

## Explanation of Negative Environmental Impact

### Predicted Major Negative impacts (1)

(During construction)

1. **Dust Noise & Vibration**
2. **Loss of trees**  
(Construction will be carried out in Govt. Land or Right of way along Roads)
3. **Run-off Turbid water** by earth work near river

### Predicted Major Negative impacts (2)

(Post construction)

Discharged Water without adequate drainage system may **provide habitat of malaria-carrying mosquito**

**Water pollution (not so significant because uses will not increase much)** by discharged Water from domestic, commercial and industrial area (without sewerage system)

### Predicted Major Negative impacts (3)

(Post construction)

**Water-logging near Water Tanker Filling Station and Public Tap Stands:**  
if not operated properly, poor drainage might cause water logging (proper drainage should be considered for these facilities)

**Water Pumping Personnel:**  
Operation of new water tanker filling stations and public tap stands might result into loss of job of private pump operators along river banks.

### Level of Negative impacts

Foreseeable Adverse Impacts	Grade of Adverse Impacts
<b>Construction Stage</b>	
Air pollution, noise and vibration by construction works	B
Flora and fauna	B+
Landscape	B
Traffic/public facilities, Public health condition, Air pollution, Noise and vibration by carrying in and out of materials/construction waste	B-
Solid waste	B
<b>Operation Stage</b>	
Air pollution, Noise and vibration	B-
Water pollution due to increased wastewater	B
Sludge disposal from WTP	B
Loss of job in case of private pump operators	B+
Water logging near WTFS and public tap stands	B

A: Serious impact expected; B: Certain impact expected  
+: the strength of impact is bigger, -: the strength of the impact is smaller

### Mitigation Measures (1) ~ Construction Stage ~

Items	Impacts	Mitigation Measures
<Landscape>	No significant impact expected	*Installation of information desk to collect complaints from residents and neighborhoods.
<Air Pollution>	Generation of particulates and exhaust gases	*Dust control through water sprinkling at construction site *Preventive maintenance of construction machineries and vehicles *Attentive operation and speed restrictions of construction vehicles and equipment
<Noise and Vibration>	Generation of noise and vibration from heavy vehicles and equipments	*Announcement of construction schedule and contents at site *Attentive operation and speed restrictions of construction vehicles and equipment
<Flora and Fauna>	Few trees might be required to cut in the proposed location of the WTP or along the alignment of the pipes	*Cutting of trees should be avoided as much as possible *In unavoidable cases, new trees should be planted after construction completes.

### Mitigation Measures (2) ~ Construction Stage ~

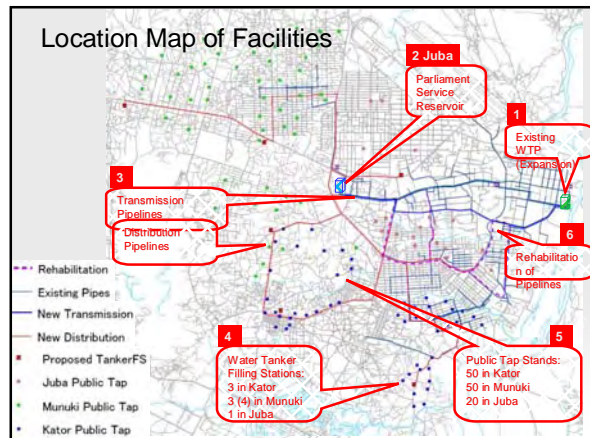
Items	Impacts	Mitigation Measures
<Traffic/ Public Facilities> <Public Health Condition> <Air Pollution> <Noise and Vibration>	Carrying in and out of materials/construction waste can result into possible adverse impacts on health, air pollution level, and noise and vibration along access road	<ul style="list-style-type: none"> <li>•Announcement and public notification concerning construction contents and its schedule</li> <li>•Assigning of watchman or traffic control staff</li> <li>•Water sprinkling</li> <li>•Covering the loading platform</li> <li>•Arrangement of information desk and deployment of responsible person</li> <li>•Attentive operation and speed restrictions of vehicles</li> <li>•Preventive maintenance of construction machineries and vehicles</li> </ul>
<Solid Waste>	Disposal of construction waste and soil	<ul style="list-style-type: none"> <li>•Promotion of reuse</li> <li>•Disposal at appropriate location such as landfill site, etc.</li> </ul>

### Mitigation Measures (3) ~ Operation Stage ~

Items	Impacts	Mitigation Measures
<Noise and Vibration>	Noise from blower, pumps, and generators is expected	•Facilities shall be installed inside buildings to reduce noise level significantly
<Water Pollution> <Public Health Condition>	Water uses pattern being same, very little increase in wastewater discharge is expected within few years.	•In long run, planning is required towards appropriate handling and disposal of wastewater.
<Sludge Disposal>	Generated sludge will be from sedimentation tanks and not hazardous in nature	<ul style="list-style-type: none"> <li>•Sludge removed from sedimentation tank shall be thickened using existing sludge tanks at WTP.</li> <li>•Thick sludge can be removed through vacuum switch pump to sewage truck and should be disposed off at appropriate landfill site.</li> </ul>

### Mitigation Measures (4) ~ Operation Stage ~

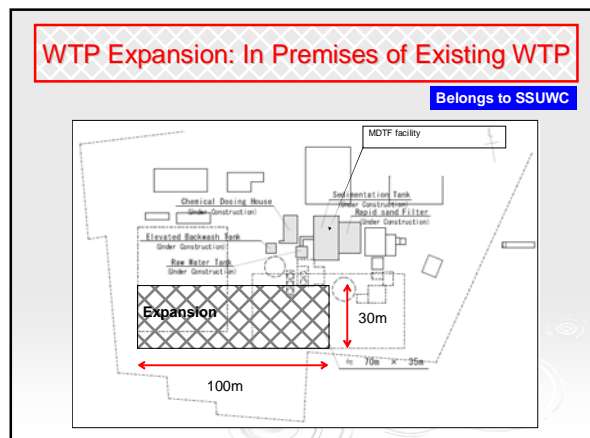
Items	Impacts	Mitigation Measures
<Loss of jobs in case of pump operators>	Due to operation of WTFS, several pump operators might lose present job.	<ul style="list-style-type: none"> <li>•Affected pump operators should be informed of project activities during implementation.</li> <li>•When bidding is announced for O&amp;M of these WTFS, pump operators should be informed as well.</li> </ul>
<Water logging near WTFS and Public tapstands>	Operation of WTFS and public tap stands might result into water logging in its surroundings.	<ul style="list-style-type: none"> <li>•Appropriate drainage facilities should be considered during design</li> <li>•Operation should be carried out appropriately to avoid water logging in its neighbourhoods.</li> </ul>

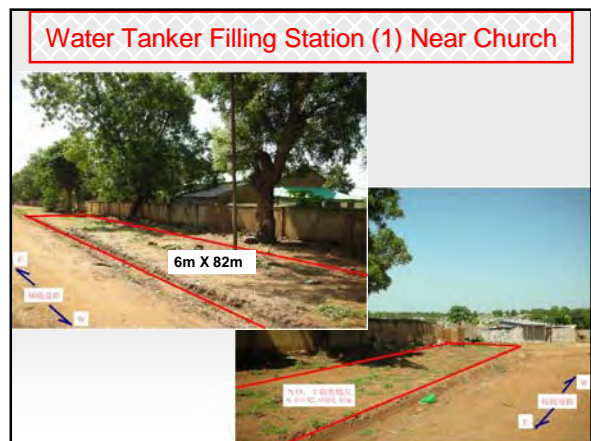
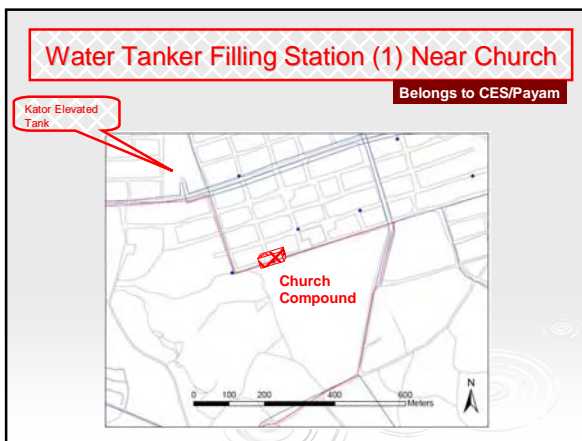
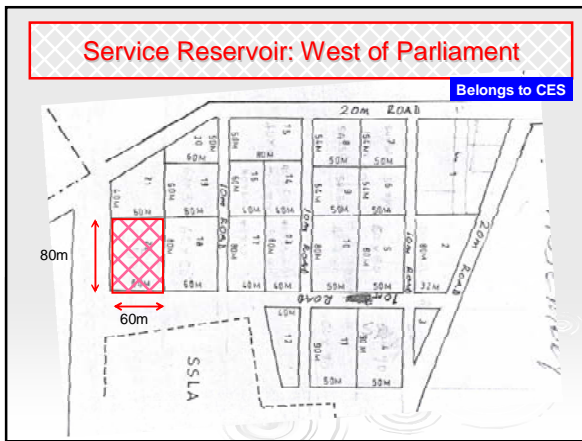
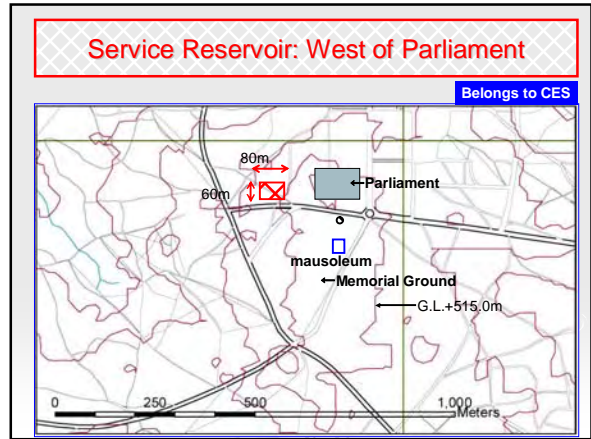


### Confirmed Landowner by preliminary survey

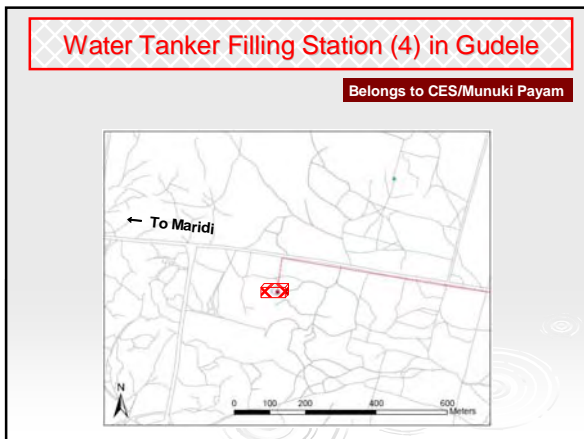
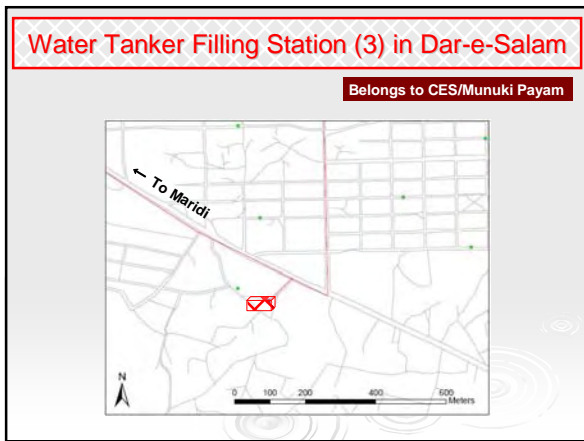
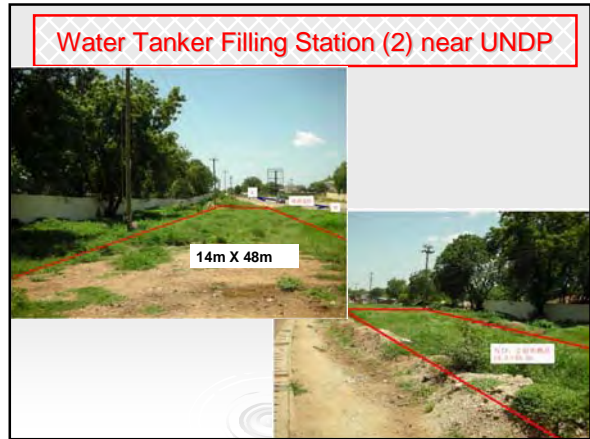
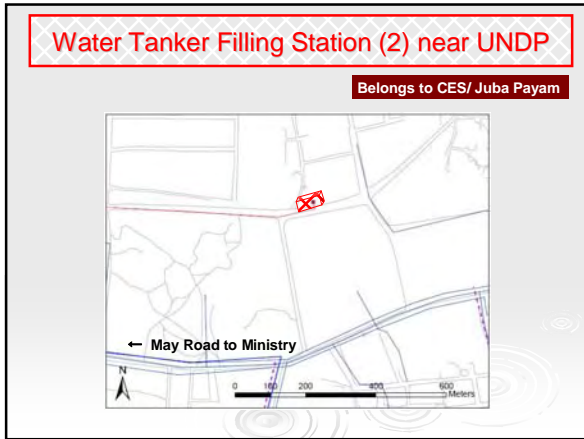
S. No.	Location	Facilities					Landowner	
		WTP	GLSR	ET	Pump	Pipes	Govt.	Community
1	UWC Premises	●	●		●		SSUWC	
2	Open ground on the west of the Parliament Building		●	●	●		CES	
3	Along main roads in the right of way					●	GOSS/CES/ Payams	
4	Near Kator Church, Jebel Market, Lologo Payam Branch Office, UNDP, Dar-e-Salam, Munuki, Munuki Church					●	CES/ Payams	
5	50 locations in Munuki, 50 locations in Kator, and 20 locations in Juba Payams along roads in right of way					●	CES/ Payams	
6	Rehabilitation of old pipelines					●	CES/ Payams	

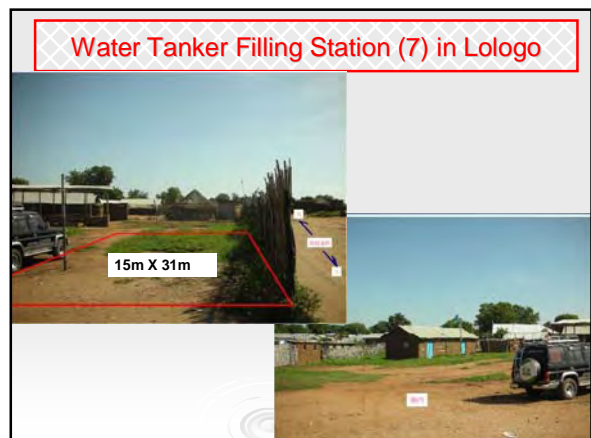
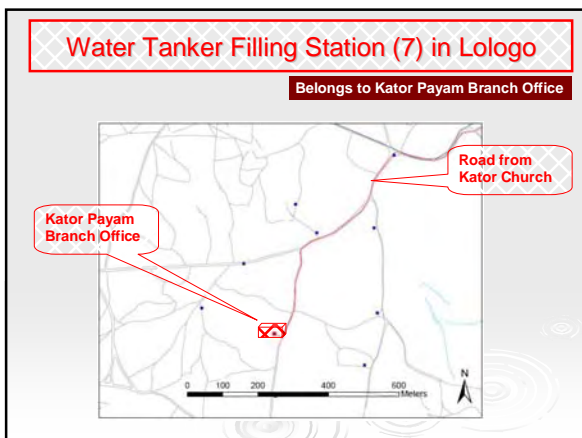
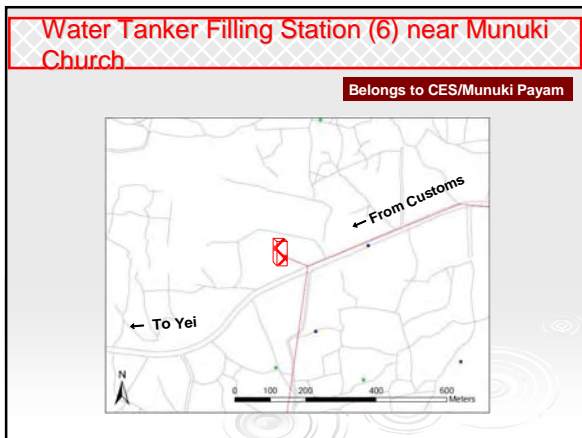
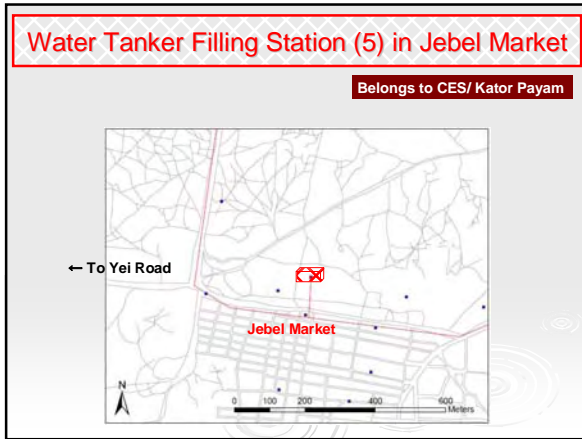
Source : Payam Engineers



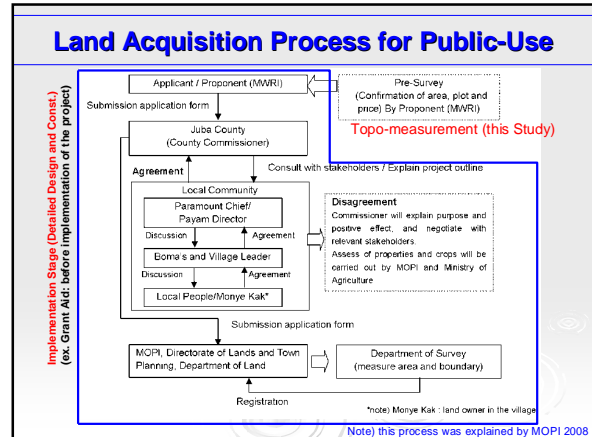








Most Concerned Issue : Getting Land Use Permissions	
Basic Design (2010-)	Detailed locations are identified under agreement with stakeholders
Before Implementation Stage (by the end of 2010)	Government should get land use permission (and if needed land acquisition) for identified locations for this Project.



## EXCHANGE OPINIONS

- ### CONCLUSIONS
1. Planning side (MWR/GOSS, SSUWC and JICA study team) **informed** about Project Components to the Stakeholders
  2. The Stakeholders **understood**
    - > Water supply system
    - > Outline of the Project
    - > Benefits and Negative Impacts of implementation of the Project
  3. Both sides **exchanged opinions** and the planning side will consider opinions in Project Implementation
    - > A
    - > B
    - > C
    - > D
    - > E

- ### CONCLUSIONS
1. Both sides build **basic consensus** on the JUBA Water Supply Improvement Project
  2. Go to **next steps** (preparation for smooth implementation of project)

## Safe Water for All

## Thank you for Attention



2



**GOVERNMENT OF SOUTHERN SUDAN**  
**MINISTRY OF ENVIRONMENT**

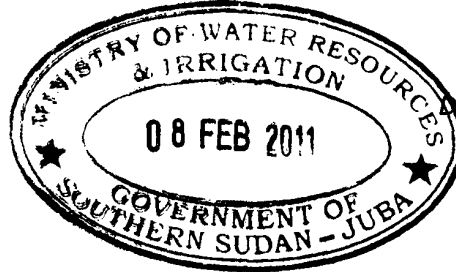


*Office of the Undersecretary*

Our Ref: .....

Your Ref: .....

*Eng.* Issac Liabwel  
 Under secretary  
 Ministry of water Resources and Irrigation  
 GOSS/Juba.



Date: 2<sup>nd</sup> February, 2011

**Subject:- APPROVAL OF AN ENVIRONMENTAL IMPACT ASSESSMENT REPORT.**

Reference to your letter dated 30<sup>th</sup> December, 2010 in regards to the submission of your Environmental Impact Statement (EIS) for the improvement of water supply system project in Juba. We regret to inform you that we could not get the attachment as mentioned in your letter. Until we received an explanation from one of your officials, we could not be able to give this delayed reply. However, JICA had already been given an approval and as this was meant for the same project, we would like to forward to you the same terms.

Hence, in the absence of your EIS, basing ourselves on JICA'S Environmental Report for the same project and given the fact that JICA will be the implementer of the Project in question in accordance with the EIA and SIA requirements, we therefore certify that the Initial Environmental Examination Report submitted by JICA Sudan Office has been reviewed and an Authorization is hereby granted for the implementation of the project, subject to the following conditions:-

1. You the project proponent and the implementer must comply with all mitigation measures detailed within the EMP as in tables 1.8 and 12.9, section (1.3); pages (1.4 and 1.15) in the report.
2. The proponent shall avoid destruction of any sites with high amenity values such as the Archaeological/historical remains, recreational sites etc.
3. The proponent must take measures to closely monitor and repair damages causing leakages and contamination from cracked structures, damage pipes, faulty valves etc.
4. The proponent shall provide fencing to protect the water supply points.
5. The proponent shall compensate the affected population according to the international/JICA'S social safeguards guidelines and shall ensure adherence to the occupational health and safeguards requirements during the different construction phases.
6. The proponent and the implementer shall throughout the project construction period, manage and mitigate all potential environmental impacts, keep high engineering and construction standards and practices.

Amb. (Rtd.) *Kuol Alor Kuol*  
 Under Secretary  
 Ministry of Environment  
 GOSS/Juba







STATE MINISTRY OF PHYSICAL INFRASTRUCTURE  
DIRECTORATE OF SURVEY  
CENTRAL EQUATORIA STATE  
JUBA.

SKETCH MAP.

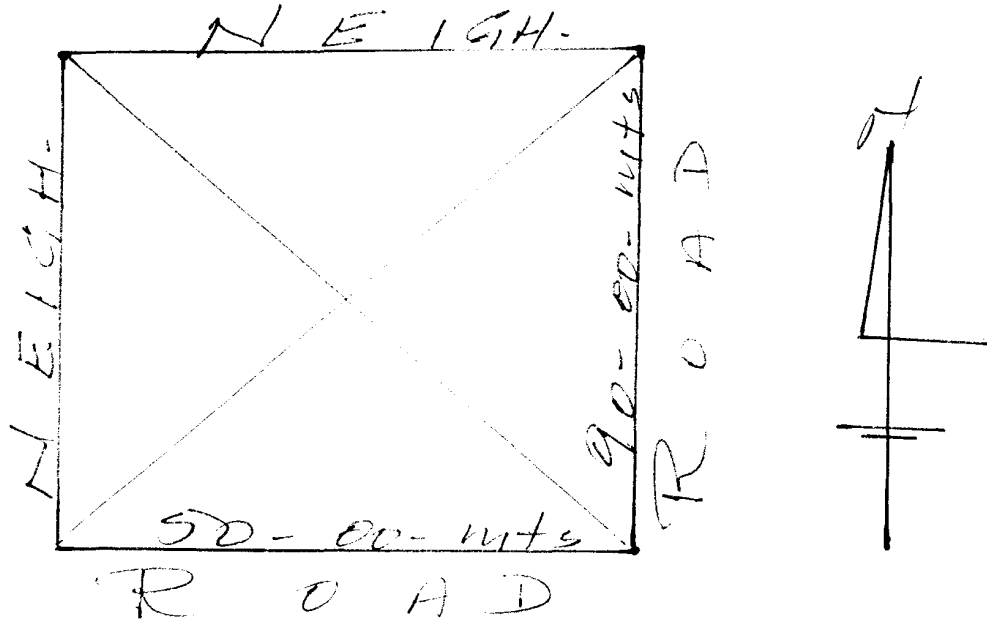
Town: Juba.

Plot No: 23

Area 4,500 Sq. Mts.

Block No: Hai Buskaman.

Property of Mr./ Mrs. Souther Sudan Madam Water



This is to certify that, the dimensions shown on the above drawing are for the above quoted Plot, not to scale. The Sum of SDG. 2,002= have been collected

as croquets fees vide R.O. NO. 480696 Date: 17-12-2010

*[Signature]*  
Director General,  
Directorate of Survey  
State Ministry of Physical Infrastructure,  
Central Equatoria State  
Juba.

3. FORMS:

(1) Application for allotment under Para I (3), of the Town Lands Scheme 1947.

