

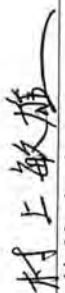
Minutes of Discussions  
on  
The Preparatory Survey  
for  
The Project for Provision of Improved Water Sources for Returned IDP  
in Acholi Sub Region in the Republic of Uganda  
(Explanation on Draft Report)


In August 2011, the Japan International Cooperation Agency (hereinafter referred to as "JICA") dispatched a Preparatory Survey Team on the Project for Provision of Improved Water Source for Returned IDP in Acholi Sub Region in Uganda (hereinafter referred to as "the Project") to the Republic of Uganda (hereinafter referred to as "Uganda") and through discussion, field survey, and technical examination of the results in Japan, JICA prepared a draft report of the study.

JICA dispatched to Uganda the Draft Report Explanation Team (hereinafter referred to as "the Team"), which was headed by Mr. Toshio Murakami, Senior Advisor of JICA, from September 3<sup>rd</sup>-6<sup>th</sup>, 2012 to consult the Uganda authorities on the components of the draft report.

As a result of discussions, both parties confirmed the main items described on the attached sheets.

Kampala, September 6<sup>th</sup>, 2012

  
Mr. Toshio Murakami  
Leader  
Preparatory Survey Team  
Japan International Cooperation Agency

  
Eng. Richard Cong  
For: Permanent Secretary  
Ministry of Water and Environment  
Government of the Republic of Uganda

ATTACHMENT

**1. Components of the Draft Report**

The Uganda side agreed and accepted in principle the components of the draft outline design explained by the Team. The project sites and components of the project are shown in Annex-1 and 2.

**2. Japan's Grant Aid scheme**

The Uganda side understood the scheme of Japan's Grant Aid and would take the necessary measures and allocate necessary budget properly for smooth implementation of the Project, as a condition for the Japanese Grant Aid to be implemented. The Grant Aid Scheme and necessary measures were described in the Annex 4, 5 and 6 of the Minutes of Discussions signed by both sides on August 23<sup>rd</sup>, 2011 (hereinafter referred to as "the previous minute").

Both sides confirmed that the dispatch of the Team is not necessary a commitment of the Project to be implemented and that the scope of the Project would be examined further by the Government of Japan for its approval as a Grant Aid.

**3. Project Area**

The project area is Acholi sub-region which is currently composed of Agago, Amuru, Kitgum, Gulu, Lamwo, Pader, and Nwoya districts. The administration boundary as of the date of this Minutes of Discussion shall be applied in case of the administrative boundary.

**4. Responsible and Implementing Organization**

4-1 The Responsible Organization is the Ministry of Water and Environment (hereinafter referred to as "MoWE"), the Government of Uganda, and its focal directorate is the Directorate of Water Development (DWD).

4-2 The Implementing Organizations are the district local governments of the respective seven (7) districts mentioned in "3.Project Area" above. These seven districts through their respective district water office are in charge of operation and maintenance of the facilities to be constructed under the Project.

**5. Schedule of the Study**

JICA will complete the final report in accordance with the confirmed items and send it to Uganda by the end of December, 2012.

**6. Other Relevant Issues**

**6-1 Target site and Alternative sites**

Both sides agreed on the following:

(1) The Team explained that the target sites are 116 villages for borehole facilities and 6 RGCs for piped water supply facilities for the Project shown in Annex-3. 36 alternative sites are reserved in addition to the above 116 sites for the unsuccessful drilling in the target sites.

(2) The Uganda side takes necessary measure for securing the project sites, and informs of the



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updated situation of the project sites shown in Annex-3.

- (3) Depending on the updated situation, the alternative sites are to be studied. As a result of the study, the number of the total target sites may be reduced for point water sources.
- (4) Any alternative site is not considered for RGCs.

#### **6-2 Criteria of Successful boreholes**

Both sides agreed that the yield of 0.6 m<sup>3</sup>/hr is applied for the successful boreholes considering the hydrogeological conditions thereof.

#### **6-3 Project Cost Estimate**

The Team explained to the Uganda side the estimated project cost as attached in Annex-5. Both sides confirmed that this estimated cost was provisional and would be examined further by the Government of Japan for its final approval. Furthermore, both sides confirmed that this project cost estimate is confidential, and should never be duplicated in any forms or released to any other parties until the relevant contracts are awarded by the executing agency, in order to secure fairness of tender procedure.

#### **6-4 Undertakings by the Uganda Side**

Both sides agreed the Uganda side to timely allocate the necessary amount of budget (Annex-5) for smooth implementation of the Project, to assign counterpart personnel during the implementation of the Project.

#### **(1) Tax exemption and Custom Clearance**

Both sides confirmed that the Uganda side shall take necessary measures to exempt Japanese nationals who will be engaged in the Project from all duties and related fiscal charges which may be imposed in Uganda with respect to local procurement under the verified contract.

Both sides also confirmed that the Uganda side shall take necessary measures to implement smooth custom clearance for the materials and equipment for the Project to be imported from Japan or third countries.

#### **(2) Environmental Impact Assessment (EIA)**

The Uganda side assured to undertake environmental screening and if necessary, the environmental impact assessment (EIA) in relation to the Project and to obtain the formal approval from relevant authorities according to the Ugandan laws and regulations. Based on the preliminary design to be provided by the Team, MoWE shall ensure that the formalities relating to EIA are undertaken by implementation of the Project.

#### **(3) Protection of Test Boreholes**

The Uganda side agreed that the test boreholes drilled in the survey shall be protected safely by the Uganda side until the commencement of the Project.

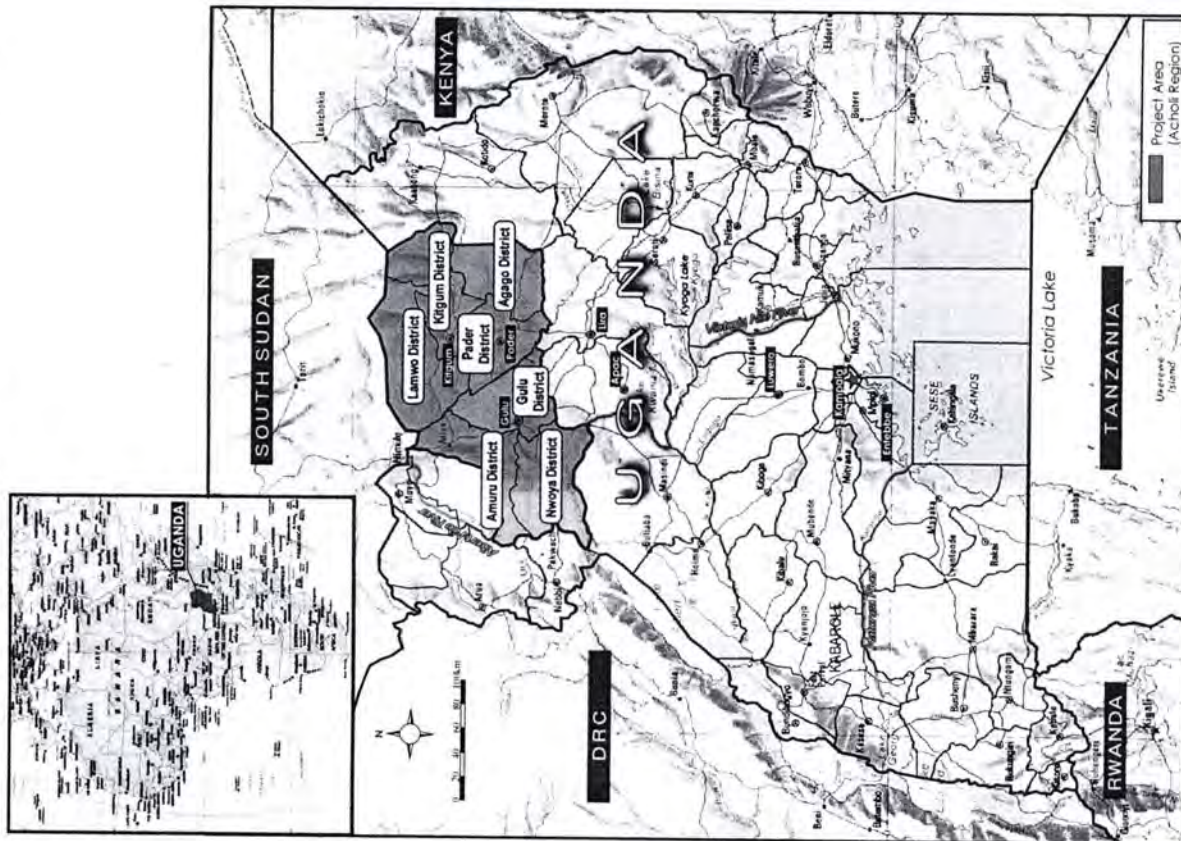
#### **(4) Operation and Maintenance of the water supply facilities**

The Uganda side assured the appropriate operation and maintenance of the water supply facilities to be constructed and proper use of the equipment provided under the Project.

(END)

Annex:

- Annex-1 Project Site
- Annex-2 Components of the Project
- Annex-3 Selected Target Villages and Substitutes
- Annex-4 Organization Chart of the Responsible Organization
- Annex-5 Project Cost Estimation



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**Components of the Project**

1. Construction of Deep Boreholes with Hand Pump 116 sites as per the attached list

- i) Amuru District: 22
  - ii) Nwoya District: 9
  - iii) Gulu District: 16
  - iv) Lamwo District: 22
  - v) Kigungu District: 15
  - vi) Pader District: 15
  - vii) Agago District: 17
- Total: 116

Hand Pump: U-2 type with PVC riser pipes and stainless steel rods

2. Construction of Piped Water Supply Facilities: 6 RGCs as listed below

District	RGC	Served Population (2017)	Water Demand (m <sup>3</sup> /day)	The Number of Boreholes	
				Test Boreholes drilled in the Study	Existing Boreholes
Gulu	Unyama	3,600	72.0	1 borehole	1 borehole
	Awere	1,700	34.0	-	2 boreholes
Nwoya	Koch Goma	2,100	42.0	1 borehole	1 borehole
Kigungu	Kigungu Mainidi	2,800	56.0	1 borehole	1 borehole
Pader	Cornet Kilak	2,000	40.0	1 borehole	2 boreholes
Agago	Adilang	3,800	76.0	2 boreholes	2 boreholes
<b>TOTAL</b>		<b>16,000</b>	<b>320.0</b>	<b>6 boreholes</b>	<b>9 boreholes</b>

3. Procurement of Service Rig: 1 set

Medium body cargo truck with crane, lift frame, winch, double tube pipes for well development, engine compressor, and engine welder

4. Procurement of Hand Pump Repair Tools: 73 sets including fishing tools

5. Technical Assistance consisting of:

- i) Empowerment of target villages for establishing WSCs and proper operation and maintenance on VLOM basis: 152 villages including 36 alternatives as well as 6 RGCs, and
- ii) Training of hand pump mechanics: 3 HPMs representing each sub-county of 7 districts for the 2-day training course focusing only on the handling of PVC riser pipes and cooperation with villagers, etc.

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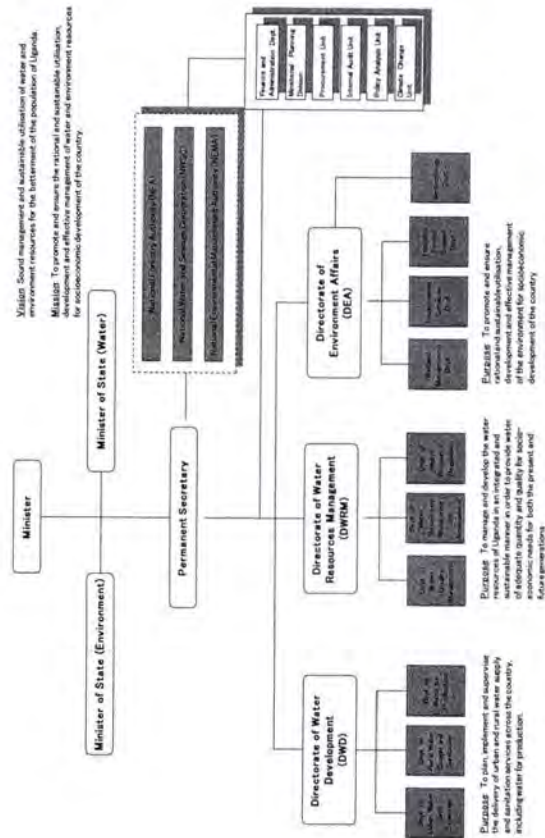
Selected Target Villages and Substitutes

No.	Village	District	Sub-county
107	Along	Gulu	Bobbi
138	Lamin Lawino	Gulu	Ongako
126	Apawoyiya I	Gulu	Lalogi
127	Apawoyiya II	Gulu	Koro
114	Atede	Gulu	Paicho
89	Acuotmer	Gulu	Lalogi
123	Oral	Gulu	Bobbi
110	Adak	Gulu	Bobbi
<b>4. Agago District (17 sites)</b>			
163	Abahukwang	Agago	Wol
184	Opyel Central	Agago	Patongo
145	Tori East	Agago	Lira Palwo
146	Akweng	Agago	Lira Palwo
150	Kotomor east	Agago	Kotomor (Patongo)
151	Amin Ogwal	Agago	Kotomor (Patongo)
156	Opal Orvoneko	Agago	Patongo
132	Oringo Ongom	Agago	Kotomor (Patongo)
167	Wit Anup	Agago	Arum (Omoot)
153	Te V wao	Agago	Kotomor (Patongo)
158	Owito	Agago	Patongo
166	Alch Tong	Agago	Arum (Omoot)
173	Leia Kabala	Agago	Wol
148	Laryem	Agago	Lira Palwo
144	Sub County HQ	Agago	Lira Palwo
159	Aianga	Agago	Wol
172	Acam Roma	Agago	Wol
141	Lutage	Agago	Lokole
170	Laming Onen	Agago	Lokole
171	Lakwa A	Agago	Omiya Pacwa (Paimol)
178	Labedongony	Agago	Omiya Pacwa (Paimol)
179	Te Okiro	Agago	Patmol
176	Tong Wiri South	Agago	Patmol
<b>5. Lamwo District (22 sites)</b>			
207	Liri Central	Lamwo	Palabek Kal
199	Morobo East	Lamwo	Agoro
196	Obere	Lamwo	Asoro
217	Arusha (Aloyi)	Lamwo	Palabek Gem
214	Amira (Nino mt)	Lamwo	Palabek Gem
188	Gem (Gem)	Lamwo	Madi-opel
216	Kafata	Lamwo	Palabek Gem
215	Pyangbhi	Lamwo	Palabek Gem
203	Biber (Iiba)	Lamwo	Palabek Gem
208	Lanywang E-walagiri	Lamwo	Palabek Kal
206	Guria North	Lamwo	Palabek Kal
180	Apyeta Central	Lamwo	Lokung
209	Ayui-lupur(Barara)	Lamwo	Palabek Ogili
218	Kanama central H/C III	Lamwo	Palabek Gem
212	Paewina central (Tee Kasia)	Lamwo	Palabek Gem
197	Lorombenge B	Lamwo	Palabek Gem
201	Lobhuku (obokotol)	Lamwo	Agoro
190	Pobulu	Lamwo	Palabek Gem
182	Padwat West (Laluru Oyika)	Lamwo	Madi-opel
195	Lumbatu West	Lamwo	Palabek Ogili
185	Dech East	Lamwo	Padibe West
186	Dog Lokuru East	Lamwo	Padibe East
184	Lio-Tee okworo	Lamwo	Padibe East
187	Tadi South	Lamwo	Padibe East
181	Padwat Central (Padwat P/S)	Lamwo	Palabek Ogili

