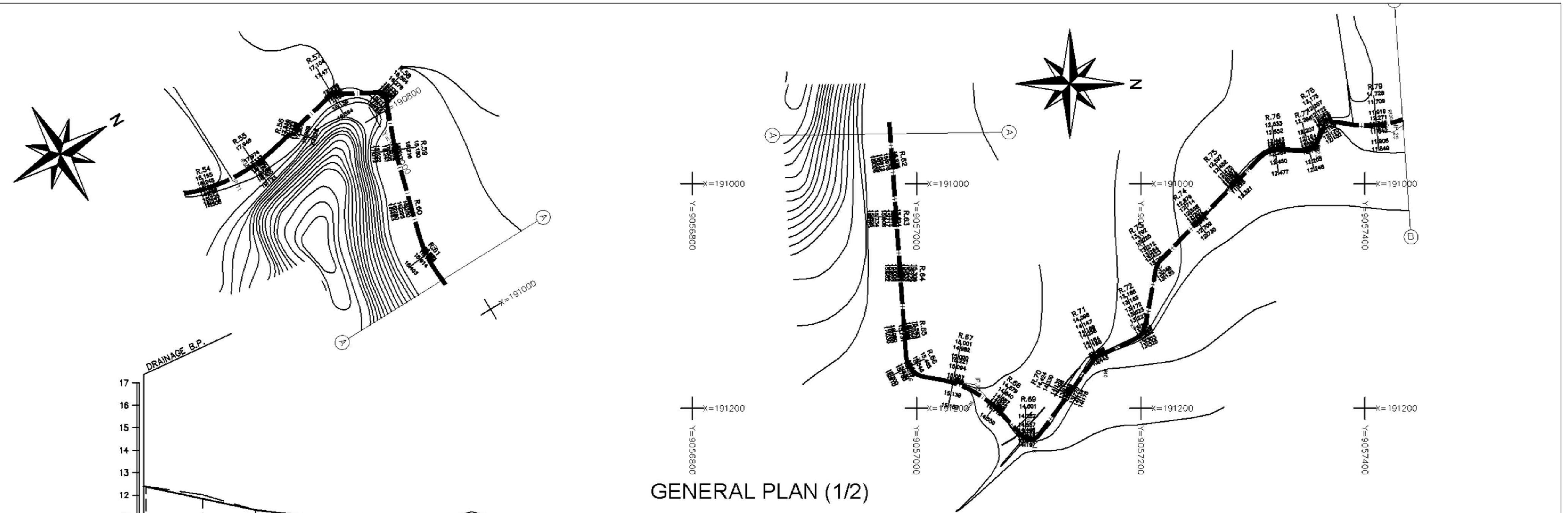
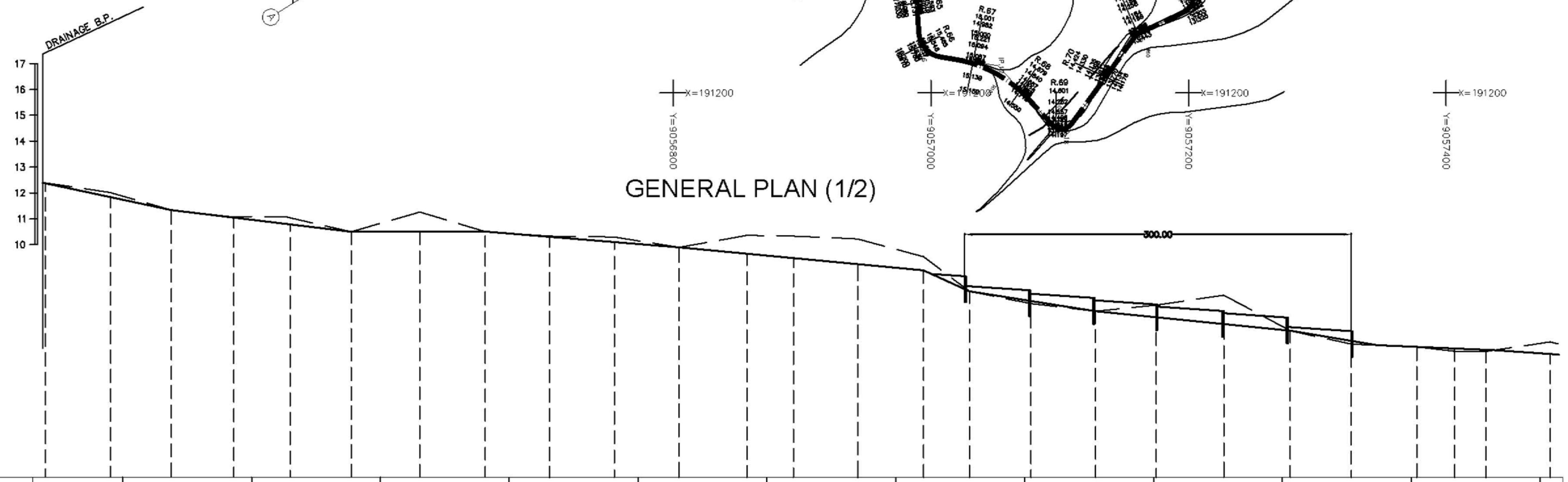


GENERAL PLAN (1/2)



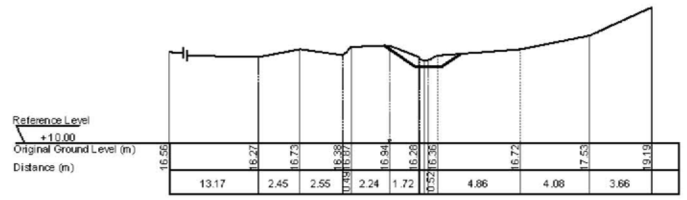
REFERENCE LEVEL
+ 6.00 m

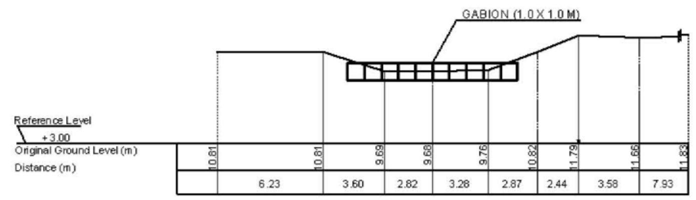
HECTOMETER STONE: HM 8, HM 9, HM 10, HM 11, HM 12, HM 13, HM 14, HM 15, HM 16, HM 17, HM 18, HM 19

PROFILE NUMBER	R.54	R.55	R.56	R.57	R.58	R.59	R.60	R.61	R.62	R.63	R.64	R.65	R.66
DISTANCE (m)	50.46	47.26	45.39	43.84	50.35	53.18	50.89	50.13	50.15	49.95	52.83	36.01	50.03
ACCUMULATED DISTANCE (m)	740.08	790.54	837.80	883.19	927.04	977.38	1030.57	1081.45	1131.58	1181.73	1231.68	1284.51	1320.52
EXISTING: GROUND LEVEL IN CENTER LINE	17.39	17.01	16.34	16.08	16.07	15.49	16.26	15.50	15.33	15.30	14.90	15.36	15.33
DESIGN: BANK LEVEL													
DESIGN: DESIGN WATER LEVEL													
DESIGN: BED LEVEL	17.39	16.84	16.88 / 15.86	15.77	15.78	15.58	15.50	15.37	15.27	15.10	15.07 / 14.07	14.65	14.48

PROFILE NUMBER	R.67	R.68	R.69	R.70	R.71	R.72	R.73	R.74	R.75	R.76	R.77	R.78	R.79
DISTANCE (m)	50.94	35.69	47.55	50.27	46.87	52.65	51.57	47.31	51.08	29.34	24.13	49.89	
ACCUMULATED DISTANCE (m)	1370.55	1421.49	1457.18	1504.72	1554.99	1601.87	1654.52	1706.08	1753.40	1804.48	1833.81	1857.94	1907.83
EXISTING: GROUND LEVEL IN CENTER LINE	15.22	14.53	13.19	12.72	12.43	12.66	13.05	11.67	11.15	11.04	10.88	10.87	11.24
DESIGN: BANK LEVEL													
DESIGN: DESIGN WATER LEVEL													
DESIGN: BED LEVEL	14.25	14.01 / 12.69	12.62	12.52	12.42	12.19	11.93	12.12 / 11.12	11.03	10.92	10.86	10.82	10.77

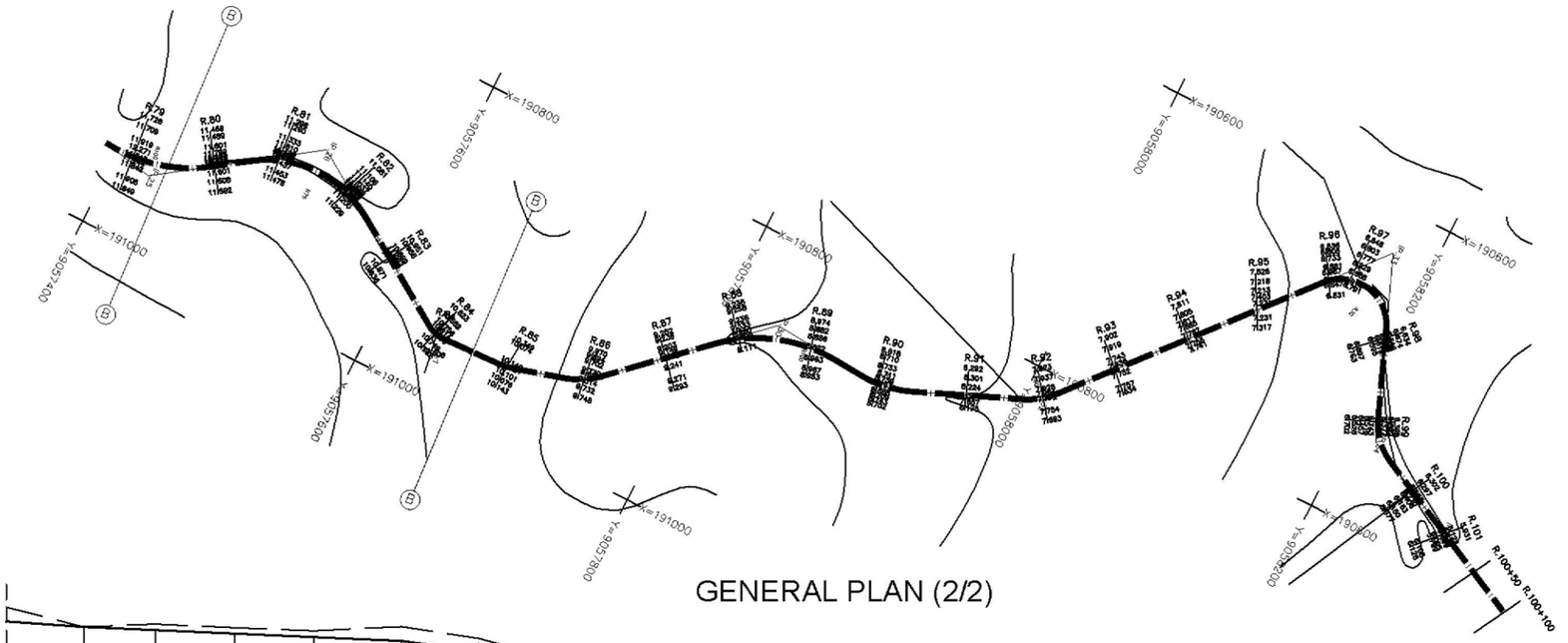
LONGTIDUNAL SECTION (1/2)



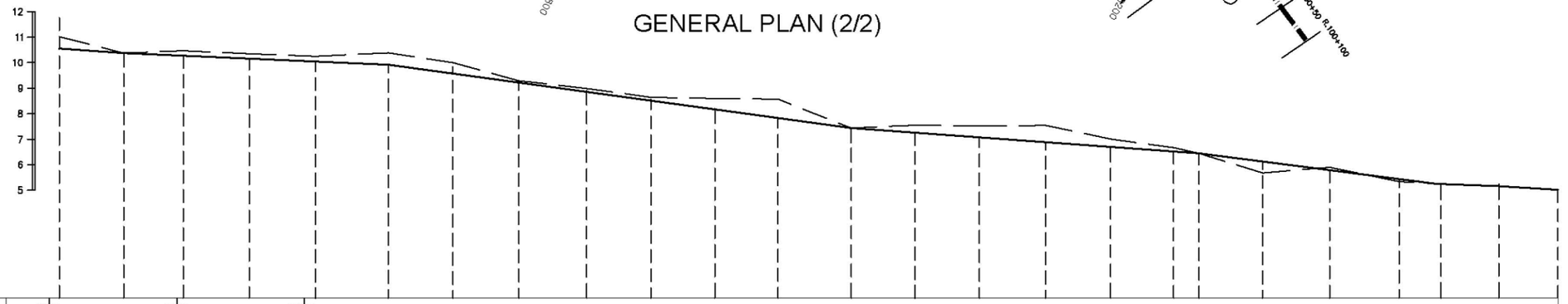


TYPICAL CROSS SECTION

NTC INTERNATIONAL CO., LTD.	REVISION	PROJECT TITLE: THE PRJECT FOR REHABILITATION AND IMPROVEMENT OF BULUTO IRRIGATION SCHEME	DATE: 2013.9	DESINGED BY: NTC INTERNATIONAL Co., Ltd.	DWG NO.: DC01.01
		DWG. TITLE: DRAINAGE CANAL NO.1 (1/2) PLAN / LONGTUDINAL SECTION / TYPICAL CROSS SECTION	SCALE: 1:200 1:4000	APPROVED BY	SERIAL NO.: 0

