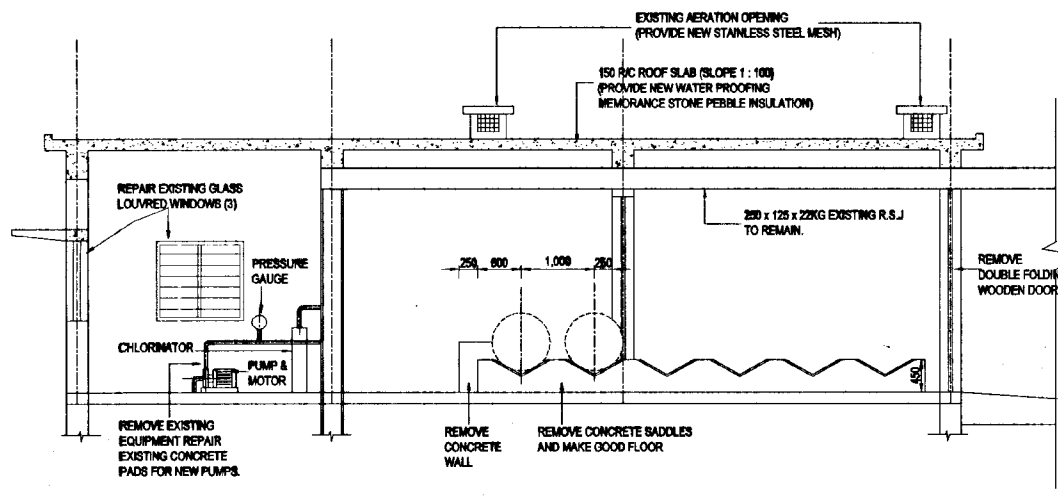
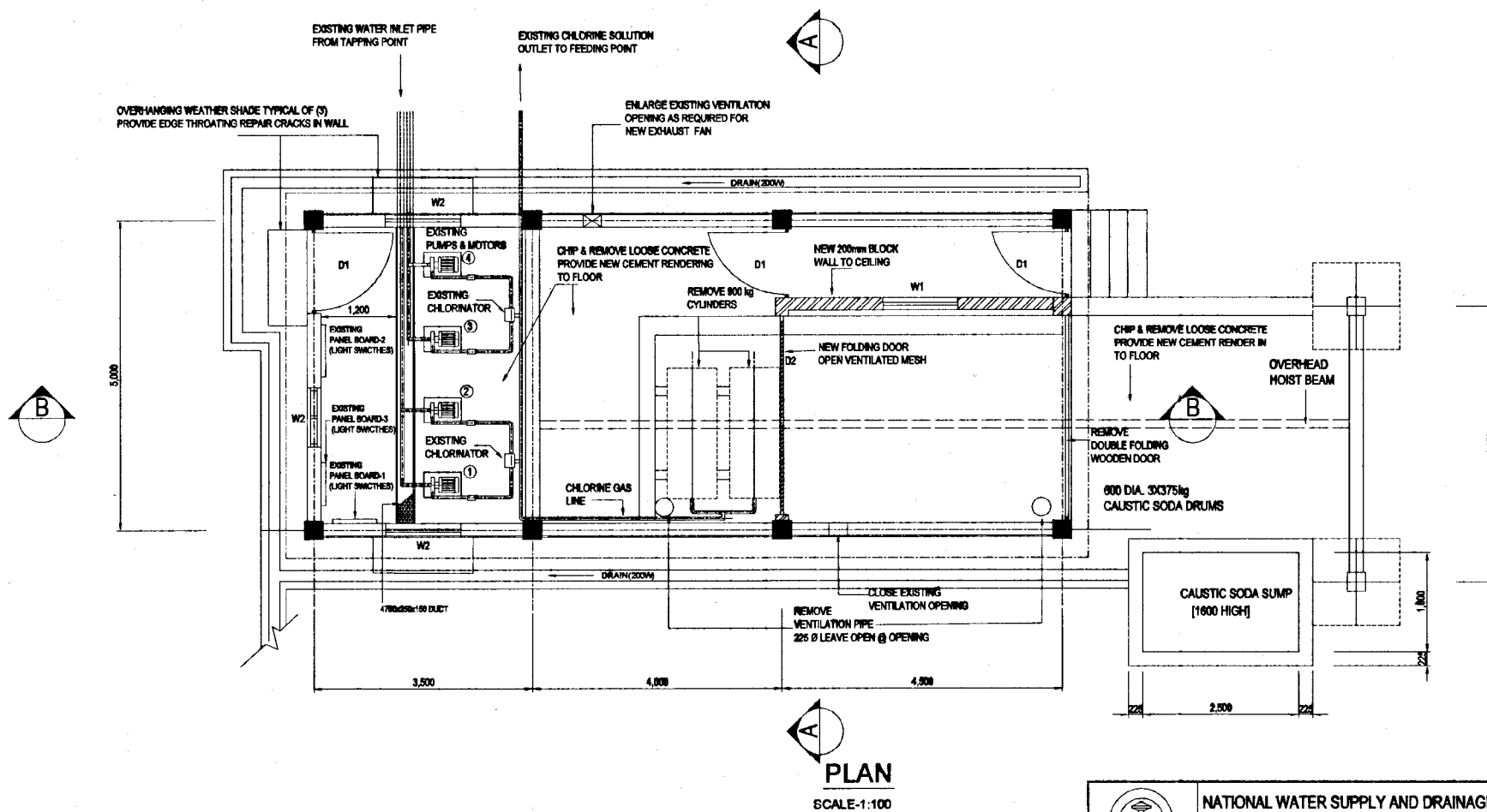


SECTION A-A




SECTION B-B



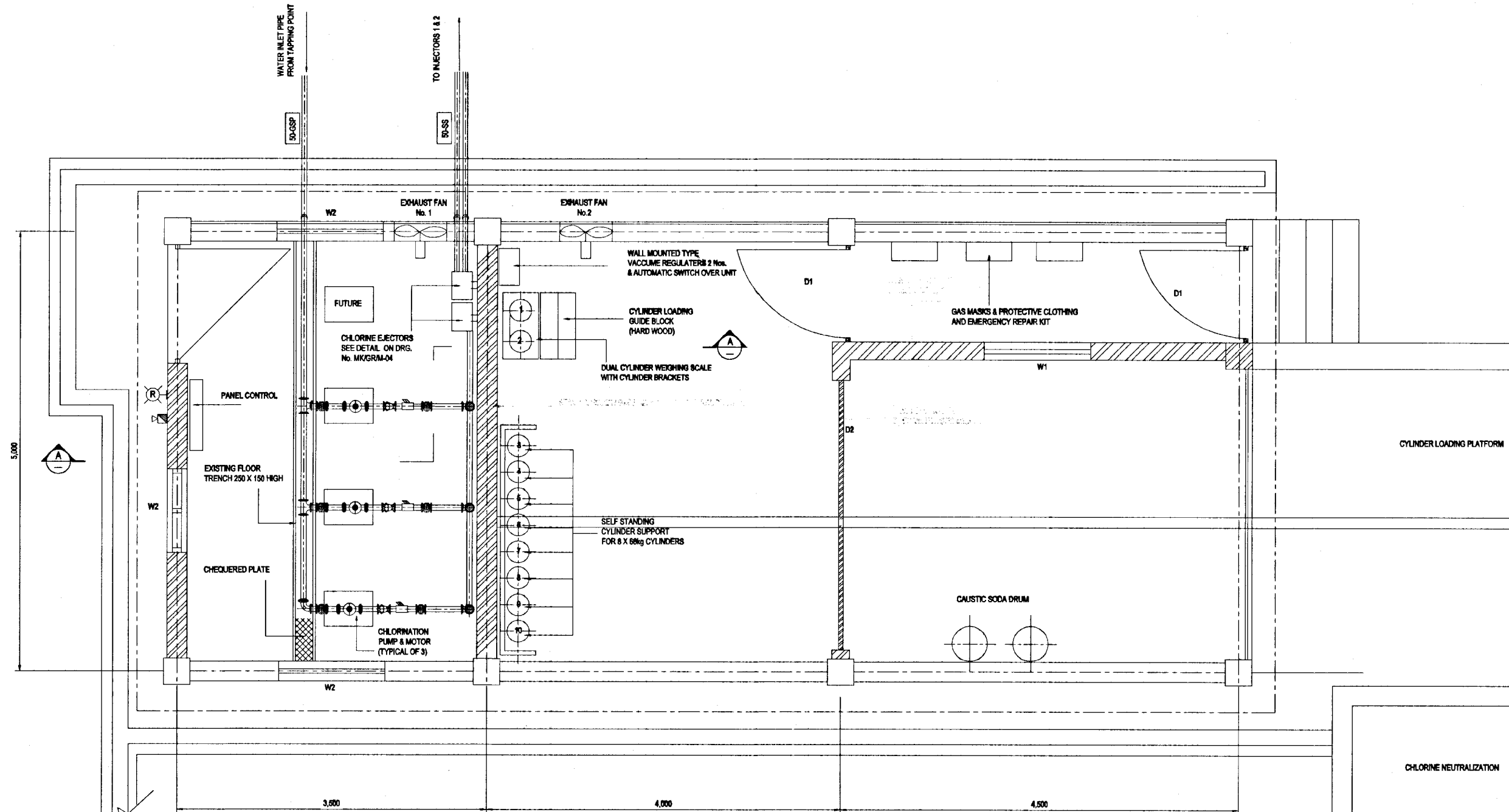
NOTE:  
REMOVE ALL EXISTING CHLORINE GAS LINES  
WATER PIPING, PUMPS, CHLORINATORS AND  
PANEL BOARDS.

DO NOT SCALE

 <p>NATIONAL WATER SUPPLY AND DRAINAGE BOARD THE PROJECT FOR THE REDUCTION OF NON-REVENUE WATER IN THE GREATER COLOMBO AREA</p>	<p>SUB PROJECT: MALIGAKANDA</p>	<p>TITLE: CHLORINATION FACILITY BUILDING REHABILITATION</p>
	<p>DESIGNED: <i>B.</i></p> <p>CHECKED: <i>B.</i></p> <p>DRY (P&amp;I) LEADER: <i>[Signature]</i></p> <p>TEAM LEADER: <i>[Signature]</i></p>	<p>DATE: <b>JAN 2001</b></p> <p>CONTRACT NO: <b>NRW / CW</b></p> <p>DATE: <b>2001</b></p> <p>DRAWN: <i>[Signature]</i></p> <p>P.H. APPROVAL: <i>[Signature]</i></p> <p>A.G.M. (P&amp;I) NO: <b>R 2 5 2</b></p> <p>D.S.M. (P&amp;I) NO:</p>

JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)  
STUDY TEAM  
NISON SUDO CONSULTANTS CO. LTD.,  
TOKYO, JAPAN






MK/CH/C-01

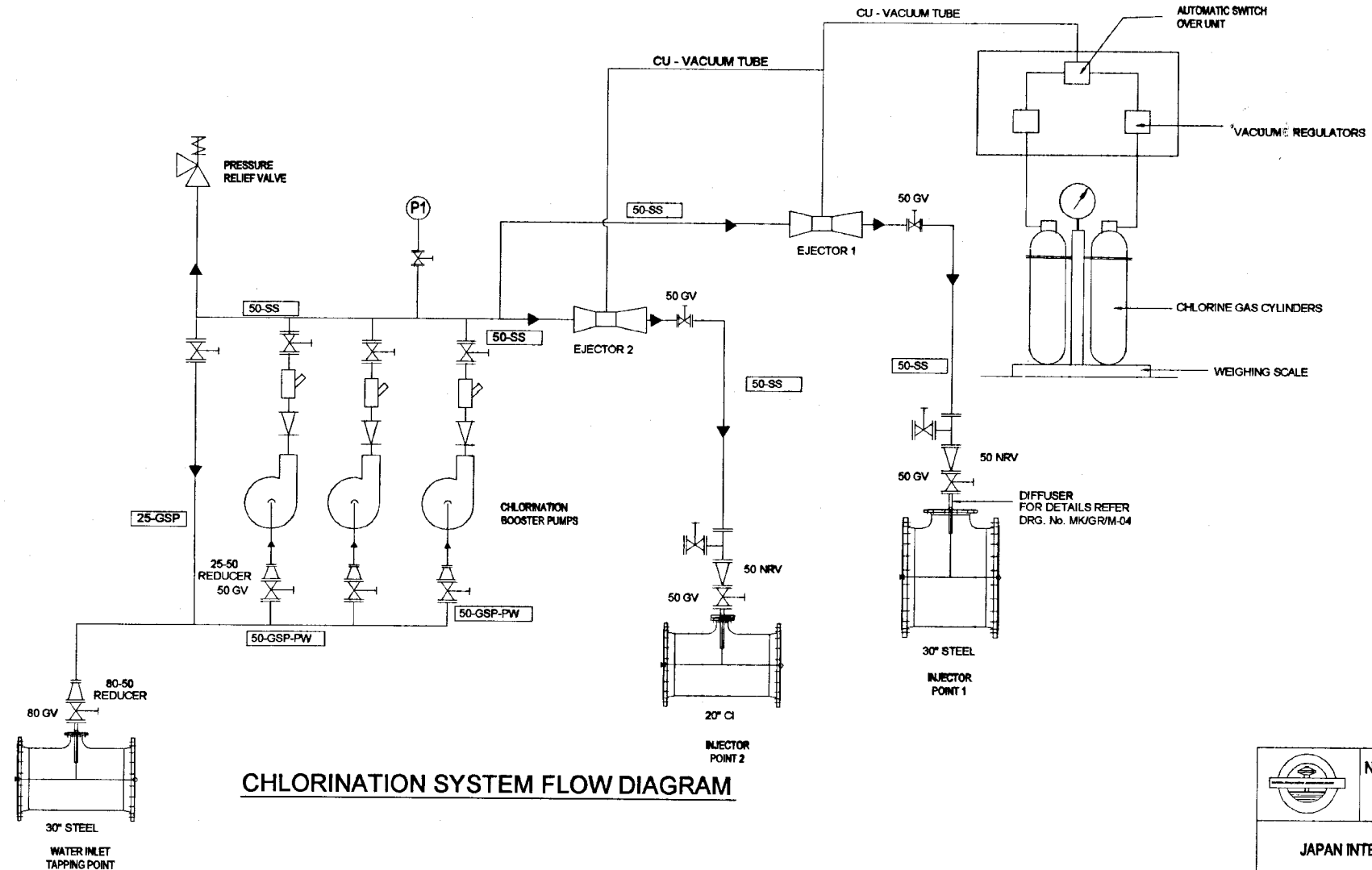


**PLAN**  
SCALE: 1:50

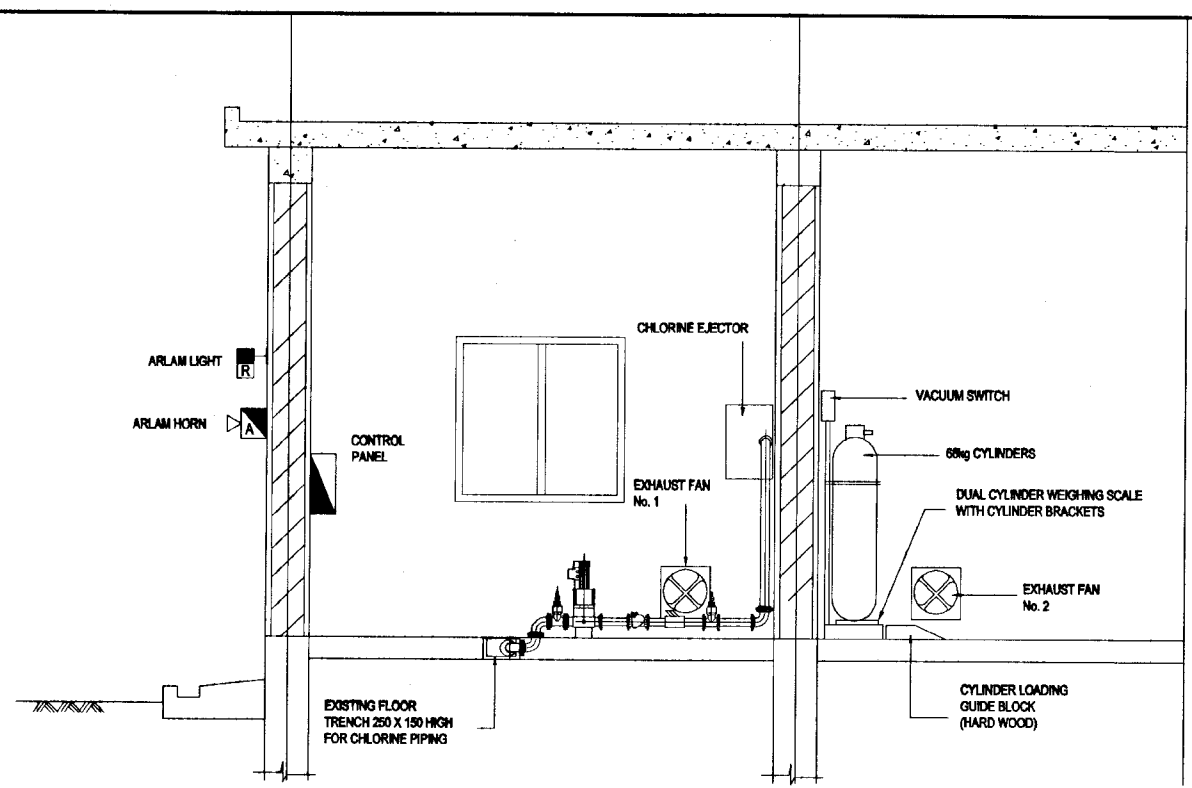
CHLORINE NEUTRALIZATION

**DO NOT SCALE**

 <p><b>NATIONAL WATER SUPPLY AND DRAINAGE BOARD</b> THE PROJECT FOR THE REDUCTION OF NON-REVENUE WATER IN THE GREATER COLOMBO AREA</p>	<p>SUB PROJECT: <b>MALIGAKANDA</b></p>	<p>TITLE: <b>CHLORINATION FACILITY MECHANICAL EQUIPMENT LAYOUT</b></p>
	<p>DESIGNED: </p> <p>CHECKED: </p> <p>DRY TEAM LEADER: </p> <p>TEAM LEADER: </p>	<p>DATE: <b>JAN 2001</b></p> <p>CONTRACT No.: <b>NRW / CW</b></p> <p>DRG. No.: <b>MK / CH / M-01</b></p>