Selected Target Villages and Substitutes

No.	Village	District	Sub-county
<b>1. Amuru District (22 sites)</b>			
3	Papawoyiya East	Amuru	Atiak
21	Coorum	Amuru	Lamwo
4	Pachlo East	Amuru	Atiak
12	Olinga	Amuru	Pabbo
10	Kal centre	Amuru	Pabbo
13	Kad Kati A	Amuru	Pabbo
32	Reckiecke	Amuru	Amuru
28	Labongo	Amuru	Amuru
23	Odur	Amuru	Lamogi
33	Lamolo Coke	Amuru	Lamogi
17	Abyee	Amuru	Lamogi
18	Amora	Amuru	Lamogi
3	Okidi North	Amuru	Atiak
19	Opok	Amuru	Atiak
9	Paomo	Amuru	Lamogi
20	Pukure	Amuru	Pabbo
14	Abeta	Amuru	Lamogi
35	Palukere West	Amuru	Pabbo
5	Palukere East	Amuru	Atiak
34	Apa	Amuru	Atiak
1	Bibia East	Amuru	Pabbo
30	Mutema	Amuru	Atiak
7	Pukumu	Amuru	Amuru
25	Teddi	Amuru	Atiak
31	Ogeli	Amuru	Amuru
27	Amoyokuma	Amuru	Amuru
29	Lujoro	Amuru	Amuru
15	Ceri	Amuru	Pabbo
11	Andara	Amuru	Pabbo
<b>2. Nwoya District (9 sites)</b>			
67	Pawatomero Central	Nwoya	Puronga
65	Hadira East	Nwoya	Puronga
66	Padra West	Nwoya	Puronga
68	Pawatomero East	Nwoya	Puronga
62	Paminolango	Nwoya	Puronga
64	Lodi	Nwoya	Puronga
70	Lugazi	Nwoya	Puronga
48	Kal	Nwoya	Anaka
54	Agonga B	Nwoya	Anaka
46	Akago	Nwoya	Kochi Gomia
37	Bwobonam B	Nwoya	Alero
40	Latekoding	Nwoya	Alero
<b>3. Gulu District (16 sites)</b>			
106	Labwromor	Gulu	Bobbi
96	Agoro I	Gulu	Palalo
116	Kal A and B	Gulu	Koro
105	Adak	Gulu	Padiko
111	Atiya	Gulu	Koro
124	Alwii	Gulu	Lalogi
125	Litimyer	Gulu	Lalogi
101	Sifeny Central	Gulu	Palalo
115	Otwola	Gulu	Koro
90	Onel	Gulu	Paicho
136	Owak	Gulu	Ongako
108	Ibar	Gulu	Bobbi
95	Gulu PTC	Gulu	Paicho

Organization Chart of the Responsible Organization  
(Ministry of Water and Environment)



Selected Target Villages and Substitutes

No.	Village	District	Sub-county
193	Lagwel P/S	Lamwo	Pudibe West
202	Langole (Keca)	Lamwo	Paloga
210	Ajaa ogala (Alere)	Lamwo	Palabek Gem
200	Lumwaka A.	Lamwo	Agoro
<b>6. Kitgum District (15 sites)</b>			
234	Panyamw	Kitgum	Muevini
241	Fucon Oringa West	Kitgum	Muevini
239	Alano	Kitgum	Faloro
246	Idwarwion	Kitgum	Ornya Aiyvina
275	Lantit	Kitgum	Kitgum Mubidi
239	Yepa A	Kitgum	Muevini
240	Grid-pwen Orina H	Kitgum	Idgoro
242	Wiyvra-Pawiv	Kitgum	Namokora
231	Ocetokkeel riding square	Kitgum	Lavabo
232	Pusen Central	Kitgum	Lavabo
235	Yvori Obola B	Kitgum	Muevini
228	Rucuried	Kitgum	Lagoro
271	Osidi central	Kitgum	Angida
240	Jura	Kitgum	Muevini
233	Lamulo excentral	Kitgum	Lavabo
252	Obooi	Kitgum	Orom
253	Agora	Kitgum	Orom
243	Lakokok	Kitgum	Namokora
249	Lobale	Kitgum	Orom
<b>7. Pader District (15 sites)</b>			
260	Apogonborce	Pader	Atanga
259	Nakshano	Pader	Idapul
261	Tee lwon	Pader	Paranga
292	Lampay	Pader	Ojoni (Klak)
268	Aringo yon	Pader	Angagura (Atanga)
269	Idi	Pader	Angagura (Atanga)
271	Parweh Lince east	Pader	Awere
270	Alup	Pader	Atanga (Acholihur)
287	Ohalo	Pader	Parale
282	Benpacha	Pader	Paranga
263	Amwaraku	Pader	Idapul
238	Alifi	Pader	Idapul
260	Tes-kono	Pader	Paranga
290	Pagor	Pader	Ojoni (Klak)
286	Lure north	Pader	Lanaya (Acholihur)
289	Dagolwato	Pader	Lanaya (Acholihur)
285	Leta avoki	Pader	Lanaya (Acholihur)
278	Lali	Pader	Laguti
264	Aria	Pader	Atanga

Note: The villages in the colored rows are selected for the implementation, and the others are reserved for substitutes.

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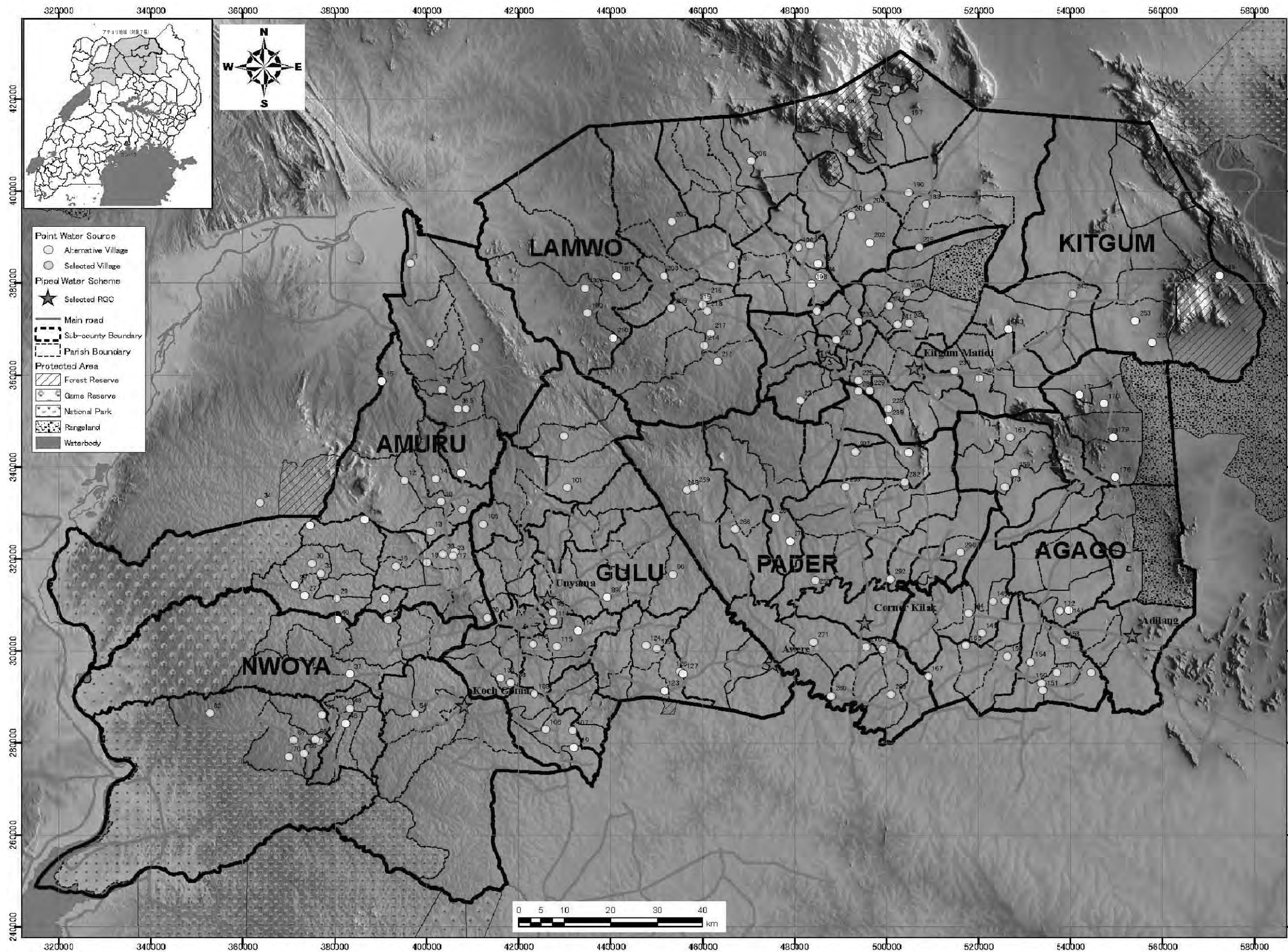
## Outline Design Drawings

### List of Drawings

No.	Drawing Title
	<u>General</u>
1.	Location of Target Villages and RGCs
	<u>Borehole with Hand Pump</u>
2.	Typical Structure of Boreholes and Hand Pump Installation
	<u>Piped Water Supply Facilities</u>
3.	Layout Plan (Koch Goma RGC)
4.	Layout Plan (Unyama RGC)
5.	Layout Plan (Awere RGC)
6.	Layout Plan (Kitgum Matidi RGC)
7.	Layout Plan (Corner Kilak RGC)
8.	Layout Plan (Adilang RGC)
9.	Typical Intake Facility
10.	Elevated Tanks
11.	Elevated Tank and Solar Power Generation Facility
12.	Solar Power Generation Facility (Solar Power Generation Module)
13.	Solar Power Generation Facility (Security Fence and Gate)
14.	Guard House for Solar Power Generation Facility
15.	Pipeline Chambers
16.	Public Taps







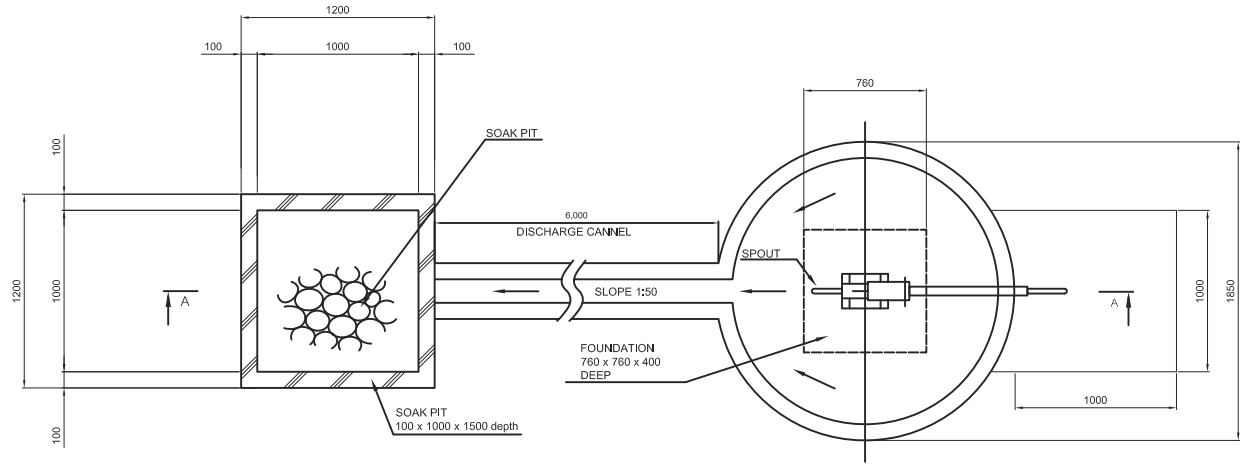
District	No.	Village	District	No.	Village
	8	Pupwonya East		207	Liri Central
	21	Coorom		199	Moroto East
	4	Pacilo East		196	Obere
	12	Olinga		217	Amsha (Aloyi)
	10	Kal centre		214	Amina (Nino mt)
	13	Kati Kati A		188	Gem (Gem)
	32	Reckiceke		216	Kafata
	28	Labongo		215	Dyangbii
	23	Odur		203	Biber (Iiba)
	33	Lamolo Coke		208	Lanywang E-walagiri
	17	Abyee		206	Garia North
	18	Amora		180	Apyeta Central
	3	Okadi North		209	Ayuu-lupur(Barara)
	19	Opok		218	Kamama central H/C III
	9	Paomo		212	Pawena central (Tee Kasia)
	20	Pukure		197	Lorombenge B
	14	Abera		201	Lobiluku (obokolot)
	35	Palukere West		190	Pobutu
	5	Palukere East		182	Padwat West (Lahuru Oyika)
	34	Apaa		195	Tumbafu West
	1	Bibia East		185	Dech East
	30	Mutema		186	Dog Lokutu East
	7	Pukuma		184	Lio-Tee okworo
	25	Teddi		187	Tadi South
	31	Ogeli		181	Padwat Central (Padwat P/S)
	27	Amoyokuma		193	Lagwel P/S
	29	Lujoro		202	Langole (Keca)
	15	Ceri		210	Ajaa ogala (Alero)
	11	Andara		200	Lumwaka A
	67	Pawatomero Central		234	Panyum "A"
	65	Patira East		241	Lacen Otinga West
	66	Patira West		229	Akino
	68	Pawatomero East		246	Labwomom
	62	Paminolango		225	Langii
	64	Lodi		239	Yepa A
	70	Lagazi		230	Gahu gwen Ona .B.
	48	Kal		242	Winyorac-Pawiny
	54	Agonga B		231	Ocetotkee Trading centre
	46	Akago		232	Pagen Central
	37	Bwobonam B		235	Ayom Olola "B"
	40	Latekodong		228	Rucurucu
	106	Labwomom		221	Okadi central
	96	Agoro I		240	Juba
	116	Kal A and B		233	Pamolo central
	105	Adak		252	Otoboi
	111	Ariya		253	Agora
	124	Ahwi		243	Lakokok
	125	Latinyer		249	Lohale
	101	Kiteny Central		266	Lapoyaokwee
	115	Obwola		259	Nek-Nono
	90	Onel		261	Tee tworo
	136	Owak		292	Lapeny
	108	Ibar		268	Arimo yon
	95	Gulu PTC		269	Libii
	107	Along		271	Parwech Lukee east
	138	Lamin Lawino		270	Atup
	126	Aparowiya I		287	Obalo
	127	Aparowiya II		282	Bangalela
	114	Atede		263	Apwor kla
	89	Acutomer		258	Alili
	123	Otal		260	Te-okuto
	110	Adak		290	Pagor
	163	Abalukwang		286	Dure north
	154	opyel Central		289	Dagobwato
	145	Tori East		285	Lela awoki
	146	Agweng		278	Lali
	150	Kotomom east		264	Aria
	151	Amin Ogwal			
	156	Opal Oryoneko			
	152	Oningo Ongom			
	167	Wii Atup			
	153	Te Vwao			
	158	Owito			
	166	Aleb Tong			
	173	Lela Kabala			
	148	Lapyem			
	144	Sub County HQ			
	159	Atanga			
	172	Acam Roma			
	141	Lutage			
	170	Laming Onen			
	171	Lakwa A			
	178	Labedongony			
	179	Te Okiro			
	176	Tong Win South			

n : Selected village  
 n : Prioritized alternative village

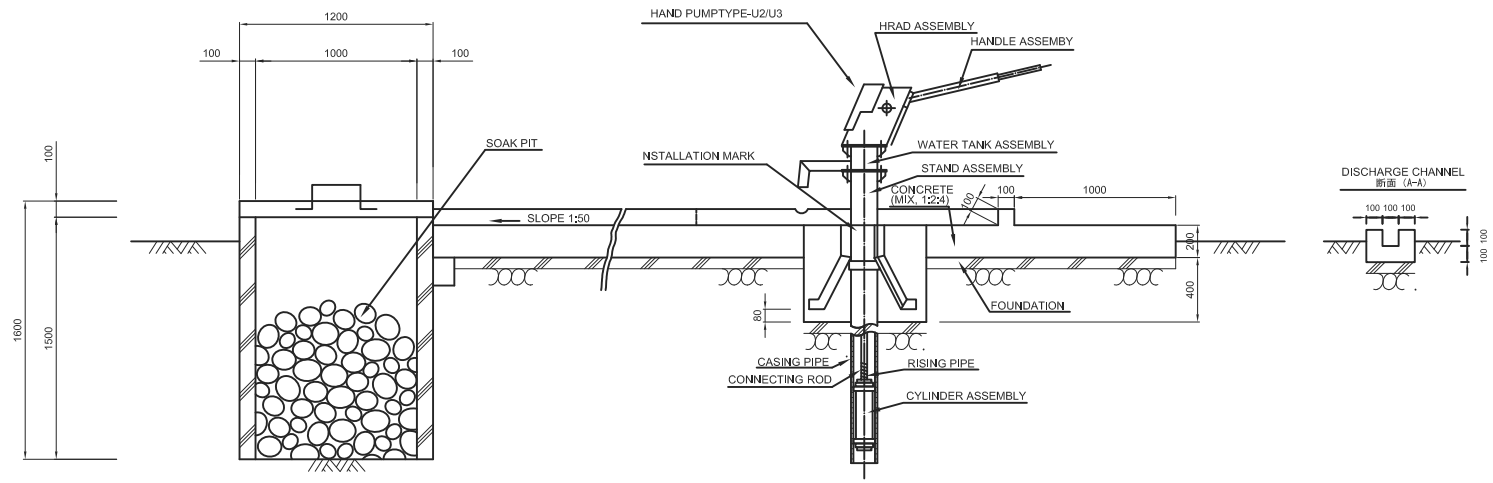
Project:				 JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)	GENERAL	Date:	
THE PROJECT FOR PROVISION OF IMPROVED WATER SOURCE FOR RETURNED IDP IN ACHOLI SUB-REGION IN REPUBLIC OF UGANDA						TOKYO ENGINEERING CONSULTANTS CO., LTD. IN ASSOCIATION WITH OYO INTERNATIONAL CORPORATION	
No:	Date:	Approved:	Revision:			No:	Ref:

# Typical Construction Drawing of Deep Well

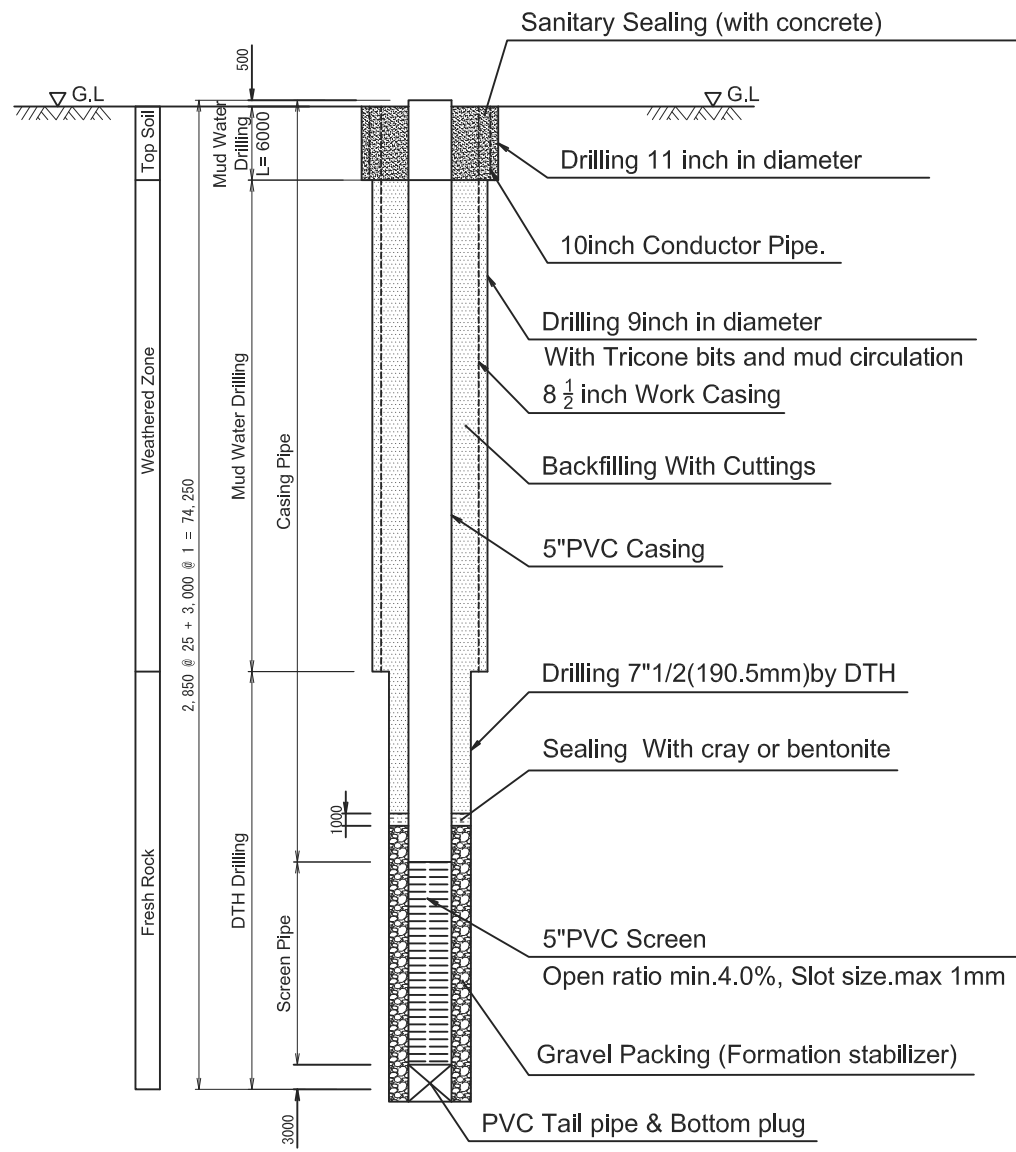
## Construction Drawing of Superstructure (Installation of Hand Pump)



PLAN OF WELL



SECTION A-A



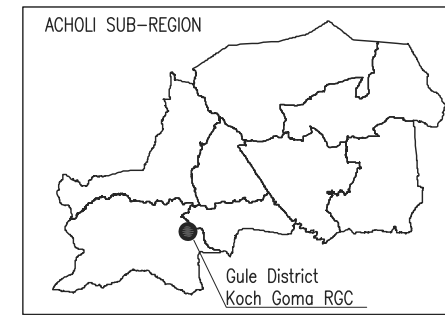
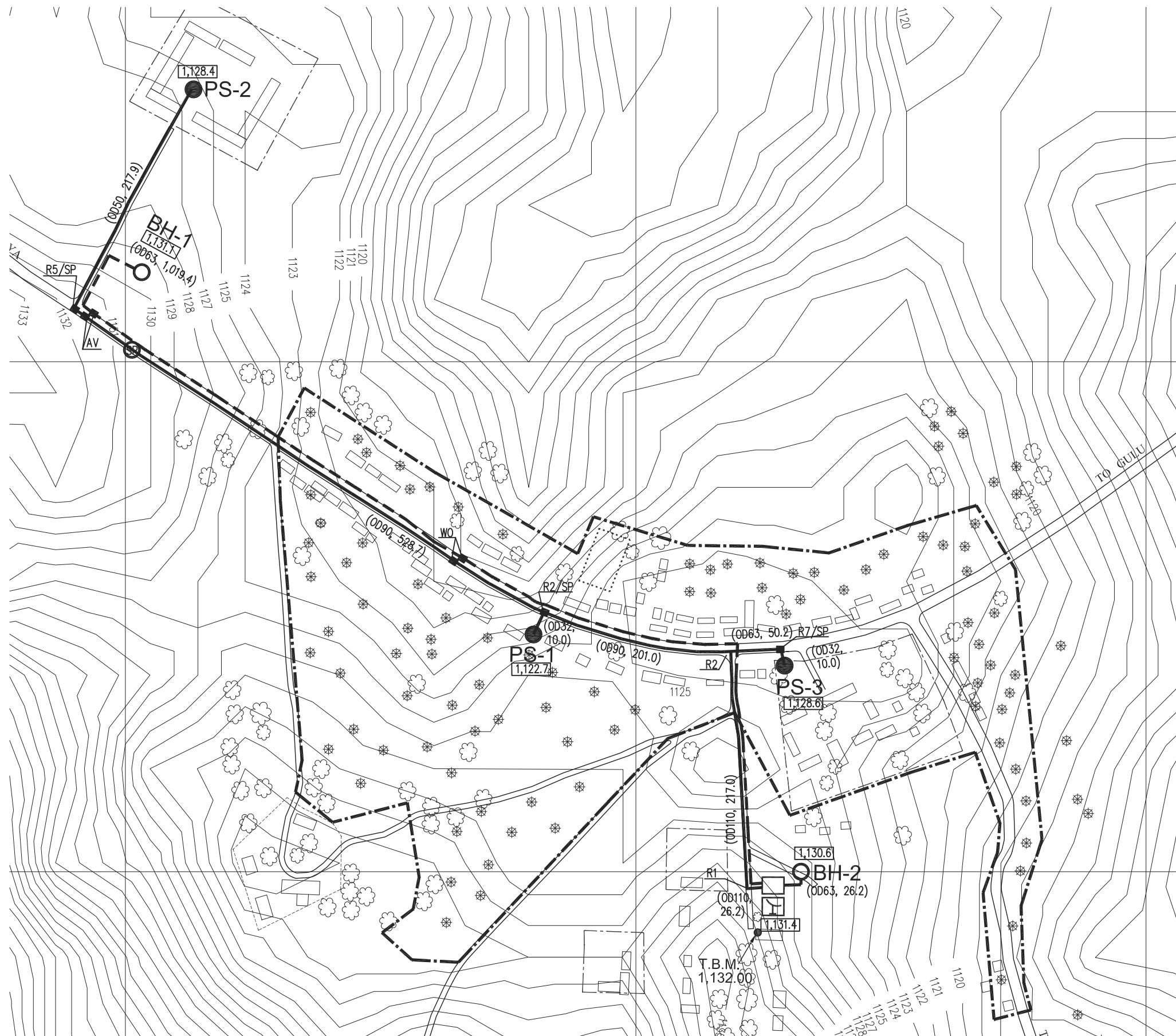
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Project:  
**THE PROJECT FOR PROVISION OF IMPROVED WATER SOURCE FOR RETURNED IDP IN ACHOLI SUB-REGION IN REPUBLIC OF UGANDA**

**JICA**  
 JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)  
 TOKYO ENGINEERING CONSULTANTS CO., LTD.  
 IN ASSOCIATION WITH  
 OYO INTERNATIONAL CORPORATION

Title:  
**TYPICAL STRUCTURE OF BOREHOLES AND HAND PUMP INSTLLATION**

Date:  
 No: \_\_\_\_\_ Ref: \_\_\_\_\_



**SUMMARY OF QUANTITIES**

ITEM	DESCRIPTION	Q'TY
1.	Target Population in 2017	2,100 (900 served)
2.	Transmission Pipeline	1,045.6
3.	Distribution Pipeline	1,261.0
4.	Water Source Borehole	2 No.s
5.	Public Stand	3 No.s
6.	Elevated Tank	1 No.
7.	Yard for Solar Modules	1 No.
8.	Air Valve and Wash Out Chambers on Transmission Pipeline	2 No.s
9.	Air Valve, Wash Out and Service Pipe Chambers on Distribution Pipeline	5 No.s

**LEGEND**

●	Public Water Stand.
○	Existing Water Source; Borehole.
☐	Solar Module.
□	Elevated Tank.
—	Distribution Pipeline.
- - -	Transmission Pipeline.
- · - · -	Electric Power Line
■ AV	Air Valve Chambers
■ WO	Wash Out Chambers
■ SP	Service Pipe Chambers
---	Education Center.
.....	Health Center.
- · - · -	RGC Core Area.

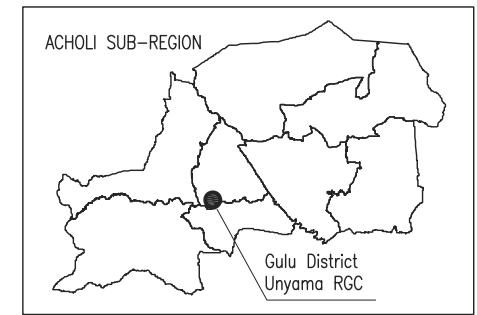
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Project:  
**THE PROJECT FOR PROVISION OF IMPROVED WATER SOURCE FOR RETURNED IDP IN ACHOLI SUB-REGION IN REPUBLIC OF UGANDA**

**JICA**  
 JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)  
 TOKYO ENGINEERING CONSULTANTS CO., LTD.  
 IN ASSOCIATION WITH  
 OYO INTERNATIONAL CORPORATION

**PIPED WATER SUPPLY FACILITIES**  
 Title:  
**LAYOUT PLAN (KOCH GOMA RGC)**

Date:  
 No:  
 Ref:



SUMMARY OF QUANTITIES

ITEM	DESCRIPTION	Q'TY
1.	Target Population in 2017	3,600
2.	Transmission Pipeline	1,643.6
3.	Distribution Pipeline	1,664.7
4.	Water Source Borehole	2 No.s
5.	Public Stand	13 No.s
6.	Elevated Tank	1 No.
7.	Yard for Solar Modules	1 No.
8.	Air Valve and Wash Out Chambers on Transmission Pipeline	0 No.
9.	Air Valve, Wash Out and Service Pipe Chambers on Distribution Pipeline	20 No.s

LEGEND

●	Public Water Stand.
○	Existing Water Source; Borehole.
☐	Solar Module.
□	Elevated Tank.
—	Distribution Pipeline.
- - -	Transmission Pipeline.
- - -	Electric Power Line
AV	Air Valve Chambers
WO	Wash Out Chambers
SP	Service Pipe Chambers
—	Education Center.
—	Health Center.
- - -	RGC Core Area.

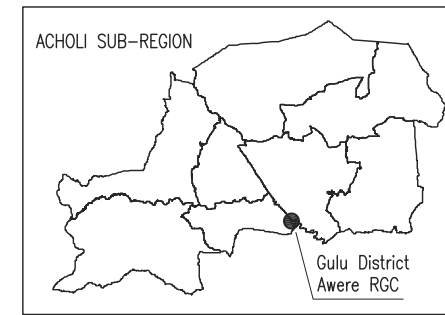
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No:	Date:	Approved:	Revision:

Project:  
**THE PROJECT FOR PROVISION OF IMPROVED WATER SOURCE FOR RETURNED IDP IN ACHOLI SUB-REGION IN REPUBLIC OF UGANDA**

**JICA**  
 JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)  
 TOKYO ENGINEERING CONSULTANTS CO., LTD.  
 IN ASSOCIATION WITH  
 OYO INTERNATIONAL CORPORATION

**PIPED WATER SUPPLY FACILITIES**  
 Title:  
**LAYOUT PLAN (UNYAMA RGC)**

Date:  
 No:  
 Ref:



SUMMARY OF QUANTITIES

ITEM	DESCRIPTION	Q'TY
1.	Target Population in 2017	1,700
2.	Transmission Pipeline	338.5
3.	Distribution Pipeline	1,018.0
4.	Water Source Borehole	2 No.s
5.	Public Stand	6 No.s
6.	Elevated Tank	1 No.
7.	Yard for Solar Modules	1 No.
8.	Air Valve and Wash Out Chambers on Transmission Pipeline	0 No.
9.	Air Valve, Wash Out and Service Pipe Chambers on Distribution Pipeline	10 No.s

LEGEND

	Public Water Stand.
	Existing Water Source; Borehole.
	Solar Module.
	Elevated Tank.
	Distribution Pipeline.
	Transmission Pipeline.
	Electric Power Line
	Air Valve Chambers
	Wash Out Chambers
	Service Pipe Chambers
	Electric Power Line
	Education Center.
	Health Center.
	RGC Core Area.

