON.	
PREPARED. SE, DESIGN CIRCLE-3 DATE:-	APPROVED CE, DESIGN DS-13-004 DWG NO. SHEET-2-OF 4



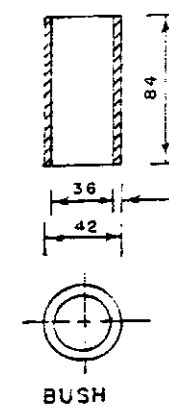
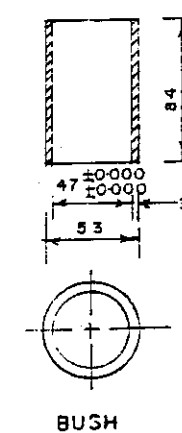
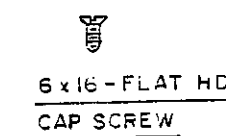
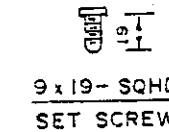
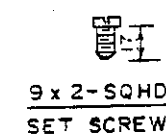
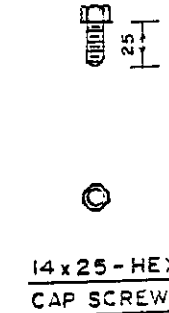
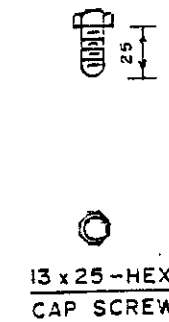
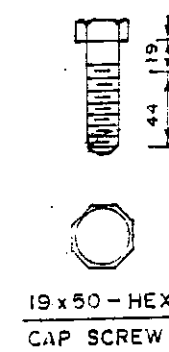
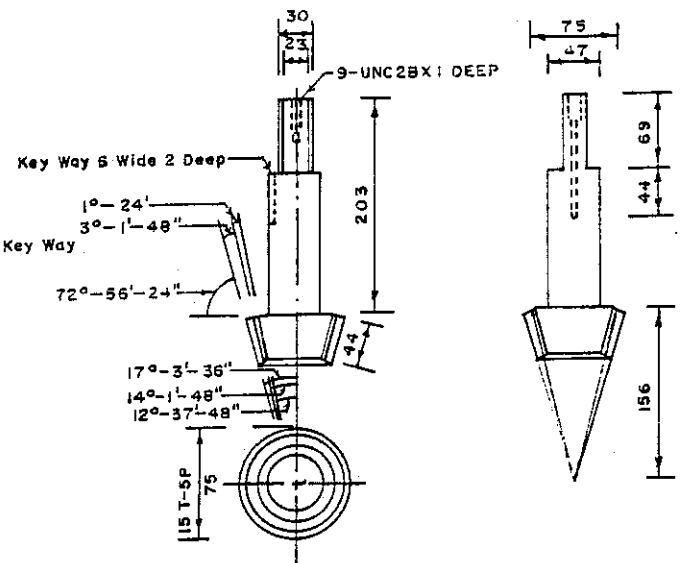
