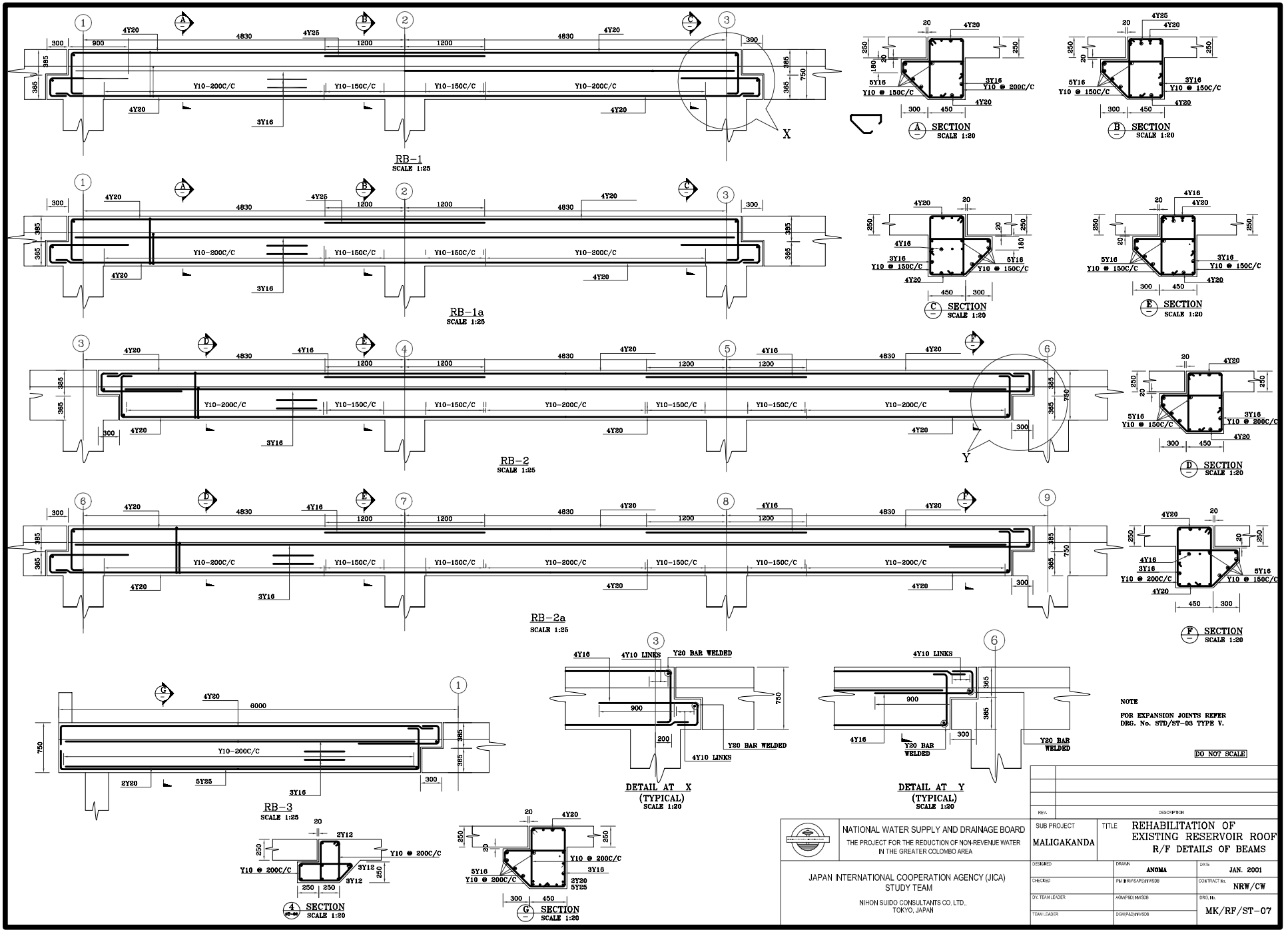
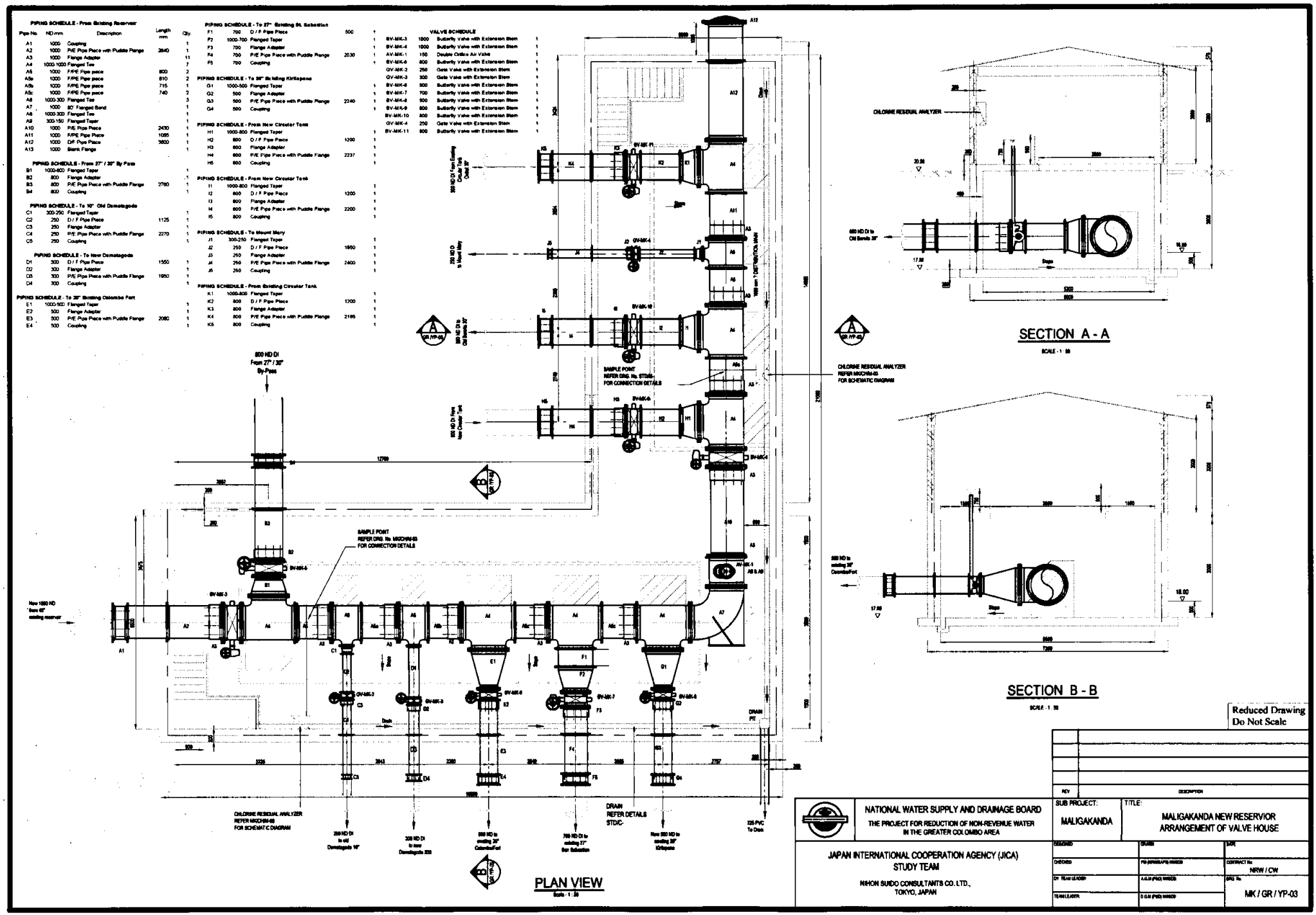
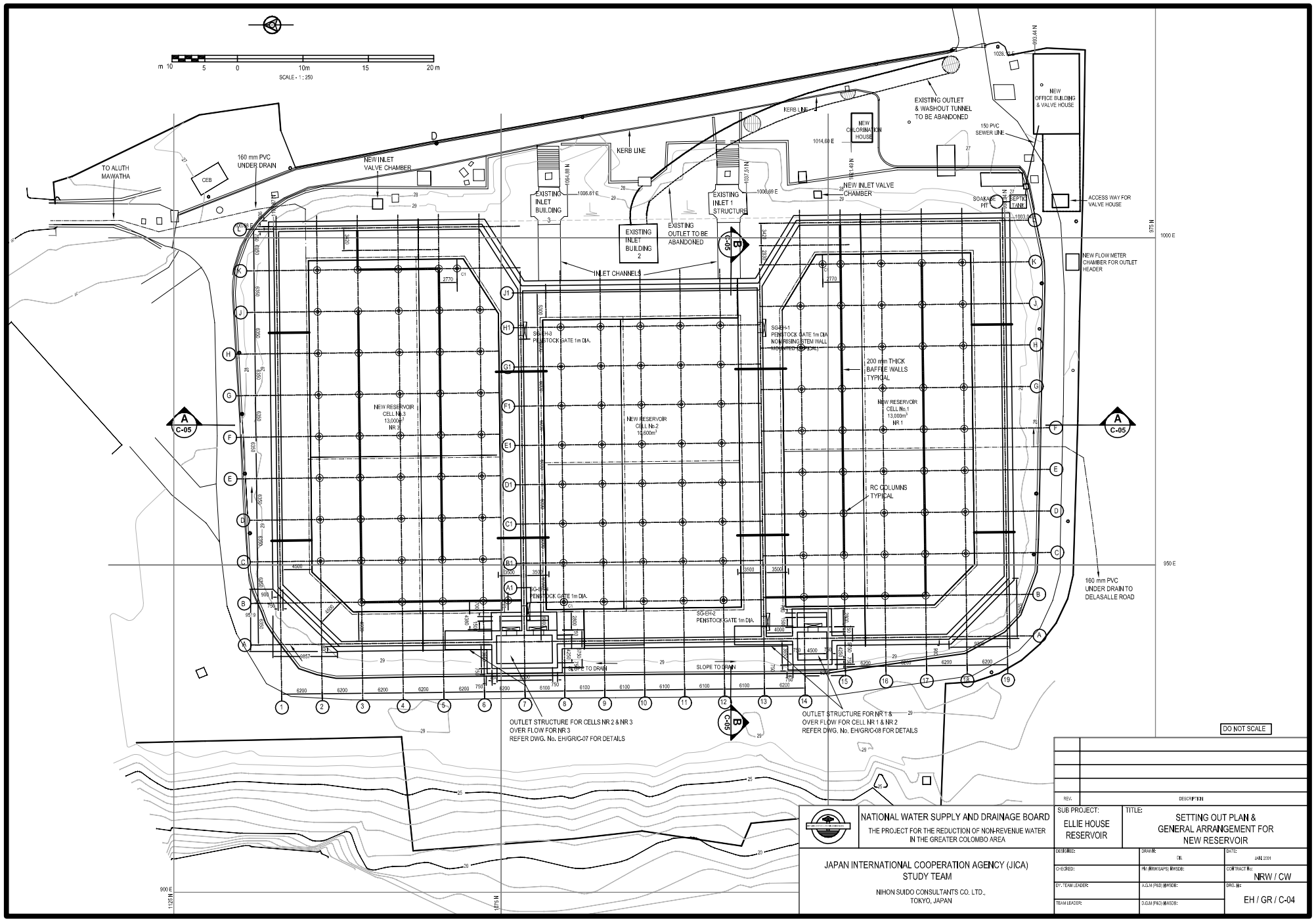
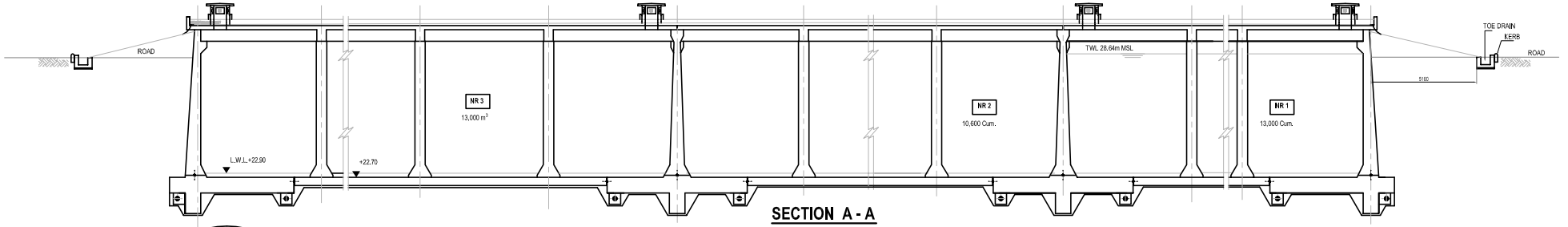

