

**PREPARATORY SURVEY
ON
NIRODH WATER SUPPLY EXPANSION
PROJECT**

DRAWINGS

JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)

NIHON SUIDO CONSULTANTS CO., LTD. (NSC)

TOKYO ENGINEERING CONSULTANTS CO., LTD.(TEC)

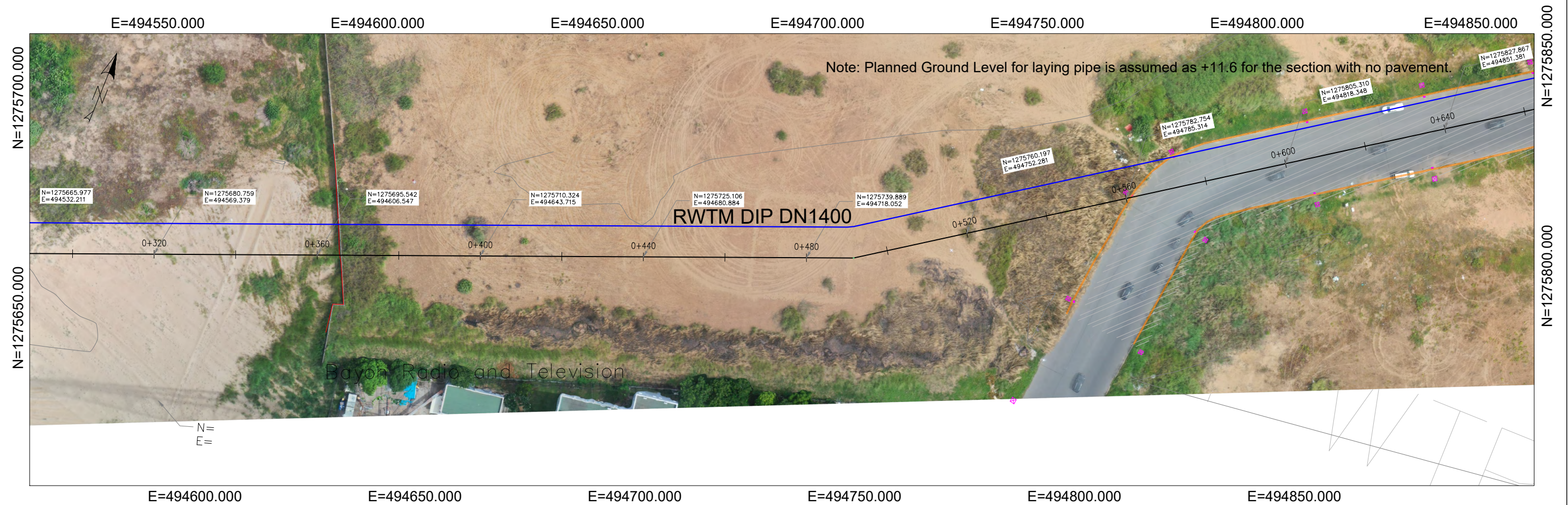
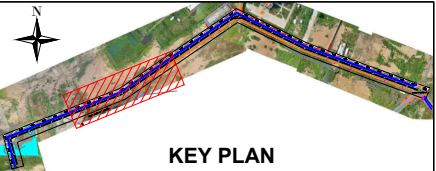
CTI ENGINEERING INTERNATIONAL CO., LTD. (CTII)

KITAKYUSHU WATER SERVICE CO., LTD. (KWS)

RAW WATER TRANSMISSION MAIN



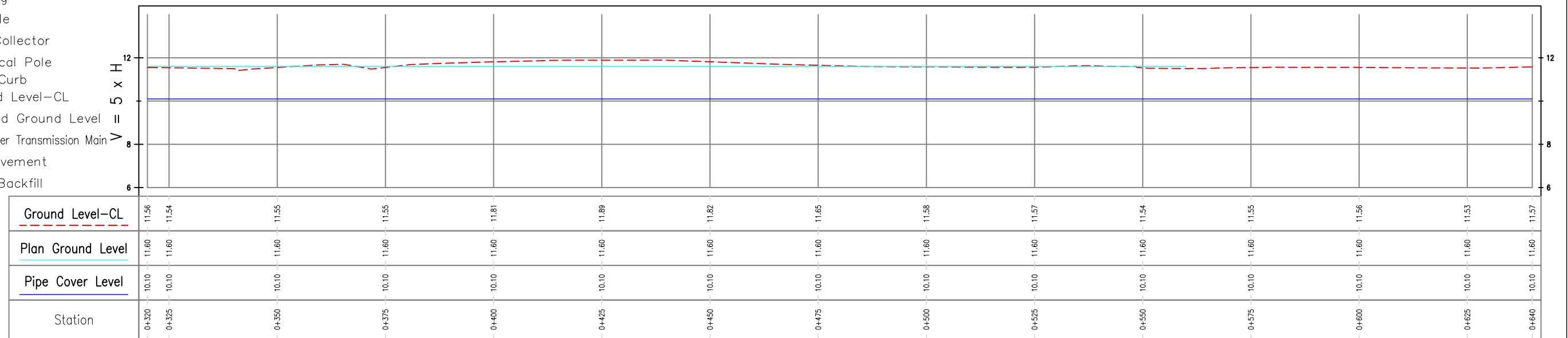
PROJECT Preparatory Survey on Nirodh Water Supply Expansion Project	DESCRIPTION LOCATION MAP	JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)	DRAWING No.	NRD/PHIII/RWTM-1
		NIHON SUIDO CONSULTANTS CO.,LTD. (NSC) TOKYO ENGINEERING CONSULTANTS CO.,LTD.(TEC) CTI ENGINEERING INTERNATIONAL CO., LTD. (CTII) KITAKYUSHU WATER SERVICE CO., LTD. (KWS)	SCALE	1:10000



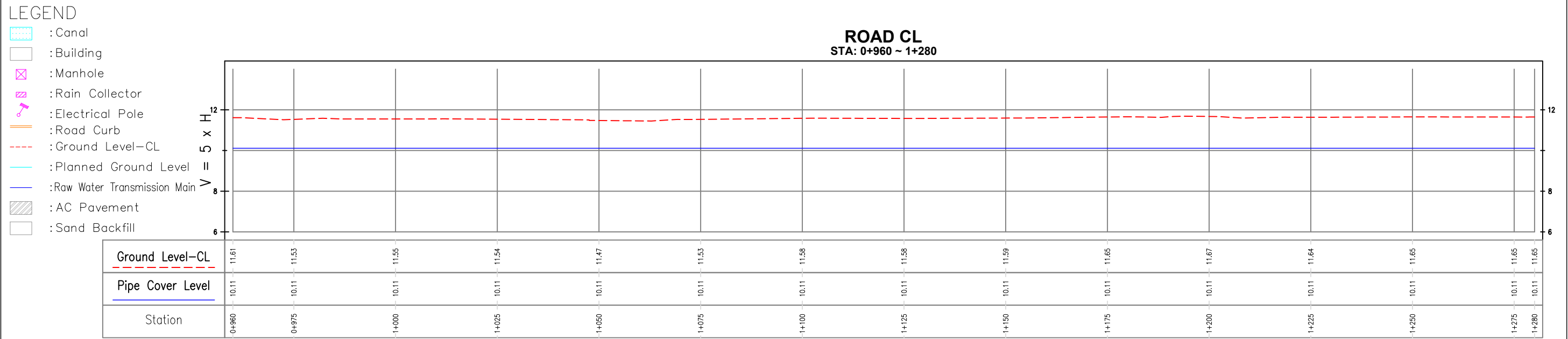
LEGEND

- : Canal
- : Building
- : Manhole
- : Rain Collector
- : Electrical Pole
- : Road Curb
- : Ground Level—CL
- : Planned Ground Level
- : Raw Water Transmission Main
- : AC Pavement
- : Sand Backfill

ROAD CL STA: 0+320 ~ 0+640



PROJECT Preparatory Survey on Nirodh Water Supply Expansion Project	DESCRIPTION Plan for Plan and Longitudinal of Raw Water Transmission Main (2)	JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)	DRAWING No.	NRD/PHIII/RWTM-2-2
		NIHON SUIDO CONSULTANTS CO.,LTD. (NSC) TOKYO ENGINEERING CONSULTANTS CO., LTD. (TEC) CTI ENGINEERING INTERNATIONAL CO., LTD. (CTII) KITAKYUSHU WATER SERVICE CO., LTD. (KWS)	SCALE	N/A

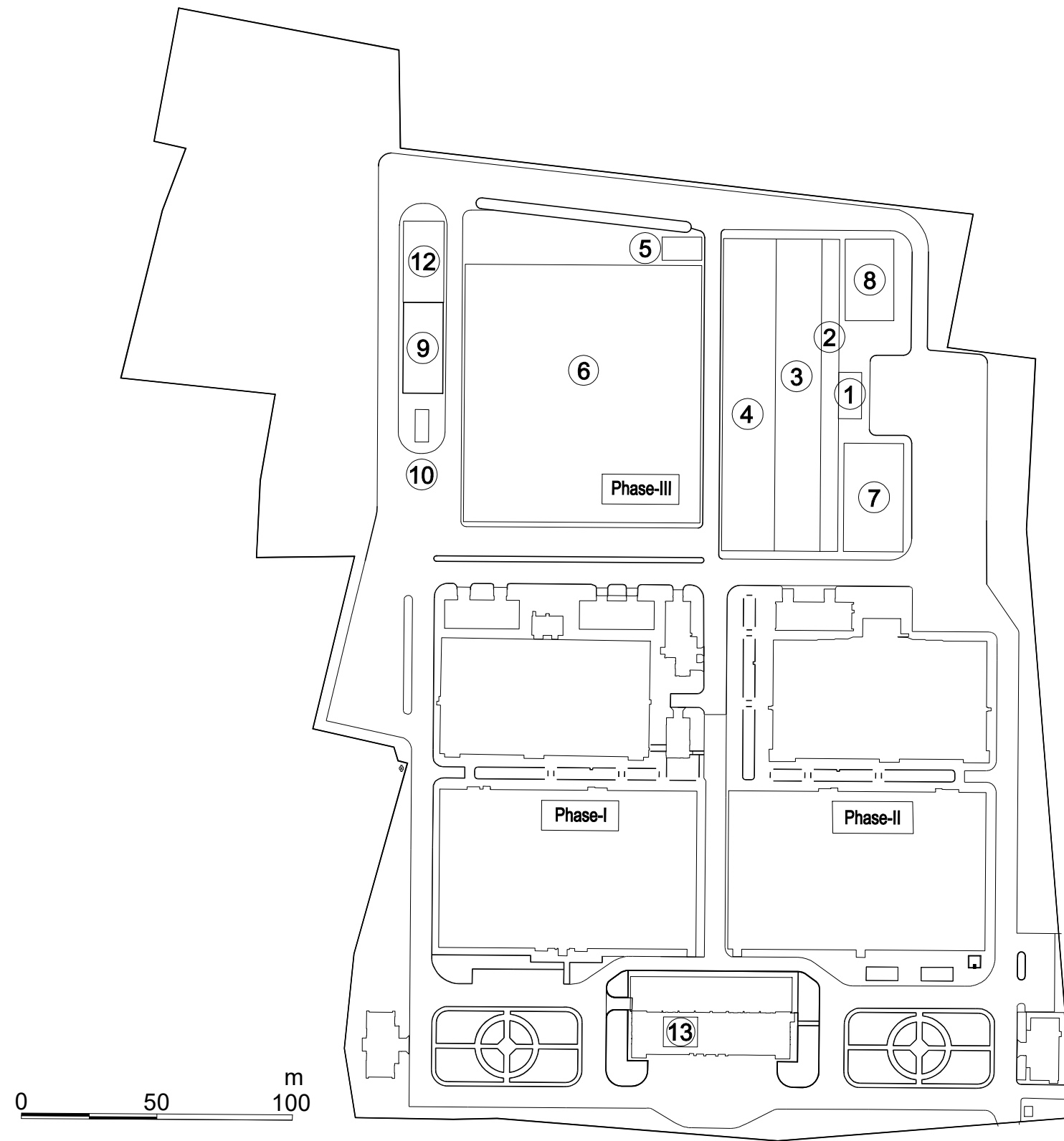


PROJECT Preparatory Survey on Nirodh Water Supply Expansion Project	DESCRIPTION Plan for Plan and Longitudinal of Raw Water Transmission Main (4)	JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)	DRAWING No.	NRD/PHIII/RWTM-2-4
		NIHON SUIDO CONSULTANTS CO.,LTD. (NSC) TOKYO ENGINEERING CONSULTANTS CO., LTD. (TEC) CTI ENGINEERING INTERNATIONAL CO., LTD. (CTII) KITAKYUSHU WATER SERVICE CO., LTD. (KWS)	SCALE	N/A

WATER TREATMENT PLANT



PROJECT Preparatory Survey on Nirodh Water Supply Expansion Project	DESCRIPTION Location Map	JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)	DRAWING No.	NRD/PHIII/WTP-1
		NIHON SUIDO CONSULTANTS CO., LTD. (NSC) TOKYO ENGINEERING CONSULTANTS CO., LTD. (TEC) CTI ENGINEERING INTERNATIONAL CO., LTD. (CTI1) KITAKYUSHU WATER SERVICE CO., LTD. (KWS)	SCALE	1:10000 (A3)



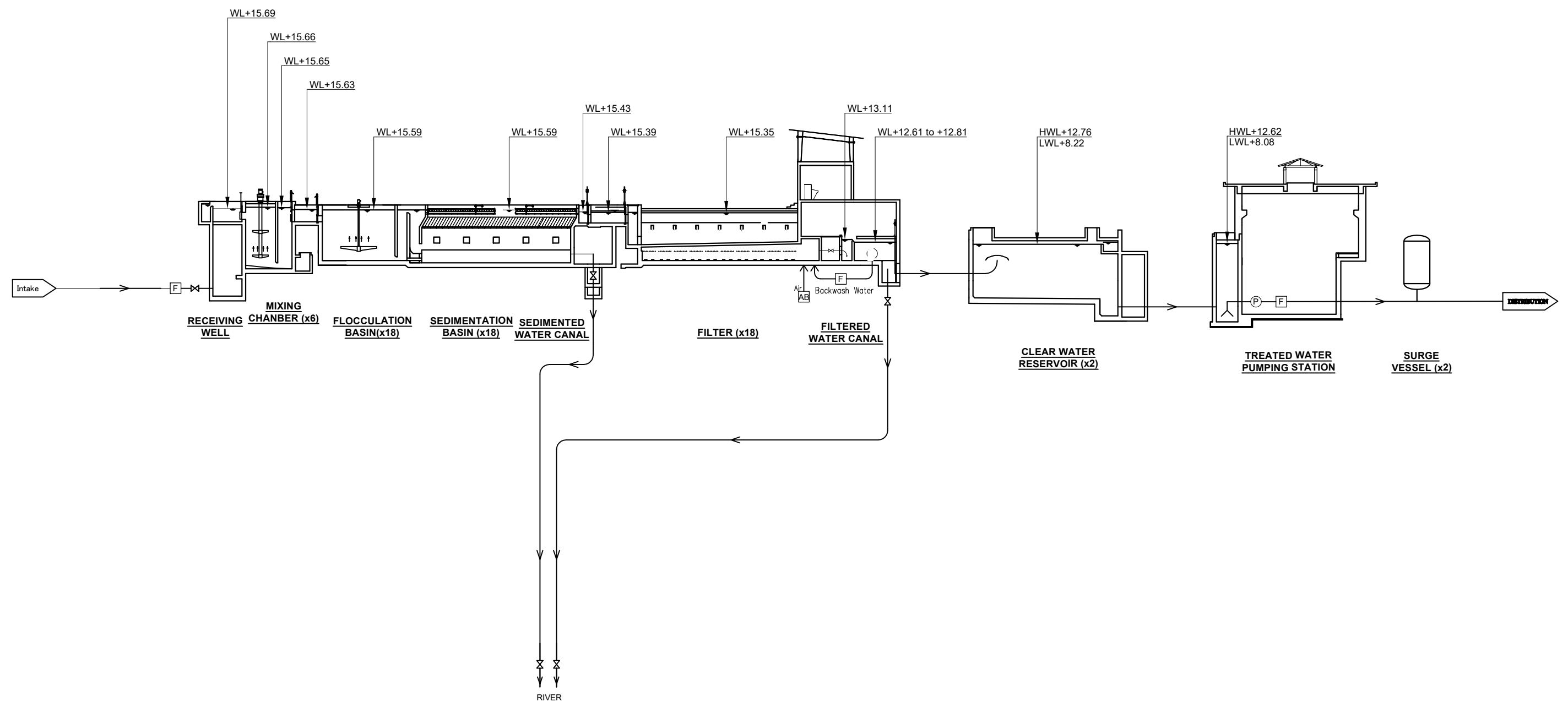
Legend

- 1 Receiving Well Cum Rapid Mixing Basin
- 2 Flocculation Basin
- 3 Sedimentation Basin
- 4 Filter
- 5 Backwash Pump Station
- 6 Clear Water Reservoir
- 7 Chemical Building
- 8 Chemical Storage Building
- 9 Water Transmission Pumping Station
- 10 Surge Vessel
- 11 Not Used
- 12 Electrical Building
- 13 SCADA

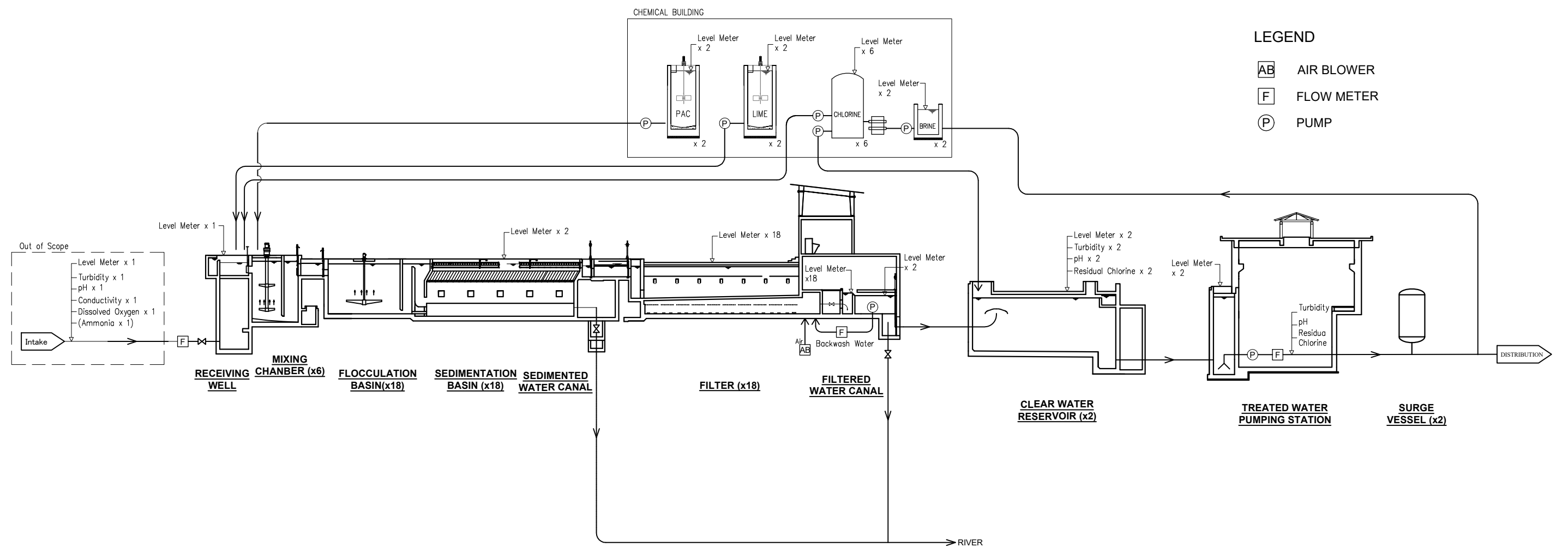
PROJECT	DESCRIPTION	JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)	DRAWING No.	NRD/PHIII/WTP-2
		NIHON SUIDO CONSULTANTS CO., LTD. (NSC) TOKYO ENGINEERING CONSULTANTS CO., LTD. (TEC) CTI ENGINEERING INTERNATIONAL CO., LTD. (CTII) KITAKYUSHU WATER SERVICE CO., LTD. (KWS)	SCALE	1:2000 (A3)

Preparatory Survey on Nirodh Water Supply Expansion Project

General Plan



PROJECT Preparatory Survey on Nirodh Water Supply Expansion Project	DESCRIPTION Hydraulic Profile	JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)	DRAWING No.	NRD/PHIII/WTP- 3
		NIHON SUIDO CONSULTANTS CO., LTD. (NSC) TOKYO ENGINEERING CONSULTANTS CO., LTD. (TEC) CTI ENGINEERING INTERNATIONAL CO., LTD. (CTII) KITAKYUSHU WATER SERVICE CO., LTD. (KWS)	SCALE	NONE



PROJECT	DESCRIPTION	JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)	DRAWING No.	NRD/PHIII/WTP-4
		NIHON SUIDO CONSULTANTS CO., LTD. (NSC) TOKYO ENGINEERING CONSULTANTS CO., LTD. (TEC) CTI ENGINEERING INTERNATIONAL CO., LTD. (CTII) KITAKYUSHU WATER SERVICE CO., LTD. (KWS)	SCALE	NONE

Preparatory Survey on Nirodh Water Supply Expansion Project

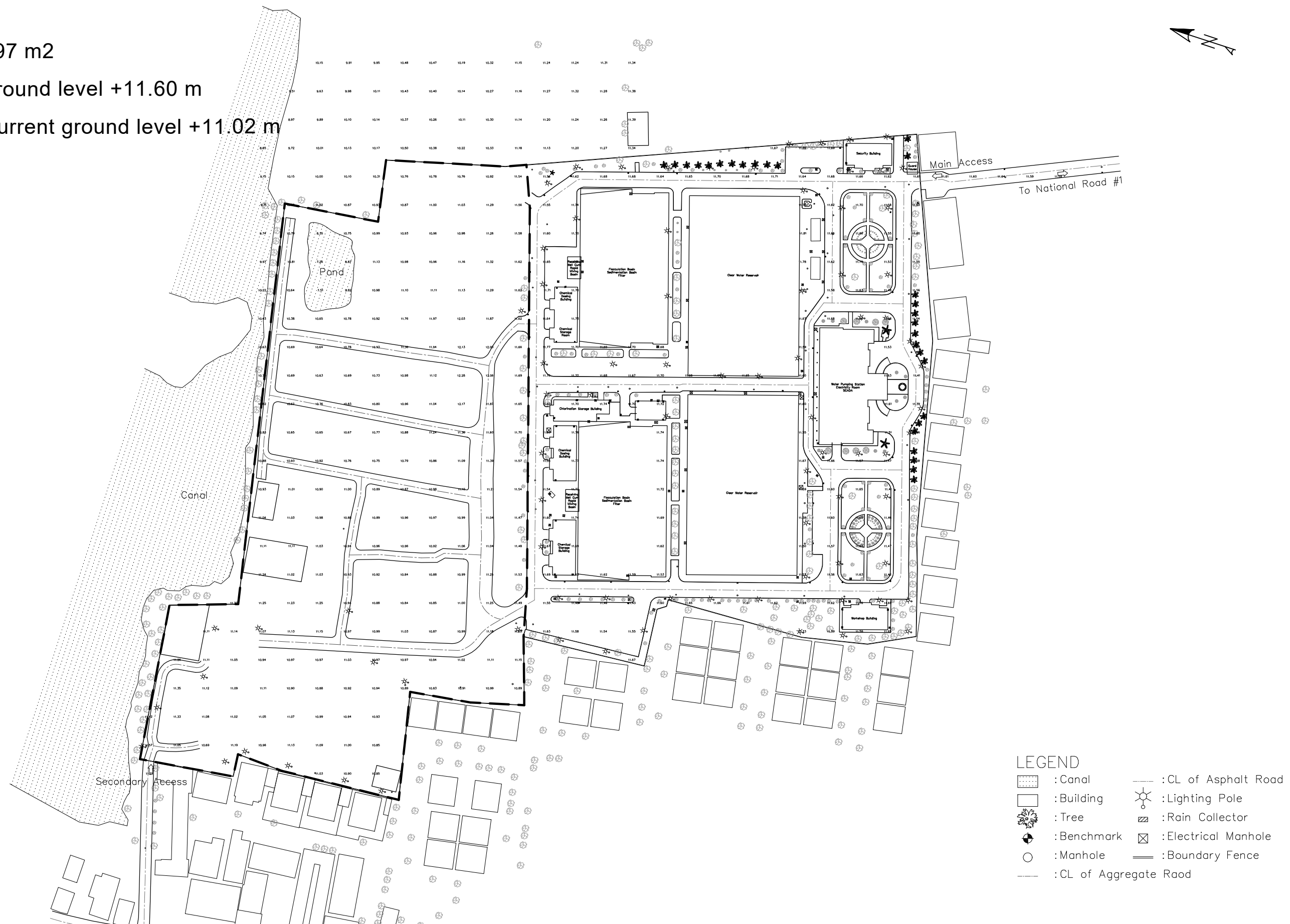
Schematic Process Flow Diagram

Area to be developed for the Phase III site

Area 46,297 m2

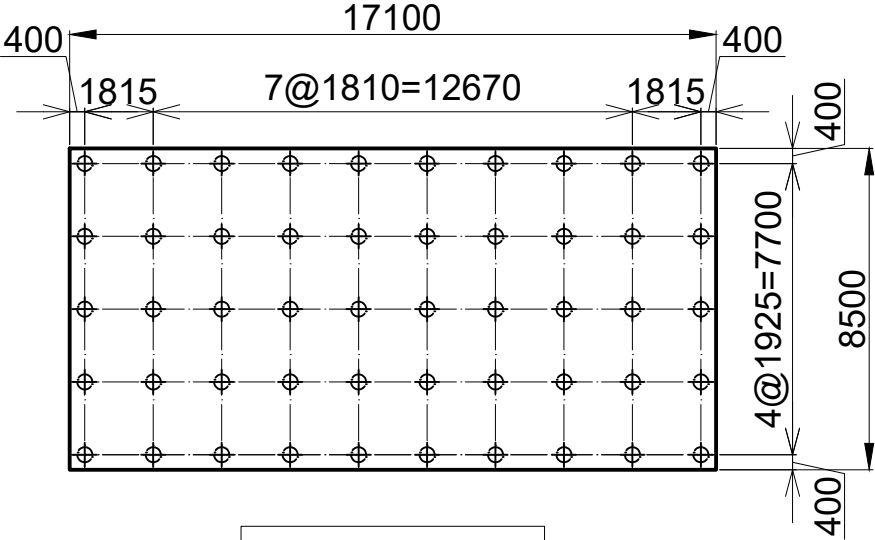
Planned ground level +11.60 m

Average current ground level +11.02 m



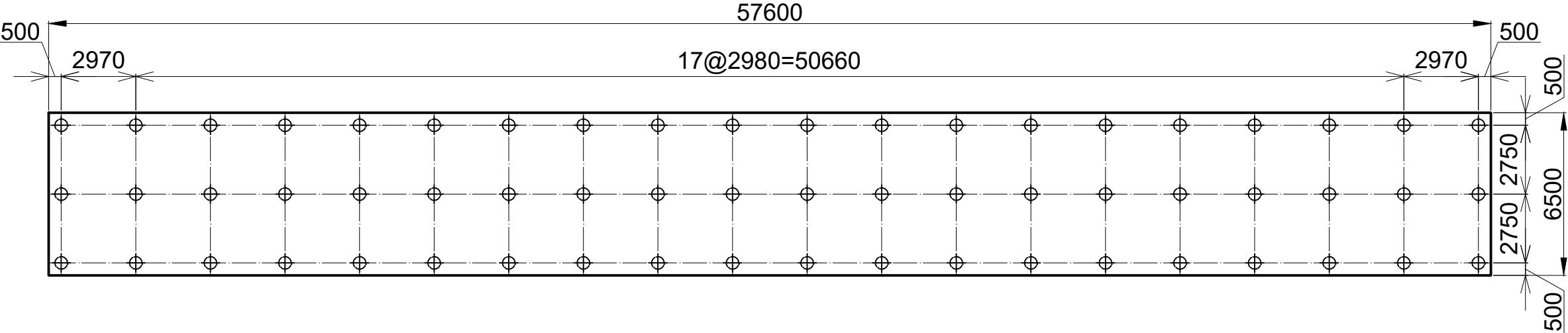
PROJECT	DESCRIPTION	JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)	DRAWING No.	NRD/PHIII/WTP-5
Preparatory Survey on Nirodh Water Supply Expansion Project	Plan For Earthwork	NIHON SUIDO CONSULTANTS CO.,LTD. (NSC) TOKYO ENGINEERING CONSULTANTS CO., LTD. (TEC) CTI ENGINEERING INTERNATIONAL CO., LTD. (CTII) KITAKYUSHU WATER SERVICE CO., LTD. (KWS)	SCALE	1:2000 (A3)

RECEIVING WELL RAPID
MIXING BASIN PART

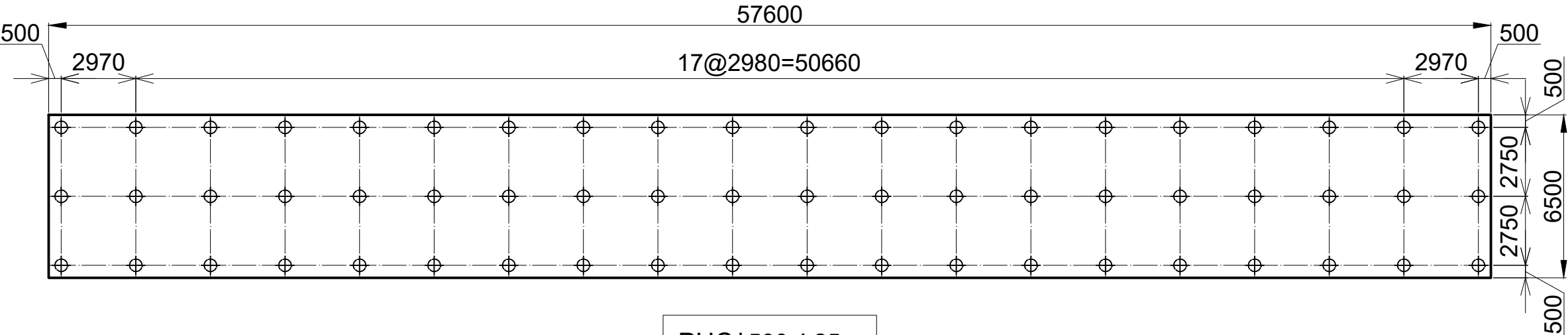


PHCφ400xL25m

FLOCCULATION BASIN
LEFT PART



FLOCCULATION BASIN
RIGHT PART



PHCφ500xL25m

PROJECT

Preparatory Survey on Nirodh Water Supply Expansion Project

DESCRIPTION

Receiving Well, Rapid Mixing Basin,
Flocculation Basin – Foundation

JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)

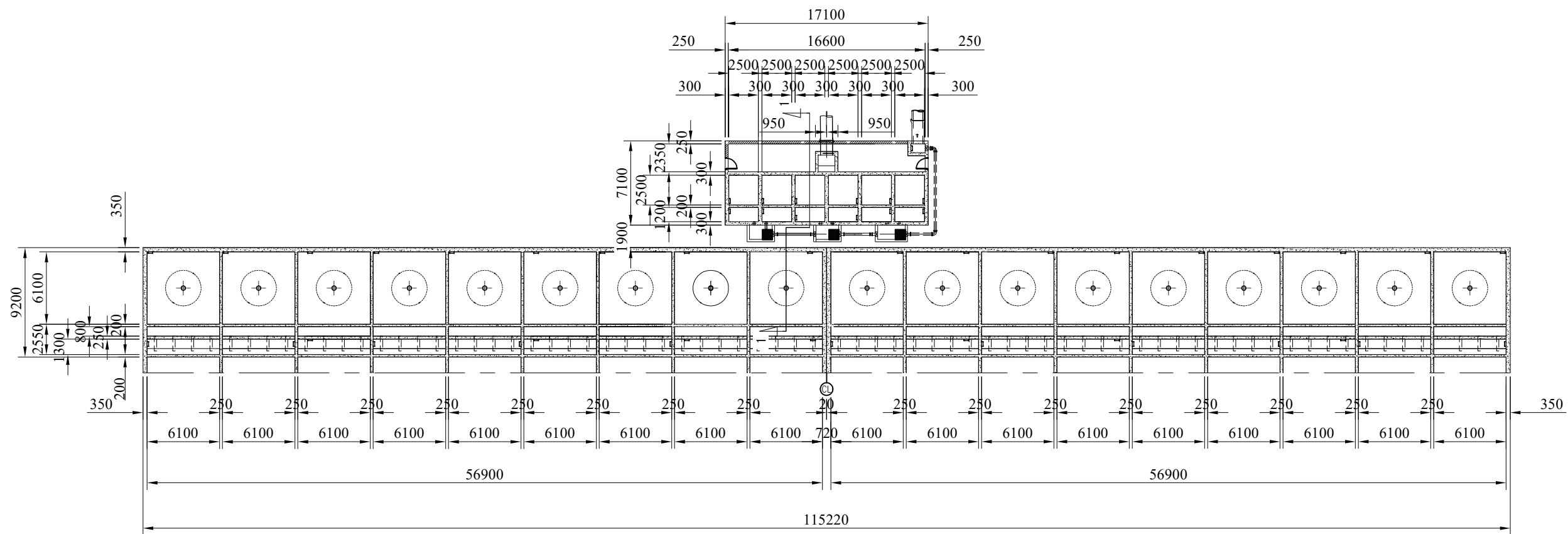
NIHON SUIDO CONSULTANTS CO., LTD. (NSC)
TOKYO ENGINEERING CONSULTANTS CO., LTD. (TEC)
CTI ENGINEERING INTERNATIONAL CO., LTD. (CTI)
KITAKYUSHU WATER SERVICE CO., LTD. (KWS)

DRAWING No.

SCALE

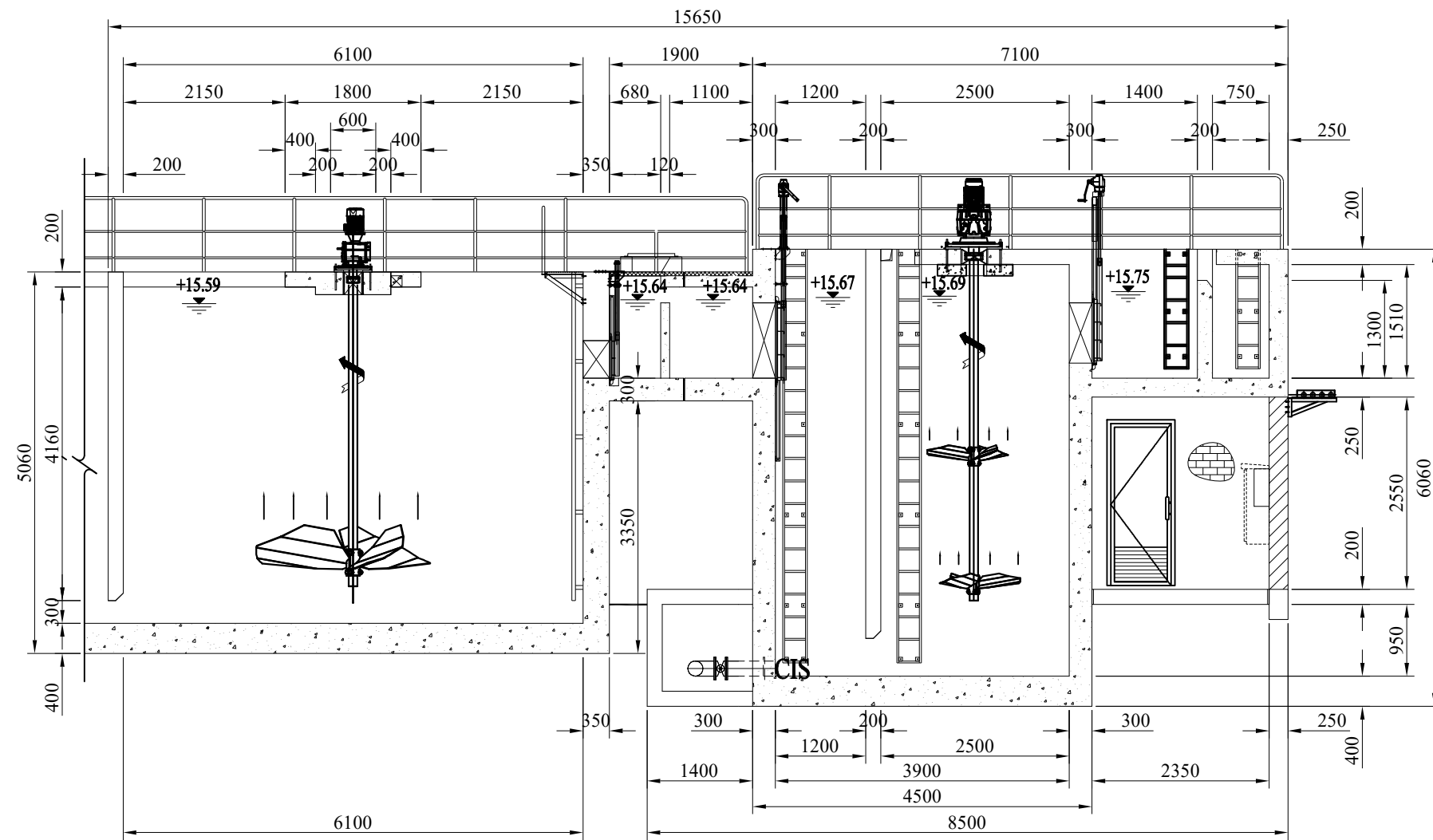
NRD/PH111/WTP-6-1

1:200



PLAN

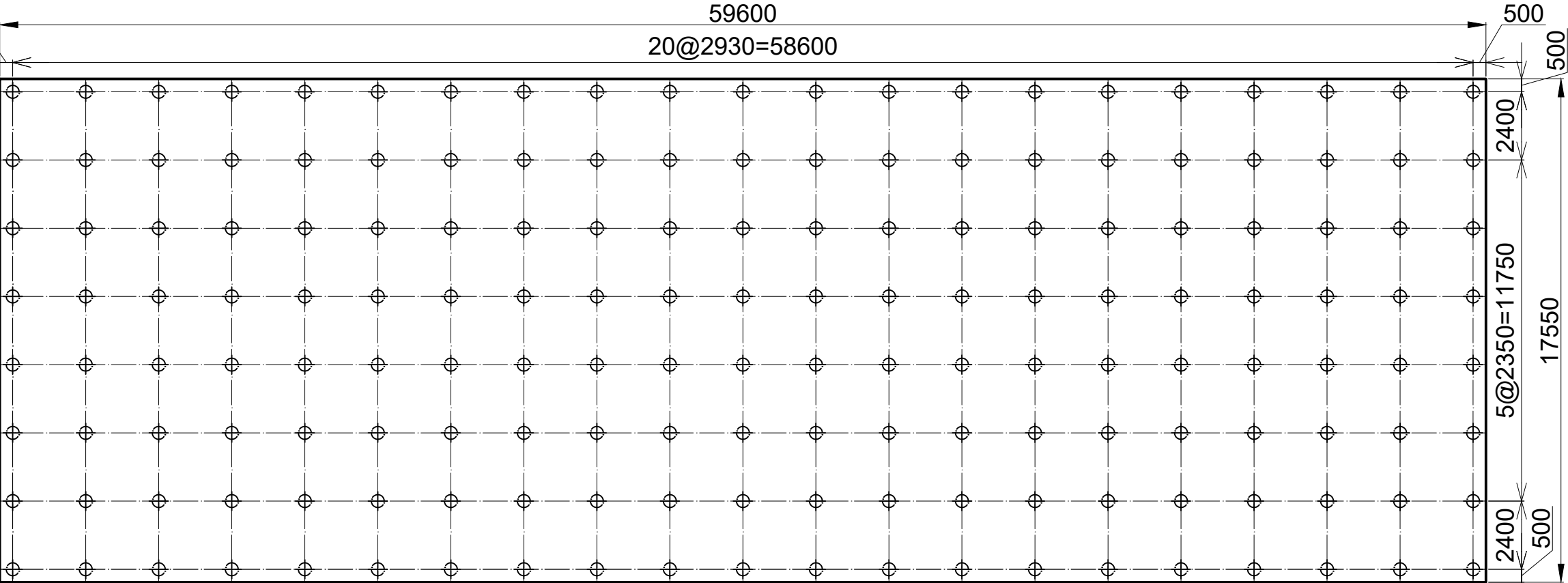
PROJECT Preparatory Survey on Nirodh Water Supply Expansion Project	DESCRIPTION Receiving Well, Rapid Mixing Basin, Flocculation Basin – Plan	JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)	DRAWING No.	NRD/PHIII/WTP-6-2
		NIHON SUIDO CONSULTANTS CO., LTD. (NSC) TOKYO ENGINEERING CONSULTANTS CO., LTD. (TEC) CTI ENGINEERING INTERNATIONAL CO., LTD. (CTII) KITAKYUSHU WATER SERVICE CO., LTD. (KWS)	SCALE	1:400



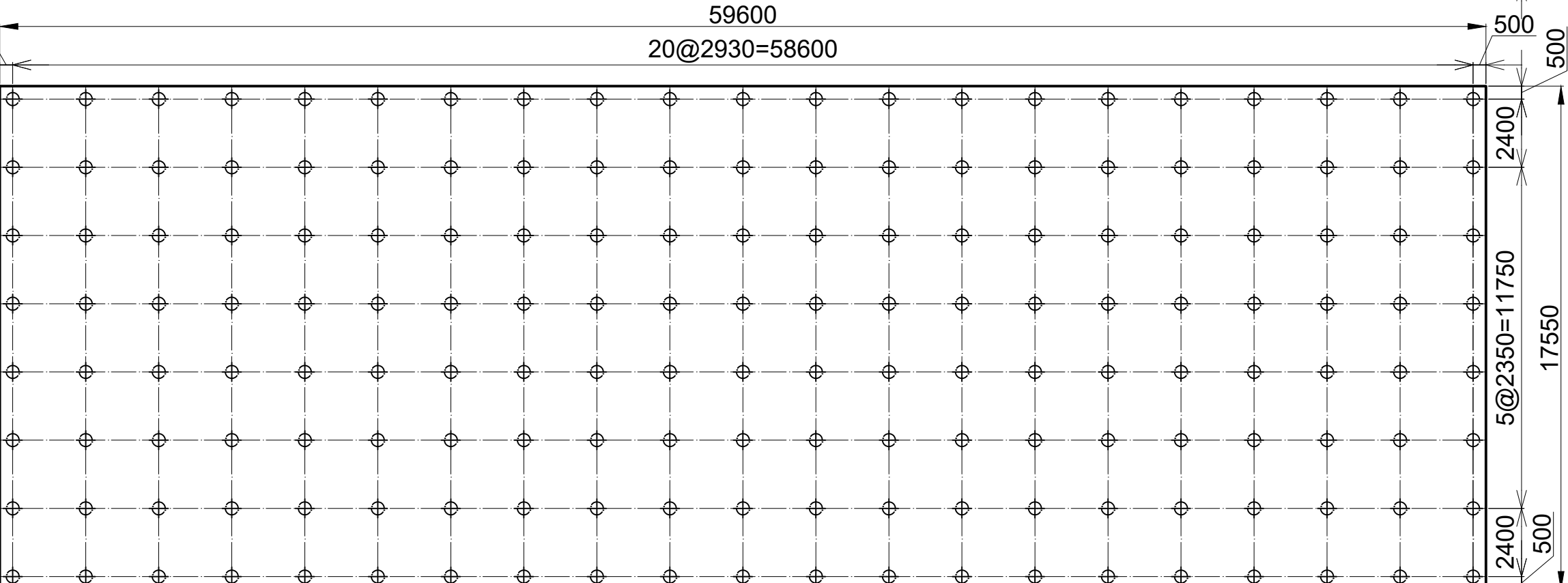
SECTION 1-1

PROJECT Preparatory Survey on Nirodh Water Supply Expansion Project	DESCRIPTION Receiving Well, Rapid Mixing Basin, Flocculation Basin - Section	JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)	DRAWING No.	NRD/PHIII/WTP-6-3
		NIHON SUIDO CONSULTANTS CO., LTD. (NSC) TOKYO ENGINEERING CONSULTANTS CO., LTD. (TEC) CTI ENGINEERING INTERNATIONAL CO., LTD. (CTII) KITAKYUSHU WATER SERVICE CO., LTD. (KWS)	SCALE	1:80

LEFT PART

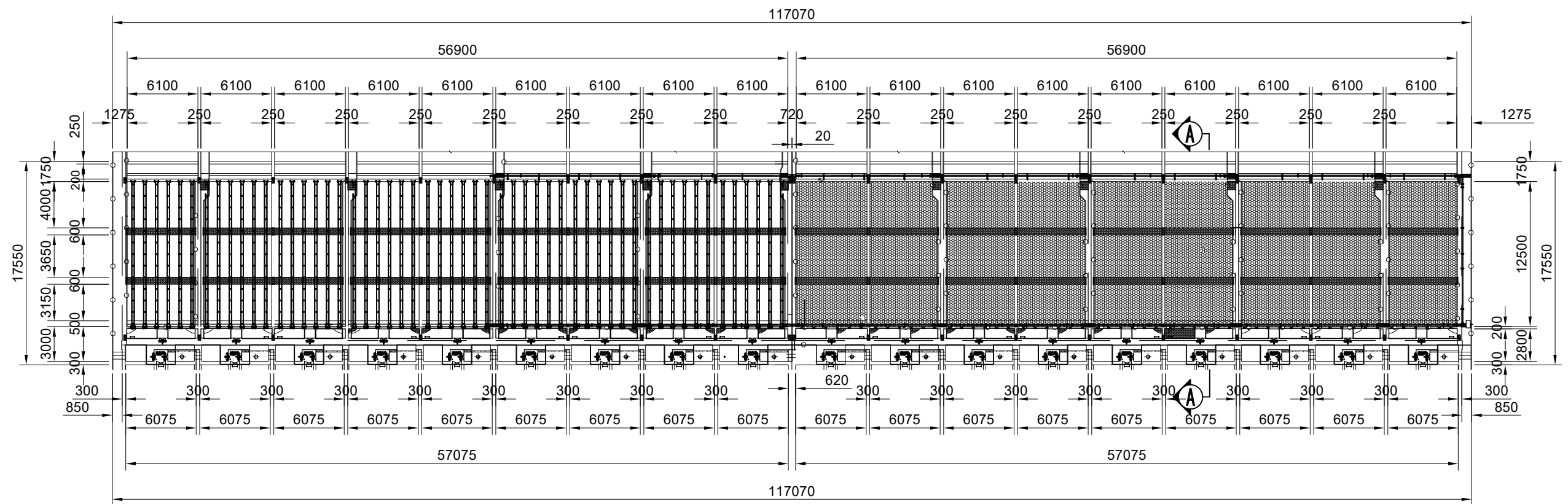


RIGHT PART



PHCφ500xL25m

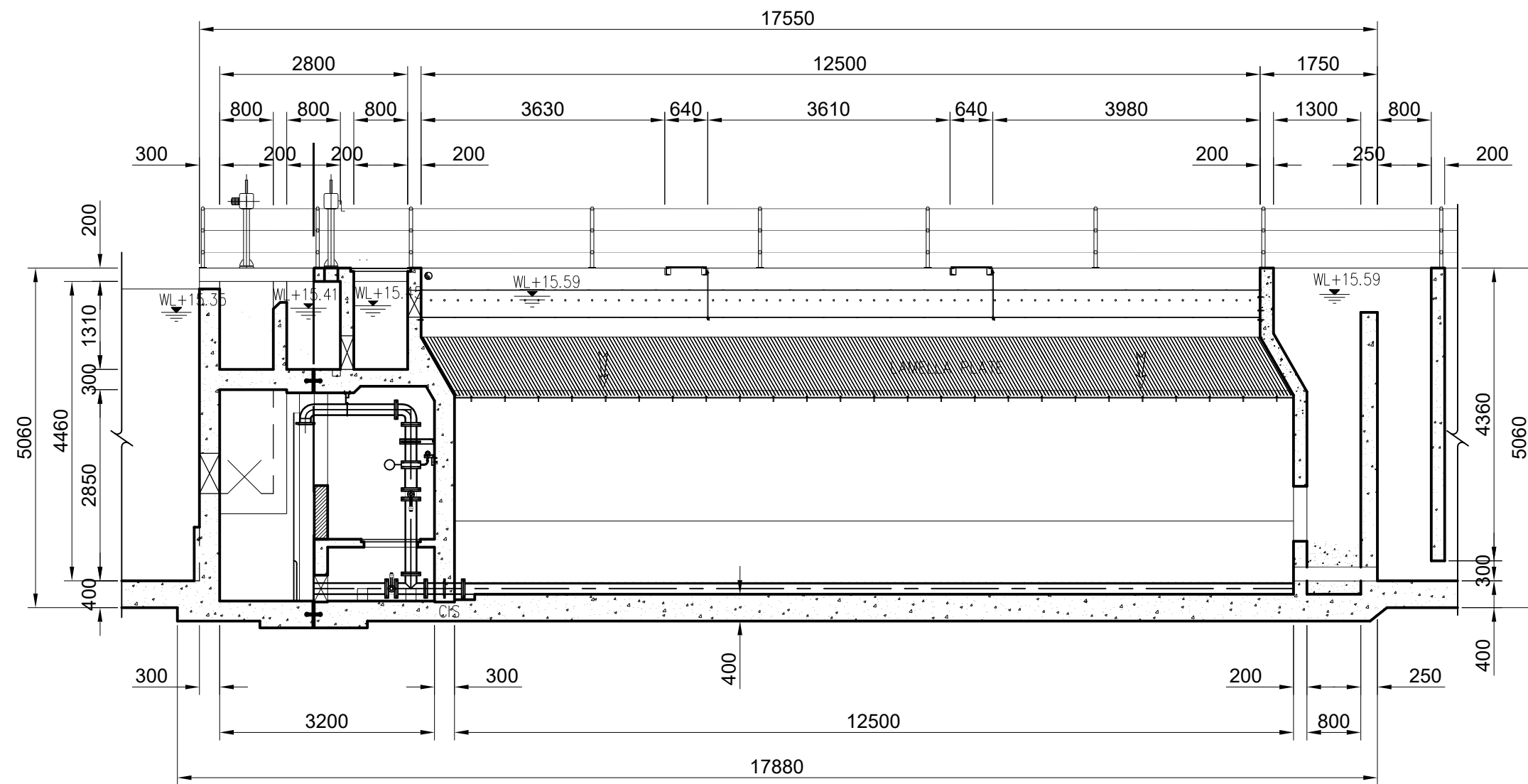
PROJECT Preparatory Survey on Nirodh Water Supply Expansion Project	DESCRIPTION Sedimentation Basin – Foundation	JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)	DRAWING No.	NRD/PH111/WTP-7-1
		NIHON SUIDO CONSULTANTS CO., LTD. (NSC) TOKYO ENGINEERING CONSULTANTS CO., LTD. (TEC) CTI ENGINEERING INTERNATIONAL CO., LTD. (CTI1) KITAKYUSHU WATER SERVICE CO., LTD. (KWS)	SCALE	1:200



PROJECT	DESCRIPTION	JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)	DRAWING No.	NRD/PHIII/WTP-7-2
		NIHON SUIDO CONSULTANTS CO., LTD. (NSC) TOKYO ENGINEERING CONSULTANTS CO., LTD. (TEC) CTI ENGINEERING INTERNATIONAL CO., LTD. (CTII) KITAKYUSHU WATER SERVICE CO., LTD. (KWS)	SCALE	1:400 (A3)

Preparatory Survey on Nirodh Water Supply Expansion Project

Sedimentation Basin - Plan

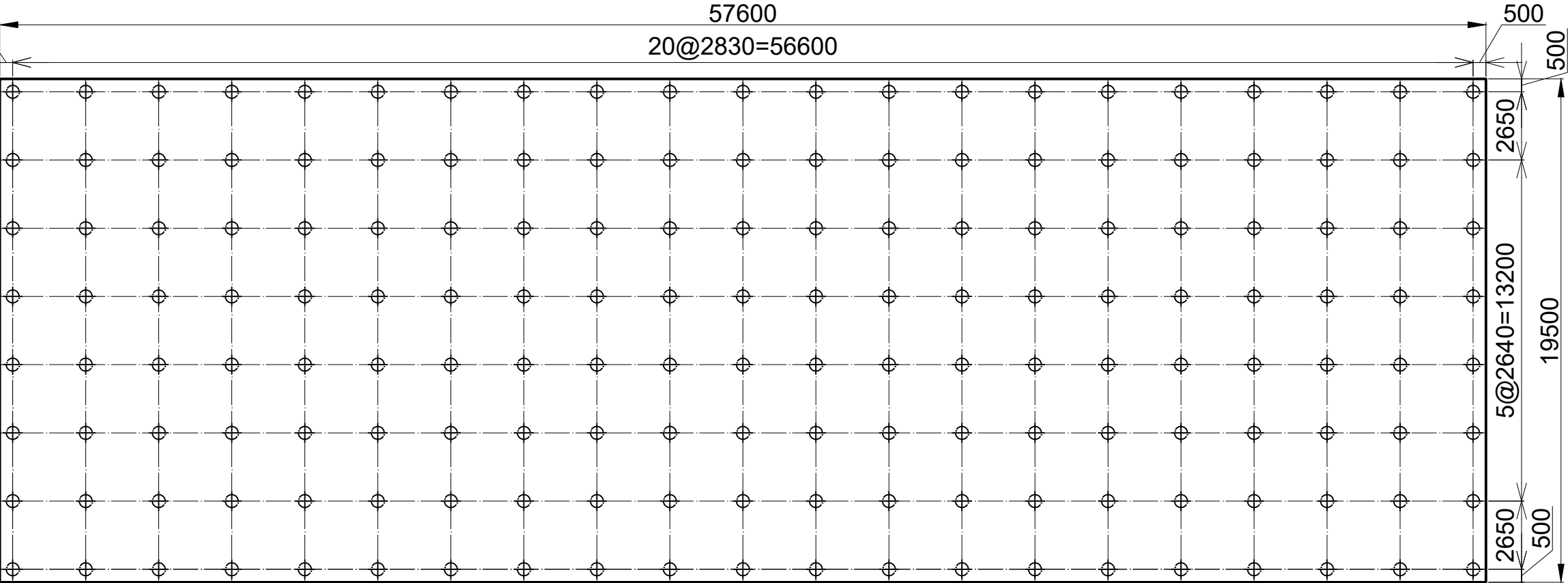


PROJECT	DESCRIPTION	JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)	DRAWING No.	NRD/PHIII/WTP-7-3
		NIHON SUIDO CONSULTANTS CO., LTD. (NSC) TOKYO ENGINEERING CONSULTANTS CO., LTD. (TEC) CTI ENGINEERING INTERNATIONAL CO., LTD. (CTII) KITAKYUSHU WATER SERVICE CO., LTD. (KWS)	SCALE	1:80 (A3)

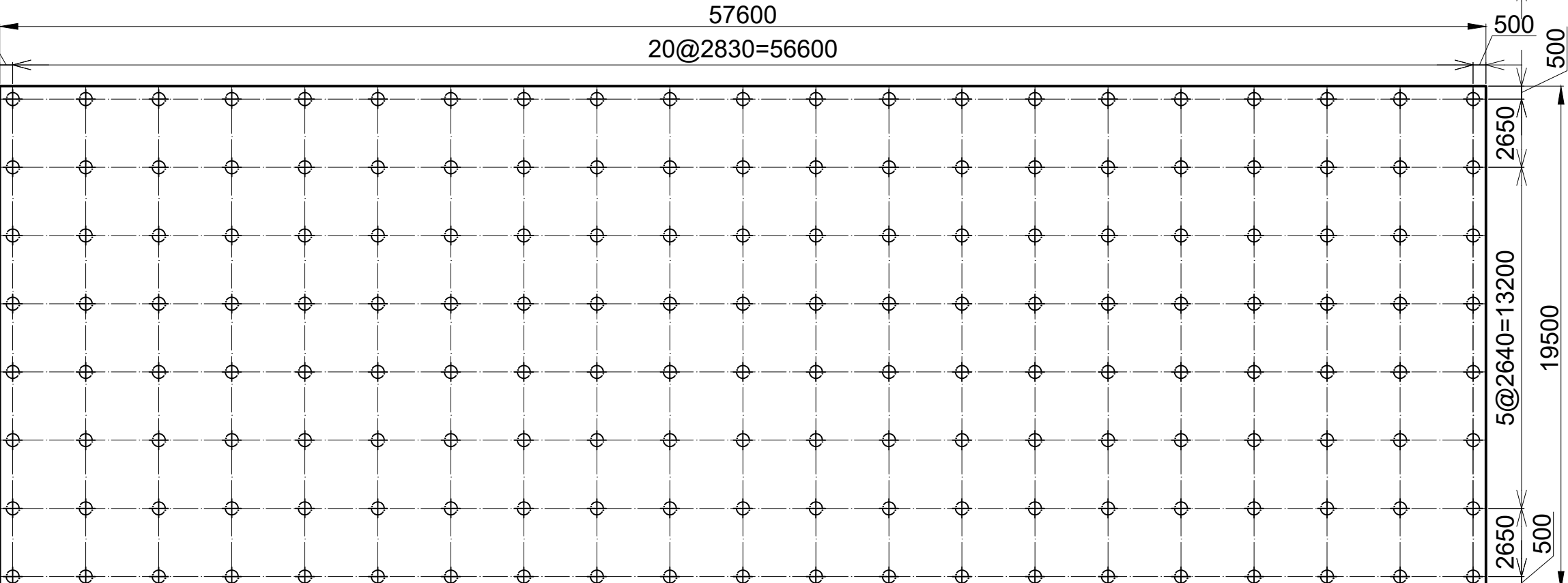
Preparatory Survey on Nirodh Water Supply Expansion Project

Sedimentation Basin - Section

LEFT PART

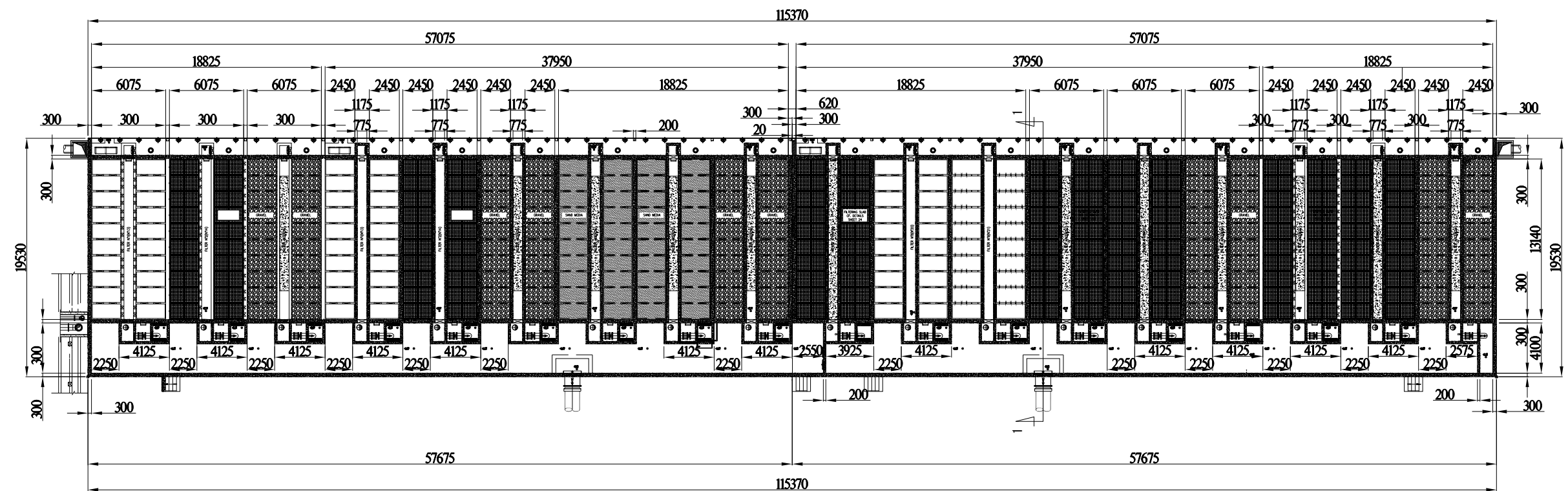


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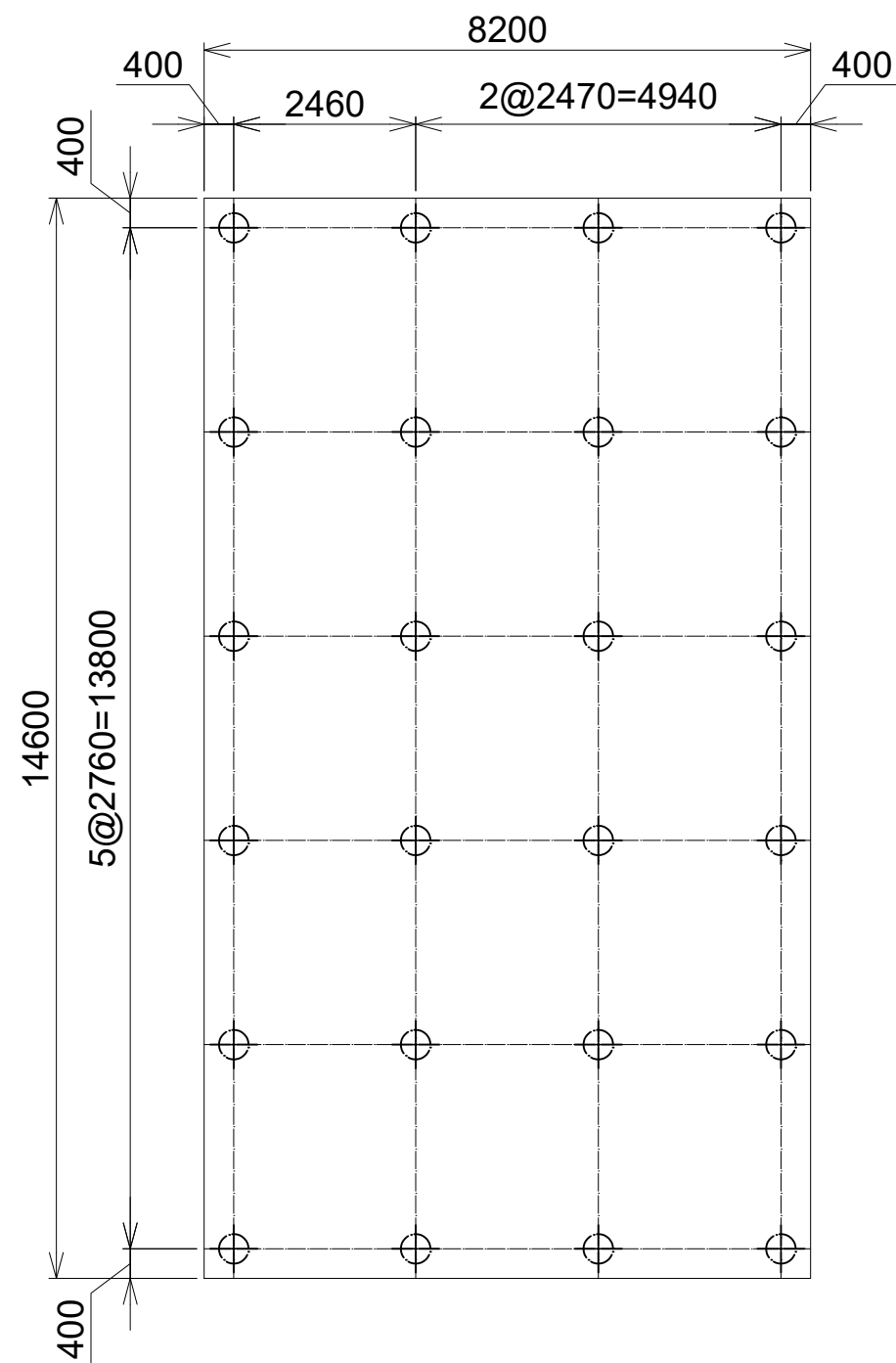
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PROJECT Preparatory Survey on Nirodh Water Supply Expansion Project	DESCRIPTION Filter - Foundation	JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)	DRAWING No.	NRD/PH111/WTP-8-1
		NIHON SUIDO CONSULTANTS CO., LTD. (NSC) TOKYO ENGINEERING CONSULTANTS CO., LTD. (TEC) CTI ENGINEERING INTERNATIONAL CO., LTD. (CTI1) KITAKYUSHU WATER SERVICE CO., LTD. (KWS)	SCALE	1:200



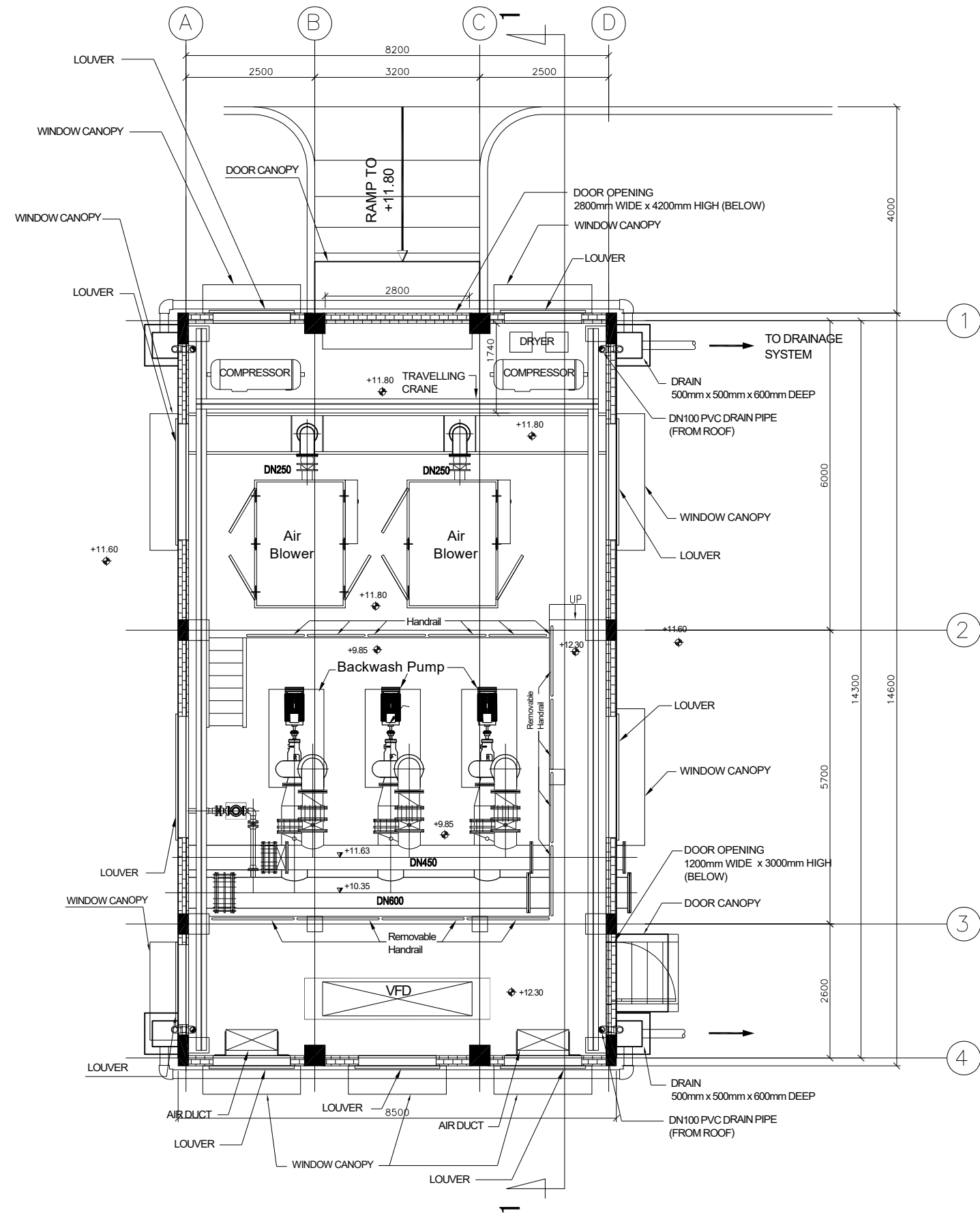
PLAN

PROJECT Preparatory Survey on Nirodh Water Supply Expansion Project	DESCRIPTION Filter Plan	JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)	DRAWING No.	NRD/PHIII/WTP-8-2
		NIHON SUIDO CONSULTANTS CO., LTD. (NSC) TOKYO ENGINEERING CONSULTANTS CO., LTD. (TEC) CTI ENGINEERING INTERNATIONAL CO., LTD. (CTII) KITAKYUSHU WATER SERVICE CO., LTD. (KWS)	SCALE	1:400 (A3)



PHCφ400xL25m

PROJECT Preparatory Survey on Nirodh Water Supply Expansion Project	DESCRIPTION Backwash Pump Station – Foundation	JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)	DRAWING No.	NRD/PH111/WTP-9-1
		NIHON SUIDO CONSULTANTS CO., LTD. (NSC) TOKYO ENGINEERING CONSULTANTS CO., LTD. (TEC) CTI ENGINEERING INTERNATIONAL CO., LTD. (CTI1) KITAKYUSHU WATER SERVICE CO., LTD. (KWS)	SCALE	1:100

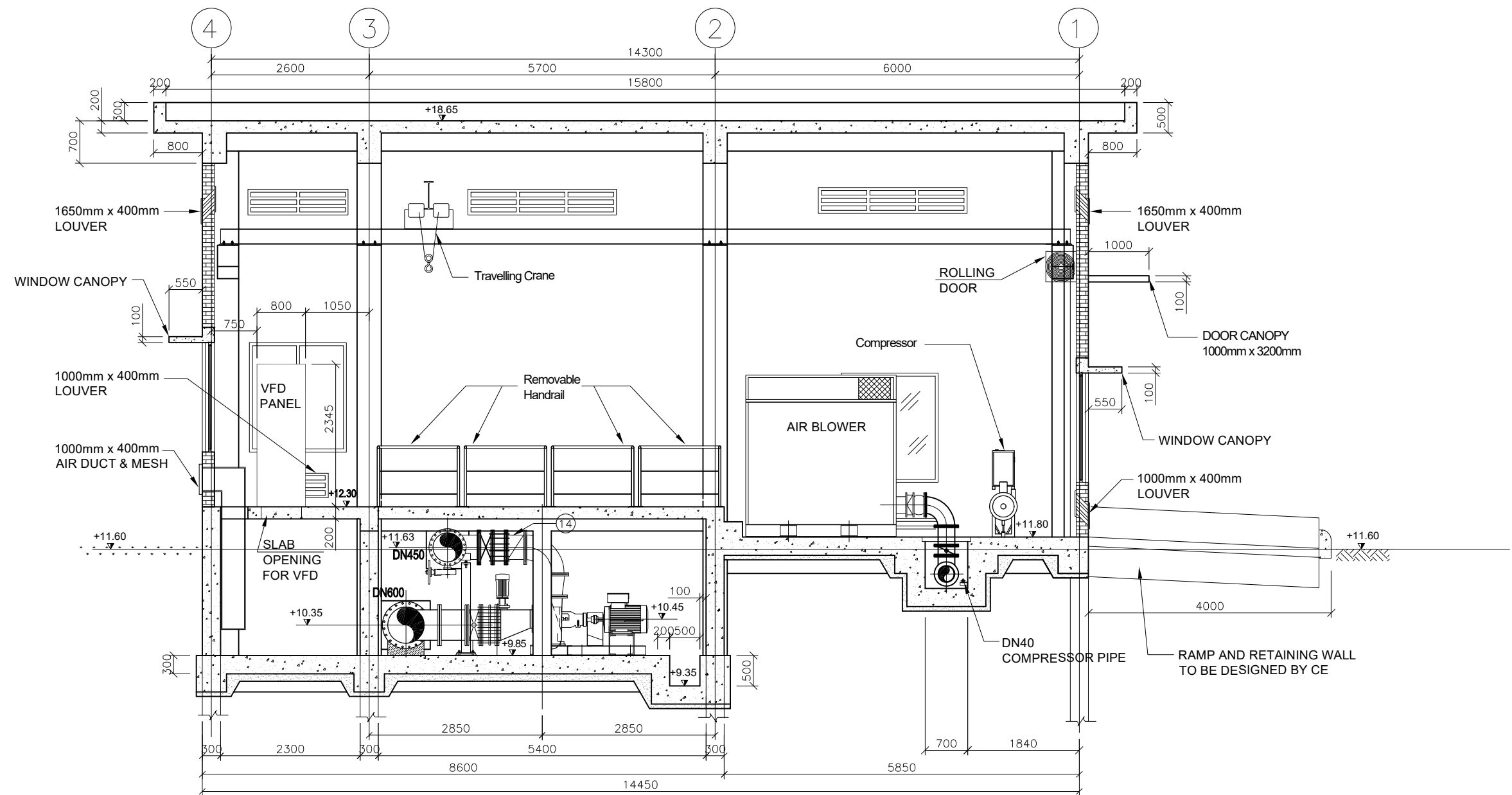


PLAN

PROJECT	DESCRIPTION	JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)	DRAWING No.	NRD/PHIII/WTP-9-2
		NIHON SUIDO CONSULTANTS CO., LTD. (NSC) TOKYO ENGINEERING CONSULTANTS CO., LTD. (TEC) CTI ENGINEERING INTERNATIONAL CO., LTD. (CTII) KITAKYUSHU WATER SERVICE CO., LTD. (KWS)	SCALE	1:100 (A3)

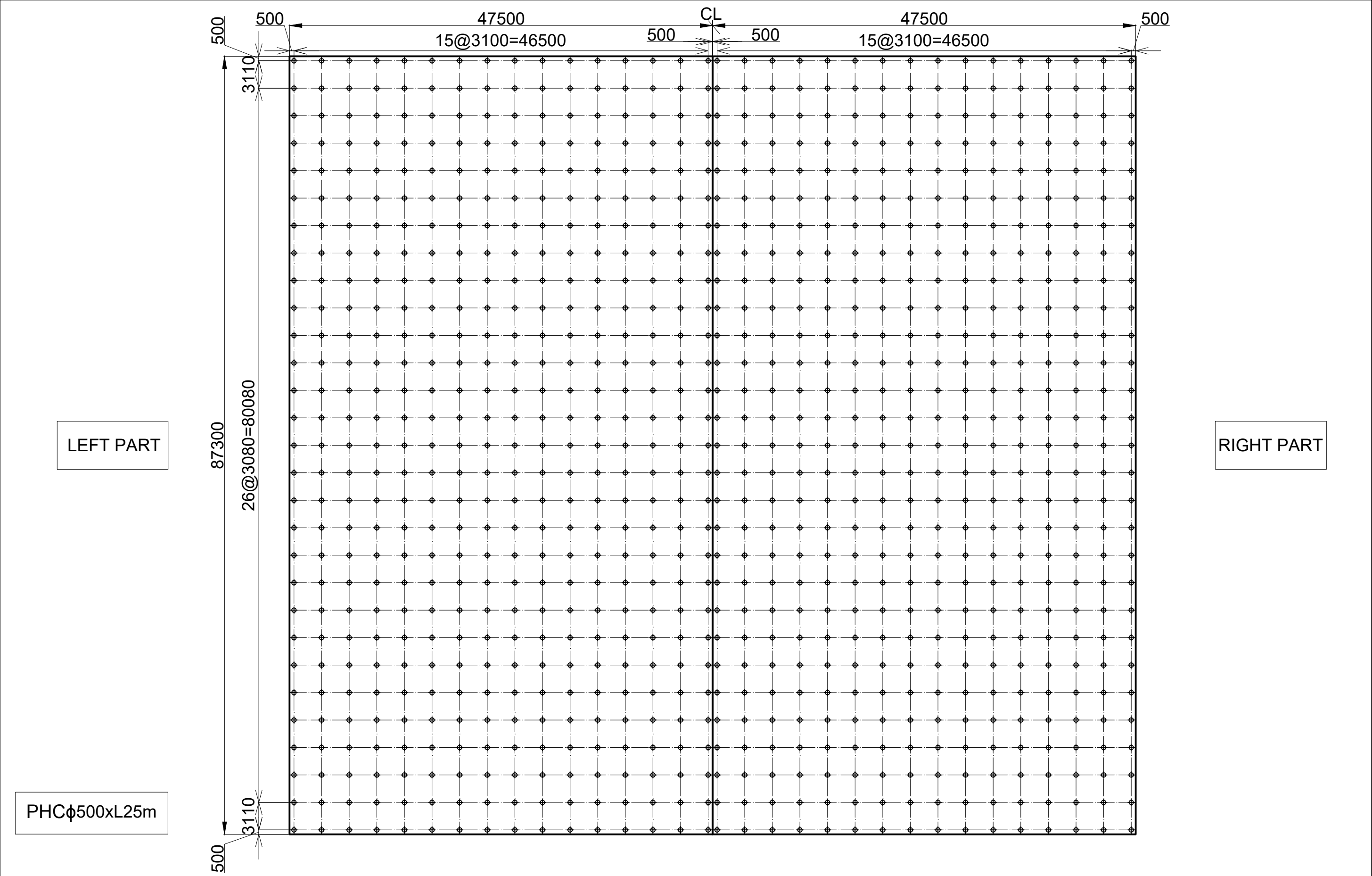
Preparatory Survey on Nirodh Water Supply Expansion Project

Backwash Pump Station
Plan

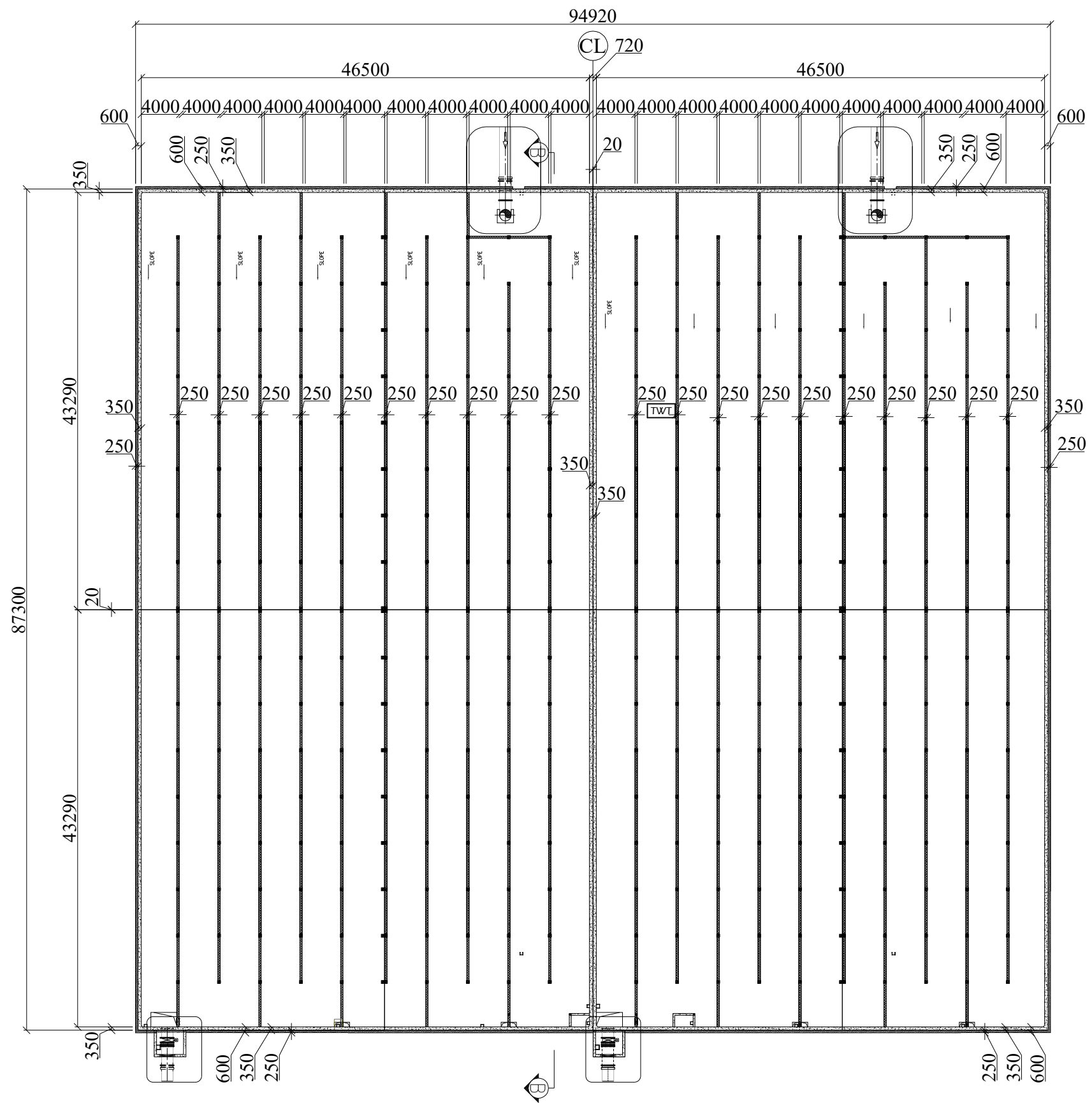


SECTION 1-1

PROJECT Preparatory Survey on Nirodh Water Supply Expansion Project	DESCRIPTION Backwash Pump Station Section	JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)	DRAWING No.	NRD/PHIII/WTP-9-3
		NIHON SUIDO CONSULTANTS CO., LTD. (NSC) TOKYO ENGINEERING CONSULTANTS CO., LTD. (TEC) CTI ENGINEERING INTERNATIONAL CO., LTD. (CTII) KITAKYUSHU WATER SERVICE CO., LTD. (KWS)	SCALE	1:100 (A3)



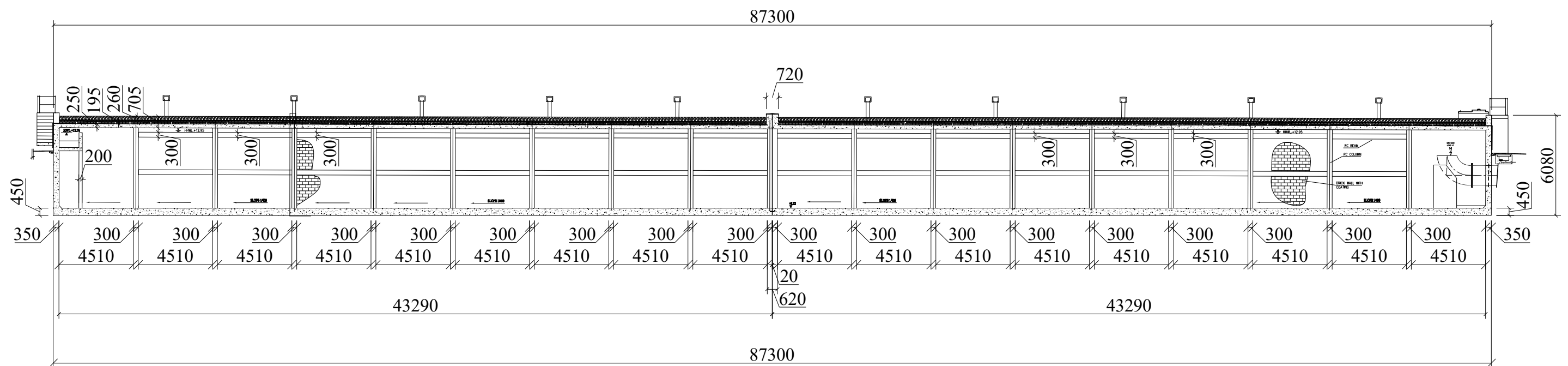
PROJECT Preparatory Survey on Nirodh Water Supply Expansion Project	DESCRIPTION Clear Water Reservoir – Foundation	JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)	DRAWING No.	NRD/PH111/WTP-10-1
		NIHON SUIDO CONSULTANTS CO., LTD. (NSC) TOKYO ENGINEERING CONSULTANTS CO., LTD. (TEC) CTI ENGINEERING INTERNATIONAL CO., LTD. (CTI1) KITAKYUSHU WATER SERVICE CO., LTD. (KWS)	SCALE	1:400



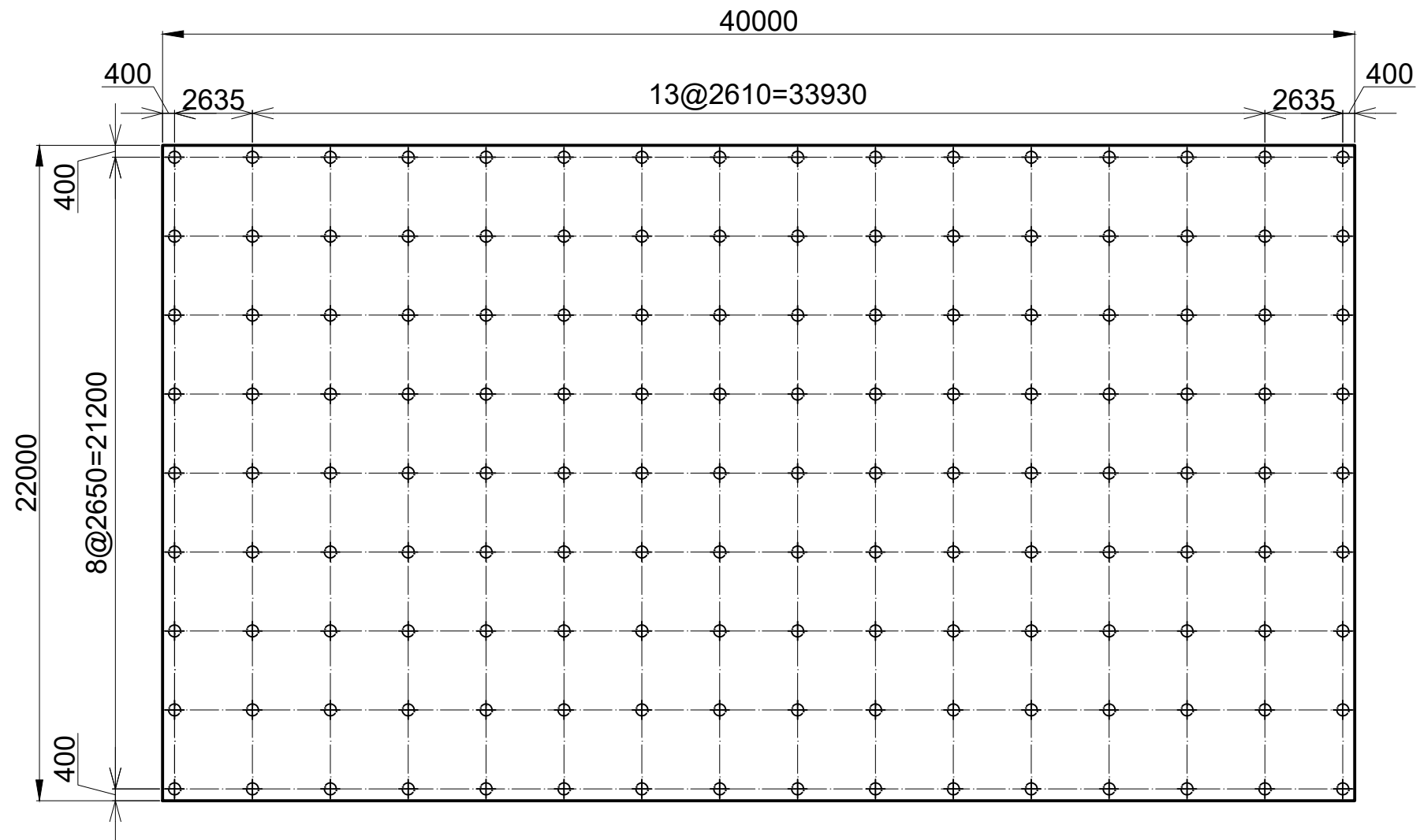
PROJECT	DESCRIPTION	JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)	DRAWING No.	NRD/PHIII/WTP-10-2
		NIHON SUIDO CONSULTANTS CO., LTD. (NSC) TOKYO ENGINEERING CONSULTANTS CO., LTD. (TEC) CTI ENGINEERING INTERNATIONAL CO., LTD. (CTII) KITAKYUSHU WATER SERVICE CO., LTD. (KWS)	SCALE	1:500 (A3)

Preparatory Survey on Nirodh Water Supply Expansion Project

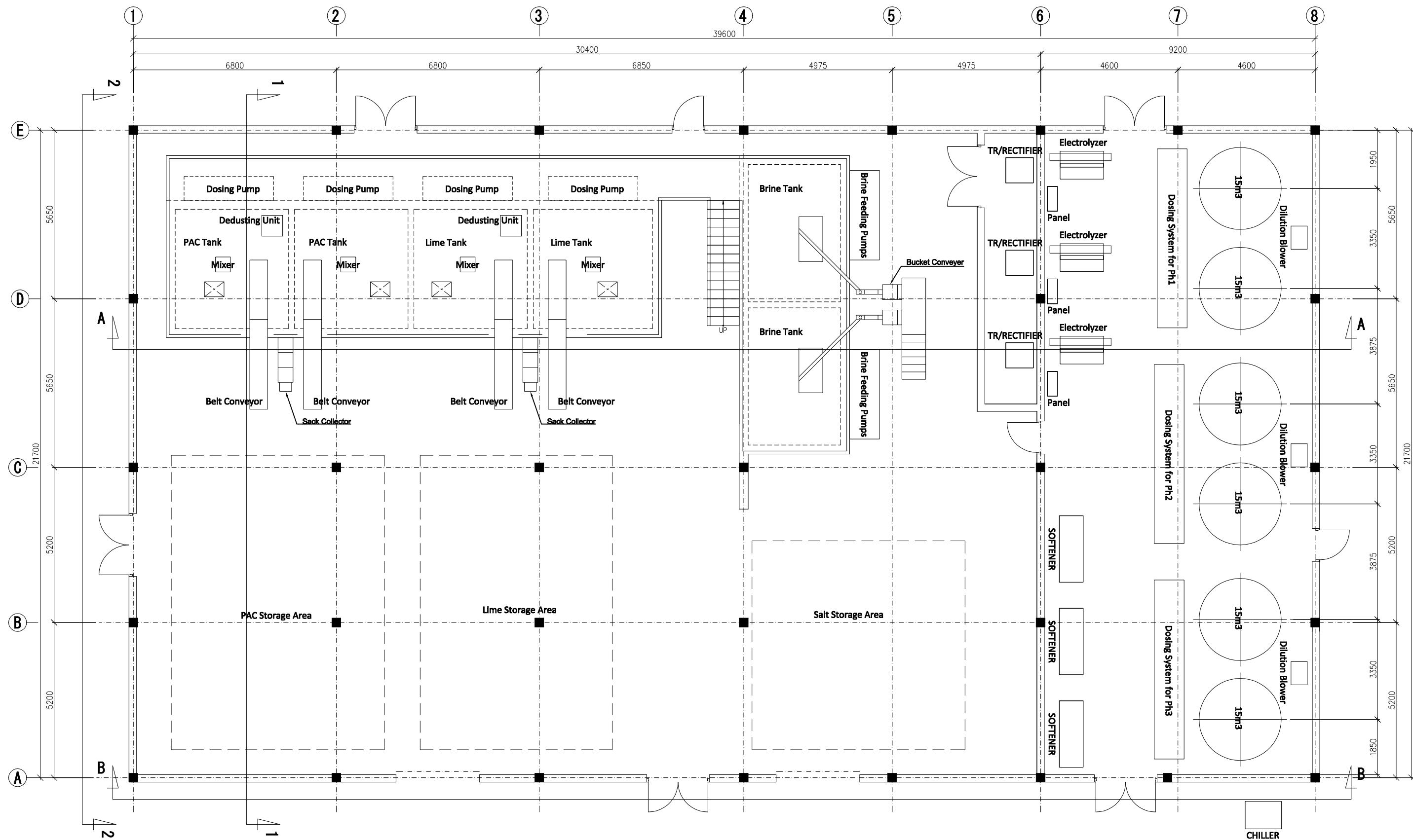
Clear Water Reservoir - Plan



PROJECT Preparatory Survey on Nirodh Water Supply Expansion Project	DESCRIPTION Clear Water Reservoir - Section	JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)	DRAWING No.	NRD/PHIII/WTP-10-3
		NIHON SUIDO CONSULTANTS CO., LTD. (NSC) TOKYO ENGINEERING CONSULTANTS CO., LTD. (TEC) CTI ENGINEERING INTERNATIONAL CO., LTD. (CTII) KITAKYUSHU WATER SERVICE CO., LTD. (KWS)	SCALE	1:250 (A3)



PROJECT Preparatory Survey on Nirodh Water Supply Expansion Project	DESCRIPTION Chemical Building – Foundation	JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)	DRAWING No.	NRD/PHI11/WTP-11-1
		NIHON SUIDO CONSULTANTS CO., LTD. (NSC) TOKYO ENGINEERING CONSULTANTS CO., LTD. (TEC) CTI ENGINEERING INTERNATIONAL CO., LTD. (CTI1) KITAKYUSHU WATER SERVICE CO., LTD. (KWS)	SCALE	1:200

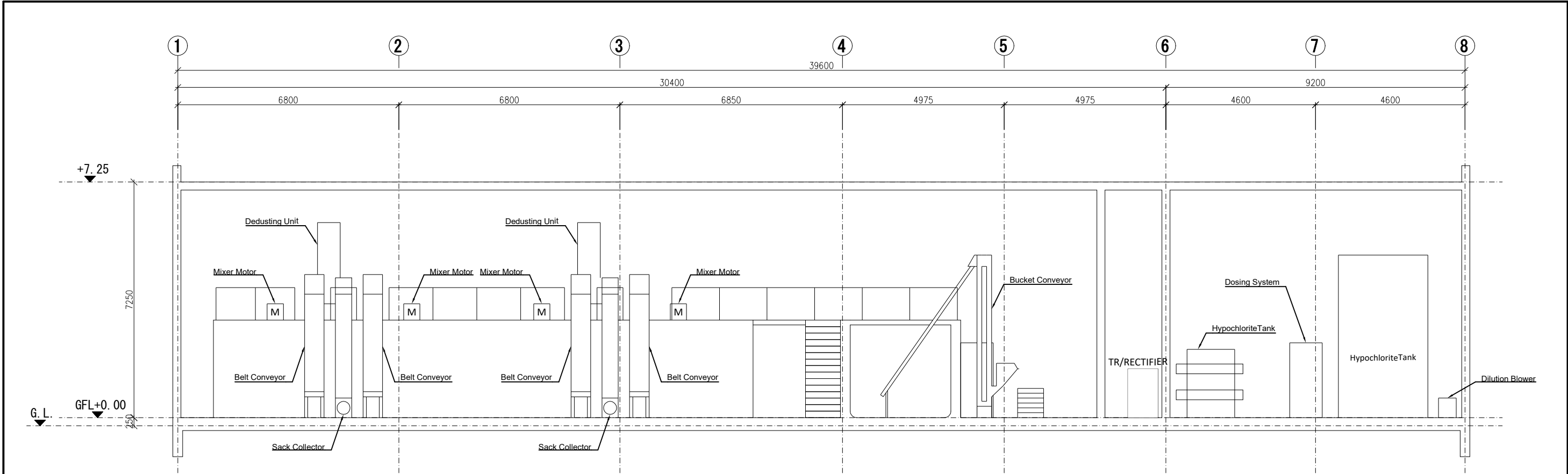


PLAN

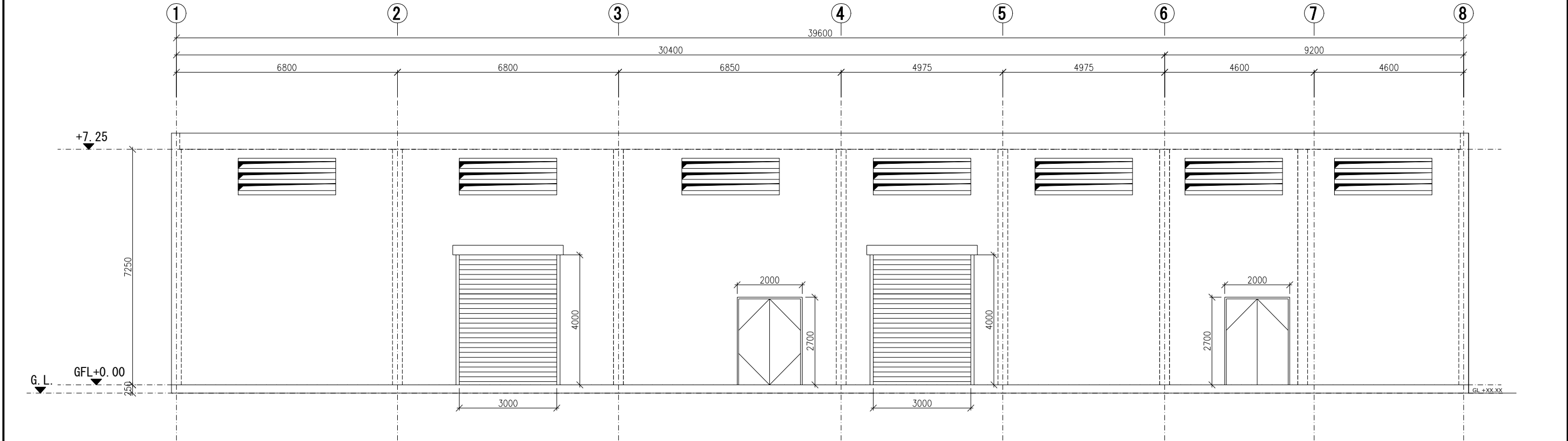
PROJECT	DESCRIPTION	JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)	DRAWING No.	NRD/PHIII/WTP-11-2
		NIHO SUIDO CONSULTANTS CO., LTD. (NSC) TOKYO ENGINEERING CONSULTANTS CO., LTD. (TEC) CTI ENGINEERING INTERNATIONAL CO., LTD. (CTII) KITAKYUSHU WATER SERVICE CO., LTD. (KWS)	SCALE	1:125 (A3)