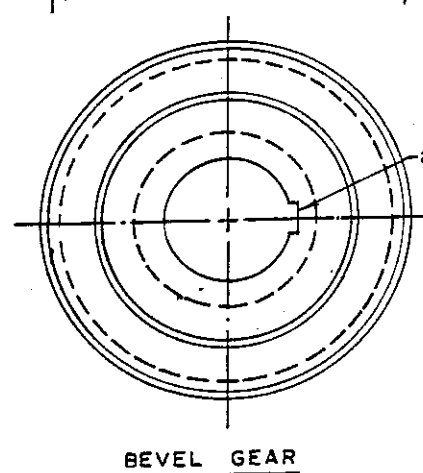
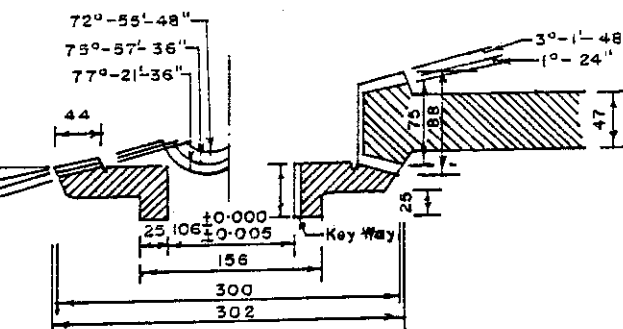
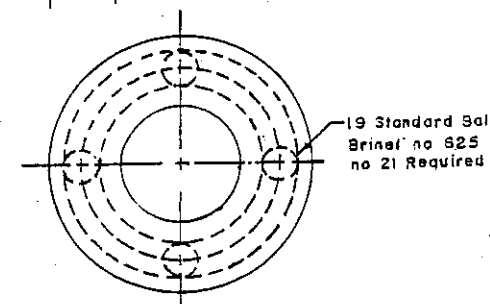
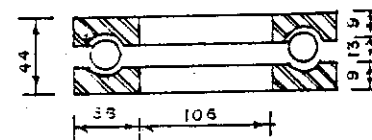
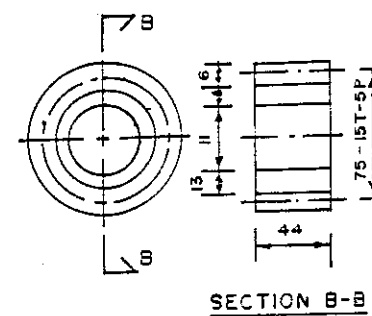
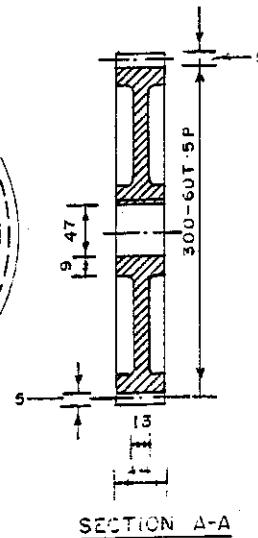
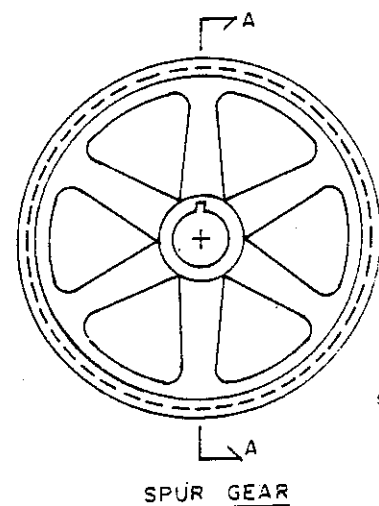
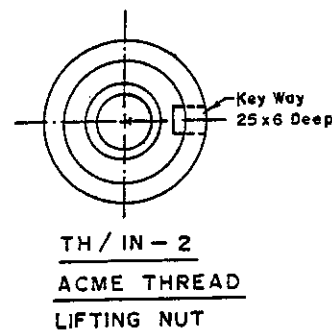
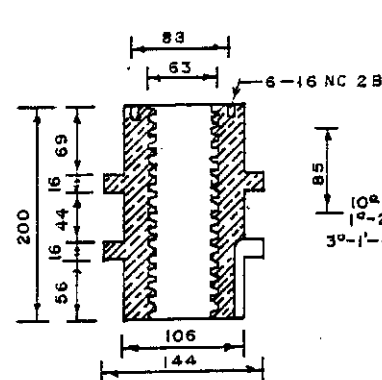
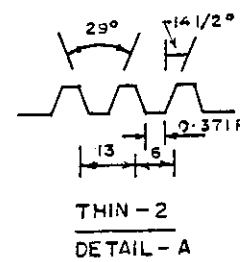
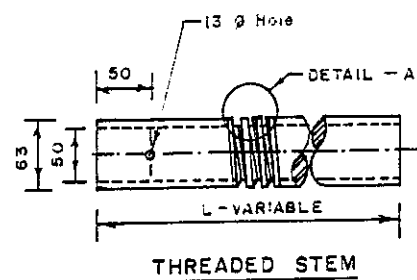
SECTION C-C  
GEAR COVER