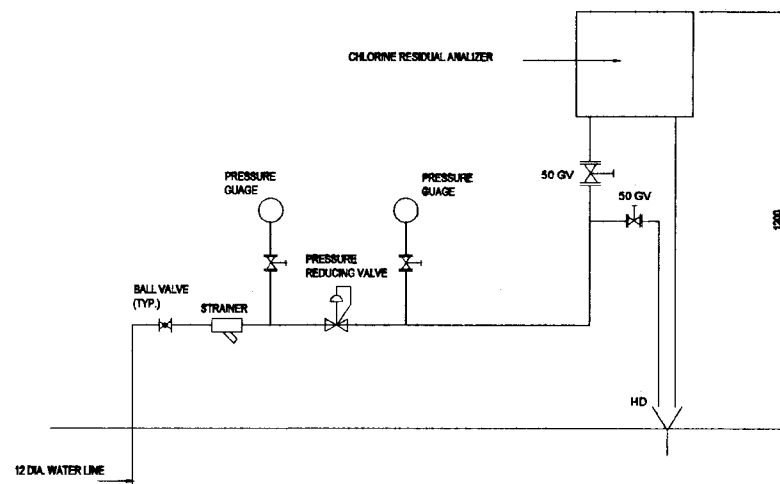
**CHLORINATION SYSTEM FLOW DIAGRAM**



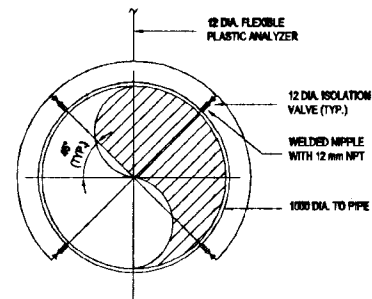
**SECTION A-A**  
SCALE - 1 : 50

**DO NOT SCALE**

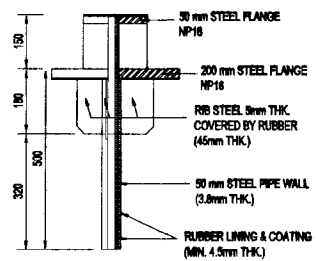
<p>NATIONAL WATER SUPPLY AND DRAINAGE BOARD THE PROJECT FOR THE REDUCTION OF NON-REVENUE WATER IN THE GREATER COLOMBO AREA</p>	<p>SUB PROJECT: MALIGAKANDA</p>	<p>TITLE: CHLORINATION FACILITY FLOW DIAGRAM AND SECTION</p>
	<p>DESIGNED: [Signature]</p> <p>CHECKED: [Signature]</p> <p>DT. TEAM LEADER: [Signature]</p> <p>TEAM LEADER: [Signature]</p>	<p>DRAWN: [Signature]</p> <p>PL. (PROJECT) ENGINEER: [Signature]</p> <p>A. E. M. (FIELD) ENGINEER: [Signature]</p> <p>D. O. M. (FIELD) ENGINEER: [Signature]</p>



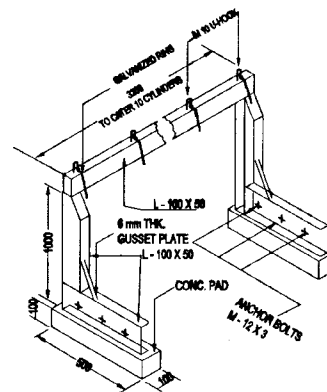
TYP. CHLORINE RESIDUAL ANALYZER - SCHEMATIC



CHLORINE SAMPLING DETAIL




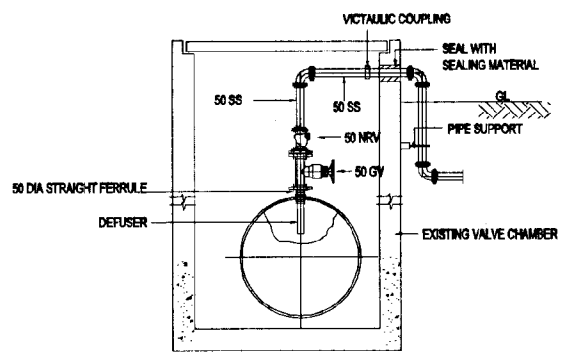
CHLORINE DIFFUSER



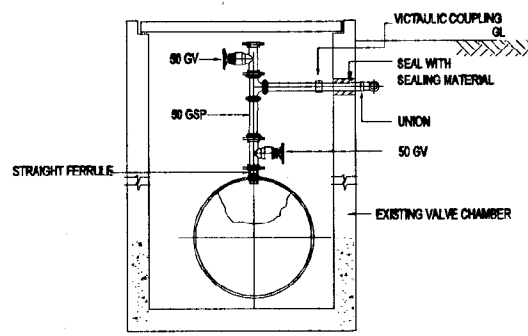
SELF STANDING CYLINDER SUPPORT

DO NOT SCALE

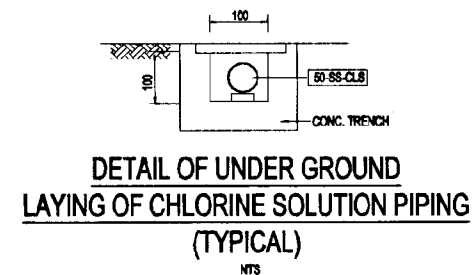
 <p>NATIONAL WATER SUPPLY AND DRAINAGE BOARD THE PROJECT FOR THE REDUCTION OF NON-REVENUE WATER IN THE GREATER COLOMBO AREA</p>	<p>SUB PROJECT: MALIGAKANDA</p>	<p>TITLE: CHLORINATION FACILITY MISCELLANEOUS DETAILS</p>
	<p>DESIGNED: [Signature]</p>	<p>DATE: JAN 2001</p>
<p>JAPAN INTERNATIONAL COOPERATION AGENCY (JICA) STUDY TEAM</p>	<p>CHECKED: [Signature]</p>	<p>DRAWN: [Signature]</p>
<p>NIHON SUJIDO CONSULTANTS CO. LTD., TOKYO, JAPAN</p>	<p>DT. TEAM LEADER: [Signature]</p>	<p>D.G.M (P&amp;I) INCHG: [Signature]</p>
	<p>TEAM LEADER: [Signature]</p>	<p>D.G.M (P&amp;I) INCHG: [Signature]</p>
		<p>DRAW. No: MK / CH / M-03</p>



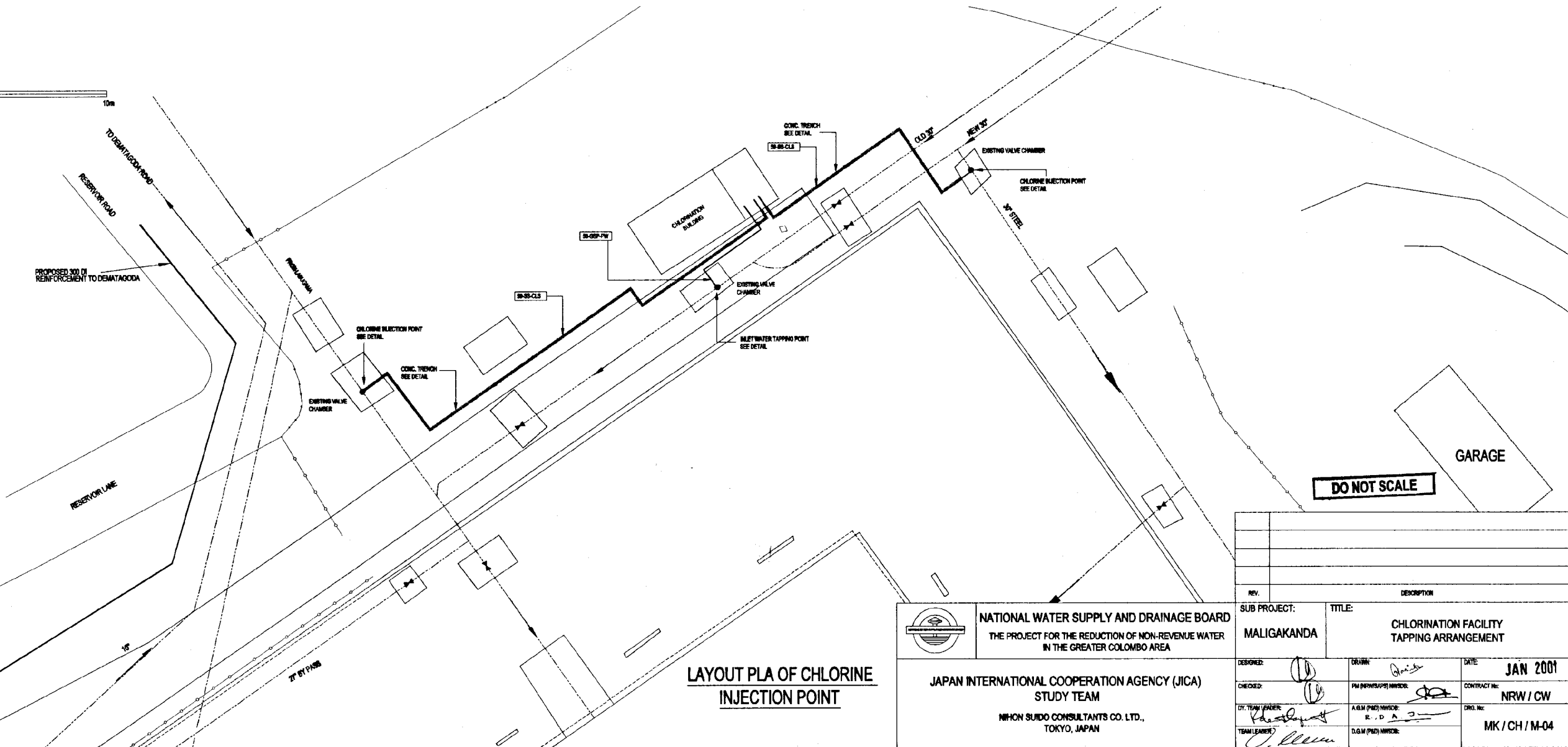
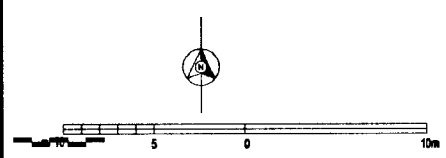
**DETAILS OF CHLORINE INJECTION POINT 1 & 2 (TYPICAL)**  
SCALE - 1:50



**DETAILS OF INLET WATER TAPPING POINT (TYPICAL)**  
SCALE - 1:50

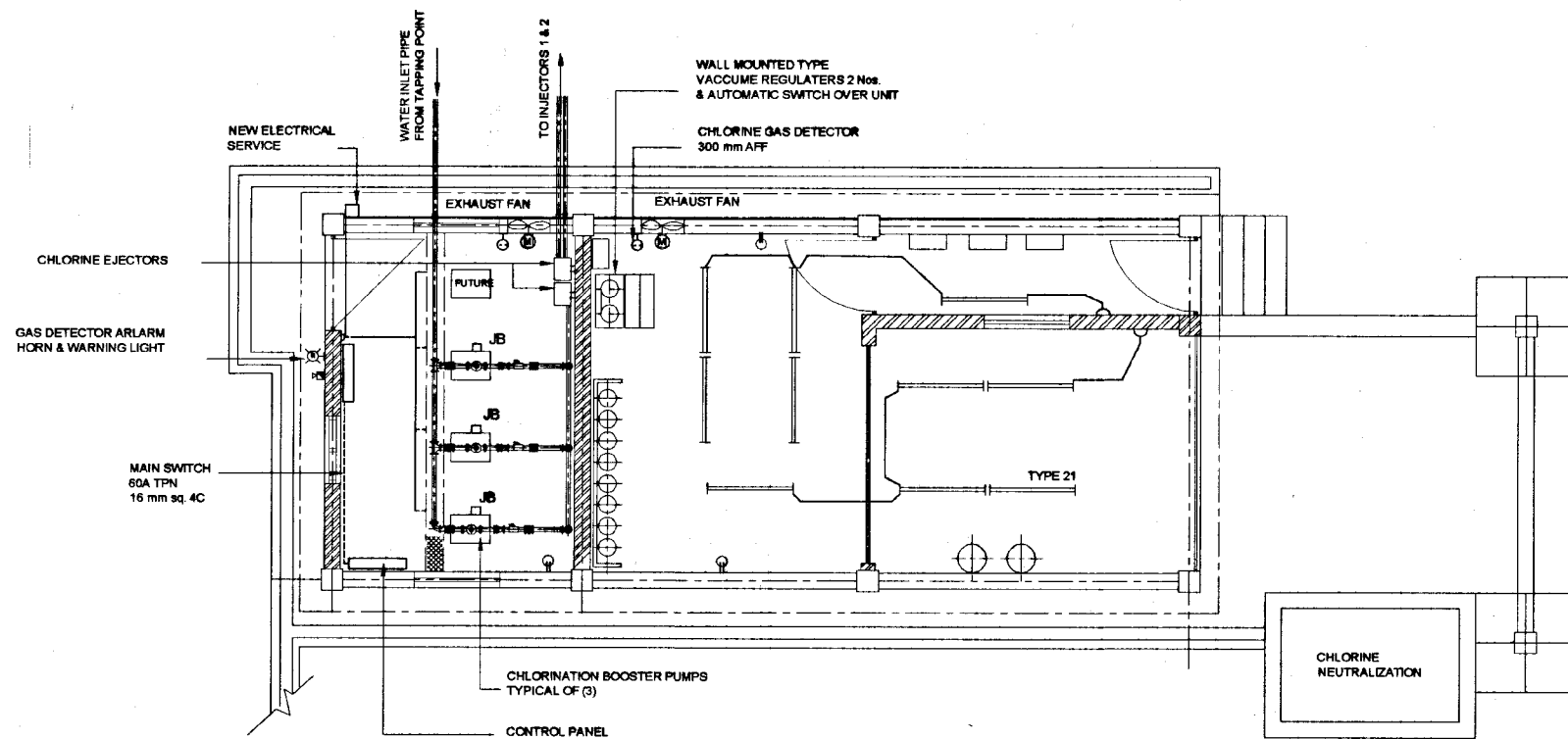


**DETAIL OF UNDER GROUND LAYING OF CHLORINE SOLUTION PIPING (TYPICAL)**

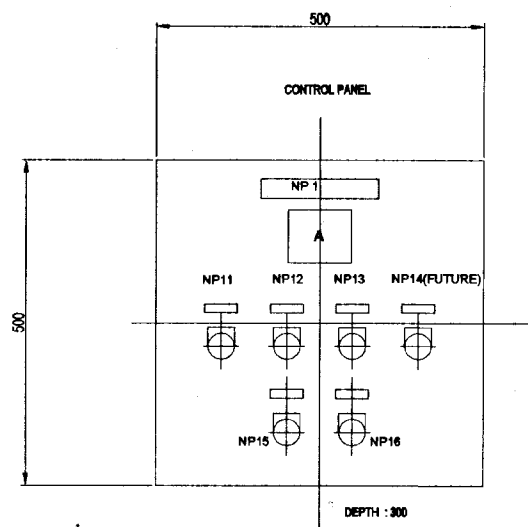


**LAYOUT PLA OF CHLORINE INJECTION POINT**

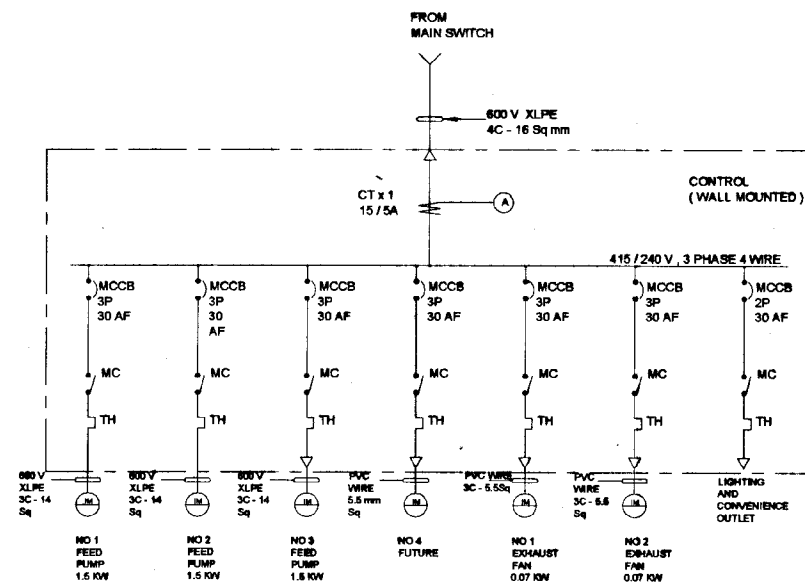
	<b>NATIONAL WATER SUPPLY AND DRAINAGE BOARD</b> THE PROJECT FOR THE REDUCTION OF NON-REVENUE WATER IN THE GREATER COLOMBO AREA		SUB PROJECT: <b>MALIGAKANDA</b>	TITLE: <b>CHLORINATION FACILITY TAPPING ARRANGEMENT</b>
	<b>JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)</b> STUDY TEAM NIKON SUJIDO CONSULTANTS CO. LTD., TOKYO, JAPAN		DESIGNED: [Signature] CHECKED: [Signature] DT. TEAM LEADER: [Signature] TEAM LEADER: [Signature]	DRAWN: [Signature] PM (PW/SAPS) NWSDB: [Signature] A.G.M (PW) NWSDB: R. D. A. J. D.G.M (PW) NWSDB: [Signature]