Preparatory Survey on Nirodh Water Supply Expansion Project

Chemical Building Plan

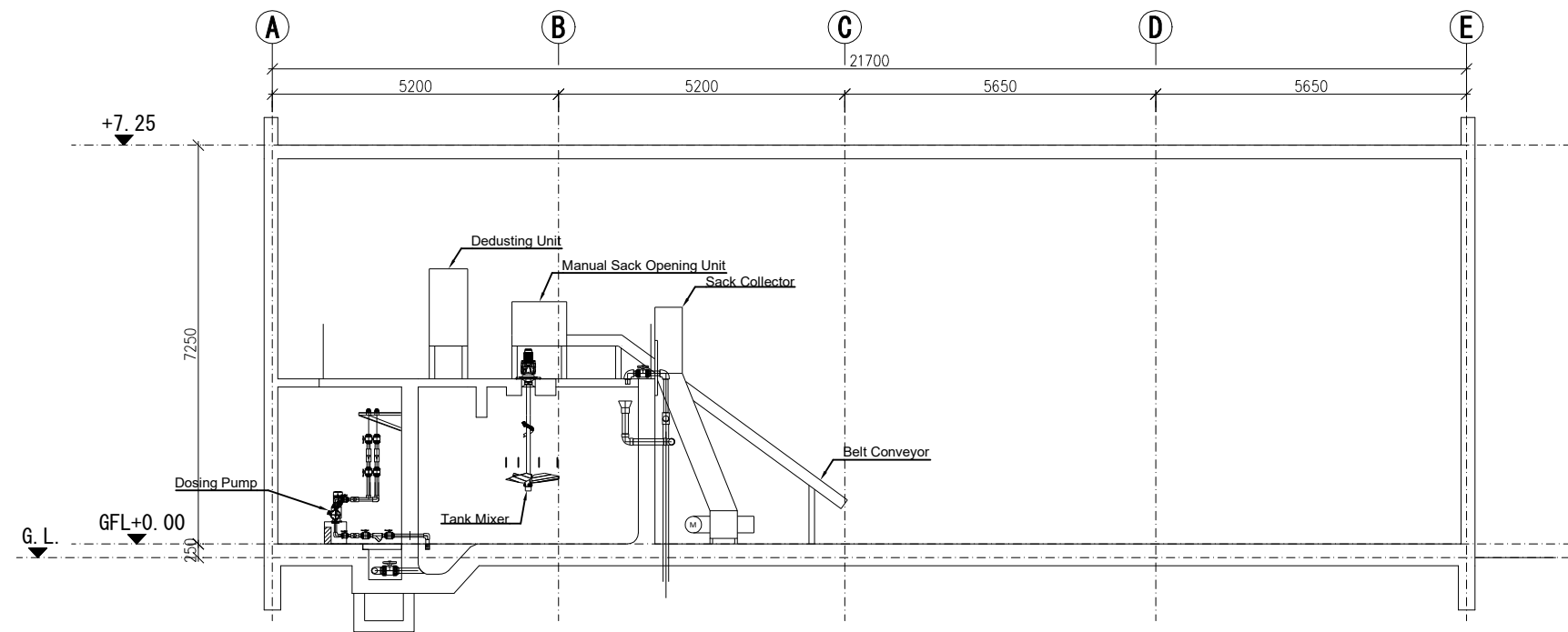


Section A-A

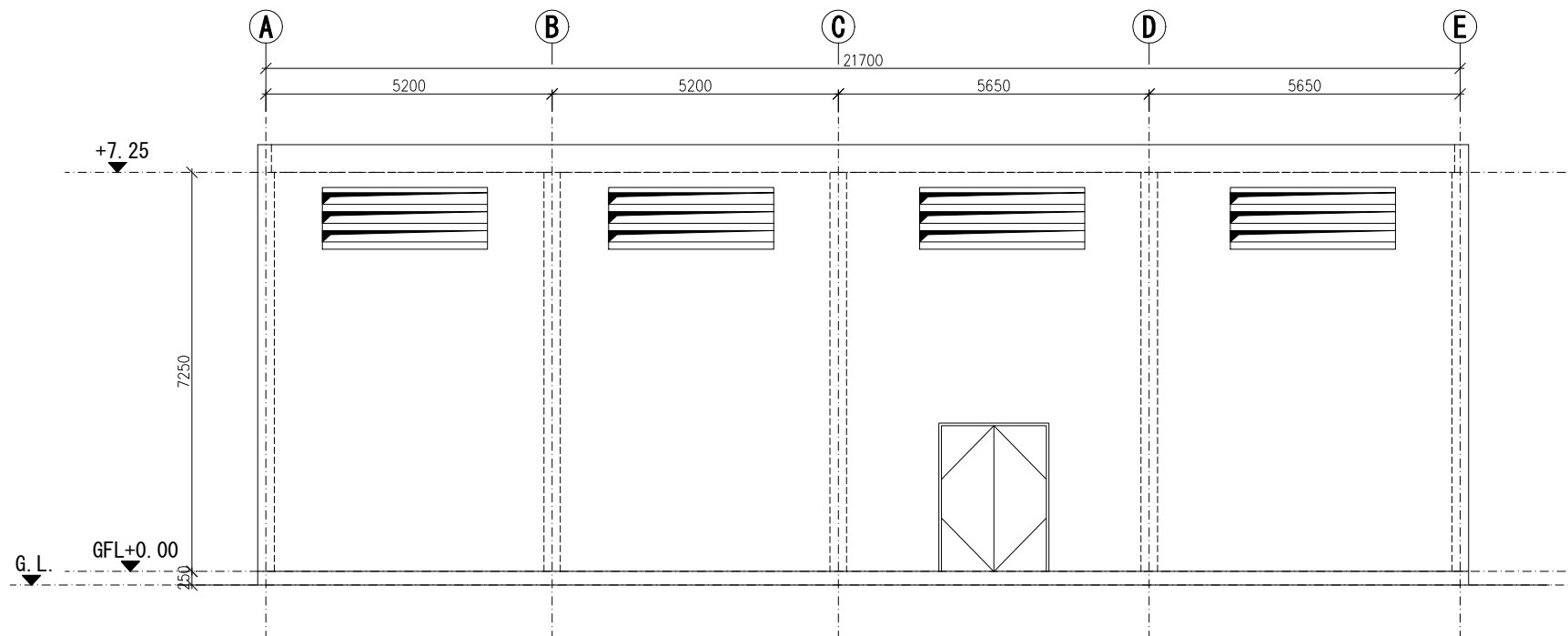


Elevation B-B

PROJECT Preparatory Survey on Nirodh Water Supply Expansion Project	DESCRIPTION Chemical Building Section (1)	JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)	DRAWING No.	NRD/PHIII/WTP-11-3
		NIHON SUIDO CONSULTANTS CO., LTD. (NSC) TOKYO ENGINEERING CONSULTANTS CO., LTD. (TEC) CTI ENGINEERING INTERNATIONAL CO., LTD. (CTII) KITAKYUSHU WATER SERVICE CO., LTD. (KWS)	SCALE	1:125 (A3)

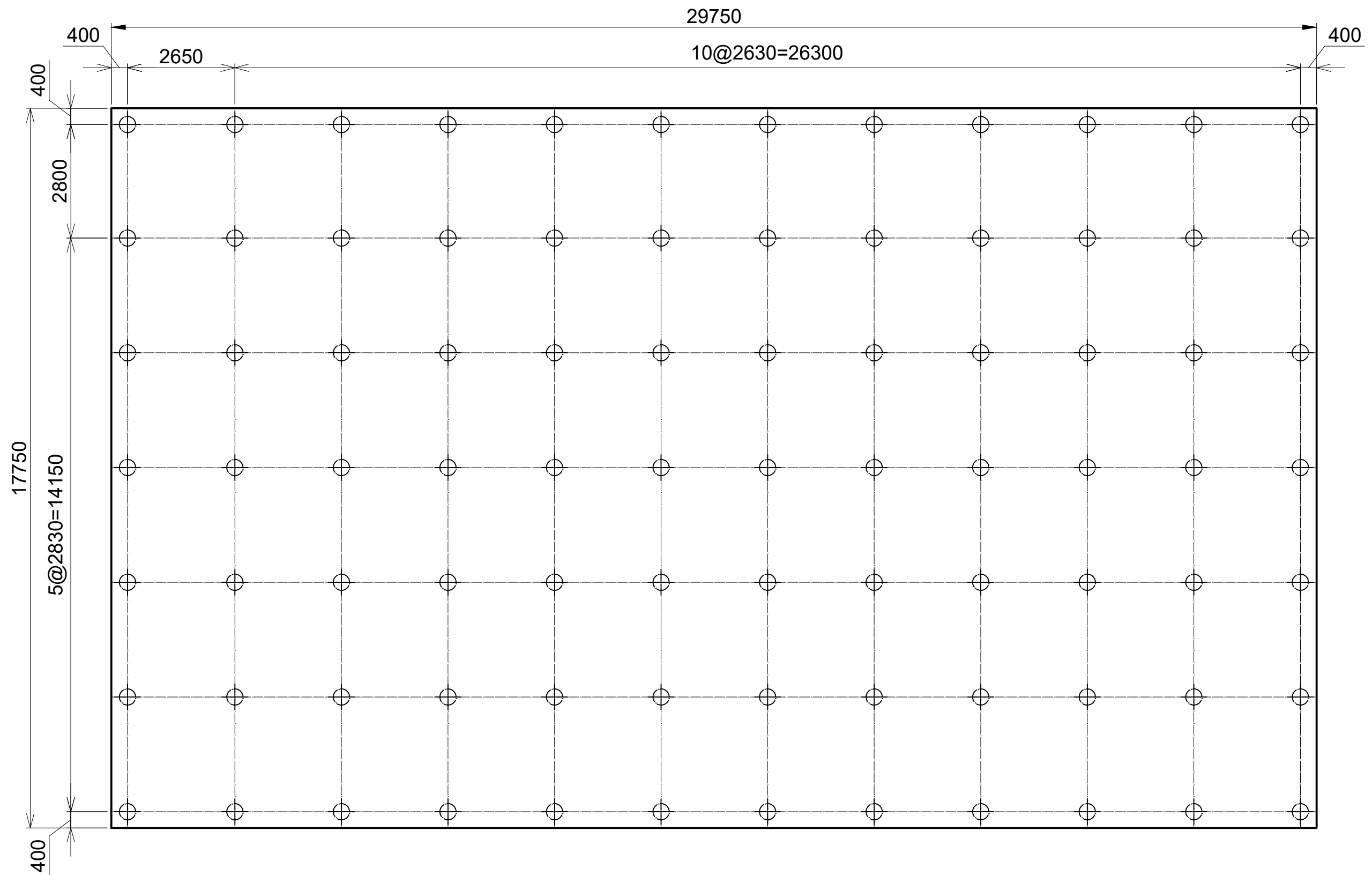


Section 1-1



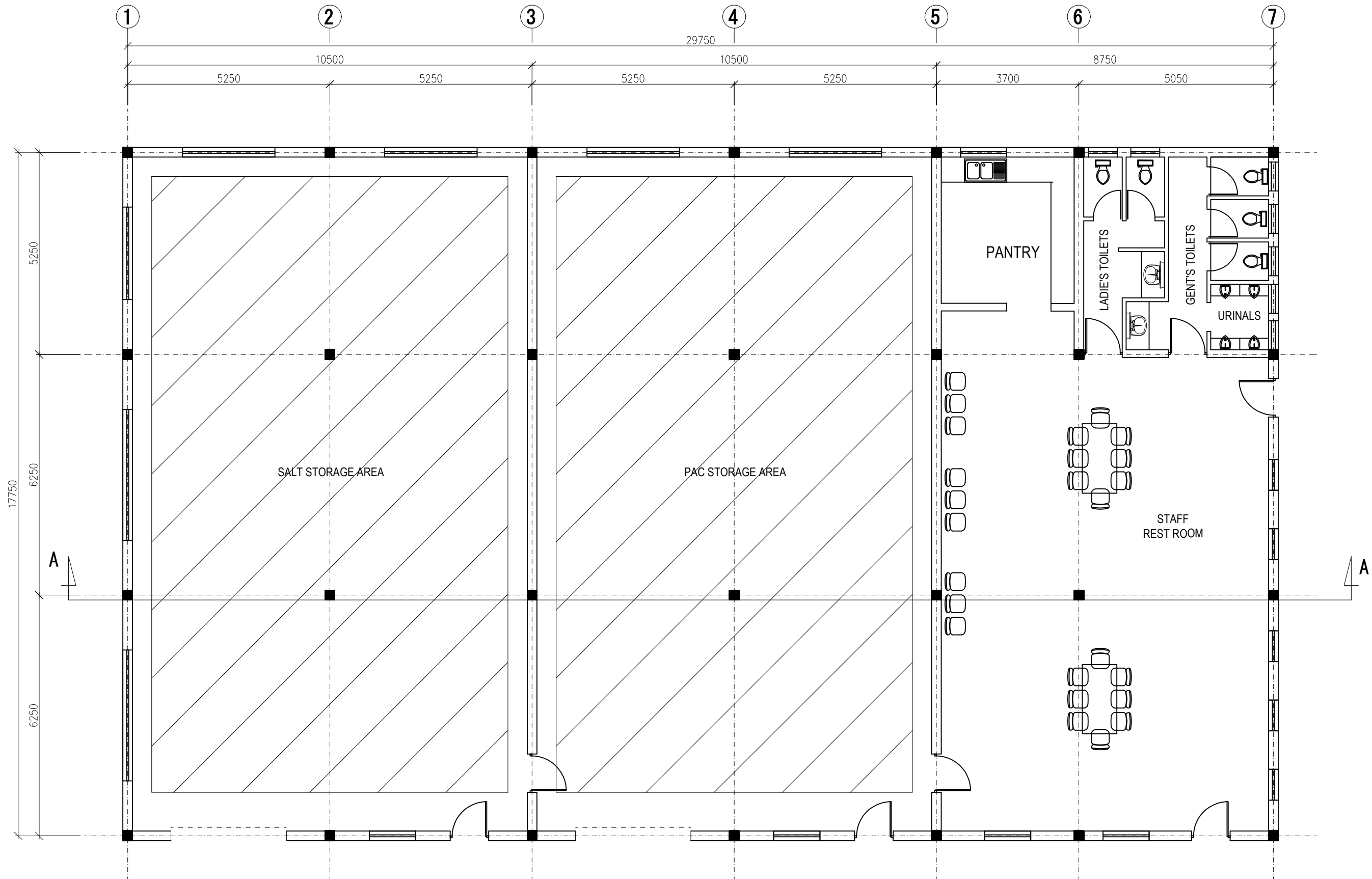
Elevation 2-2

PROJECT Preparatory Survey on Nirodh Water Supply Expansion Project	DESCRIPTION Chemical Building Section (2)	JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)	DRAWING No.	NRD/PHIII/WTP-11-4
		NIHON SUIDO CONSULTANTS CO., LTD. (NSC) TOKYO ENGINEERING CONSULTANTS CO., LTD. (TEC) CTI ENGINEERING INTERNATIONAL CO., LTD. (CTII) KITAKYUSHU WATER SERVICE CO., LTD. (KWS)	SCALE	1:125 (A3)



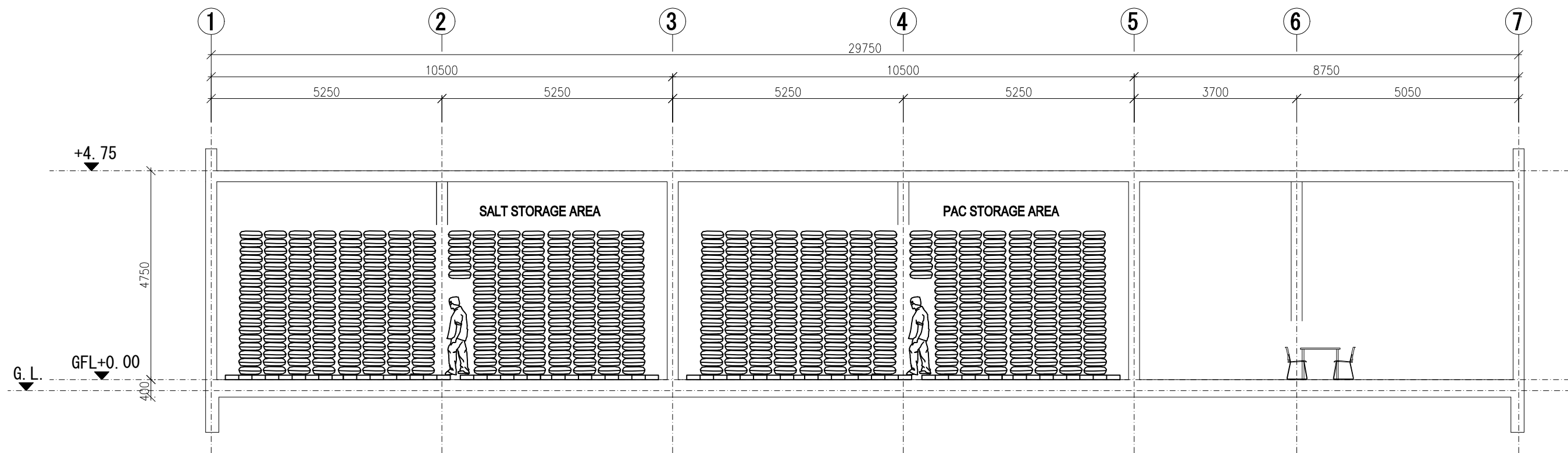
PHCφ400xL25m

PROJECT Preparatory Survey on Nirodh Water Supply Expansion Project	DESCRIPTION Chemical Storage Building – Foundation	JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)	DRAWING No.	NRD/PHI11/WTP-12-1
		NIHON SUIDO CONSULTANTS CO., LTD. (NSC) TOKYO ENGINEERING CONSULTANTS CO., LTD. (TEC) CTI ENGINEERING INTERNATIONAL CO., LTD. (CTI1) KITAKYUSHU WATER SERVICE CO., LTD. (KWS)	SCALE	1:100

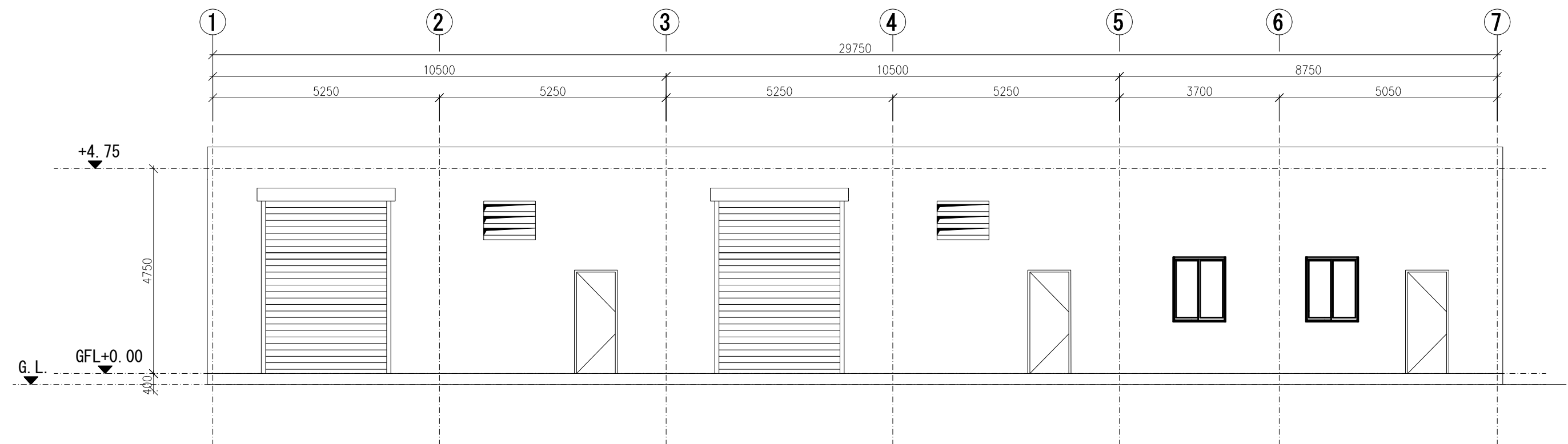


PLAN

PROJECT Preparatory Survey on Nirodh Water Supply Expansion Project	DESCRIPTION Chemical Storage Building Plan	JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)	DRAWING No.	NRD/PHIII/WTP-12-2
		NIHON SUIDO CONSULTANTS CO., LTD. (NSC) TOKYO ENGINEERING CONSULTANTS CO., LTD. (TEC) CTI ENGINEERING INTERNATIONAL CO., LTD. (CTII) KITAKYUSHU WATER SERVICE CO., LTD. (KWS)	SCALE	1:100 (A3)



Section A-A

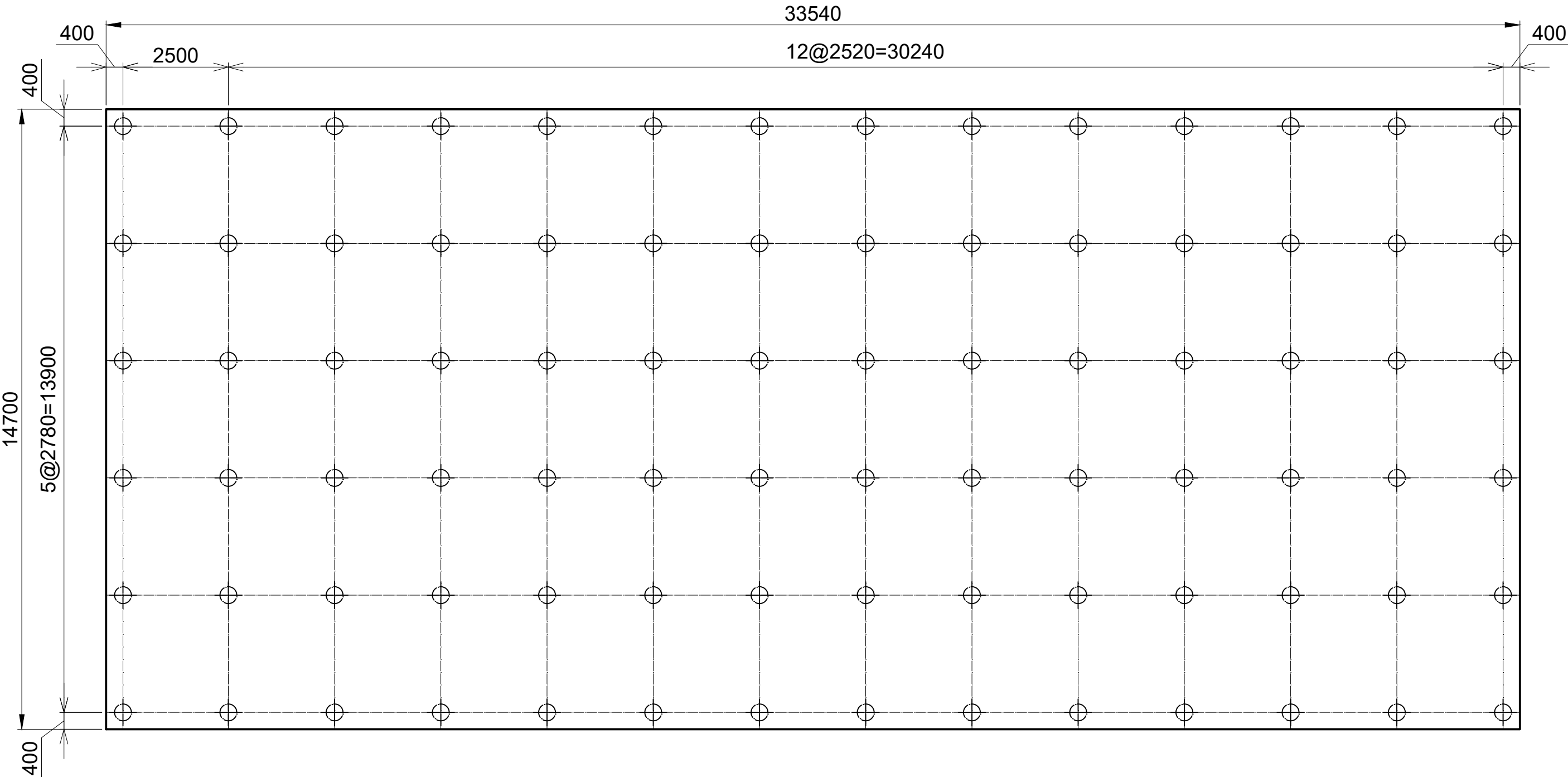


Section B-B

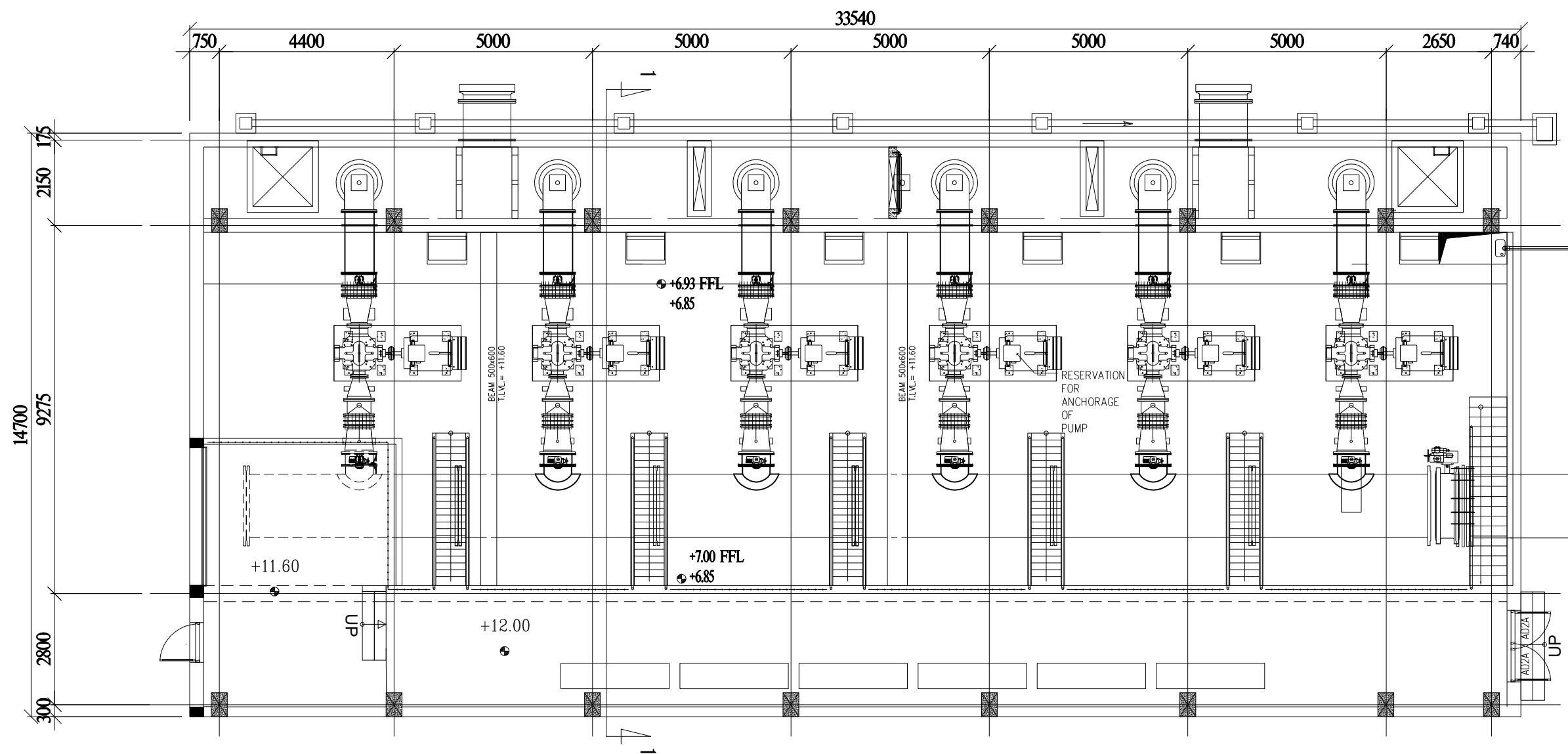
PROJECT	DESCRIPTION	JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)	DRAWING No.	NRD/PHIII/WTP-12-3
		NIHON SUIDO CONSULTANTS CO., LTD. (NSC) TOKYO ENGINEERING CONSULTANTS CO., LTD. (TEC) CTI ENGINEERING INTERNATIONAL CO., LTD. (CTII) KITAKYUSHU WATER SERVICE CO., LTD. (KWS)	SCALE	1:100 (A3)

Preparatory Survey on Nirodh Water Supply Expansion Project

Chemical Storage Building Section



PROJECT Preparatory Survey on Nirodh Water Supply Expansion Project	DESCRIPTION Water Transmission Pumping Station – Foundation	JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)	DRAWING No.	NRD/PHI11/WTP-13-1
		NIHON SUIDO CONSULTANTS CO., LTD. (NSC) TOKYO ENGINEERING CONSULTANTS CO., LTD. (TEC) CTI ENGINEERING INTERNATIONAL CO., LTD. (CTI1) KITAKYUSHU WATER SERVICE CO., LTD. (KWS)	SCALE	1:100

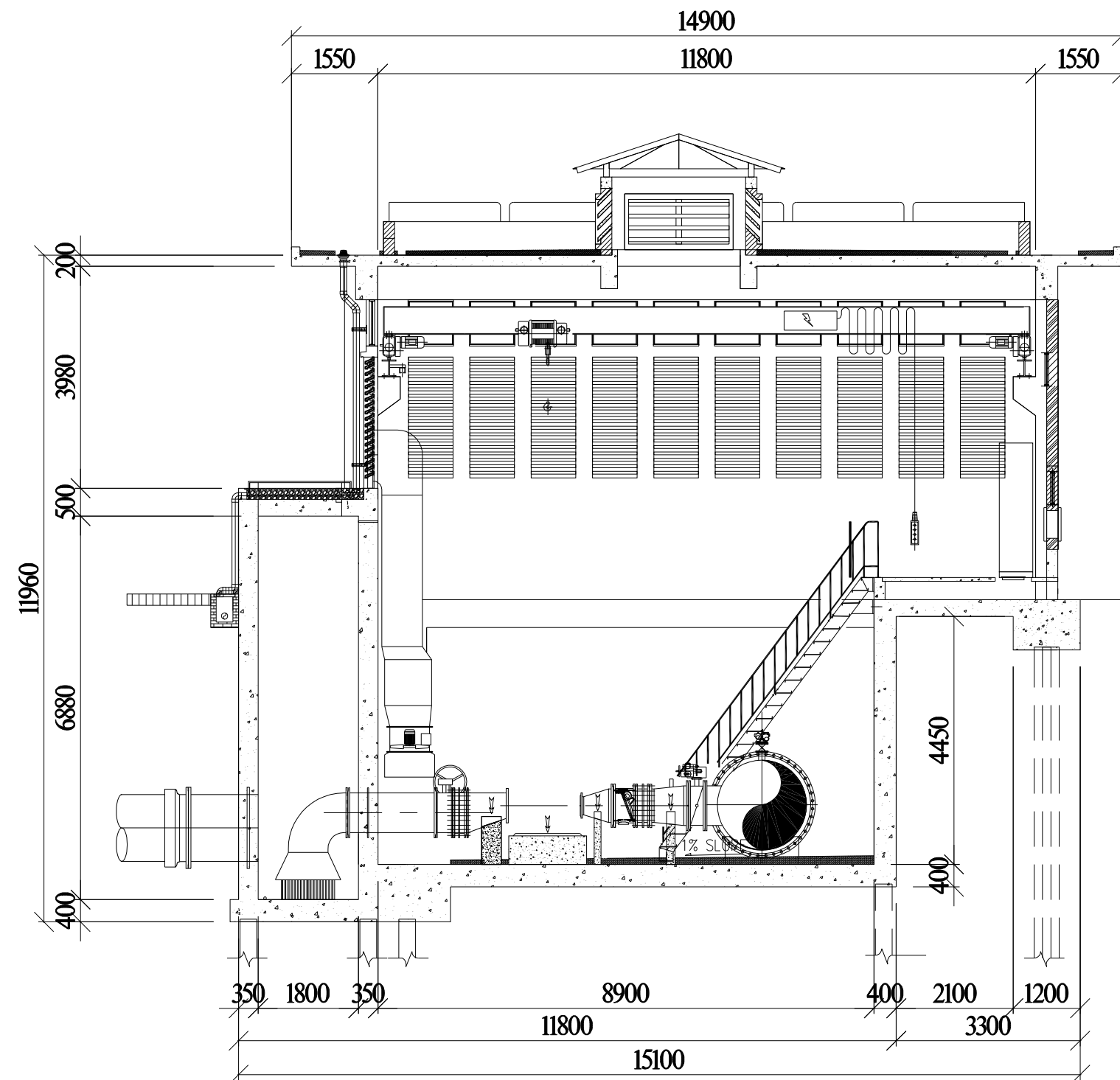


PLAN

PROJECT	DESCRIPTION	JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)	DRAWING No.	NRD/PHIII/WTP-13-2
		NIHON SUIDO CONSULTANTS CO., LTD. (NSC) TOKYO ENGINEERING CONSULTANTS CO., LTD. (TEC) CTI ENGINEERING INTERNATIONAL CO., LTD. (CTII) KITAKYUSHU WATER SERVICE CO., LTD. (KWS)	SCALE	1:100 (A3)

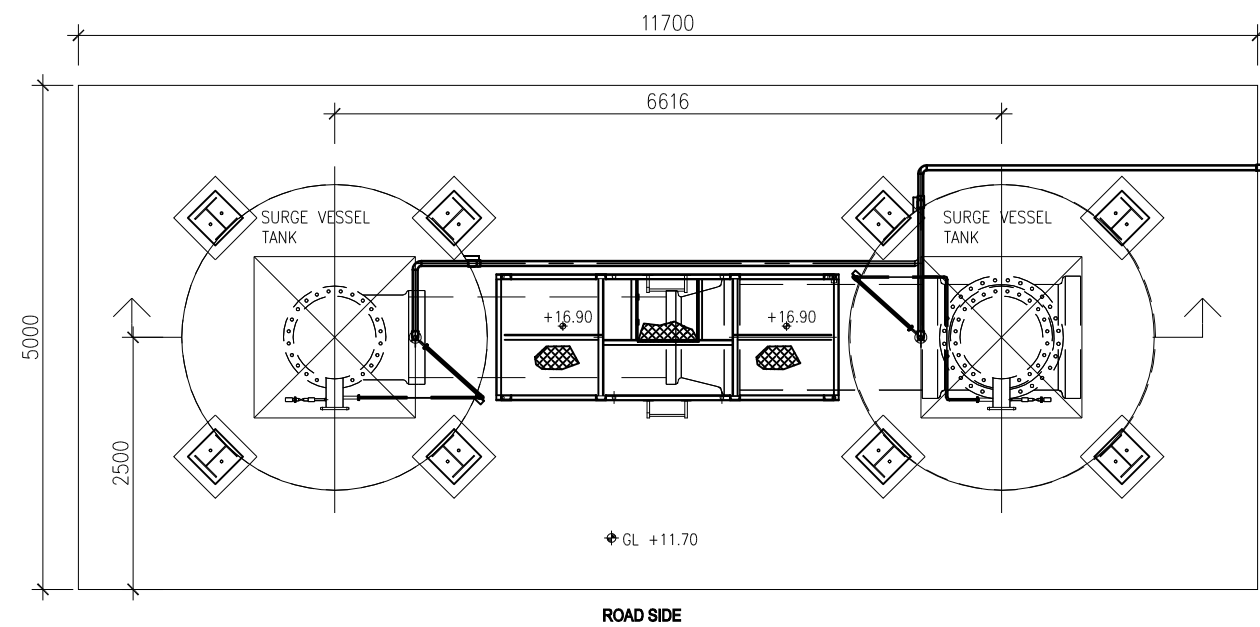
Preparatory Survey on Nirodh Water Supply Expansion Project

Water Transmission Pumping Station
Plan

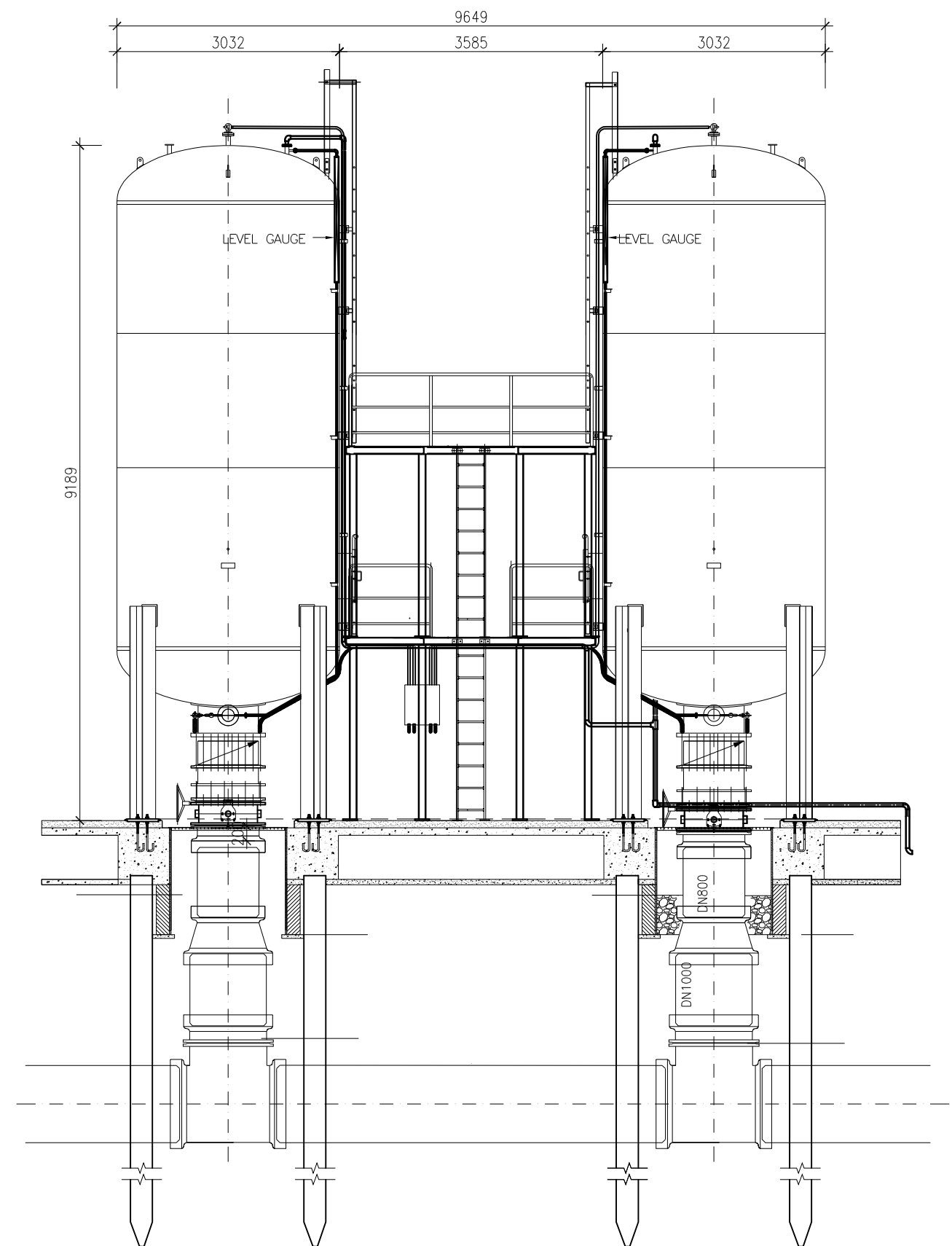


SECTION 1-1

PROJECT Preparatory Survey on Nirodh Water Supply Expansion Project	DESCRIPTION Water Transmission Pumping Station Section	JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)	DRAWING No.	NRD/PHIII/WTP-13-3
		NIHON SUIDO CONSULTANTS CO., LTD. (NSC) TOKYO ENGINEERING CONSULTANTS CO., LTD. (TEC) CTI ENGINEERING INTERNATIONAL CO., LTD. (CTII) KITAKYUSHU WATER SERVICE CO., LTD. (KWS)	SCALE	1:100 (A3)

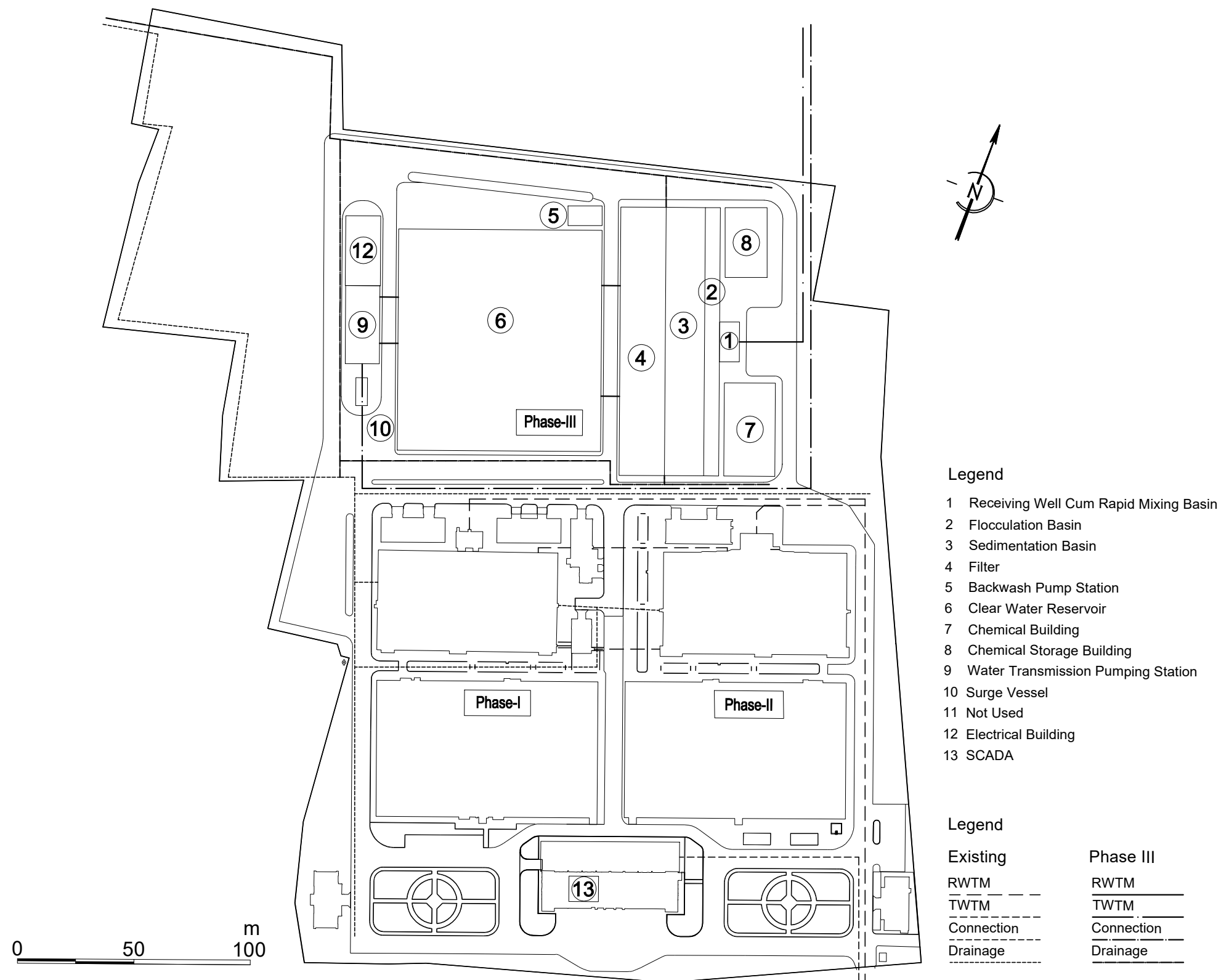


TOP PLAN



SECTION

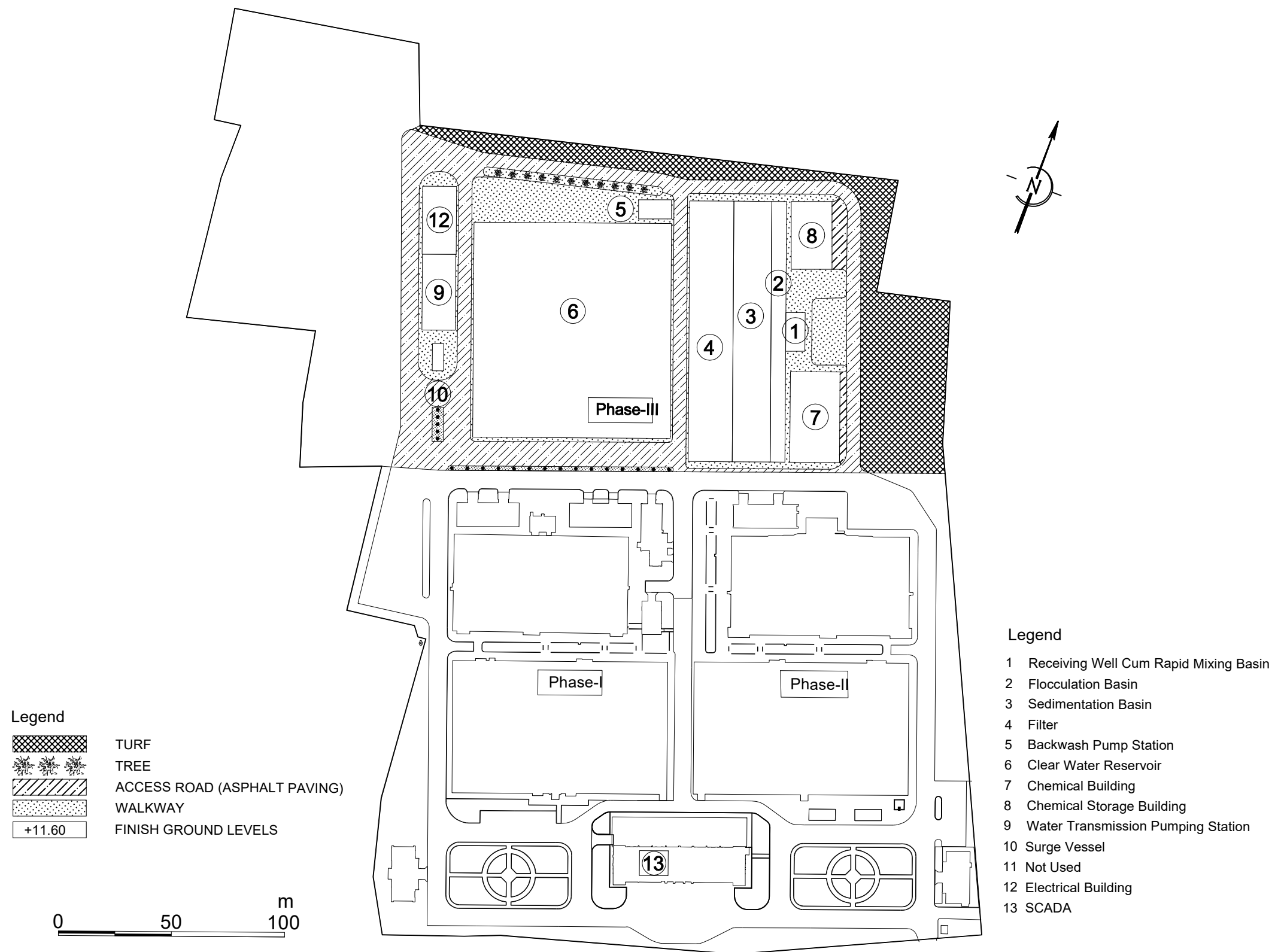
PROJECT Preparatory Survey on Nirodh Water Supply Expansion Project	DESCRIPTION Surge Vessel	JAPAN INTERNATIONAL COOPERATION AGENCY (JICA) NIHON SUIDO CONSULTANTS CO., LTD. (NSC) TOKYO ENGINEERING CONSULTANTS CO., LTD. (TEC) CTI ENGINEERING INTERNATIONAL CO., LTD. (CTII) KITAKYUSHU WATER SERVICE CO., LTD. (KWS)	DRAWING No. NRD/PHIII/WTP-13-4	SCALE 1:75 (A3)
			SCALE	



PROJECT	DESCRIPTION	JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)	DRAWING No.	NRD/PHIII/WTP-18
		NIHON SUIDO CONSULTANTS CO., LTD. (NSC) TOKYO ENGINEERING CONSULTANTS CO., LTD. (TEC) CTI ENGINEERING INTERNATIONAL CO., LTD. (CTII) KITAKYUSHU WATER SERVICE CO., LTD. (KWS)	SCALE	1:2000 (A3)

Preparatory Survey on Nirodh Water Supply Expansion Project

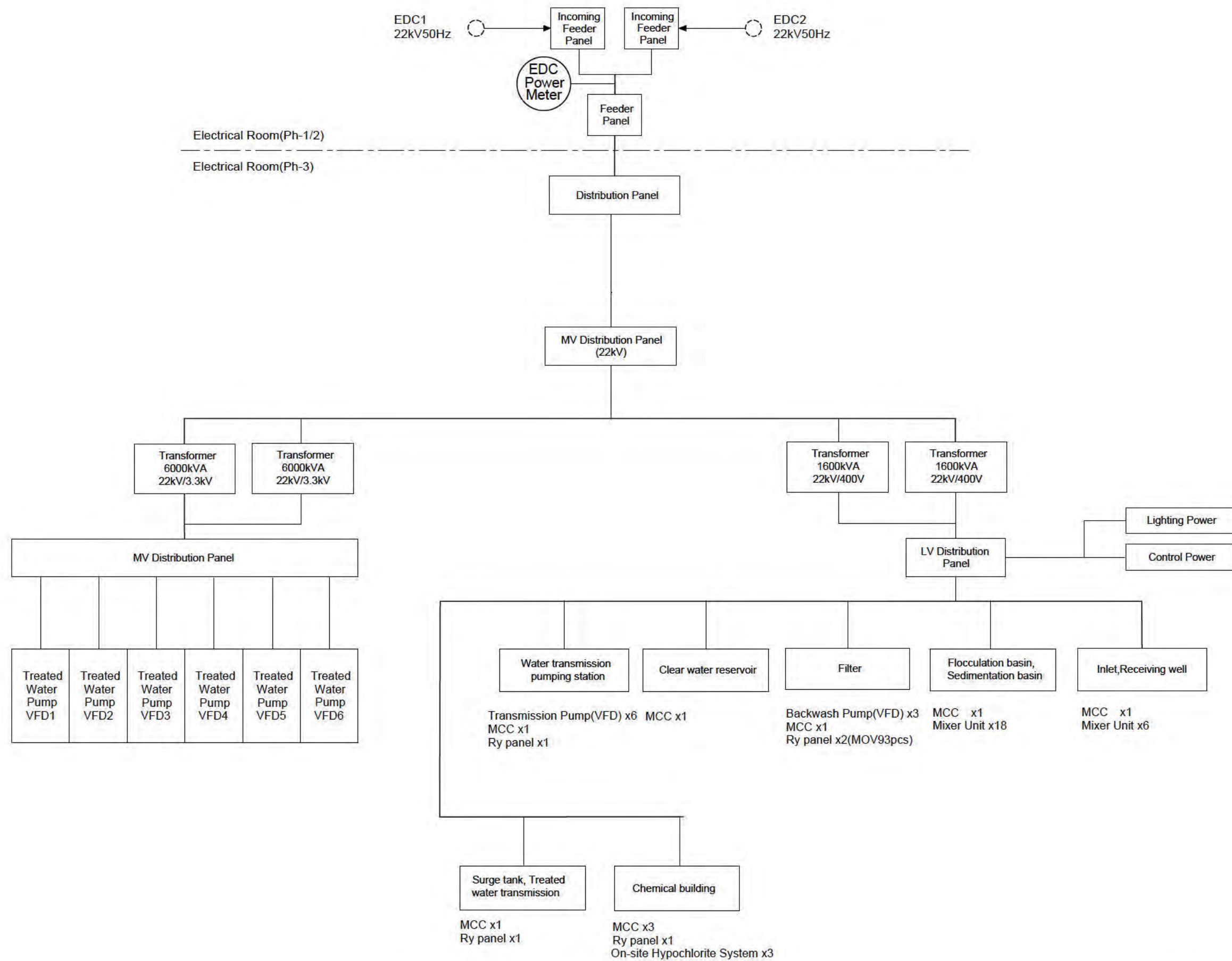
Plan for In-Plant Pipe Laying



PROJECT	DESCRIPTION	JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)	DRAWING No.	NRD/PHIII/WTP-19
		NIHON SUIDO CONSULTANTS CO., LTD. (NSC) TOKYO ENGINEERING CONSULTANTS CO., LTD. (TEC) CTI ENGINEERING INTERNATIONAL CO., LTD. (CTII) KITAKYUSHU WATER SERVICE CO., LTD. (KWS)	SCALE	1:2000 (A3)

Preparatory Survey on Nirodh Water Supply Expansion Project

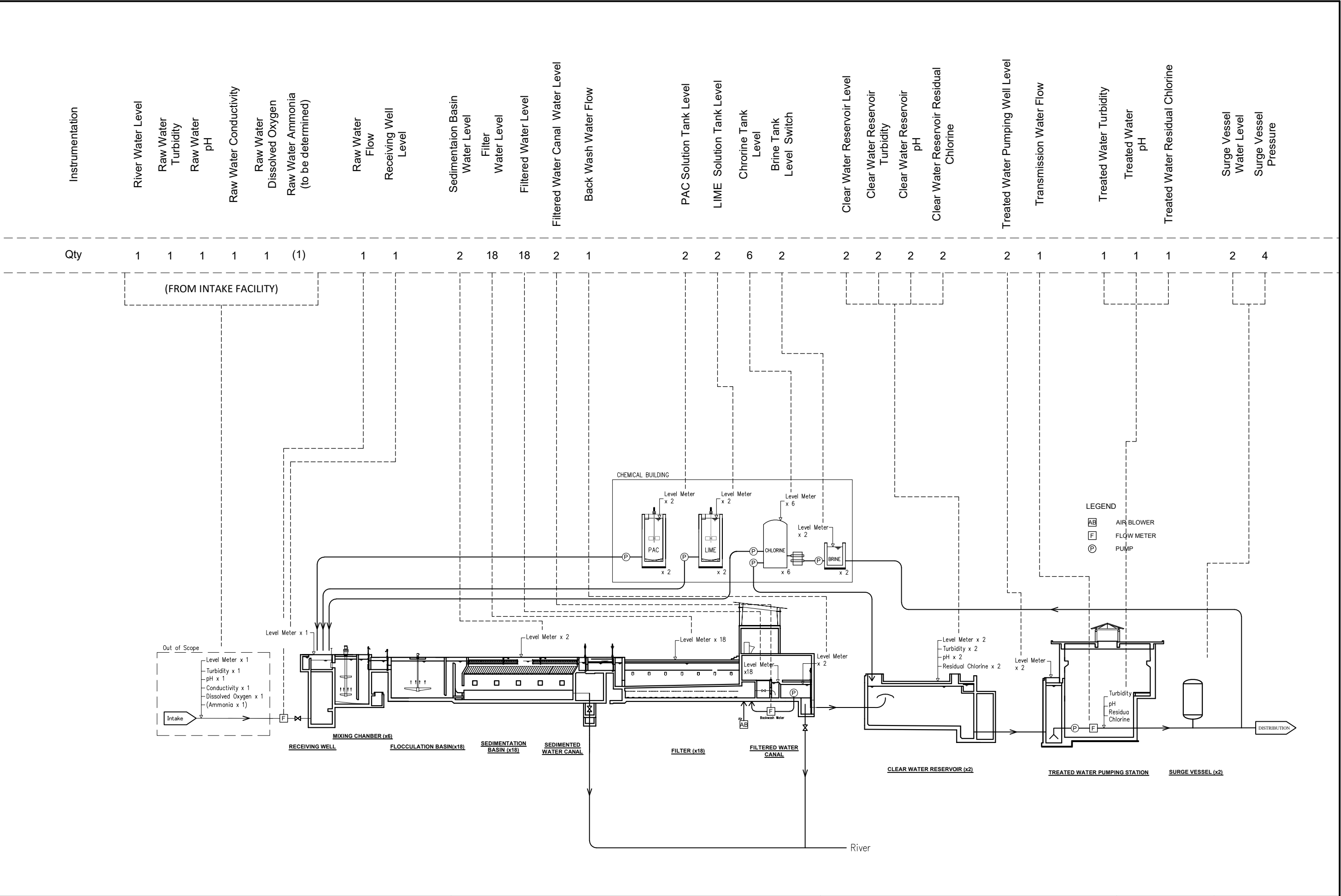
Plan for Landscaping



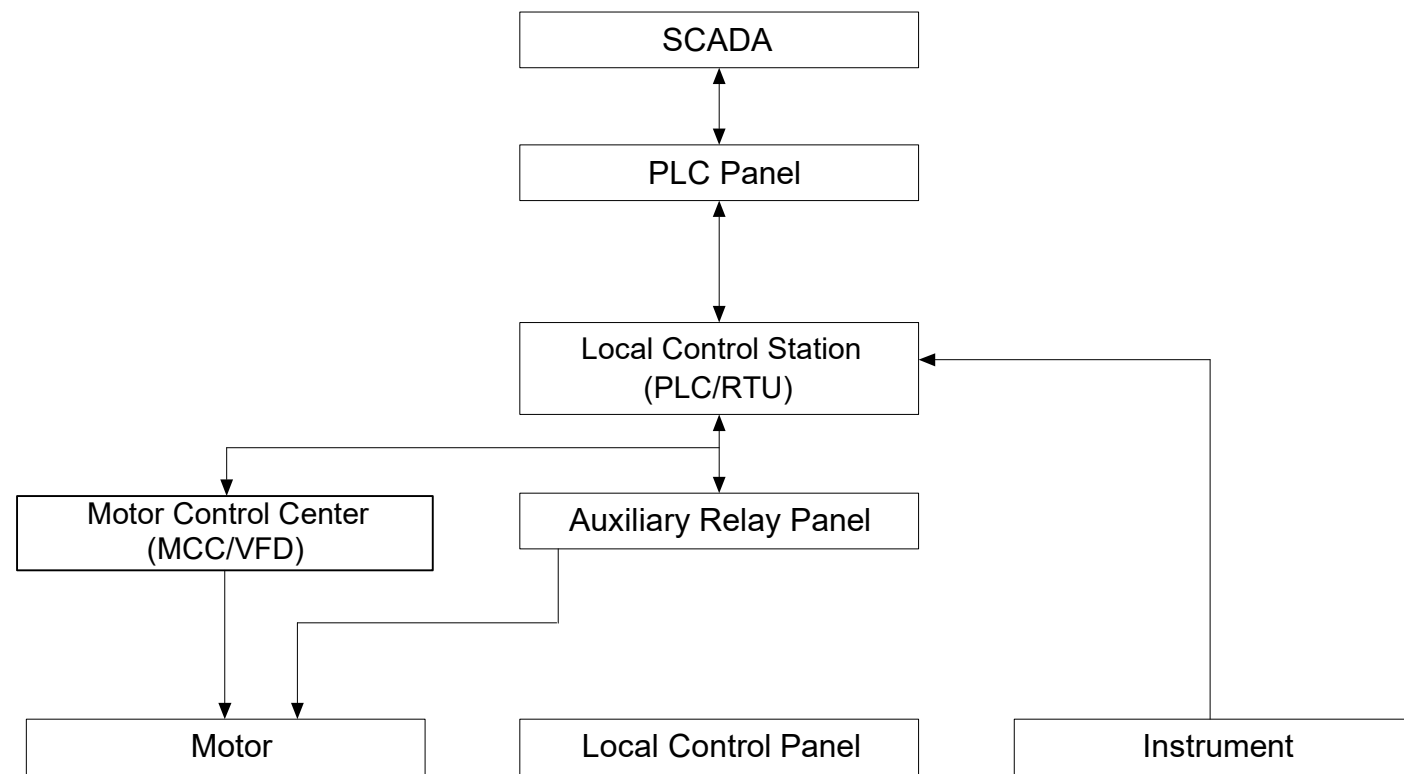
PROJECT	DESCRIPTION	JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)	DRAWING No.	NRD/PHIII/WTP-20
		NIHON SUIDO CONSULTANTS CO.,LTD. (NSC) TEC INTERNATIONAL CO., LTD. (TECI) CTI ENGINEERING INTERNATIONAL CO., LTD. (CTII) KITAKYUSHU WATER SERVICE CO., LTD. (KWS)	SCALE	NONE

Preparatory Survey on Nirodh Water Supply Expansion Project

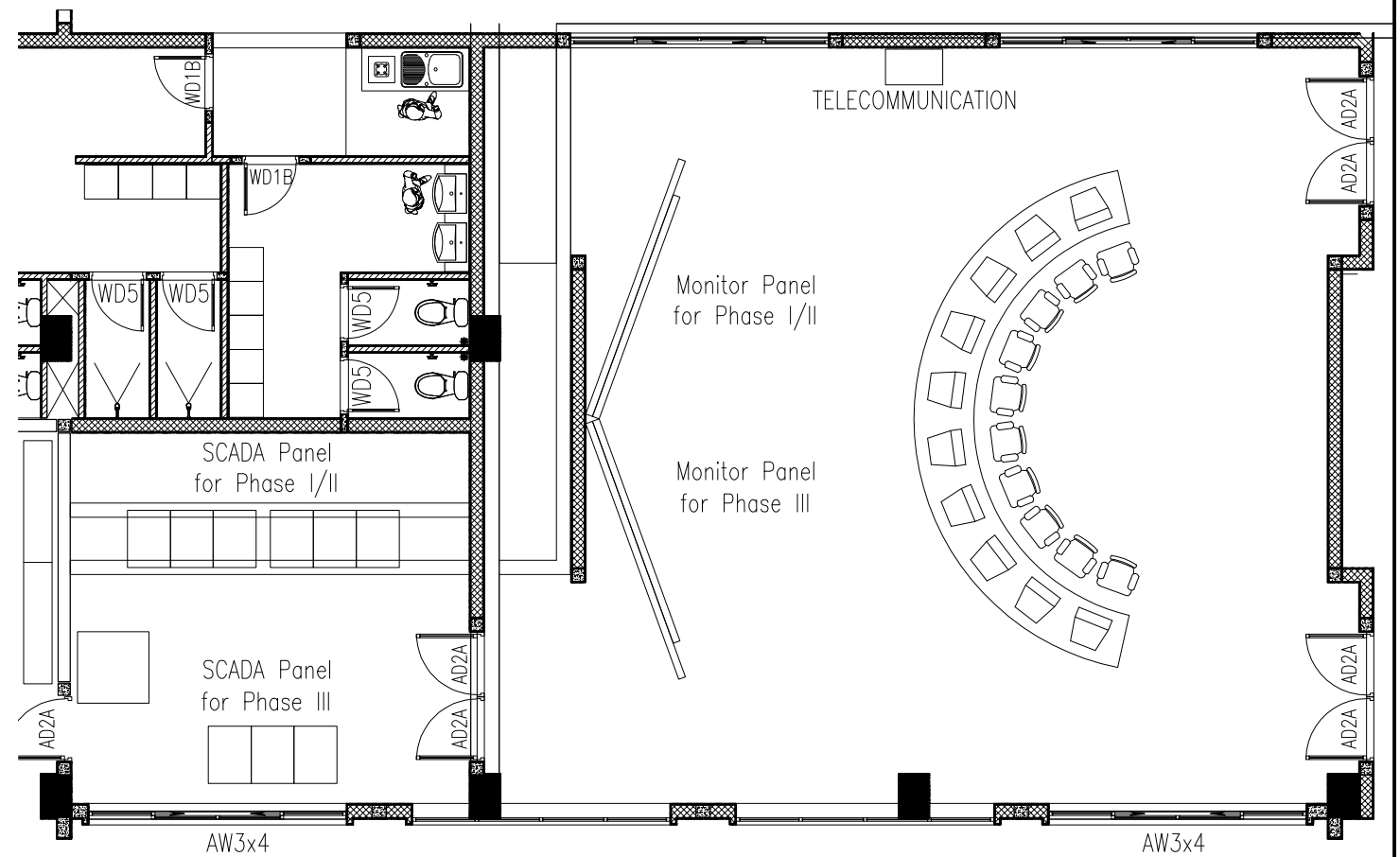
Single Line Diagram



PROJECT Preparatory Survey on Nirodh Water Supply Expansion Project	DESCRIPTION Flow Diagram For Instrumentation (Water Treatment Plant)	JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)	DRAWING No.	NRD/PHIII/WTP-21
		NIHON SUIDO CONSULTANTS CO., LTD. (NSC) TOKYO ENGINEERING CONSULTANTS CO., LTD. (TEC) CTI ENGINEERING INTERNATIONAL CO., LTD. (CTII) KITAKYUSHU WATER SERVICE CO., LTD. (KWS)	SCALE	NONE



SCADA System Configuration

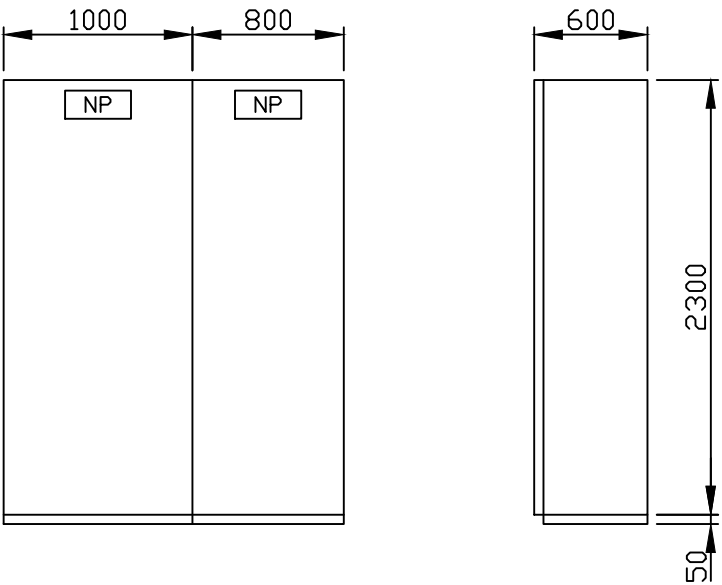


SCADA Room Layout Plan

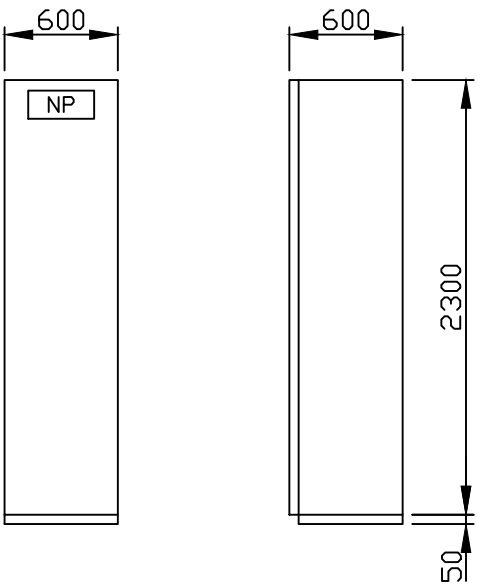
PROJECT	DESCRIPTION	JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)	DRAWING No.	NRD/PHIII/WTP-22
		NIHON SUIDO CONSULTANTS CO., LTD. (NSC) TOKYO ENGINEERING CONSULTANTS CO., LTD. (TEC) CTI ENGINEERING INTERNATIONAL CO., LTD. (CTI1) KITAKYUSHU WATER SERVICE CO., LTD. (KWS)	SCALE	NONE

Preparatory Survey on Nirodh Water Supply Expansion Project

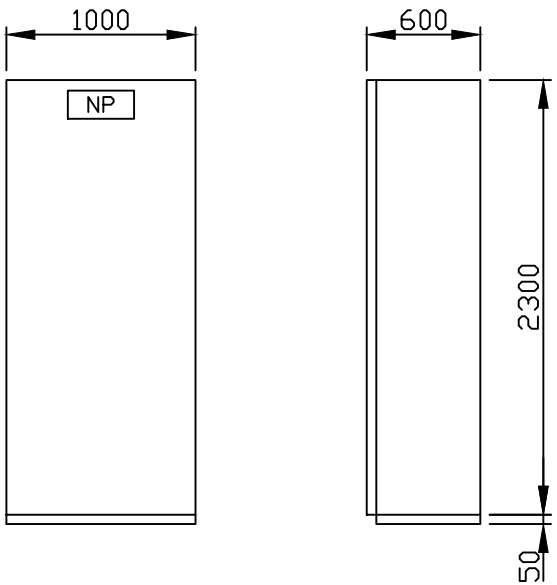
SCADA System Configuration and SCADA Room Layout Plan



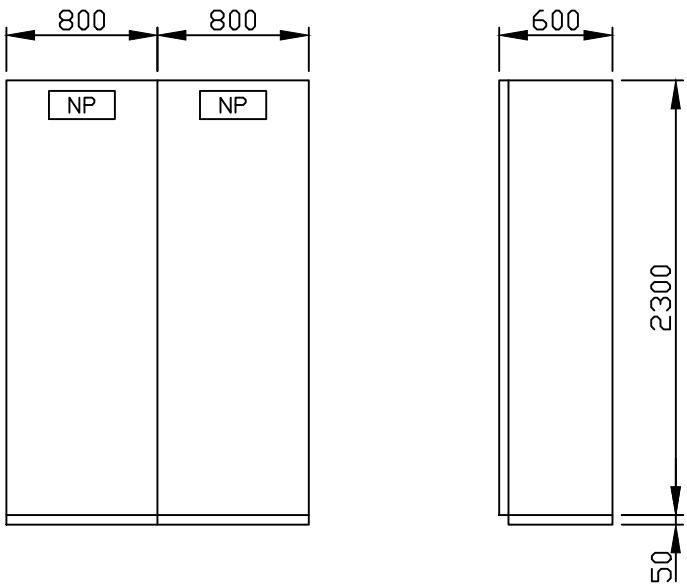
Power Receiving Panel
Busbarriser Riser
Bus Coupler
Feeder Panel



Distribution Panel
Motor Control Center
Relay Panel
PLC panel
SCADA Server Rack
Local Control Station

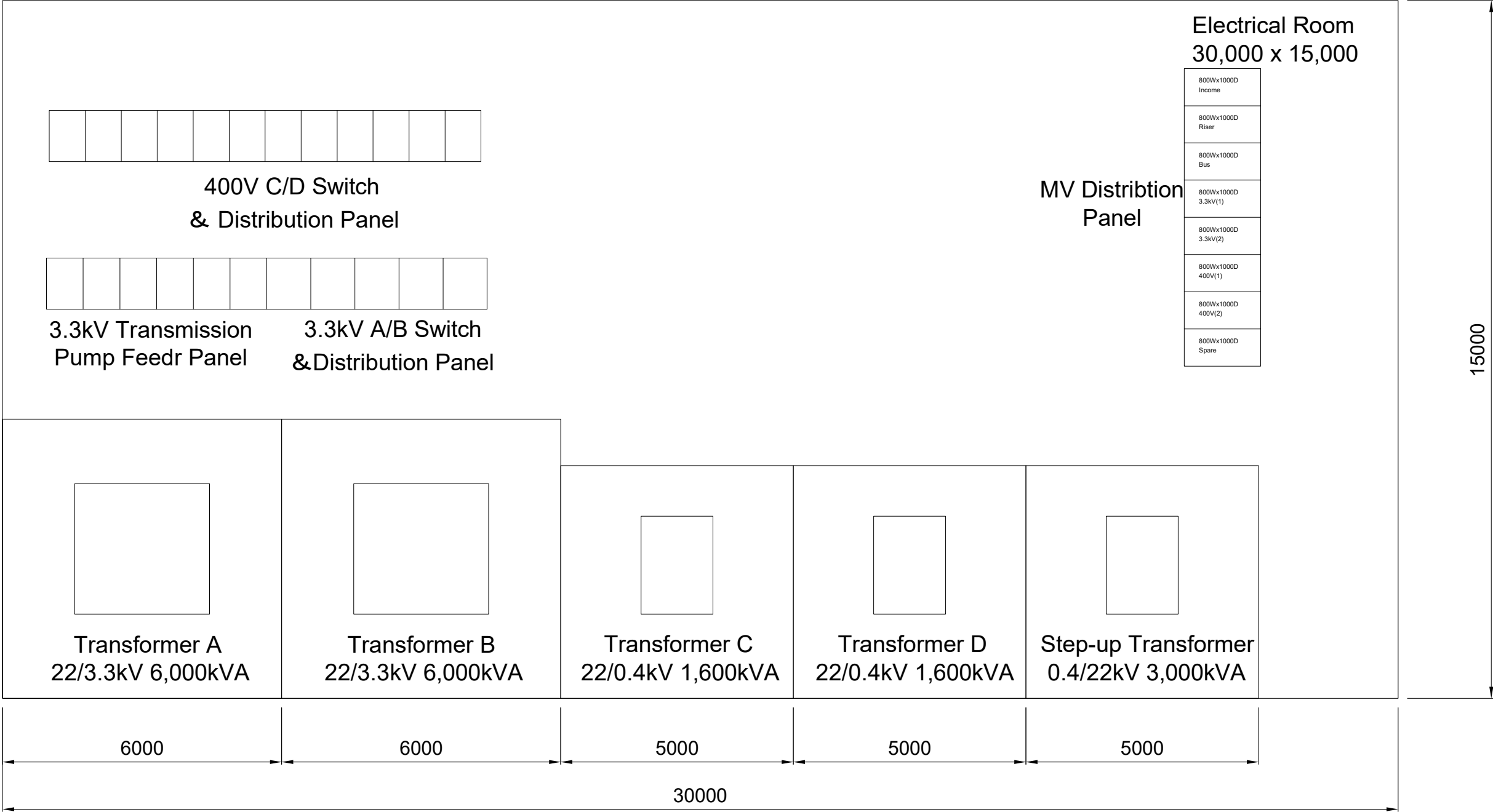


Distribution Panel
Motor Control Center
Relay Panel
(Wide type)

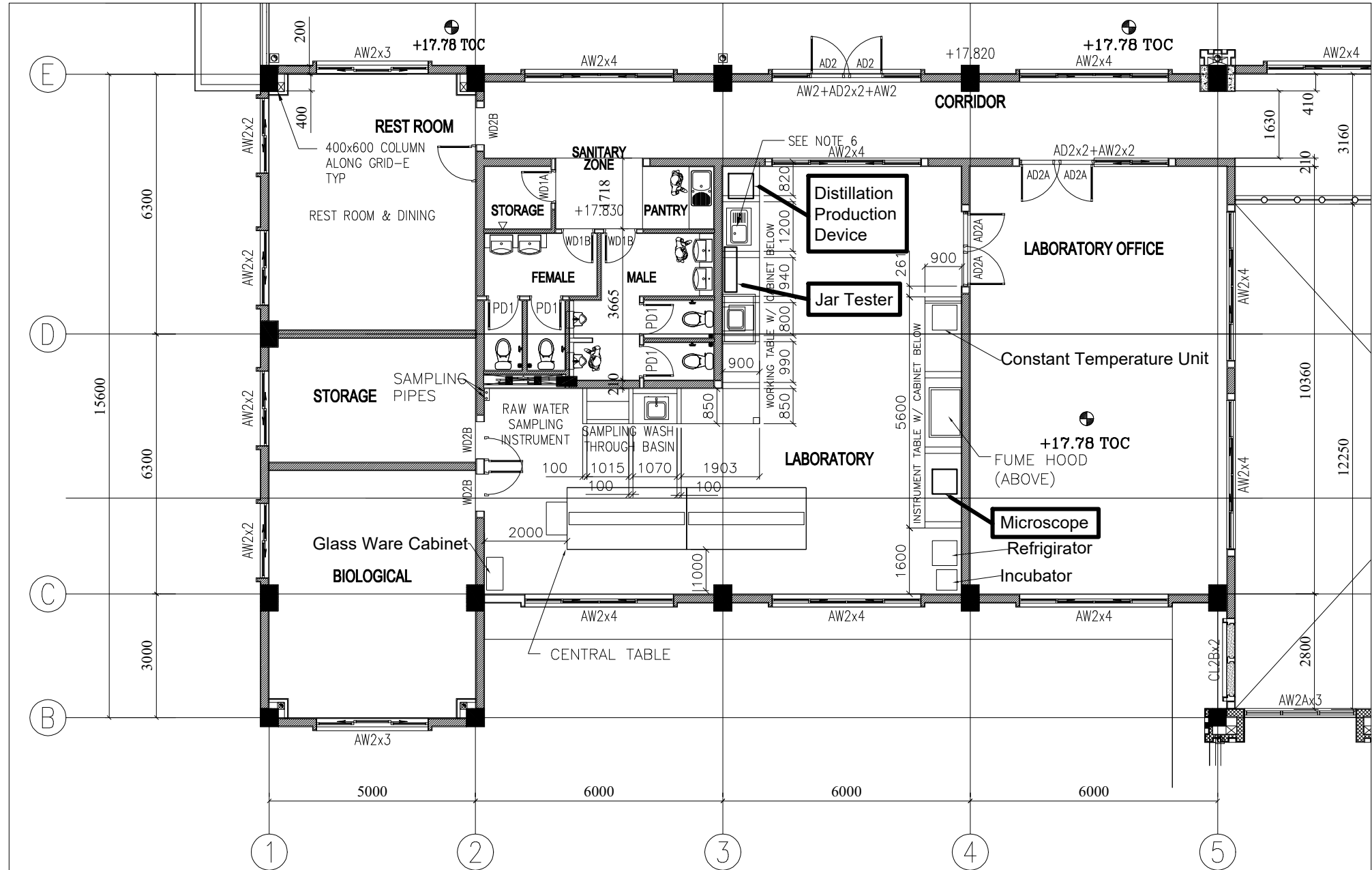


VFD Panel

PROJECT Preparatory Survey on Nirodh Water Supply Expansion Project	DESCRIPTION Electrical Panel Outline	JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)	DRAWING No.	NRD/PHIII/WTP-23
		NIHON SUIDO CONSULTANTS CO.,LTD. (NSC) TOKYO ENGINEERING CONSULTANTS CO.,LTD.(TEC) CTI ENGINEERING INTERNATIONAL CO., LTD. (CTII) KITAKYUSHU WATER SERVICE CO., LTD. (KWS)	SCALE	1:40 (A3)



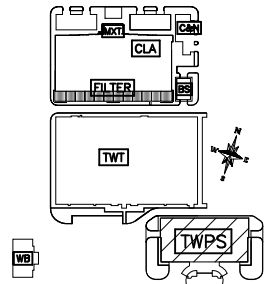
PROJECT Preparatory Survey on Nirodh Water Supply Expansion Project	DESCRIPTION Electrical Room Layout Plan	JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)	DRAWING No.	NRD/PHIII/WTP-24
		NIHON SUIDO CONSULTANTS CO., LTD. (NSC) TOKYO ENGINEERING CONSULTANTS CO., LTD. (TEC) CTI ENGINEERING INTERNATIONAL CO., LTD. (CTI1) KITAKYUSHU WATER SERVICE CO., LTD. (KWS)	SCALE	1:100 (A3)



Laboratory Plan (SECOND FLOOR)
(+LEVEL +19.00)

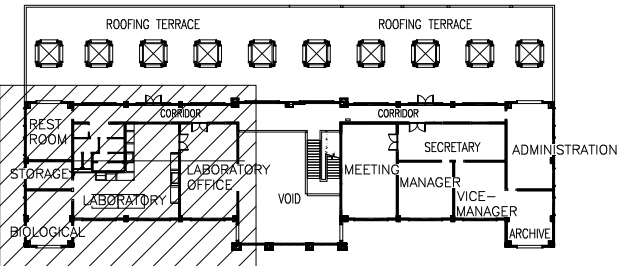
NOTE:
1. Based on Nirodh Ph1 DWG No. NWP/B/B/TWPS/003
2. ALL DIMENSIONS ARE IN MILLIMETER (mm) AND LEVELS IN METER (m) UNLESS OTHERWISE STATED.

MAP of Nirodh Ph1 WTP Facilities



LEGEND:
C&NCHLORINATION AND NEUTRALIZATION
CLACLARIFIER
MXTMIXING TANK
FILTERFILTER BUILDING
TWTTREATED WATER TANK
TWPSTREATED WATER PUMPING STATION
BWPSBACKWASH PUMPING STATION
WBWORKSHOP BUILDING

Map of Treated Water Pumping Station

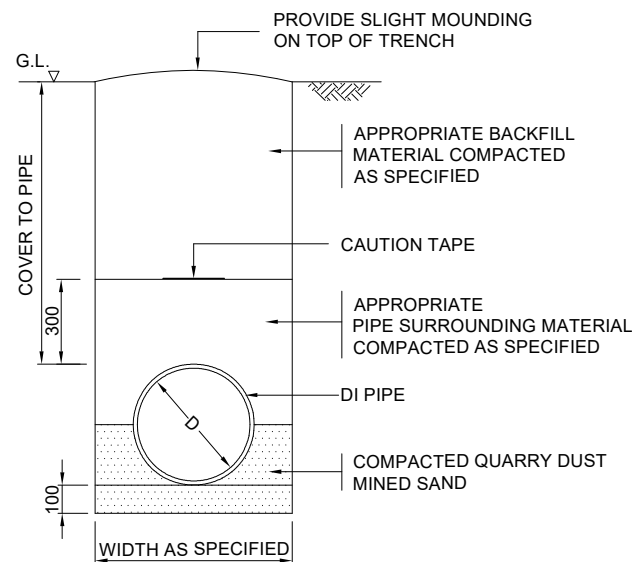


LEGEND:
- BRICK WALL
- FLOOR TILE FINISH
- ROOF FINISH

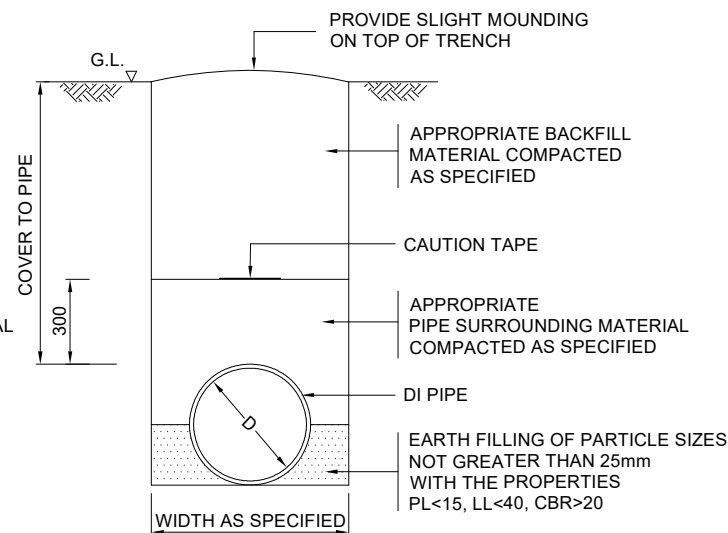
PROCUREMENT EQUIPMENT:

1. Distillation Production Device (For Replacement)
2. Jar Tester (For Replacement)
3. Microscope (For Upgrade)

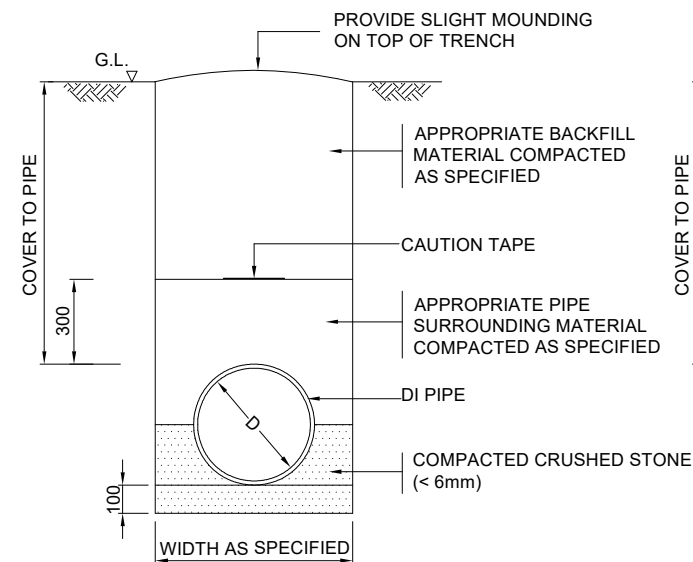
PROJECT Preparatory Survey on Nirodh Water Supply Expansion Project	DESCRIPTION Water Quality Laboratory Procurement Equipment Layout Plan	JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)	DRAWING No.	NRD/PHIII/WTP-25
		NIHON SUIDO CONSULTANTS CO., LTD. (NSC) TOKYO ENGINEERING CONSULTANTS CO., LTD. (TEC) CTI ENGINEERING INTERNATIONAL CO., LTD. (CTI) KITAKYUSHU WATER SERVICE CO., LTD. (KWS)	SCALE	1:125 (A3)



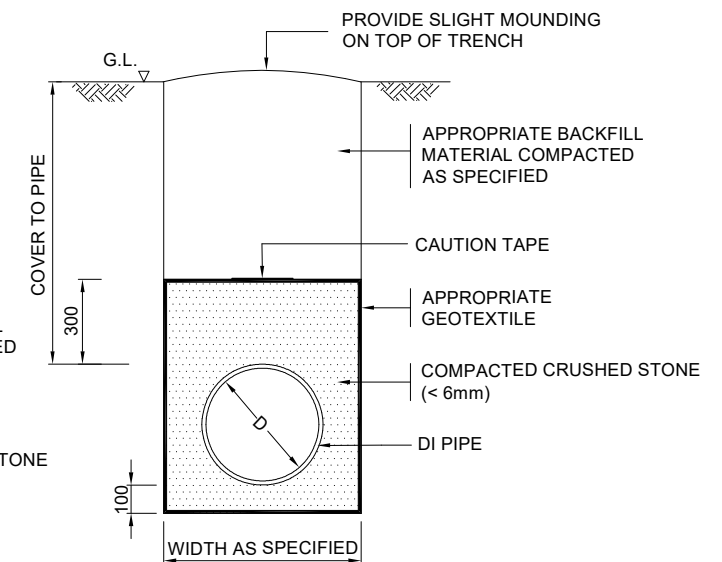
BEDDING TYPE - A
FOR HARD SOIL / ROCK BASE
(BEARING CAPACITY > 200 KN/m²)



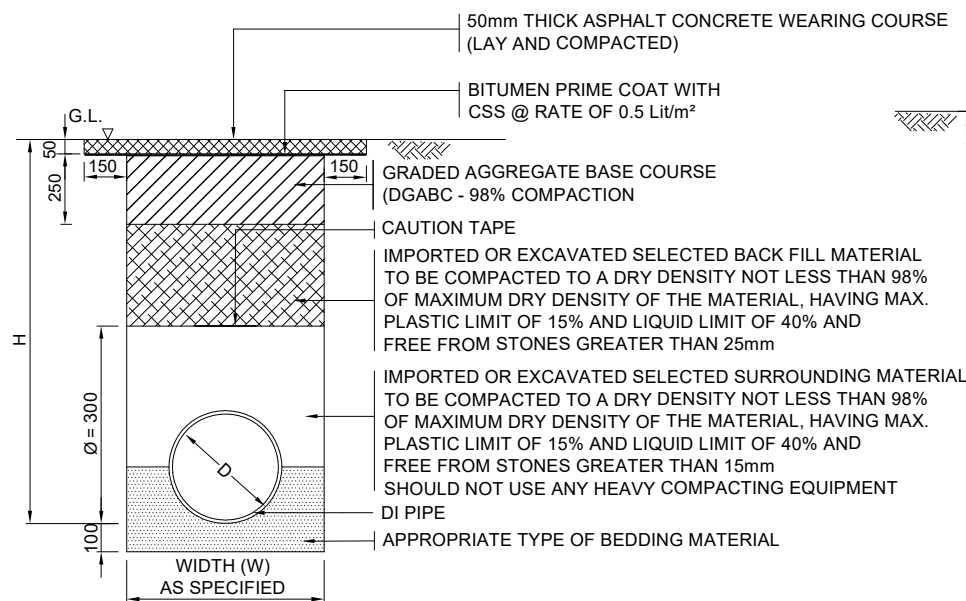
BEDDING TYPE - B
FOR NORMAL SOIL
(BEARING CAPACITY 100 - 200 KN/m²)



BEDDING TYPE - C
FOR LOOSE SOIL AND CLAY
(BEARING CAPACITY 75 - 200 KN/m²)

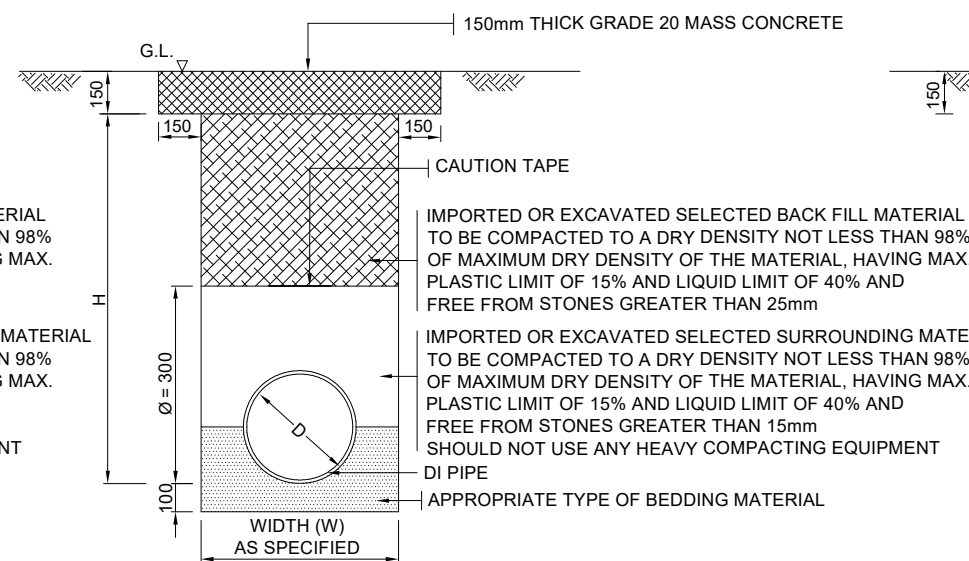


BEDDING TYPE - D
FOR CLAY AND PEATY SOILS
(BEARING CAPACITY < 75 KN/m²)



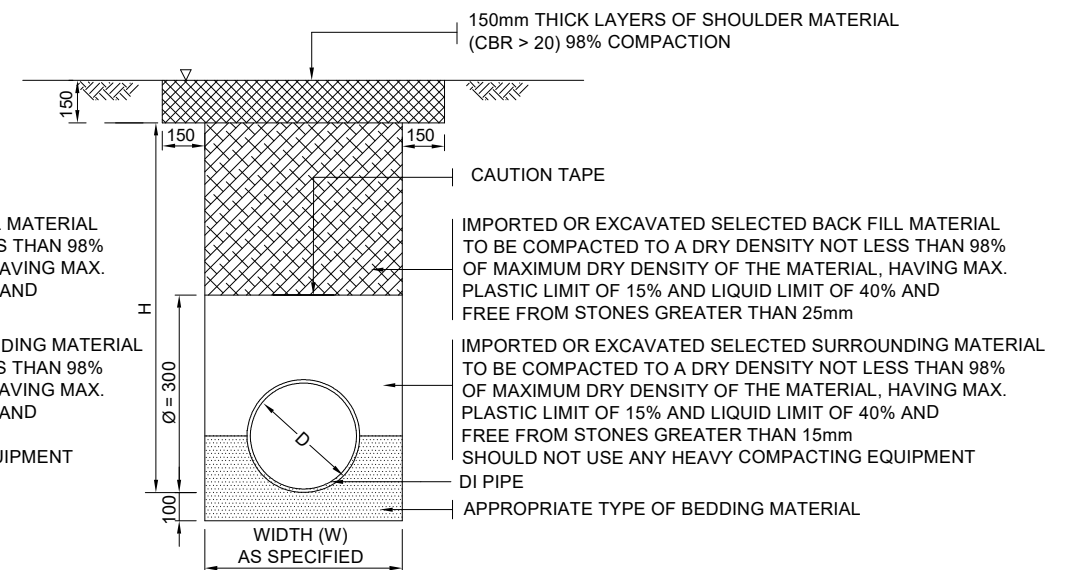
TYPE I

HARD SHOULDER AND CARRIAGEWAY
ASPHALT CONCRETE / TARRED ROADS
BACK FILLING AND PERMANENT REINSTATEMENT



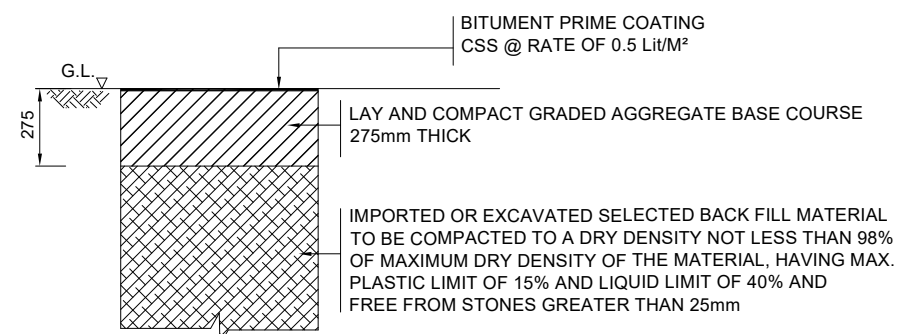
TYPE II

CONCRETE ROAD BACK FILLING AND
PERMANENT REINSTATEMENT



TYPE III

ROAD SHOULDER
BACK FILLING AND PERMANENT / TEMPORARY REINSTATEMENT



TEMPORARY REINSTATEMENT OF ASPHALT / TARRED SURFACES

DETAIL OF TRENCH		
PIPE DIA. (mm)	WIDTH (W) (m)	DEPTH (H) (m)
80	0.06	0.950
100	0.06	0.950
150	0.06	1.000
200	0.06	1.200
250	0.06	1.250
300	0.06	1.300
350	0.75	1.350
400	0.900	1.400
450	0.900	1.450

DETAIL OF TRENCH		
PIPE DIA. (mm)	WIDTH (W) (m)	DEPTH (H) (m)
500	0.900	1.500
600	1.100	1.600
700	1.200	1.700
800	1.300	1.900
900	1.500	2.000
1000	1.600	2.100
1100	1.700	2.250
1200	1.800	2.400

NOTE:

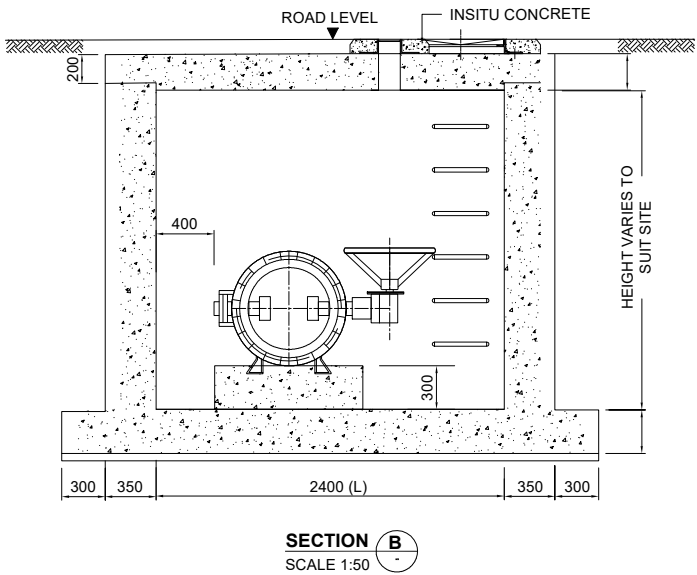
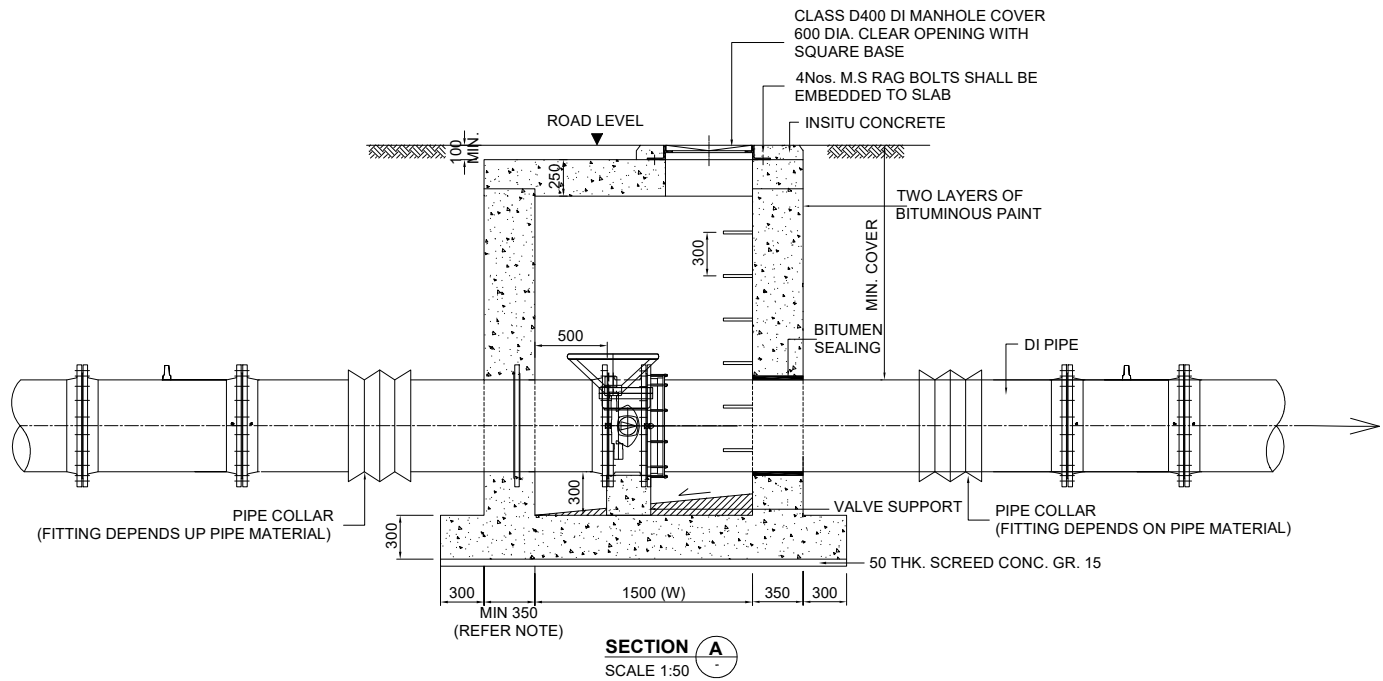
1. ALL DIMENSIONS ARE IN MILLIMETERS
2. CSS - CATAIONIC SLOW SETTING
3. EXCAVATED SOIL CAN BE USED AS BACK FILLING MATERIAL IF THEY CONFIRM TO THE REQUIRED SPECIFICATION
4. FOR PIPES IN SOFT OR PEATY GROUND, THE GRANULAR BEDDING SHALL BE COMPLETELY SURROUNDED BY A GEOTEXTILE AS SHOWN IN THE DRAWING AND AS DIRECTED BY THE ENGINEER TO PREVENT THE INGRESS OF FINES. GEOTEXTILE FABRIC SHALL BE WOVEN POLYPROPYLENE THERMALLY BOUNDED HAVING FOLLOWING PROPERTIES WEIGHT 150 G/M (MINIMUM) (ASTM D5261)

TENSILE STRENGTH 9 KN/m (MINIMUM) (ASTM D4595) @ 5 % ELONGATION
PERMEABILITY 30 L/m² /S(MINIMUM) (BS 6906/3) (100mm WATER HEAD)
PORE SIZE (0₉₀) < 300 MICRONS (BS 6906/2)