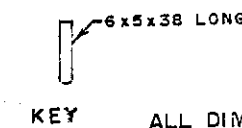
SECTION B-B

ALL DIMENSIONS ARE IN m.m.

BWDB OFFICE OF THE CE, DESIGN	
5 TON, HOISTING SYSTEM PEDESTAL AND CRANK TYPE	
PREPARED S.E. DESIGN CIRCLE - 3	APPROVED C.E. DESIGN
DATE	DWG NO-DS-13-004 SHEET-30F4

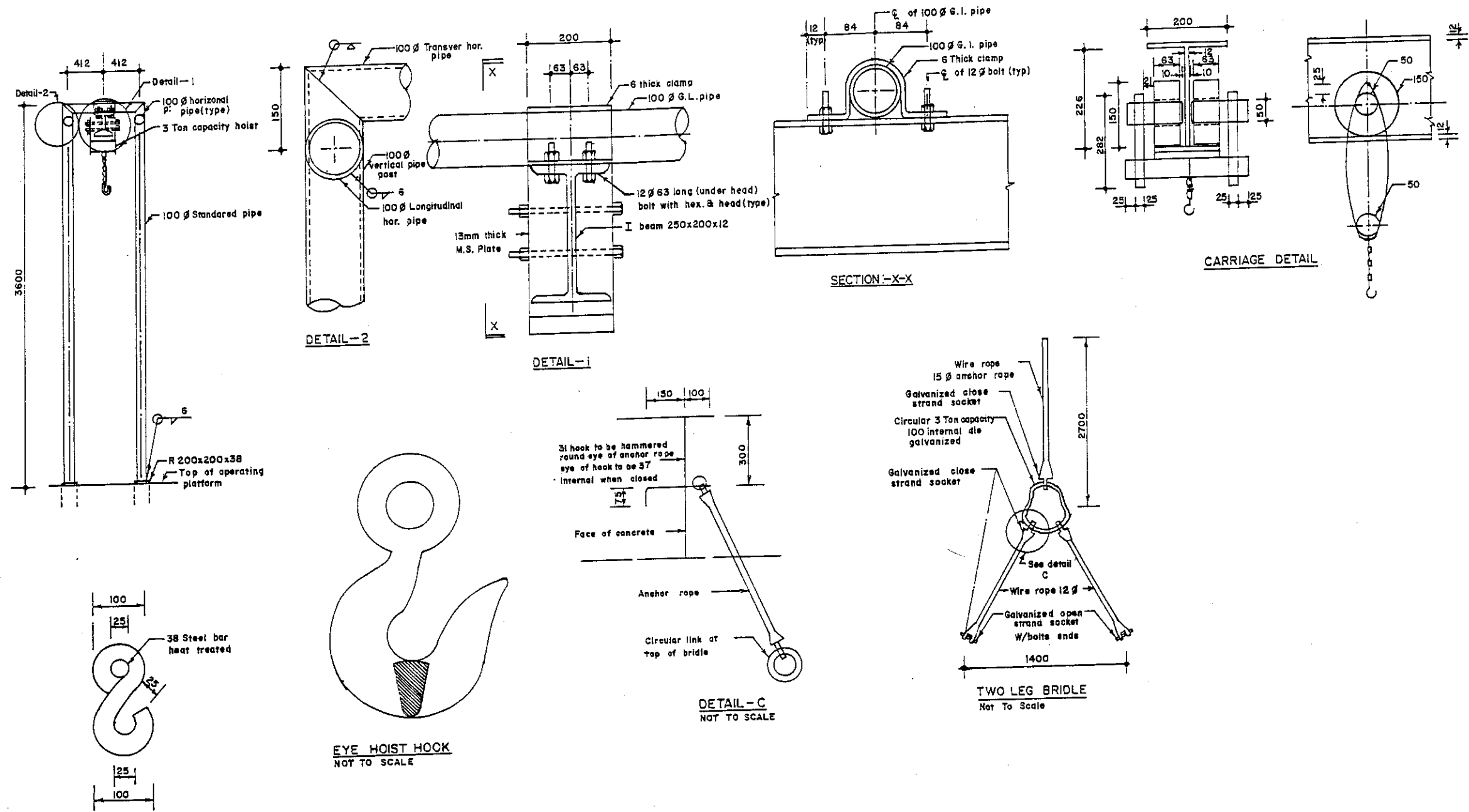


(TO BE FORCEFIT IN THE)



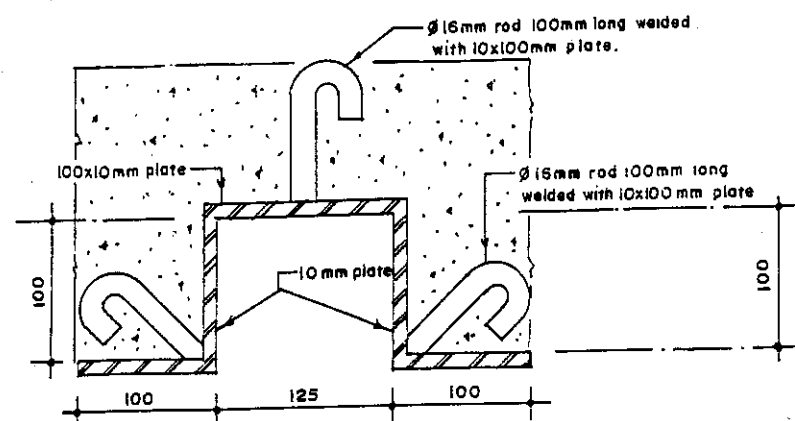
ALL DIMENSIONS ARE IN mm.

BWDB OFFICE OF THE CE, DESIGN	
5 TON, HOISTING SYSTEM PEDESTAL AND CRANK TYPE	
PREPARED SE DESIGN CIRCLE-3	APPROVED CE. DESIGN
DATE	DWG NO - DS-13-004 SHEET-4-OF-4

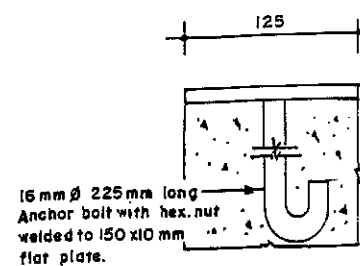


ALL DIMENSIONS ARE IN m m

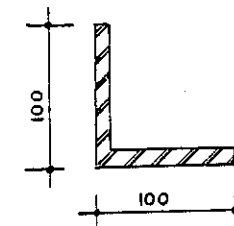
BWDB OFFICE OF THE CE, DESIGN	
HOISTING SYSTEM FOR FLAP GATE	
PREPARED SE, DESIGN CIRCLE - 3	APPROVED CE, DESIGN
DATE	DWG. NO - DS-14-001