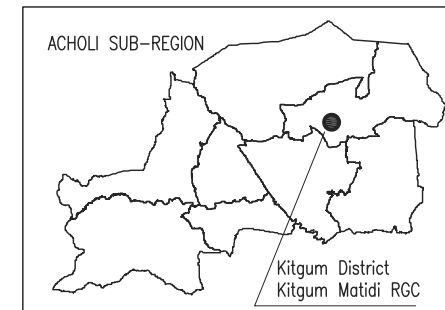
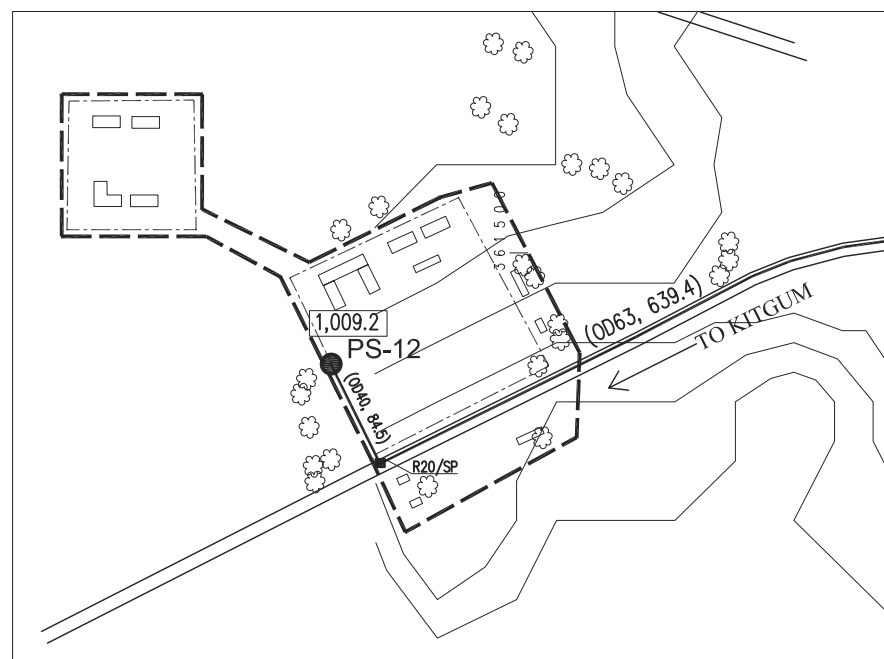
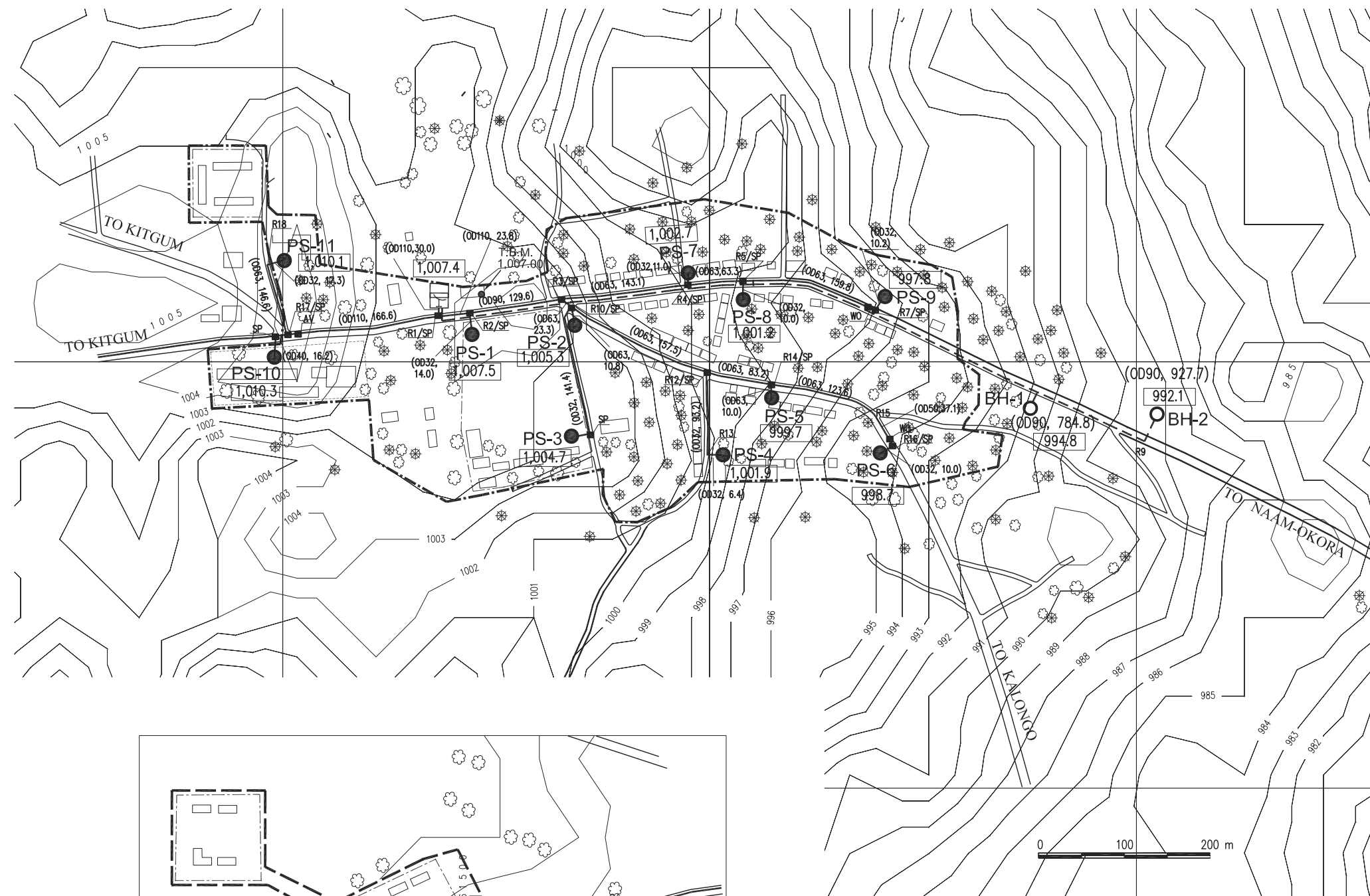
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No:	Date:	Approved:	Revision:

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**THE PROJECT FOR PROVISION OF IMPROVED WATER SOURCE FOR RETURNED IDP IN ACHOLI SUB-REGION IN REPUBLIC OF UGANDA**

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 JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)  
 TOKYO ENGINEERING CONSULTANTS CO., LTD.  
 IN ASSOCIATION WITH  
 OYO INTERNATIONAL CORPORATION

**PIPED WATER SUPPLY FACILITIES**  
 Title:  
**LAYOUT PLAN (AWERE RGC)**

Date:  
 No:  
 Ref:



SUMMARY OF QUANTITIES

ITEM	DESCRIPTION	Q'TY
1.	Target Population in 2017	2,800
2.	Transmission Pipeline	1,712.5
3.	Distribution Pipeline	2,361.9
4.	Water Source Borehole	2 No.s
5.	Public Stand	12 No.s
6.	Elevated Tank	1 No.
7.	Yard for Solar Modules	1 No.
8.	Air Valve and Wash Out Chambers on Transmission Pipeline	0 No.
9.	Air Valve, Wash Out and Service Pipe Chambers on Distribution Pipeline	17 No.s

LEGEND

	Public Water Stand.
	Existing Water Source; Borehole.
	Solar Module.
	Elevated Tank.
	Distribution Pipeline.
	Transmission Pipeline.
	Electric Power Line
	Air Valve Chambers
	Wash Out Chambers
	Service Pipe Chambers
	Education Center.
	Health Center.
	RGC Core Area.

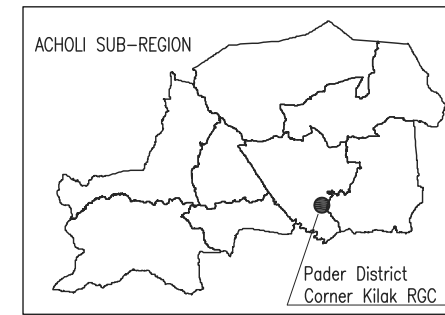
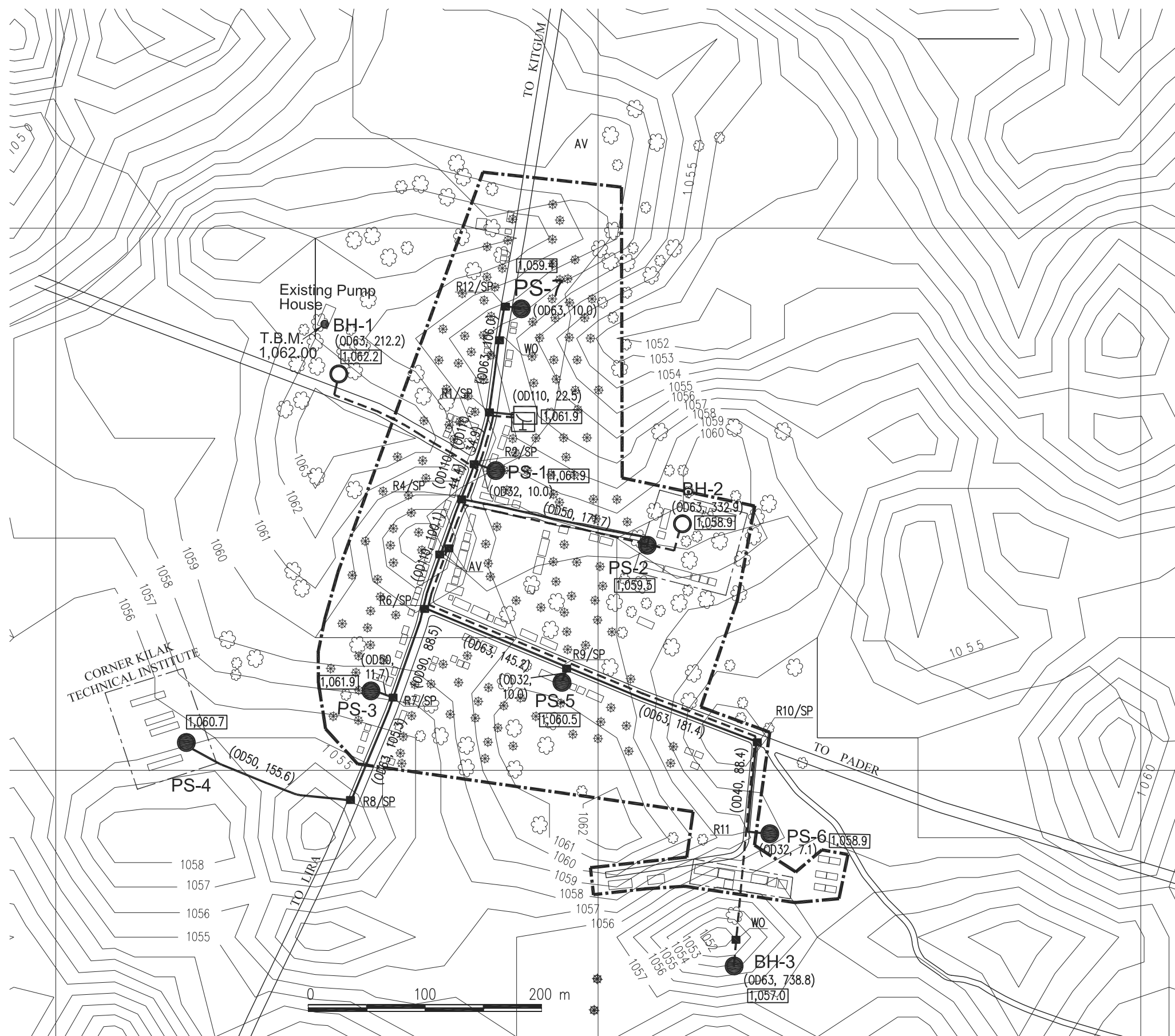
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No:	Date:	Approved:	Revision:

Project:  
**THE PROJECT FOR PROVISION OF IMPROVED WATER SOURCE FOR RETURNED IDP IN ACHOLI SUB-REGION IN REPUBLIC OF UGANDA**

**JICA**  
 JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)  
 TOKYO ENGINEERING CONSULTANTS CO., LTD.  
 IN ASSOCIATION WITH  
 OYO INTERNATIONAL CORPORATION

**PIPED WATER SUPPLY FACILITIES**  
 Title:  
**LAYOUT PLAN (KITGUM MATIDI RGC)**

Date:  
 No:  
 Ref:



SUMMARY OF QUANTITIES

ITEM	DESCRIPTION	Q'TY
1.	Target Population in 2017	2,000
2.	Transmission Pipeline	1,283.9
3.	Distribution Pipeline	1,292.8
4.	Water Source Borehole	3 No.s
5.	Public Stand	7 No.s
6.	Elevated Tank	1 No.
7.	Yard for Solar Modules	1 No.
8.	Air Valve and Wash Out Chambers on Transmission Pipeline	1 No.
9.	Air Valve, Wash Out and Service Pipe Chambers on Distribution Pipeline	11 No.s

LEGEND

	Public Water Stand.
	Existing Water Source; Borehole.
	Solar Module.
	Elevated Tank.
	Distribution Pipeline.
	Transmission Pipeline.
	Electric Power Line
	Air Valve Chambers
	Wash Out Chambers
	Service Pipe Chambers
	Education Center.
	Health Center.
	RGC Core Area.

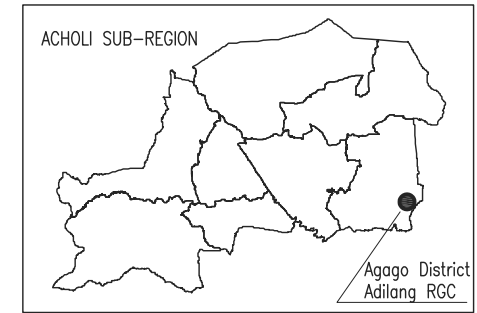
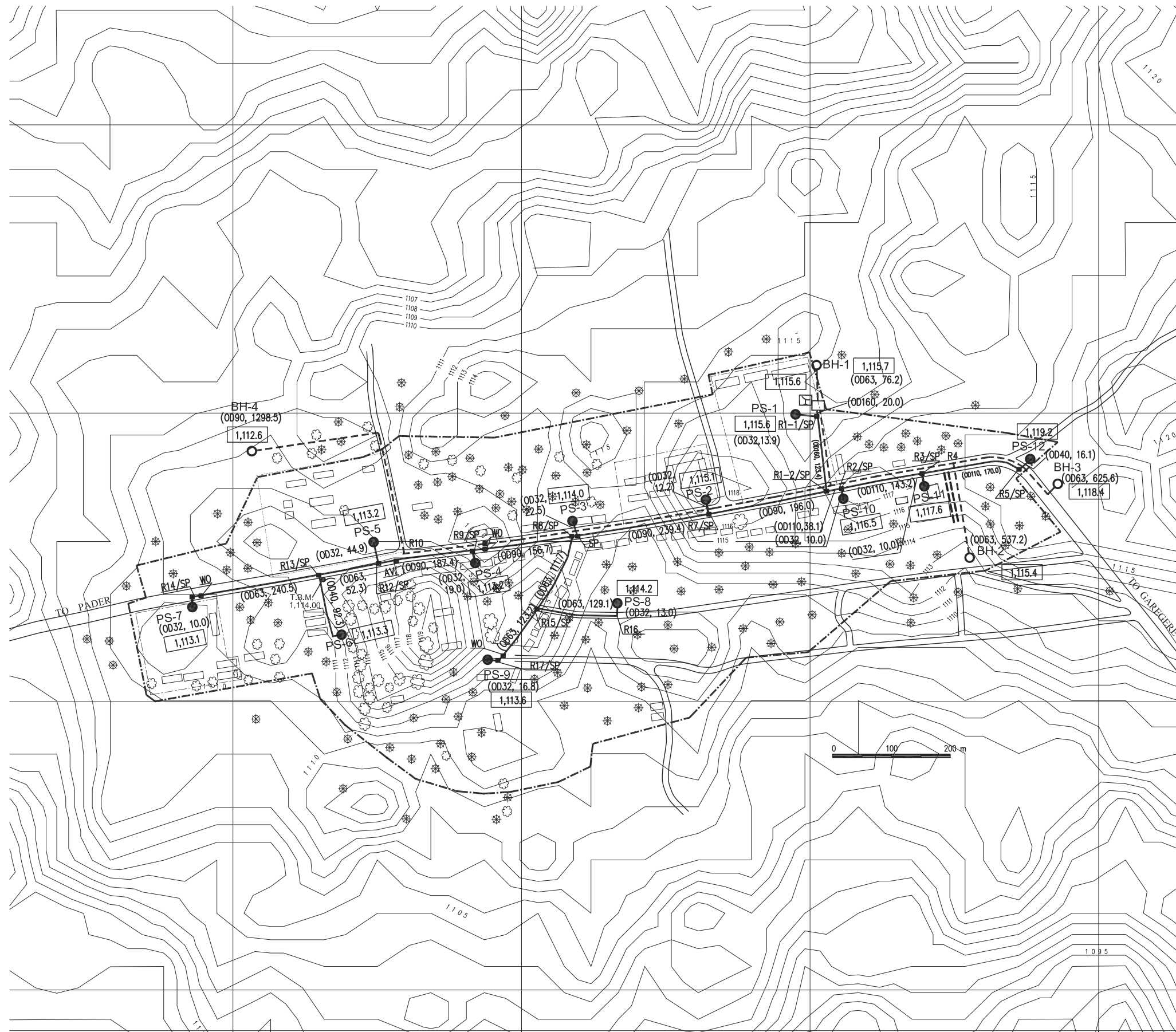
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Project:  
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 JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)  
 TOKYO ENGINEERING CONSULTANTS CO., LTD.  
 IN ASSOCIATION WITH  
 OYO INTERNATIONAL CORPORATION

**PIPED WATER SUPPLY FACILITIES**  
 Title:  
**LAYOUT PLAN (CORNER KILAK RGC)**

Date:  
 No:  
 Ref:



SUMMARY OF QUANTITIES

ITEM	DESCRIPTION	Q'TY
1.	Target Population in 2017	3,800 (3,420 served)
2.	Transmission Pipeline	2,529.5
3.	Distribution Pipeline	2,211.7
4.	Water Source Borehole	4 No.s
5.	Public Stand	12 No.s
6.	Elevated Tank	1 No.
7.	Yard for Solar Modules	1 No.
8.	Air Valve and Wash Out Chambers on Transmission Pipeline	1 No.
9.	Air Valve, Wash Out and Service Pipe Chambers on Distribution Pipeline	18 No.s

LEGEND

	Public Water Stand.
	Existing Water Source; Borehole.
	Solar Module.
	Elevated Tank.
	Distribution Pipeline.
	Transmission Pipeline.
	Electric Power Line
	Air Valve Chambers
	Wash Out Chambers
	Service Pipe Chambers
	Education Center.
	Health Center.
	RGC Core Area.