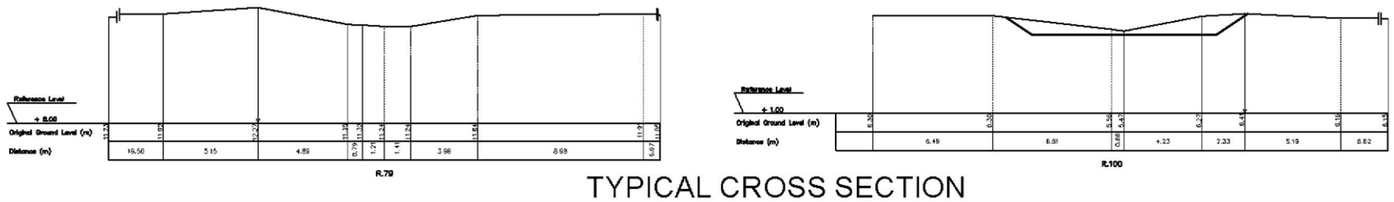


GENERAL PLAN (2/2)



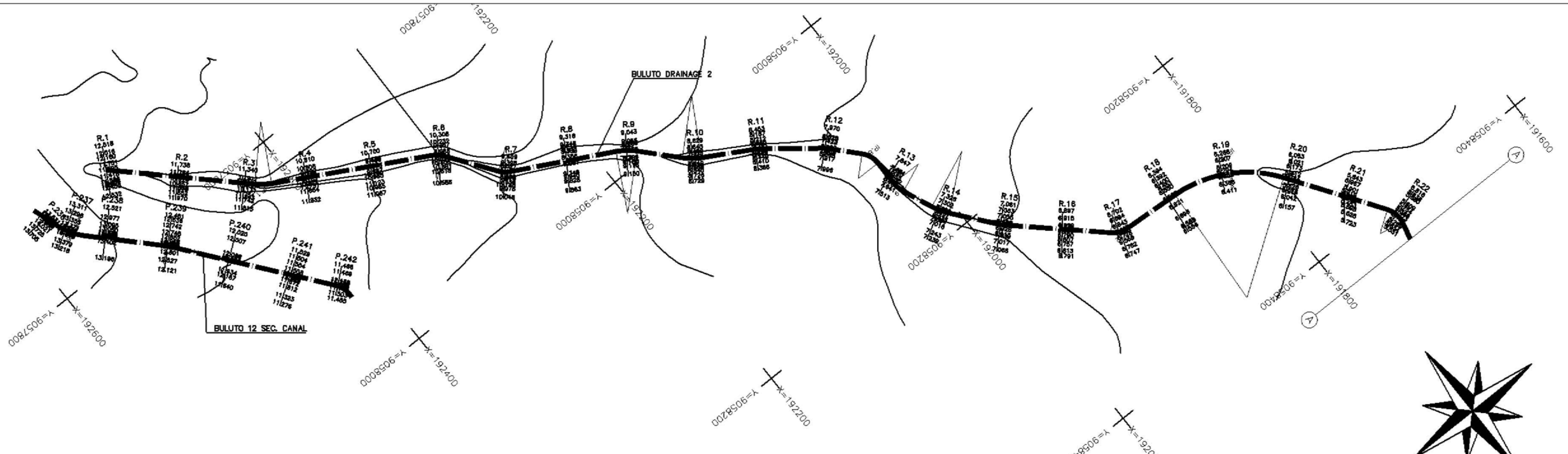
LONGTIDUNAL SECTION (2/2)

FLOOR PLAN-WUA
OFFICE

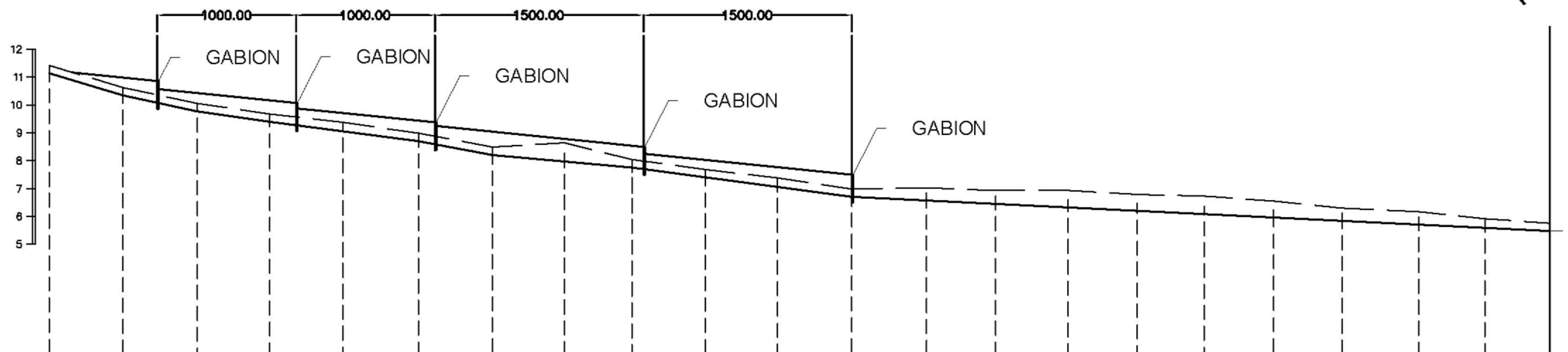


TYPICAL CROSS SECTION

	NTC INTERNATIONAL CO., LTD.	REVISION	PROJECT TITLE: THE PRJECT FOR REHABILITATION AND IMPROVEMENT OF BULUTO IRRIGATION SCHEME	DATE: 2013.9	DESINGED BY: NTC INTERNATIONAL Co., Ltd.	DWG NO.: DC01.02
			DWG. TITLE: DRAINAGE CANAL NO.1 (2/2) PLAN / LONGTUDINAL SECTION / TYPICAL CROSS SECTION	SCALE: 1:200 1:4000	APPROVED BY	SERIAL NO.: 0



GENRAL PLAN (1/2)



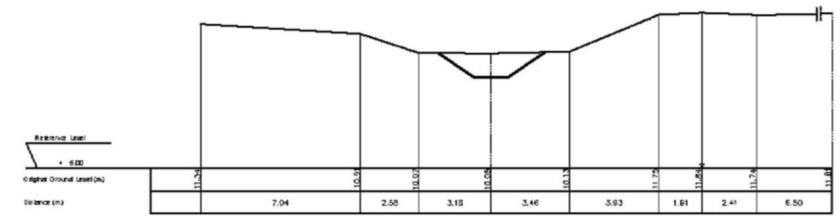
REFERENCE LEVEL + 1.00 m

HECTOMETER STONE: HM 0, HM 1, HM 2, HM 3, HM 4, HM 5, HM 6, HM 7, HM 8, HM 9, HM 10

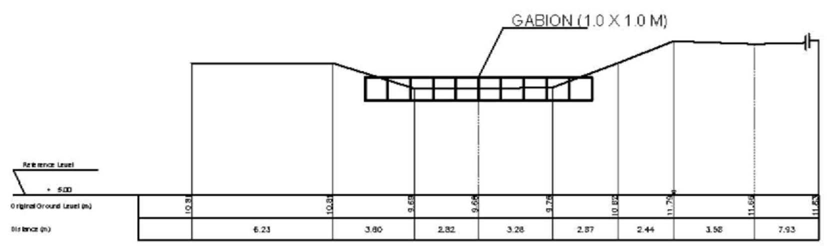
PROFILE NUMBER	ACCUMULATED DISTANCE (m)	DISTANCE (m)	EXISTING: GROUND LEVEL IN CENTER LINE	DESIGN: BED LEVEL
R.1	0.00	53.23	11.42	9.81
R.2	53.23	53.42	10.62	9.71
R.3	106.66	52.30	10.05	9.60
R.4	158.95	52.78	9.68	9.49
R.5	211.74	54.28	9.38	8.89
R.6	266.02	53.38	8.89	8.78
R.7	319.39	51.87	8.49	8.67
R.8	371.26	48.60	8.64	8.26
R.9	419.86	52.45	8.04	8.47
R.10	472.32	52.19	7.69	7.87
R.11	524.51	53.37	7.38	7.34
R.12	577.88	53.91	6.98	7.15
R.13	631.79	49.66	7.02	6.85
R.14	681.45	52.32	6.94	6.73
R.15	733.77	50.06	6.93	6.61
R.16	783.83	47.91	6.79	6.48
R.17	831.75	50.02	6.73	6.37
R.18	881.77	49.31	6.55	6.24
R.19	931.08	55.20	6.29	6.12
R.20	986.28	47.85	6.17	5.99
R.21	1034.13	46.71	5.92	5.87
R.22	1080.84		5.75	5.65

BANK LEVEL, DESIGN WATER LEVEL (legend rows, no values)

LONGITUDINAL SECTION (1/2)



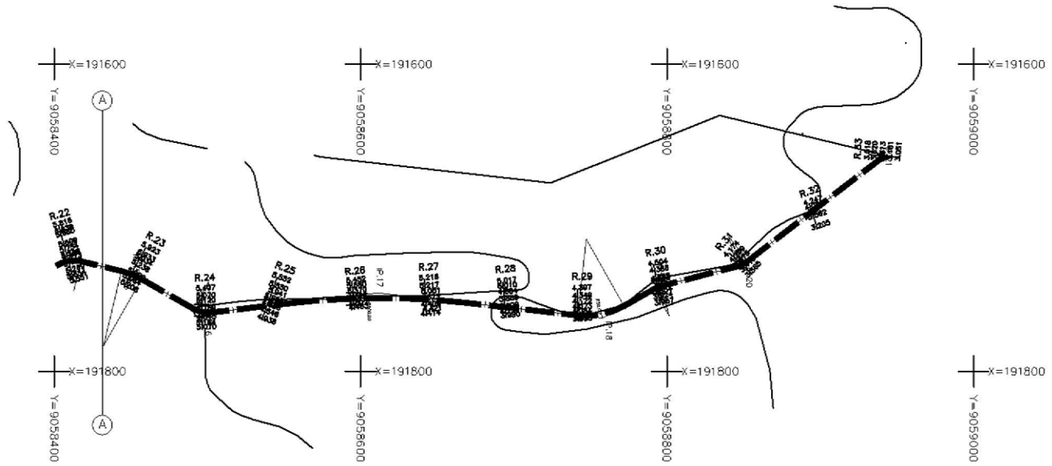
R.3



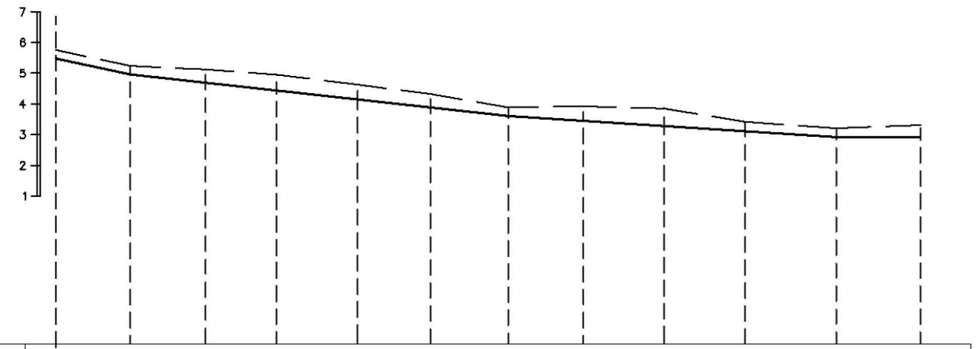
R.4 (U/S)

TYPICAL CROSS SECTION (1/2)

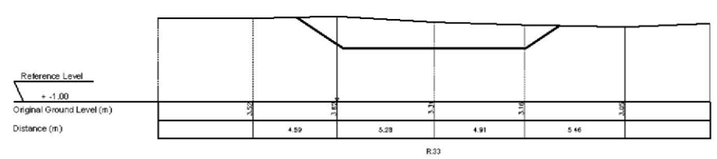
NTC INTERNATIONAL CO., LTD.	REVISION	PROJECT TITLE: THE PRJECT FOR REHABILITATION AND IMPROVEMENT OF BULUTO IRRIGATION SCHEME	DATE: 2013.9	DESINGED BY: NTC INTERNATIONAL Co., Ltd.	DWG NO.: DC02.01
		DWG. TITLE: DRAINAGE CANAL NO.2 (1/2) PLAN / LONGTUDINAL SECTION / TYPICAL CROSS SECTION	SCALE: 1:200 1:4000	APPROVED BY	SERIAL NO.: 0



GENRAL PLAN (2/2)