Town : Juba  
Plot No. 23  
Block No. Hai Barلمان Area 4,500m<sup>2</sup>  
S.T.F.B. Minute Number:

If Relevant.

S.T.F.B. Plan Number: Southern Sudan Urban Water Corporation (GOSS)

Proposed Allottee: Water Tank

Purpose of Allotments

Whether Allotment is to Final: Final

Conditions of Allotment (if any) To be Constructed in permanent materials

EMMANUEL MATAYO WANI

CHAIRMAN

16.12.2010.

DATE :

(a) An allotment shall be in the following form:-

FINAL/ALLOTMENT

~~STRIKE OUT~~  
~~WHICH IS NOT~~  
~~REQUIRED.~~

Town Juba Block No. Hai Barلمان  
Plot No. 23  
Area: 4,500m<sup>2</sup> Square metres approximately.  
S.T.F.B. Minute No.  
S.T.F.B. Plan No.

Final Allotment of the above mention plot is

~~STRIKE OUT~~  
~~WHICH IS NOT~~  
~~REQUIRED.~~

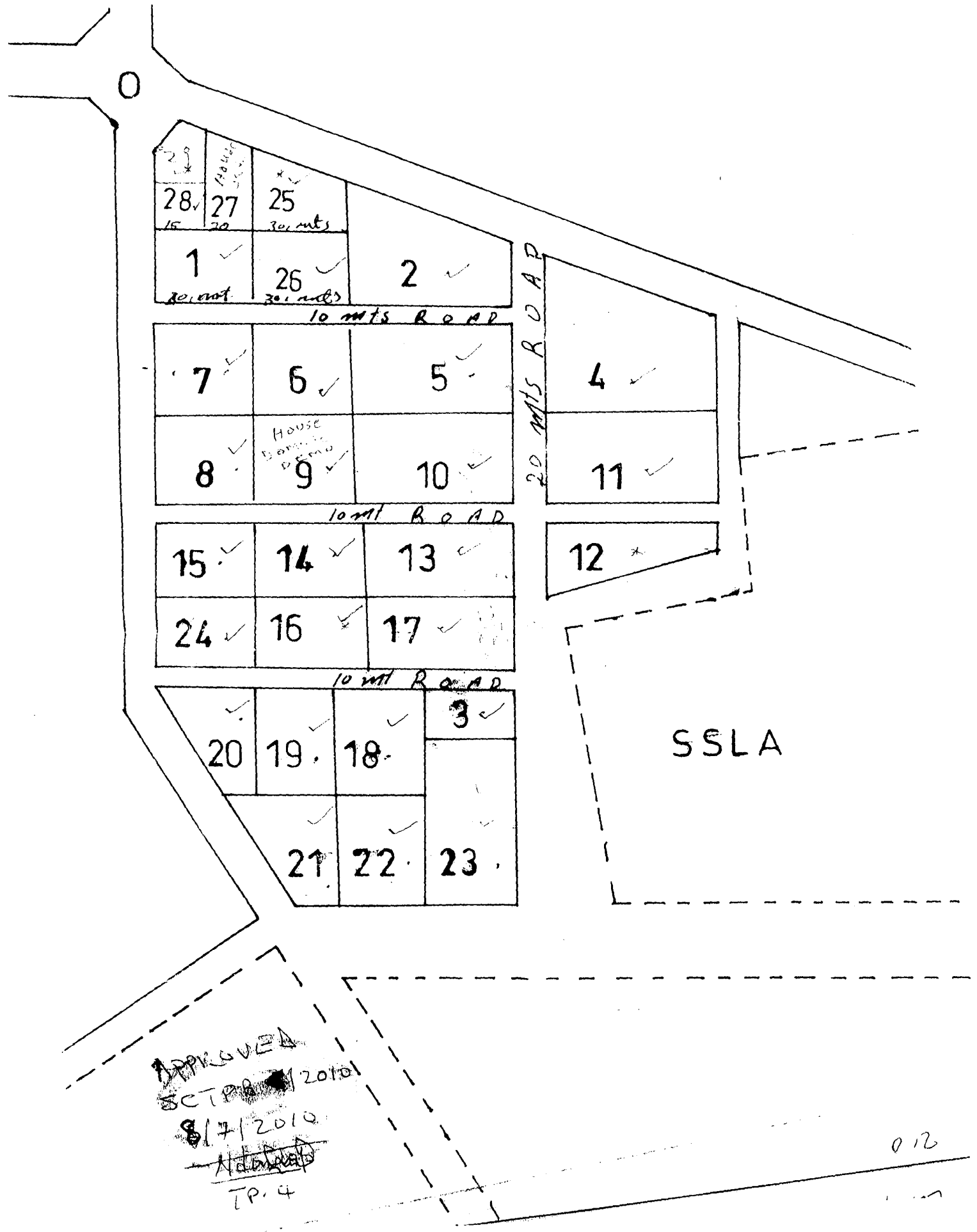
Hereby made under Para I (3) The Town Land Sche, 1947 to  
Unit.

For the purposed of Water Tank

CONDITION ( IF ANY )  
To be built in permanent Material.

KALISTO LADU SAVERIO

DIRECTOR



*(Letter Head of MOPI/CES)*

Date: 15<sup>th</sup> December, 2010

To: JICA Preparatory Survey Team

**Subject: Land for Water Tanker Filling Stations**

Re: The Project for the Improvement of Water Supply System of Juba in Southern Sudan

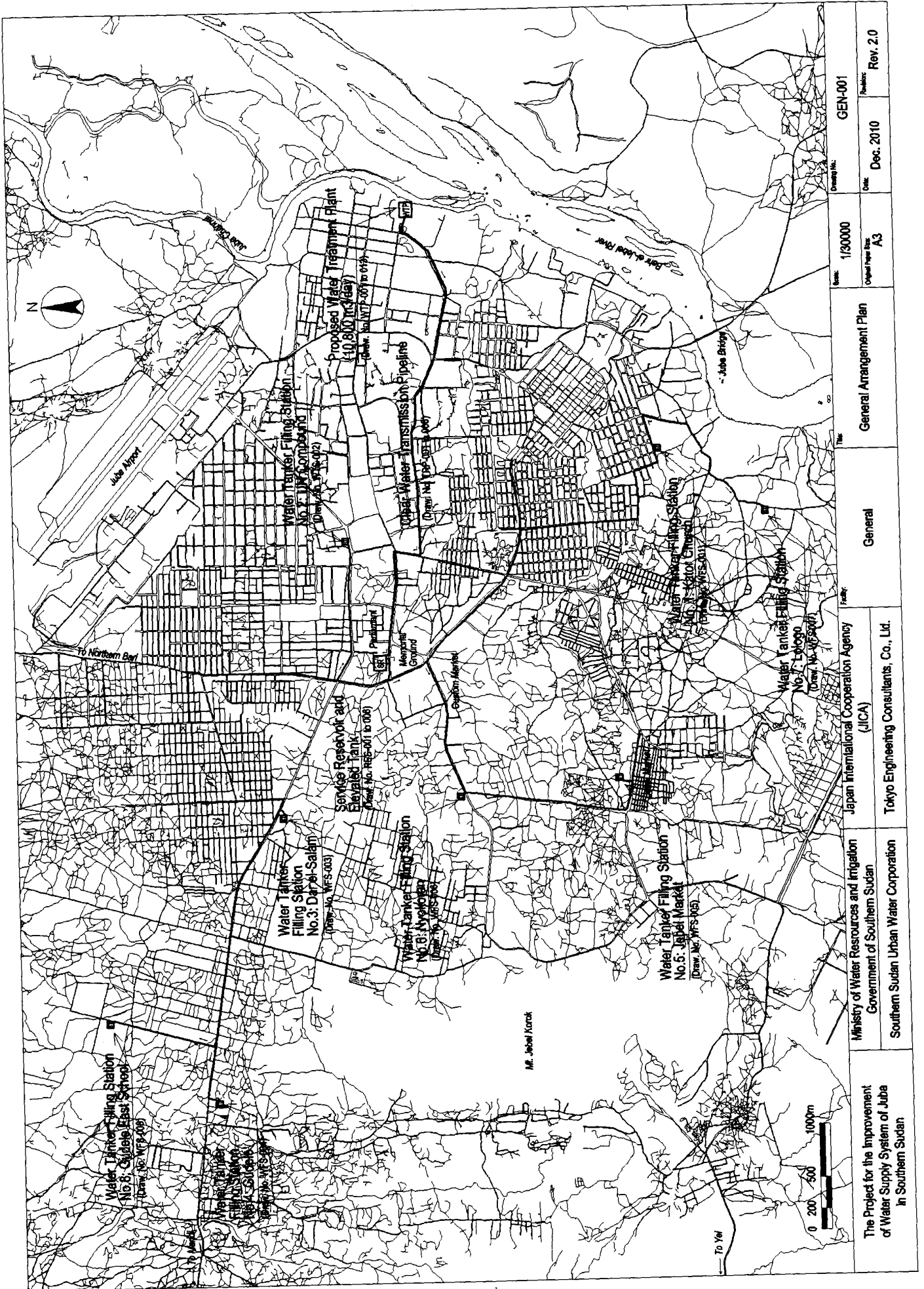
With regard to the sites for water tanker filling stations, of which the layout plans were presented by the Team as the Attachments, the Payam representatives and JICA Survey Team identified these locations in July 2010. We, hereby, confirm that the sites are the public lands under management of the Payam, the sites shall be properly secured by responsibility of the Payam, the sites shall be used and accessible only for the JICA Project and the sites shall not be occupied by any other entities of private nor public, whatsoever legally or illegally.

Sincerely,

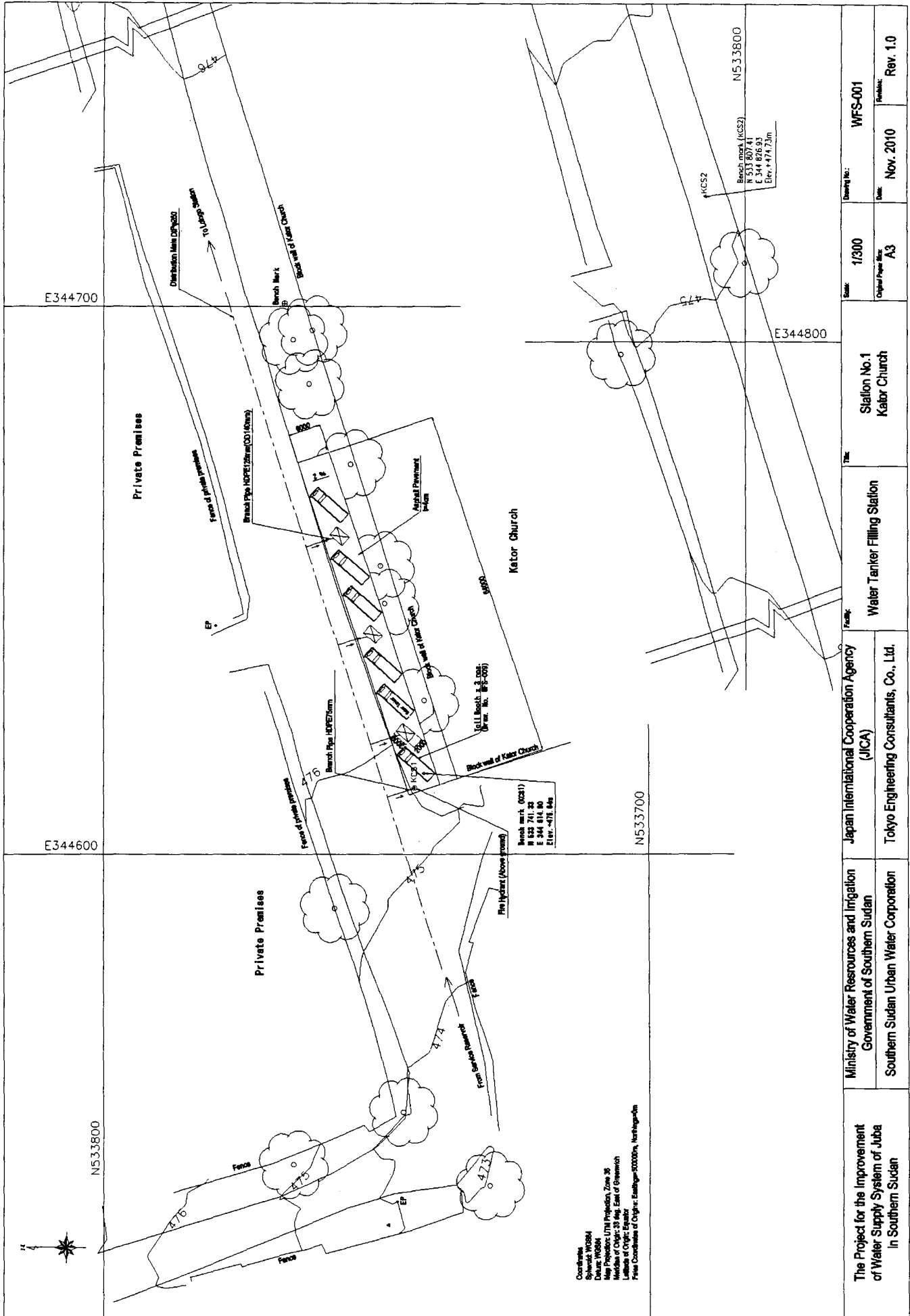


Lewis Gore G...  
1<sup>st</sup> Director General,  
Ministry of Physical Infrastructure,  
Central Equatoria State

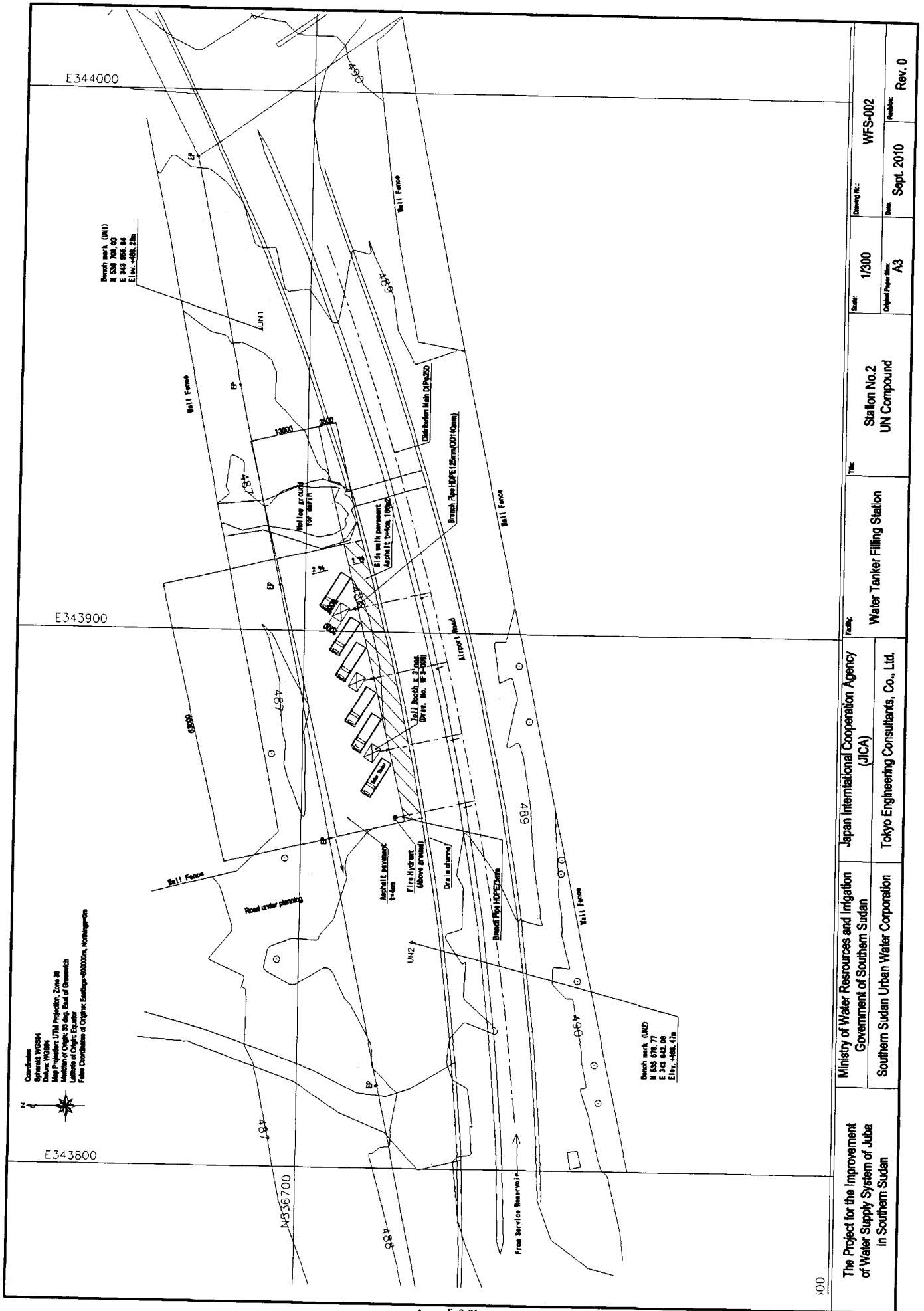




The Project for the Improvement of Water Supply System of Juba in Southern Sudan		Ministry of Water Resources and Irrigation Government of Southern Sudan Southern Sudan Urban Water Corporation		Japan International Cooperation Agency (JICA) Tokyo Engineering Consultants, Co., Ltd.		General		General Arrangement Plan		Scale: 1/30000 Sheet No. A3		Date: Dec. 2010 Rev. 2.0		Drawing No.: GEN-001	
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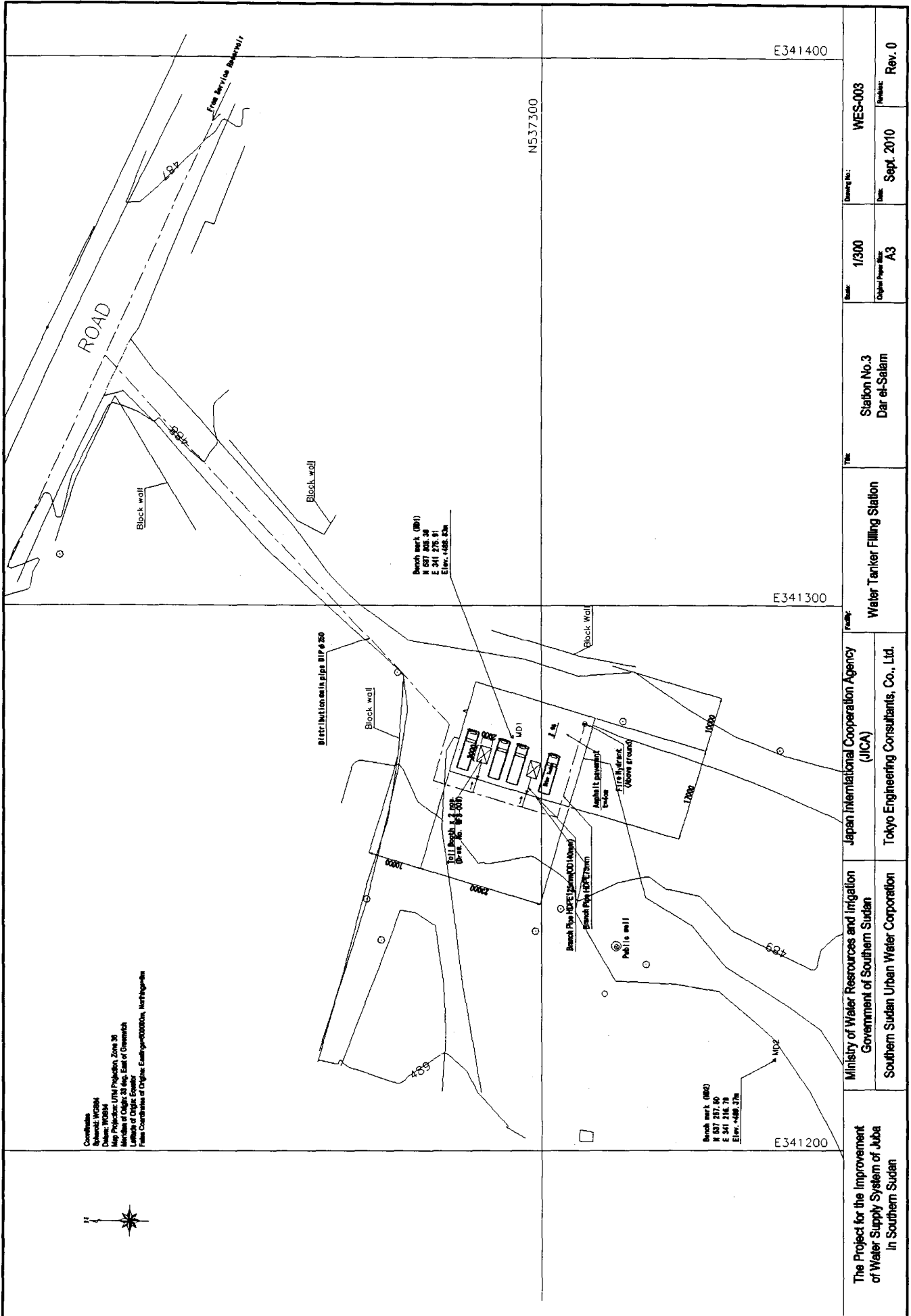
Appendix 2-20



1:00

The Project for the Improvement of Water Supply System of Juba in Southern Sudan	Ministry of Water Resources and Irrigation Government of Southern Sudan Southern Sudan Urban Water Corporation	Japan International Cooperation Agency (JICA)	Water Tanker Filling Station	Station No.2 UN Compound	Scale: 1/300 Original Paper Size: A3	Drawing No.: WFS-002
		Tokyo Engineering Consultants, Co., Ltd.			Date: Sept. 2010	Revision: Rev. 0

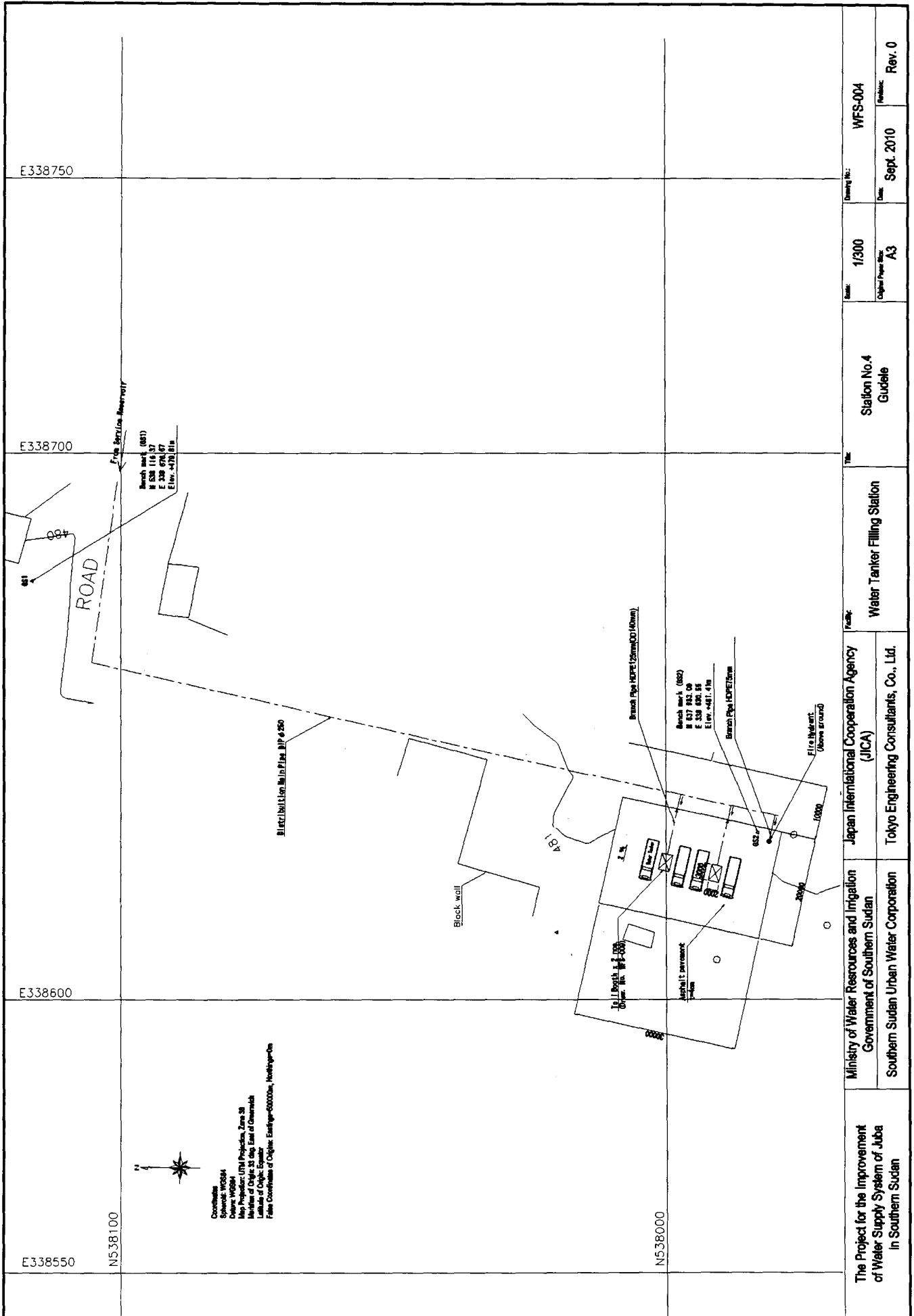
Appendix2-21



Coordinates  
 Spheroid: WGS84  
 Datum: WGS84  
 Zone: UTM  
 Projection: UTM  
 Meridian: 33 (400, East of Greenwich)  
 Units: Meter  
 False Coordinates of Origin: Easting=500000, Northing=0