**PLAN**  
SCALE: 1:50



NOTE 1  
CONTROL SWITCH SHALL BE PUSH BUTTON AND ALTERNATE TYPE NOT MOMENTARY TYPE



**SCHEMATIC ONE - LINE**

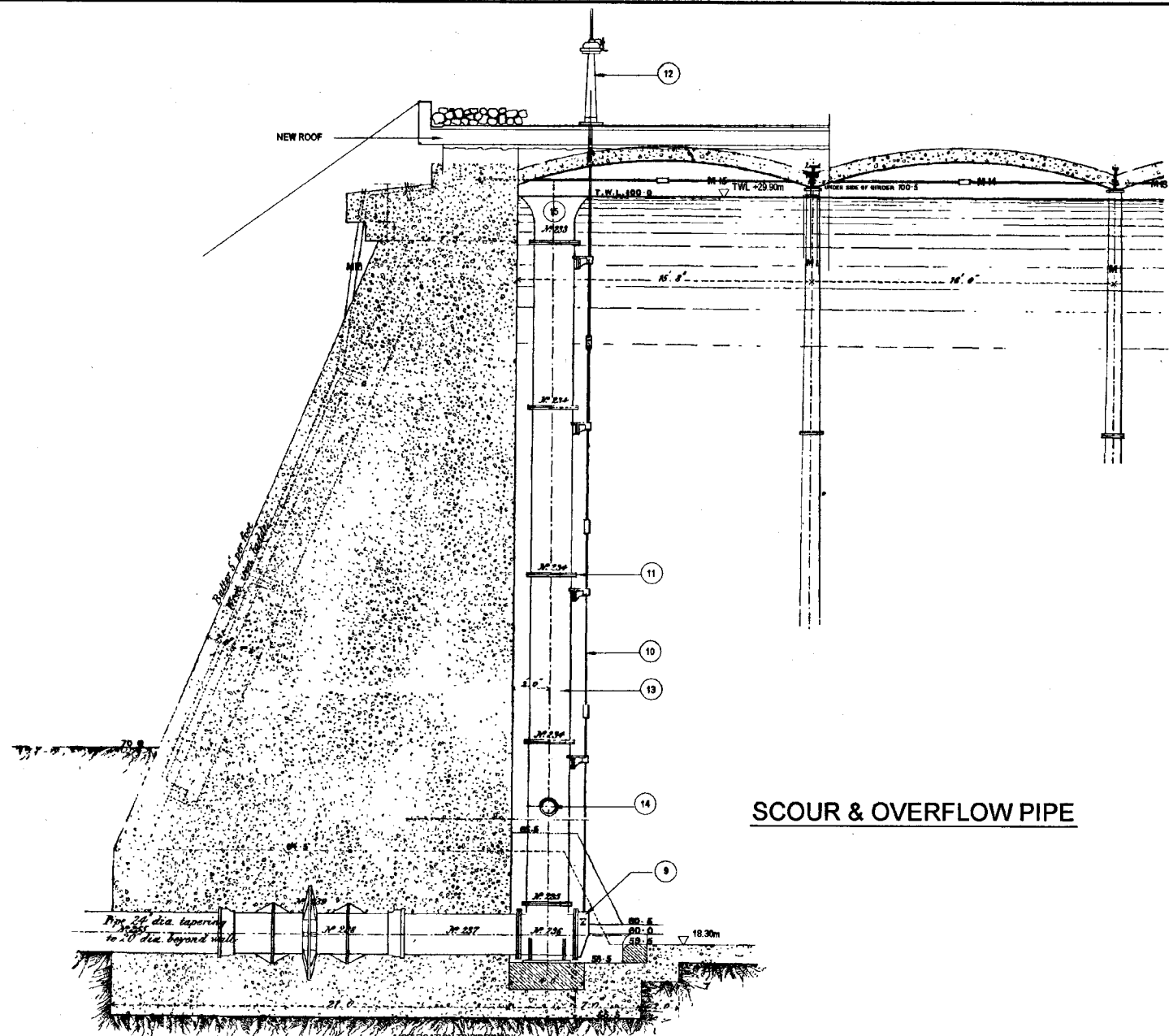
NP	DESCRIPTION
NP 1	SWITCH BOX (CHLORINATION)
NP 11	FEED PUMP No. 1 (1.5 KW)
NP 12	- DO - No. 2 (1.5 KW)
NP 13	- DO - No. 3 (1.5 KW)
NP 14	FUTURE
NP 15	EXHAUST FAN No. 1 (0.07 KW)
NP 16	- DO - No. 2 (0.07 KW)

NOTE 2  
FOR VENTILATION FAN MOTOR, HAVING SMALL OUTPUT (0.07 KW), SINGLE PHASE MAY BE APPLIED

NOTE 3  
PROVIDE REMOTE SWITCH TO START FANS No. 2 IN CHLORINE STORAGE ROOM.

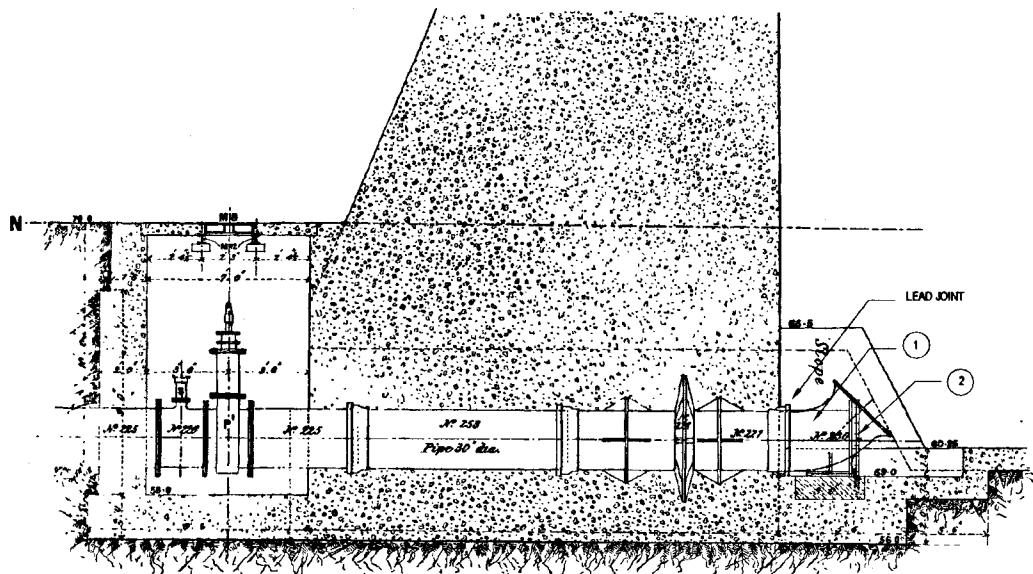
**DO NOT SCALE**

<p>NATIONAL WATER SUPPLY AND DRAINAGE BOARD THE PROJECT FOR THE REDUCTION OF NON-REVENUE WATER IN THE GREATER COLOMBO AREA</p>	<p>SUB PROJECT: MALIGAKANDA</p>	<p>TITLE: CHLORINATION FACILITY ELECTRICAL</p>
	<p>DESIGNED: <i>[Signature]</i></p> <p>CHECKED: <i>[Signature]</i></p> <p>BY: <i>[Signature]</i></p> <p>DATE: JAN 2001</p>	<p>CONTRACT No: NRW / CW</p> <p>DWG. No: MK / CH / E-01</p>
<p>JAPAN INTERNATIONAL COOPERATION AGENCY (JICA) STUDY TEAM</p> <p>NIHON SUDO CONSULTANTS CO. LTD., TOKYO, JAPAN</p>		

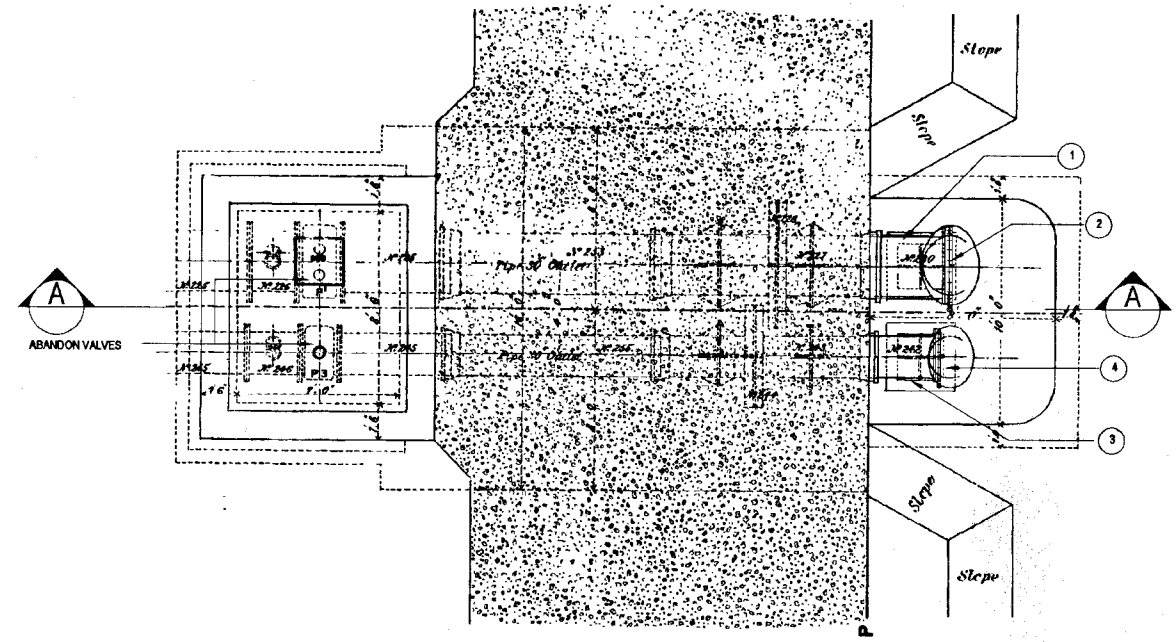


**SCOUR & OVERFLOW PIPE**

LOCATION	ITEM No.	ITEM DESCRIPTION	ACTION
30" OUTLET	1	30" CI FLANGE AND PLAIN ENDED PIPE 3' LONG. THE PLAIN END SHALL BE SUITABLE FOR MAKING A LEAD JOINT WITH THE EXISTING 30" CI SOCKET AND FLANGED END TO SUIT BLANK FLANGE DESCRIBED IN ITEM No.2	NEW ITEM
	2	30" BLANK FLANGE FOR ABOVE	NEW ITEM
20" OUTLET	3	20" CI FLANGE AND PLAIN ENDED PIPE 3' LONG. THE PLAIN END SHALL BE SUITABLE FOR MAKING A LEAD JOINT WITH THE EXISTING 20" CI SOCKET AND FLANGED END TO SUIT BLANK FLANGE DESCRIBED IN ITEM No.4	NEW ITEM
	4	20" BLANK FLANGE FOR ABOVE	NEW ITEM
40" OUTLET (NO DETAILS AVAILABLE & NOT SHOWN)	5	40" PENSTOCK GATE	REFURBISH & REINSTALL
	6	VALVE STEM	REPLACE EXISTING VALVE STEM WITH 15 m LONG NEW STAINLESS STEEL VALVE STEM
	7	4Nos. WALL BRACKETS TO FIX VALVE STEM TO RESERVOIR WALL	REPLACE EXISTING 4Nos. WALL BRACKETS WITH NEW WALL BRACKETS
	8	HEAD STOCK	PROVIDE NEW HEADSTOCK TO SUIT 40" REFURBISHED PENSTOCK & NEW STAINLESS STEEL VALVE STEM
24" OVERFLOW/WASHOUT	9	24" PENSTOCK	REFURBISH AND REINSTALL
	10	VALVE STEM	REPLACE EXISTING VALVE STEM WITH 15 m LONG NEW STAINLESS STEEL VALVE STEM
	11	4Nos. WALL BRACKETS TO FIX VALVE STEM TO OVERFLOW PIPE	REPLACE EXISTING 4Nos. WALL BRACKETS WITH NEW WALL BRACKETS
	12	HEAD STOCK	PROVIDE NEW HEADSTOCK TO SUIT 24" REFURBISHED PENSTOCK & NEW STAINLESS STEEL VALVE STEM
	13	24" OVERFLOW PIPE	REFURBISH REMOVE ALL RUST AND PAINT WITH TWO COATINGS OF THICK NON-TOXIC BITUMEN PAINT
30" INLET ON EASTERN SIDE	14	DRAIN HOLES	DISCONNECT AND CAP EXISTING DRAIN LINES
	15	24" CI FLANGED BELL MOUTH	NEW ITEM
30" INLET ON EASTERN SIDE	16	30" BLANK FLANGE TO SUIT EXISTING 30" STEEL PIPE FLANGE	NEW ITEM




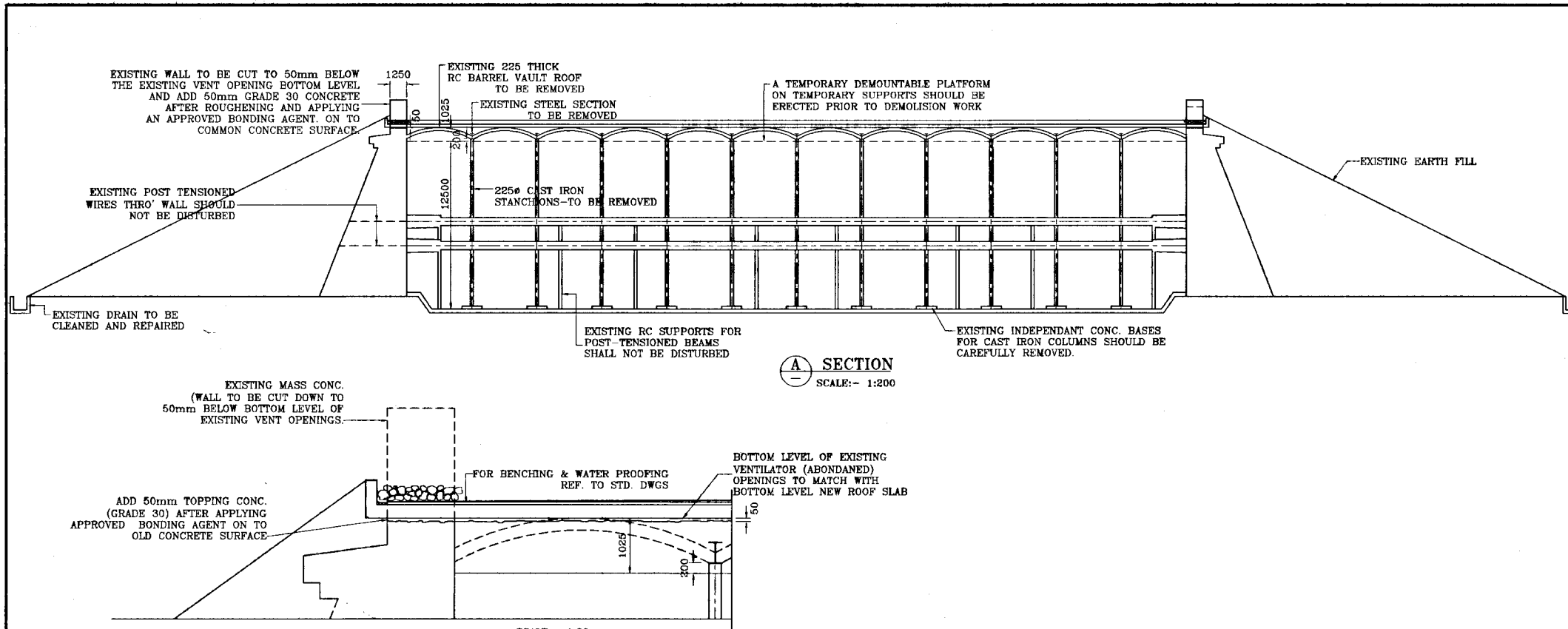
**SECTION A-A**



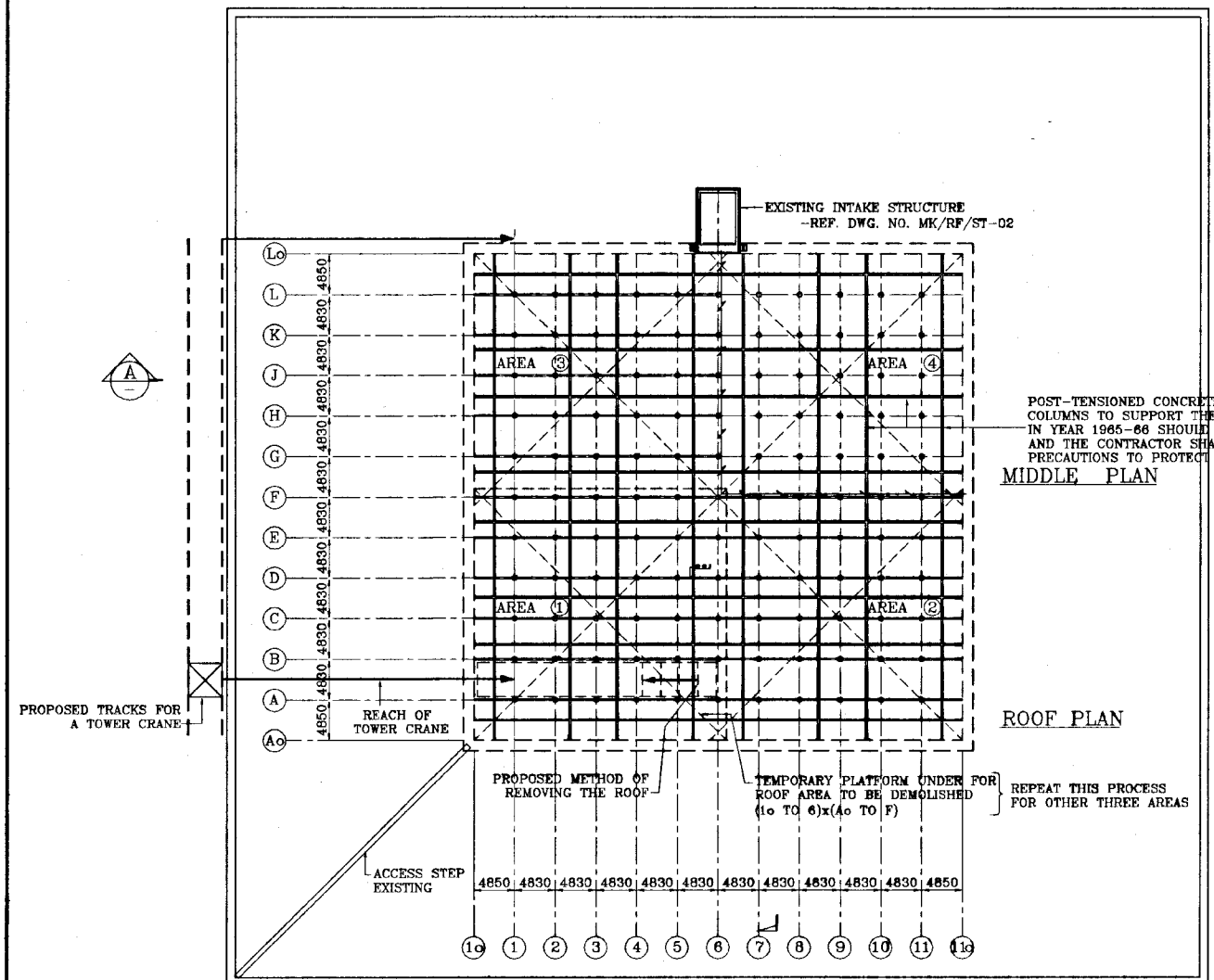
**SECTIONAL PLAN - 30" AND 20" OUTLET**

**DO NOT SCALE**

 <p><b>NATIONAL WATER SUPPLY AND DRAINAGE BOARD</b> THE PROJECT FOR THE REDUCTION OF NON-REVENUE WATER IN THE GREATER COLOMBO AREA</p>	<p>SUB PROJECT: <b>MALIGAKANDA</b></p>	<p>TITLE: <b>REHABILITATION OF ROOF AT MALIGAKANDA RESERVOIR DETAILS OF OVERFLOW, WASHOUT AND OUTLET</b></p>
	<p>DESIGNED: <i>[Signature]</i></p> <p>CHECKED: <i>[Signature]</i></p> <p>BY: TEAM LEADER <i>[Signature]</i></p> <p>TEAM LEADER: <i>[Signature]</i></p>	<p>DATE: <b>JAN 2001</b></p> <p>CONTRACT No: <b>NRW / CW</b></p> <p>DRAWN: <i>[Signature]</i></p> <p>PLG (PMD) NUMBER: <i>[Signature]</i></p> <p>ALSM (PMD) NUMBER: <i>[Signature]</i></p> <p>D.G.M (PMD) NUMBER: <i>[Signature]</i></p>