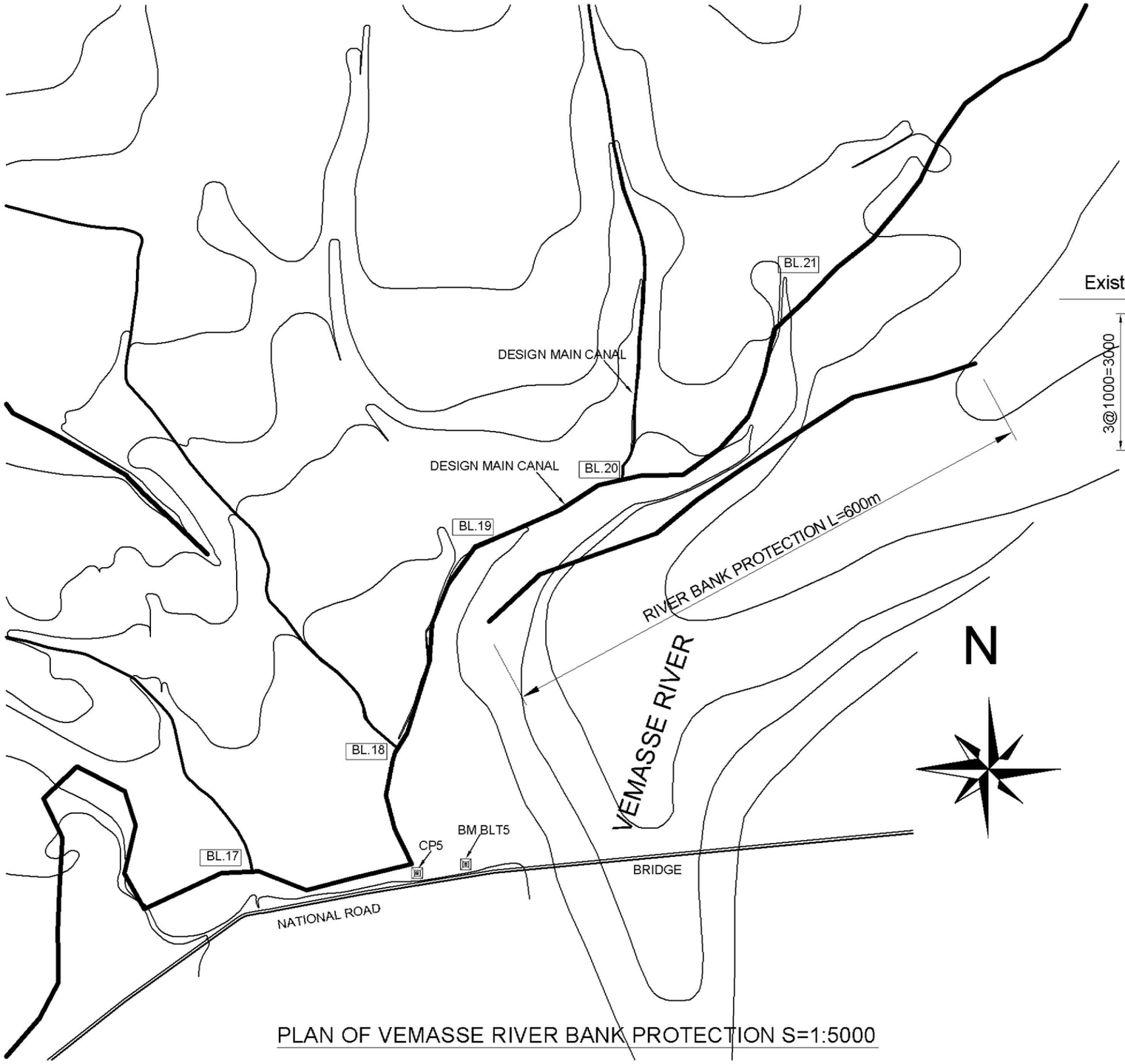


LONGITUDINAL SECTION (2/2)

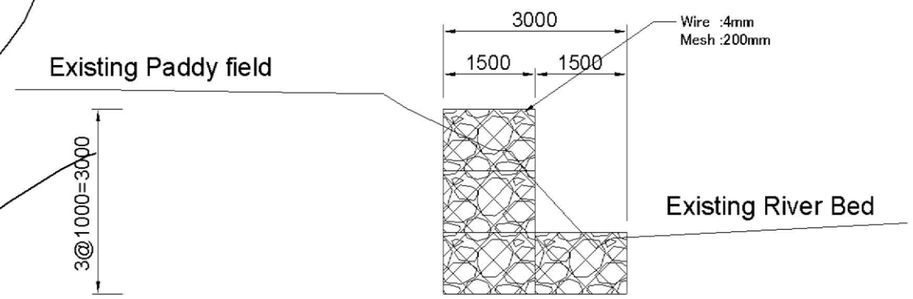


TYPICAL CROSS SECTION

	NTC INTERNATIONAL CO., LTD.	REVISION	PROJECT TITLE: THE PRJECT FOR REHABILITATION AND IMPROVEMENT OF BULUTO IRRIGATION SCHEME	DATE: 2013.9	DESINGED BY: NTC INTERNATIONAL Co., Ltd.	DWG NO.: DC02.02
			DWG. TITLE: DRAINAGE CANAL NO.2 (2/2) PLAN / LONGTUDINAL SECTION / TYPICAL CROSS SECTION	SCALE: 1:200 1:4000	APPROVED BY:	SERIAL NO.: 0

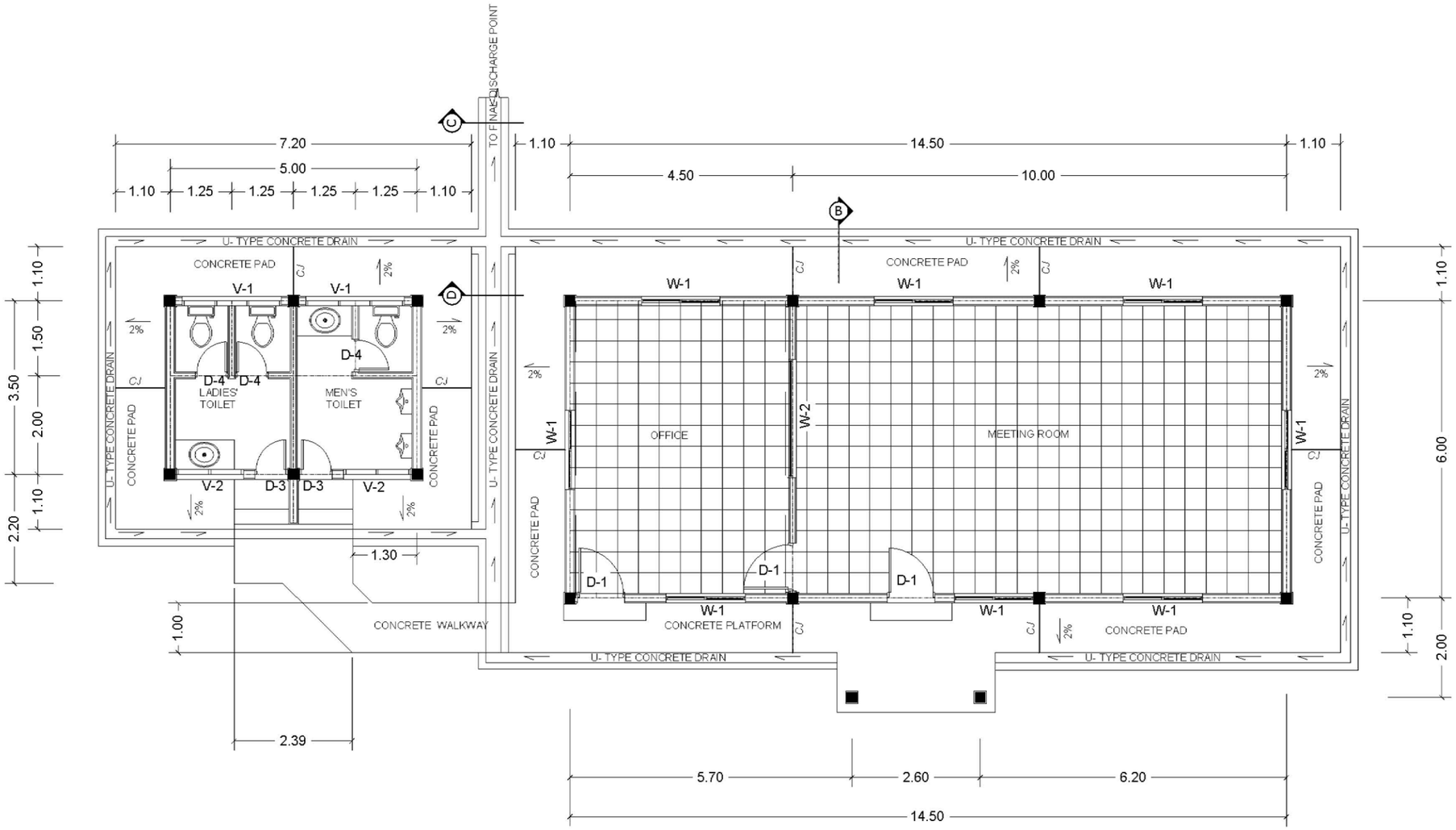


PLAN OF VEMASSE RIVER BANK PROTECTION S=1:5000



TYPICAL SECTION
OF VEMASSE RIVER BANK PROTECTION
S=1 : 100

	NTC INTERNATIONAL CO., LTD.	REVISION	PROJECT TITLE: THE PRJECT FOR REHABILITATION AND IMPROVEMENT OF BULUTO IRRIGATION SCHEME	DATE: 2013.09	DESINGED BY: NTC INTERNATIONAL Co.,Ltd.	DWG NO.: RBP.01
			DWG. TITLE: INTAKE PLAN VEMASSE RIVER BANK PROTECTION	SCALE: 1 : 100 / 1 : 5000	APPROVED BY:	SERIAL NO.: 0