RB-1
SCALE 1:25
RB-1a
SCALE 1:25
RB-2
SCALE 1:25
RB-2a
SCALE 1:25
RB-3
SCALE 1:25
A SECTION
SCALE 1:20
B SECTION
SCALE 1:20
C SECTION
SCALE 1:20
E SECTION
SCALE 1:20
D SECTION
SCALE 1:20
F SECTION
SCALE 1:20
4 SECTION
SCALE 1:20
G SECTION
SCALE 1:20
DETAIL AT X
(TYPICAL)
SCALE 1:20
DETAIL AT Y
(TYPICAL)
SCALE 1:20
NOTE
FOR EXPANSION JOINTS REFER
DRG. No. STD/ST-03 TYPE V.
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
MALIGAKANDA
TITLE
REHABILITATION OF EXISTING RESERVOIR ROOF
R/F DETAILS OF BEAMS
JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)
STUDY TEAM
NIHON SUIDO CONSULTANTS CO. LTD.,
TOKYO, JAPAN
DESIGNED
DRAWN
ANOMA
DATE
JAN. 2001
CHECKED
CONTRACT No.
NRW/CW
DY. TEAM LEADER
DRG. No.
MK/RF/ST-07
TEAM LEADER

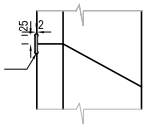

PIPING SCHEDULE - From Existing Reservoir
PIPING SCHEDULE - To 27" Existing St. Sebastian
PIPING SCHEDULE - To 39" Existing Kirkapone
PIPING SCHEDULE - From New Circular Tank
PIPING SCHEDULE - From New Circular Tank
PIPING SCHEDULE - To Mount Mary
PIPING SCHEDULE - From Existing Circular Tank
PIPING SCHEDULE - From 27" / 30" By Pass
PIPING SCHEDULE - To 10" Old Dematagoda
PIPING SCHEDULE - To New Dematagoda
PIPING SCHEDULE - To 39" Existing Colombo Fort
VALVE SCHEDULE
800 ND DI From 27" / 30" By-Pass
SAMPLE POINT REFER DRG. No. MKCHM-05 FOR CONNECTION DETAILS
CHLORINE RESIDUAL ANALYZER REFER MKCHM-05 FOR SCHEMATIC DIAGRAM
DRAIN REFER DETAILS STD/C-
PLAN VIEW
SECTION A - A
SECTION B - B
Reduced Drawing
Do Not Scale
NATIONAL WATER SUPPLY AND DRAINAGE BOARD
THE PROJECT FOR REDUCTION OF NON-REVENUE WATER IN THE GREATER COLOMBO AREA
SUB PROJECT: MALIGAKANDA
TITLE: MALIGAKANDA NEW RESERVIOR ARRANGEMENT OF VALVE HOUSE
JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)
STUDY TEAM
NIHON SUIDO CONSULTANTS CO. LTD., TOKYO, JAPAN
NRW / CW
MK / GR / YP-03


SCALE - 1 : 250
TO ALUTH MAWATHA
160 mm PVC UNDER DRAIN
CEB
NEW INLET VALVE CHAMBER
KERB LINE
EXISTING INLET BUILDING 3
EXISTING INLET BUILDING 2
EXISTING INLET 1 STRUCTURE
EXISTING OUTLET TO BE ABANDONED
INLET CHANNELS
NEW INLET VALVE CHAMBER
EXISTING OUTLET & WASHOUT TUNNEL TO BE ABANDONED
NEW CHLORINATION HOUSE
NEW OFFICE BUILDING & VALVE HOUSE
150 PVC SEWER LINE
SOAKAGE PIT
SEPTIC TANK
ACCESS WAY FOR VALVE HOUSE
NEW FLOW METER CHAMBER FOR OUTLET HEADER
SG-EH-3 PENSTOCK GATE 1m DIA.
SG-EH-1 PENSTOCK GATE 1m DIA NON RISING STEM WALL MOUNTED (TYPICAL)
200 mm THICK BAFFLE WALLS TYPICAL
NEW RESERVOIR CELL No.3 13,000m³ NR 3
NEW RESERVOIR CELL No.2 13,600m³
NEW RESERVOIR CELL No.1 13,000m³ NR 1
RC COLUMNS TYPICAL
SG-EH-4 PENSTOCK GATE 1m DIA.
SG-EH-2 PENSTOCK GATE 1m DIA.
SLOPE TO DRAIN
160 mm PVC UNDER DRAIN TO DELASALLE ROAD
OUTLET STRUCTURE FOR CELLS NR 2 & NR 3 OVER FLOW FOR NR 3 REFER DWG. No. EH/GR/C-07 FOR DETAILS
OUTLET STRUCTURE FOR NR 1 & OVER FLOW FOR CELL NR 1 & NR 2 REFER DWG. No. EH/GR/C-08 FOR DETAILS
A C-05
B C-05
DO NOT SCALE
REV.
DESCRIPTION
NATIONAL WATER SUPPLY AND DRAINAGE BOARD
THE PROJECT FOR THE REDUCTION OF NON-REVENUE WATER IN THE GREATER COLOMBO AREA
SUB PROJECT: ELLIE HOUSE RESERVOIR
TITLE: SETTING OUT PLAN & GENERAL ARRANGEMENT FOR NEW RESERVOIR
JAPAN INTERNATIONAL COOPERATION AGENCY (JICA) STUDY TEAM
NIHON SUIDO CONSULTANTS CO. LTD., TOKYO, JAPAN
DESIGNED:
DRAWN: DR.
DATE: JAN. 2011
CHECKED:
PM (NWSDB):
CONTRACT No: NRW / CW
DY. TEAM LEADER:
A.D.M (P&D) NWSDB:
DRG. No: EH / GR / C-04
TEAM LEADER:
D.G.M (P&D) NWSDB:



SECTION A - A

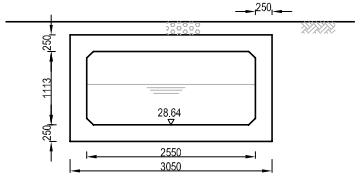
SCALE 1:100



DETAIL "A"

SECTION B - B - INLET STRUCTURE

SCALE 1:50



SECTION C - C - INLET CHANNEL

SCALE 1:50

DO NOT SCALE

REV.	DESCRIPTION

NATIONAL WATER SUPPLY AND DRAINAGE BOARD

THE PROJECT FOR THE REDUCTION OF NON-REVENUE WATER IN THE GREATER COLOMBO AREA

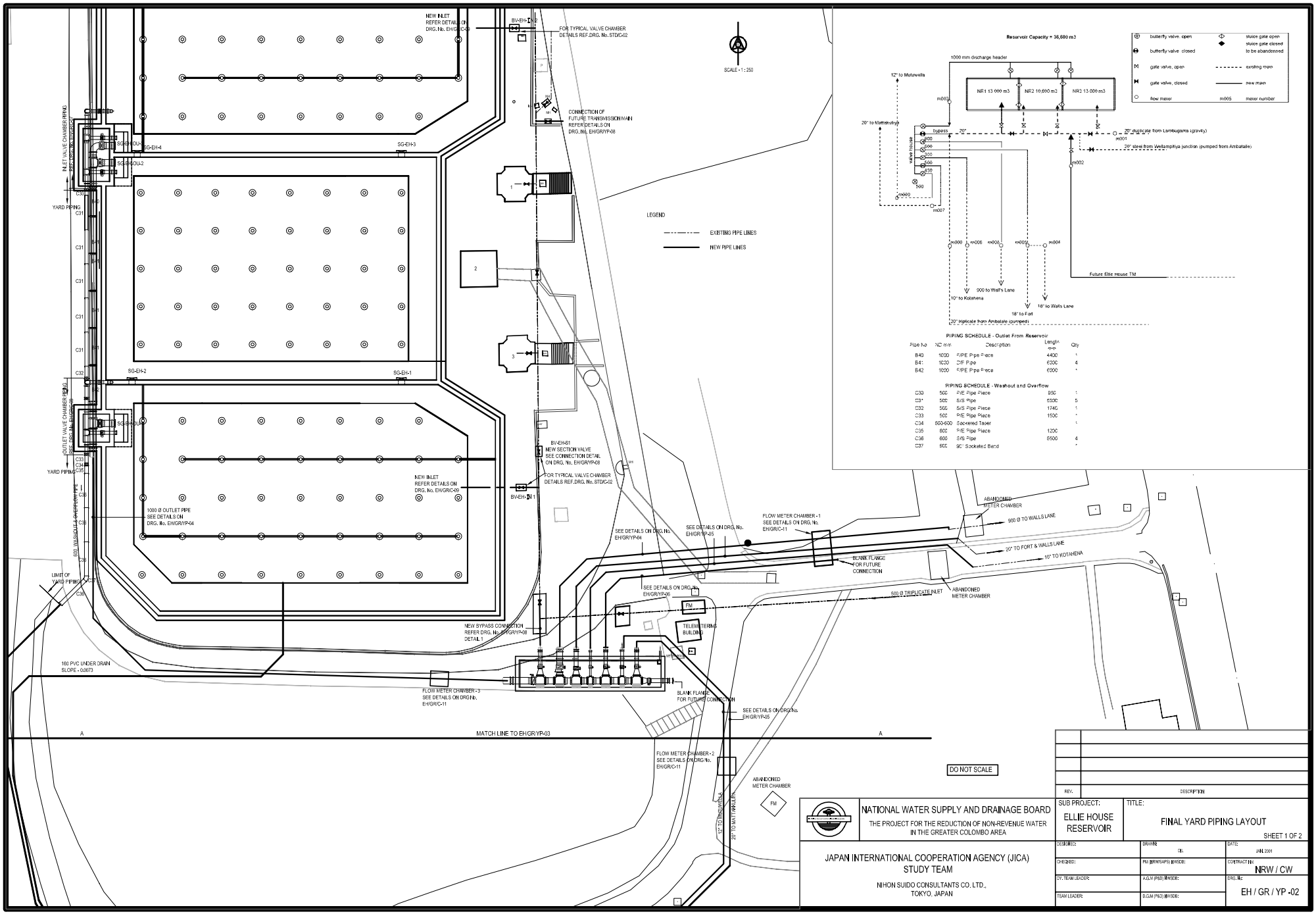
SUB PROJECT: ELLIE HOUSE RESERVOIR

TITLE: GENERAL ARRANGEMENT NEW RESERVOIR SECTIONAL DETAILS

JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)
STUDY TEAM

NIHON SUIDO CONSULTANTS CO. LTD.,
TOKYO, JAPAN

DESIGNED:	DRAWN: DR.	DATE: JAN. 2001
CHECKED:	PM (NWSDB):	CONTRACT No: NRW / CW
DY. TEAM LEADER:	A.D.M (P&D) NWSDB:	DRG. No: EH / GR / C-05
TEAM LEADER:	D.G.M (P&D) NWSDB:	


