

Ministry of Works, Transport and Communication (MOWTC)

Tanzania Port Authority (TPA)

United Republic of Tanzania

THE ADDITIONAL PREPARATORY SURVEY REPORT
ON
THE PROJECT FOR REHABILITATION OF KIGOMA PORT
IN
THE UNITED REPUBLIC OF TANZANIA

AUGUST 2018

JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)

ECOH CORPORATION

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PREFACE

Japan International Cooperation Agency (JICA) decided to conduct THE ADDITIONAL PREPARATORY SURVEY ON THE PROJECT FOR REHABILITATION OF KIGOMA PORT IN THE UNITED REPUBLIC OF TANZANIA and entrust the survey to ECOH CORPORATION.

The survey team held a series of discussions with the officials concerned of the Government of United Republic of Tanzania from September 25 to October 20, 2017, and conducted a field investigation at the project site. As a result of further studies in Japan, the present report was finalized.

I hope that this report will contribute to the promotion of the project and to the enhancement of friendly relations between our two countries.

Finally, I wish to express my sincere appreciation to the officials concerned of the Government of Tanzania for their close cooperation extended to the survey team.

August, 2018

Itsu ADACHI
Director General
Infrastructure and Peacebuilding Department
Japan International Cooperation Agency

Summary

SUMMARY

(1) Country Brief

The United Republic of Tanzania (hereunder called Tanzania) is located in East Africa between 1 to 12 degrees south latitude and shares common borders with 8 countries which are Kenya, Uganda, Rwanda, Burundi, Democratic Republic of the Congo, Zambia, Malawi and Mozambique. The land area is 945,000 km² (land: 886,000km² and inland water: 62,000km²) and it is about 2.5 times the size of Japan. About 40% of the land is forest, other areas are savanna or open forest except for urban areas. Lake Victoria, Lake Tanganyika and Lake Nyasa (Lake Malawi), which are the three largest lakes in Africa, are located along the border from the northwest to the southwest. Weather conditions are hot and humid tropical climate in a coastal zone, temperate dry climate in the mountains and dry in the plateau area. Tanzania is a united republican nation established by the merger of the mainland, Tanganyika and the island of Zanzibar.

The population in 2016 was 55.57 million which consisted of approx. 130 tribes like Sukuma, Makonde, Chagga and Haya. The main language is Kiswahili which is widely spoken as well as each tribal language. Concerning religion, Islam and Christianity are about 40 % each and traditional religions are about 20%.

Concerning the economy, the GDP growth rate of Tanzania in 2014 attained 7.0 % even under the influence of a world financial market and economic crisis. GNI per capita has smoothly transitioned from \$530 in 2010 to \$920 in 2014. However, about 50 to 60 % of the total population lives in poverty on less than US\$1/day. The economy depends on agriculture which represents more than half of GDP, 80 % for export and 85 % of employment. The tourist industry continues to progress by a wide variety of resources such as safaris in the Ngorongoro conservation district, national parks like the Serengeti, climbing Mt. Kilimanjaro and the historic heritage of Zanzibar Island.

Total export amount shows an increasing tendency but the total import amount is bigger and the international deficit has continued to suffer.

(2) Background and Summary of the Project

As a gateway to East Africa, Tanzania has become an important hub for transportation routes to inland countries. Tanzania aims to proceed with corridor development for efficiency in international transportation picking up 4 important corridors which are Dar es Salaam Corridor, Central Corridor, Mtwara Corridor and Cairo-Gaborone Corridor in the “Transport Sector Investment Program (TSIP).” Out of these international corridors, the Central Corridor connecting Kigoma Port and Dar es Salaam through railways and roads and expanding to Burundi, Republic of the Congo and Zambia across Lake Tanganyika takes on important roles for national security not only for Tanzania but also with neighboring countries as an import and export route for goods such as daily commodities and natural resources.

Kigoma Port located on the east coast of Lake Tanganyika has grown in importance as a transportation base for the import and export of copper, coffee, food, petroleum products and others. As well as being a strategic station, it fulfills a function as a base of humanitarian support for the Republic

of the Congo. However, the port facilities of Kigoma Port have deteriorated and the necessity and urgency of their rehabilitation are pointed out when considering future increases in the handling of cargoes in the TSIP. Due to these situations, the Government of Tanzania has requested a “Rehabilitation Plan for Kigoma Port” including a passenger wharf, construction of a passenger terminal building, construction of a cargo warehouse, and the pavement of an access road (hereinafter called “the Project”) to the Government of Japan in March 2010.

Considering the above circumstance, Japan executed the “Data Collection Survey on Transport and Trade around Kigoma Port” (hereinafter called “previous preparatory survey” from October 2011 to August 2012 and the survey was completed confirming the relevancy for the rehabilitation of the passenger wharf. Since then the implementation of the main project has been extended, and a F/S executed on the rehabilitation of the cargo wharf at Kigoma Port by the Tanzanian Government and the recommencement of this project with an additional survey for a cargo wharf rehabilitation project were requested in December 2016. With these circumstances, using the design and relevancy of the previous preparatory survey will allow this project to make the most appropriate plan.

(3) Summary of Study and Components of the Project

The Government of Japan decided to conduct the preparatory survey upon the request of the Government of Tanzania and dispatched the study team as follows,

Field Survey	: September 23 to October 22, 2017
Explanation survey of Draft Report	: June 19 to June 30, 2018

The Project aims to draw up the rehabilitation plan of the passenger wharf at Kigoma Port for the re-survey and additional request. Natural conditions surveys and environmental related surveys were made as well as surveying the present situation at Kigoma Port including the cargo wharf being the objective for the additional request in addition to the passenger wharf. As a result, the urgency of the rehabilitation on the passenger wharf was considered to be high for improving safety and efficiency of the wharf since the facilities at the passenger wharf are very poor and remarkably deteriorated.

Project components in the previous survey, in addition to the 4 items requested, beacons to support safe navigation of ships and lighting facility corresponding to the SOLAS convention for safety of life at sea have been additionally requested.

- Rehabilitation of Passenger Wharf
- Construction of Passenger Terminal Building
- Construction of Cargo Warehouse
- Access Road Pavement
- Beacon and Lighting facility

In this survey, items concerning the passenger wharf, cargo wharf and cargo handling machines

were additionally requested. Out of these, the following 2 items have been included in the plan.

- New construction of a General Cargo Warehouse
- Canopy to be added on to the Passenger Terminal Building

The survey results and the content of each component are as shown below.

1) Rehabilitation of the Passenger Wharf

The rehabilitation plan of the passenger wharf was drawn up so as to solve the problems of the existing facilities based on the functions required for berthing facility, land facilities, passenger waiting facility and flow lines of passengers and cargoes. The wharf plan was drawn up based on the size of ships like the MV Liemba that used Kigoma Port as her mother port and other ships servicing the Lake Tanganyika area. As a result, it planned for 2 berths in the main east berth with a length of 130 m and -5.0 m water depth. 50m of wharf width was secured as a necessary width to handle cargoes from passenger ships effectively. Furthermore, the north berth was planned as to not be dredged due to consideration of the natural environment, but it is planned as a mooring facility for small boats. As additional facilities, beacon and lighting facilities that were requested are installed.

The structural plan of the wharf facility adopted a sheet pile wharf structure considering the water environment, economic performance and safety. And, the design accommodates a future drawdown since the long term lowering of water levels in Lake Tanganyika is anticipated.

2) Construction of Passenger Terminal Building

The Passenger Terminal Building was planned based on the number of passenger as 500 from the complement of passengers on the MV Liemba as 600 now on service as the main passenger ship and the result of the field survey. The project facilities were separated as administration and service zone, passenger waiting zone and weighing and storage zone so as to be able to create flow lines of passengers and cargoes more effectively as well as necessary functions and proper size facilities allocation were made for each zone. The allocated CIQ facility comprising of immigration, customs, quarantine, ticket booth, ticket gate and security office, administration office, toilets, kiosk, etc. in the administration and service zone. The passenger waiting room for common passengers and VIP lounge were allocated in the passenger waiting zone. Weighing and storage zone is the facility to handle cargoes from/to passenger ship and consisted of scale space, cashier box, cargo storage, etc.

As a result of the additional survey on the waiting passenger situation, it found that passengers cannot enter the waiting facility until the ticket gate opens and have to wait at the square in front of the wharf since the entering system to the port is different from the time of the preparatory survey. Therefore, a canopy will be installed as the passage for CIQ inspection and for the convenience of passengers waiting outside.

Passenger Terminal Building is a flat building with steel beams and the foundation, floor slab

and columns are of concrete structures and the total floor area is 1,200 m² (54m x 24m). The canopy is installed at the entrance of passenger terminal building providing accommodation for 250 people with a total floor area of 324 m² (12 m x 27 m).

3) Construction of Cargo Warehouse

In consideration of the present utilization situation of the passenger wharf, the necessity of a large scaled cargo warehouse as requested is low and storage for luggage and cargoes to be carried on before departure, lost items, etc. shall be allocated in the above Passenger Terminal Building.

4) Pavement of Access Road

The access road to the passenger terminal is not paved in spite of the many passing vehicles for passengers and heavy trucks for cargo transportation. In addition, no pavement is at the open space in front of the passenger wharf, and thus, many puddles appear when it rains causing troubles for passengers and relevant vehicles. Under this situation, concrete pavement with a width of 7.0 m (2 lanes) on the access road with a total length of 471 m from the passenger wharf to the main road will be laid down. Concrete pavement shall also be laid on the open space in front of the wharf (949 m²) which is the starting spot of the access road.

5) Construction of new General Cargo Warehouse

The existing general cargo warehouse is two stories with a total floor area of 81,764 m² (4 m x 21 m) and was constructed and used since 1927. Over 90 years after its construction have passed and it has heavily deteriorated and is not safe, only the ground floor is used as a warehouse. As a result, consideration on the possibility of rehabilitation were investigated. It was found that the execution of rehabilitation and reinforcement for the restoration of the original shape not only created technical difficulty but also cost a great amount. Furthermore, in order to secure more cargo handling space at the back of the wharf with the increase in future cargo demand, it is judged that the merit for the construction of new general cargo warehouse is more than that of rehabilitation of the existing warehouse. As a result, a General Cargo Warehouse is to be newly constructed at the area where the WFP tents were, there does not interfere with using the backside of the wharf.

The General Cargo Warehouse will consist of a warehouse zone on the ground floor and an administration function zone on the second floor. Warehouse zone is consisted of food stuff storage with 1,800 m² (30 m×60 m) and strong cage with 70.47 m² (6 m×11.7 m). The storage capacity of food stuff is calculated as 3,420 t for usual use and 3,780 t for maximum use and it exceeds 3,000 t storage capacity of the existing general cargo warehouse. Administration function zone will consist of operations office, conference room and toilets on two stories and its total floor area is 288m² (6m ×24m×2floors).

The following table is the comparison with the requested components and the project components.

<Planned facilities and Equipment>

Component	Requested	Project	Remark
1. Rehabilitation of Passenger Wharf	140m x 63m (8,820m ²)	130m x 53m (6,500m ²)	East Berth North Berth Land for Wharf
2. Construction of Passenger Terminal Building	25m x 20m (500m ²)	54m x 24m (1,200m ²)	Administration & Service Zone Passenger Waiting Zone Weighing & Storage Zone
		12m x 27m (324m ²)	Canopy
3. Construction of Cargo Warehouse	50m x 20m (1,000m ²)	Allocated in Passenger Terminal Building	Weighing and storage zone (308m ²)
4. Pavement of Access Road	800m x 12m (9,600m ²)	471m x 7.0m (3,297m ²)	Road from Wharf to Main Road Front Open Space of Wharf
		Open space (949m ²)	
5. Beacon and Lighting Facility	Additional Request (2011)	Beacon 1 set Lighting Facility 5 sets	
6. Construction of new General Cargo Warehouse	Additional Request (2017)	60m x 30m (1,800m ²)	Warehouse zone
		6m x 24m x 2floors (288m ²)	Administration function zone

(4) Estimated Project Cost and Implementation Schedule

The cost borne by the Tanzanian Government is approximately 12 million yen under implementation by Grant Aid Cooperation of the Japanese Government. The implementation period takes 29 months in total, comprising of 7 months for detailed design and tender, and 22 months for construction and procurement.

(5) Project Evaluation

1) Relevance

Kigoma Port is the international port located on the east coast of Lake Tanganyika as a part of the Central Corridor and functions as the hub port for the Republic of the Congo on the other side of the lake and Burundi on the north side, and the Tanzania Ports Authority is responsible for the operation and management of it. The wharf facilities are consisted of very poor structures and there are problems such as shallow water depth of mooring facilities, possible collapse due to the deterioration of the concrete piles of jetty facilities. And, there are other problems for the on-land facilities like the low capacity of the passenger shed relative to the number of passengers and narrow wharf area to handle cargoes from passenger ships.

The existing warehouse was constructed in 1927 and its deterioration becomes serious and there is a concern for the safety of using the facility. The new construction site for the general cargo warehouse is located at the back side within the port area instead of on the site of the existing warehouse

considering the future effective operation for the general cargo wharf.

With respect to solving the problems of the general cargo warehouse in addition to the passenger wharf, including passenger facilities and mooring facility, plus improving the safety and efficiency at the passenger and cargo terminals, the necessity and urgency of the rehabilitation of the passenger terminal and the construction of new general cargo warehouse are well affirmed.

Tanzania picked up 4 corridors including the Central Corridor as the important developing corridor in the “Transport Sector Investment Program (TSIP)” and decided to develop corridors for the efficiency of international transportation. Also the Tanzania Ports Authority has drawn up a “Tanzania Ports Master Plan” that plans for the rehabilitation of ports on Lake Victoria, Lake Tanganyika and Lake Nyasa in addition to the rehabilitation of the existing ports facing the Indian Ocean.

The TPA drew up long-term rehabilitation plans for Kigoma Port in 2016 and intends to expand to integrate with the neighboring Kibirizi region in the redevelopment of the present Kigoma Port. Concerning the rehabilitation of the passenger wharf in Kigoma Port and the new construction of a general cargo warehouse, the Development of the Central Corridor/Lake Tanganyika Integrated Transport System made by the Central Corridor Transit Transport Facilitation Agency consisting of the governments of Tanzania, Uganda and Burundi posts it.

With the above related plans, rehabilitation of the passenger terminal to meet with the port expansion plan of Kigoma Port is posted and the consistency of implementation of this project is made.

The rehabilitation of the Kigoma Passenger Terminal and the new construction of a general cargo warehouse will contribute to strengthen the Central Corridor, and will provide stable transportation of people and commodities along the coastal areas of Lake Tanganyika and the service of passenger and cargo transportation shall be upgraded. With this result, the improvement of transportation of people and distribution of cargoes shall be made in the coastal area of Lake Tanganyika and its hinterland, which contributes to the vitalization of economic activities, industrial promotion and furthermore, it is expected to contribute to area stability and peace. The direct beneficiaries are considered to be the 2.127 million people in the Kigoma Region, 1.004 million people in the Rukwa Region and 0.565 million people in the Katavi Region totaling 3.70 million people. As the Central Corridor connects Kigoma and Dar es Salaam, the benefits are considered to be enjoyed indirectly by the people living along the corridor and the people in Dar es Salaam, as well as the hinterlands of the Kigoma Region and Rukwa Region, which corresponds to most of the population of Tanzania that is 55.57 million people. Furthermore, by developing the cargo terminal facilities, transportation towards the coastal hinterland of Lake Tanganyika in Republic of the Congo will be promoted, and the same benefits will accrue to the residents there.

With the above, as the Project widely contributes to the improvement of basic human needs (BHN) and to poverty reduction, the relevance to implement the Japanese Grant Aid Cooperation for part of the Project is confirmed.

2) Effectiveness

The outcome of quantitative effects by the Project is shown as follows,

i) Increase number of ships by direct berthing to passenger terminal

As a passenger ship can be directly berth along the terminal by this rehabilitation, the passenger can land directly without passing through an unstable barge and dangerous jetty portion between the passenger ship and the terminal where it was seriously unsafe before. Since, the passenger ship is operated every other week, the number of ships to berth directly to the wharf can be estimated as approx. 26 ships/year.

ii) Shortening of Passenger Embarkation and Disembarkation Time

Currently between a passenger ship and the terminal, there is a barge and a pier of 30 m in length, and it seems to take approximately 3 minutes for embarkation and disembarkation. After the construction of the facility, passenger ships can berth just along the terminal. Thus, such passenger transportation over the barge and pier will not be needed, and the time for embarkation and disembarkation shall be shortened. The time to be shortened is calculated as 40 minutes hypothesizing the number of passengers is 500 and their physical interval is 0.75 m.

The criterion time for embarkation is 120 minutes from the time that the passenger's gate is opened to the time that all passengers are on board and this shortens to 80 minutes. The criterion time for disembarkation is 90 minutes from the time that the passenger ship is berthed to the time that all passengers get through the passenger's gate and move to the outside of the port and this shortens to about 50 minutes. As the time from Passenger Terminal Building to the passenger ship is shortened, effective operation of the passenger wharf become possible and at the same time, the waiting time of passenger at the passenger wharf is shortened and the convenience becomes better.

iii) Improving Cargo Handling Capacity at the General Cargo Terminal

After the passenger terminal and general cargo warehouse (new construction) are provided, when the existing warehouse is removed by the TPA, the cargo handling capacity at the general cargo terminal will improve.

At the general cargo terminal, 2 terminal cranes of 5 ton class are operated, and the terminal length which can be used for cargo handling is limited to 60 m equivalent to 1 berth between general cargo terminal and container berth. The width of the apron at the terminal in front of the general cargo warehouse is narrow forcing inefficient cargo handling.

Cargo handling using 194 m in length at the general cargo terminal will be feasible by the relocation and construction of a general cargo warehouse when the existing warehouse is removed. The length is equivalent to 3 berths for passenger ships. With 3 cranes in total, operating 2 cranes of 5 ton, and 1 crane of 30 ton class to be introduced, loading and unloading of 3 cargo ships at the same time will be feasible, and resultantly, cargo handling efficiency will be improved.

Annual cargo handling capacity is estimated as 120,000ton for one berth of the existing

wharf and 187,000 ton/year can be expected if 3 berths are operated together after the removal of the existing general cargo warehouse in the future.

The outcomes of qualitative effects by this project are shown below.

- 1) Improvement of commodity distribution and people flow by effectiveness of cargo handling and embarkation / disembarkation of passenger ship

The cargo handling effect is improved by the rehabilitation of the passenger terminal and berthing days of passenger ships is shortened. As a result, as the operational effectiveness of passenger ships is improved, commodity distribution and people's flow are promoted in the Central Corridor.

- 2) Improvement of safety and amenity by flow line separation between passengers and cargoes and mitigation of congestion

Congestion at the existing terminal is mitigated significantly as well as setting flow lines for passenger in order by the rehabilitation of the passenger terminal. Overall, as the service level improves at the passenger facility, people will be more comfortable because of the rehabilitated toilet facility, passenger waiting room, Kiosk, etc.

- 3) Efficiency of cargo handling at the passenger terminal

As passenger ships can be directly berthed by the construction of the terminal, it is possible to load and unload cargoes directly to the passenger ships by ship's crane. Therefore, as cargo transportation between barge and terminal from the passenger ships and the jetty portion which is unsafe for cargo handling work can be omitted and the safety of cargo handling workers is secured. Furthermore, the usability of cargo handling vehicles is promoted and the mitigation of congestion is attained by securing wider terminal area.