**GATE GROOVE**  
SCALE :- 1 : 5



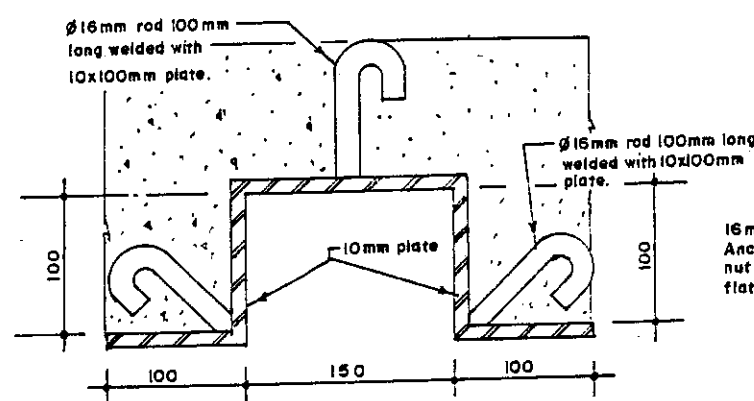
**BOTTOM SEAL PLATE**  
SCALE :- 1 : 5



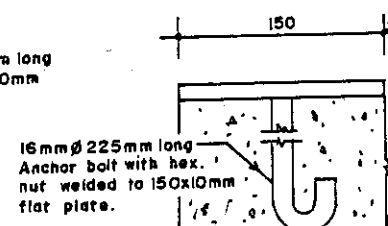
**BREAST WALL PLATE**  
SCALE :- 1 : 5

VENT SIZE (mm)	MAX. HEAD DIFF. (M)
1200 X 1500	1.5 M
900 X 1200	1.5 M
900 X 1200	2.5 M

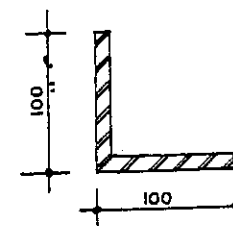
ALL DIMENSIONS ARE IN MILLI METRE.



**GATE GROOVE**  
SCALE :- 1 : 5



**BOTTOM SEAL PLATE**  
SCALE :- 1 : 5

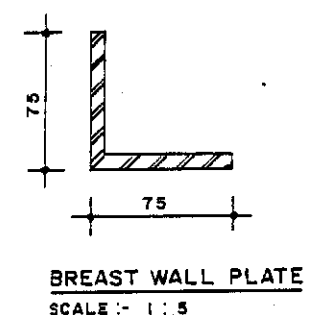
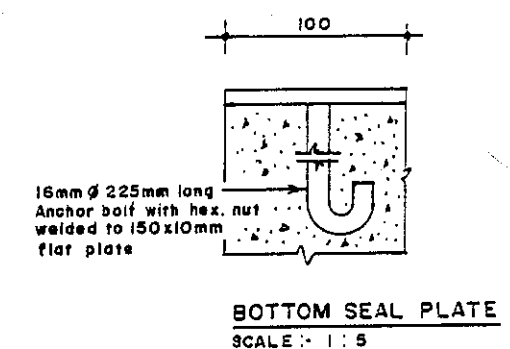
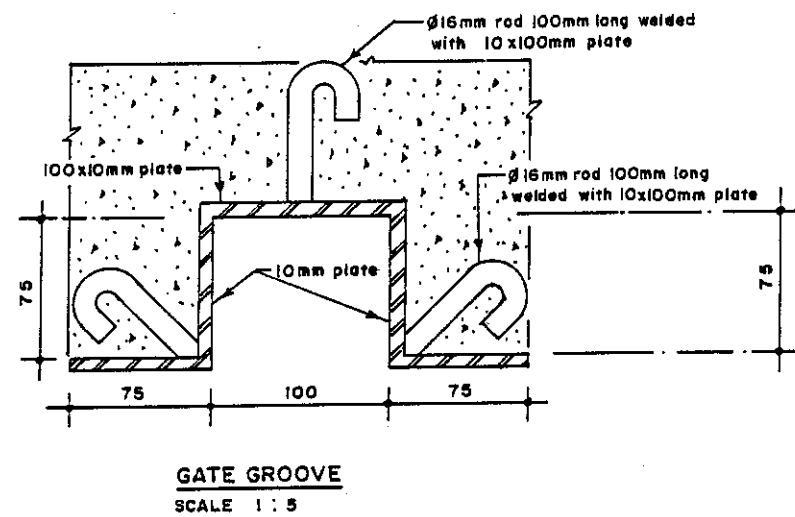