Reservoir Capacity = 36,600 m3
1000 mm discharge header
12" to Mutuwella
NR1 13 000 m3
NR2 10,600 m3
NR3 13 000 m3
20" to Mattakuliya
bypass
20" duplicate from Lambugama (gravity)
20" steel from Wellampitiya junction (pumped from Ambatale)
valve house
Future Elie House TM
900 to Walls Lane
10" to Kotahena
18" to Walls Lane
18" to Fort
20" Inplicate from Ambatale (pumped)
butterfly valve, open
butterfly valve closed
gate valve, open
gate valve, closed
flow meter
sluice gate open
sluice gate closed to be abandonned
existing main
new main
meter number
PIPING SCHEDULE - Outlet From Reservoir
Pipe No
NO mm
Description
Length mm
Qty
B40 1000 F/PE Pipe Piece 4400 1
B41 1000 D/F Pipe 6200 4
B42 1000 F/PE Pipe Piece 6000 1
PIPING SCHEDULE - Washout and Overflow
C30 500 P/E Pipe Piece 950 1
C31 500 S/S Pipe 6500 5
C32 500 S/S Pipe Piece 1740 1
C33 500 P/E Pipe Piece 1500 1
C34 600-500 Socketed Taper 1
C35 600 P/E Pipe Piece 1200 1
C36 600 S/S Pipe 6500 4
C37 600 90° Socketed Bend 1
SCALE - 1 : 250
LEGEND
EXISTING PIPE LINES
NEW PIPE LINES
NEW INLET REFER DETAILS ON DRG. No. EH/GR/C-09
FOR TYPICAL VALVE CHAMBER DETAILS REF.DRG. No. STD/C-02
CONNECTION OF FUTURE TRANSMISSION MAIN REFER DETAILS ON DRG. No. EH/GR/YP-08
SG-EH-1
SG-EH-2
SG-EH-3
SG-EH-4
SG-EH-OUL-1
SG-EH-OUL-2
SG-EH-OUL-3
SG-EH-OUL-4
INLET VALVE CHAMBER RING REF. DRG. No. EH/GR/C-09
OUTLET VALVE CHAMBER RING REF. DRG. No. EH/GR/C-09
YARD PIPING
BV-EH-01
BV-EH-02
BV-EH-S1 NEW SECTION VALVE SEE CONNECTION DETAIL ON DRG. No. EH/GR/YP-08
1000 Ø OUTLET PIPE SEE DETAILS ON DRG. No. EH/GR/YP-04
900 WASHOUT & OVERFLOW PIPE
LIMIT OF YARD PIPING
160 PVC UNDER DRAIN SLOPE - 0.0073
SEE DETAILS ON DRG.No. EH/GR/YP-04
SEE DETAILS ON DRG.No. EH/GR/YP-05
FLOW METER CHAMBER -1 SEE DETAILS ON DRG. No. EH/GR/C-11
BLANK FLANGE FOR FUTURE CONNECTION
ABANDONED METER CHAMBER
900 Ø TO WALLS LANE
20" TO FORT & WALLS LANE
10" TO KOTAHENA
500 Ø TRIPLICATE INLET
SEE DETAILS ON DRG.No. EH/GR/YP-06
NEW BYPASS CONNECTION REFER DRG. No. EH/GR/YP-08 DETAIL 1
TELEMETERING BUILDING
FM
FLOW METER CHAMBER - 3 SEE DETAILS ON DRG No. EH/GR/C-11
BLANK FLANGE FOR FUTURE CONNECTION
SEE DETAILS ON DRG No. EH/GR/YP-05
MATCH LINE TO EH/GR/YP-03
A
A
FLOW METER CHAMBER - 2 SEE DETAILS ON DRG No. EH/GR/C-11
ABANDONED METER CHAMBER
FM
12" TO MUTUWELLA
20" TO MATTAKULIYA
DO NOT SCALE
REV.
DESCRIPTION
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
SUB PROJECT: ELLIE HOUSE RESERVOIR
TITLE: FINAL YARD PIPING LAYOUT
SHEET 1 OF 2
DESIGNED:
DRAWN: DIL
DATE: JAN 2001
CHECKED:
PM/ (NRW/SAPS) INSIDE:
CONTRACT No: NRW / CW
DY. TEAM LEADER:
A.D.M (P&D) INSIDE:
DRG. No: EH / GR / YP -02
TEAM LEADER:
D.D.M (P&D) INSIDE:

CHAPTER 3

3 WATER SUPPLY ENHANCEMENT IN KOTIKAWATTE AND MULLERIYAWA AREA

3.1 BACKGROUND

The scope of JBIC loan for this project component was determined based on the improvement plan proposed by World Bank Report 1994. The report proposed as follows:

- Water required for the improvement be taken from the Ambatale-Jubilee transmission main by branching off a new transmission main.
- A new ground reservoir, a pumping station and a water tower be constructed at the Mulleriyawa Mental Hospital area in two phases to improve water supply in the Mulleriyawa area whereas the existing Gothatuwa water tower be utilized to supply part of the Gothatuwa town.

This plan was not implemented except for some distribution reinforcements in 1995 and ad-hoc additions of distribution mains.

The following facilities have been included in the scope of JBIC loan based on the World Bank proposal.

- Transmission Main (length: 2,400 m, diameter 500 mm)
- Distribution Mains (length: 4,710 m, diameter 75 to 150 mm)
- Mulleriyawa ground reservoir (2,000 m3)
- Mulleriyawa water tower (1,500 m3)
- Gothatuwa pump station (1.5 m3/min. x 27 m)
- Mulleriyawa pump station (9 m3/min. x 40 m)

In 1999, NWSDB prepared a revised improvement plan to directly pump water from Ambatale WTP to the Mulleriyawa area while utilising the existing Gothatuwa Tower to supply part of the Gothatuwa Town as recommended by World Bank.

The scope of JBIC loan was clarified during the visit of JICA S/W mission in June 1999 in that NWSDB explained that review of the World Bank proposal was necessary to conform best water supply enhancement plan.

3.2 REVIEW OF WATER SUPPLY ENHANCEMENT PLAN

In March 2000, the study team conducted an assessment of the existing Ambatale-Jubilee

transmission main and concluded that it had no adequate capacity to cater for additional water demand in the Kotikawatte and Mulleriyawa area. Based on the assessment, water for improvement was decided to be taken directly from the Ambatale WTP by pumping.

NWSDB indicated the study team that it had a plan to construct a new ground reservoir at Kolonnawa to supply mainly CMC, including housing developments at Sahaspura (20,000 housing units) and Minikelanipura (6,000 housing units). NWSDB requested to consider pumping to the Kotikawatte-Mulleriyawa area and to the proposed Kolonnawa ground reservoir from a common pumping station and through a common transmission main thereby reducing the number of pumping stations at Ambatale and the number of transmission mains originating from the plant. NWSDB has provided the following details of the plan.

Rate of water transmission (design demand)	-	29,575 m^3/d (6.5 mgd)
Diameter of transmission main	-	600 mm
TWL of Reservoir	-	25.2 m MSL
BWL of Reservoir	-	15.75 m MSL
Reservoir capacity	-	11,250 m^3

Making provisions for this NWSDB plan was agreed in the amended scope of work agreed between NWSDB, JICA and JBIC on August 4, 2000. The amended scope of work also increased the total length of distribution mains to be installed under the project from 4,710 m to 40,360 m.

3.2.1 Water Demand

Water demand estimated by the SAPROF study was updated by the study team by reflecting the increase in population, existing water supply and expected time when the improvements under this project actually benefit the customers. The water demand estimate prepared by NWSDB in 1998 based on streetwise surveys was also reviewed and compared with the updated SAPROF estimate. These two estimates were discussed with NWSDB and agreed that the following water demands be used for preparation of the water enhancement plan.

Existing consumption (year 2000)	-	11,628 m^3/d
Existing supply (year 2000)	-	17,900 m^3/d
Average daily water demand (year 2020	-	28,100 m^3/d
Maximum daily water demand (year 2020)	-	30,900 m^3/d

3.2.2 Land Availability

During the Stage II work in Sri Lanka, 3 sites were investigated as the possible sites for construction of ground reservoir, pumping station and water tower. They are "Gothatuwa site", "Mulleriyawa site" and "Fever Hospital site". However, at the "Mulleriyawa site", where proposed facilities had originally been planned to be sited within the Angoda Mental (Teaching) Hospital premises under the World Bank proposal, new hospital wards have already been constructed and no sufficient space is available for construction of proposed facilities. "Fever Hospital site" was eliminated due to the poor accessibility to the site and health concerns.

Finally, "Gothatuwa site" was selected as the site for construction of proposed facilities. The existing Gothatuwa Tower site has vacant land on southwest, south and west sides, which are currently owned by the Fever Hospital. The site is around 24 m above MSL, enabling the new water tower at this site to supply the entire Kotikawatte and Mulleriyawa area.

NWSDB indicated that the proposed pumping facility for Kotikawatte and Mulleriyawa area could be constructed at a plot of land immediately adjacent to the new Ambatale-Ellie House transmission pumping station. This pumping station had already been under construction when this Study started in January 2000 and has almost been competed to date.

3.2.3 Proposed System

Based on the estimated water demand, locations of the proposed facilities, and the results of hydraulic simulation analyses, the following facilities have been proposed. Drawing KMU/PS/G-02 shows the outline of the proposed system.

- Gothatuwa-Kolonnawa Pump House (At Ambatale WTP)
- Gothatuwa Transmission Main (From Ambatale WTP to Gothatuwa Ground Reservoir)
- Gothatuwa Ground Reservoir and Pump House (At Gothatuwa site)
- Gothatuwa New Water Tower (At Gothatuwa site)
- Distribution mains (Throughout Kotikawatte and Mulleriyawa area)

3.3 GOTHATUWA-KOLONNAWA PUMP HOUSE

The pump house is designed to transmit treated water from Ambatale treatment plant to service reservoirs at Gothatuwa (this project) and at Kolonnawa (in future). Operating characteristics are as follows:

Volume of sump : 100 m^3

High water level	:	+12.38 m MSL
Low Water Level	:	+ 9.28 m MSL
Floor level sump	:	+ 7.30 m MSL
Floor level pump house	:	+ 8.0 m MSL
Ground elevation	:	+ 7.5 m MSL

The ultimate number of pumps units is 3 x 14 m^3/min plus 1 stand-by. Initially (year 2005) three pumps will be installed (2 duty + 1 standby). The pumps are double suction type with horizontal split casing and will have trimmed impellers to give 11.85 m^3/min each thereby matching the range in flow from 2005 to 2010. By 2010 it will be necessary to install one additional pump (3 duty pumps) to meet maximum day flows bringing the total number of pumps to 4. Timing for the installation of a fourth pump will depend on growth and trends in water use. Between the year 2010 and 2015 it will be necessary to change the impellers to 14 m^3/min in all pumps to obtain maximum day flows.

Pump motors are rated 165 kW, 3 phase 415 volts. Power supply is provided from an existing substation located in the neighboring Ellie House Pump house.

The site plan for Gothatuwa-Kolonnawa Pump House is presented in drawing KMU/PS/C-01. The general layout plan for the pump house is presented in drawing KMU/PS/C-04 with a sectional view presented in drawing KMU/PS/C-08. The upper level (+11.25 m MSL) consists of a staging area at the entrance for removing pumps and a floor area for electrical switchgear and motor controls. The pumps are located at the lower floor level (+ 8.0 m MSL).

Two 15 m^3 surge tanks are provided to attenuate the effects of pressure transients in the transmission main. The tanks are physically quite large and have been located outdoors to simplify access for maintenance.

Flow control at the transmission end (Ambatale) is not possible since the transmission main branches into two sections with different operating requirements and head loss characteristics. Therefore flow control is placed at each reservoir to control the amount of water received.

Pump building is designed to be similar in appearance to the existing pump house next to it. The building is reinforced concrete frame. The proposed pump house has overall dimension of 15 m x 15 m.

3.4 GOTHATUWA TRANSMISSION MAIN

Gothatuwa Transmission main is to pump water from Gothatuwa-Kolonnawa Pump House

located within Ambatale Water Treatment Plant premises to the Gothatuwa Ground Reservoir to be constructed next to the existing Gothatuwa water tower along the Fever Hospital Road.

The transmission main (ϕ800 mm DI) will exit through the gate of New Ambatale Plant taking an anti-clockwise route around the new treatment plant facilities. It will be laid along the same route as existing Dehiwela main (ϕ1,000 mm CI) and existing Kolonnawa main (ϕ600 mm DI) for approximately 0.6 km and thereafter up to Petiagoda Lane with the existing Kolonnawa main. At the Hospital Junction (junction of Himbutana Road and Angoda Road), it will branch to Gothatuwa Ground Reservoir site (ϕ500 mm DI) and to New Kolonnawa Reservoir site (ϕ600 mm DI). A blank-flanged tee with valve will be provided at this junction for future laying of pipeline to New Kolonnawa Reservoir site by NWSDB.

Major lengths are as follows:

Length of 800 mm transmission main, from Gothatuwa-Kolonnawa Pump house to Hospital Junction	= 2,541 m
Length of 500 mm transmission main, from Hospital Junction to Gothatuwa Ground Reservoir	= 1,821 m
Length of 600 mm transmission main, from Hospital Junction to Kolonnawa New reservoir	= 6,207 m

Ductile iron pipe with cement-mortar lining will be used which is the economical material for this range of diameters.

3.5 GOTHATUWA GROUND RESERVOIR AND PUMP HOUSE

The reservoir receives treated water from Ambatale treatment plant. The pump house is designed to lift water from the service reservoir to the elevated water tower. The reservoir and tower combine to provide storage to balance the fluctuation in demands in the Kotikawatte-Mulleriyawa distribution area. Operating characteristics of the reservoir are as follows:

Volume	:	4,400 m^3
High water level	:	+26.25 m MSL
Low Water Level	:	+ 21.0 m MSL
Floor level sump	:	+ 19.15 m MSL
Floor level pump house	:	+ 20.0 m MSL
Ground elevation variable	:	+ 23.0 to 25.0 m MSL

The reservoir provides 3.4 hours of storage at maximum day demand in the year 2020.