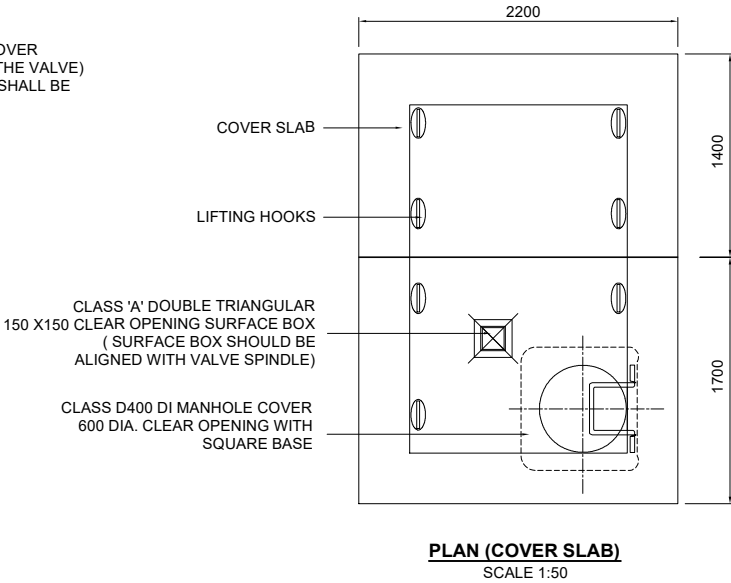
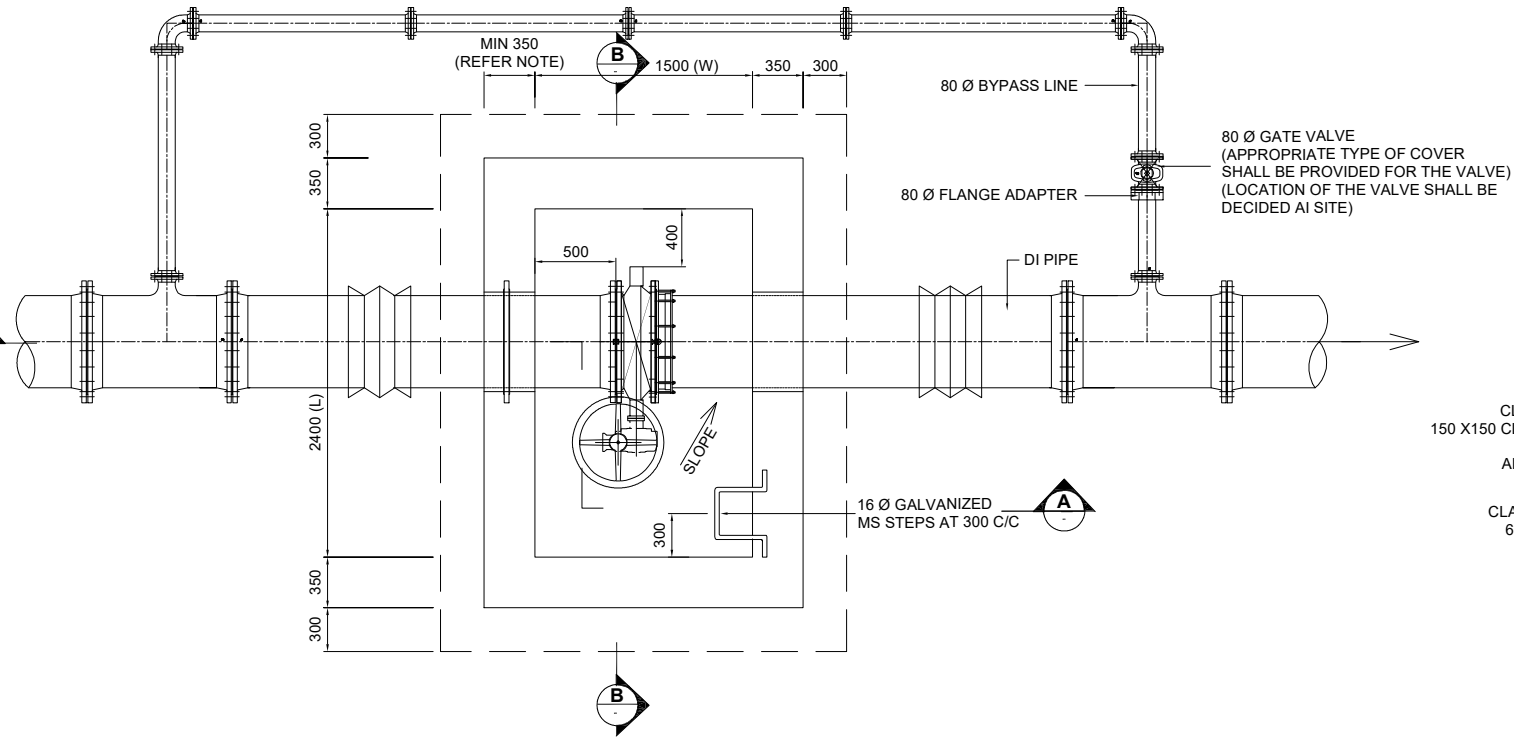
PROJECT	DESCRIPTION	JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)	DRAWING No.	NRD/PHIII/WTP-26-1
Preparatory Survey on Nirodh Water Supply Expansion Project	Standard Details for Pipe Bedding and Road Reinstatement for DI Pipes	NIHON SUIDO CONSULTANTS CO., LTD. (NSC) TOKYO ENGINEERING CONSULTANTS CO., LTD. (TEC) CTI ENGINEERING INTERNATIONAL CO., LTD. (CTII) KITAKYUSHU WATER SERVICE CO., LTD. (KWS)	SCALE	NTS

NOTES:

- MANHOLE COVERS SHALL BE OF HINGED HEAVY-DUTY (CLASS-D 400) WITH 600DIA. MINIMUM CLEAR OPENING.
- MANHOLE FRAME SHALL BE FIRMLY FIXED TO THE CHAMBER WITH 4 NOS. RAG BOLTS OR SIMILAR MANNER.
- ALL INSITU CONCRETE SUPPORTS AND THRUST RESTRAINTS SHALL BE GRADE 20 UNLESS OTHERWISE STATED.
- DRAINAGE FOR CHAMBER SHOULD BE CONSIDERED WITH SITE CONDITION IN FURTHER STUDY.
- DIMENSIONS SHOULD BE DECIDED IN FURTHER DETAILED DESIGN.
- WIDTH OF THE WALL SHALL BE THE MAXIMUM OF 350mm OR 0.5 TIMES PIPE DIAMETER



PIPE DIA.	CHAMBER SIZE (mm)		SLAB SIZE (mm)	
	L	W	L1	W1
350 - 450	2100	1500	2600	2000
500 - 600	2400	1500	2900	2000
700 - 800	2800	1600	3300	2100
900 - 1000	3000	1800	3500	2300
1200	3200	2000	3700	2500

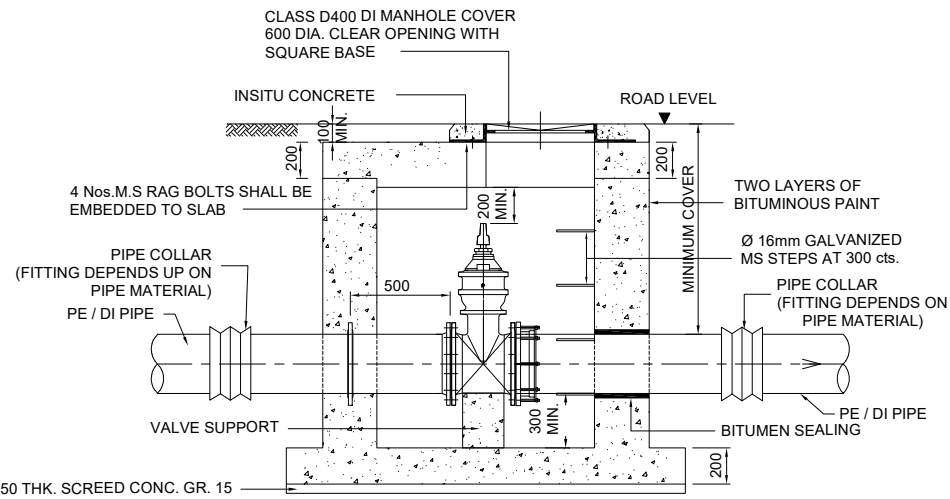


PROJECT
Preparatory Survey on Nirodh Water Supply Expansion Project

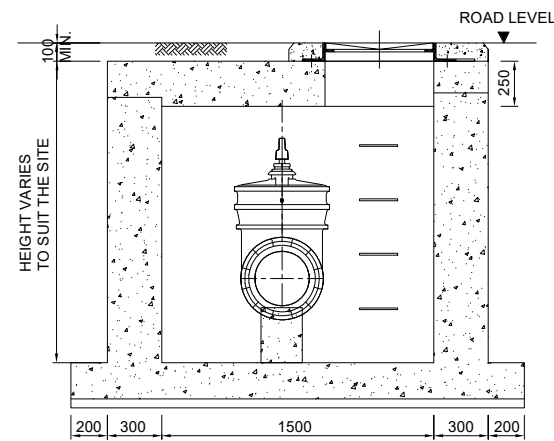
DESCRIPTION
Standard Details for
Flow Meter Chamber

JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)
NIHON SUIDO CONSULTANTS CO., LTD. (NSC)
TOKYO ENGINEERING CONSULTANTS CO., LTD. (TEC)
CTI ENGINEERING INTERNATIONAL CO., LTD. (CTII)
KITAKYUSHU WATER SERVICE CO., LTD. (KWS)

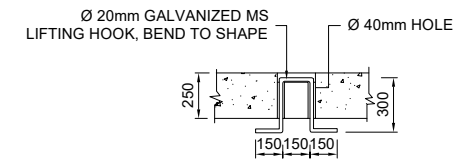
DRAWING No. NRD/PH111/WTP-26-2
SCALE NTS



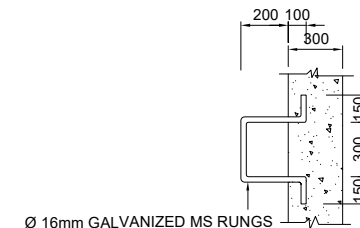
SECTION A
SCALE 1:40



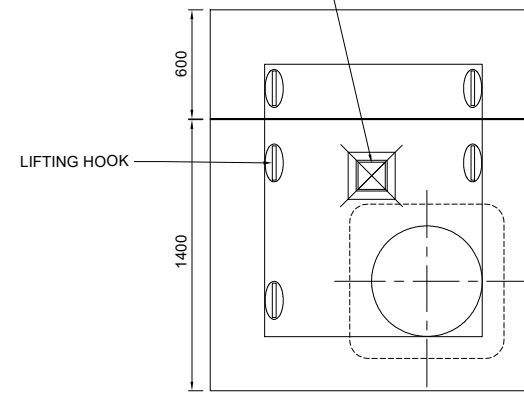
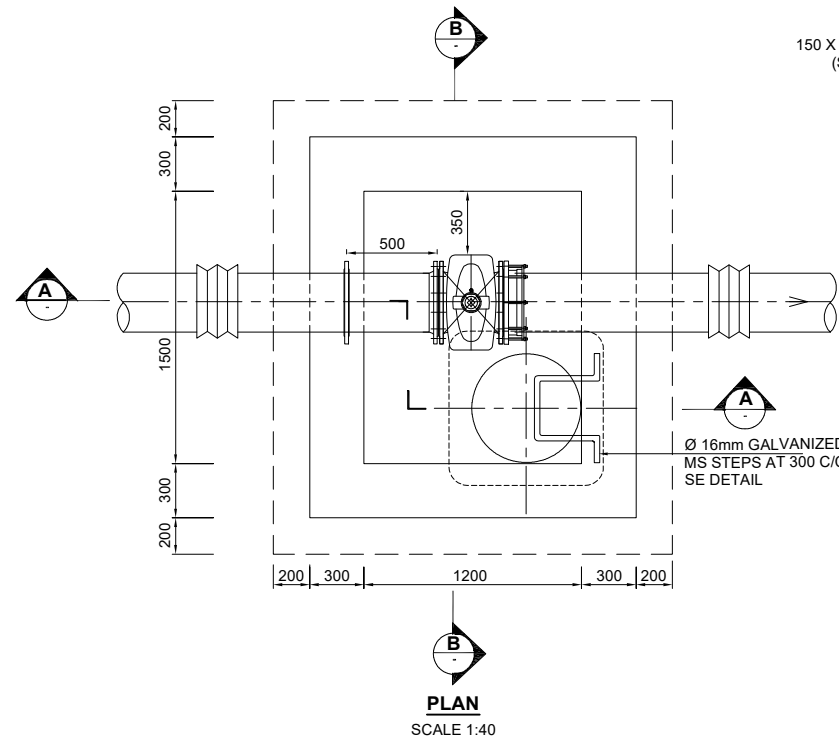
SECTION B
SCALE 1:40



DETAILS OF LIFTING HOOK
SCALE 1:40



DETAILS OF MS RUNGS
SCALE 1:40



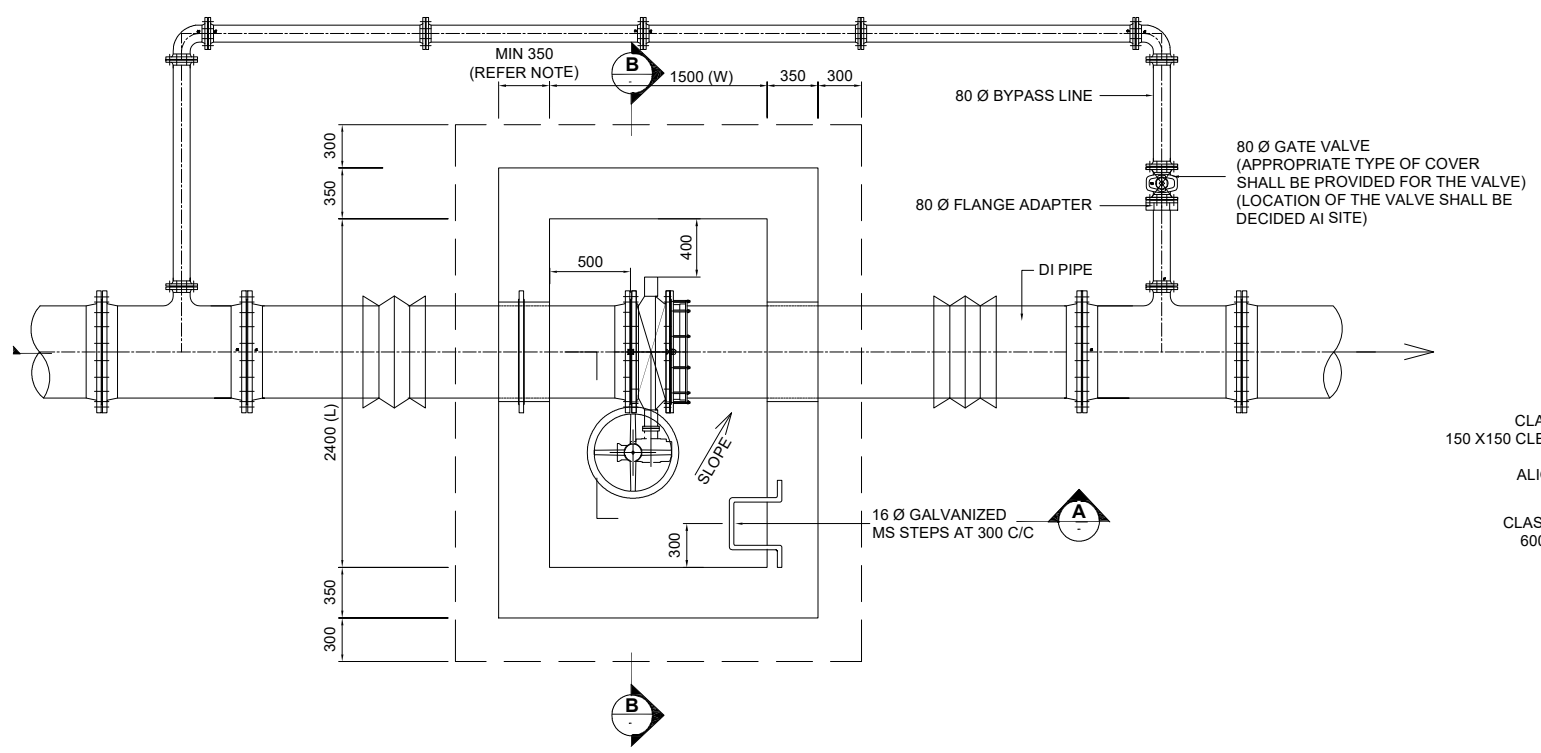
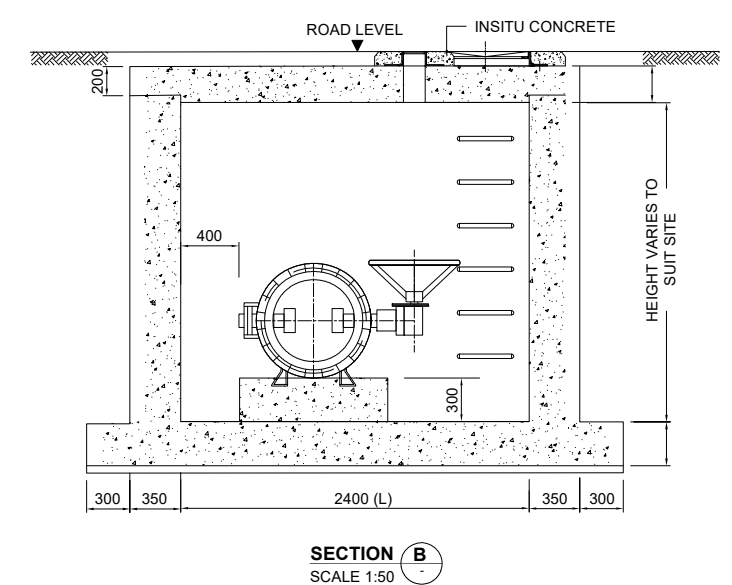
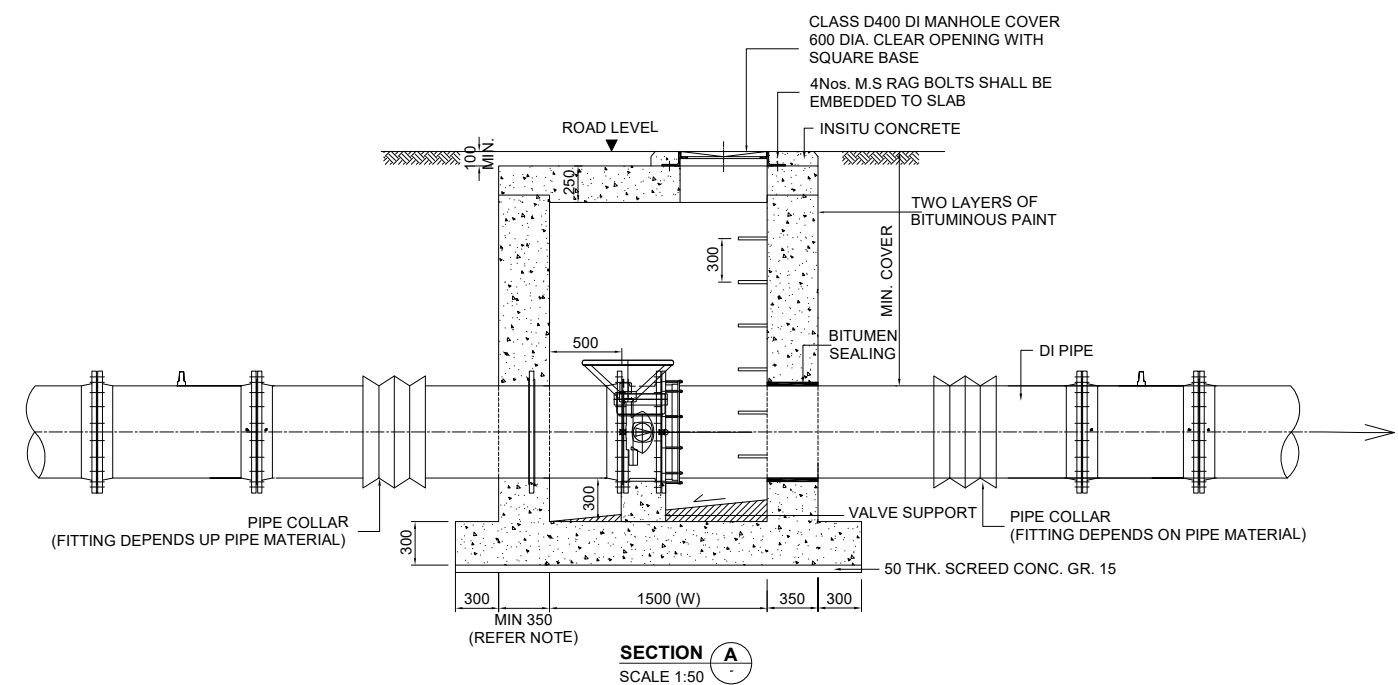
PLAN (COVER SLAB)
SCALE 1:40

FOR PE / DI PIPES DN 150 TO DN 300

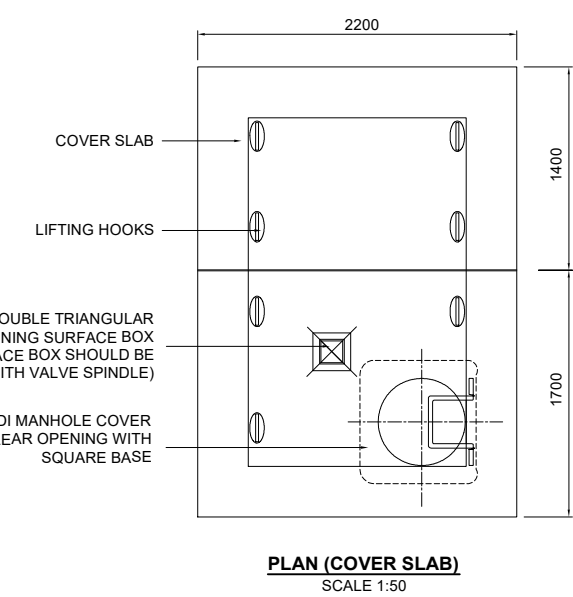
NOTES:

1. MANHOLE COVERS SHALL BE OF HINGED HEAVY-DUTY (CLASS-D 400) WITH 600DIA. MINIMUM CLEAR OPENING.
2. MANHOLE FRAME SHALL BE FIRMLY FIXED TO THE CHAMBER WITH 4 NOS. RAG BOLTS OR SIMILAR MANNER.
3. ALL INSITU CONCRETE SUPPORTS AND THRUST RESTRAINTS SHALL BE GRADE 20 UNLESS OTHERWISE STATED.
4. DRAINAGE FOR CHAMBER SHOULD BE CONSIDERED WITH SITE CONDITION IN FURTHER STUDY.
5. DIMENSIONS SHOULD BE DECIDED IN FURTHER DETAILED DESIGN.
6. DRAIN SHOULD BE CONSIDERED IN FURTHER DETAIL DESIGN.

PROJECT Preparatory Survey on Nirodh Water Supply Expansion Project	DESCRIPTION Standard Details for Valve Chamber – DN 300 and Below	JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)	DRAWING No.	NRD/PHIII/WTP-26-3
		NIHON SUIDO CONSULTANTS CO., LTD. (NSC) TOKYO ENGINEERING CONSULTANTS CO., LTD. (TEC) CTI ENGINEERING INTERNATIONAL CO., LTD. (CTII) KITAKYUSHU WATER SERVICE CO., LTD. (KWS)	SCALE	NTS



PIPE DIA.	CHAMBER SIZE (mm)		SLAB SIZE (mm)	
	L	W	L1	W1
350 - 450	2100	1500	2600	2000
500 - 600	2400	1500	2900	2000
700 - 800	2800	1600	3300	2100
900 - 1000	3000	1800	3500	2300
1200	3200	2000	3700	2500

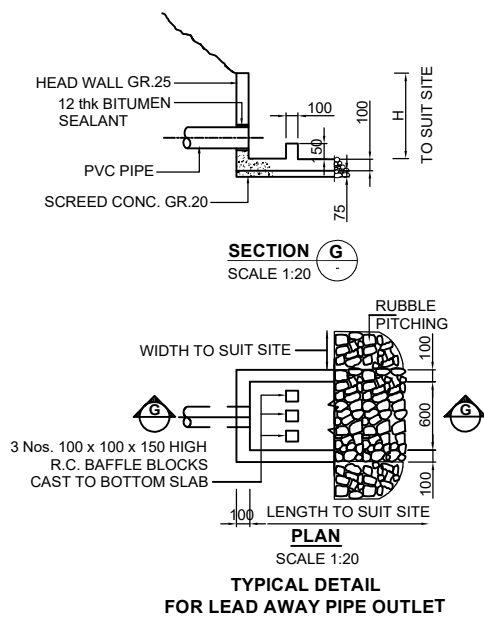
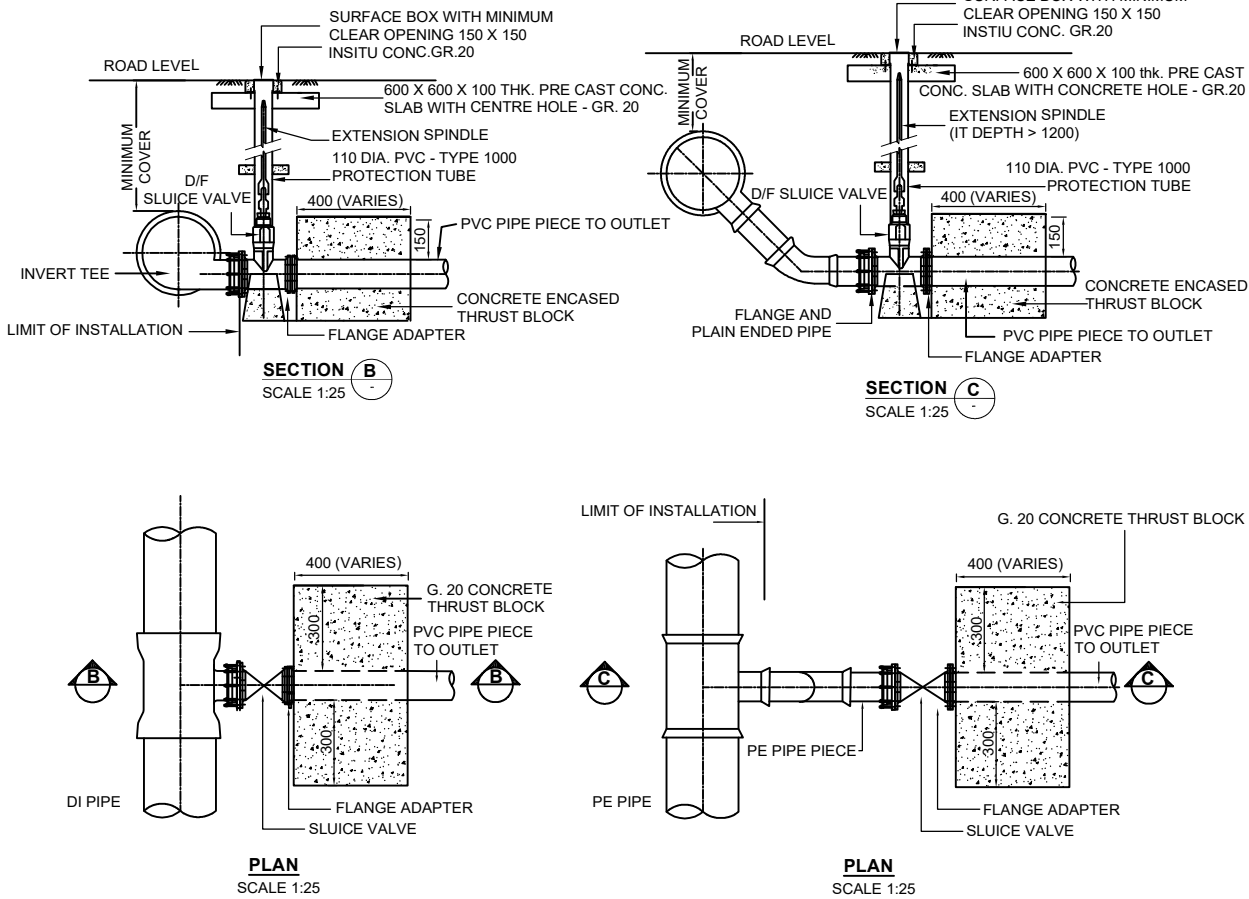
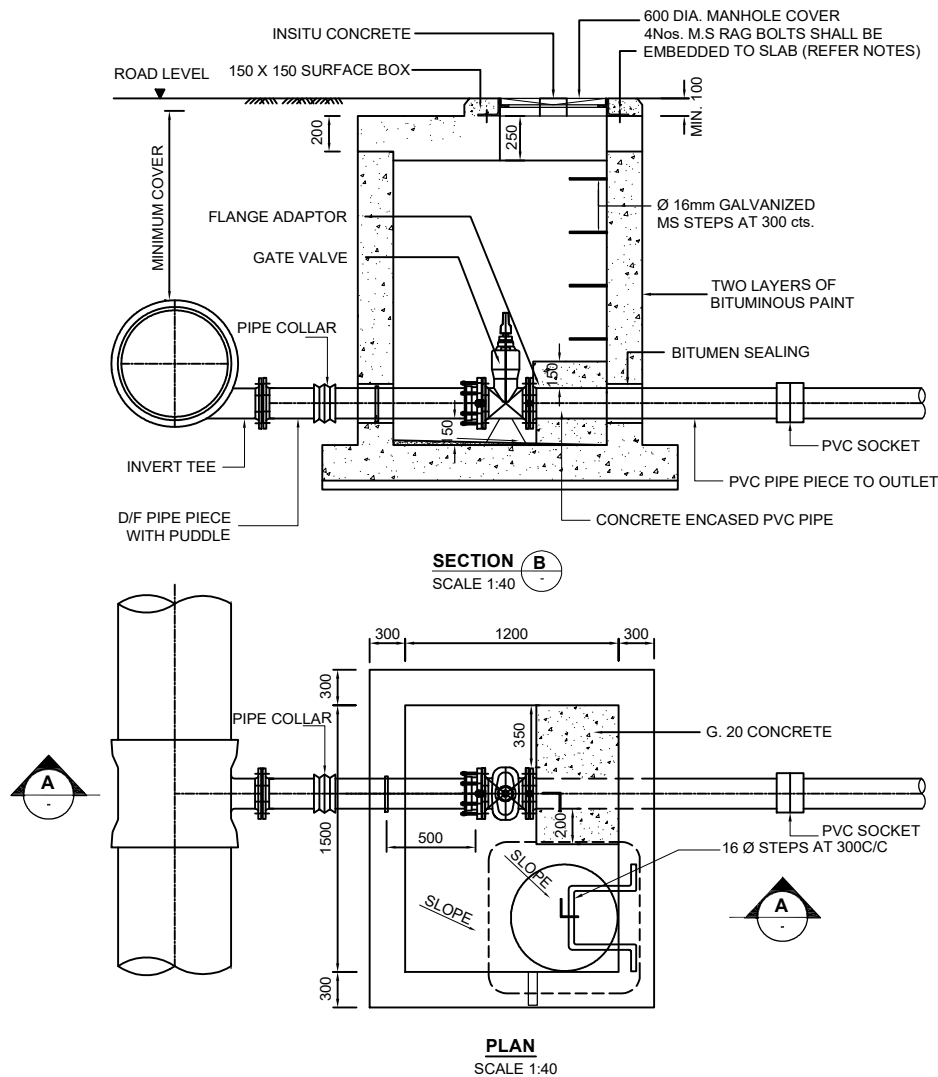


- NOTES:**
1. MANHOLE COVERS SHALL BE OF HINGED HEAVY-DUTY (CLASS-D 400) WITH 600DIA. MINIMUM CLEAR OPENING.
 2. MANHOLE FRAME SHALL BE FIRMLY FIXED TO THE CHAMBER WITH 4 NOS. RAG BOLTS OR SIMILAR MANNER.
 3. ALL INSITU CONCRETE SUPPORTS AND THRUST RESTRAINTS SHALL BE GRADE 20 UNLESS OTHERWISE STATED.
 4. DRAINAGE FOR CHAMBER SHOULD BE CONSIDERED WITH SITE CONDITION IN FURTHER STUDY.
 5. DIMENSIONS SHOULD BE DECIDED IN FURTHER DETAILED DESIGN.
 6. WIDTH OF THE WALL SHALL BE THE MAXIMUM OF 350mm OR 0.5 TIMES PIPE DIAMETER

PROJECT Preparatory Survey on Nirodh Water Supply Expansion Project	DESCRIPTION Standard Details for Valve Chamber - DN 350 and Above	JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)	DRAWING No.	NRD/PH1111/WTP-26-4
		NIHON SUIDO CONSULTANTS CO., LTD. (NSC) TOKYO ENGINEERING CONSULTANTS CO., LTD. (TEC) CTI ENGINEERING INTERNATIONAL CO., LTD. (CTII) KITAKYUSHU WATER SERVICE CO., LTD. (KWS)	SCALE	NTS

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE STATED.
2. LENGTH OF PIPE FROM THE VALVE TO THE DISCHARGE POINT SHALL BE TO SUIT THE SITE.
3. MANHOLE COVER SHALL BE OF HINGED, HEAVY DUTY (CLASS D 400) VENTILATED TYPE WITH 600 DIA. MINIMUM CLEAR OPENING.
4. DRAIN SHOULD BE CONSIDERED IN FURTHER DETAIL DESIGN.
5. EXACT DIMENSIONS SHOULD BE DECIDED IN FURTHER DETAIL DESIGN.



SCHEDULE OF VALVE & OUTLET PIPE

SIZE OF MAIN PIPE	SIZE OF WASHOUT VALVE (mm)	SIZE OF LEAD AWAY PIPE FROM MAIN PIPE TO CHAMBER
UPTO 225 PVC	80	90 PVC
250 - 500 DI	100	110 PVC
600 DI - 800 DI	200	225 PVC
800 DI - 1000 DI	250	250 DI
1000 DI - 1200 DI	300	300 DI

PROJECT
Preparatory Survey on Nirodh Water Supply Expansion Project

DESCRIPTION
Standard Details for Washout Valve Chamber

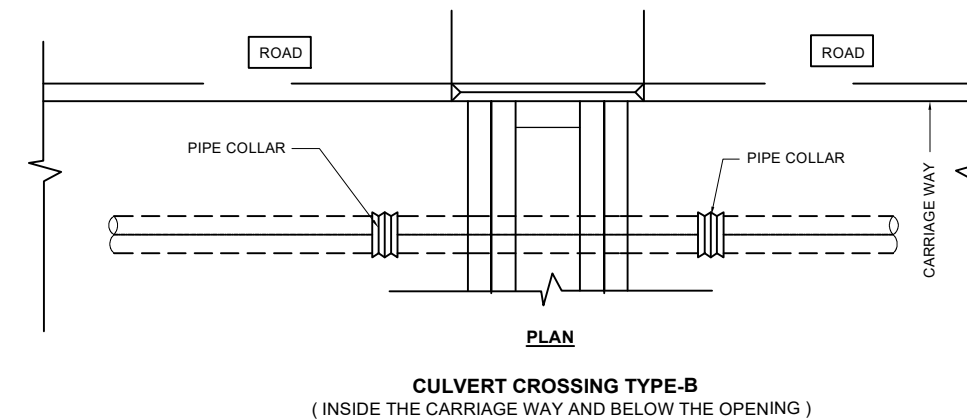
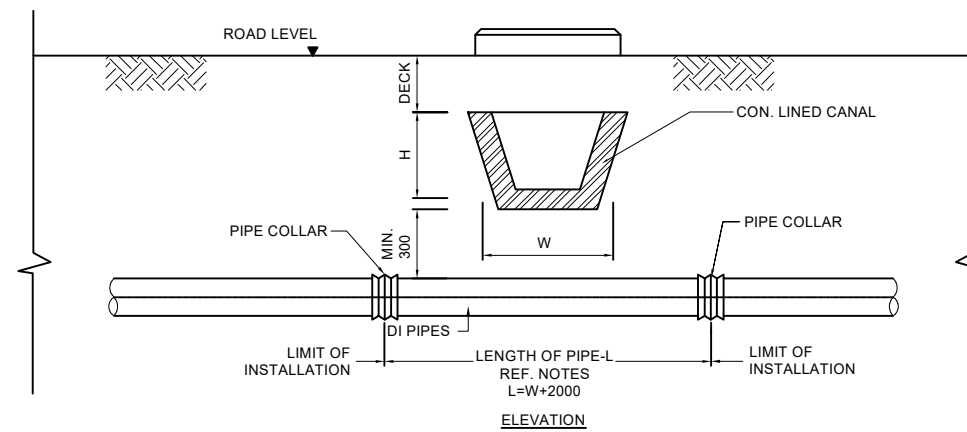
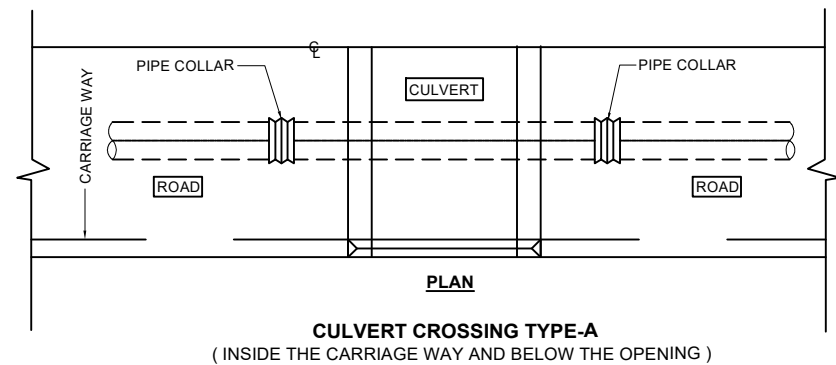
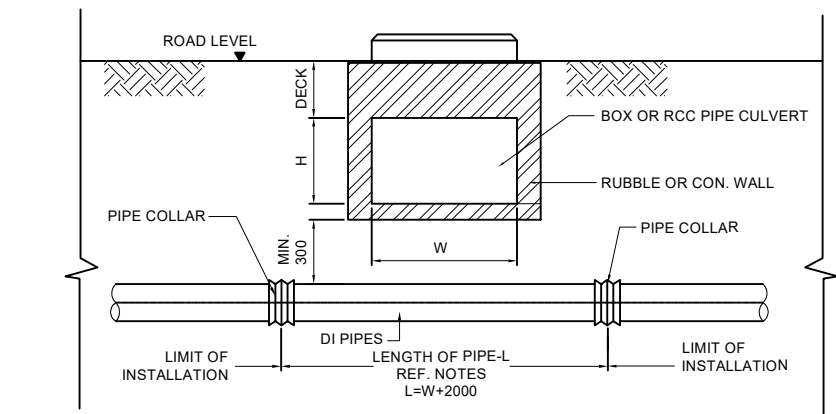
JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)
NIHON SUIDO CONSULTANTS CO., LTD. (NSC)
TOKYO ENGINEERING CONSULTANTS CO., LTD. (TEC)
CTI ENGINEERING INTERNATIONAL CO., LTD. (CTII)
KITAKYUSHU WATER SERVICE CO., LTD. (KWS)

DRAWING No.

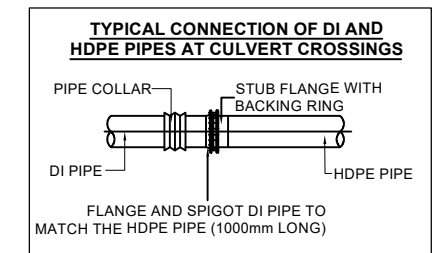
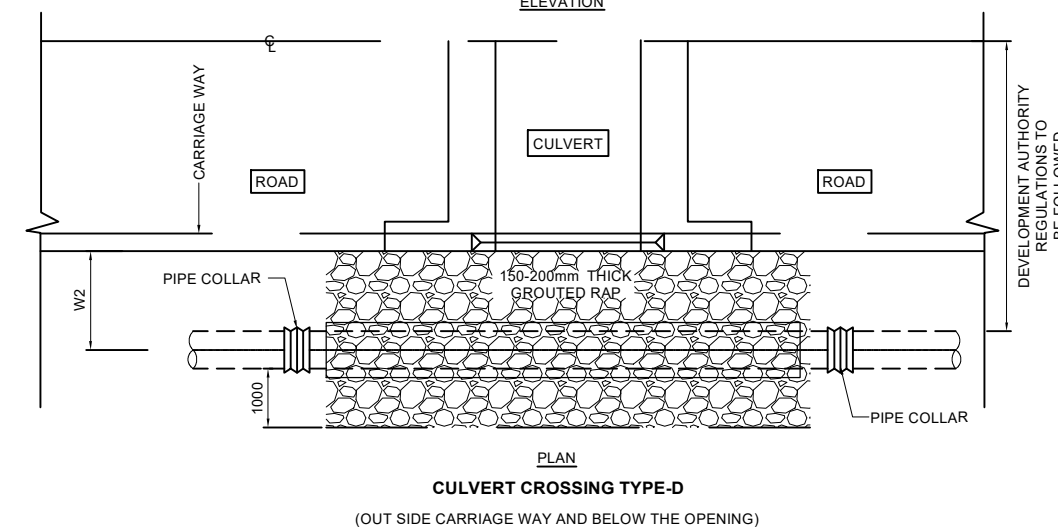
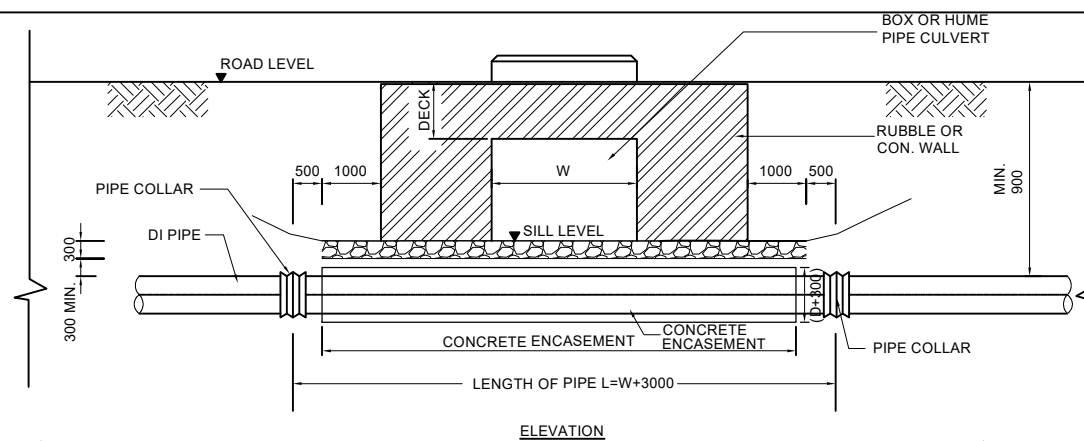
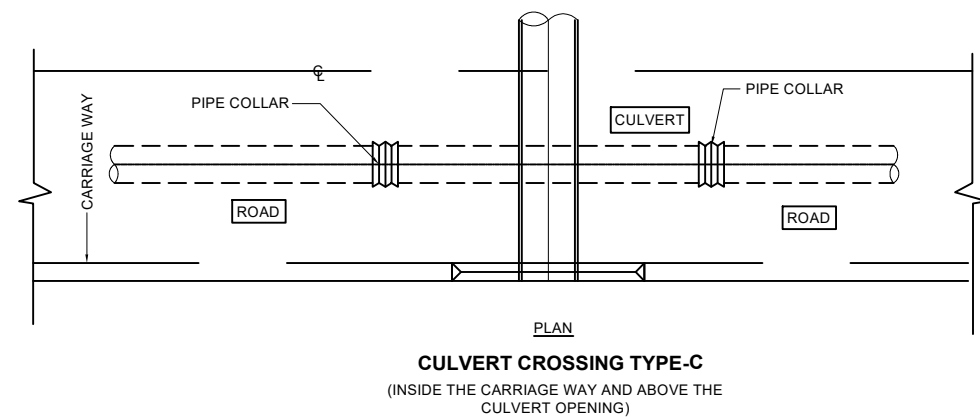
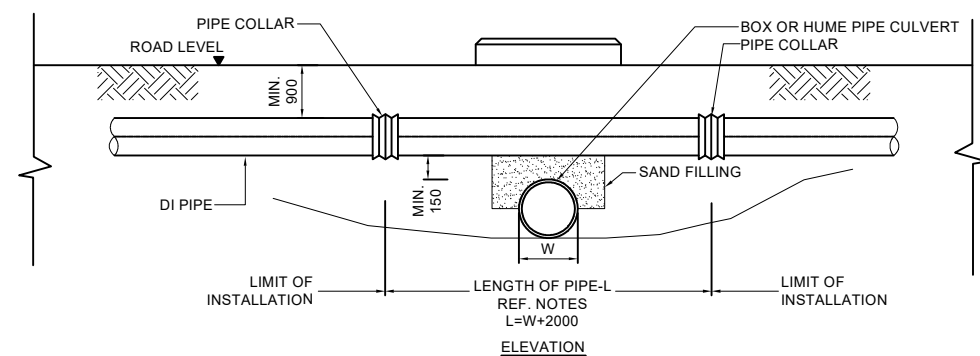
SCALE

NRD/PH111/WTP-26-5

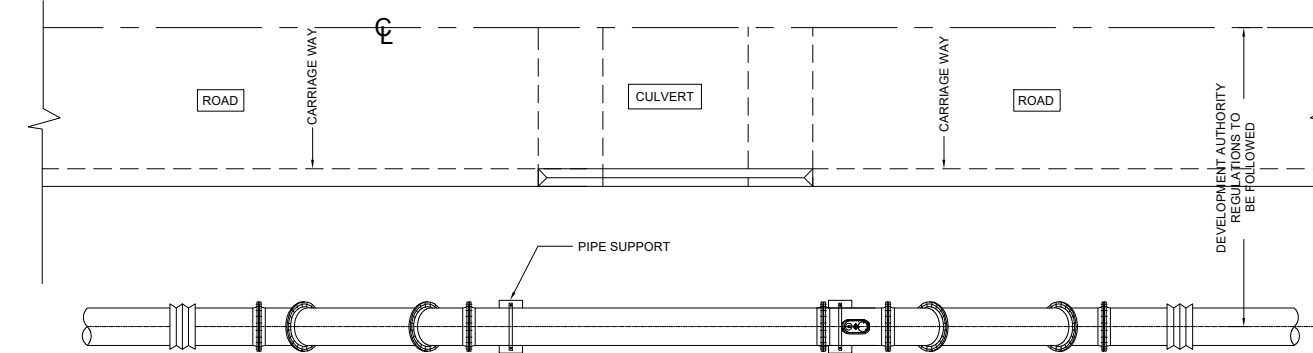
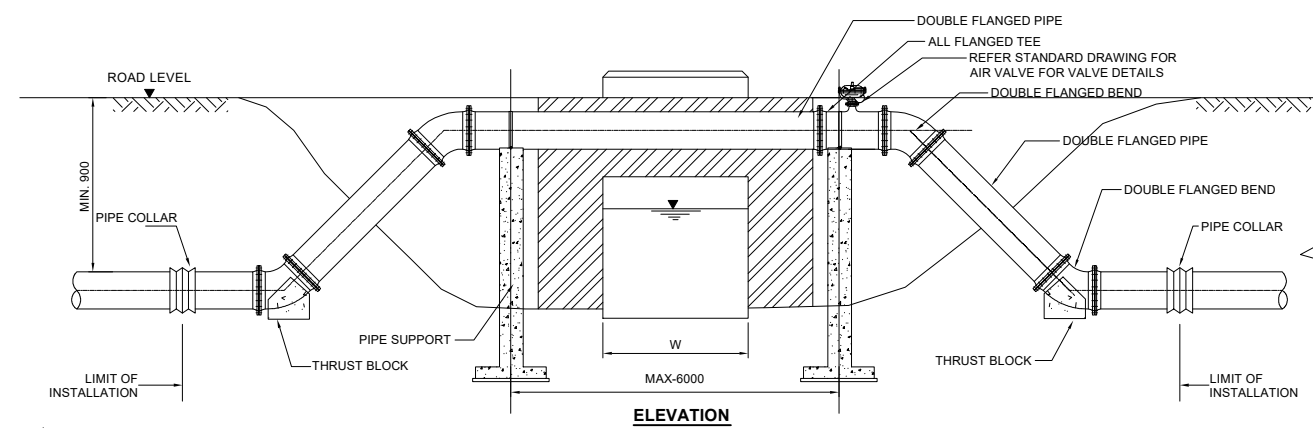
NTS



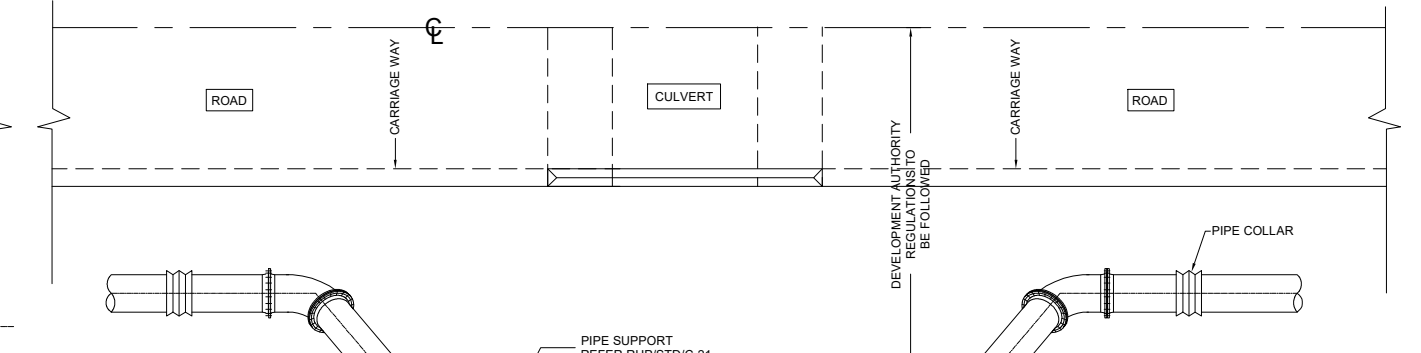
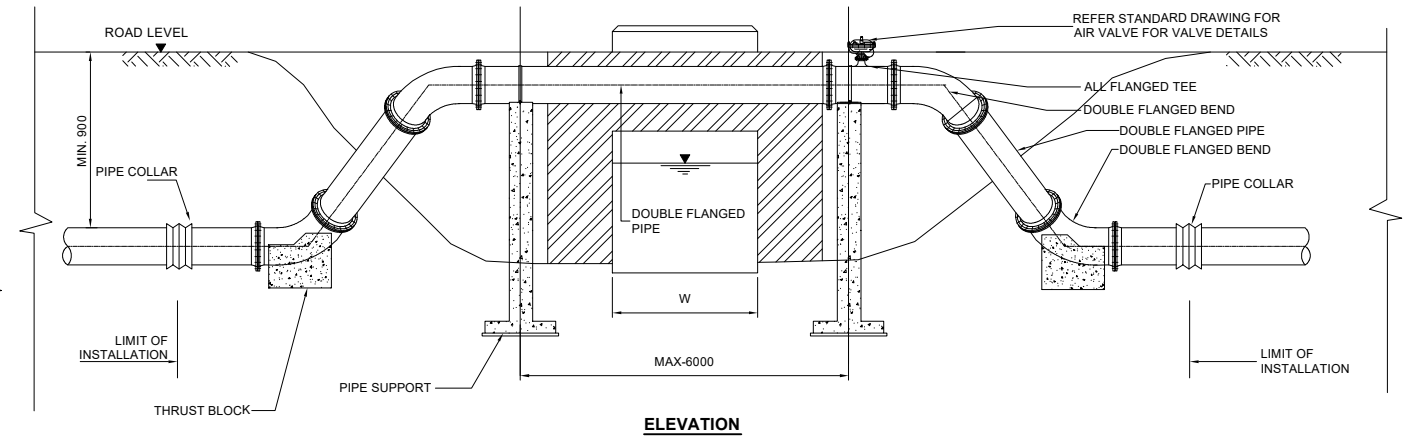
- NOTES:**
2. THE GROUP RIP RAP TO BE PROVIDED ONLY WHEN $W2 \leq 2000$
 3. NO OBSTRUCTION TO THE FLOW THROUGH THE CULVERT SHALL OCCUR DUE TO THE PIPE CROSSED.
 4. WHERE APPLICABLE, THE WASHOUT TEE SHALL BE PROVIDED AT A MINIMUM DISTANCE OF $2D$ AWAY FROM THE COUPLING.



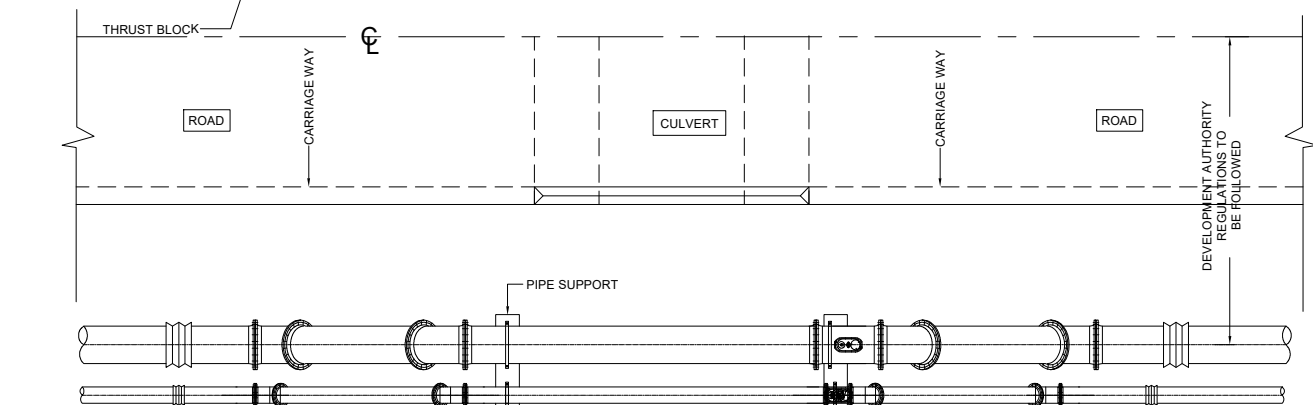
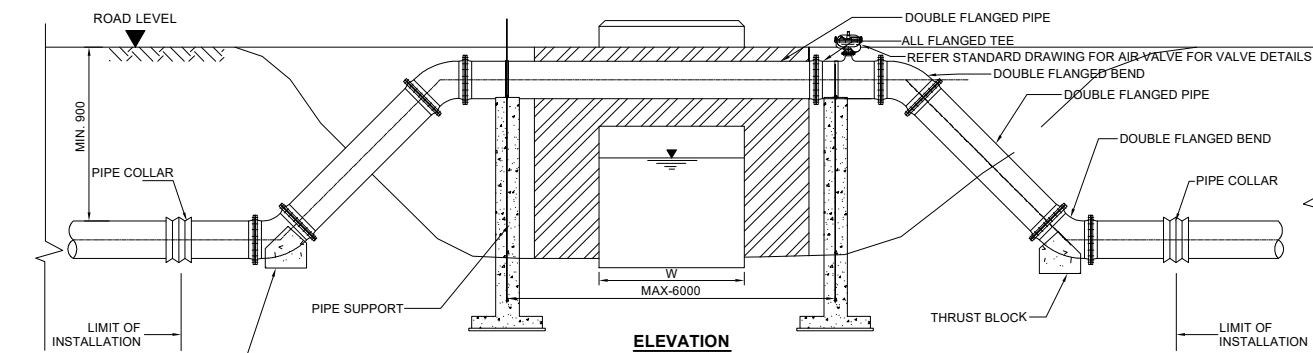
PROJECT Preparatory Survey on Nirodh Water Supply Expansion Project	DESCRIPTION Standard Details for Culvert Crossings (Sheet 01 of 02)	JAPAN INTERNATIONAL COOPERATION AGENCY (JICA) NIHON SUIDO CONSULTANTS CO., LTD. (NSC) TOKYO ENGINEERING CONSULTANTS CO., LTD. (TEC) CTI ENGINEERING INTERNATIONAL CO., LTD. (CTII) KITAKYUSHU WATER SERVICE CO., LTD. (KWS)	DRAWING No. SCALE	NRD/PH111/WTP-26-6-1 NTS
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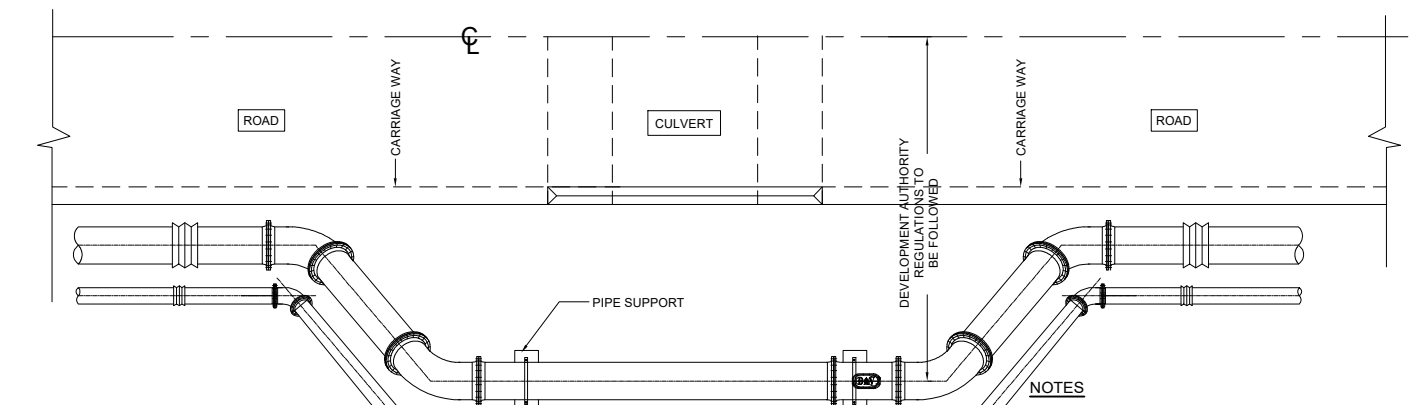
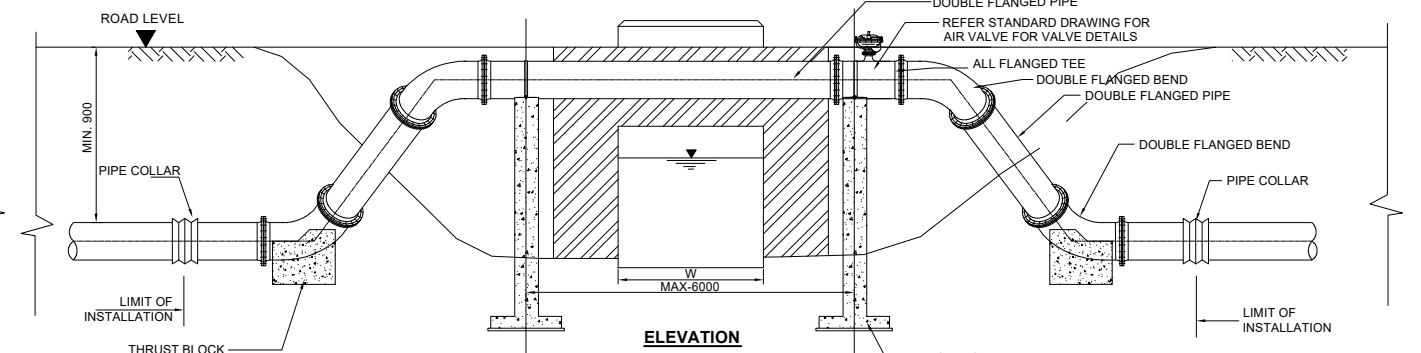
PLAN
CULVERT CROSSING TYPE-E (FOR SINGLE PIPE)



PLAN
CULVERT CROSSING TYPE-G (FOR SINGLE PIPE)



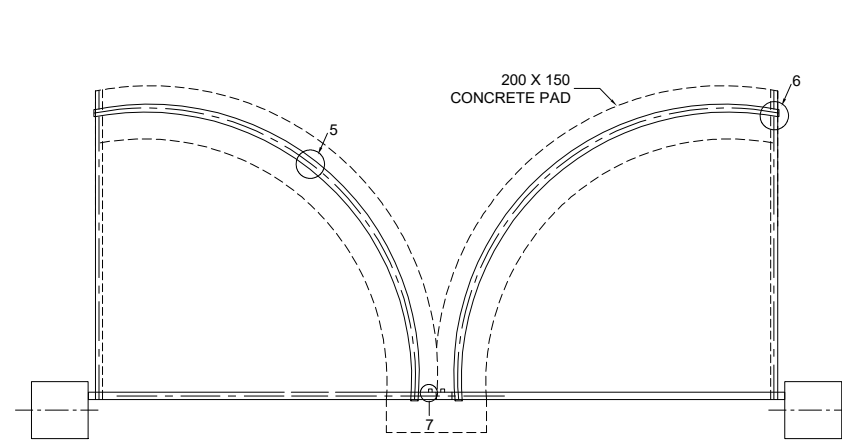
PLAN
CULVERT CROSSING TYPE-E (FOR TWO PIPES)



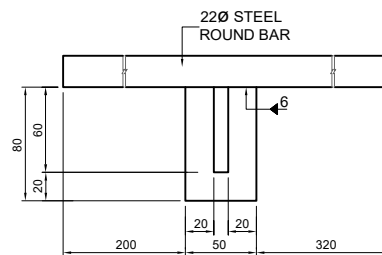
PLAN
CULVERT CROSSING TYPE-G (FOR TWO PIPES)

- NOTES**
1. NO OBSTRUCTION TO THE FLOW THROUGH THE CULVERT SHALL OCCUR DUE TO THE PIPE CROSSING.
 2. WHERE APPLICABLE THE WASHOUT TEE SHALL BE PROVIDE AT A MINIMUM DISTANCE OF 2D AWAY FROM THE COUPLING.
 3. SOME FLANGES MAY NEED SPECIAL DRILLING FOR TYPE G CROSSING.

PROJECT Preparatory Survey on Nirodh Water Supply Expansion Project	DESCRIPTION Standard Details for Culvert Crossings (Sheet 02 of 02)	JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)	DRAWING No.	NRD/PH111/WTP-26-6-2
		NIHON SUIDO CONSULTANTS CO., LTD. (NSC) TOKYO ENGINEERING CONSULTANTS CO., LTD. (TEC) CTI ENGINEERING INTERNATIONAL CO., LTD. (CTII) KITAKYUSHU WATER SERVICE CO., LTD. (KWS)	SCALE	NTS

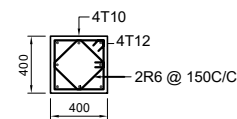


PLAN
SCALE:- 1:50

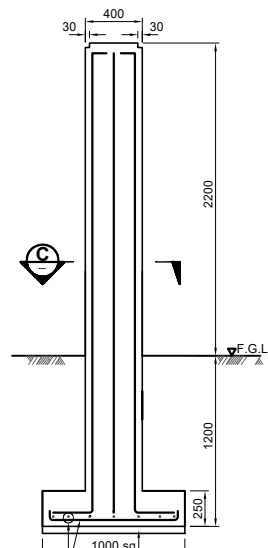


NOTES:
LENGTH AND PLACE OF HASP OF LOCK BOLT SHALL BE
ADJUSTED TO SUIT WELDED STAPLES.

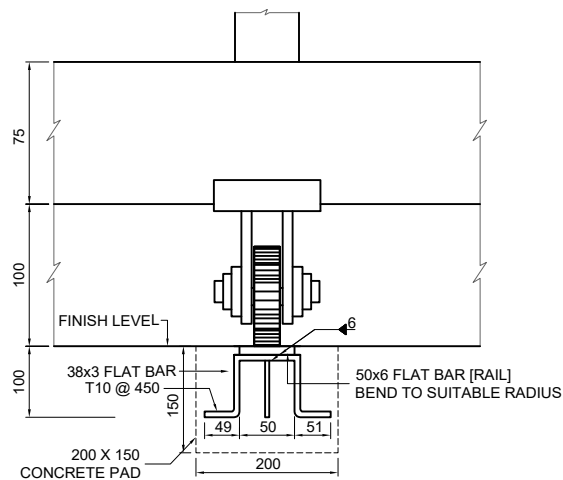
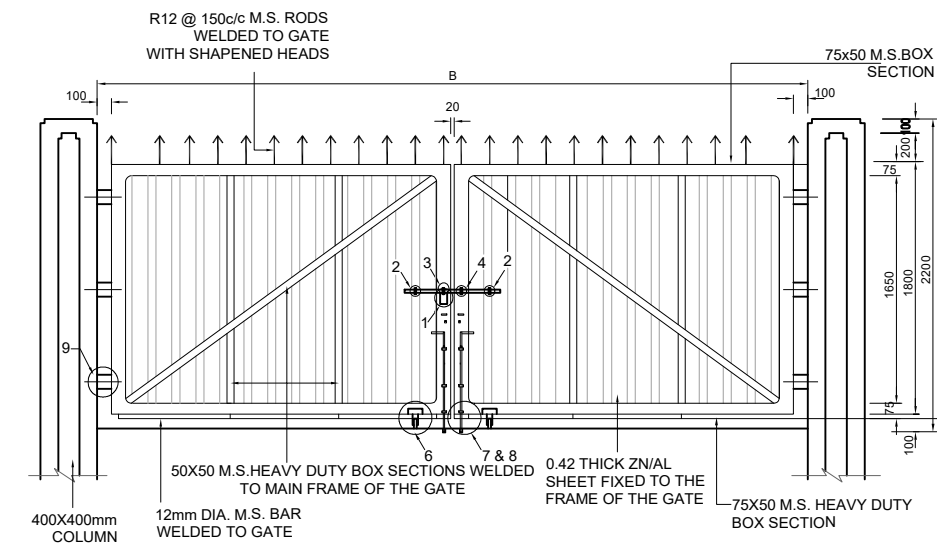
MAIN LOCK BOLT (1No.)
DETAIL 1
NOT TO SCALE



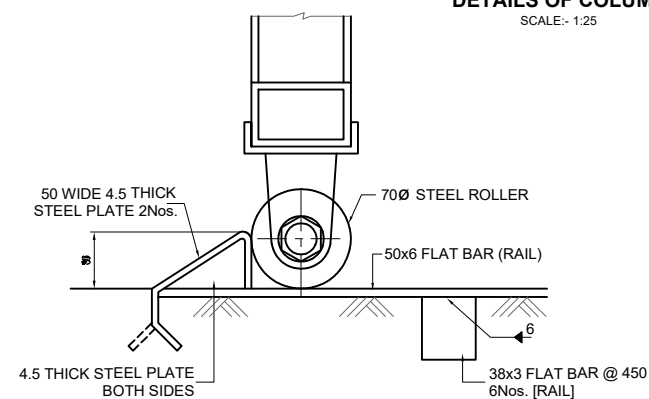
SECTION C
SCALE:- 1:25



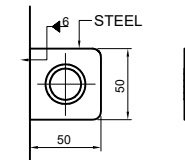
DETAILS OF COLUMN
SCALE:- 1:25



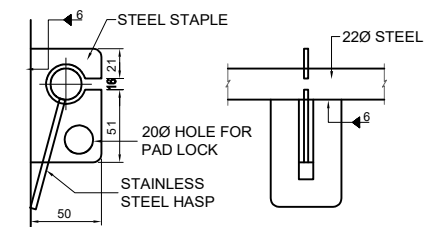
RAIL (2Nos.)
DETAIL 5
NOT TO SCALE
DETAILS OF THE GATE (INSIDE VIEW)
(SCALE:- 1:25)



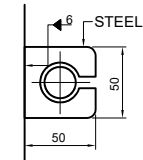
ROLLER STOPPER (4Nos.)
DETAIL 6
NOT TO SCALE



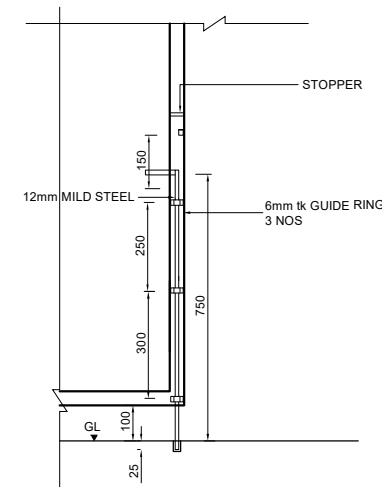
DETAIL 2 (2Nos.)
NOT TO SCALE



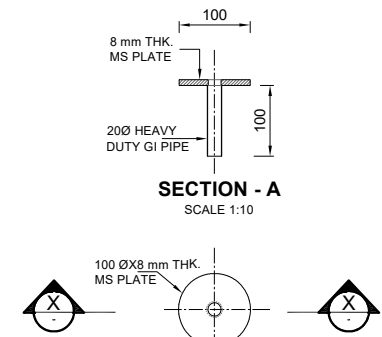
DETAIL 3 (1No.)
NOT TO SCALE



DETAIL 4 (1No.)
NOT TO SCALE



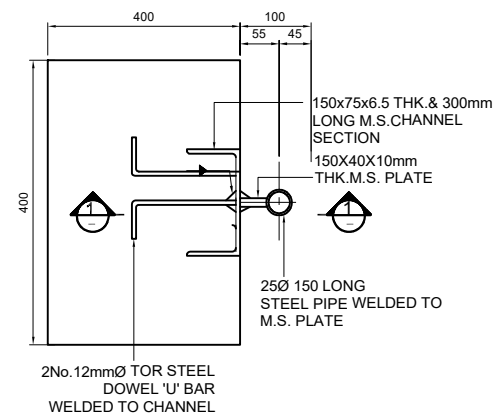
DETAIL (8)
SCALE 1:20



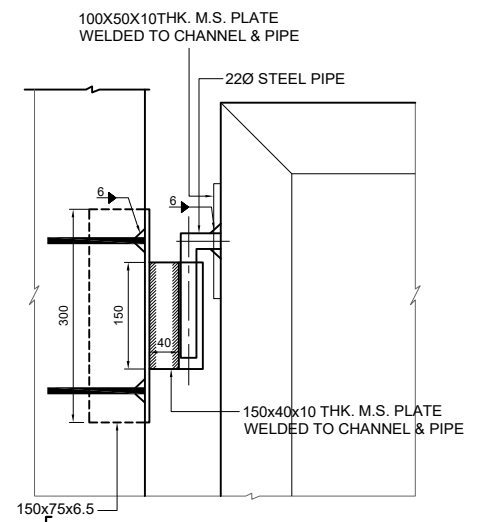
SECTION - A
SCALE 1:10



PLAN
SCALE 1:10
(DETAIL - 7)



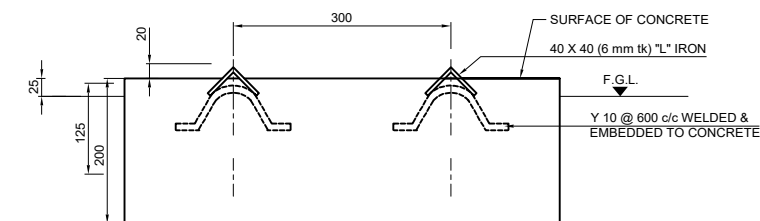
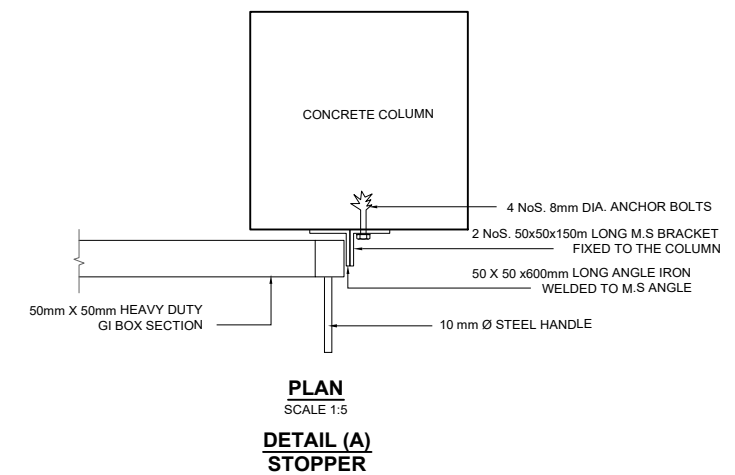
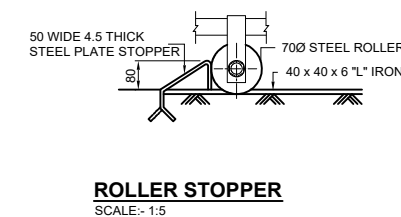
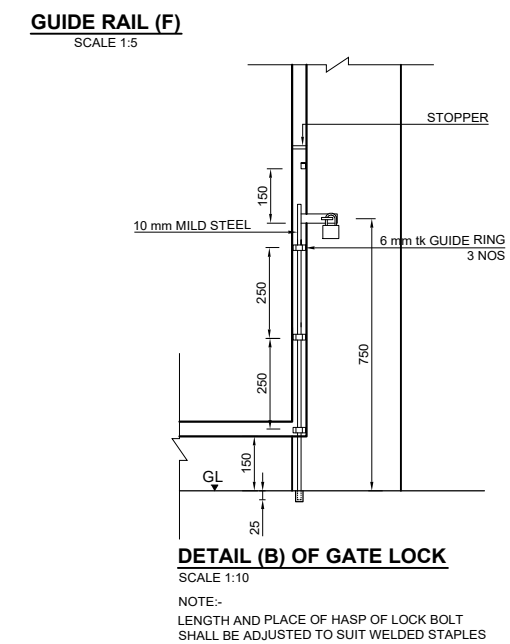
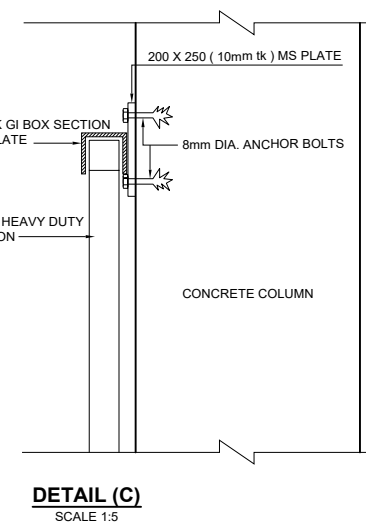
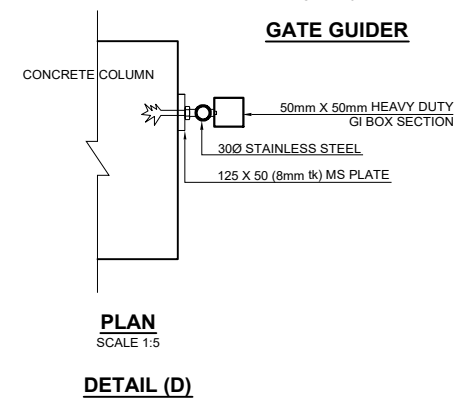
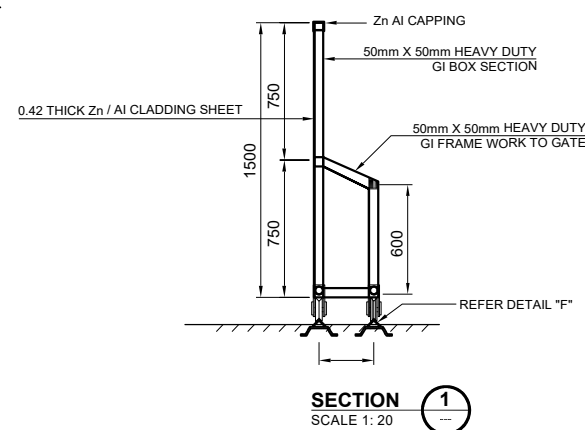
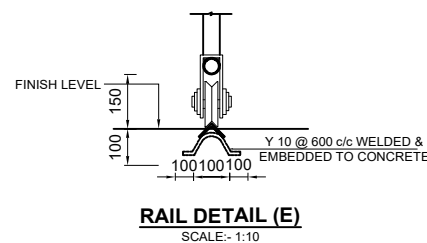
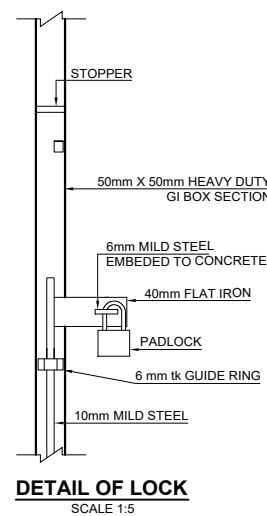
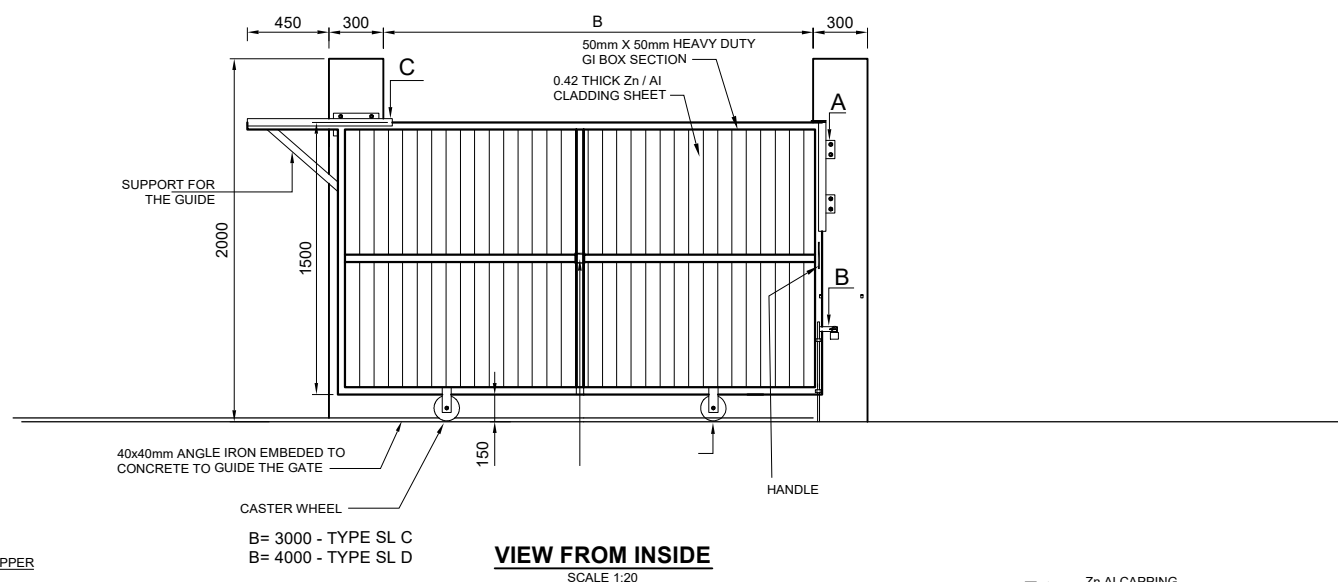
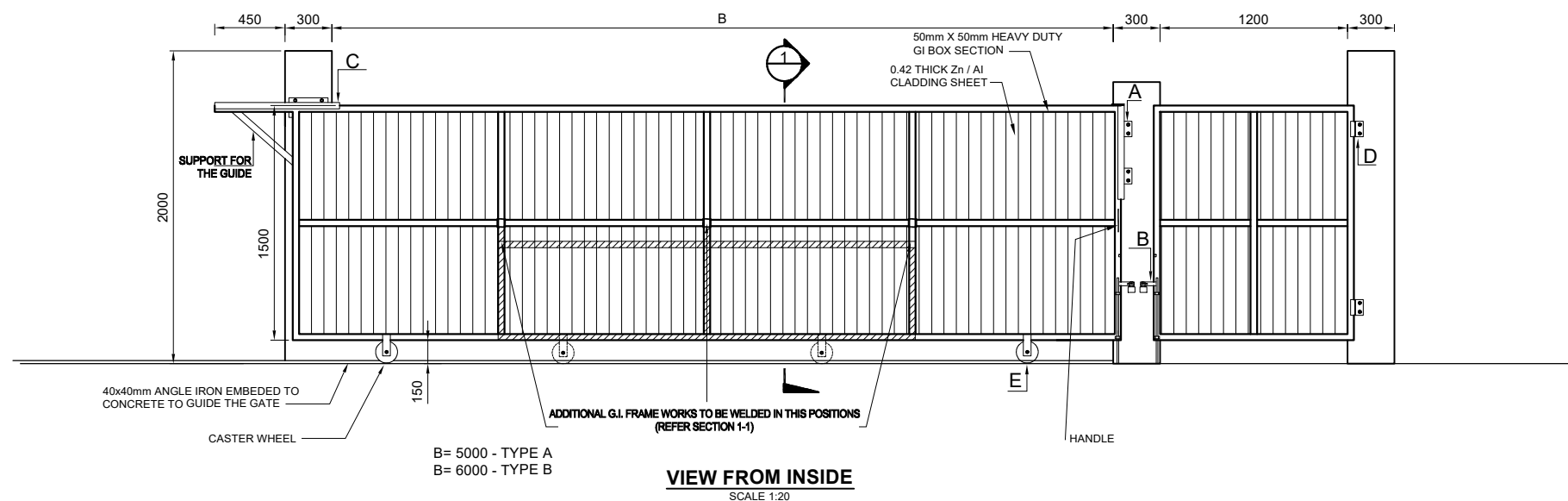
HINGE (6Nos.)
DETAIL 9
NOT TO SCALE



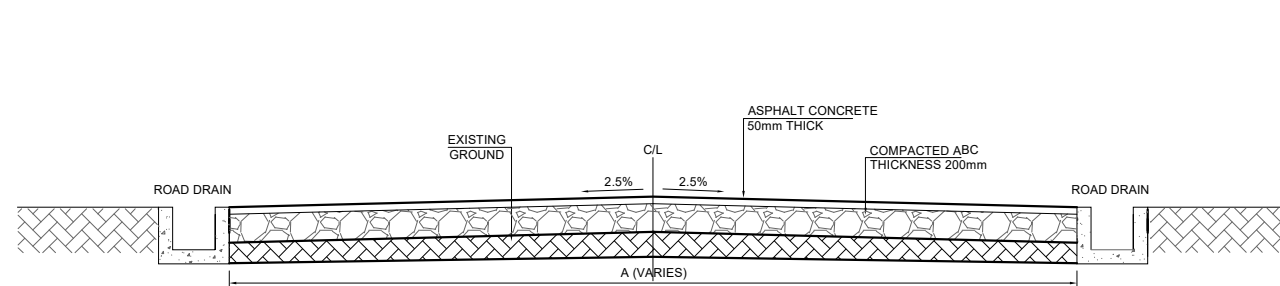
SECTION 1:1
NOT TO SCALE

NOTES:
1. FOR NOTES AND STANDARD DETAILS REFER TO DRAWING Nos.
STD -01, 02, 03 & 04.

PROJECT Preparatory Survey on Nirodh Water Supply Expansion Project	DESCRIPTION Standard Details for Swing Gate	JAPAN INTERNATIONAL COOPERATION AGENCY (JICA) NIHON SUIDO CONSULTANTS CO., LTD. (NSC) TOKYO ENGINEERING CONSULTANTS CO., LTD. (TEC) CTI ENGINEERING INTERNATIONAL CO., LTD. (CTII) KITAKYUSHU WATER SERVICE CO., LTD. (KWS)	DRAWING No. SCALE	NRD/PHIII/WTP-26-7-1 NTS
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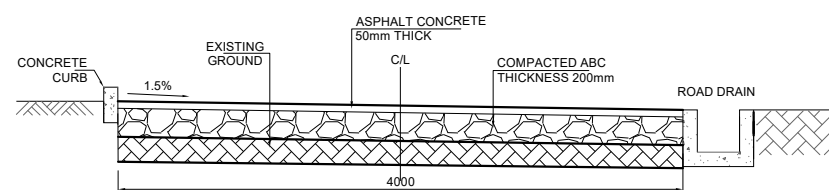


PROJECT Preparatory Survey on Nirodh Water Supply Expansion Project	DESCRIPTION Standard Details for Sliding Gate	JAPAN INTERNATIONAL COOPERATION AGENCY (JICA) NIHON SUIDO CONSULTANTS CO., LTD. (NSC) TOKYO ENGINEERING CONSULTANTS CO., LTD. (TEC) CTI ENGINEERING INTERNATIONAL CO., LTD. (CTII) KITAKYUSHU WATER SERVICE CO., LTD. (KWS)	DRAWING No. SCALE	NRD/PHIII/WTP-26-7-2 NTS
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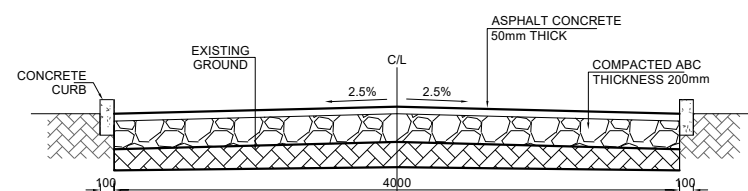


TYPICAL CROSS SECTION OF PAVED AREA
SCALE 1:50

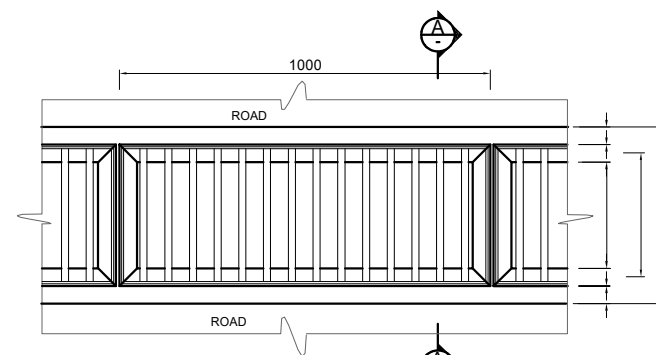
TYPE - A



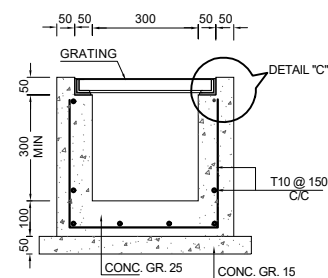
TYPE - B



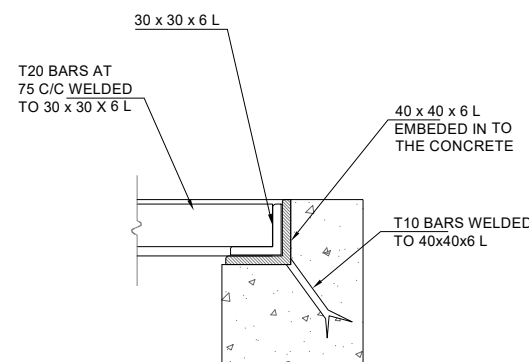
TYPE - C



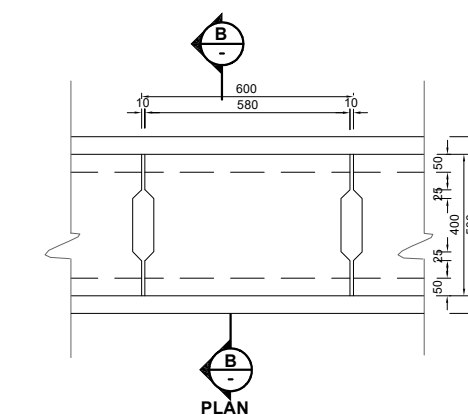
CROSS - ROAD GRATING AND DRAIN
SCALE 1:20



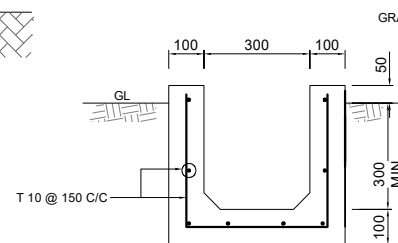
SECTION A



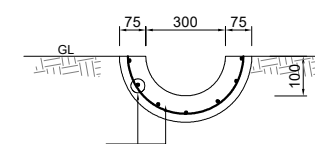
DETAIL C



PLAN



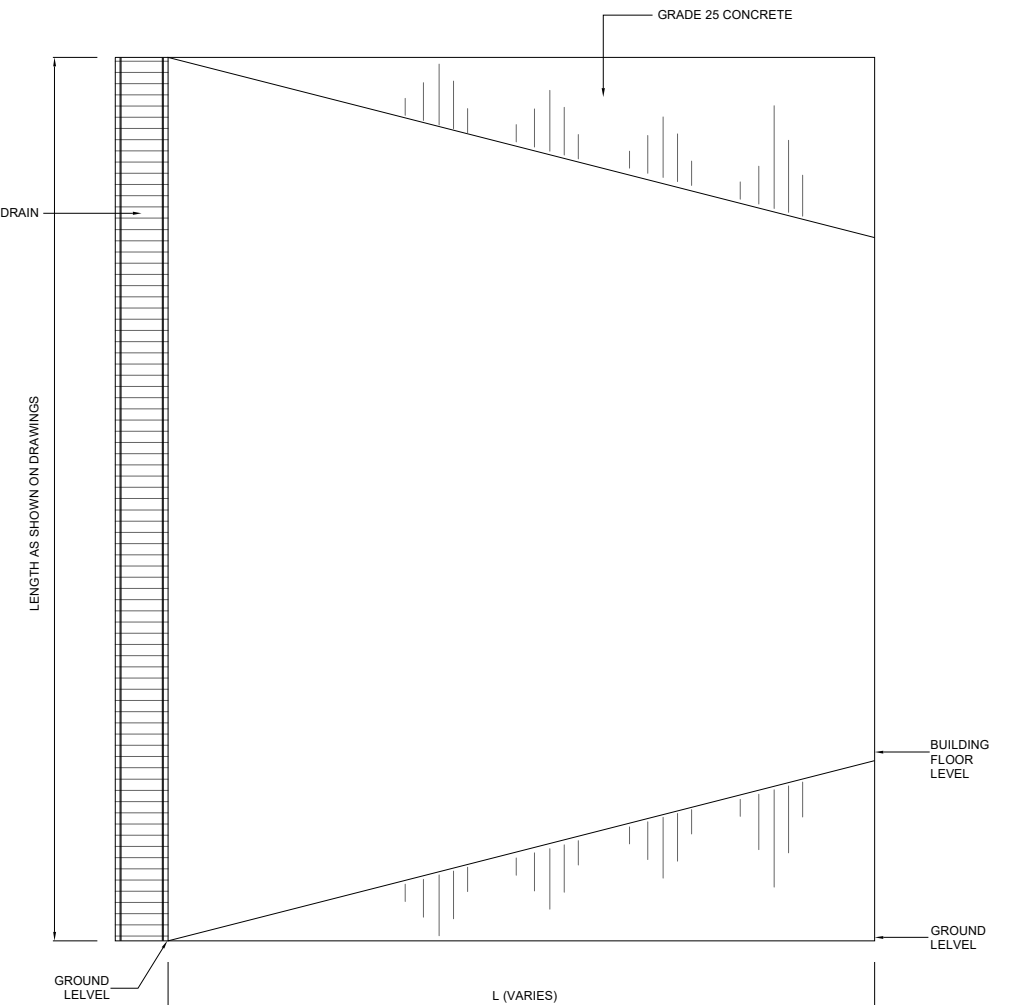
TYPE - 1



TYPE - 2

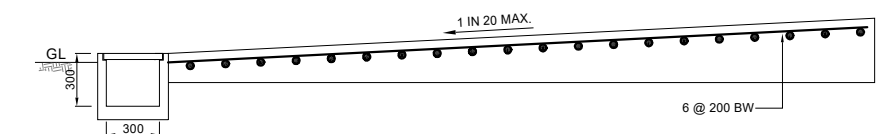
(SEMI CIRCULAR PRE- CAST UNITS)

DETAIL OF PERIMETER DRAIN



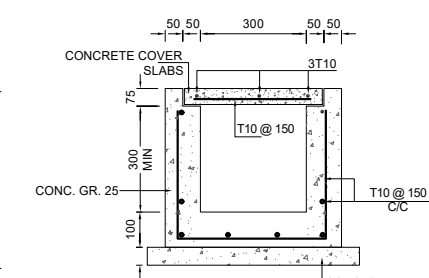
HEAVY DUTY ACCESS DRIVEWAY DETAIL (RAMP)

SCALE 1:40



HEAVY DUTY ACCESS DRIVEWAY DETAIL (RAMP)

SCALE 1:40



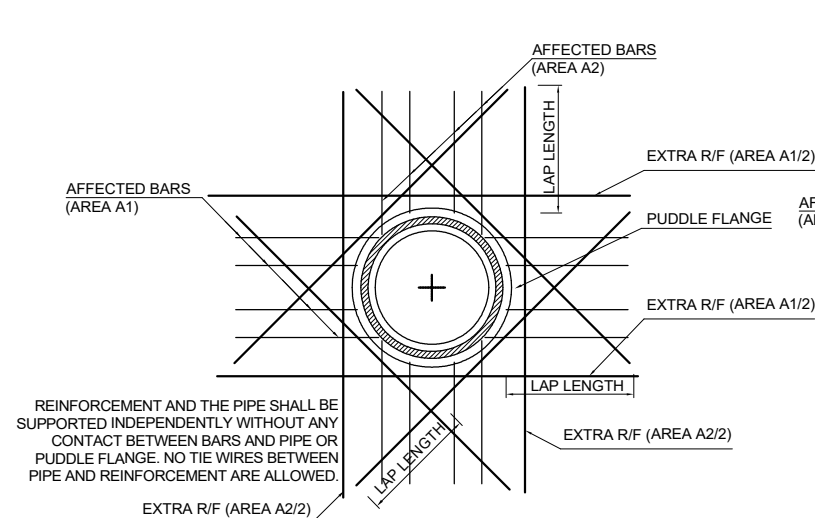
SECTION B
TYPE - 1

* DEPTH TO BE CHANGE TO SUIT THE SITE

DETAIL OF RC DRAINS WITH COVER SLAB

SCALE 1:20

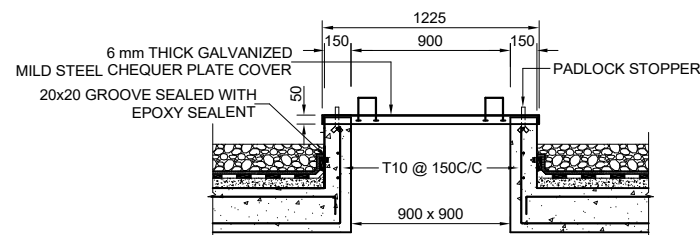
PROJECT Preparatory Survey on Nirodh Water Supply Expansion Project	DESCRIPTION Standard Details for Access Road Section, Drain Types, Grating & Access Driveway Detail	JAPAN INTERNATIONAL COOPERATION AGENCY (JICA) NIHON SUIDO CONSULTANTS CO., LTD. (NSC) TOKYO ENGINEERING CONSULTANTS CO., LTD. (TEC) CTI ENGINEERING INTERNATIONAL CO., LTD. (CTII) KITAKYUSHU WATER SERVICE CO., LTD. (KWS)	DRAWING No. SCALE	NRD/PHIII/WTP-26-8 NTS
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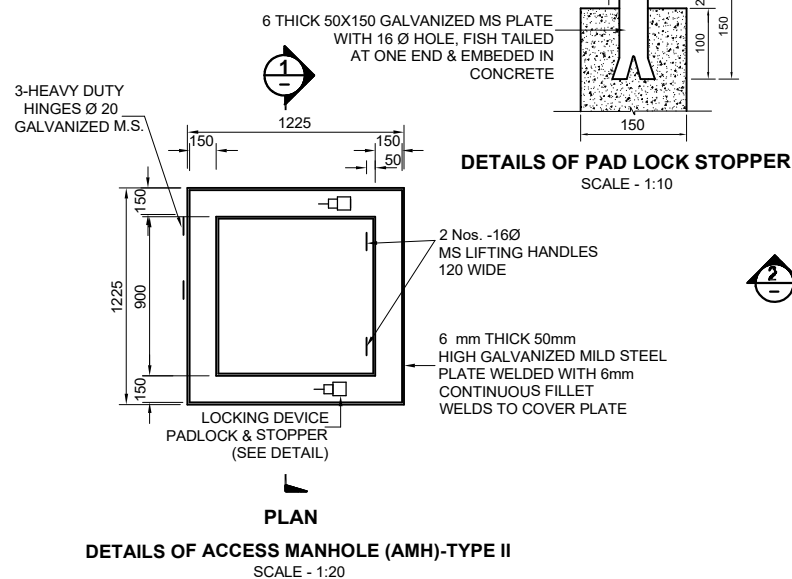
TYPICAL REINFORCEMENT DETAILS AT PIPE OPENING

NOTES

1. FOR ALL OPENINGS, REINFORCEMENT SHALL NOT BE FLAME CUT.
2. DIAGONAL REINFORCEMENT ARE NEEDED ONLY WHEN THE OPENING SIZE EXCEED 500 mm
3. DIAGONAL BARS SHALL BE $\frac{1}{2}$ OR $\frac{3}{4}$ WHICH EVER CHEATER.