**BREAST WALL PLATE**  
SCALE :- 1 : 5

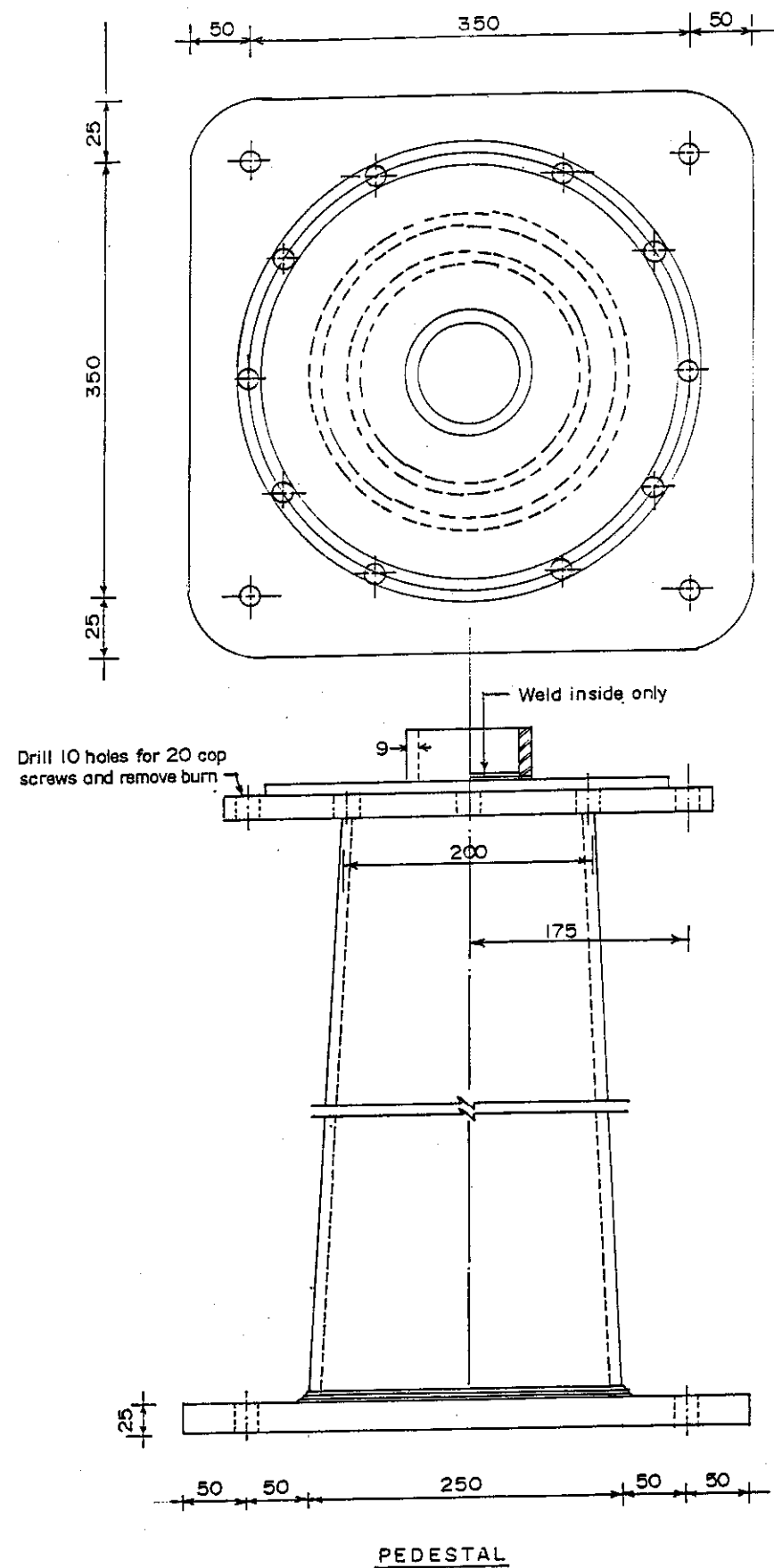
VENT SIZE (mm)	MAX. HEAD DIFF. (M)
1500 X 1800	1.5 M
1500 X 1800	2.5 M
1200 X 1500	2.5 M

BWDB OFFICE OF THE CE, DESIGN	
SAMPLE DRAWING OF GROOVE & EMBEDDED PARTS DETAILS OF VERTICAL LIFT GATE	
PREPARED SE, DESIGN CIRCLE - 3	APPROVED CE, DESIGN
DATE	DWG.NO - DS -15-001

GROOVE & EMBEDDED PARTS FOR VERTICAL LIFT GATE ON PIPE  
 SLUICE DIA 300 m.m, 450 m.m. & 600 m.m.

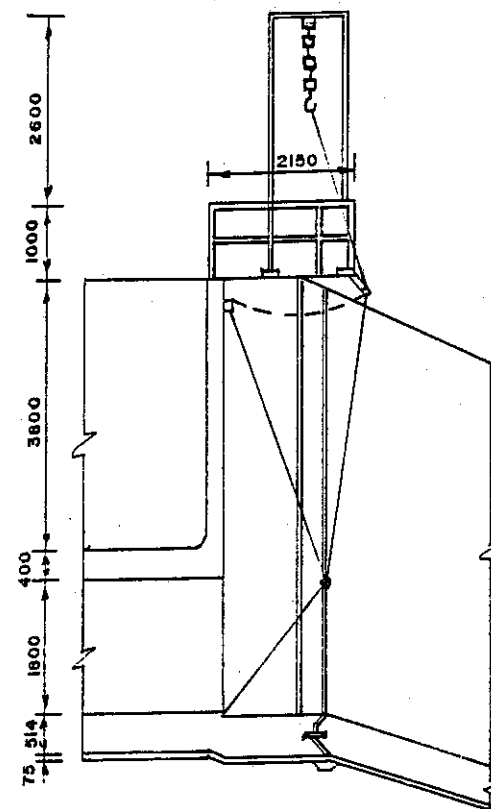


BWDB OFFICE OF THE CE, DESIGN	
SAMPLE DRAWING OF GROOVE & EMBEDDED PARTS DETAILS OF VERTICAL LIFT GATE FOR PIPE SLUICE DIA 300, 450 & 600mm	
PREPARED <i>[Signature]</i> SE, DESIGN CIRCLE-3	APPROVED <i>[Signature]</i> CE, DESIGN
DATE	DWG.NO-DS-15A-001