The ultimate number of pumps units is 2 x 18 m^3/min plus 1 stand-by. The pumps are double suction type with horizontal split casing. Pump motors are rated 130 kW, 3 phase 415 volts. Power supply is provided by LECO from a 400 kVA pole mounted transformer located on site. Initially (year 2005) two pumps will be installed (1 duty + 1 standby). By 2010 it will be necessary to install one additional pump (2 duty pumps) to meet maximum day flows bringing the total number of pumps to 3. Timing for the installation of a third pump will depend on growth and trends in water use.

The site plan for Gothatuwa Pump House and ground reservoir is presented in drawing KMU/GR/G-02. The site is near the existing water tower in Gothatuwa adjoining the Fever Hospital Boundary. The site is small and physically constrains the maximum plan dimensions of the reservoir.

The reservoir is rectangular and has a plan dimension of 26.6 m x 32.6 m with a water height of 5.25 m. The pump house is built attached to the reservoir and has a plan dimension of 10.7 m x 19.5 m. The upper level (+ 26.25 m MSL) consists of a staging area at the entrance for removing pumps and a floor area for electrical switchgear and motor controls. The pumps are located at the lower floor level (+ 19.5 m MSL). The reservoir is divided into two equal cells. A sump common to both cells is provided for pump intakes. Sluice gates are provided between each cell and the common sump to isolate one half of the reservoir for maintenance. Internal baffle walls are provided to improve circulation within the reservoir.

A 375 kVA diesel generator is provided to operate 1 duty pumps in the event of a power failure and miscellaneous station loads. The diesel generator is oversized to meet the inrush current when the pump starts. The diesel generator starts automatically and has a fuel supply of 8 hours.

Pumping from Ambatale needs to be a continuous operation with as few stop start cycles as possible. For this reason, a motor operated flow control valve on the inlet side will be modulated by a flow meter to keep flow into the reservoir constant and match demand as closely as possible

3.6 GOTHATUWA NEW WATER TOWER

The water towers provided as additional storage and to maintain pressures in the distribution

lines.

Hydraulic characteristics of the new water tower are as follows:

Volume of clear well	:	1500 m^3
High water level	:	+47.5 m MSL
Low water level	:	+ 41.5 m MSL

Note: low water level is set to match the bottom of the existing 227 m^3 tower.

The tower will provide 1.15 hours of storage at maximum day demand in the year 2020. The existing 227 m^3 water tower increase storage to 1.34 hours.

The 1,500 m^3 water tower will be reinforced concrete of the same Intz-type design adopted by NWSDB in other locations. Ground elevations at the site vary from +24.38 m MSL to +23.38 m MSL. The foundation level is set at +22.25 m MSL at same elevation as the existing water tower. The cylindrical water tank has a conical bottom that will be supported on a circular reinforced concrete shaft bearing onto a raft foundation. The inlet and outlet piping will be accommodated within the circular shaft. A thin walled shaft will be provided in the center of the tank for service access.

The tower will be provided with internal lighting, lightning protection and aircraft obstruction warning light.

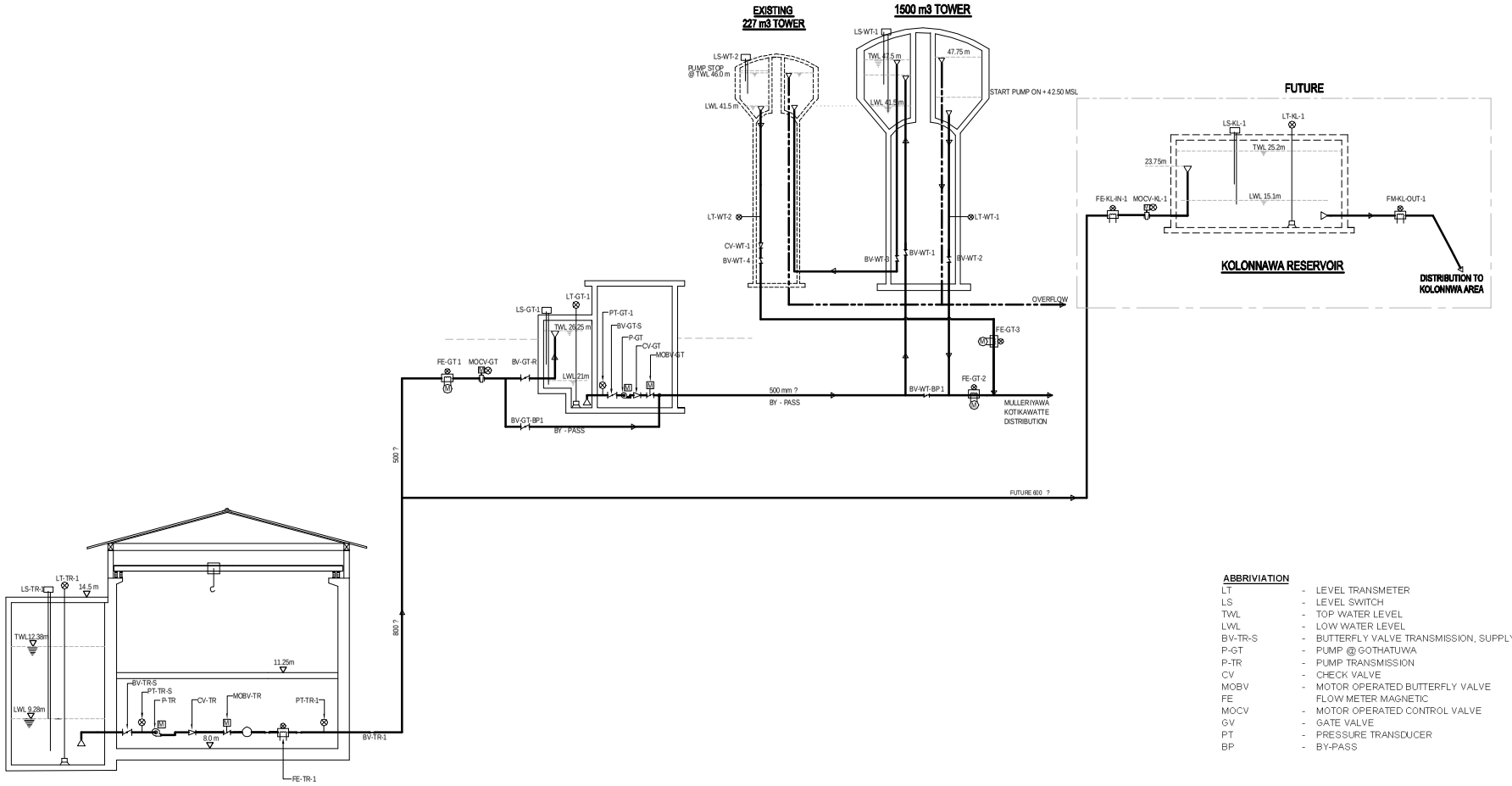
3.7 DISTRIBUTION MAINS

Pipeline routes required to meet water demand in year 2020 are determined based on hydraulic network analyses. The new pipelines will be connected to existing pipelines through interconnections to improve the existing system pressure.

Approximately 40 km of priority pipeline routes have been selected for construction under this project as shown below. Drawing KMU/DM/G-02 shows the locations of these priority distribution mains.

Diameter and Material	Required Length, m
500 mm DI	2,124
400 mm DI	1,764
300 mm DI	12,290
250 mm DI	213

Sub-total	16,391
225 mm PVC	9,904
160 mm PVC	3,932
110 mm PVC	9,486
Sub-total	23,322
Total	39,713



ABBRIVIATION

LT	-	LEVEL TRANSMETER
LS	-	LEVEL SWITCH
TWL	-	TOP WATER LEVEL
LWL	-	LOW WATER LEVEL
BV-TR-S	-	BUTTERFLY VALVE TRANSMISSION, SUPPLY
P-GT	-	PUMP @ GOTHATUWA
P-TR	-	PUMP TRANSMISSION
CV	-	CHECK VALVE
MOBV	-	MOTOR OPERATED BUTTERFLY VALVE
FE		FLOW METER MAGNETIC
MOCV	-	MOTOR OPERATED CONTROL VALVE
GV	-	GATE VALVE
PT	-	PRESSURE TRANSDUCER
BP	-	BY-PASS

KOLONNAWA - GOTHATUWA TRANSMISSION PUMP STATION AT AMBATALE

PUMP SPECIFICATION	GOTHATUWA - KOLONNAWA PUMP HOUSE		GOTHATUWA PUMP HOUSE	
	(this contract)	(future)	(this contract)	(future)
Total no. of pumps	3	4	2	3
Pump unit in operation	2	3	1	2
Pump unit on stand-by	1	1	1	1
Q (m^3) each	11.85	14	18	18
TDH (m) each	42	50	30	30
Motor Output (kw) each	165	165	130	130
Type of pump	double volute horizontal		double volute horizontal	

DO NOT SCALE

REV.	DESCRIPTION

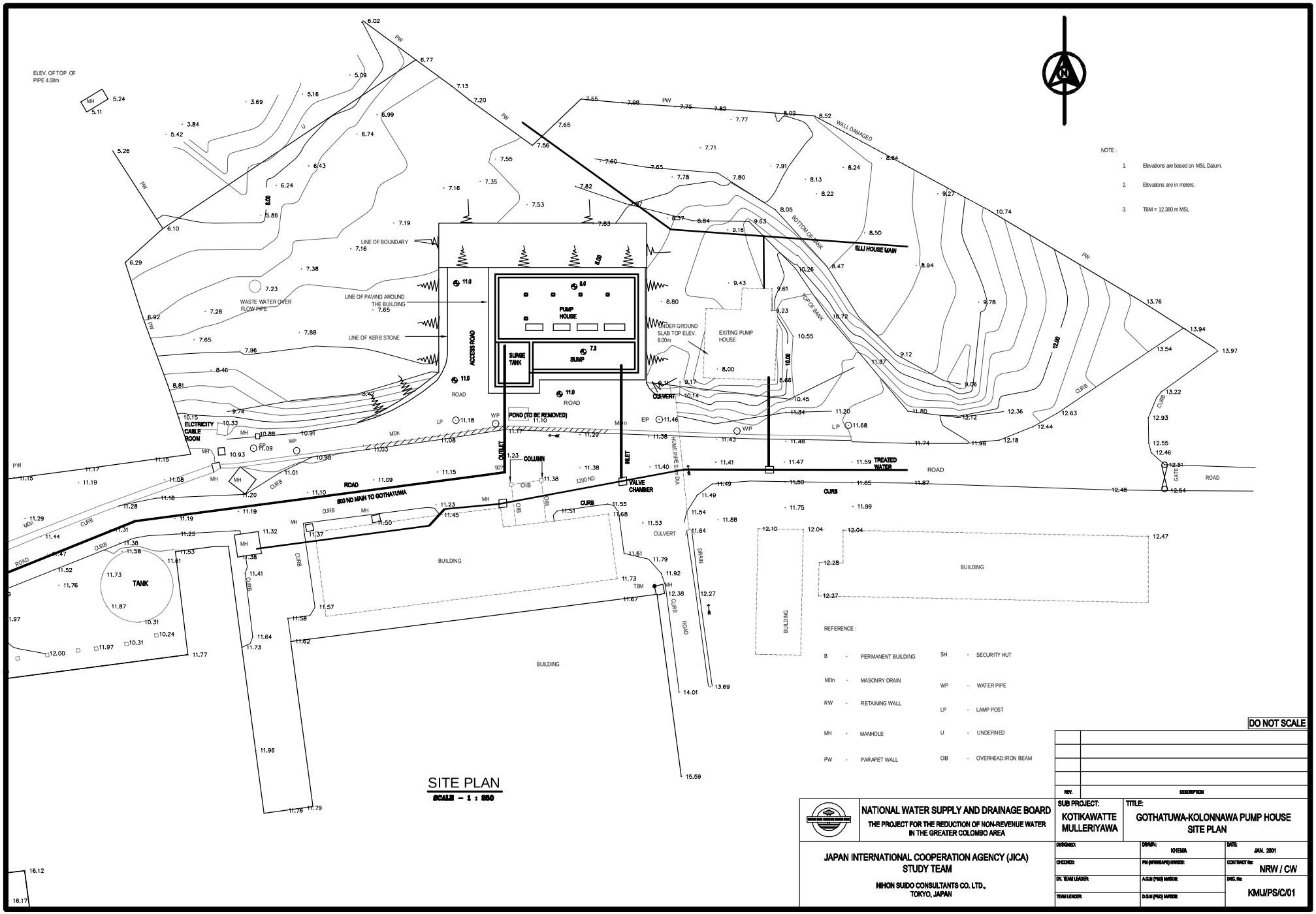
NATIONAL WATER SUPPLY AND DRAINAGE BOARD
THE PROJECT FOR THE REDUCTION OF NON-REVENUE WATER IN THE GREATER COLOMBO AREA