- 4) Reduction of distribution cost in the passenger terminal

The safety and efficiency of cargo handling operation are improved with the possible introduction of cargo handling equipment as well as mitigating the congestion at the terminal area by the rehabilitation of the passenger terminal facilities. Furthermore, the traffic performance of cargo handling vehicles is improved by the pavement of the access road, which leads to the reduction of operation costs of the vehicles. As a result, ensuring smooth transportation of commodities, it is possible that the distribution cost becomes cheaper.

- 5) Safe cargo storage in the general cargo warehouse

After the general cargo warehouse is newly constructed, safety for cargo storage and those handling works will be improved because such works on existing old and deteriorated warehouse are not necessary. In addition, cargo handling efficiency will also increase since the warehouse will

be built without columns inside. Furthermore, the management office facility will be established together with the warehouse, and resultantly cargo storage will be managed more efficiently.

6) Shortening offshore standby time

Improvement of cargo handling capacity and shortening offshore standby time shall be achieved under a 3 berths operation system at the general cargo terminal, by the removal of the existing cargo warehouse and construction of a new warehouse.

With the above contents, the relevancy of this project is sufficient and the efficiency is considered to be significant.

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Appendix-5 Technical Data

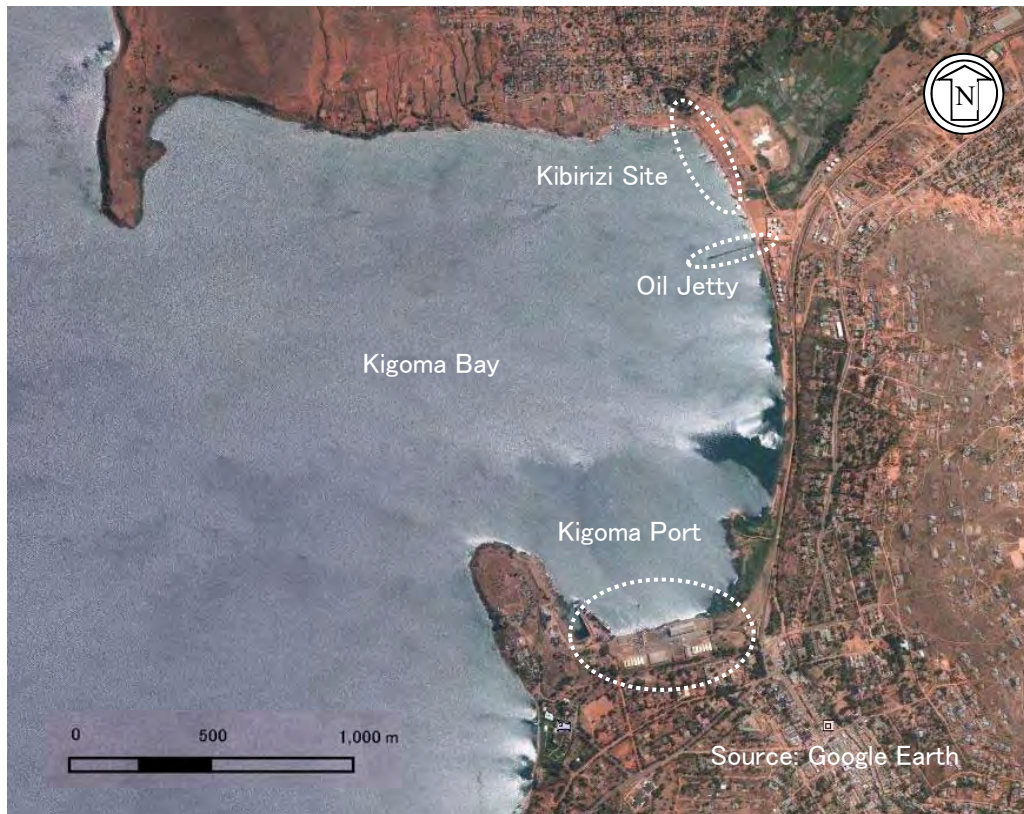
Appendix-6 Structural Performance Evaluation of Existing General Cargo Warehouse



Location Map of Tanzania



Location Map of Kigoma

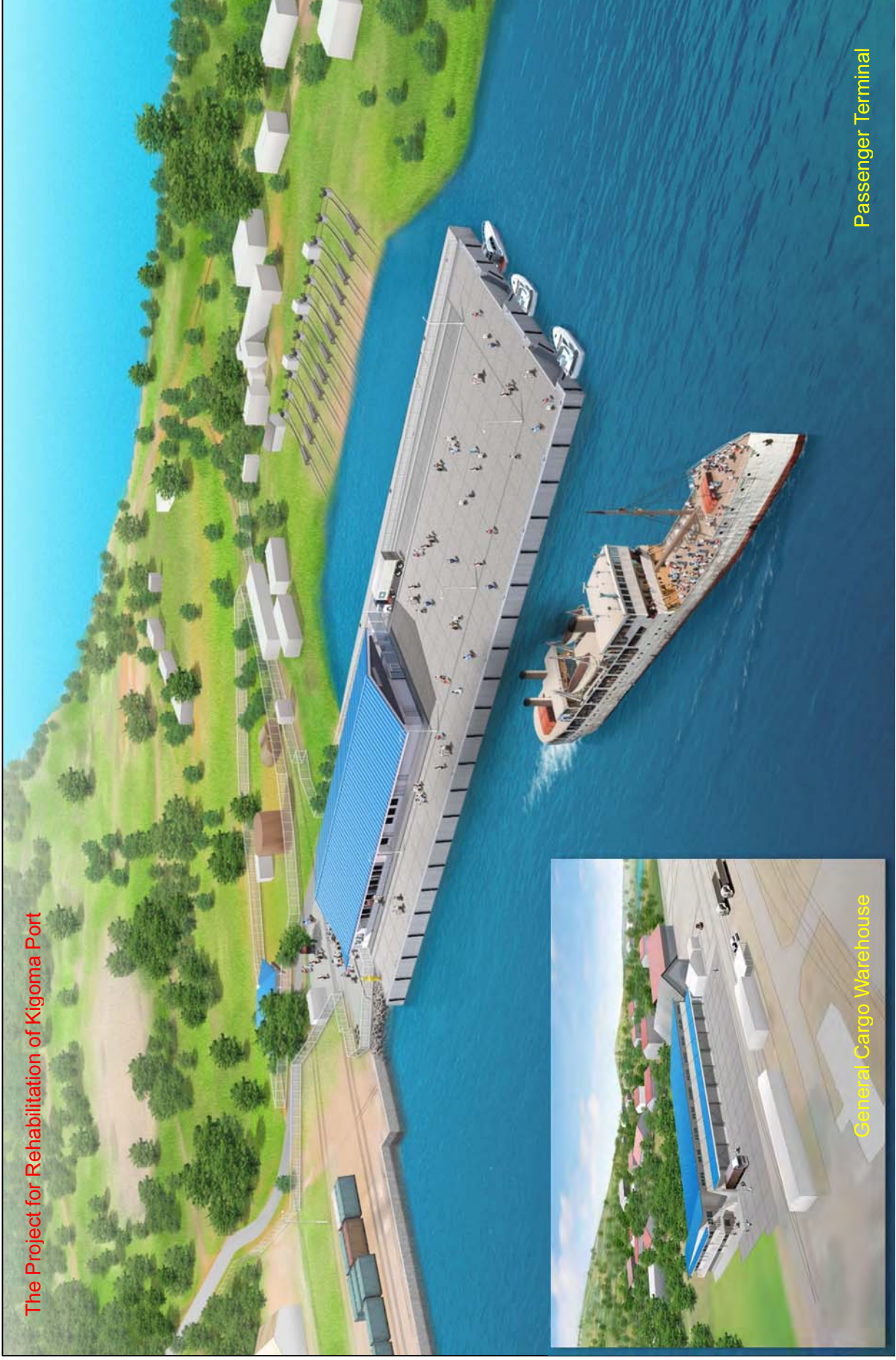


Location Map of Passenger Kigoma Port



Location Map of Passenger Wharf of Kigoma Port

The Project for Rehabilitation of Kigoma Port



Passenger Terminal

General Cargo Warehouse

Perspective

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Abbreviations

A	AP	Authorization to Pay
B	BA	Banking Arrangement
	BD	Basic Design (Outline Design or Preparatory Survey Design)
	B/L	Bill of Lading
C	CDL	Chart Datum Level
	CIF	Cost, Insurance and Freight
	Co	Concrete
	C/P	Counter Part
	CRB	Contractors Registration Board
D	DSA	Development Bank of Southern Africa
	DD	Detailed Design
	DRC	Democratic Republic of Congo
E	EIA	Environmental Impact Assessment
	EIS	Environmental Impact Statement
	EN	Exchange of Notes
	ERB	Engineers Registration Board
	EU	European Union
F	FAO	Food and Agricultural Organization of the United Nations
G	GA	Grant Agreement
	GDP	Gross Domestic Product
I	IBRD	International Bank for Reconstruction and Development
	ICT	Inland Container Terminal
	IEE	Initial Environmental Examination
	IMF	International Monetary Fund
	IMO	The International Maritime Organization
	IUCN	International Union for Conservation of Nature and Natural Resources
J	JICA	Japan International Cooperation Agency

L	LDC	Less Developed Country
M	MSCL	Marine Services Company LTD.
	MoFP	Ministry of Finance and Planning
	MoWTC	Ministry of Works, Transport and Communication
N	NEMA	National Environmental Management Act
	NEMC	National Environmental Management Council
	NEPAD	New Partnership for Africa's Development
	NGO	Non-Governmental Organization
O	ODA	Official Development Assistance
	OD	Outline Design
P	PAPs	Project Affected Persons
	PIP	Project Investment Plan
	PPP	Public Private Partnership
S	SADC	Southern African Development Community
	SEC	Special Economic Zone
T	TANROAD	Tanzania National Roads Agency
	TEU	Twenty-Foot Equivalent Unit
	TMEA	Trade Mark East Africa
	TPA	Tanzania Ports Authority
	TRA	Tanzania Revenue Authority
	TRC	Tanzania Railways Corporation
	Tsh	Tanzania Shilling
U	UN	United Nations
	UNDP	United Nations Development Program
	UNHCR	United Nations High Commissioner for Refugees
	USAID	U.S. Agency for International Development
W	WB	The World Bank
	WFP	World Food Programme

Chapter 1 Background of the Project

Chapter 1 Background of the Project

1-1 Background and Summary of the Project

1-1-1 Background

Tanzania serves as a hub for important transportation routes to inland countries and is a gateway to East Africa where it has borders with 8 countries. Tanzania aims to facilitate corridor development to improve the efficiency of international transportation picking up 4 important corridors which are Dar es Salaam Corridor, Central Corridor, Mtwara Corridor and Cairo-Gaborone Corridor in the “Transport Sector Investment Program (TSIP)”. Out of these international corridors, Central Corridor connecting Kigoma Port and Dar es Salaam through railway and roads and expanding to Burundi, Democratic Republic of the Congo and Zambia through Lake Tanganyika takes on important roles for national security not only for Tanzania but also neighboring countries as an import and export route of goods such as daily commodities and natural resources.

Kigoma Port on Lake Tanganyika is located along the Central Corridor and important as a transportation base for the import and export of copper, coffee, food, petroleum products and other goods. As well as being a strategic station, it fulfills a function as a base of humanitarian support for the Democratic Republic of the Congo. However, the port facilities at Kigoma Port have deteriorated and the necessity and urgency of their rehabilitation are pointed out when considering future increases in the handling of cargoes in the TSIP. Due to these situations, the Government of Tanzania has requested a “Rehabilitation Plan for Kigoma Port” (hereinafter called “the Project”) to improve the passenger terminal comprising of the construction of a passenger terminal building, construction of a cargo warehouse and pavement of an access road in March 2010.

Responding to that request, the Government of Japan executed “The Additional Preparatory Survey for the Project for The Rehabilitation of Kigoma Port in the United Republic of Tanzania” from October 2011 to August 2012 and the survey was completed after confirming the relevancy for the rehabilitation of the wharf. Since then, although the execution of the Project has been postponed, a Feasibility Study concerning the construction of a cargo terminal for Kigoma Port from December 2016 by the Government of Tanzania has been conducted and a request for the re-start of the Project with the additional study concerning the cargo terminal in December 2016 was made. Based on these situations, this Project is executed to evaluate the design of the previous preparatory study and its relevancy, and to make an appropriate plan.

1-1-2 Summary of Project

(1) Overall Goal

Contribute to the improvement on commercial exchange and transportation along the Central Corridor through stable transportation.

(2) Project Goal

Safety and efficiency for the embarkation and disembarkation of passengers and the cargo handling operation with the rehabilitation of the passenger terminal of Kigoma Port, construction of a general cargo warehouse and the pavement of an access road.

(3) Prospective Outcome

Rehabilitation of the passenger terminal at Kigoma Port and construction of a general cargo shed are constructed.

(4) Project Component

1) Contents of the project according to the Preparatory Survey in 2012

The requested components for the Project are as shown below.

- i) Rehabilitation of Passenger Wharf (140m x 70m)
- ii) Construction of Passenger Terminal Building (25m x 20m)
- iii) Construction of Cargo Warehouse (50m x 20m)
- iv) Access Road (800m x 12m)

According to the results of the survey and as the components of passenger terminal, project facilities shown in Table 1.1.2-1 were planned.

Table 1.1.2-1 Project Contents according to the Preparatory Survey (2012)

Facility	Requested Component	Planned Component
① Construction of Passenger Wharf	140m x 63m (8,820m ²)	130m x 53m (6,500 m ²)
② Construction of Passenger Terminal Building	25m x 20m (500m ²)	54m x 24m (1,296m ²)
② Construction of Cargo Warehouse	50m x 20m (1,000m ²)	To have the function in the Passenger Terminal Building
④ Pavement of Access Road	800m x 12m (9,600m ²)	481m x 7.0m (3,297 m ²) Square in front of wharf 949m ²
⑤ Beacon and Security Light	Additional request	Nos. 1 and 5

2) The content of additional components requested (February 2017)

Items shown in Table 1.1.2-2 were additionally requested by the execution of an additional survey.

Table 1.1.2-2 Additional Components Requested, this time

Place • Item	Requested Item
Passenger Wharf	① Construction of a simple waiting room at the open space in front of the wharf
Cargo Wharf	③ Pavement and improvement of berth (Container berth and General cargo berth) ④ Improvement of the general cargo warehouse ⑤ Improvement of train rails in the Port ⑥ Improvement of an access road and other roads in the Port ⑦ Construction of a Port Office and Customs Office ⑧ Other ancillary facilities
Cargo handling machinery	⑨ Reach stacker(1set) ⑩ RTG (1set) ⑪ Terminal tractor (4 cars) ⑫ Trailer (5 cars)
Others (*)	⑬ Construction of a jetty for police and security

(*) Items of Others were agreed to at the meeting between TPA and JICA in April 2017 to be excluded from this project.

(5) Project Site

Kigoma Port, Kigoma-Ujiji District, Kigoma Region

(6) Concerned Government Organization

Responsible Agency: Ministry of Works, Transport and Communication (MoWTC)

Implementation Agency: Tanzania Ports Authority (TPA)

(7) Beneficial Effects of Project

- Safe embarkation and disembarkation of a ship's passengers
- Efficiency of embarkation and disembarkation of a ship's passengers
- Improvement on handling the flow line of general cargo and safe storage

1-2 Natural Conditions

(1) Geographical Features

The country of Tanzania is located in East Africa and faces the western part of the Indian Ocean. There is a coastal plain in the eastern part along the Indian Ocean, with a higher-ground region that spreads from the center of the country to the western part. Along the western border, the Great Rift Valley cuts through the African continent north to south containing the graben lakes of Lake Victoria, Lake Tanganyika and Lake Nyasa which were generated by the ground slot belt. Kigoma Port is located in the westernmost part of the country at a distance in a straight line from the capital of Dar-es-Salaam of 1,100 km at 770 m above sea level.

(2) Climate Condition

Weather data was collected from the Tanzania Meteorological Agency in the Kigoma airport for conducting an arrangement analysis. It is about 5 km in distance between the observation point and project site; it is thought that the observed values represent the weather situation for the project site. The climate at the project site is in a warm and humid zone that is divided into two seasons, a rainy season from October to April and a dry season from May to September, according to the precipitation, temperature and humidity data shown below. The result of the analysis is that it is considered to be fine weather conditions for construction work at the project site with regard to temperature and precipitation.

1) Temperature, Precipitation, Humidity and Atmospheric Pressure

Figure 1.2-1. And Table 1.2-1 show the monthly averages of data related to temperature, precipitation, humidity and atmospheric pressure around Kigoma from 2014 to 2016.

The annual average temperature is about 25°C. Seasonal variation is comparatively small and it is stable throughout the year. The annual average precipitation is around 900 mm and it exceeds a monthly average of 100 mm during the rainy season from October to April. However, the monthly average is less than 50 mm during the dry season from May to September with it dipping below 10 mm from June to September, an extremely low level.

The average humidity is approximately 65 %. And, the average atmospheric pressure is about 920 hpa showing a feature of its highland location.

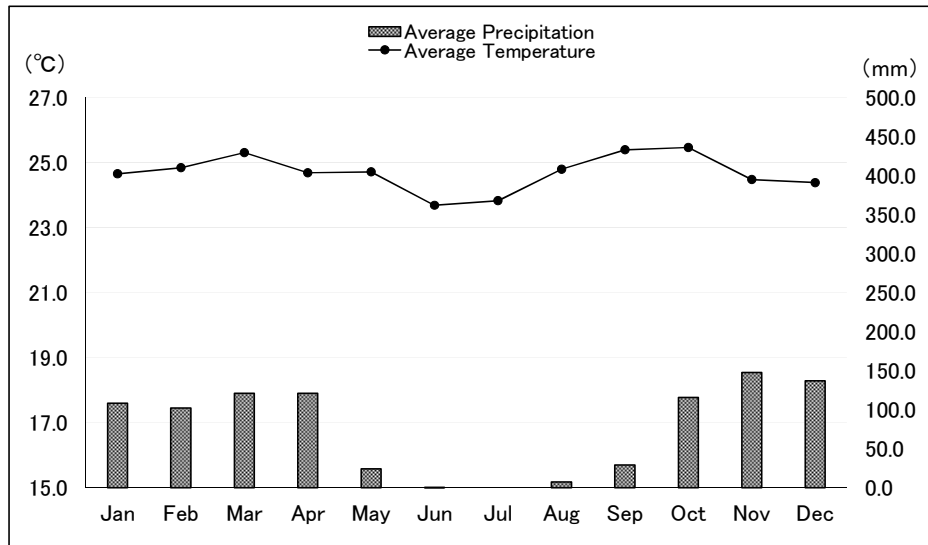


Figure 1.2-1 Annual Average Temperature and Precipitation around Kigoma (2014 - 2016)

Table 1.2-1 Temperature, Precipitation, Humidity and Atmospheric Pressure (2014 - 2016)

2014~2016	unit	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Average
Average Temperature	°C	24.7	24.8	25.3	24.7	24.7	23.7	23.8	24.8	25.4	25.5	24.5	24.4	24.7
Maximum Temperature	°C	28.4	29.0	29.6	29.0	29.7	29.8	30.3	31.3	31.2	30.0	29.0	28.3	29.6
Minimum Temperature	°C	20.9	20.7	21.0	20.4	19.8	18.1	17.4	18.3	20.1	20.9	20.5	20.5	19.9
Average Precipitation	mm	108.4	102.1	121.1	121.1	24.3	0.2	0.0	7.2	29.1	115.6	147.7	137.1	913.9
Average Humidity	%	75.7	72.5	72.8	72	66.8	58.4	52.9	49.6	52.6	59.4	74.1	76	65.2
Average Atmospheric Pressure	hpa	920.6	920.0	920.3	920.7	921.9	922.6	922.9	921.7	920.8	920.0	920.6	920.9	921.1

2) Wind Feature

The monthly average wind speed and monthly maximum wind velocity during 2014 to 2016 are shown in Table 1.2-2 and the wind rose is shown in Figure 1.2-2. With regard to wind direction around Kigoma, the occurrence ratio of wind directions are North and East throughout the whole year, and the average wind speed is moderate also throughout the year.