SECTION A  
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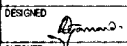
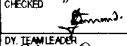
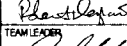
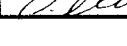
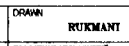
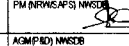
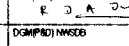
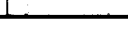
EXISTING RESERVOIR PLAN  
SCALE: 1:400

NOTES:-

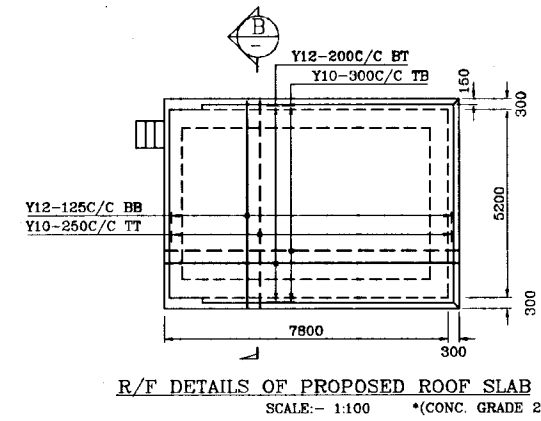
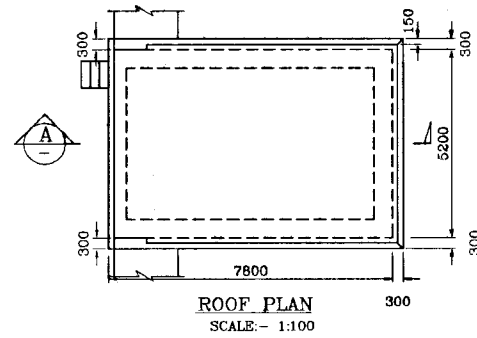
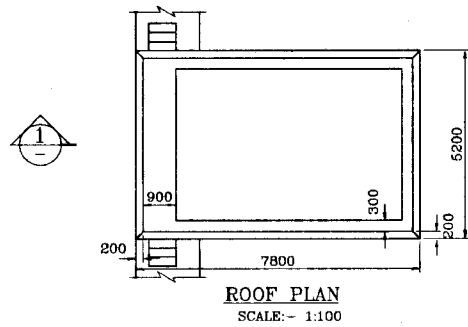
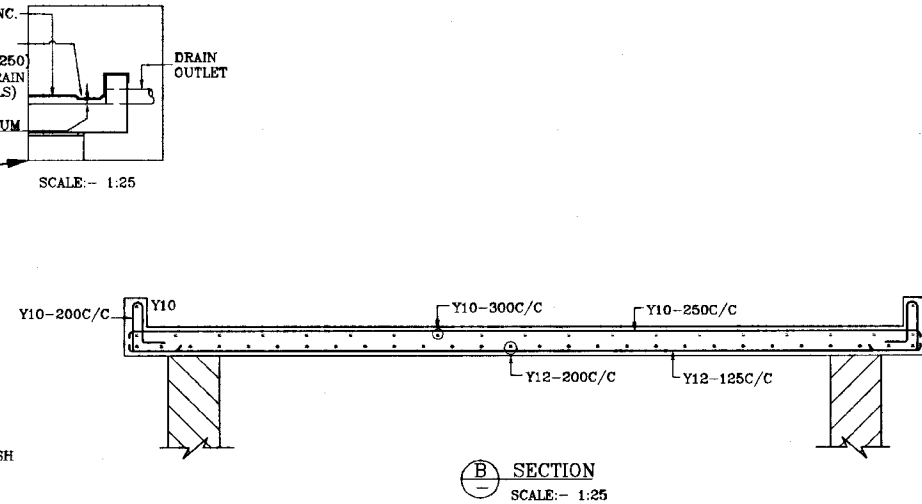
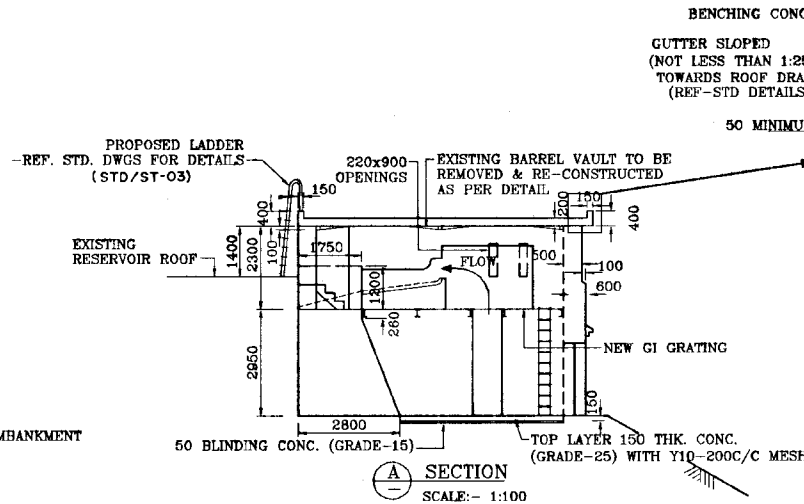
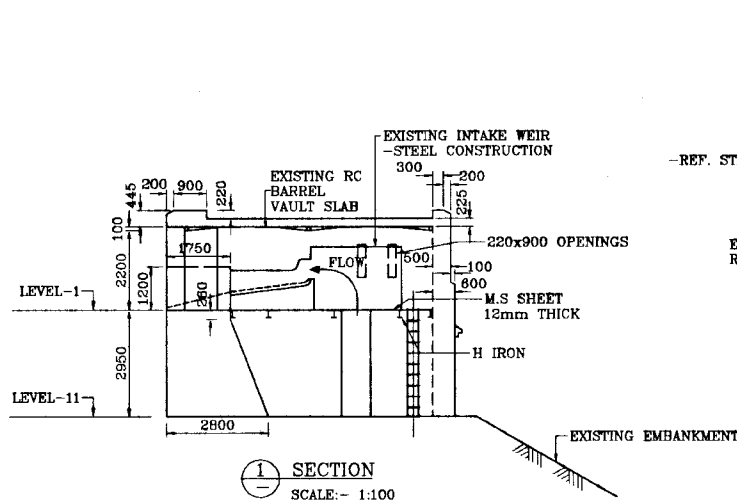
- The drawings shall not be scaled. The contractor, prior to start with rehabilitation works, shall verify dimensions and all information in connection with the existing structure at site and satisfy himself. He also should get prior approval of the engineer for methodology, program, and the entire operation of rehabilitation works.
- The main rehabilitation works in brief, is as listed below. As a precautionary measure to safeguard the existing post-tensioned concrete beams and rc column, which support them within the reservoir, the walls and the reservoir base, the contractor shall erect a temporary platform under the existing steel girders of the "barrel vault" roof. Since the steel tie rods which should provide horizontal support for the "barrel vaults" are severely corroded/damaged it is necessary to provide temporary horizontal ties system prior to removing the roof.
  - Existing reinforced concrete (rc) "barrel vault" roof structure should be cut into pieces with the help of a high pressure water jet, electrically or mechanically operated diamond tipped circular saw or an approved equivalent, and be carefully removed part by part.
  - The existing steel girders which support the barrel vault roof, should be cut into pieces with the help of an oxy-acetylene flame or an electric saw or any approved equivalent and carefully removed part by part. It is necessary to provide lateral supports to the existing cast iron columns when removing the existing steel girders.
  - The existing cast iron columns and bases which support the roof structure should be carefully removed.
  - The perimeter concrete wall should be cut with the help of a high pressure water jet or a diamond tipped circular saw, to 50-75 mm below the bottom level of the proposed new rc roof slab and carefully be removed roughened the exposed surface and finished with topping concrete with approved bonding agent.
  - Since there are post-tensioned beams and their supports within the reservoir, the contractor shall be careful if necessary to erect a tower crane or heavy equipment within the reservoir to facilitate demolition or construction work.
  - The contractor may erect a motorized gantry to span between existing reservoir walls with centre support on the existing base of the reservoir and the cut pieces may be brought to a place reachable to a tower crane erected outside the perimeter earth fill.
  - The earth fill around the existing perimeter mass concrete wall of the reservoir should be made to a constant slope by filling the depressions with fresh soil. The filling should be carried out manually and tamping should be done with the help of a manual tamper, so that there will be no vibrations passed on to the existing structure. Prior to filling operation, the top soil should be removed. The filled area should be finished with turfing with approved grass.
  - The existing toe drain along the perimeter of the reservoir should be cleaned, and repaired where necessary, to have a constant gradient for the water to flow into the nearest manhole.
  - No heavy constructions equipment shall not be allowed on the existing embankment, specially when the reservoir is empty and the roof structure is removed.
  - The possible tracks for a tower crane to facilitate removal of debris is as shown on the layout plan. This can be changed to suit the contractor's proposal for rehabilitation works.
  - Carry out new construction work as indicated on drawings and rehabilitation work related to existing intake structure. Ref. Dwg. No. MK/RF/ST-02 for details.

The cement used to produce concrete for the foundation structure such as the base slab of the reservoir shall be Portland Cement complying to BS 12 mixed with 25 % pulverized fuel ash (pfa). The cement content of the concrete shall be not less than 380 kg/m<sup>3</sup> and the maximum free water cement ratio shall be 0.45.

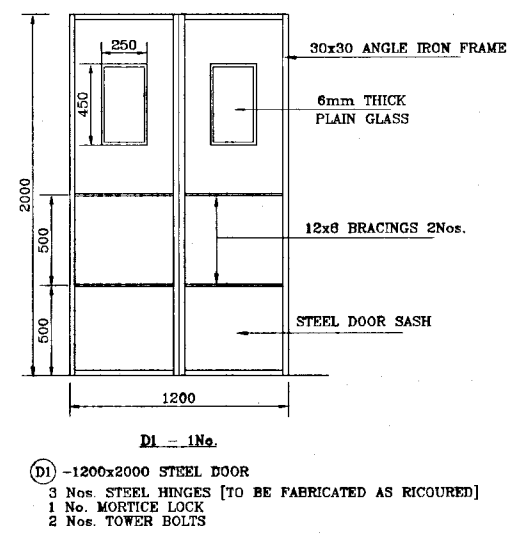
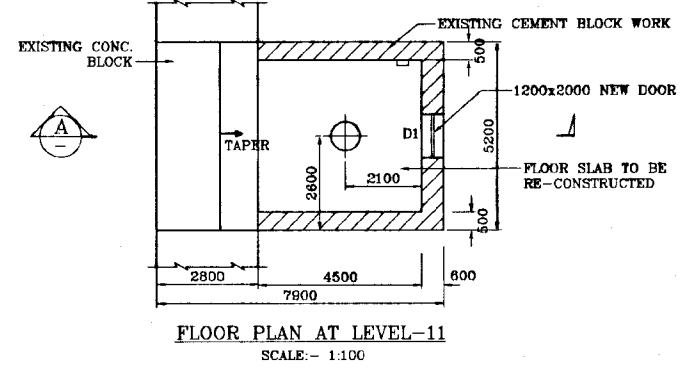
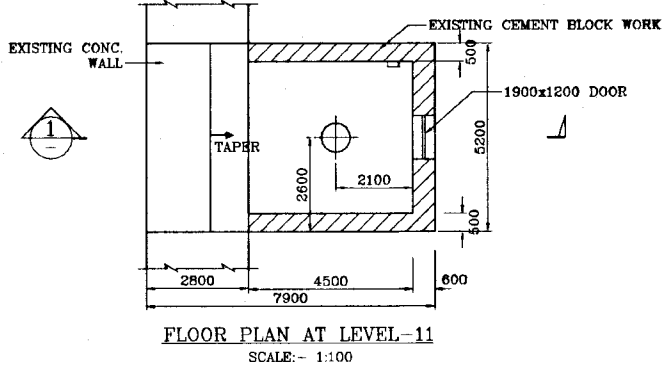
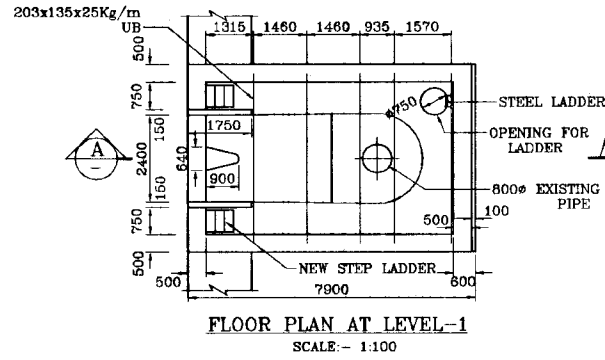
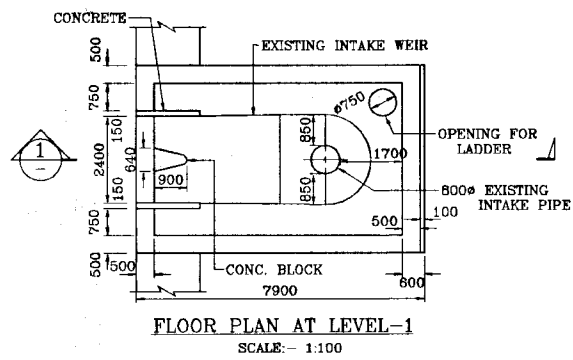
**DO NOT SCALE**

 NATIONAL WATER SUPPLY AND DRAINAGE BOARD THE PROJECT FOR THE REDUCTION OF NON-REVENUE WATER IN THE GREATER COLOMBO AREA	SUB PROJECT <b>MALIGAKANDA</b>	TITLE <b>REHABILITATION OF          EXISTING RESERVOIR ROOF          DEMOLITION PLAN</b>	DATE <b>JAN 2001</b>
	DESIGNED  CHECKED  DT. TEAM LEADER  TEAM LEADER 	DRAWN  PM (NWS&D) NWSD  ACMP (NWS&D) NWSD  DCMP (NWS&D) NWSD 	CONTRACT NO. <b>NRW/CW</b>





- NOTES**
- THE FOLLOWING ARE THE MAIN ACTIVITIES IN REHABILITATION OF THE INTAKE STRUCTURE
    - Slab at Level I  
Remove the existing slab (on grade) completely. Compact the sub base and reconstruct a new rc slab as shown.
    - Slab at Level II  
Remove the existing steel chequered plate floor completely. Erect new steel sections as shown. Construct a floor with GI grating (unfactored super imposed load 5kN/m<sup>2</sup>) supported on the new steel beam sections.
    - Existing Steel weir and its supports.  
Clean the existing steel weir by sand blast to BS 7079-Sa 2.5 or by any other approved equivalent method. Carryout all necessary works to repair it and protect all exposed steel works with two stage epoxy coating ( Suitable for potable water ).
    - Existing "Barrel Vault" type roof slab & steps.  
Remove completely and construct a new roofslab. Construct concrete benching, water proofing and heat insulation.
    - Construct a new step ladder from the reservoir new roof to the level II of the Intake Structure. Construct steel ladders from level I to the Level II of the Intake Structure, from reservoir new roof to the Intake Structure new roof. Erect all necessary piping works and arrange new rain water drainage from Intake new roof. Erect a new door in place of old door as shown on drawings.
    - All structural steel works (except weir) shall be hot dip galvanized.