SUB PROJECT: KOTIKAWATTA MULLERIYAWA

TITLE: GOTHATUWA GROUND RESERVOIR & PUMP HOUSE SCHEMATIC FLOW DIAGRAM

JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)
STUDY TEAM
NIHON SUIDO CONSULTANTS CO. LTD.,
TOKYO, JAPAN

DESIGNED:	DRAWN: KHEMA	DATE: JAN. 2001
CHECKED:	PM (NSW/SAPS) MISSION:	CONTRACT No: NRW / CW
DY. TEAM LEADER:	A.G.M (P&D) MISSION:	DRG. No: KMU/PS/G-02
TEAM LEADER:	D.G.M (P&D) MISSION:	



NOTE :

1. Elevations are based on MSL Datum.
2. Elevations are in meters.
3. TBM = 12.380 m MSL

REFERENCE :

B	- PERMANENT BUILDING	SH	- SECURITY HUT
MDn	- MASONRY DRAIN	WP	- WATER PIPE
RW	- RETAINING WALL	LP	- LAMP POST
MH	- MANHOLE	U	- UNDEFINED
PW	- PARAPET WALL	OIB	- OVERHEAD IRON BEAM

SITE PLAN

SCALE – 1 : 250

DO NOT SCALE

REV.	DESCRIPTION

NATIONAL WATER SUPPLY AND DRAINAGE BOARD

THE PROJECT FOR THE REDUCTION OF NON-REVENUE WATER IN THE GREATER COLOMBO AREA

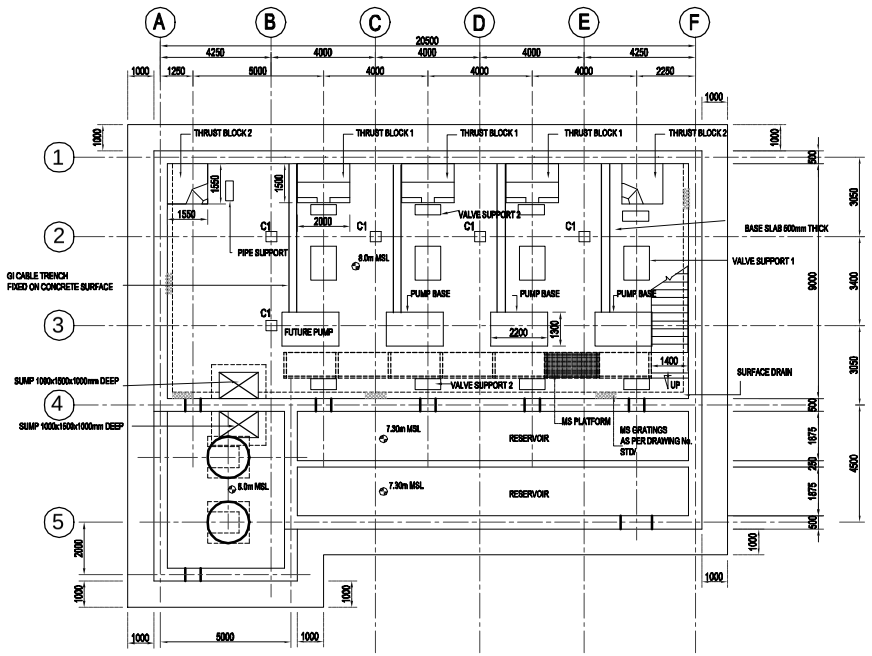
JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)
STUDY TEAM

NIHON SUIDO CONSULTANTS CO. LTD.,
TOKYO, JAPAN

SUB PROJECT: KOTIKAWATTE MULLERIYAWA

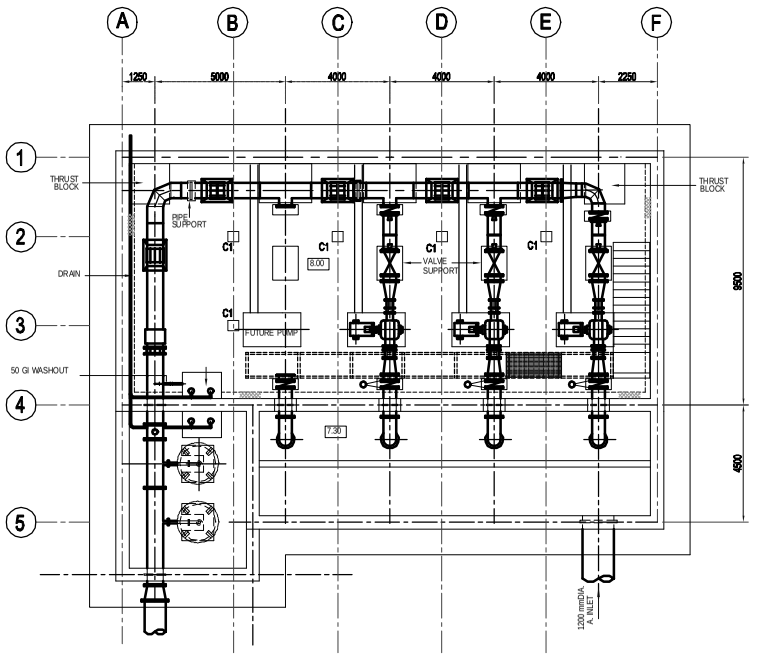
TITLE: GOTHATUWA-KOLONNAWA PUMP HOUSE SITE PLAN

DESIGNED:	DRAWN: KHEMA	DATE: JAN. 2001
CHECKED:	PM (NRW&WAPS) NAME&DR.	CONTRACT No: NRW / CW
DY. TEAM LEADER:	A.G.M (P&C) NAME&DR.	DRG. No: KMU/PS/C/01
TEAM LEADER:	D.G.M (P&C) NAME&DR.	



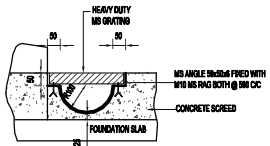
PLAN AT 8.00m MSL

SCALE - 1:100



GENERAL LAYOUT PLAN AT 8.00m MSL

SCALE - 1:100



DETAIL OF GUTTER DRAIN

SCALE 1 : 10

DO NOT SCALE

REV.	DESCRIPTION

NATIONAL WATER SUPPLY AND DRAINAGE BOARD

THE PROJECT FOR THE REDUCTION OF NON-REVENUE WATER IN THE GREATER COLOMBO AREA

SUB PROJECT: KOTIKAWATTE MULLERIYAWA

TITLE: GOTHATUWA-KOLONNAWA PUMP HOUSE GENERAL ARRANGEMENT OF PUMP HOUSE

JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)
STUDY TEAM

NIHON SUIDO CONSULTANTS CO. LTD., TOKYO, JAPAN

DESIGNED:	DRAWN: KHEMA	DATE: JAN. 2001
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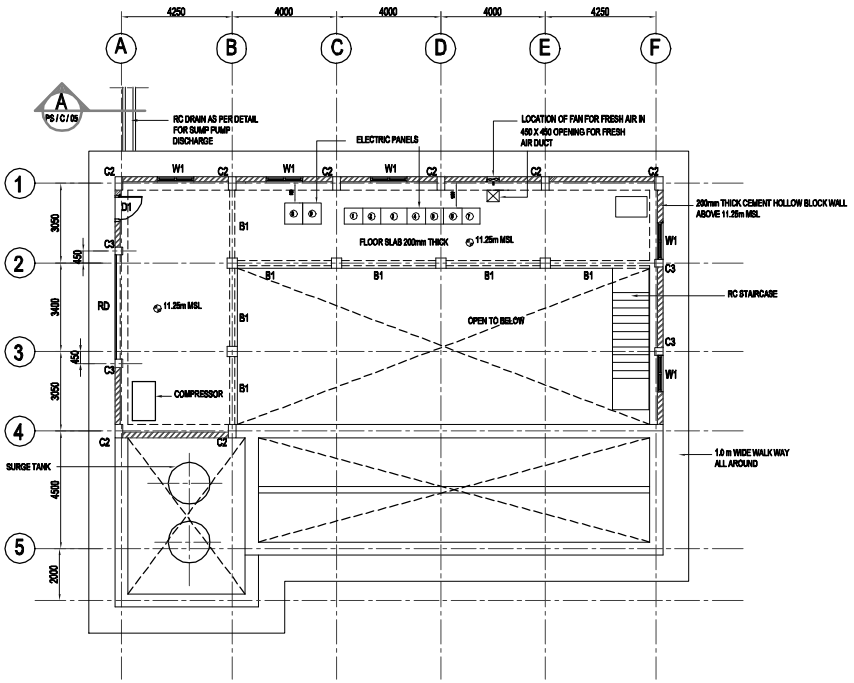
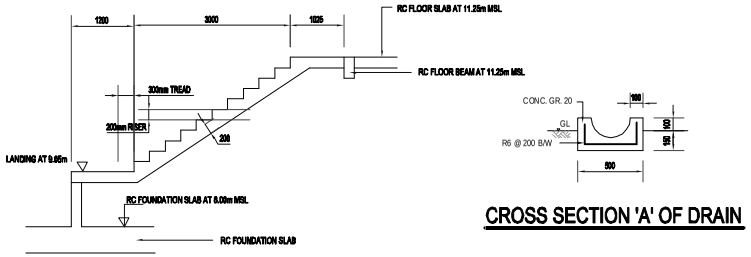
DY. TEAM LEADER:	A.D.M (P&D) NAME:	DRG. No: KMU/PS/C/04
TEAM LEADER:	D.G.M (P&D) NAME:	



PLAN AT 11.25m LEVEL

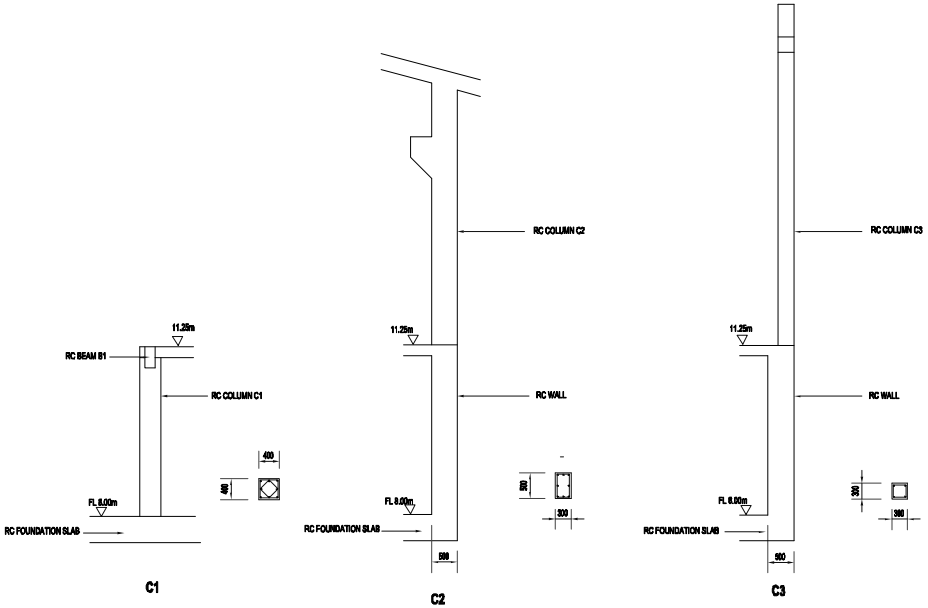
SCALE - 1:100



DETAIL OF RC STAIRCASE

SCALE - 1:50

CROSS SECTION 'A' OF DRAIN



DETAIL OF COLUMNS

SCALE - 1:50

SCHEDULE OF DOORS & WINDOWS

TYPE	SIZE IN mm		DESCRIPTION	QUANTITY
	WIDTH	HEIGHT		
D1	1000	2200	BRONZE ANODISED ALUMINUM DOOR WITH GLAZED PANELS	01
W1	1400	1800	BRONZE ANODISED ALUMINUM FRAMES & PANELS WITH GLASS	05
RD	4000	3000	ALUMINUM ROLLER DOOR	01