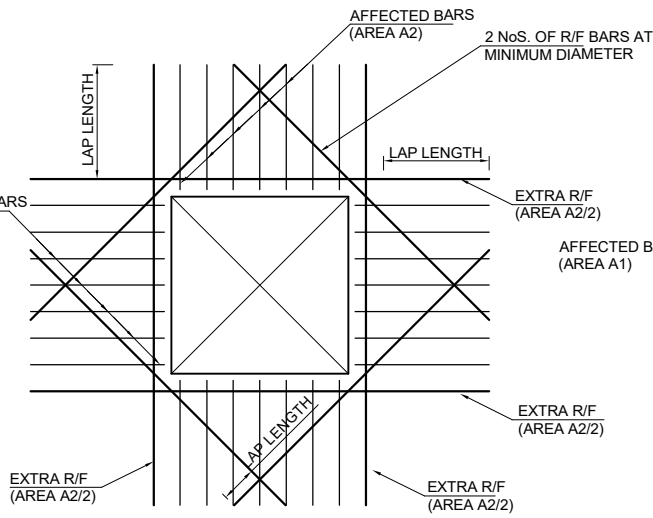


SECTION 1



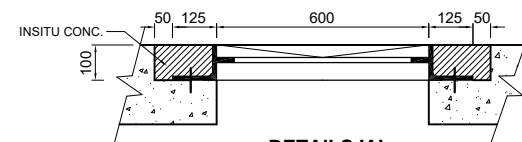
DETAILS OF PAD LOCK STOPPER

SCALE - 1:10



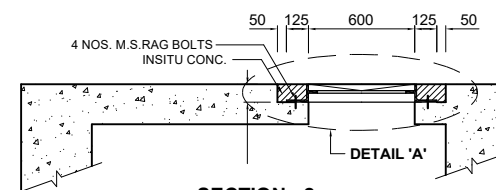
TYPICAL DETAIL FOR REINFORCEMENT AROUND OPENINGS

SCALE 1:40



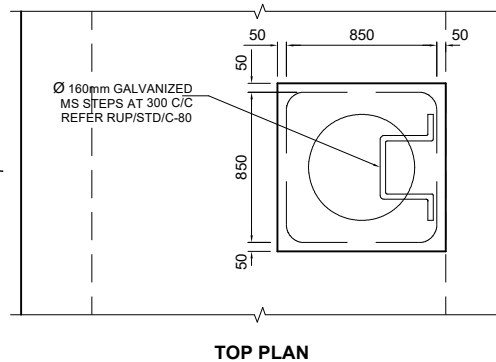
DETAILS 'A'

SCALE 1:20



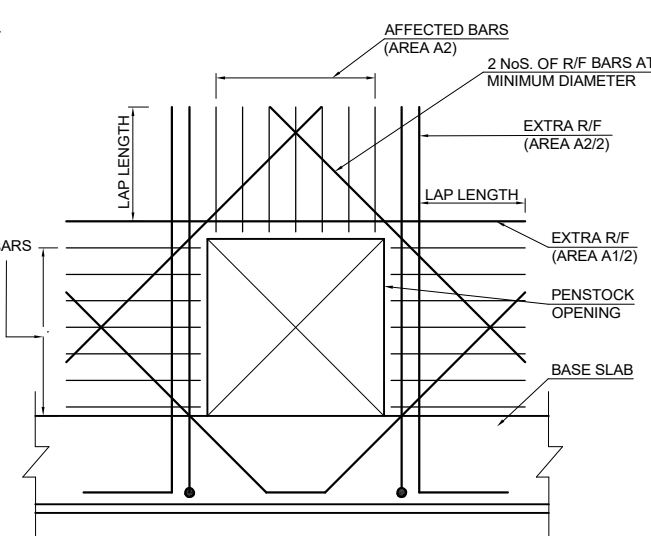
SECTION - 2

SCALE 1:40



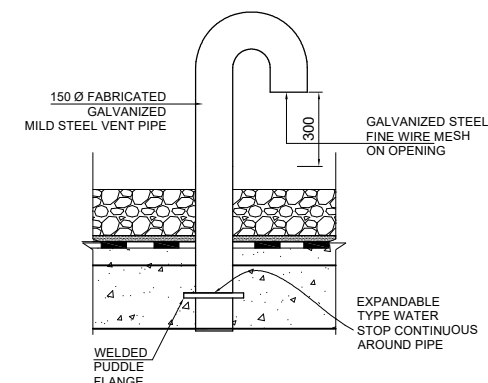
DETAILS OF ACCESS MANHOLE (AMH)-TYPE I

SCALE - 1:40



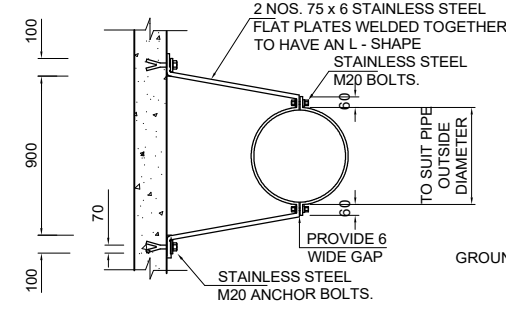
TYPICAL R/F DETAILS AT PENSTOCK OPENING

SCALE 1:40



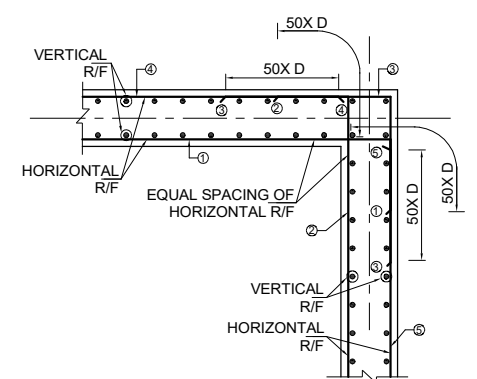
DETAILS OF VENT PIPE

SCALE - 1:10



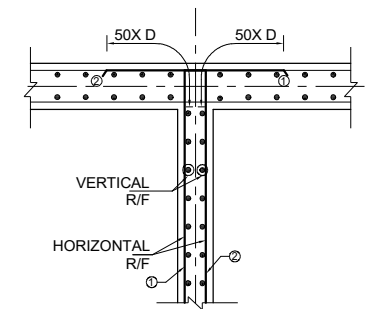
PIPE SUPPORT BRACKET DETAIL

SCALE 1:40



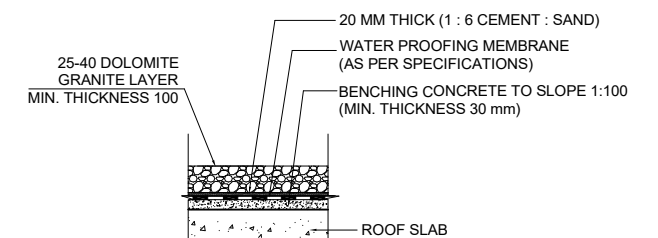
TYPICAL R/F DETAIL AT "L" WALL JUNCTIONS

SCALE 1:50



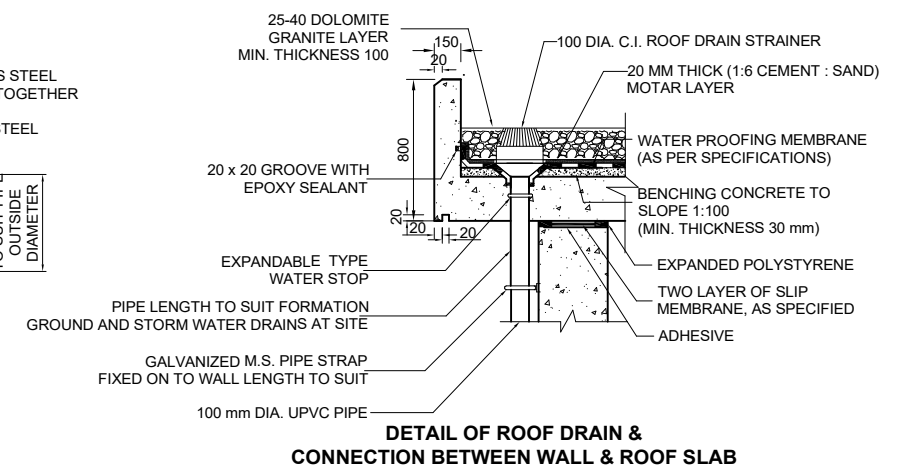
TYPICAL R/F DETAIL AT "T" WALL JUNCTIONS

SCALE 1:50



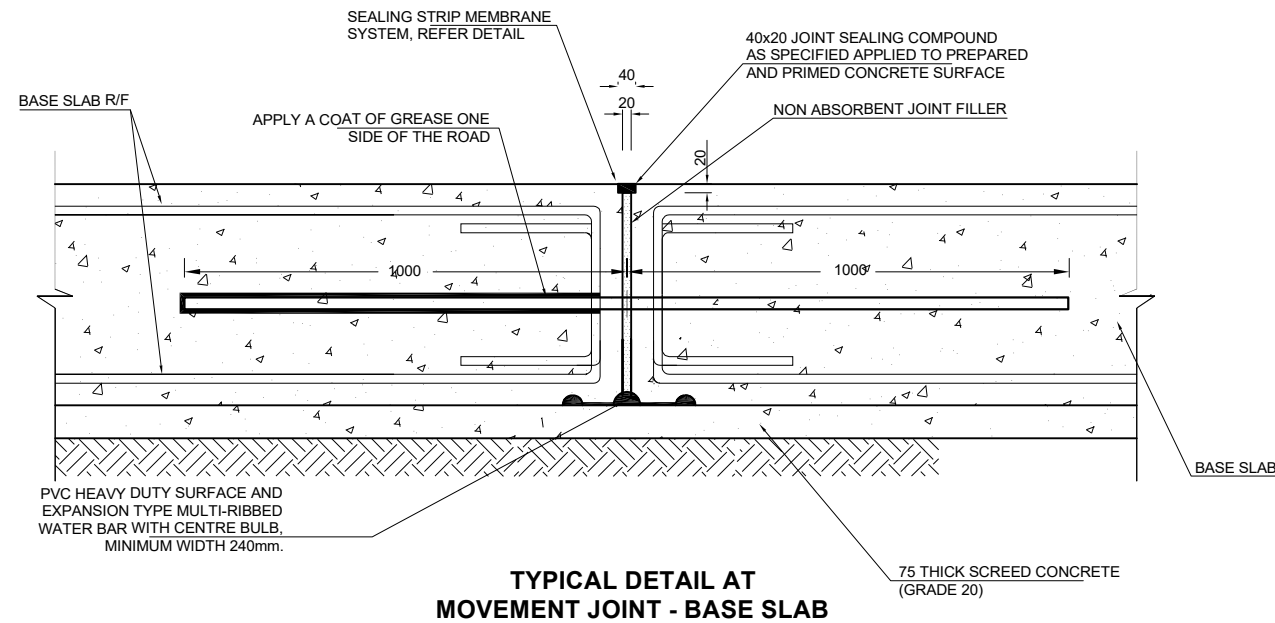
RESERVOIR ROOF-TYPICAL

SCALE 1:20

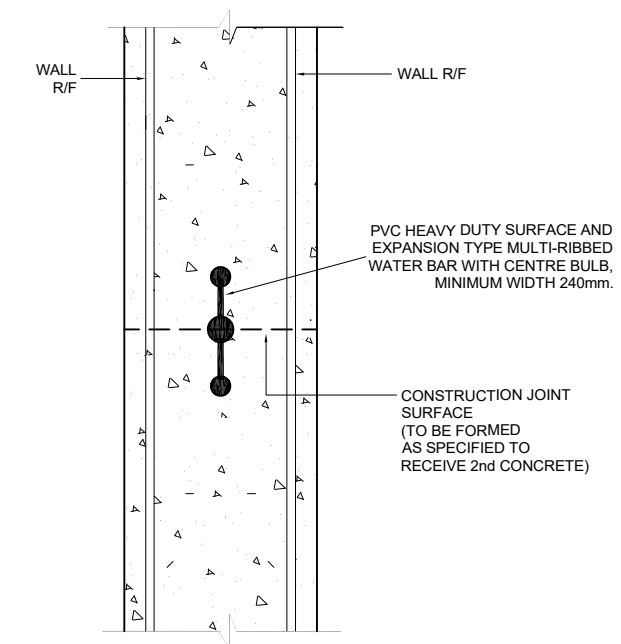
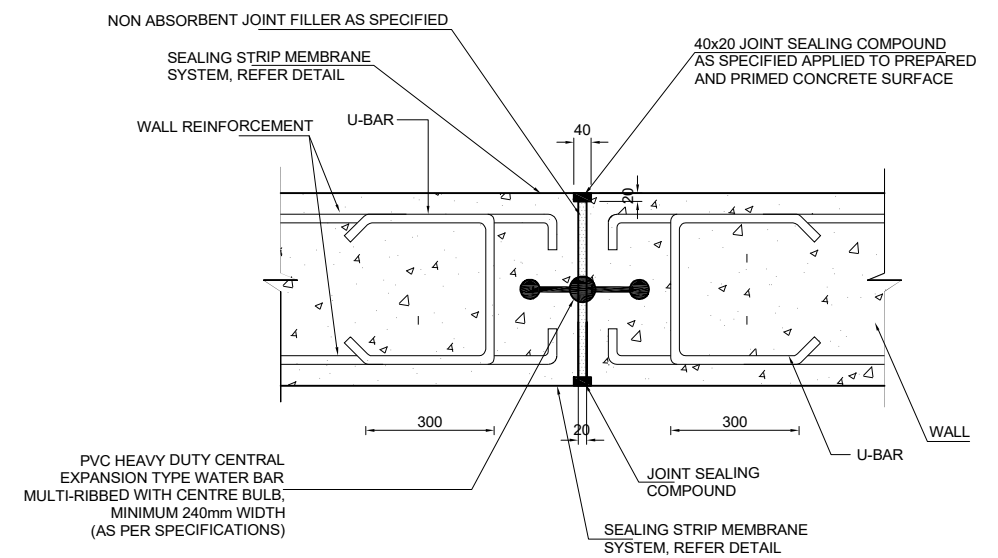
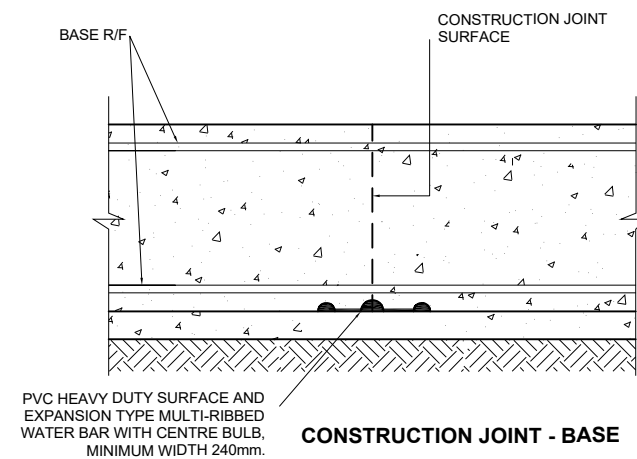
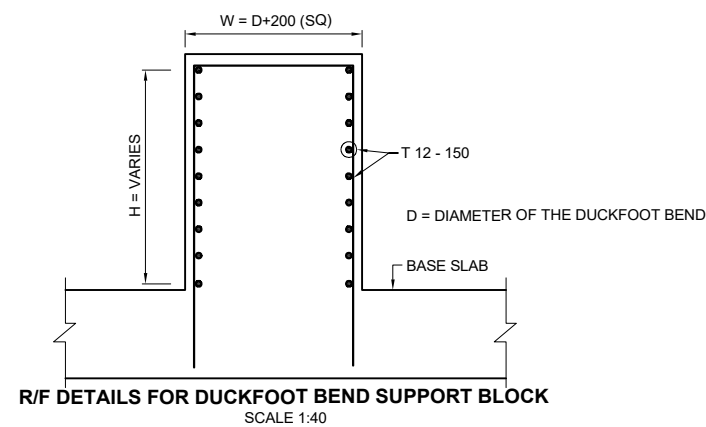


DETAIL OF ROOF DRAIN & CONNECTION BETWEEN WALL & ROOF SLAB

PROJECT Preparatory Survey on Nirodh Water Supply Expansion Project	DESCRIPTION Standard Structural Details (Sheet 01 of 02)	JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)	DRAWING No.	NRD/PHIII/WTP-26-9-1
		NIHON SUIDO CONSULTANTS CO., LTD. (NSC) TOKYO ENGINEERING CONSULTANTS CO., LTD. (TEC) CTI ENGINEERING INTERNATIONAL CO., LTD. (CTII) KITAKYUSHU WATER SERVICE CO., LTD. (KWS)	SCALE	NTS



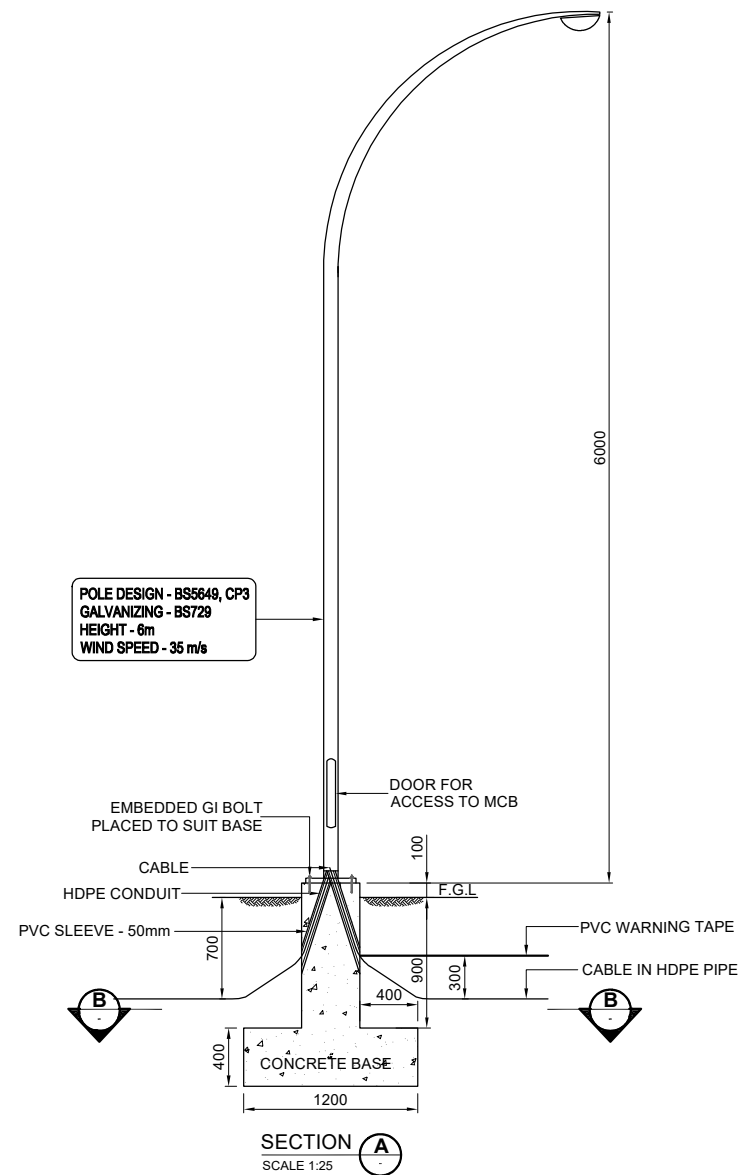
NOTE:
THE CONNECTION OF WATER BAR FROM BASE SLAB TO WALL
SHOULD BE PROPERLY WELDED AT JOINTS WITH OUT TOUCHING REINFORCEMENT



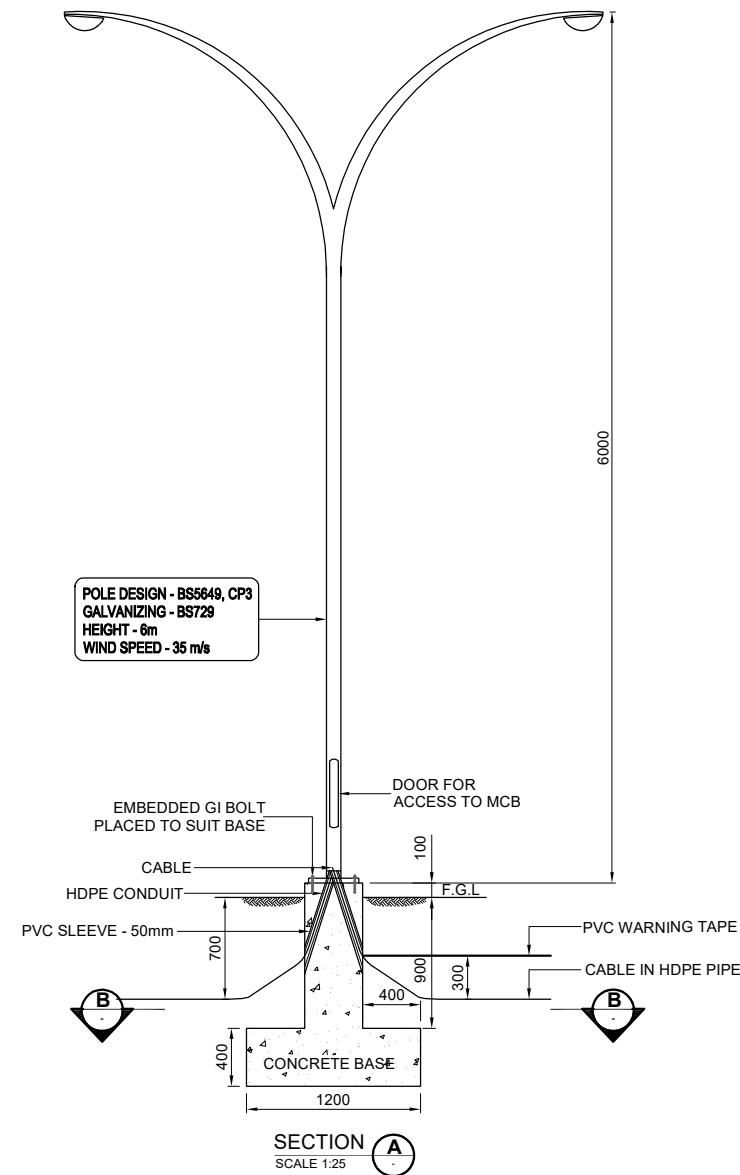
PROJECT	DESCRIPTION	JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)	DRAWING No.	NRD/PH111/WTP-26-9-2
		NIHON SUIDO CONSULTANTS CO., LTD. (NSC) TOKYO ENGINEERING CONSULTANTS CO., LTD. (TEC) CTI ENGINEERING INTERNATIONAL CO., LTD. (CTII) KITAKYUSHU WATER SERVICE CO., LTD. (KWS)	SCALE	NTS

Preparatory Survey on Nirodh Water Supply Expansion Project

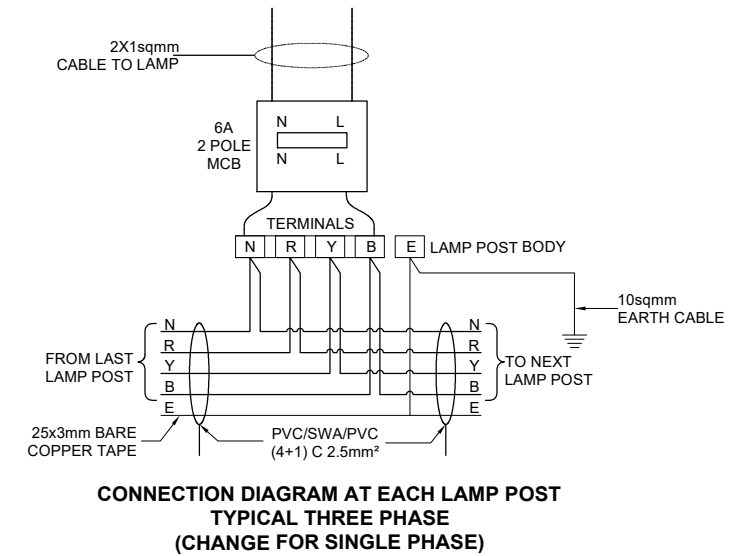
Standard Structural Details
(Sheet 02 of 02)



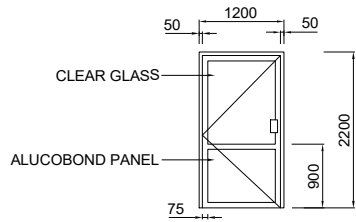
LAMP POST AND BASE TYPICAL ARRANGEMENT
(SINGLE)



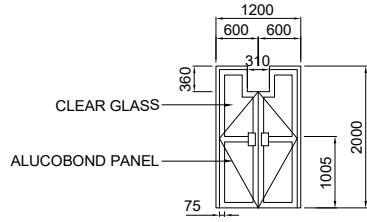
LAMP POST AND BASE TYPICAL ARRANGEMENT
(DOUBLE)



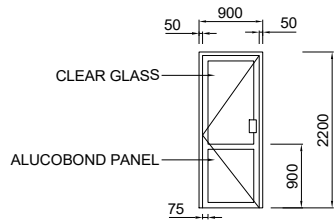
PROJECT Preparatory Survey on Nirodh Water Supply Expansion Project	DESCRIPTION Standard Details for Yard Lighting Lamp Post	JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)	DRAWING No.	NRD/PH111/WTP-26-10
		NIHON SUIDO CONSULTANTS CO., LTD. (NSC) TOKYO ENGINEERING CONSULTANTS CO., LTD. (TEC) CTI ENGINEERING INTERNATIONAL CO., LTD. (CTII) KITAKYUSHU WATER SERVICE CO., LTD. (KWS)	SCALE	NTS



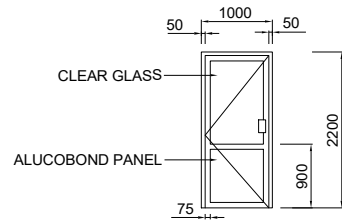
TYPE	DOOR: DR 1
MATERIAL	ALUMINIUM
FINISH	POWER COATED EXTRUDED ALUM.
GLAZING	6mm
HINGS & FASTENERS	STAINLESS STEEL



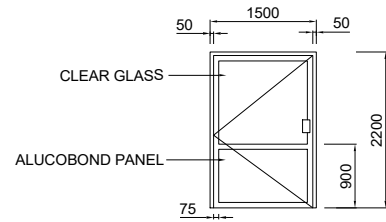
TYPE	DOOR: DR 2
MATERIAL	ALUMINIUM
FINISH	POWER COATED EXTRUDED ALUM.
GLAZING	6mm
HINGS & FASTENERS	STAINLESS STEEL



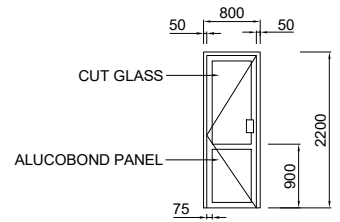
TYPE	DOOR: DR 3
MATERIAL	ALUMINIUM
FINISH	POWER COATED EXTRUDED ALUM.
GLAZING	6mm
HINGS & FASTENERS	STAINLESS STEEL



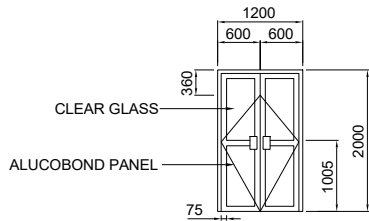
TYPE	DOOR: DR 4
MATERIAL	ALUMINIUM
FINISH	POWER COATED EXTRUDED ALUM.
GLAZING	6mm
HINGS & FASTENERS	STAINLESS STEEL



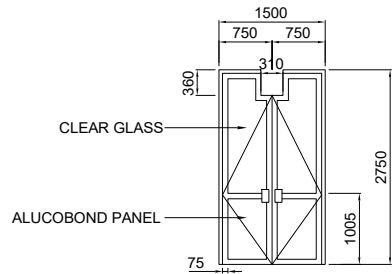
TYPE	DOOR: DR 5
MATERIAL	ALUMINIUM
FINISH	POWER COATED EXTRUDED ALUM.
GLAZING	6mm
HINGS & FASTENERS	STAINLESS STEEL



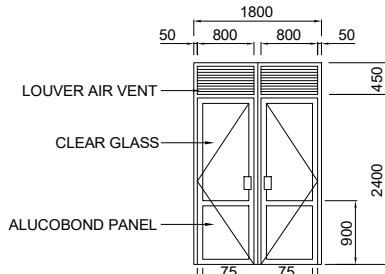
TYPE	DOOR: DR 6
MATERIAL	ALUMINIUM
FINISH	POWER COATED EXTRUDED ALUM.
GLAZING	5mm
HINGS & FASTENERS	STAINLESS STEEL



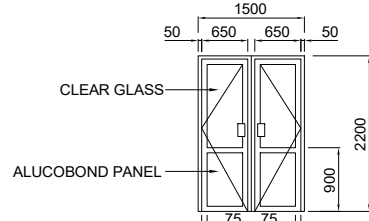
TYPE	DOOR: DR 7
MATERIAL	ALUMINIUM
FINISH	POWER COATED EXTRUDED ALUM.
GLAZING	6mm
HINGS & FASTENERS	STAINLESS STEEL



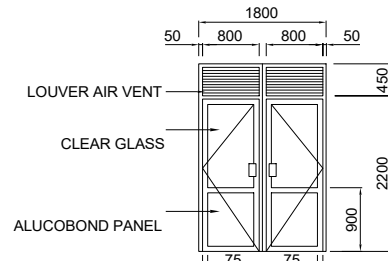
TYPE	DOOR: DR 8
MATERIAL	ALUMINIUM
FINISH	POWER COATED EXTRUDED ALUM.
GLAZING	6mm
HINGS & FASTENERS	STAINLESS STEEL



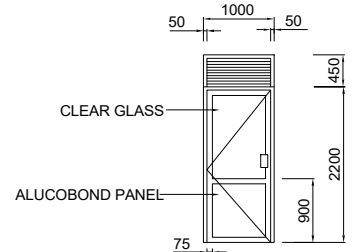
TYPE	DOOR: DR 9
MATERIAL	ALUMINIUM
FINISH	POWER COATED EXTRUDED ALUM.
GLAZING	6mm
HINGS & FASTENERS	STAINLESS STEEL



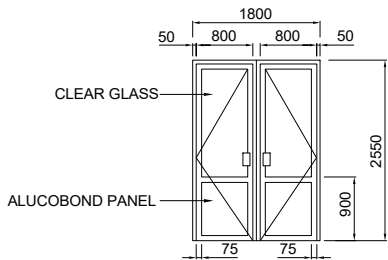
TYPE	DOOR: DR 10
MATERIAL	ALUMINIUM
FINISH	POWER COATED EXTRUDED ALUM.
GLAZING	6mm
HINGS & FASTENERS	STAINLESS STEEL



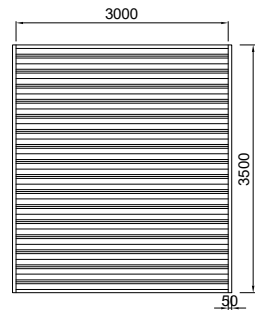
TYPE	DOOR: DR 11
MATERIAL	ALUMINIUM
FINISH	POWER COATED EXTRUDED ALUM.
GLAZING	6mm
HINGS & FASTENERS	STAINLESS STEEL



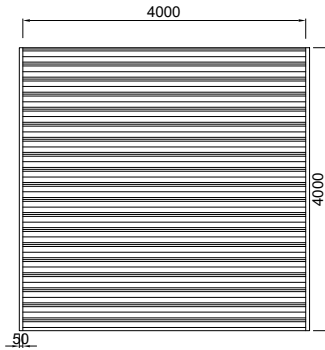
TYPE	DOOR: DR 12
MATERIAL	ALUMINIUM
FINISH	POWER COATED EXTRUDED ALUM.
GLAZING	6mm
HINGS & FASTENERS	STAINLESS STEEL



TYPE	DOOR: DR 13
MATERIAL	ALUMINIUM
FINISH	POWER COATED EXTRUDED ALUM.
GLAZING	6mm
HINGS & FASTENERS	STAINLESS STEEL



TYPE	DOOR: RD1
MATERIAL	ALUMINIUM
FINISH	POWER COATED EXTRUDED ALUM.
GLAZING	-
HINGS & FASTENERS	COMPLETE WITH BARREL, COUNTERBALANCE ASSEMBLY, GUIDE ASSEMBLES & BRACKET PLATES.



TYPE	DOOR: RD2
MATERIAL	ALUMINIUM
FINISH	POWER COATED EXTRUDED ALUM.
GLAZING	-
HINGS & FASTENERS	COMPLETE WITH BARREL, COUNTERBALANCE ASSEMBLY, GUIDE ASSEMBLES & BRACKET PLATES.

NOTE:

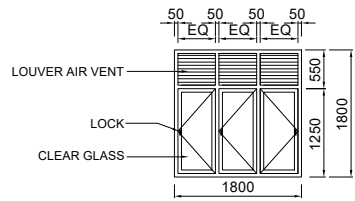
- 1.) ALL DIMENSIONS ARE GIVEN IN MILLIMETERS.
- 2.) THIS DRAWING INDICATES APPROX. DIMENSIONS. ACTUAL DIMENSIONS SHALL BE VERIFIED AT SITE & CONFIRMED BEFORE ANY FABRICATION.
- 3.) ALL PROFILES SHALL BE POWER COATED EXTRUDED ALUMINIUM SECTIONS AND MIN. WALL THICKNESS SHALL BE 1mm.
- 4.) INTERFACE AT WALLS AND WINDOWS SHALL BE PROPERLY SEALED USING FLEX SILICON. ALL OPEN ABLE WINDOWS SHALL BE PROVIDED WITH DOUBLE SEAL GASKET.

PROJECT
Preparatory Survey on Nirodh Water Supply Expansion Project

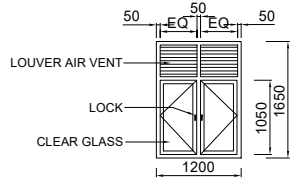
DESCRIPTION
Standard Details for
Aluminium Doors

JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)
NIHON SUIDO CONSULTANTS CO., LTD. (NSC)
TOKYO ENGINEERING CONSULTANTS CO., LTD. (TEC)
CTI ENGINEERING INTERNATIONAL CO., LTD. (CTII)
KITAKYUSHU WATER SERVICE CO., LTD. (KWS)

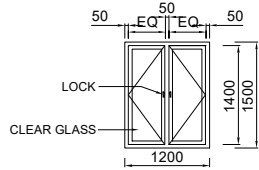
DRAWING No. NRD/PHIII/WTP-26-11
SCALE NTS



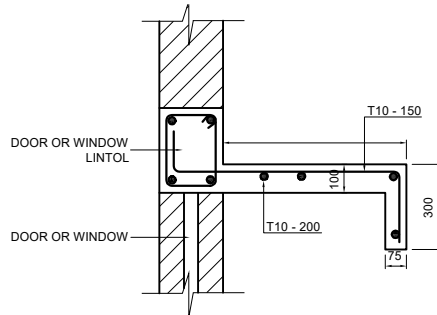
TYPE	WINDOW: W1
MATERIAL	ALUMINIUM
FINISH	POWER COATED EXTRUDED ALUM.
GLAZING	6mm
HINGS & FASTENERS	STAINLESS STEEL



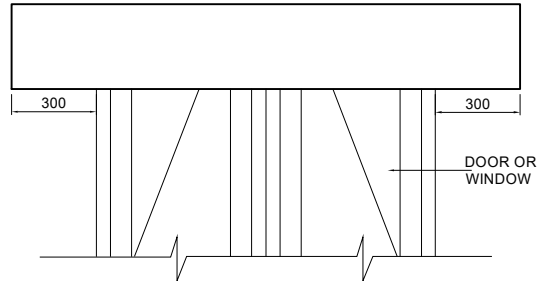
TYPE	WINDOW: W2
MATERIAL	ALUMINIUM
FINISH	POWER COATED EXTRUDED ALUM.
GLAZING	6mm
HINGS & FASTENERS	STAINLESS STEEL



TYPE	WINDOW: W3 (FIXED WINDOW)
MATERIAL	ALUMINIUM
FINISH	POWER COATED EXTRUDED ALUM.
GLAZING	6mm
HINGS & FASTENERS	STAINLESS STEEL

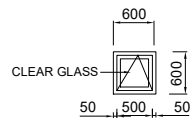


SECTIONAL VIEW

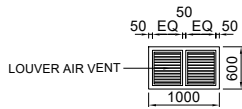


ELEVATION

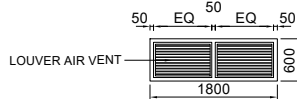
DETAIL OF TYPICAL CANOPY



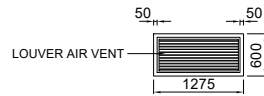
TYPE	FANLIGHT: FL
MATERIAL	ALUMINIUM
FINISH	POWER COATED EXTRUDED ALUM.
GLAZING	6mm
HINGS & FASTENERS	STAINLESS STEEL



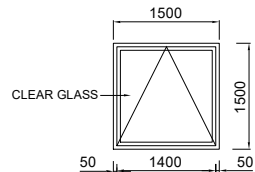
TYPE	WINDOW: LW1
MATERIAL	ALUMINIUM
FINISH	POWER COATED EXTRUDED ALUM.
GLAZING	-
HINGS & FASTENERS	STAINLESS STEEL



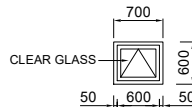
TYPE	WINDOW: LW2
MATERIAL	ALUMINIUM
FINISH	POWER COATED EXTRUDED ALUM.
GLAZING	-
HINGS & FASTENERS	STAINLESS STEEL



TYPE	WINDOW: LW3
MATERIAL	ALUMINIUM
FINISH	POWER COATED EXTRUDED ALUM.
GLAZING	-
HINGS & FASTENERS	STAINLESS STEEL



TYPE	FIXED GLASS: FG
MATERIAL	ALUMINIUM
FINISH	POWER COATED EXTRUDED ALUM.
GLAZING	6mm
HINGS & FASTENERS	STAINLESS STEEL



TYPE	FIXED GLASS: FG2
MATERIAL	ALUMINIUM
FINISH	POWER COATED EXTRUDED ALUM.
GLAZING	6mm
HINGS & FASTENERS	STAINLESS STEEL

NOTE:

- 1.) ALL DIMENSIONS ARE GIVEN IN MILLIMETERS.
- 2.) THIS DRAWING INDICATES APPROX. DIMENSIONS. ACTUAL DIMENSIONS SHALL BE VERIFIED AT SITE & CONFIRMED BEFORE ANY FABRICATION.
- 3.) ALL PROFILES SHALL BE POWER COATED EXTRUDED ALUMINIUM SECTIONS AND MIN. WALL THICKNESS SHALL BE 1mm.
- 4.) INTERFACE AT WALLS AND WINDOWS SHALL BE PROPERLY SEALED USING FLEX SILICON. ALL OPEN ABLE WINDOWS SHALL BE PROVIDED WITH DOUBLE SEAL GASKET.

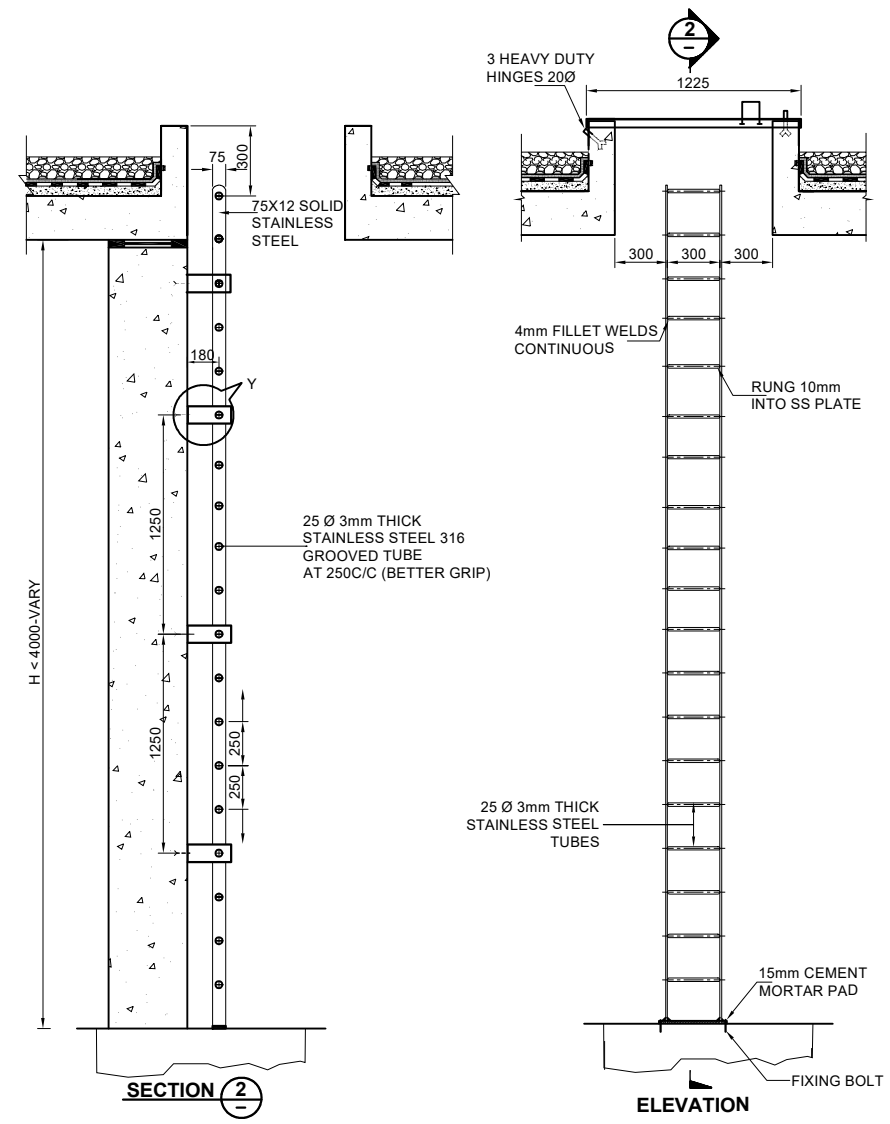
PROJECT
Preparatory Survey on Nirodh Water Supply Expansion Project

DESCRIPTION
Standard Details for
Aluminium Windows

JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)
NIHON SUIDO CONSULTANTS CO., LTD. (NSC)
TOKYO ENGINEERING CONSULTANTS CO., LTD. (TEC)
CTI ENGINEERING INTERNATIONAL CO., LTD. (CTII)
KITAKYUSHU WATER SERVICE CO., LTD. (KWS)

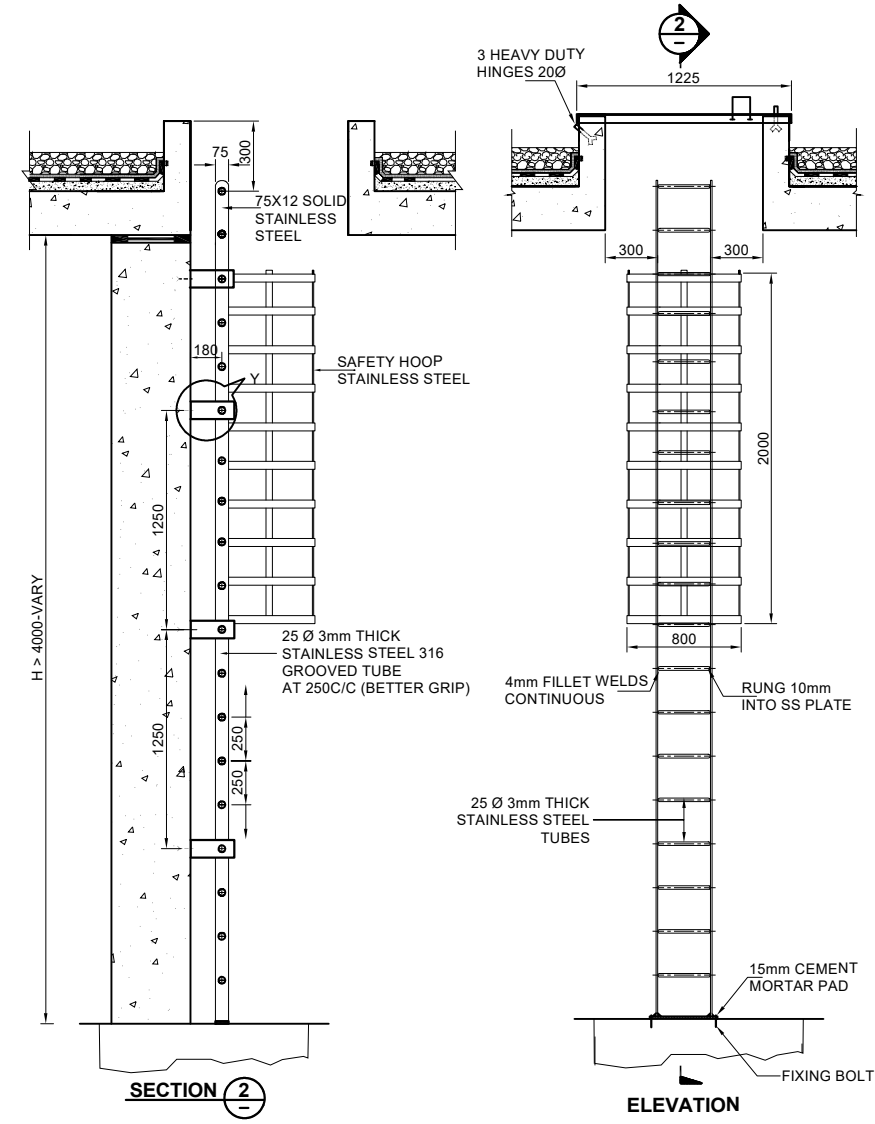
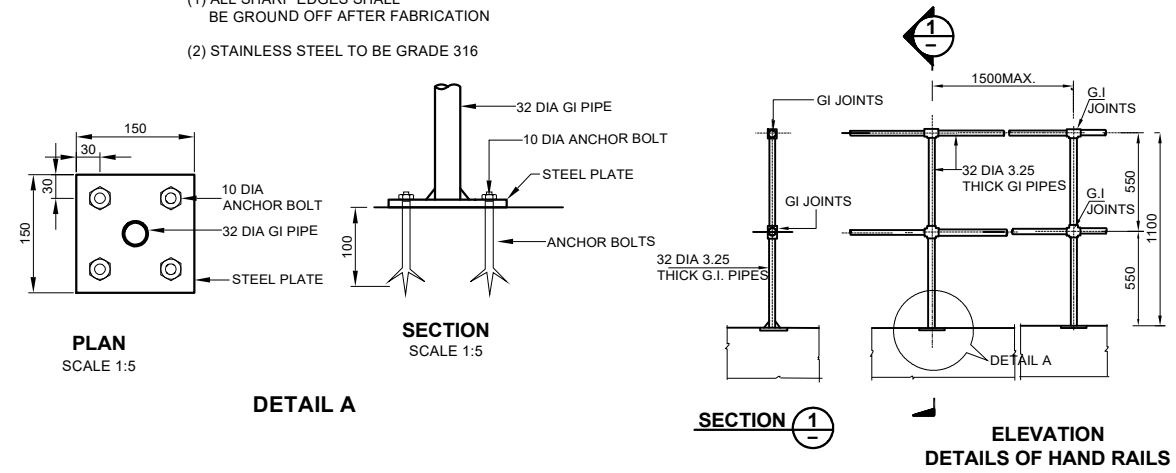
DRAWING No.
SCALE

NRD/PHIII/WTP-26-12
NTS

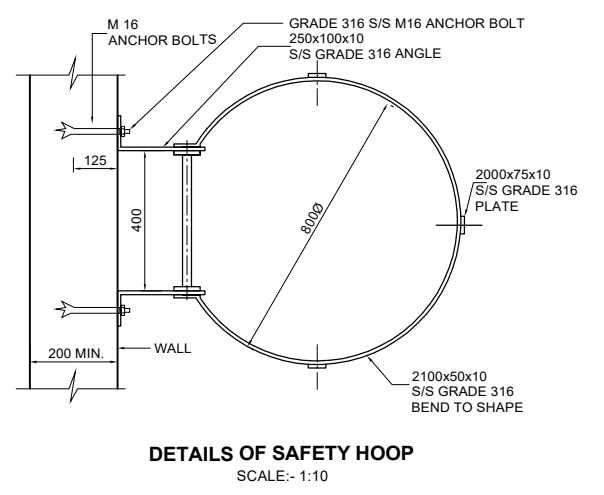
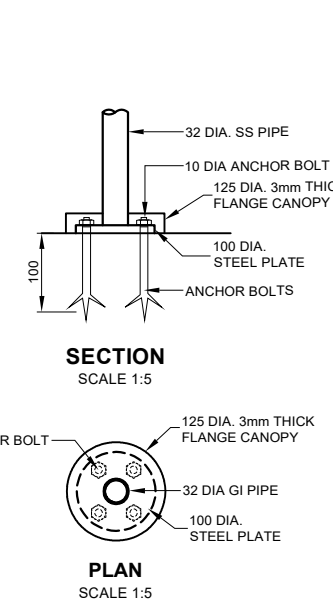
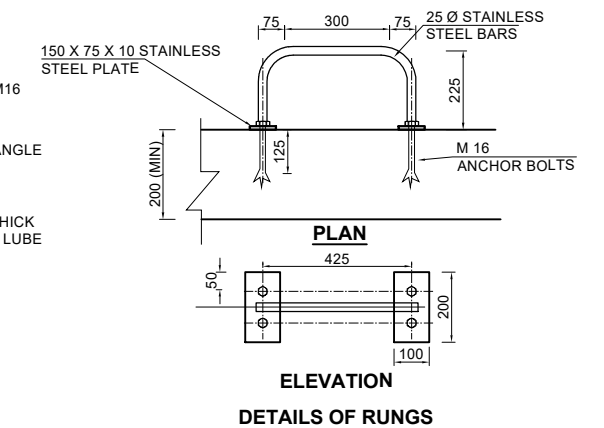
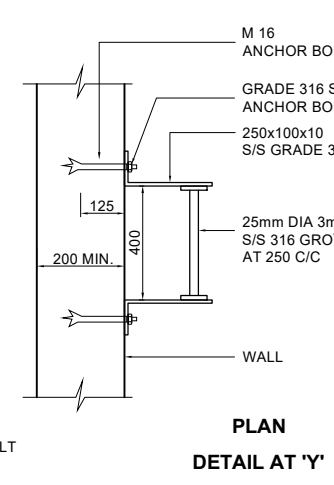
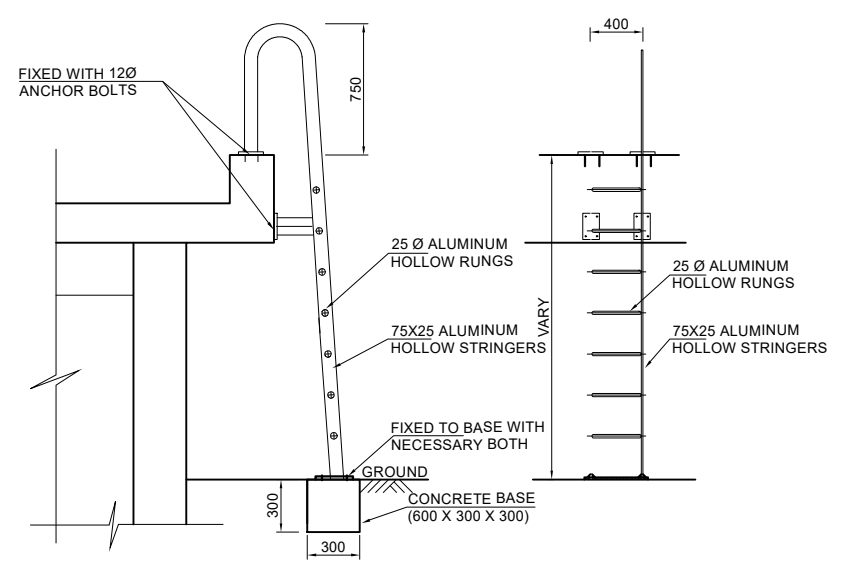
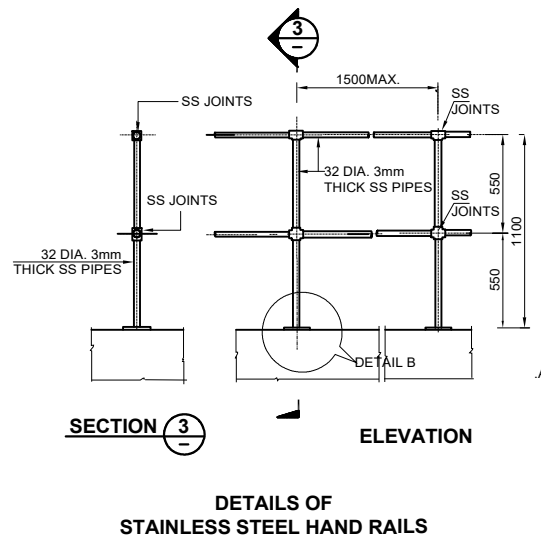


DETAILS OF ACCESS LADDER (INTERNAL)
HEIGHT < 4000

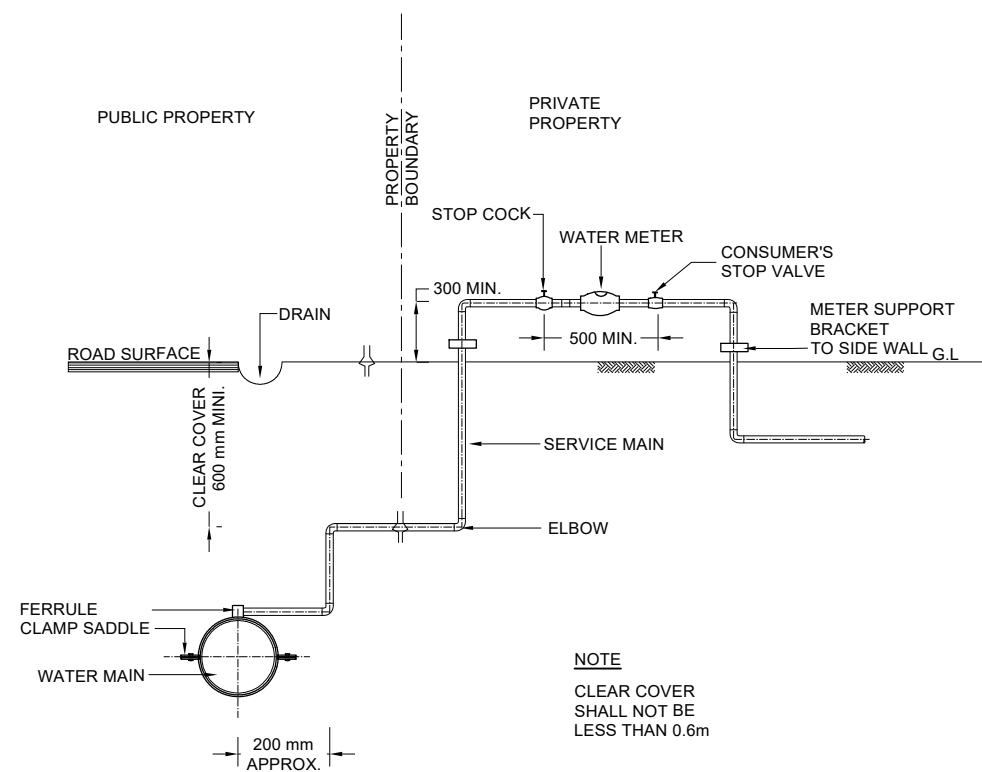
- NOTE:
- (1) ALL SHARP EDGES SHALL BE GROUND OFF AFTER FABRICATION
 - (2) STAINLESS STEEL TO BE GRADE 316



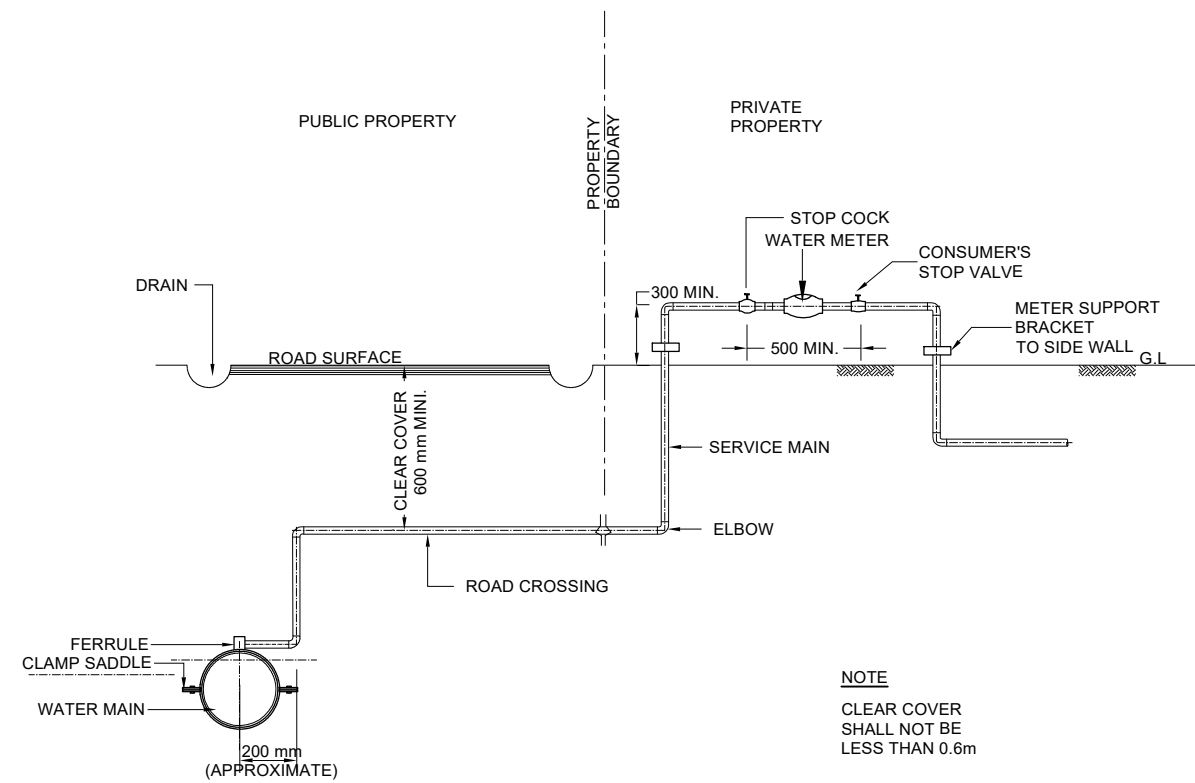
DETAILS OF ACCESS LADDER (INTERNAL)
HEIGHT > 4000



PROJECT Preparatory Survey on Nirodh Water Supply Expansion Project	DESCRIPTION Standard Details for Handrails and Ladders	JAPAN INTERNATIONAL COOPERATION AGENCY (JICA) NIHON SUIDO CONSULTANTS CO., LTD. (NSC) TOKYO ENGINEERING CONSULTANTS CO., LTD. (TEC) CTI ENGINEERING INTERNATIONAL CO., LTD. (CTII) KITAKYUSHU WATER SERVICE CO., LTD. (KWS)	DRAWING No. SCALE	NRD/PHIII/WTP-26-13 NTS
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DETAILS OF TYPICAL SERVICE CONNECTION
WHEN THE SERVICE MAIN UP TO 1½" AND
THE PROPERTY IS ON THE SAME SIDE OF THE ROAD.

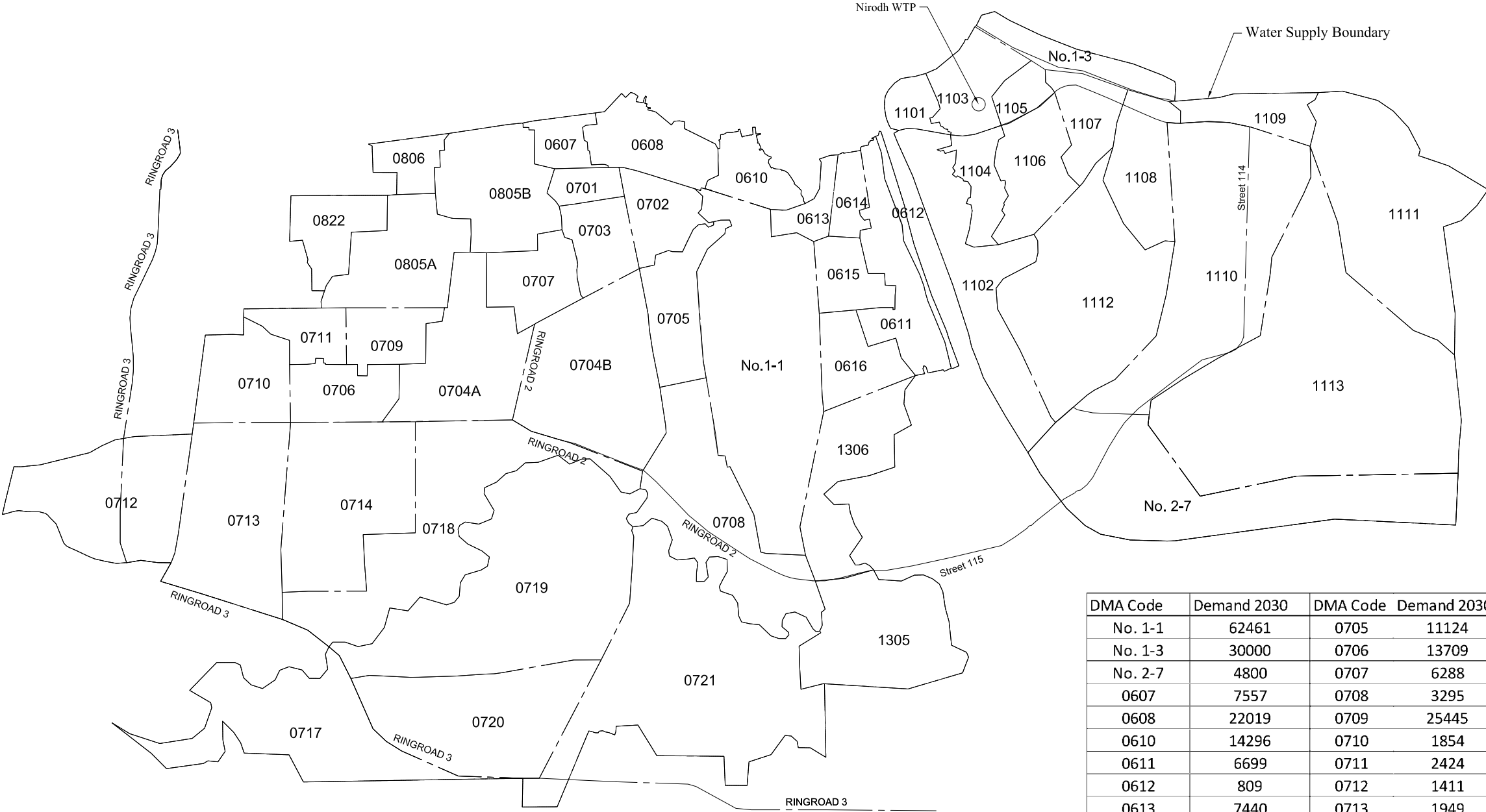


DETAILS OF TYPICAL SERVICE CONNECTION
WHEN THE SERVICE MAIN IS UP TO 1½" AND
THE PROPERTY IS ON THE SAME SIDE OF THE ROAD.

PROJECT Preparatory Survey on Nirodh Water Supply Expansion Project	DESCRIPTION Standard Detail for Typical Service Connection	JAPAN INTERNATIONAL COOPERATION AGENCY (JICA) NIHON SUIDO CONSULTANTS CO., LTD. (NSC) TOKYO ENGINEERING CONSULTANTS CO., LTD. (TEC) CTI ENGINEERING INTERNATIONAL CO., LTD. (CTII) KITAKYUSHU WATER SERVICE CO., LTD. (KWS)	DRAWING No. SCALE	NRD/PHIII/WTP-26-14 NTS
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GENERAL LAYOUT

Location Map of DMA For Nirodh Water Supply Area

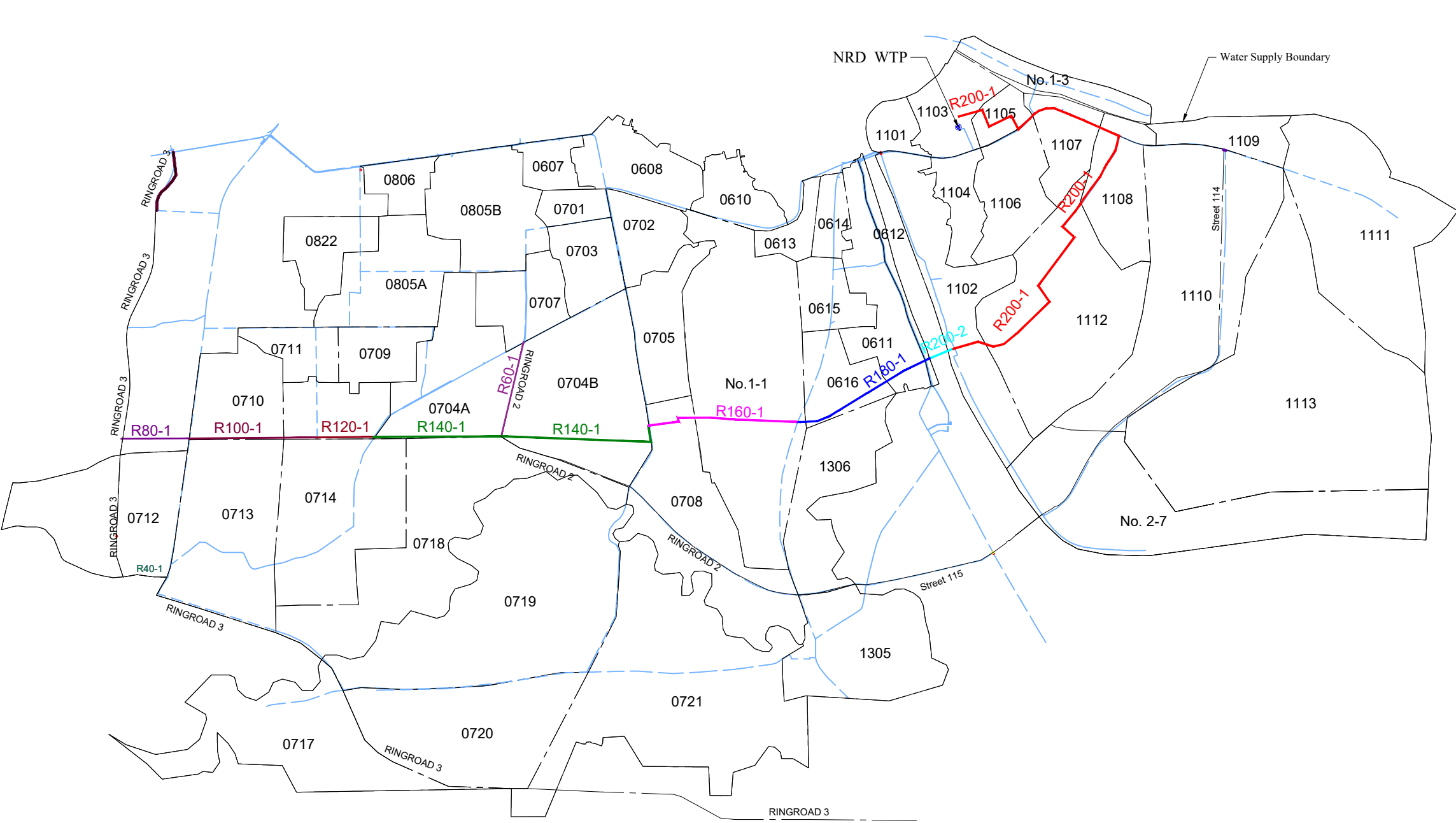


DMA Code	Demand 2030	DMA Code	Demand 2030	DMA Code	Demand 2030
No. 1-1	62461	0705	11124	0806	9649
No. 1-3	30000	0706	13709	0822	7633
No. 2-7	4800	0707	6288	1101	7655
0607	7557	0708	3295	1102	9399
0608	22019	0709	25445	1103	4130
0610	14296	0710	1854	1104	6418
0611	6699	0711	2424	1105	1362
0612	809	0712	1411	1106	16056
0613	7440	0713	1949	1107	2702
0614	621	0714	3801	1108	1376
0615	6396	0717	1629	1109	5423
0616	3221	0718	3240	1110	17254
0701	4899	0719	1580	1111	2076
0702	689	0720	5957	1112	24053
0703	15089	0721	16341	1113	1975
0704A	8256	0805A	14032	1305	12606
0704B	8256	0805B	14032	1306	1881
Total		463267	m3/day		

PROJECT Preparatory Survey on Nirodh Water Supply Expansion Project	DESCRIPTION Location Map of DMA Sharing For Nirodh Water Supply Area	JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)	DRAWING No.	NRD/PH III/PL-GP001
		NIHON SUIDO CONSULTANTS CO.,LTD. (NSC) TOKYO ENGINEERING CONSULTANTS CO., LTD.(TEC) CTI ENGINEERING INTERNATIONAL CO., LTD. (CTII) KITAKYUSHU WATER SERVICE CO., LTD. (KWS)	SCALE	1:90,000

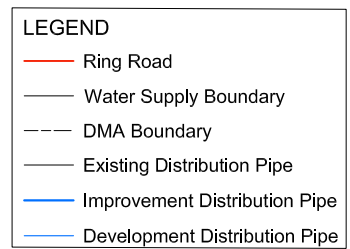
Location Map of Transmission Network (TM) For Nirodh Water Supply Area

Option-1



Legend	
TM_600	
TM_800	
TM_1000	
TM_1200	
TM_1400	
TM_1600	
TM_1800	
TM_2000	
TM_2000 (P.J.)	
Existing_TM	

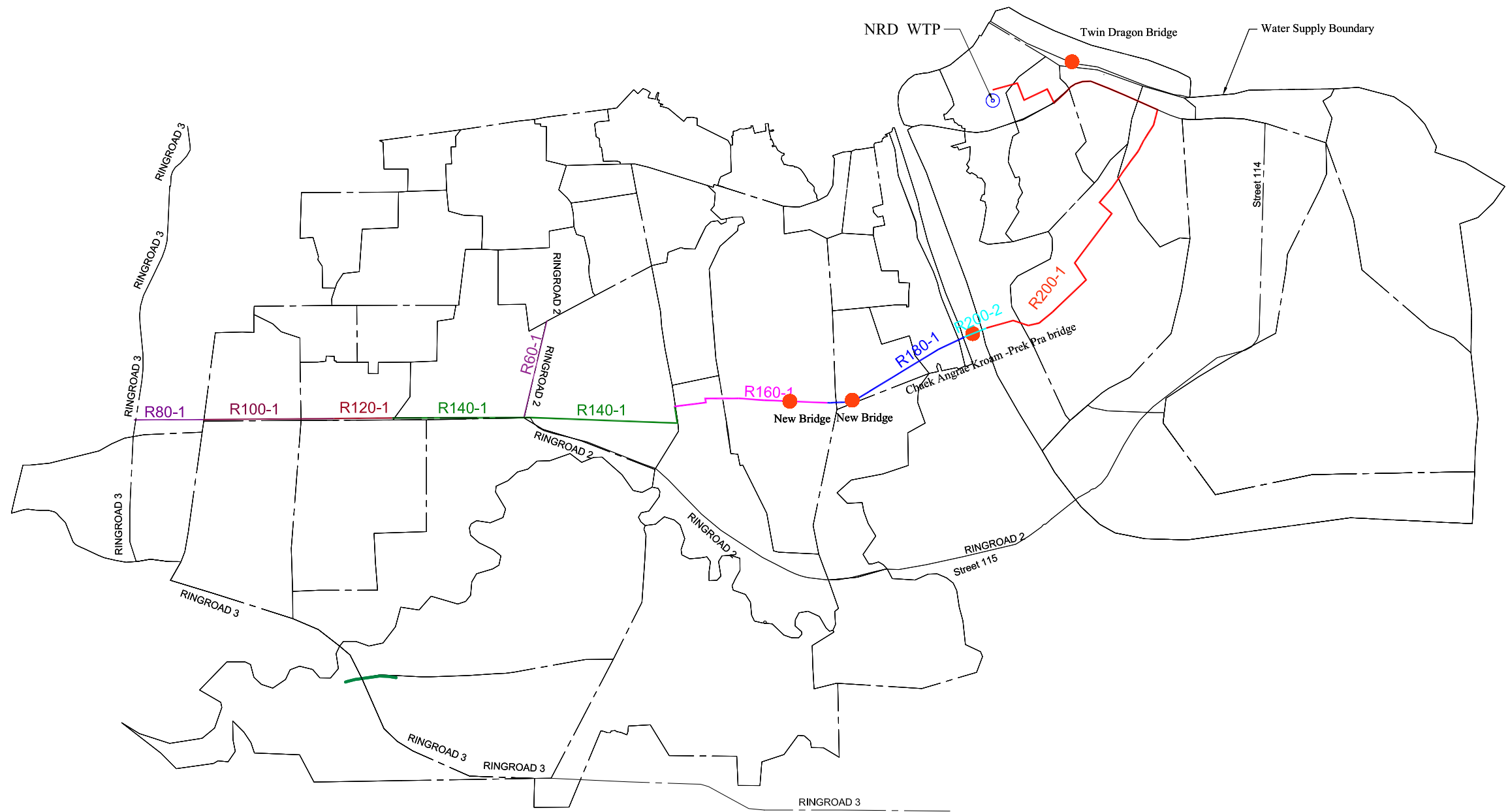
PROJECT Preparatory Survey on Nirodh Water Supply Expansion Project	DESCRIPTION Location Map of Transmission Network for Nirodh Water Supply Area Option-1	JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)	DRAWING No.	NRD/PH 111/PL-GP002-1
		NIHON SUIDO CONSULTANTS CO.,LTD. (NSC) TOKYO ENGINEERING CONSULTANTS CO., LTD.(TEC) CTI ENGINEERING INTERNATIONAL CO., LTD. (CTII) KITAKYUSHU WATER SERVICE CO., LTD. (KWS)	SCALE	1:90,000



PROJECT	DESCRIPTION	JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)	DRAWING No.	NRD/PH 111/PL-GP004-1
Preparatory Survey on Nirodh Water Supply Expansion Project	Location Map of Distribution Network For Nirodh Water Supply Area	NIHON SUIDO CONSULTANTS CO.,LTD. (NSC) TOKYO ENGINEERING CONSULTANTS CO., LTD.(TEC) CTI ENGINEERING INTERNATIONAL CO., LTD. (CTII) KITAKYUSHU WATER SERVICE CO., LTD. (KWS)	SCALE	1:90,000

Location Map of River Crossing For Nirodh Water Supply Area

Option-1

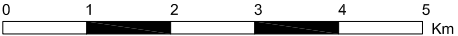


LEGEND

River Crossing

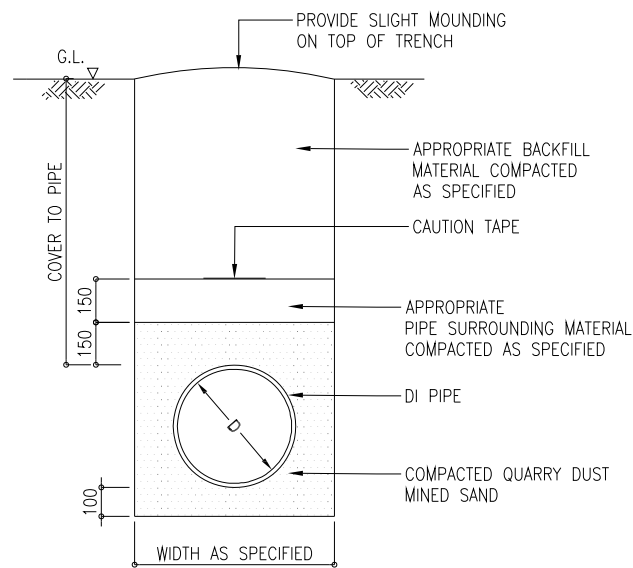
Water Supply Boundary

DMA Boundary

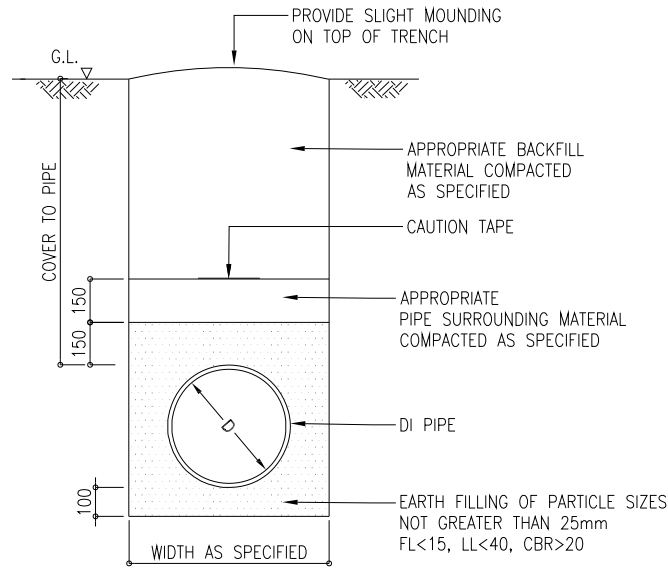


PROJECT Preparatory Survey on Nirodh Water Supply Expansion Project	DESCRIPTION Location Map of River Crossing For Nirodh Water Supply Area	JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)	DRAWING No.	NRD/PH 111/PL-GP005-1
		NIHON SUIDO CONSULTANTS CO.,LTD. (NSC) TOKYO ENGINEERING CONSULTANTS CO., LTD.(TEC) CTI ENGINEERING INTERNATIONAL CO., LTD. (CTII) KITAKYUSHU WATER SERVICE CO., LTD. (KWS)	SCALE	1:90,000

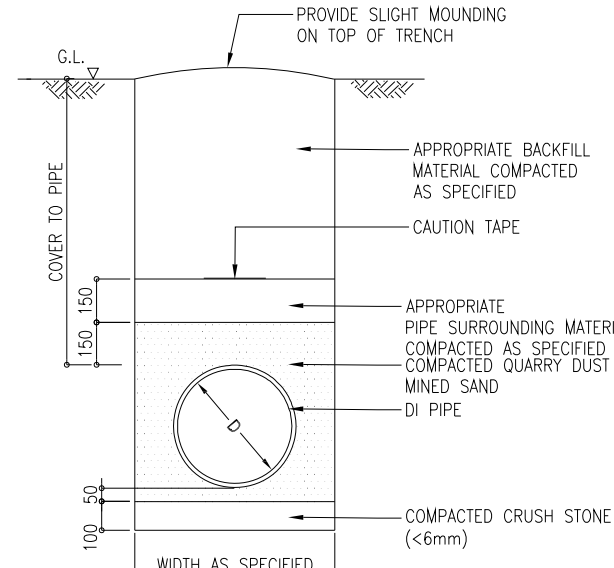
TYPICAL DRAWING



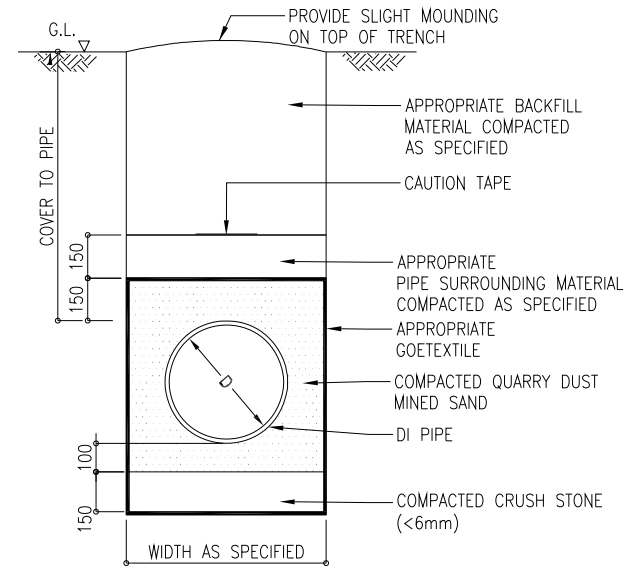
BEDDING TYPE-A FOR HARD SOIL / ROCK BASE
(BEARING CAPACITY >200 KN/m²)



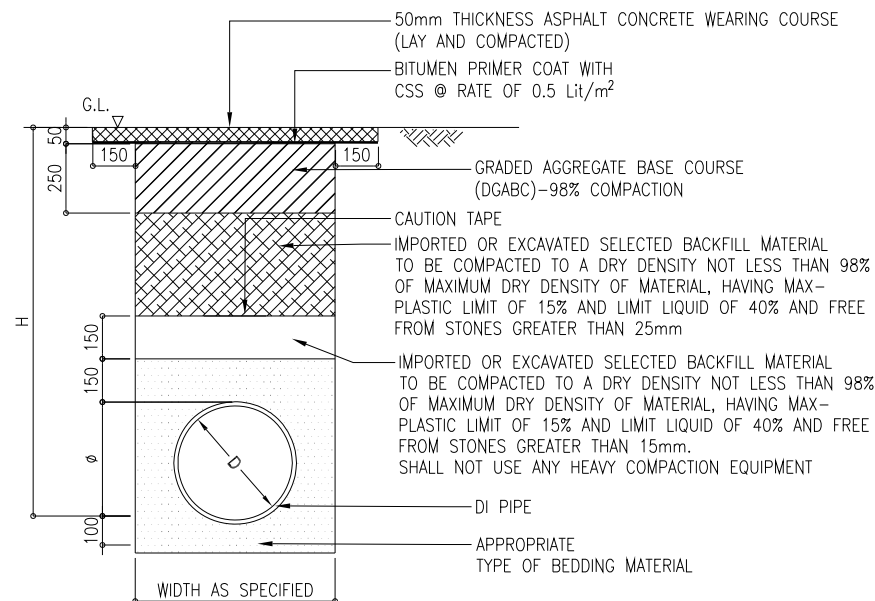
BEDDING TYPE-B OR NORMAL SOIL
(BEARING CAPACITY 100-200 KN/m²)



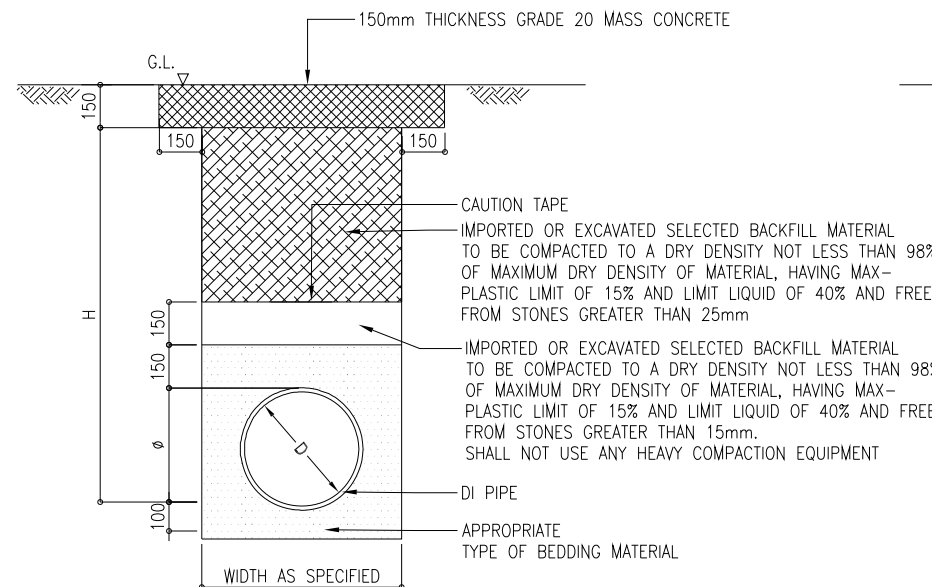
BEDDING TYPE-C FOR NORMAL SOIL AND CLAY
(BEARING CAPACITY 75-200 KN/m²)



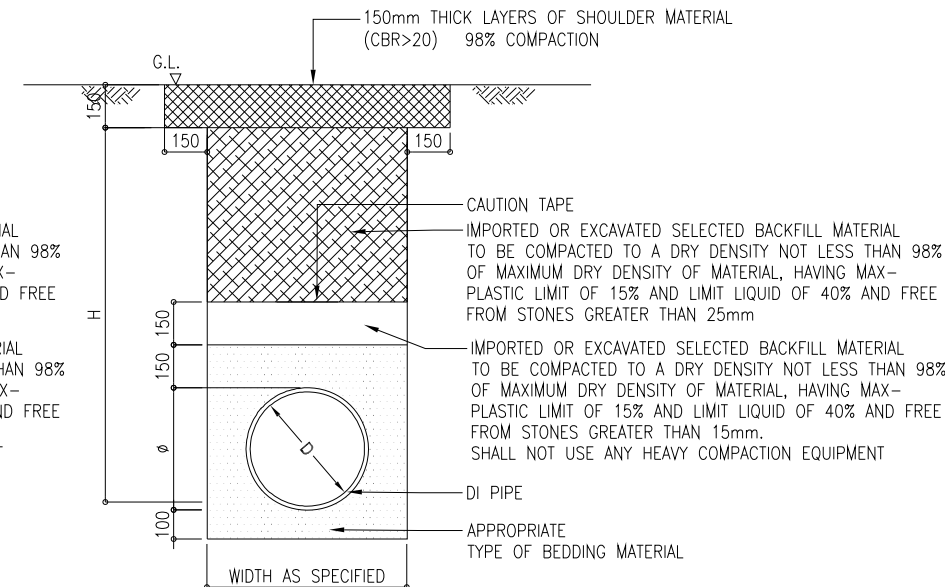
BEDDING TYPE-D FOR CLAY AND PEATY SOIL
(BEARING CAPACITY <75 KN/m²)



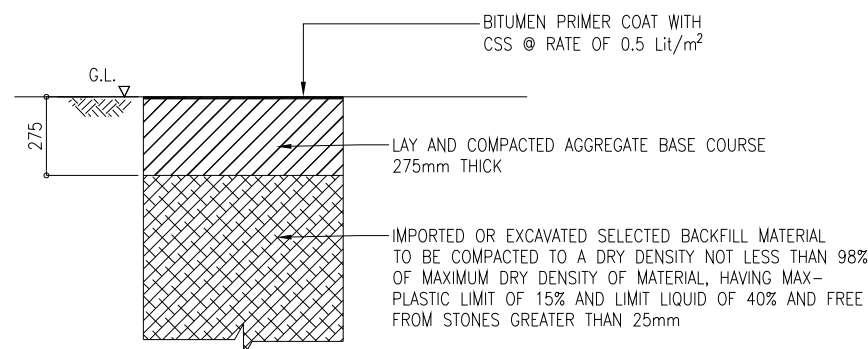
TYPE-I
HARD SHOULDER AND CARRIAGEWAY
ASPHALT CONCRETE/TARRED ROAD
BACKFILLING AND DERANGEMENT REINSTATEMENT



TYPE-II
CONCRETE ROAD BACKFILLING AND PERMANENT REINSTATEMENT



TYPE-III
ROAD SHOULDER
BACKFILLING AND PERMANENT /TEMPORARY REINSTATEMENT



TEMPORARY REINSTATEMENT OF ASPHALT/ TARRED SURFACE

DETAIL OF TRENCH		
DIA. (mm)	WIDTH m	DEPTH m
63	0.3	0.60
90	0.40	0.80
110	0.50	0.90
160	0.60	1.00
225	0.60	1.10
250	0.80	1.30
300	0.80	1.50
400	1.00	1.50
450	1.00	1.50
500	1.50	1.80
600	1.50	1.90

DETAIL OF TRENCH		
DIA. (mm)	WIDTH m	DEPTH m
700	1.80	2.20
800	2.20	2.60
900	2.30	2.80
1000	2.50	3.00
1100	2.80	3.10
1200	3.00	3.20
1400	3.40	3.50
1600	3.50	4.50
1800	3.80	5.00
2000	4.00	5.00

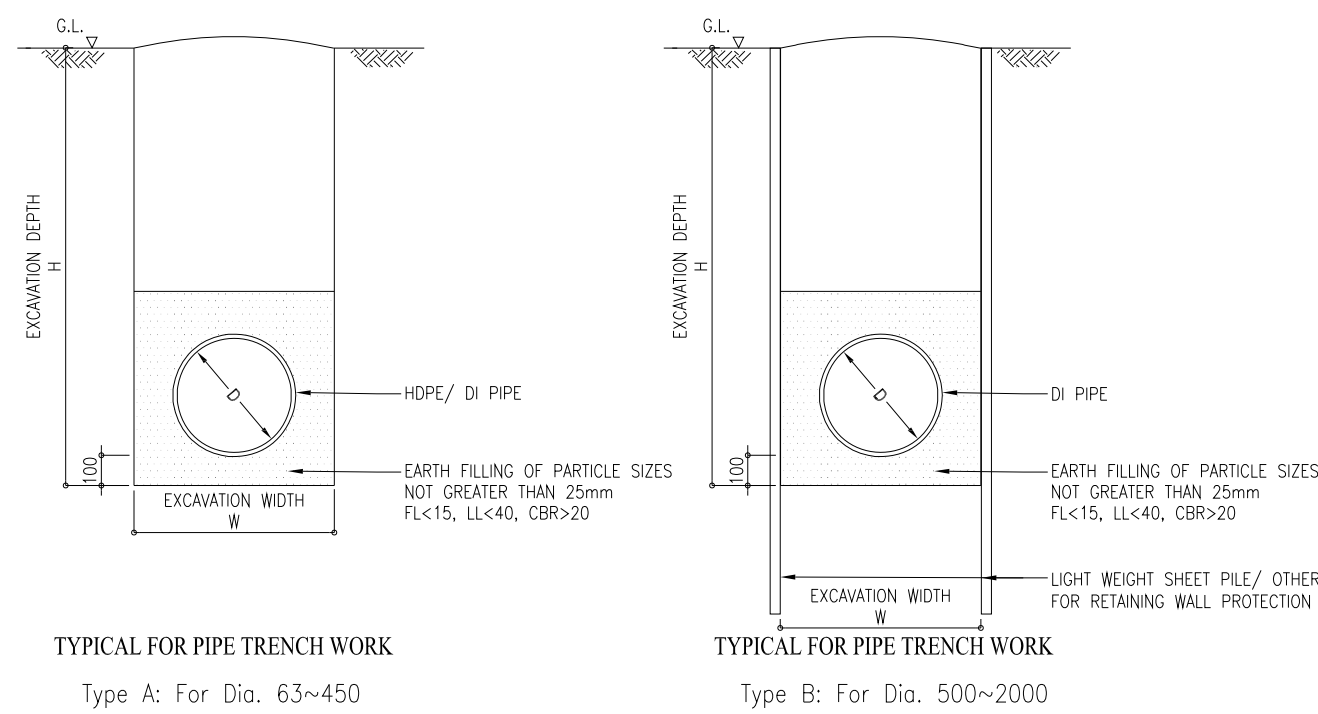
TYPICAL DRAWING FOR TRENCH WORK
(EXCAVATION AND BACKFILLING) (1)

NOTE:

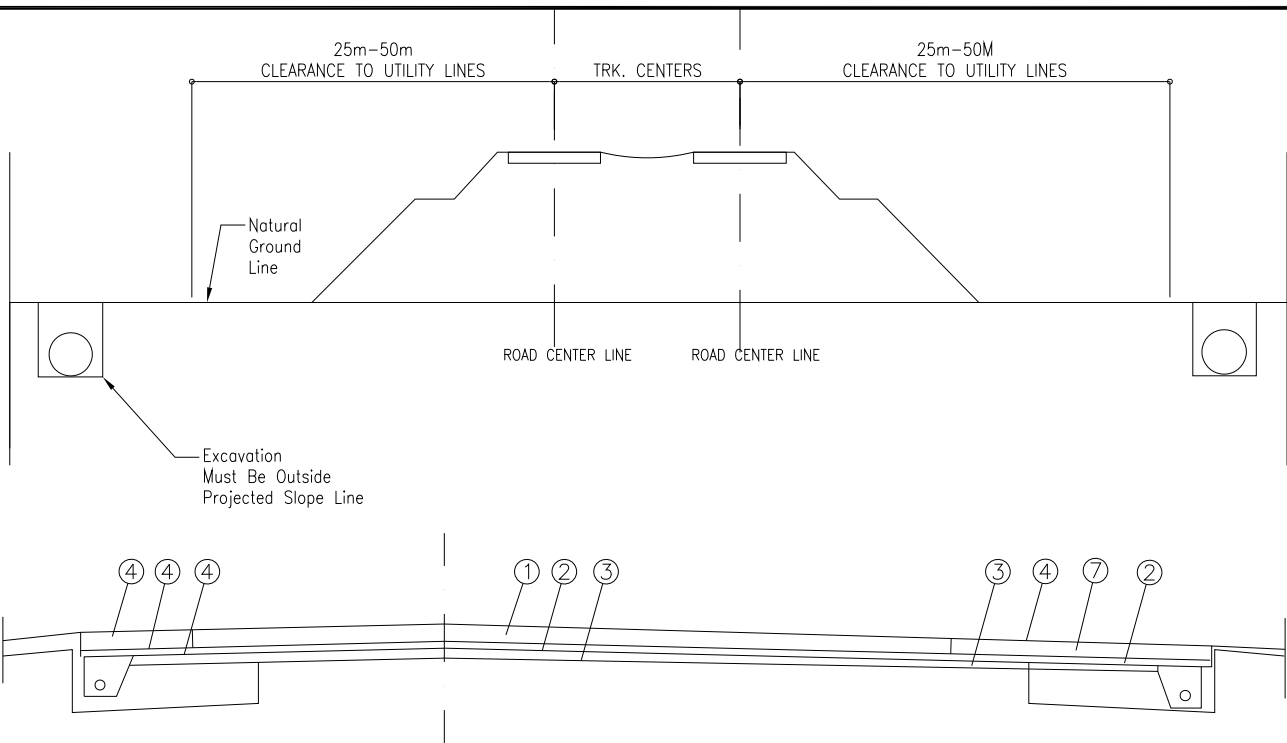
- ALL DIMENSION ARE IN MILLIMETERS
- CSS- CATAIONIC SLOW SETTING
- EXCAVATION SOIL CAN BE USED AS BACKFILL MATERIAL IF THEY CONFIRM TO THE REQUIREMENT SPECIFICATION
- FOR PIPE IN SOFT OR PEATY GROUND, THE GRANULAR BEDDING SHALL BE COMPLETELY SURROUNDED BY A GEOTEXTILE AS SHOWN IN THE DRAWING AND AS DIRECTED BY ENGINEER TO PREVENT THE INGRESS OF FINES. GEOTEXTILE FABRIC SHALL BE WOVEN POLYPROPYLENE THEMALLY BONDED HAVING FOLLOWING PROPERTY WEIGHT 150G/m (MINIMUM)(ASTM D5261), TENSILE STRENGTH 9KN/m (MINIMUM) (ASTM D4595) @ 5% ELONGATION PERMEABILITY 30L/m²/S (MINIMUM) (BS 6906 /3) (100mm WATER HEAD) PORE SIZE (0₉₀)<300 MICRONS (BS 6906 /2)

PROJECT	DESCRIPTION	JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)	DRAWING No.	NRD/PH III/PL-TP001
Preparatory Survey on Nirodh Water Supply Expansion Project	TYPICAL DRAWING FOR TRENCH WORK (EXCAVATION AND BACKFILLING) (1)	NIHON SUIDO CONSULTANTS CO.,LTD.(NSC) TOKYO ENGINEERING CONSULTANTS CO., LTD.(TEC) CTI ENGINEERING INTERNATIONAL CO., LTD. (CTII) KITAKYUSHU WATER SERVICE CO., LTD. (KWS)	SCALE	N/A

TYPICAL FOR PIPE TRENCH WORK



DETAIL OF TRENCH WORKS		
DIA. (mm)	WIDTH m	DEPTH m
63	0.3	0.60
90	0.40	0.80
110	0.50	0.90
160	0.60	1.00
225	0.60	1.10
250	0.80	1.30
300	0.80	1.50
400	1.00	1.50
450	1.00	1.50
500	1.50	1.80
600	1.50	1.90
700	1.80	2.20
800	2.20	2.60
900	2.30	2.80
1000	2.50	3.00
1100	2.80	3.10
1200	3.00	3.20
1400	3.40	3.50
1600	3.50	4.50
1800	3.80	5.00
2000	4.00	5.00



- ① B.C OR P.C.C PAVEMENT, MIN. 6 IN THICK
- ② 4 IN. B.S.O.G. OH N.S.O.G. DRAINAGE LAYER
- ③ BASE OR SUB BASE LAYER
- ④ B.C SHOULDER
- ⑤ SOIL AGGREGATE OR DENSE GRADED AGGREGATE BASE LAYER
- ⑥ 8 OR 57 COURSE AGGREGATE
- ⑦ L.F.A PLANT MIXED STABILIZED BASE COURSE OR NONSTABILIZED BASE COURSE OVER FILTER FABRIC

NOTES:

1. USE PRIME COAT ON THE TOP OF THE NSOG LAYER

2. DRAINAGE PIPE SHALL BE PERFORATED OR SLOTTED CORRUGATED MATERIAL, PVC OR PE PLASTIC OR POROUS WALL CONCRETE PIPE

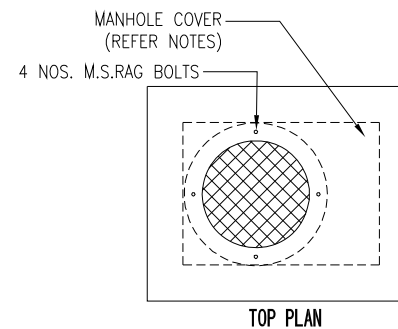
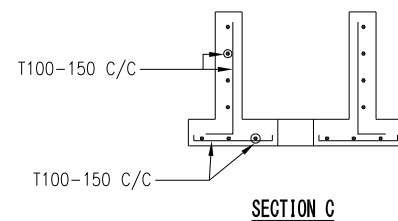
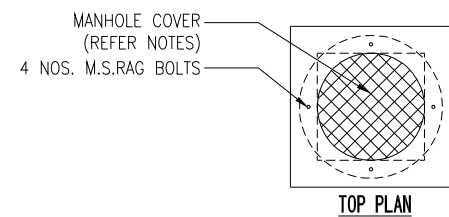
Note:

1. The pavement of excavation area will restore follow the existing Condition.

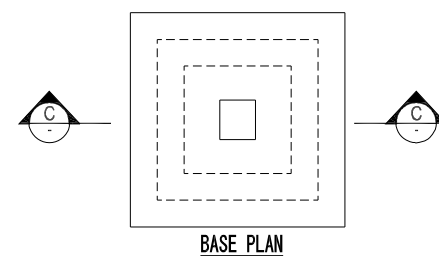
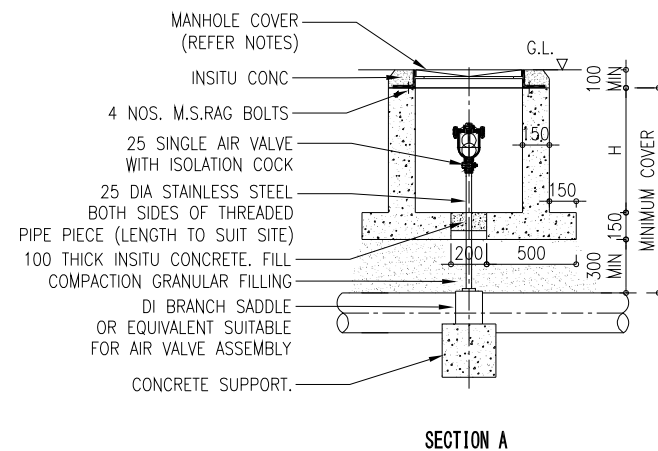
2. The quantities for Restoration will calculation in detail design Stage.

3. The Excavation Size are base on standard of PPWSA.

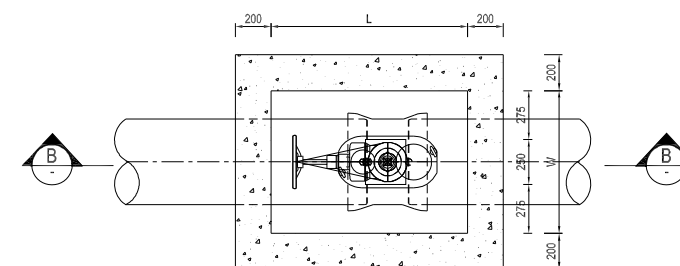
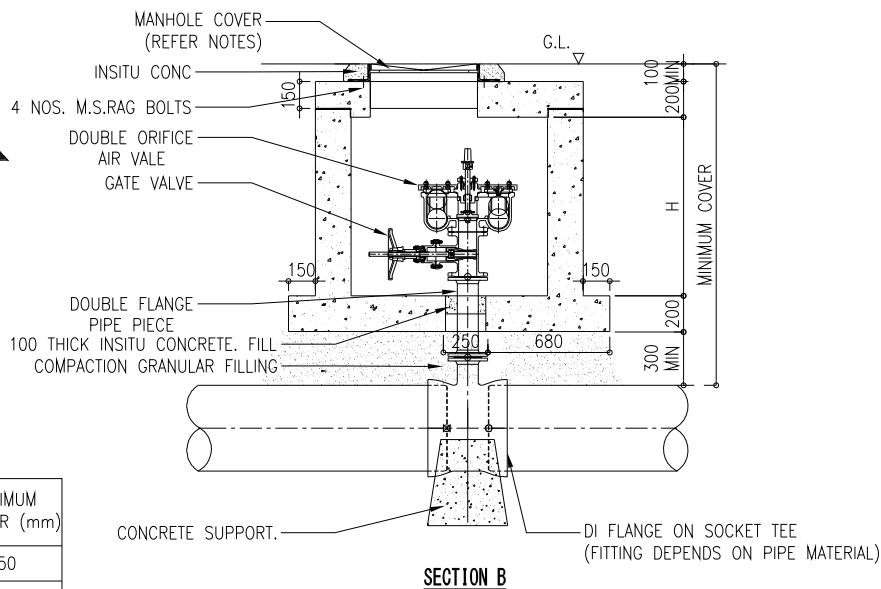
PROJECT	DESCRIPTION	JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)	DRAWING No.	NRD/PH III/PL-TP002
		NIHON SUIDO CONSULTANTS CO.,LTD. (NSC) TOKYO ENGINEERING CONSULTANTS CO., LTD.(TEC) CTI ENGINEERING INTERNATIONAL CO., LTD. (CTII) KITAKYUSHU WATER SERVICE CO., LTD. (KWS)	SCALE	N/A



SUMMARY AIR VALE QUANTITIES (1 UNIT)				
No.	DESCRIPTION	UNIT	QUANTITIES	REMARK
1	MNHOLE COVER DIA. 600 mm	SET	1	
2	AIR VALVE	SET	1	
3	GATE VALVE	SET	1	



AIR VALVE TYPE-A (R/F DETAILS)



SECTIONAL PLAN
AIR VALVE TYPE-B
(DOUBLE ORIFICE AIR VALVE FOR DI PIPES
250-2000/HDPE PIPES 280-400)

- NOTE:
1. CHAMBER SIZES GIVEN IN THE DRG.ARE THE MINIMUM.
 2. CHAMBER SIZE AND MINIMUM EARTH COVER DETERMINE ACCORDING TO THE DIMENSION ARE GIVEN IN A SPECIFIED CATALOGUE. THESE SIZES SHALL BE REVISED WHEN OTHER PRODUCTION ARE USED.
 3. MANHOLE COVER SHALL BE HINGED, HEAVY DUTY (CLASS D400) VENTILATED TYPE WITH 600DIA. MINIMUM CLEAR OPENING.
 4. MANHOLE FRAME SHALL BE FIRMLY FIXED TO CHAMBER WITH 4Nos. RAG BOLTS OR SIMILAR MANNER.
 5. ALL IN-SITU CONCRETE, SUPPORT AND THRUST RESTRAINS ARE GRADE 20 UNLESS OTHERWISE NOTED.
 6. FOR PIPE IN COMMON TRENCH, AIR VALVE LOCATION SHALL BE STAGGERED TO ALLOW SPACE FOR VALVE CHAMBERS.
 7. EXACT DIMENSIONS SHALL BE DECIDED IN FURTHER DETAIL DESIGN.
 8. CONNECTION DEPENDS ON PIPE MATERIAL.