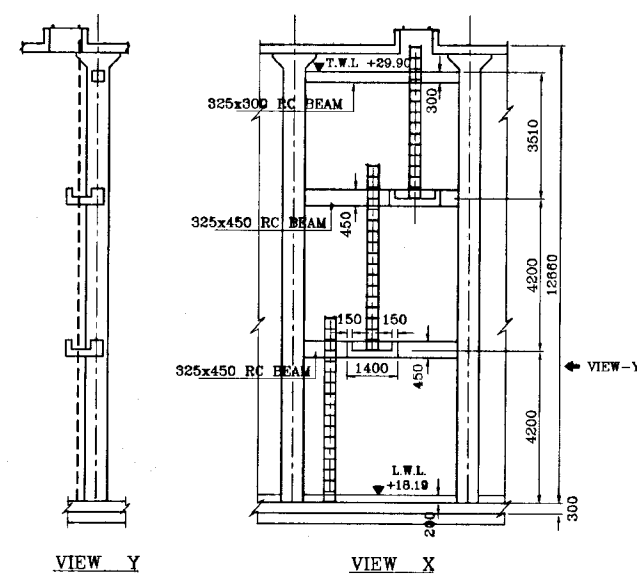
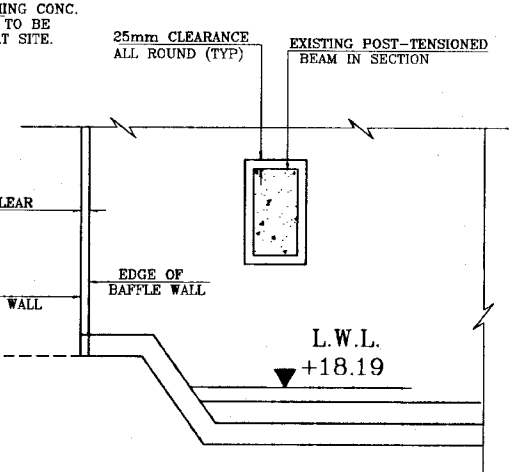
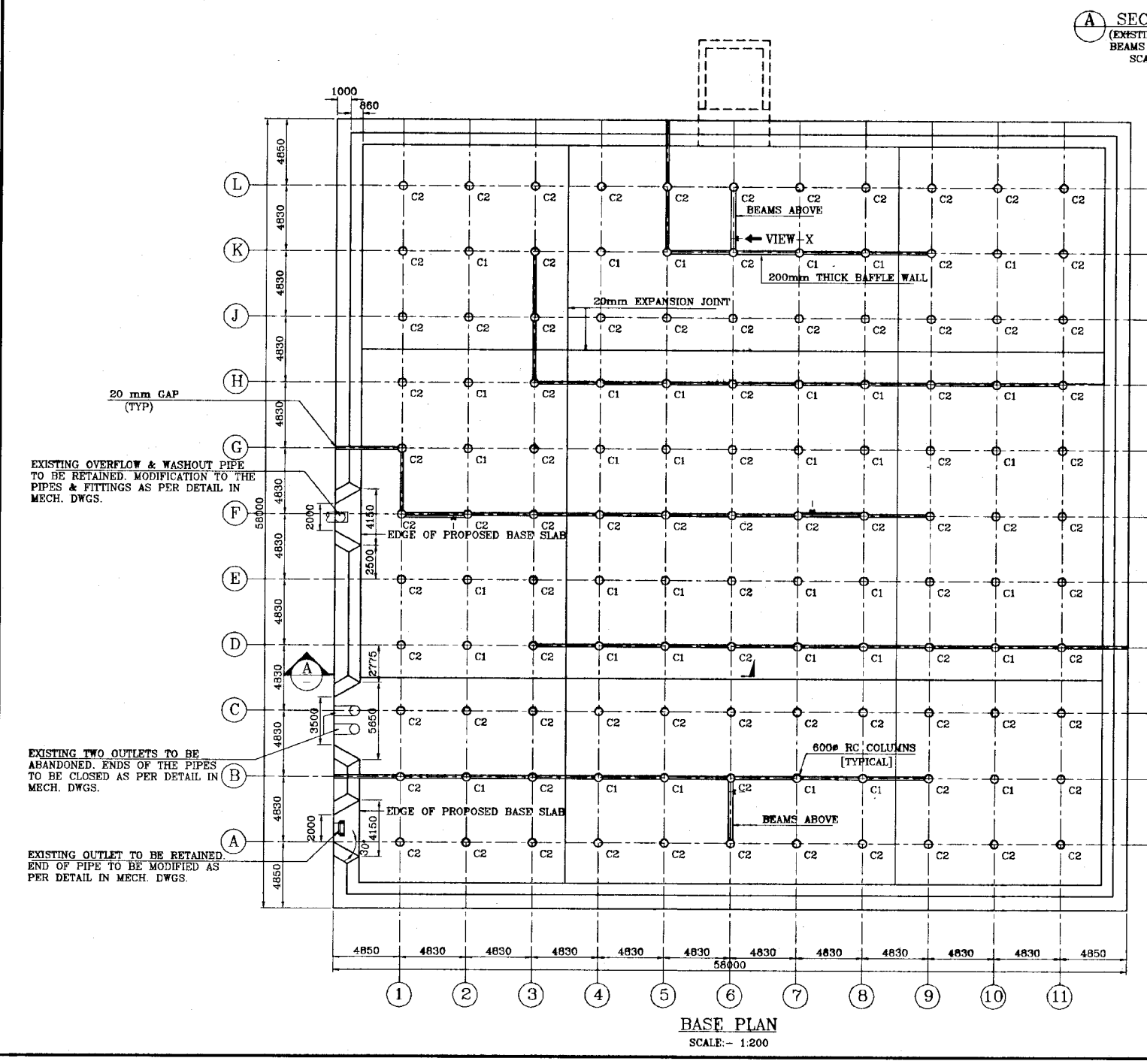
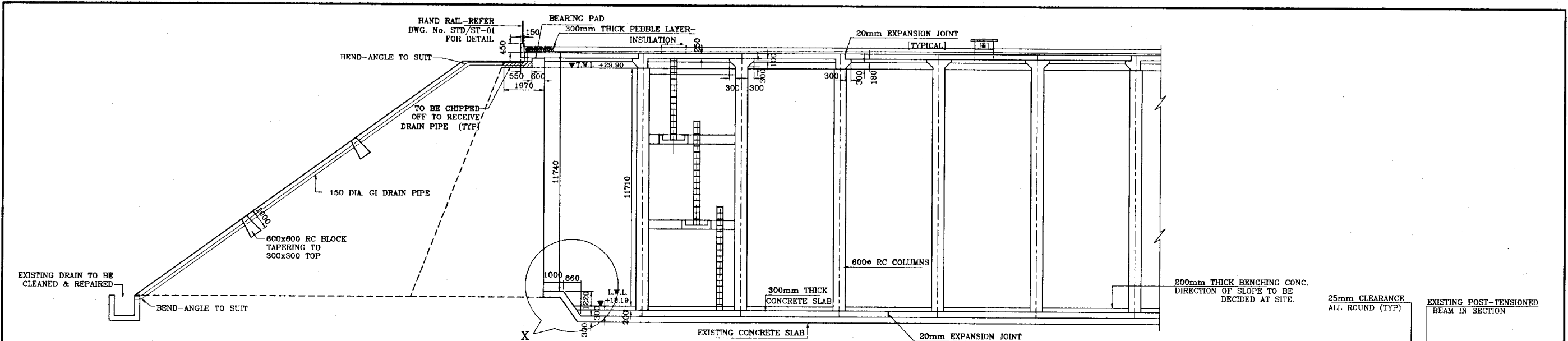


**DO NOT SCALE**

EXISTING STRUCTURE

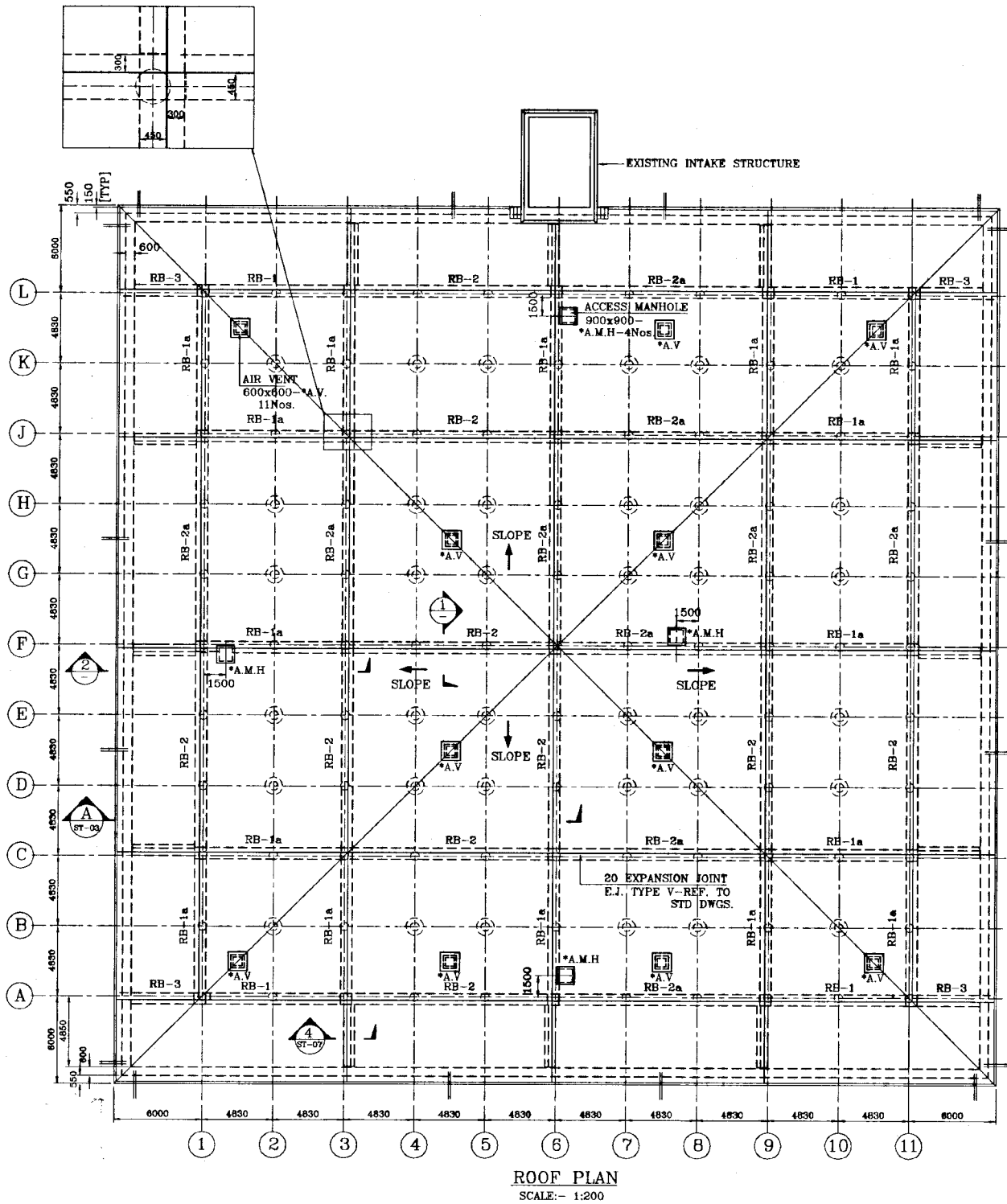
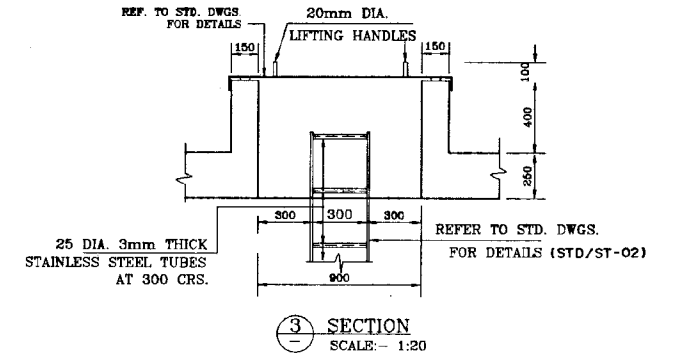
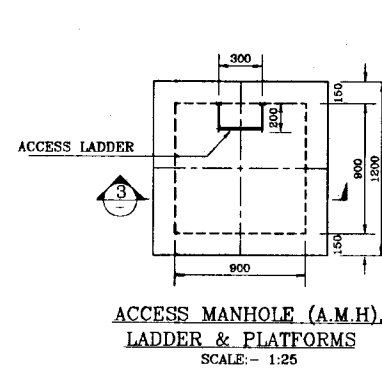
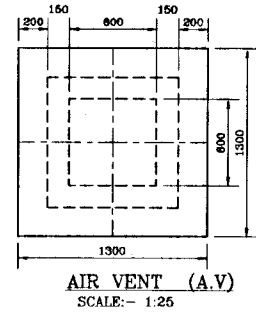
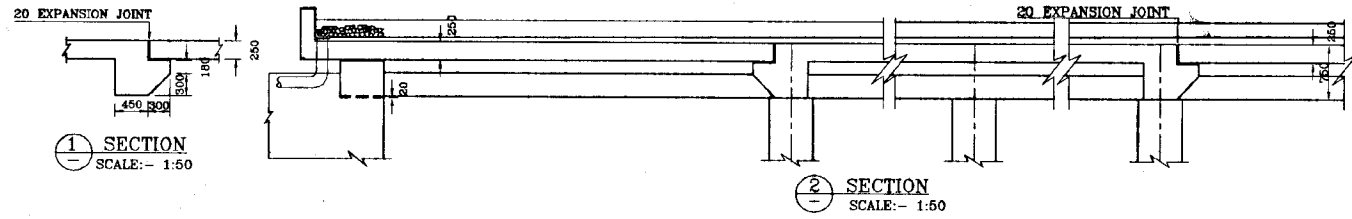
PROPOSED MODIFICATIONS TO EXISTING STRUCTURE

	<b>NATIONAL WATER SUPPLY AND DRAINAGE BOARD</b> THE PROJECT FOR THE REDUCTION OF NON-REVENUE WATER IN THE GREATER COLOMBO AREA		SUB PROJECT <b>MALIGAKANDA</b>	TITLE <b>REHABILITATION OF EXISTING RESERVOIR ROOF INTAKE STRUCTURE</b>
	DESIGNED: [Signature] CHECKED: [Signature] CIV. TEAM LEADER: [Signature] TEAM LEADER: [Signature]	DRAWN: [Signature] PM NRW/S/MSDB: [Signature] ACP/MD/MSDB: [Signature] DCP/MD/MSDB: [Signature]	DATE <b>JAN 2001</b>	CONTRACT NO. <b>NRW/CW</b>



**DO NOT SCALE**

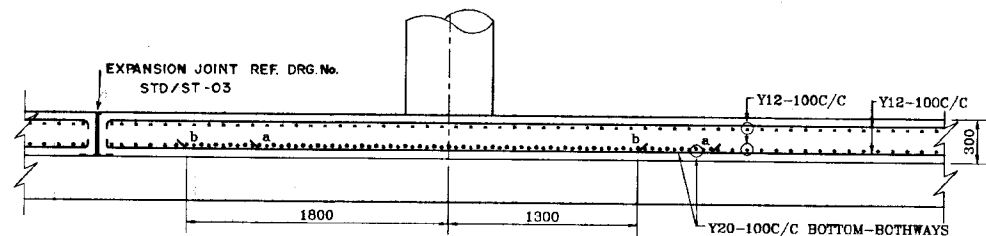
	<b>NATIONAL WATER SUPPLY AND DRAINAGE BOARD</b> THE PROJECT FOR THE REDUCTION OF NON-REVENUE WATER IN THE GREATER COLOMBO AREA		SUB PROJECT <b>MALIGAKANDA</b>	TITLE <b>REHABILITATION OF EXISTING RESERVOIR ROOF GENERAL ARRANGEMENT</b> SHEET 1 OF 2
	<b>JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)</b> STUDY TEAM NIKON SUIDO CONSULTANTS CO. LTD., TOKYO, JAPAN		DESIGNED: [Signature] CHECKED: [Signature] BY TEAM LEADER: [Signature] TEAM LEADER: [Signature]	DATE <b>JAN 2001</b> CONTRACT NO. <b>NRW/CW</b> DRG NO. <b>MK/RF/ST-03</b>



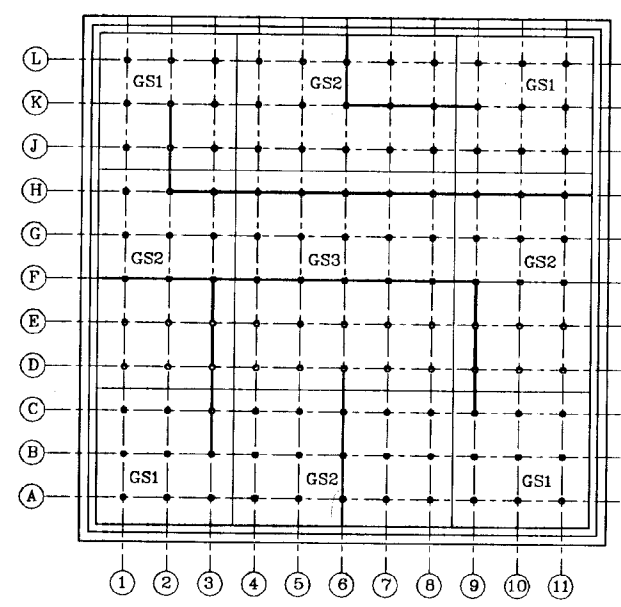
NOTE : FOR DETAILS OF EXPANSION JOINT, REFER DRG NO STD/ST-03

**DO NOT SCALE**

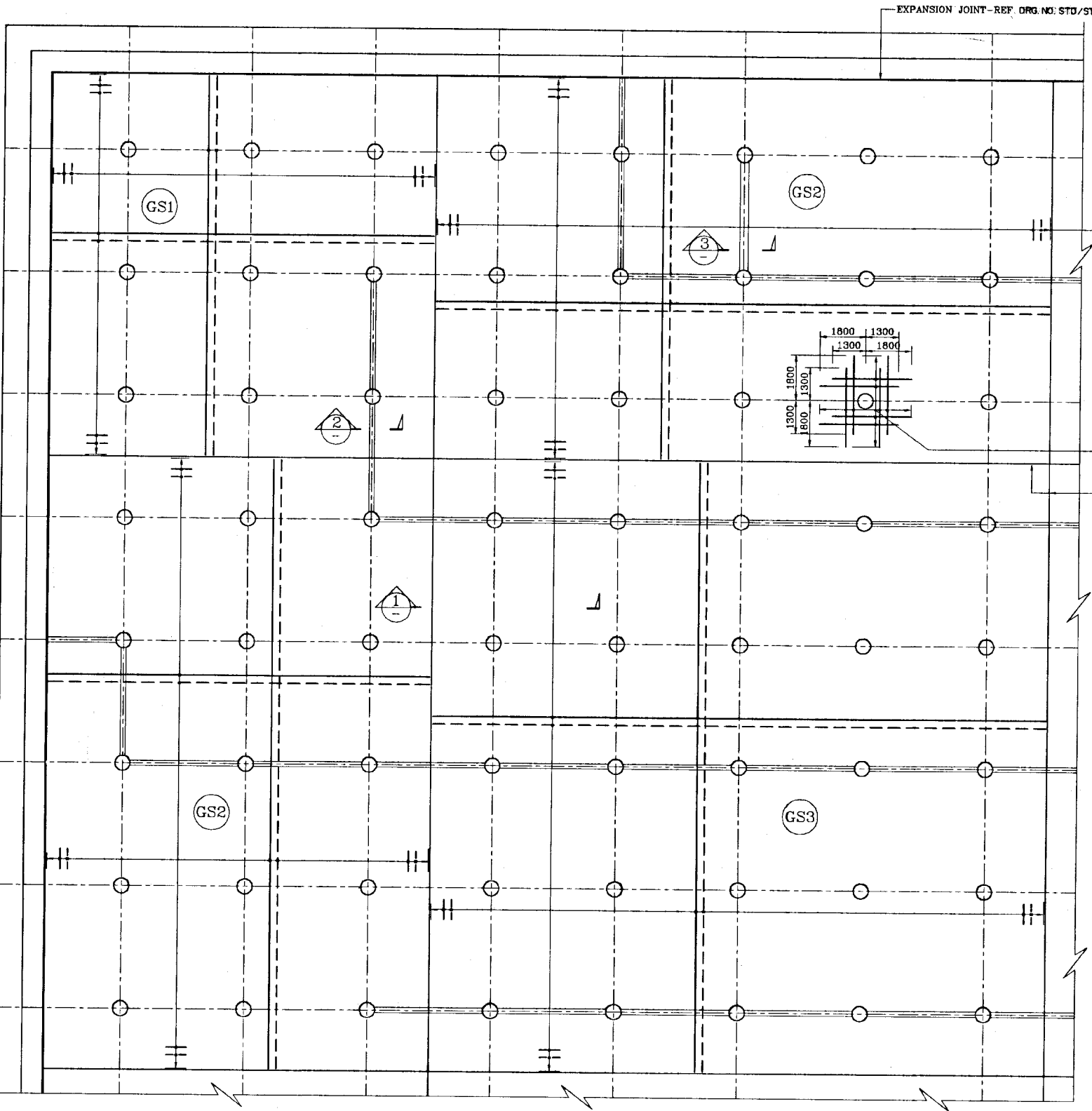
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	DESIGNED <i>[Signature]</i>		DATE JAN 2001	
JAPAN INTERNATIONAL COOPERATION AGENCY (JICA) STUDY TEAM		DRAWN RUKMANT		CONTRACT No. NRW/CW
NIHON SUDO CONSULTANTS CO. LTD. TOKYO, JAPAN		CHECKED <i>[Signature]</i>		DWG No. MK/RF/ST-04
		DT TEAM LEADER <i>[Signature]</i>		
		TEAM LEADER <i>[Signature]</i>		