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No:	Date:	Approved:	Revision:

Project:  
**THE PROJECT FOR PROVISION OF IMPROVED WATER SOURCE FOR RETURNED IDP IN ACHOLI SUB-REGION IN REPUBLIC OF UGANDA**

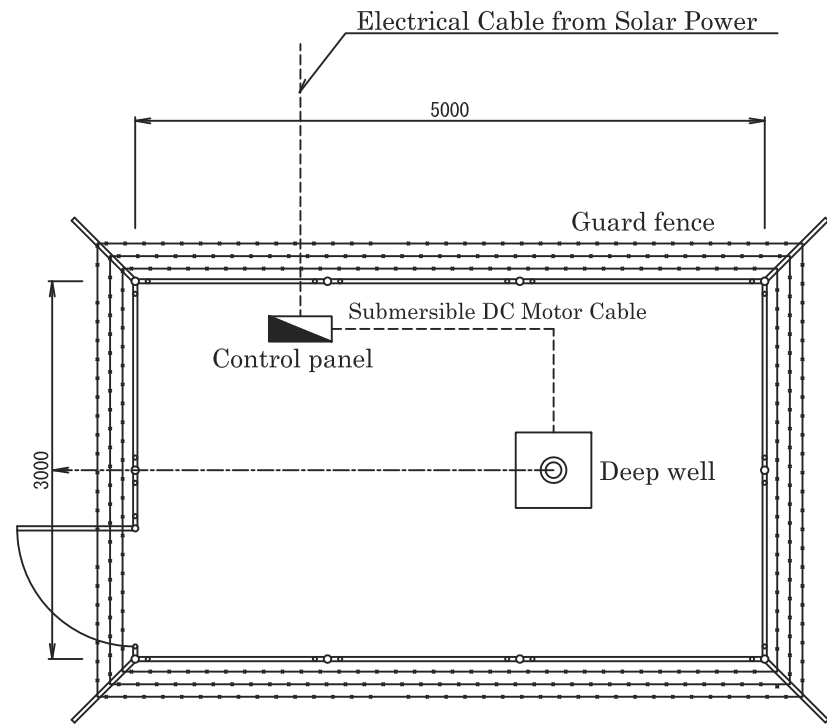
**JICA**  
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 TOKYO ENGINEERING CONSULTANTS CO., LTD.  
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**PIPED WATER SUPPLY FACILITIES**  
 Title:  
**LAYOUT PLAN (ADILANG RGC)**

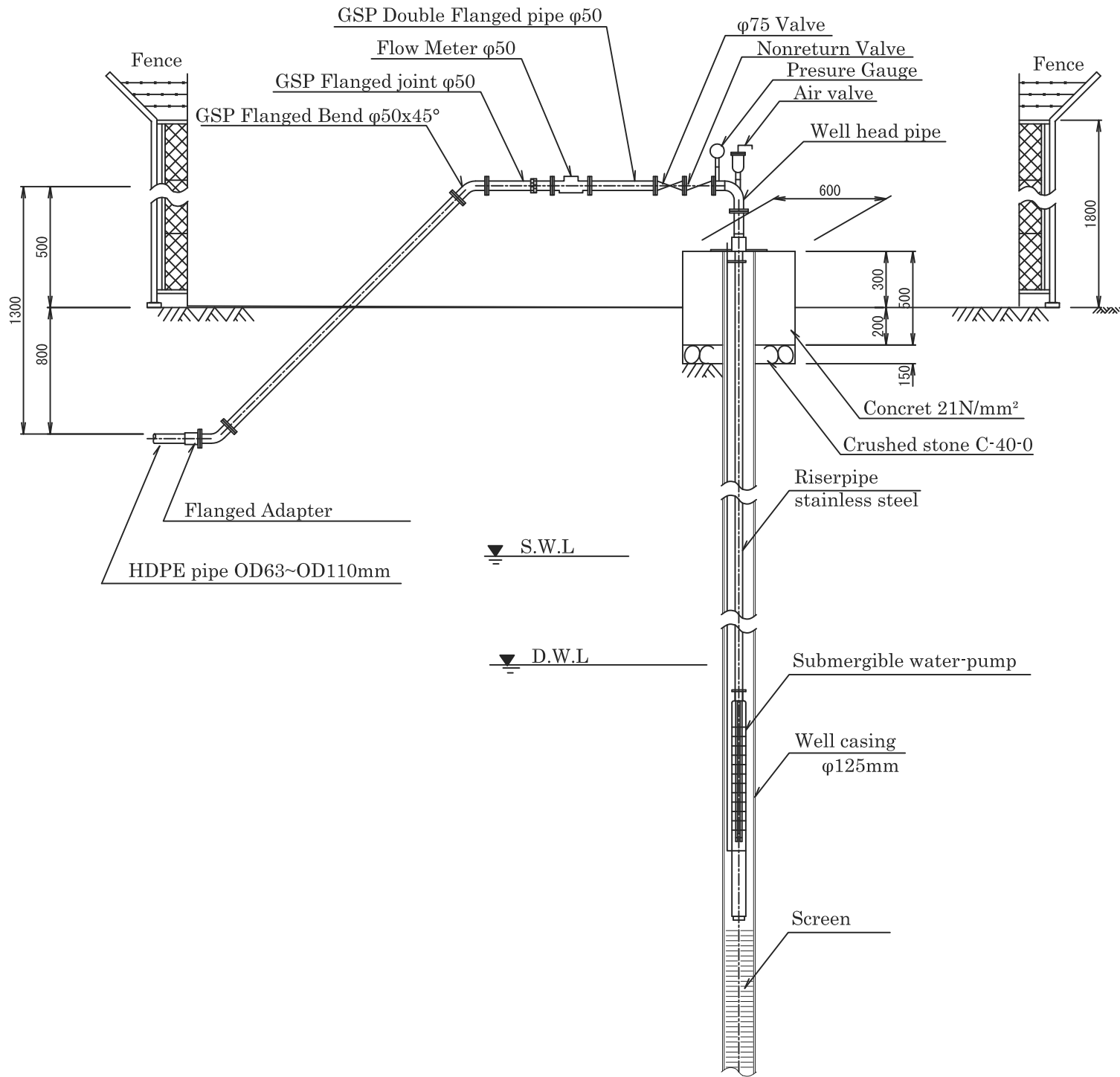
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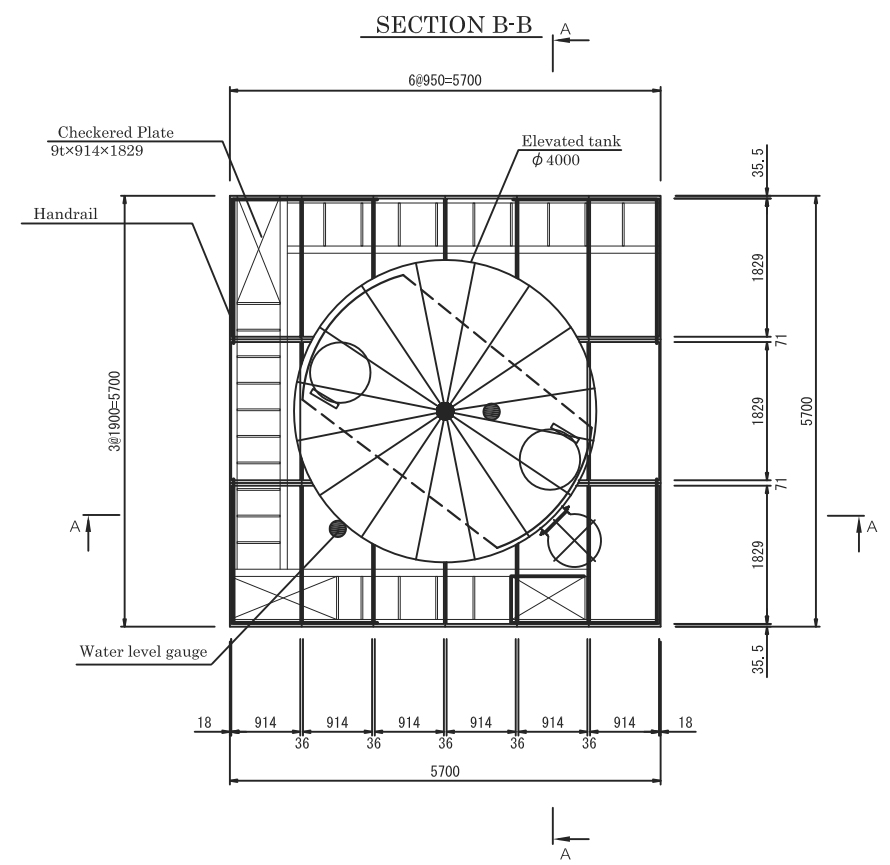
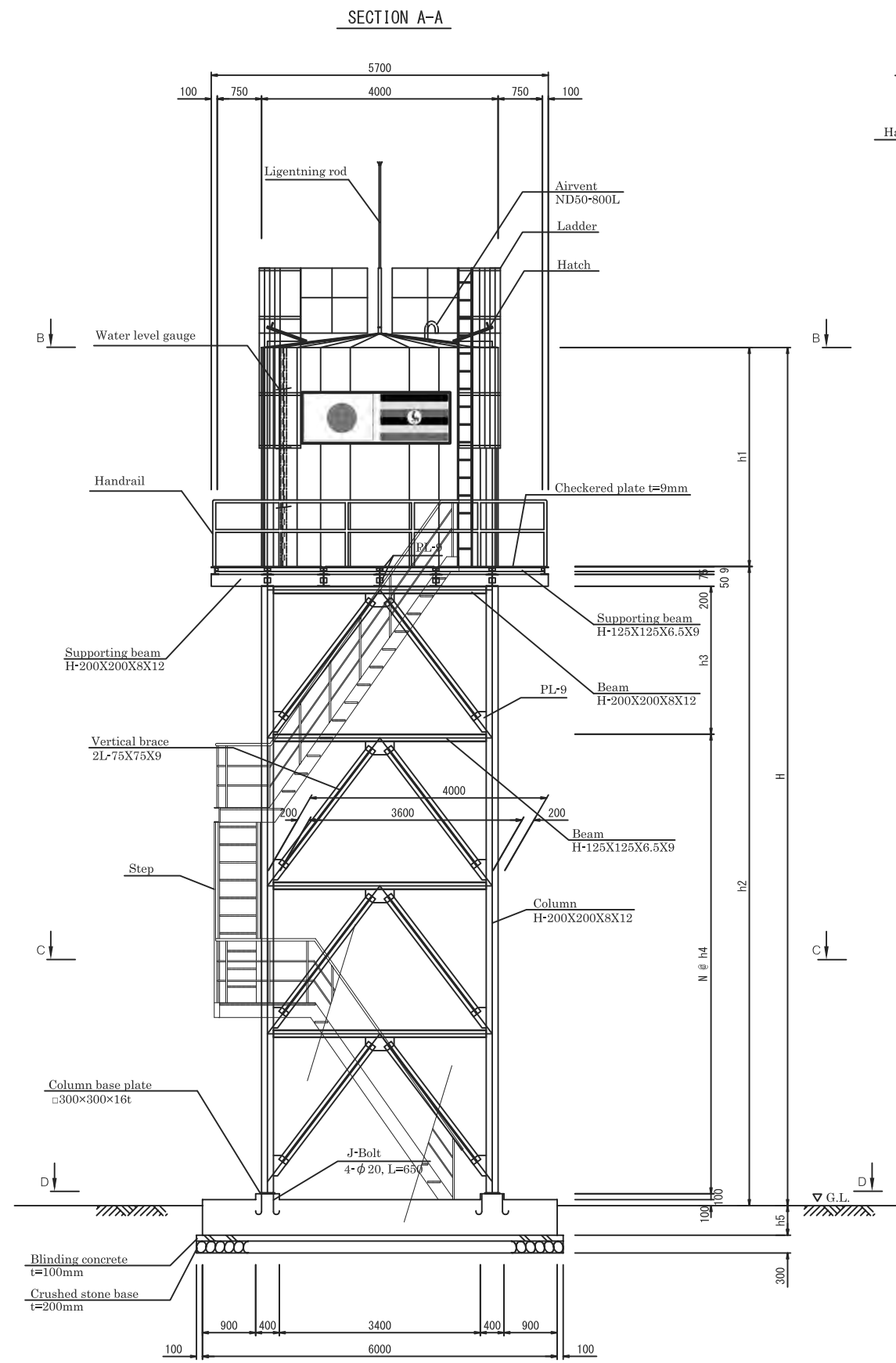
### Plan of Production Deep Well



### Typical Detail of Production Deep Well

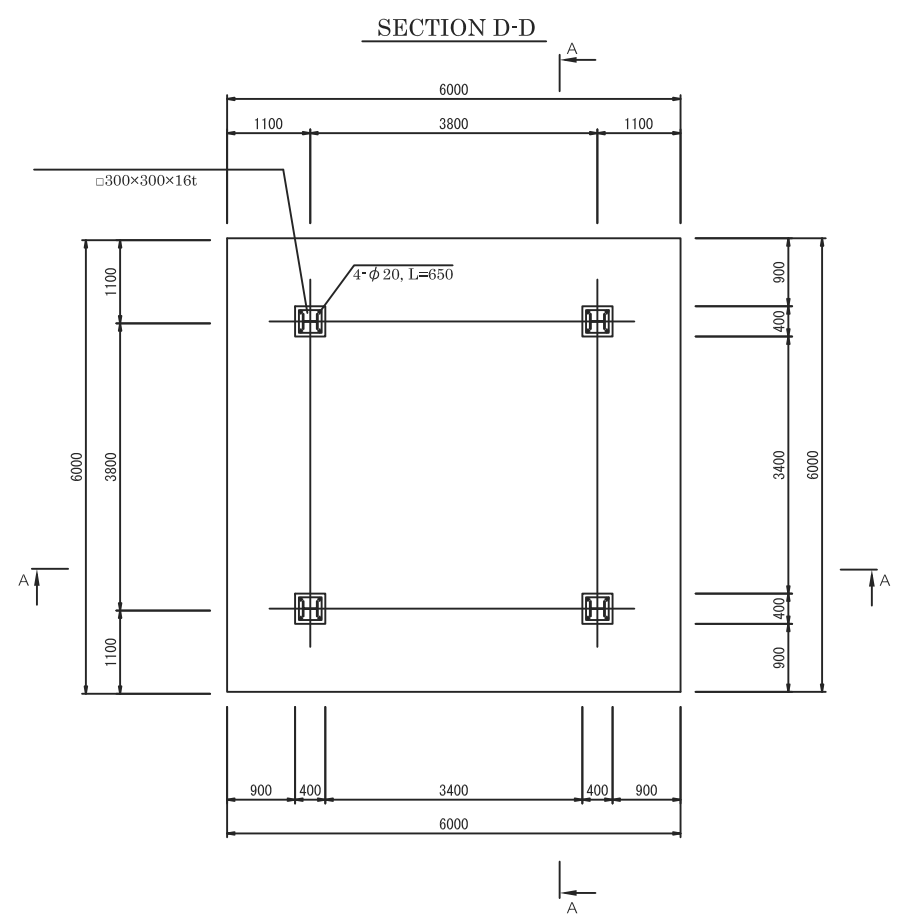
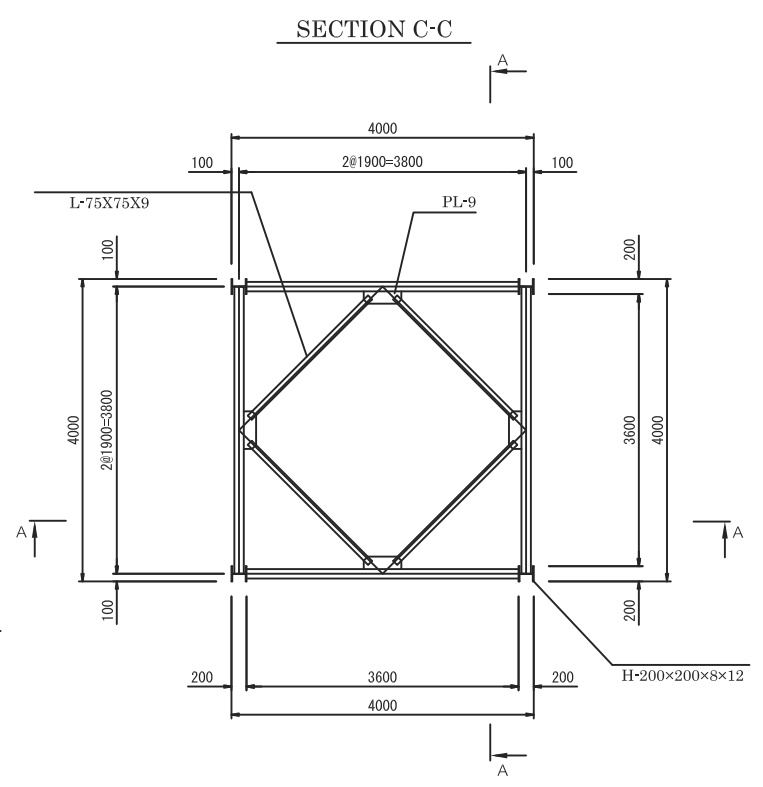