The maximum wind velocity in the past was about 15 m/s (30Knot), and a strong wind speed that could affect the design of structures has not been observed.

Table 1.2-2 Wind Speed around Kigoma (2014 to 2016)

Knot		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2014	Average	2.1	2.0	2.7	2.5	4.3	4.0	4.3	4.7	3.7	3.5	4.2	2.6
	Maximum	15.0	18.0	15.0	15.0	20.0	20.0	20.0	18.0	20.0	20.0	20.0	20.0
2015	Average	2.3	2.8	3.0	3.0	4.0	4.0	4.6	4.9	4.6	3.4	3.0	2.5
	Maximum	17.0	20.0	20.0	20.0	25.0	20.0	20.0	25.0	20.0	20.0	20.0	15.0
2016	Average	2.7	3.1	2.8	3.7	3.6	4.3	4.5	5.5	4.8	-	-	3.5
	Maximum	15.0	20.0	15.0	20.0	20.0	20.0	250.0	20.0	20.0	-	-	30.0
Average	Average	2.4	2.6	2.8	3.1	4.0	4.1	4.5	5.0	4.4	3.4	3.6	2.9
	Maximum	17.0	20.0	20.0	20.0	25.0	20.0	20.0	25.0	20.0	20.0	20.0	30.0

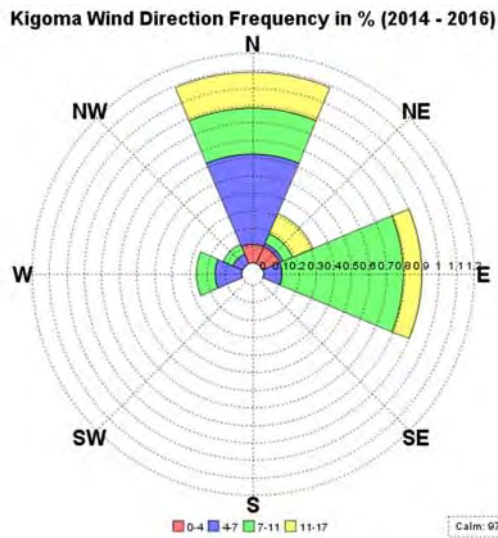


Figure 1.2-2 Wind Rose around Kigoma (Kigoma Airport: 2014 – 2016)

3) Earthquake

It is said that annually about 2 earthquakes are experienced in the Kigoma area, but no observations were made to confirm this, and thus these scales, etc. are not known. Although past damage from earthquakes is not clear, there is no record of especially big or severe damage having occurred.

The influence of earthquakes around Lake Tanganyika was investigated using the home page of USGS. Figure 1.3-2 shows the seismic sources for earthquakes of magnitude greater than 5.0 generated around the target site in the last 100 years from November 1917 to November 2017. The biggest earthquake during that time period was one with a magnitude of 7.2 and 15 km depth generated on July 8, 1919 with the seismic source coming from Sumbawanga south of Lake Tanganyika. As for the biggest and nearest earthquake to Kigoma Port, it was one with a 6.8 magnitude and 22 km depth generated on December 5, 2005 with the seismic source coming from the Mahale area about 100 km south of Kigoma city. The western border of Tanzania forms part of a big rift valley running through the African continent north and south. The rift valley is 35 to 100 km in width and 7,000 km in total length. There are many lakes in this rift valley and the seismic sources are also along it. The project site is located on the west side of the rift valley and 9 earthquakes exceeding magnitude 6 were generated during this period.

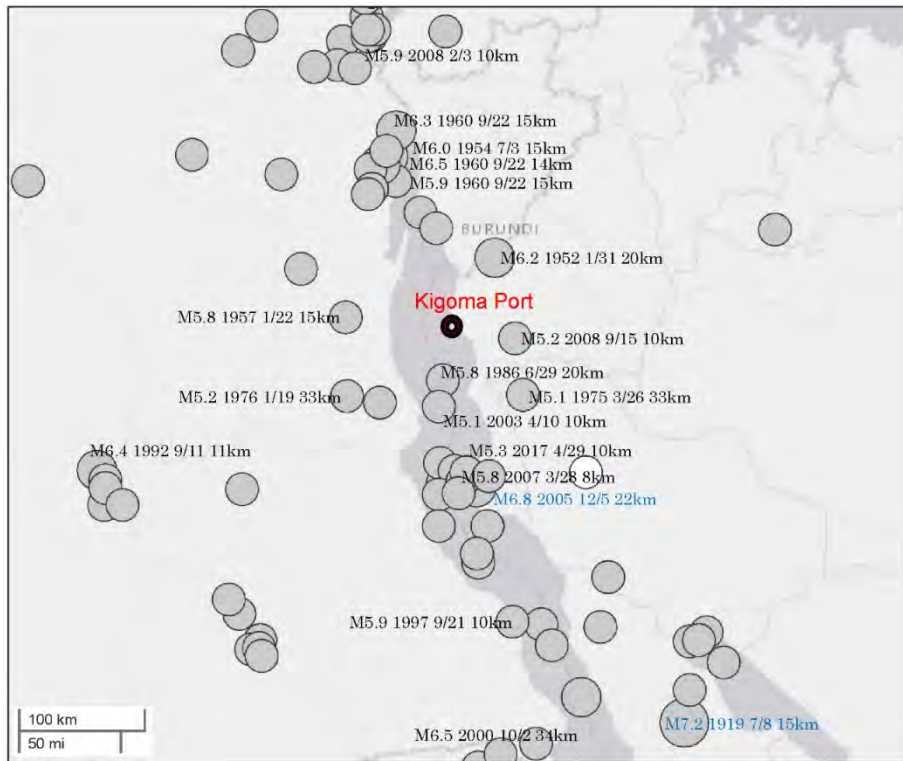


Figure 1.2-3 Distribution of Seismic Sources around Kigoma (Magnitude greater than 5.0, 1917 - 2017)

6) Change of Lake Water Level

The water level of Lake Tanganyika is observed at the Kigoma intake place at Bangue Beach in the Kuwasa area, and the Kigoma State Government controls the Lake Tanganyika Basin.

The monthly average water levels of the last 20 years come from the combined collected data of this time (2010 to 2014) with the previous survey data from (1995 to 2009) are analyzed in Table 1.2-3. Figure 1.2-4 shows the chronological change with the monthly average values. And, the annual average water level of 2014 is shown in Figure 1.2-5.

As a result, the differences between the data collected in the previous survey and the data for the more recent this survey was about a 10 cm increase of water level and the influence relative to the design water level can't be considered.

The highest water level during observation periods was 775.86 m in July 2003 and the lowest water level was 772.92 m in October, 2005 and thus the difference in water level was 2.94 m at the most.

It is said that the water level of Lake Tanganyika is changing with regard to the balance between precipitation inflow versus outflow volume of rivers and evaporation.

Analysis of monthly water levels in the last 20 years reveals that the water level is highest in April when the rainy season is over and lowest in November when the rainy season begins, and the difference of levels is about, on average 60 cm. Additionally, annual average highest water level becomes 775.0 m and the annual average minimum water level becomes 773.21m. D.L. (chart datum level) adopts 773.5m which is the standard chart datum level for the TPA and the water level relationship diagram is as shown in Figure 1.2-7.

Chart Datum Level(D.L. ±0.0m)=773.5m (TPA Standard Value)

Table 1.2-3 Change of Lake Tanganyika Water Level (Unit: m, above sea level)

Month Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ave.
1995	773.96	774.04	774.24	774.40	774.43	774.33	774.14	773.99	773.83	773.79	773.63	773.79	774.05
1996	773.83	773.87	774.04	774.16	774.30	774.11	773.94	773.74	773.67	773.53	773.65	773.75	773.88
1997	773.59	773.60	773.67	773.77	773.86	773.77	773.55	773.49	773.34	773.34	773.46	773.75	773.60
1998	774.06	773.60	773.67	774.78	773.86	775.27	775.69	774.92	774.77	774.69	774.59	774.60	774.54
1999	774.39	774.43	774.47	774.53	774.41	774.25	773.90	773.75	773.42	773.57	774.11	774.27	774.13
2000	773.92	774.08	774.26	774.46	774.45	774.34	774.18	774.01	773.89	773.80	773.52	773.71	774.05
2001	773.92	774.08	774.26	774.46	774.45	774.34	774.18	774.01	773.89	773.80	773.84	773.89	774.09
2002	774.01	774.21	774.34	774.46	774.58	774.34	774.18	774.01	773.89	773.80	773.84	773.89	774.13
2003	774.01	774.21	774.13	774.22	774.19	774.04	775.86	775.68	773.56	773.46	773.44	773.44	774.19
2004	773.18	773.55	773.58	773.66	773.65	773.56	773.38	773.39	773.08	773.00	773.44	773.44	773.41
2005	773.18	773.26	773.31	773.45	773.53	773.48	773.31	773.13	773.01	772.92	772.97	773.02	773.21
2006	773.45	773.65	773.75	773.81	773.83	773.77	773.60	773.44	773.35	773.25	772.94	773.22	773.51
2007	773.55	773.74	773.88	774.12	774.15	774.03	773.85	773.73	773.60	773.54	773.29	773.42	773.74
2008	773.81	773.91	774.04	774.22	774.18	774.20	774.05	773.88	773.73	773.65	773.55	773.79	773.92
2009	773.81	773.91	774.04	774.22	774.18	774.20	774.05	773.88	773.73	773.65	773.67	773.67	773.92
2010	774.12	774.21	774.27	774.43	774.42	774.38	774.16	773.99	773.86	773.88	773.90	774.01	774.14
2011	774.26	774.26	774.39	774.52	774.41	774.45	774.30	774.17	774.07	773.96	774.12	774.12	774.25
2012	774.57	774.61	774.70	774.90	775.01	774.87	774.69	774.52	774.42	774.40	774.06	774.28	774.59
2013	774.66	774.74	774.94	775.13	775.09	774.95	774.76	774.59	774.49	774.41	774.50	774.51	774.73
2014	774.65	774.77	774.77	774.95	774.98	774.90	774.73	774.55	774.43	774.34	774.44	774.53	774.67
Average	773.95	774.04	774.14	774.33	774.30	774.28	774.23	774.04	773.80	773.74	773.75	773.86	774.0
Monthly high level	774.66	774.77	774.94	775.13	775.09	775.27	775.86	775.68	774.77	774.69	774.59	774.60	775.0
Monthly low level	773.18	773.26	773.31	773.45	773.53	773.48	773.31	773.13	773.01	772.92	772.94	773.02	773.2
Record high level													775.9
Record low level													772.9

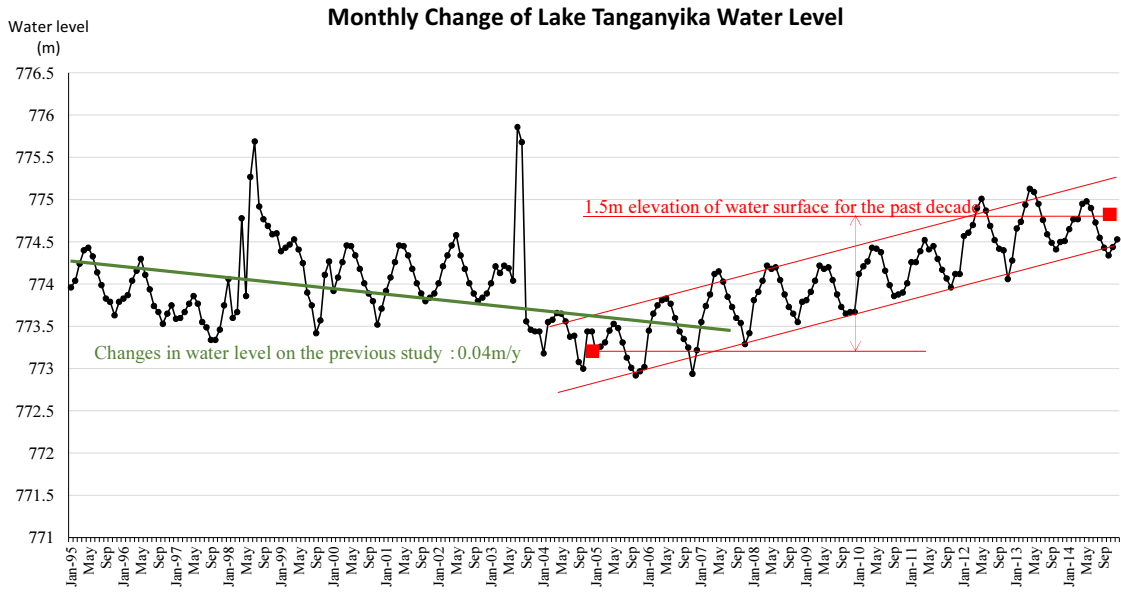


Figure 1.2-4 Monthly Change of Lake Tanganyika Water Level (1995 -2014)

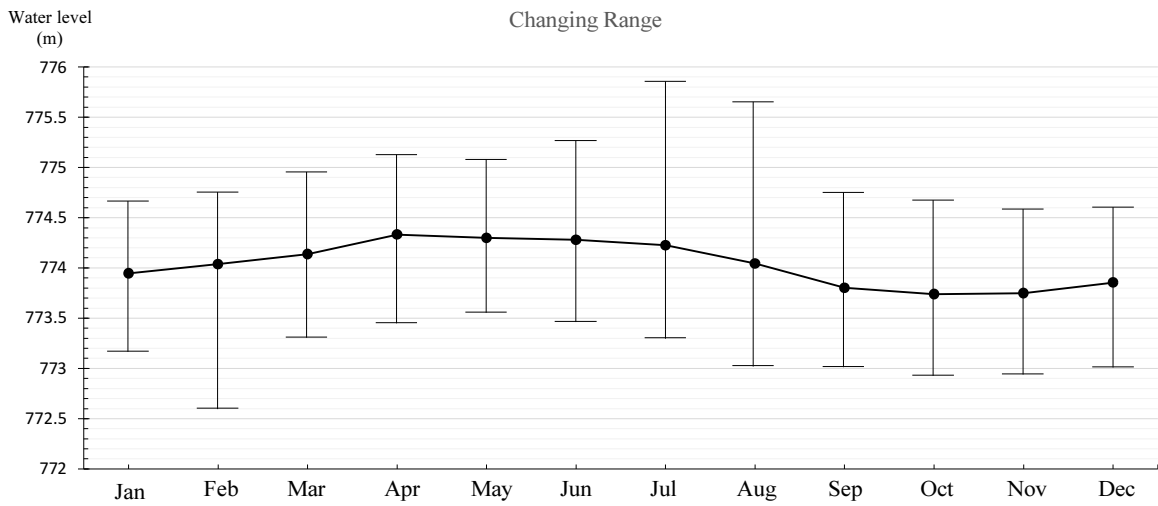


Figure 1.2-5 Average Monthly Change of Water Level (1995-2014)

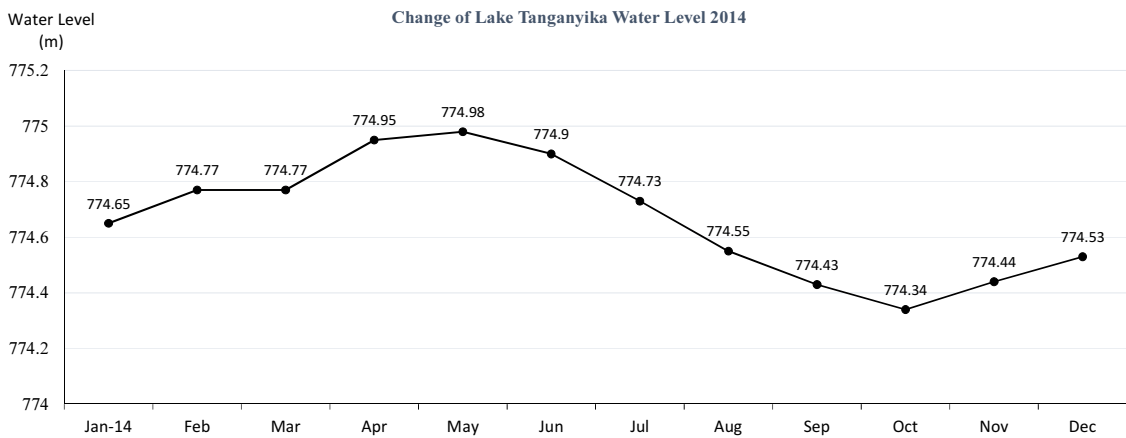


Figure 1.2-6 Monthly Water Level Change (2014)

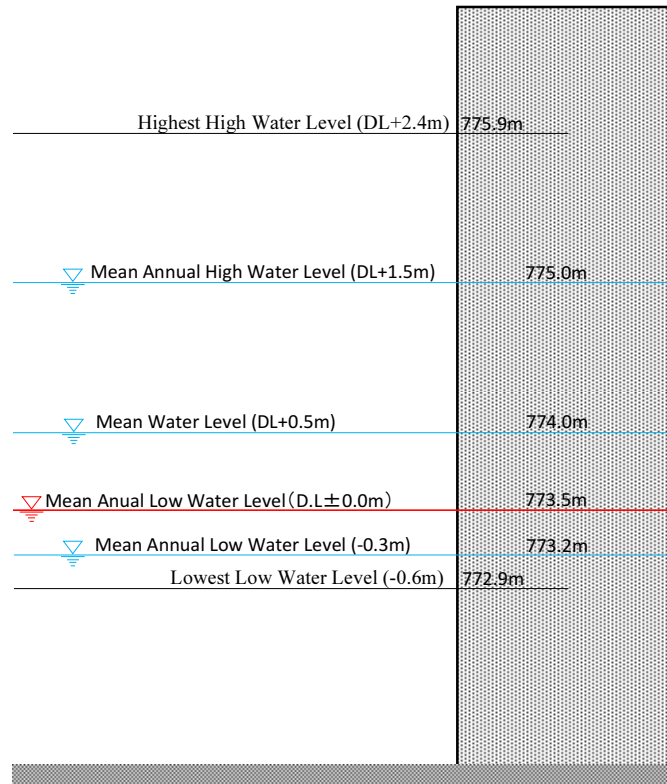


Figure 1.2-7 Relationship Diagram of Water Level

(3) Topographic Survey

A topographic survey was carried out at the Kigoma Port and its vicinity by a sub-contracted surveyor in October 2011. The above-mentioned Datum Level (D. L.) was used for the standard height of this topographic survey. The results of the topographic survey are shown in Figure 1.2-9 (overall view), Figure 1.2-10 (around cargo terminal) and Figure 1.2-11 (around passenger terminal).

(4) Bathymetric Survey of Lake Bottom

A bathymetric survey of the lake bottom of the water area of Kigoma Port and vicinity uses the survey results from November 2017 and the standard level for the depth of water was based on the same Datum Level (D. L.) in the previous topographic survey.

Concerning the shallow points in the results of the previous survey, a big change in the water depth was not found as the result of several sounding surveys in October 2017.