SECTION 1  
SCALE: 1:25



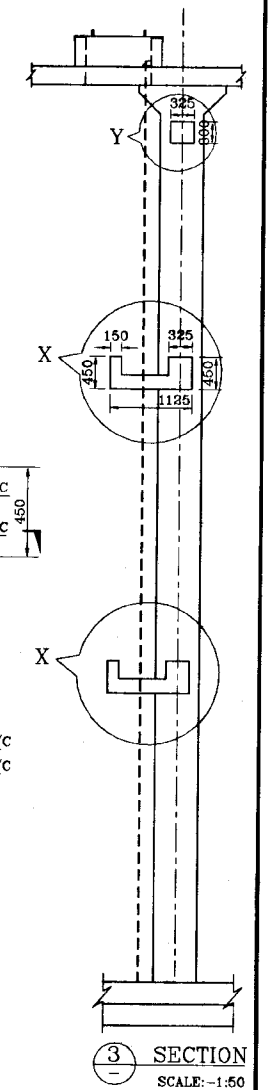
BASE KEY PLAN  
SCALE: 1:400



BASE PART PLAN  
SCALE: 1:100

Y12-100C/C TOP & BOTTOM BOTHWAYS (TYPICAL FOR ALL SLAB PANELS)

Y20-100C/C (IN ADDITION TO Y12-100C/C) BOTTOM BOTHWAYS AT ALL COLUMN POINTS (TYPICAL)  
EXPANSION JOINT-REF. STD. DWGS. (EJ TYP. 1) STD/ST-03

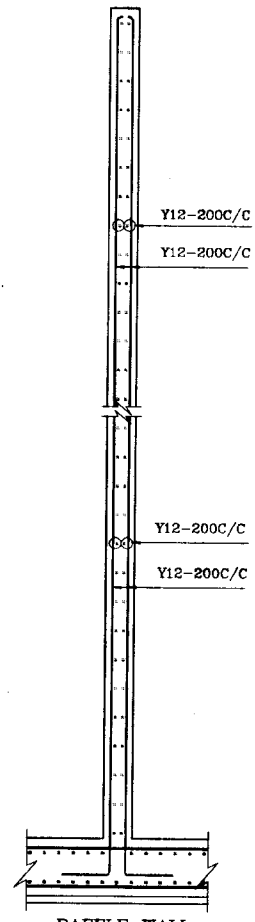


DETAIL AT Y  
SCALE: 1:20

DETAIL AT X  
SCALE: 1:20

SECTION 4  
SCALE: 1:20

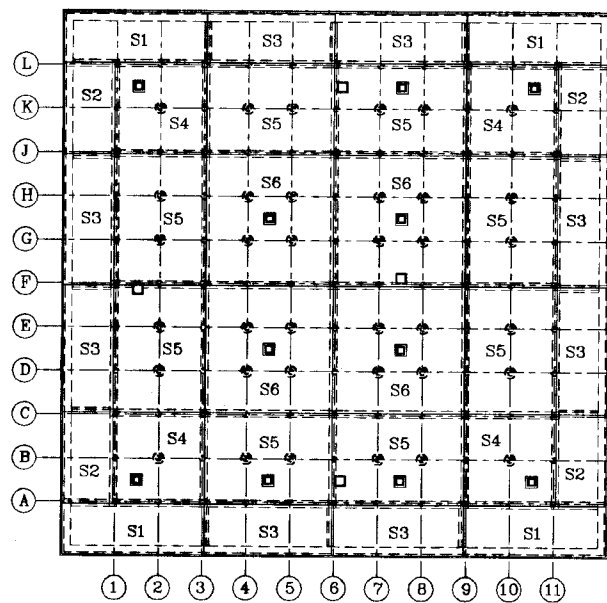
SECTION 3  
SCALE: 1:50



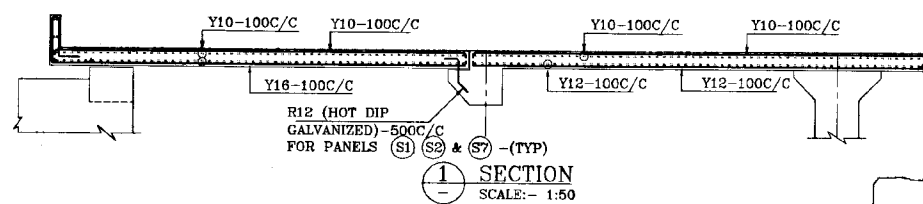
BAFFLE WALL  
SECTION 2 (TYPICAL)  
SCALE: 1:25

**DO NOT SCALE**

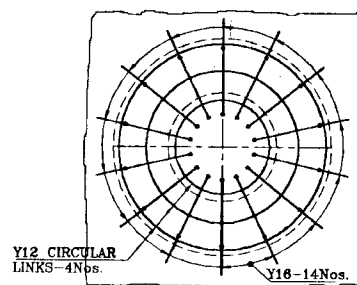
<p>NATIONAL WATER SUPPLY AND DRAINAGE BOARD THE PROJECT FOR THE REDUCTION OF NON-REVENUE WATER IN THE GREATER COLOMBO AREA</p> <p>JAPAN INTERNATIONAL COOPERATION AGENCY (JICA) STUDY TEAM</p> <p>NIHON SUDO CONSULTANTS CO. LTD., TOKYO, JAPAN</p>	SUB PROJECT MALIGAKANDA		TITLE REHABILITATION OF EXISTING RESERVOIR ROOF R/F DETAILS OF BASE SLAB	
	DESIGNED <i>[Signature]</i>	DRAWN RURUMANT	DATE JAN 2001	
	CHECKED <i>[Signature]</i>	PM (NRW/AFS) MNSDR <i>[Signature]</i>	CONTRACT NO. NRW/CW	
	BY TEAM LEADER <i>[Signature]</i>	AGM (PI) MNSDR R.D.A.	ORG. NO. MK/RF/ST-05	
	TEAM LEADER <i>[Signature]</i>	DOM (PI) MNSDR		



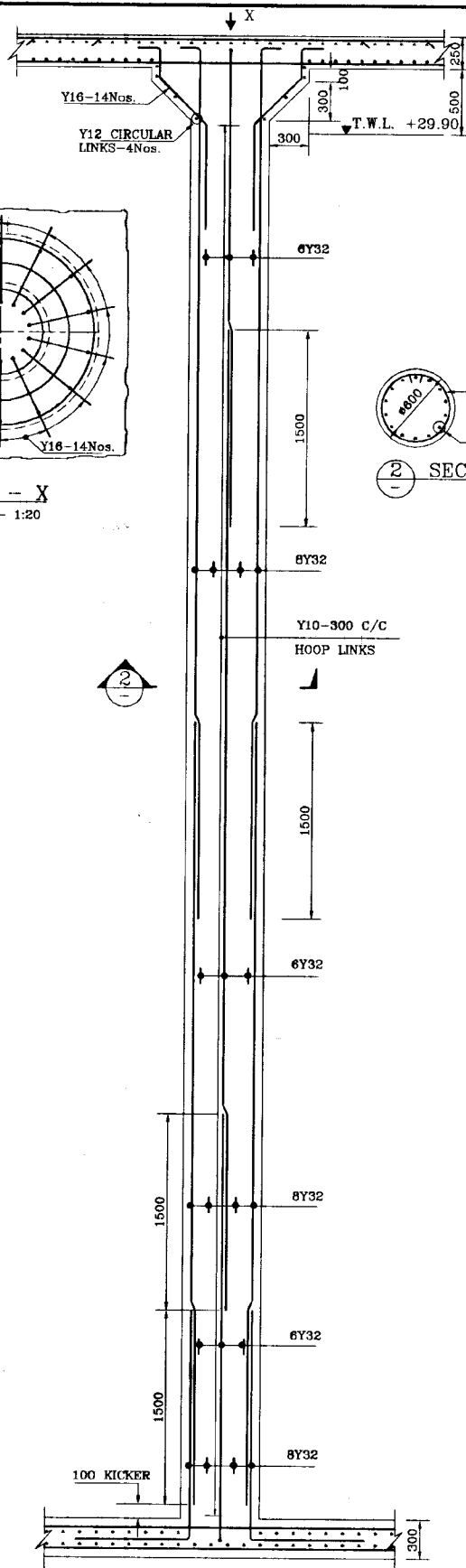
ROOF KEY PLAN  
SCALE:- 1:400



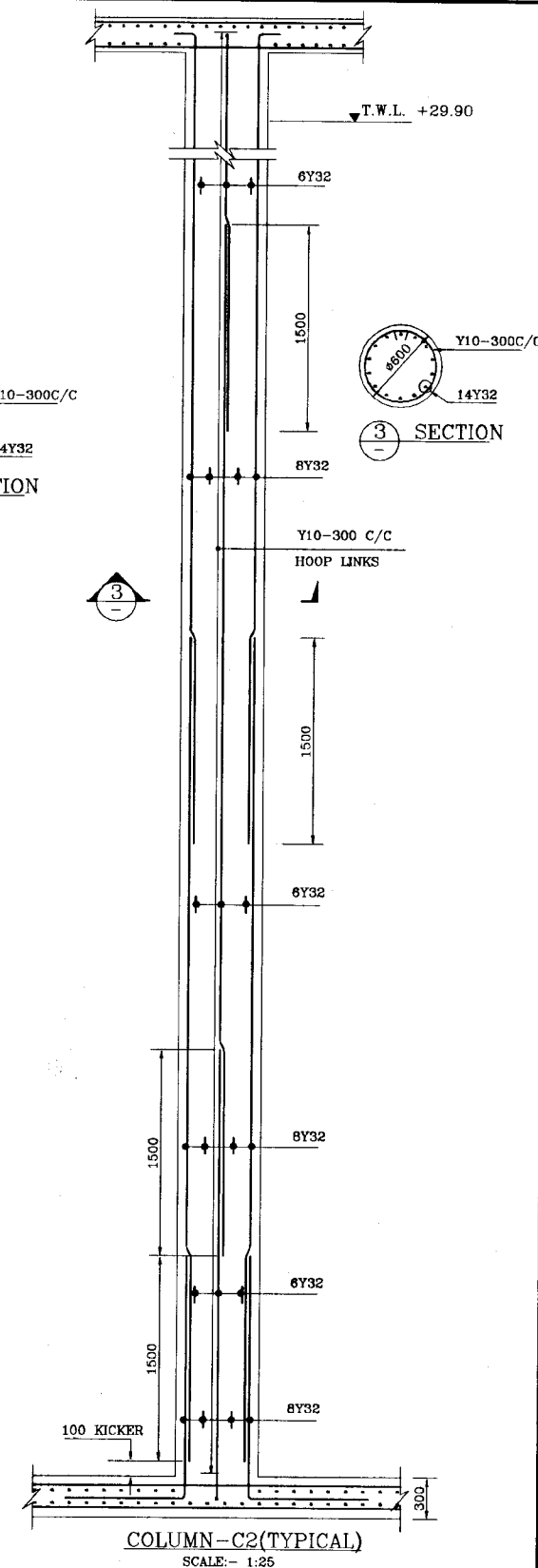
SECTION 1  
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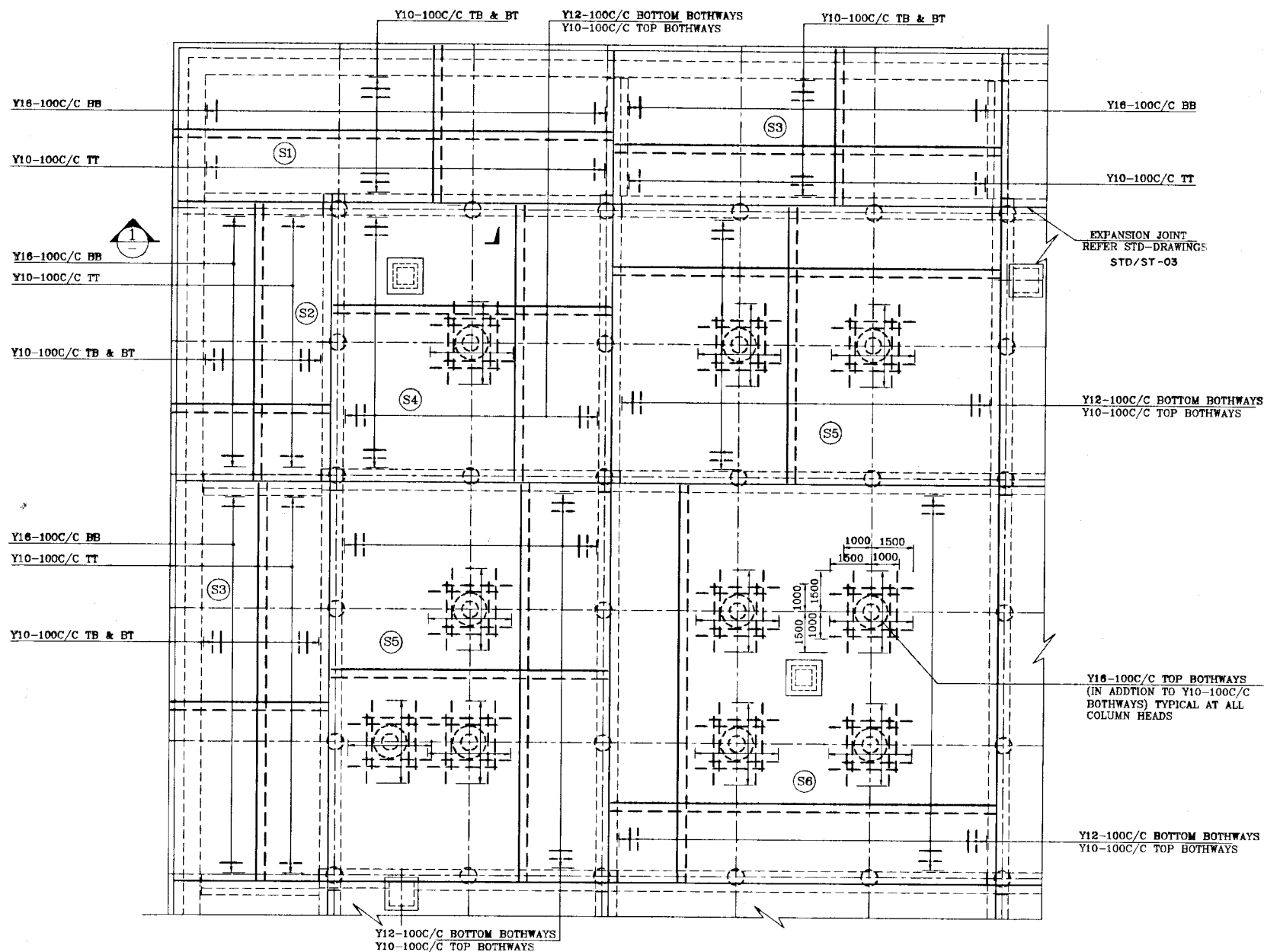
VIEW - X  
SCALE:- 1:20



COLUMN - C1 (TYPICAL)  
SCALE:- 1:25



COLUMN - C2 (TYPICAL)  
SCALE:- 1:25



ROOF PART PLAN  
SCALE:- 1:100

**DO NOT SCALE**

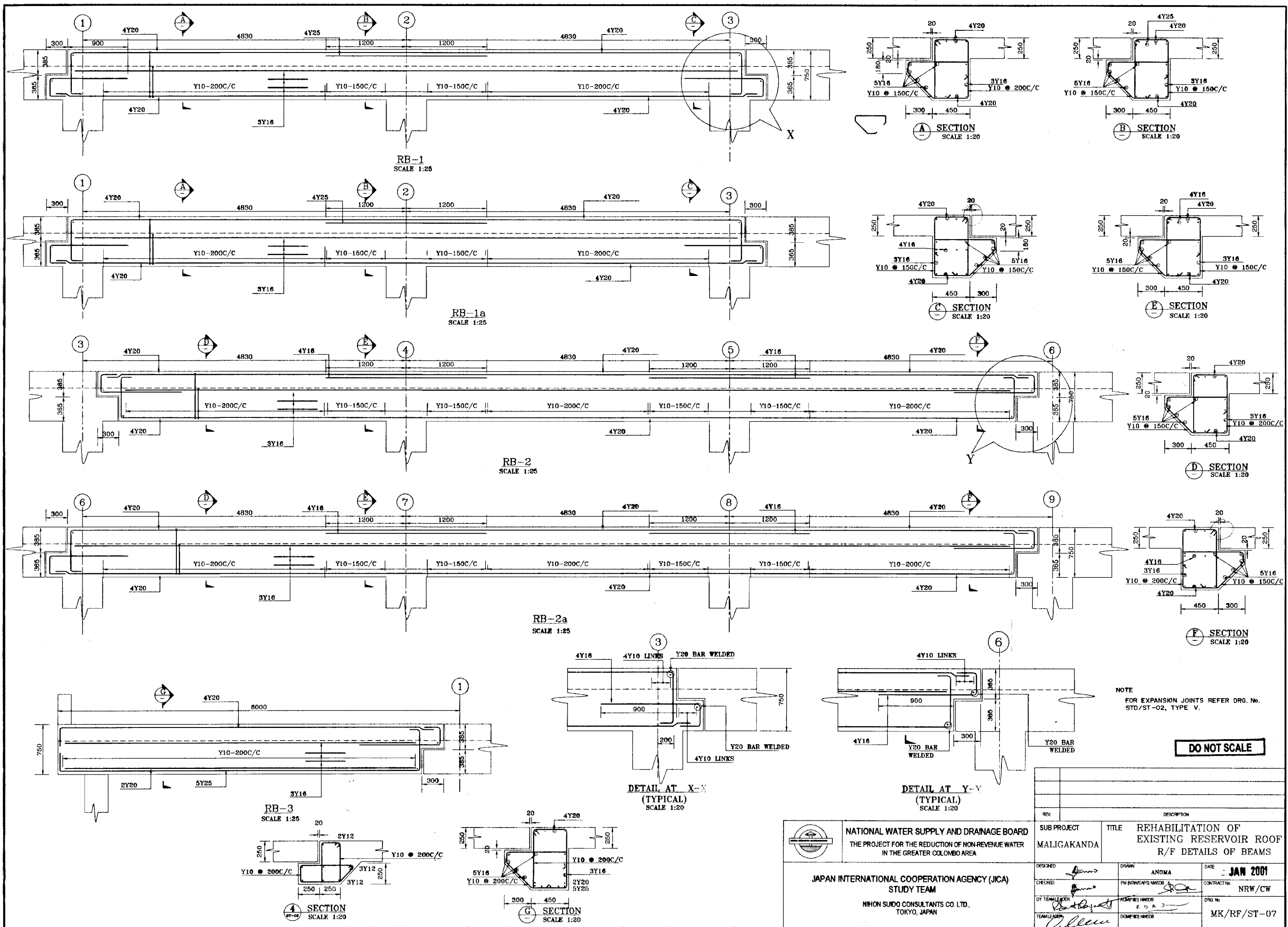
NATIONAL WATER SUPPLY AND DRAINAGE BOARD  
THE PROJECT FOR THE REDUCTION OF NON-REVENUE WATER  
IN THE GREATER COLOMBO AREA


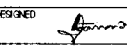
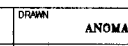


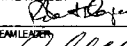
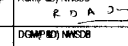
JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)  
STUDY TEAM

NIHON SUIDO CONSULTANTS CO. LTD.,  
TOKYO, JAPAN

REV	DESCRIPTION

SUB PROJECT	MALIGAKANDA	TITLE	REHABILITATION OF EXISTING RESERVOIR ROOF R/F DETAILS OF ROOF SLAB & COLUMNS
DESIGNED		DATE	JAN 2001
CHECKED		CONTRACT NO.	NRW/CW
DT. TEAM LEADER		DRG. No.	MK/RF/ST-06
TEAM LEADER			



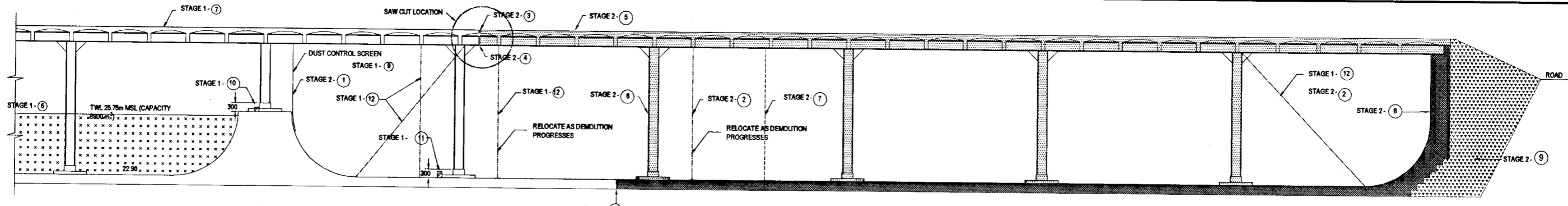
 <p>NATIONAL WATER SUPPLY AND DRAINAGE BOARD THE PROJECT FOR THE REDUCTION OF NON-REVENUE WATER IN THE GREATER COLOMBO AREA</p>	SUB PROJECT MALIGAKANDA	TITLE REHABILITATION OF EXISTING RESERVOIR ROOF R/F DETAILS OF BEAMS
	DESIGNED 	DRAWN ANOMA 
CHECKED 	PM INCHSAPS NWSDB 	CONTRACT NO. NRW/CW
DT TEAM LEADER 	TEAM LEADER 	DRG. NO. MK/RF/ST-07
JAPAN INTERNATIONAL COOPERATION AGENCY (JICA) STUDY TEAM NIHON SUDO CONSULTANTS CO. LTD. TOKYO, JAPAN		

**DO NOT SCALE**

NOTE  
FOR EXPANSION JOINTS REFER DRG. No.  
STD/ST-02, TYPE V.