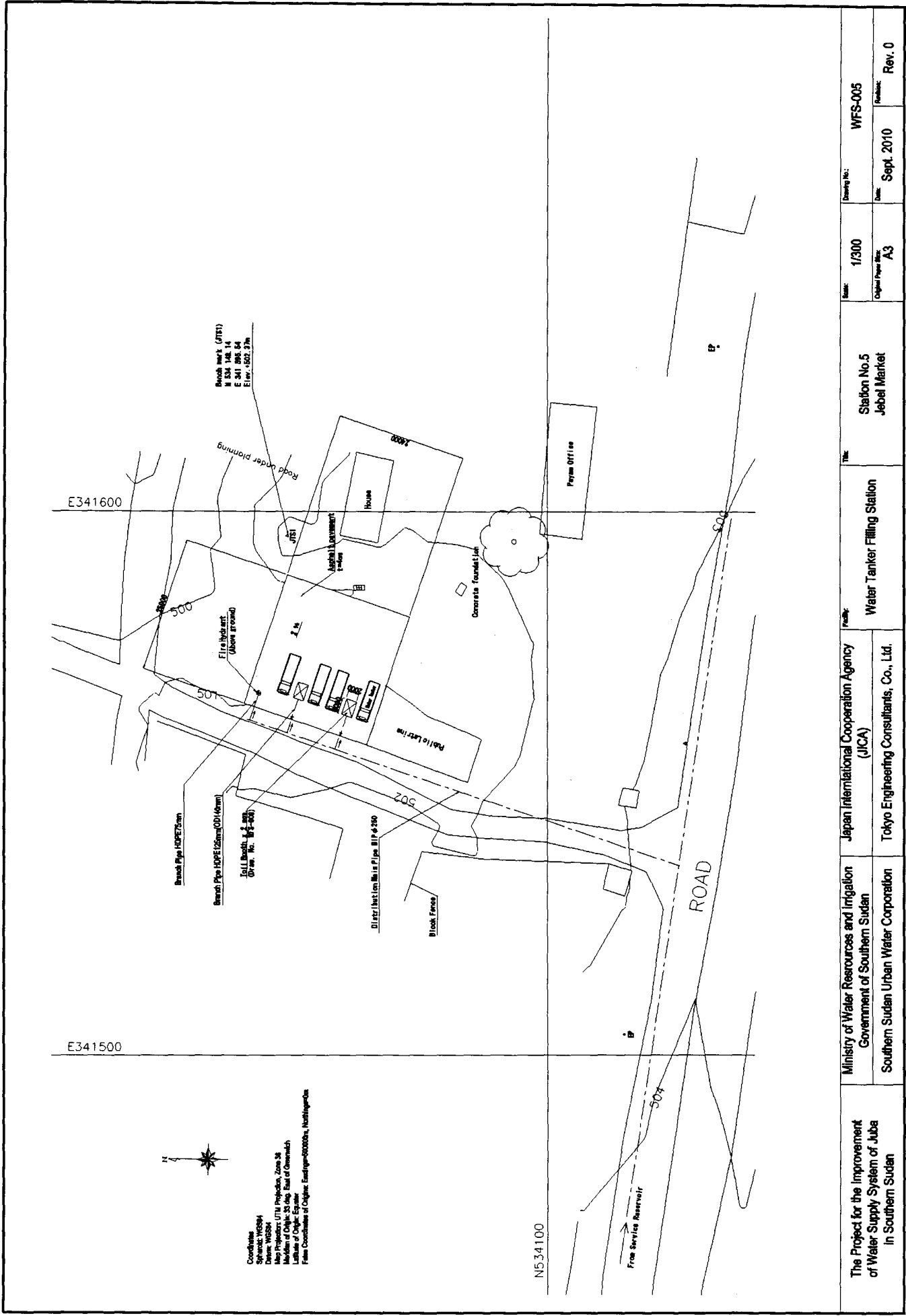
Appendix 2-22

The Project for the Improvement of Water Supply System of Juba in Southern Sudan	Ministry of Water Resources and Irrigation Government of Southern Sudan Southern Sudan Urban Water Corporation	Japan International Cooperation Agency (JICA)	Water Tanker Filling Station	Station No.3 Dar el-Salam	Sheet:	Drawing No.:	Rev. 0
					1/300	WES-003	
					Original Paper Size:	Date:	
					A3	Sept. 2010	



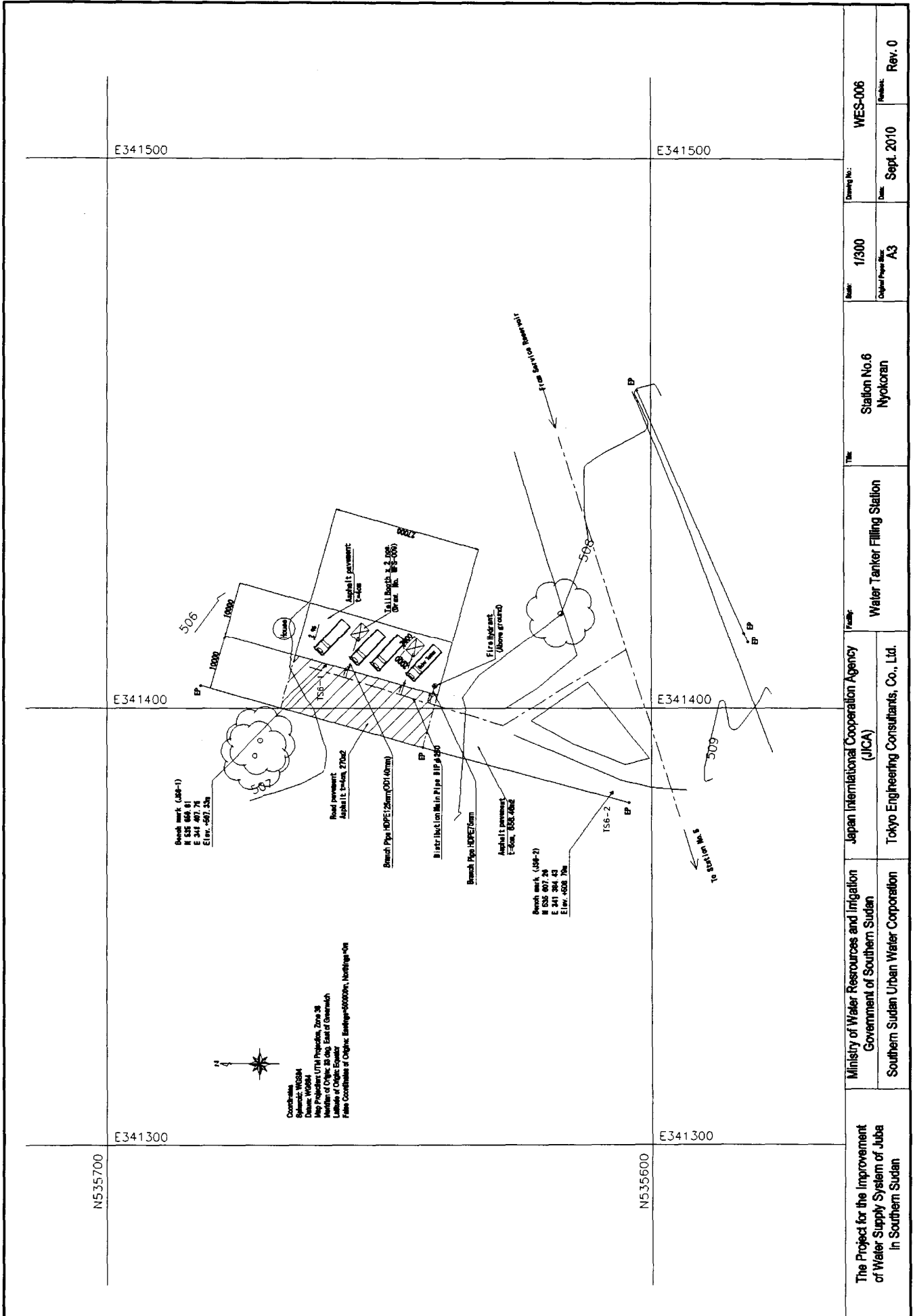
Appendix2-23





The Project for the improvement of Water Supply System of Juba in Southern Sudan	Ministry of Water Resources and Irrigation Government of Southern Sudan Southern Sudan Urban Water Corporation	Japan International Cooperation Agency (JICA) Tokyo Engineering Consultants, Co., Ltd.	Station No.5 Jebel Market	Scale: 1/300 Original Paper Size: A3	Drawing No.: WFS-005 Date: Sept. 2010 Revision: Rev. 0
	Water Tanker Filling Station				

Appendix2-24

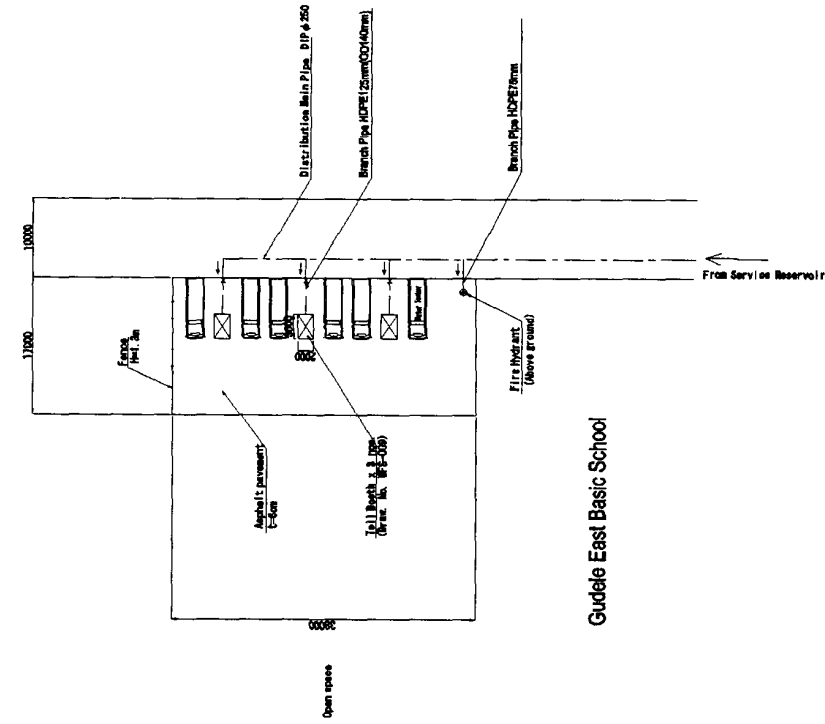


Appendix2-25

The Project for the Improvement of Water Supply System of Juba in Southern Sudan	Ministry of Water Resources and Irrigation Government of Southern Sudan Southern Sudan Urban Water Corporation	Japan International Cooperation Agency (JICA)	Tokyo Engineering Consultants, Co., Ltd.	Water Tanker Filling Station	Station No.6 Myokoran	Sheet: 1/300	Drawing No.: WES-006
						Original Paper Size: A3	Date: Sept. 2010



(N.B.)  
 The layout plan is prepared based on preliminary site survey by using simple measurement apparatus.  
 It shall be finalized based on accurate topographic survey to be carried out in Detailed Design.



Gudale East Basic School

The Project for the Improvement of Water Supply System of Juba in Southern Sudan	Ministry of Water Resources and Irrigation Government of Southern Sudan	Japan International Cooperation Agency (JICA)	Water Tanker Filling Station	Station No.8 Gudale-Gurai	Scale: 1/300	Drawing No.: WFS-008
	Southern Sudan Urban Water Corporation				Tokyo Engineering Consultants, Co., Ltd.	Sheet: A3

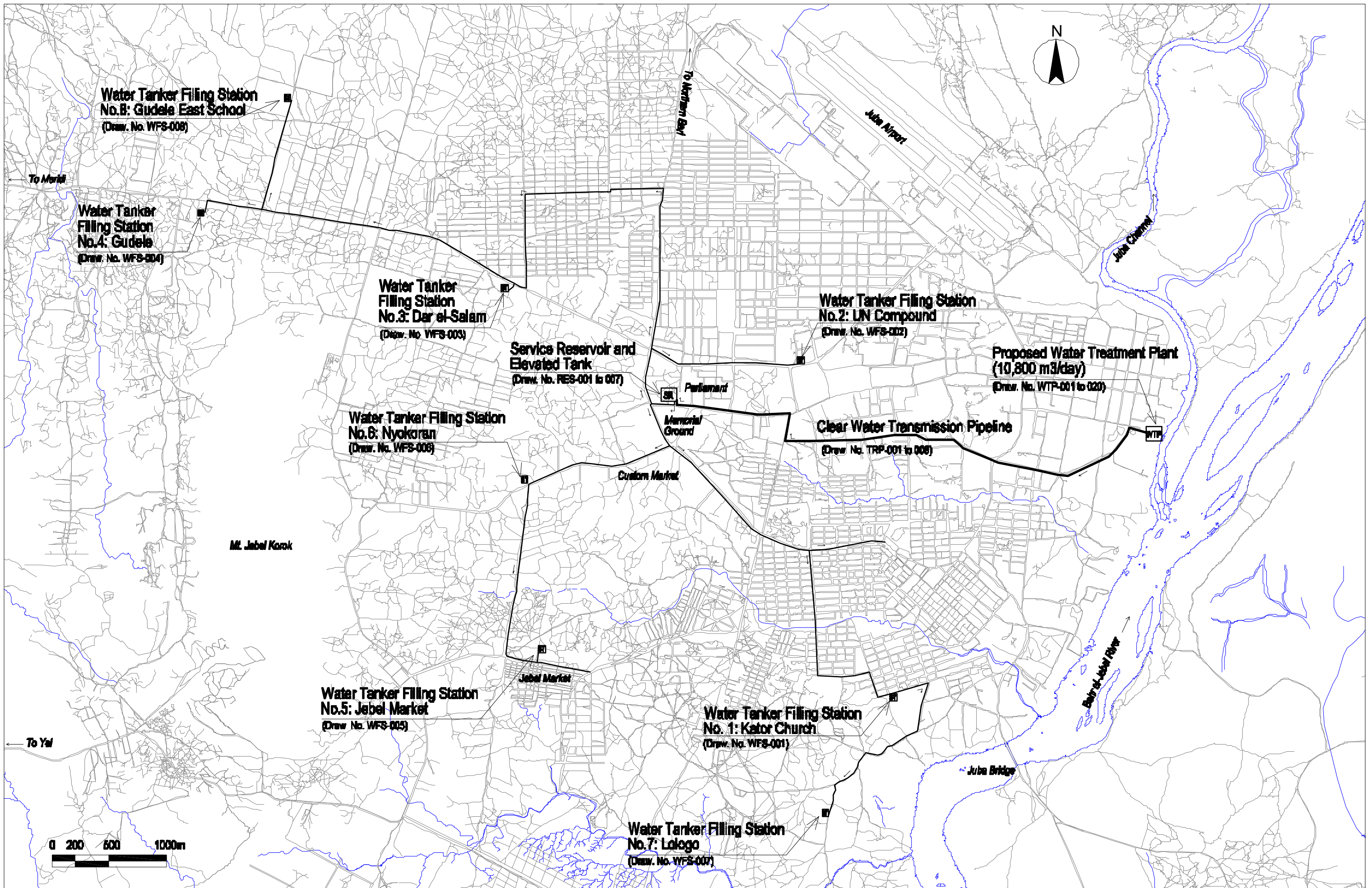
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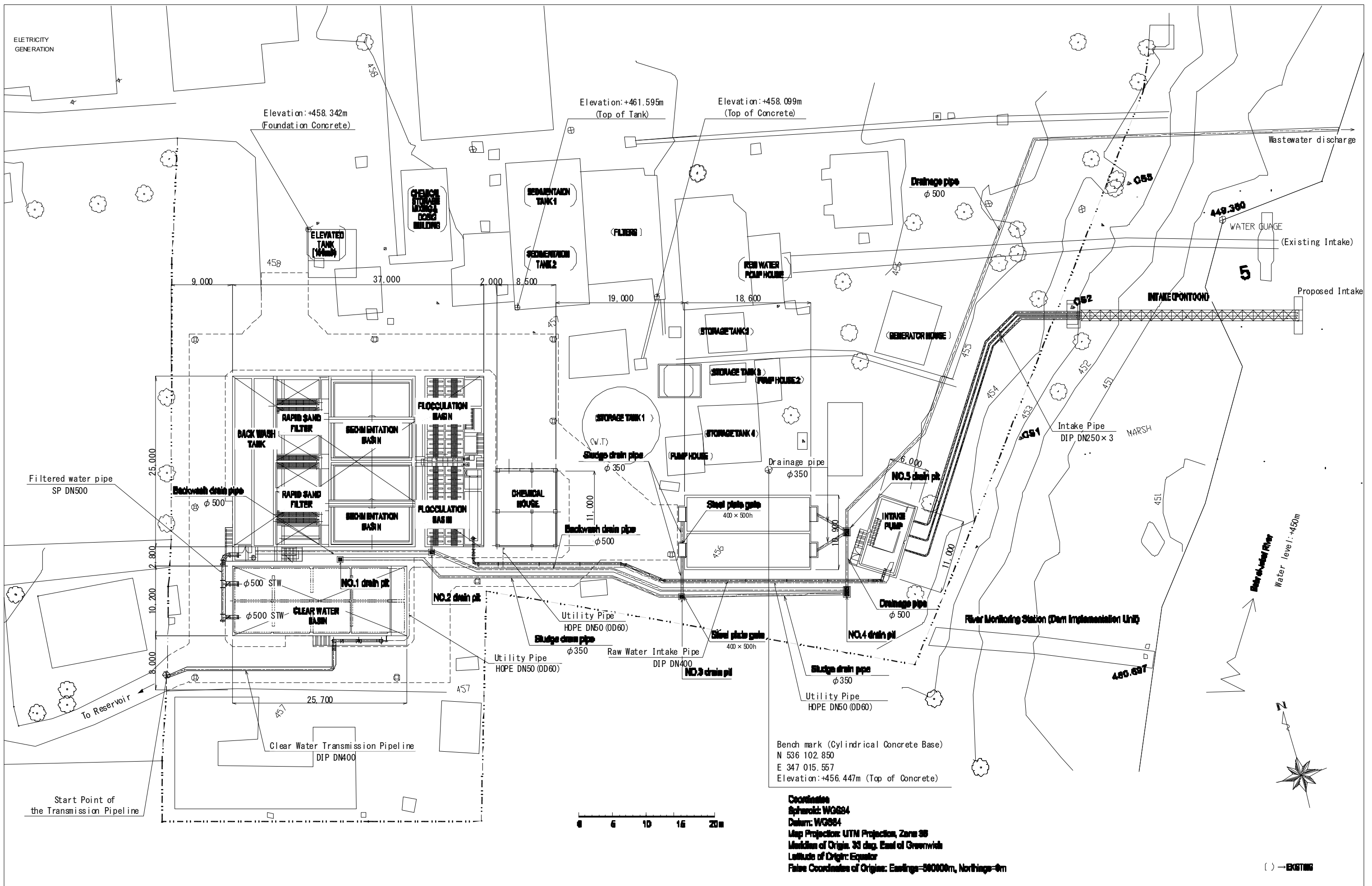


## **Appendix-7 Outline Design Drawing**





The Project for the Improvement of Water Supply System of Juba in Southern Sudan	Ministry of Water Resources and Irrigation Government of Southern Sudan	Japan International Cooperation Agency (JICA)	Scale:	Title:	Scale:	Drawing No.:
	Southern Sudan Urban Water Corporation	Tokyo Engineering Consultants, Co., Ltd.	General	General Arrangement Plan	1/30000	GEN-001
					Original Paper Size:	Date:
					A3	Dec. 2010
						Revision:
						Rev. 2.0



The Project for the Improvement  
of Water Supply System of Juba  
in Southern Sudan

Ministry of Water Resources and Irrigation  
Government of Southern Sudan  
Southern Sudan Urban Water Corporation

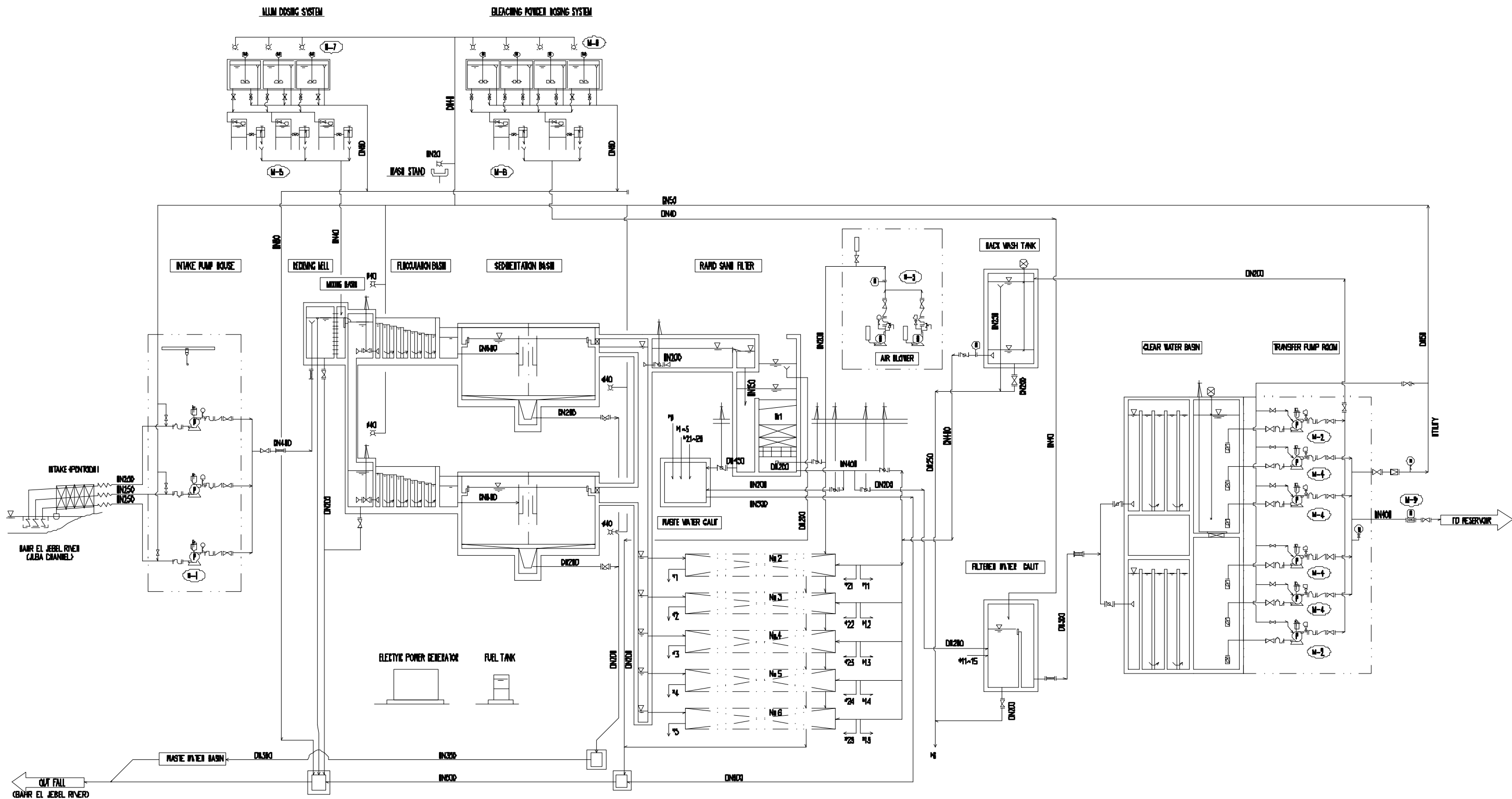
Japan International Cooperation Agency  
(JICA)  
Tokyo Engineering Consultants, Co., Ltd.