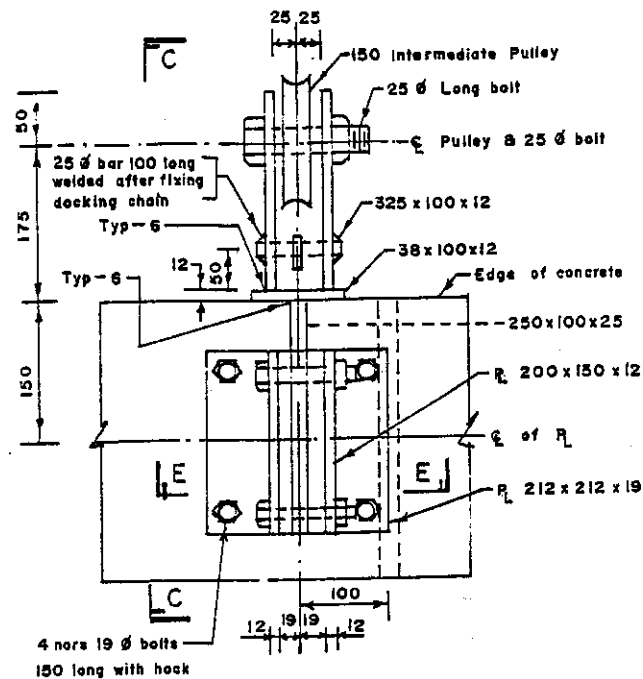


ALL DIMENSIONS ARE IN m.m

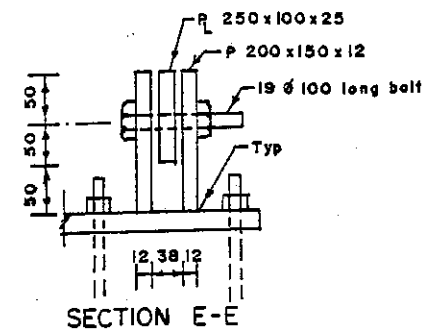
BWDB OFFICE OF THE CE, DESIGN	
OPERATION DECK HOISTING SYSTEM BLOCK OUT DETAIL	
PREPARED SE, DESIGN CIRCLE-3	APPROVED CE, DESIGN
DATE	DWG.NO-DS-16-001