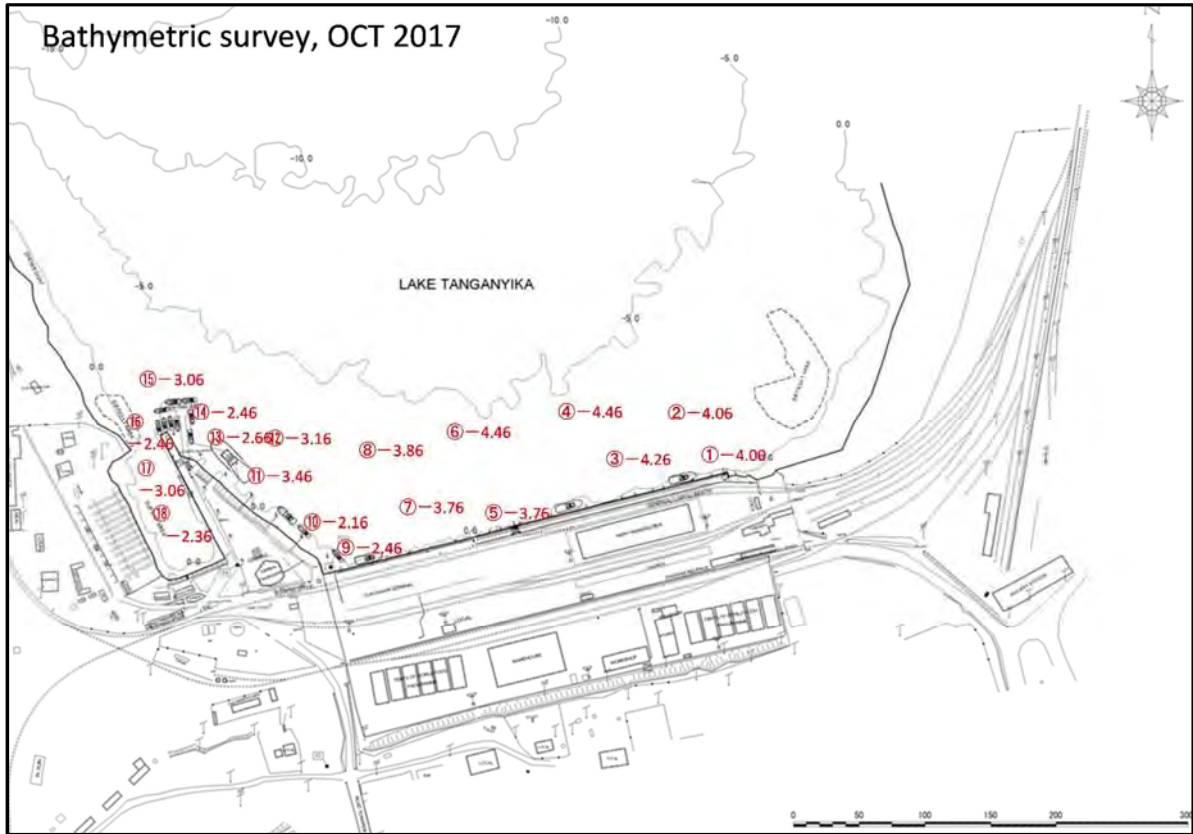


Figure 1.2-8 Result of Sounding Survey (October 11 2017)

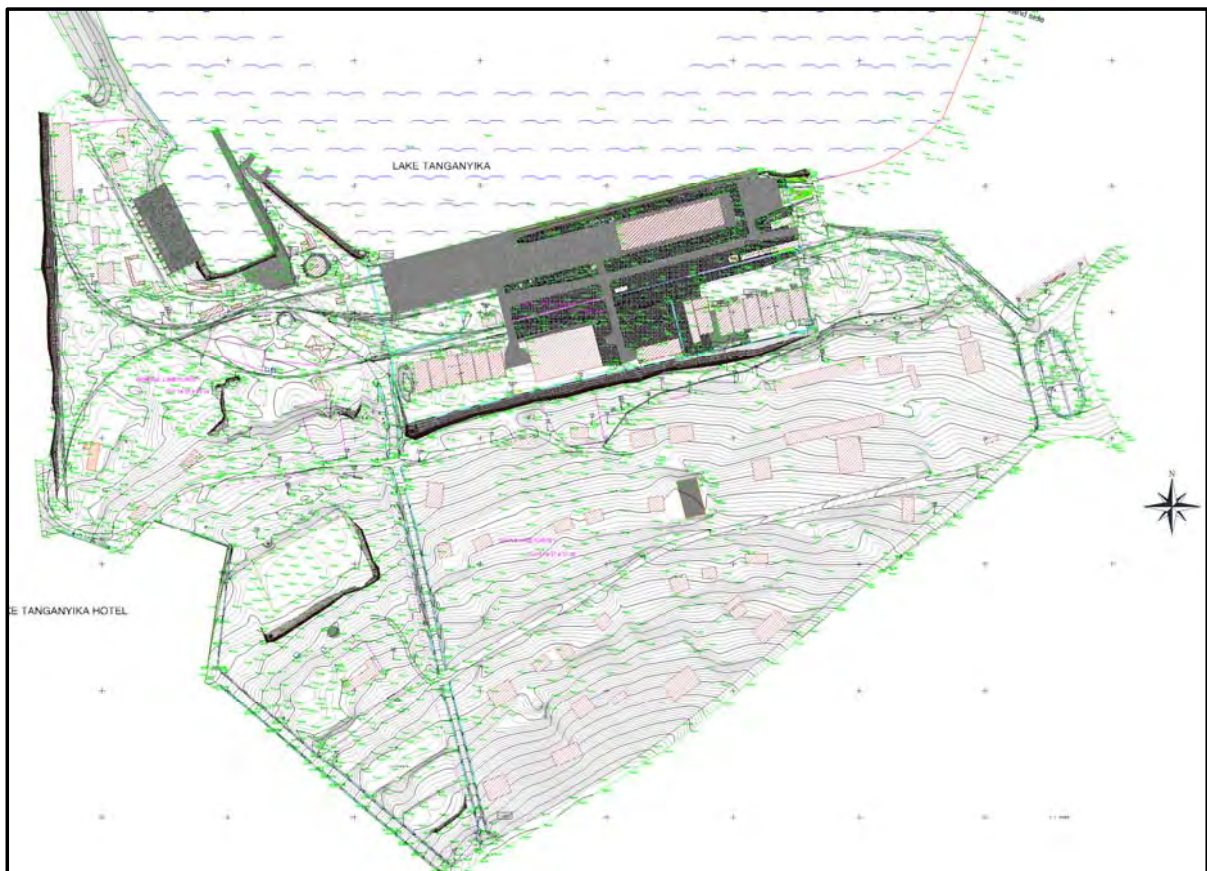


Figure 1.2-9 Topographic Survey (October 2017) and Water Depth Survey of Lake Bottom (November 2011)

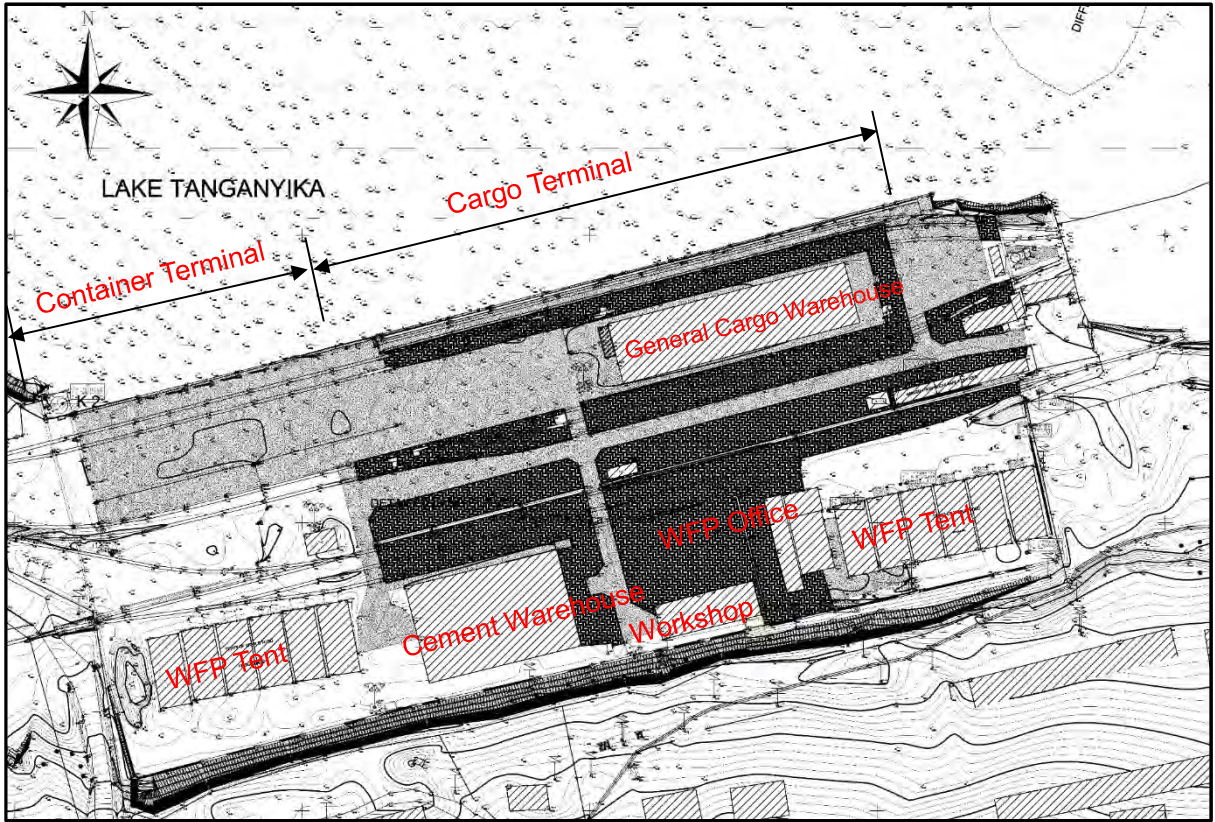


Figure 1.2-10 Topographic Survey (around Cargo Terminal) (October 2017)

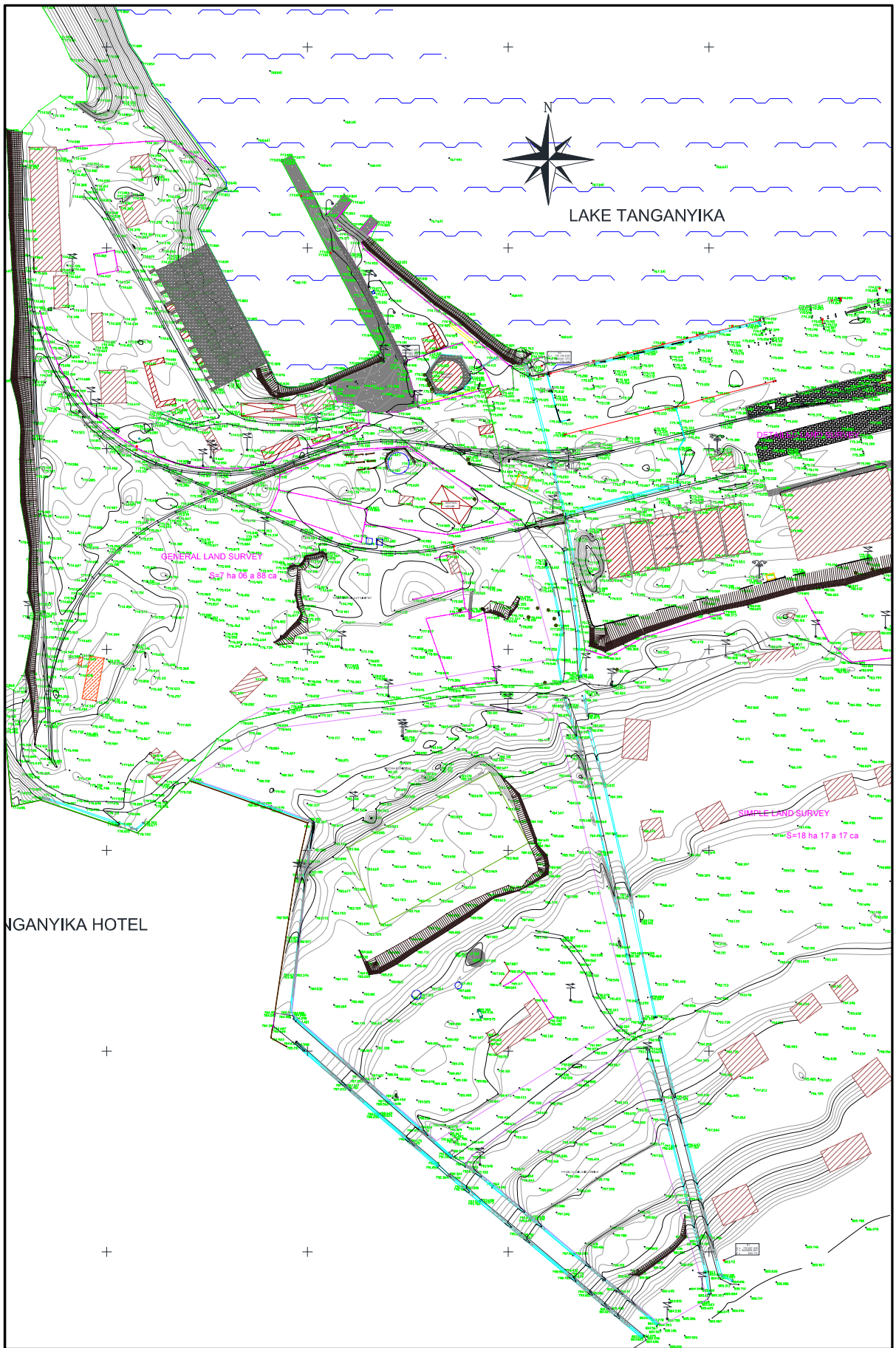


Figure1.2-11 Topographic Survey (around Passenger Terminal) (October 2017)

(5) Plate Bearing Test

Plate bearing tests were carried out at one point on the passenger wharf and 2 points on the access road as shown in Figure 1.2-12 at the time of the previous survey (November 2011). Table 1.2-4 shows the result of the tests. The K₃₀ value at P.1 on the passenger wharf shows more than 300N/cm³ which is sufficient ground bearing capacity. Although K₃₀ values at P.2 and P.3 are below 100 N/cm³, these survey points are on the ground outside of the access road and not compacted. The actual access road is considered to have a strength greater than 300 N/cm³, same as the passenger wharf due to compaction from traffic load.

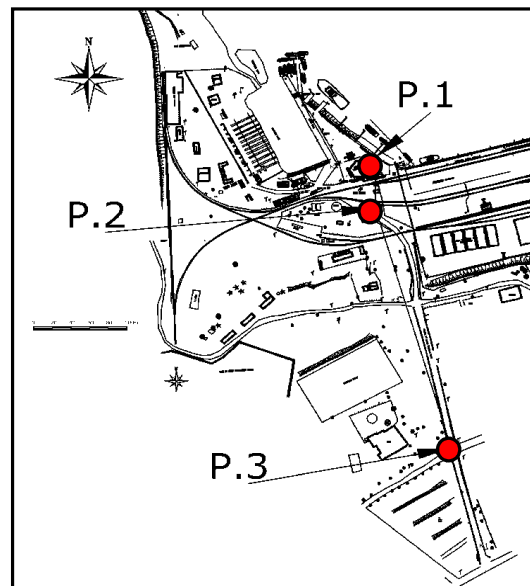


Figure1.2-12 Location of Load Bearing Test

Table 1.2-4 Result of K₃₀ Observation

Points	K ₃₀ (N/cm ³)
P.1	369.2
P.2	14.5
P.3	47.6

(6) Soil Investigation

Soil investigations by water boring works were carried out at 4 points (BH1 – BH-4) near the normal line of the passenger wharf was to be at the time of the previous survey in 2011. Another 4 land boring works (BH5 to BH8) were carried out at “the land designated for the general cargo warehouse in this survey. Borehole logs at each survey point are as shown in Figure 1.2.14 & 15. Grain size distribution curves from the previous survey are shown in Figure 1.2-16 and a triangular distribution diagram of grain size is shown in Figure 1.2-17. In addition, at BH2 and BH4, drilling became difficult when metal obstacles were found at a depth of 7 to 9 m below the D.L. level. Therefore, drilling was continued after changing the positions to BH2b and BH4b, respectively.

1) Soil Property

a) Features of BH1 to BH4

Soil quality of the surface layer is silty clay down to a depth of 7m below the D.L. with N values varying from 30 to high 40s. At the layer deeper than 8m below D.L., the soil condition was weathered sandstone showing N values of 50 or more.

The uniformity coefficient and coefficient of curvature coefficient which were obtained among samples are values of 5 or less and from 1 to 3, respectively, and the slopes of grain size distribution curves are large. From these results, it was confirmed that the grain sizes of the soil of the site area

are uniformed.

As a result of classifying with the triangular coordinate, soils of the site area are classified into sandy soil, granule part mixture sand and sand. Results are shown in Figure 1.2-17.

b) Features of BH5 to BH8

The soil structure is silt and sandy soil mingled with gravel having N values of 15 to 25 at the 2 m from surface stratum, however, the level near +1.0 where residual water level is confirmed has a tendency to have N values below 10. The stratum of 4 to 5 m drilling length from present ground which is near the D.L. ± 0.0 is all covered by sandstone with N values more than 50 and makes for extremely solid ground conditions.

2) Engineering Evaluation

Soils of the site area consist of sandy soil generally, and there was no soil such as soft ground, it is judged to be a satisfactory foundation, especially, in view of construction of the passenger wharf. However, since distribution of the comparatively hard foundation with N values of 50 or more is confirmed, then construction by the driving of steel sheet piles, makes it necessary to examine the construction method carefully.