Facility:  
Water Treatment Plant

Title:  
General Layout Plan

Scale:  
1/500  
Original Paper Size:  
A3

Drawing No.:  
WTP-001  
Date:  
Mar. 2011  
Revision:  
Rev. 2.0



TAG NO	M - 1	M - 2	M - 3	M - 4	M - 5	M - 6	M - 7	M - 8	M - 9
ITEM NAME	INTAKE PUMP	ELEVATING PUMP	AIR BLOWER	TRANSFER PUMP	ALUM DOSING UNIT	BLEACHING POWDER DOSING UNIT	ALUM DILUTION MIXER	BLEACHING POWDER DILUTION MIXER	FLOW METER
TYPE	SELF-PRIMING	END SUCTION	ROOTS-TYPE	MULTI-STAGE END SUCTION	DRIP TYPE	DRIP TYPE	ELECTRIC MOTOR DRIVE	ELECTRIC MOTOR DRIVE	WALTMAN TURBIN TYPE
SPEC.	4.1m <sup>3</sup> /min, 21m 30kw, 400v, 50Hz	3.0m <sup>3</sup> /min, 11m 11kw, 400v, 50Hz	15.4m <sup>3</sup> /min, 1.5m 7.5kw, 400v, 50Hz	2.5m <sup>3</sup> /min, 76m 55kw, 400v, 50Hz	15~150L/hr MANUAL	11~110L/hr MANUAL	360 RPM 0.75kw, 400v, 50Hz	360 RPM 0.75kw, 400v, 50Hz	Φ400 INSTANTANEOUS FLOW ACCUMULATIVE FLOW
ACCESSORY	FOOT VALVE SLUICE VALVE CHECK VALVE PRESS. GAUGE EXP-JOINT	FOOT VALVE SLUICE VALVE CHECK VALVE PRESS. GAUGE EXP-JOINT	SILENCER CHECK VALVE EXP-JOINT	FOOT VALVE SLUICE VALVE SMOLENSKY CHECK VALVE EXP-JOINT	300L PE TANK	200L PE TANK	SUPPORT (CS)	SUPPORT (CS)	
NUMBER	3 (1)	2 (1)	2 (1)	4 (1)	3 (1)	2 (1)	3 (1)	4 (1)	1

The Project for the Improvement of Water Supply System of Juba in Southern Sudan

Ministry of Water Resources and Irrigation  
Government of Southern Sudan  
Southern Sudan Urban Water Corporation

Japan International Cooperation Agency (JICA)  
Tokyo Engineering Consultants, Co., Ltd.

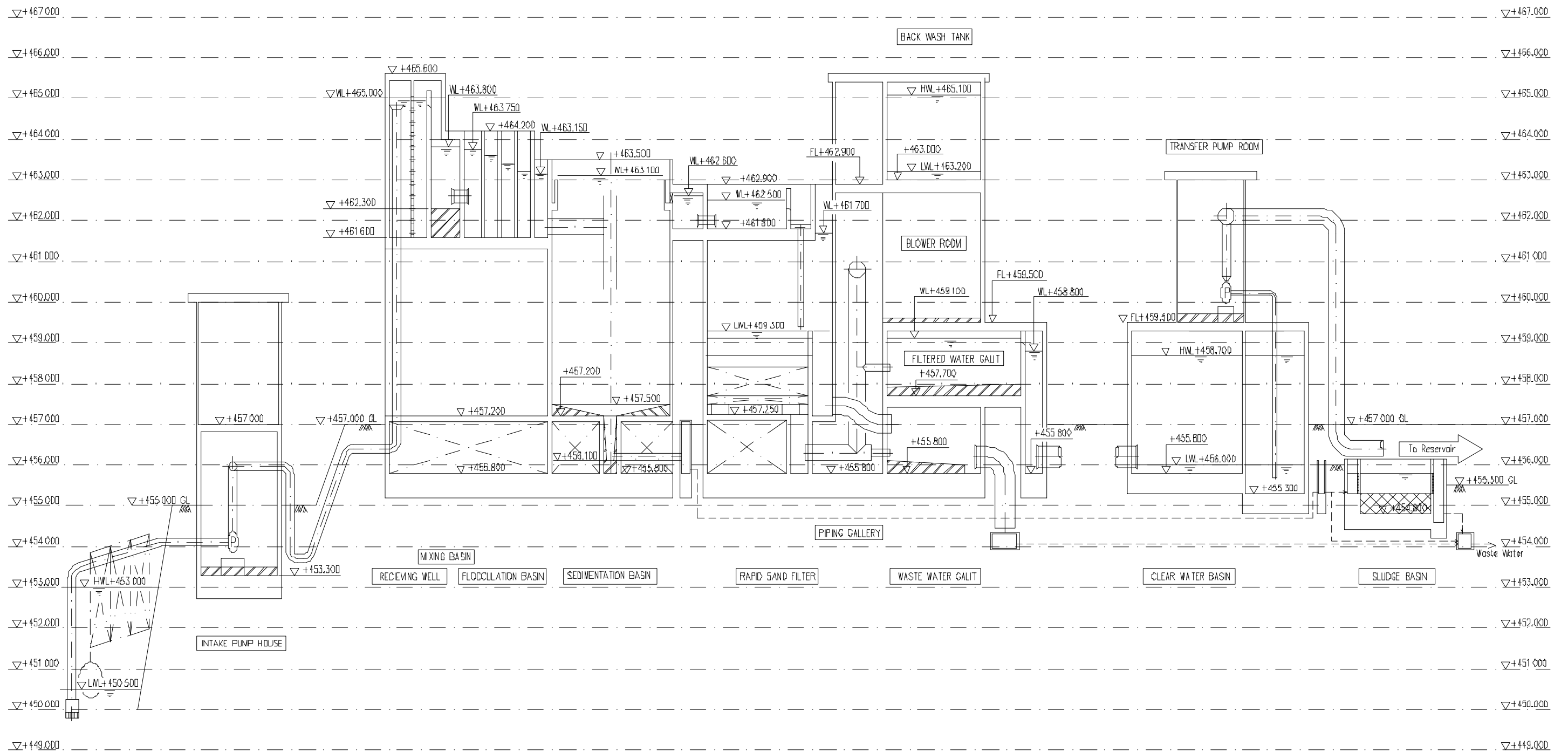
Plant: Water Treatment Plant

Title: Process Flow Diagram

Scale: Non  
Original Paper Size: A3

Drawing No.: WTP-002  
Date: Mar. 2011  
Revision: Rev. 2.0

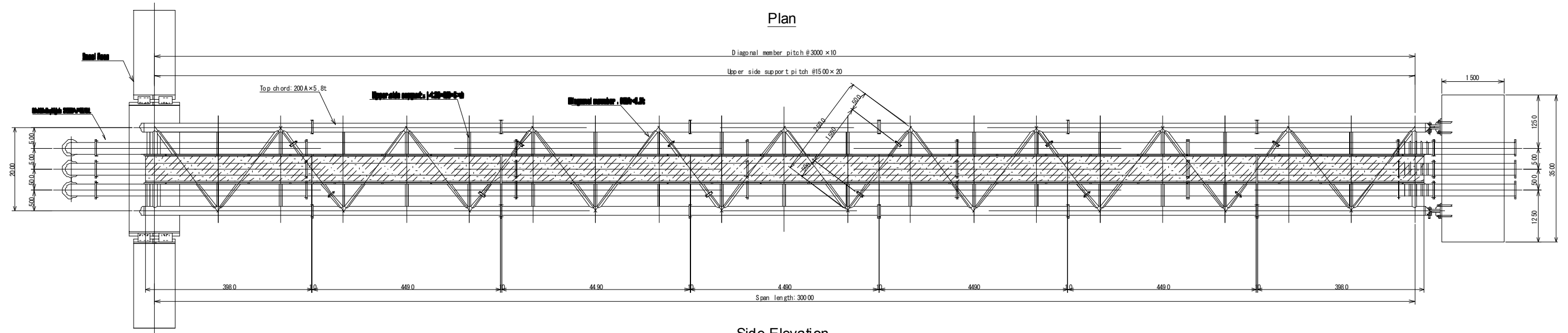




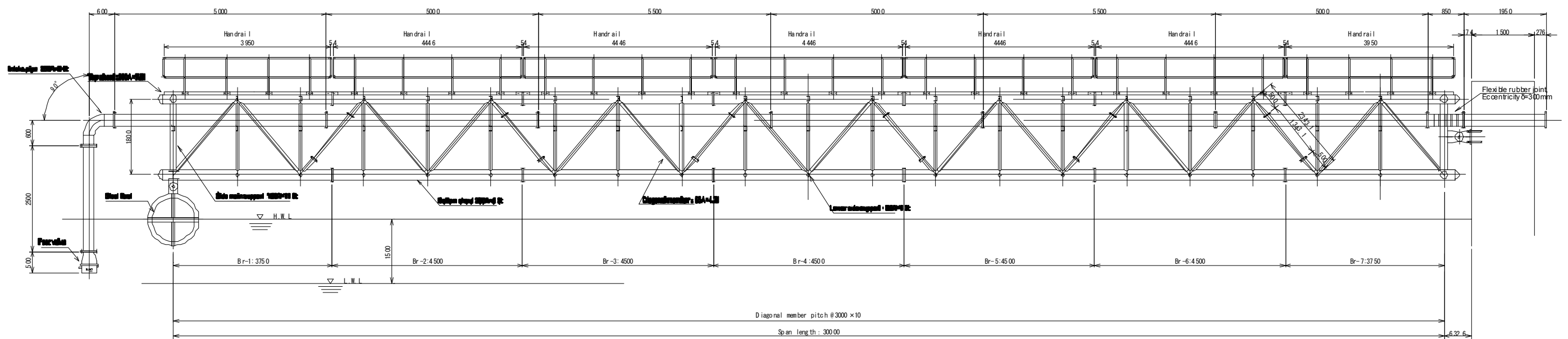
<b>The Project for the Improvement of Water Supply System of Juba in Southern Sudan</b>	<b>Ministry of Water Resources and Irrigation Government of Southern Sudan</b>	<b>Japan International Cooperation Agency (JICA)</b>	<b>Water Treatment Plant</b>	<b>Water Level Profile</b>	<b>Scale: Non</b>	<b>Drawing No.: WTP-003</b>
	<b>Southern Sudan Urban Water Corporation</b>	<b>Tokyo Engineering Consultants, Co., Ltd.</b>			<b>Original Paper Size: A3</b>	<b>Date: Mar. 2011</b> <b>Revision: Rev. 2.0</b>

**Intake Pipe on Box Truss Support with Float**  
(Dia. 250mm x 3 nos.)

**Plan**



**Side Elevation**



**The Project for the Improvement  
of Water Supply System of Juba  
in Southern Sudan**

**Ministry of Water Resources and Irrigation  
Government of Southern Sudan  
Southern Sudan Urban Water Corporation**

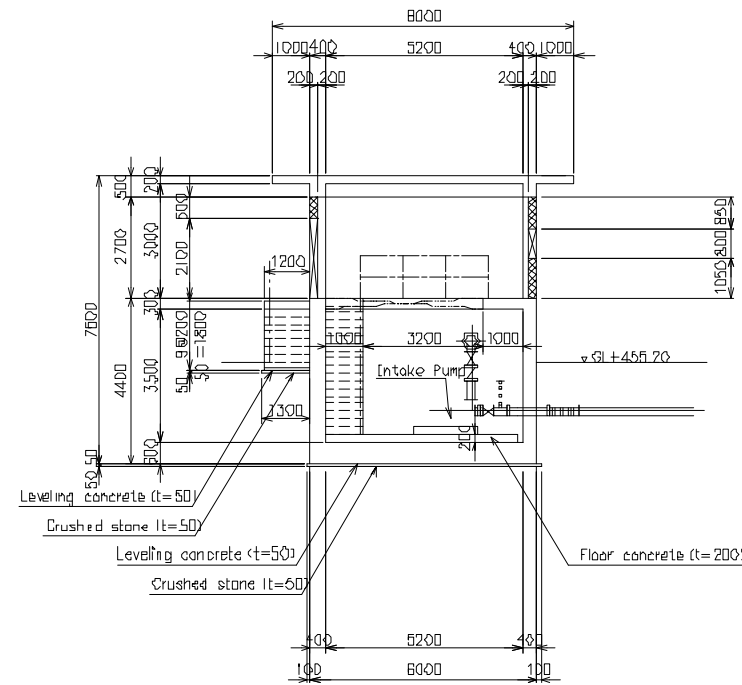
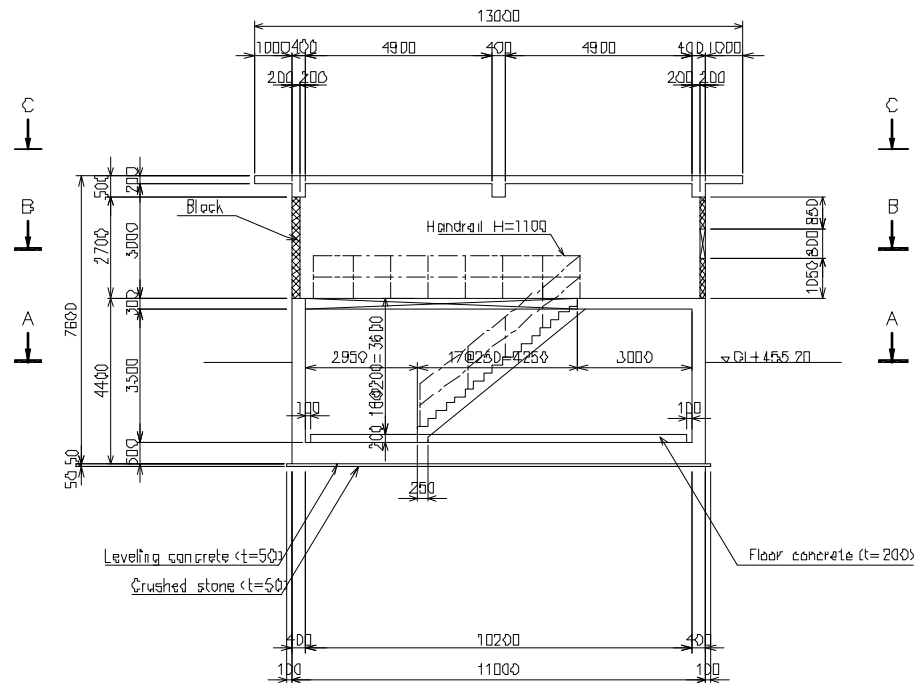
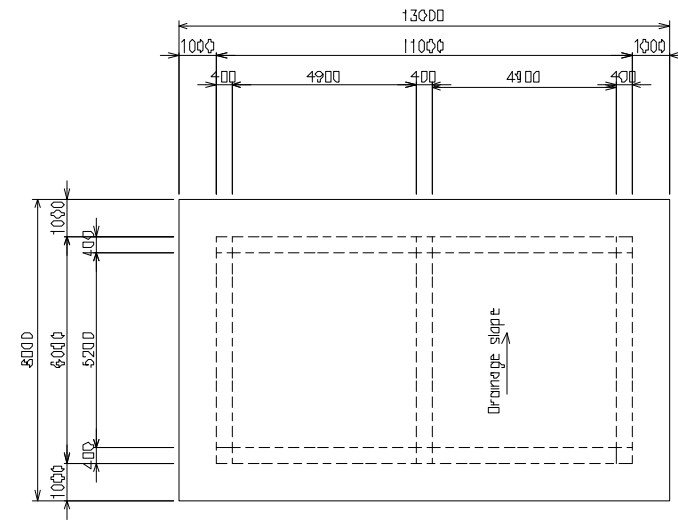
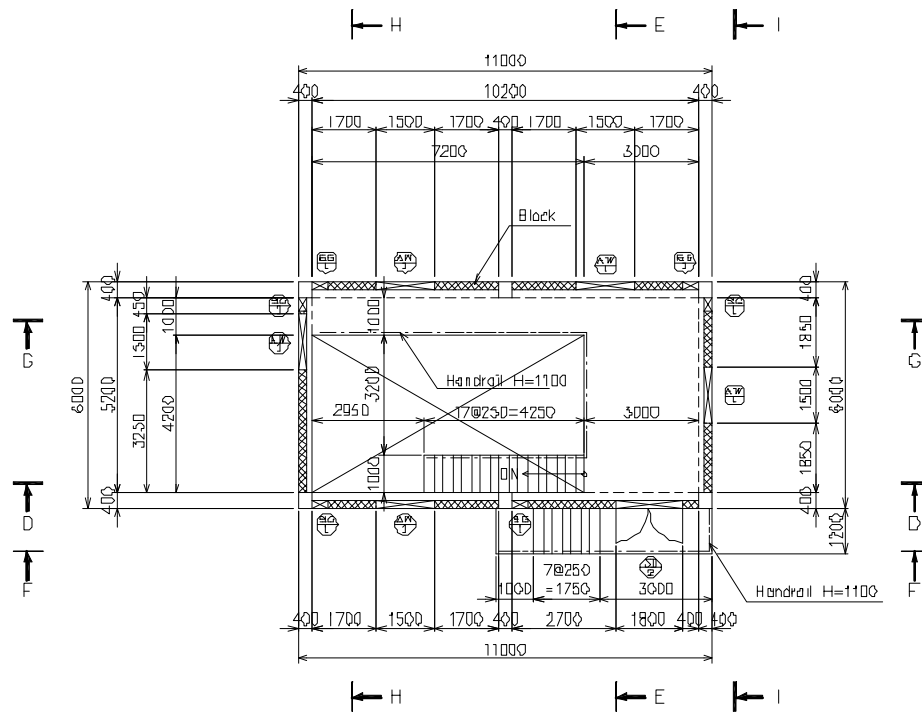
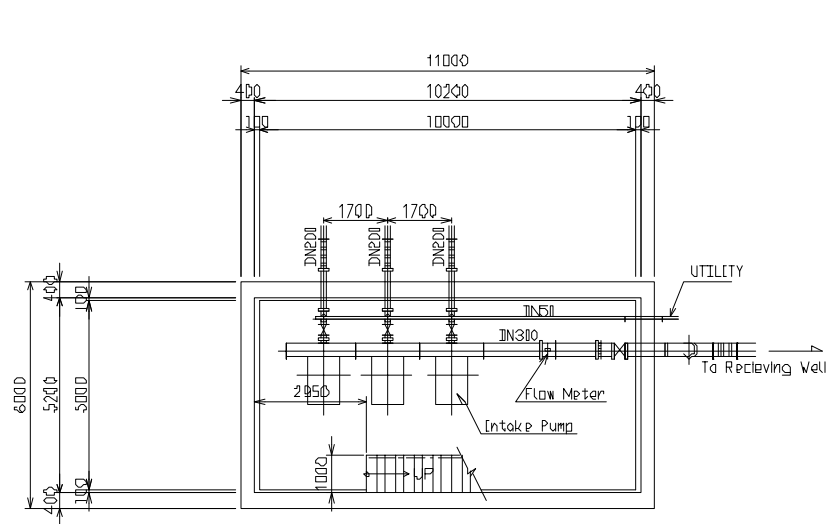
**Japan International Cooperation Agency  
(JICA)  
Tokyo Engineering Consultants, Co., Ltd.**

Facility:  
Water Treatment Plant

Title:  
Water Intake

Scale:  
1/100  
Original Paper Size:  
A3

Drawing No.:  
WTP-004  
Date:  
Mar. 2011  
Revision:  
Rev. 2.0



The Project for the Improvement  
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Ministry of Water Resources and Irrigation  
Government of Southern Sudan  
Southern Sudan Urban Water Corporation

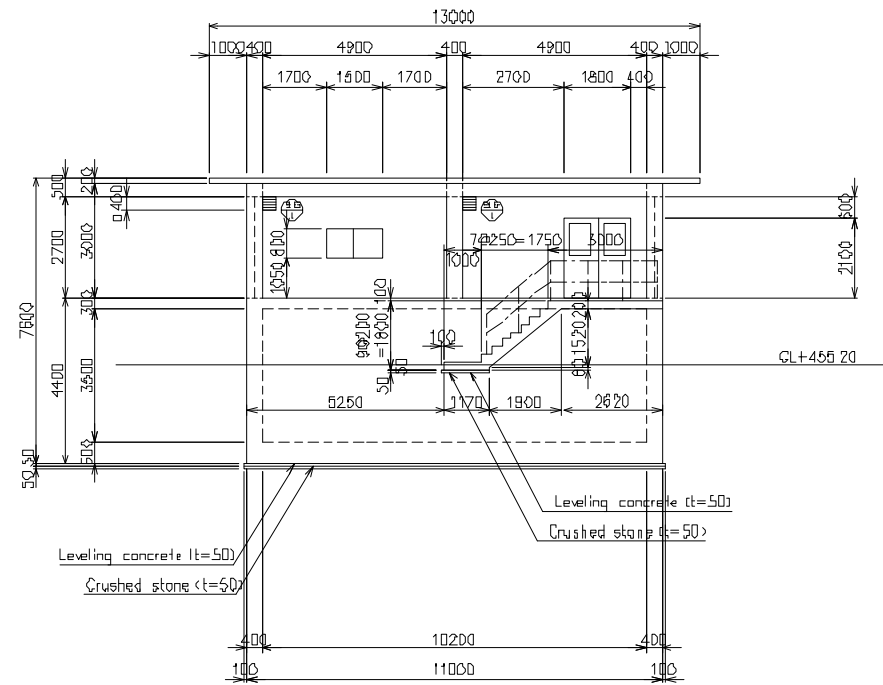
Japan International Cooperation Agency  
(JICA)  
Tokyo Engineering Consultants, Co., Ltd.