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<>			THE PROJECT FOR PROVISION OF IMPROVED WATER SOURCE FOR RETURNED IDP IN ACHOLI SUB-REGION IN REPUBLIC OF UGANDA	No:			Ref:	
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No:	Date:	Approved:	Revision:					



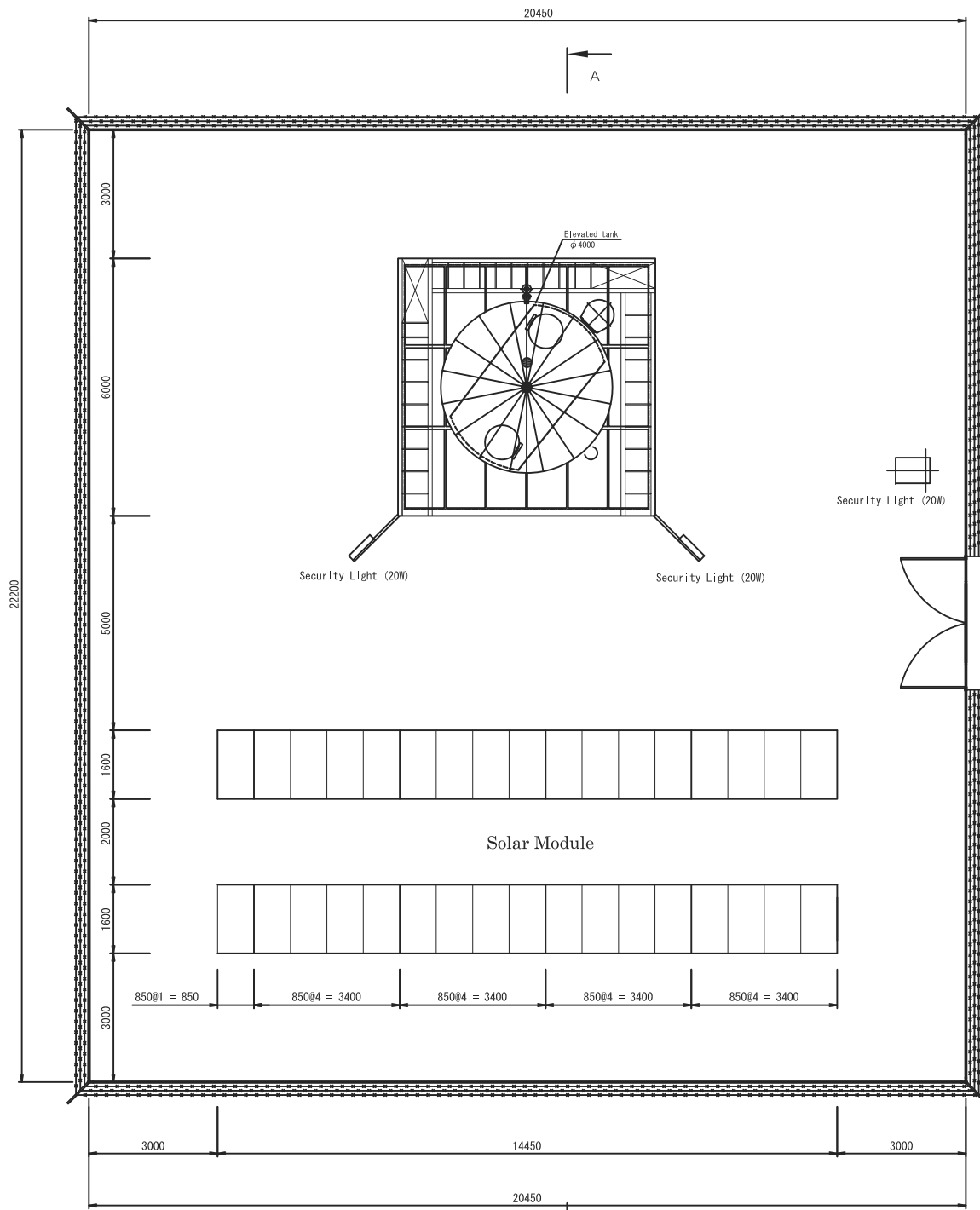
Measurement Table of Elevated Tank

RGCs	Koch Goma	Unyama	Awere	Adilang	Kitgum Matidi	Coner Kilak
Capacity(m <sup>3</sup> )	40	60	30	60	50	30
h1(m)	3.700	5.230	2.900	5.300	4.500	2.900
h2(m)	4.300	7.970	4.100	9.800	9.400	6.200
h3(m)	2.000	1.920	1.900	1.920	1.840	2.000
N	1	3	1	4	4	2
h4(m)	2.100	1.950	2.000	1.920	1.840	2.000
h5(m)	0.600	0.700	0.600	0.700	0.700	0.600
H(m)	8.000	13.200	7.000	15.100	13.900	9.100

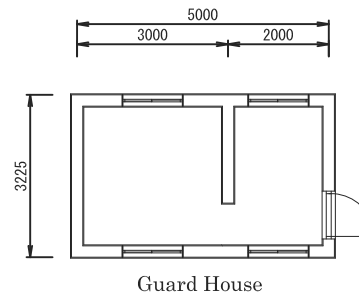


Project:	THE PROJECT FOR PROVISION OF IMPROVED WATER SOURCE FOR RETURNED IDP IN ACHOLI SUB-REGION IN REPUBLIC OF UGANDA	JICA JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)	PIPED WATER SUPPLY FACILITIES	Date:
No:	Date:	TOKYO ENGINEERING CONSULTANTS CO., LTD. IN ASSOCIATION WITH OYO INTERNATIONAL CORPORATION	Title: ELEVATED TANKS	No:
Approved:	Revision:			Ref:

PLAN OF ELEVATED TANK



Note: Adilang



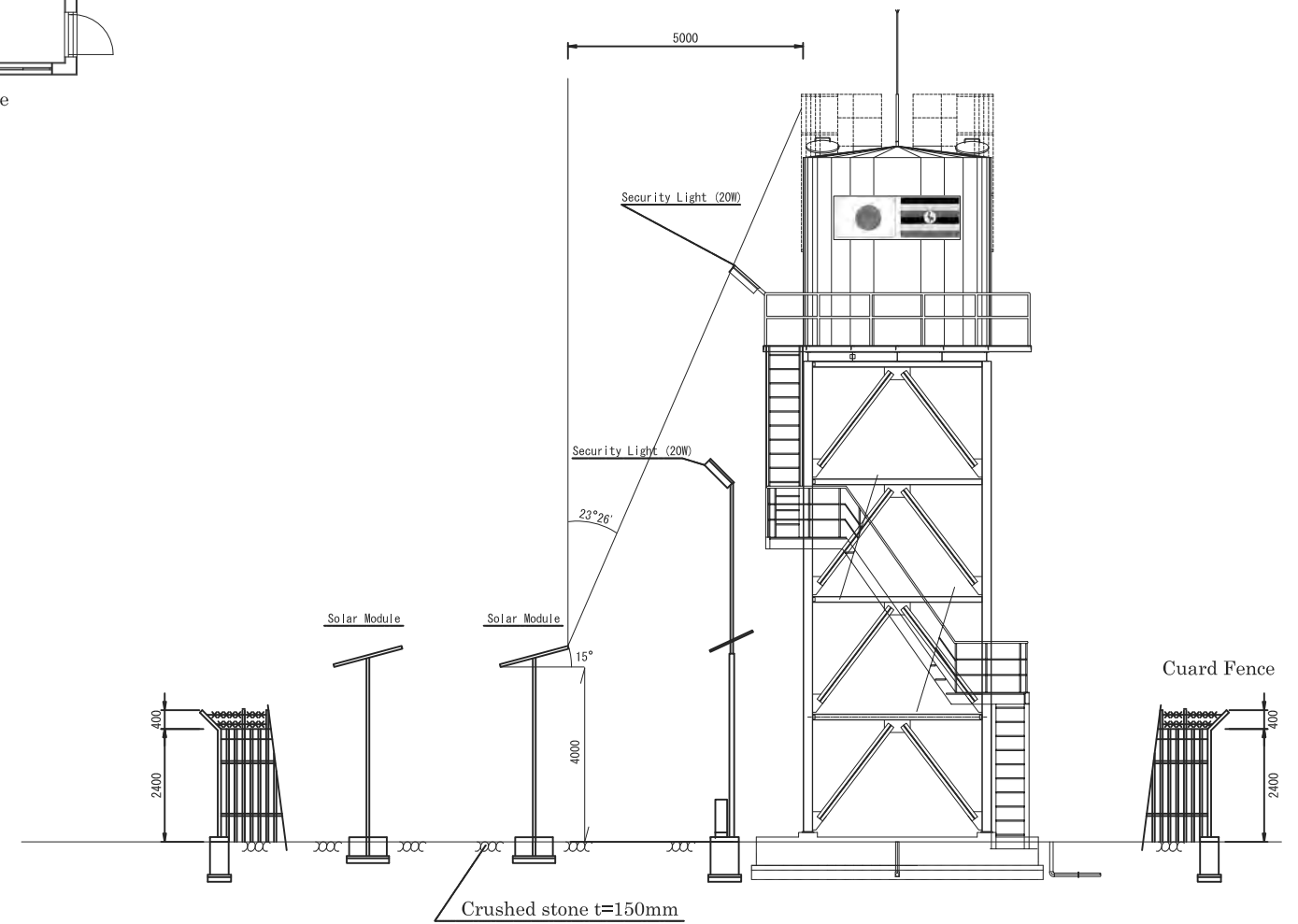
Guard House

Outline of Solar Generation Facilities and Required Area

Case	RGCs	Schematic Drawings	Well No	No. of Solar Module	Required Area /Length of Guard Fence*	Case	RGCs	Schematic Drawings	Well No	No. of Solar Module	Required Area /Length of Guard Fence*
1	Koch Goma		AT-1	3	Required Area (ET+SM): 18.6m x 11.95m =222.3m <sup>2</sup>	4	Adilang		AT-1	8	Required Area (ET+SM): 22.2m x 20.45m =454.0m <sup>2</sup>
			TD-1	4	Length of GF (ET+SM): (18.6m + 11.95m) x 2-3m=58.2m				AT-4	14	Length of GF (ET+SM): (22.2m + 20.45m) x 2-3m=82.4m
			Total	7					TD-1	4	
2	Unyama		AT-1	16	Required Area (ET): 12.0m x 15.0m = 180.0m <sup>2</sup>	5	Kitgum Matidi		AT-1	18	Required Area (ET+SM): 22.2m x 21.3m =472.9m <sup>2</sup>
			TD-2	18	Required Area (SM): 13.2m x 20.45m =269.9m <sup>2</sup>				TD-1	8	Length of GF (ET+SM): (22.2m + 21.3m) x 2-3m =84.0m
			Total	34	Length of GF (ET): (12.0m + 15.0m) x 2-3m =51.0m Length of GF (SM): (13.2m + 20.45m) x 2-3m =64.4m				TD-1	8	
3	Awere		AT-1	4	Required Area (ET): 12.0m x 15.0m = 180.0m <sup>2</sup>	6	Coner Kilak		AT-1	8	Required Area (ET+SM): 22.2m x 11.95m =265.3m <sup>2</sup>
			AT-2	4	Required Area (SM): 9.6m x 12.8m =122.9m <sup>2</sup>				AT-2	4	Length of GF (ET+SM): (22.2m + 11.95m) x 2-3m =65.4m
			Total	8	Length of GF (ET): (12.0m + 15.0m) x 2-3m =51.0m Length of GF (SM): (9.6m + 12.8m) x 2-3m =41.8m				TD-1	2	
						Total					

Note: ET: Elevated Tank, SM: Solar Module  
\*: Length of guard fence except gate width