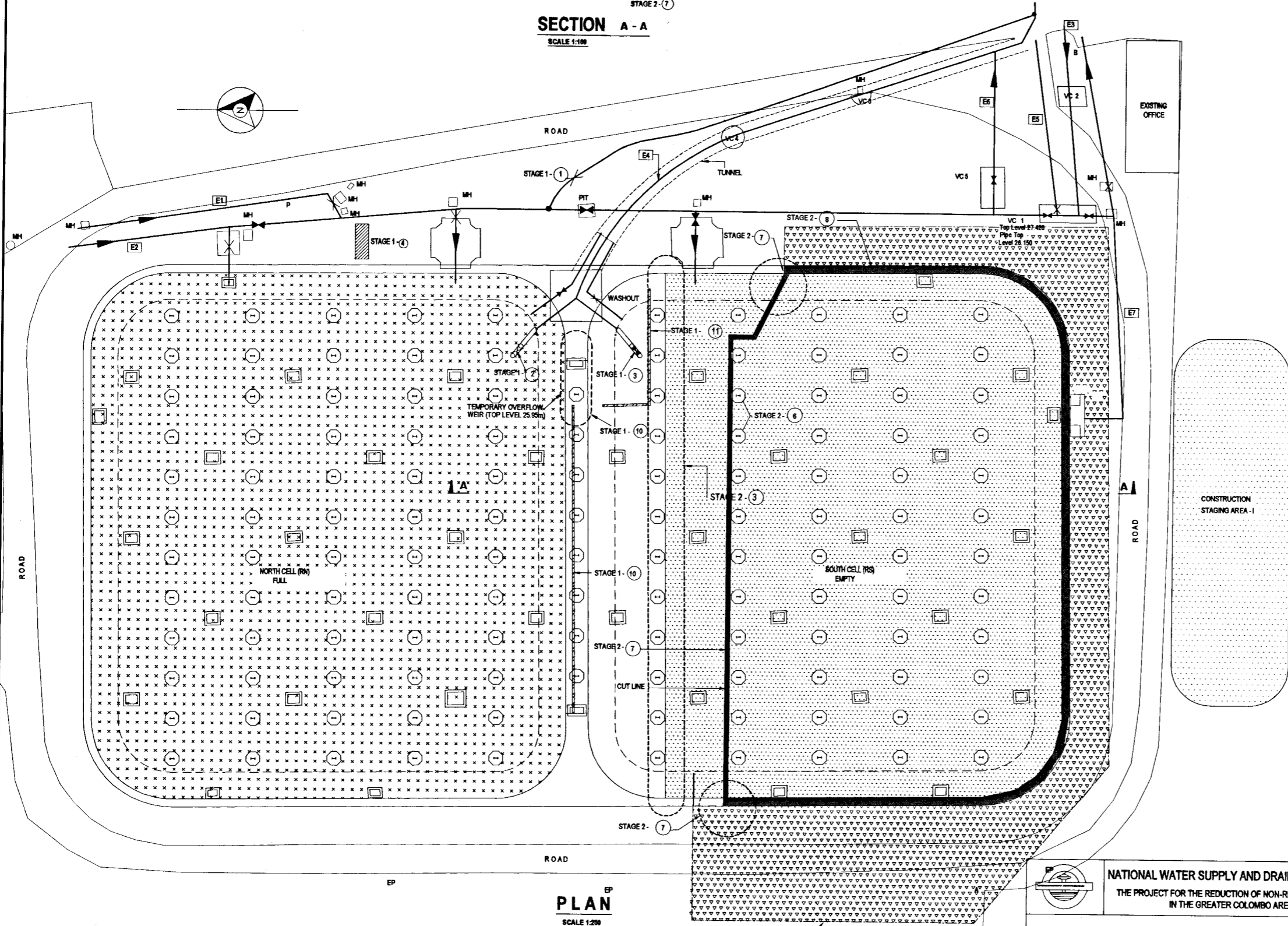






**SECTION A - A**  
SCALE 1:100

- Notes:**
- Demolition will start on the South Cell while keeping the North Cell in operation.
- Suggested Construction Sequence**
- Stage 1 - Prepare for demolition of RS and office building**
- Provide Temporary By-pass Connection 20".
  - Open outlet valve from RN.
  - Close outlet valve from RS.
  - Provide temporary chlorination for RN.
  - Open washout valve in RS, dewater and remove silt. Washout for RS will function as temporary overflow for RN during construction therefore leave washout valve open.
  - Lower water levels in RN to 200mm below existing dividing wall.
  - Remove earth cover on roof slab.
  - Remove roof slab covering the overflow chamber for access to RS. Additional access from ventilator openings near dividing wall.
  - Provide dust control screen.
  - Roughen the top of the existing wall and Construct masonry wall to provide overflow weir at East end of wall, 300mm High.
  - Construct 300mm diversion channel in RS to washout.
  - Provide temporary props and bracing support to roof structure as indicated on Drawings and in locations to be determined by the contractor and approved by the Engineer.
  - Provide temporary office NW side of reservoir.
- Stage 2 - Demolition of RS and office building**
- Install dust screen on South side of dividing wall.
  - Keep props and bracing during demolition.
  - Saw cut roof slab.
  - Cut main steel beam.
  - Remove roof slab and beams.
  - Remove columns.
  - Cut wall & floor slab.
  - Demolish wall structure in RS.
  - Excavate around walls. Remove and stockpile excavated materials. Protect existing water mains.



**PLAN**  
SCALE 1:200

**PIPE SCHEDULE (EXISTING)**

- E1 20" Supply From Labugama (Duplicate)
- E2 20" Supply From Wellampitiya (Steel)
- E3 20" Supply From Ambatale (Triplicate)
- E4 20" Reservoir Outlet in Tunnel
- E5 10" Direct Supply to Kotahena
- E6 20" By-Pass to 20" Outlet
- E7 20" Overflow Pipe

**LEGEND:**

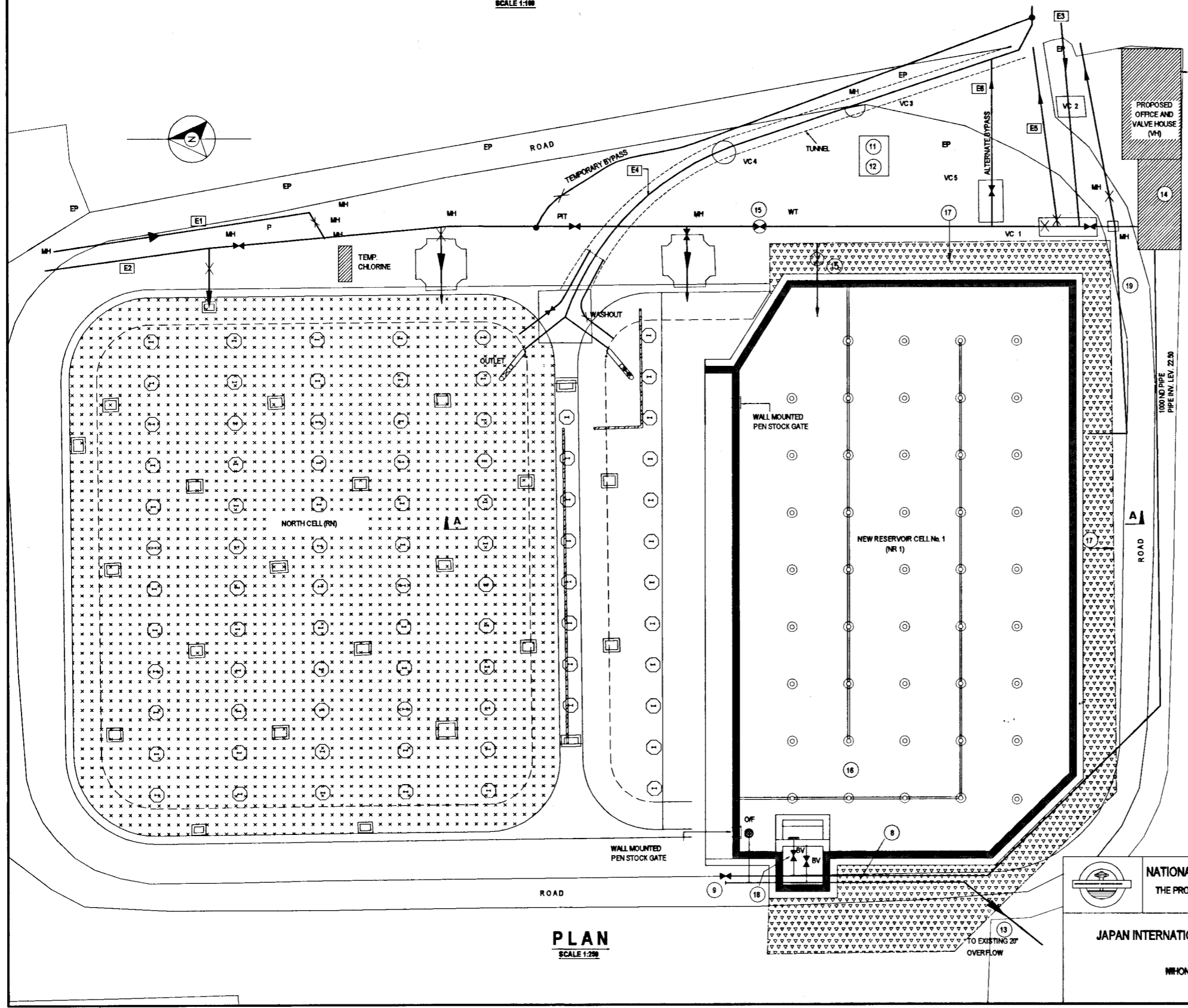
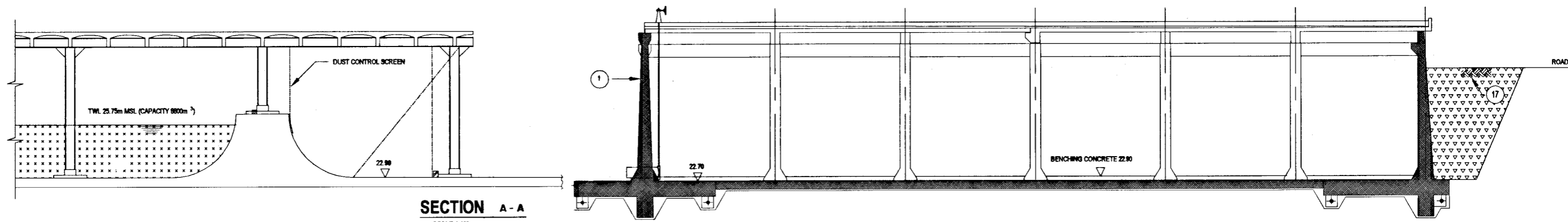
STAGE 1 - 2: Construction Stage 1, Refer to Note #2

- Gate Valve (closed)
- Gate Valve (open)

DO NOT SCALE





<b>NATIONAL WATER SUPPLY AND DRAINAGE BOARD</b> THE PROJECT FOR THE REDUCTION OF NON-REVENUE WATER IN THE GREATER COLOMBO AREA		SUB PROJECT: <b>ELLIE HOUSE RESERVOIR</b>	TITLE: <b>CONSTRUCTION SEQUENCE - STAGE 1&amp;2</b>
DESIGNED: [Signature] CHECKED: [Signature] DR. TEAM LEADER: [Signature] TEAM LEADER: [Signature]	DATE: JUN. 2001 CONTRACT No: <b>NRW / CW</b> ENG. No: <b>EH / GR / G-02</b>	JAPAN INTERNATIONAL COOPERATION AGENCY (JICA) STUDY TEAM NIKON SUDO CONSULTANTS CO. LTD., TOKYO, JAPAN	





- Suggested Construction Sequence**  
**Stage 3 - Construct NR1, VH and chlorination facility**
1. Start construction of new reservoir R/C structure NR1
  2. Identify locations of inlet, outlet, overflow and washout lines
  3. Set out construction of new valve house
  4. Identify existing lines that are to be connected to the system. Confirm their invert levels.
  5. Set out piping works within the valve house and set out various connections to and from the valve house.
  6. Confirm levels of the valve house and make changes if necessary
  7. Complete piping work within the reservoir.
  8. Provide outlet valve and overflow/washout piping.
  9. Provide Gate valve with blank flange for extension of discharge header to NR3. Blank flange the overflow pipe for extension to outlet of NR2.
  10. Construct valve house and install piping within the valve house at correct levels
  11. Confirm location of new chlorination facility
  12. Construct chlorination facility and install piping to inlet structure for RS.
  13. Complete outlet and washout/overflow piping. Connect washout/overflow line to existing 20" scour line. Blank flange the overflow pipe for extension to NR3.
  14. Connect outlet of NR1 to VH.
  15. Connect inlet of NR1 to 20" triplicate supply line and install new sectional valve
  16. Test and disinfect NR1 and reservoir outlet piping to VH.
  17. Backfill to grade level around reservoir but no the VH.
  18. Open NR1 outlet valve. Now NR1 and VH are ready for service supplied from triplicate 20" RN is still supplied from duplicate (or steel 20").
  19. Remove Overflow Piping & Blank off at Manhole.

- PIPE SCHEDULE (EXISTING)**
- E 1 20" Supply From Labugama. (Duplicate)
  - E 2 20" Supply From Wellampitiya (Steel)
  - E 3 20" Supply From Ambatale (Triplicate)
  - E 4 20" Reservoir Outlet in Tunnel
  - E 5 10" Direct Supply to Kotahena
  - E 6 20" By-Pass to 20" Outlet

-  GATE VALVE - CLOSED
-  GATE VALVE - OPEN
-  BUTTERFLY VALVE - CLOSED
-  BUTTERFLY VALVE - OPEN

DO NOT SCALE

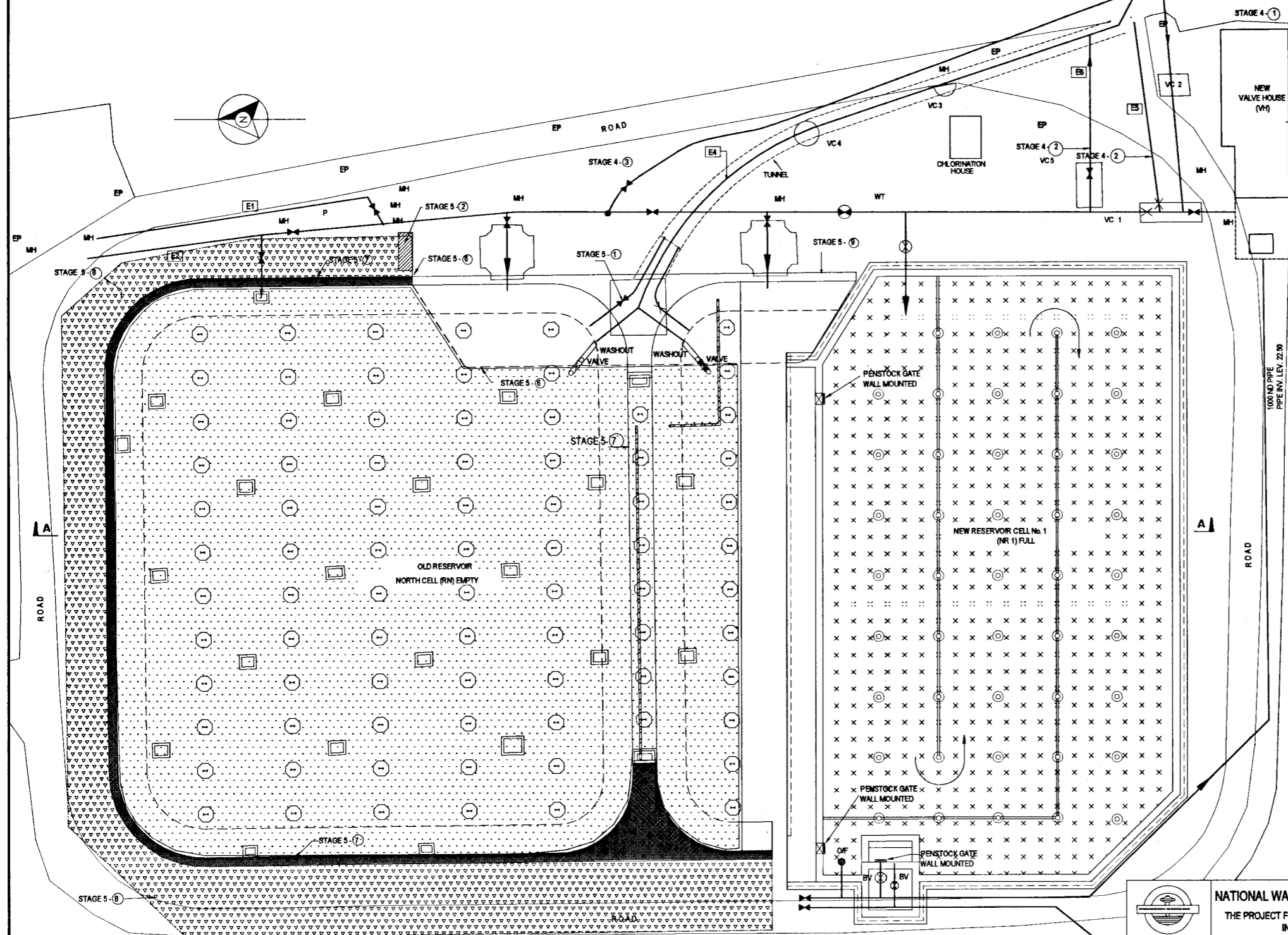
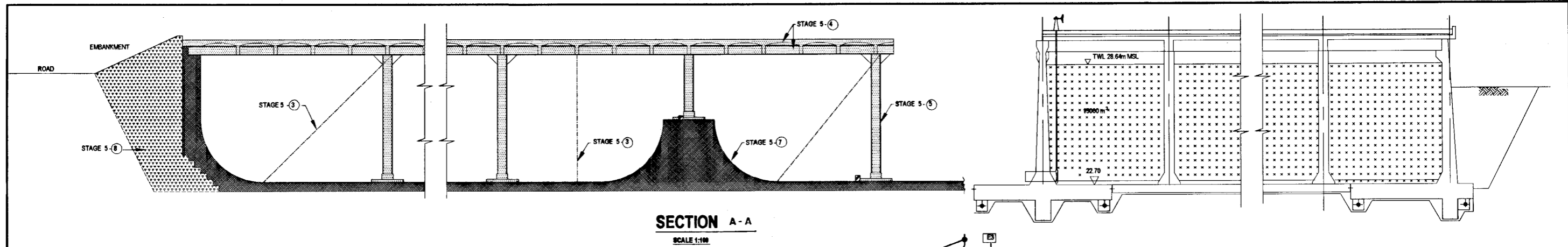
**NATIONAL WATER SUPPLY AND DRAINAGE BOARD**  
 THE PROJECT FOR THE REDUCTION OF NON-REVENUE WATER  
 IN THE GREATER COLOMBO AREA

**JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)**  
 STUDY TEAM

**NIHON SUDO CONSULTANTS CO. LTD.,**  
 TOKYO, JAPAN

REV.	DESCRIPTION

SUB PROJECT:	TITLE:
<b>ELLIE HOUSE RESERVOIR</b>	<b>CONSTRUCTION SEQUENCE - STAGE 3</b>
DESIGNED:	DATE:
CHECKED:	DATE:
DR. TEAM LEADER:	DATE:
TEAM LEADER:	DATE:
DATE: JUN 2011	CONTRACT No: <b>NRW / CW</b>
DWG. No: <b>EH / GR / G - 03</b>	



- Suggested Construction Sequence**
- Stage 4 - Transfer distribution mains to VH**
1. Install distribution mains from VH transferring one by one to existing.
  2. Remove abandoned connections
  3. Remove Temporary By-pass.
- Stage 5 - Demolition of RN**
1. Open washout valve in RN, dewater & remove silt.
  2. Remove temporary chlorination.
  3. Re-arrange props and bracing as required.
  4. Remove roof slab and beams
  5. Remove columns
  6. Cut walls and floor slab.
  7. Demolish wall structure in RN.
  8. Excavate around walls. Remove and stockpile excavated materials.
  9. Keep existing walls & floor slab intact and protect from excessive vibration.

**PIPE SCHEDULE (EXISTING)**

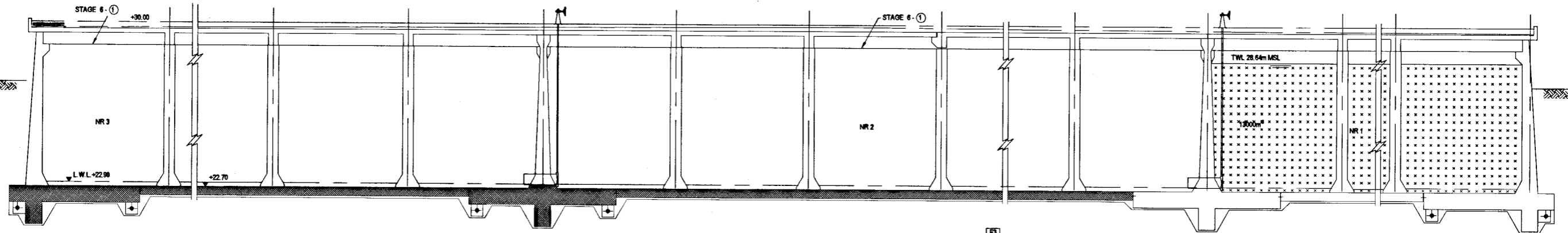
E 1	20" Supply From Labugama. (Duplicate)
E 2	20" Supply From Wellampthya (Steel)
E 3	20" Supply From Ambatale (Triplicate)
E 4	20" Reservoir Outlet in Tunnel
E 5	10" Direct Supply to Kotahena
E 6	20" By-Pass to 20" Outlet

STAGE 4 - (2) : Construction Stage 4, Refer to Note #2

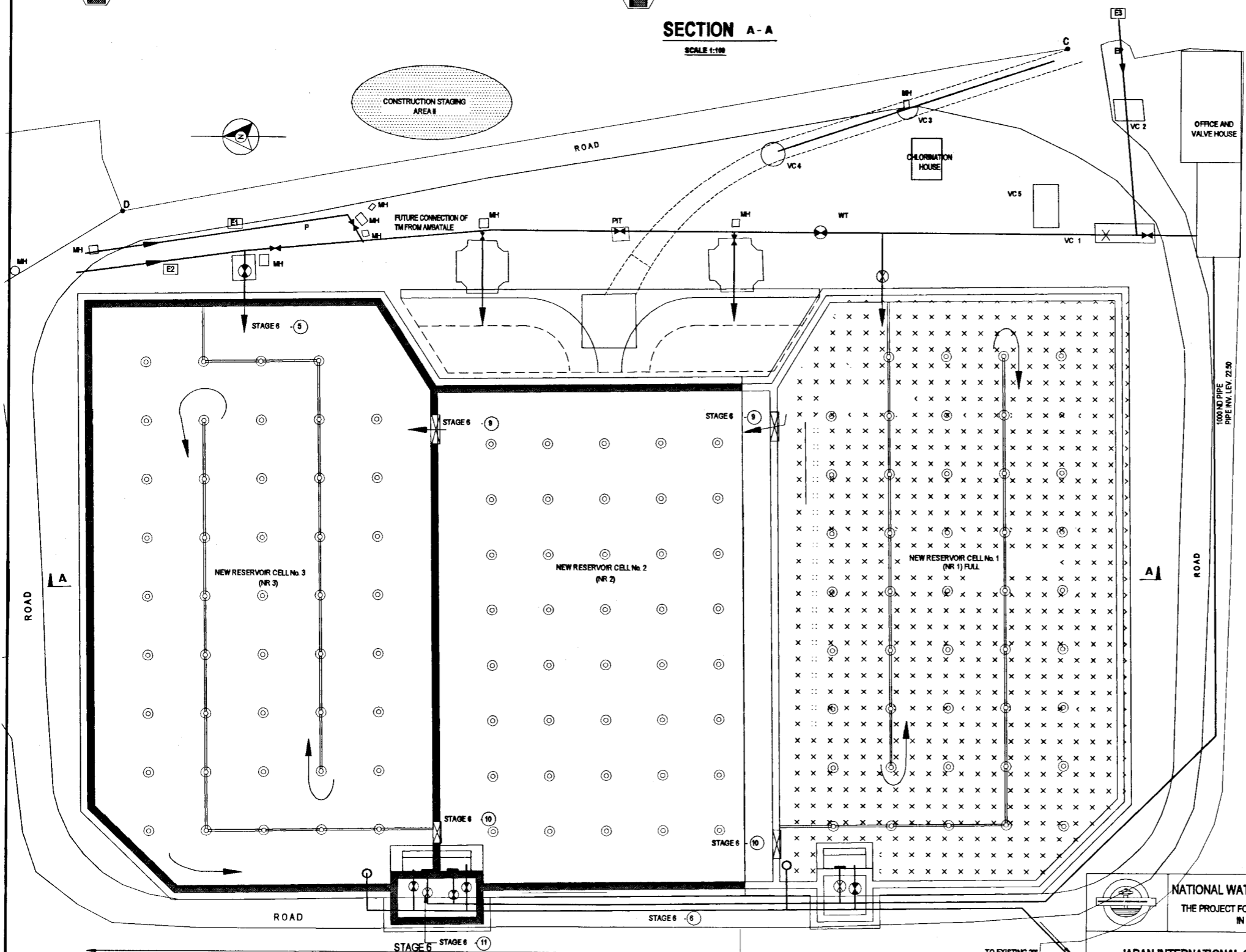
- BV - CLOSED
- BV - OPEN
- GV - OPEN
- GV - CLOSED

DO NOT SCALE

<p><b>NATIONAL WATER SUPPLY AND DRAINAGE BOARD</b> THE PROJECT FOR THE REDUCTION OF NON-REVENUE WATER IN THE GREATER COLOMBO AREA</p>		SUB PROJECT:		TITLE:	
		ELLIE HOUSE RESERVOIR		CONSTRUCTION SEQUENCE - STAGE 4 AND 5	
DESIGNED:	DRAWN:	DATE:	JAN 2011		
CHECKED:	PLN (NRWS&D) INCHDR:	CONTRACT No:	NRW / CW		
DT. TEAM LEADER:	A.O.M (NRWS) INCHDR:	DRAW. No:	EH / GR / G - 04		
TEAM LEADER:	D.O.M (NRWS) INCHDR:				
<p><b>JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)</b> STUDY TEAM</p> <p>NIHON SUIDO CONSULTANTS CO. LTD., TOKYO, JAPAN</p>					



SECTION A-A  
SCALE 1:100



PLAN  
SCALE 1:200

**Suggested Construction Sequence**

**Stage 6 - Construct & Commission NR2 & NR3**

1. Start construction of new reservoir R/C structure NR2 & NR3
2. Identify locations of outlet, overflow and washout lines
3. Complete piping work within the reservoir.
4. Complete outlet and washout/overflow piping.
5. Provide new inlet connection from duplicate 20".
6. Extend outlet-piping, overflow and washout lines from NR2 & NR3.
7. Test and disinfect NR2 & NR3.
8. Backfill to grade level.
9. Open Sluice gate Operate NR2 and NR3 in Series. (With NR1 in parallel.)
10. Close sluice gate
11. Open Outlet gate.

**PIPE SCHEDULE (EXISTING)**

- E 1 20" Supply From Labugama. (Duplicate)
- E 2 20" Supply From Wellampitiya (Steel)
- E 3 20" Supply From Ambatale (Triuplicate)

- BV - CLOSED
- BV - OPEN
- GV - OPEN
- GV - CLOSED

DO NOT SCALE

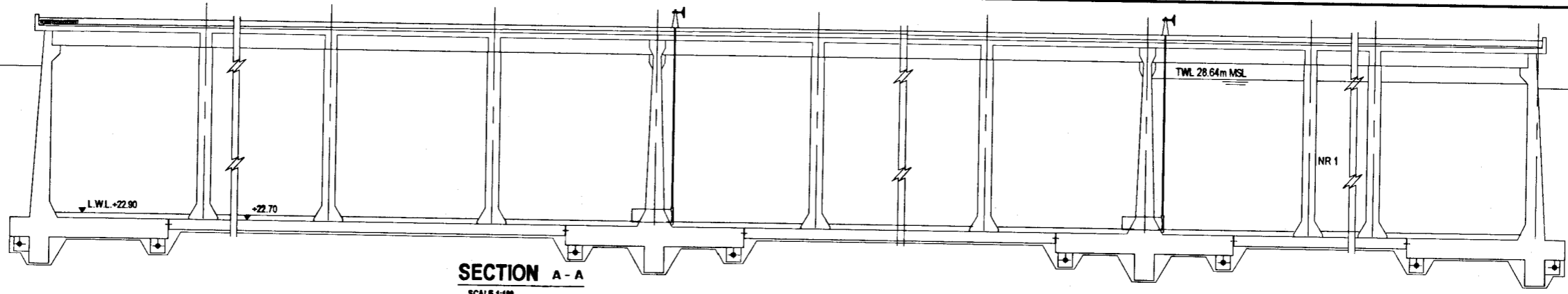
NATIONAL WATER SUPPLY AND DRAINAGE BOARD  
THE PROJECT FOR THE REDUCTION OF NON-REVENUE WATER  
IN THE GREATER COLOMBO AREA

JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)  
STUDY TEAM

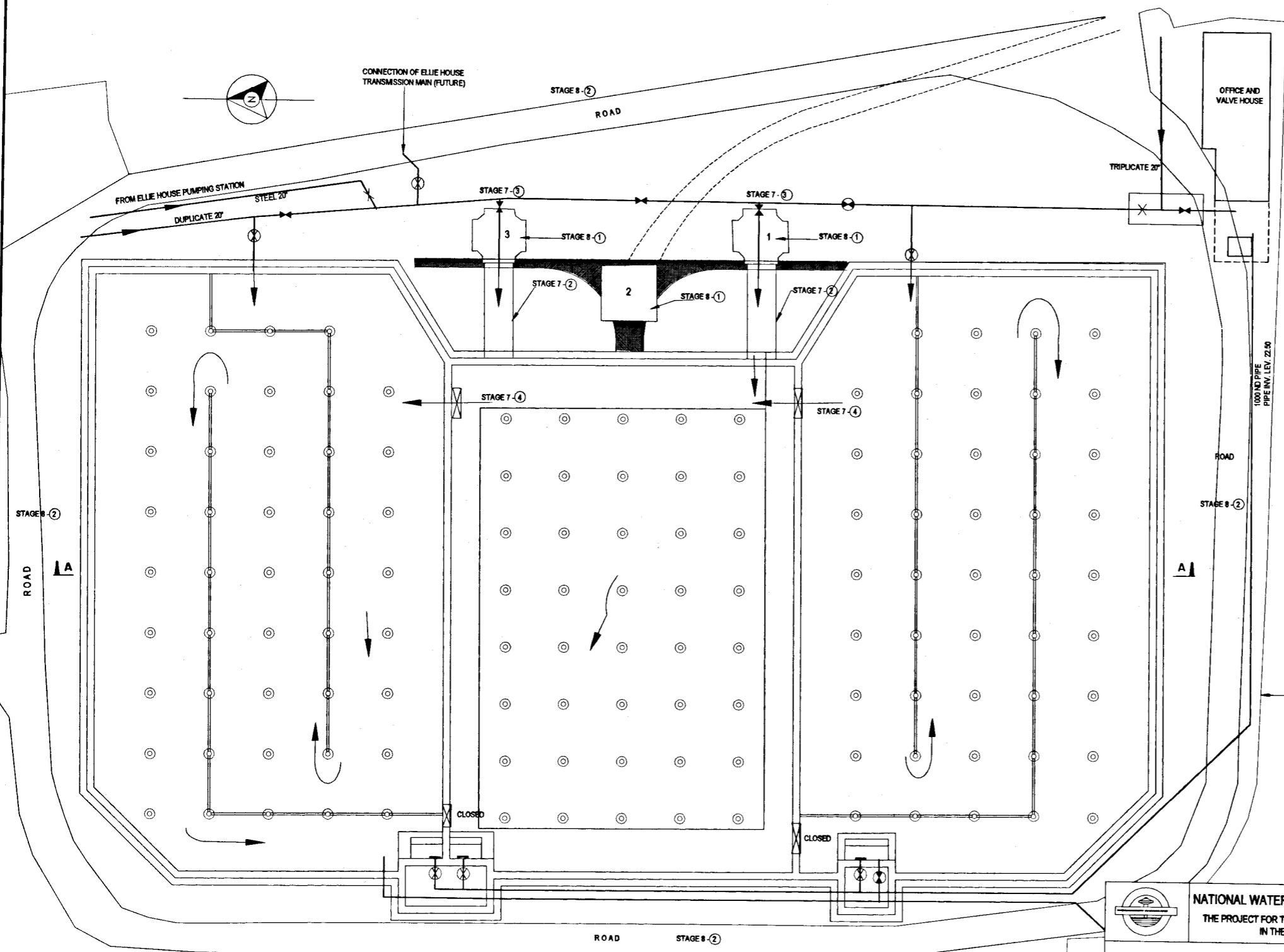
NIHON SUIDO CONSULTANTS CO. LTD.,  
TOKYO, JAPAN

REV.	DESCRIPTION

SUB PROJECT:	ELLIE HOUSE RESERVOIR	TITLE:	CONSTRUCTION SEQUENCE - STAGE 6 AND 7
DESIGNED:	RD	DRAWN:	RAMDA
CHECKED:	<i>[Signature]</i>	DATE:	JAN 2011
DR. TEAM LEADER:	<i>[Signature]</i>	CONTRACT No.:	NRW / CW
TEAM LEADER:	<i>[Signature]</i>	ENGR. No.:	EH / GR / 5 - 05







**SECTION A - A**  
SCALE 1:100




**PLAN**  
SCALE 1:200

**Suggested Construction Sequence**

- Stage 7**
1. Backfill around inlet / outlet structures.
  2. Construct Channels to inlet structures.
  3. Open inlet valves.
  4. Adjust sluice gates to operate in parallel.
- Note: Washout & Overflow not shown for clarity.
- Stage 8**
1. Restore inlet & outlet buildings.
  2. Roads, Gates, Boundary walls.

-  BUTTERFLY VALVE - CLOSED
-  BUTTERFLY VALVE - OPEN
-  GV - OPEN
-  GV - CLOSED

DO NOT SCALE

 <b>NATIONAL WATER SUPPLY AND DRAINAGE BOARD</b> THE PROJECT FOR THE REDUCTION OF NON-REVENUE WATER IN THE GREATER COLOMBO AREA		SUB PROJECT:		TITLE:
		ELLIE HOUSE RESERVOIR		CONSTRUCTION SEQUENCE - STAGE 8
DESIGNED:	CHECKED:	DATE:	DATE:	
BY: [Signature]	BY: [Signature]	JUL 2001	DATE:	
DR. TEAM LEADER:	A.S.M (P.M.) NUMBER:	CONTRACT NO.:	NRW / CW	
BY: [Signature]	ED A			
TEAM LEADER:	D.G.M (P.M.) NUMBER:	ORIG. NO.:	EH / GR / G - 08	
BY: [Signature]				