Facility  
Water Treatment Plant

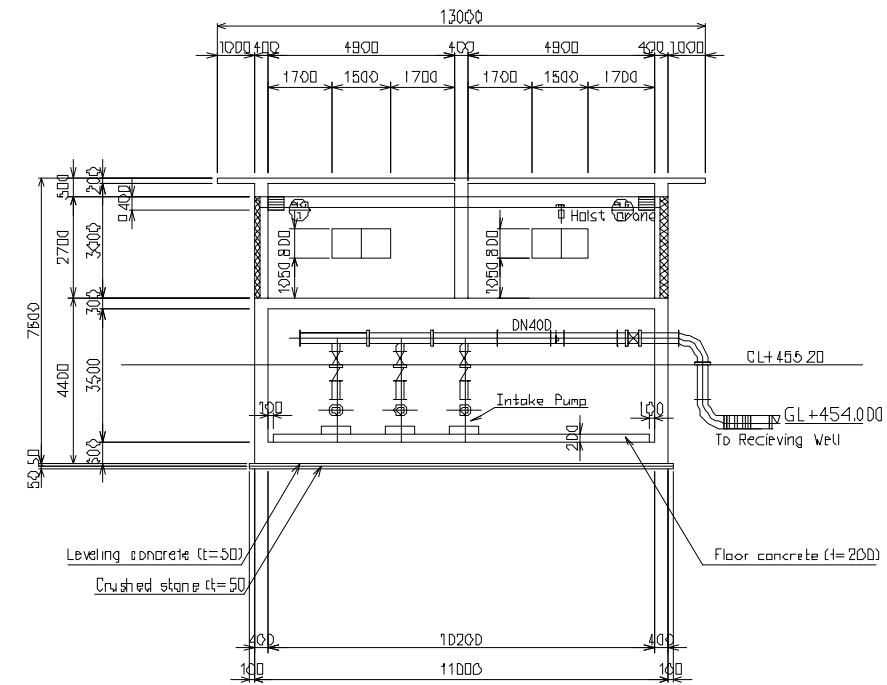
Title  
Intake Pump House (1/2)

Scale  
1/200  
Original Paper Size  
A3

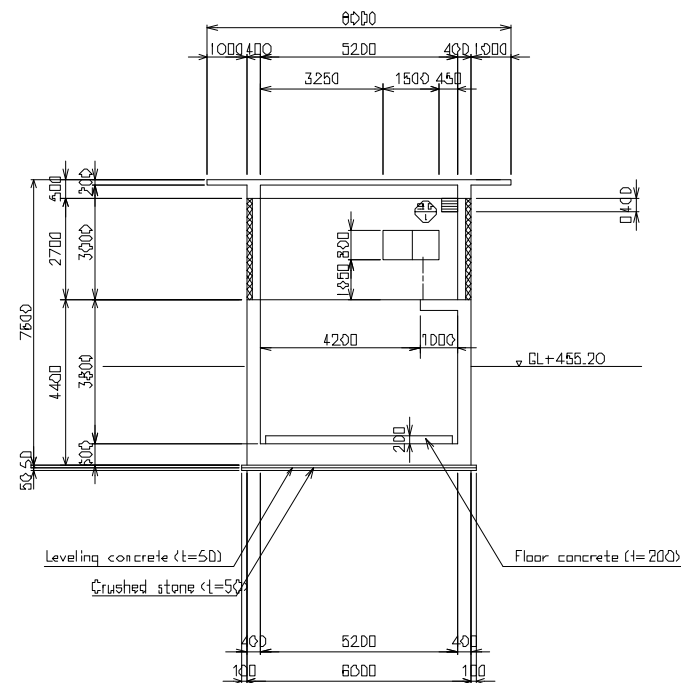
Drawing No.  
WTP-005  
Date  
Mar. 2011  
Revision  
Rev. 1.0



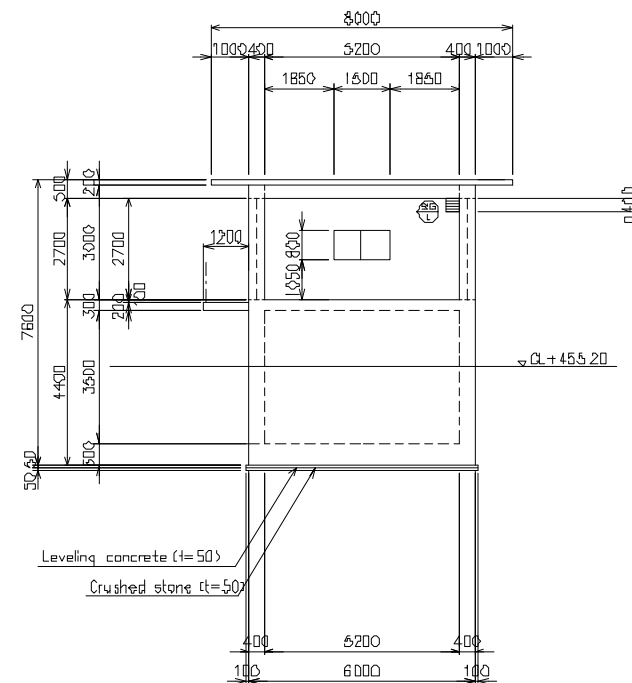
SECTION F-F



SECTION G-G



SECTION H-H



SECTION I-I

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Southern Sudan Urban Water Corporation

Japan International Cooperation Agency  
(JICA)  
Tokyo Engineering Consultants, Co., Ltd.

Facility

Service Reservoir

Title

Intake Pump House (2/2)

Scale

1/200

Original Paper Size  
A3

Drawing No.

WTP-006

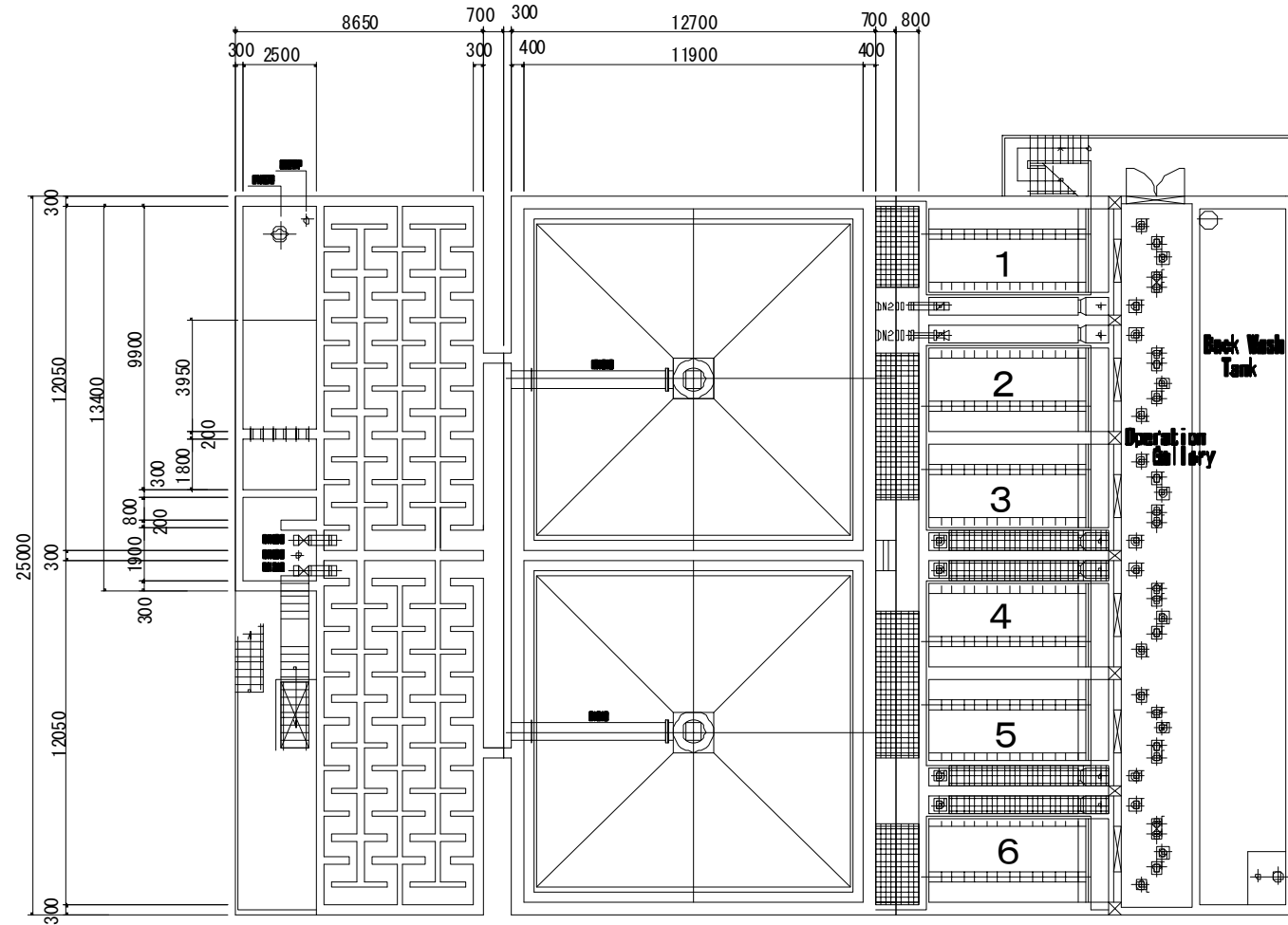
Date

Mar. 2011

Revision

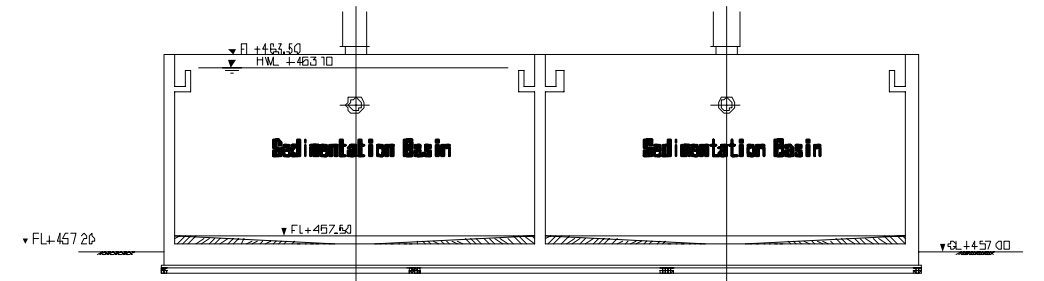
Rev. 1.0





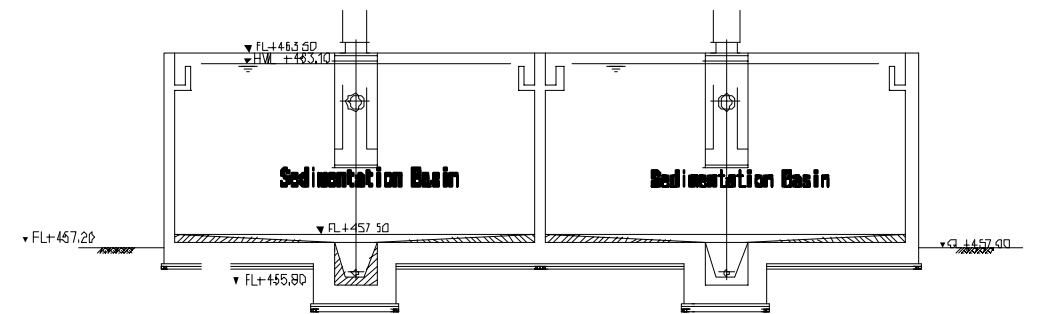
**B-B Plan**

Scale 1:250



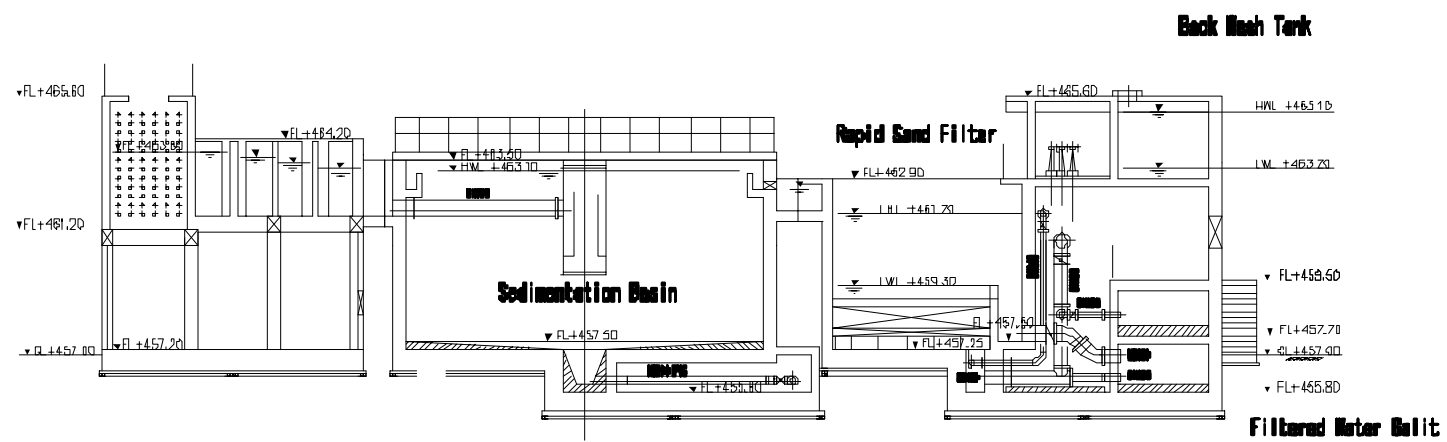
**L-L Section**

Scale 1:250



**M-M Section**

Scale 1:250



**F-F Section**

Scale 1:250

The Project for the Improvement  
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Southern Sudan Urban Water Corporation

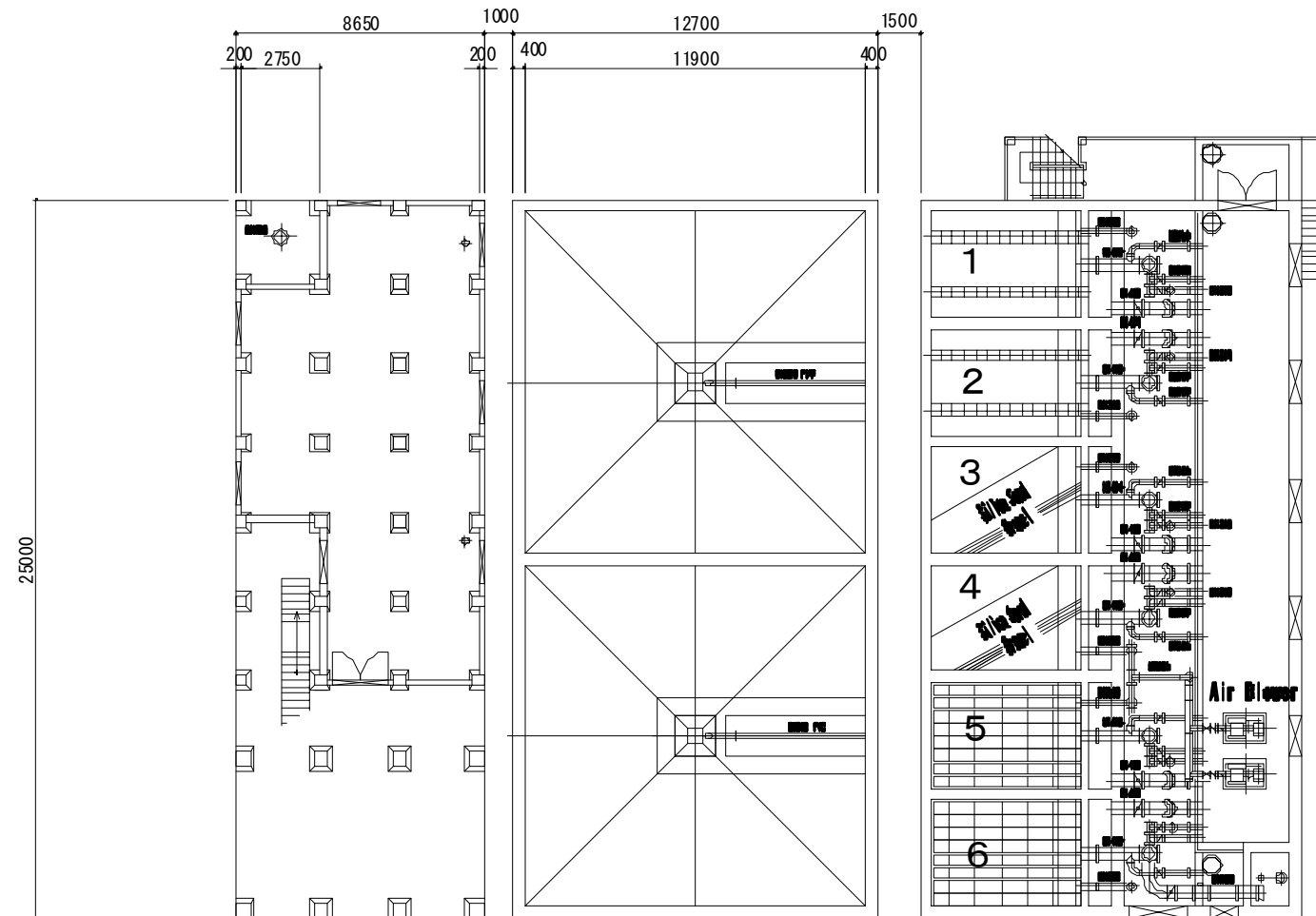
Japan International Cooperation Agency  
(JICA)  
Tokyo Engineering Consultants, Co., Ltd.

Facility:  
Water Treatment Plant

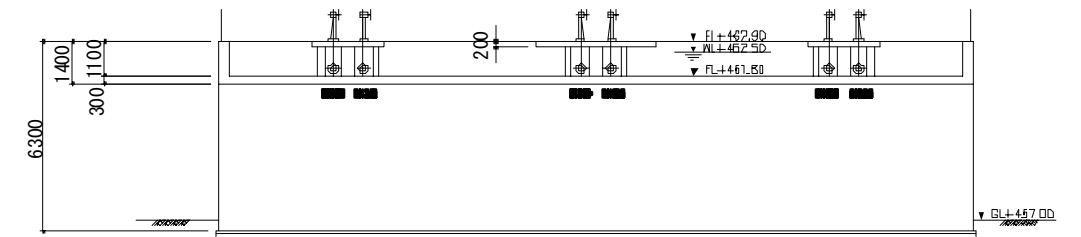
Title:  
Flocculation/ Sedimentation/  
Filtration - 2

Scale:  
1/250  
Original Paper Size:  
A3

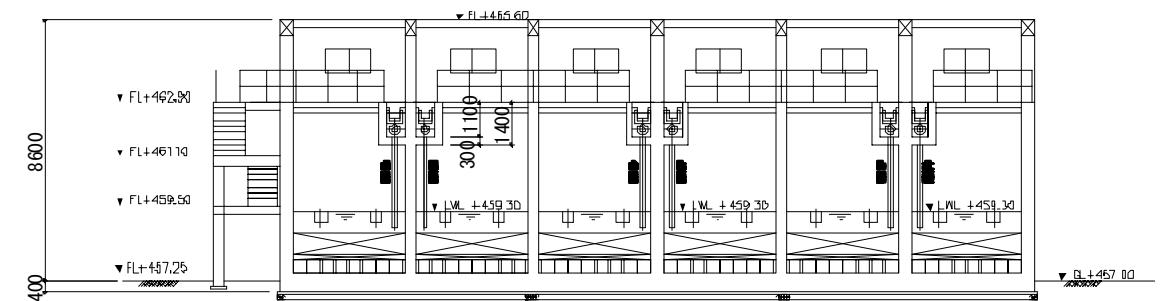
Drawing No. :  
WTP-008  
Date:  
Mar. 2011  
Revision:  
Rev. 1.1



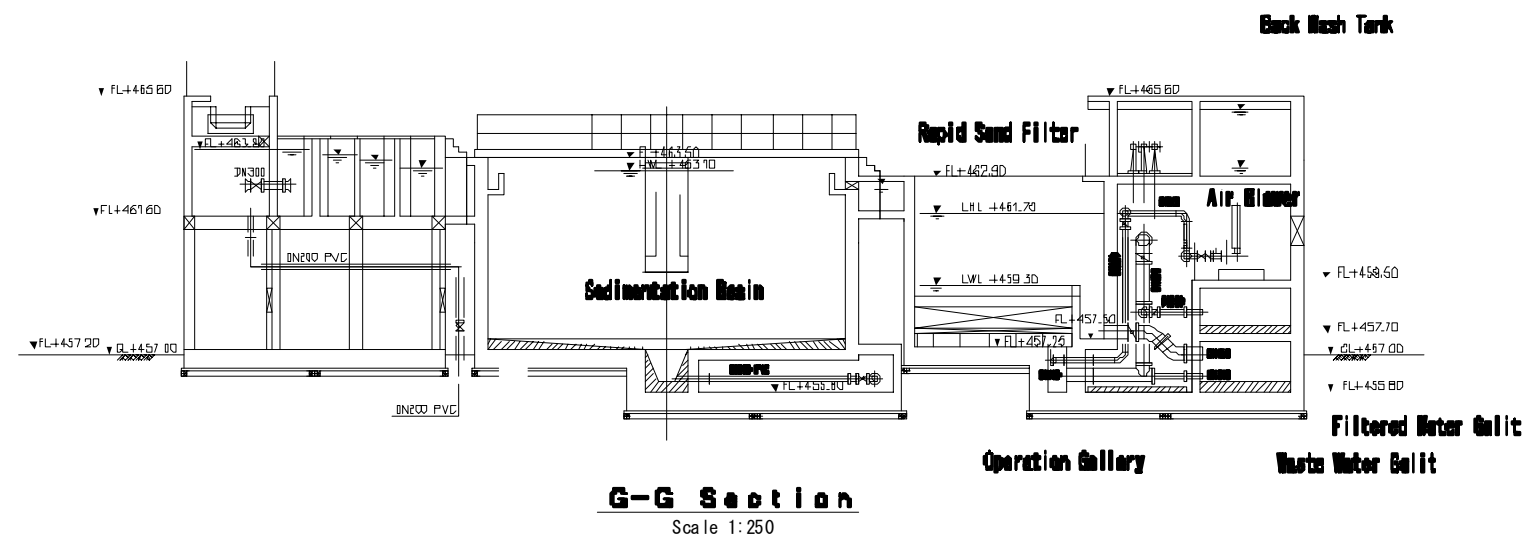
**C-C Plan**  
Scale 1: 250



**N-N Section**  
Scale 1: 250



**O-O Section**  
Scale 1: 250



**G-G Section**  
Scale 1: 250

The Project for the Improvement  
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Southern Sudan Urban Water Corporation

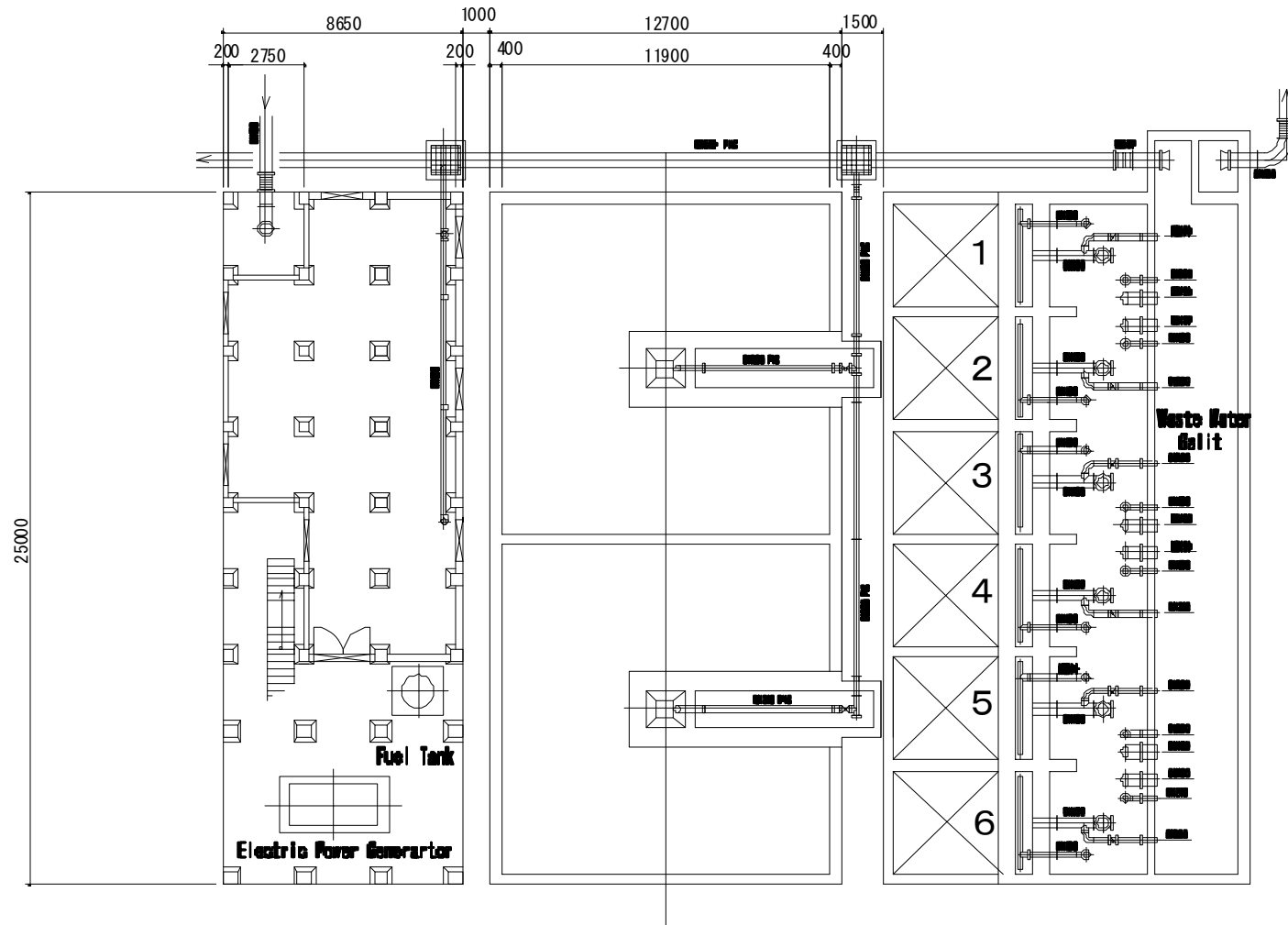
Japan International Cooperation Agency  
(JICA)  
Tokyo Engineering Consultants, Co., Ltd.