SECTION A-A



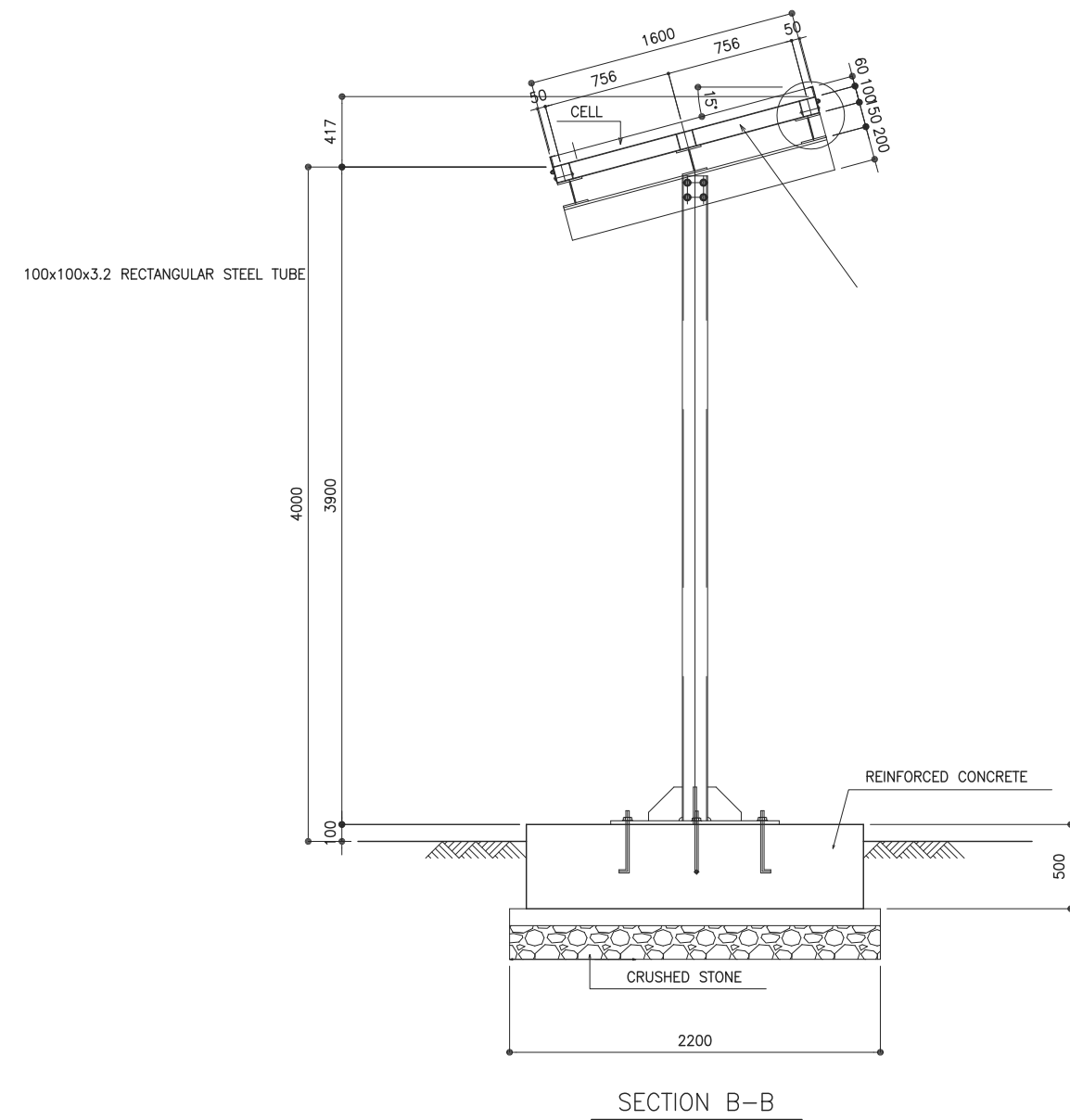
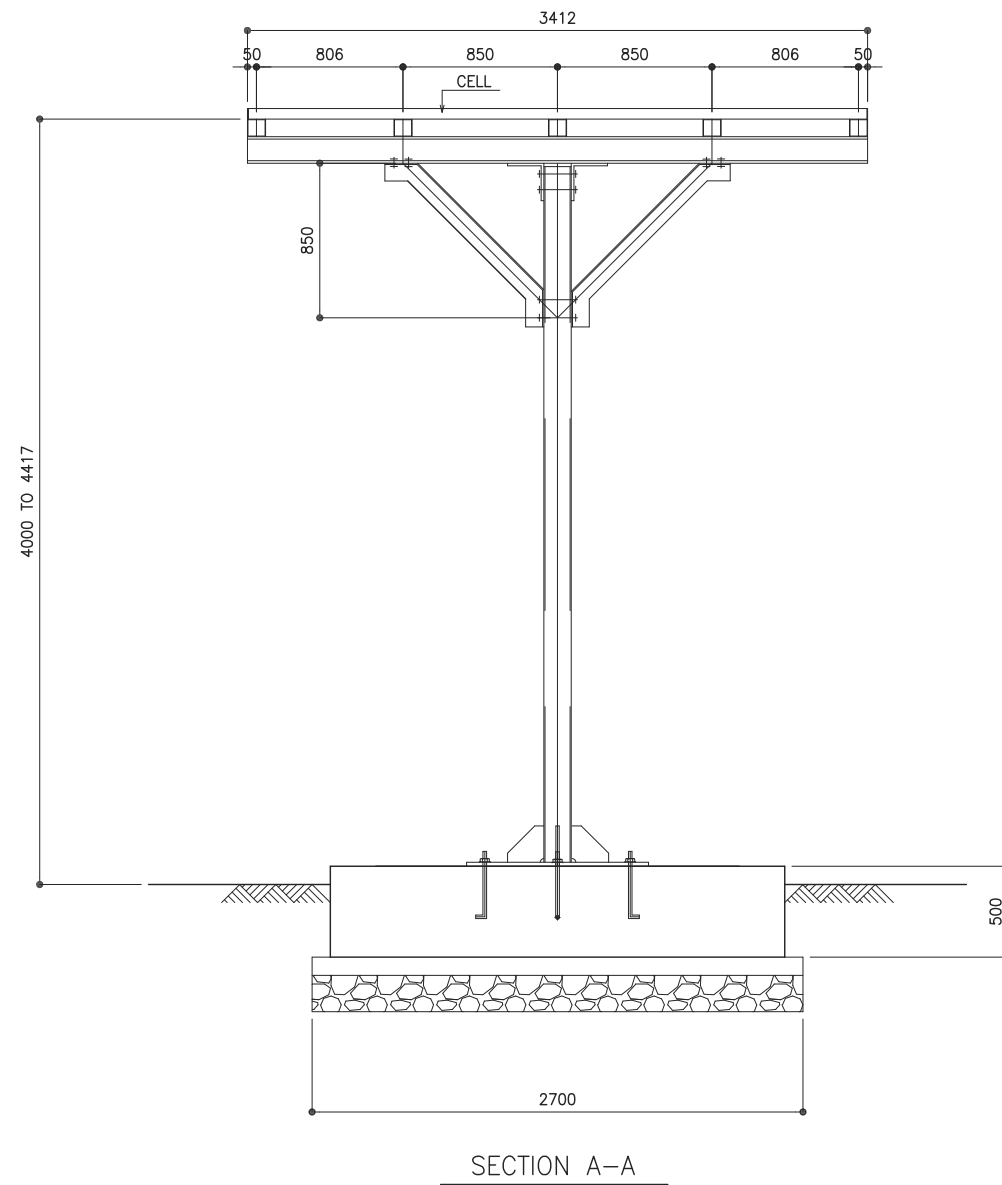
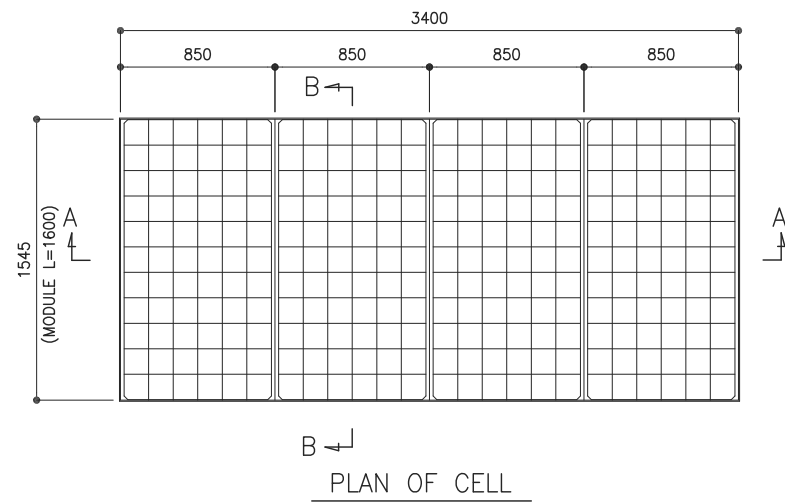
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Project:  
THE PROJECT FOR PROVISION OF IMPROVED WATER SOURCE FOR RETURNED IDP IN ACHOLI SUB-REGION IN REPUBLIC OF UGANDA

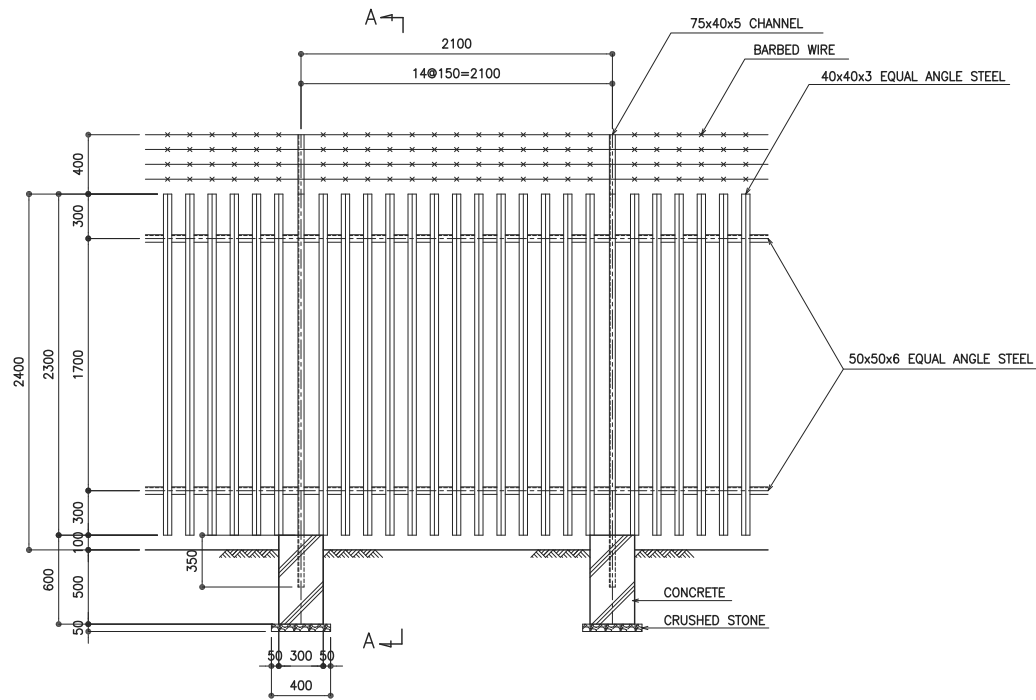
**JICA**  
JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)  
TOKYO ENGINEERING CONSULTANTS CO., LTD.  
IN ASSOCIATION WITH  
OYO INTERNATIONAL CORPORATION

Date:  
Title:  
PIPED WATER SUPPLY FACILITIES  
ELEVATED TANK AND SOLAR POWER GENERATION FACILITY

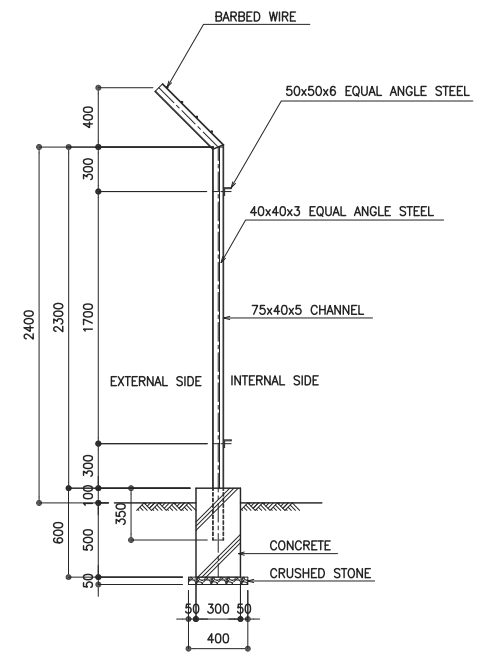
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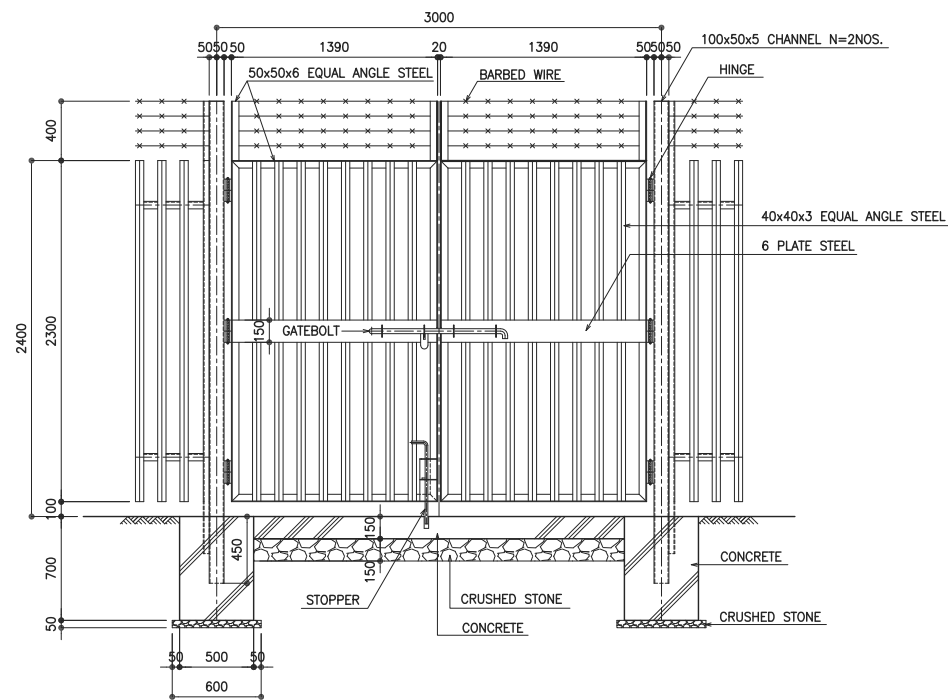
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				THE PROJECT FOR PROVISION OF IMPROVED WATER SOURCE FOR RETURNED IDP IN ACHOLI SUB-REGION IN REPUBLIC OF UGANDA				No:	Ref:



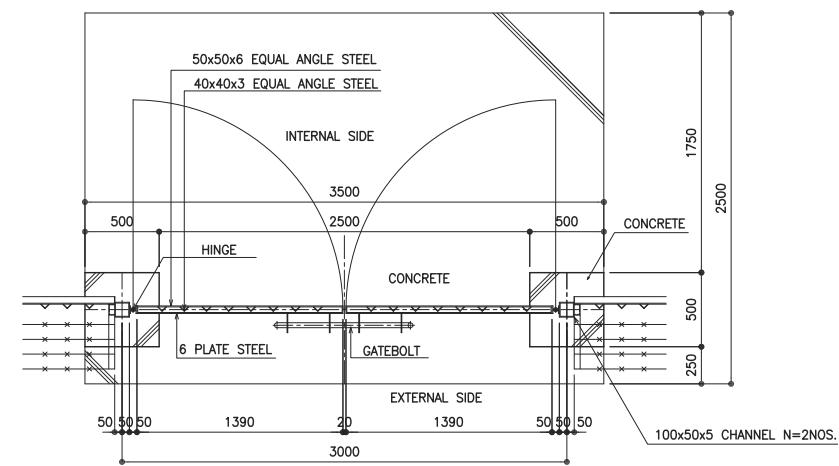
VIEW OF FENCE (EXTERNAL SIDE)



SECTION A-A



VIEW OF GATE (EXTERNAL SIDE)



PLAN OF GATE

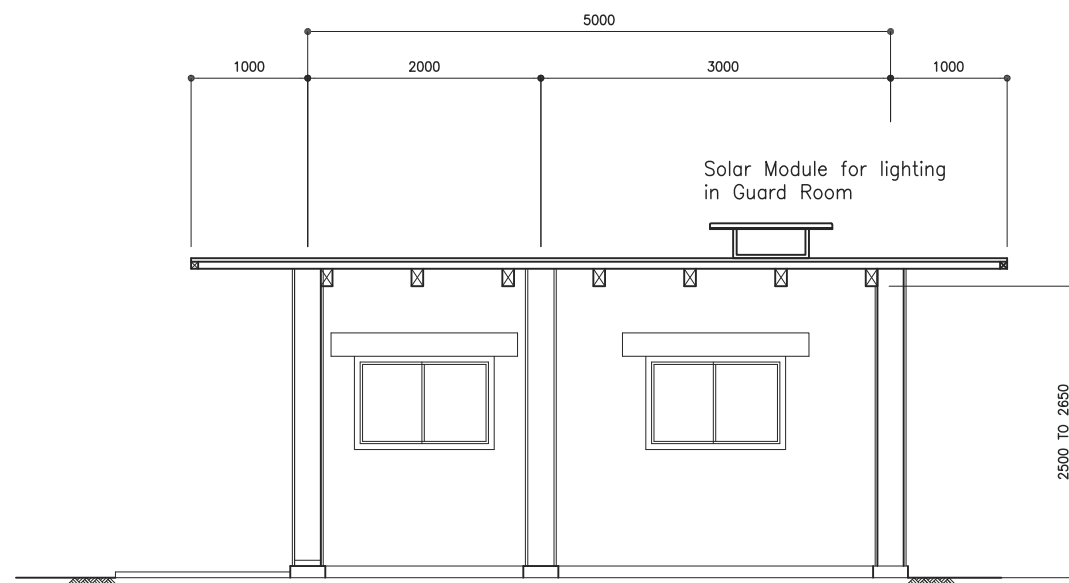
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 RETURNED IDP IN ACHOLI SUB-REGION IN REPUBLIC OF UGANDA

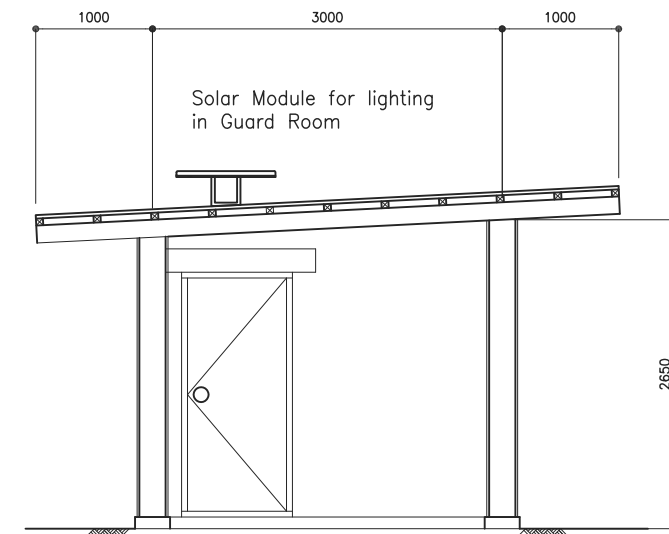
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 JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)  
 TOKYO ENGINEERING CONSULTANTS CO., LTD.  
 IN ASSOCIATION WITH  
 OYO INTERNATIONAL CORPORATION