SIZE OF AIR VALVE CHAMBER

TYPE	DIAMETER OF MAIN PIPE	INTERNAL DIMENSION (mm)			MINIMUM COVER (mm)
		L	W	H	
A	280-400 HDPE	600	600	700	1250
B	250-2000 DI	1100	800	1000	1800

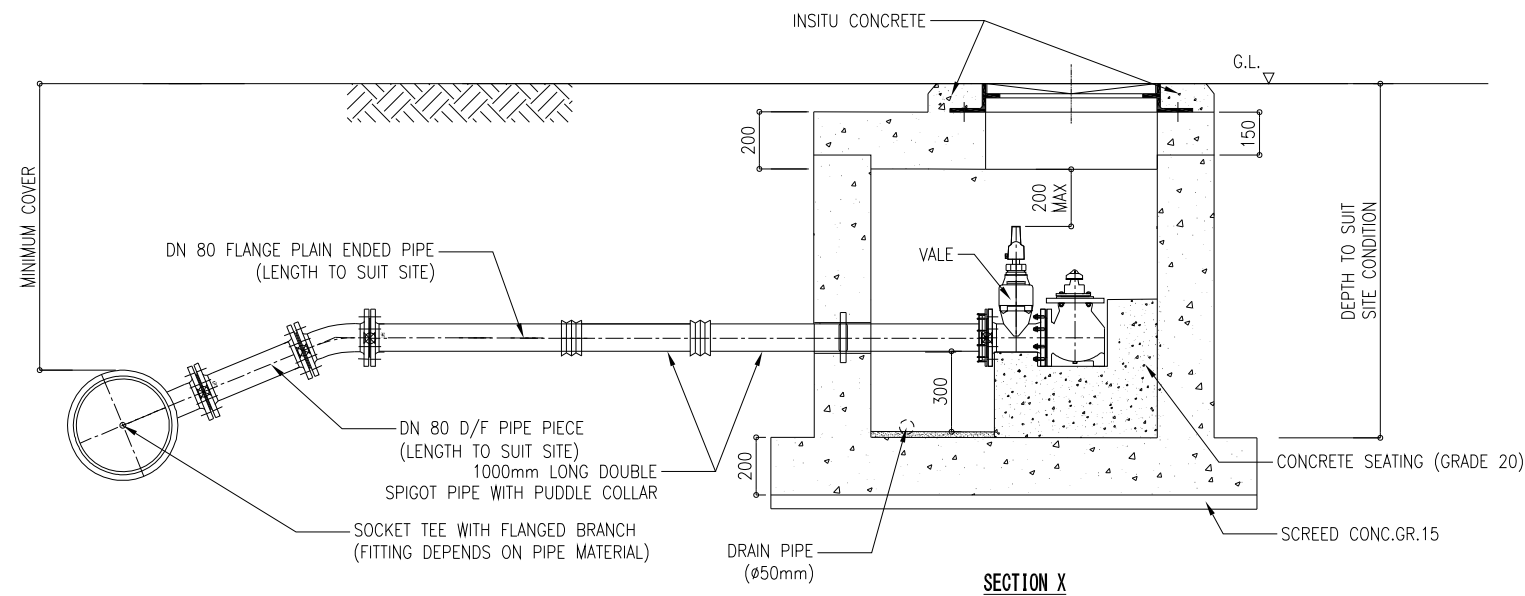
SUMMARY AIR VALE QUANTITIES (1 UNIT)				
Pipe Diameter (mm)	V. CONC (m³)	WEIGHT RB (t)	V. MORTAR (m³)	V. GRANULAR (m³)
250	0.514	0.039	0.057	0.799
300	1.154	0.087	0.032	1.311
400	1.119	0.084	0.032	1.420
450	1.102	0.083	0.032	1.489
500	1.283	0.096	0.032	1.515
600	1.317	0.099	0.032	1.598
700	1.483	0.111	0.032	1.668
800	1.717	0.129	0.032	1.726
900	1.820	0.136	0.032	1.771
1000	1.923	0.144	0.032	1.804
1100	1.962	0.147	0.032	1.824
1200	2.002	0.150	0.032	1.832
1400	2.151	0.161	0.032	1.809
1600	2.766	0.207	0.032	1.736
1800	3.056	0.229	0.032	1.613
2000	3.019	0.226	0.032	1.440

SIZE OF AIR VALVE ASSEMBLY

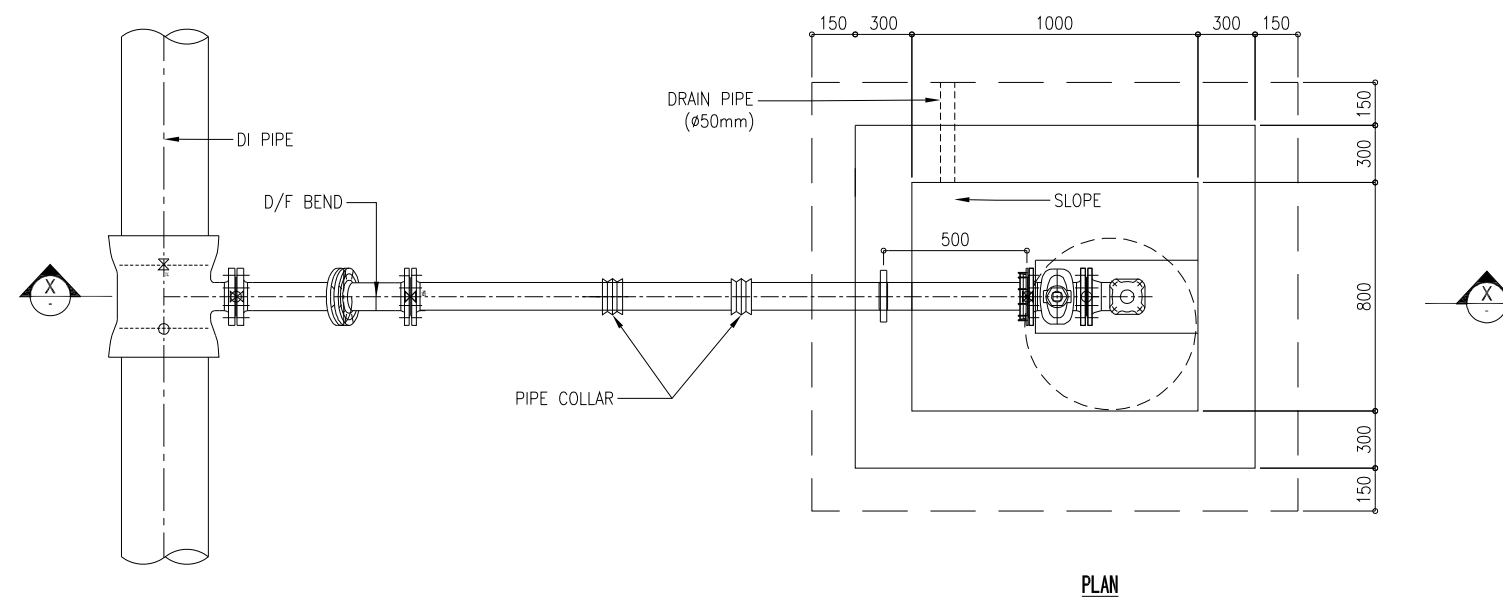
DIAMETER OF MAIN PIPE	SIZE OF AIR VALVE (PN 16)	SIZE OF ISOLATING GATE VALVE	SIZE OF FLANGED BRANCH OFF
UP TO 250 HDPE / UP TO 200 DI	25 SINGLE AIR VALVE	25 ISOLATING CLOCK	-
250-350 DI / 280-400 HDPE	80 DOUBLE AIR VALVE	80 D/F GATE VALVE	80
400-600 DI	100 DOUBLE AIR VALVE	100 D/F GATE VALVE	100
700-800 DI	150 DOUBLE AIR VALVE	150 D/F GATE VALVE	150
900-1000 DI	150 DOUBLE AIR VALVE	150 D/F GATE VALVE	150
1100-2000 DI	200 DOUBLE AIR VALVE	200 D/F GATE VALVE	200

TYPICAL DRAWING FOR AIR VALVE

PROJECT Preparatory Survey on Nirodh Water Supply Expansion Project	DESCRIPTION TYPICAL DRAWING FOR AIR VALVE (REFERENCE)	JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)	DRAWING No.	NRD/PH III/PL-TP003
		NIHON SUIDO CONSULTANTS CO.,LTD. (NSC) TOKYO ENGINEERING CONSULTANTS CO., LTD.(TEC) CTI ENGINEERING INTERNATIONAL CO., LTD. (CTII) KITAKYUSHU WATER SERVICE CO., LTD. (KWS)	SCALE	N/A



SUMMARY FIREHYDRANT QUANTITIES (1 UNIT)				
No.	DESCRIPTION	UNIT	QUANTITIES	REMARK
1	SOCKET TEE WITH FLANGED BRANCH DN 80mm	SET	1	
2	1.0M LONG DOUBLE SPIGOT PIPE WITH PUDDLE COLLAR 80mm	SET	2	
3	DN 80 D/F PIPE PIECE (LENGTH TO SUIT SITE)	SET	1	
4	DN 80 FLANGE PLAIN ENDED PIPE (LENGTH TO SUIT SITE)	SET	1	
5	MNHOLE COVER DIA. 600 mm	SET	1	
6	V. CONC (m³)	m³	2.477	
7	WEIGHT RB (t)	t	0.186	
8	V. MORTAR (m³)	m³	0.057	
9	V. LEAN CONCRETE (m³)	m³	0.255	



TYPICAL DRAWING FOR FIRE_HYDRANT

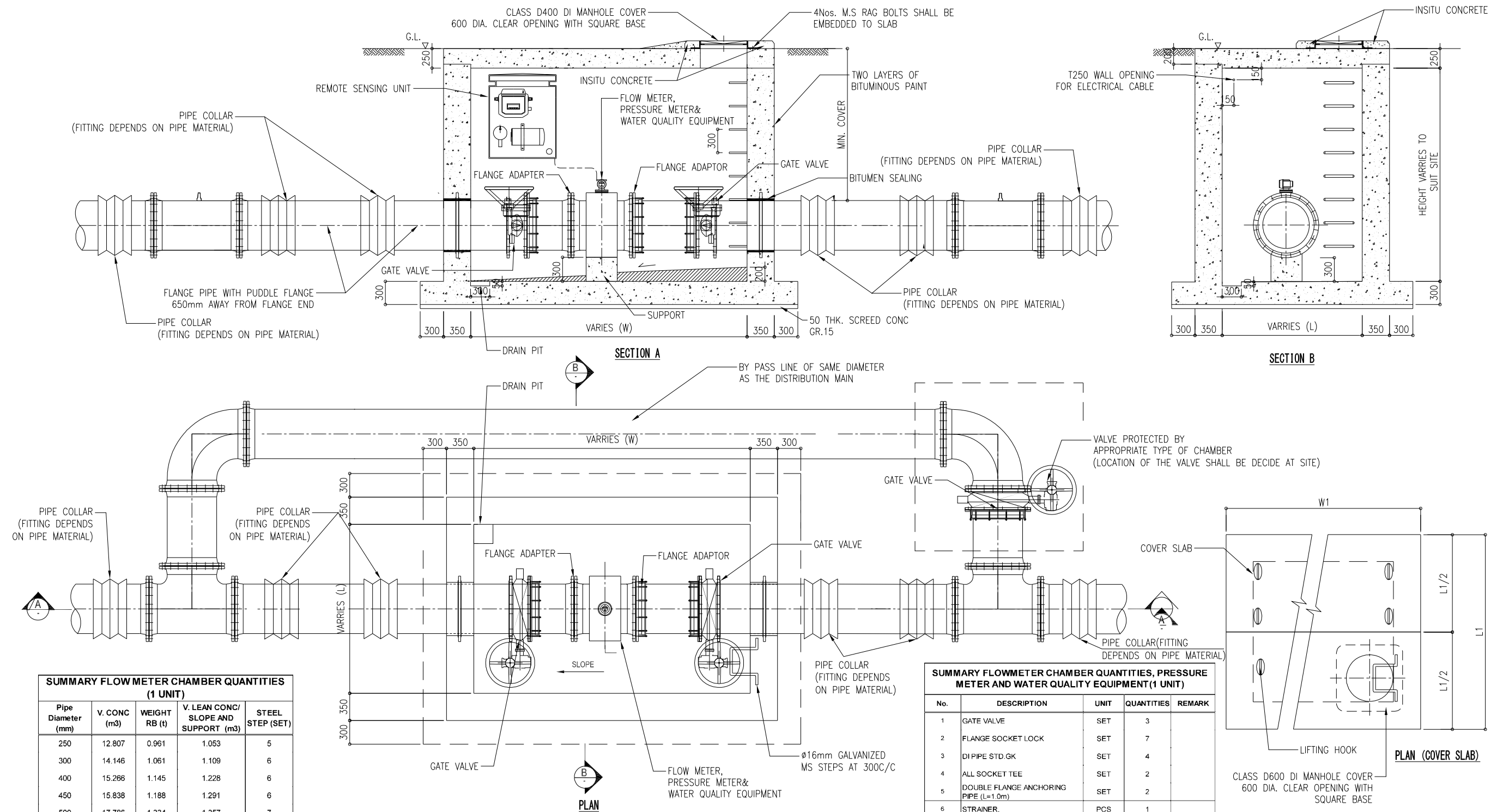
NOTE:

1. ALL DIMENSION ARE IN MILLIMETERS UNLESS OTHERWISE STATED.
2. EXACT LOCATION OF THE FIRE HYDRANT IS TO BE VERIFIED AT SITE.
3. MANHOLE COVER SHALL BE OF HINGED, HEAVY DUTY (CLASS-D400) VENTILATED TYPE WITH 600 DIA. MINIMUM CLEAR OPENING.
4. MANHOLE FRAME SHALL BE FIRMLY FIXED TO THE CHAMBER WITH 4 Nos RAG BOLTS OR SIMILAR MANNER.
5. EXACT DIMENSION SHOULD BE DECIDED IN FURTHER DETAILED DESIGN.

PROJECT	DESCRIPTION	JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)	DRAWING No.	NRD/PH III/PL-TP004
		NIHON SUIDO CONSULTANTS CO.,LTD. (NSC) TOKYO ENGINEERING CONSULTANTS CO., LTD.(TEC) CTI ENGINEERING INTERNATIONAL CO., LTD. (CTII) KITAKYUSHU WATER SERVICE CO., LTD. (KWS)	SCALE	N/A

Preparatory Survey on Nirodh Water Supply Expansion Project

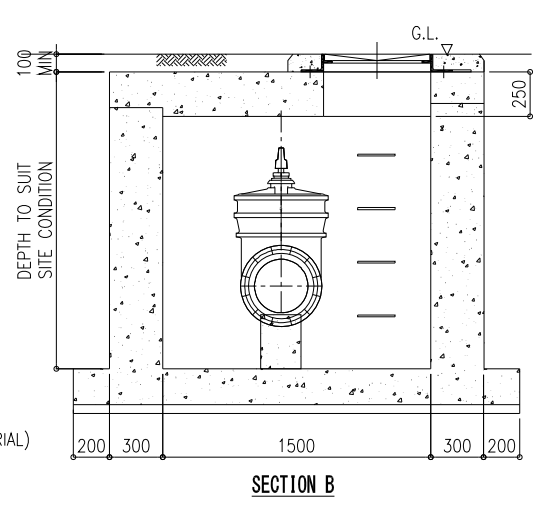
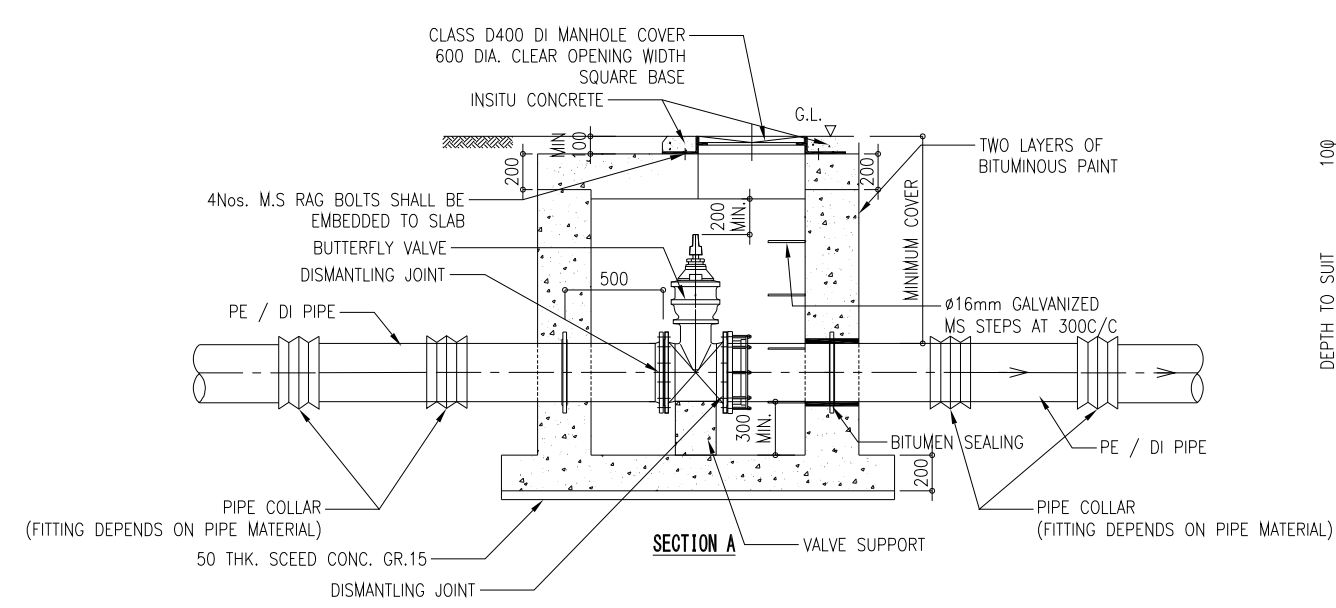
TYPICAL DRAWING FOR FIRE_HYDRANT
(REFERENCE)



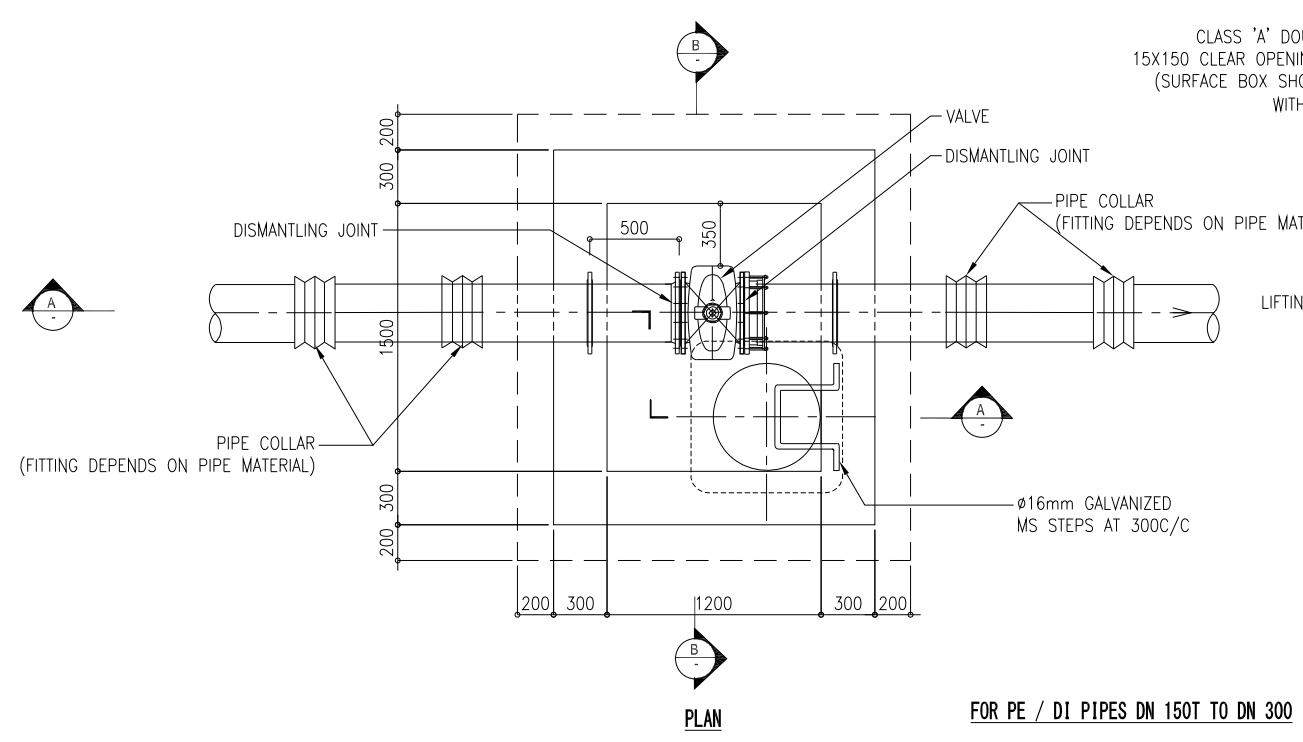
SUMMARY FLOW METER CHAMBER QUANTITIES (1 UNIT)				
Pipe Diameter (mm)	V. CONC (m ³)	WEIGHT RB (t)	V. LEAN CONC/ SLOPE AND SUPPORT (m ³)	STEEL STEP (SET)
250	12.807	0.961	1.053	5
300	14.146	1.061	1.109	6
400	15.266	1.145	1.228	6
450	15.838	1.188	1.291	6
500	17.786	1.334	1.357	7
600	19.524	1.464	1.494	7
700	22.350	1.676	1.642	8
800	25.882	1.941	1.799	10
900	28.534	2.140	1.966	10
1000	34.258	2.569	2.447	11
1100	36.681	2.751	2.652	11
1200	39.185	2.939	2.870	12
1400	45.138	3.385	3.339	13
1600	56.761	4.257	3.857	16
1800	65.486	4.911	4.426	18
2000	70.593	5.295	5.048	18

SUMMARY FLOW METER CHAMBER QUANTITIES, PRESSURE METER AND WATER QUALITY EQUIPMENT (1 UNIT)				
No.	DESCRIPTION	UNIT	QUANTITIES	REMARK
1	GATE VALVE	SET	3	
2	FLANGE SOCKET LOCK	SET	7	
3	DI PIPE STD.GK	SET	4	
4	ALL SOCKET TEE	SET	2	
5	DOUBLE FLANGE ANCHORING PIPE (L=1.0m)	SET	2	
6	STRAINER,	PCS	1	
7	FLOW METER ELECTROMAGNETIC	PCS	1	
8	DOUBLE FLANGE PIPE	PCS	1	
9	DISMANTLING JOINT	PCS	1	
10	DOUBLE SOCKET BEND 90 STD VI	SET	2	
11	FLANGE SPIGOT	SET	1	
12	BLANK FLANGE	PCS	1	
13	MANHOLE COVER DIA. 600 mm	SET	1	
14	FEMALE ELBOW 20X3/4"	SET	1	
15	200mm DIRECT TAPPING	SET	1	
16	200mm PRESSURE GAUGE	PCS	1	
17	REMOTE SENSING UNIT WITH POWER SUPPLY	SET	1	

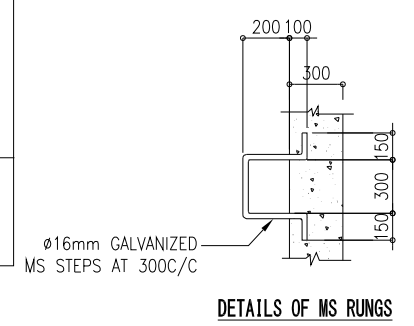
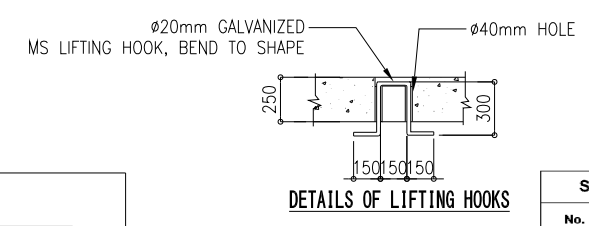
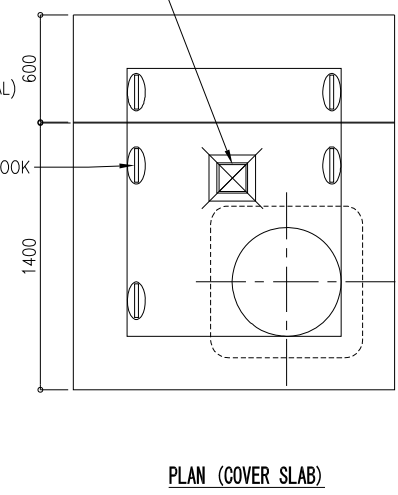
PROJECT Preparatory Survey on Nirodh Water Supply Expansion Project	DESCRIPTION TYPICAL DRAWING FOR FLOW METER CHAMBER, PRESSURE METER AND WATER QUALITY EQUIPMENT (REFERENCE)	JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)	DRAWING No.	NRD/PH III/PL-TP005
		NIHON SUIDO CONSULTANTS CO.,LTD. (NSC) TOKYO ENGINEERING CONSULTANTS CO., LTD.(TEC) CTI ENGINEERING INTERNATIONAL CO., LTD. (CTII) KITAKYUSHU WATER SERVICE CO., LTD. (KWS)	SCALE	N/A



SUMMARY VALVE CHAMBER QUANTITIES (1 UNIT)				
Pipe Diameter (mm)	V. CONC (m3)	WEIGHT RB (t)	V. LEAN CONC, SLOPE AND SUPPORT (m3)	STEEL STEP (SET)
250	4.449	0.334	0.314	5
300	10.024	0.752	0.636	6
400	10.571	0.793	0.682	6
450	10.849	0.814	0.707	6
500	12.221	0.917	0.732	7
600	13.210	0.991	0.784	7
700	15.022	1.127	0.840	8
800	17.335	1.300	0.899	10
900	18.931	1.420	0.961	10
1000	20.594	1.545	1.027	11
1100	21.876	1.641	1.096	11
1200	23.197	1.740	1.168	12
1400	26.446	1.983	1.322	13
1600	33.533	2.515	1.490	16
1800	38.494	2.887	1.672	18
2000	40.909	3.068	1.868	18



CLASS 'A' DOUBLE TRIANGULAR 15X150 CLEAR OPENING SURFACE BOX (SURFACE BOX SHOULD BE ALIGNED WITH VALVE SPINDLE)

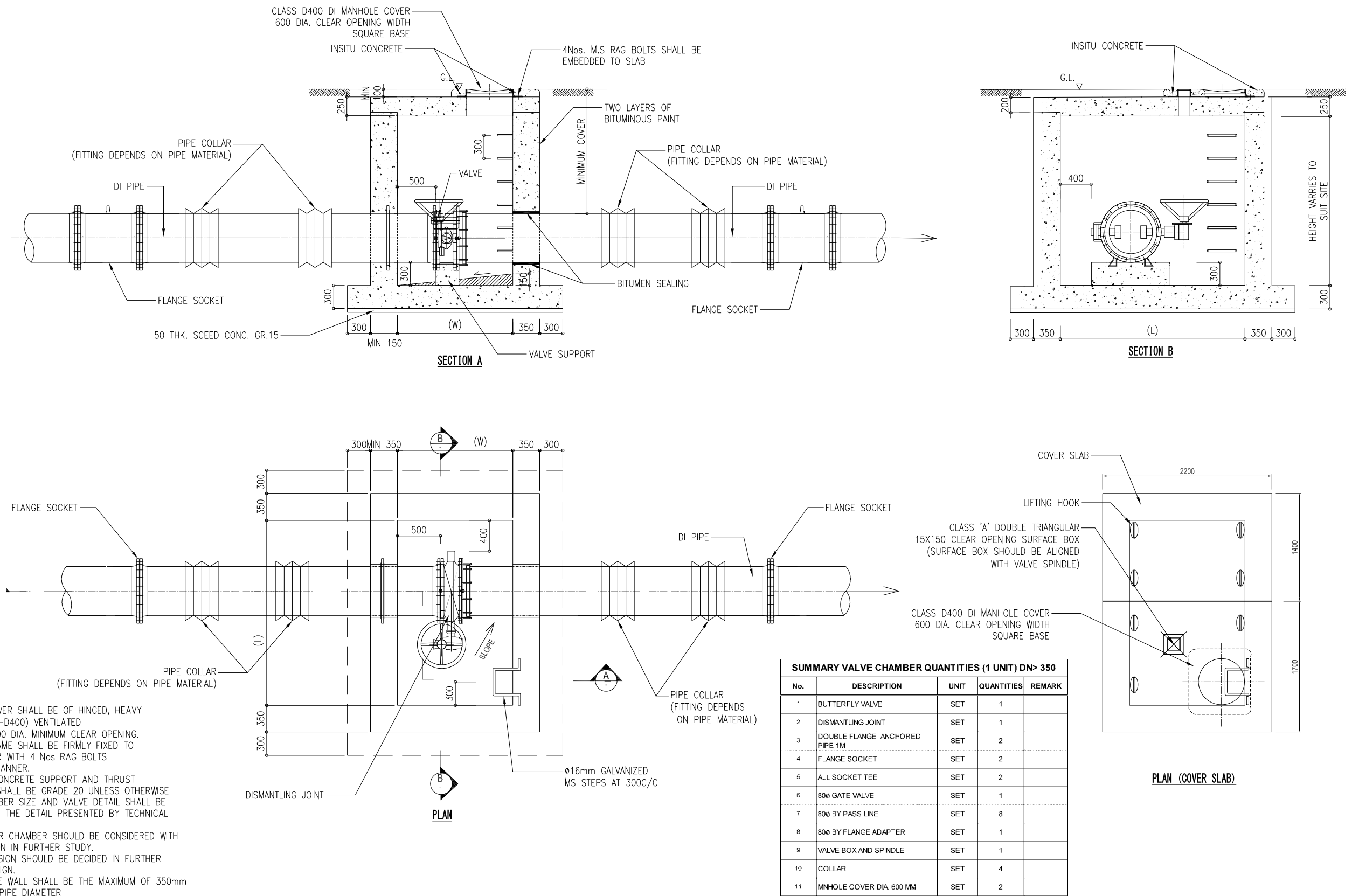


SUMMARY VALVE CHAMBER QUANTITIES (1 UNIT) DN<300				
No.	DESCRIPTION	UNIT	QUANTITIES	REMARK
1	BUTTERFLY VALVE	SET	1	
2	DISMANTLING JOINT	SET	2	
3	DOUBLE FLANGE ANCHORED PIPE 1M	SET	2	
4	FLANGE SOCKET	SET	2	
5	VALVE BOX AND SPINDLE	SET	1	
6	COLLAR	SET	4	
7	MNHOLE COVER DIA. 600 MM	SET	1	

- NOTE:
- MANHOLE COVER SHALL BE OF HINGED, HEAVY DUTY (CLASS-D400) VENTILATED TYPE WITH 600 DIA. MINIMUM CLEAR OPENING.
 - MANHOLE FRAME SHALL BE FIRMLY FIXED TO THE CHAMBER WITH 4 Nos RAG BOLTS OR SIMILAR MANNER.
 - ALL INSITU CONCRETE SUPPORT AND THRUST RESTRAINTS SHALL BE GRADE 20 UNLESS OTHERWISE STATED.CHAMBER SIZE AND VALVE DETAIL SHALL BE VERIFIED WITH THE DETAIL PRESENTED BY TECHNICAL CONTRACTOR.
 - DRAINAGE FOR CHAMBER SHOULD BE CONSIDERED WITH SITE CONDITION IN FURTHER STUDY.
 - EXACT DIMENSION SHOULD BE DECIDED IN FURTHER DETAILED DESIGN.

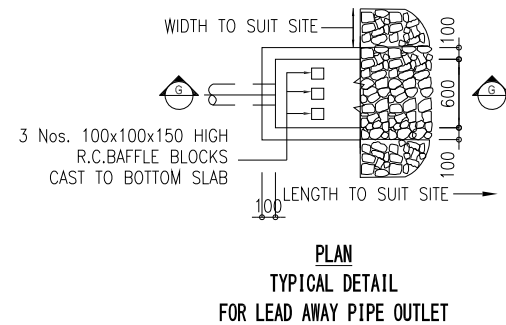
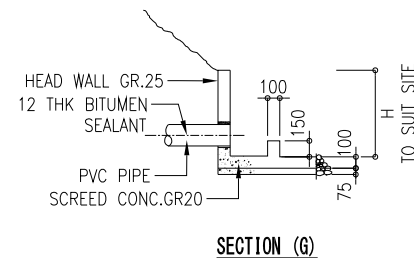
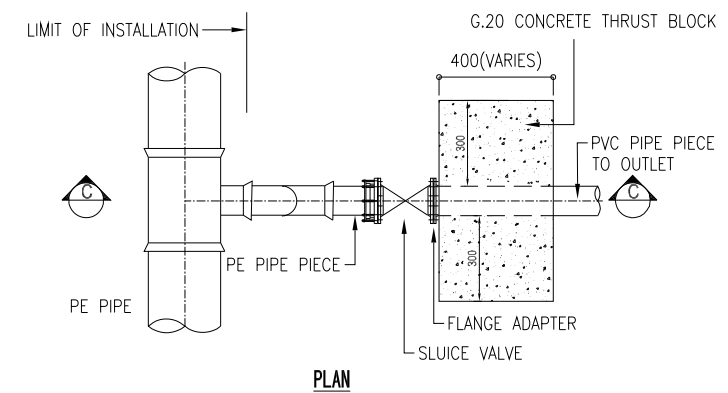
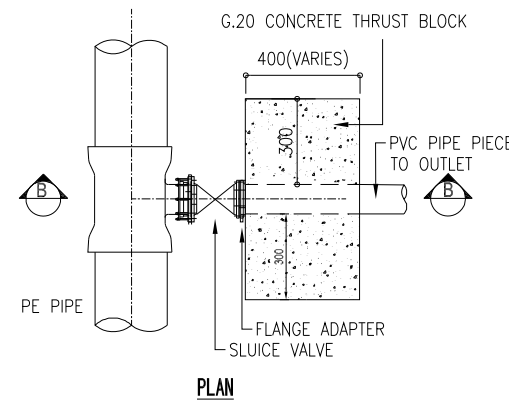
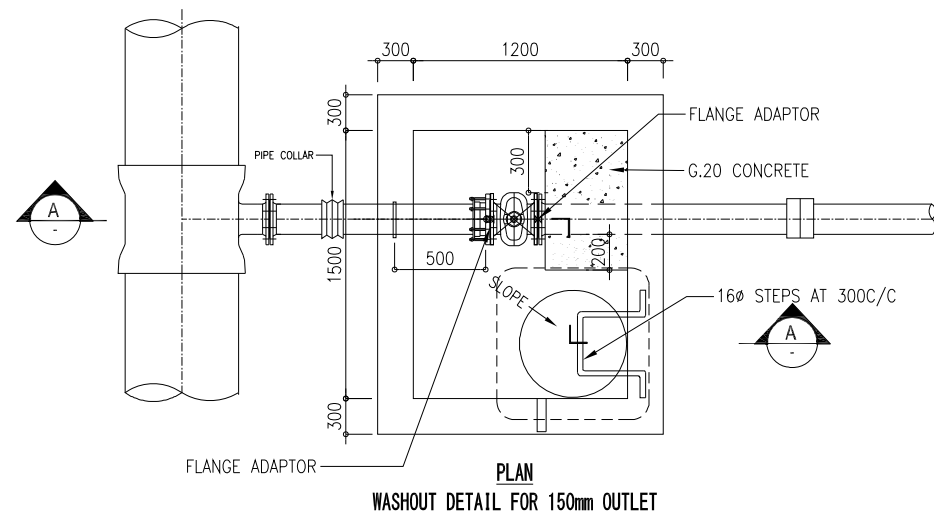
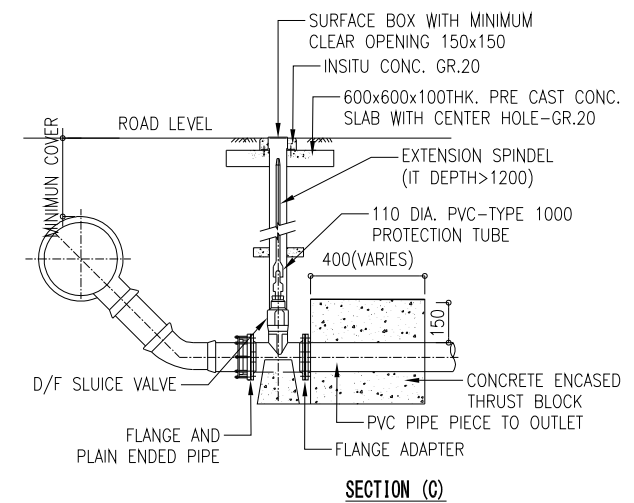
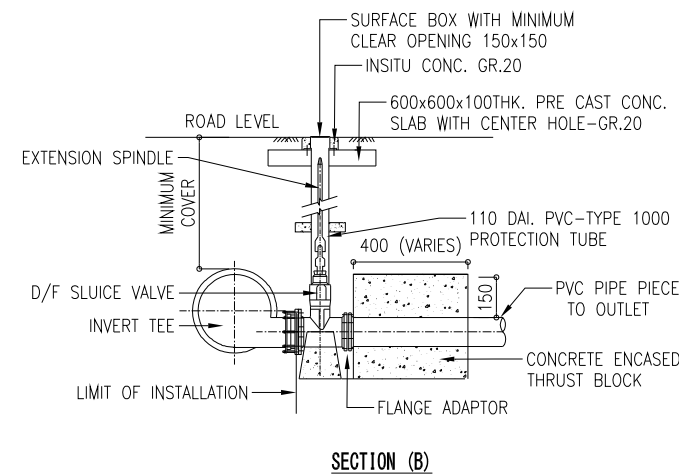
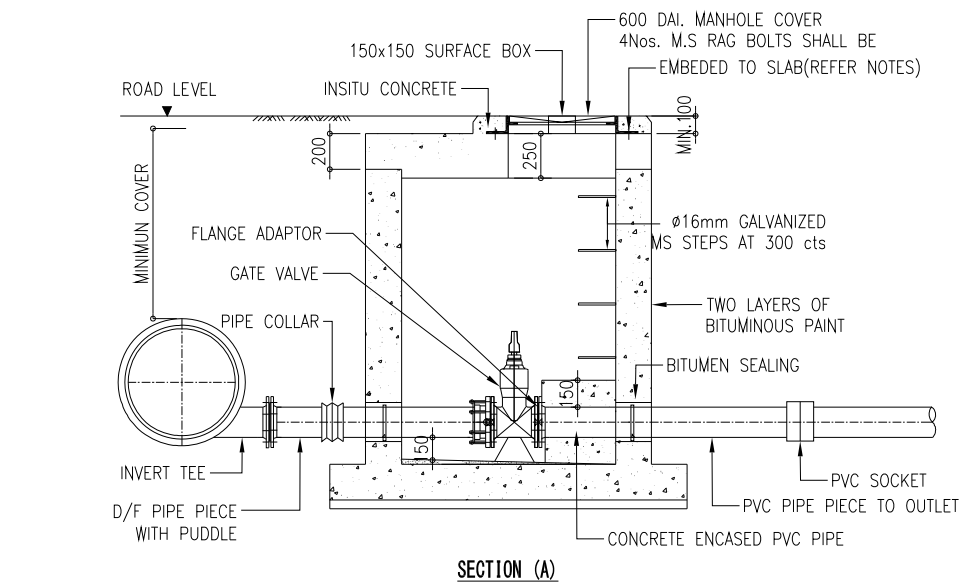
TYPICAL DRAWING FOR VALVE CHAMBER DN300 AND BELOW

PROJECT Preparatory Survey on Nirodh Water Supply Expansion Project	DESCRIPTION TYPICAL DRAWING FOR VALVE CHAMBER DN300 AND BELOW (REFERENCE)	JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)	DRAWING No.	NRD/PH III/PL-TP006
		NIHON SUIDO CONSULTANTS CO.,LTD. (NSC) TOKYO ENGINEERING CONSULTANTS CO., LTD.(TEC) CTI ENGINEERING INTERNATIONAL CO., LTD. (CTII) KITAKYUSHU WATER SERVICE CO., LTD. (KWS)	SCALE	N/A



TYPICAL DRAWING FOR VALVE CHAMBER DN350 AND ABOVE

PROJECT	DESCRIPTION	JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)	DRAWING No.	NRD/PH III/PL-TP007
Preparatory Survey on Nirodh Water Supply Expansion Project	TYPICAL DRAWING FOR VALVE CHAMBER DN350 AND ABOVE (REFERENCE)	NIHON SUIDO CONSULTANTS CO.,LTD. (NSC) TOKYO ENGINEERING CONSULTANTS CO., LTD.(TEC) CTI ENGINEERING INTERNATIONAL CO., LTD. (CTII) KITAKYUSHU WATER SERVICE CO., LTD. (KWS)	SCALE	N/A



SCHEDULE PF VALVE & OUTLET PIPE

SIZE OF MAIN PIPE	SIZE OF WASHOUT VALVE(mm)	SIZE OF LEAD AWAY PIPE FROM MAIN PIPE TO CHAMBER
UPTO 225HDPE	75	90 DI
250 DI-500 DI	100	110 DI
600 DI-800 DI	200	225 DI
800 DI-1000 DI	250	250 DI
1000 DI-2000 DI	300	300 DI

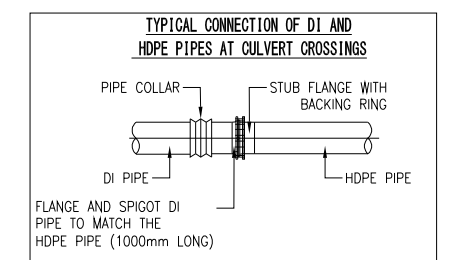
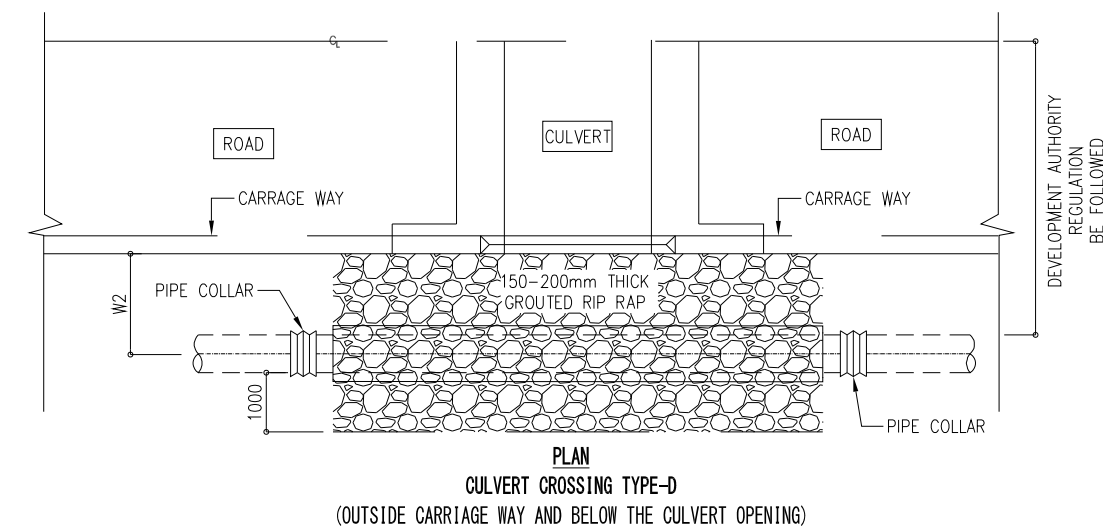
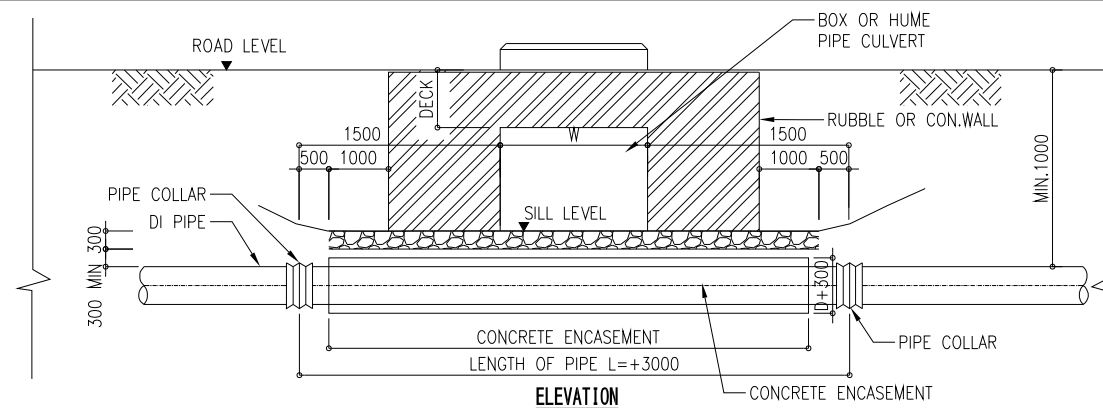
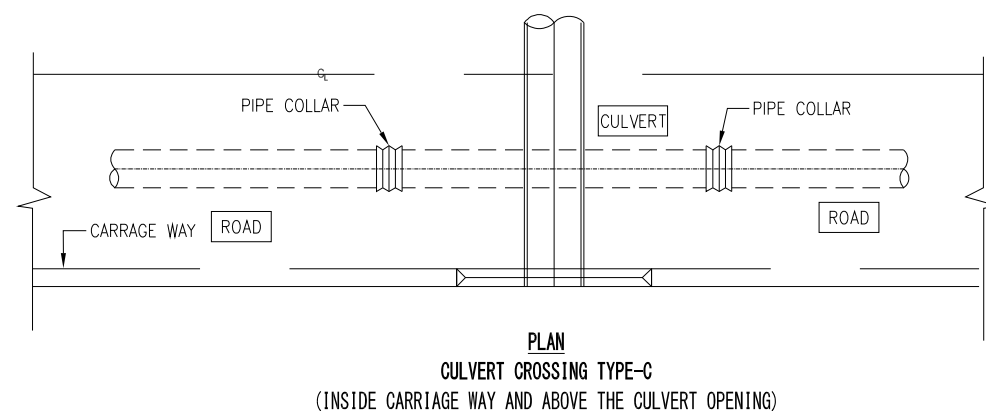
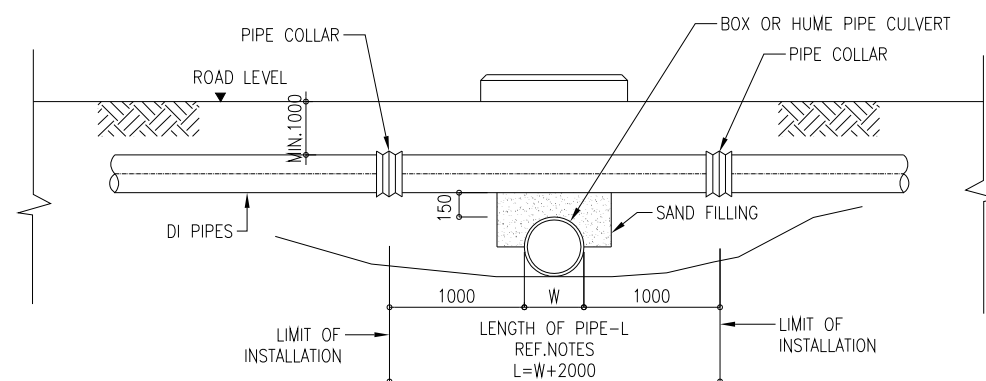
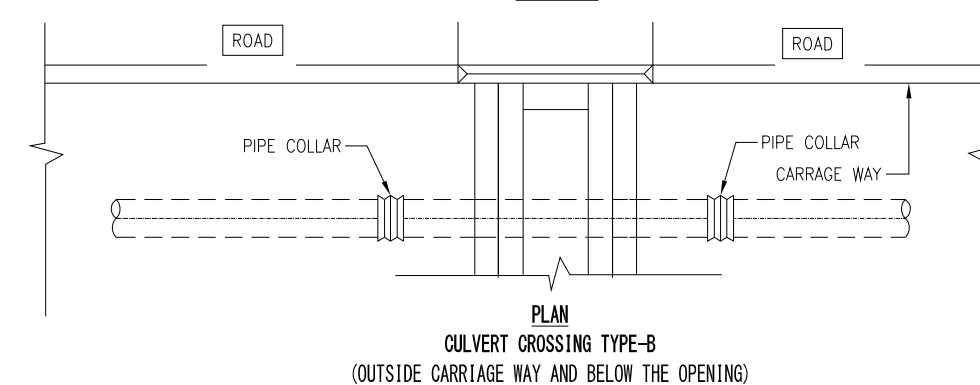
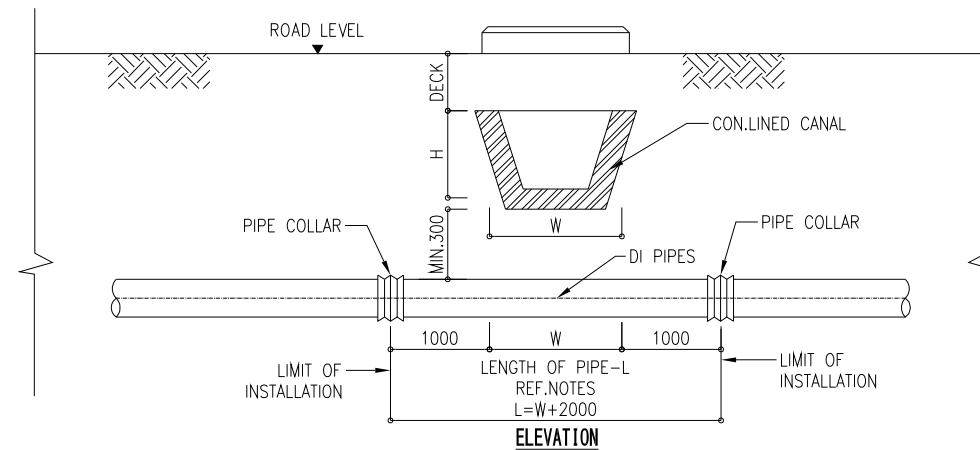
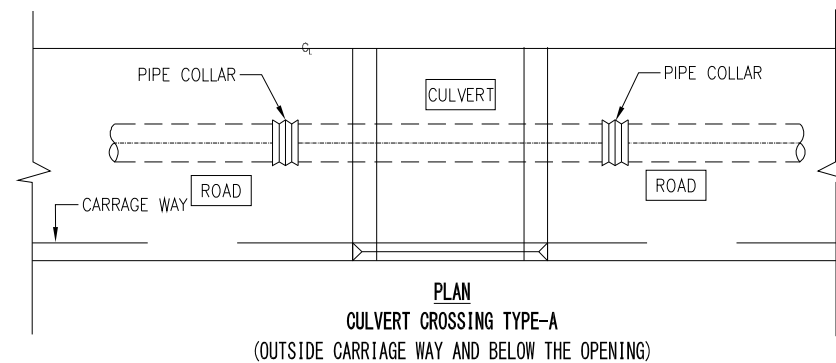
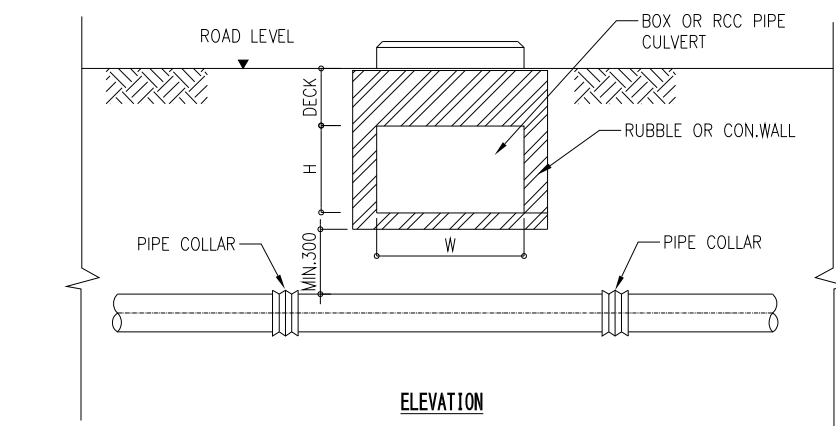
SUMMARY WASHOUT CHAMBER QUANTITIES (1 UNIT)				
Pipe Diameter (mm)	V. CONC (m3)	WEIGHT RB (t)	V. LEAN CONC, SLOPE AND SUPPORT (m3)	STEEL STEP (SET)
250	5.197	0.390	0.491	6
300	5.593	0.420	0.491	6
400	5.593	0.420	0.491	6
450	5.593	0.420	0.491	6
500	6.187	0.464	0.491	7
600	6.385	0.479	0.491	8
700	6.979	0.523	0.491	9
800	7.771	0.583	0.491	10
900	8.167	0.613	0.491	11
1000	8.563	0.642	0.491	11
1100	8.761	0.657	0.491	12
1200	8.959	0.672	0.491	12
1400	9.553	0.717	0.491	13
1600	11.533	0.865	0.491	16
1800	12.523	0.939	0.491	18
2000	12.523	0.939	0.491	18

SUMMARY WASHOUT CHAMBER QUANTITIES (1 UNIT)				
No.	DESCRIPTION	UNIT	QUANTITIES	REMARK
1	INVERT TEE	SET	1	
2	GATE VALVE	SET	1	
3	DOUBLE FLANGE ANCHORED PIPE 1M	SET	1	
4	FLANGE SOCKET	SET	2	
5	VALVE BOX AND SPINDLE	SET	1	
6	MANHOLE COVER DIA. 600MM	SET	1	

- NOTES
1. ALL DIMENSION ARE IN MILLIMETERS UNLESS OTHERWISE STATED.
 2. LENGTH OF PIPE FROM THE VALVE TO THE DISCHARGE POINT SHALL BE TO SUIT THE SITE.
 3. MANHOLE COVER SHALL BE OF HINGED, HEAVY DUTY (CLASS D400) VENTILATED TYPED TYPE WITH 600 DAI. MINIMUM CLEAR OPENING.
 4. DRAIN SHOULD BE CONSIDERED IN FURTHER DETAIL DESIGN.
 5. EXACT DIMENSION SHOULD BE DECIDED IN FURTHER DETAILED DESIGN.

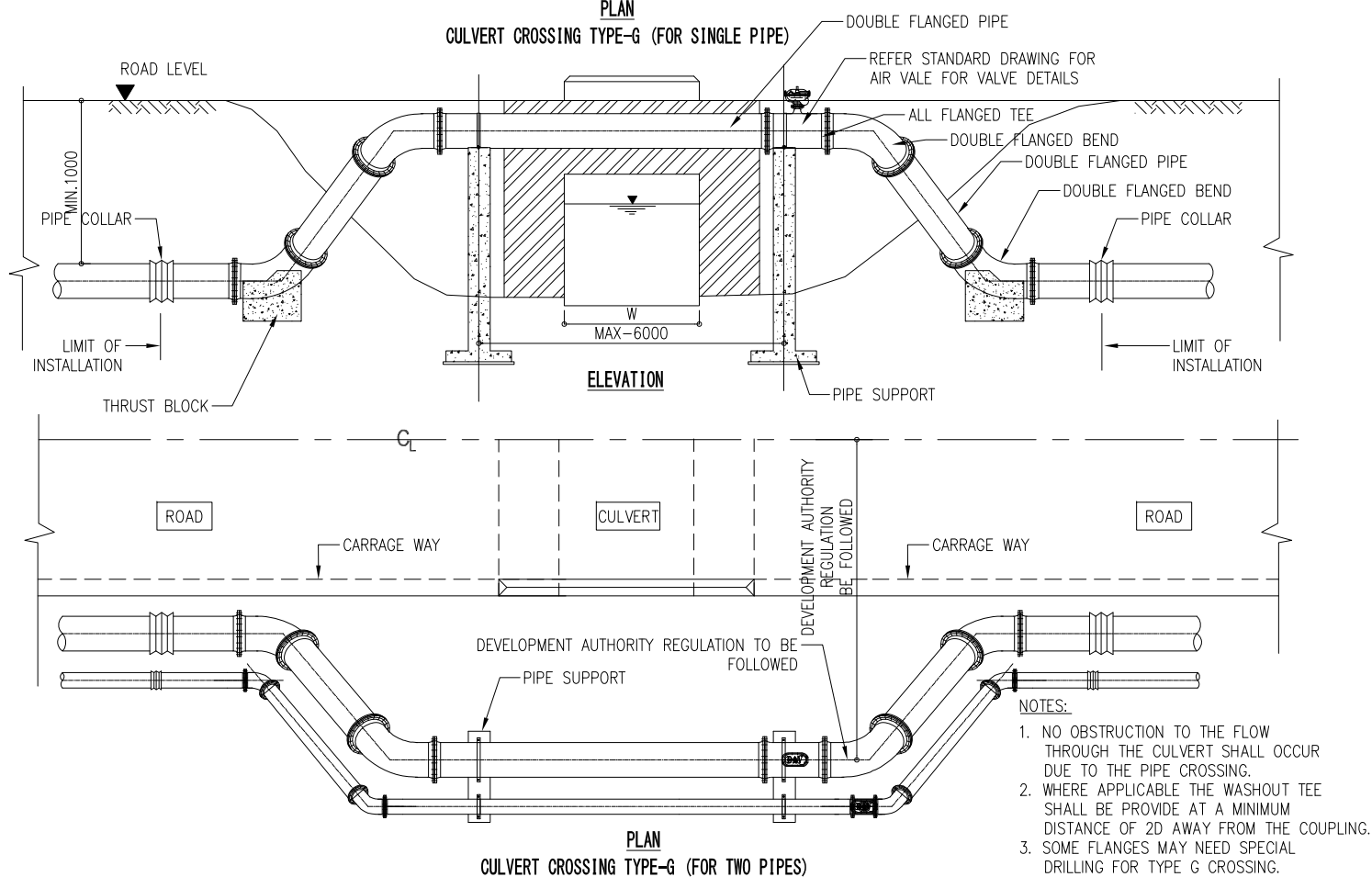
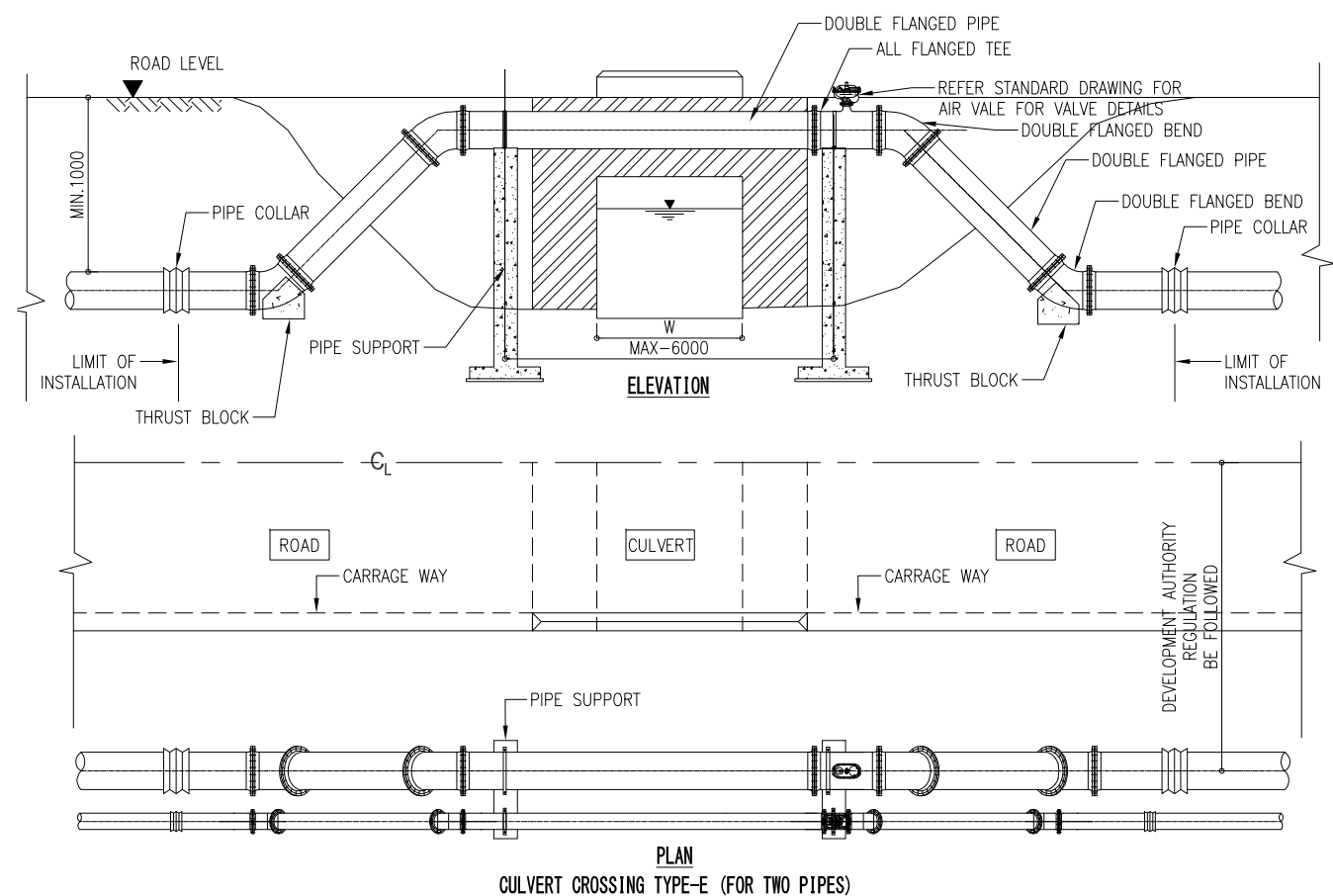
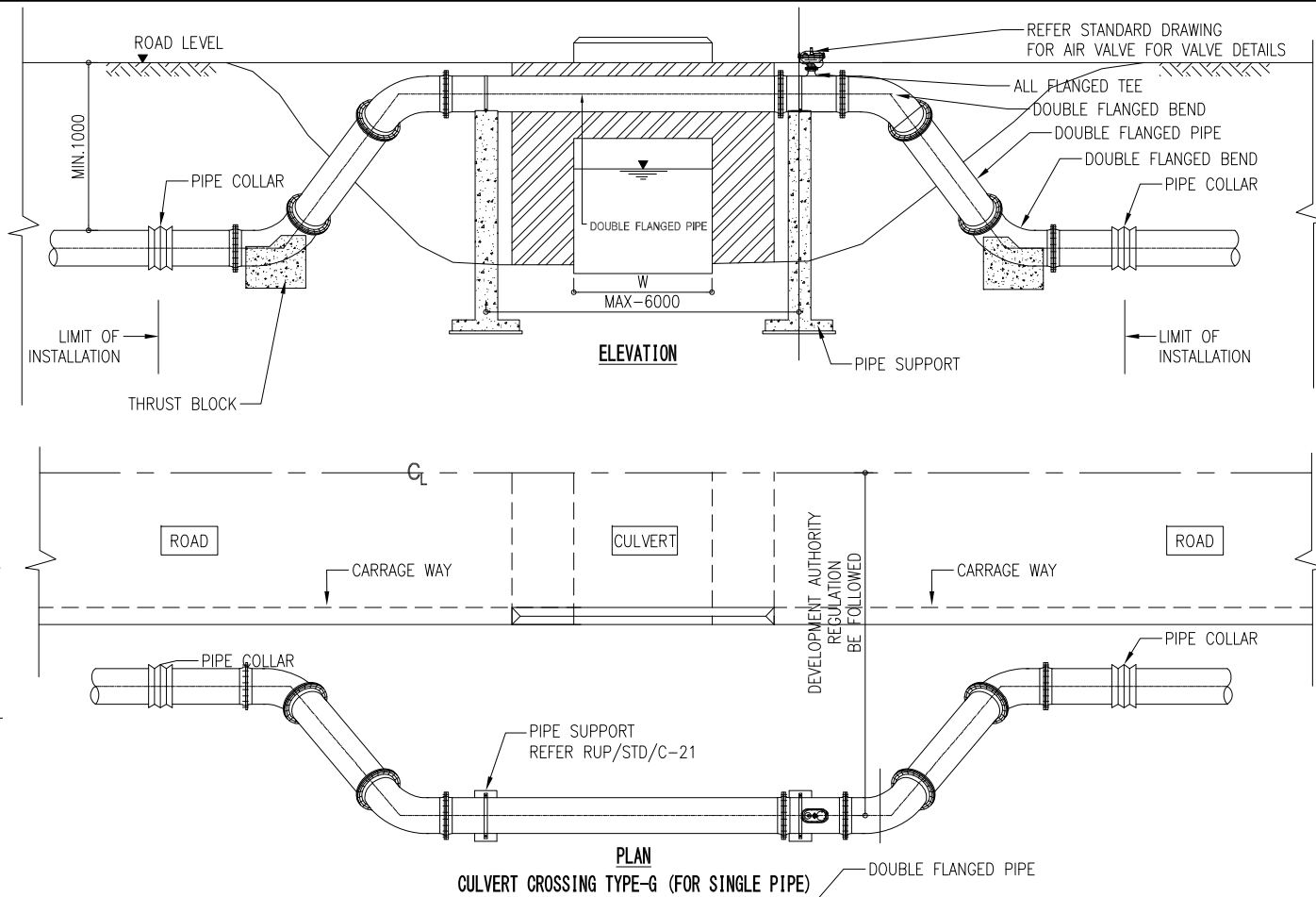
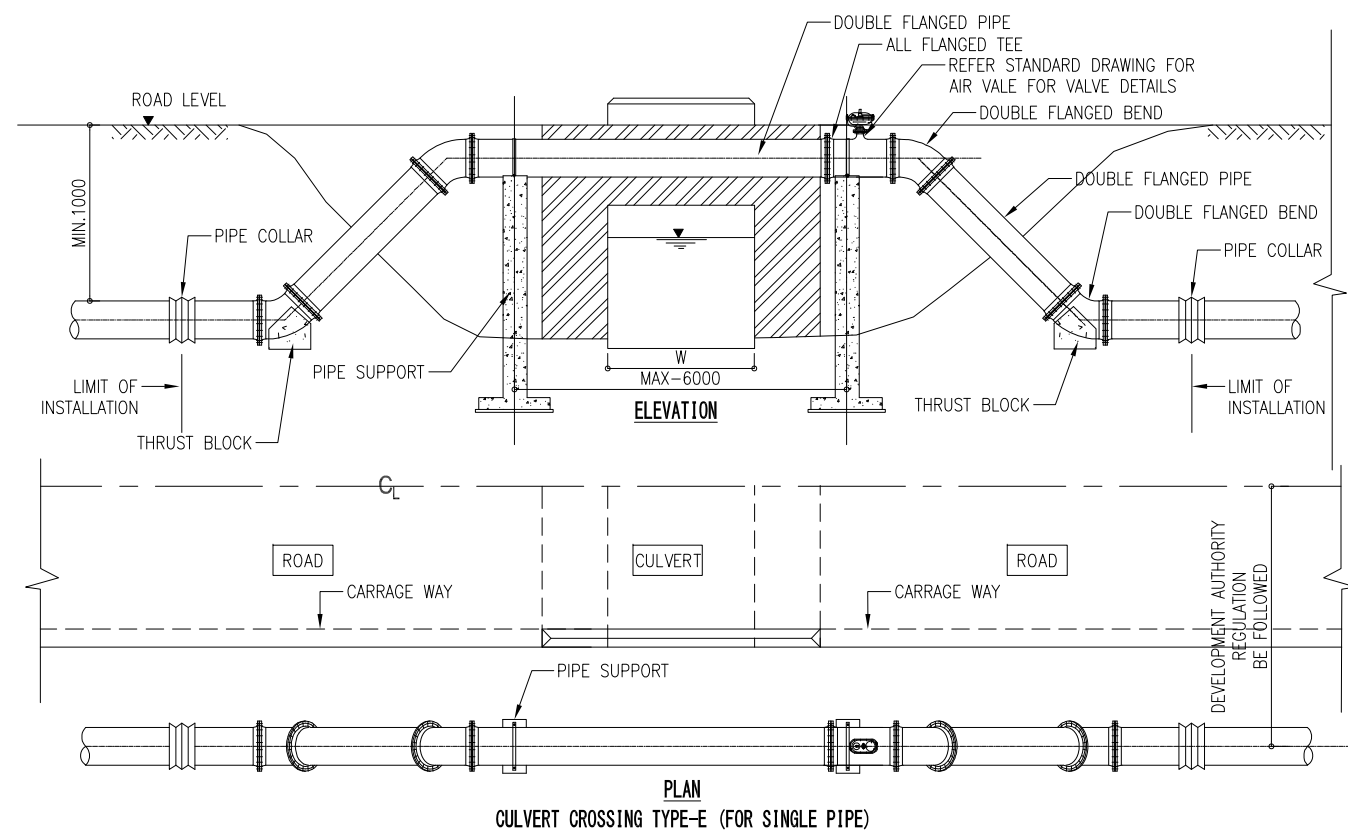
TYPICAL DRAWING FOR WASHOUT VALVE CHAMBER

PROJECT	DESCRIPTION	JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)	DRAWING No.	NRD/PH III/PL-TP008
Preparatory Survey on Nirodh Water Supply Expansion Project	TYPICAL DRAWING FOR WASHOUT VALVE CHAMBER (REFERENCE)	NIHON SUIDO CONSULTANTS CO.,LTD. (NSC) TOKYO ENGINEERING CONSULTANTS CO., LTD.(TEC) CTI ENGINEERING INTERNATIONAL CO., LTD. (CTI) KITAKYUSHU WATER SERVICE CO., LTD. (KWS)	SCALE	N/A



- NOTES**
2. THE GROUTED RIP RAP TO BE PROVIDED ONLY WHEN $W \leq 2000$.
 3. NO OBSTRUCTION TO THE FLOW THROUGH THE CULVERT SHALL OCCUR DUE TO THE PIPE CROSSING.
 4. WHERE APPLICABLE, THE WASHOUT TEE SHALL BE PROVIDED AT A MINIMUM DISTANCE OF 2D AWAY FROM THE COUPLING.

PROJECT Preparatory Survey on Nirodh Water Supply Expansion Project	DESCRIPTION TYPICAL DRAWING FOR CULVERT CROSSING (1) (REFERENCE)	JAPAN INTERNATIONAL COOPERATION AGENCY (JICA) NIHON SUIDO CONSULTANTS CO.,LTD. (NSC) TOKYO ENGINEERING CONSULTANTS CO., LTD.(TEC) CTI ENGINEERING INTERNATIONAL CO., LTD. (CTII) KITAKYUSHU WATER SERVICE CO., LTD. (KWS)	DRAWING No. SCALE	NRD/PH III/PL-TP009 N/A
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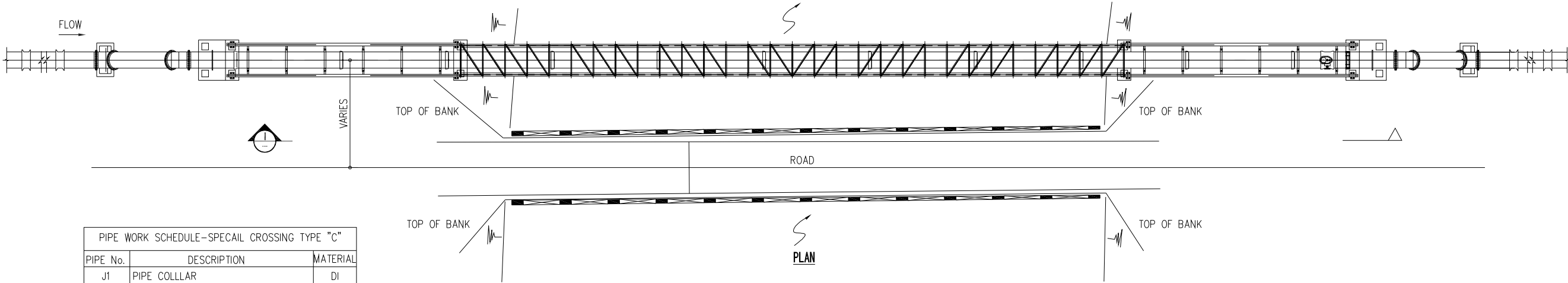
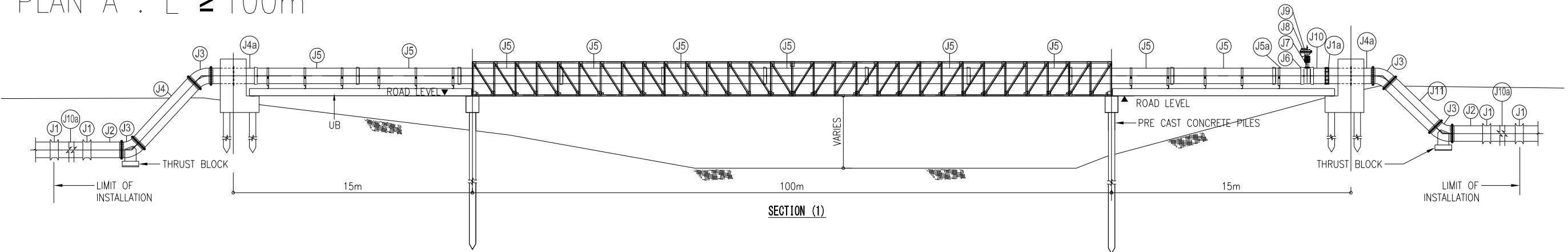


PROJECT	DESCRIPTION	JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)	DRAWING No.	NRD/PH III/PL-TP010
		NIHON SUIDO CONSULTANTS CO.,LTD. (NSC) TOKYO ENGINEERING CONSULTANTS CO., LTD.(TEC) CTI ENGINEERING INTERNATIONAL CO., LTD. (CTII) KITAKYUSHU WATER SERVICE CO., LTD. (KWS)	SCALE	N/A

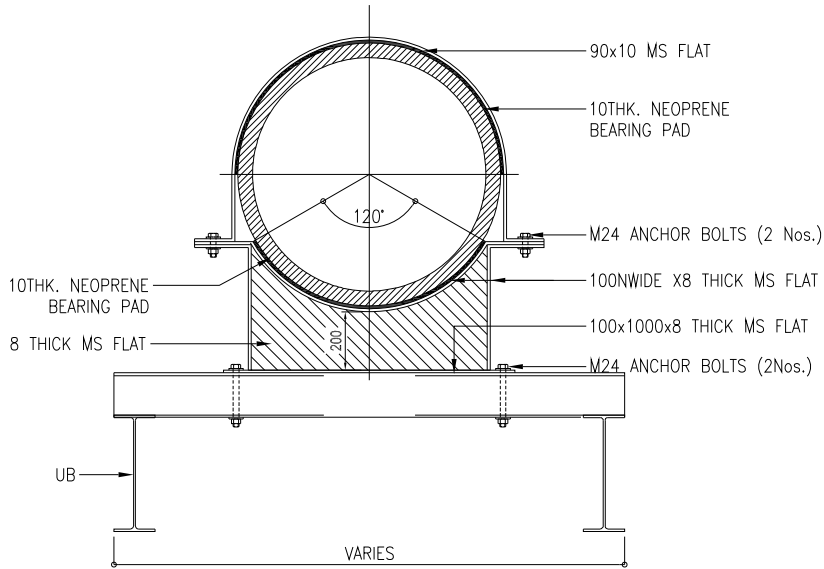
Preparatory Survey on Nirodh Water Supply Expansion Project

TYPICAL DRAWING FOR CULVERT CROSSING (2)
(REFERENCE)

PLAN A : L ≥ 100m

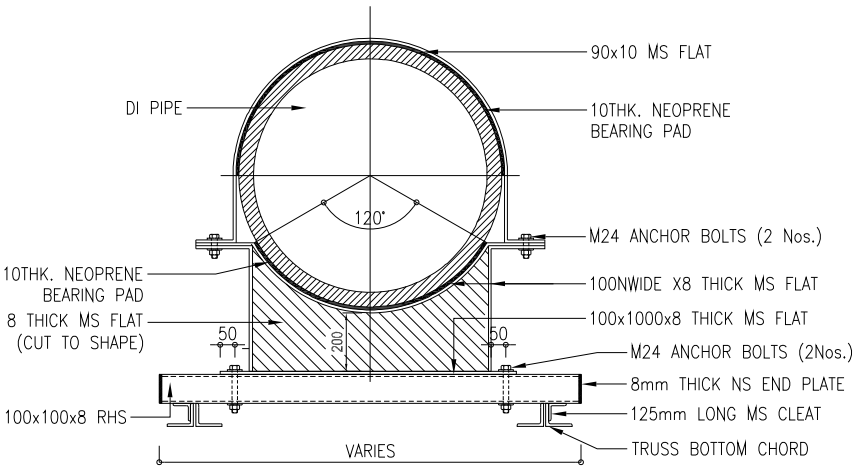


PIPE WORK SCHEDULE-SPEACIL CROSSING TYPE "C"		
PIPE No.	DESCRIPTION	MATERIAL
J1	PIPE COLLAR	DI
J1a	COUPLING	DI
J2	F/PE PIPE	DI
J3	45° FLANGED BEND	DI
J4	DOUBLE FLANGED PIPE (TO SUIT SITE)	DI
J4a	F/PIPE WITH PUDDLE FLANGE	DI
J5	SOCKET & SPIGOT PIPE	DI
J5a	SOCKET & SPIGOT PIPE	DI
J6	FLANGE ON SOCKET TEE	DI
J7	D/F PIPE	DI
J8	FLANGED GATE VALE-HAND WHEEL OPERATED	DI
J9	DOUBLE ORIFICE AIR VALE	DI
J10	P/E PIPE	DI
J10a	P/E PIPE	DI
J11	DOUBLE FLANGED PIPE (TO SUIT SITE)	DI



DETAIL OF PIPE BENCH (TYPE 01)

NOTE:
1. ALL DIMENSION ARE IN MILLIMETERS UNLESS OTHERWISE STATED

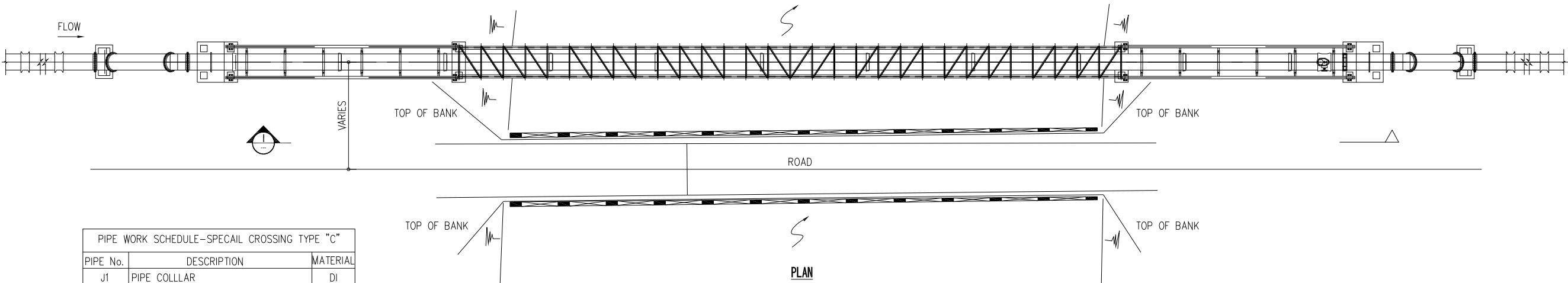
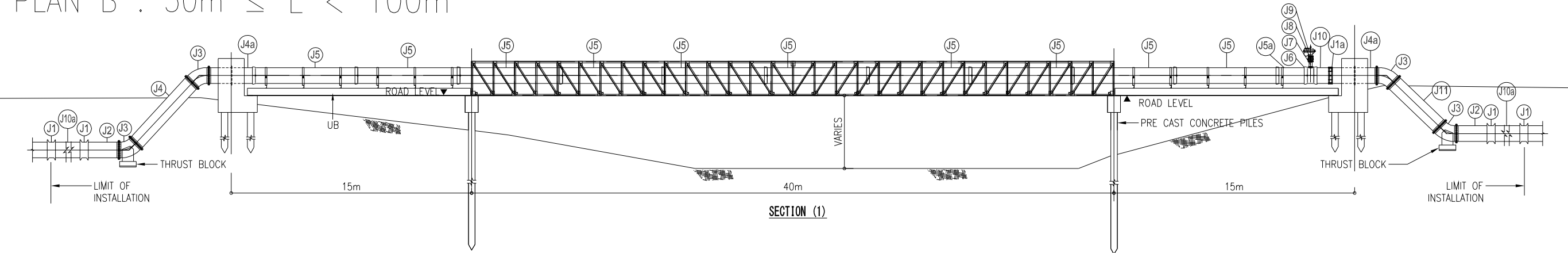


DETAIL OF PIPE BENCH (TYPE 02)

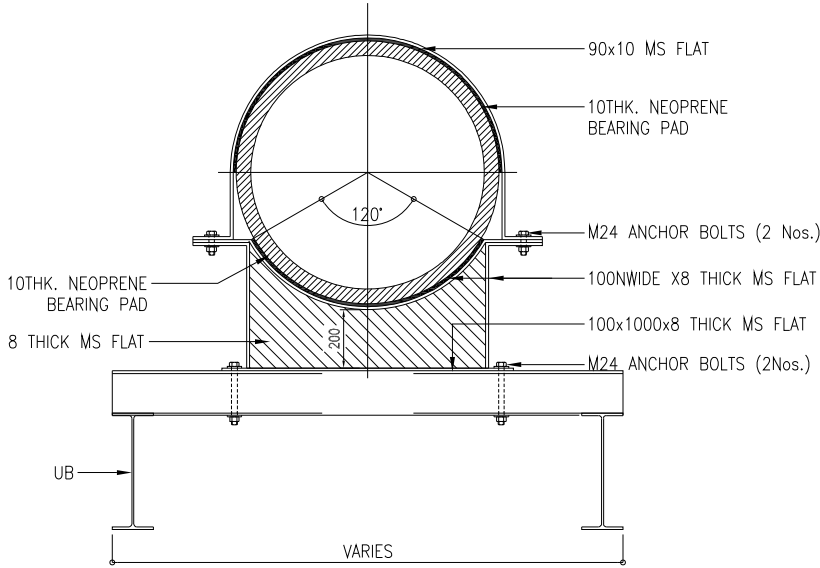
NOTE:
1. ALL DIMENSION ARE IN MILLIMETERS UNLESS OTHERWISE STATED

PROJECT	DESCRIPTION	JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)	DRAWING No.	NRD/PH III/PL-TP011
		NIHON SUIDO CONSULTANTS CO.,LTD. (NSC) TOKYO ENGINEERING CONSULTANTS CO., LTD.(TEC) CTI ENGINEERING INTERNATIONAL CO., LTD. (CTII) KITAKYUSHU WATER SERVICE CO., LTD. (KWS)	SCALE	N/A
Preparatory Survey on Nirodh Water Supply Expansion Project	TYPICAL DRAWING FOR PIPE TRUSS (1) (REFERENCE)			

PLAN B : 50m ≤ L < 100m

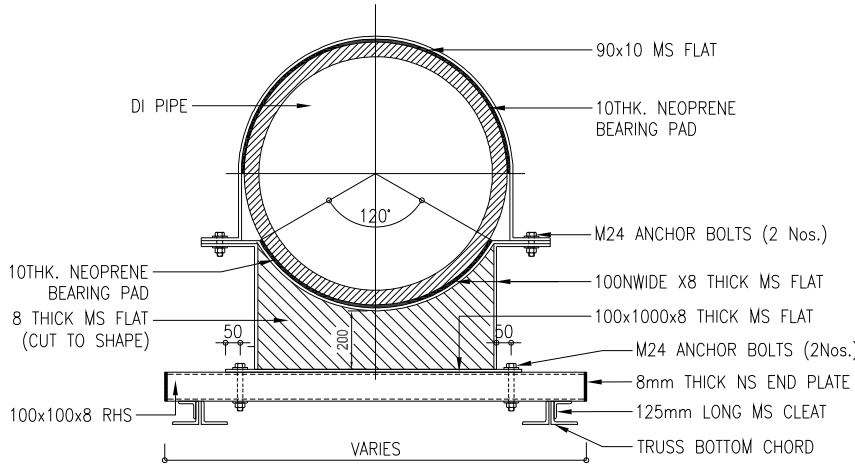


PIPE WORK SCHEDULE-SPECAIL CROSSING TYPE "C"		
PIPE No.	DESCRIPTION	MATERIAL
J1	PIPE COLLAR	DI
J1a	COUPLING	DI
J2	F/PE PIPE	DI
J3	45° FLANGED BEND	DI
J4	DOUBLE FLANGED PIPE (TO SUIT SITE)	DI
J4a	F/PIPE WITH PUDDLE FLANGE	DI
J5	SOCKET & SPIGOT PIPE	DI
J5a	SOCKET & SPIGOT PIPE	DI
J6	FLANGE ON SOCKET TEE	DI
J7	D/F PIPE	DI
J8	FLANGED GATE VALE-HAND WHEEL OPERATED	DI
J9	DOUBLE ORIFICE AIR VALE	DI
J10	P/E PIPE	DI
J10a	P/E PIPE	DI
J11	DOUBLE FLANGED PIPE (TO SUIT SITE)	DI



DETAIL OF PIPE BENCH (TYPE 01)

NOTE:
1. ALL DIMENSION ARE IN MILLIMETERS UNLESS OTHERWISE STATED

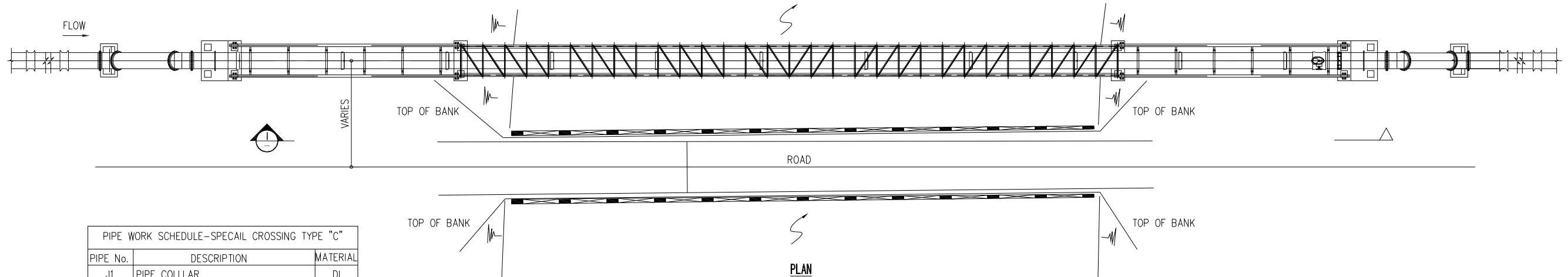
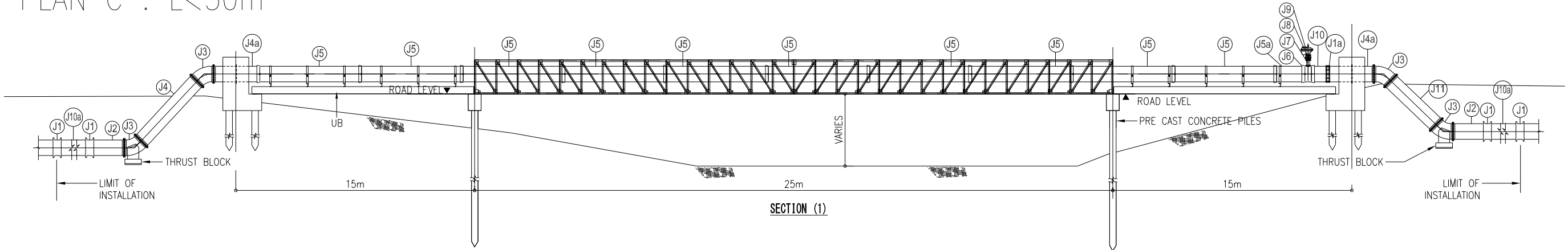


DETAIL OF PIPE BENCH (TYPE 02)

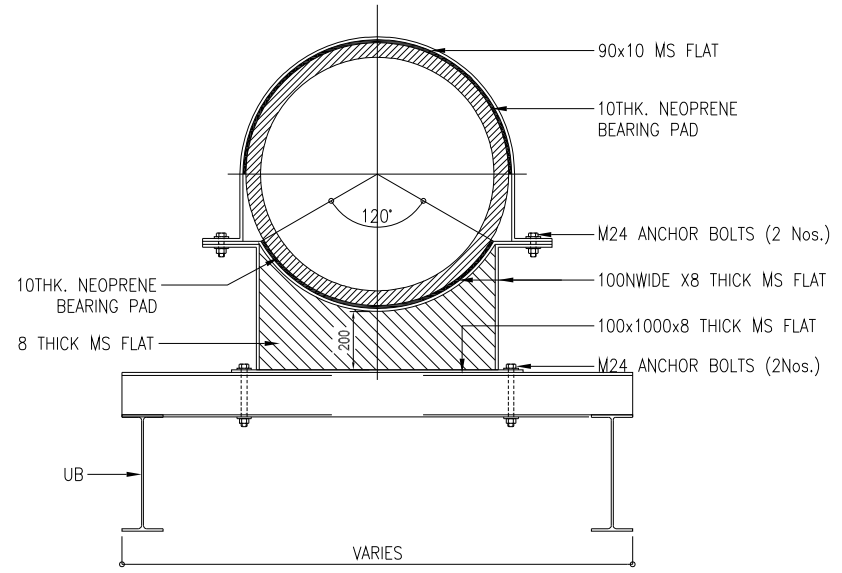
NOTE:
1. ALL DIMENSION ARE IN MILLIMETERS UNLESS OTHERWISE STATED

PROJECT	DESCRIPTION	JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)	DRAWING No.	NRD/PH III/PL-TP012
Preparatory Survey on Nirodh Water Supply Expansion Project	TYPICAL DRAWING FOR PIPE TRUSS (2) (REFERENCE)	NIHON SUIDO CONSULTANTS CO.,LTD. (NSC) TOKYO ENGINEERING CONSULTANTS CO., LTD.(TEC) CTI ENGINEERING INTERNATIONAL CO., LTD. (CTII) KITAKYUSHU WATER SERVICE CO., LTD. (KWS)	SCALE	N/A

PLAN C : L<50m

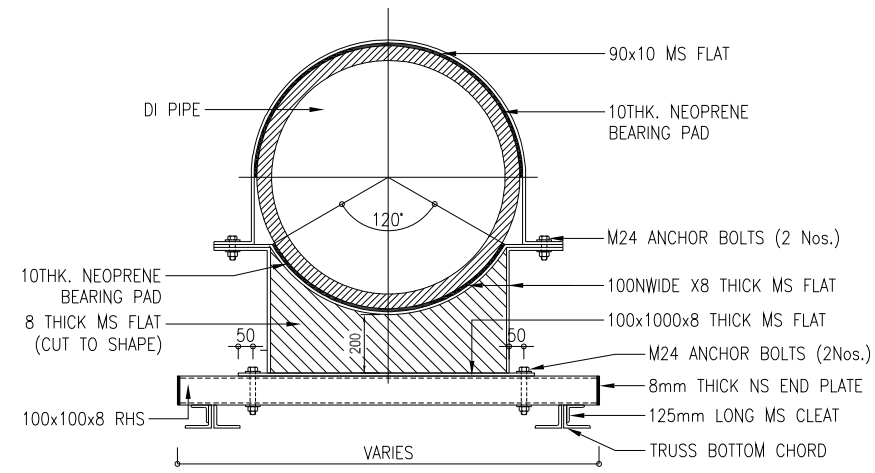


PIPE WORK SCHEDULE-SPECAIL CROSSING TYPE "C"		
PIPE No.	DESCRIPTION	MATERIAL
J1	PIPE COLLAR	DI
J1a	COUPLING	DI
J2	F/PE PIPE	DI
J3	45° FLANGED BEND	DI
J4	DOUBLE FLANGED PIPE (TO SUIT SITE)	DI
J4a	F/PIPE WITH PUDDLE FLANGE	DI
J5	SOCKET & SPIGOT PIPE	DI
J5a	SOCKET & SPIGOT PIPE	DI
J6	FLANGE ON SOCKET TEE	DI
J7	D/F PIPE	DI
J8	FLANGED GATE VALE-HAND WHEEL OPERATED	DI
J9	DOUBLE ORIFICE AIR VALE	DI
J10	P/E PIPE	DI
J10a	P/E PIPE	DI
J11	DOUBLE FLANGED PIPE (TO SUIT SITE)	DI



DETAIL OF PIPE BENCH (TYPE 01)

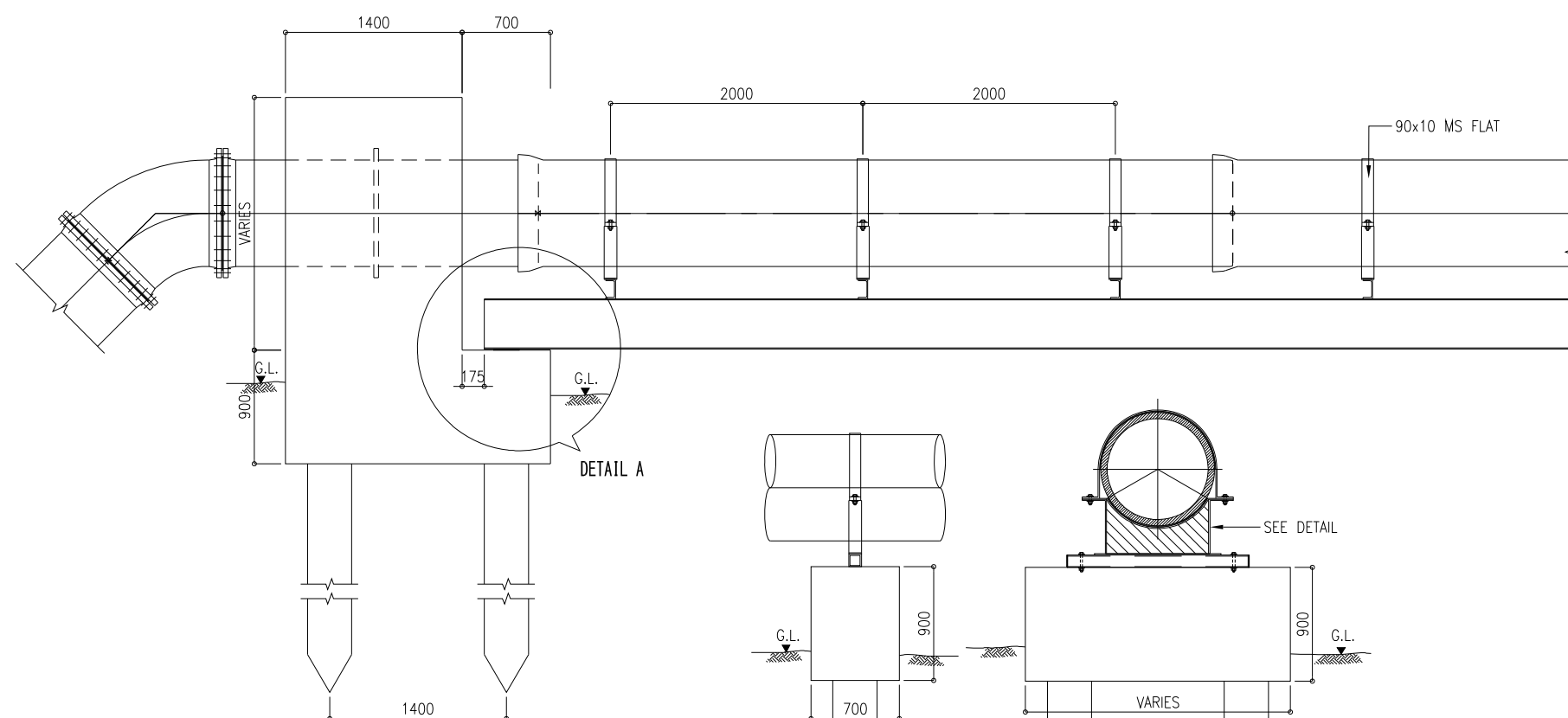
NOTE:
1. ALL DIMENSION ARE IN MILLIMETERS UNLESS OTHERWISE STATED



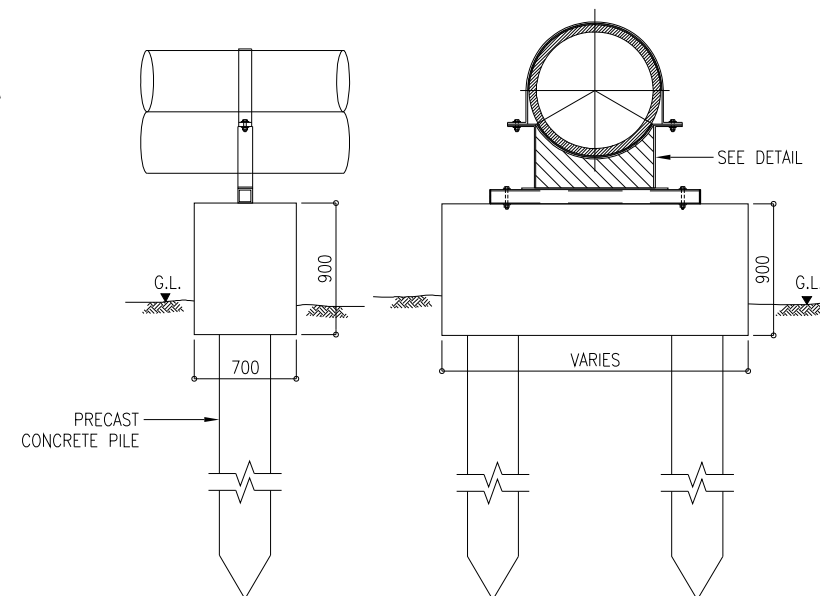
DETAIL OF PIPE BENCH (TYPE 02)