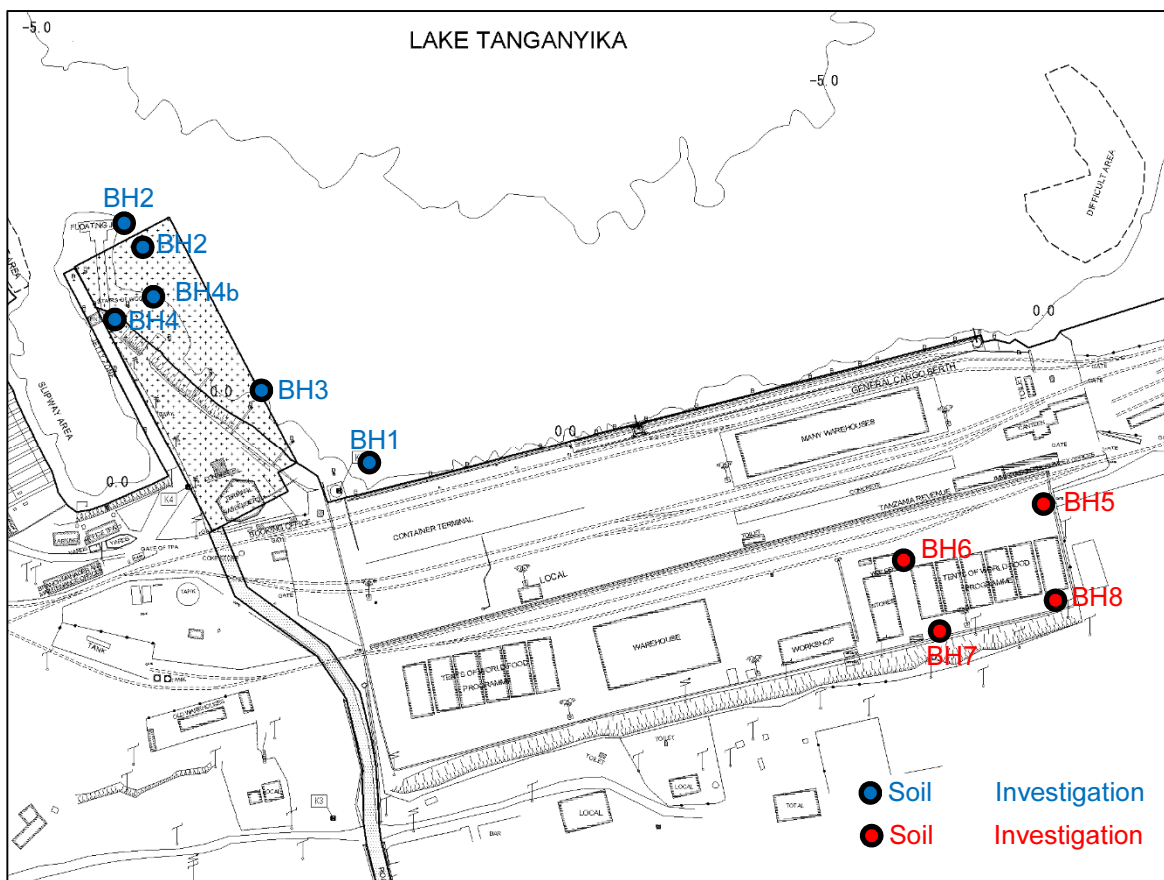
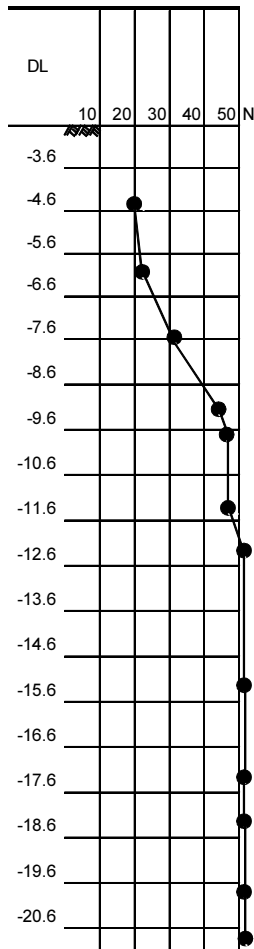
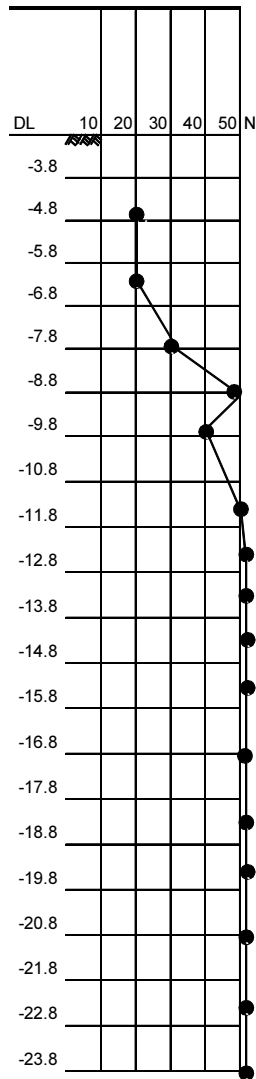


Figure 1.2-13 Location of Soil investigation

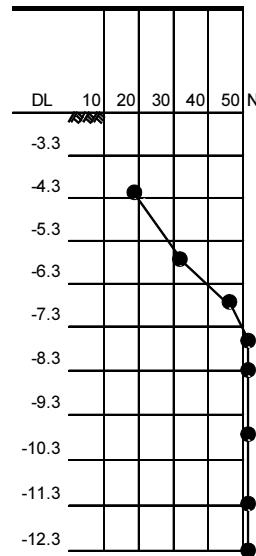
D.L. ±0.0 BH1



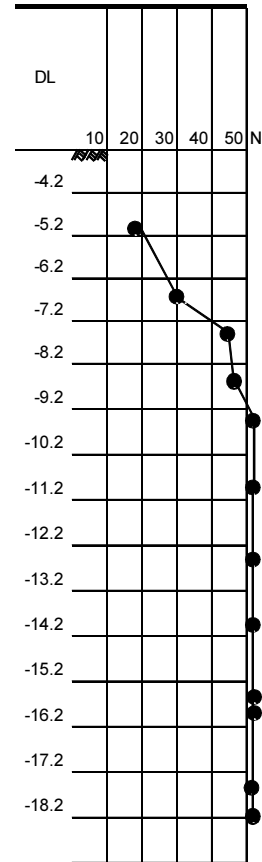
BH3



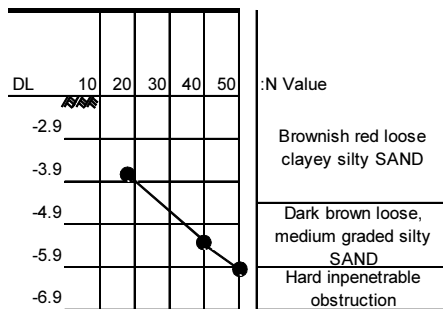
BH4b



BH2b3



D.L. ±0.0 BH4



BH2

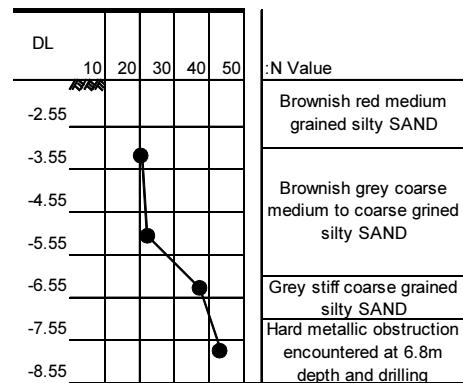


Figure 1.2-14 Boring Logs (N Values)

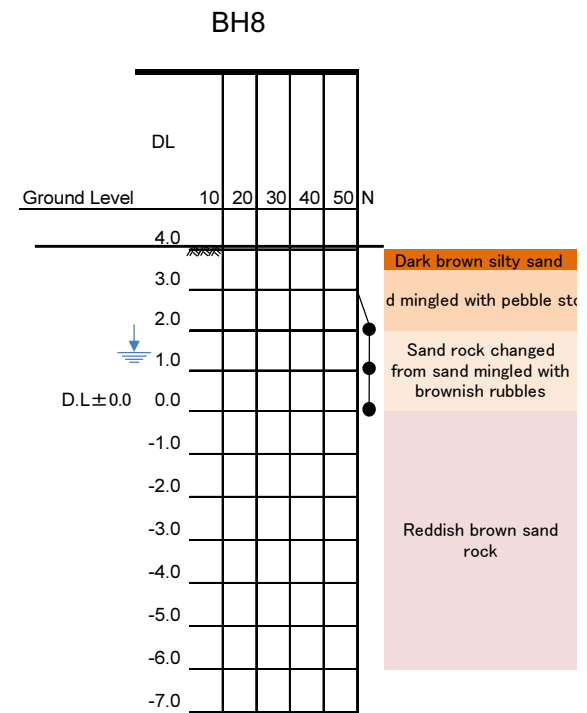
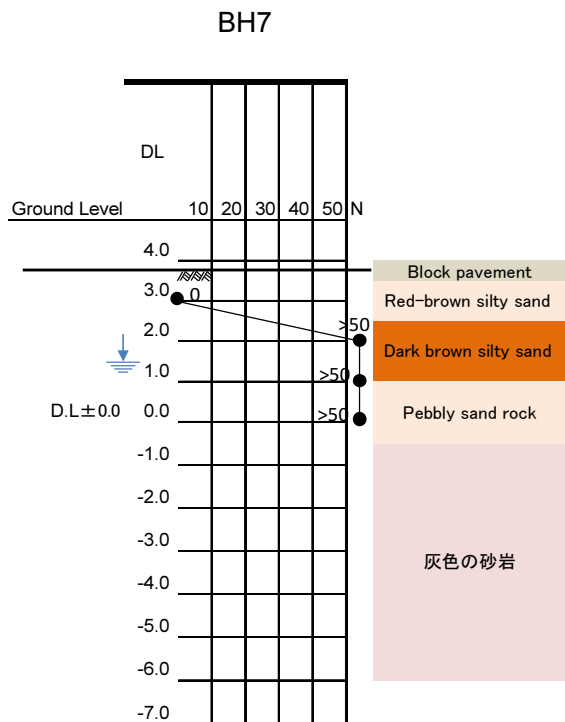
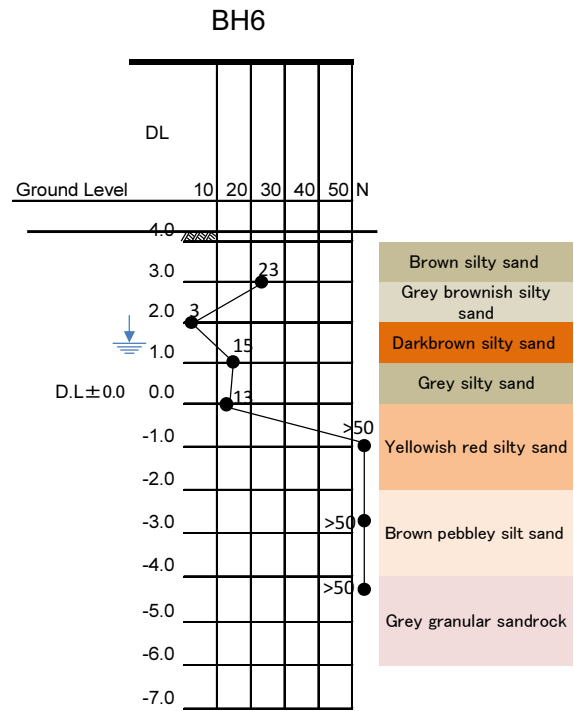
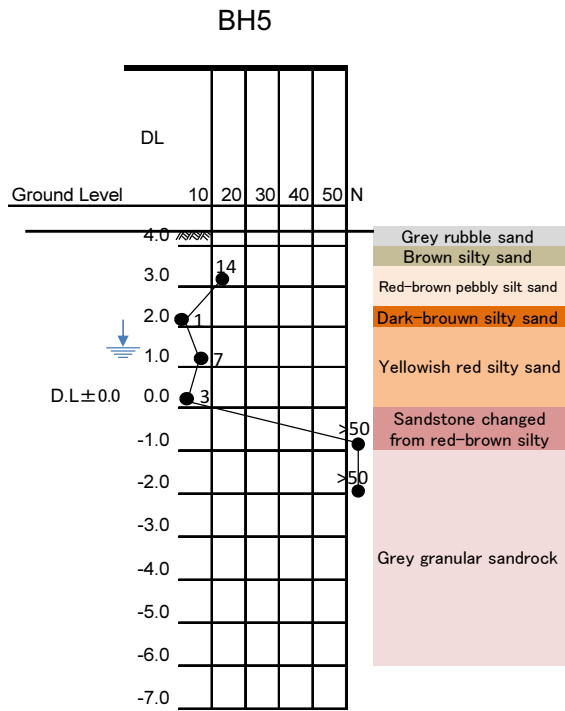
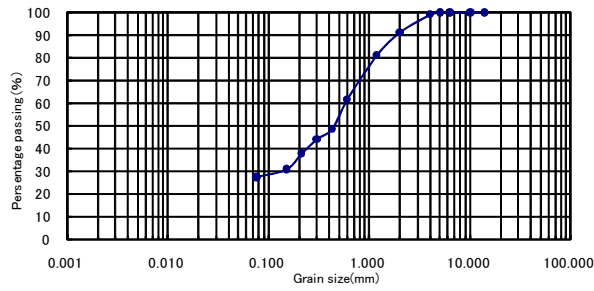


Figure 1.2-15 Boring Logs (N Values)

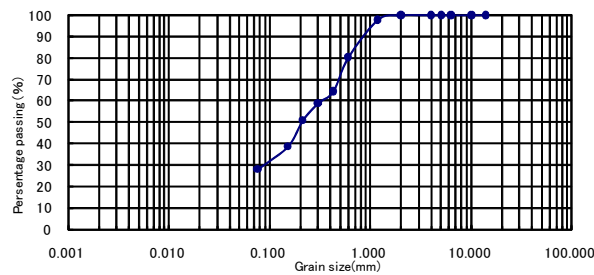
BH3 0.0m~1.0m			
Initial Dry Mass(g) 2298			
Mass retained (g)	Retained (%)	Cumulative Passing (%)	
14mm	0	0.0%	100.0%
10mm	0	0.0%	100.0%
6.3mm	0	0.0%	100.0%
5mm	0	0.0%	100.0%
4mm	20.9	0.9%	99.1%
2mm	179.6	7.8%	91.3%
1.180mm	232.8	10.1%	81.1%
0.600mm	449.8	19.6%	61.6%
0.425mm	298.8	13.0%	48.6%
0.300mm	101.7	4.4%	44.1%
0.212mm	144.2	6.3%	37.9%
0.150mm	162.7	7.1%	30.8%
0.075mm	77.6	3.4%	27.4%
Passing 0.075mm	629.9		
Grading modulus	GM	1.33	
Grading coefficient	GC	50.96	
D60, D30, D10	0.64	0.23	0.095
Uniformity coefficient U _c	6.74		
Coefficient of curvature U _{c'}	0.06		

BH3,DL-2.8~3.8m



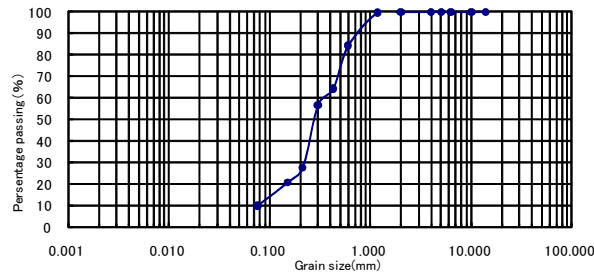
BH3 1.5m~2.5m			
Initial Dry Mass(g) 1235			
Mass retained (g)	Retained (%)	Cumulative Passing (%)	
14mm	0	0.0%	100.0%
10mm	0	0.0%	100.0%
6.3mm	0	0.0%	100.0%
5mm	0	0.0%	100.0%
4mm	0	0.0%	100.0%
2mm	0	0.0%	100.0%
1.180mm	26	2.1%	97.9%
0.600mm	217.1	17.6%	80.3%
0.425mm	196.2	15.9%	64.4%
0.300mm	68.3	5.5%	58.9%
0.212mm	98.3	8.0%	50.9%
0.150mm	152.2	12.3%	38.6%
0.075mm	130.3	10.6%	28.1%
Passing 0.075mm	346.6		
Grading modulus	GM	1.08	
Grading coefficient	GC	35.57	
D60, D30, D10	0.64	0.23	0.095
Uniformity coefficient U _c	6.74		
Coefficient of curvature U _{c'}	0.06		

BH3,DL-4.3~5.3m



BH3 3.0m~4.0m			
Initial Dry Mass(g) 1618			
Mass retained (g)	Retained (%)	Cumulative Passing (%)	
14mm	0	0.0%	100.0%
10mm	0	0.0%	100.0%
6.3mm	0	0.0%	100.0%
5mm	0	0.0%	100.0%
4mm	0	0.0%	100.0%
2mm	0.6	0.0%	100.0%
1.180mm	4.4	0.3%	99.7%
0.600mm	247.3	15.3%	84.4%
0.425mm	325	20.1%	64.3%
0.300mm	121	7.5%	56.8%
0.212mm	469.1	29.0%	27.8%
0.150mm	113.9	7.0%	20.8%
0.075mm	174.2	10.8%	10.0%
Passing 0.075mm	162.5		
Grading modulus	GM	1.26	
Grading coefficient	GC	35.68	
D60, D30, D10	0.64	0.23	0.095
Uniformity coefficient U _c	6.74		
Coefficient of curvature U _{c'}	0.06		

BH3,DL-5.8~6.8m



BH3 4.5m~5.5m			
Initial Dry Mass(g) 1284.39			
Mass retained (g)	Retained (%)	Cumulative Passing (%)	
14mm	0	0.0%	100.0%
10mm	0	0.0%	100.0%
6.3mm	0	0.0%	100.0%
5mm	0	0.0%	100.0%
4mm	0	0.0%	100.0%
2mm	0	0.0%	100.0%
1.180mm	20.9	1.6%	98.4%
0.600mm	176.5	13.7%	84.6%
0.425mm	237.3	18.5%	66.2%
0.300mm	90.8	7.1%	59.1%
0.212mm	125.6	9.8%	49.3%
0.150mm	194.9	15.2%	34.1%
0.075mm	163.4	12.7%	21.4%
Passing 0.075mm	274.99		
Grading modulus	GM	1.12	
Grading coefficient	GC	33.84	
D60, D30, D10	0.64	0.23	0.095
Uniformity coefficient U _c	6.74		
Coefficient of curvature U _{c'}	0.06		

BH3,DL-7.3~8.3m

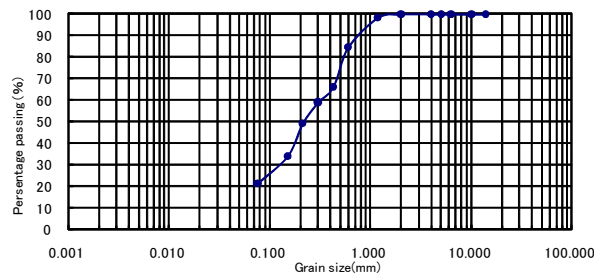


Figure 1.2-16 Grain size Distribution Curves (BH-3)

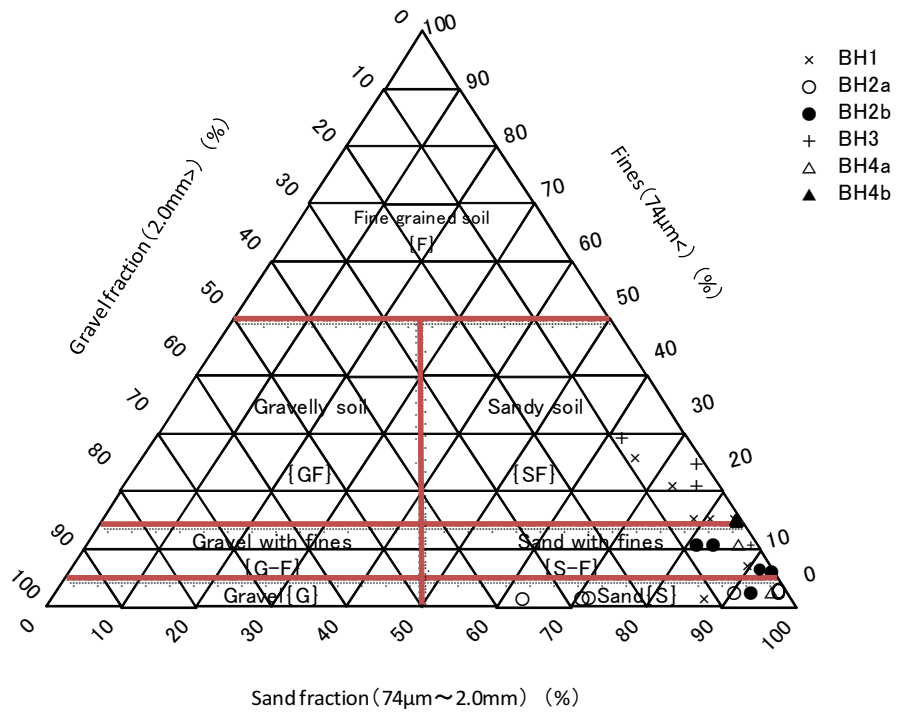


Figure 1.2-17 Distribution of Soil Qualities plotted on a triangular coordinate by Japan unified soil classification method
 (Particle sizes are measured by sieving)

1-3 Environmental and Social Considerations

(1) Outline of Project Components Influencing Environmental and Social Impacts

1) Project Aim

This project aims to construct and improve a passenger wharf, a cargo wharf and other ancillary facilities. It is expected to improve the safety of embarkation and disembarkation of passengers and cargo handling.