Title:  
 PIPED WATER SUPPLY FACILITIES  
 SOLAR POWER GENERATION FACILITY  
 (SECURITY FENCE AND GATE)

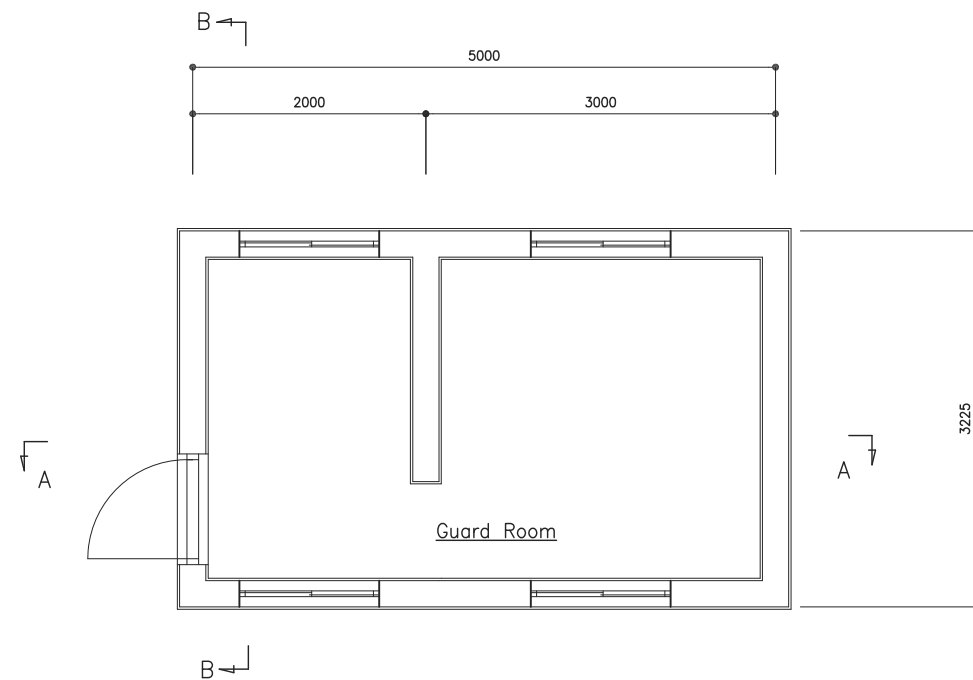
Date:  
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A-A VIEW



B-B VIEW

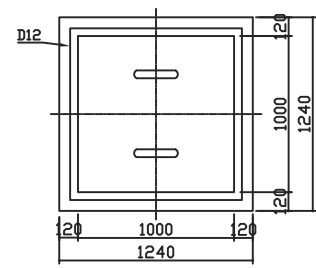


PLAN

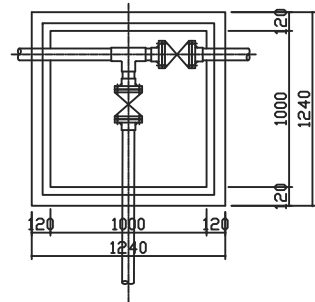
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				THE PROJECT FOR PROVISION OF IMPROVED WATER SOURCE FOR RETURNED IDP IN ACHOLI SUB-REGION IN REPUBLIC OF UGANDA					No:

# TYPICAL PIPELINE CHAMBERS

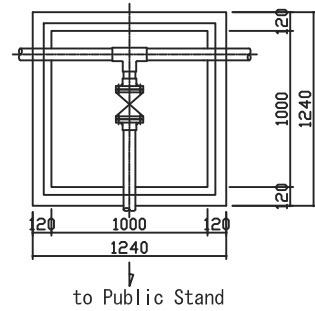
AIR VALVE CHAMBERS



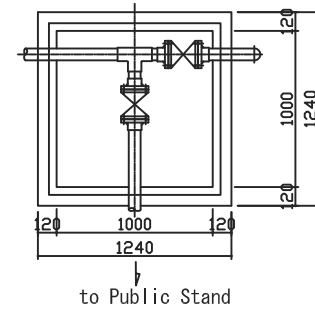
WASH OUT CHAMBERS



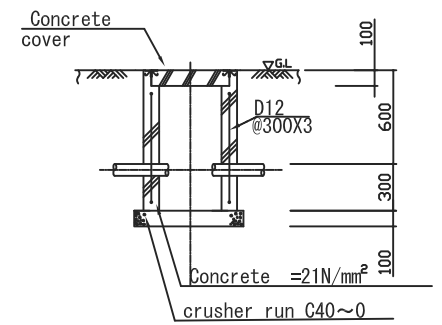
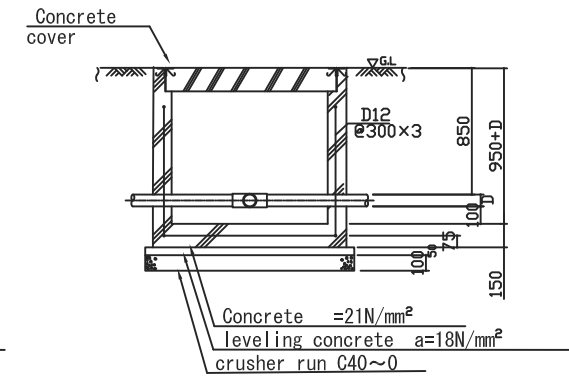
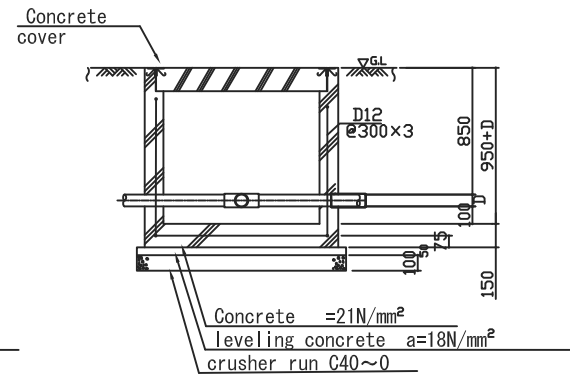
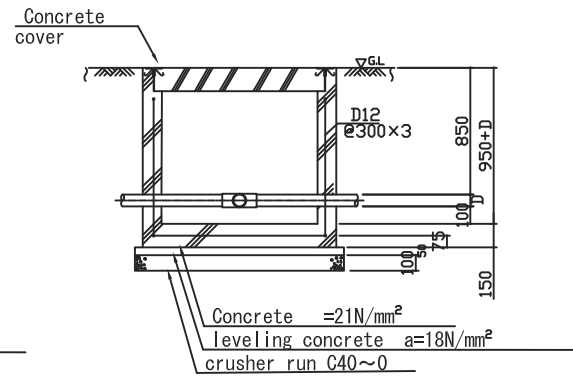
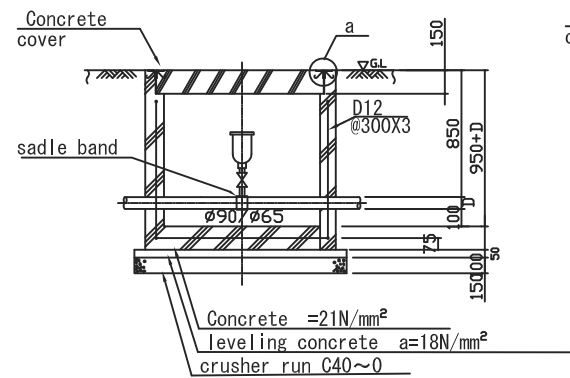
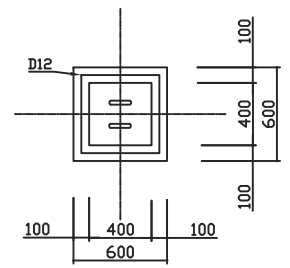
SERVICEPIPE CHAMBERS



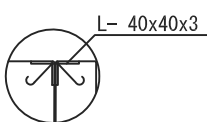
SERVICEPIPE CHAMBERS  
(end-point of networks)



CABLE CHAMBERS

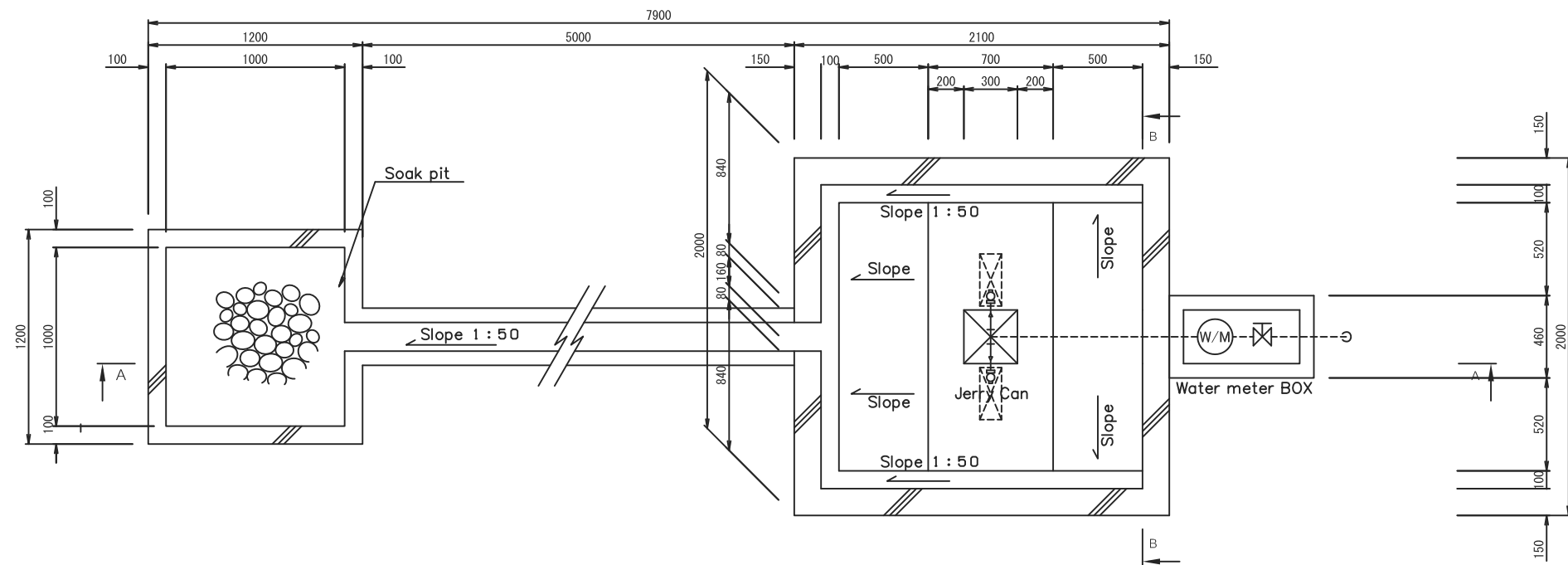


Detail "a"

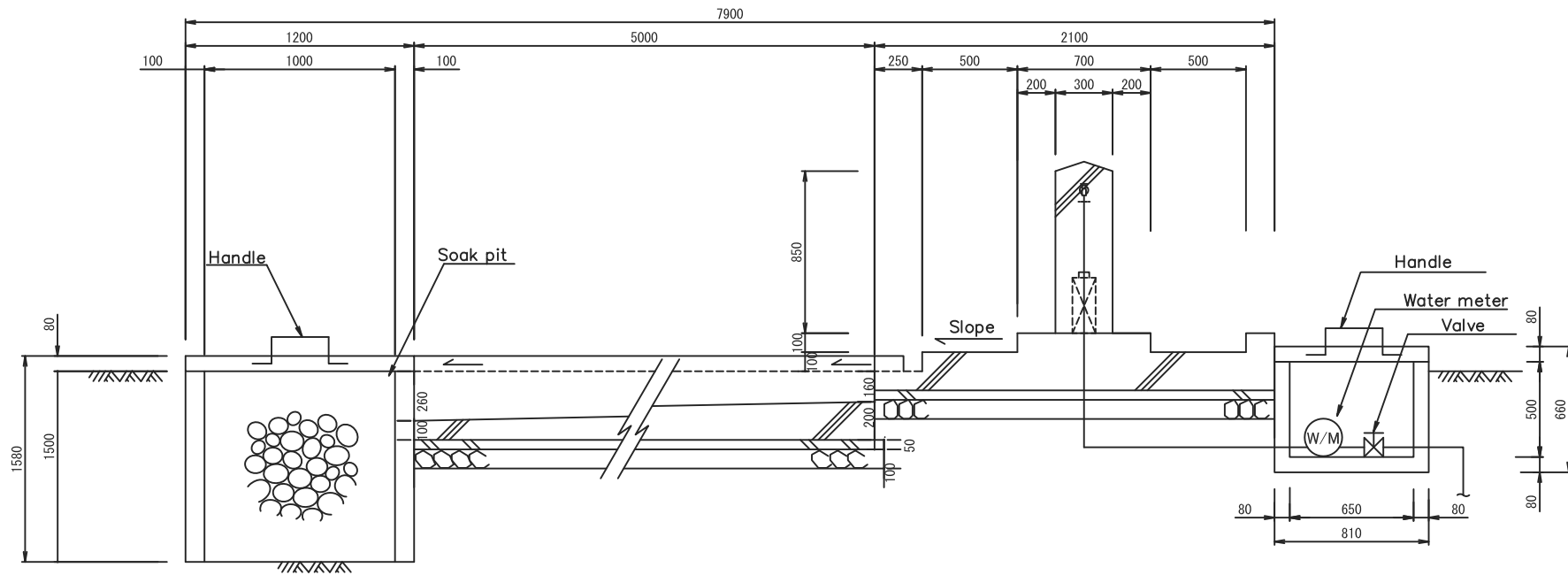


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<>	<>	<>	THE PROJECT FOR PROVISION OF IMPROVED WATER SOURCE FOR RETURNED IDP IN ACHOLI SUB-REGION IN REPUBLIC OF UGANDA	TOKYO ENGINEERING CONSULTANTS CO., LTD. IN ASSOCIATION WITH OYO INTERNATIONAL CORPORATION	Title:	PIPELINE CHAMBERS	No:	Ref:
No:	Date:	Approved:	Revision:					<>

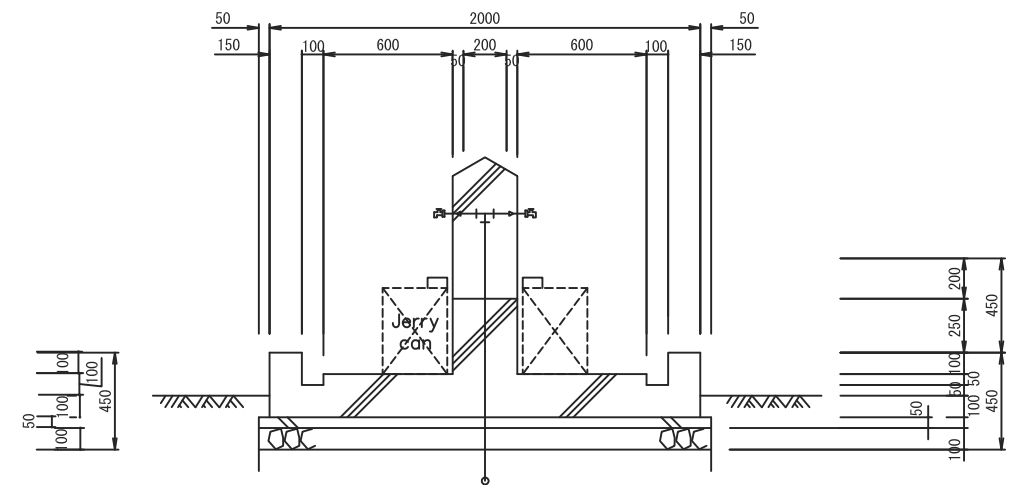
平面图



A-A 断面图



B-B 断面图



◇			
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No:	Date:	Approved:	Revision:

Project:  
 THE PROJECT FOR PROVISION OF IMPROVED WATER SOURCE FOR  
 RETURNED IDP IN ACHOLI SUB-REGION IN REPUBLIC OF UGANDA

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 JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)  
 TOKYO ENGINEERING CONSULTANTS CO., LTD.  
 IN ASSOCIATION WITH  
 OYO INTERNATIONAL CORPORATION

**PIPED WATER SUPPLY FACILITIES**  
 Title:  
**PUBLIC TAPS**

Date:  
 No:  
 Ref:  
 A9 - 18