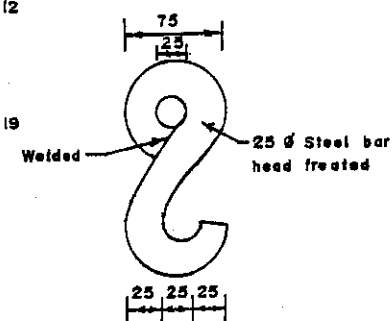
SECTION A-A



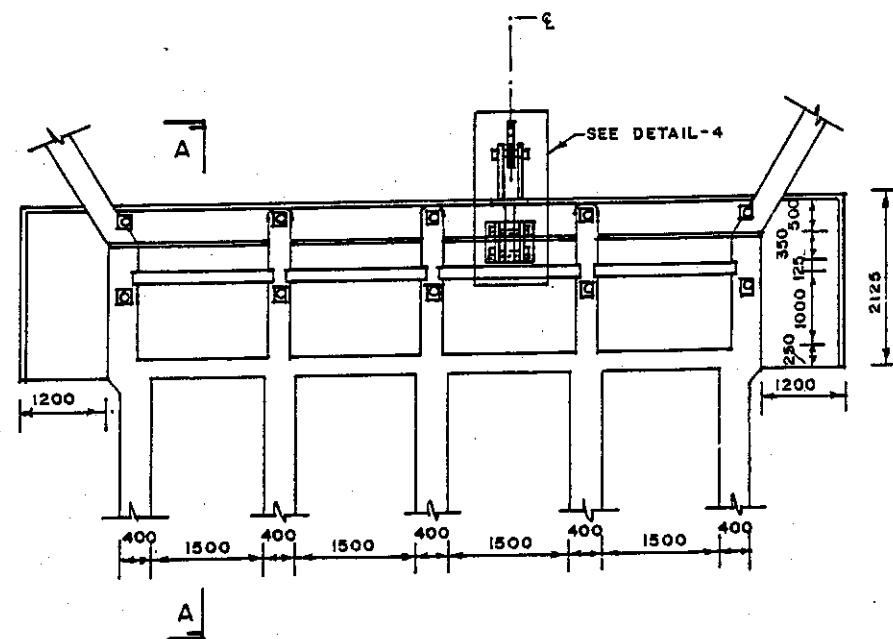
DETAIL - 4



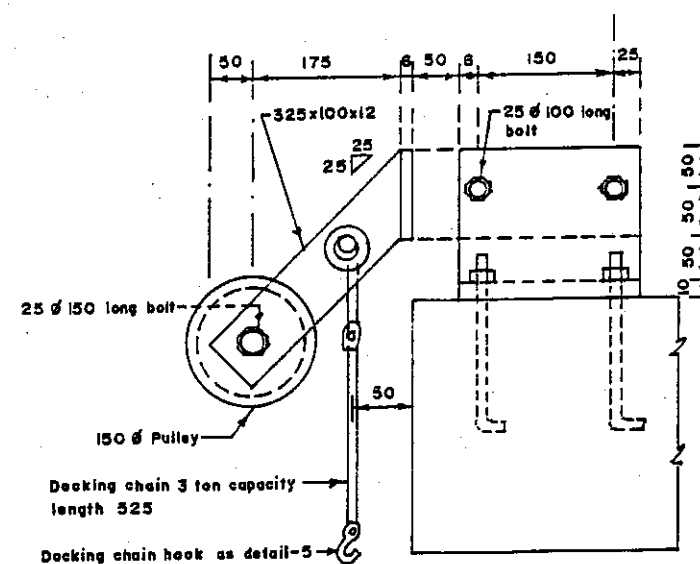
SECTION E-E



DETAIL - 5



PLAN

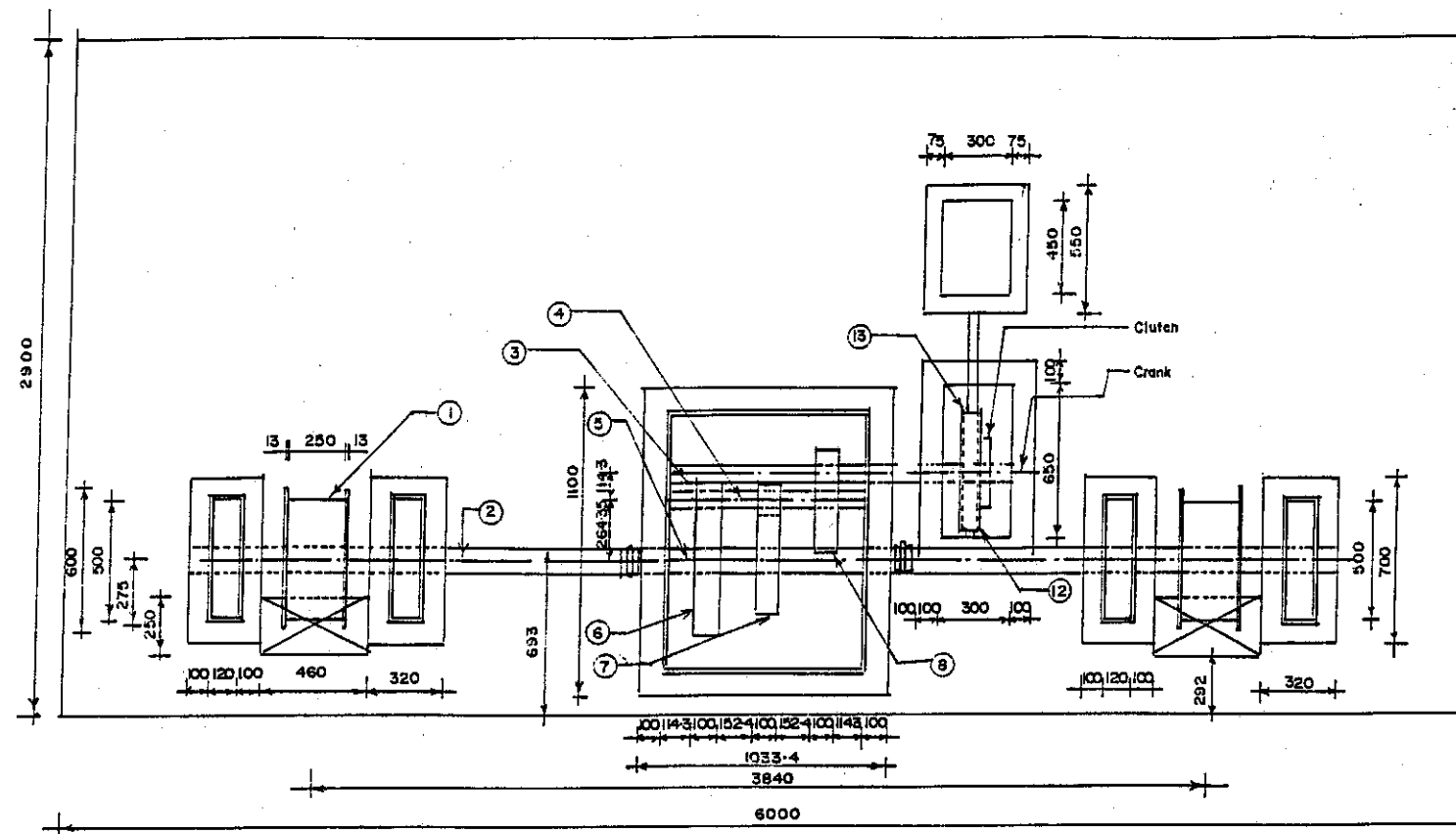


SECTION C-C

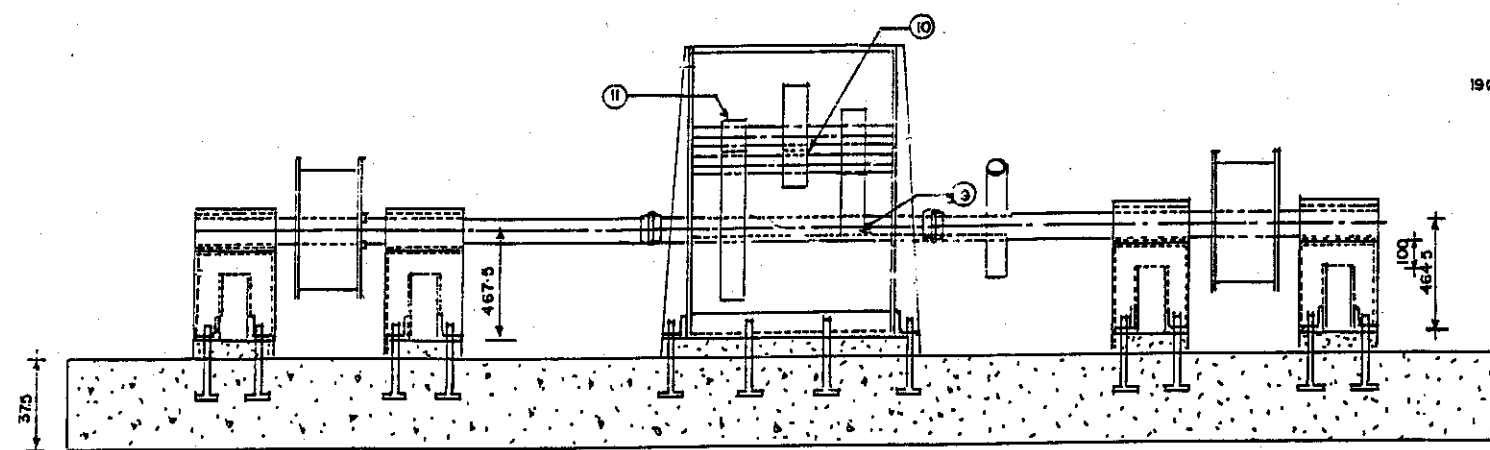
ALL DIMENSIONS ARE IN m m

BWDB OFFICE OF THE CE, DESIGN	
OPERATION DECK BLOCK OUT FOR HOISTING SYSTEM OF FLAP GATE	