Facility:  
Water Treatment Plant

Title:  
**Flocculation/ Sedimentation/  
Filtration - 3**

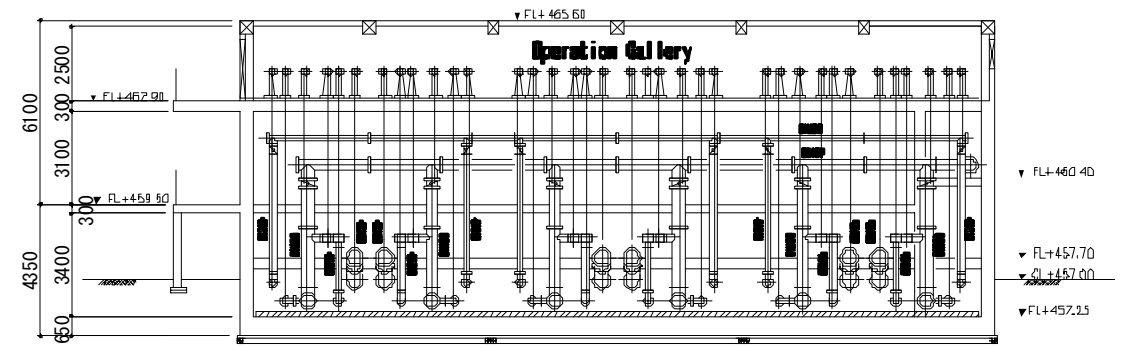
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Drawing No. :  
WTP-009  
Date:  
Mar. 2011  
Revision:  
Rev. 1. 1



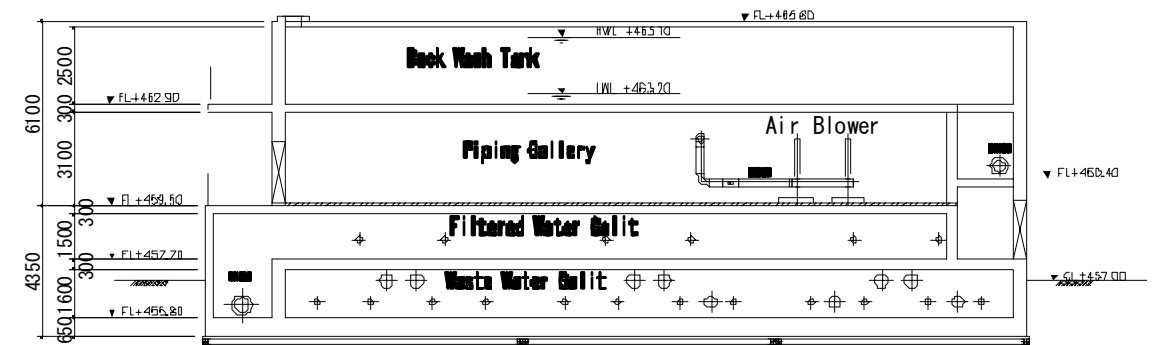
**P-P Plan**

Scale 1:250



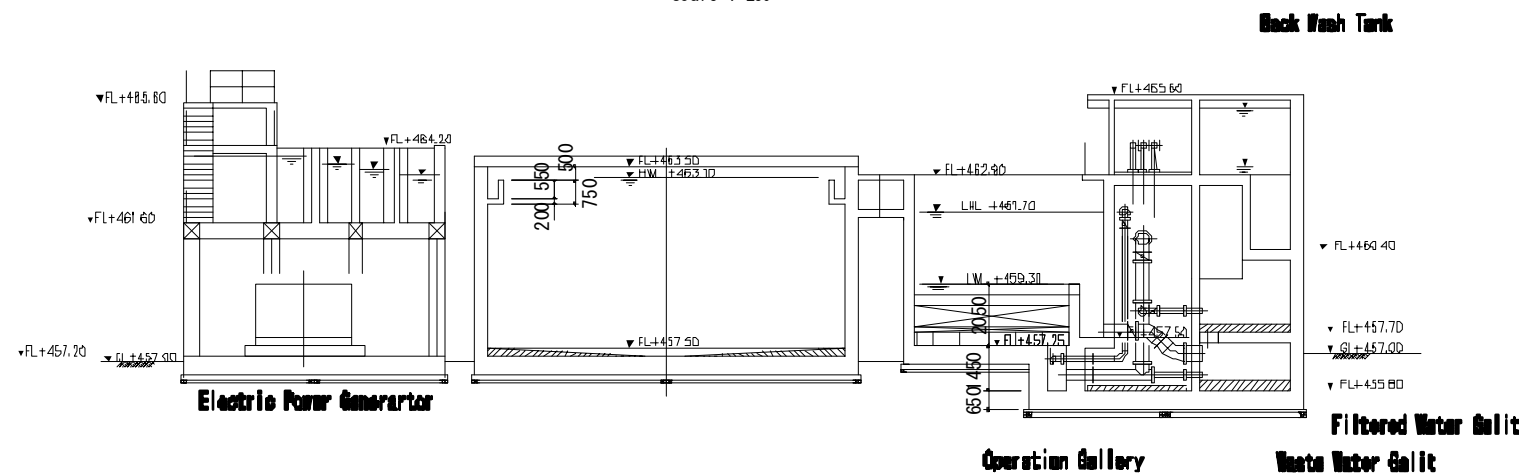
**P-P Section**

Scale 1:250



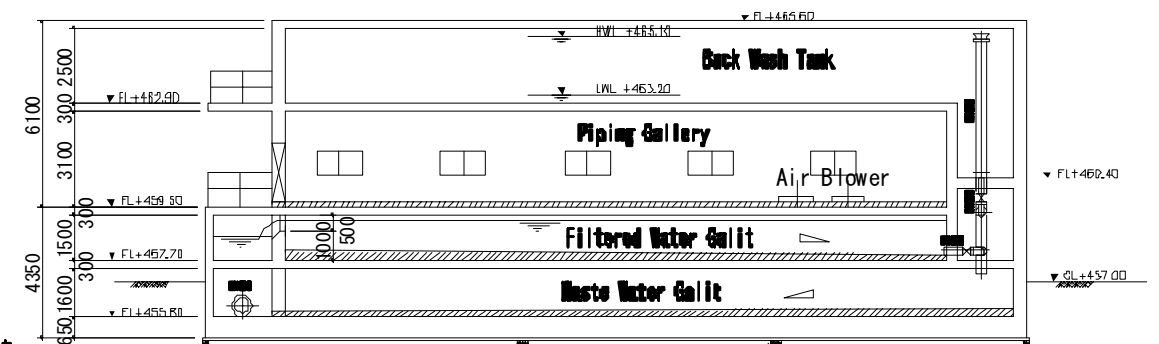
**Q-Q Section**

Scale 1:250



**H-H Section**

Scale 1:250



**R-R Section**

Scale 1:250

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Japan International Cooperation Agency  
(JICA)  
Tokyo Engineering Consultants, Co., Ltd.

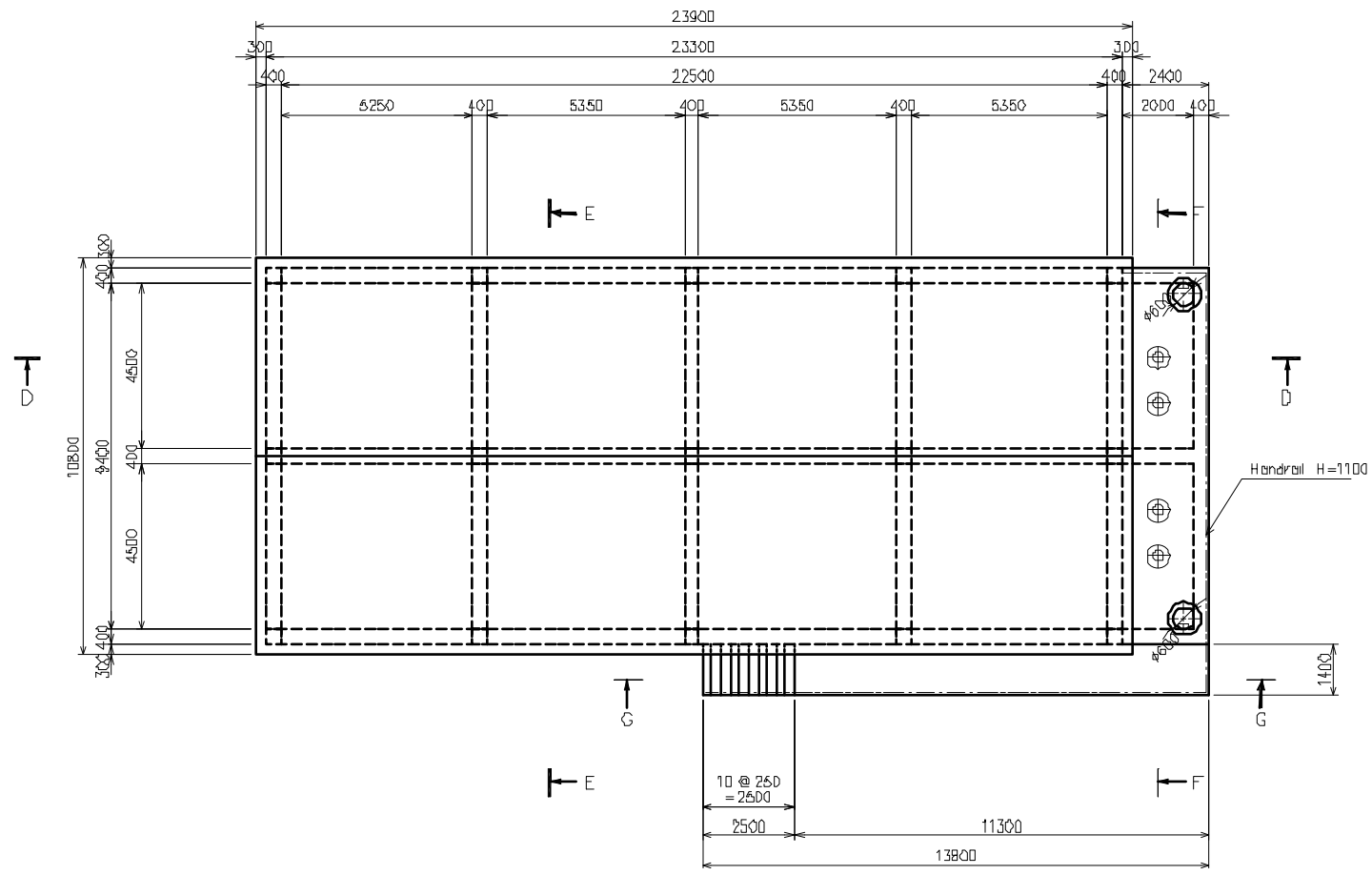
Facility:  
Water Treatment Plant

Title:  
Flocculation/ Sedimentation/  
Filtration - 4

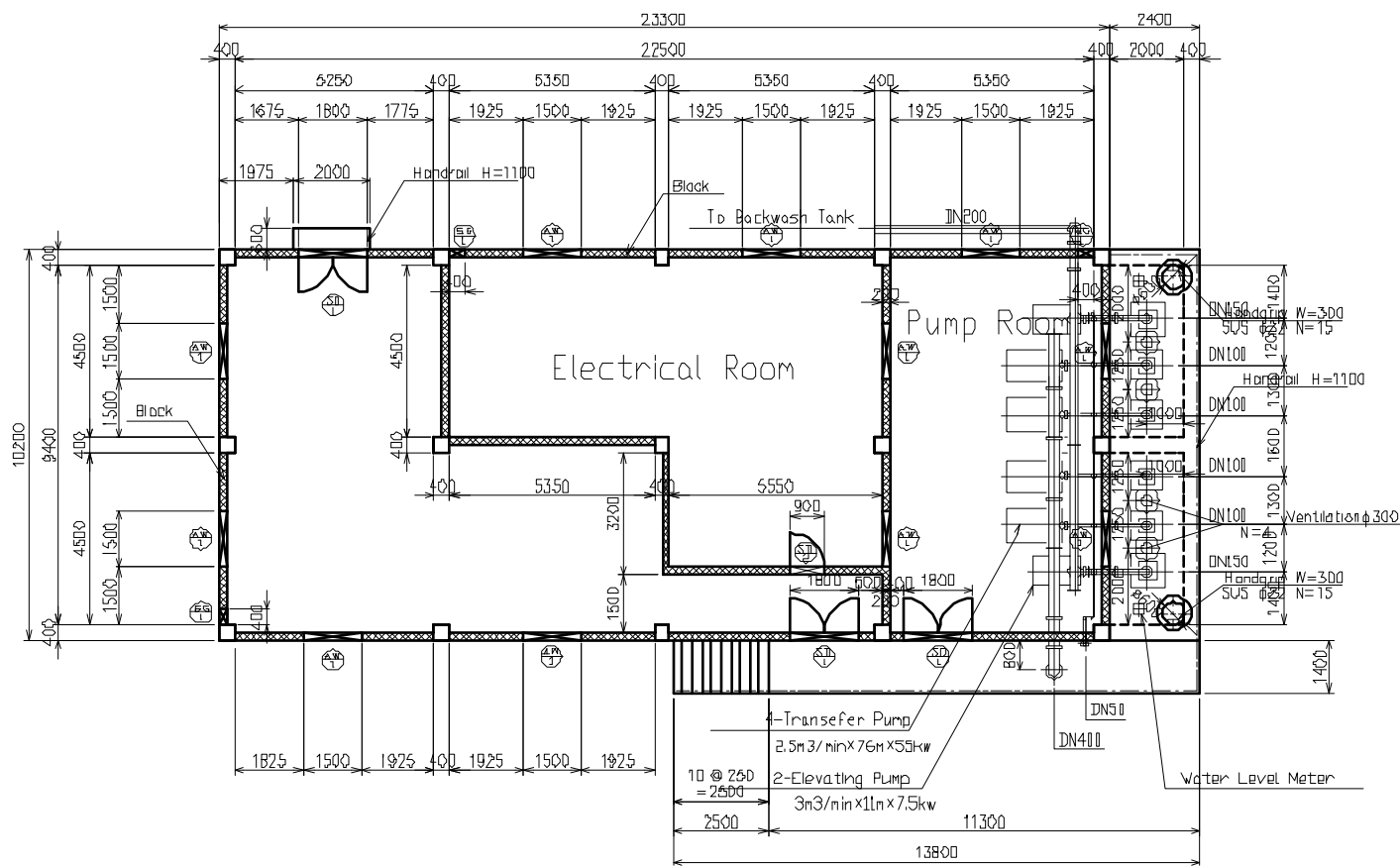
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Drawing No. :  
WTP-010  
Date:  
Mar. 2011  
Revision:  
Rev. 1.1

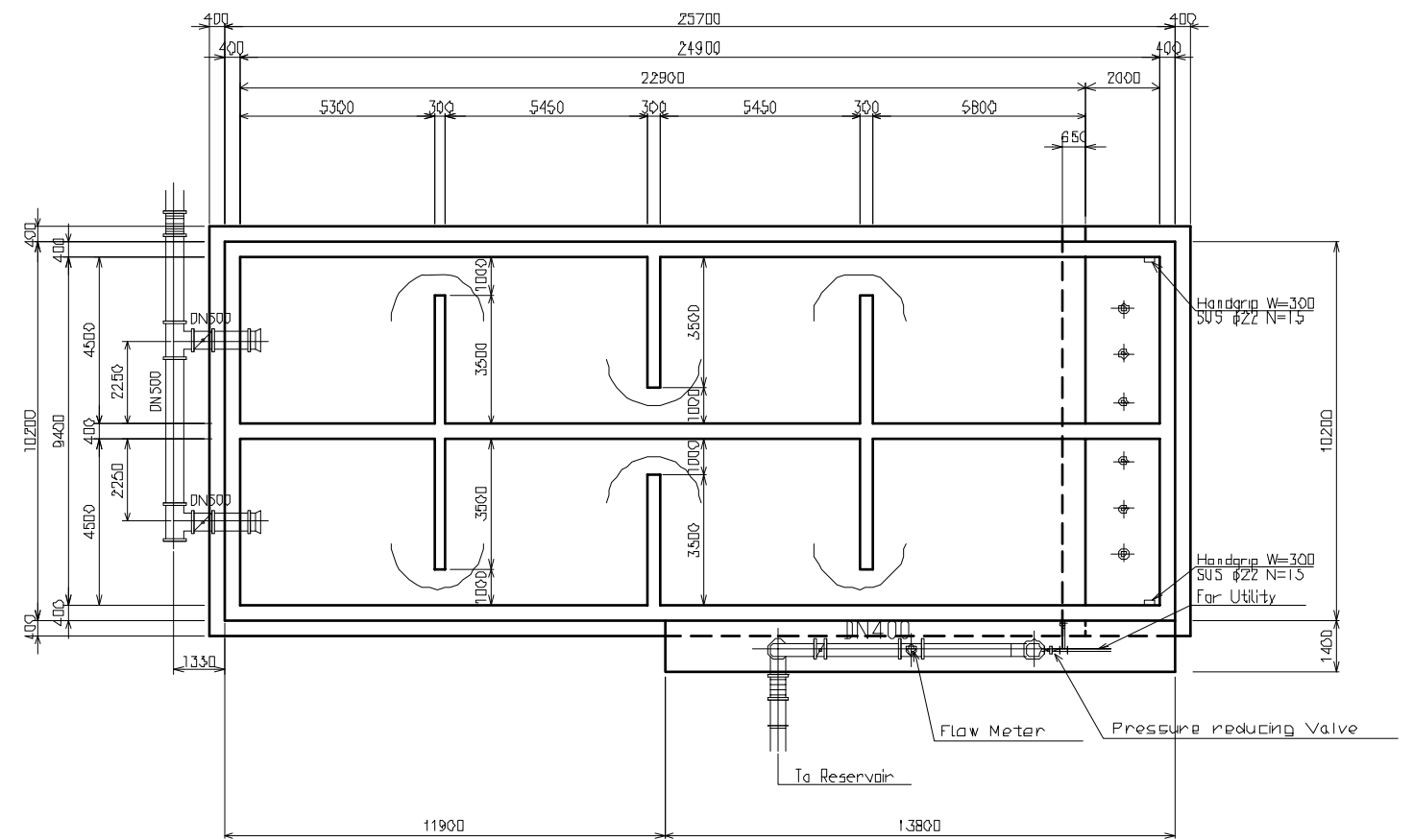




SECTION A-A



SECTION B-B



SECTION C-C

The Project for the Improvement  
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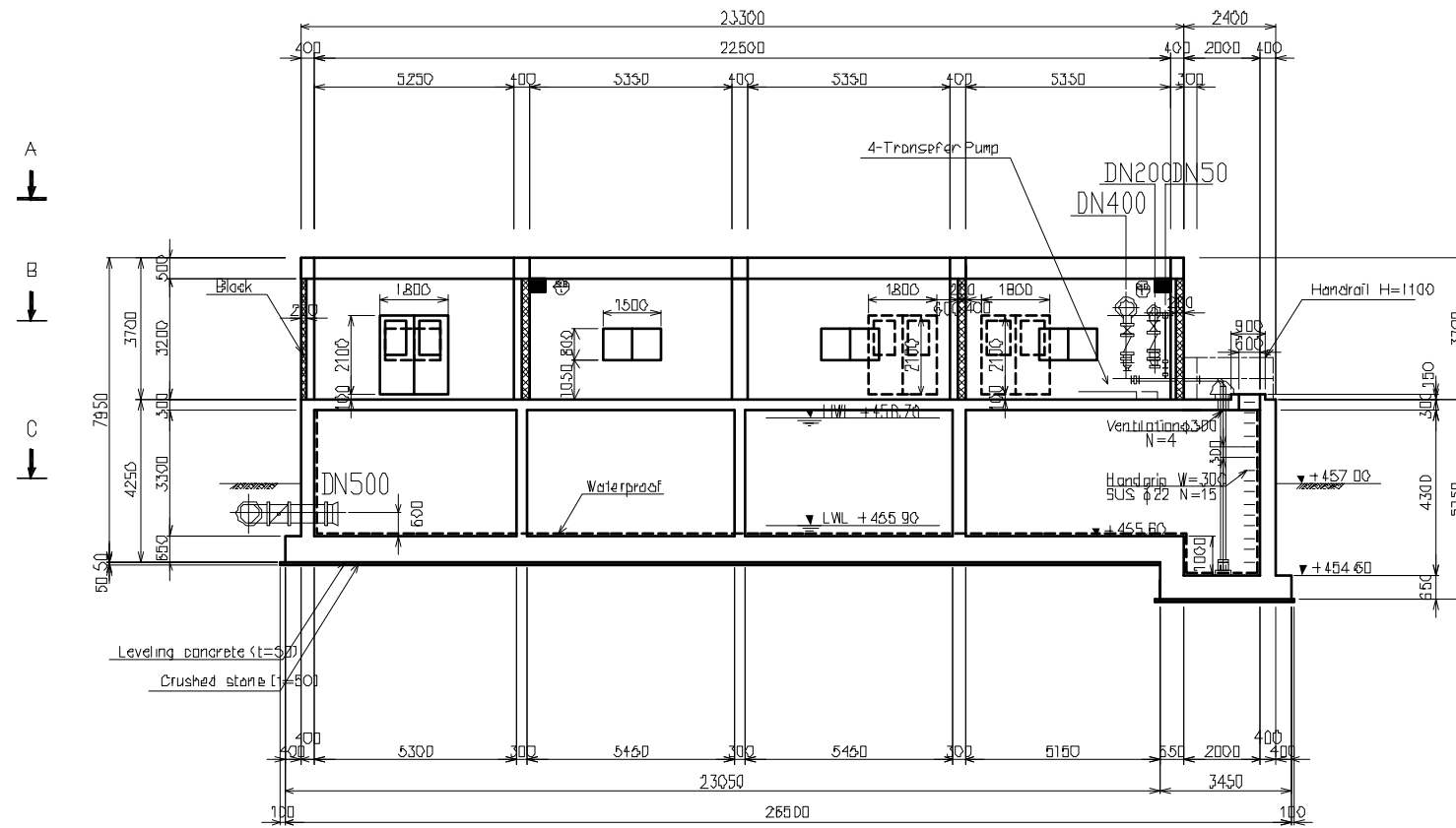
Japan International Cooperation Agency  
(JICA)  
Tokyo Engineering Consultants, Co., Ltd.