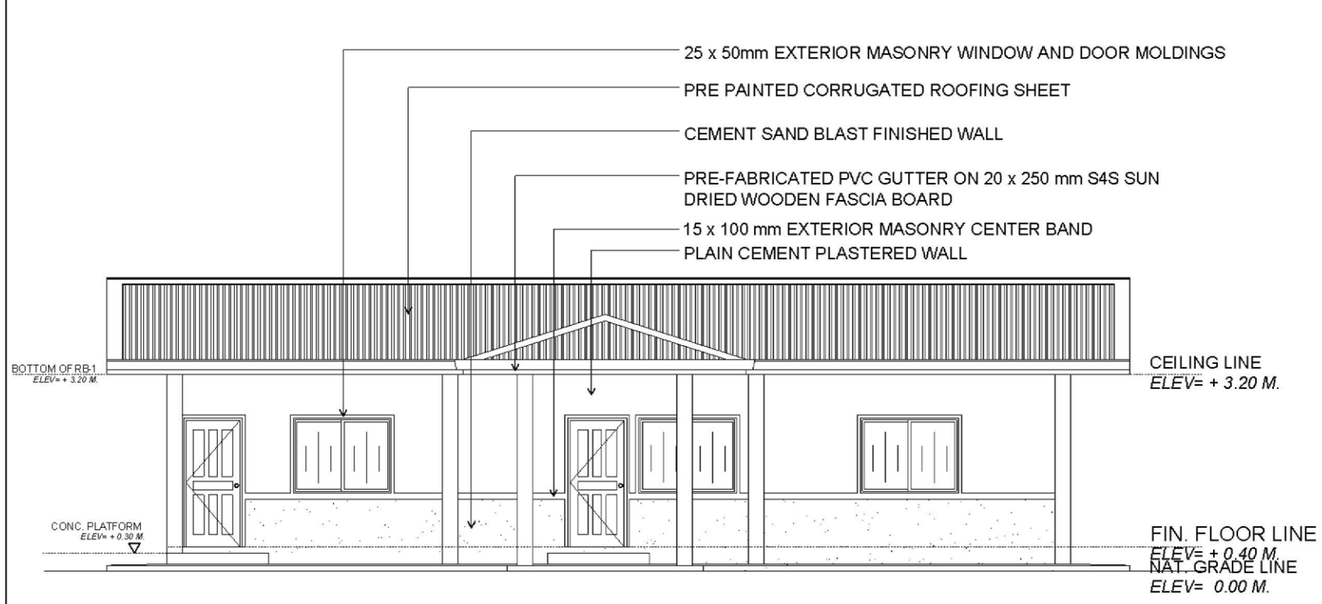


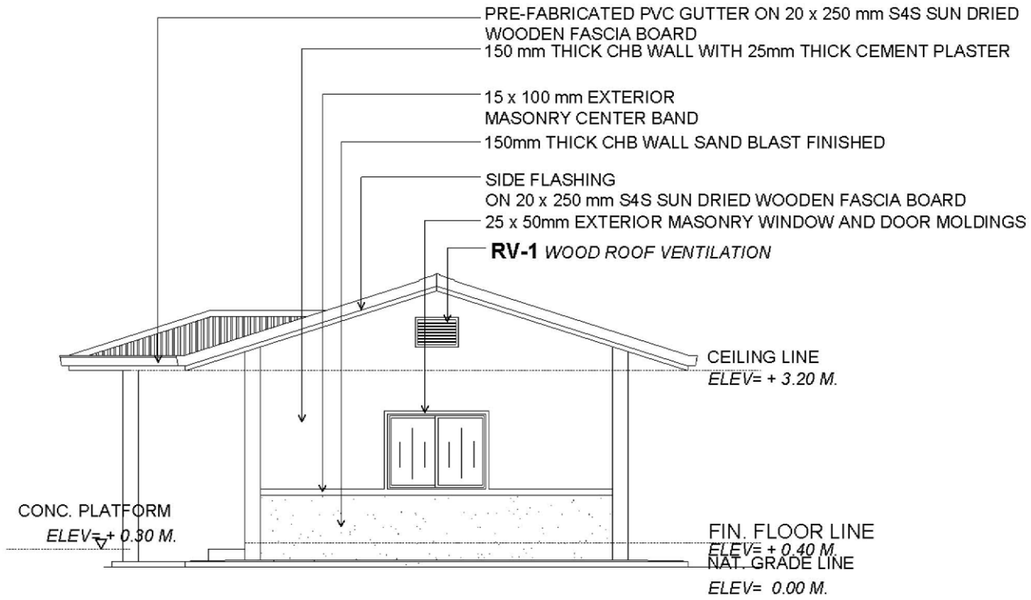
FLOOR PLAN-TOILET

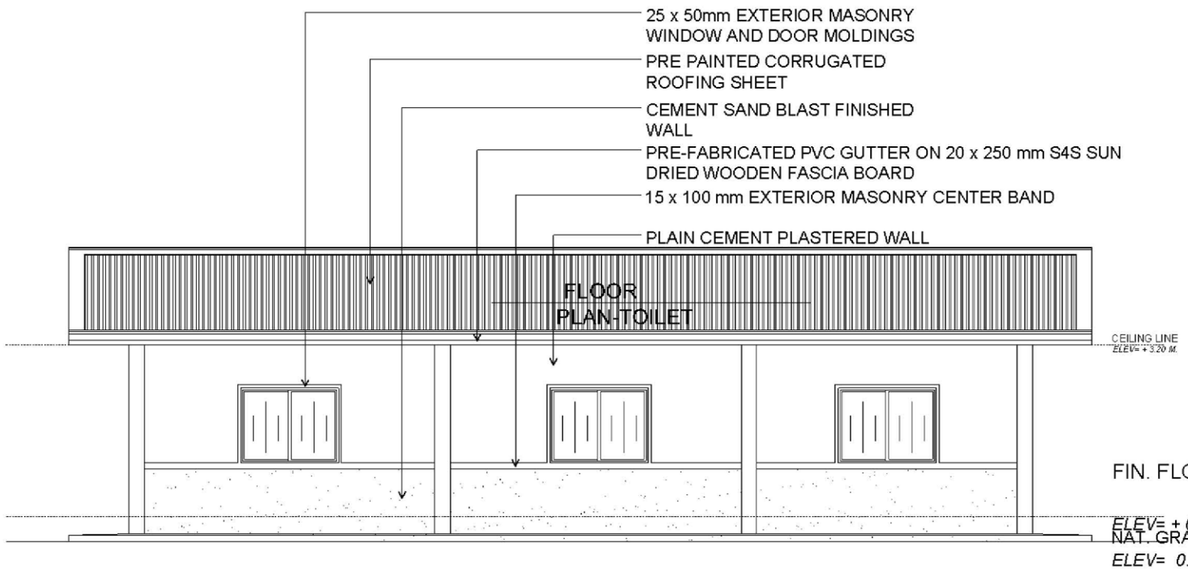
FLOOR PLAN-WUA OFFICE

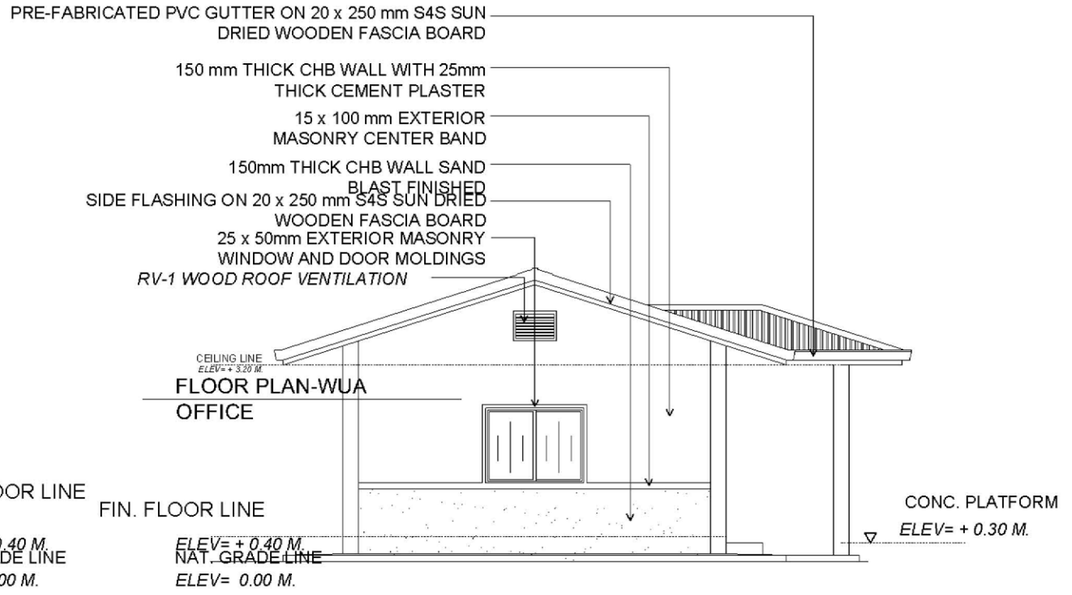
0 1 2 3 4 5m

	NTC INTERNATIONAL CO., LTD.	REVISION	PROJECT TITLE: THE PRJECT FOR REHABILITATION AND IMPROVEMENT OF BULUTO IRRIGATION SCHEME	DATE: 2013.9	DESINGED BY: NTC INTERNATIONAL Co., Ltd.	DWG NO.: WUA.01
			DWG. TITLE: WUA OFFICE PLAN	SCALE: 1:100	APPROVED BY:	SERIAL NO.: 0









	NTC INTERNATIONAL CO., LTD.	REVISION	PROJECT TITLE: THE PRJECT FOR REHABILITATION AND IMPROVEMENT OF BULUTO IRRIGATION SCHEME	DATE: 2013.9	DESINGED BY: NTC INTERNATIONAL Co., Ltd.	DWG NO.: WUA.02
			DWG. TITLE: WUA OFFICE PLAN	SCALE: 1:100	APPROVED BY:	SERIAL NO.: 0

2-2-4 Implementation Plan

2-2-4-1 Implementation Policy

1) Basic issues

This Project will be implemented within the framework of Japanese Grand Aid. After the completion of preliminary design, if Japanese government approves the project implementation, Exchange of Note (E/N) and Grand Agreement (G/A) will be concluded and finally, the Project implementation phase will be started. The contract type of the Project will be the lump sum service contract.

This Project contains the construction of intake structures, diversion canal, main & secondary canal, drainage channel and a meeting facility in the target area located in between Laleia sub-district of Manatuto district and Vemasse sub-district of Baucau district of Timor-Leste.

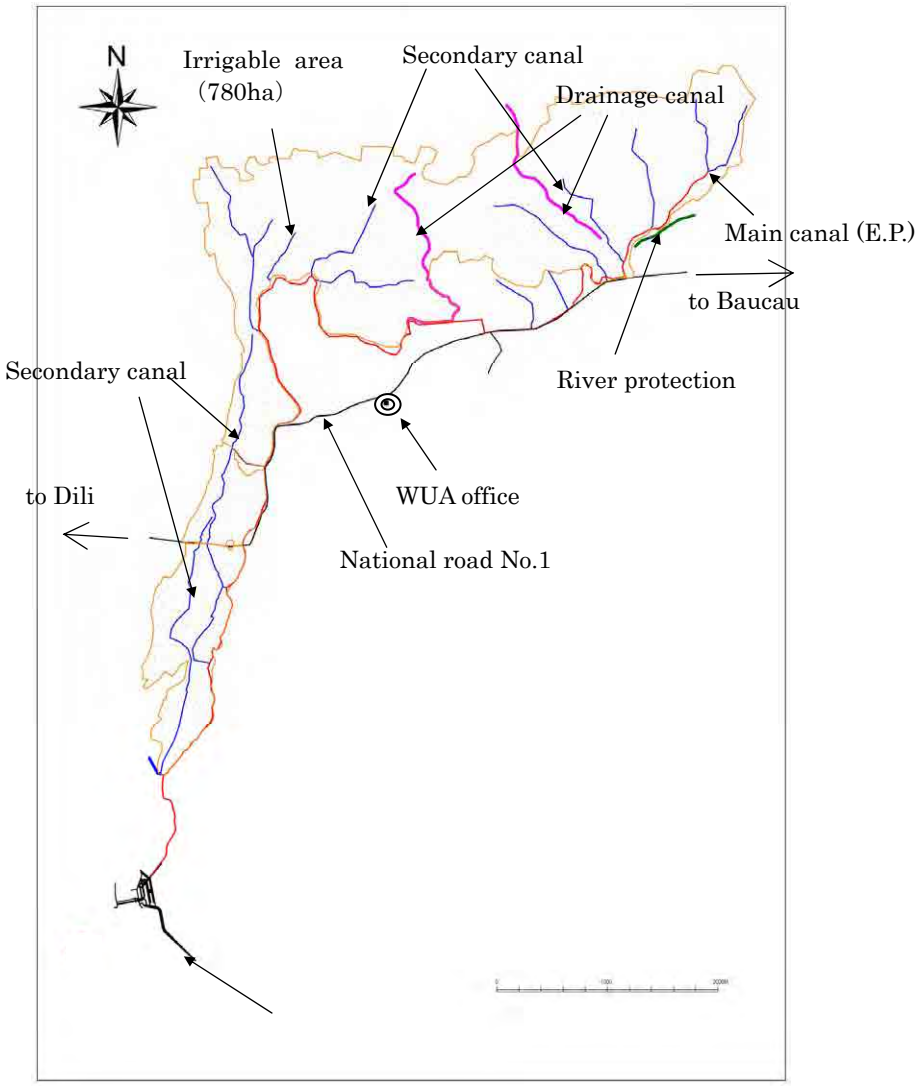


Figure 2-46 Plot Plan of Irrigation Facilities in the Buluto Irrigation Scheme

2) Employment of local contractor

At present, there are 5 to 6 construction companies managed by the local residents and foreigners in Timor-Leste. Those construction companies are locally recognized as big enterprises performing especially in the Capital of Dili. Moreover, the companies possess sufficient numbers of technicians and construction machines, meaning that it is possible to employ those companies as subcontracting company for this Project.

3) Necessity of resident engineer

There are few technicians having the knowledge & skills in terms of construction works in Timor-Leste. Thus, the civil engineer and building engineer should be dispatched in this work. Besides, since the establishment of several gates requires accurate works, the gate work expert should be dispatched as well. In this way, the implementation system should be constructed to secure the necessity technical level.

4) Implementation system of Timor-Leste side

The National Directorate of Irrigation and Water Management of the Ministry of Agriculture and Fisheries is supposed to manage the entire Project of administration side, while the Agriculture Offices of Manatuto district and Baucau district will perform the practical measures in the field. The organization chart is as follows.

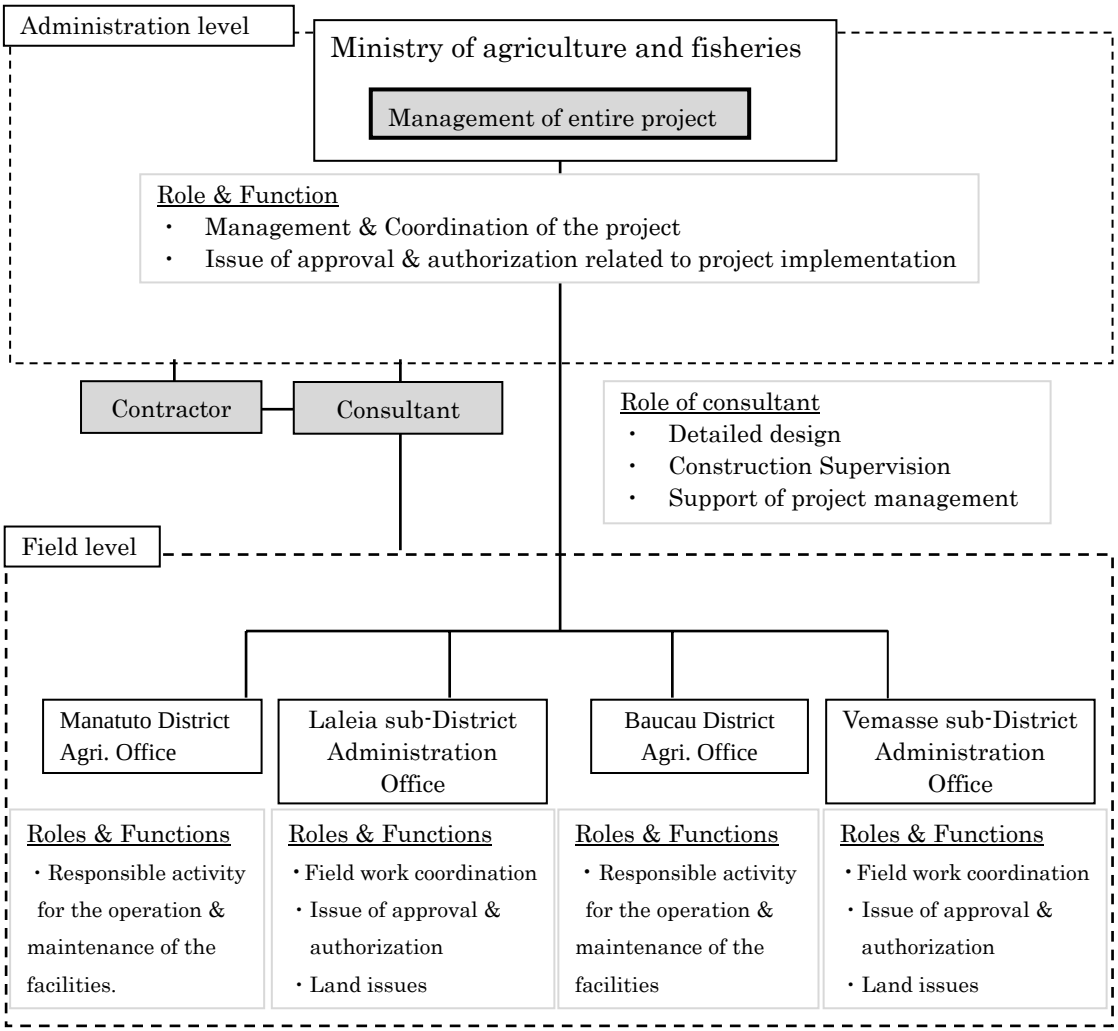


Figure 2-47 Organization Chart of Project Implementation

2-2-4-2 Implementation Conditions

1) Important notice for the execution

i) Temporary construction of intake works

The intake works such as fixed weir, gravel trap and settling basin will be constructed during first and second dry season. Thus, during the rainy season, the temporary cofferdam construction should be required as a countermeasure for the flooding in the gravel trap and settling basin constructed during the first dry season. The intake works will be constructed during June to January, when the stream flow reaches lower than $10m^3$/sec.

ii) Irrigation canal construction

For the main canal (L=12.3 km), the existing canal will be rehabilitated to utilize as a main canal in upstream side (7km approximately) although the main canal will be newly constructed in the downstream side (5.5 km).