DO NOT SCALE

REV.	DESCRIPTION

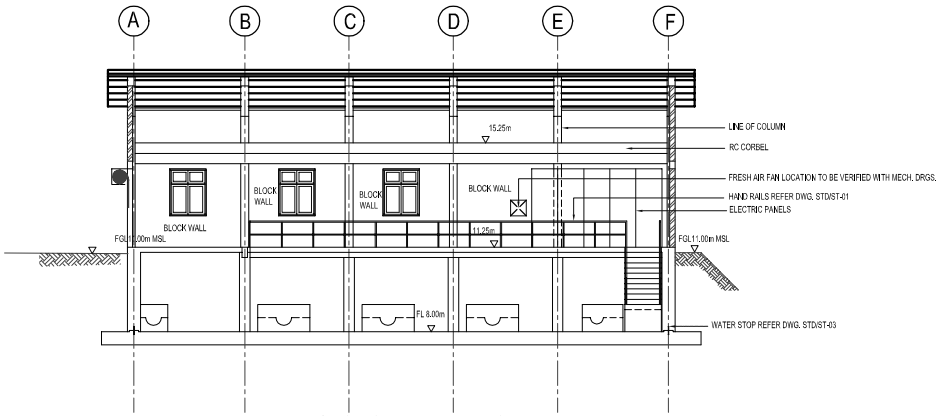
NATIONAL WATER SUPPLY AND DRAINAGE BOARD
THE PROJECT FOR THE REDUCTION OF NON-REVENUE WATER IN THE GREATER COLOMBO AREA

SUB PROJECT: KOTIKAWATTE MULLERIYAWA

TITLE: GOTHATUWA-KOLONNAWA PUMP HOUSE PLAN AT 11.25 MSL

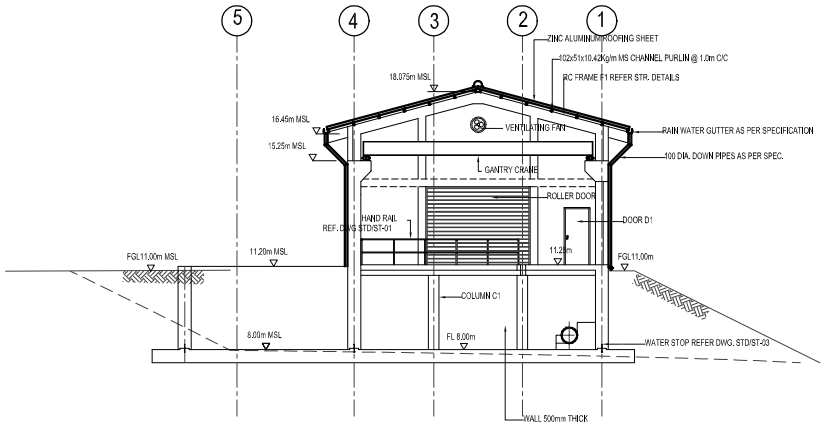
JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)
STUDY TEAM
NIHON SUIDO CONSULTANTS CO. LTD.,
TOKYO, JAPAN

DESIGNED:	DRAWN: K.HEMA	DATE: JAN. 2001
CHECKED:	PM (NIRWSAPD) NAME/DR:	CONTRACT No: NRW / CW
DY. TEAM LEADER:	A.G.M (P&D) NAME/DR:	DRG. No: KMU/PS/C/05
TEAM LEADER:	D.G.M (P&D) NAME/DR:	



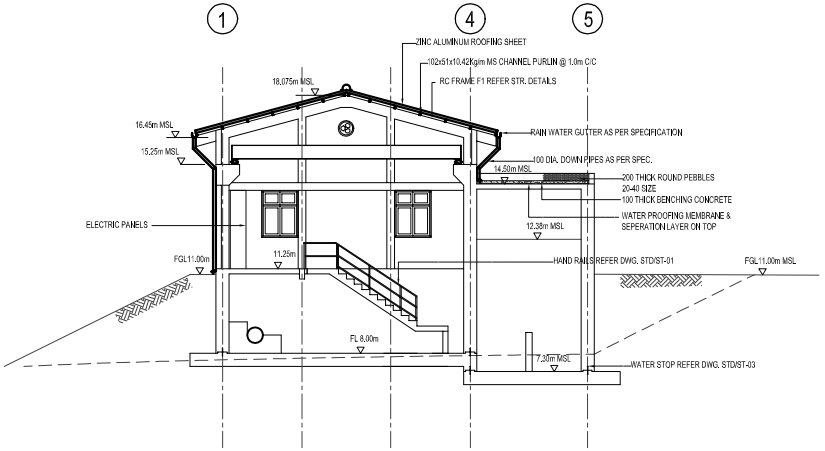
SECTIONAL ELEVATION 1

SCALE - 1:100



SECTIONAL ELEVATION 2

SCALE - 1:100



SECTIONAL ELEVATION 3

SCALE - 1:100

DO NOT SCALE

REV.	DESCRIPTION

NATIONAL WATER SUPPLY AND DRAINAGE BOARD

THE PROJECT FOR THE REDUCTION OF NON-REVENUE WATER IN THE GREATER COLOMBO AREA

SUB PROJECT: KOTIKAWATTE MULLERIYAWA

TITLE: GOTHATUWA - KOLONNAWA PUMP HOUSE SECTIONAL ELEVATIONS & DETAILS

JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)
STUDY TEAM
NIHON SUIDO CONSULTANTS CO. LTD.,
TOKYO, JAPAN

DESIGNED:	DRAWN: KHEMA	DATE: JAN. 2001
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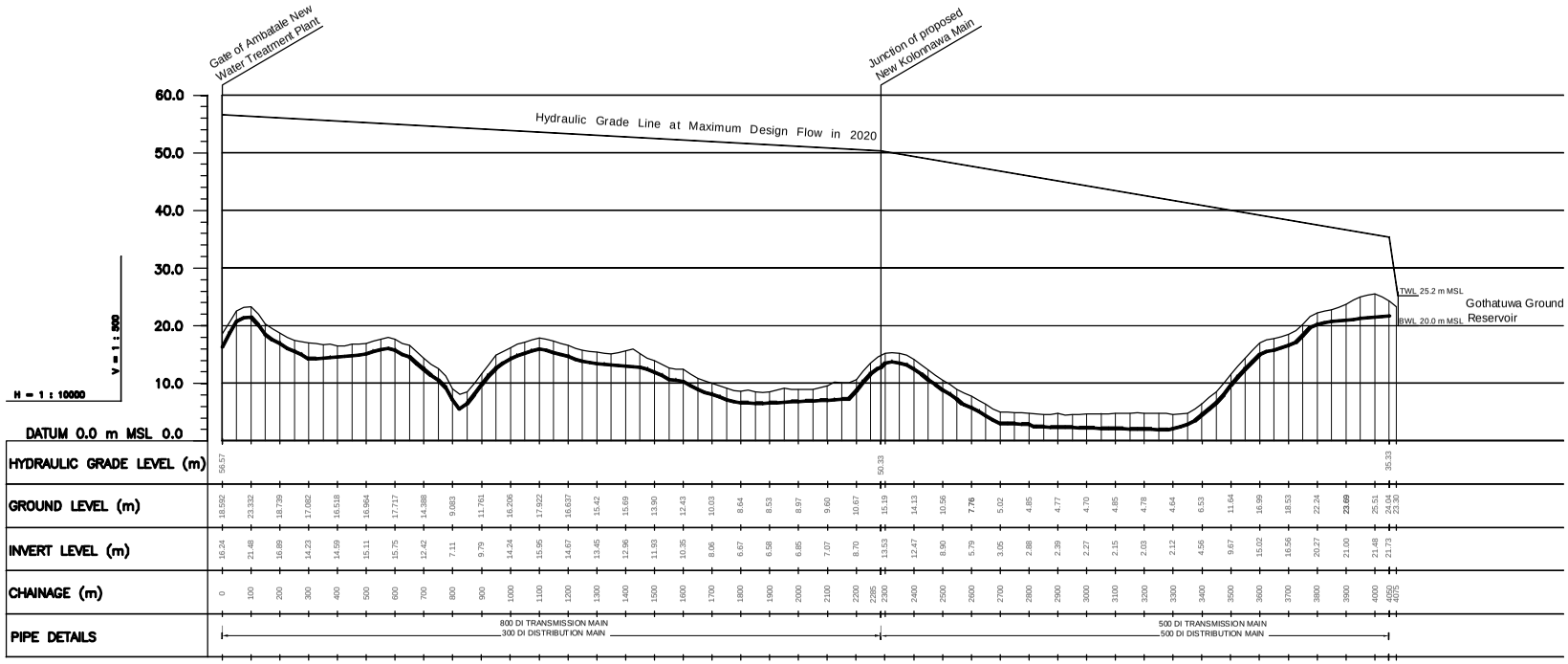
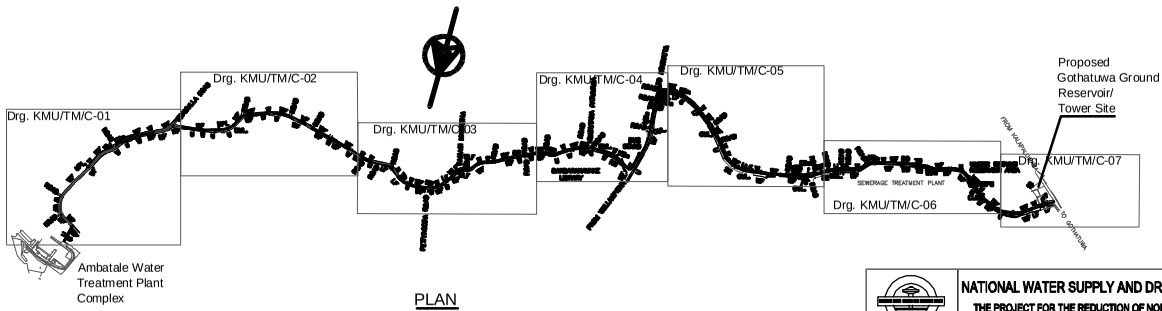
DY. TEAM LEADER:	A.G.M (P&D) NWSDB:	DRG. No: KMU/PS/C/08
TEAM LEADER:	D.G.M (P&D) NWSDB:	



LONGITUDINAL SECTION



PLAN

SCALE – 1 : 10000

DO NOT SCALE

REV.	DESCRIPTION

NATIONAL WATER SUPPLY AND DRAINAGE BOARD

THE PROJECT FOR THE REDUCTION OF NON-REVENUE WATER IN THE GREATER COLOMBO AREA

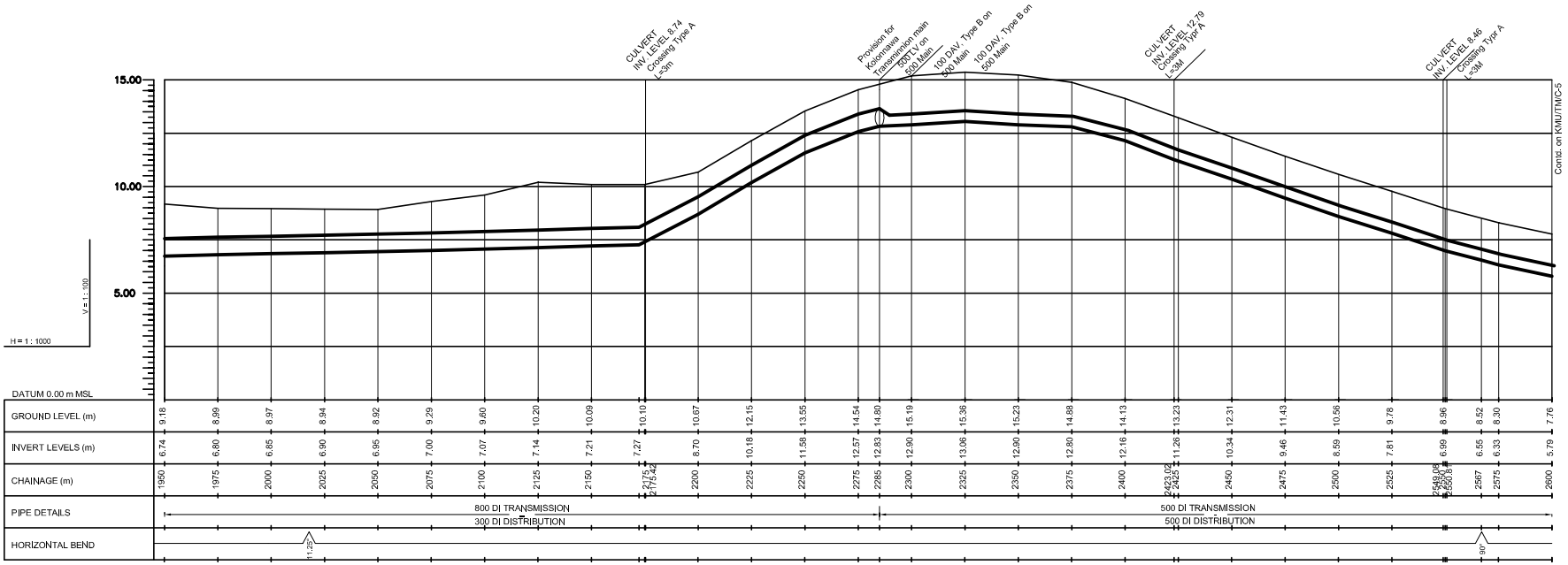
SUB PROJECT: KOTIKAWATTA MULLERIYAWA

TITLE: TRANSMISSION MAIN (WITH DISTRIBUTION MAIN) FROM AMBATALE WATER TREATMENT PLANT TO GOTHATUWA GROUND RESERVOIR - KEY MAP