NOTE:
1. ALL DIMENSION ARE IN MILLIMETERS UNLESS OTHERWISE STATED

PROJECT Preparatory Survey on Nirodh Water Supply Expansion Project	DESCRIPTION TYPICAL DRAWING FOR PIPE TRUSS (3) (REFERENCE)	JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)	DRAWING No.	NRD/PH III/PL-TP013
		NIHON SUIDO CONSULTANTS CO.,LTD.(NSC) TOKYO ENGINEERING CONSULTANTS CO.,LTD.(TEC) CTI ENGINEERING INTERNATIONAL CO., LTD.(CTII) KITAKYUSHU WATER SERVICE CO., LTD.(KWS)	SCALE	N/A



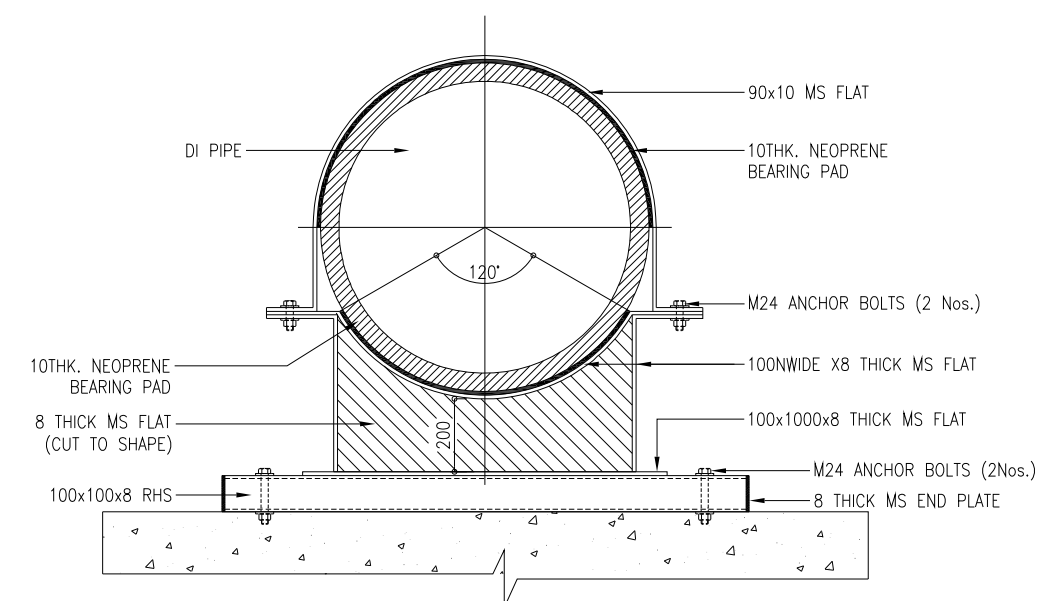
PILE AND PILE CAP 02



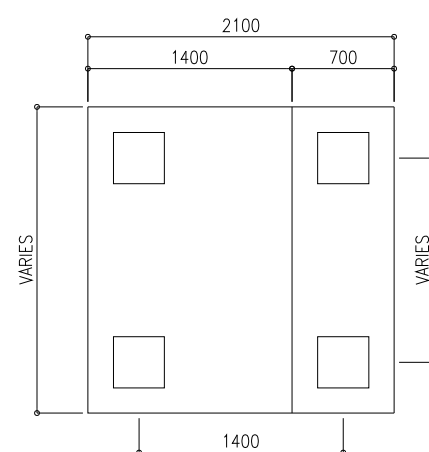
SIDE ELEVATION

FRONT ELEVATION

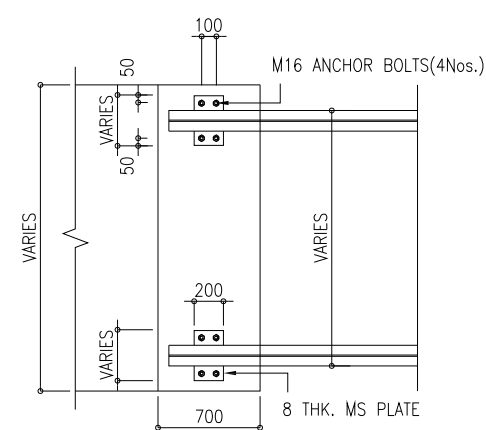
PILE & PILE CAP



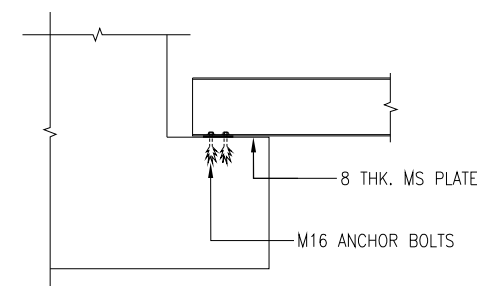
DETAIL OF PIPE BENCH



PLAN



PLAN

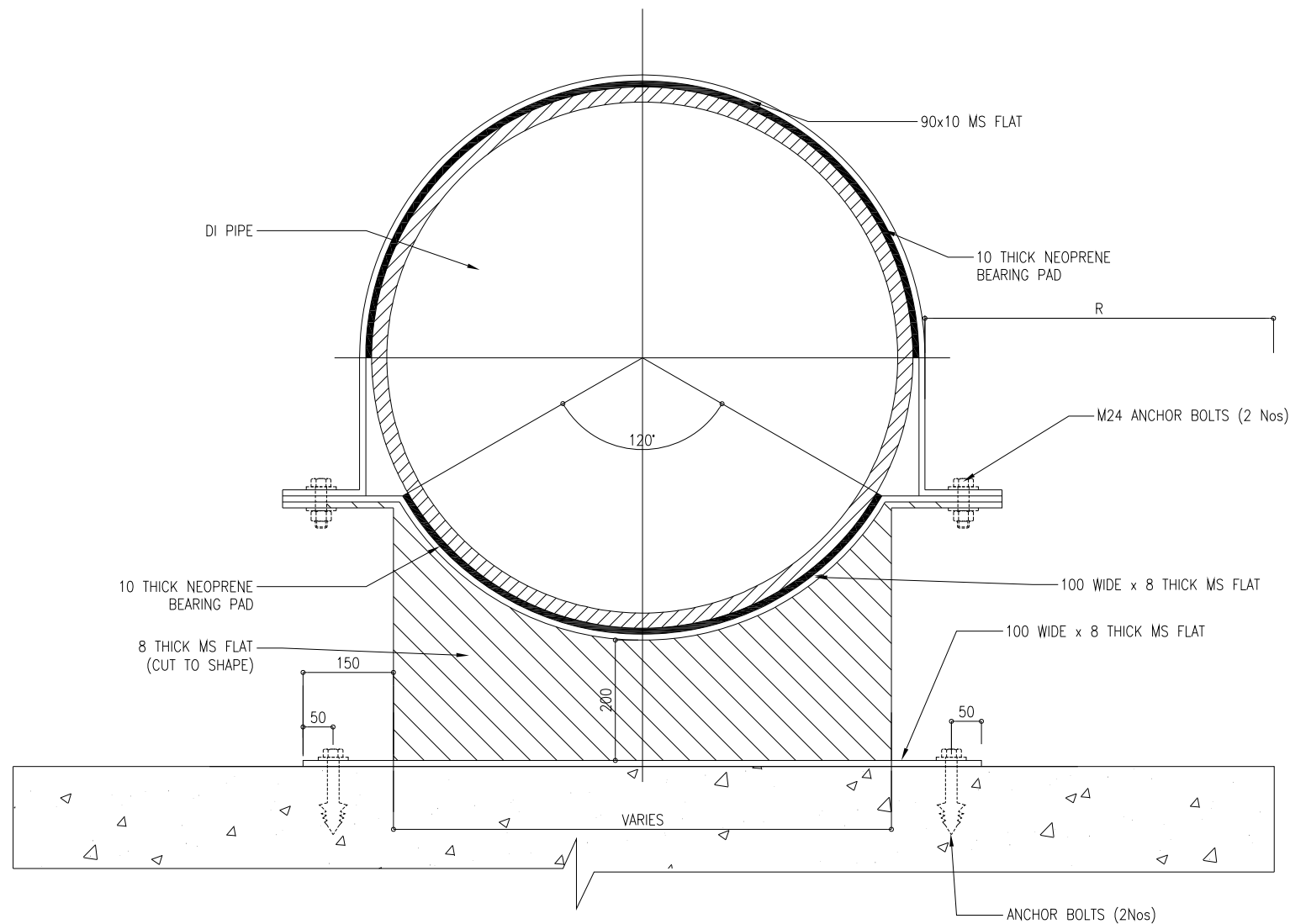


SIDE ELEVATION

DETAIL A

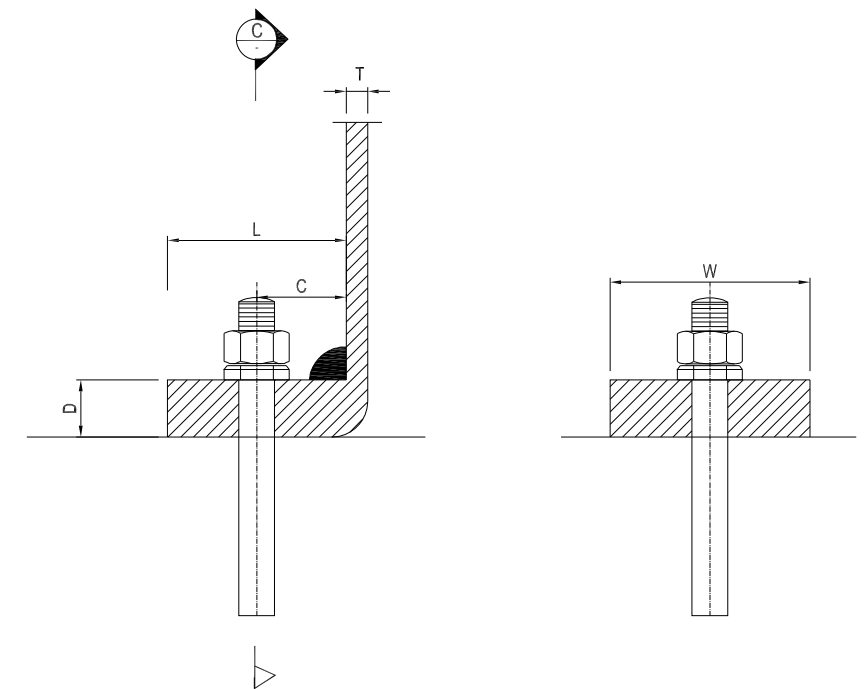
NOTE:
A SLOT FOR FREE MOMENT SHALL BE PROVIDED AT THE END OF THE STRUCTURAL BOLT HOLES

PROJECT Preparatory Survey on Nirodh Water Supply Expansion Project	DESCRIPTION TYPICAL DRAWING FOR PIPE TRUSS (4) (REFERENCE)	JAPAN INTERNATIONAL COOPERATION AGENCY (JICA) NIHON SUIDO CONSULTANTS CO.,LTD. (NSC) TOKYO ENGINEERING CONSULTANTS CO., LTD.(TEC) CTI ENGINEERING INTERNATIONAL CO., LTD. (CTII) KITAKYUSHU WATER SERVICE CO., LTD. (KWS)	DRAWING No. SCALE	NRD/PH III/PL-TP014 N/A



DETAIL A

DETAILS OF STRAP						
PIPE SIZE (mm)	T(mm)	W(mm)	D(mm)	L(mm)	C(mm)	SIZE OF BOLT
80-150	6	40	13	45	25	M12
200-300	6	50	16	50	30	M16
350-800	10	65	19	65	35	M20



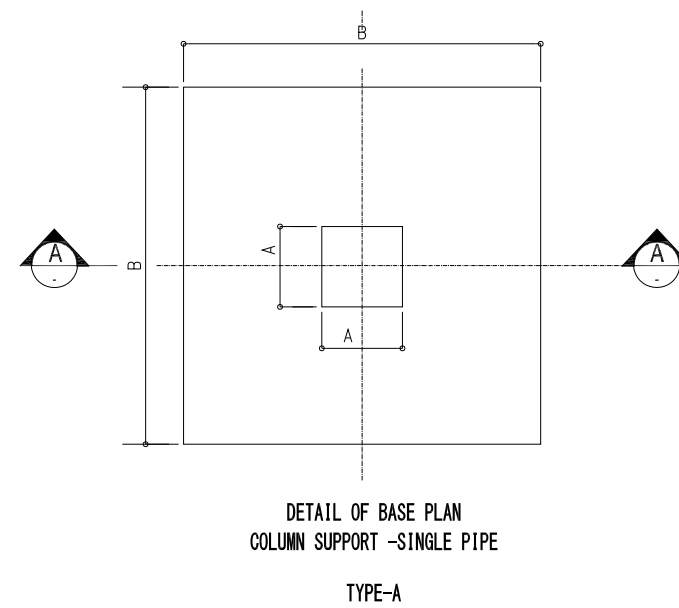
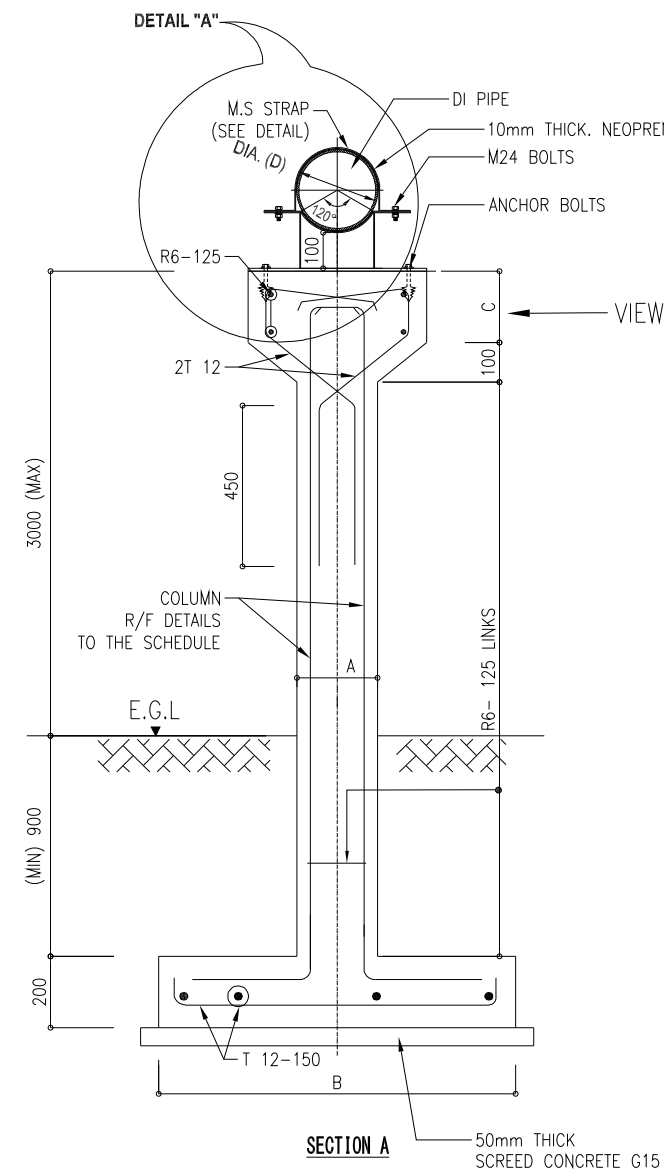
DETAIL A

SINGLE PIPE CROSSING						
PIPE (φ)	COLUMN WIDTH (A)	COLUMN HEAD HEIGHT (C)	(R)	(S)	COLUMN R/F	BASE (B)
DN ≤ 300	225	200	100	50	4T12	1000
350-400-450	300	250	150	75	4T12	1200
500-600	350	300	200	100	4T16	1500
700-800	400	350	300	150	4T16	2000

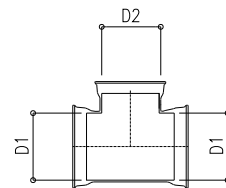
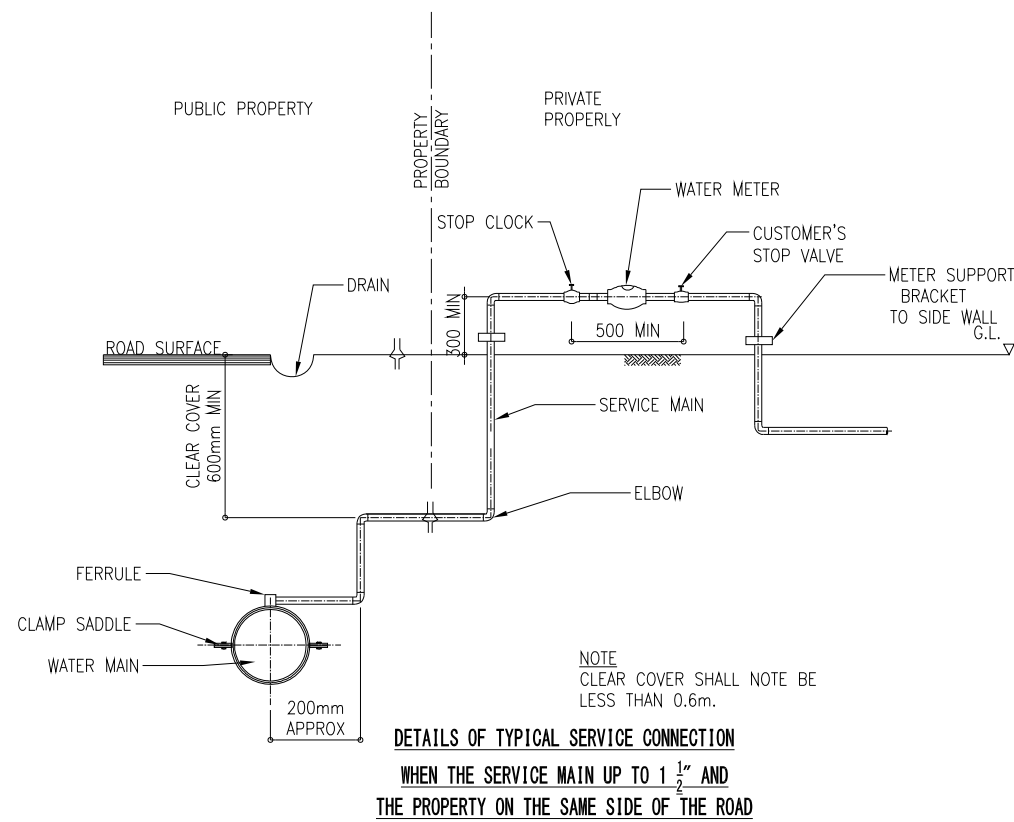
DOUBLE PIPE CROSSING						
PIPE (φ)	COLUMN WIDTH (A)	COLUMN HEAD HEIGHT (C)	BASE (B1xB2)	BETWEEN PIPE (P)	BETWEEN COLUMN (Q)	(R)
≤300	225	200	1500x1000	300	450	100
350-450	250	250	1800x1200	300	500	150
500-600	300	300	2000x1200	400	550	200
700-800	300	300	2100x1800	500	650	250
900-1000	350	325	2100x1800	600	750	300
1200	400	400	2400x2000	750	900	300

D1 (Q) INDICATE THE LARGER DIAMETER

PROJECT	DESCRIPTION	JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)	DRAWING No.	NRD/PH III/PL-TP015
Preparatory Survey on Nirodh Water Supply Expansion Project	TYPICAL DRAWING FOR PIPE SUPPORT (1) (REFERENCE)	NIHON SUIDO CONSULTANTS CO.,LTD. (NSC) TOKYO ENGINEERING CONSULTANTS CO., LTD.(TEC) CTI ENGINEERING INTERNATIONAL CO., LTD. (CTII) KITAKYUSHU WATER SERVICE CO., LTD. (KWS)	SCALE	N/A

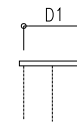
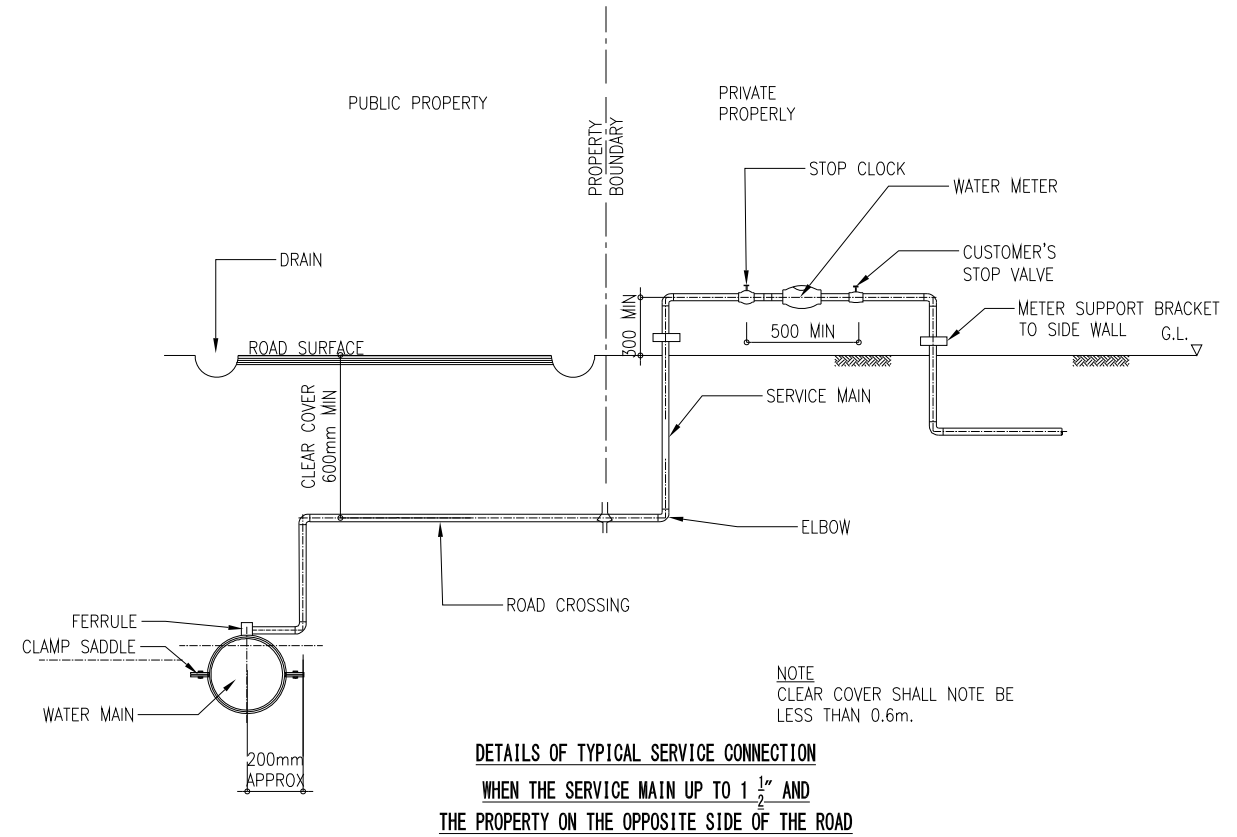


PROJECT Preparatory Survey on Nirodh Water Supply Expansion Project	DESCRIPTION TYPICAL DRAWING FOR PIPE SUPPORT (2) (REFERENCE)	JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)	DRAWING No.	NRD/PH III/PL-TP016
		NIHON SUIDO CONSULTANTS CO.,LTD. (NSC) TOKYO ENGINEERING CONSULTANTS CO., LTD.(TEC) CTI ENGINEERING INTERNATIONAL CO., LTD. (CTII) KITAKYUSHU WATER SERVICE CO., LTD. (KWS)	SCALE	N/A



BRANCH PIPE FITTING		
MAIN PIPE SIZE (D1 mm)	Tee-Branch (D2 mm)	Connection Point
800	2000	R200-1 & R80-4
2000	500	R200-1 & R50-8
500	300	R50-10 & R30-2
500	300	R50-5 & R30-2
400	300	R40-1 & R30-1
800	600	R80-1 & R60-5
1400	600	R140-1 & R60-6
800	500	R80-1 & R50-1
800	500	R80-1 & R50-2
500	500	R50-1 & R50-2
1000	800	R80-2 & R100-2
800	500	R80-2 & R50-1
800	600	R80-3 & R60-4
800	250	R80-3 & R25-1
1400	600	R140-1 & R60-1
1400	800	R140-1 & R80-3
1600	300	R160-1 & R80-5

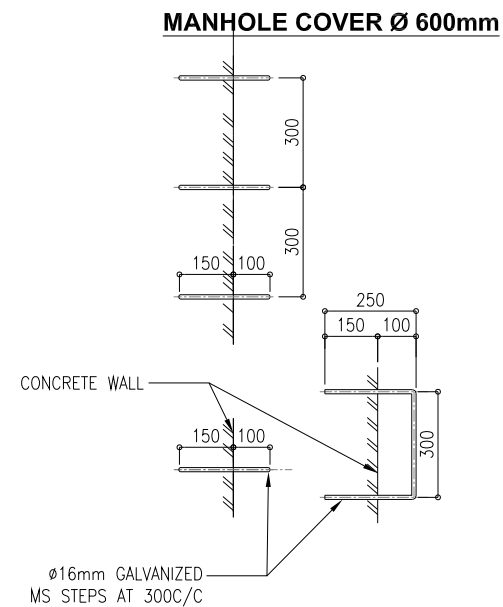
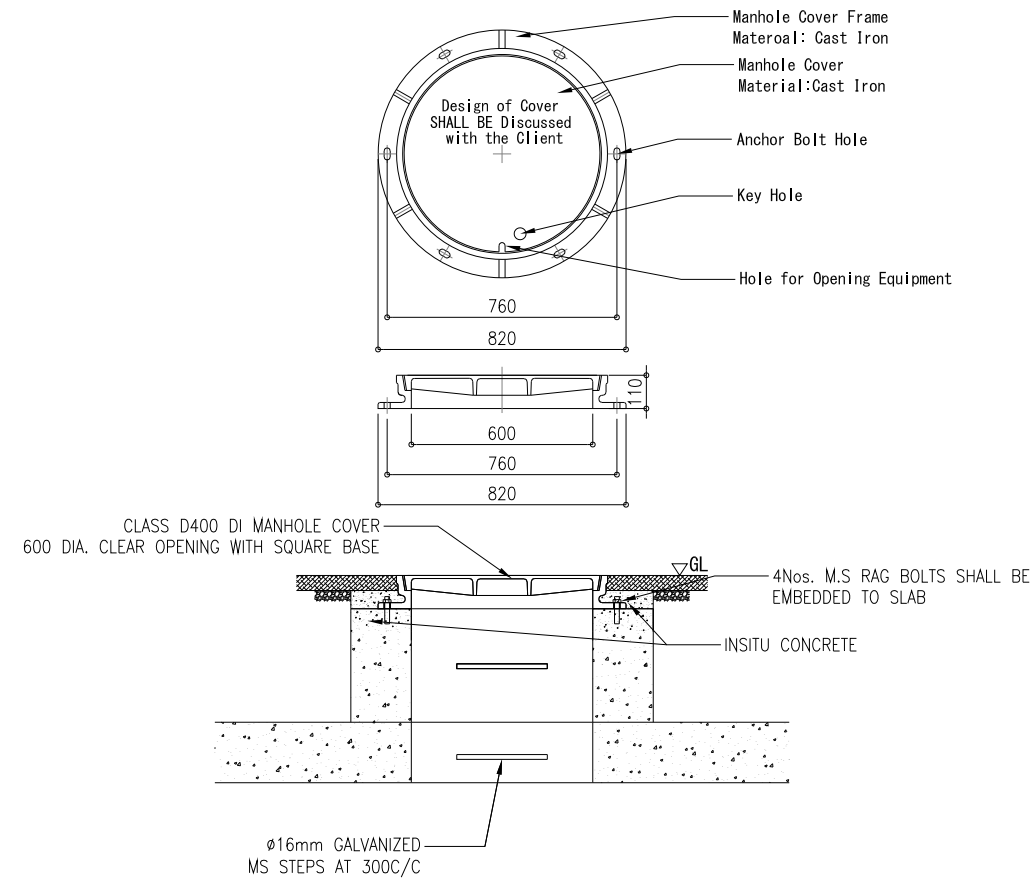
TYPICAL TEE-BRANCHES



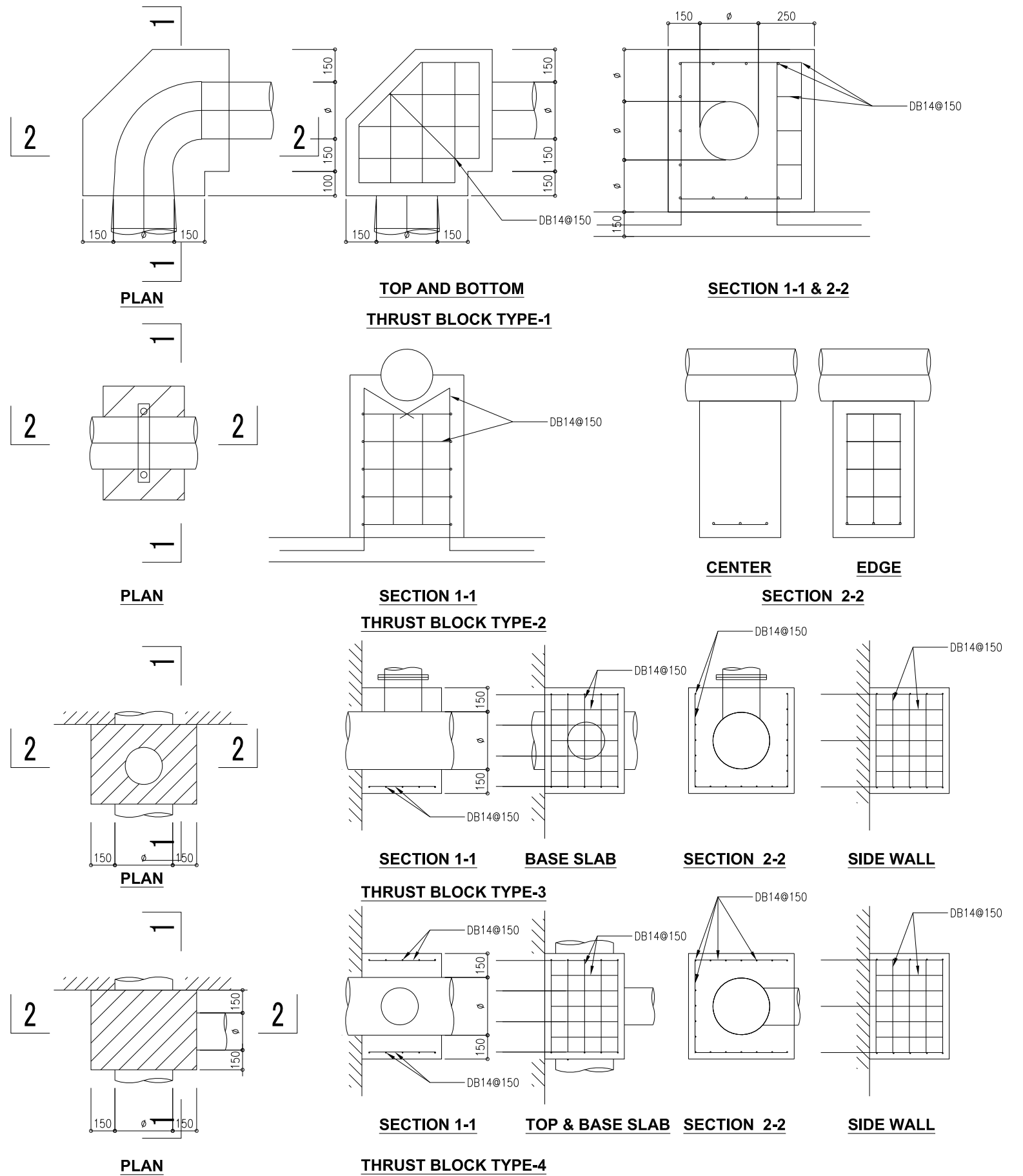
End PIPE FITTING	
MAIN PIPE SIZE (D1 mm)	End Cap Point
300	R30-1
800	R80-1
500	R50-1
600	R60-2
500	R50-4
500	R50-11
600	R60-3
500	R50-3
250	R25-1
300	R30-5
500	R50-5
250	R25-4
600	R60-9
800	R80-4
500	R50-6
500	R50-8
250	R25-2

TYPICAL END CAP

PROJECT Preparatory Survey on Nirodh Water Supply Expansion Project	DESCRIPTION TYPICAL DRAWING FOR SERVICE CONNECTION (REFERENCE)	JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)	DRAWING No.	NRD/PH III/PL-TP017
		NIHON SUIDO CONSULTANTS CO.,LTD. (NSC) TOKYO ENGINEERING CONSULTANTS CO., LTD.(TEC) CTI ENGINEERING INTERNATIONAL CO., LTD. (CTII) KITAKYUSHU WATER SERVICE CO., LTD. (KWS)	SCALE	N/A



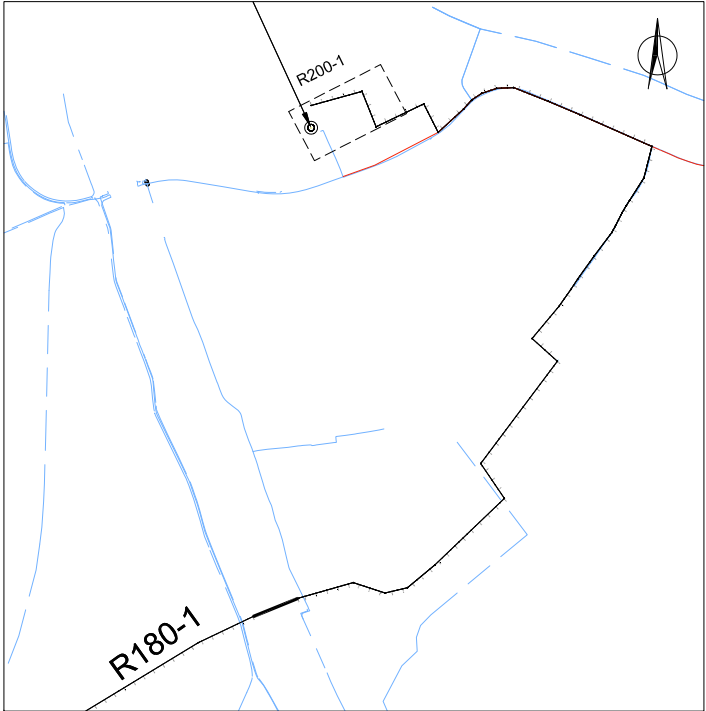
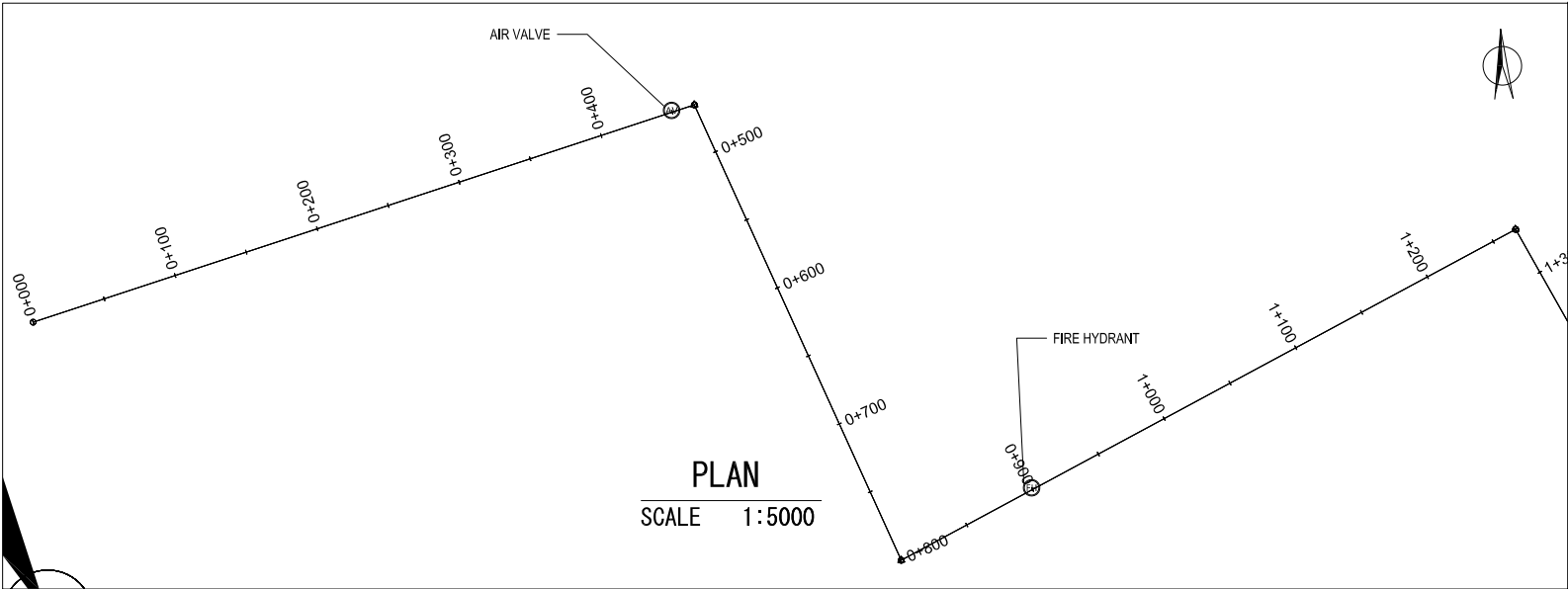
STEEL STEP DETAIL



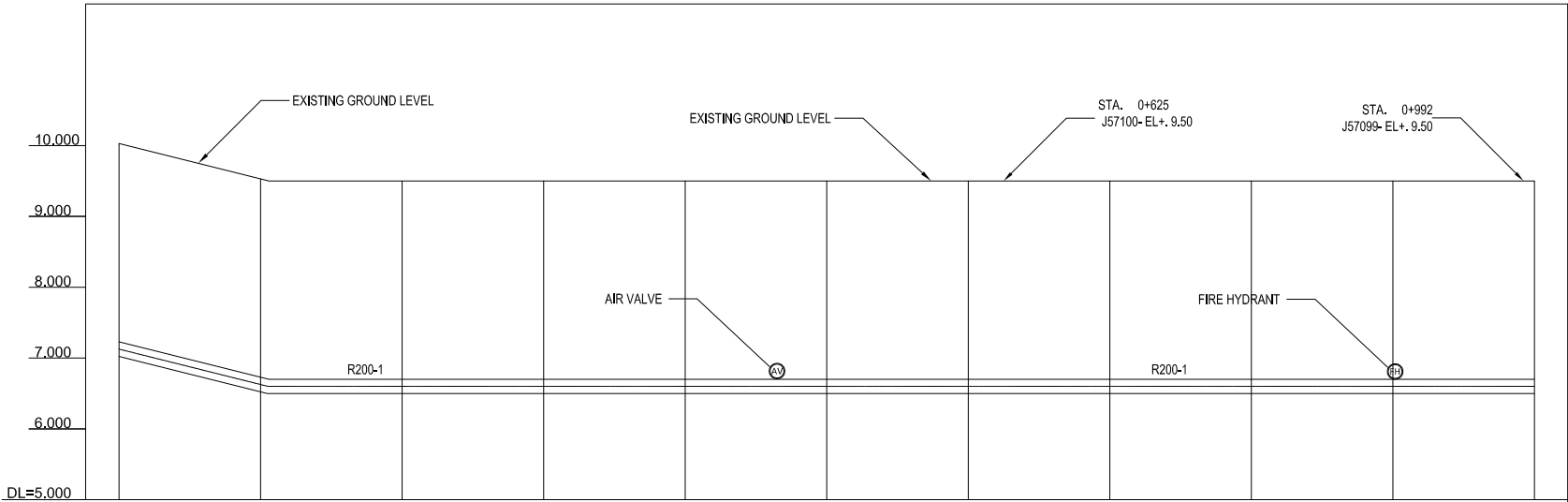
PROJECT	DESCRIPTION	JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)	DRAWING No.	NRD/PH III/PL-TP018
Preparatory Survey on Nirodh Water Supply Expansion Project	TYPICAL DRAWING FOR OTHER RELATED STRUCTURE (REFERENCE)	NIHON SUIDO CONSULTANTS CO.,LTD. (NSC) TOKYO ENGINEERING CONSULTANTS CO., LTD.(TEC) CTI ENGINEERING INTERNATIONAL CO., LTD. (CTII) KITAKYUSHU WATER SERVICE CO., LTD. (KWS)	SCALE	N/A

PLAN AND PROFILE DRAWINGS

R200-1, TRANSMISSION LINE, DI Φ 2000mm (0+000 TO 1+000)



KEY PLAN



GROUND LEVEL (m)	10.030	9.530	9.500	9.500	9.500	9.500	9.500	9.500	9.500	9.500	9.500
TOP PIPE LEVEL (m)	7.230	6.730	6.700	6.700	6.700	6.700	6.700	6.700	6.700	6.700	6.700
EARTH COVERING DEPTH (m)											
PIPE LINE DATA	TRANSMISSION PIPE DI Ø 2000										
SINGLE DISTANCE (m)	0.00	88.00	100.00	7.00	100.00	41.00	100.00	20.00	100.00	100.00	100.00
STATION	0+000	0+100	0+200	0+300	0+400	0+500	0+600	0+700	0+800	0+900	1+000

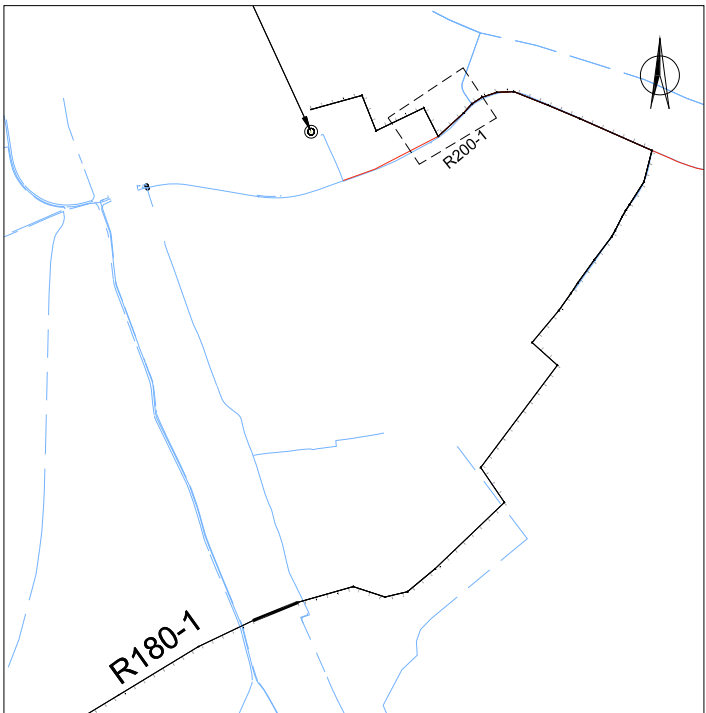
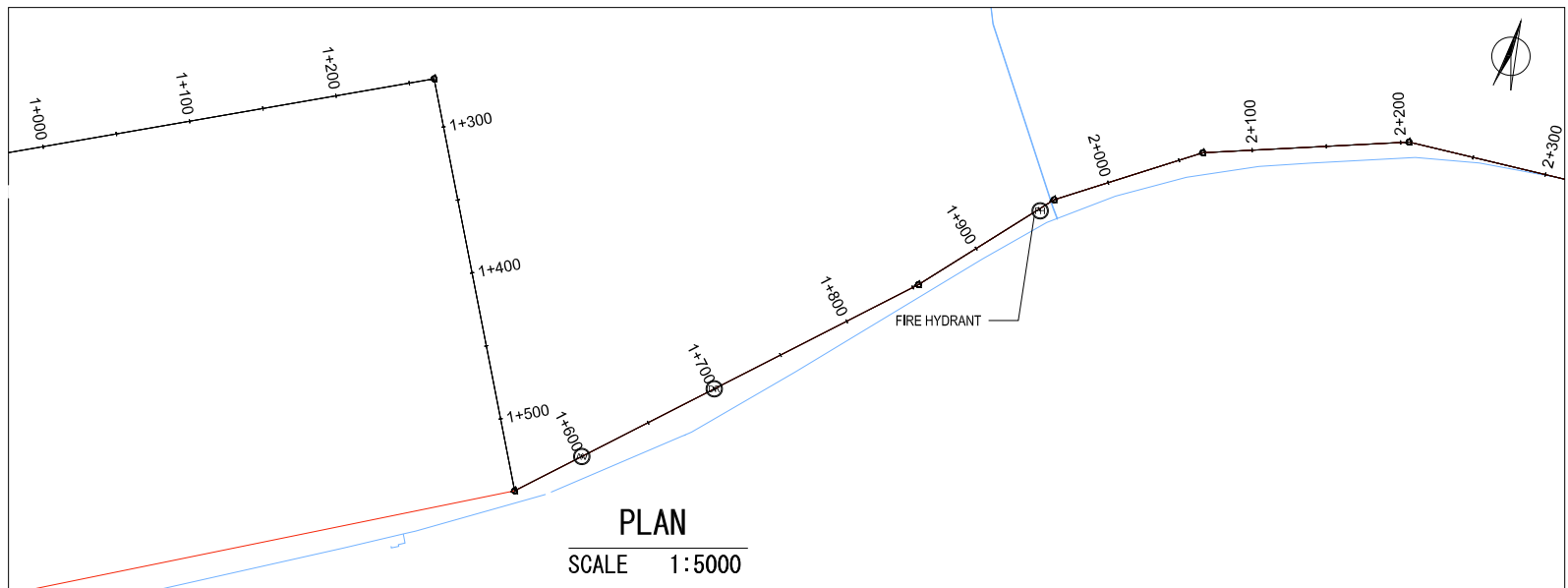
PROFILE

SCALE 1:5000

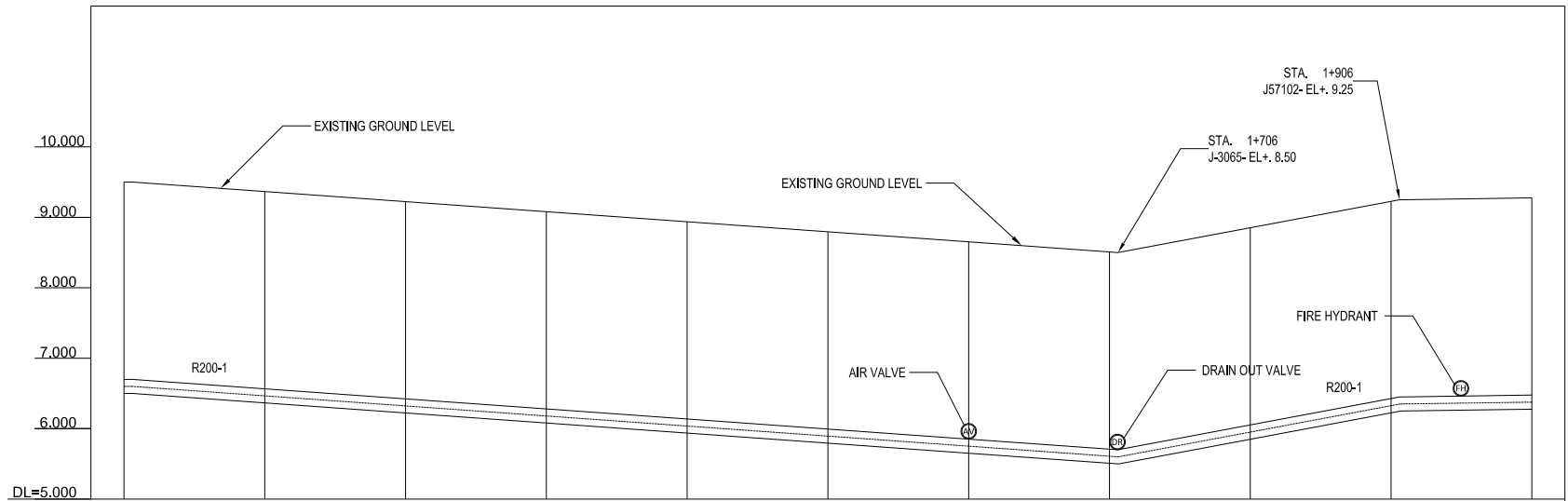
LEGEND			
—	Alignment of Pipeline	□	TBM (Temporary Bench Mark)
—	Road Center Line	△	ST (Station Points)
—	Fence	⊙	Water Meter
—	Pavement Road	⊙	Valve
---	Un-pavement Road	⊙	Fire Hydrant
⊠	House/Building	⊙	Manhole
⊠	Karola (Concrete Block)	⊙	Electricity Manhole
⊠	Garden/ Park	⊙	Cable Optic Manhole
⊠		⊠	Cable Optic Box
⊠		⊠	Advertisement Board
⊠		⊠	Steel Light Post
⊠		⊠	Concrete Light Post
⊠		⊠	Concrete Electricity Post
⊠		⊠	Wooden Electricity Post
⊠		⊠	Traffic Sign
⊠		⊠	Tree

PROJECT	DESCRIPTION	JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)	DRAWING No.	NRD/PH III/PL-TM001
		NIHON SUIDO CONSULTANTS CO.,LTD. (NSC) TOKYO ENGINEERING CONSULTANTS CO., LTD.(TEC) CTI ENGINEERING INTERNATIONAL CO., LTD. (CTII) KITAKYUSHU WATER SERVICE CO., LTD. (KWS)	SCALE	AS SHOWN

R200-1, TRANSMISSION LINE, DI Φ 2000mm (1+000 TO 2+000)



KEY PLAN



GROUND LEVEL (m)	9.500	9.366	9.223	9.080	8.937	8.794	8.651	8.509	8.363	8.228	8.076
TOP PIPE LEVEL (m)	6.700	6.566	6.423	6.280	6.137	5.994	5.851	5.709	6.053	6.428	6.476
EARTH COVERING DEPTH (m)	2.800	2.800	2.800	2.800	2.800	2.800	2.800	2.800	2.800	2.800	2.800
PIPE LINE DATA	TRANSMISSION PIPE DI Ø 2000										
SINGLE DISTANCE (m)	0.00	100.00	100.00	75.00	100.00	100.00	14.00	100.00	100.00	100.00	100.00
STATION	1+000	1+100	1+200	1+300	1+400	1+500	1+600	1+700	1+800	1+900	2+000

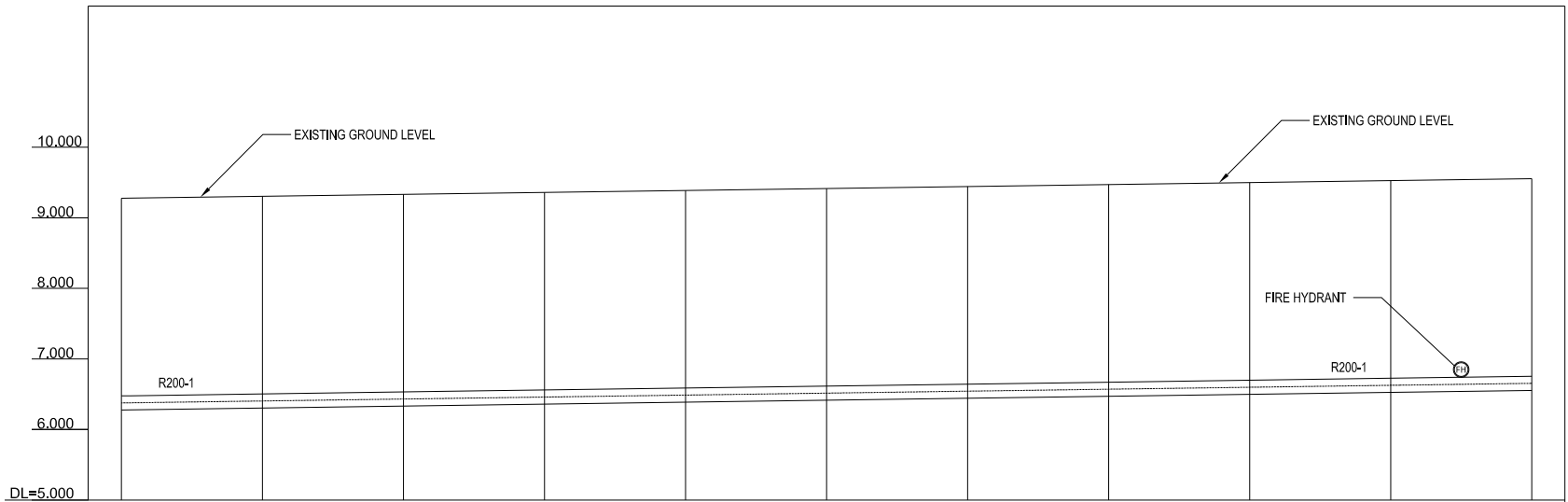
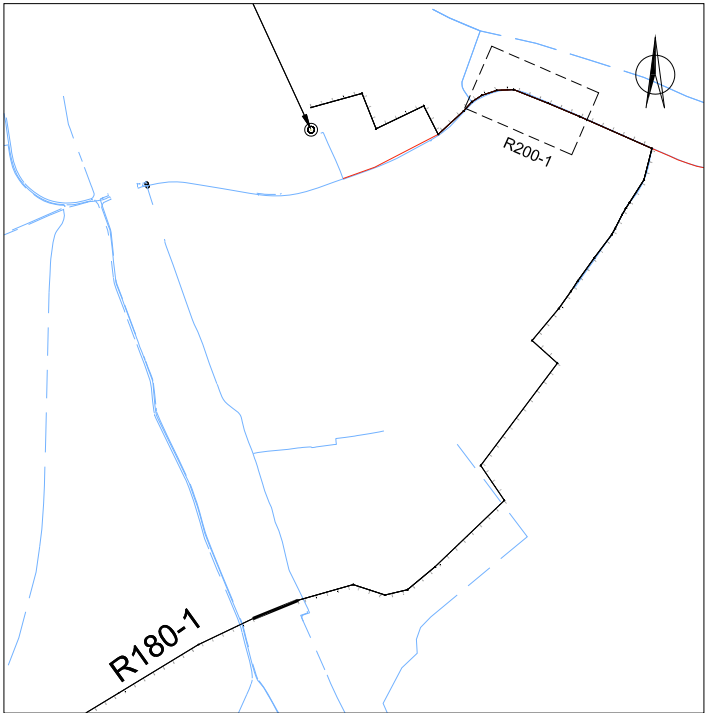
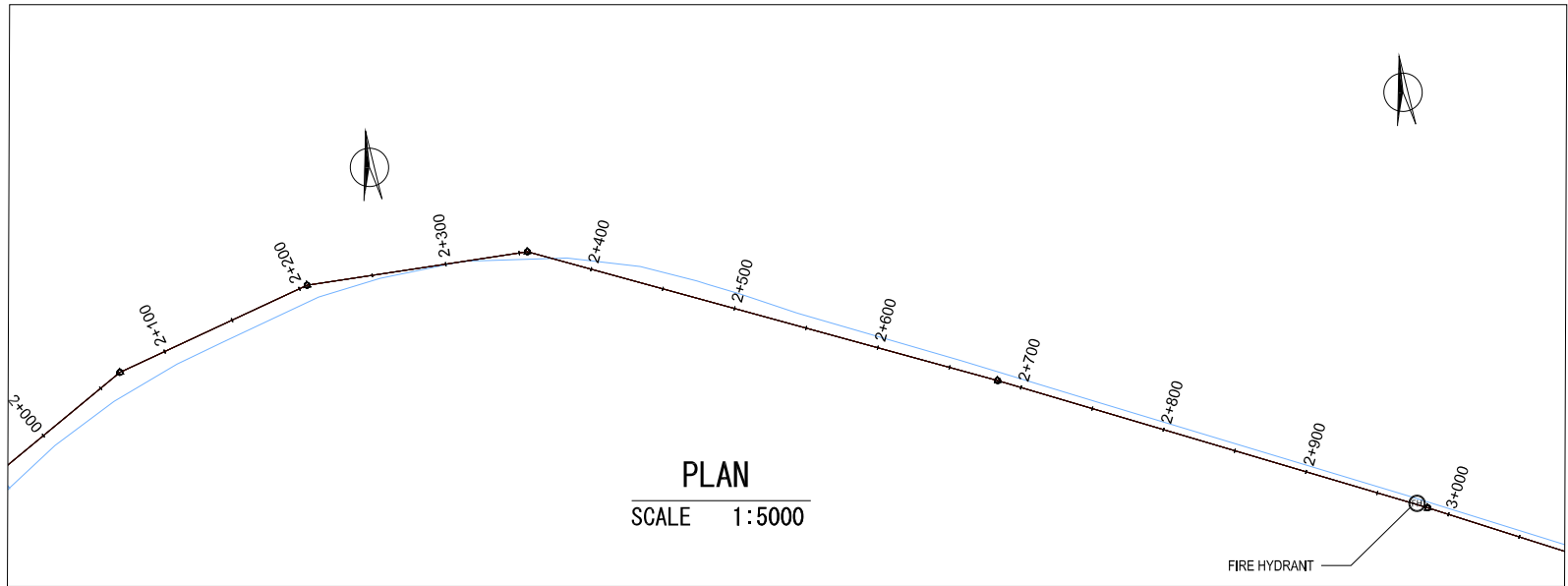
PROFILE

SCALE 1:5000

LEGEND		
Alignment of Pipeline	TBM (Temporary Bench Mark)	Cable Optic Box
Road Center Line	ST (Station Points)	Advertisement Board
Fence	Water Meter	Steel Light Post
Pavement Road	Valve	Concrete Light Post
Un-pavement Road	Fire Hydrant	Concrete Electricity Post
House/Building	Manhole	Wooden Electricity Post
Karola (Concrete Block)	Electricity Manhole	Traffic Sign
Garden/ Park	Cable Optic Manhole	Tree

PROJECT Preparatory Survey on Nirodh Water Supply Expansion Project	DESCRIPTION TYPICAL FOR PLAN AND PROFILE OF TRANSMISSION LINE R200-1 (2/10) FROM 1+000 TO 2+000	JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)	DRAWING No.	NRD/PH III/PL-TM002
		NIHON SUIDO CONSULTANTS CO.,LTD. (NSC) TOKYO ENGINEERING CONSULTANTS CO., LTD.(TEC) CTI ENGINEERING INTERNATIONAL CO., LTD. (CTII) KITAKYUSHU WATER SERVICE CO., LTD. (KWS)	SCALE	AS SHOWN

R200-1, TRANSMISSION LINE, DI Φ 2000mm (2+000 TO 3+000)



GROUND LEVEL (m)	9.276	9.304	9.332	9.359	9.387	9.415	9.443	9.471	9.498	9.526	9.554
TOP PIPE LEVEL (m)	6.476	6.504	6.532	6.559	6.587	6.615	6.643	6.671	6.698	6.726	6.754
EARTH COVERING DEPTH (m)	2.800	2.800	2.800	2.800	2.800	2.800	2.800	2.800	2.800	2.800	2.800
PIPE LINE DATA	TRANSMISSION PIPE DI Ø 2000										
SINGLE DISTANCE (m)	0.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
STATION	2+000	2+100	2+200	2+300	2+400	2+500	2+600	2+700	2+800	2+900	3+000

PROFILE

SCALE 1:5000

LEGEND			
—	Alignment of Pipeline	□	TBM (Temporary Bench Mark)
—	Road Center Line	△	ST (Station Points)
—	Fence	⊙	Water Meter
—	Pavement Road	⊙	Valve
---	Un-pavement Road	⊙	Fire Hydrant
⊠	House/Building	⊠	Manhole
⊠	Karola (Concrete Block)	⊠	Electricity Manhole
⊠	Garden/ Park	⊠	Cable Optic Manhole
⊠		⊠	Cable Optic Box
⊠		⊠	Advertisement Board
⊠		⊠	Steel Light Post
⊠		⊠	Concrete Light Post
⊠		⊠	Concrete Electricity Post
⊠		⊠	Wooden Electricity Post
⊠		⊠	Traffic Sign
⊠		⊠	Tree

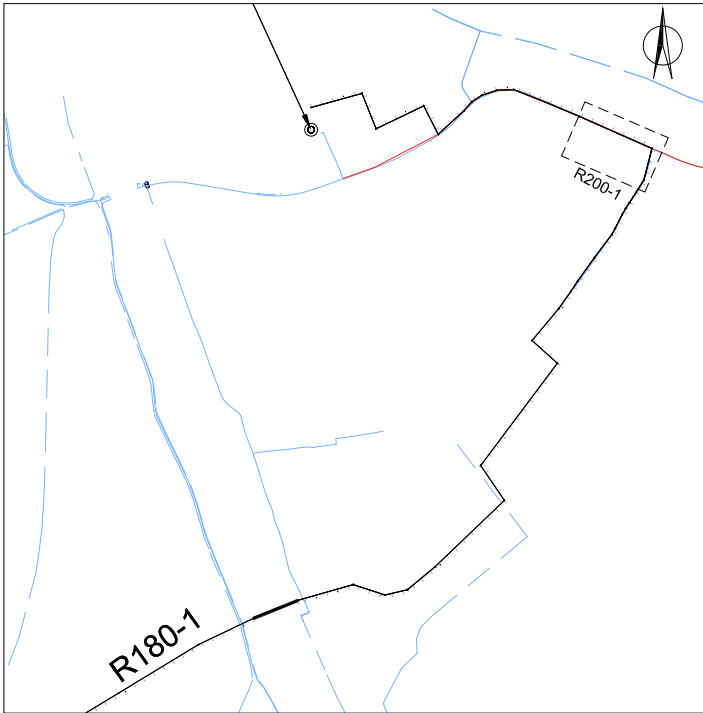
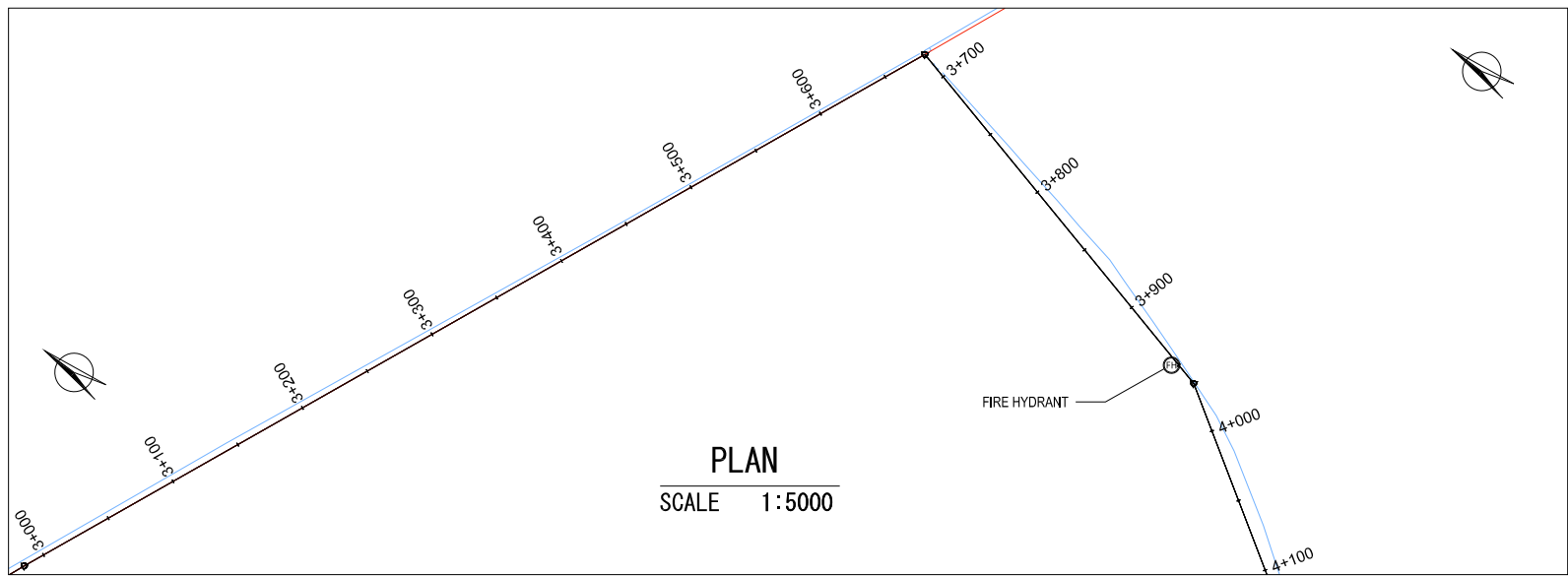
PROJECT
Preparatory Survey on Nirodh Water Supply Expansion Project

DESCRIPTION
TYPICAL FOR PLAN AND PROFILE OF TRANSMISSION
LINE R200-1 (3/10) FROM 2+000 TO 3+000

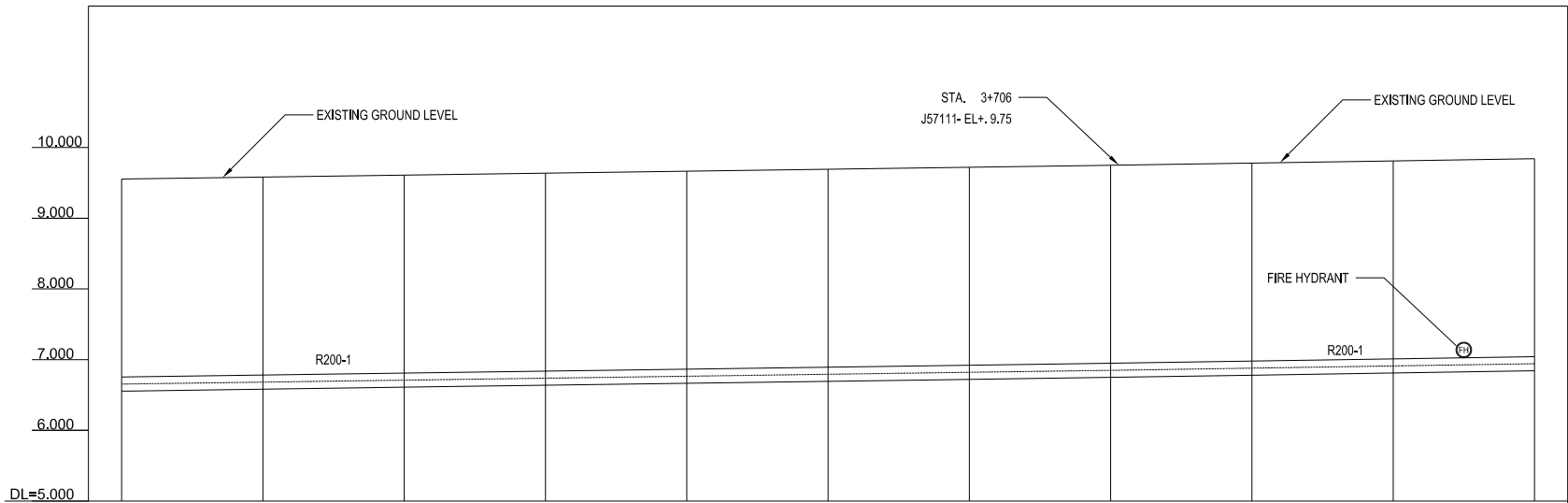
JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)
NIHON SUIDO CONSULTANTS CO.,LTD. (NSC)
TOKYO ENGINEERING CONSULTANTS CO., LTD.(TEC)
CTI ENGINEERING INTERNATIONAL CO., LTD. (CTII)
KITAKYUSHU WATER SERVICE CO., LTD. (KWS)

DRAWING No.
SCALE
NRD/PH III/PL-TM003
AS SHOWN

R200-1, TRANSMISSION LINE, DI Φ 2000mm (3+000 TO 4+000)



KEY PLAN



GROUND LEVEL (m)	9.554	9.582	9.609	9.637	9.665	9.693	9.721	9.748	9.779	9.811	9.842
TOP PIPE LEVEL (m)	6.754	6.782	6.809	6.837	6.865	6.893	6.921	6.948	6.979	7.011	7.042
EARTH COVERING DEPTH (m)	2.800	2.800	2.800	2.800	2.800	2.800	2.800	2.800	2.800	2.800	2.800
PIPE LINE DATA	TRANSMISSION PIPE DI Ø 2000										
SINGLE DISTANCE (m)	0.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
STATION	3+000	3+100	3+200	3+300	3+400	3+500	3+600	3+700	3+800	3+900	4+000

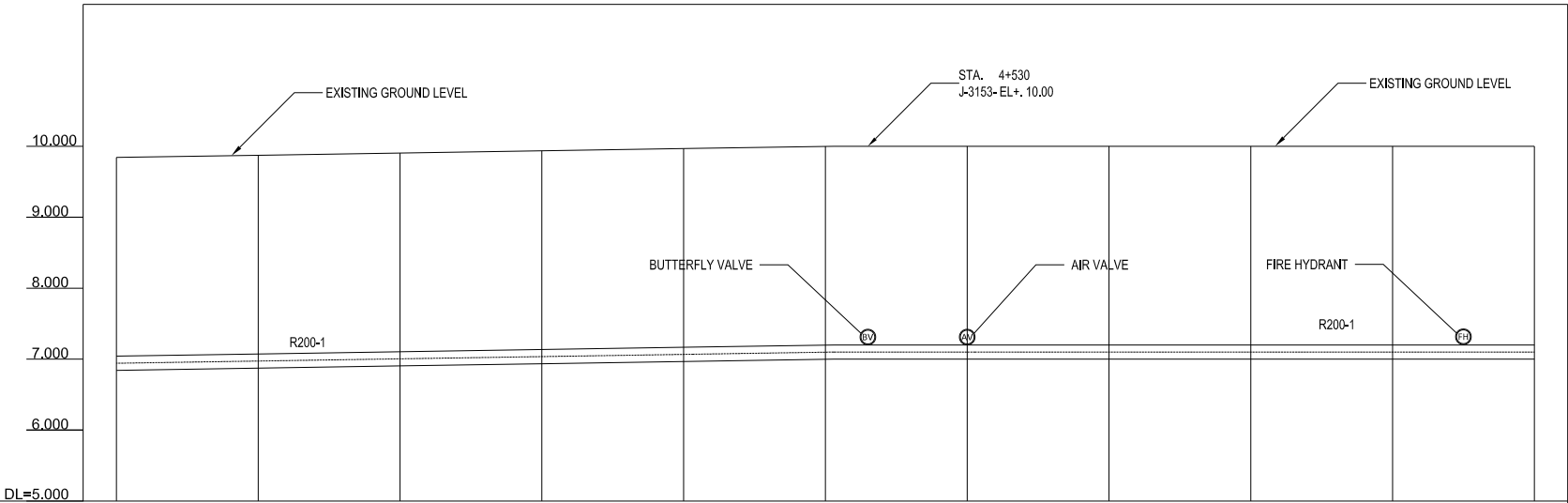
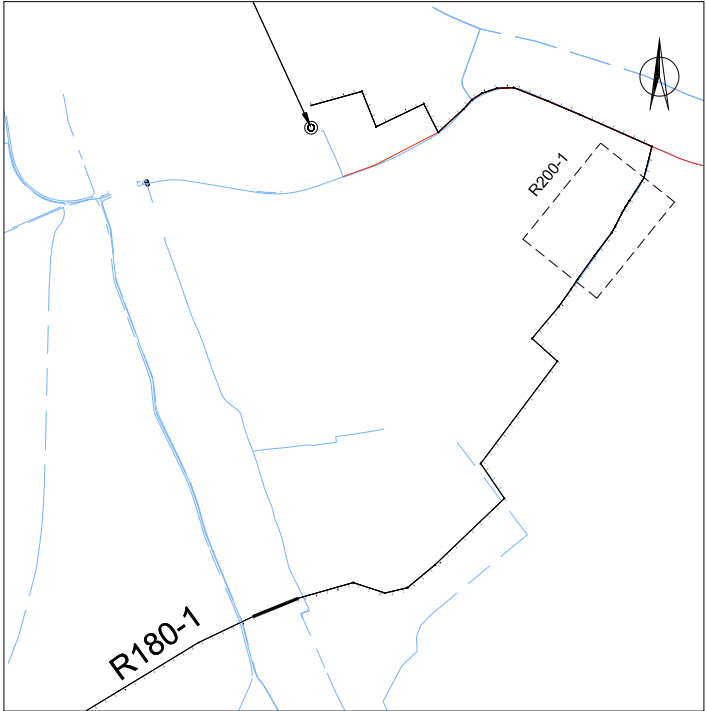
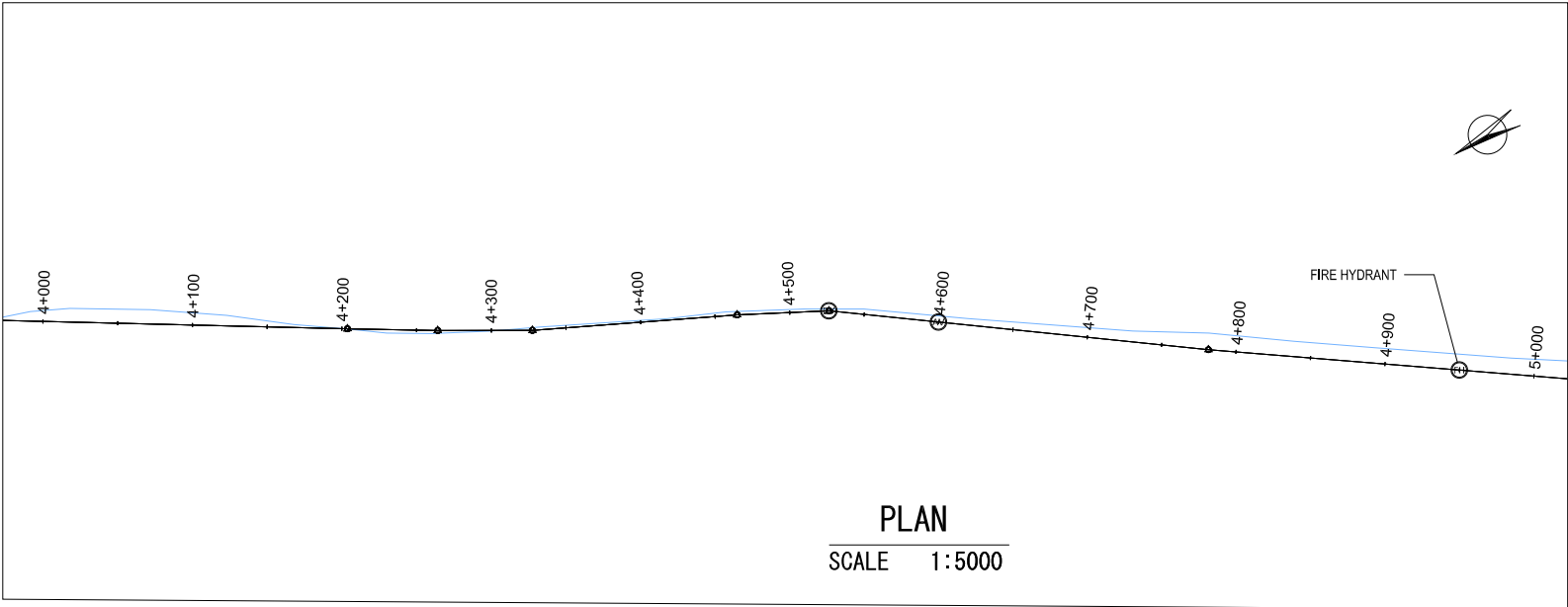
PROFILE

SCALE 1:5000

LEGEND			
—	Alignment of Pipeline	□ TBM (Temporary Bench Mark)	□ Cable Optic Box
—	Road Center Line	△ ST (Station Points)	□ Advertisement Board
—	Fence	⊙ Water Meter	* Steel Light Post
—	Pavement Road	⊙ Valve	* Concrete Light Post
—	Un-pavement Road	⊙ Fire Hydrant	□ Concrete Electricity Post
—	House/Building	⊙ Manhole	⊙ Wooden Electricity Post
—	Karola (Concrete Block)	⊙ Electricity Manhole	⊙ Traffic Sign
—	Garden/ Park	⊙ Cable Optic Manhole	⊙ Tree

PROJECT Preparatory Survey on Nirodh Water Supply Expansion Project	DESCRIPTION TYPICAL FOR PLAN AND PROFILE OF TRANSMISSION LINE R200-1 (4/10) FROM 3+000 TO 4+000	JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)	DRAWING No.	NRD/PH III/PL-TM004
		NIHON SUIDO CONSULTANTS CO.,LTD. (NSC) TOKYO ENGINEERING CONSULTANTS CO., LTD.(TEC) CTI ENGINEERING INTERNATIONAL CO., LTD. (CTII) KITAKYUSHU WATER SERVICE CO., LTD. (KWS)	SCALE	AS SHOWN

R200-1, TRANSMISSION LINE, DI Φ 2000mm (4+000 TO 5+000)

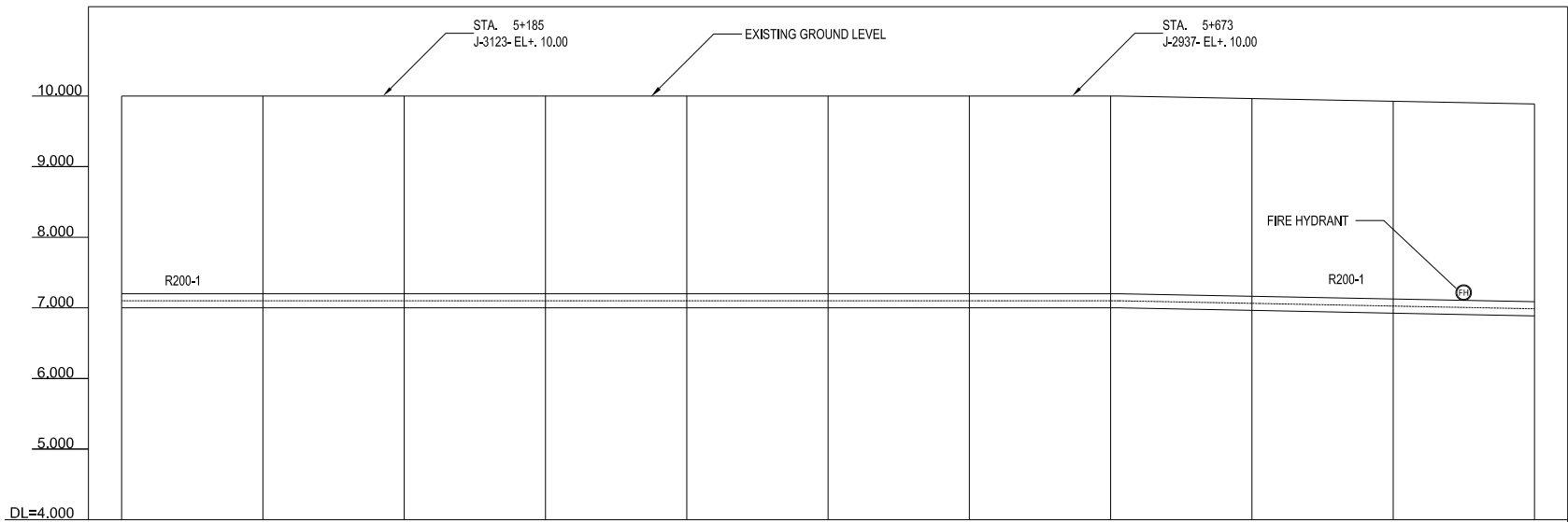
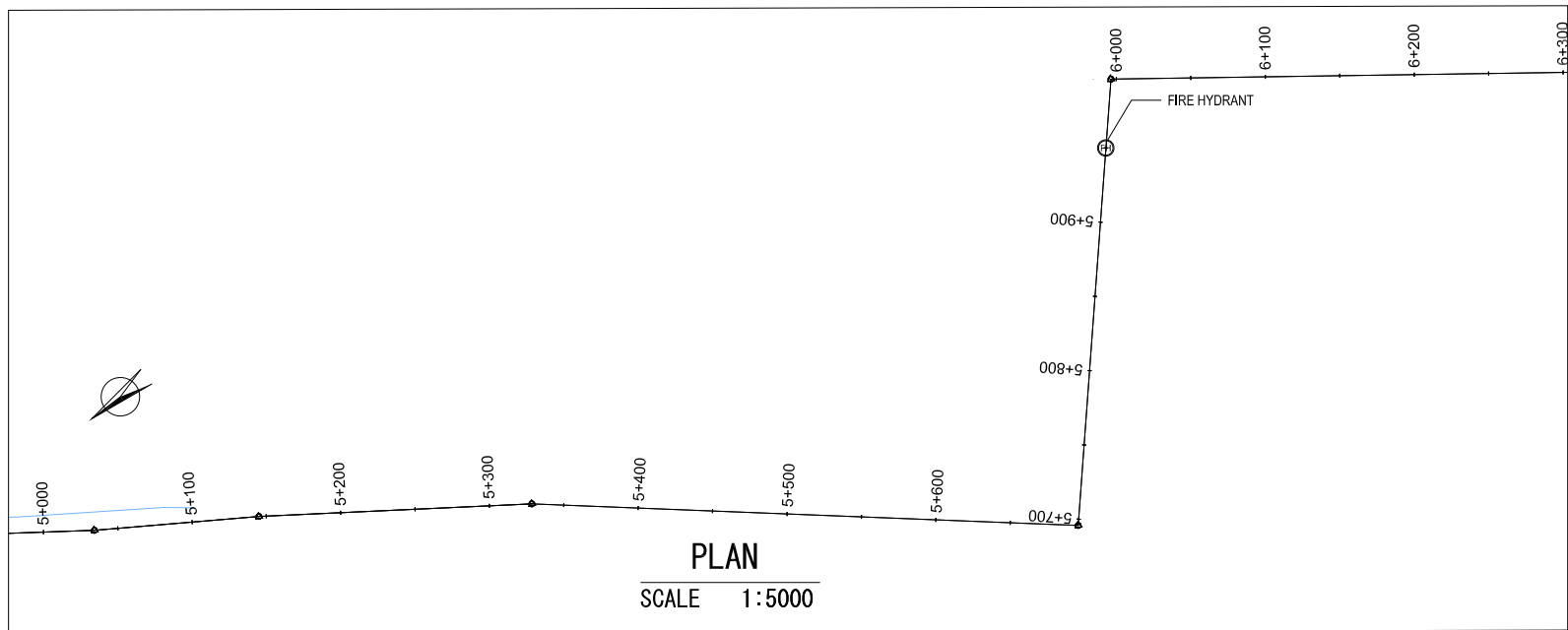


GROUND LEVEL (m)	9.842	9.873	9.904	9.936	9.967	9.998	10.000	10.000	10.000	10.000	10.000
TOP PIPE LEVEL (m)	7.042	7.073	7.104	7.136	7.167	7.198	7.200	7.200	7.200	7.200	7.200
EARTH COVERING DEPTH (m)	2.800	2.800	2.800	2.800	2.800	2.800	2.800	2.800	2.800	2.800	2.800
PIPE LINE DATA	TRANSMISSION PIPE DI Ø 2000										
SINGLE DISTANCE (m)	0.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
STATION	4+000	4+100	4+200	4+300	4+400	4+500	4+600	4+700	4+800	4+900	5+000

LEGEND			
—	Alignment of Pipeline	□	TBM (Temporary Bench Mark)
—+—	Road Center Line	△	ST (Station Points)
—+—+—	Fence	⊙	Water Meter
—+—+—+—	Pavement Road	⊙	Valve
- - - - -	Un-pavement Road	⊙	Fire Hydrant
▢	House/Building	⊙	Manhole
▢	Karola (Concrete Block)	⊙	Electricity Manhole
▢	Garden/ Park	⊙	Cable Optic Manhole
		⊙	Cable Optic Box
		⊙	Advertisement Board
		⊙	Steel Light Post
		⊙	Concrete Light Post
		⊙	Concrete Electricity Post
		⊙	Wooden Electricity Post
		⊙	Traffic Sign
		⊙	Tree

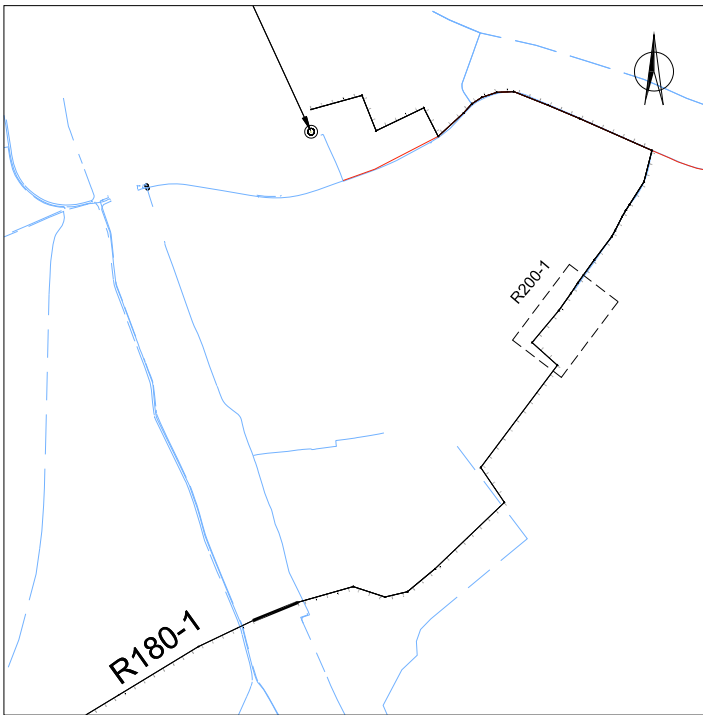
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		NIHON SUIDO CONSULTANTS CO.,LTD. (NSC) TOKYO ENGINEERING CONSULTANTS CO., LTD.(TEC) CTI ENGINEERING INTERNATIONAL CO., LTD. (CTII) KITAKYUSHU WATER SERVICE CO., LTD. (KWS)	SCALE	AS SHOWN

R200-1, TRANSMISSION LINE, DI Φ 2000mm (5+000 TO 6+000)



GROUND LEVEL (m)	10.000	10.000	10.000	10.000	10.000	10.000	10.000	10.000	10.000	9.964	9.925	9.887
TOP PIPE LEVEL (m)	7.200	7.200	7.200	7.200	7.200	7.200	7.200	7.200	7.200	7.164	7.125	7.087
EARTH COVERING DEPTH (m)	2.800	2.800	2.800	2.800	2.800	2.800	2.800	2.800	2.800	2.800	2.800	2.800
PIPE LINE DATA	TRANSMISSION PIPE DI Ø 2000											
SINGLE DISTANCE (m)	0.00	100.00	76.00	100.00	100.00	100.00	100.00	100.00	100.00	12.00	100.00	100.00
STATION	5+000	5+100	5+200	5+300	5+400	5+500	5+600	5+700	5+800	5+900	6+000	

PROFILE
SCALE 1:5000

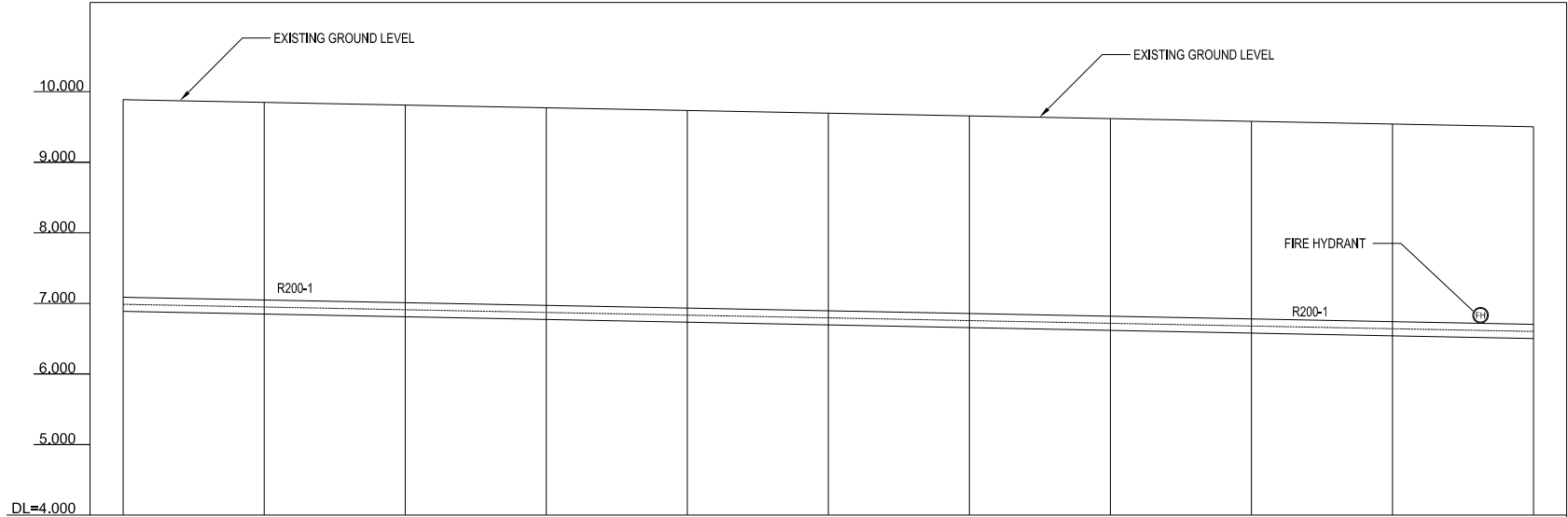
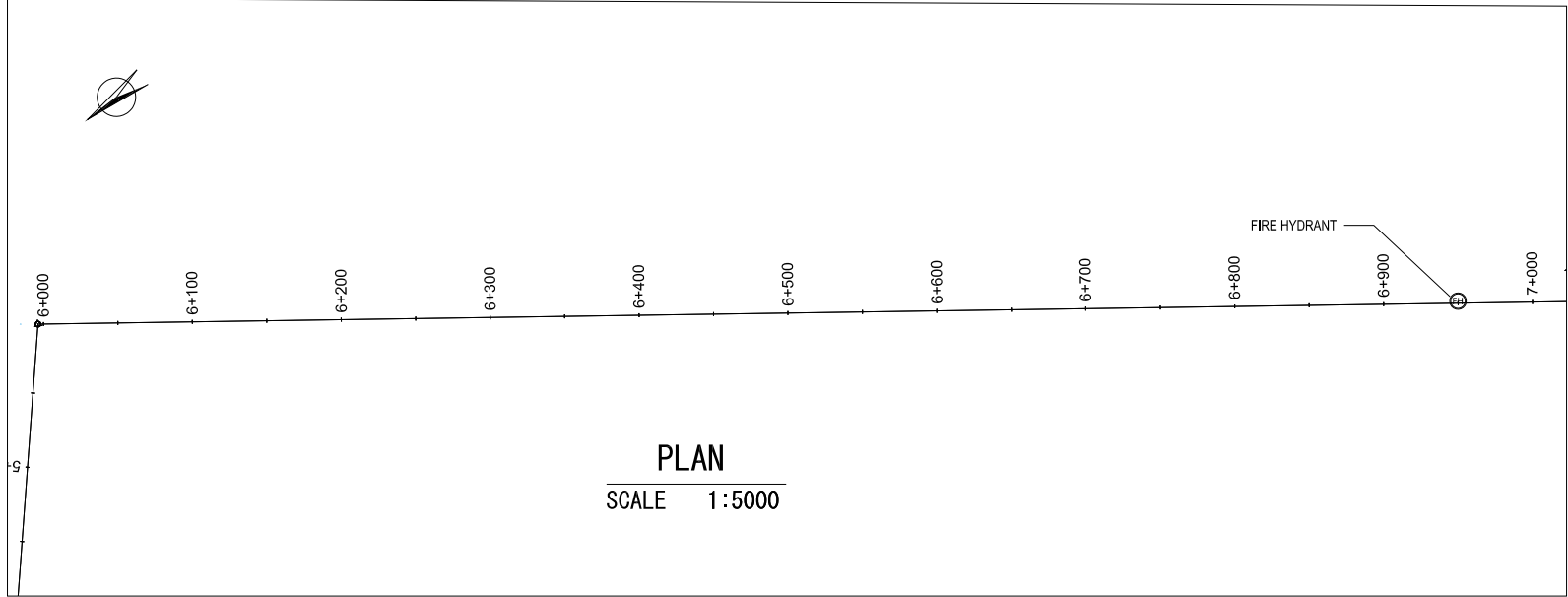


KEY PLAN

LEGEND			
—	Alignment of Pipeline	⊕	TBM (Temporary Bench Mark)
—○—○—	Road Center Line	△	ST (Station Points)
— — — —	Fence	⊙	Water Meter
— — — —	Pavement Road	⊙	Valve
- - - - -	Un-pavement Road	⊕	Fire Hydrant
▢	House/Building	⊕	Manhole
▢	Karola (Concrete Block)	⊕	Electricity Manhole
▢	Garden/ Park	⊕	Cable Optic Manhole
▢		▢	Cable Optic Box
		▢	Advertisement Board
		*	Steel Light Post
		*	Concrete Light Post
		▢	Concrete Electricity Post
		⊙	Wooden Electricity Post
		⊙	Traffic Sign
		⊙	Tree

PROJECT	DESCRIPTION	JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)	DRAWING No.	NRD/PH III/PL-TM006
		NIHON SUIDO CONSULTANTS CO.,LTD. (NSC) TOKYO ENGINEERING CONSULTANTS CO., LTD.(TEC) CTI ENGINEERING INTERNATIONAL CO., LTD. (CTII) KITAKYUSHU WATER SERVICE CO., LTD. (KWS)	SCALE	AS SHOWN

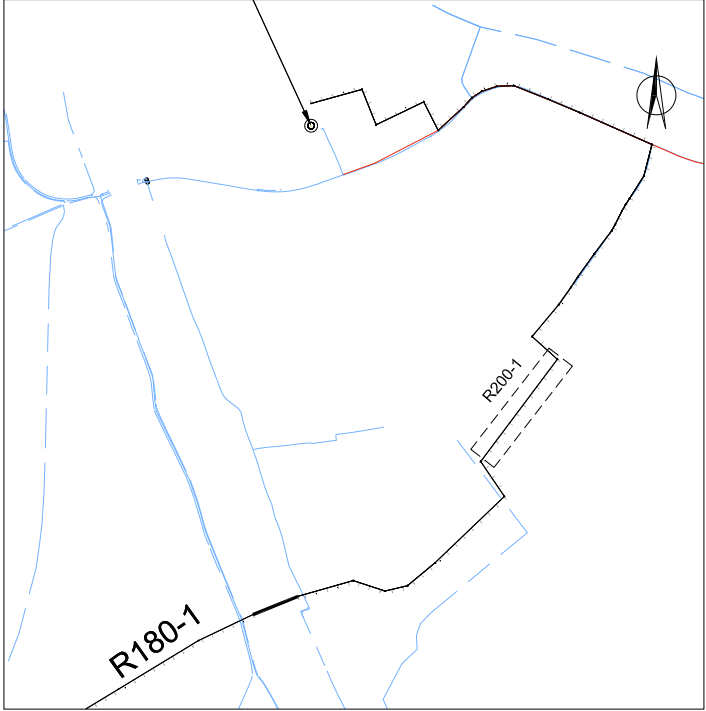
R200-1, TRANSMISSION LINE, DI Φ 2000mm (6+000 TO 7+000)



GROUND LEVEL (m)	9.887	9.848	9.810	9.772	9.733	9.695	9.656	9.618	9.579	9.541	9.502
TOP PIPE LEVEL (m)	7.087	7.048	7.010	6.972	6.933	6.895	6.856	6.818	6.779	6.741	6.702
EARTH COVERING DEPTH (m)	2.800	2.800	2.800	2.800	2.800	2.800	2.800	2.800	2.800	2.800	2.800
PIPE LINE DATA	TRANSMISSION PIPE DI Ø 2000										
SINGLE DISTANCE (m)	0.00	100.00	100.00	33.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
STATION	6+000	6+100	6+200	6+300	6+400	6+500	6+600	6+700	6+800	6+900	7+000

PROFILE

SCALE 1:5000

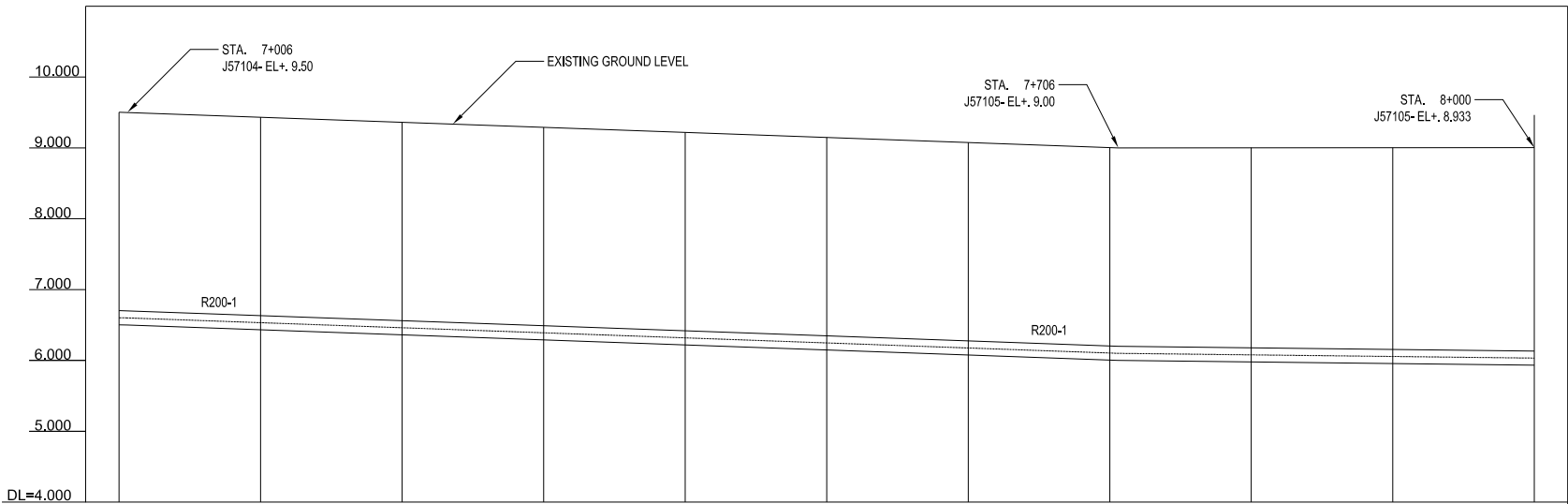
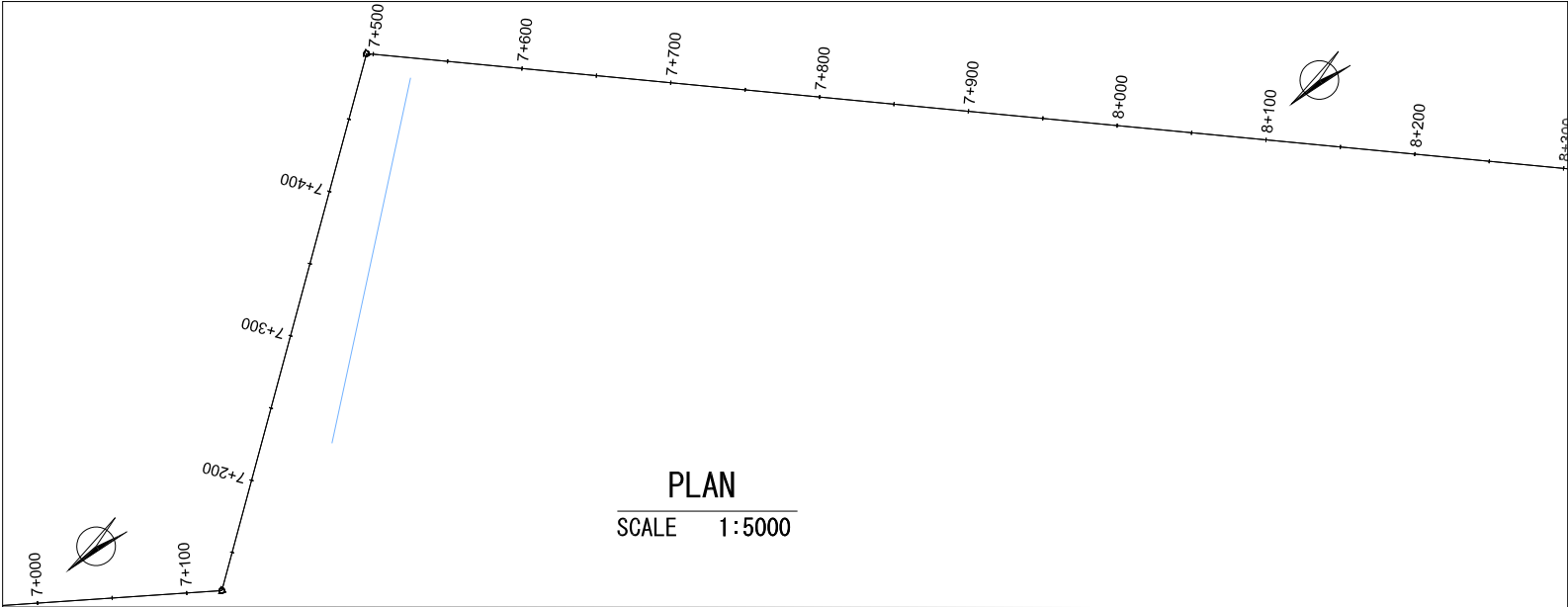