The main canal which requires heavy works such as the concrete and wet masonry works will be constructed by the combination work of bulldozer and backhoe. The embankment materials will be collected in the bedrock near the main canal and carried by the dump truck. As a general rule, the concrete will be carried from the concrete plant established in installation point of intake works. On the other hand, the branch canal will be constructed manually since its works require only small scale earthworks.

iii) Drainage works

Two (2) drainage canals (L=4.6 km) will be constructed in this Project. At present, the natural drainage is formed in the target area. However, there is a section blocking the water flow because of the accumulation of earth and sand. Thus, to secure the passage of drainage and to improve the drainage condition, the excavation works (width=10m, depth=1m, approximately) will be implemented by the backhoe. Besides, as the consolidation works, the gabion works will be installed in the upstream section in order to fix the passage of drainage and to prevent the erosion.

iv) Revetment works in Vemasse River

Totally 1,200 gabion works will be installed over the section (L=600m) of main canal running near the Vermasse river to prevent the river channel erosion at the time of flooding. The shape of gabion works will be designed as 1m (Length)×1m (Width)×1.5m（Height）. The gabion works will be made by knitting reinforcing bar (Diameter=4mm) in the field and filling the round stone into the gabion.

v) Construction of meeting facility for Water Users' Association (WUA)

The meeting facility for Water Users' Association (WUA) will be designed as one-story house (building area=87m^2) consisting of an office and a meeting room. The building will be constructed as reinforced concrete pole & beam structure. From the viewpoint of sanitary conditions, the toilet (building area=15m^2) will be constructed separately and the water tank & septic tank will be installed in the toilet.

vi) Gate control room

The gate control room will be installed near the intake works. The building will consist of a manager room and a storage room. The building will be constructed as one-story type (60m^2), reinforced concrete pole and beam structure. The toilet will be installed in the gate control room.

2-2-4-3 Scope of Works

The responsibilities of Japanese side and Timor-Leste side regarding the Project implementation are indicated in the table shown below.

Table 2-35 Responsibility Division of Execution, Procurement and Installation

Responsibility of Japanese Side	Responsibility of Timor-Leste Side
(1) Intake facilities: Complete set ・ Fixed weir: Concrete structure, Weir length with 200m, Weir Height (2.3m), Sand trap gate (2.5m) (Width) × 2.1m (Height) × 2 gates ・ Intake works: 1.5m (Width) ×0.8m (Height) ×4 gates ・ Settling basin: Concrete structure, 50m (Length) ×8m (Width) ・ Scour gate : 2.0m（Width）×1.2m（Height）×2 gates ・ Driving channel : Concrete canal, Regulating gate 2.0m (Width) ×0.75m (Height) ×2 gates ・ Revetment works (Dividing wall): Semi-gravity type retaining wall (Both banks), H= 8.1 to 9.6m ・ Guide wall: Earth dike, H=7 to 8m ・ Gate control room and Storage room: Floor space 60m^2, Concrete pole, Roof, Block wall ・ Driving channel (Left bank): Concrete pipe (φ800mm), Length (192m) (2) Irrigation canal：Complete set ・ Main canal: Side wall with wet masonry structure, Deck slab with plain concrete, Length (12.3km), Supplemental works with reinforced-concrete structure ・ Secondary canal: Earth canal structure with 16 lines and total length with 15.4km (3) Management road works: Complete set ・ Macadamize road: Length with 1.3km and road-width with 3.5m (4) Drainage works: Complete set ・ Drainage excavation works: Excavation of end section of drainage, drainage in upstream side (300m) and drainage in downstream side (90m) ・ Groundsel works (stone netting installation): 7 drainage in upstream side and 5 drainage in downstream side (5) River revetment works (downstream side and left bank of Vemasse river): Complete set ・ Revetment works: Stone netting installation (3 steps×600m) (6) Assembly hall for water management cooperative and gate control room / storage room: Complete set ・ Assembly hall: Concrete pole and beam, building area (87 m^2) and toilet (17.5m^2) ・ Gate control room / Storage room: Concrete pillar and beam, building area (60 m^2) (7) Soft component implementation: Complete set ・ Establishment of water management cooperative, training for the operation, water management and maintenance of irrigation facilities.	(1) To secure the land for the planned construction site (2) Free provision of rented ground for the works (3) Improvement of access road to the planned construction site, dissemination to the local residents regarding the utilization of existing road (4) Application procedures for construction to the related organization in terms of cutting trees and aggregate collection in the river, etc. (5) Dissemination to the beneficiaries regarding the stoppage of irrigation water distribution during the construction period. (6) To extend the transmission line to the field office. (7) Assignment of 3 C/P staffs for the implementation of soft component.

2-2-4-4 Constructions Supervision

(1) Basic Policies and the Items to be Considered

The following items should be considered regarding the construction supervision for this Project.

1) Basic Items

a) To grasp the contents and background of outline and detailed design.

b) To understand the scheme of Grand Aid project.

c) To grasp the contents of E/N and G/A contracted by both the countries.

d) To implement the Project smoothly in cooperation with all the stakeholders of the Project

e) To confirm the responsibility items of Timor-Leste side agreed when the outline design was completed.

2) Items to be Considered Regarding the Construction Supervision

a) Work schedule

b) To confirm the procedures of tax exemption and custom clearance in case of importing equipment

c) The period during December to April is rainy season in Buluto area, while the dry season period is from May to November. The concrete plant will be installed in the right bank of weir construction point, which is presently covered by forests. After the commencement of the Project, the installation points will be cleared and leveled. Thereafter, the temporary road and temporary drainage will be established to prepare the work camp for this Project. The work schedule should be decided with consideration for the earth works and concrete works in rainy season. Moreover, the concrete production conducted in the field should be carried out without delay when conducting the weir construction in second dry season, since it requires a lot of concrete.

d) The quality of concrete should be secured through the careful attention on the temperature and working conditions.

e) Security

i) The security management under the construction should be secured to prevent the traffic accident and shock hazard.

ii) The emergency network should be constructed.

f) The documents such as approved plan, working drawing, completion drawing, inspection records, meeting records and progress report should be kept certainly.

The tasks of consultant in terms of construction supervision are as follows.

a) Discussion with people concerned before the Project initiation

b) Approval of shop drawing

c) Supervision of work schedule, quality and security management for the construction works

d) Pre-shipment inspection, progress management for construction works, quality inspection, various examination and final inspection

e) To prepare the progress report during the construction period.

f) To issue the certificate of completion of the construction work and payment

The supervisor will manage the entire construction works through the construction period, while the team leader will witness at the time of initiation and end of construction work. Besides, the local civil engineer will be employed to support the work for the supervisor.

2-2-4-5 Quality Control Plan

The following items in the table shown below will be supervised for the quality management under the construction process. The concrete compression test will be conducted in every concrete placing day and every strength class.

Table 2-36 Quality Management Plan

Type of works	Management items	Method	Frequency
Embankment	Slope gradient, Tightening level	Eyesight, size measurement, particle size distribution, Density examination	Every principle part
Leveling work	Soil quality condition	Eyesight	Every principle part
	Width, Height	Size measurement	Every work field
Wet masonry	Stone, Mortar	Stone size, Mix proportion of sand & cement	
Concrete	Aggregate	Particle size examination	1 time
	Cement	Confirmation of certificate of quality	1time / month
	Concrete	Slamp	every concrete placing day & every strength class
		Compressive strength test（7th、28th）	every concrete placing day & every strength class
Reinforcing bar	Condition of bar arrangement	Bar arrangement inspection	Every part
Formwork, Mine timbering	Installation position, Strength level	Fixed position & method Design calculation	Every part as necessary
Structure quality	Size quality	Size measurement	Every part

2-2-4-6 Procurement Plan

(1) Materials for Construction Works

In general, most of the construction materials except for cement and stones are procured from abroad. The reinforcing bar and gate materials will be procured from Japan, while cement and stone materials

such as sand and gravels will be procured from the area near the Project area. The table below shows the procurement of major construction materials.

Table 2-37 Procurement Division of Major Construction Materials

Name of materials	Supplier			Remarks
	Timor-Leste	Japan	Third Country	
Fine & coarse aggregate	○			
Cement	○			
Reinforcing bar		○		Procurement from Japan is more economical
Embankment material	○			
Stone for the canal	○			
Macadam	○			
Steel scaffolding	○			
Plywood form	○			
Diesel	○			
Gasoline	○			
Gabion			○	Indonesia
Gate material		○		Procurement from Japan is more economical
Sealing strip		○		The materials made in Japan are of higher quality

(2) Main Construction Machine

Backhoe, bulldozer, dump truck and concrete plant will be procured from Japan, since it is more economical. The other construction machines such as the generator and concrete vibrator will be procured through the large-scale construction firm or leasing company. Besides, the crane for the gate installation will be procured in Timor-Leste, since its operation period is only around 2 months.

Table 2-38 Procurement Division of the Construction Machine

Type	Construction machine	Supplier			Remarks
		Timor-Leste	Japan	Third country	
Construction Machine	Backhoe		○		
	Bulldozer		○		
	Dump truck		○		
	Concrete plant		○		
	Concrete mixer truck		○		
	Concrete pump		○		
	Generator	○			
	Tamper	○			
	Concrete vibrator	○			
	Welding machine	○			

(3) Transfer Route

The materials procured in Japan will be transported to Dili port by the chartered ship from Yokohama port or regular liner through Singapore and Jakarta. Construction materials imported from Indonesia are transported to Dili port. The distance is about 80km from Dili port to Buluto Project site. Those materials will be transported by the container truck and heavy-duty truck.

2-2-4-7 Operation Guidance Plan

The basic operation manual (Manufacturer, detailed completion drawing, etc.) of newly-established gate will be submitted to Timor-Leste side by the contractor, while the specific operation and maintenance and management method will be supervised by the consultant as a soft component activity.

2-2-4-8 Soft Component (Technical Assistance) Plan

(1) Background of Soft Component Plan

The Project aims at improvement of agricultural production in the target area by changing the existing traditional irrigation system of small scale to modern irrigation system including intake weir. For the sustainable achievement of the purpose, proper maintenance of irrigation facility and fair and proper water distribution are very important activities. The Ministry of Agriculture and Fisheries Irrigation Water Management Bureau will manage the key facility, and WUA will handle the issues of operation and maintenance of terminal facilities. By implementation of this Project, existing small-scale irrigation schemes are to be integrated into one. Therefore, an existing small-scale irrigation association is to be united and thus makes it possible to manage more systems. By expanding the irrigation scale, more systematic and fair water management is needed to provide irrigation water to entire area properly.

In order to do that, capacity building of organizational management is important by supporting establishment of water users association by the Department of Water Management which is the department responsible for operation and maintenance in the Bureau of Irrigation and Water Management. The supports are to provide technical guidance for operation of new irrigation facilities and to make water management guidelines for making it possible to have proper maintenance. These technical supports will be conducted under soft component of the Project.

(2) Objective of Soft Component

Considering the existing facility maintenance activities and water management and on the assumption that Timor-Leste can continuously keep the activities after the completion of the Project, the soft component of the Project is planned with the objective that the concerned parties acquire the knowledge which is necessary for maintenance and water management of new and improved irrigation facilities.

(3) Output of Soft Component

The output of the objectives is the improvement of water management and maintenance capacity of facilities for concerned parties of Ministry of Agriculture and Fisheries Irrigation Water Management Bureau, Water Management Division, Agricultural Office, and Water Users Association (WUA) which is responsible for maintenance and water management.

(4) Confirmation of Output Achievement

Outcomes and achievements of soft component are to be judged by parameters 1) Checking the records of registration of water association and organization rules in the area, 2) Checking the procedure of making of water management guidelines, and 3) checking the process of acquisition of operation of irrigation facilities maintenance technology based on training record such as implementation of training and guidance or questionnaire survey after the training.

(5) Activities of Soft Component

The table below shows more concrete activities such as supporting the establishment and capacity building of water user association and guidance for water management skill. About activity items 7, after the guidance for operation of equipment and facilities in the gate by the supplier, water management guidelines and the guidance for proper operation and maintenance management according to the guideline of irrigation plan are planned as soft component.

Table 2-39 Activities of Soft Component

Name of supporting program	Target	Activity
Support for establishment of water use association	Beneficiary farmers	**(1) Establishment of water user's association (WUA)** ✓ Explanatory meeting for establishment of WUA ✓ Making list of irrigation beneficiary ✓ Explanation of responsibility of WUA leaders ✓ Consideration of membership ✓ Choosing organization leaders **(2) Formulating organization rules** ✓ Conducting study tour to Lacro irrigation area ✓ Formulation and discussion of WUA organization rules(Plan) ✓ Discussion for conduction and management method of WUA meeting place ✓ Formulation of WUA organization rules **(3) Support for government registration** ✓ Formulation of WUA organization rules ✓ Explanation of procedure of government registration ✓ Support for procedure of government registration ✓ Government registration (Accepting WUA certification)
Conduct of facility/maintenance	Government agents and beneficial farmers	**(4) Formation of water management guidance** ✓ Discussion for irrigation amount and water use fee ✓ Preparation of water management plan (Supply of irrigation water, maintenance of facility and collection of water charge) **(5) Review and improvement of water management guidance** ✓ Review and improvement of water management outline as a result of technical guidance of water management(shown below) ✓ Formulation of water management outline
Guidance for water management	Government agents and beneficial farmers	**(6) Technical guidance of water management** ✓ Conducting study tour to Lacro irrigation area(main theme is water management, to leaders of WUA and operator of the gate.) ✓ Technical explanation of irrigation block ✓ Practical training of water management **(7) Operation of facility, technology transfer of maintenance management** ✓ Practical training of facility operation based on irrigation plan ✓ Technical guidance for facility maintenance

(6) Ways and Means of Resource of Soft Component

It is important to cooperate with the government's technical staffs of Timor-Leste and include them into the Project's activity from the beginning of soft component so that they can subjectively work on the activity continuously even after the Project. Therefore, key people of implementation organization of the soft component are Technical staff of the Ministry of Agriculture and Fisheries

Irrigation Water Management Bureau Water Management Division and the Japanese engineer of consultant support them.