JAPAN INTERNATIONAL COOPERATION AGENCY (JICA) STUDY TEAM

NIHON SUIDO CONSULTANTS CO. LTD., TOKYO, JAPAN

DESIGNED:	DRAWN: K.HEMA	DATE: JAN. 2001
CHECKED:	PM (KIRIWAPO) NAME:	CONTRACT No: NRW / CW
DY. TEAM LEADER:	A.G.M (P&D) NAME:	DRG. No: KMU / TM / G-1
TEAM LEADER:	D.G.M (P&D) NAME:	



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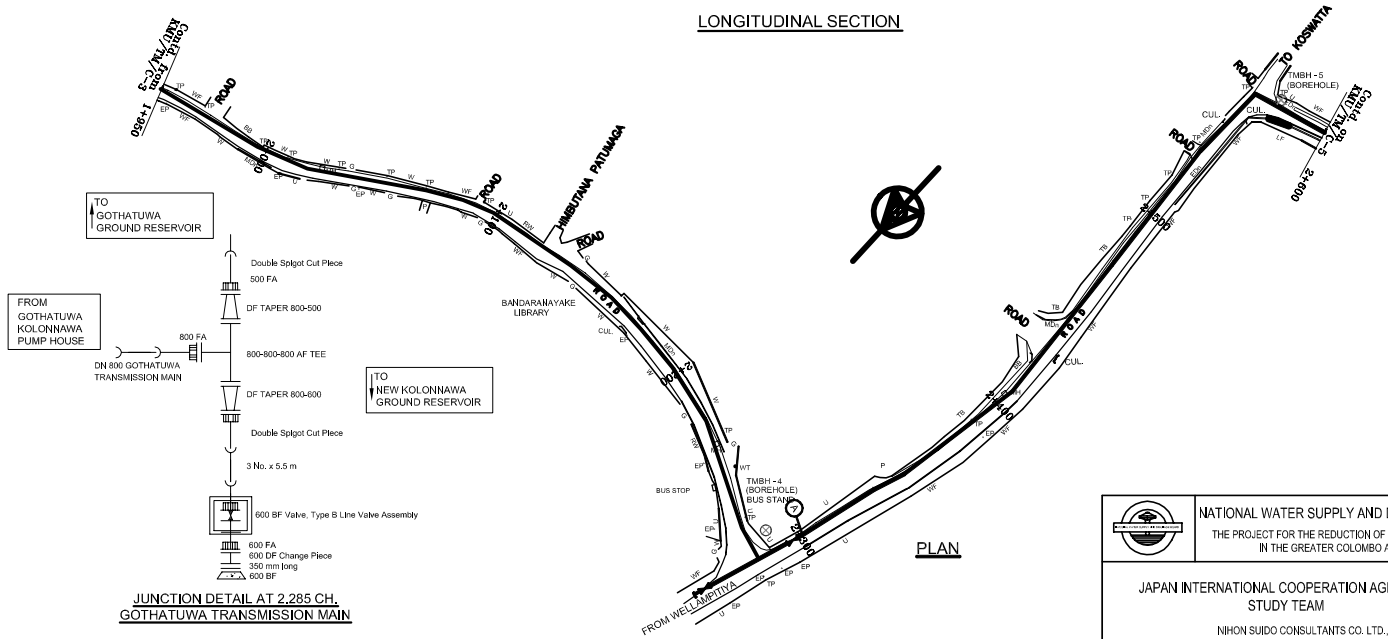


JUNCTION DETAIL AT 2.285 CH.
GOTHATUWA TRANSMISSION MAIN

PLAN

DO NOT SCALE

REV.	DESCRIPTION

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

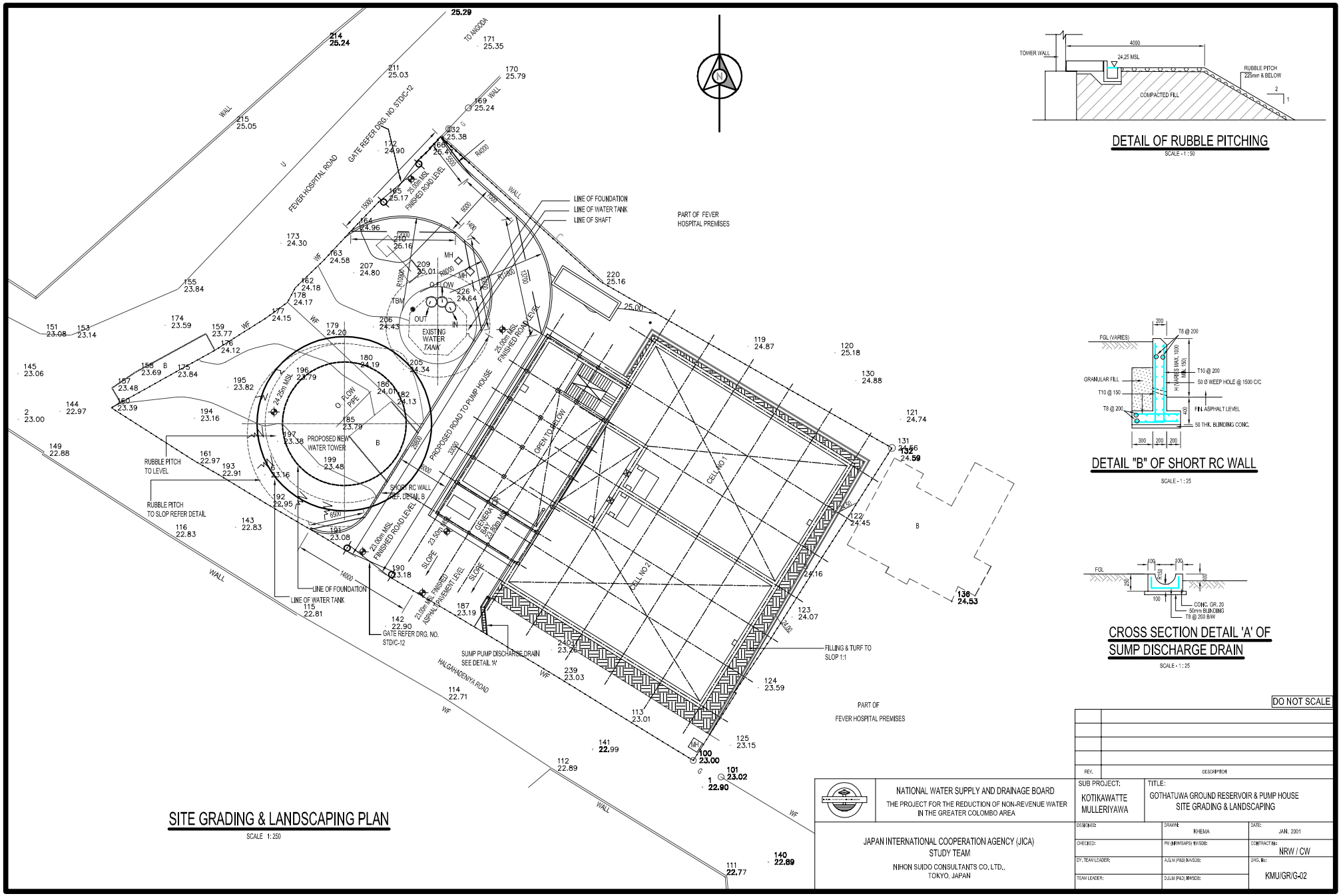
SUB PROJECT: KOTIKAWATTA MULLERIYAWA

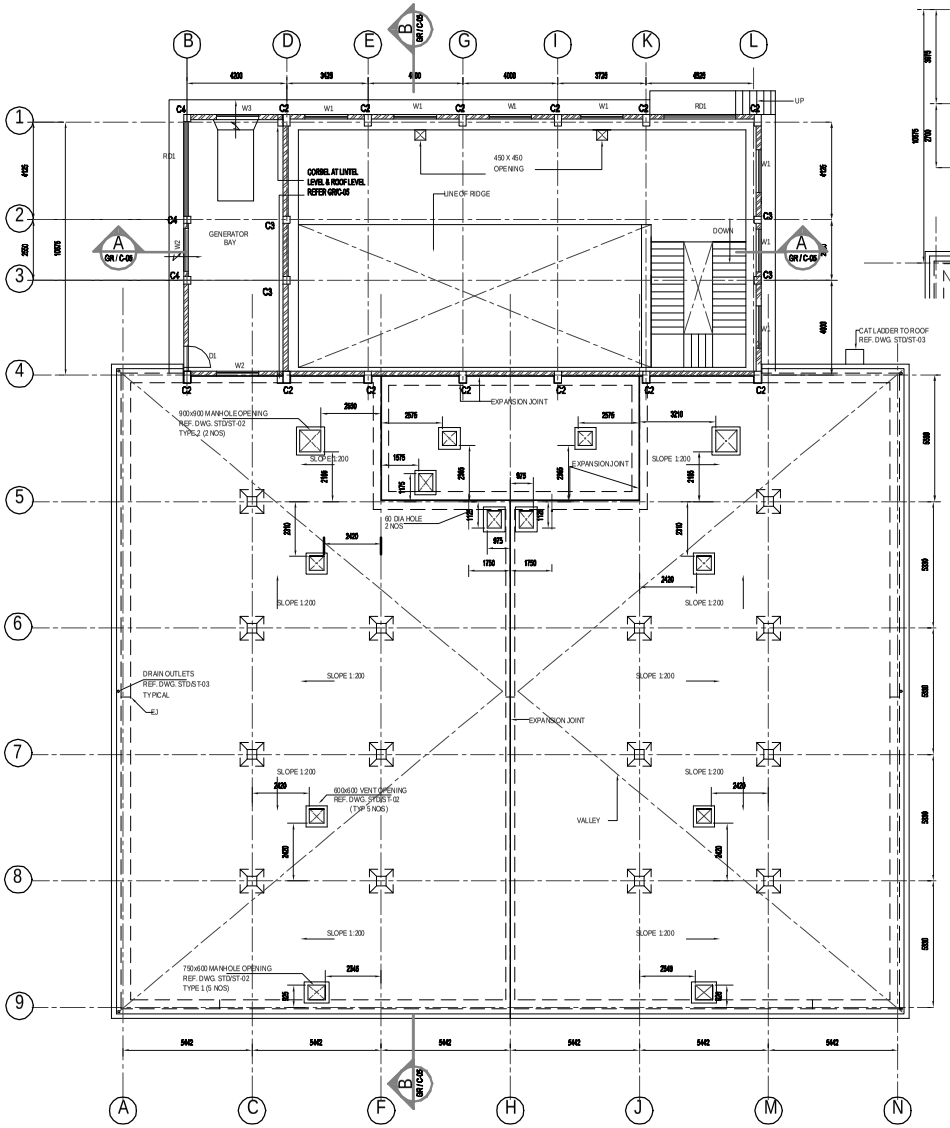
TITLE: TRANSMISSION MAIN (WITH DISTRIBUTION MAIN) FROM AMBATALE WATER TREATMENT PLANT TO GOTHATUWA GROUND RESERVOIR