Facility:  
Water Treatment Plant

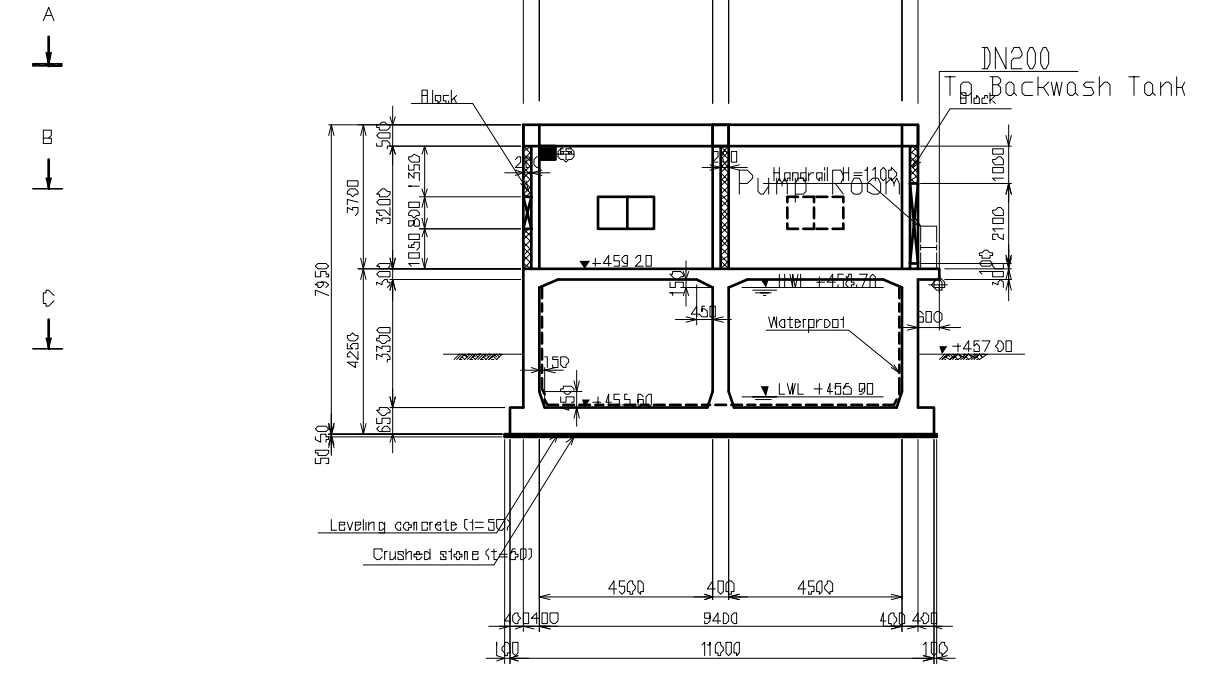
Title:  
Clear Water Reservoir ( 1/2 )

Scale:  
1/200  
Original Paper Size:  
A3

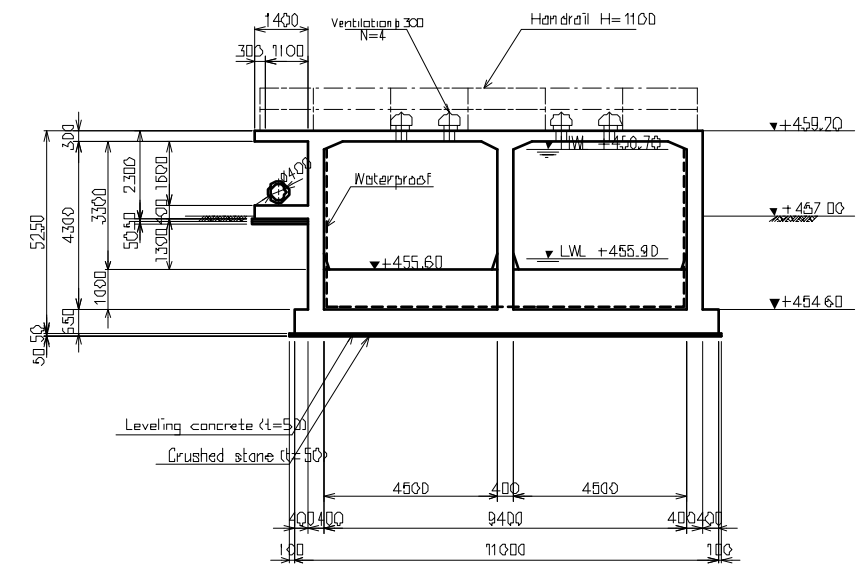
Drawing No.:  
WTP-011  
Date:  
Mar. 2011  
Revision:  
Rev. 2.0



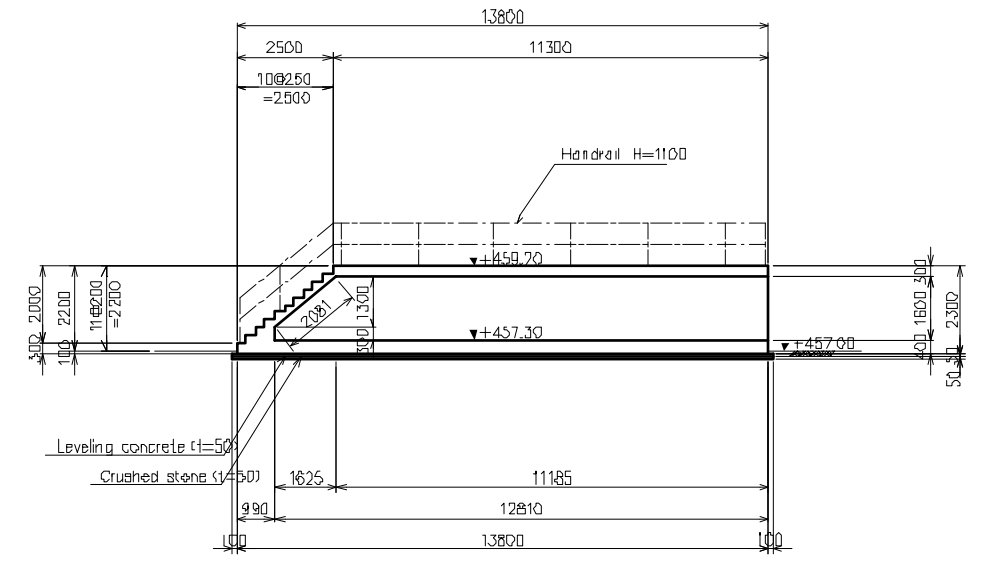
SECTION D-D



SECTION E-E



SECTION F-F



SECTION G-G

The Project for the Improvement  
of Water Supply System of Juba  
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Ministry of Water Resources and Irrigation  
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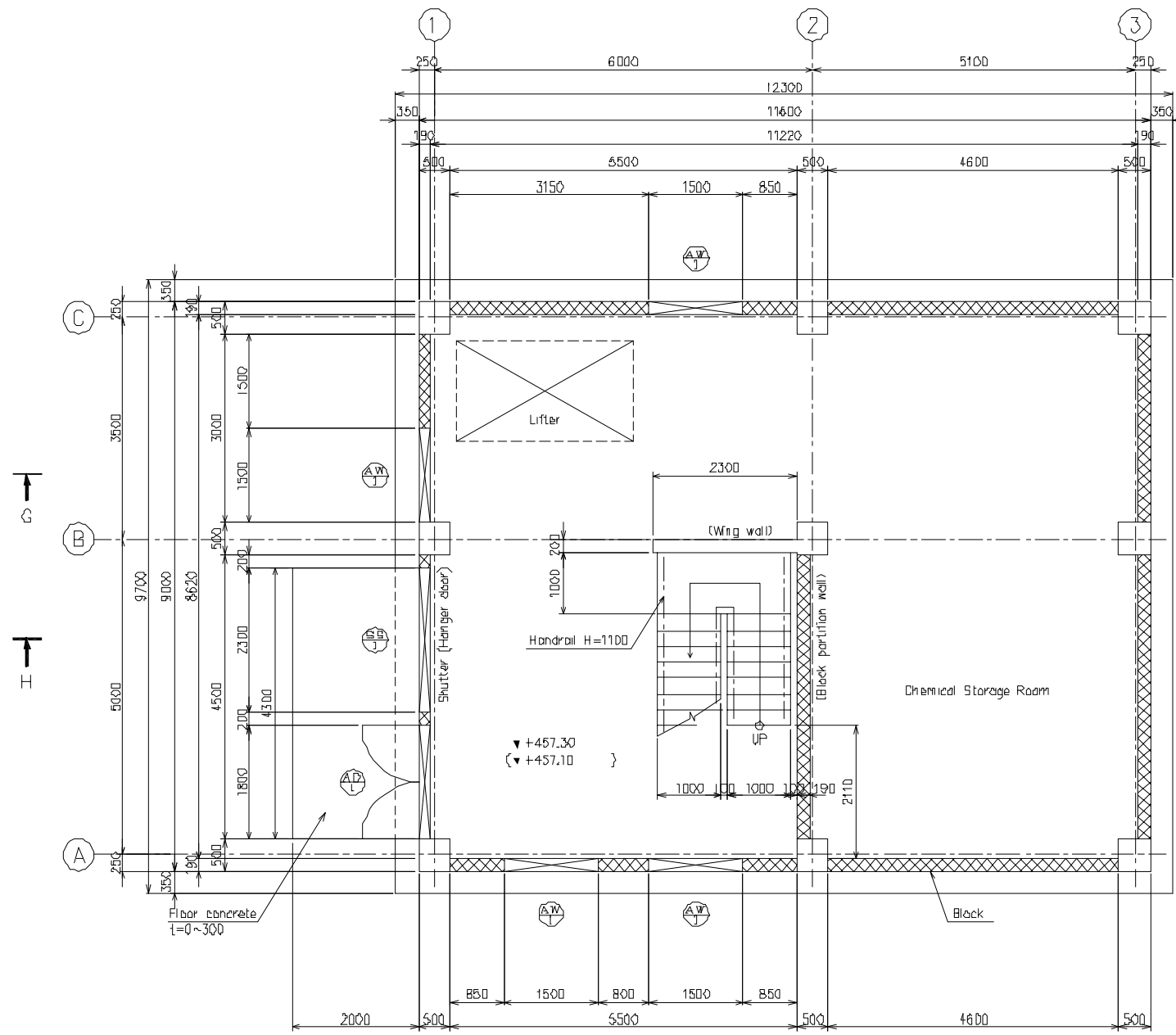
Japan International Cooperation Agency  
(JICA)  
Tokyo Engineering Consultants, Co., Ltd.

Facility:  
Water Treatment Plant

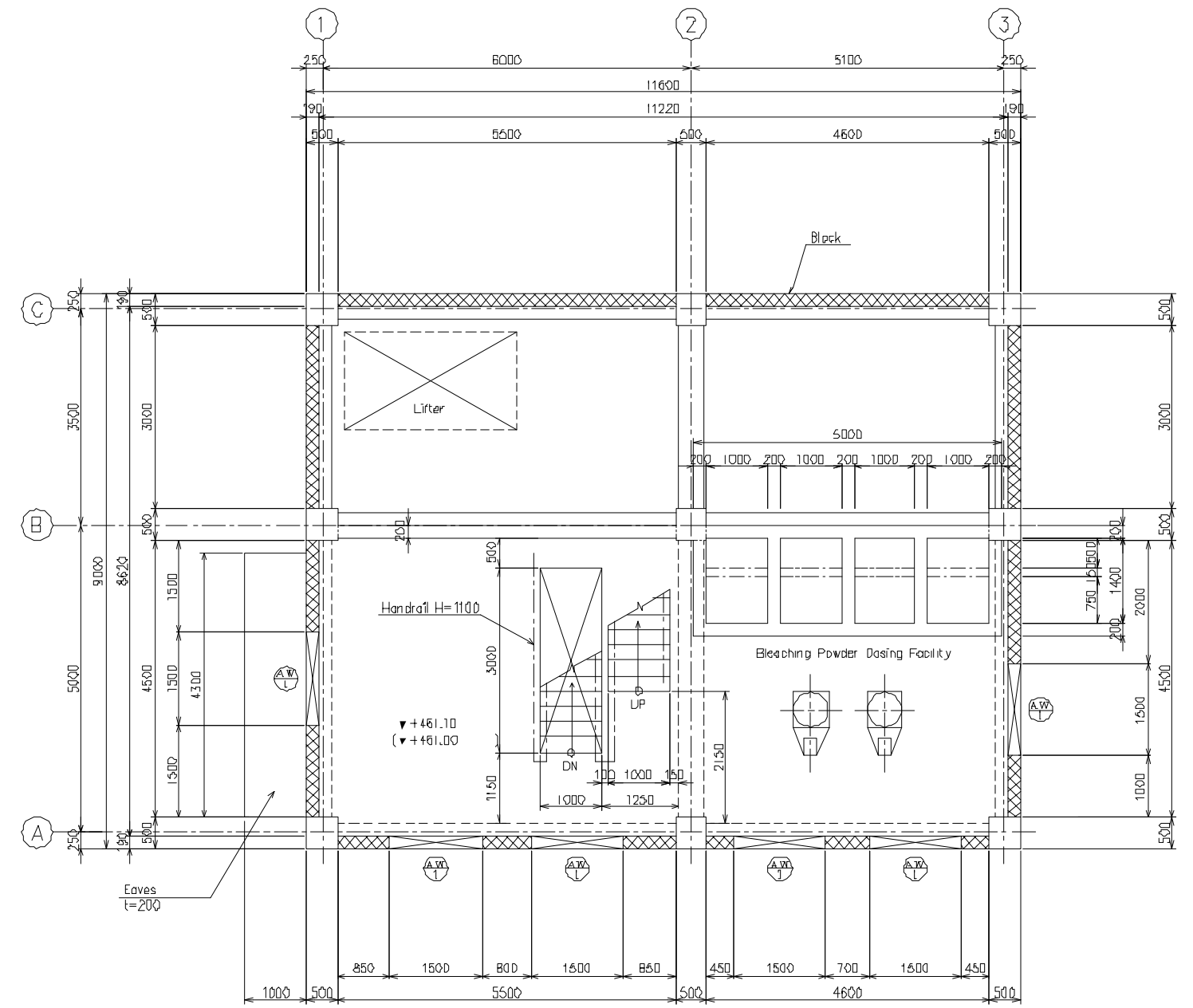
Title:  
Clear Water Reservoir (2/2)

Scale:  
1/200  
Original Paper Size:  
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Drawing No.:  
WTP-012  
Date:  
Mar. 2011  
Revision:  
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SECTION A-A  
(2F)



SECTION B-B  
(2F)

The Project for the Improvement  
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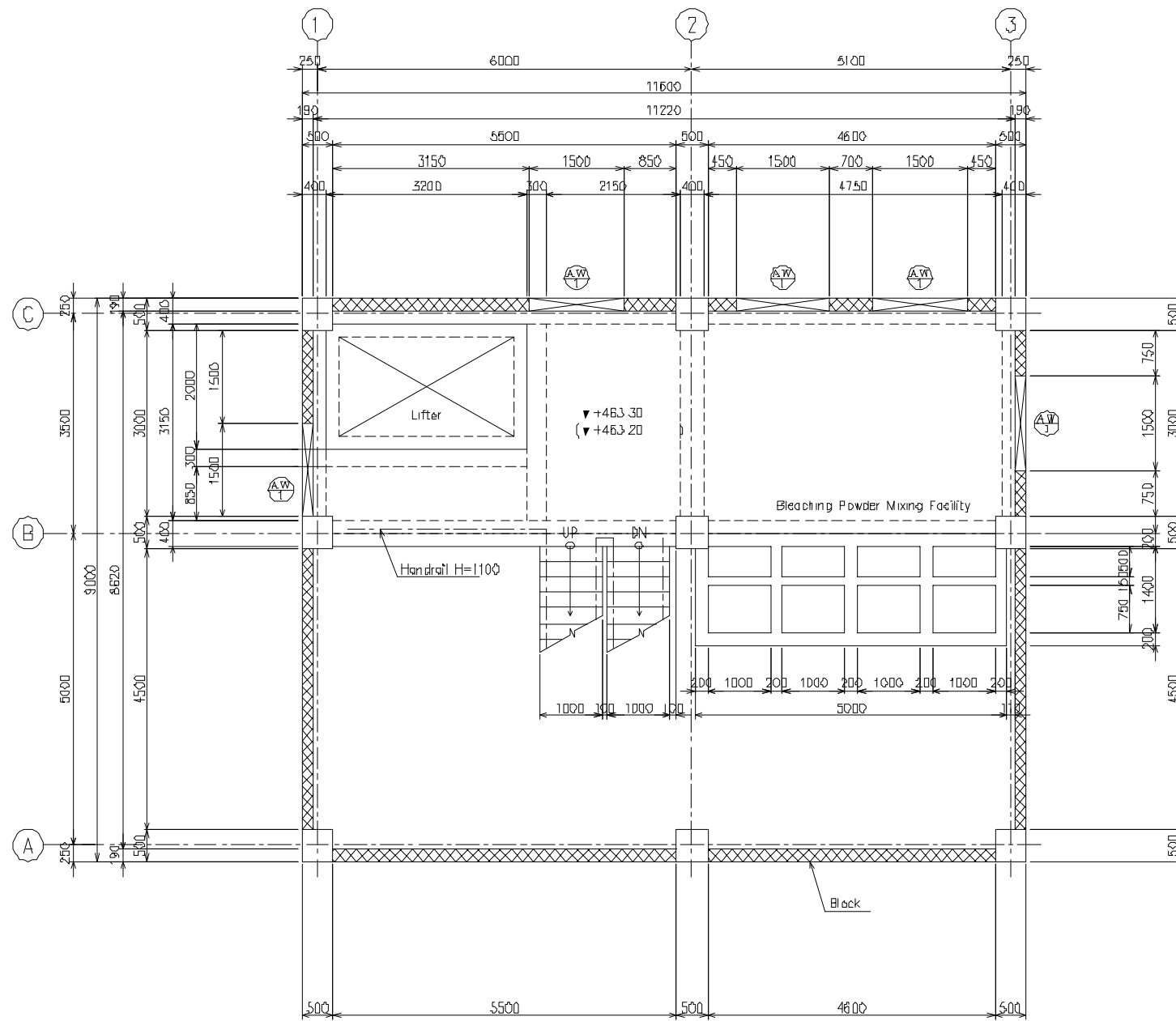
Japan International Cooperation Agency  
(JICA)  
Tokyo Engineering Consultants, Co., Ltd.

Facility:  
Water Treatment Plant

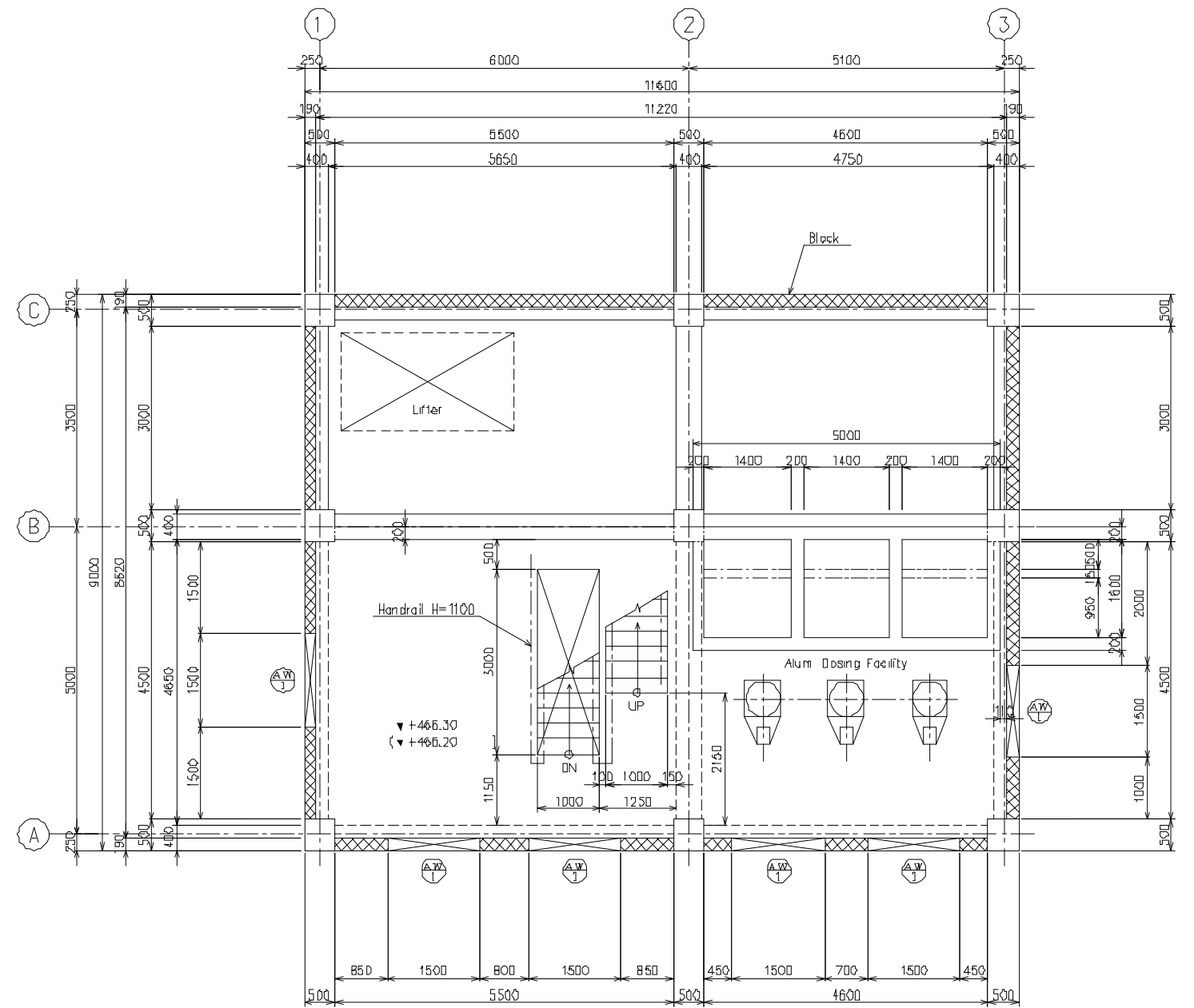
Title:  
Chemical Building ( 1/4 )

Scale:  
1/100  
Original Paper Size:  
A3

Drawing No.:  
WTP-013  
Date:  
Mar. 2011  
Revision:  
Rev. 1.0



SECTION C-C  
(2 MF)



SECTION D-D  
(3F)

The Project for the Improvement  
of Water Supply System of Juba  
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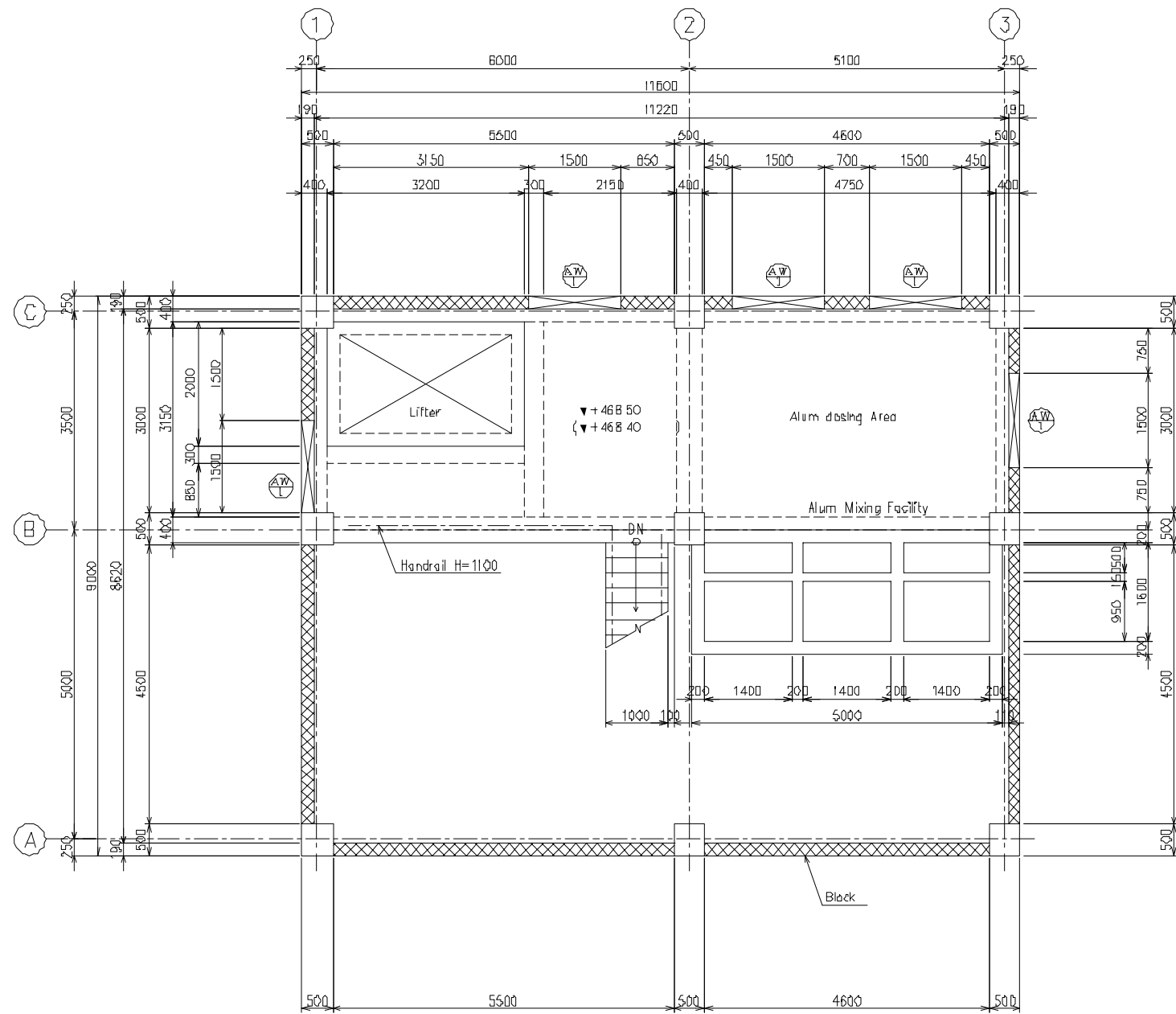
Japan International Cooperation Agency  
(JICA)  
Tokyo Engineering Consultants, Co., Ltd.