1) Japanese expert: 1 person

The Japanese expert should have experience as a leader of activity or project relating to maintenance of irrigation facilities including water management and organization management. He also must be able to manage the whole soft component work and become leader for the counterpart. The work time schedule in Timor-Leste includes 2 times visit (i.e. for 1.0 month and then 0.7 month), making it 1.7 month in total. He shall carry out the tasks and activities of (1) to (4) of the table shown below in the first travel, and the activities (5) to (7) in the second travel.

2) Counterpart organization for implementation facility: 3 people

The counterparts shall include an irrigation engineer of Department of Irrigation and Water Management (1 person) and irrigation engineer from agricultural office of Manatuto and Baucau District Agriculture Offices (one person for each prefecture). The C/Ps shall be responsible for the activities of water users association and monitoring of the activities of soft component.

(7) Process of Soft Component

At the time when the progress in construction is achieved to some extent, the support for the establishment of water users association should be started. When the construction of main irrigation facilities is finished, guidance on water management should be provided. Meanwhile, support of organization development shall continue. The entire period of assignment is about 12 months.

Table 2-40 Schedule of Soft Component

Month	1	2	...	9	10	11	12	13	14	15	16	17	18	19	20	21	22
Items of support	Construction Period														1st rice cultivation		
(1) Establishment of WUA																	
(2)Formulating organization rules																	
(3) Support for government registration																	
(4) Formation of water management guidance																	
(5) Review and improvement of water management guidance																	
(6) Technical guidance of water management																	
(7) Operation of facility, technology transfer of maintenance																	
Plan of Assignment																	
Japanese expert (1 person)																	
C/P (3 persons)																	

(8) The Deliverables of Soft Component

The deliverables of soft component include preparation of 1) final report on soft component and 2) outline of water management, and submission to the government of Timor-Leste, water users association and JICA.

(9) Responsibility of Timor-Leste side

The rehabilitation of irrigation facilities by this Project is conducted under the agreement between JICA and the Government of Timor-Leste that Timor-Leste should be responsible for the administration & maintenance management of those facilities. Based on this agreement, the following activities should be conducted by Timor-Leste side for the achievement of objective of the soft component mentioned above.

a) To dispatch three C/P staffs including their activity cost.

b) To prepare the office for this Project

c) To conduct the continuous monitoring regarding the organizational management condition of WUA and to implement proper support & additional training for WUA based on the monitoring result.

2-2-4-9 Demonstration Farm

This Project does not include the component of agricultural management and guidance for cropping technology, because the extension officers of MAF have sufficient understanding of rice cultivation techniques. Thus, the agricultural extension officer is expected to propagate the agricultural technology to the farmers effectively at the selected demonstration farms, where the extension officers demonstrate on how to use fertilizers for increasing the paddy production and how to use the agricultural machinery such as farm tractor after the development of the irrigation system.

Figure 2-48 shows the candidate site of the demonstration farm where the reconnaissance survey and interview were made with MAF, land owners, and finally, the farms were selected based on the conditions mentioned below:

- Paddy field with an area of 2 ha and relatively flat land (most of the land is having a sloppy area and need transportation of soil to some extent)
- Land area located near to the road and irrigation canal

The farm is selected because it is close to the main road and proposed irrigation canal. In cases, where the land area is selected for the demonstration farm, these farms are reformed to the size of 20m x 50m approximately so that the tractor can be driven effectively[3]. In the proposed Project, 2 flat lands were selected for the plan of the demonstration farm with a minimum reform by the adjustment of rectangular paddy field dike. The proposed farm is having an approximate field block size of 20m x 50m (0.1ha). In total, 3 field blocks were selected for Laleia and Vamasse as indicated in Figure 2-48. Thus, the total area of demonstration farm is 0.6ha.

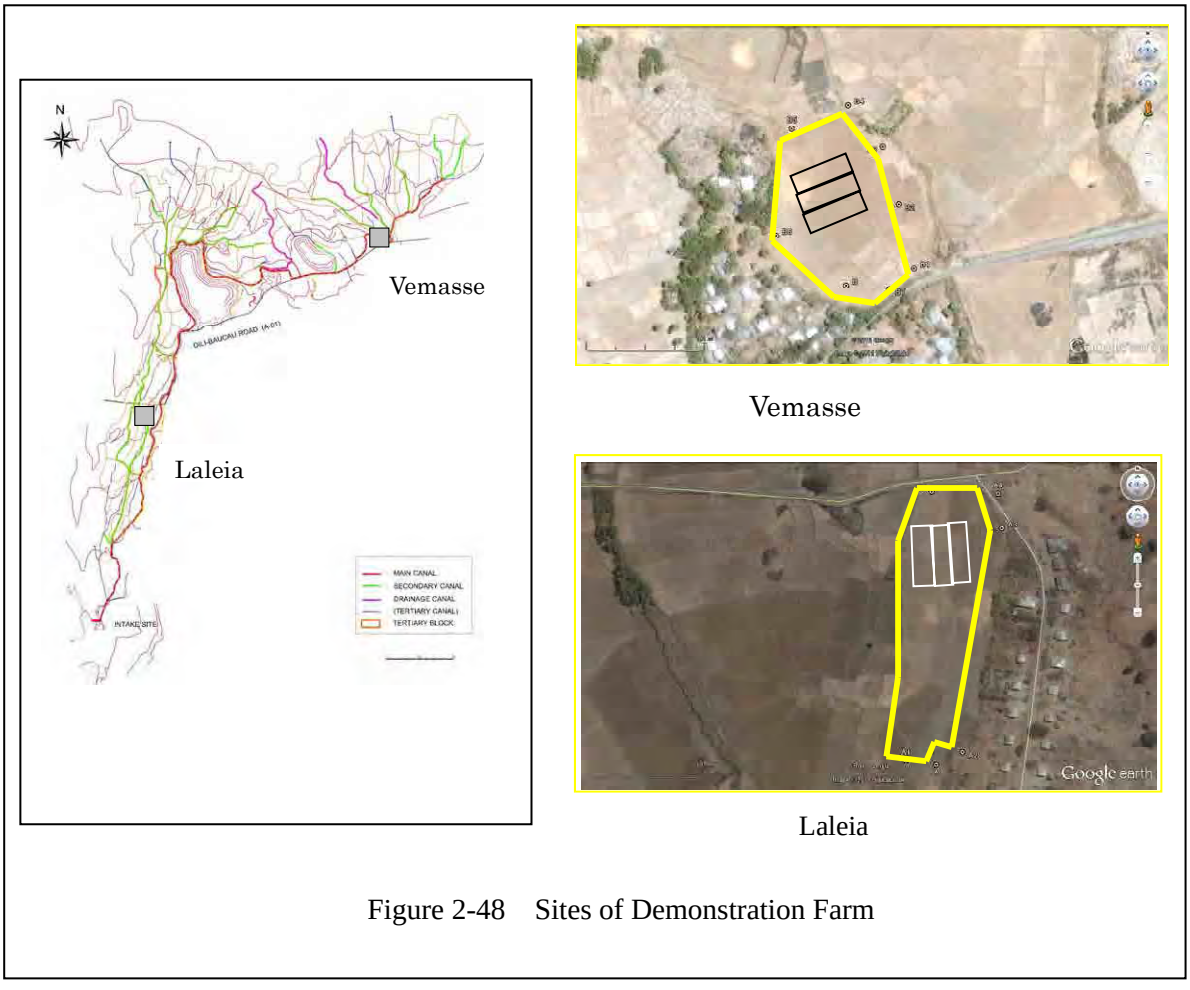


Figure 2-48 Sites of Demonstration Farm

2-2-4-10 Implementation Schedule

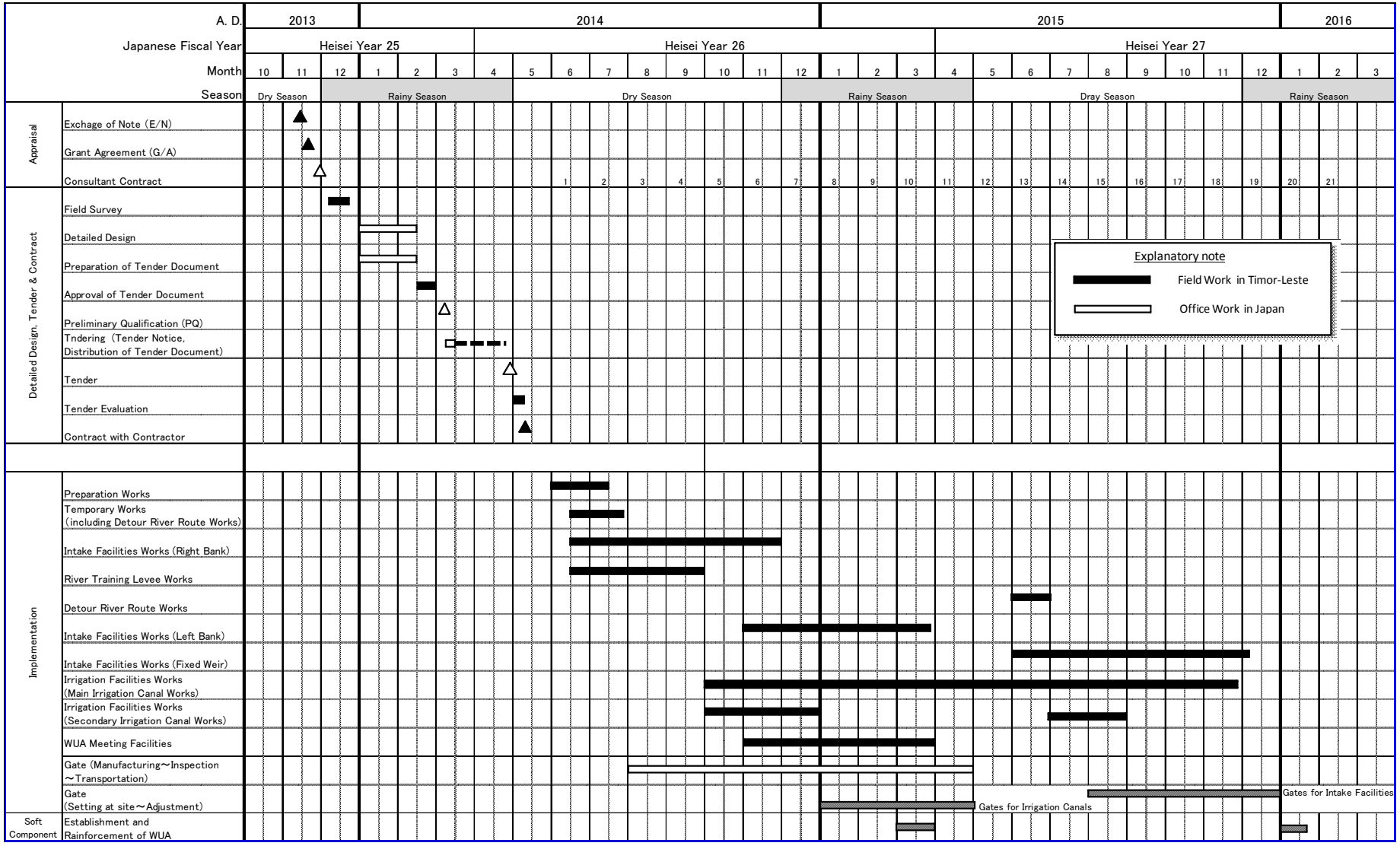
The process of the construction work of this Project is planned based on the method mentioned in the Section "2.1.9 Construction method / procurement method", so that the construction work can efficiently be carried out by taking full advantage of 2 successive dry seasons.

- Detailed design: about 3.0 months

[3] Even in the flat land, there are gentle slope and surrounded by paddy field dike along contour. Thus, land consolidation is required more or less in order to form a rectangular shape through stripping top soil→temporary stock→excavation of base soil→backfilling by top soil from stock pile.

- Bidding/ contract period: about 2.5 months
- Construction work: about 20.0 months (the period includes starting from contract with the contractor to the work completion)

Table 2-42 Schedule for Implementation



2-3 Obligation of Recipient Country

Provided that the proposed Project is implemented by the Japanese Grant Aid system, the outline of the Project components to be borne by Timor-Leste side, which are required for the smooth implementation of the preparatory stage, construction period, and for the smooth operation and maintenance of the constructed facilities and equipment are mentioned below.

2-3-1 Items to be Borne by the Timor-Leste Side on Construction and Procurement

2-3-1-1 General

a) To provide necessary ground space / site for constructing facilities consolidated by this Project as well as for installing machinery, equipment and placing materials used in this Project
b) To bear the required commission fee to the banks concerned based on on-going bank-agreement (B/A) and to issue the Authorization to Pay (A/P)
c) To promptly clear the procedure required for custom clearance etc. of the machinery, equipment and materials to be carried in by this Project
d) To exempt or to bear import taxes, excise duties, inland/ domestic taxes and other levies to be imposed in Timor-Leste in procuring machinery, equipment and materials and in providing personal services by Japanese citizens
e) To provide Japanese citizens who provide services for implementing this Project with necessary conveniences for their entry into Timor-Leste for the purpose of performing the work of the Project as well for their sojourn therein
f) To pertinently and effectively maintain and manage facilities and equipment improved/ rehabilitated by this Project. Besides, to report in reply to the request of Japan, the state of their operation and maintenance conditions to the Japanese side
g) To bear all the necessary expenses that is not included in the agreed Japanese Grant Aid Cooperation
h) To pay proper attention to environment and social consideration in implementing this Project

2-3-1-2 Items t to be Carried Out Before and During the Project Implementation

a) To securely provide the scheduled construction site
b) To provide space or leased land under free of charge for using in the construction work
c) To repair access road to the scheduled construction site and to inform the inhabitants living around the construction sites of the use of roads for construction purpose
d) To provide and clear procedures of obtaining permission to fell trees and collect sand/ pebble and stones from the river as well as to take procedure of exempting royalty of quarry
e) To thoroughly and preliminarily inform about the interruption of irrigation water supply during the construction period to the beneficiary people by the explanation to the inhabitants

etc., and to obtain their understanding/ cooperation to the construction work

f) To complete the extension of electricity feeding cable to the site management office, prior to the initiation of the construction work

g) To obtain permit of construction from the concerned agencies

2-3-1-3 Items to be Borne on the Soft Component

In implementing the soft component, the contents of activities to be carried out by the responsibility of Timor-Leste side are as follows:

a) Provision of three (3) counterpart staff including their expenditure in activities,

b) Provision of office space for the activities and

c) Continuous monitoring on the state of organizational management/ activities of WUAs and provision of pertinent advices and additional training in conformity with the result of monitoring.