KEY PLAN

LEGEND			
	Alignment of Pipeline	 TBM (Temporary Bench Mark)	 Cable Optic Box
	Road Center Line	 ST (Station Points)	 Advertisement Board
	Fence	 Water Meter	 Steel Light Post
	Pavement Road	 Valve	 Concrete Light Post
	Un-pavement Road	 Fire Hydrant	 Concrete Electricity Post
	House/Building	 Manhole	 Wooden Electricity Post
	Karola (Concrete Block)	 Electricity Manhole	 Traffic Sign
	Garden/ Park	 Cable Optic Manhole	 Tree

PROJECT Preparatory Survey on Nirodh Water Supply Expansion Project	DESCRIPTION PLAN AND PROFILE OF TRANSMISSION LINE R200-1 (7/10) FROM 6+000 TO 7+000	JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)	DRAWING No.	NRD/PH III/PL-TM007
		NIHON SUIDO CONSULTANTS CO.,LTD. (NSC) TOKYO ENGINEERING CONSULTANTS CO., LTD.(TEC) CTI ENGINEERING INTERNATIONAL CO., LTD. (CTII) KITAKYUSHU WATER SERVICE CO., LTD. (KWS)	SCALE	AS SHOWN

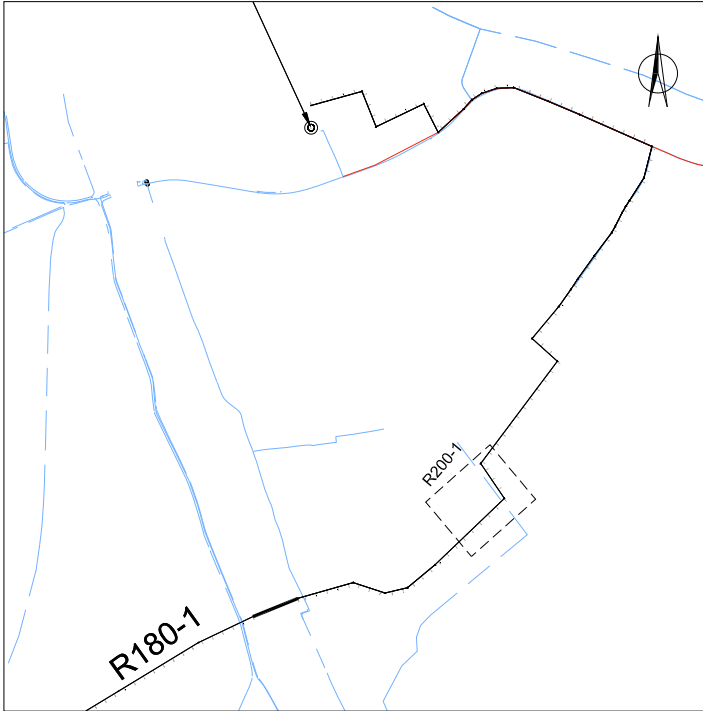
R200-1, TRANSMISSION LINE, DI Φ 2000mm (7+000 TO 8+000)



GROUND LEVEL (m)	9.502	9.433	9.361	9.290	9.219	9.147	9.076	9.004	8.933	8.933	8.933
TOP PIPE LEVEL (m)	6.702	6.633	6.561	6.490	6.419	6.347	6.276	6.204	6.133	6.133	6.133
EARTH COVERING DEPTH (m)	2.800	2.800	2.800	2.800	2.800	2.800	2.800	2.800	2.800	2.800	2.800
PIPE LINE DATA	TRANSMISSION PIPE DI Ø 2000										
SINGLE DISTANCE (m)	0.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	50.00	100.00	100.00
STATION	7+000	7+100	7+200	7+300	7+400	7+500	7+600	7+700	7+800	7+900	8+000

PROFILE

SCALE 1:5000

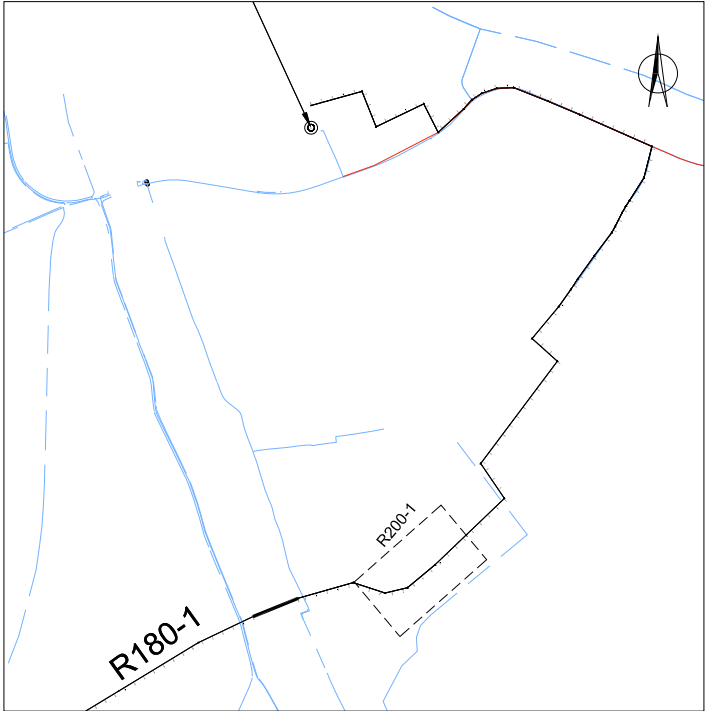
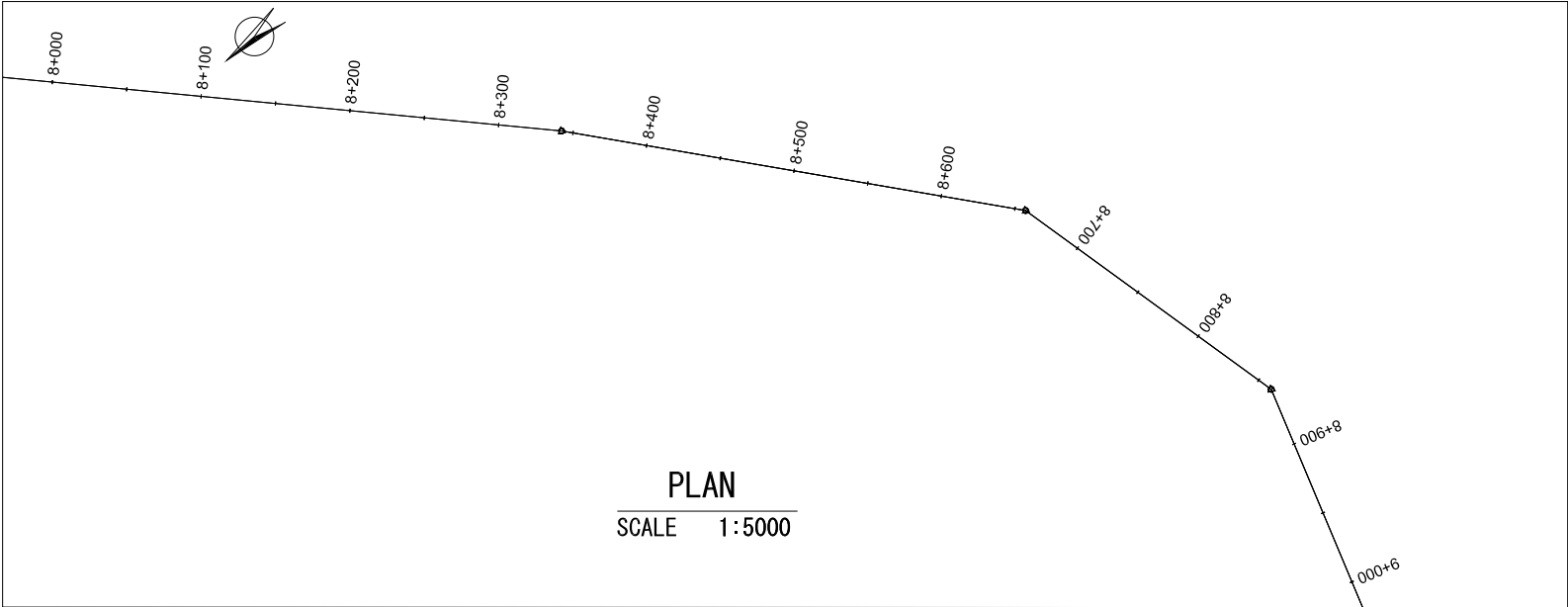


KEY PLAN

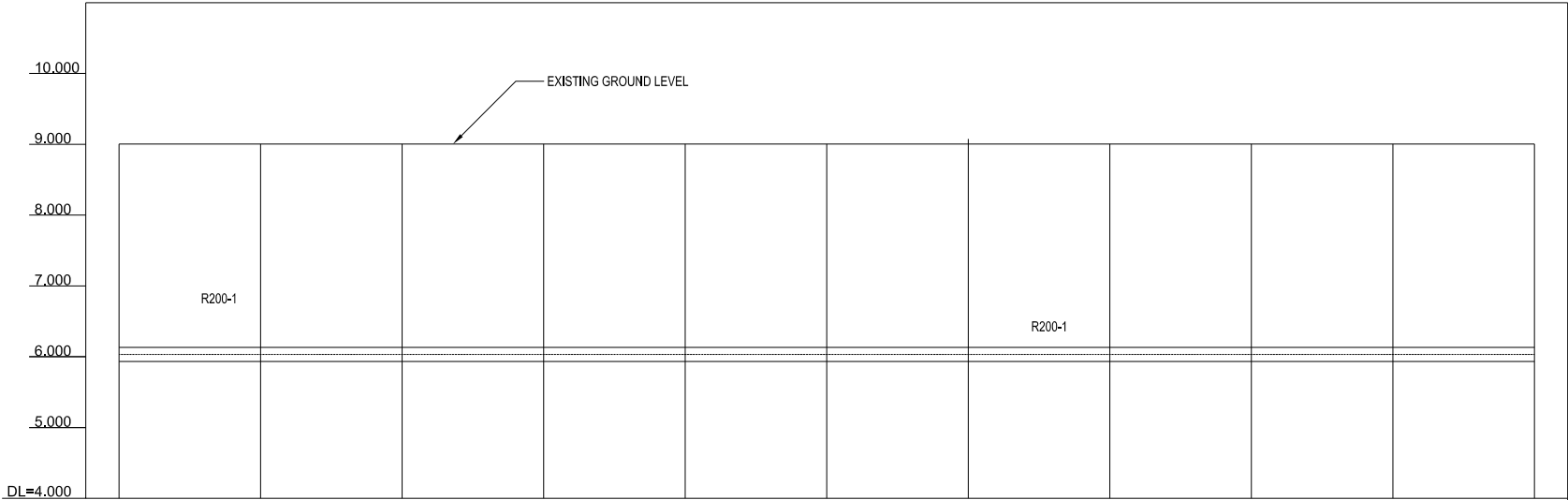
LEGEND			
—	Alignment of Pipeline	□ TBM (Temporary Bench Mark)	□ Cable Optic Box
—+—	Road Center Line	△ ST (Station Points)	□ Advertisement Board
—○—	Fence	⊙ Water Meter	* Steel Light Post
—+—+—	Pavement Road	⊙ Valve	* Concrete Light Post
- - - - -	Un-pavement Road	⊙ Fire Hydrant	■ Concrete Electricity Post
□	House/Building	⊙ Manhole	⊙ Wooden Electricity Post
■	Karola (Concrete Block)	⊙ Electricity Manhole	⊙ Traffic Sign
■	Garden/ Park	⊙ Cable Optic Manhole	⊙ Tree

PROJECT Preparatory Survey on Nirodh Water Supply Expansion Project	DESCRIPTION TYPICAL FOR PLAN AND PROFILE OF TRANSMISSION LINE R200-1 (8/10) FROM 7+000 TO 8+000	JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)	DRAWING No.	NRD/PH III/PL-TM008
		NIHON SUIDO CONSULTANTS CO.,LTD. (NSC) TOKYO ENGINEERING CONSULTANTS CO., LTD.(TEC) CTI ENGINEERING INTERNATIONAL CO., LTD. (CTII) KITAKYUSHU WATER SERVICE CO., LTD. (KWS)	SCALE	AS SHOWN

R200-1, TRANSMISSION LINE, DI Φ 2000mm (8+000 TO 9+000)



KEY PLAN



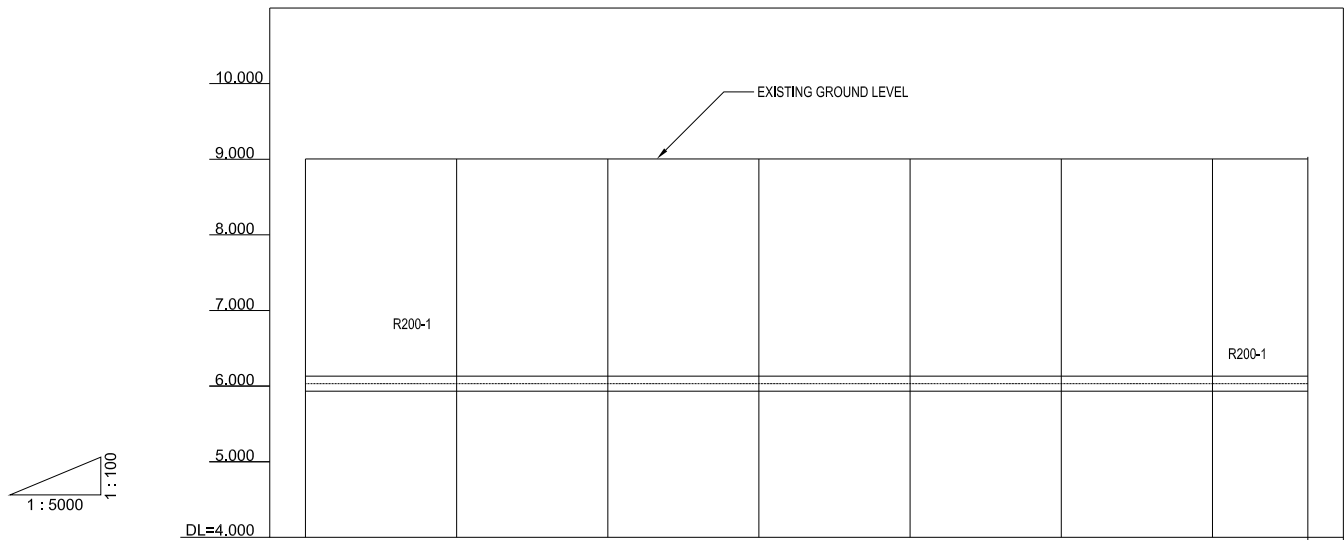
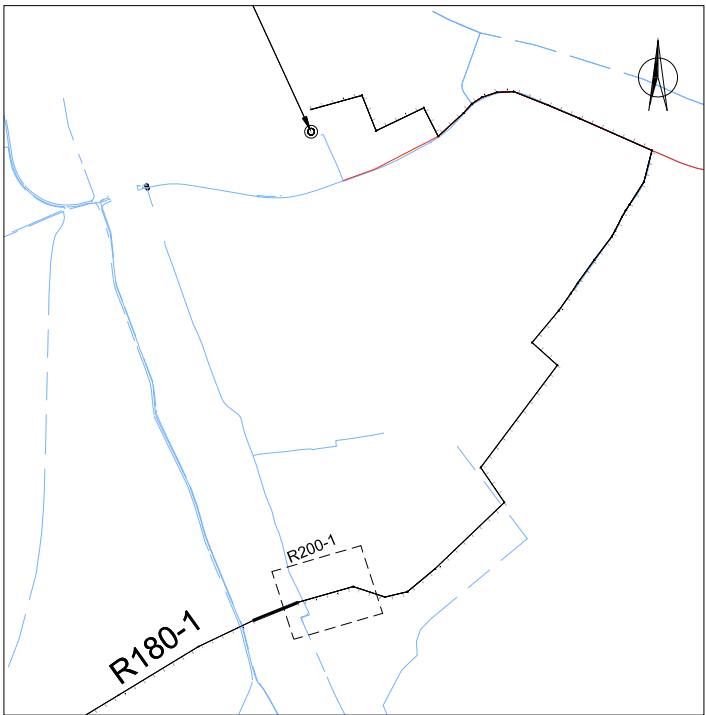
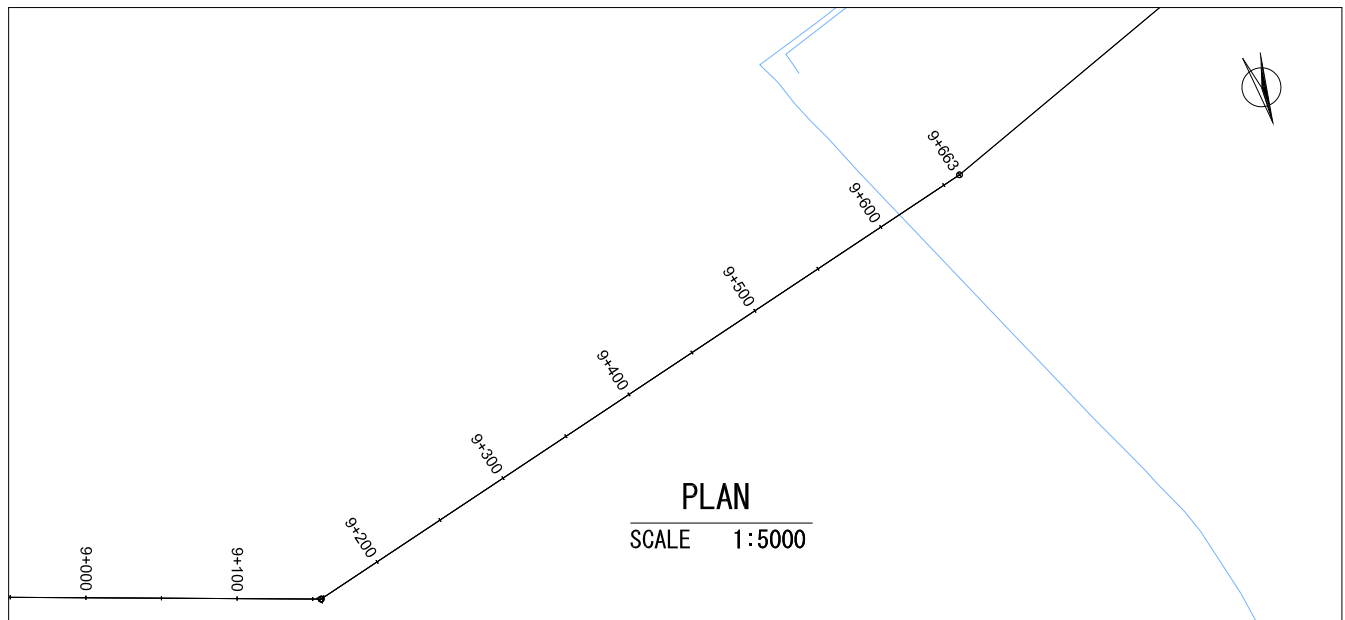
GROUND LEVEL (m)	8.933	8.933	8.933	8.933	8.933	8.933	8.933	8.933	8.933	8.933	8.933
TOP PIPE LEVEL (m)	6.133	6.133	6.133	6.133	6.133	6.133	6.133	6.133	6.133	6.133	6.133
EARTH COVERING DEPTH (m)	2.800	2.800	2.800	2.800	2.800	2.800	2.800	2.800	2.800	2.800	2.800
PIPE LINE DATA	TRANSMISSION PIPE DI Ø 2000										
SINGLE DISTANCE (m)	0.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	50.00	100.00	100.00
STATION	8+000	8+100	8+200	8+300	8+400	8+500	8+600	8+700	8+800	8+900	9+000

PROFILE
SCALE 1:5000

LEGEND			
	Alignment of Pipeline		TBM (Temporary Bench Mark)
	Road Center Line		ST (Station Points)
	Fence		Water Meter
	Pavement Road		Valve
	Un-pavement Road		Fire Hydrant
	House/Building		Manhole
	Karola (Concrete Block)		Electricity Manhole
	Garden/ Park		Cable Optic Manhole
	Cable Optic Box		Advertisement Board
	Steel Light Post		Concrete Light Post
	Concrete Electricity Post		Wooden Electricity Post
	Traffic Sign		Tree

PROJECT Preparatory Survey on Nirodh Water Supply Expansion Project	DESCRIPTION TYPICAL FOR PLAN AND PROFILE OF TRANSMISSION LINE R200-1 (9/10) FROM 8+000 TO 9+000	JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)	DRAWING No.	NRD/PH III/PL-TM009
		NIHON SUIDO CONSULTANTS CO.,LTD. (NSC) TOKYO ENGINEERING CONSULTANTS CO., LTD.(TEC) CTI ENGINEERING INTERNATIONAL CO., LTD. (CTII) KITAKYUSHU WATER SERVICE CO., LTD. (KWS)	SCALE	AS SHOWN

R200-1, TRANSMISSION LINE, DI Φ 2000mm (9+000 TO 9+663)



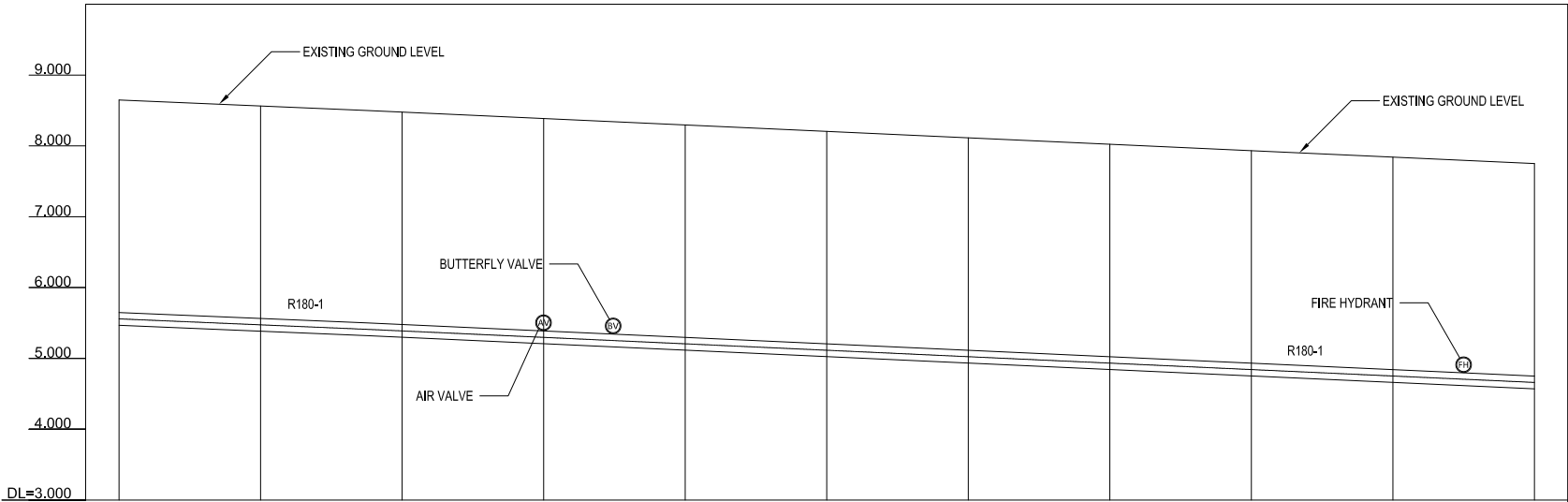
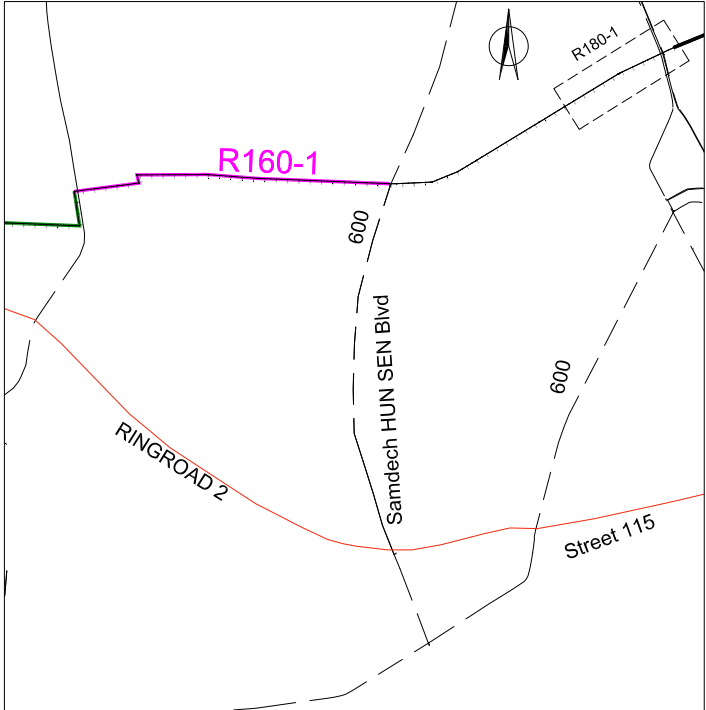
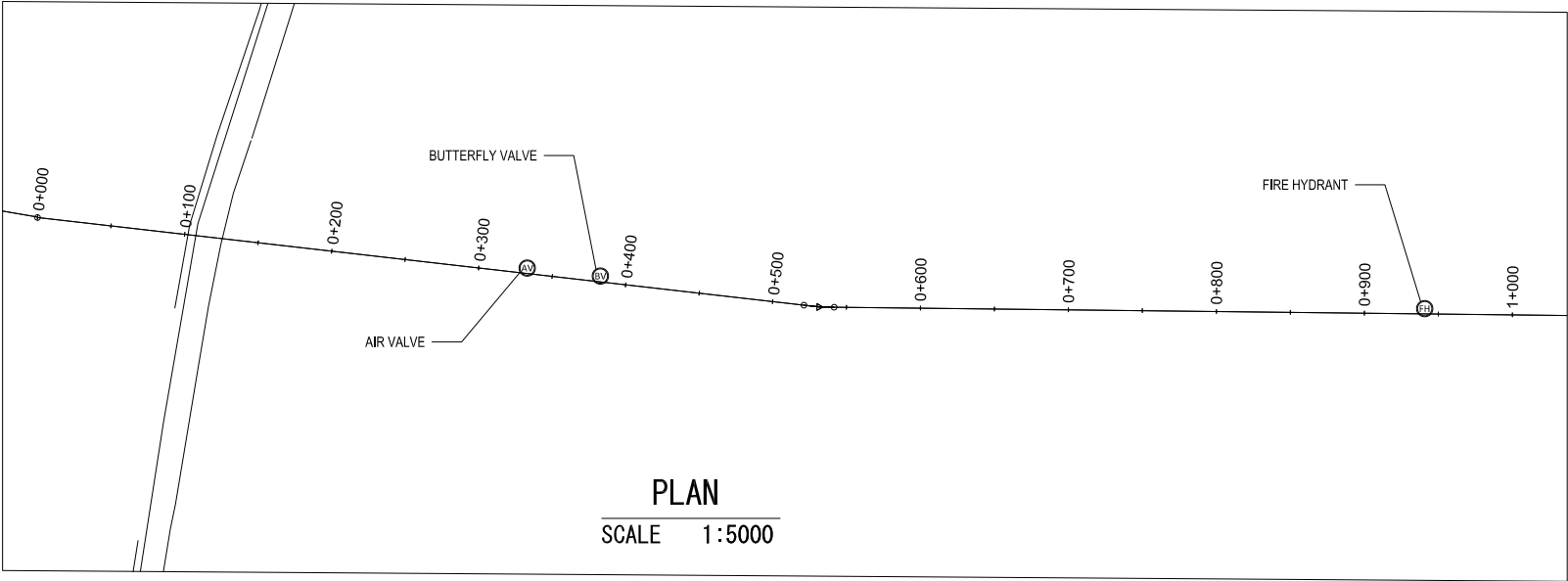
GROUND LEVEL (m)	8.933	8.933	8.933	8.933	8.933	8.933	8.933	8.933
TOP PIPE LEVEL (m)	6.133	6.133	6.133	6.133	6.133	6.133	6.133	6.133
EARTH COVERING DEPTH (m)	2.800	2.800	2.800	2.800	2.800	2.800	2.800	2.800
PIPE LINE DATA	TRANSMISSION PIPE DI Ø 2000							
SINGLE DISTANCE (m)	0.00	100.00	100.00	100.00	100.00	100.00	100.00	63.00
STATION	9+000	9+100	9+200	9+300	9+400	9+500	9+600	9+663

PROFILE
SCALE 1:5000

LEGEND			
—	Alignment of Pipeline	□ TBM (Temporary Bench Mark)	□ Cable Optic Box
—+—	Road Center Line	△ ST (Station Points)	△ Advertisement Board
— —	Fence	⊙ Water Meter	* Steel Light Post
— — —	Pavement Road	⊙ Valve	* Concrete Light Post
- - - -	Un-pavement Road	⊙ Fire Hydrant	■ Concrete Electricity Post
▭	House/Building	⊙ Manhole	⊙ Wooden Electricity Post
▨	Karola (Concrete Block)	⊙ Electricity Manhole	⊙ Traffic Sign
▩	Garden/ Park	⊙ Cable Optic Manhole	⊙ Tree

PROJECT Preparatory Survey on Nirodh Water Supply Expansion Project	DESCRIPTION TYPICAL FOR PLAN AND PROFILE OF TRANSMISSION LINE R200-1 (10/10) FROM 9+000 TO 9+663	JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)	DRAWING No.	NRD/PH III/PL-TM010
		NIHON SUIDO CONSULTANTS CO.,LTD. (NSC) TOKYO ENGINEERING CONSULTANTS CO., LTD.(TEC) CTI ENGINEERING INTERNATIONAL CO., LTD. (CTII) KITAKYUSHU WATER SERVICE CO., LTD. (KWS)	SCALE	AS SHOWN

R180-1, TRANSMISSION LINE, DI Φ 1800mm (0+000 TO 1+000)

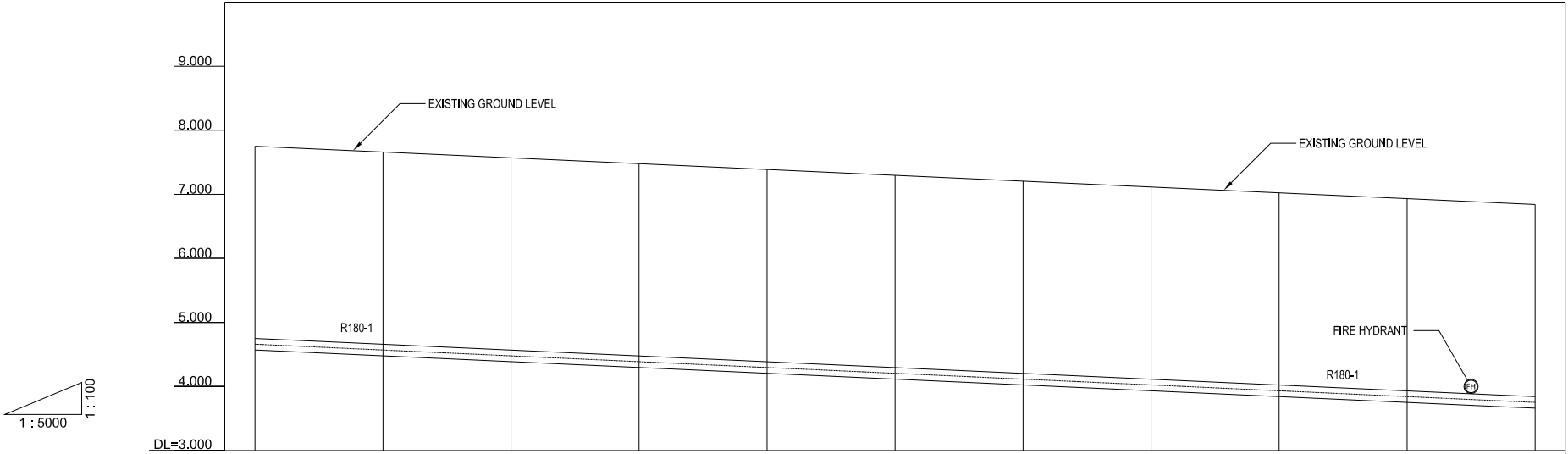
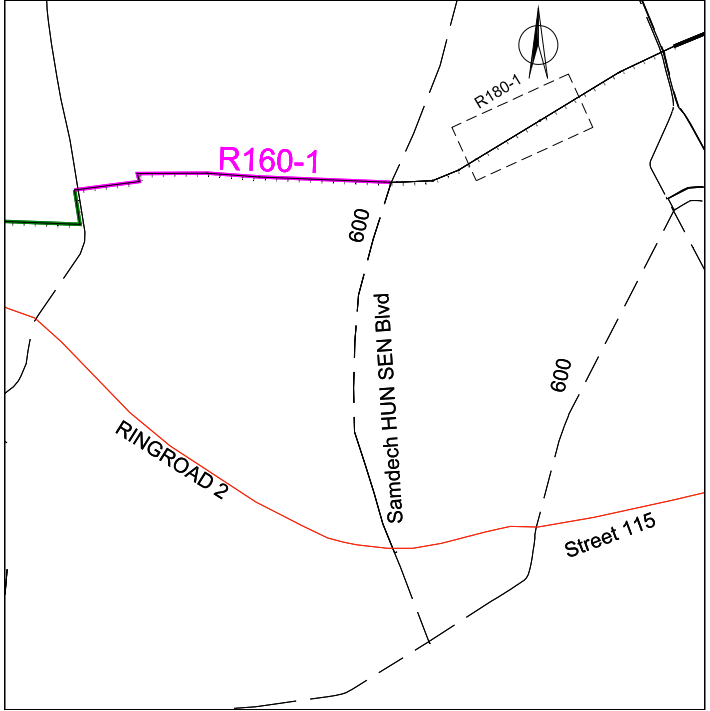


GROUND LEVEL (m)	8.647	8.563	8.477	8.386	8.295	8.205	8.114	8.023	7.932	7.841	7.750
TOP PIPE LEVEL (m)	5.647	5.563	5.477	5.386	5.295	5.205	5.114	5.023	4.932	4.841	4.750
EARTH COVERING DEPTH (m)	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000
PIPE LINE DATA	TRANSMISSION PIPE DI Ø 1800										
SINGLE DISTANCE (m)	0.000	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
STATION	0+000	0+100	0+200	0+300	0+400	0+500	0+600	0+700	0+800	0+900	1+000

LEGEND			
—	Alignment of Pipeline	□	TBM (Temporary Bench Mark)
—	Road Center Line	△	ST (Station Points)
—	Fence	⊙	Water Meter
—	Pavement Road	⊙	Valve
—	Un-pavement Road	⊙	Fire Hydrant
—	House/Building	⊙	Manhole
—	Karola (Concrete Block)	⊙	Electricity Manhole
—	Garden/ Park	⊙	Cable Optic Manhole
—		⊙	Cable Optic Box
—		⊙	Advertisement Board
—		⊙	Steel Light Post
—		⊙	Concrete Light Post
—		⊙	Concrete Electricity Post
—		⊙	Wooden Electricity Post
—		⊙	Traffic Sign
—		⊙	Tree

PROJECT Preparatory Survey on Nirodh Water Supply Expansion Project	DESCRIPTION PLAN AND PROFILE OF TRANSMISSION LINE R180-1 (1/3) FROM 0+000 TO 1+000	JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)	DRAWING No.	NRD/PH III/PL-TM011
		NIHON SUIDO CONSULTANTS CO.,LTD. (NSC) TOKYO ENGINEERING CONSULTANTS CO., LTD.(TEC) CTI ENGINEERING INTERNATIONAL CO., LTD. (CTII) KITAKYUSHU WATER SERVICE CO., LTD. (KWS)	SCALE	AS SHOWN

R180-1, TRANSMISSION LINE, DI Φ1800mm (1+000 TO 2+000)

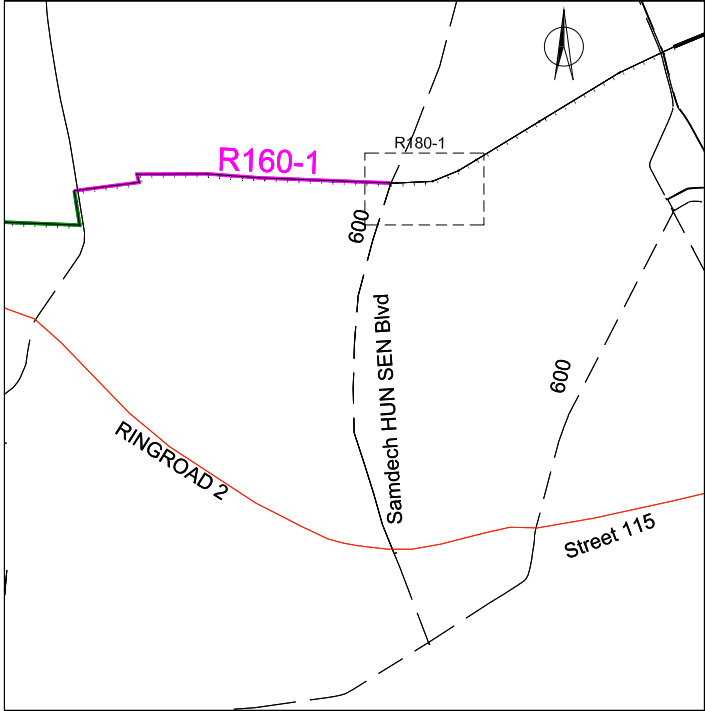
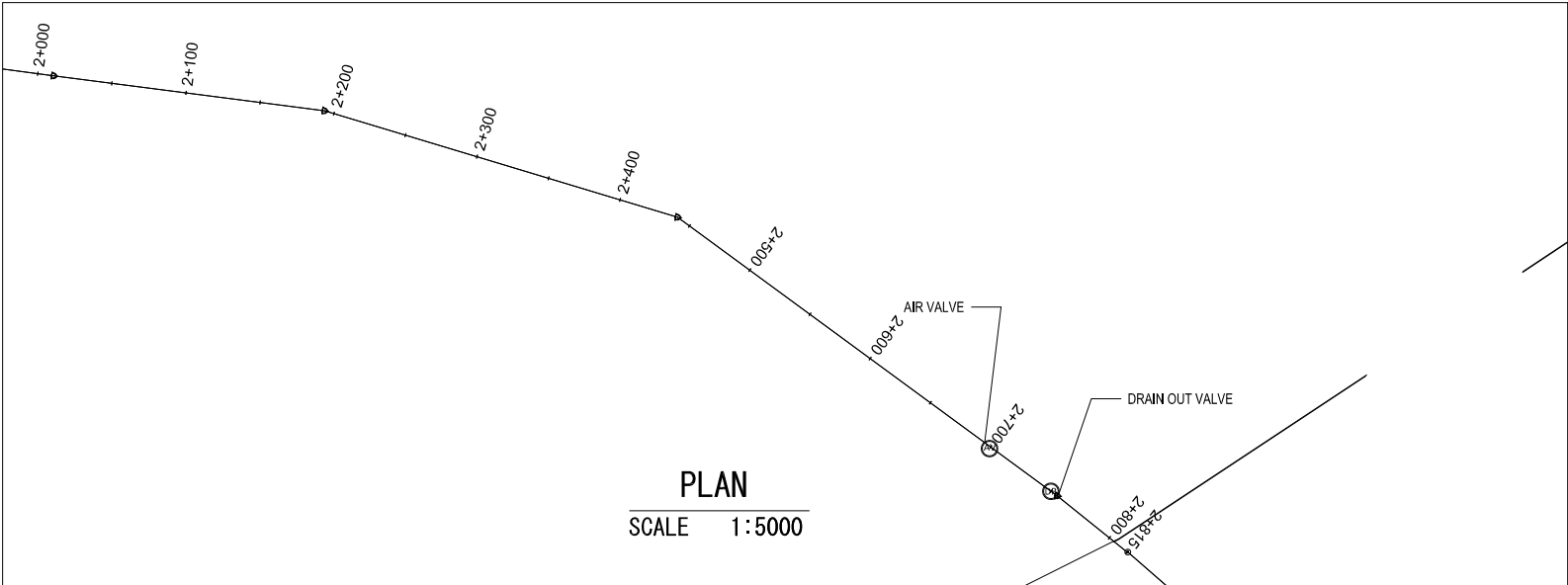


GROUND LEVEL (m)	7.750	7.659	7.568	7.477	7.386	7.295	7.205	7.114	7.023	6.932	6.841
TOP PIPE LEVEL (m)	4.750	4.659	4.568	4.477	4.386	4.295	4.205	4.114	4.023	3.932	3.841
EARTH COVERING DEPTH (m)	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000
PIPE LINE DATA	TRANSMISSION PIPE DI Ø 1800										
SINGLE DISTANCE (m)	0.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
STATION	1+000	1+100	1+200	1+300	1+400	1+500	1+600	1+700	1+800	1+900	2+000

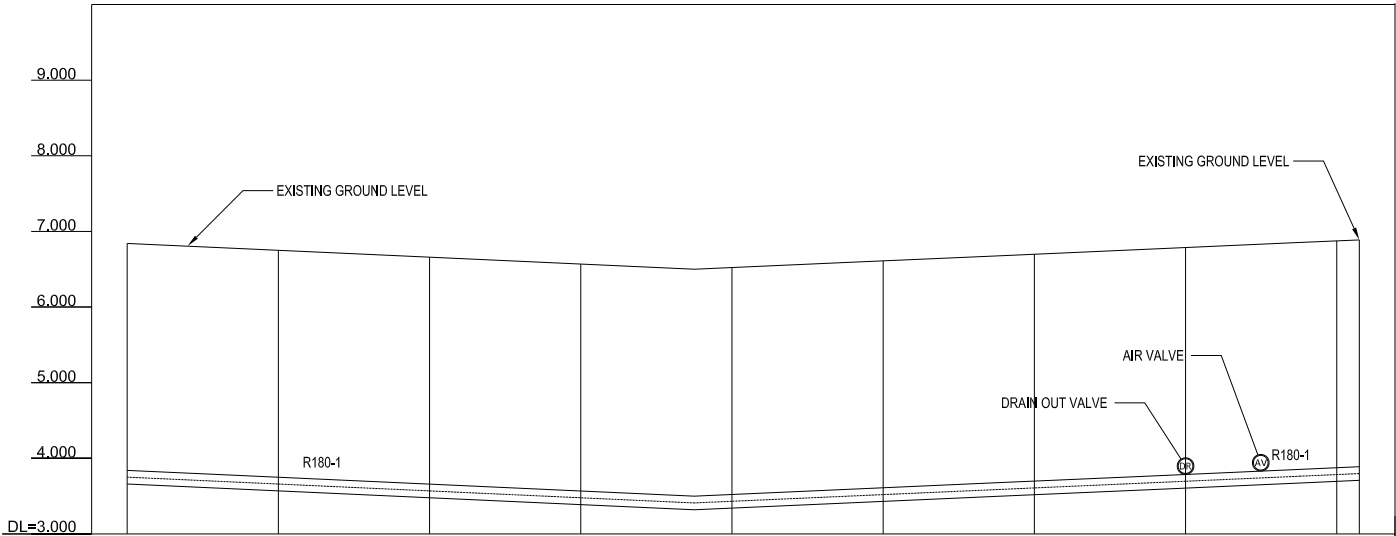
LEGEND		
Alignment of Pipeline	TBM (Temporary Bench Mark)	Cable Optic Box
Road Center Line	ST (Station Points)	Advertisement Board
Fence	Water Meter	Steel Light Post
Pavement Road	Valve	Concrete Light Post
Un-pavement Road	Fire Hydrant	Concrete Electricity Post
House/Building	Manhole	Wooden Electricity Post
Karola (Concrete Block)	Electricity Manhole	Traffic Sign
Garden/ Park	Cable Optic Manhole	Tree

PROJECT Preparatory Survey on Nirodh Water Supply Expansion Project	DESCRIPTION PLAN AND PROFILE OF TRANSMISSION LINE R180-1 (2/3) FROM 1+000 TO 2+000	JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)	DRAWING No.	NRD/PH III/PL-TM012
		NIHON SUIDO CONSULTANTS CO.,LTD. (NSC) TOKYO ENGINEERING CONSULTANTS CO., LTD.(TEC) CTI ENGINEERING INTERNATIONAL CO., LTD. (CTII) KITAKYUSHU WATER SERVICE CO., LTD. (KWS)	SCALE	AS SHOWN

R180-1, TRANSMISSION LINE, DI Φ1800mm (2+000 TO 2+815)



KEY PLAN



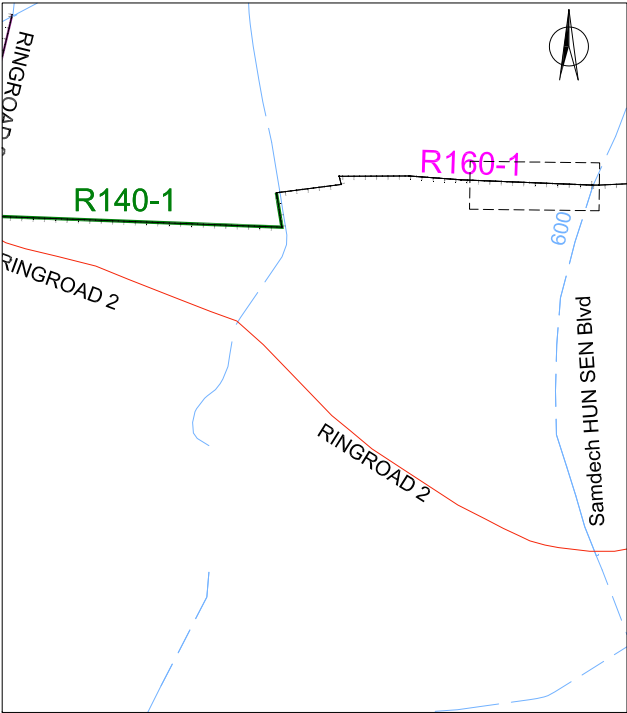
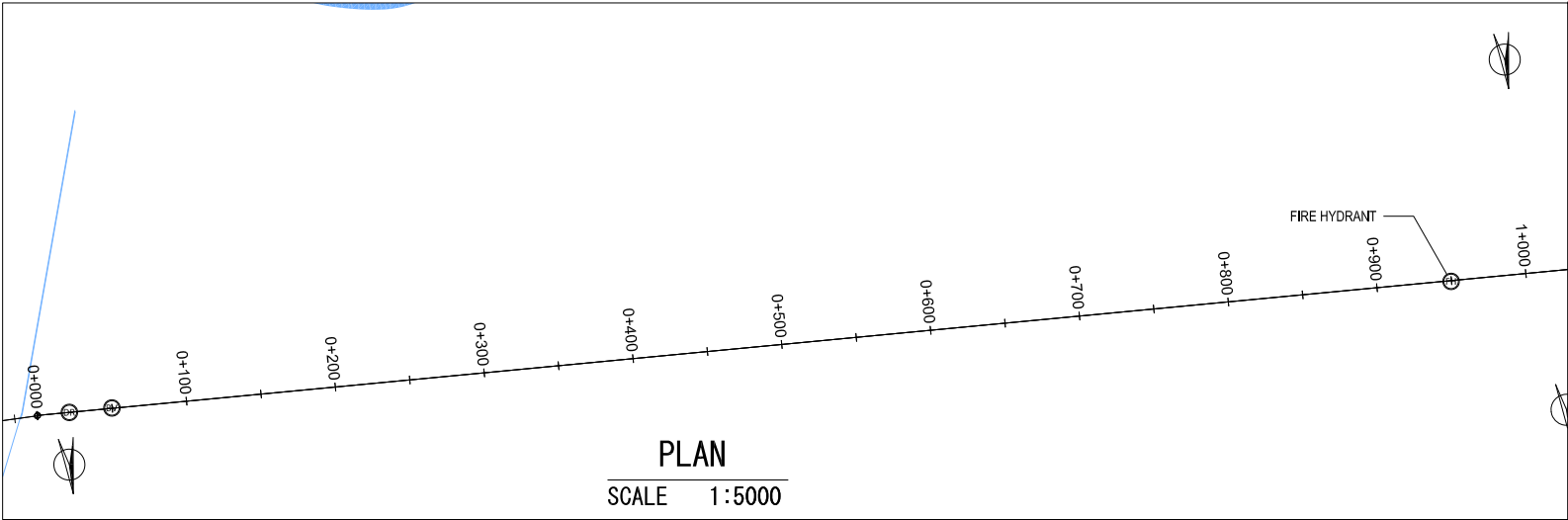
GROUND LEVEL (m)	6.841	6.750	6.659	6.568	6.522	6.610	6.699	6.787	6.875	6.880
TOP PIPE LEVEL (m)	3.841	3.750	3.659	3.568	3.522	3.610	3.699	3.787	3.875	3.880
EARTH COVERING DEPTH (m)	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000
PIPE LINE DATA	TRANSMISSION PIPE DI Ø 1800									
SINGLE DISTANCE (m)	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	15.00
STATION	2+000	2+100	2+200	2+300	2+400	2+500	2+600	2+700	2+800	2+815

PROFILE
SCALE 1:5000

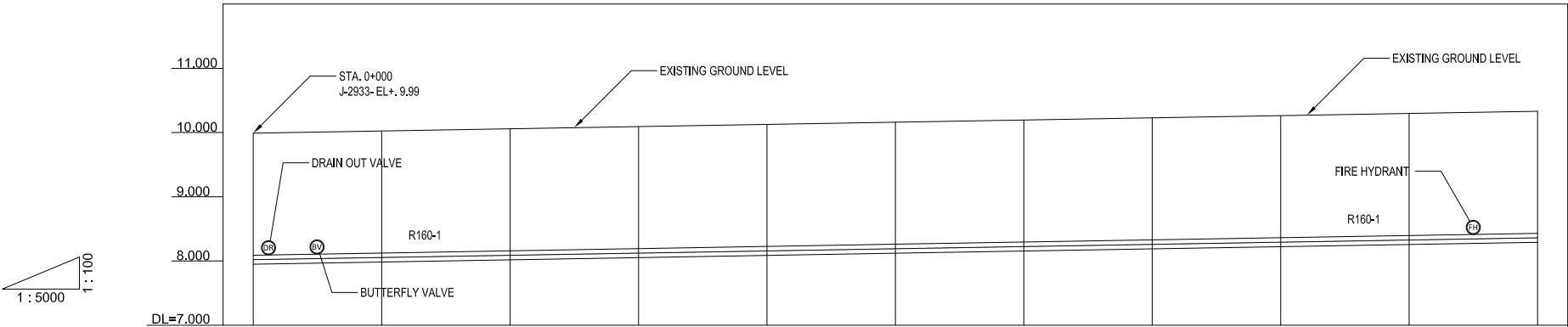
LEGEND			
—	Alignment of Pipeline	□ TBM (Temporary Bench Mark)	□ Cable Optic Box
—+—	Road Center Line	△ ST (Station Points)	□ Advertisement Board
—+—+—	Fence	⊙ Water Meter	* Steel Light Post
—+—+—+—	Pavement Road	⊙ Valve	* Concrete Light Post
- - - - -	Un-pavement Road	⊙ Fire Hydrant	■ Concrete Electricity Post
□	House/Building	⊙ Manhole	⊙ Wooden Electricity Post
▒	Karola (Concrete Block)	⊙ Electricity Manhole	⊙ Traffic Sign
▒	Garden/ Park	⊙ Cable Optic Manhole	⊙ Tree

PROJECT	DESCRIPTION	JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)	DRAWING No.	NRD/PH III/PL-TM013
		NIHON SUIDO CONSULTANTS CO.,LTD. (NSC) TOKYO ENGINEERING CONSULTANTS CO., LTD.(TEC) CTI ENGINEERING INTERNATIONAL CO., LTD. (CTII) KITAKYUSHU WATER SERVICE CO., LTD. (KWS)	SCALE	AS SHOWN

R160-1, TRANSMISSION LINE, DI Φ 1600mm (0+000 TO 1+000)



KEY PLAN



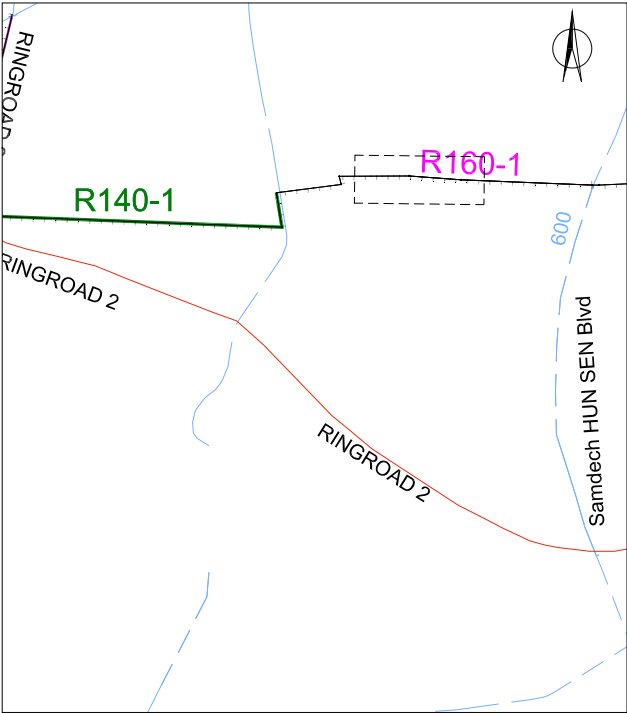
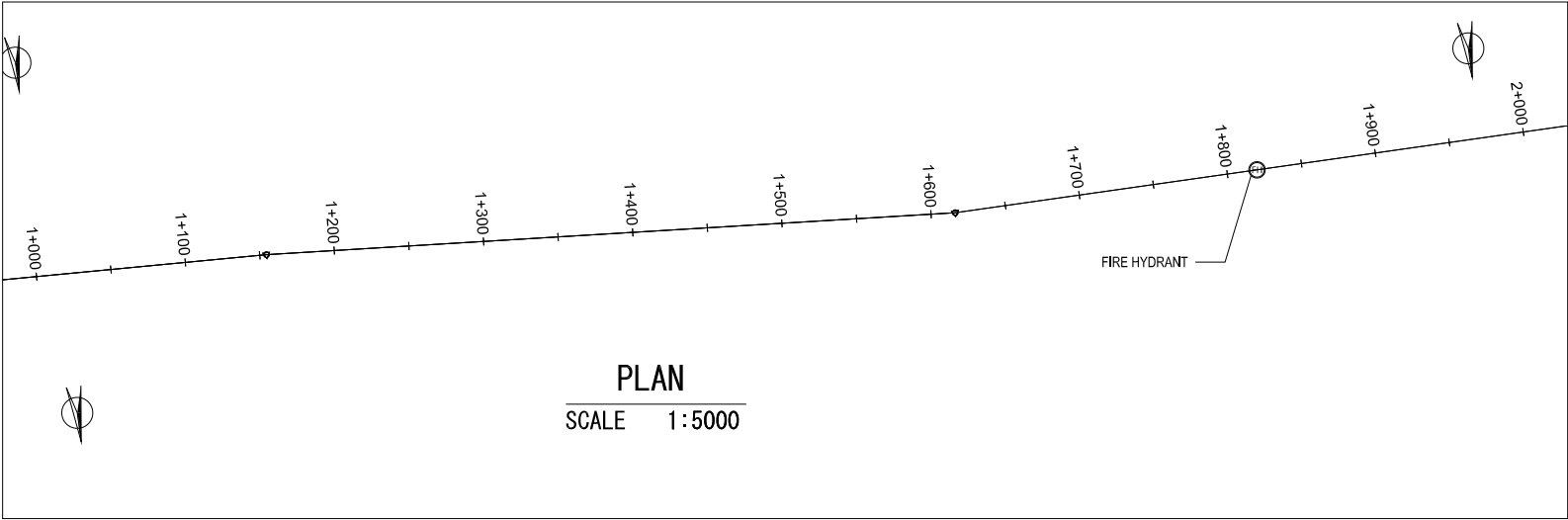
GROUND LEVEL (m)	9.990	10.024	10.058	10.092	10.126	10.160	10.194	10.228	10.262	10.296	10.330
TOP PIPE LEVEL (m)	8.090	8.124	8.158	8.192	8.226	8.260	8.294	8.328	8.362	8.396	8.430
EARTH COVERING DEPTH (m)	1.900	1.900	1.900	1.900	1.900	1.900	1.900	1.900	1.900	1.900	1.900
PIPE LINE DATA	TRANSMISSION PIPE DI Ø 1600										
SINGLE DISTANCE (m)	0.000	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
STATION	0+000	0+100	0+200	0+300	0+400	0+500	0+600	0+700	0+800	0+900	1+000

PROFILE
SCALE 1:5000

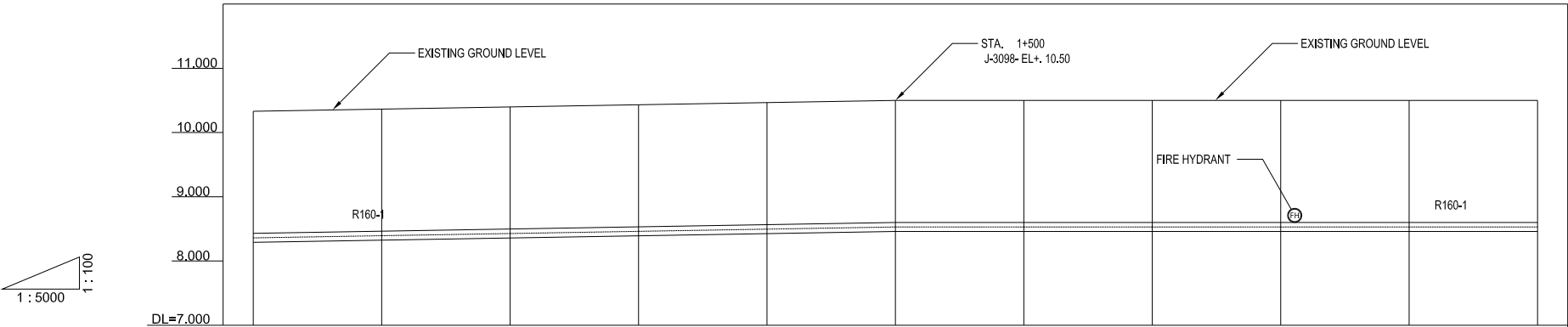
LEGEND			
—	Alignment of Pipeline	□	TBM (Temporary Bench Mark)
—	Road Center Line	△	ST (Station Points)
—	Fence	⊙	Water Meter
—	Pavement Road	⊙	Valve
---	Un-pavement Road	⊙	Fire Hydrant
—	House/Building	⊙	Manhole
—	Karola (Concrete Block)	⊙	Electricity Manhole
—	Garden/ Park	⊙	Cable Optic Manhole
—		⊙	Cable Optic Box
—		⊙	Advertisement Board
—		⊙	Steel Light Post
—		⊙	Concrete Light Post
—		⊙	Concrete Electricity Post
—		⊙	Wooden Electricity Post
—		⊙	Traffic Sign
—		⊙	Tree

PROJECT	DESCRIPTION	JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)	DRAWING No.	NRD/PH III/PL-TM014
		NIHON SUIDO CONSULTANTS CO.,LTD. (NSC) TOKYO ENGINEERING CONSULTANTS CO., LTD.(TEC) CTI ENGINEERING INTERNATIONAL CO., LTD. (CTII) KITAKYUSHU WATER SERVICE CO., LTD. (KWS)	SCALE	AS SHOWN

R160-1, TRANSMISSION LINE, DI Φ 1600mm (1+000 TO 2+000)



KEY PLAN



GROUND LEVEL (m)	10.330	10.364	10.398	10.432	10.466	10.500	10.500	10.500	10.500	10.500	10.500
TOP PIPE LEVEL (m)	8.430	8.464	8.498	8.532	8.566	8.600	8.600	8.600	8.600	8.600	8.600
EARTH COVERING DEPTH (m)	1.900	1.900	1.900	1.900	1.900	1.900	1.900	1.900	1.900	1.900	1.900
PIPE LINE DATA	TRANSMISSION PIPE DI Ø 1600										
SINGLE DISTANCE (m)	0.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
STATION	1+000	1+100	1+200	1+300	1+400	1+500	1+600	1+700	1+800	1+900	2+000

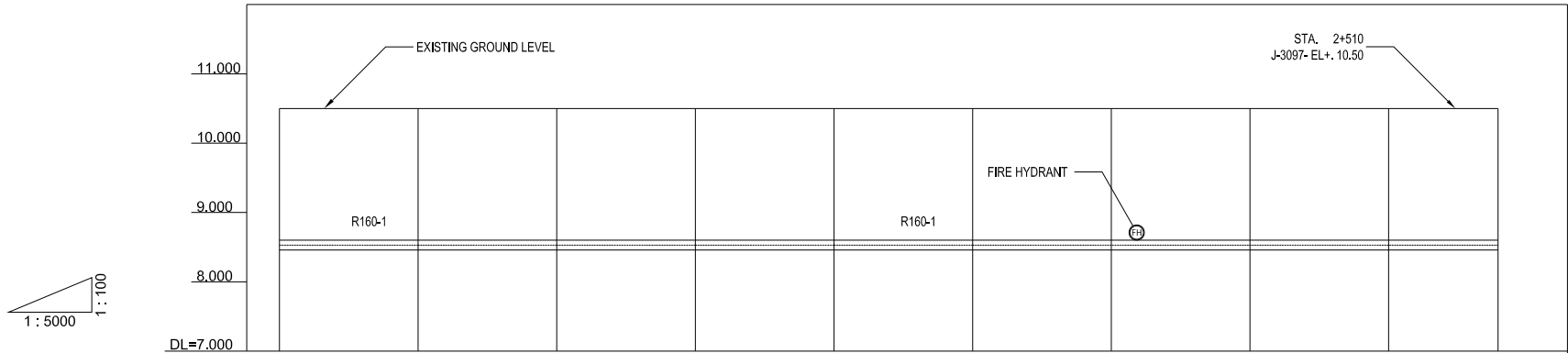
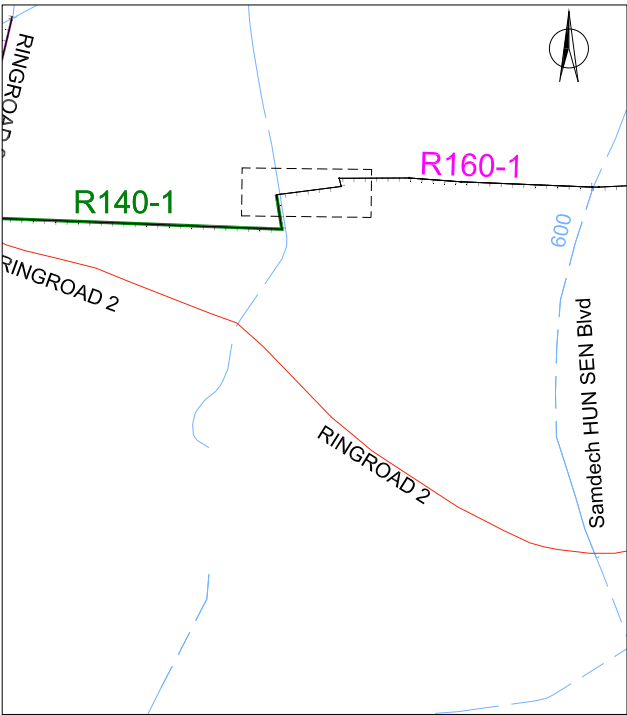
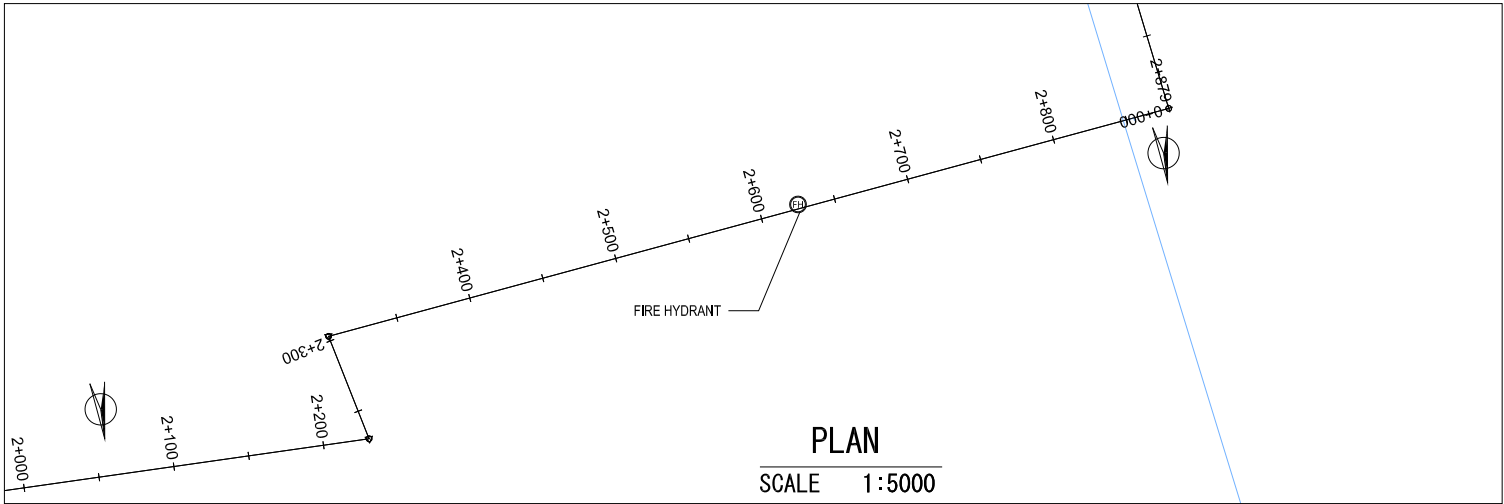
PROFILE

SCALE 1:5000

LEGEND		
—	Alignment of Pipeline	□ TBM (Temporary Bench Mark)
—	Road Center Line	△ ST (Station Points)
—	Fence	⊙ Water Meter
—	Pavement Road	⊙ Valve
---	Un-pavement Road	⊙ Fire Hydrant
■	House/Building	⊙ Manhole
■	Karola (Concrete Block)	⊙ Electricity Manhole
■	Garden/ Park	⊙ Cable Optic Manhole
■		⊙ Cable Optic Box
■		⊙ Advertisement Board
■		⊙ Steel Light Post
■		⊙ Concrete Light Post
■		⊙ Concrete Electricity Post
■		⊙ Wooden Electricity Post
■		⊙ Traffic Sign
■		⊙ Tree

PROJECT	DESCRIPTION	JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)	DRAWING No.	NRD/PH III/PL-TM015
		NIHON SUIDO CONSULTANTS CO.,LTD. (NSC) TOKYO ENGINEERING CONSULTANTS CO., LTD.(TEC) CTI ENGINEERING INTERNATIONAL CO., LTD. (CTII) KITAKYUSHU WATER SERVICE CO., LTD. (KWS)	SCALE	AS SHOWN

R160-1, TRANSMISSION LINE, DI Φ 1600mm (2+000 TO 2+879)

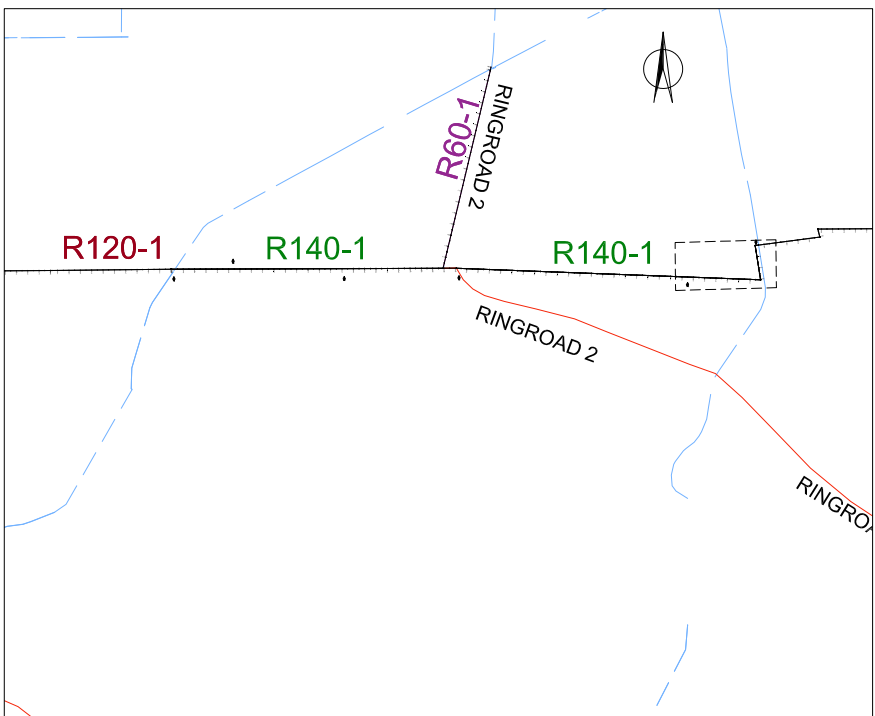
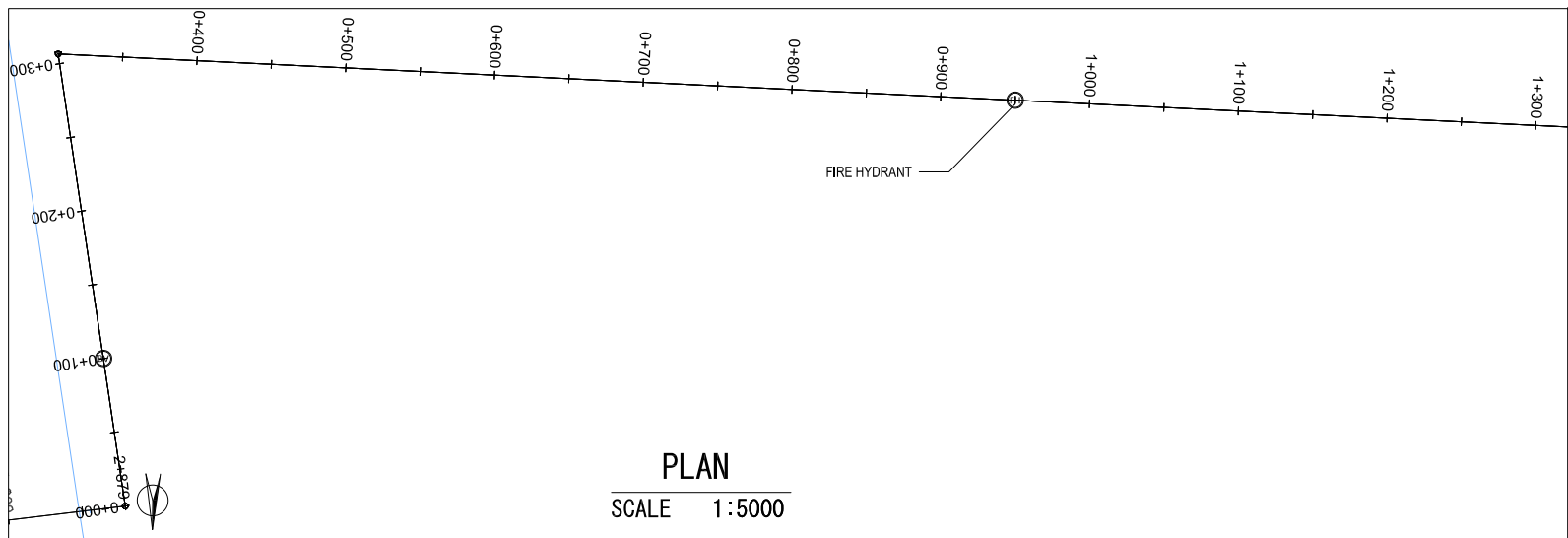


GROUND LEVEL (m)	10.500	10.500	10.500	10.500	10.500	10.500	10.500	10.500	10.500	10.500
TOP PIPE LEVEL (m)	8.600	8.600	8.600	8.600	8.600	8.600	8.600	8.600	8.600	8.600
EARTH COVERING DEPTH (m)	1.900	1.900	1.900	1.900	1.900	1.900	1.900	1.900	1.900	1.900
PIPE LINE DATA	TRANSMISSION PIPE DI Ø 1600									
SINGLE DISTANCE (m)	0.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	79.00
STATION	2+000	2+100	2+200	2+300	2+400	2+500	2+600	2+700	2+800	2+879

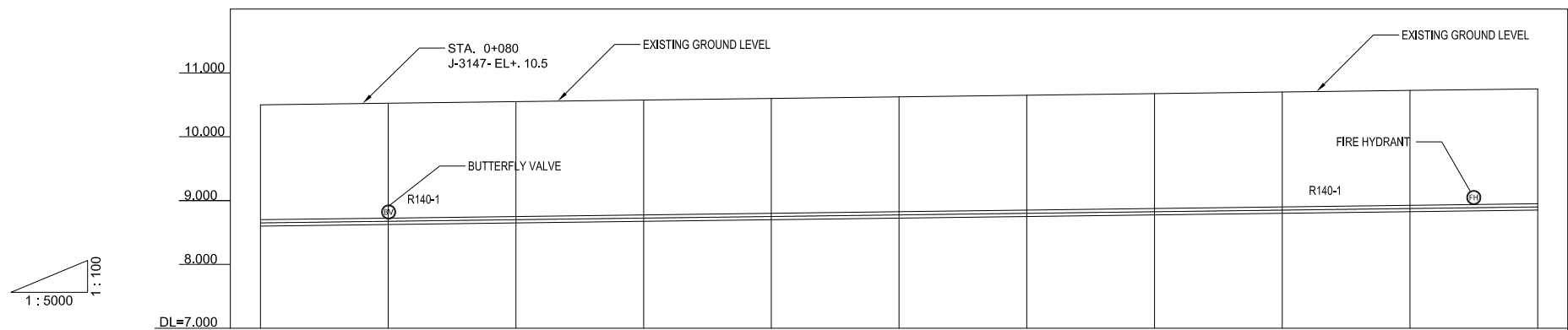
LEGEND		
—	Alignment of Pipeline	□ TBM (Temporary Bench Mark)
—	Road Center Line	△ ST (Station Points)
—	Fence	⊙ Water Meter
—	Pavement Road	⊙ Valve
- - -	Un-pavement Road	⊙ Fire Hydrant
⊠	House/Building	⊠ Manhole
⊠	Karola (Concrete Block)	⊠ Electricity Manhole
⊠	Garden/ Park	⊠ Cable Optic Manhole
⊠		⊠ Cable Optic Box
⊠		⊠ Advertisement Board
⊠		⊠ Steel Light Post
⊠		⊠ Concrete Light Post
⊠		⊠ Concrete Electricity Post
⊠		⊠ Wooden Electricity Post
⊠		⊠ Traffic Sign
⊠		⊠ Tree

PROJECT Preparatory Survey on Nirodh Water Supply Expansion Project	DESCRIPTION PLAN AND PROFILE OF TRANSMISSION LINE R160-1 (3/3) FROM 2+000 TO 2+879	JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)	DRAWING No.	NRD/PH III/PL-TM016
		NIHON SUIDO CONSULTANTS CO.,LTD. (NSC) TOKYO ENGINEERING CONSULTANTS CO., LTD.(TEC) CTI ENGINEERING INTERNATIONAL CO., LTD. (CTII) KITAKYUSHU WATER SERVICE CO., LTD. (KWS)	SCALE	AS SHOWN

R140-1, TRANSMISSION LINE, DI Φ 1400mm (0+000 TO 1+000)



KEY PLAN



GROUND LEVEL (m)	10.500	10.525	10.525	10.550	10.575	10.600	10.625	10.650	10.675	10.700	10.725	10.750
TOP PIPE LEVEL (m)	8.700	8.725	8.725	8.750	8.775	8.800	8.825	8.850	8.875	8.900	8.925	8.950
EARTH COVERING DEPTH (m)	1.800	1.800	1.800	1.800	1.800	1.800	1.800	1.800	1.800	1.800	1.800	1.800
PIPE LINE DATA	TRANSMISSION PIPE DI Ø 1400											
SINGLE DISTANCE (m)	0.000	80.00	20.00	100.00	7.00	100.00	41.00	100.00	20.00	100.00	100.00	100.00
STATION	0+000	0+080	0+100	0+200	0+300	0+400	0+500	0+600	0+700	0+800	0+900	1+000

PROFILE
SCALE 1:5000

LEGEND			
—	Alignment of Pipeline	□	TBM (Temporary Bench Mark)
—+—+—+—	Road Center Line	△	ST (Station Points)
—+—+—+—	Fence	⊙	Water Meter
—+—+—+—	Pavement Road	⊙	Valve
- - - - -	Un-pavement Road	⊙	Fire Hydrant
▢	House/Building	⊙	Manhole
▢	Karola (Concrete Block)	⊙	Electricity Manhole
▢	Garden/ Park	⊙	Cable Optic Manhole
▢		▢	Cable Optic Box
		▢	Advertisement Board
		*	Steel Light Post
		*	Concrete Light Post
		▢	Concrete Electricity Post
		⊙	Wooden Electricity Post
		⊙	Traffic Sign
		⊙	Tree

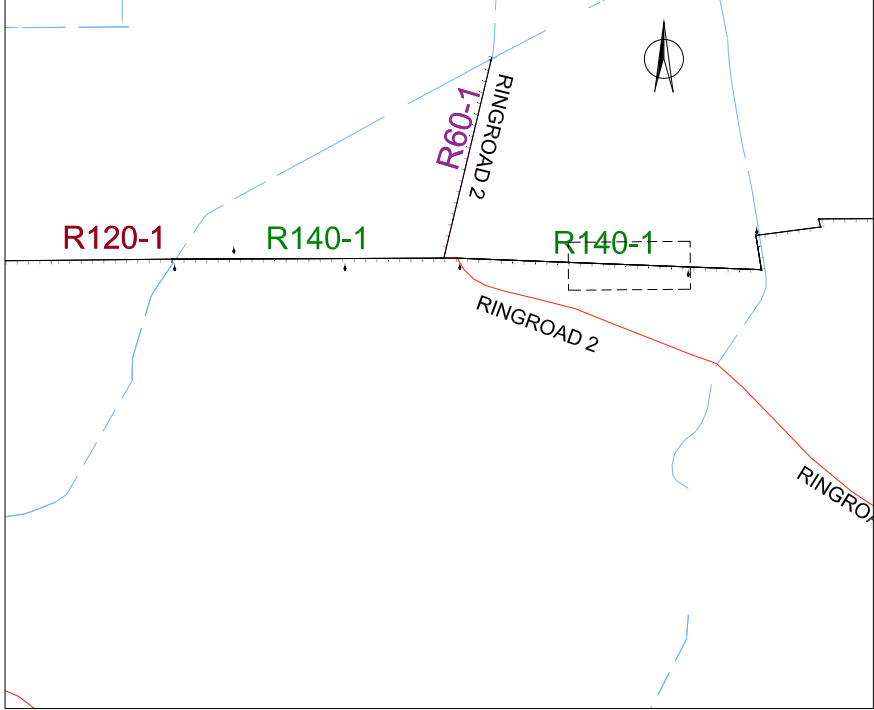
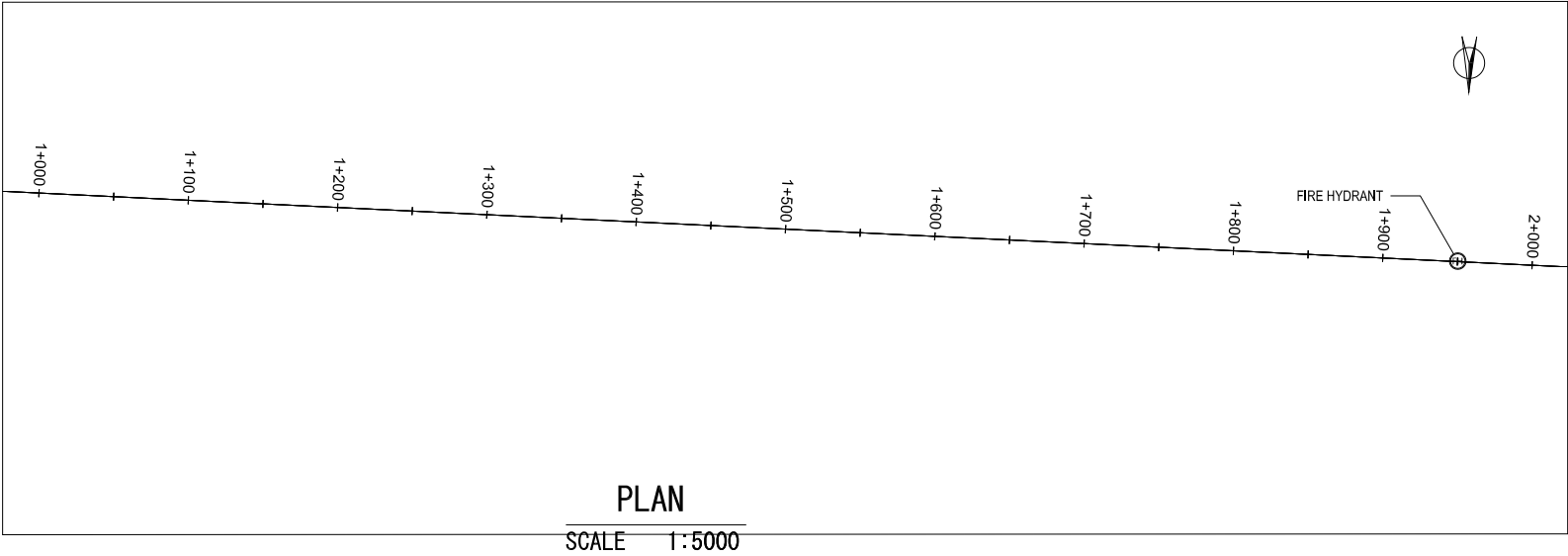
PROJECT
Preparatory Survey on Nirodh Water Supply Expansion Project

DESCRIPTION
PLAN AND PROFILE OF TRANSMISSION
LINE R140-1 (1/6) FROM 0+000 TO 1+000

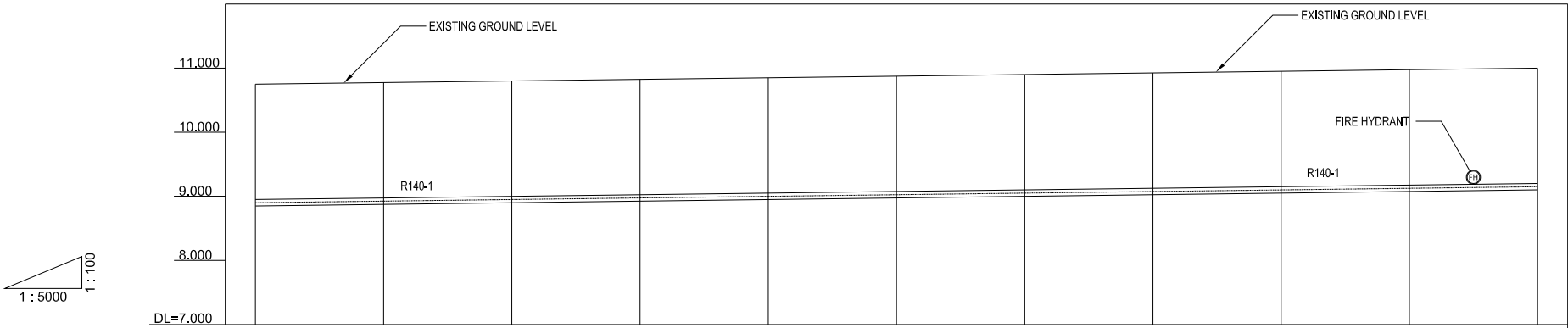
JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)
NIHON SUDO CONSULTANTS CO.,LTD. (NSC)
TOKYO ENGINEERING CONSULTANTS CO., LTD.(TEC)
CTI ENGINEERING INTERNATIONAL CO., LTD. (CTII)
KITAKYUSHU WATER SERVICE CO., LTD. (KWS)

DRAWING No.
SCALE
NRD/PH III/PL-TM017
AS SHOWN

R140-1, TRANSMISSION LINE, DI Φ 1400mm (1+000 TO 2+000)



KEY PLAN



GROUND LEVEL (m)	10.750	10.775	10.801	10.825	10.850	10.875	10.900	10.925	10.950	10.975	11.000
TOP PIPE LEVEL (m)	8.950	8.975	9.001	9.025	9.050	9.075	9.100	9.125	9.150	9.175	9.200
EARTH COVERING DEPTH (m)	1.800	1.800	1.800	1.800	1.800	1.800	1.800	1.800	1.800	1.800	1.800
PIPE LINE DATA	TRANSMISSION PIPE DI Φ 1400										
SINGLE DISTANCE (m)	100.00	100.00	100.00	75.000	100.00	100.00	14.00	100.00	100.00	100.00	100.00
STATION	1+000	1+100	1+200	1+300	1+400	1+500	1+600	1+700	1+800	1+900	2+000

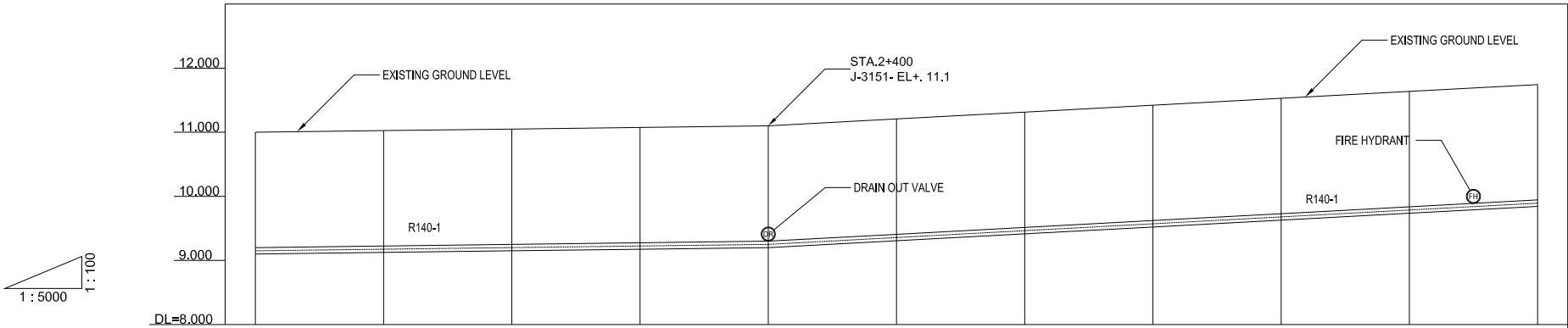
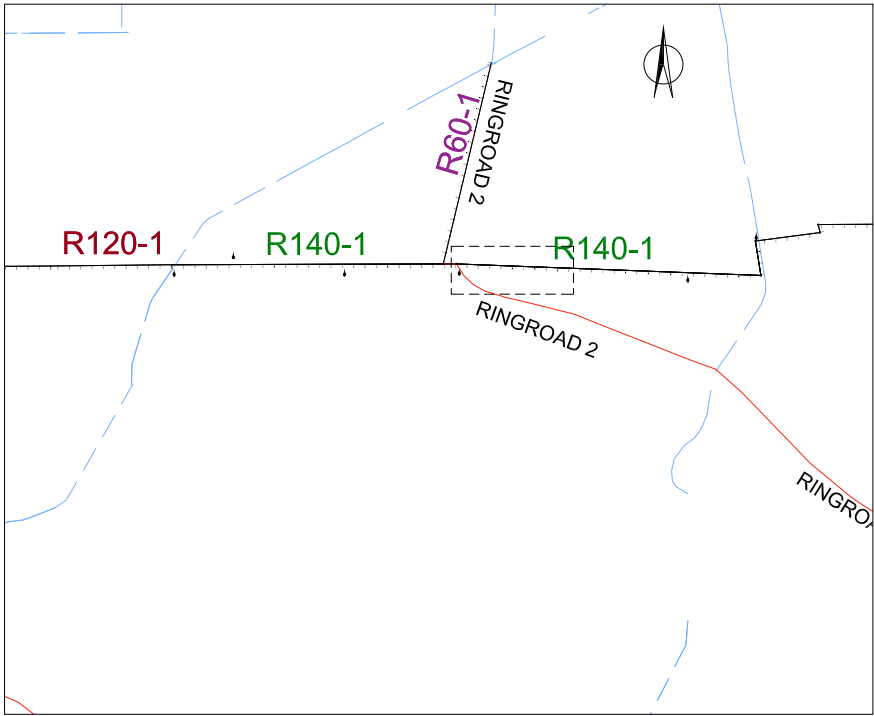
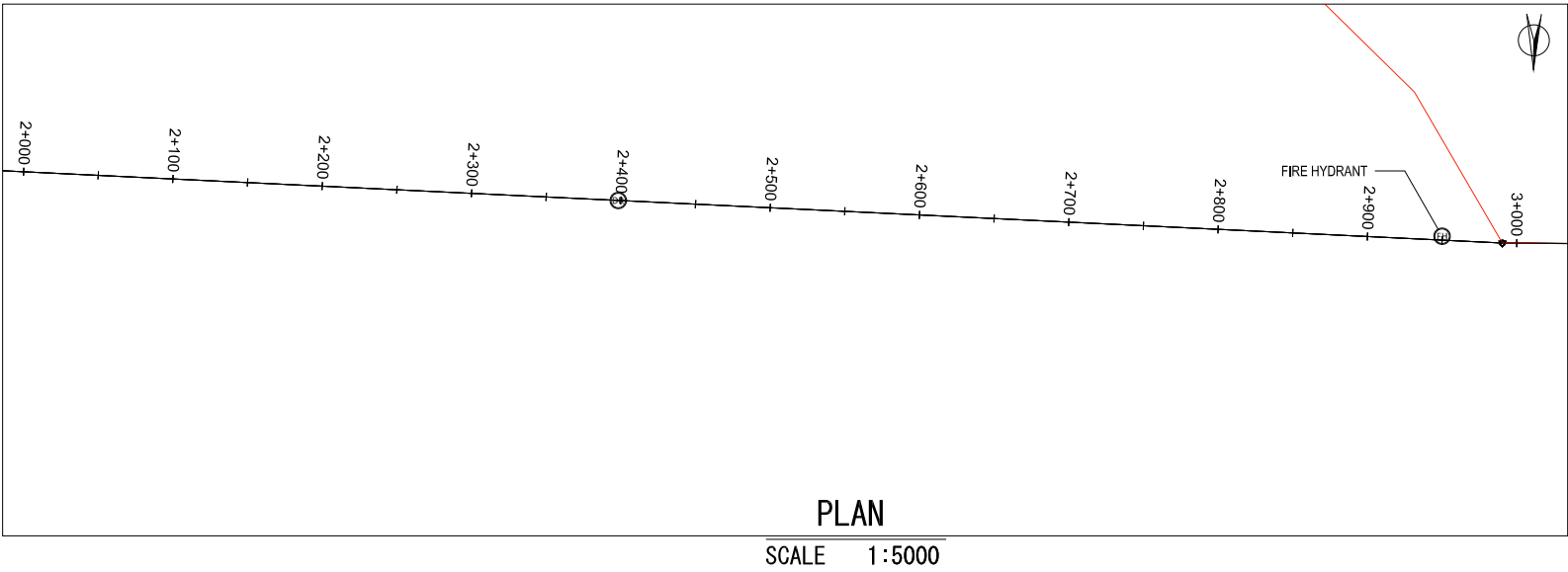
PROFILE

SCALE 1:5000

LEGEND			
—	Alignment of Pipeline	□	TBM (Temporary Bench Mark)
—+—	Road Center Line	△	ST (Station Points)
— —	Fence	⊙	Water Meter
— — —	Pavement Road	⊙	Valve
- - - - -	Un-pavement Road	⊙	Fire Hydrant
▢	House/Building	⊙	Manhole
▢	Karola (Concrete Block)	⊙	Electricity Manhole
▢	Garden/ Park	⊙	Cable Optic Manhole
▢		▢	Cable Optic Box
		▢	Advertisement Board
		*	Steel Light Post
		*	Concrete Light Post
		▢	Concrete Electricity Post
		⊙	Wooden Electricity Post
		⊙	Traffic Sign
		⊙	Tree

PROJECT Preparatory Survey on Nirodh Water Supply Expansion Project	DESCRIPTION PLAN AND PROFILE OF TRANSMISSION LINE R140-1 (2/6) FROM 1+000 TO 2+000	JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)	DRAWING No.	NRD/PH III/PL-TM018
		NIHON SUIDO CONSULTANTS CO.,LTD. (NSC) TOKYO ENGINEERING CONSULTANTS CO., LTD.(TEC) CTI ENGINEERING INTERNATIONAL CO., LTD. (CTII) KITAKYUSHU WATER SERVICE CO., LTD. (KWS)	SCALE	AS SHOWN

R140-1, TRANSMISSION LINE, DI Φ 1400mm (2+000 TO 3+000)

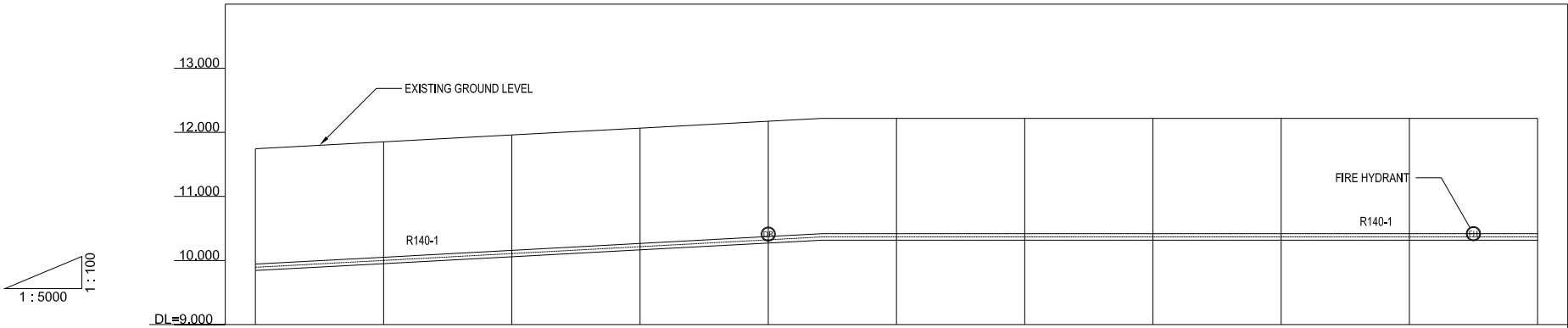
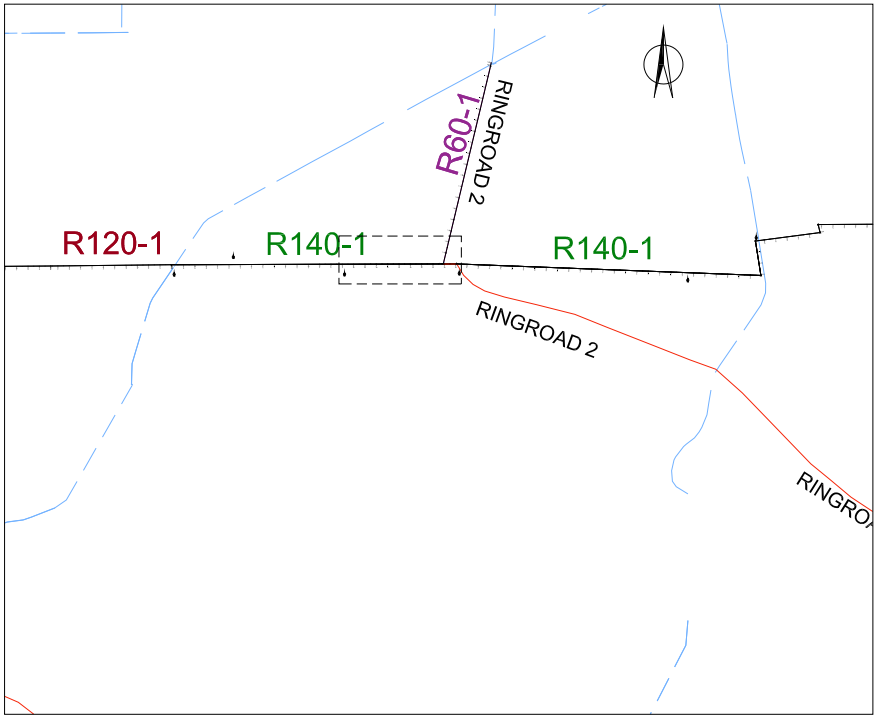
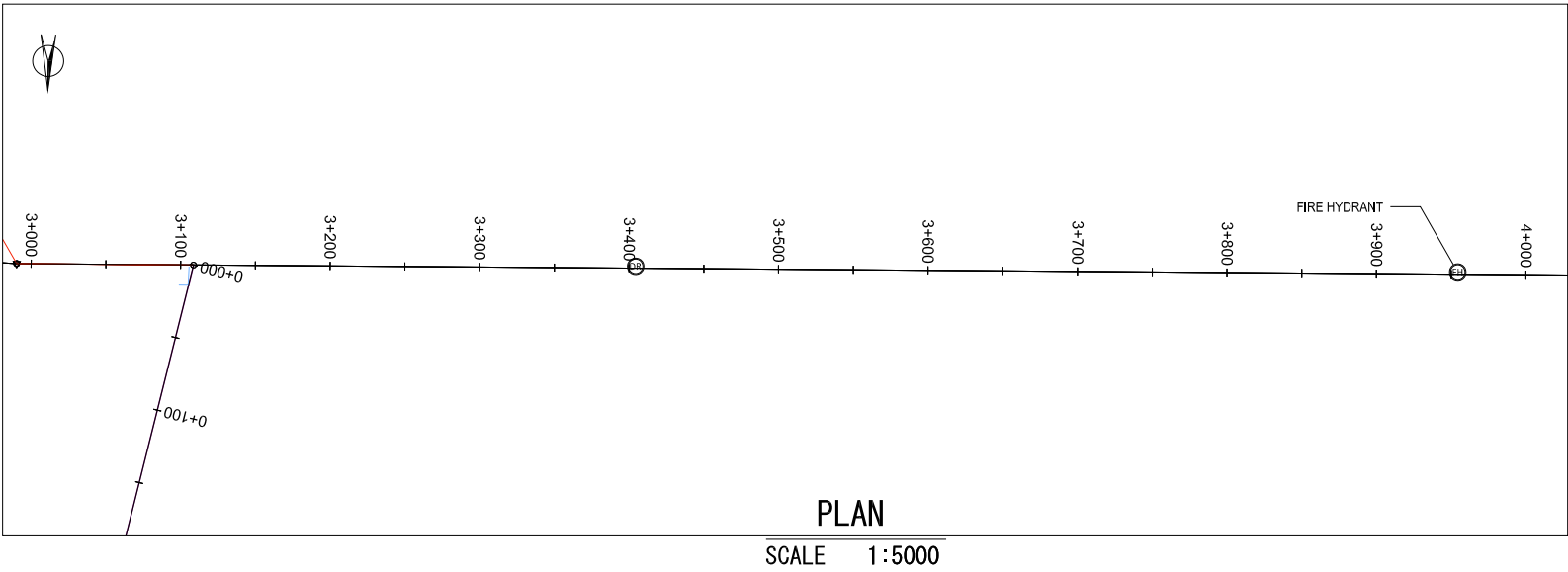