Facility:  
Water Treatment Plant

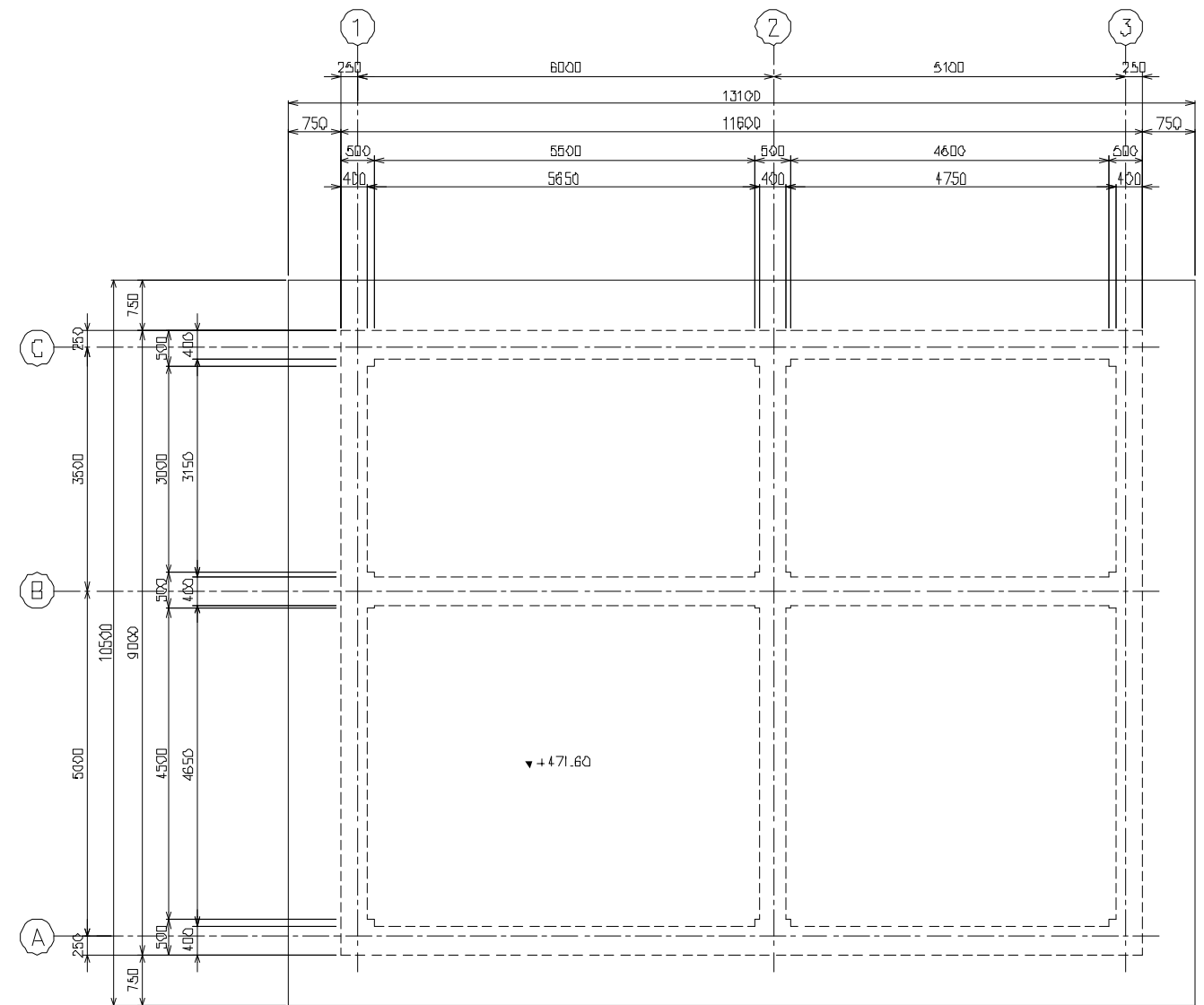
Title:  
Chemical Building (2/4)

Scale:  
1/100  
Original Paper Size:  
A3

Drawing No.:  
WTP-014  
Date:  
Mar. 2011  
Revision:  
Rev. 2.0



SECTION E-E  
(3 NF)



SECTION F-F  
(RF)

The Project for the Improvement  
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Southern Sudan Urban Water Corporation

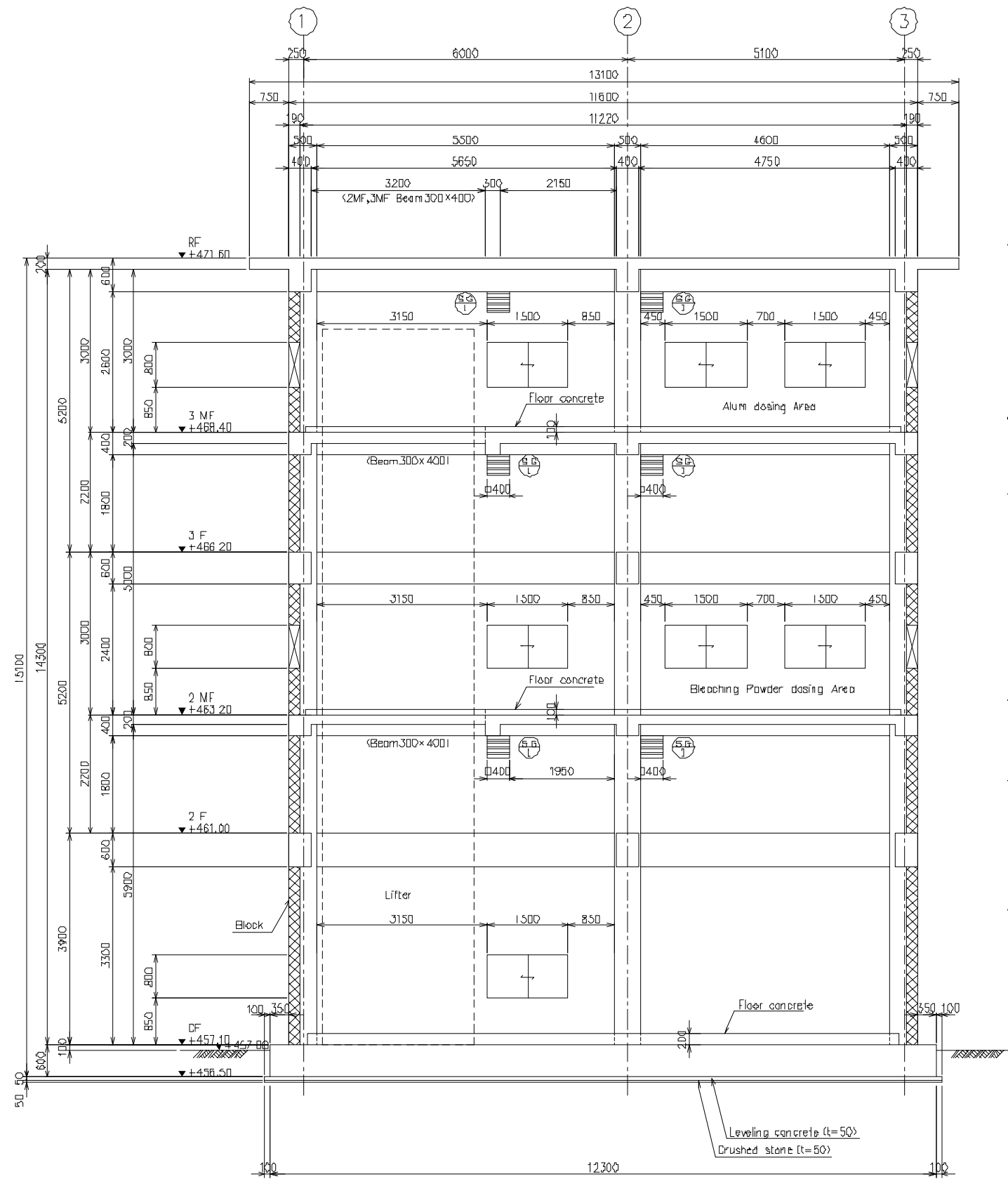
Japan International Cooperation Agency  
(JICA)  
Tokyo Engineering Consultants, Co., Ltd.

Facility:  
Water Treatment Plant

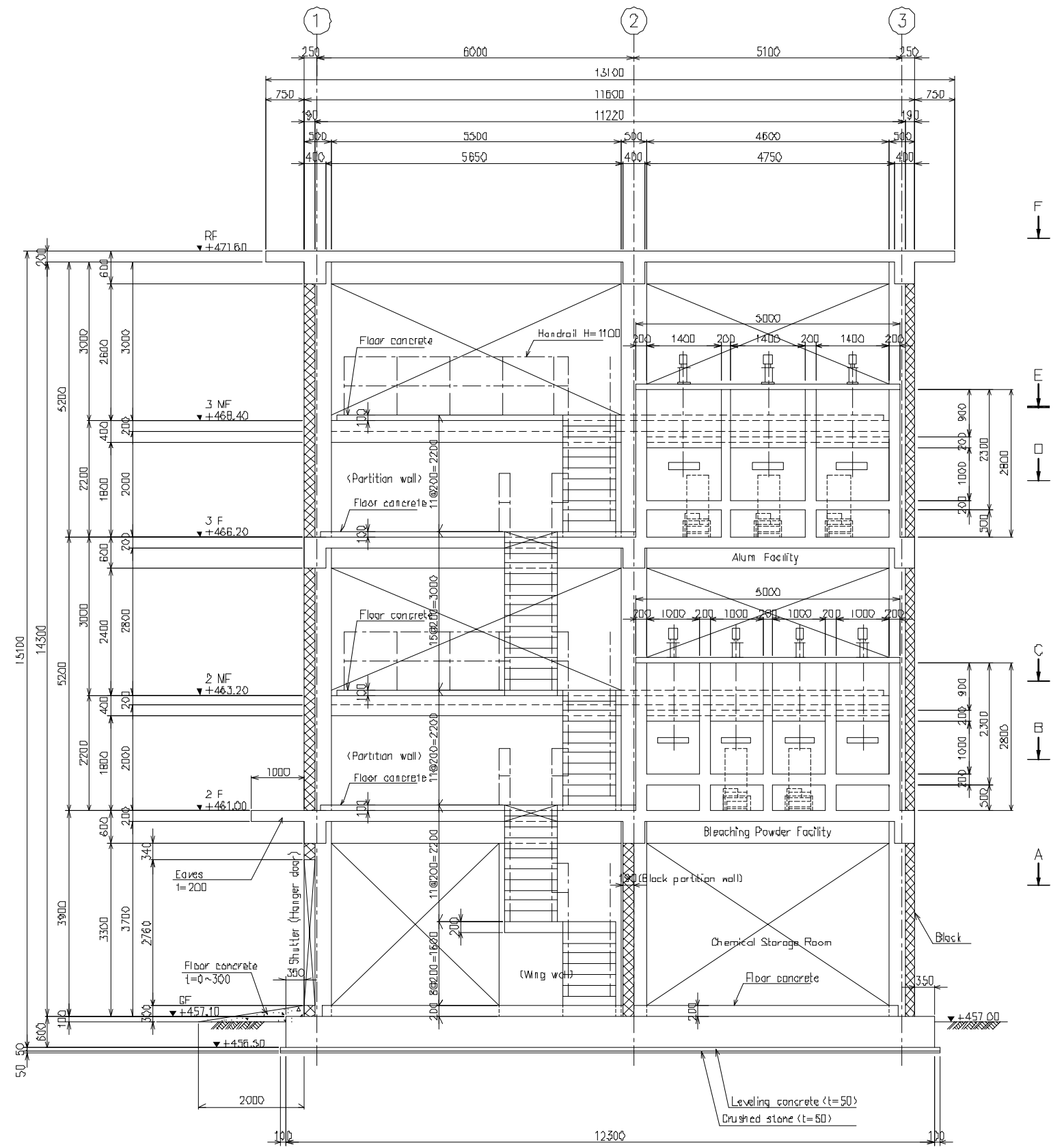
Title:  
Chemical Building (3/4)

Scale:  
1/100  
Original Paper Size:  
A3

Drawing No.:  
WTP-015  
Date:  
Mar. 2011  
Revision:  
Rev. 2.0



SECTION G-G



SECTION H-H

The Project for the Improvement  
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Ministry of Water Resources and Irrigation  
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Southern Sudan Urban Water Corporation

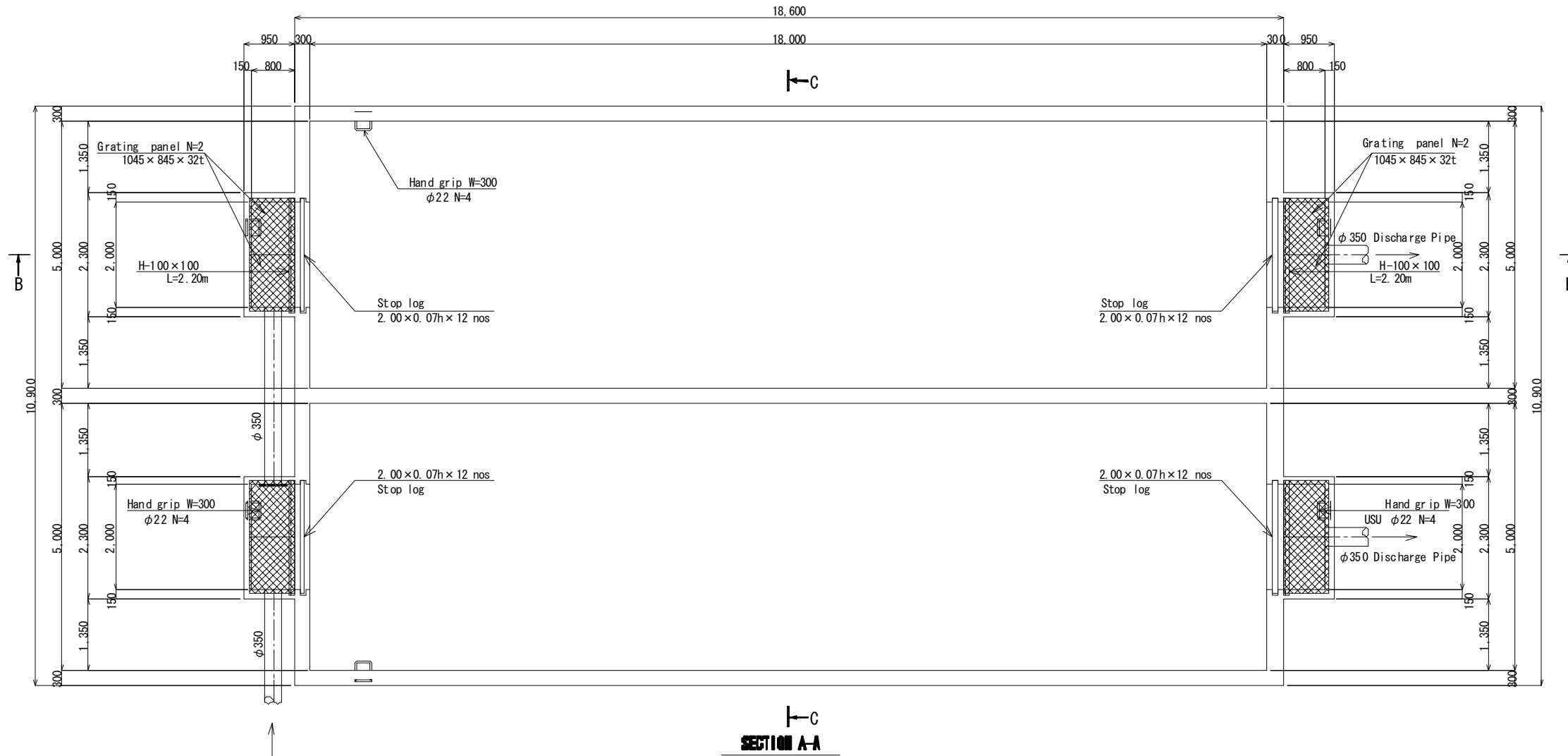
Japan International Cooperation Agency  
(JICA)  
Tokyo Engineering Consultants, Co., Ltd.

Facility:  
Water Treatment Plant

Title:  
Chemical Building (4/4)

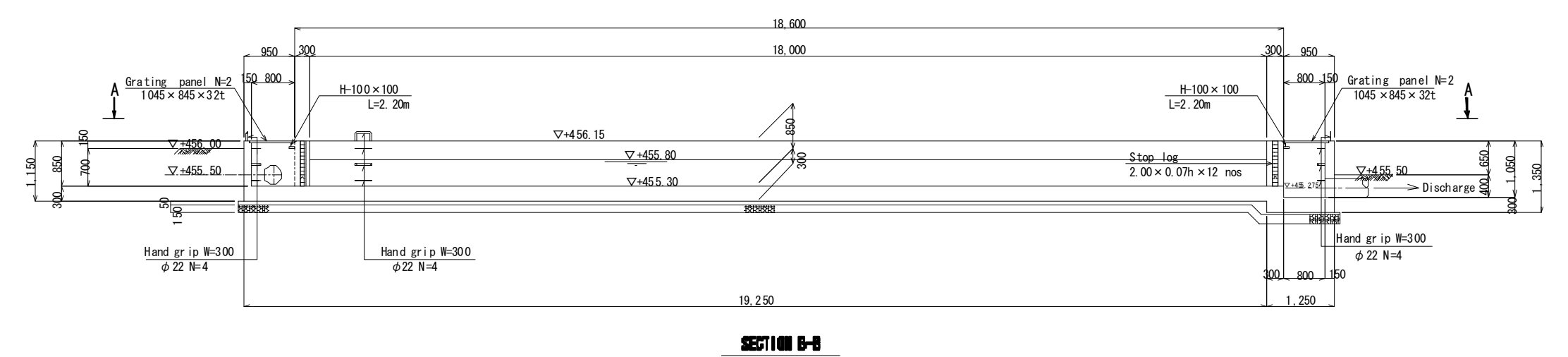
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Original Paper Size:  
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Drawing No.:  
WTP-016  
Date:  
Mar. 2011  
Revision:  
Rev. 2.0

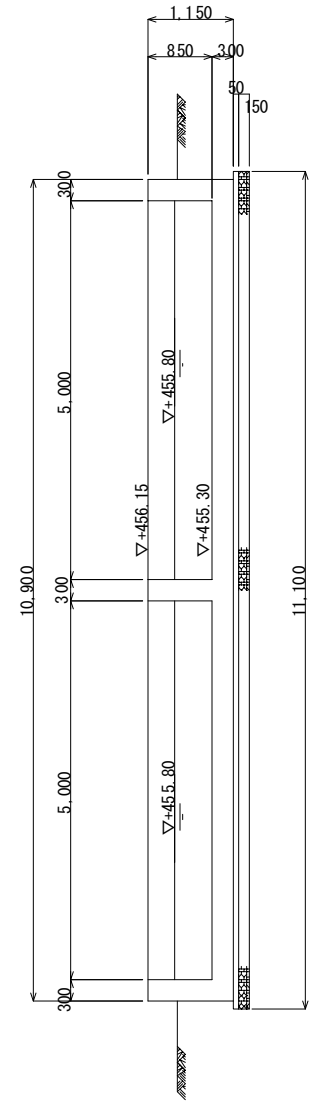


Sludge drainage  
(Inflow)

SECTION A-A



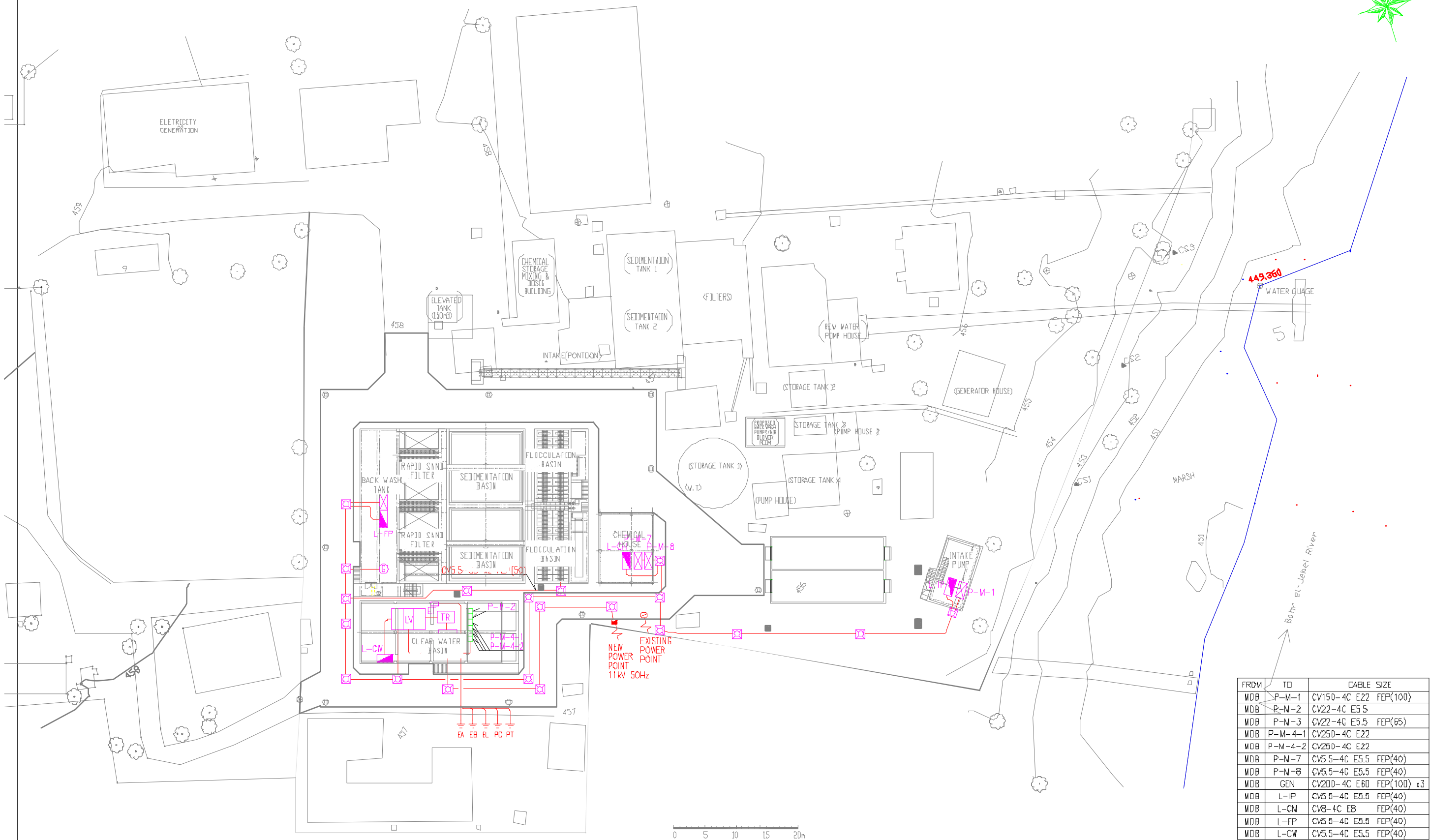
SECTION B-B



SECTION C-C

The Project for the Improvement of Water Supply System of Juba in Southern Sudan	Ministry of Water Resources and Irrigation Government of Southern Sudan	Japan International Cooperation Agency (JICA)	Facility: Water Treatment Plant	Title: Sludge Basin	Scale: 1/100	Drawing No.: WTP-017
	Southern Sudan Urban Water Corporation	Tokyo Engineering Consultants, Co., Ltd.			Original Paper Size: A3	

# Electrical System Layout



FROM	TO	CABLE SIZE
MDB	P-M-1	CV150-4C E22 FEP(100)
MDB	P-M-2	CV22-4C E5.5
MDB	P-M-3	CV22-4C E5.5 FEP(65)
MDB	P-M-4-1	CV250-4C E22
MDB	P-M-4-2	CV250-4C E22
MDB	P-M-7	CV5.5-4C E5.5 FEP(40)
MDB	P-M-8	CV5.5-4C E5.5 FEP(40)
MDB	GEN	CV200-4C E60 FEP(100) x3
MDB	L-IP	CV5.5-4C E5.5 FEP(40)
MDB	L-CN	CV8-4C E8 FEP(40)
MDB	L-FP	CV5.5-4C E5.5 FEP(40)
MDB	L-CW	CV5.5-4C E5.5 FEP(40)

**The Project for the Improvement of Water Supply System of Juba In Southern Sudan**

**Ministry of Water Resources and Irrigation  
Government of Southern Sudan  
Southern Sudan Urban Water Corporation**

**Japan International Cooperation Agency (JICA)  
Tokyo Engineering Consultants, Co., Ltd.**

**Facility:  
Water Treatment Plant**

**Title:  
Site Electrical System**

**Scale:  
1/800  
Original Paper Size:  
A3**

**Drawing No. WTP-018  
Date: Mar. 2011  
Revision: Rev. 1.0**