SHEET 4 OF 7

JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)
STUDY TEAM
NIHON SUIDO CONSULTANTS CO. LTD., TOKYO, JAPAN

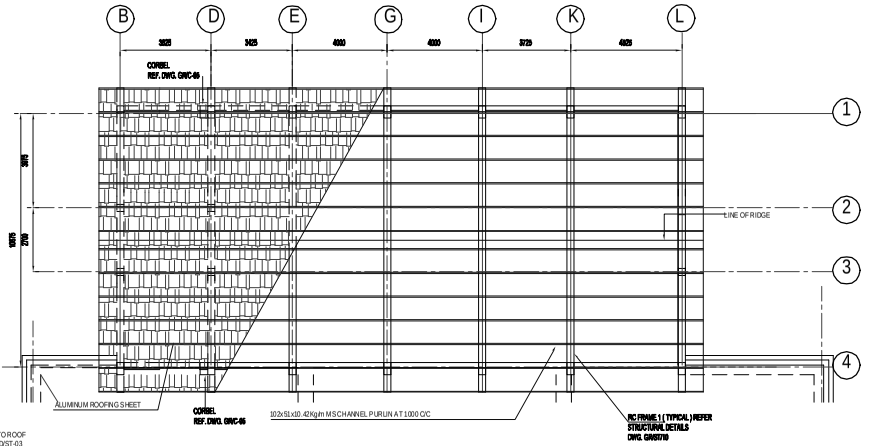
DESIGNED:	DRAWN: KHEMA	DATE: JAN. 2001
CHECKED:	PM (NRW/SAPS) NWSDB:	CONTRACT No.: NRW /CW
DY. TEAM LEADER:	A.G.M (P&D) NWSDB:	DRG. No.: KMU / TM / C-4
TEAM LEADER:	D.G.M (P&D) NWSDB:	


SITE GRADING & LANDSCAPING PLAN
SCALE 1:250
DETAIL OF RUBBLE PITCHING
SCALE - 1 : 50
DETAIL "B" OF SHORT RC WALL
SCALE - 1 : 25
CROSS SECTION DETAIL 'A' OF SUMP DISCHARGE DRAIN
SCALE - 1 : 25
PROPOSED NEW WATER TOWER
EXISTING WATER TANK
PROPOSED ROAD TO PUMP HOUSE
FEVER HOSPITAL ROAD
HALGAHADENIYA ROAD
PART OF FEVER HOSPITAL PREMISES
PART OF FEVER HOSPITAL PREMISES
LINE OF FOUNDATION
LINE OF WATER TANK
LINE OF SHAFT
SHORT RC WALL REF. DETAIL B
RUBBLE PITCH TO LEVEL
RUBBLE PITCH TO SLOP REFER DETAIL
GATE REFER DRG. NO. STD/C-12
SUMP PUMP DISCHARGE DRAIN SEE DETAIL 'A'
FILLING & TURF TO SLOP 1:1
CELL NO.1
CELL NO.2
OPEN TO BELOW
GENERATOR BAY
O. FLOW PIPE
TBM
IN
OUT
TO ANGODA
DO NOT SCALE
REV.
DESCRIPTION
NATIONAL WATER SUPPLY AND DRAINAGE BOARD
THE PROJECT FOR THE REDUCTION OF NON-REVENUE WATER IN THE GREATER COLOMBO AREA
SUB PROJECT:
KOTIKAWATTE MULLERIYAWA
TITLE:
GOTHATUWA GROUND RESERVOIR & PUMP HOUSE SITE GRADING & LANDSCAPING
JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)
STUDY TEAM
NIHON SUIDO CONSULTANTS CO, LTD., TOKYO, JAPAN
DESIGNED:
DRAWN: KHEMA
DATE: JAN. 2001
CHECKED:
PM (NWS&SPB) NWSDB:
CONTRACT No: NRW / CW
DY. TEAM LEADER:
A.G.M (P&D) NWSDB:
DRG. No: KMU/GR/G-02
TEAM LEADER:
D.G.M (P&D) NWSDB:



RESERVOIR ROOF PLAN AT 26.80m MSL

SCALE - 1:100



PUMP HOUSE ROOF PLAN

SCALE - 1:100

DO NOT SCALE

REV.	DESCRIPTION

NATIONAL WATER SUPPLY AND DRAINAGE BOARD

THE PROJECT FOR THE REDUCTION OF NON-REVENUE WATER IN THE GREATER COLOMBO AREA

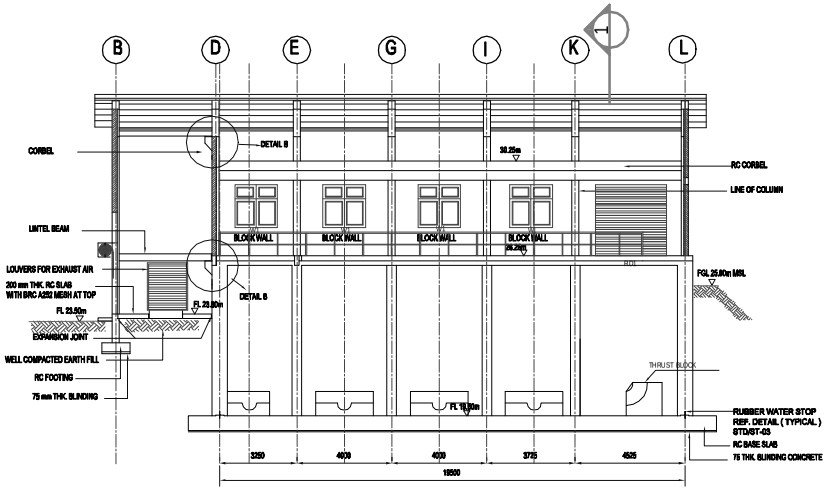
SUB PROJECT: KOTIKAWATTE MULLERIYAWA

TITLE: GOTHATUWA GROUND RESERVOIR & PUMP HOUSE ROOF PLAN OF RESERVOIR & PUMP HOUSE

JAPAN INTERNATIONAL COOPERATION AGENCY (JICA) STUDY TEAM

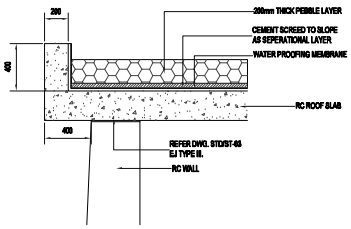
NIHON SUIDO CONSULTANTS CO. LTD., TOKYO, JAPAN

DESIGNED:	DRAWN: K.HEMA	DATE: JAN. 2001
CHECKED:	PM (NIRWSA/PD) NAME/DS:	CONTRACT No: NRW / CW
DY. TEAM LEADER:	A.G.M (P&D) NAME/DS:	DRG. No: KMU/GR/C-03
TEAM LEADER:	D.G.M (P&D) NAME/DS:	



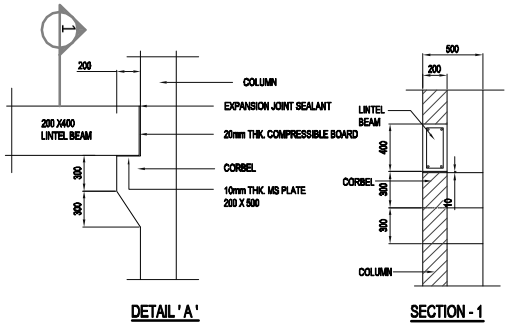
SECTIONAL ELEVATION A-A

SCALE - 1:100



DETAIL - A

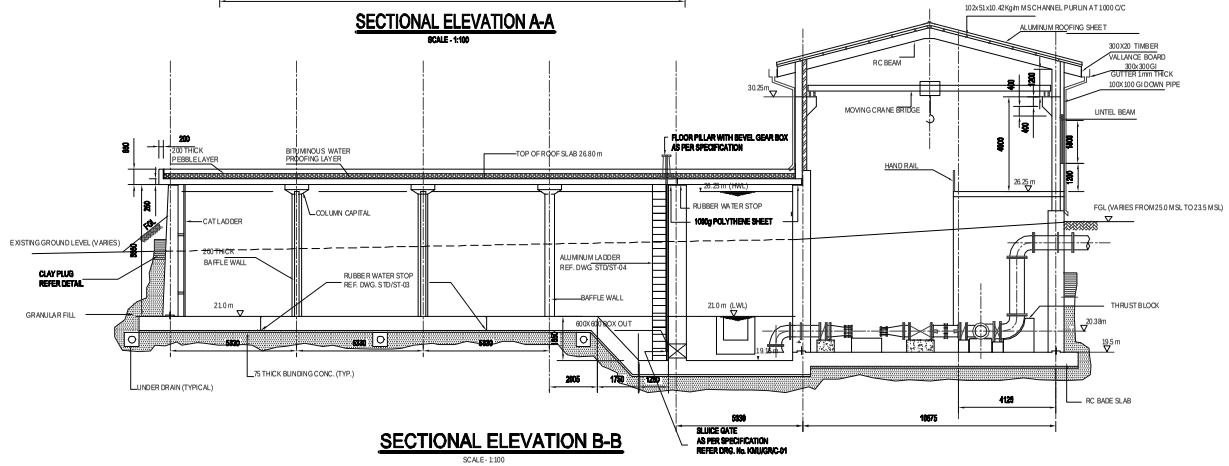
SCALE - 1:20



DETAIL OF CORBEL AT GENERATOR HOUSE

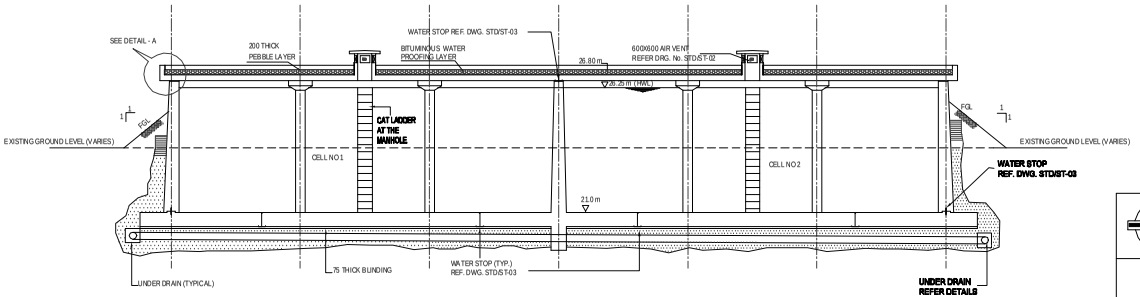
FOR STRUCTURAL DETAILS REFER DRG. No. ST-08

SCALE - 1:20



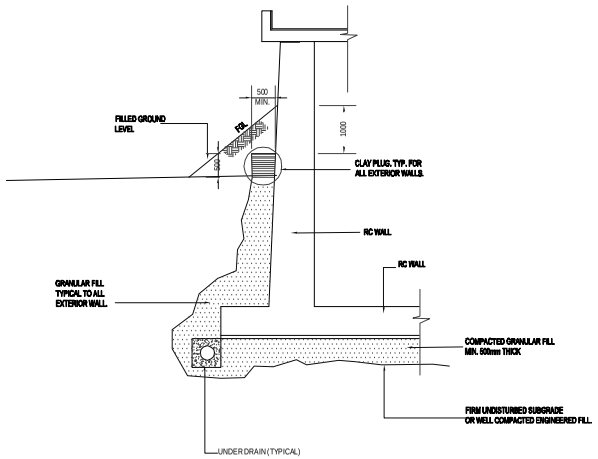
SECTIONAL ELEVATION B-B

SCALE - 1:100



SECTIONAL ELEVATION C-C

SCALE - 1:100



PERIMETER WALL BACK FILLING & UNDER DRAIN DETAIL

SCALE - 1:50

DO NOT SCALE

REV.	DESCRIPTION

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

SUB PROJECT: KOTIKAWATTE MULLERIYAWA

TITLE: GOTHATUWA GROUND RESERVOIR & PUMP HOUSE ELEVATION & SECTIONS

SHEET 2 OF 2

JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)
STUDY TEAM

NIHON SUIDO CONSULTANTS CO. LTD.,
TOKYO, JAPAN

DESIGNED:	DRAWN: K.HEMA	DATE: JAN. 2001
CHECKED:	PM (NIRMAPA) NAME:	CONTRACT No: NRW / CW
DY. TEAM LEADER:	A.G.M (P&D) NAME:	DRG. No: KMU/GR/C-05
TEAM LEADER:	D.G.M (P&D) NAME:	