2) Project Site

Kigoma Port: Land for the passenger wharf and cargo wharf

3) Project Components Influencing Environmental and Social Impacts

TPA controls the Kigoma Port and the inside of it can be divided into three related facility areas: passenger terminal wharf used by general passengers, cargo handling terminal and administration office area. This project plans to deal with two of these areas, passenger terminal wharf and related facilities with a waiting zone for passengers and cargo handling terminal. The port administration office building already exists and is not included in the project site.

Out of the main components requested in this project, those components influencing environmental and social impacts are “construction of passenger terminal” (berthing quay), “passenger waiting zone”, “warehouse”, “pavement of access road”, “exterior works”, and in addition to these, “installation of a temporary yard” related to construction activities. The project components influencing environmental and social impacts are assumed below.

First, construction debris born from the removal of structures for existing facilities going with the construction of the new Kigoma Port facilities is anticipated. The generation of water turbidity in the lake with the execution of landfilling parts of the lakefront construction for the passenger wharf (berthing quay) and an adverse impact to bio-facies are predicted. The existing WFP 6 tents will be necessary for removal (relocation) with the construction of the warehouse. At the same time, concurrent with the rehabilitation work on the jetty facility and construction of land facilities, influences on the operation of existing liner boats is also predicted. In addition, noise damage, generation of dust, etc. are anticipated impacting on the surrounding residents by the construction and installation of each facility of which main work is “pavement of access road”.

(2) Basic Environmental and Social Considerations

1) General Information on the Project Site

The site of this project is the existing Kigoma Port. This port is located next to Lake Tanganyika and belongs to the Kigoma Region. The Kigoma Region is located at latitude 3.6 to 6.5° south and longitude 29.5 to 31.5° east of the Lake Tanganyika coast which is the western part of Tanzania. Lake Tanganyika was created by the hills west of the Great Rift Valley, and is the second oldest ancient lake in the world. There exist Burundi and Kagera Region in the north, Shinyanga and Tabora regions to the east and Rukwa in the south. The southern part of the lake belongs to Zambia and the Democratic Republic of the Congo exists surrounding Lake Tanganyika on the west side.

Kigoma Port is controlled by the TPA and the inside of it can be divided into three areas that are related facilities of ferry terminal used by general passengers, cargo handling terminal, and an office area including a few administration offices. There is railway in cargo handling terminal of Kigoma Port for transporting landed goods from the port to other areas in the country by railway. As previously described, Lake Tanganyika is surrounded by 3 countries, and therefore, the military of Tanzania keeps guard of the lake coast and is always stationed adjoining to Kigoma Port. The international ferry is in service to connect Zambia and Burundi through Kigoma Port. A custom house is set up at the passenger terminal. The cargo terminal handles cargoes from other regions of Tanzania or international cargoes, warehouse, one administration office and 12 WFP food storing tents are installed in Kigoma Port as the main facility. There are gardens widely spread around the area because the port is surrounded by a residential area. The area adjoining Kigoma Port is called Kigodeko. There is a fish landing beach for artisanal fishermen with temporary residential houses for fishermen's operations.

2) Social and Economic Situation of Kigoma Ujiji City

Kigoma Region where Kigoma Ujiji City belongs (project site) consists of the 4 Districts of Kigoma Urban, Kigoma Rural, Kasulu and Kibondo. As administrative districts, they are divided into Kasulu, Kibondo and Kigoma Districts and an overall Kigoma Ujiji City. The Region is further divided into 19 Divisions, 85 Wards, 232 villages, 199 Mitaa and 1,512 Sub-villages. The total area of this Region is 45,066 km² which occupies 4.78% of the total Tanzanian land area, and its 8,029 km² is water area. The social and economic situation of Kigoma Ujiji City is as shown in Table 1.3-1. The social and economic index for the city which was not obtained is shown in the index of Tanzania (items with * mark in the table)

Table 1.3-1 Social Economic Situation of Kigoma Ujiji City

Social Economic Main Items	
Area	128km ²
Population and no. of households	Population: 215,458 (Male 104,185, Female 111,273) in 2012 Population growth rate: approx. 2.4% in 2012 Number of households: 43,091 in 2012
Race	The largest ethnic group is the Ha Tribe which are approx. 70%. The Nyamwezi Tribe, Sukuma Tribe, Fipa Tribe and immigrants from neighboring Democratic Republic of the Congo, Ruanda and Burundi comprise the rest of the ethnic groups.
Religion	Islam and Christianity are the majority religions, and Islam being approx. 70% of the total.
Birth Rate*	35.6/1000 persons in 2016
Child Mortality Rate*	39.9/1000 births in 2016
Average Life Expectancy*	62.6 years (Male: 61.2, Female: 64.1) in 2016
HIV/AIDS Infection Rate *	4.7% in 2016
Unemployment Rate*	10.3% in 2014
Population below poverty rate*	22.8% in 2015
GDP growth rate*	7% in 2016, 7% in 2015, 7% in 2014
GDP per capita*	3,100 US\$ in 2016
Inflation rate*	5.2% in 2016, 5.6% in 2015
Export amount*	5.7 billion US\$ in 2016
Import amount*	8.5 billion US\$ in 2016
Main export destination*	Switzerland 15.1%, India 13.8%, South Africa 12.4%, China 7%, Kenya 6.2%, Democratic Republic of the Congo 5.7%, Belgium 5.6% in 2016
Main importing country*	China 20.1%, India 18.1%, UAE 7.5%, South Africa 6%, Japan 4.7% in 2016
Literacy rate*	77.9% (Male: 83.2%, Female: 73.1%) in 2015
Number of schools (Elementary and Secondary school)	Elementary School: 51, Secondary School: 30
Number of health-care facilities	Hospital: 2, Medical Clinic: 2
Local main industries	Primary Industry: Agriculture (Main Crops: Corn, Banana, Cassava, Beans, Rice, Sweet Potato, Palm oil), Fishing Industry in Lake Tanganyika and Live Stock Secondary Industry: Simplified Manufacturing Industry Third Industry: Sales Industry, Restaurant Business, Lodging Industry and etc. are included. And, there is a mine in the city administration area and there also exists a little mining industry.

3) Field Survey

Field surveys were carried out at the land to be the project site or the vicinity. Please refer to the detailed content and the results described in the clause “(6) Result of Environmental Social Consideration.”

4) Nature Protected Areas and World Heritage-Listed Sites

The following descriptions of all the protected nature areas and world heritage-listed sites, including Ramsar sites and protected marine areas are located at least 50km straight distance from the proposed project sites. Thus there are neither protected areas nor world heritage-listed sites,

including Ramsar sites and protected marine areas, within the site nor close to the site.

a) National Park, Wild Animals, Protected Area on Land

There are many wild life habitats in Tanzania, these are in the Savanna and feature dry miombo forest (mainly containing Acacia and Combretum genus). Approximately 25% of the African mainland is used for conservation and preservation of wild animal sanctuaries. Table 1.3-4 shows the Ngorongoro Conservation Area and Table 1.3-5 shows Game Reserves. There exists 14 national parks and 18 conservation areas including game reserves in Tanzania.

Table 1.3-2 Category of Conservation Area in Wild Animal Reserve

	Category	No.	Area (ha)	Ratio (%) of land area
1	National Parks	14	3,842,800	4.1
2	Game Reserves	17	10,401,250	10.4
3	Game Controlled Areas	38	9,086,502	9.6
4	Ngorongoro Conservation Area	1	828,800	1.0
Total			24,660,552	25.1

Source: State of the Environment VPO-DOE 2006, JICA Environmental Profile 2011, JICA Final Report of National Power System Master Plan in 2017 and others

Each detail of National Parks, Game Reserves, Ngorongoro Conservation Area shown above are as per Table 1.3-3 below.

Table 1.3-3 National Park

	Name of National Park	Area (ha)	Opened
1	Serengeti	1,467,300	1951
2	Lake Manyara	32,500	1960
3	Arusha	13,700	1960
4	Ruaha	1,296,000	1964
5	Mikumi	323,000	1964
6	Gombe	5,200	1968
7	Tarangire	260,000	1970
8	Kilimanjaro	75,600	1973
9	Katavi	225,300	1974
10	Rubondo	73,600	1977
11	Mahale Mountain	157,700	1984
12	Udzungwa	199,000	1992
13	Saadani	N/A	2004
14	Kitulo	41,200	2005

Source: State of the Environment VPO-DOE 2006, JICA Environment Profile 2011 and others

Table 1.3-4 Ngorongoro Conservation Area (NCA)

1	Ngorongoro Conservation Area (NCA)	Area (ha)	Opened
		828,800	1959

Source: State of the Environment VPO-DOE 2006, JICA Environment Profile 2011 and others

Table 1.3-5 Wild Life Sanctuary

	Wild life sanctuary	Area (ha)	Opened
1	Selous *	5,000,000	1905
2	Rungwa*	900,000	1951
3	Kigosi	700,000	1983
4	Moyowosi*	600,000	1981
5	Uwanda	500,000	1959
6	Ugala River	500,000	1965
7	Kizigo	400,000	1972
8	Maswa*	220,000	1969
9	Burigi*	220,000	1973
10	Umba*	150,000	1974
11	Biharamuro	130,000	1959
12	Mkomazi*	100,000	1951
13	Rumanyika	80,000	1965
14	Mt. Kilimanjaro	76,000	1951
15	Mt. Meru	30,000	1951
16	Ibanda*	20,000	1972
17	Saa Nane Island	50	1964

Source: State of the Environment VPO-DOE 2006, JICA Environment Profile 2011 and others

b) World Heritage Sites

3 natural heritage, 3 cultural heritage and 1 natural and cultural mixed heritage totaling 7 world heritage sites in Tanzania were designated by international treaty.

Table 1.3-6 World Heritage in Tanzania Designated by UNESCO

Kind of world heritage	Name	Opened
Natural heritage	Kilimanjaro National Park	1987
	Selous Game Reserve	1982
	Serengeti National Park	1981
Cultural heritage	Kondoa Rock-Art Sites	2006
	Ruins of Kilwa Kisiwani and Ruins of Songo Mnara	1981
	Stone Town of Zanzibar	2000
Mixed heritage	Ngorongoro Conservation Area	1979, 2010

c) Marine Protected Areas

Followings are the marine and coastal protected areas in Tanzania.

- Mafia Island Marine Park: MIMP faces 2 conservation areas, Chole Bay and Tutia Atoll, and this area has been approved by the marine park and conservation act in 1995.
- Mnazi Bay Marine Park: Mnazi Marine Park including Mnazi Bay and Ruvuma Rubuma River Mouth is located on the seashore at the south end of Tanzania bordering with Mozambique. There are many mangroves at Munji bay and Rubuma River mouth which are habitats of crustacea such as lobster, crab and fin.
- Marine Protected Areas: Some areas were designated as marine protected areas based on the

Fisheries Act of 1970 and later Government Notice No.1370 of 1975. A marine protected area becomes a place utilized for recreation, landscape value, education, or research activity. (Source: JICA Environment Profile 2011 and others)

d) Wetland

There are wetlands throughout Tanzania occupying approximately 10% of the land. Out of these, there are 4 Ramsar Convention wetlands with a total area of 4,868,424ha. There are no Ramsar Convention wetlands on the project site or vicinity.

Table 1.3-7 Wetland registered under the Ramsar Convention in Tanzania

	Name	Area (ha)	Registered
1	Malagarasi-Muyowosi wetlands	3,250,000	2000
2	Lake Natron Basin	224,781	2001
3	Kilombero valley floodplain	796,735	2002
4	Rufiji-Mafia-Kilwa Marine Ramsar site	596,908	2004

Source: <https://rsis.ramsar.org>

(3) System and Organization of Environmental Social Consideration in Tanzania

1) Organization of Environmental Social Consideration in Tanzania

The responsible organization for environmental issues in Tanzania is NEMC: National Environmental Management Committee. NEMC manages everything related with the execution of EIA screening, compliance, monitoring and the promotion of public participation at the time of decision making on environmental matters and all of the duties assigned to NEMC. Administration organizations related to environmental social considerations, including NEMC, are as shown in Figure 1.3-1.

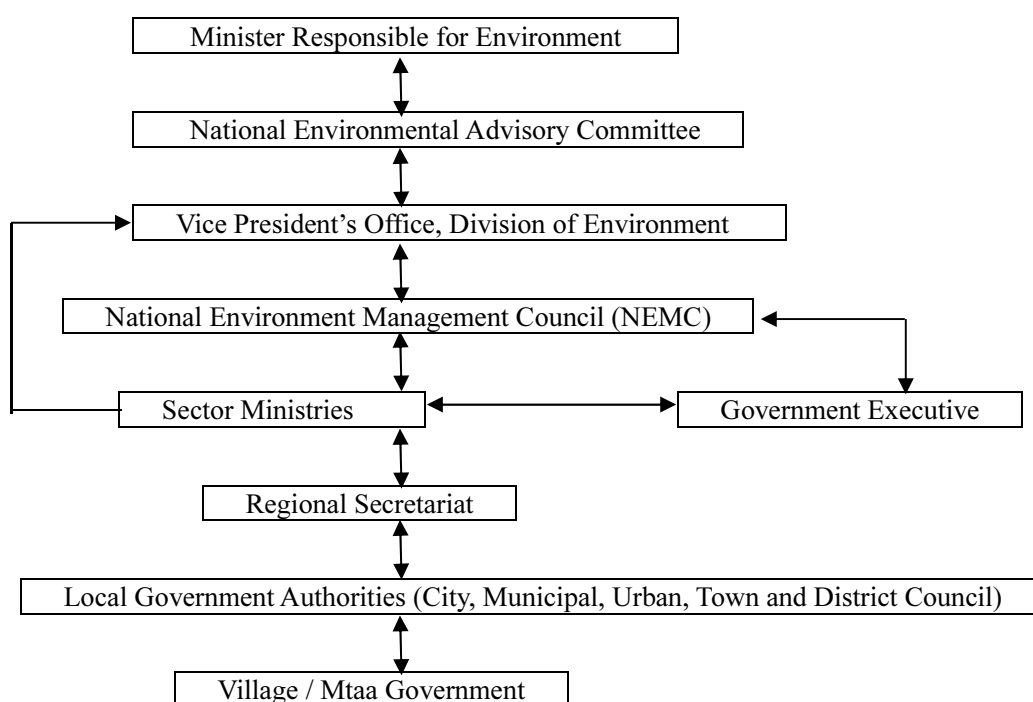


Figure 1.3-1 Administration Organization Chart for Environmental Social Consideration

Major rolls of each organization shown above are as follows,

- NEMC: This committee was established to provide professional advice for all environmental problems of the environment agency (vice president office) and other sectors.
- Minister Responsible for Environment: The Minister can specifically show political guide related to the environment such as the rules of environment monitoring, Environmental Action Plan and make the rules and guidelines. In addition, the Minister can provide directions of any function or activity of any organizations.
- VPO-DOE: Vice President's Office, Division of Environment): VPO-DOE advises the Government concerning coordination of environmental activities, environmental laws or international agreements and plans and effects the monitoring and assessment of activities in related organizations and State of Environment Report.
- Function of NEMC: execution of environmental audit, survey and research, review of EIA and advice on approval, enhancement of compliance to National Environmental Quality Standards, commencement of procedures for the prevention of accidents which could possibly lead to environmental deterioration, execution of driving program for environmental education, publication and permeation of manuals related to environmental management, advice on and provision of technical support to owners working with natural resources and environmental management and the execution of other functions directed by environmental related offices.
- Sector Ministries: Each Sector Ministry executes functions and assignments related to the environment in accordance with the EMA or other laws (only when the compliance is ensured by the EMA). In order to secure compliance to the EMA, a Sector Ministry engages environmental management through Sector Environment Sections-SES installed at each Ministry. After the establishment of the EMA, almost all Sector Ministries installed a SES and Sector Environmental Coordinators are assigned or employed at this moment.
- Regional Secretariat: Regional Environmental Management Expert-REME is allocated in local governments. A REME is responsible to advise on matters related to the introduction and execution of an EMA for a local government body under that jurisdiction. A REME connects with the environment manager and localities after establishment of an EMA, several local governments assign or employ REMEs.
- Local Government Authorities: Local Government Authorities are divided into two categories. Management and development in an urban area including "Townships" or "Municipalities and City" is responsible for local government authorities of an urban area. In general, local authorities in a local area known as District Councils are the second category of local government authorities. All local government authorities are required to function mainly ① execution of management works and drawing up rules and regulations, ② drawing up economic development plans under their jurisdiction. Especially, in the local area, various initiatives concerning sustainable development are executed at this level. The EMA vests local government authorities with environmental management functions. An environmental officer

is allocated by the EMA and the functions related to the environment are directed by several committees.

2) Procedure to Obtain Environmental Approval

Concerning the procedure to obtain environmental approval, NEMC sorts out projects with the following categorizes according to the degree of influence on the environment. The execution of an EIA is set up as follows under “The Environmental Impact Assessment and Audit Regulations, 2005”.

(Type-A: Project obliged to execute an EIA)

Project requires a precise survey on its influence scale, area and importance for appropriate countermeasures against the high possibility to generate notable adverse effects to the environment.

(Type-B: Project required to do preliminary environment assessment)

Project needs a preliminary environment assessment whether or not an EIA is necessary due to uncertain influence although some adverse influences are recognized.

(Type-C: Project not required to do preliminary environment assessment)

Project does not require further procedure to obtain environmental approval due to small or no adverse effects to the environment or society.

The above 3 are also called Category-A, Category-B and Category-C

(Source: The Environmental Impact Assessment and Audit Regulations, 2005, JICA Environmental Profile 2011)

Assessment of a proposed EIA is processed through the required procedures, which are shown on the Table 1.3-8, and finally approved by the responsible Minister for Environment, and then an EIA certificate is issued to the project proponent. Upon the issue of the EIA certificate, the project proponent has to commence the approved project within 3 years. The EMA defines that the rules related to an EIA are executed at the national level, sector level and local level. At this moment, all the EIA are executed at the national level. The major procedures for Environmental Approval is described below.

Table 1.3-8 Procedure to Obtain Environmental Approval

Step	Procedure	Content	Days required
1	Registration of Project	Project owner registers the project by the submission of an EIA application form to NEMC	
2	Screening	In order to sort out the category and decide EIA level, NEMC does screening based on the application form and explanation of project outline submitted by the project owner.	Within 45 days
3	Scoping	With the result of screening, in cases that a full scale EIA is needed, the project owner executes scoping done by a consultant and specifies the main problems to be predicted. On that basis, a TOR draft of an EIA is drawn up and submitted together with scoping report to NEMC for review and approval.	TOR of EIA is done within 14 days
4	Impact Assessment	EIA is executed based on the TOR being approved by NEMC. The out-put at this moment is an EIA report (or Environmental Impact Statement: EIS). Environmental Management Plan (EMP) and Monitoring Plan (MP) sort out the management of predicted impacts and the methods of monitoring are included in the EIA report. And, in case of executing EIA, a public hearing has to be held, the project owner is required to hear opinions from important stakeholders.	
5	Examination & Review	After submission of EIA report (EIS) by project owner, NEMC implements the site survey of the project and verifies the information. Thereafter, NEMC establishes Technical Advisory Committee for reviewing the EIA report.	NEMC reviews EIA report within 60 days
	Public Hearing	A public hearing about the impact on residents becomes necessary sometimes as part of the review process. A public hearing for residents is sometimes necessary to explain the project site, project type or scale, technique(s) to be used, land utilization, resettlement, accumulation of impacts, etc.	
6	Reflection on comments from TAC	EIA report is corrected based on the comments from TAC and re-submitted to NEMC.	
7	Approval	After submitted final EIA report, NEMC confirms whether it reflects properly against comments or recommendations from TAC. Then, NEMC makes conditions when EIA approval is issued. The determination of whether or not approval is given to the final EIA report is made by the Minister Responsible for Environment according to the EMA.	Minister determines approval or not on EIA report within 30 days
8	Appeal from affected resident	People influenced by the project owner and the project have the right to appeal and can appeal to the Court of Environment.	
9	Project Implementation	According to any additional conditions approved, the project is implemented based on the EMP and MP.	
10	Environmental Audit	Daily monitoring is done by the project owner. There are two types of environmental audits: one is an Environmental Impact Audit to compare predicted impacts in the EIA report and the actual situation after project implementation, and the other one is an Environmental Management Audit to confirm the observance of the plan, countermeasures and compliance.	