2-4 Project Operation Plan

2-4-1 Project Management, Operation and Maintenance (OM/M)

(1) Current Situation of Operation, Maintenance and Management

In the implementation stage of the Project, MAF will assist the beneficiaries to establish WUA for the Buluto irrigation system of 780 ha. Out of the major irrigation facilities, the intake facilities to the main canal are the large structures and need operation under facility management and water management in close cooperation. Therefore, the full-time operator shall be deployed under the governmental level of operation. The Water Users' Associations (WUA) operate and maintain the earthen made secondary canal and downstream to the terminal facilities voluntarily under farmers level. The proposed operation, maintenance and management system can be illustrated as shown the Figure 2-49.

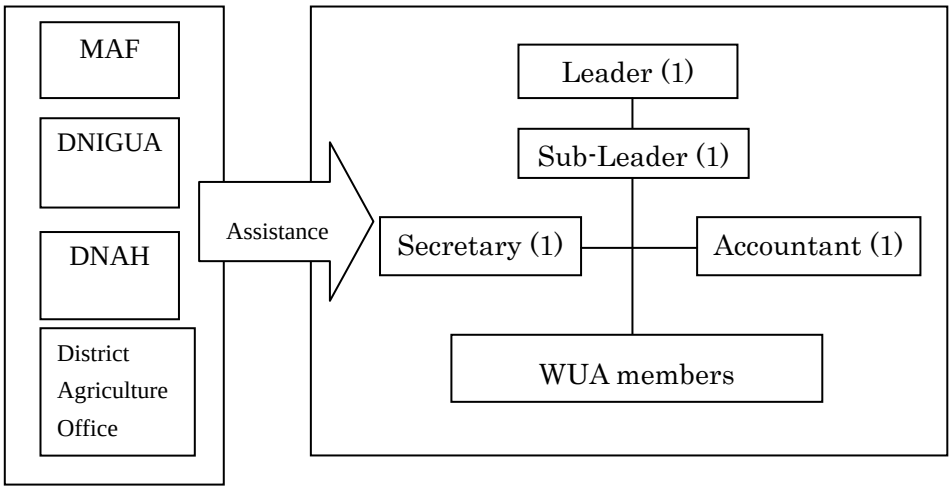


Figure 2-49 Organization Chart of WUA and Supported Organizations

2-4-2 Operation, Maintenance and Management Plan

In parallel with the construction of the head woks, the paddy field area of 780 ha which extends over the Sub-Districts of Laleia and Vemasse irrigated by Laleia river is integrated into one system by installation of the new weir, extension of main canal, etc. In order to effectively use this permanent irrigation system which will be newly constructed and improved, the implementation of soft component is planned to include trainings on the new rules of water management and water distribution.

The following procedural method is proposed to operate, maintain and manage the facilities that are newly constructed or rehabilitated by this Project.

a) To acquire basic knowledge for maintaining function and capacity of the facilities,
b) To regularly report state of routine management, and to provide minutes of reporting,
c) To master the method of proper gate operation to secure relevant water distribution,
d) To perform circular inspection and preventive conservation,
e) To collect, manage and keep information on irrigation facilities,
f) To formulate an annual O/M activity plan and to maintain monitoring/ feedback and
g) To provide a manual on O/M for the irrigation facilities.

The items and contents of the inspection consisting of routine and regular inspection are proposed in the following table.

Table 2-43 Items and Contents of Routine and Periodical Inspection

Item	Contents	Person in charge	Frequency
Routine inspection	- Unusual state of the structures of the facility (deformation, subsidence, change in color, unusual sound, unfamiliar odor etc.), - Whether abnormality found in the function of facilities to maintain water conveyance or water level or not, - Whether influence of irrigation or facility installation takes place in the ambient environment or not, - Whether complaints have been received from water users or the inhabitants living around the facilities or not, - to provide and keep records of routine inspection and O/M work and - to manage O/M cost in good order.	In charge of OM/M	Once per week
Periodical Inspection	- Whether water distribution/ allocation is adequately performed or not, - Whether beneficiary farmers are satisfied with irrigation services or not, - Whether routine inspection and recording of maintenance activities are performed or not, - Whether O/M cost is managed in good order or not and - to elaborate preventive conservation measures (stock management)	In charge of water management	Twice a year

2-5 Project Cost Estimation

2-5-1 Initial Cost Estimation

(1) Project Cost to be Borne by the Japanese Government

The Project cost shall be undisclosed until verification of the contractors for the construction work and procurement by the Japanese Government.

(2) Project Cost Borne by Timor-Leste

Table 2-44 Estimated Cost Borne by the Government of Timor-Leste

Accounting item	Cost	
1. Bank's handling charge for B/A and A/P	19,200 US$	
2. Miscellaneous	2,884,000 US$	
Total	2,903,200 US$	233 Million J. Yen

(3) Conditions for estimating the cost

a) Time of the estimation: December, 2012
b) Foreign currency exchange rates: 1US$＝80.38yen
c) Period of construction /procurement: The period of detailed design and the construction period is shown in the process of implementation.
d) Others: The cost estimation is made in accordance with the system of Grant Aid Cooperation of Japanese Government.

2-5-2 Operation and Maintenance Cost

The budget necessary for operation, maintenance and management is planned to be borne by irrigation service fee paid by the members of WUA and subsidy of the government. The operation, maintenance and management of the major facilities such as intake weir, intake gate, sediment trap, main canal are judged to be difficult for WUA to manage and maintain considering the scale, significance and high management level of the facilities. Therefore, these facilities are managed by the government, and WUAs manage and maintain secondary canal down to the terminal facilities. Based on the establishment of WUA, the ISF to be borne by WUA is determined. However, these collected ISF will be used for management of the facilities from secondary canal down to the terminal facilities. The OMM cost can be divided by the government portion subsidized by the government, and WUA portion borne by the collected ISF calculated as tabulated below:

Table 2-45 Expected Cost of Operation and Maintenance

Contents	Cost for operation and maintenance (US$/year)				Remarks
	Government contribution		WUA Contribution		
	1 to 5 years	After 6years	1 to 5 years	After 6years	
A. Perquisite for leader of WUA	—	—	3,600	3,600	for 3 persons WUA responsibility
B. Manager of intake gate	3,600	3,600	—	—	for 3 persons Supported by government
C. Management for secondary canal	—	—	—	—	Managed by farmers
D. Maintenance cost for intake gate	904	1,625	—	—	Supported by government : Oil filling, Paint, switch a gum for water tight
E. Maintenance cost for distribution structure gate and check gate (44 sites)	1,600	3,119	—	—	ditto
F. Repairing cost for facilities (Main canal, river protection , drainage canal)	11,301	22,745	—	—	Supported by government
G. O/M (routine work) (remove sedimentation and weeds)	—	—	8,660	8,660	WUA responsibility
H.WUA activity costs (meeting, fuel, etc.)	—	—	1,200	1,200	WUA responsibility
O&M cost Total (Thousand US$／year)	17	31	13	13	
O&M cost / ha (US$／ha／year)	22	40	17	17	A=780ha
O&M total cost (Government contribution + WUA contribution) (US$／ha／year)	1 ~ 5 years ：30 thousand US$（＝39 US$／ha／year） after 6 years：44thousand US$（＝57 US$／ha／year）				

CHAPTER 3 PROJECT EVALUATION

CHAPTER 3 PROJECT EVALUATION

3-1 Preconditions

(1) Secure of Approval of Initial Environmental Examination (IEE)

It is needed to submit the application form of the Project to MCIE and take an approval as per "Decree-Law No. 5/201 9.2.2011" the legislation in RDTL to implement the Project likely to the impact to environment.

In this Project, the form has already been submitted to MCIE and the Project is placed under Category B. Currently, IEE and EMP have been submitted and the environmental license will be issued approval before the commencement of the Project.

(2) Land Acquisition and Permission of Construction

After the public meeting about land acquisition held between October 2012 and December 2012, the consultants made list of land owners who has the land around or along the proposed facilities. Bureau director of DNIGUA had secured the signatures from the land owners as form of approval. The signature for approval has been collected from all related land owners. These land owners sighed at their own initiative to provide the lands.

The land owners list with their signature for land acquisition is submitted to JICA office, attached with the caver letter written by Director General of MAF 24th July 2013.

(3) Customs and Tax Exemption

As the project is a grant aid project, customs, taxes and other financial surcharge for this Project will be exempted.

However, RDTL does not have a provision of tax exemption in any ordinance. Therefore, MOF will include the budget for exempted tax as "Financial Contribution", and manage in an integrated treatment. The contents are confirmed by the minuets signed by Deputy Minister of MOF, Minister of MAF and Chief Representative of JICA RDTL office on 27th August 2013.

3-2 Necessary Inputs to be Provided by Recipient Country

Prerequisite of the above three preconditions has to be achieved by the recipient country. The Project management group set in DNIGUA will manage the operation of the contract, environmental monitoring, etc.

The operation of the soft component needs to be participated from related organization, and office to be based on the activities for soft component has to be provided.

Furthermore, the activity of demonstration farm includes the implementation a comprehensive technical guidance of ICM and on-farm water management technology. Such technical extension

will bring about increase of the rice production.

3-3 Important Assumption

The important assumption in order to make the Project effective and sustainable shall be as follows.

- There will be no occurrences of severe drought and/or flood for a long period in the Laleia river.
- Operation and maintenance of the facilities will be done regularly to keep the function of intake
- The activities of agricultural extensions are to be conducted in the irrigable area.
- There will be no significant change of agriculture policy and irrigation policy in RDTL

3-4 Project Evaluation

3-4-1 Relevance

The relevance for the Project implementation under the grant aid scheme by the Government of Japan is confirmed from the following viewpoints.

(1) Coordination with the Development Plan of the Country

The goals of agriculture sector stated in the SDP (2011 to 2030) are improvement of food security, reduction of rural poverty, support to process of shift from subsistence agriculture to marketing agriculture about agricultural crops and livestock, fisheries, environmental persistence enhancement and natural resources protection. The related points with the Project are as follows.

- 2011 to 2015: Increase in the rice production from 37,500 tons to 61,262 tons
- 2016 to 2020: Exceed the demand over the food supply
  Increase in Irrigable paddy field from 50,000 ha to 70,000ha
- 2021-2030: Decrease in on-farm rice storage loss from 20% to 5%

These contents attributes for increase in the rice production. In this context, this irrigation project harmonizes with the agricultural development policy.

(2) Relationship of Japanese Grant Aid Scheme and Policy

GOJ has cooperated RDTL under the notion as “Establishing the foundation for the economic growth from the instauration”. Thus the important subjects are “establishing the foundation for the economic growth”, “agricultural and rural development” and “capacity building of public sector and government”. In the field of “agricultural and rural development”, GOJ puts priority of cooperation on improvement of productivity and food security and promotion of agribusiness for promotion of employment, poverty reduction and food security. As the Project harmonizes with this policy, the relevance of the Project is judged as high.

3-4-2 Effectiveness

The expected impacts of the implementation of the Project are as follows.

(1) Quantitative Effects

The expected impacts of the implementation of the Project are as follows.

Table 3-1 Indicator for the Quantitative Impact

Items	Descriptions	Baseline (2012)	Target (2018) 3years after completion
Yield of Rice (ton/ha)	Throughout the Year	1.87	2.50
Planted Area (ha)	Rainy Season	473	540
	Dry Season	61	270
Irrigable Area (ha)	Rainy Season	331	540
	Dry Season	61	270

(2) Qualitative Impact

- Livelihood of farmers can be improved, as the production of rice is increased.
- The productivity of rice will be improved, as labor work of for repairing the earth canal is reduced and increased to the work for cultivation after the lining of the main canal.
- Trafficability and accessibility of vehicles and the agricultural machinery like a tractor will be improved, as maintenance road along with to the canals is constructed.

APPENDICES

Appendices 1 Member List of the Study Team

(1) Field Survey 1

Job Title	Name / Position
Leader	**Mr. Kenichiro KOBAYASHI** Director Paddy Based Farming Area Division 1 Rural Development Department, JICA HQs
Planning/Analysis	**Mr. Makoto YAMANE** Adviser Paddy Based Farming Area Division 1 Rural Development Department, JICA HQs
Consultants leader / Planning for irrigation and drainage / Operation and maintenance	**Mr. Ryosuke SHAKANASHI** Project Manager Engineering Department NTC International Co, Ltd.
Facility design I / Natural condition survey (soil , topographic survey)	**Mr. Takahiro KATO** Managing Executive Officer Engineering Department NTC International Co, Ltd.
Facility design II / Constructing planning / Cost estimate	**Mr. Motoo TAKI** Senior Engineer Engineering Department NTC Consultant Co, Ltd.
Hydrology, river engineering / Natural condition survey (hydro-meteorology)	**Mr. Katsuhiko KOMATSU** Engineer Engineering Department SUNCOH Consultant Co, Ltd.
Farm management / Farmer's organization	**Mr. Keiichiro KOBAYASHI** Deputy General Manager Engineering Department NTC International Co, Ltd.
Enviromental and social consideration	**Mr. Mitsuo NISHIYA** General Manager Engineering Department NTC International Co, Ltd.
Coordinator / Assistant to natural condition survey	**Mr.Tomoaki KOYAMA** Engineer Engineering Department NTC International Co, Ltd.