PREPARED <i>[Signature]</i> SE, DESIGN CIRCLE-3	APPROVED <i>[Signature]</i> CE, DESIGN
DATE	DWG. NO - DS - 17 - 001

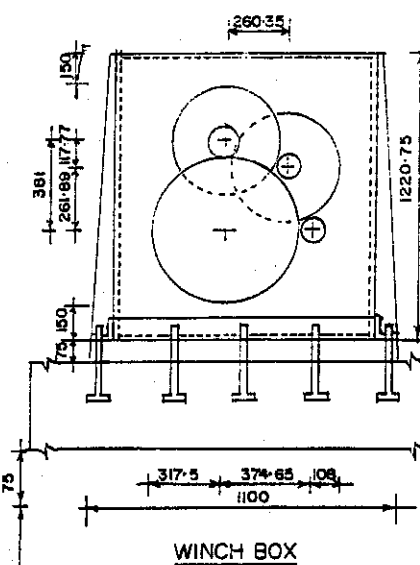
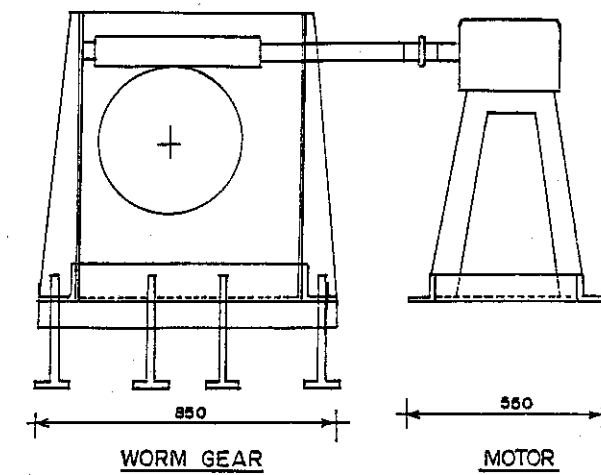




PLAN



ELEVATION



19# Anchor bolt & bar

ALL DIMENSIONS ARE IN MILLI METRE.

BWDB	
OFFICE OF THE CE, DESIGN	
OPERATION DECK BLOCK OUT	
DETAIL FOR ROPE & DRUM TYPE	
HOISTING SYSTEM	
PREPARED	APPROVED
SE, DESIGN CIRCLE-3	CE, DESIGN
DATE	DWG.NO-DS-18-001