(Source: JICA Environment Profile 2011 and others)

The above procedure flow is as shown in Figure 1.3-2

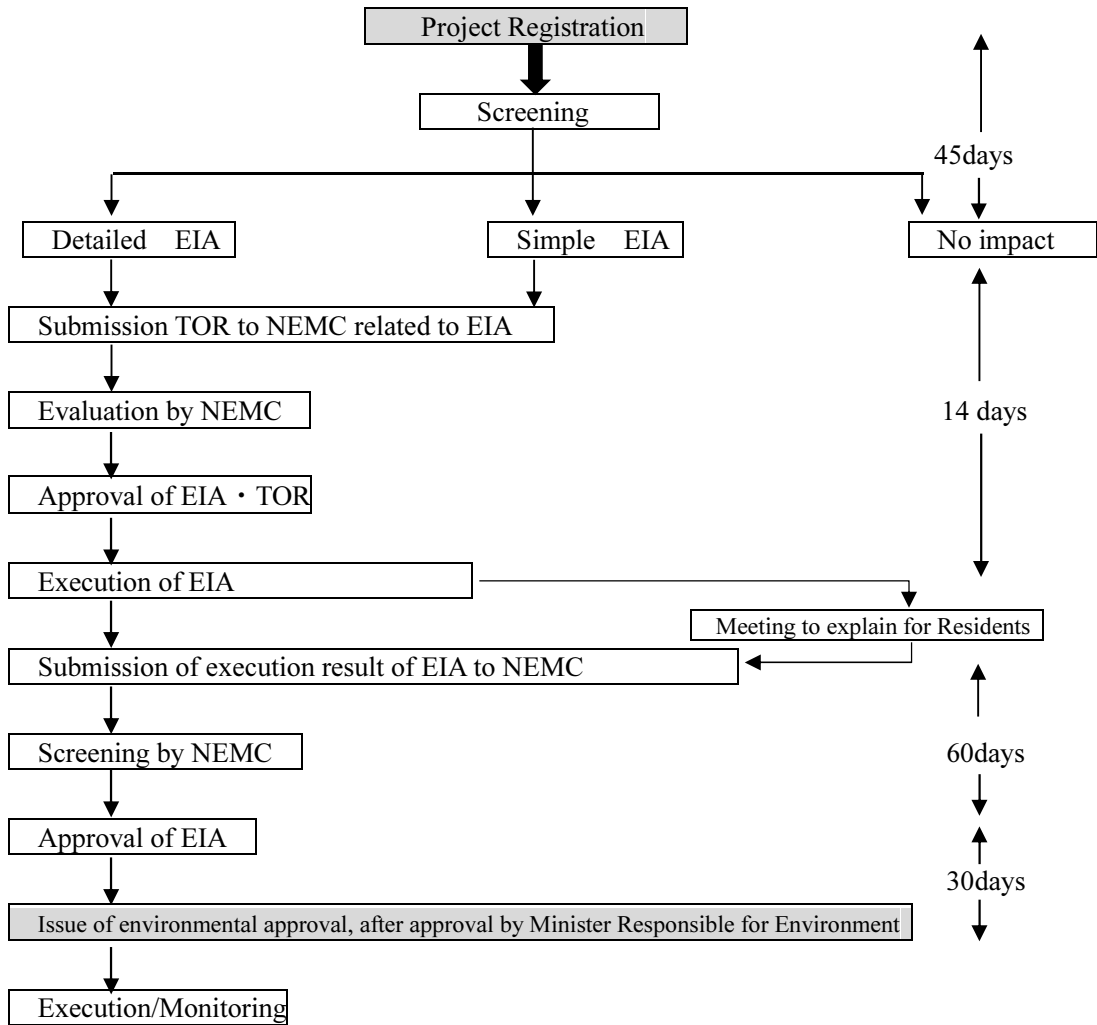


Figure 1.3-2 Procedure to Obtain Environmental Approval in Tanzania

3) Matters Concerning Environmental Approval of the Project

This project was regarded as belonging to the following two sectors, which are “Transport and Infrastructure” and “Building and Civil Engineering Industries”, and it was obliged to conduct an EIA under “The Environmental Impact Assessment and Audit Regulations, 2005.”

Table 1.3-9 Matters Concerning Procedure of Environmental Approval

Sector related in this project	Subsector in this project
Transport and infrastructure	Construction, expansion and repair of new main road
	Construction, expansion and repair of airport, runway and ancillary facilities
	New construction or expansion of railway
	New construction or expansion of shipbuilding dockyard or port facilities
	Installation or expansion of telecommunication tower
Building and Civil Engineering Industries	Land for industry and houses
	Main urban program (high-rise building, automobile terminal, market, etc.)
	Road, port, ship building yard, Kigoma Port, airport, railroad, and construction, expansion and repair of pipeline
	Development of beach front

(Source: The Environmental Impact Assessment and Audit Regulations, 2005, JICA Environment Profile 2011)

According to Article-35, Part VII of the Environmental Audit Act, in case that design changes occur after issuance of environmental approval, the project implementation agent submits Form 5 to NEMC and it is necessary to do an additional review concerning design change points. In cases where there is nothing to show that the project progress going by 3 years, the EIA certificate that NEMC issued will expire. In case of expiration, the project owner (TPA in the project) produces another EIA for review by NEMC to obtain a new EIA certificate.

TPA obtained an EIA certificate from NEMC on February 25, 2016. This EIA certificate is valid until February 2019 according to the responsible person at NEMC. If this project does not take any actions or commence further by February 2019, TPA will have to contact NEMC by written document notifying them of the delay of commencement of the project. However, the results of the meeting for the probability of variation of the EIA certificate with JICA, TPA and NEMC, it was confirmed that the variation of the EIA certificate is necessary. TPA will commence the required steps described to be taken below and will receive the approval of the variation of the EIA certificate.

Process of Variation of Obtained EIA Certificate

In the case of changing of an already obtained EIA certificate, it is necessary to follow these required procedures. The cost required to change it is 150,000 Tsh to be paid by TPA to NEMC. Even if the amendment of an already submitted EIA report is necessary, NEMC regards that the amendment works can be done adequately by the person in charge of TPA.

- i) Report on changing contents to NEMC (NEMC execute screening)
- ii) Upon the result of screening by NEMC, Form 5 is submitted to NEMC
- iii) Approval on EIA for changing contents
- iv) Correspond to amend the EIA in accordance with the direction from NEMC

The above procedure by NEMC needs 1 to 2 months.

4) Related Laws and Regulations

VPO (Vice President's Office) enacted NEP (National Environmental Policy, 1997) in 1997. This NEP aims at achieving sustainable development through adopting necessary corresponding measure for the rational utilization and development activity of natural resources for the protection of the environment. Environmental consideration is regarded as an important matter in the decision-making of the nation and, at the same time, this policy is to provide the framework for a built-in aspect of environmental consideration as a main factor of national decision-making.

The Government of Tanzania established the EMA (The Environmental Management Act, 2004) as the provision of a legal system framework for the management of environment and the execution of NEP. This Act regulates the roles of NEMC (National Environmental Management Council) and National Environmental Advisory Committee. NEMC handles all surveillances allocated to NEMC related to the environment, i.e., execution of EIA, compliance, screening, monitoring and public involvement in the environmental decision-making process. Out of these, NEMC ① suggests the approval or not by screening of EIA and ② confirms whether it is necessary for the project or program to execute an environmental audit or monitoring. VPO enacted the "Environmental Impact Assessment and Audit Regulations" the following year, 2005. This regulation establishes the procedures concerning the execution of EIA in Tanzania and describes procedures from EIA application to approval, entries and items to be included in an EIA, project list that needs the execution of an EIA. (JICA Environment Profile 2011)

Legislation concerning environmental impact assessment in Tanzania is listed below.

Table 1.3-10 Policy and Legal System Related to Environmental Impact Assessment in Tanzania

Segment	Name
Policies	National Environmental Policy, 1997
	National Forest Policy, 1998
	Water Policy, 2002
	The Wildlife and Wetland Policy of Tanzania, 2007
	Agriculture and Livestock Policy, 1997
	National Land Policy, 1995 (Revised in 1997)
	Tanzania Development Vision, 2000 National Strategy for Growth and Reduction of Poverty
Legal and Regulatory Framework	Environmental Management Act, 2004
	Environmental Impact Assessment and Audit Regulations, 2005
	Forest Act, 2002
	Water utilization and Control Act, 1974
	Wildlife Conservation Act, 1974
	National Land Use Planning Commission Act, 1984
	Rural Land Use (Planning and Utilization) Act, 1973
	The Land Act (No.6), 1999
	Village Land Act (No.7), 1999
	Land Regulation, 2001
	Land Disputes and Courts Act, 2002
	Local Government Act, 1982
	Occupational Health and Safety Act, 2003

Policies and basic laws concerning Environmental and social considerations other than the above are mainly as follows,

Table 1.3-11 Policies and Legal Regulatory Framework Related to Environmental and Social Considerations

Segment	Name	Enactment Year	Competent Ministry and etc.
Policies	National Environmental Policy	1997	VPO (Vice President's Office)
	National Forest Policy	1998	Ministry of Natural Resources and Tourism
	National Tourism Policy	1998	
	Wildlife and Wetland Policy	2007	
	National Water Policy	2002	Ministry of Water and Irrigation
	Agriculture and Livestock Policy	1997	Ministry of Agriculture and Livestock Development
	National Energy Policy 1992	1992	Ministry of Energy and Minerals
	National Mineral Policy	1998	
	National Transport Policy	2003	Ministry of Transport and Communication
	Construction Industry Policy	2002	Ministry of Works
	Road Safety Policy	2009	Ministry of Infrastructure Development
	National Human Settlements Development Policy	2000	Ministry of Land, Housing and Human Settlement Development
	National Land Policy (Revised in 1997)	1997	
	Women and Gender Development Policy	2000	Ministry of Women, Gender and Children Development
National Policy on HIV/AIDS	2001	Prime Minister's Office	
Legal and Regulatory Framework	Environment Management Act	2004	VPO
	The Environmental Impact Assessment and Audit Regulations	2005	
	The Environmental (Regulations of Environmental Experts) Regulations	2005	
	Strategic Environmental Assessment Regulations	2008	
	National Environmental Standards 2005	2005	Tanzania Bureau of Standards
	The Grave (Removal) Act	1969	Ministry of Land, Housing and Human Settlement Development
	Land and Village Land Acts No. 4 & 5 of 1999	1999	
	The Land Regulations	2001	
	The Land Use Planning Act No. 6	2007	
	The Urban Planning Act	2007	
	Local Government Acts No. 7 & 8	1982	
	Regional and District Act No. 9	1997	
	The HIV and AIDS (Prevention and Control) Act	2008	
	Forest Act	2002	Ministry of Natural Resources and Tourism
	Wildlife Conservation Act No. 5	2009	
	Protected Places and Areas Act	1969	
	Marine Parks and Reserves Act	1994	
	Water Resources Management Act	2009	Ministry of Water and Irrigation
	The Road Act	2007	Ministry of Infrastructure Development
	Surface and Marine Transport Regulation Authority (SUMATRA) Act	2001	Ministry of Transport and Communication
	Mining Act (No. 5 of 1998)	1998	Ministry of Energy and Minerals
	Mining (Environmental Management and Protection) Regulations	1999	
	The Electricity Act	2008	
	The Petroleum Act	2008	
	Occupational Health and Safety Act	2003	Ministry of Labor, Employment and Youth Development
	The Employment and Labor Regulations Act	2004	

5) International Treaty Related to Environmental Protection Ratified by Tanzania

The following is a list of international treaties and agreements related to environmental protection ratified by Tanzania.

Table1.3-12 International Treaty and Agreement Related to Environmental Protection Ratified by Tanzania

Field	International treaty and agreement related to environmental protection	Enacted year
Biodiversity /Ecosystem	The Convention on Wetlands of International Importance Especially as Waterfowl Habitat (the Ramsar Convention)	1971
	The convention on International Trade in Endangered species of Wild Fauna and Flora (CITES), Washington	1979
	Nairobi Convention for the Protection, Management and Development of the Marine and Coastal Environment of the Eastern African Region and the Related Protocols	1985
	The Convention on Preservation of Fauna and Flora in their Natural State, London	1993
	Lusaka Agreement on Cooperative Enforcement Operations Directed at Illegal Trade in Wild Fauna and Flora	1994
	United Nations Convention on Biological Diversity	1996
	Convention on Sustainable Management of Lake Tanganyika	2004
Marine environment	The Convention on the Prevention of Marine Pollution by Dumping of Wastes and other Matters, London	1972
	The Convention on the Prevention of Marine Pollution from ships (MARPOL)	1973
	The United Nations Convention on Law of the Sea, Montego Bay	1982
	Convention on Development and Protection of Coastal and Marine Environment for the Eastern Africa Region	1985
Cultural Heritage	The Convention Concerning the Protection of World Cultural and Natural Heritage, Paris	1972
Hazardous Waste /Chemical substance	Bamako Convention on the Ban of the Import into Africa and the Control of Transboundary Movements of Hazardous Wastes within Africa	1990
	The Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal	1993
	Rotterdam Convention of Prior Informed Consent Chemicals	1998
	Stockholm Convention on Persistent Organic Pollutants (POPs)	2002
Ozone Layer	The Vienna Convention on the Protection of the Ozone Layer	1993
	Montreal Protocol on Substances that Deplete the Ozone Layer	1993
Climate Change	United Nations Framework Convention on Climate Change - adopted in 1992	1996
	Kyoto Protocol to the United Nations Framework Convention on Climate Change	2002
Desertification	United Nations Convention to Combat Desertification	1997

Source: Tanzania Environment Profile JICA 2011, Final Report JICA 2017 and main Study for Tanzania National Power System Master Plan

(4) Comparison of Alternative Plan (Including No Project Option)

The alternative plan for this project is made a comparative review of the occupied area for the construction land to be in this project. The result is as follows.

1) No Implementation of the Project:

If nothing is done the following can be expected. No influence occurs on additional construction costs to Kigoma Port, relocation of 6 WFP tents, liner boats operation during construction period and custom's work, etc. Problems of efficiency and safety will continue. In

addition, various problems remain unsolved such as inefficient boarding of passenger boats, occurrence of serious accidents by continued use of a heavily damaged jetty that is anticipated to collapse, insanitary toilet, unsanitary environment when it rains, cargo warehouse that is anticipated fall down due to aging deterioration.

2) This Project:

The rehabilitation of the existing jetty is executed. Approximately 0.35 ha landfill is made for the construction of the new jetty. A new passenger terminal building with attaching customs, immigration and quarantine offices is constructed, and the existing passenger waiting facility and customs quarantine facilities are demolished. In addition, a general cargo warehouse is constructed where 6 WFP tents are installed due to the deterioration of the existing general cargo warehouse. Therefore, the removal (relocation) of 6 WFP tents comes up.

3) Alternative 1:

The difference with this project is to use the existing jetty and barge without improving the passenger wharf. Other than this, rehabilitation and new construction of passenger terminal and construction of new warehouse are the same as this project.

4) Alternative 2

The difference with this project is to construct a new high rise general cargo warehouse. With this, the number of removal (relocation) of WFP tents can be reduced from 6 to three. Other than this, rehabilitation of passenger wharf, rehabilitation and new construction of passenger terminal are same as this project.

Table 1.3-13 Comparison of Alternative Plans of New Kigoma Port Construction

Environmental entry	No project implementation option	This project	Alternative-1	Alternative-2
Land area to be planned	Same as now	Same as now	Same as now	Same as now
Construction cost	Not required	expensive than alternative-1	Cheaper than this project	Cheaper than this project
Land acquisition	Not required	Not required	Not required	Not required
Resettlement	Not required	Not required	Not required	Not required
Landfill	Not required	Approximately 0.35ha landfill is made for the construction of new jetty	Not required	Approximately 0.35ha landfill is made for the construction of new jetty
Pavement on access road	Dirt road remains unchanged and bad surface in the rainy season and sand dust from vehicular traffic during the dry season	Vehicles transportation become smooth in rainy and dry seasons by paving the existing access road from main road to passenger terminal	Same as this project	Same as this project

Public facilities	Not required	6 food storing tents of the WFP (World Food Programme) need to be removed (relocated) for the installation of a new general cargo warehouse.	Same as this project	Removal (relocation) of 3 WFP tents it is a decrease by half from the project.
Condition of port related facility	As a result of leaving the existing passenger wharf that is heavily deteriorated, it is anticipated that collapse will occur at some stage and em/disembarkation will be seriously in trouble. The existing general cargo warehouse is around 90 years old and the deterioration is remarkable. There are some holes on the second floor making it hard to use, and the concrete supporting the 2 floor office has significantly deteriorated creating the risk of collapse.	As remarkably deteriorated jetty is rehabilitated, the risk of collapse is avoided. As the wharf will not need the barge which is used now, and em/disembarkation by boat users will be smooth. Furthermore, the passenger terminal will be constructed to have a sanitary toilet and comfortable passenger terminal building, comfortable use by passengers can be expected.	The passenger jetty, which is heavily deteriorated, will be remain unchanged and collapse of the berth is anticipated at some point causing serious troubles to occur when passengers em/disembark.	Same as this project
Benefit	Waiting zone can accommodate approx. 200 passengers, however, the actual passenger count usually exceeds 400. Thus passengers wait a long time sitting around until boarding by passengers who cannot use the waiting zone is completed. The toilet for passengers installed at the port facility cannot be regarded as sanitary.	Convenience for passengers will be greatly improved by constructing a passenger terminal building where 500 passengers can wait comfortably until the departure of their ship plus a sanitary toilet. The planned toilet to be constructed will be handicapped accessible, and is in consideration for the vulnerable.	Same as this project	Same as this project
Consideration to Socially vulnerable	The existing toilet which passenger can use has no facilities for disabled people.	The toilet to be constructed in the passenger terminal building will be a handicapped accessible facility that disabled people can use, it is in consideration for the vulnerable.	Same as this project	Same as this project