(2)Field Survey 2

Job Title	Name / Position
Leader	**Mr. Makoto YAMANE** Adviser Paddy Based Farming Area Division 1 Rural Development Department, JICA HQs
Consultants leader / Planning for irrigation and drainage / Operation and maintenance	**Mr. Ryosuke SHAKANASHI** Project Manager Engineering Department NTC International Co, Ltd.
Facility design I / Natural condition survey (soil , topographic survey)	**Mr. Takahiro KATO** Managing Executive Officer Engineering Department NTC International Co, Ltd.
Farm management / Farmer's organization	**Mr. Keiichiro KOBAYASHI** Deputy General Manager Engineering Department NTC International Co, Ltd.

Appendices 2 Study Schedule

(1) Field Survey 1 (JICA Team)

Name		Kenichiro Kobayashi	Makoto Yamane
Specialty		Leader	Planning/Analysis
Nov.3	Sat	Haneda-Singapore-Dili, Meeting with Consultant	
Nov.4	Sun	Confirm the site states	
Nov.5	Mon	Meeting with MAF	
Nov.6	Tue	Meeting with MAF	
Nov.7	Wed	Reporting for JICA and embassy	
Nov.8	Thu	(Survey for another project)	
Nov.9	Fri	(Survey for another project)	
Nov.10	Sat	Arr. Singapore	（Survey for another project）
Nov.11	Sun	Arr. Haneda	
Nov.12	Mon		
Nov.13	Tue		
Nov.14	Wed		
Nov.15	Thu		Arr. Singapore
Nov.16	Fri		Arr. Haneda

(2) Field Survey 1 (Consultants)

Name		Ryosuke Sakanashi	Takahiro Kato	Motoo Taki	Katsuhiko Komatsu	Keiichiro Kobayashi	Mitsuo Nishiya	Tomoaki Koyama
Specialty		Consultant Leader	Facility design I / Natural Condition survey (Soil, Topographic survey)	Facility design II / Constructing planning/ Cost estimate	Hydrology, River engineering / Natural Condition survey(Hydro-meteorology)	Farm management /Farmer's Organization	Environmental and Social consideration	Coordinator / Assistant to natural condition survey
Oct.29	Mon	Haneda－Singapore－Dili						Haneda－Singapore－Dili
Oct.30	Tue	Meeting with JICA						Meeting with JICA
Oct.31	Wed	Meeting with MAF						Meeting with MAF
Nov.1	Thu	Buluto Confirm the site states					Haneda-Singapore -Dili	Preparation of study
Nov.2	Fri	Mariana Irrigation Area	subcontracting agreement	Mariana Irrigation Area			Mariana Irrigation Area	
Nov.3	Sat	Meeting with JICA	Buluto Confirm the site states				Buluto Confirm the site states	
Nov.4	Sun	Meeting with MAF		Site Investigation			Site Investigation	
Nov.5	Mon	Meeting with MAF		Set the peg for land use survey			Set the peg for land use survey	Set the peg for land use survey

Nov.6	Tue	Meeting with MAF		Set the peg for land use survey	Hydro-meteorology survey		Stakeholder meeting with Baucau office	
Nov.7	Wed	Reporting for JICA and embassy						
Nov.8	Thu	Set the peg for land use survey	Facility design				Environmental and social consideration survey	
Nov.9	Fri							
Nov.10	Sat	Environmental and social consideration survey		Site Investigation			Environmental and social consideration survey	Environmental and social consideration survey
Nov.11	Sun	Collected Data Analysis	Bequeque site survey	Collected Data Analysis	Collected Data Analysis		Collected Data Analysis	Bequeque site survey
Nov.12	Mon		Collected Data Analysis					Collected Data Analysis
Nov.13	Tue	Survey for facility management and irrigation water management	Site investigation Soil condition survey		Hydro-meteorology survey			
Nov.14	Wed						Arrangement Public Meeting	Arrangement Public Meeting
Nov.15	Thu							
Nov.16	Fri	Public Meeting (Laleia、Vemasse)					Public Meeting (Laleia、Vemasse)	
Nov.17	Sat	Collect the Data and Information					Collect the Data and Information	
Nov.18	Sun	Collect the Data and Information					Collect the Data and Information	
Nov.19	Mon	Relevant organizations consultation Collect Data					Relevant organizations consultation Collect Data	
Nov.20	Tue	Decision the irrigation plan Manage the topographic survey Capture the irrigable area by GPS Decision the irrigation canal route Interview the owner of the site	Natural Condition (Soil foundation, flood condition) Design the standard section Confirm the area damaged from the flood of Laleia river and Vemasse river.		Hydro-Meteorology survey Manage the Hydro survey design the irrigation water level		Landowner survey	Landowner survey along the canal routes Report the landowner list
Nov.21	Wed						Environmental and social consideration survey	
Nov.22	Thu					Arr. Singapore		
Nov.23	Fri					Arr. Baucau		
Nov.24	Sat					Agriculture survey		
Nov.25	Sun	Report Writing						
Nov.26	Mon	Decision the irrigation plan Manage the topographic survey Capture the irrigable area by GPS Decision the irrigation canal route Interview the owner of the site	Natural Condition (Soil foundation, flood condition) Design the standard section Confirm the area damaged from the flood of Laleia river and Vemasse river.		Hydro-Meteorology survey Manage the Hydro survey design the irrigation water level	Agricultural survey Hearing for farmers about agricultural equipment and tools Confirm the preset condition of marketing	Social condition survey	Landowner survey along the canal routes Report the landowner list
Nov.27	Tue						Report writing	
Nov.28	Wed						Report writing	
Nov.29	Thu						Reporting for JICA Arr. Singapore	
Nov.30	Fri						Arr.Haneda	
Dec.1	Sat	Decision the irrigation plan	Natural condition survey Facility design		Hydro-meteorology survey	Agricultural survey		Landowner survey

Dec.2	Sun	Manage the topographic survey Capture the irrigable area by GPS Decision the irrigation canal route Interview the owner of the site	Natuiral Condition (Soil foundation, flood condition) Design the standard section Confirm the area damaged from the flood of Laleia river and Vemasse river.	Arr. Dili		Hearing for farmers about agricultural equipment and tools Confirm the presect condition of marketing		along the canal routes Report the landowner list
Dec.3	Mon			Reporting for JICA				
Dec.4	Tue			Arr. Singapore				
Dec.5	Wed			Arr. Haneda				
Dec.6	Thu							
Dec.7	Fri							
Dec.8	Sat	Collect the Data				Collect the Data		Collect the Data
Dec.9	Sun							
Dec.10	Mon	Survey for facility management and irrigation water management	Natural condition survey Facility design			Collect the Data and information about agriculture in Dili Discuss with the related agency of agriculture		Timber survey around the site proposed construction
Dec.11	Tue							
Dec.12	Wed							
Dec.13	Thu	Collected Data Analysis						Collected Data Analysis
Dec.14	Fri	Site Investigation						Site Investigation
Dec.15	Sat	Reporting Writing				Reporting Writing		Reporting Writing
Dec.16	Sun							
Dec.17	Mon	Reporting for JICA office, MAF				Reporting for JICA office, MAF		Reporting for JICA office, MAF
Dec.18	Tue	Arr. Singapore				Arr. Singapore		Arr. Singapore
Dec.19	Wed	Arr. Haneda				Arr. Haneda		Arr. Haneda

(3)Field survey 2

Team		JICA	Consultant		
Name		Makoto Yamane	Ryosuke Sakanshi	Takahiro Kato	Keiichiro Kobayashi
Specialty		Leader	Consultant Leader	Facility design I / Natural Condition survey (Soil, Topographic survey)	Farm management /Farmer's Organization
Jun.29	Sat		Haneda－Singapore -Dili		
Jun.30	Sun	Haneda-Bali-Dili Team meeting	Make a document for the meeting Team Meeting		
Jul.1	Mon	Courtesy visit to the Minister and Deputy minister of MAF Meeting with MAF, JICA			
Jul.2	Tue	Meeting with JICA expert, Meeting with MAF, Discussion with Department of Finance, Meeting with MOP			
Jul.3	Wed	Visit to Laleia Briefing session in Buluto inspect IRCP2	Visit to Laleia, Briefing session in Laleia, Site investigation, Back to Dili		
Jul.4	Thu	Attended the harvest festival IRCP2 Discussion with Department of Finance	Reporting for MAF about the Draft report, Discussion with Department of Finance,		
Jul.5	Fri	Discussion M/D signature Reporting for JICA Reporting for Embassy	Meeting with MAF（Land acquisition, Regulation for gravel extraction）, Reporting for JICA, Site investigation（Kato）、Reporting for embassy（Sakanashi）		
Jul.6	Sat	Dili- Denpasar	Collected Data Analysis		
Jul.7	Sun	Denpasar -Narita	Collect Data and Analysis, Make the documentation for meeting with MOP		
Jul.8	Mon		Meeting with MAF（National Road, Regulation for gravel extraction） Meeting with JICA、Meeting with MOP		
Jul.9	Tue		Meeting with MAF Dili－Singapore－		
Jul.10	Wed		Arr. Haneda		

Appendices 3 List of Parties Concerned in the Recipient Country

(1) Japanese Parties Concerned in the Recipient Country

TAKATA Hirohiko	JICA Timor - Leste Office Chief Representative
DAIKO Hideto	JICA Timor - Leste Office Project Formulation Adviser
YAMAUCHI Yoichi	MAF, Agriculture Promotion Adviser
FURUDONO Seigo	Chief Adviser / Irrigation and Water Management, IRCP II (Until Nov.2012)
HOSHI Ryosuke	Chief Adviser / Irrigation and Water Management, IRCP II (From Nov.2012)
KAWATA Akihiro	Coordinator / Instruction, IRCP II
ADACHI Kumiko	Short term Experts (Participatory Rural Deveropment), IRCP II

(2) East Timorese Parties Concerned in the Recipient Country

【Ministry of Agriculture and Fisheries (MAF)】

Mariano Asanami Sabino	Minister
Marcos da Cruz	Vice Minister
Lourenco Borges Fontes	Director General
Martinho L. Soares	National Director, Irrigation and Water Management
Octavio da C.M. de Almeida	National Director, Policy and Planning
Gil Rangel da Cruz	National Director, Agriculture and Horticulture
Agostinoho Menezes	Chief of Irrigation Department for Infrastructure
Florindo Barreto	Chief of Irrigation Technology Department
Dinis Pereira	Chief of Planning & Finances Department
Francisco Gosmao	Chief of Protection & River Normalization Department
Vicente Guterres	Chief of Operation & Maintenance of Irrigation Facilities Dept.
Deolindo de Oliveira	Director, Manatuto District Agriculture Office
Francisco Antonio	Irrigation Section Officer, Manatuto District Agriculture Office
Nivio Satunnino Lopes	Irrigation Section Staff, Manatuto District Agriculture Office
Abel Soares De Caryaiho	Irrigation Section Staff, Manatuto District Agriculture Office
Marcelo	Agriculture Staff, Manatuto District Agriculture Office
Antonio de Sousacortia	Extension Staff, Manatuto District Agriculture Office
Bonuifacio De Fatima	Extension （Coordinator）, Vemasse Sub District
Sebastiao Jos Santos Belo	Extension Stuff, Watolari , Vemasse Sub District

Americo Soares	Extension Stuff, Vemasse Sub District
Amaro Ximenes	Director, Baucau District Agriculture Office
Luciano Perreira	Irrigation Section Officer, Baucau District Agriculture Office
Antonio Jose Lopez	Crop Production Officer, Baucau District Agriculture Office
Agostinho F Xaview	Chief Technical of Baucau District Agriculture Office
Vasco Simoes	Chief Extension of Baucau District Agriculture Office
Bonifacio da Costa Fraitas	Extension Officer, Suco Vemasse, Baucau Dist. Agri. Office

【Ministry of Finance】

Jose Antonio Fatima Abilio	Director of Aid Effectiveness
Arlindo da Cruz Monteiro	AIMS Manager
Cancio De Oliveira	Head of DPMU
Takeshi Ken WATANABE	Advisor
Maxime Damphousse	Legal Advisor

【Ministry of Public Works】

Odete Genoveva V. Da Costa	Project Management Unit
Frederick G. Santos	Chief Technical Advisor

【Ministry of State Administration】

Basildo Ximenes	Administrator, Laleia Sub District, Manatuto District
Cosme Ximenes	Deputy Administrator, Laleia Sub District, Manatuto District
Thomas F. D. E. Fraitas	Administrator, Vemasse Sub District, Baucau District
Sebastiao F. De. A Correia	Deputy Administrator, Vemasse Sub District, Baucau District
Carlos Fraitas	Suco Leader of Vemasse
Jorge Coreia	Suco Leader of Vemasse
Gaspan Jdef Costa	Suco Leader of Lareia

【Ministry of Commerce, Industry and Environment】

Joao Carlos	Director, National Directorate for Environment
Francisco Poto	National Directorate of Environment, Head of Department of EIA
Janurario Perera	Environment Department of Baucau District

Kanji USUI	Advisor for Environmental Impact Assessment

(3) Donors/ Others

Carlos Fraitas	Suco Leader of Vemasse
Jorge Coreia	Suco Leader of Vemasse
Gaspan Jdef Costa	Suco Leader of Lareia
Heinz-Josef Heile	Principal Advisor, GIZ
John B Dalton	Austlaian Team Leader, Seed of Life
Ruben Famarique Urdin	MDGF & COMPASIS Project Manager, FAO
Paula Lopes da Cruz	FAO Assistant Representative for Timor - Leste and Officer-in-Charge, FAO
Marrie-Ann Merza	Chief Technical Advisor for the MAF, National Information and Early Warning System (NIEWS) on Food Security, FAO