GROUND LEVEL (m)	11.000	11.025	11.050	11.075	11.100	11.207	11.315	11.422	11.529	11.636	11.744
TOP PIPE LEVEL (m)	9.200	9.225	9.250	9.275	9.300	9.407	9.515	9.622	9.729	9.836	9.944
EARTH COVERING DEPTH (m)	1.800	1.800	1.800	1.800	1.800	1.800	1.800	1.800	1.800	1.800	1.800
PIPE LINE DATA	TRANSMISSION PIPE DI Ø 1400										
SINGLE DISTANCE (m)	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
STATION	2+000	2+100	2+200	2+300	2+400	2+500	2+600	2+700	2+800	2+900	3+000

LEGEND			
—	Alignment of Pipeline	□ TBM (Temporary Bench Mark)	□ Cable Optic Box
—+—	Road Center Line	△ ST (Station Points)	□ Advertisement Board
—+—+—	Fence	⊙ Water Meter	* Steel Light Post
—+—+—+—	Pavement Road	⊙ Valve	* Concrete Light Post
- - - - -	Un-pavement Road	⊙ Fire Hydrant	■ Concrete Electricity Post
□	House/Building	⊙ Manhole	⊙ Wooden Electricity Post
■	Karola (Concrete Block)	⊙ Electricity Manhole	⊙ Traffic Sign
■	Garden/ Park	⊙ Cable Optic Manhole	⊙ Tree

PROJECT	DESCRIPTION	JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)	DRAWING No.	NRD/PH III/PL-TM019
		NIHON SUIDO CONSULTANTS CO.,LTD. (NSC) TOKYO ENGINEERING CONSULTANTS CO., LTD.(TEC) CTI ENGINEERING INTERNATIONAL CO., LTD. (CTII) KITAKYUSHU WATER SERVICE CO., LTD. (KWS)	SCALE	AS SHOWN

R140-1, TRANSMISSION LINE, DI Φ 1400mm (3+000 TO 4+000)

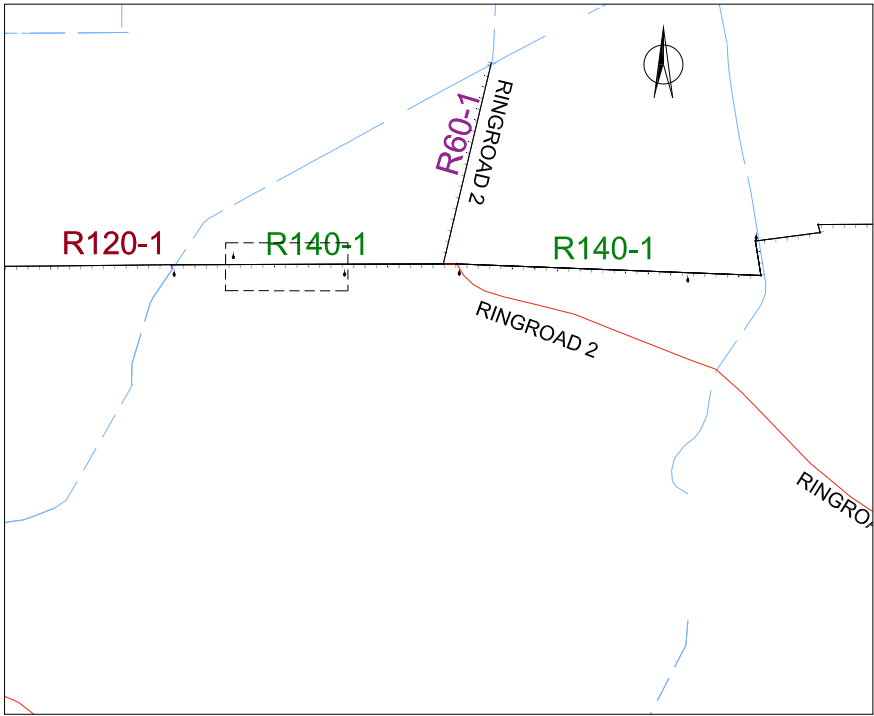
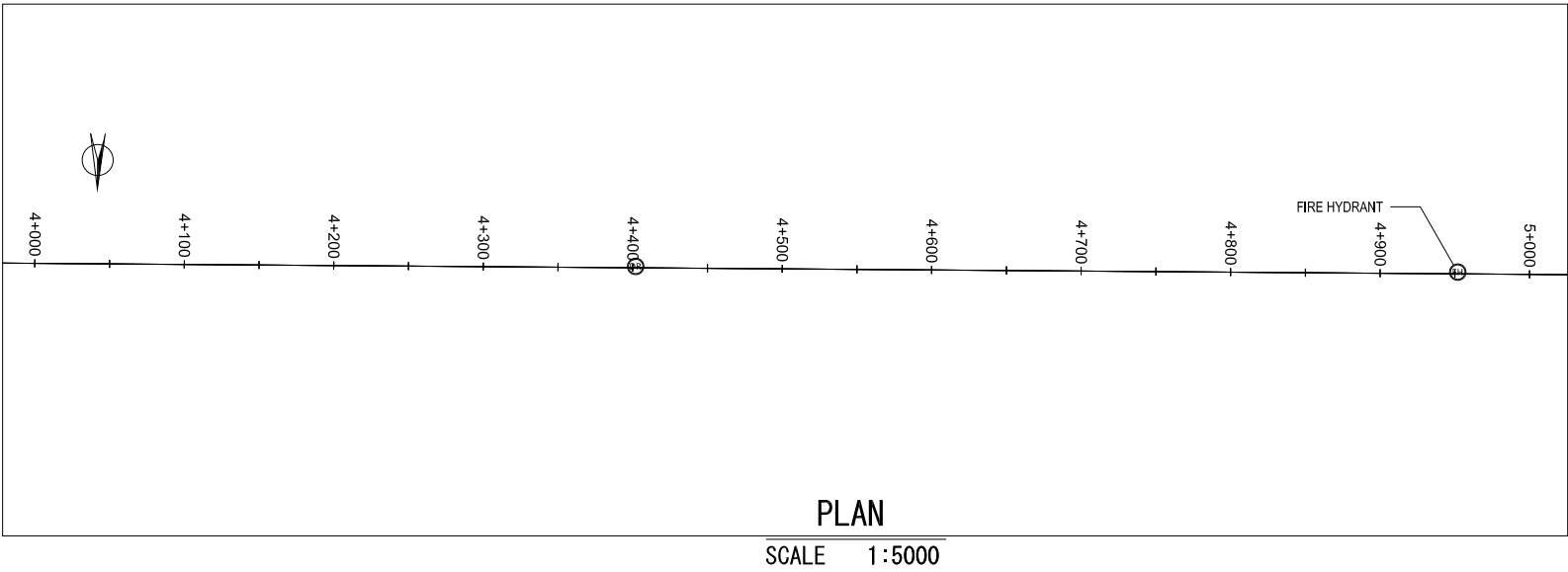


GROUND LEVEL (m)	11.744	11.851	11.958	12.065	12.173	12.218	12.218	12.218	12.218	12.218	12.218
TOP PIPE LEVEL (m)	9.944	10.051	10.158	10.265	10.373	10.418	10.418	10.418	10.418	10.418	10.418
EARTH COVERING DEPTH (m)	1.800	1.800	1.800	1.800	1.800	1.800	1.800	1.800	1.800	1.800	1.800
PIPE LINE DATA	TRANSMISSION PIPE DI Ø 1400										
SINGLE DISTANCE (m)	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
STATION	3+000	3+100	3+200	3+300	3+400	3+500	3+600	3+700	3+800	3+900	4+000

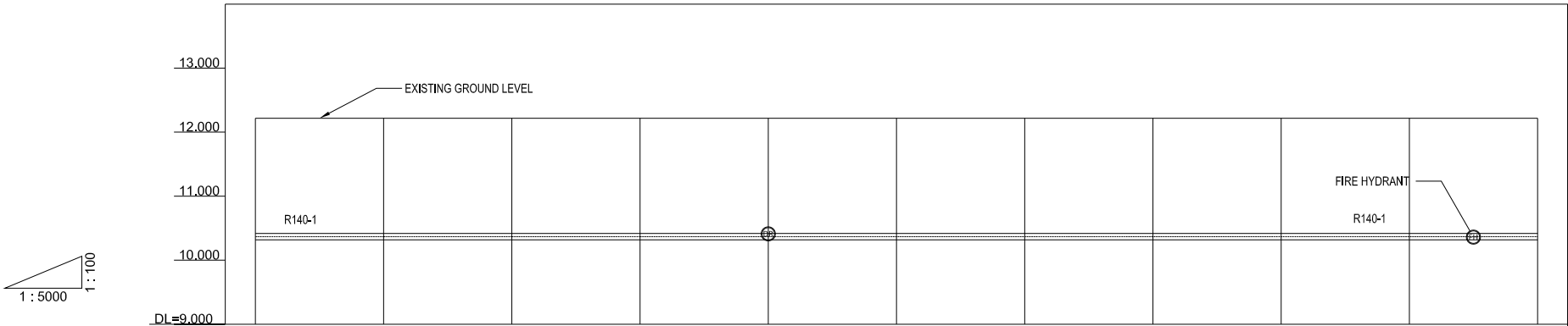
LEGEND			
	Alignment of Pipeline		TBM (Temporary Bench Mark)
	Road Center Line		ST (Station Points)
	Fence		Water Meter
	Pavement Road		Valve
	Un-pavement Road		Fire Hydrant
	House/Building		Manhole
	Karola (Concrete Block)		Electricity Manhole
	Garden/ Park		Cable Optic Manhole
			Cable Optic Box
			Advertisement Board
			Steel Light Post
			Concrete Light Post
			Concrete Electricity Post
			Wooden Electricity Post
			Traffic Sign
			Tree

PROJECT	DESCRIPTION	JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)	DRAWING No.	NRD/PH III/PL-TM020
		NIHON SUIDO CONSULTANTS CO.,LTD. (NSC) TOKYO ENGINEERING CONSULTANTS CO., LTD.(TEC) CTI ENGINEERING INTERNATIONAL CO., LTD. (CTII) KITAKYUSHU WATER SERVICE CO., LTD. (KWS)	SCALE	AS SHOWN

R140-1, TRANSMISSION LINE, DI Φ 1400mm (4+000 TO 5+000)



KEY PLAN



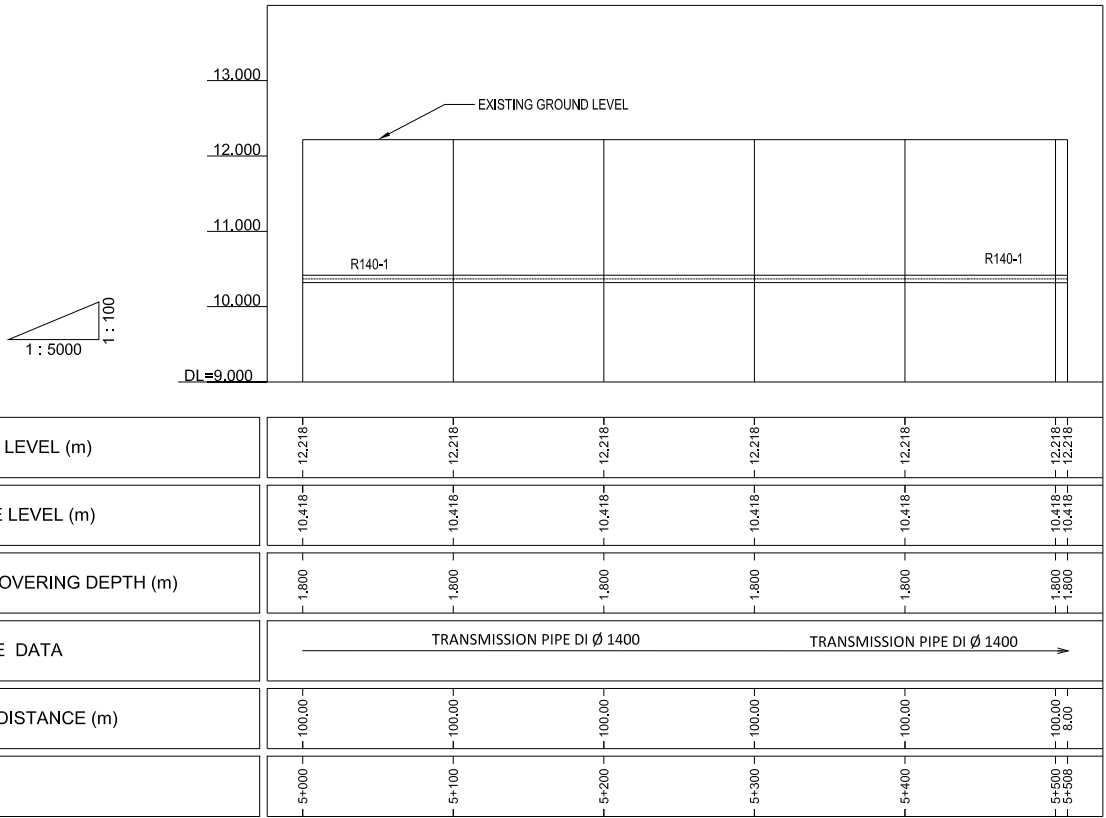
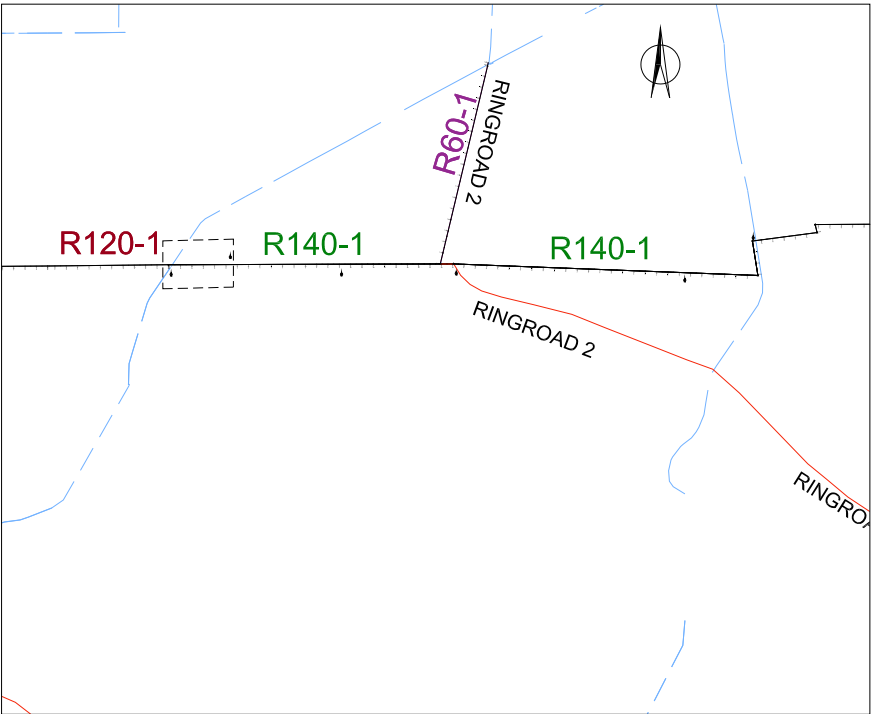
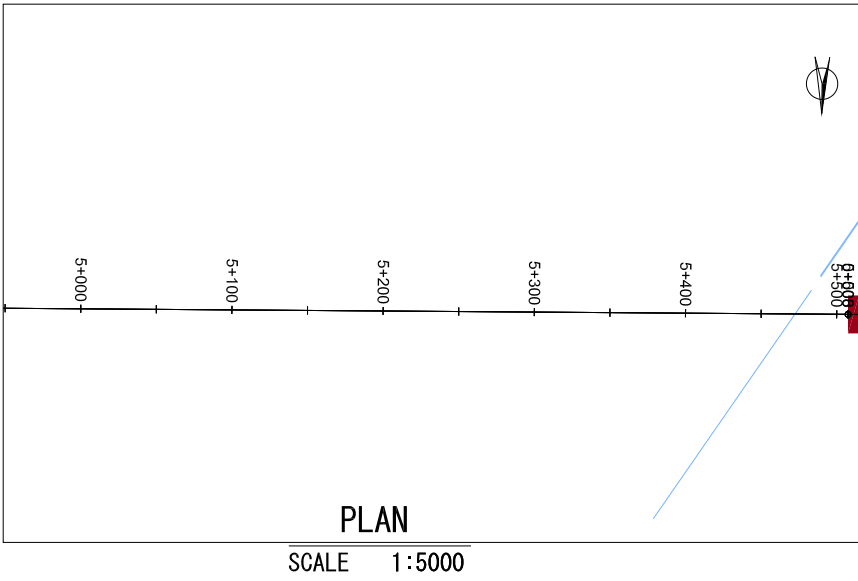
GROUND LEVEL (m)	12.218	12.218	12.218	12.218	12.218	12.218	12.218	12.218	12.218	12.218	12.218
TOP PIPE LEVEL (m)	10.418	10.418	10.418	10.418	10.418	10.418	10.418	10.418	10.418	10.418	10.418
EARTH COVERING DEPTH (m)	1.800	1.800	1.800	1.800	1.800	1.800	1.800	1.800	1.800	1.800	1.800
PIPE LINE DATA	TRANSMISSION PIPE DI Ø 1400										
SINGLE DISTANCE (m)	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
STATION	4+000	4+100	4+200	4+300	4+400	4+500	4+600	4+700	4+800	4+900	5+000

PROFILE
SCALE 1:5000

LEGEND			
	Alignment of Pipeline		TBM (Temporary Bench Mark)
	Road Center Line		ST (Station Points)
	Fence		Water Meter
	Pavement Road		Valve
	Un-pavement Road		Fire Hydrant
	House/Building		Manhole
	Karola (Concrete Block)		Electricity Manhole
	Garden/ Park		Cable Optic Manhole
			Cable Optic Box
			Advertisement Board
			Steel Light Post
			Concrete Light Post
			Concrete Electricity Post
			Wooden Electricity Post
			Traffic Sign
			Tree

PROJECT Preparatory Survey on Nirodh Water Supply Expansion Project	DESCRIPTION PLAN AND PROFILE OF TRANSMISSION LINE R140-1 (5/6) FROM 4+000 TO 5+000	JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)	DRAWING No.	NRD/PH III/PL-TM021
		NIHON SUIDO CONSULTANTS CO.,LTD. (NSC) TOKYO ENGINEERING CONSULTANTS CO., LTD.(TEC) CTI ENGINEERING INTERNATIONAL CO., LTD. (CTII) KITAKYUSHU WATER SERVICE CO., LTD. (KWS)	SCALE	AS SHOWN

R140-1, TRANSMISSION LINE, DI Φ 1400mm (5+000 TO 5+508)

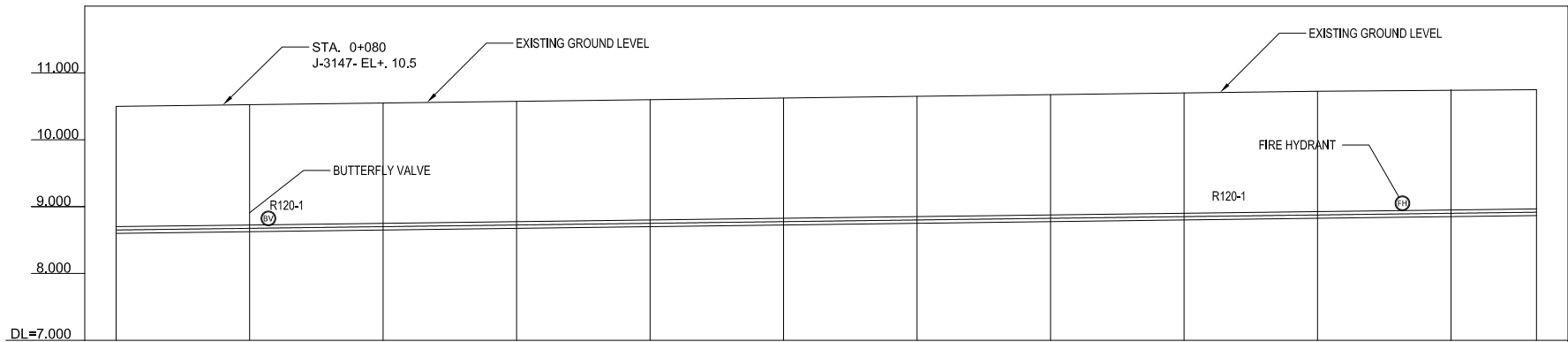
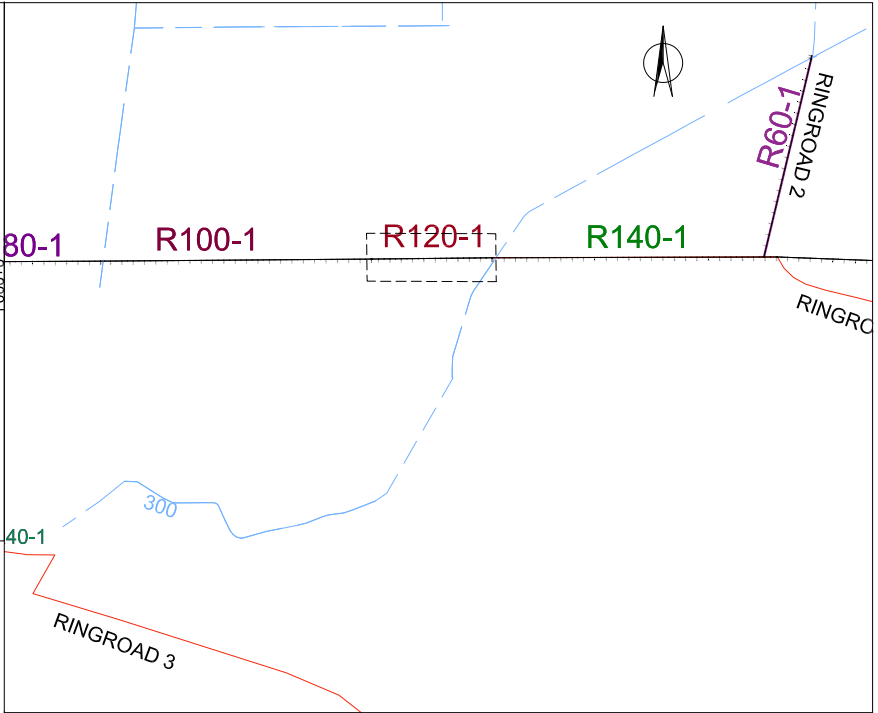
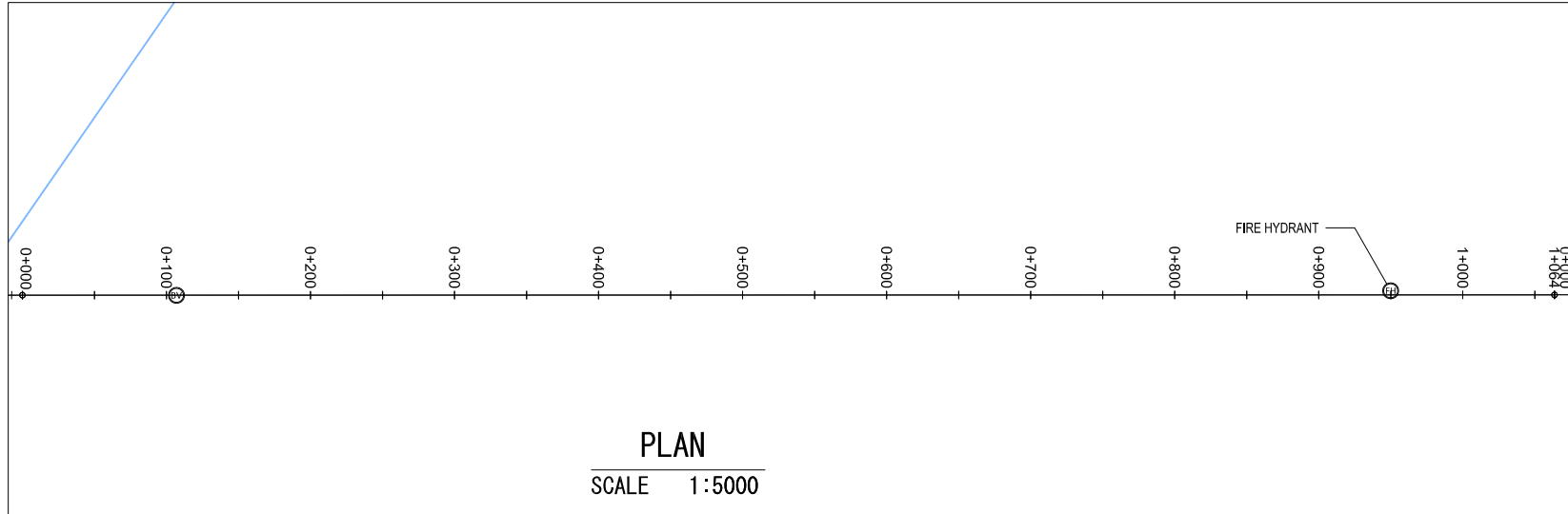


LEGEND			
	Alignment of Pipeline	 TBM (Temporary Bench Mark)	 Cable Optic Box
	Road Center Line	 ST (Station Points)	 Advertisement Board
	Fence	 Water Meter	 Steel Light Post
	Pavement Road	 Valve	 Concrete Light Post
	Un-pavement Road	 Fire Hydrant	 Concrete Electricity Post
	House/Building	 Manhole	 Wooden Electricity Post
	Karola (Concrete Block)	 Electricity Manhole	 Traffic Sign
	Garden/ Park	 Cable Optic Manhole	 Tree

PROFILE
SCALE 1:5000

PROJECT	DESCRIPTION	JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)	DRAWING No.	NRD/PH III/PL-TM022
		NIHON SUIDO CONSULTANTS CO.,LTD.(NSC) TOKYO ENGINEERING CONSULTANTS CO., LTD.(TEC) CTI ENGINEERING INTERNATIONAL CO., LTD. (CTII) KITAKYUSHU WATER SERVICE CO., LTD. (KWS)	SCALE	AS SHOWN

R120-1, TRANSMISSION LINE, DI Φ 1200mm (0+000 TO 1+064)

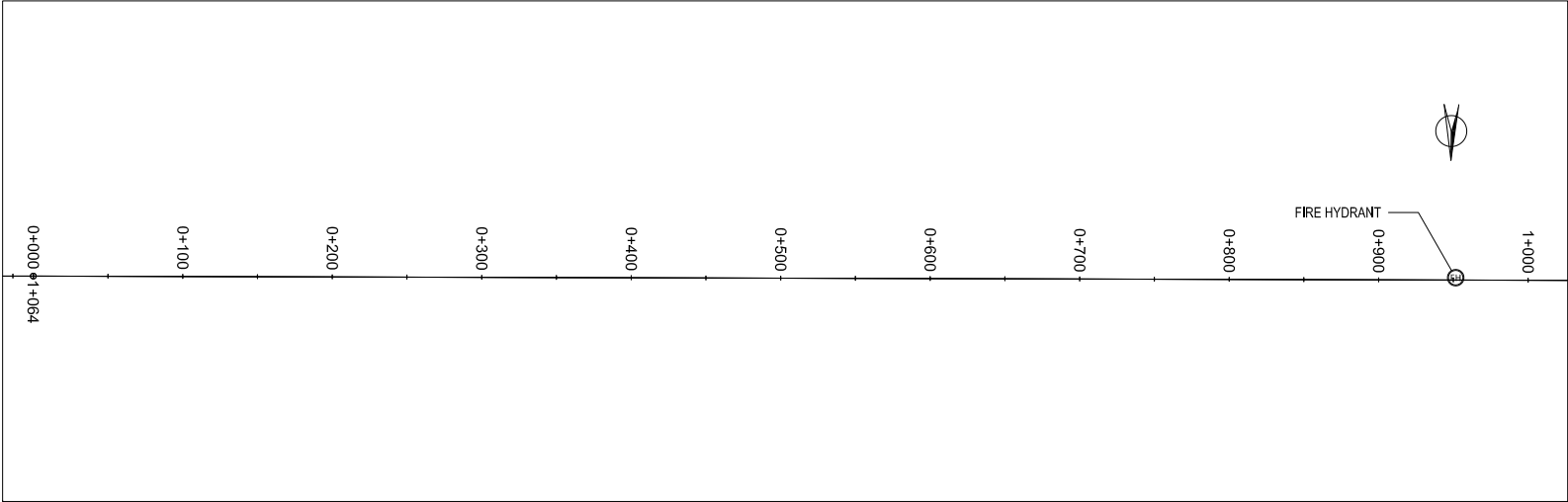


LEGEND	
	Alignment of Pipeline
	Road Center Line
	Fence
	Pavement Road
	Un-pavement Road
	House/Building
	Karola (Concrete Block)
	Garden/ Park
	Cable Optic Box
	Advertisement Board
	Steel Light Post
	Concrete Light Post
	Concrete Electricity Post
	Wooden Electricity Post
	Traffic Sign
	Tree
	TBM (Temporary Bench Mark)
	ST (Station Points)
	Water Meter
	Valve
	Fire Hydrant
	Manhole
	Electricity Manhole
	Cable Optic Manhole

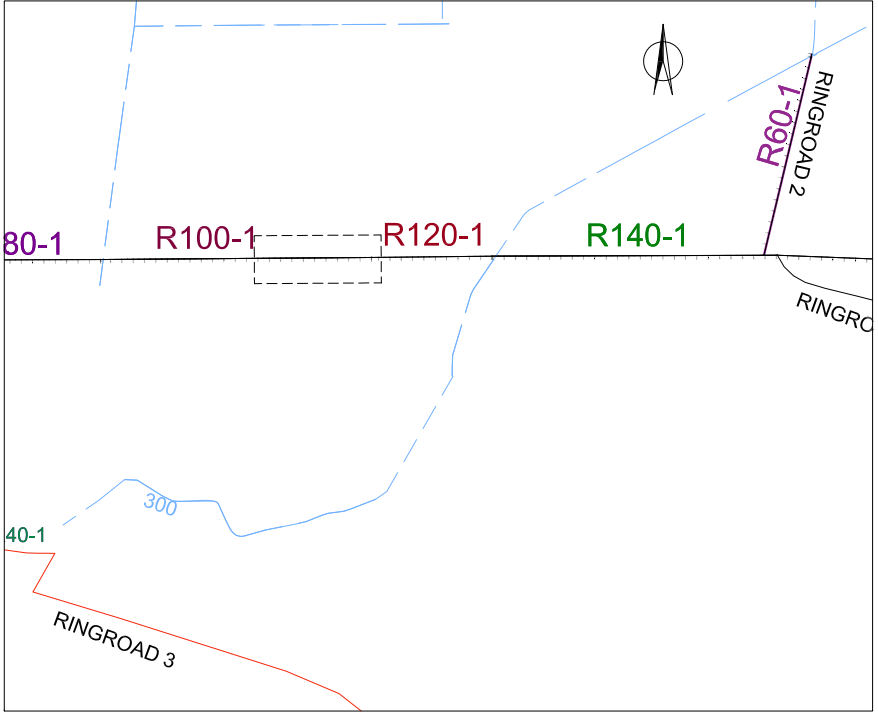
GROUND LEVEL (m)	10.500	10.525	10.525	10.550	10.575	10.600	10.625	10.650	10.675	10.700	10.725	10.750	10.750
TOP PIPE LEVEL (m)	8.700	8.725	8.725	8.750	8.775	8.800	8.825	8.850	8.875	8.900	8.925	8.950	8.950
EARTH COVERING DEPTH (m)	1.800	1.800	1.800	1.800	1.800	1.800	1.800	1.800	1.800	1.800	1.800	1.800	1.800
PIPE LINE DATA	TRANSMISSION PIPE DI Ø 1200												
SINGLE DISTANCE (m)	0.000	80.00	20.00	100.00	7.00	100.00	41.00	100.00	20.00	100.00	100.00	100.00	64.00
STATION	0+000	0+080	0+100	0+200	0+300	0+400	0+500	0+600	0+700	0+800	0+900	1+000	1+064

PROJECT Preparatory Survey on Nirodh Water Supply Expansion Project	DESCRIPTION PLAN AND PROFILE OF TRANSMISSION LINE R120-1 (1/1) FROM 0+000 TO 1+064	JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)	DRAWING No.	NRD/PH III/PL-TM023
		NIHON SUIDO CONSULTANTS CO.,LTD. (NSC) TOKYO ENGINEERING CONSULTANTS CO., LTD.(TEC) CTI ENGINEERING INTERNATIONAL CO., LTD. (CTII) KITAKYUSHU WATER SERVICE CO., LTD. (KWS)	SCALE	AS SHOWN

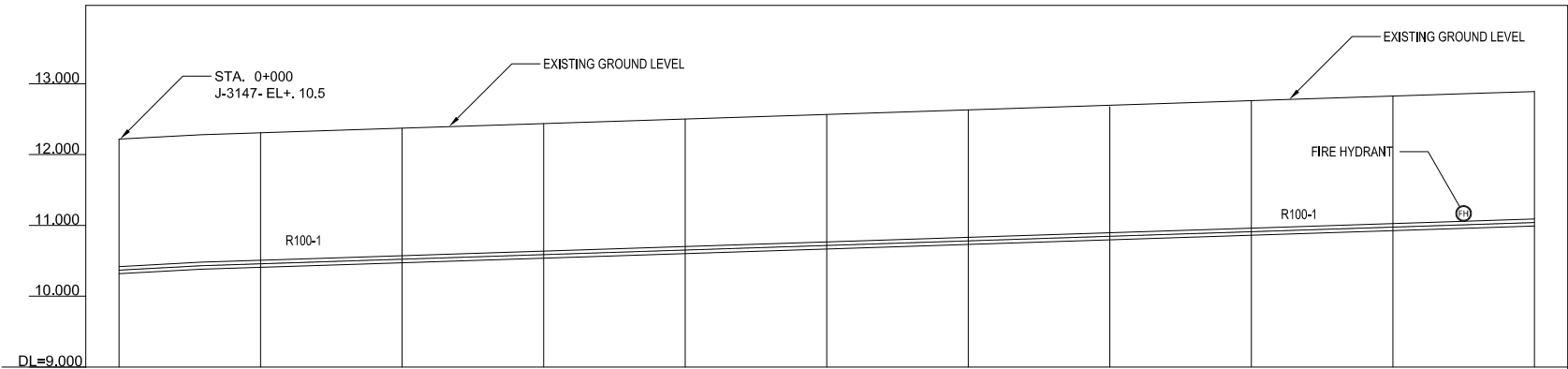
R100-1, TRANSMISSION LINE, DI Φ 1000mm (0+000 TO 1+000)



PLAN
SCALE 1:5000



KEY PLAN



1:5000
1:100

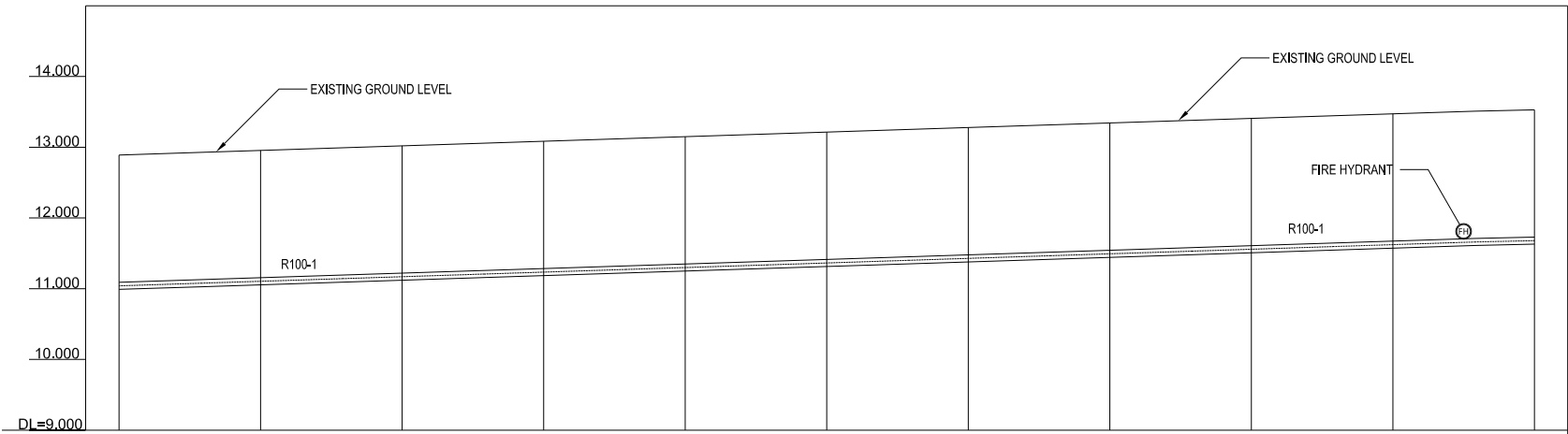
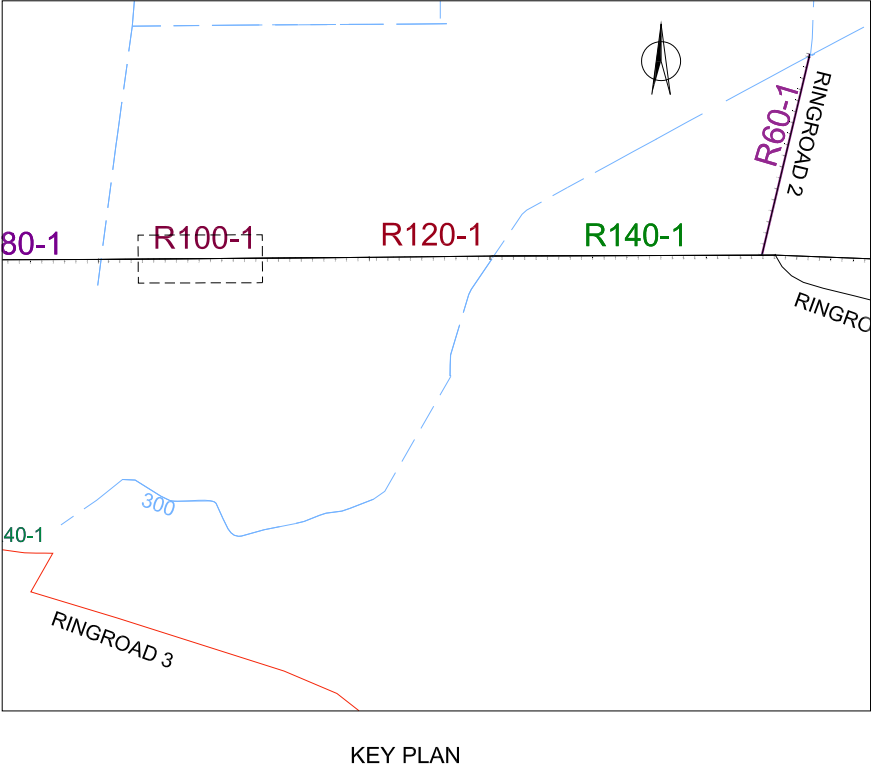
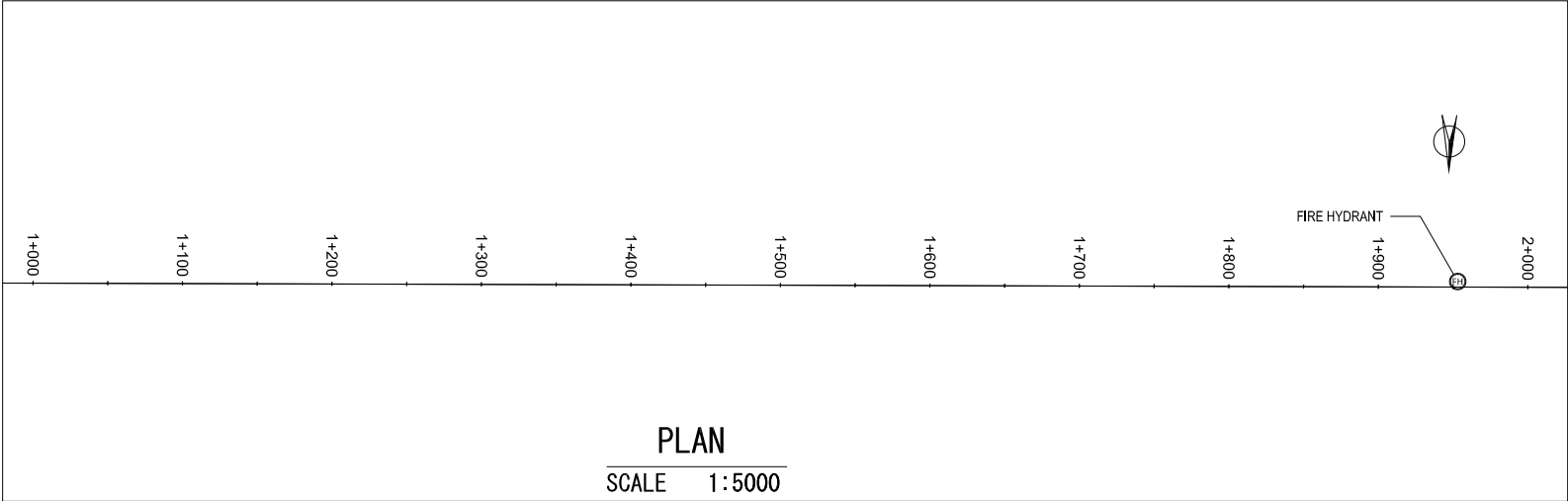
GROUND LEVEL (m)	10.000	12.218	12.307	12.372	12.437	12.501	12.566	12.631	12.696	12.760	12.825	12.890
TOP PIPE LEVEL (m)	10.418	10.507	10.572	10.637	10.701	10.766	10.831	10.896	10.960	11.025	11.090	11.155
EARTH COVERING DEPTH (m)	1.800	1.800	1.800	1.800	1.800	1.800	1.800	1.800	1.800	1.800	1.800	1.800
PIPE LINE DATA	TRANSMISSION PIPE DI Ø 1000											
SINGLE DISTANCE (m)	0.000	100.00	100.00	7.00	100.00	41.00	100.00	20.00	100.00	100.00	100.00	100.00
STATION	0+000	0+100	0+200	0+300	0+400	0+500	0+600	0+700	0+800	0+900	1+000	

PROFILE
SCALE 1:5000

LEGEND		
Alignment of Pipeline	TBM (Temporary Bench Mark)	Cable Optic Box
Road Center Line	ST (Station Points)	Advertisement Board
Fence	Water Meter	Steel Light Post
Pavement Road	Valve	Concrete Light Post
Un-pavement Road	Fire Hydrant	Concrete Electricity Post
House/Building	Manhole	Wooden Electricity Post
Karola (Concrete Block)	Electricity Manhole	Traffic Sign
Garden/ Park	Cable Optic Manhole	Tree

PROJECT Preparatory Survey on Nirodh Water Supply Expansion Project	DESCRIPTION PLAN AND PROFILE OF TRANSMISSION LINE R100-1 (1/3) FROM 0+000 TO 1+000	JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)	DRAWING No.	NRD/PH III/PL-TM024
		NIHON SUIDO CONSULTANTS CO.,LTD. (NSC) TOKYO ENGINEERING CONSULTANTS CO., LTD.(TEC) CTI ENGINEERING INTERNATIONAL CO., LTD. (CTII) KITAKYUSHU WATER SERVICE CO., LTD. (KWS)	SCALE	AS SHOWN

R100-1, TRANSMISSION LINE, DI Φ 1000mm (1+000 TO 2+000)

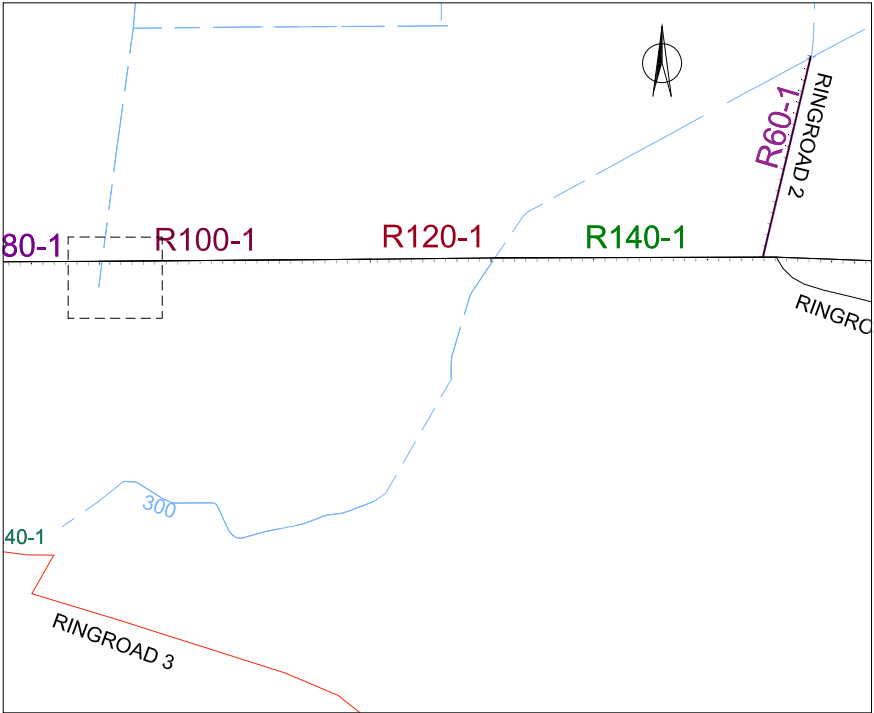
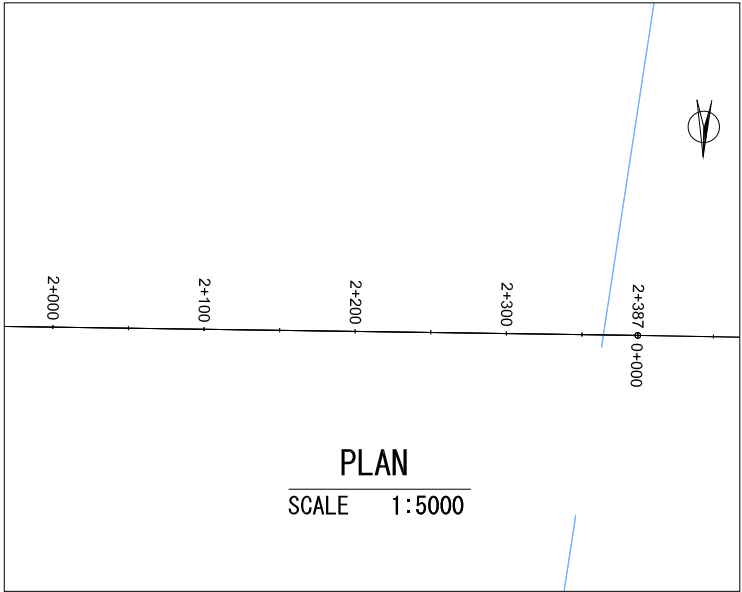


GROUND LEVEL (m)	12.890	12.955	13.019	13.084	13.149	13.214	13.278	13.343	13.408	13.472	13.529
TOP PIPE LEVEL (m)	11.090	11.155	11.219	11.284	11.349	11.414	11.478	11.543	11.608	11.672	11.729
EARTH COVERING DEPTH (m)	1.800	1.800	1.800	1.800	1.800	1.800	1.800	1.800	1.800	1.800	1.800
PIPE LINE DATA	TRANSMISSION PIPE DI Ø 1000										
SINGLE DISTANCE (m)	0.00	100.00	100.00	75.00	100.00	100.00	14.00	100.00	100.00	100.00	100.00
STATION	1+000	1+100	1+200	1+300	1+400	1+500	1+600	1+700	1+800	1+900	2+000

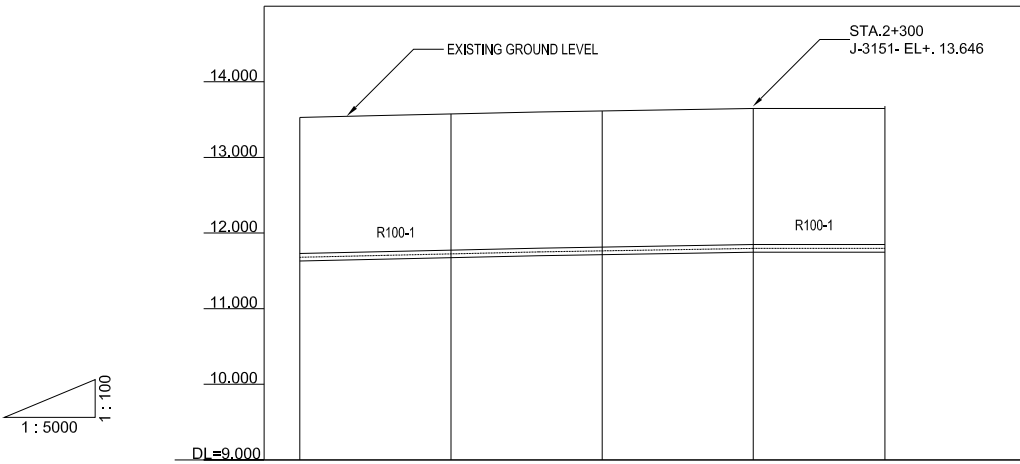
LEGEND			
Alignment of Pipeline	TBM (Temporary Bench Mark)	Cable Optic Box	
Road Center Line	ST (Station Points)	Advertisement Board	
Fence	Water Meter	Steel Light Post	
Pavement Road	Valve	Concrete Light Post	
Un-pavement Road	Fire Hydrant	Concrete Electricity Post	
House/Building	Manhole	Wooden Electricity Post	
Karola (Concrete Block)	Electricity Manhole	Traffic Sign	
Garden/ Park	Cable Optic Manhole	Tree	

PROJECT Preparatory Survey on Nirodh Water Supply Expansion Project	DESCRIPTION PLAN AND PROFILE OF TRANSMISSION LINE R100-1 (2/3) FROM 1+000 TO 2+000	JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)	DRAWING No.	NRD/PH III/PL-TM025
		NIHON SUIDO CONSULTANTS CO.,LTD. (NSC) TOKYO ENGINEERING CONSULTANTS CO., LTD.(TEC) CTI ENGINEERING INTERNATIONAL CO., LTD. (CTII) KITAKYUSHU WATER SERVICE CO., LTD. (KWS)	SCALE	AS SHOWN

R100-1, TRANSMISSION LINE, DI Φ 1000mm (2+000 TO 2+387)



KEY PLAN



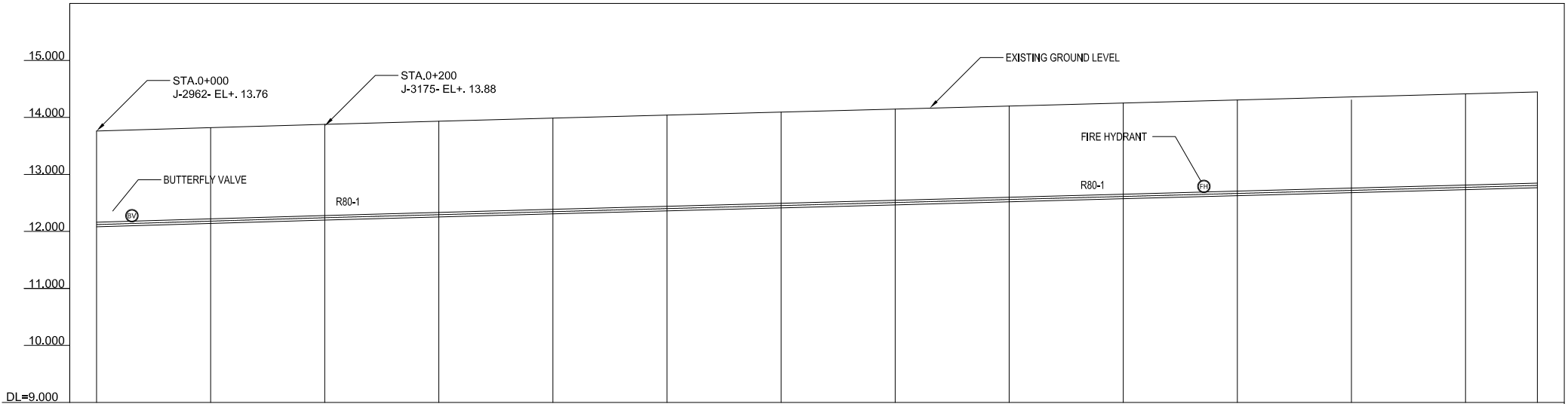
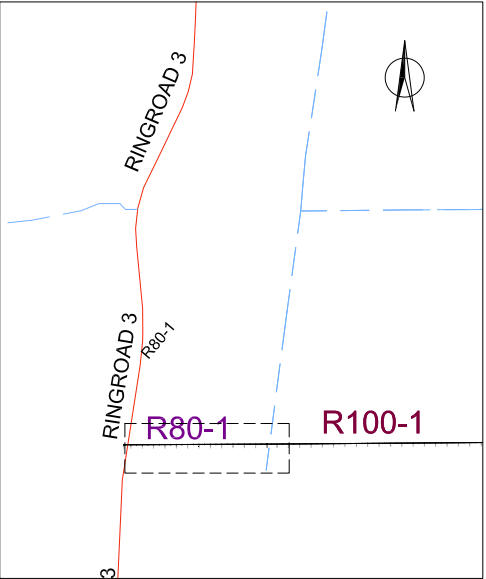
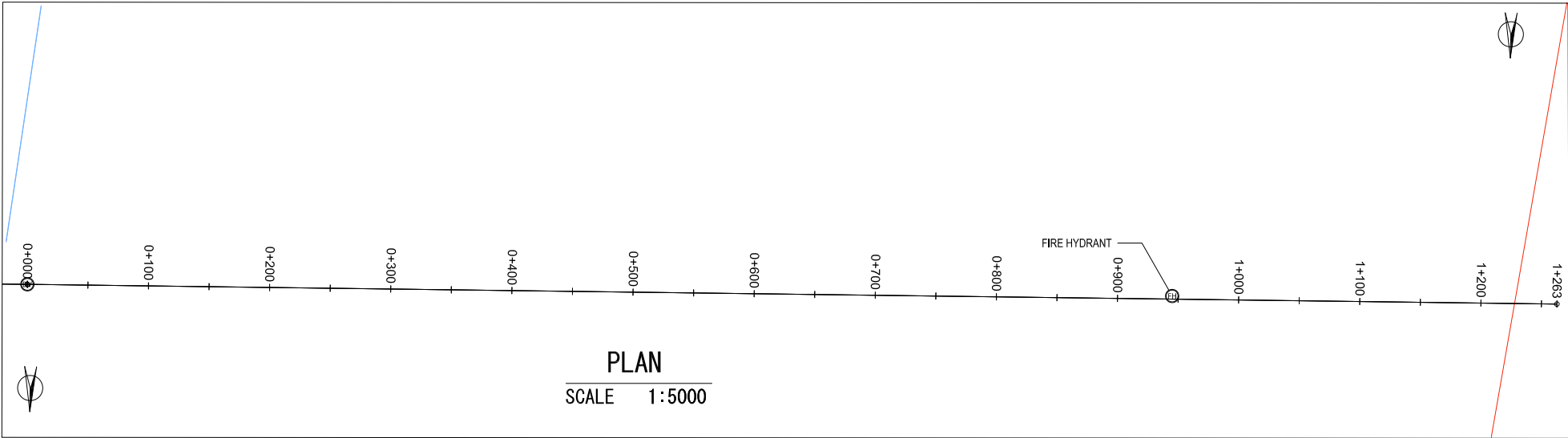
GROUND LEVEL (m)	13.529	13.574	13.614	13.646	13.646
TOP PIPE LEVEL (m)	11.729	11.774	11.814	11.846	11.846
EARTH COVERING DEPTH (m)	1.800	1.800	1.800	1.800	1.800
PIPE LINE DATA	TRANSMISSION PIPE DI Ø 1000				
SINGLE DISTANCE (m)	100.00	100.00	100.00	100.00	87.00
STATION	2+000	2+100	2+200	2+300	2+387

PROFILE
SCALE 1:5000

LEGEND		
Alignment of Pipeline	TBM (Temporary Bench Mark)	Cable Optic Box
Road Center Line	ST (Station Points)	Advertisement Board
Fence	Water Meter	Steel Light Post
Pavement Road	Valve	Concrete Light Post
Un-pavement Road	Fire Hydrant	Concrete Electricity Post
House/Building	Manhole	Wooden Electricity Post
Karola (Concrete Block)	Electricity Manhole	Traffic Sign
Garden/ Park	Cable Optic Manhole	Tree

PROJECT Preparatory Survey on Nirodh Water Supply Expansion Project	DESCRIPTION PLAN AND PROFILE OF TRANSMISSION LINE R100-1 (3/3) FROM 2+000 TO 2+387	JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)	DRAWING No.	NRD/PH III/PL-TM026
		NIHON SUIDO CONSULTANTS CO.,LTD. (NSC) TOKYO ENGINEERING CONSULTANTS CO., LTD.(TEC) CTI ENGINEERING INTERNATIONAL CO., LTD. (CTII) KITAKYUSHU WATER SERVICE CO., LTD. (KWS)	SCALE	AS SHOWN

R80-1, TRANSMISSION LINE, DI Φ 800mm (0+000 TO 1+263)

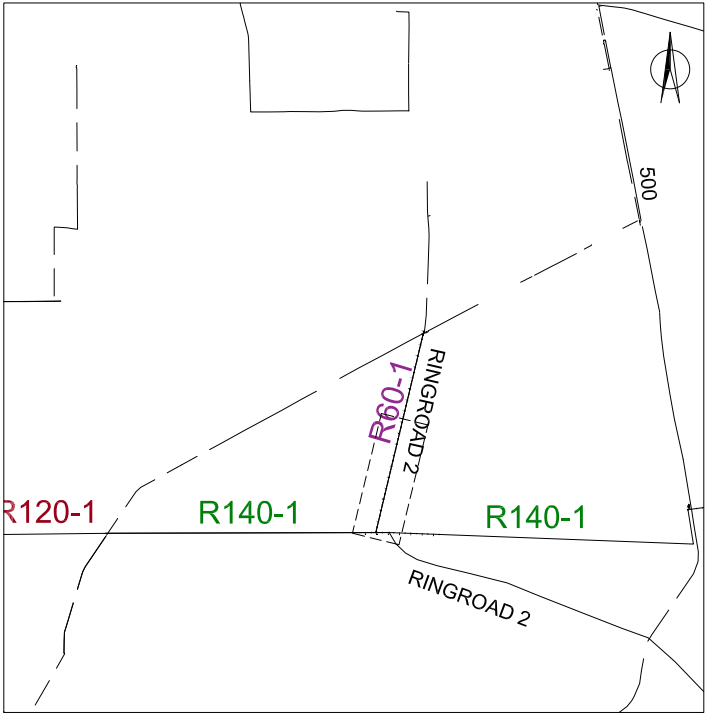
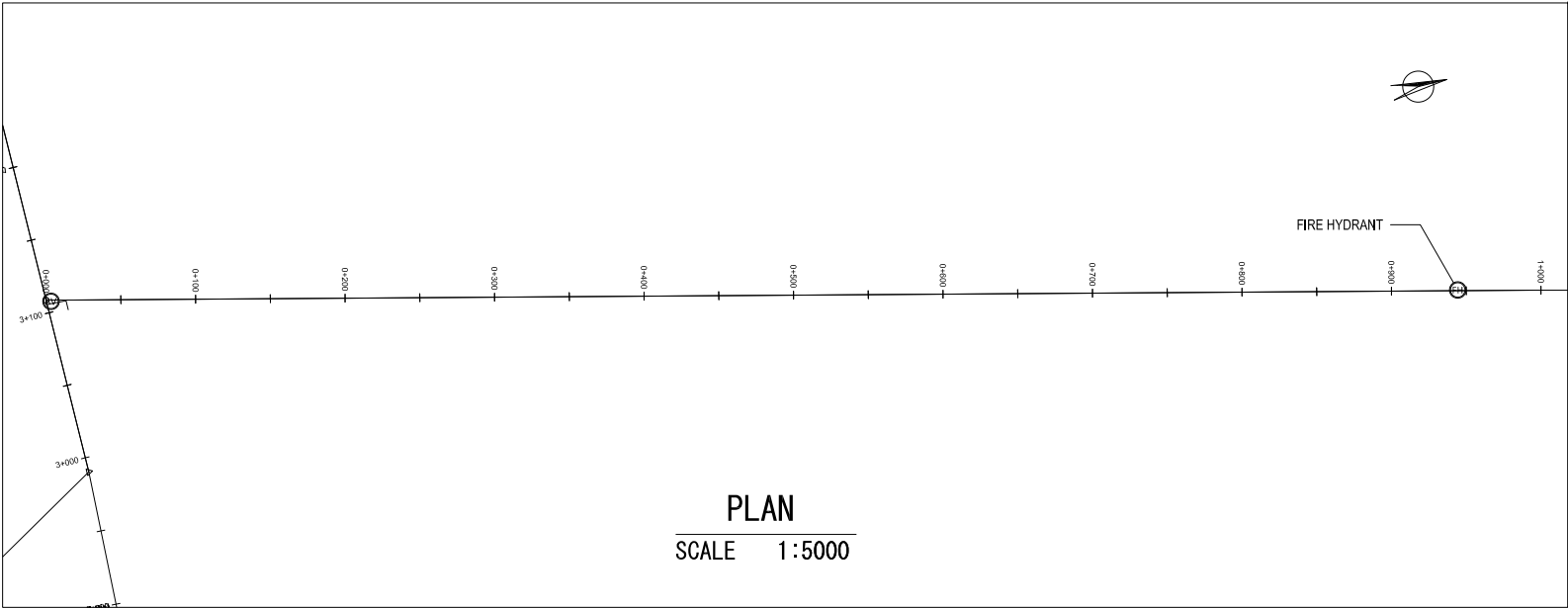


LEGEND	
	TBM (Temporary Bench Mark)
	ST (Station Points)
	Water Meter
	Valve
	Fire Hydrant
	Manhole
	Electricity Manhole
	Cable Optic Manhole
	Alignment of Pipeline
	Road Center Line
	Fence
	Pavement Road
	Un-pavement Road
	House/Building
	Karola (Concrete Block)
	Garden/ Park
	Cable Optic Box
	Advertisement Board
	Steel Light Post
	Concrete Light Post
	Concrete Electricity Post
	Wooden Electricity Post
	Traffic Sign
	Tree

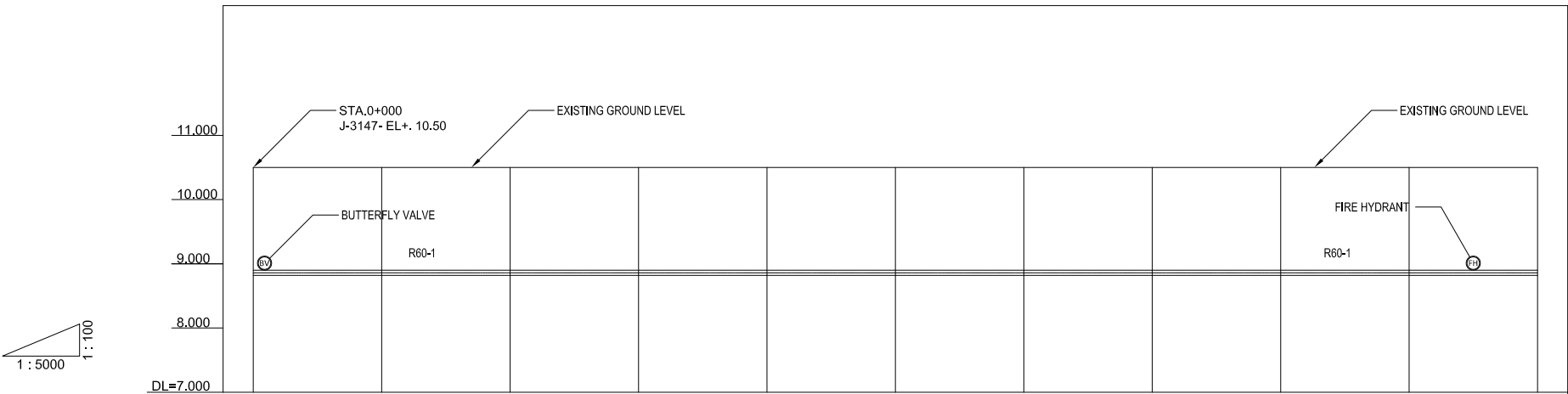
GROUND LEVEL (m)	13.760	13.820	13.880	13.933	13.987	14.040	14.093	14.146	14.200	14.253	14.306	14.359	14.413	14.466
TOP PIPE LEVEL (m)	12.160	12.220	12.280	12.333	12.387	12.440	12.493	12.546	12.600	12.653	12.706	12.759	12.813	12.866
EARTH COVERING DEPTH (m)	1.600	1.600	1.600	1.600	1.600	1.600	1.600	1.600	1.600	1.600	1.600	1.600	1.600	1.600
PIPE LINE DATA	TRANSMISSION PIPE DI Ø 800													
SINGLE DISTANCE (m)	0.000	100.000	100.000	100.000	100.000	100.000	100.000	100.000	100.000	100.000	100.000	100.000	100.000	63.000
STATION	0+000	0+100	0+200	0+300	0+400	0+500	0+600	0+700	0+800	0+900	1+000	1+100	1+200	1+263

PROJECT	DESCRIPTION	JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)	DRAWING No.	NRD/PH III/PL-TM027
		NIHON SUIDO CONSULTANTS CO.,LTD. (NSC) TOKYO ENGINEERING CONSULTANTS CO., LTD.(TEC) CTI ENGINEERING INTERNATIONAL CO., LTD. (CTII) KITAKYUSHU WATER SERVICE CO., LTD. (KWS)	SCALE	AS SHOWN

R60-1, TRANSMISSION LINE, DI Φ 600mm (0+000 TO 1+000)



KEY PLAN



GROUND LEVEL (m)	10.500	10.500	10.500	10.500	10.500	10.500	10.500	10.500	10.500	10.500	10.500
TOP PIPE LEVEL (m)	8.900	8.900	8.900	8.900	8.900	8.900	8.900	8.900	8.900	8.900	8.900
EARTH COVERING DEPTH (m)	1.600	1.600	1.600	1.600	1.600	1.600	1.600	1.600	1.600	1.600	1.600
PIPE LINE DATA	TRANSMISSION PIPE DI Ø 600										
SINGLE DISTANCE (m)	0.000	88.00	100.00	7.00	100.00	41.00	100.00	20.00	100.00	100.00	100.00
STATION	0+000	0+100	0+200	0+300	0+400	0+500	0+600	0+700	0+800	0+900	1+000

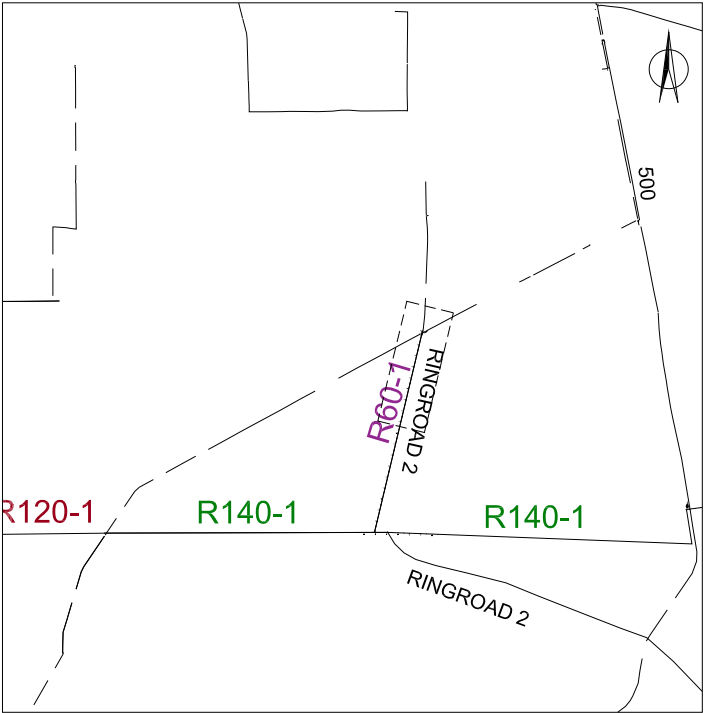
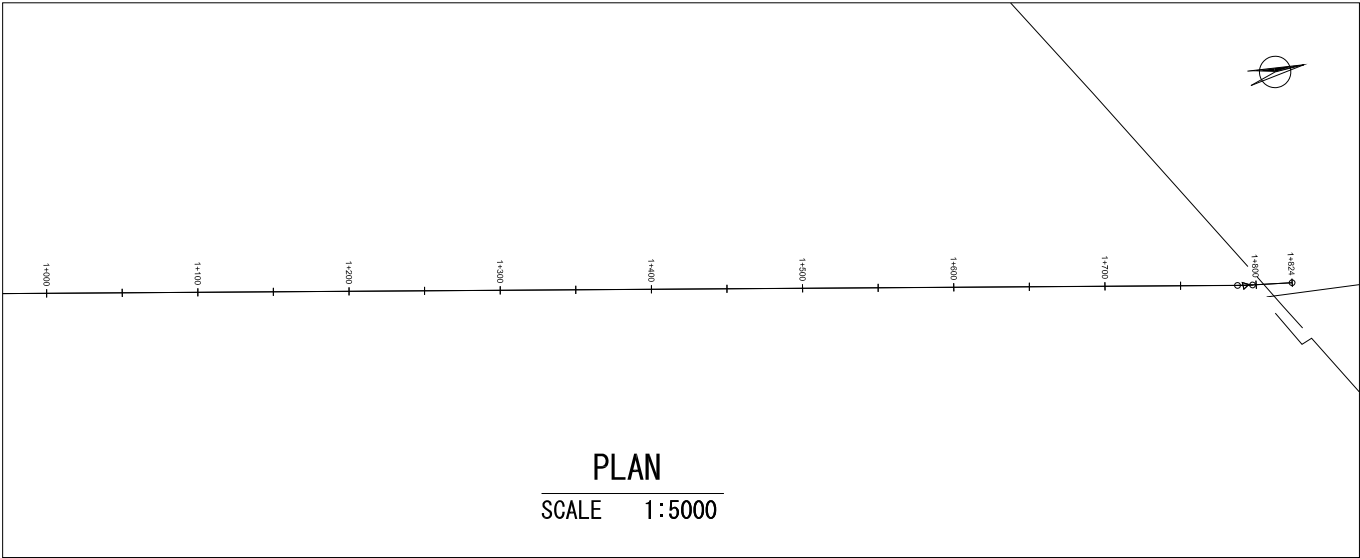
PROFILE

SCALE 1:5000

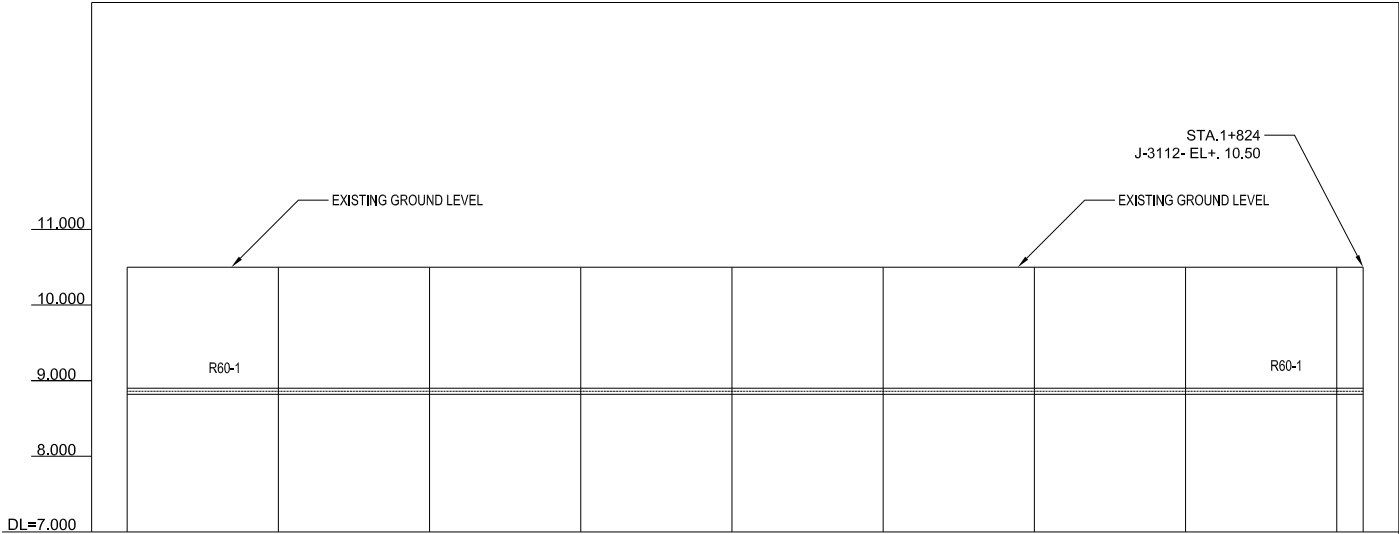
LEGEND					
	Alignment of Pipeline		TBM (Temporary Bench Mark)		Cable Optic Box
	Road Center Line		ST (Station Points)		Advertisement Board
	Fence		Water Meter		Steel Light Post
	Pavement Road		Valve		Concrete Light Post
	Un-pavement Road		Fire Hydrant		Concrete Electricity Post
	House/Building		Manhole		Wooden Electricity Post
	Karola (Concrete Block)		Electricity Manhole		Traffic Sign
	Garden/ Park		Cable Optic Manhole		Tree

PROJECT Preparatory Survey on Nirodh Water Supply Expansion Project	DESCRIPTION PLAN AND PROFILE OF TRANSMISSION LINE R60-1 (1/2) FROM 0+000 TO 1+000	JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)	DRAWING No.	NRD/PH III/PL-TM028
		NIHON SUIDO CONSULTANTS CO.,LTD. (NSC) TOKYO ENGINEERING CONSULTANTS CO., LTD.(TEC) CTI ENGINEERING INTERNATIONAL CO., LTD. (CTII) KITAKYUSHU WATER SERVICE CO., LTD. (KWS)	SCALE	AS SHOWN

R60-1, TRANSMISSION LINE, DI Φ 600mm (1+000 TO 1+824)



KEY PLAN



GROUND LEVEL (m)	10.500	10.500	10.500	10.500	10.500	10.500	10.500	10.500	10.500	10.500
TOP PIPE LEVEL (m)	8.900	8.900	8.900	8.900	8.900	8.900	8.900	8.900	8.900	8.900
EARTH COVERING DEPTH (m)	1.600	1.600	1.600	1.600	1.600	1.600	1.600	1.600	1.600	1.600
PIPE LINE DATA	TRANSMISSION PIPE DI Ø 600									
SINGLE DISTANCE (m)	100.00	100.00	100.00	75.00	100.00	100.00	14.00	100.00	100.00	24.00
STATION	1+000	1+100	1+200	1+300	1+400	1+500	1+600	1+700	1+800	1+824

PROFILE
SCALE 1:5000

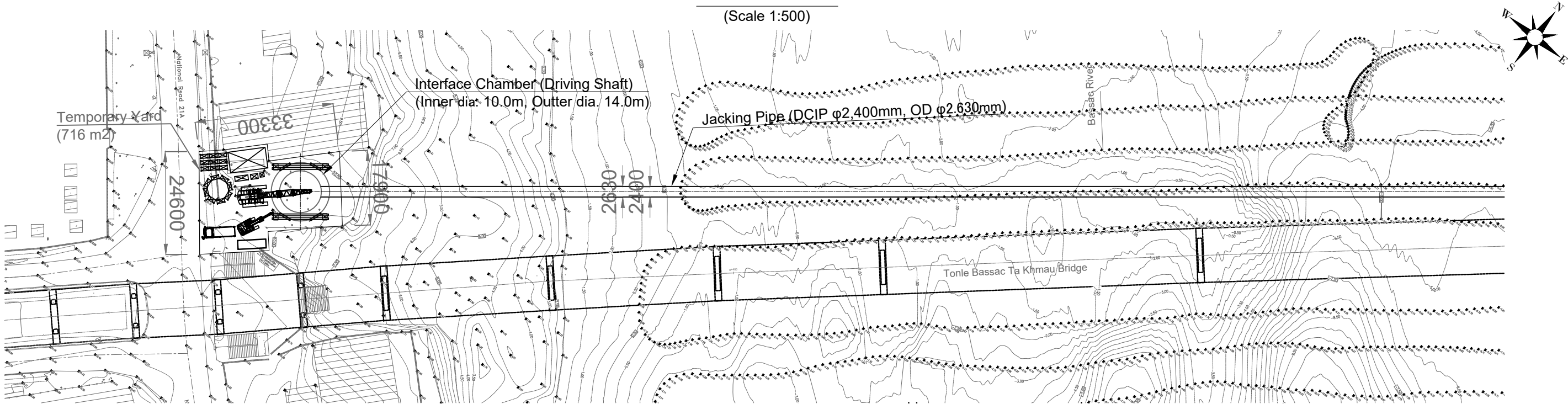
LEGEND		
—	Alignment of Pipeline	▣ TBM (Temporary Bench Mark)
—+—	Road Center Line	△ ST (Station Points)
—○—	Fence	⊙ Water Meter
—+—	Pavement Road	⊙ Valve
- - - -	Un-pavement Road	⊙ Fire Hydrant
▭	House/Building	⊙ Manhole
▨	Karola (Concrete Block)	⊙ Electricity Manhole
▩	Garden/ Park	⊙ Cable Optic Manhole
▣	Cable Optic Box	⊙ Advertisement Board
⊙	Steel Light Post	⊙ Concrete Light Post
⊙	Concrete Electricity Post	⊙ Wooden Electricity Post
⊙	Traffic Sign	⊙ Tree

PROJECT Preparatory Survey on Nirodh Water Supply Expansion Project	DESCRIPTION PLAN AND PROFILE OF TRANSMISSION LINE R60-1 (2/2) FROM 1+000 TO 1+824	JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)	DRAWING No.	NRD/PH III/PL-TM029
		NIHON SUIDO CONSULTANTS CO.,LTD. (NSC) TOKYO ENGINEERING CONSULTANTS CO., LTD.(TEC) CTI ENGINEERING INTERNATIONAL CO., LTD. (CTII) KITAKYUSHU WATER SERVICE CO., LTD. (KWS)	SCALE	AS SHOWN

PIPE JACKING DRAWINGS

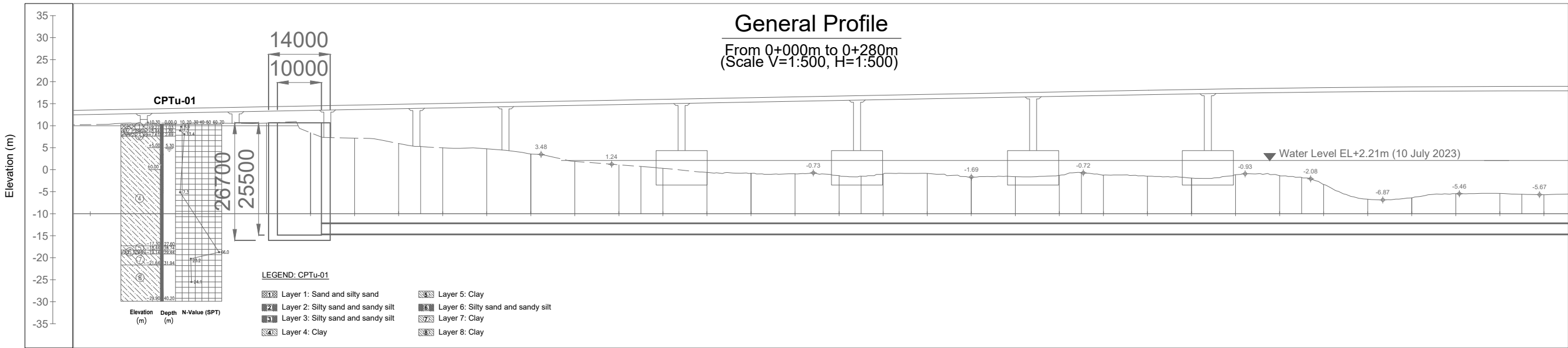
General Plan

(Scale 1:500)



General Profile

From 0+000m to 0+280m
(Scale V=1:500, H=1:500)



Datum -25.00m

Existing Ground Level	+7.61	+6.00	+4.70	+1.90	+0.30	-0.80	-1.40	-0.90	-1.60	-1.20	-1.90	-1.40	-6.70	-5.50	-5.70
Jacking Pipe Invert Elevation	-14.65	-14.65	-14.65	-14.65	-14.65	-14.65	-14.65	-14.65	-14.65	-14.65	-14.65	-14.65	-14.65	-14.65	-14.65
Transmission Pipe Invert Elevation	-14.65	-14.65	-14.65	-14.65	-14.65	-14.65	-14.65	-14.65	-14.65	-14.65	-14.65	-14.65	-14.65	-14.65	-14.65
Cover Depth (GL to Top of Pipe)	19.74	18.13	16.83	14.03	12.43	11.33	10.73	11.23	10.53	10.93	10.23	10.73	5.43	6.63	6.43
Station (m)	0.00	20.00	40.00	60.00	80.00	100.00	120.00	140.00	160.00	180.00	200.00	220.00	240.00	260.00	280.00

PROJECT
Preparatory Survey on Nirodh Water Supply Expansion Project

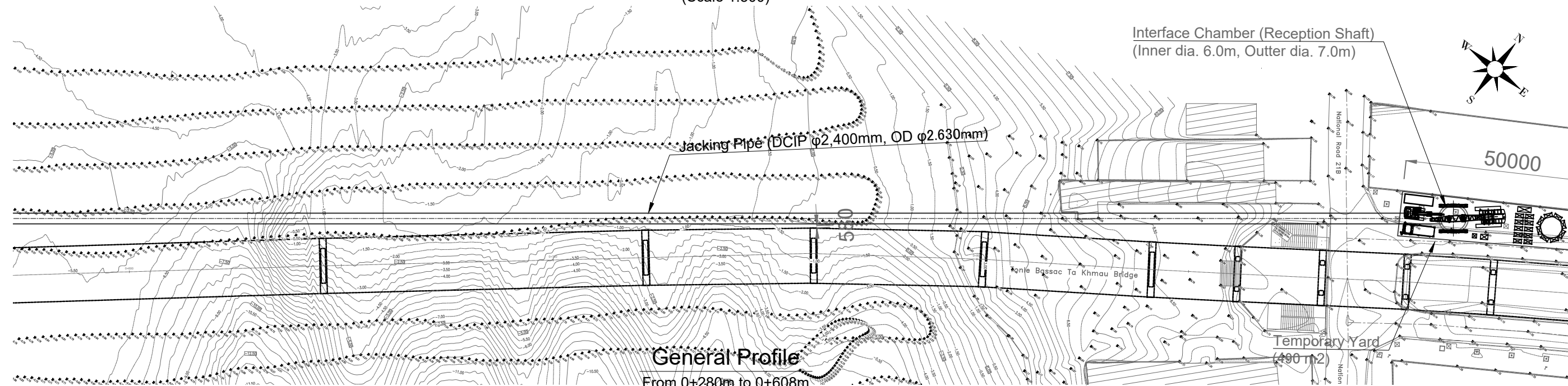
DESCRIPTION
General Plan of Pipe Jacking Crossing Basac River
(0m to 0+280m)

JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)
NIHON SUIDO CONSULTANTS CO.,LTD. (NSC)
TOKYO ENGINEERING CONSULTANTS CO., LTD.(TEC)
CTI ENGINEERING INTERNATIONAL CO., LTD. (CTII)
KITAKYUSHU WATER SERVICE CO., LTD. (KWS)

DRAWING No. NRD/PH III/PL-PJ001
SCALE AS SHOWN

General Plan

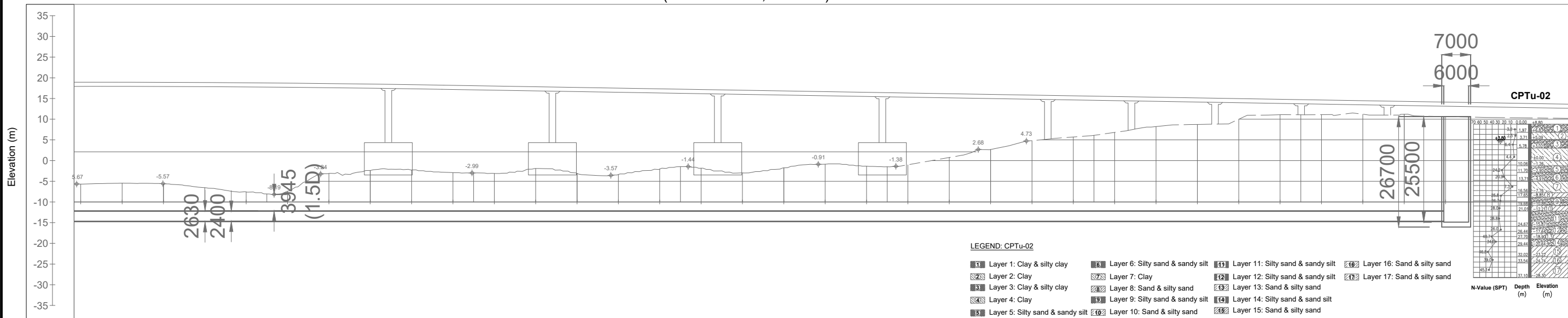
(Scale 1:500)



General Profile

From 0+280m to 0+608m

(Scale V=1:500, H=1:500)



Datum -25.00m

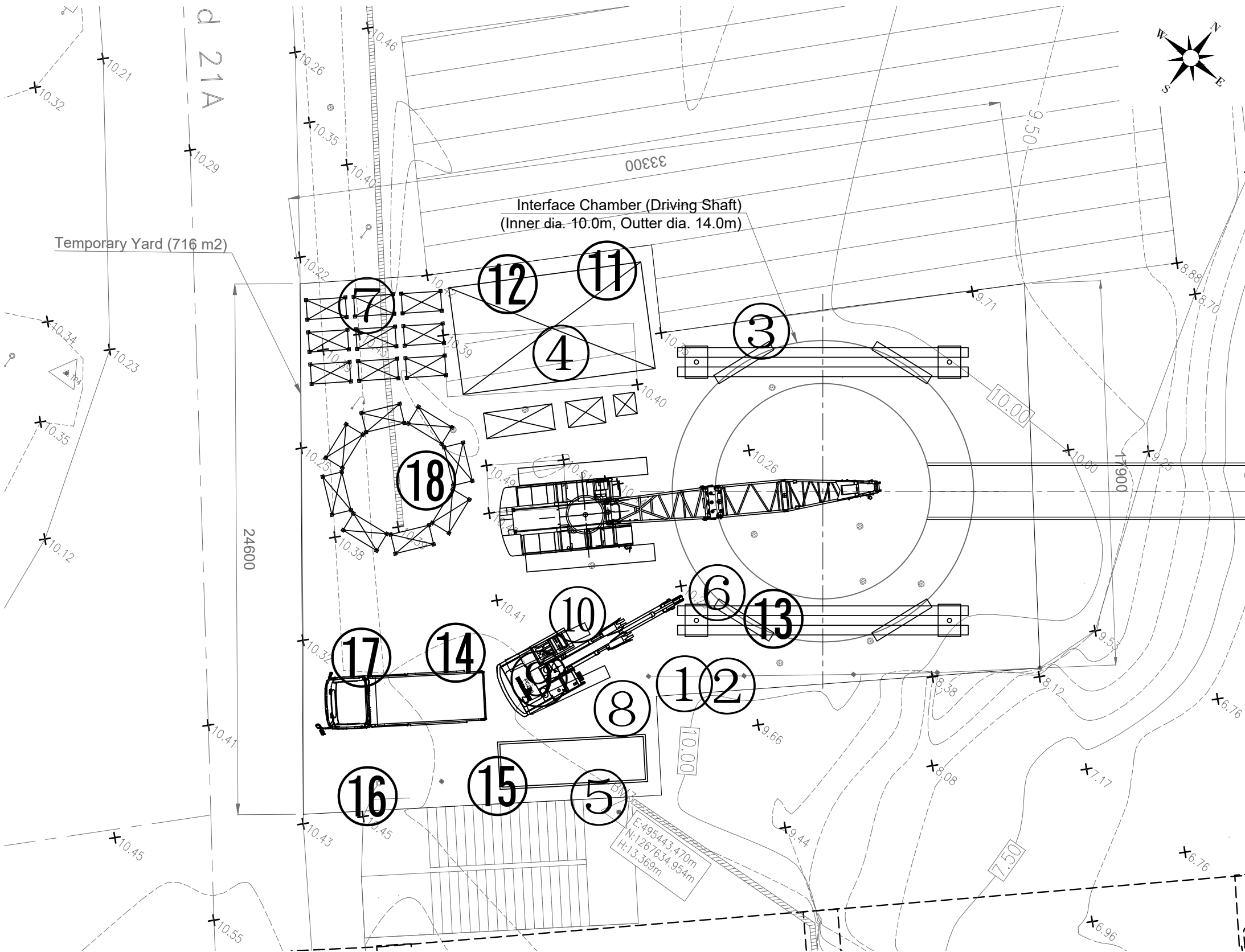
Existing Ground Level	-5.70	-5.60	-7.60	-3.10	-2.30	-3.10	-3.10	-2.00	-3.00	-0.90	-1.00	+2.70	+5.70	+8.20	+10.00	+11.10	+11.20	+10.60
Jacking Pipe Invert Elevation	-14.65	-14.65	-14.65	-14.65	-14.65	-14.65	-14.65	-14.65	-14.65	-14.65	-14.65	-14.65	-14.65	-14.65	-14.65	-14.65	-14.65	-14.65
Transmission Pipe Invert Elevation	-14.65	-14.65	-14.65	-14.65	-14.65	-14.65	-14.65	-14.65	-14.65	-14.65	-14.65	-14.65	-14.65	-14.65	-14.65	-14.65	-14.65	-14.65
Cover Depth (GL to Top of Pipe)	6.43	6.53	4.53	9.03	9.83	9.03	9.03	10.13	9.13	11.23	11.13	14.83	17.83	20.33	22.13	23.23	23.33	22.73
Station (m)	280.00	300.00	320.00	340.00	360.00	380.00	400.00	420.00	440.00	460.00	480.00	500.00	520.00	540.00	560.00	580.00	600.00	608.87

PROJECT	DESCRIPTION	JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)	DRAWING No.	NRD/PH III/PL-PJ002
		NIHON SUIDO CONSULTANTS CO.,LTD. (NSC) TOKYO ENGINEERING CONSULTANTS CO., LTD.(TEC) CTI ENGINEERING INTERNATIONAL CO., LTD. (CTII) KITAKYUSHU WATER SERVICE CO., LTD. (KWS)	SCALE	AS SHOWN

Pipe Jacking System Layout Plan (Driving Shaft)

(Scale 1:200)

No.	Facilities and Equipment
①	Mixer
②	Pump
③	Compressor
④	RC Jacking Pipe (2,400mm)
⑤	Primly Sludge Treatment Plant
⑥	Sludge Transfer Pump
⑦	Clear Water Tank (20m3)
⑧	Slurry Tank (5m3)
⑨	Primary Sludge Basin (25m3)
⑩	Secondary Sludge Basin (28m3)
⑪	Generator (300 KVA _m 3)
⑫	Generator (300 KVA _m 3)
⑬	Blower
⑭	Stock Yard
⑮	Soil Reservoir
⑯	Excavator (0.45m3)
⑰	Truck (10t)
⑱	Crawler Crane (10t)



PROJECT
Preparatory Survey on Nirodh Water Supply Expansion Project

DESCRIPTION
Pipe Jacking System Layout Plan

JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)
NIHON SUIDO CONSULTANTS CO.,LTD. (NSC)
TOKYO ENGINEERING CONSULTANTS CO., LTD.(TEC)
CTI ENGINEERING INTERNATIONAL CO., LTD. (CTII)
KITAKYUSHU WATER SERVICE CO., LTD. (KWS)

DRAWING No. NRD/PH III/PL-PJ003
SCALE AS SHOWN

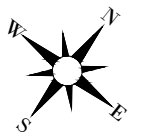
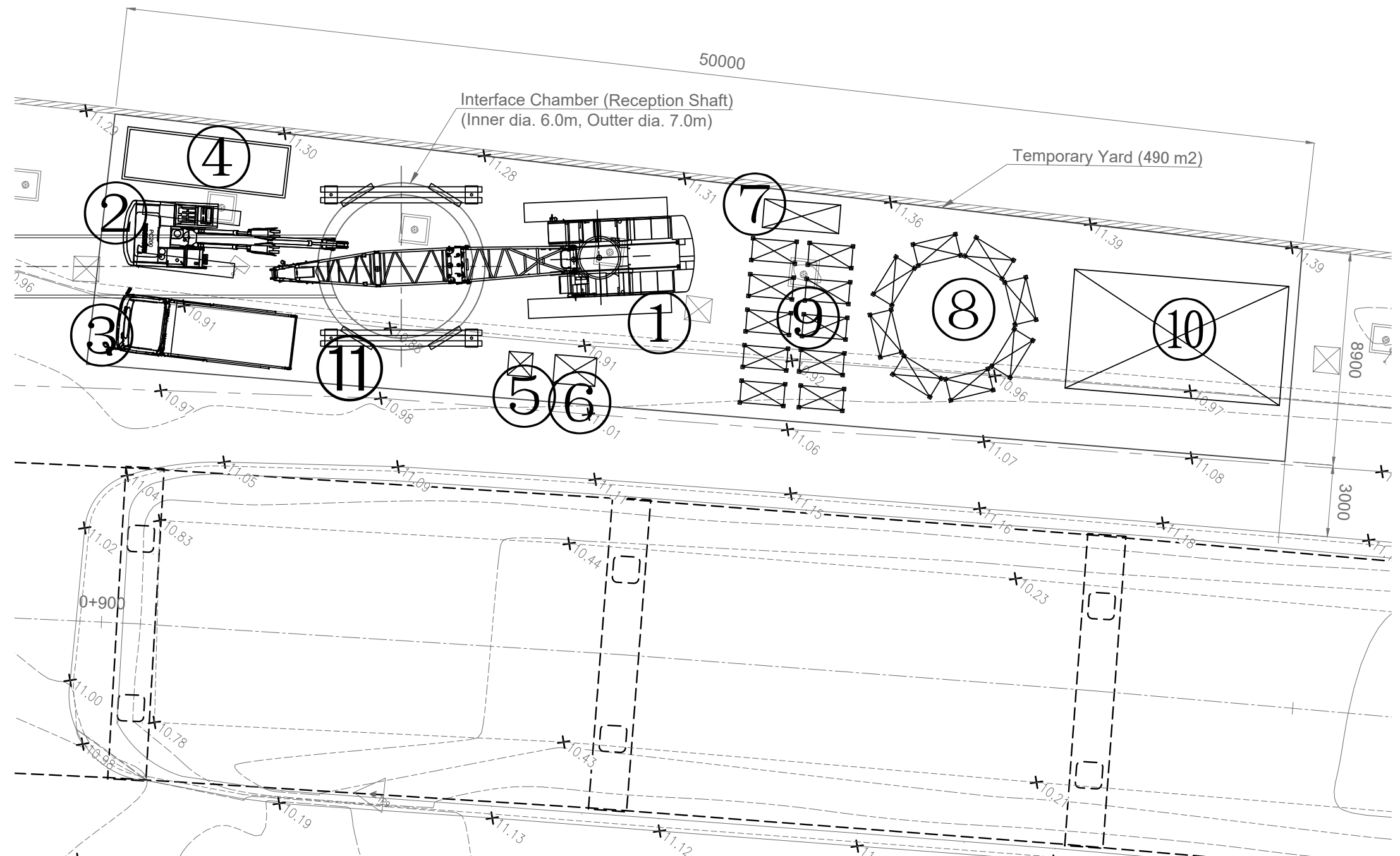
(Scale 1:100)

This technical site plan illustrates the layout of a tunnel construction site. The plan includes the following elements:

- Interface Chamber (Driving Shaft):** A large circular structure with an inner diameter of 10.0m and an outer diameter of 14.0m, located in the upper right quadrant.
- Temporary Yard (716 m2):** A rectangular area on the left side of the plan, measuring 24600 units in length.
- Equipment and Structures:**
 - 1:** A large crane or drilling rig positioned near the center of the site.
 - 2:** A smaller crane or drilling rig located near the bottom center.
 - 3:** A rectangular structure, possibly a storage container or equipment shed, located near the bottom left.
 - 4:** A rectangular structure, possibly a storage container or equipment shed, located near the bottom center.
 - 5:** A small structure or shed located near the center.
 - 6:** A small structure or shed located near the center.
 - 7:** A small structure or shed located near the center.
 - 8:** A circular structure, possibly a well or a small tunnel, located near the center.
 - 9:** A rectangular structure, possibly a storage container or equipment shed, located near the top left.
 - 10:** A rectangular structure, possibly a storage container or equipment shed, located near the top center.
 - 11:** A rectangular structure, possibly a storage container or equipment shed, located near the top right.
- Topographic Features:** Contour lines indicating elevation, with labels such as 9.50, 10.00, 10.50, and 11.00.
- Surveying Data:** A box in the bottom right corner provides coordinates: E:495443.470m, N:1267634.954m, H:13.369m.
- Orientation:** A compass rose in the top right corner indicates North (N), South (S), East (E), and West (W).

PROJECT	DESCRIPTION	JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)	DRAWING No.	NRD/PH III/PL-PJ004
Preparatory Survey on Nirodh Water Supply Expansion Project	Open Caisson System Layout Plan (Driving Shaft)	NIHON SUIDO CONSULTANTS CO.,LTD. (NSC) TOKYO ENGINEERING CONSULTANTS CO., LTD.(TEC) CTI ENGINEERING INTERNATIONAL CO., LTD. (CTII) KITAKYUSHU WATER SERVICE CO., LTD. (KWS)	SCALE	AS SHOWN

(Scale 1:100)

[illegible]

PROJECT	DESCRIPTION	JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)	DRAWING No.	NRD/PH III/PL-PJ005
Preparatory Survey on Nirodh Water Supply Expansion Project	Open Caisson System Layout Plan (Reception Shaft)	NIHON SUIDO CONSULTANTS CO.,LTD. (NSC) TOKYO ENGINEERING CONSULTANTS CO., LTD.(TEC) CTI ENGINEERING INTERNATIONAL CO., LTD. (CTII) KITAKYUSHU WATER SERVICE CO., LTD. (KWS)	SCALE	AS SHOWN

DISTRIBUTION NETWORK