Water pollution and ecosystem in water	Without a sanitary toilet, human excreta is incontinent in the port, and water pollution is caused by neglecting the waste disposal problem in the port and surrounding area.	Along with the rehabilitation work on the existing jetty, approx. 0.3 ha of landfill is required. Hence, it is anticipated that some influence on water pollution and benthic life to occur.	Same as this project	Same as this project
Treatment of waste	Apparent problem has not occurred since treatment of waste is periodically done in Kigoma Port.	Apparent problem has not occurred since treatment of waste is periodically done in Kigoma Port.	Same as this project	Same as this project
Overall Evaluation	<p>(Issue)</p> <ul style="list-style-type: none"> ● There will be the probability of an accident with passenger ship users and big troubles for passenger ship operations by the extremely high risk of berth collapse due to deterioration. ● Inconvenience of the passengers using the barge remains unchanged. ● Inconvenience of using an unsanitary toilet for passenger ship users remains unchanged. ● The deteriorated warehouse is not rehabilitated and collapses causing major damage and the risk of accidents for the workers is very high. 	<p>(Merit)</p> <ul style="list-style-type: none"> ● The risk for berth collapse is excluded by the rehabilitation of the passenger wharf, and em/disembarkation using the barge will not be necessary which improves convenience and safety a lot for passengers and workers. ● Convenience and sanitary improvement for passengers and workers can be expected from the construction of a sanitary toilet that disabled people can use, construction of new passenger terminal, etc. ● Safety and convenience is greatly improved with the construction of a new general cargo warehouse 	<p>(Issue)</p> <ul style="list-style-type: none"> ● There will be the probability of an accident with passenger ship users and big troubles for passenger ship operations by the extremely high risk of berth collapse due to deterioration. ● Inconvenience of the passengers using the barge remains unchanged. ● Inconvenience of using an unsanitary toilet for passenger ship users remains unchanged. 	<p>(Merit)</p> <ul style="list-style-type: none"> ● Same improvement can be expected ● The number of removal (relocation) of WFP tent will decrease by half. <p>(Issue)</p> <ul style="list-style-type: none"> ● The cost will be expensive by comparison to this project.
	△	◎	○	○

(5) Scoping

Concerning the scoping in environmental and social aspects by implementation of this project are as per Table 1.3-14

Table 1.3-14 Result of Scoping

Entry	No.	Check item	Evaluation		Evaluation reason
			Before & during construction	In operation	
Pollution abatement	1	Ambient air pollution	B-	D	During construction period, generation of dust by removal of the existing facilities and exhaust gas from construction vehicles are anticipated. After in service, there will be no impact by this project.
	2	Water contamination	B-	B-	During construction period, the generation of water contamination is anticipated by the construction on the lake coast. After in service, water pollution is anticipated by the generation of toilet sewage from office facility in the new Kigoma Port and public toilet to be installed.
	3	Waste	B-	D	During construction period, along with the removal of existing buildings on the site, construction debris will be generated. After completion, users of Kigoma Port and port facility operations are predicted to generate waste.
	4	Soil contamination	D	D	In each phase of before construction and during construction period and after in service, there will be no impact is anticipated.
	5	Noise and Vibration	B-	D	Noise and vibration from construction machineries and vehicles is anticipated to occur in the Kigoma Port rehabilitation site and surrounding area. After in service, the increase of noise and vibration is not anticipated.
	6	Land subsidence	D	D	Land subsidence is not anticipated by this project.
	7	Offensive odor	D	D	Offensive odor is not anticipated by this project.
	8	Bottom sediment	D	D	Adverse effect to bottom sediment is not anticipated by this project
Natural environment	9	Protected area	D	D	There is no protected area in this project site and adjacent area.
	10	Ecosystem	C	C	Adverse effect to the ecosystem by this project is unknown.
	11	Hydrometeor	D	D	There is no adverse effect to hydrometeor by this project.
	12	Topography and geology	D	D	There is no adverse effect to topography and geology by this project
Social environment	13	Involuntary resettlement and site acquisition	C	D	The occurrence of resettlement or site acquisition by this project is unknown.
	14	Vulnerable people	D	D	Adverse effect on vulnerable people is not anticipated by the implementation of this project.
	15	Minorities and indigenous people	D	D	There is no impact on minorities and indigenous people by this project.
	16	Local economy such as employment and livelihood	C	D	As the commercial activities within this site or along the access road to be paved by this project is unknown, the adverse effect is unknown.
	17	Land use and local resource utilization	D	D	No adverse impact is predicted by this project.

	18	Water utilization	D	D	As the water supply in this project plans to use general clean water, no adverse impact is predicted by this project.
	19	Existing social infrastructure and social service	B-	D	Coinciding with the rehabilitation work on the passenger wharf, there will be no wharf for passenger ships to dock at. It is necessary to plan an alternative wharf for passenger ship berthing. No adverse impact is predicted after commencement of operations.
	20	Social organization like social capital and local decision-making body	D	D	No adverse impact is predicted by this project.
	21	Uneven distribution of damages and benefits	D	D	No adverse impact is predicted by this project.
	22	Conflict of interest in the area	D	D	No adverse impact is predicted by this project.
	23	Cultural heritages	C	D	The existence of local historical or cultural heritage sites in the project site or area to be influenced by construction work and others is unknown.
	24	Landscape	C	D	The impact to landscape by this project is unknown.
	25	Gender	D	B+	As this project plans to install sanitary toilets designated by gender, women can safely use them, good impact is predicted for gender. While, no adverse impact by this project is predicted to gender.
	26	Children's right	D	D	No adverse impact is predicted by this project.
	27	Infectious diseases such as HIV/AIDS	D	D	No adverse impact is predicted by this project.
	28	Vocational environment (including labor safety)	B-	D	There is the risk of accidents occurring for workers during the construction period.
Others	29	Accident	B-	D	There is the risk of accidents occurring for workers during the construction period. No accident is predicted after commencement of service.
	30	Transboundary impact and climate change	D	D	No adverse impact is predicted by this project.

A+/-: serious impact is predicted

B+/-: Not serious but middle level impact is predicted

C+/-: Impact is unknown

D+/-: Almost no impact is predicted

(6) Survey Results of Environmental and Social Considerations (Including Predicted Results)

1) TOR of Environmental and Social Considerations

TOR of environmental and social considerations studied is as shown in Table 1.3-15.

Table 1.3-15 TOR of Environmental and Social Considerations

Entry	Check Item	Survey Method
Study of alternative plan	<ul style="list-style-type: none"> ● Component's contents to be constructed and installed and facility design and layout ● Location of temporary yard and occupied scale, etc. 	<ol style="list-style-type: none"> 1) Content of the project plan 2) Site survey 3) Number of relocated households, minimization of land acquisition and maximization of project profit
Involuntary Resettlement and land acquisition	<ul style="list-style-type: none"> ● Area of influence by project implementation ● Confirmation of resident, shop and private land 	<ol style="list-style-type: none"> 1) Site survey and hearing survey of surrounding area 2) Past survey data and hearing survey to related organization 3) Survey of cadastral map, etc.
Local economy for employment, livelihood, etc.	<ul style="list-style-type: none"> ● Confirmation of shops to do business in project site or on the access road ● Operating state of neighboring fishermen ● Area of influence by project implementation 	<ol style="list-style-type: none"> 1) Hearing survey to neighboring fishermen 2) Hearing to related organizations 3) Hearing in stakeholder's meeting
Existing social infrastructures and social services	<ul style="list-style-type: none"> ● Confirmation of alternative wharf to be used by TPA passenger ships ● Utilization state of Kigoma Port 	<ol style="list-style-type: none"> 1) Existing survey data 2) Site survey and hearing survey
Cultural heritage	<ul style="list-style-type: none"> ● State of cultural heritage of surrounding residents 	<ol style="list-style-type: none"> 1) Existing survey data 2) Site survey and hearing survey
Landscape	<ul style="list-style-type: none"> ● State of surrounding and project site landscape 	<ol style="list-style-type: none"> 1) Facility plan of this project and design plan view 2) Site survey
Eco system	<ul style="list-style-type: none"> ● Construction scale ● Confirmation of precious water organism 	<ol style="list-style-type: none"> 1) Existing survey data 2) Site survey and hearing survey
Ambient air	<ul style="list-style-type: none"> ● Confirmation of environmental standard ● Confirmation of surrounding houses, schools, hospitals, etc. near project site ● Influence during construction period 	<ol style="list-style-type: none"> 1) Existing survey data 2) Site survey and hearing survey 3) Confirmation of content, method, duration, location and area of construction work, construction machineries, travel route, etc.
Water quality	<ul style="list-style-type: none"> ● Water quality of lakes ● State of human sewage into lake water 	<ol style="list-style-type: none"> 1) Existing survey data, collection data in related organization 2) Site survey and hearing surveys in the vicinity of the project area
Waste	<ul style="list-style-type: none"> ● Treatment method of construction debris 	Hearing survey, etc. to related organization
Noise and vibration	<ul style="list-style-type: none"> ● Confirmation of environmental standard, etc. ● Distances to resident area, hospital and school from the source 	<ol style="list-style-type: none"> 1) Existing survey data 2) Site survey and hearing survey 3) Confirmation of content, method, duration, location and area of construction work, location of temporary yard, construction machineries, etc.
Vocational environment (including labor safety)	<ul style="list-style-type: none"> ● Labor safety measures 	Survey of similar cases
Accident	<ul style="list-style-type: none"> ● Confirmation of work site and method 	Confirmation of content, method, duration, location and area of construction work, location of temporary yard, construction machineries, etc.

2) Interview Survey

Simple interview surveys were given to residents living around the area to be influenced by implementing this project, fishermen working on the lake coast nearby, people doing commercial activity around the access road and related people concerning such activities. The survey contents and result are described at “5) Site survey and hearing survey.” As a result of the site survey and hearing survey, it was proved that involuntary resettlement, land acquisition, and commercial relocation do not come up with the implementation of this project.

3) Explanation on JICA Environmental and Social Considerations Guidelines

Explanations of this project and JICA Environmental and Social Considerations Guidelines were made to Mr. Sonda Thobias who belongs to the Unit of Fire, Safety, Health and Environment of TPA during the preparatory survey period of this project.

4) Survey Results of Environmental and Social Consideration

a) Survey Result of Environmental and Social Considerations Based on the TOR Plan

The survey result of environmental and social considerations based on the TOR plan previously made is as shown in Table 1.3-16.

Table 1.3-16 Survey Result of Environmental and Social Considerations

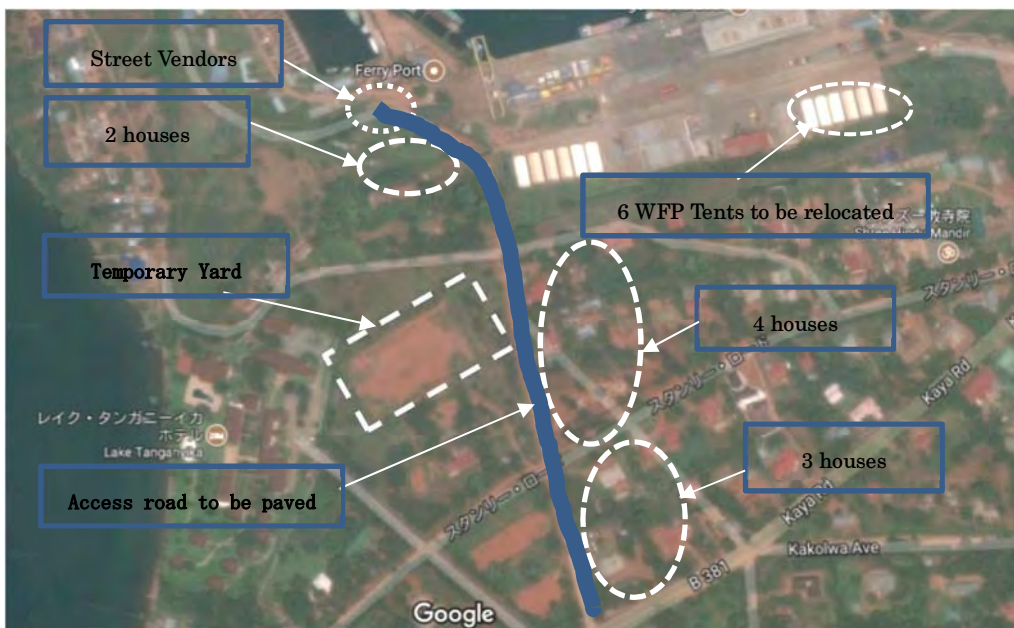
	Influenced item	Survey result
1	Involuntary resettlement and land acquisition	According to the site survey and hearing survey, they proved that resettlement of residents does not come up nor land acquisition.
2	Local economy such as employment, livelihood, etc.	There are street vendors engaging in business at the project site and around the access road during the construction work period. However, these street vendors have no fixed premises and their mobility is extremely high. They open their shops to match the schedule of the passenger ships, i.e., monthly 2 times. This was proved by the hearing from TPA related people. Furthermore, as the pavement work on the access road will be done one traffic lane at a time leaving the other lane free for vehicles and pedestrians. Therefore, street vendors can engage in their businesses. As the section of “the Mitigation Measures” describes, it is necessary to pay attention to the street vendors’ business space during the construction period. On the other hand, the artisanal fishermen anchoring their boats adjacent to the project site will have little impacts on their fishing operation of fishing ground and cruise routes to the ground as their characteristics are described on the “Table 1.3-20 Summary of interview survey to neighboring artisanal fishermen”.
3	Water utilization	The water supply of each facility in this project are planned to take water from a general clean water tap and no utilization of groundwater. This project will not consume a large volume of water. Moreover, this project’s port facilities will not consume a large volume of water which would significantly exceed the present amount of water consumption.

		Therefore, it is predicted that there is no influence on local water utilization.
4	Existing social infrastructure and social service	The liner passenger ship, MV Liemba operates once every other week at the project site, and the construction work is scheduled to rehabilitate the wharf where the passenger ship is berthed. During the construction period, the wharf on the cargo warehouse side is scheduled to be partly used at the same time, and customs and quarantine offices will be installed on a temporary basis. The influences on the passenger ship users and the work of customs and quarantine officers can be minimized. The influence of construction work on the pavement of the access road to surrounding residents can be minimized by doing construction work only one lane at a time and leaving the other lane opened for road users. Also, a temporary yard to be constructed during the construction period is scheduled to be installed near the site (around 100 m from Kigoma Port), the exact place is indicated on “Figure 1.3-3 Kigoma Port and the surrounding situation” and “Figure 2.2.4.1-4 Location Map of Temporary Construction Yard and Road”. Therefore, traffic jams due to congestion from construction vehicles is not predicted. Upon the construction of the new warehouse to be scheduled in this project, 6 tents are obliged to relocate out of 12 tents installed in Kigoma Port by WFP (World Food Programme). TPA has planned to relocate them in Kigoma Port and the relocation place and the process are to be decided by the TPA and WFP.
5	Cultural heritages	Any cultural heritage is not confirmed at Kigoma Port or along the access road to be paved. However, there are 3 big trees with a height of 20 m and diameter of 2 m on the sides of the access road and around the passenger waiting room. These trees provide shade to people waiting for passenger ships and become precious rest spaces for Kigoma Port workers. Therefore, the work plan is to avoid cutting down these trees as much as possible.
6	Landscape	The same as stated in the above cultural heritage, there are 3 big trees with a height of 20m and diameter of 2m next to the access road and around the passenger waiting room. These trees provide shade to people waiting for passenger ships and become precious rest spaces for Kigoma Port workers. In view of conservation of landscape as well, the work plan is to avoid cutting down these trees.
7	Eco system	It is predicted that land filling for rehabilitating the wharf and dredging work in the water will impact more than a little on the living area of specific benthic life species. The water in front of the wharf where is out of the same water as the Lake, i.e., left coast (named Kigodeko), that water area is rich in biodiversity with observations of Lates Mariae (endemic and IUCN vulnerable species). Juvenile freshwater fish have made a habitat only in this water area in Lake Tanganyika, Cichilidae=Tropheus Duboisi Marlier, same endemic and vulnerable species, concerning shellfish L. littorina (Hirthis Spp.) that is IUCN threatened species, L. Coronata (Lavigeria Spp.) that is near threatened species and etc.

		However, land filling water area is approximately 0.3 ha and the influence to these fishes is considered to be minor.
8	Ambient air	<p>It is predicted that the dust from the removal of the existing market before construction commences on this project will be generated. During the construction period, an increase of exhaust gas and the generation of dust from construction vehicles are predicted. After commencement of service, no influence by this project is predicted. According to the WHO website (http://apps.who.int/gho/data/node.main.152?lang=en), the level of PM 2.5 is 23.9 ug/m³ in urban areas of Tanzania, and an average of 21.7 ug/m³ in the whole nation which is higher than the WHO's standard of 10 ug/m³.</p>
9	Water quality	<p>During construction period, it is predicted that the generation of water turbidity by leakage of oil and others in the process of construction using heavy machinery along with construction work on the coast area. After commencement of service, along with the discharge of toilet sewage from the office facility of the new Kigoma Port and public toilets, the generation of water contamination is anticipated, however, by installing penetration type toilets by bacterial detachment or others, the prevention of water contamination is possible.</p>
10	Waste	<p>During construction period, construction debris will be generated along with the removal of existing buildings on the site. Out of these, recyclable materials will be recycled and the remaining waste transported to proper places for disposal. The total volume of construction debris is estimated at approximately 150m³, which the Kigoma-Ujiji municipal's wastes disposal center is quite capable to accommodate since its total volume of capacity is approximately 600,000 m³ (area size: 6ha, with the depth of 10m) in volume. After commencement of service, waste is generated by littering from Kigoma Port users, engaged persons of small scale shops and visitors. A waste management committee is already established by Kigoma port users and related people will consider the method of waste treatment. The new place for the waste disposal centre of Kigoma-Ujiji municipal will open in 2018. The general outline of the center is as follows.</p> <ul style="list-style-type: none"> • Place: Msimba approximately 13km from the Kigoma Port • Capacity of the Msimba waste disposal center: 2 cells, each of the cells is approximately 600,000 m³ (area size: 6ha, with the depth of 10m)
11	Noise and Vibration	<p>Noise and vibration are generated by heavy machines and construction vehicles, etc. during the construction period in the site and vicinity. This can be mitigated to decrease the noise damage to surrounding residents by providing time restriction like limiting their work to daytime and no construction work at night. After commencement of service, the increase of noise and vibration cannot be predicted.</p>
12	Vocational environment (including labor safety)	<p>During construction period, there is the fear of accidents happening to workers, however, accidents can be reduced or avoided by execution of safety education, installation of accident prevention fences, and ensuring safe driving by drivers of heavy machines and vehicles.</p>

13	Accident	During construction period, there is the fear of accidents happening to workers. As described above, the generation of accidents can be reduced or avoided by safety education and ensuring safe voyage. After commencement of service, traffic accidents are anticipated between the various vehicles coming to Kigoma Port and users and port workers, however, they can be mitigated by traffic control or direction of a safe driving program from the new Kigoma Port Operation Committee. The TPA is planning for vehicles to change to one way traffic in Kigoma Port for the smoother driving patterns and reduction of traffic accidents after completion of the new Kigoma Port.
14	Excavation sites (Borrow pit)	Excavation sites / borrow pits are required to obtain environmental approval based on the “Mineral Sector Environmental Impact Assessment Guidelines” in Tanzania. To arrange necessary soil and rocks for construction activities, a construction contractor of this project is required to select suppliers who have obtained environmental approval for their excavation sites and borrow pits, and the contractor is required to report to a responsible consulting firm on this matter.

The following shows location to be the project site and vicinity.



(Remark: Blue line shows access road to be paved approx. 480m long)

(Source of aero photograph: Google Earth)

Figure 1.3-3 Kigoma Port and Surrounding Situation

b) Water Quality

A detailed water survey was executed around Kigoma Port in Lake Tanganyika at the time of the previous site survey and below is the result. Table 1.3-17 (Latitude and Longitude) and water quality samples (collected November 14 and 15, 2011) taken from 6 points on the survey point map shown in Figure 1.3-4 was analyzed and the results obtained are shown in Table 1.3-18.

Table 1.3.17 Water Quality Surveying Point (by latitude and longitude)

	WTZ 1/A	WTZ 2/B	WTZ 3/C	WTZ 4	WTZ 5	WTZ 6/D
Latitude	4°52'36.61"S	4°52'29.16"S	4°52'26.63"S	4°52'11.08"S	4°53'7.71"S	4°52'21.42"S
Longitude	29°37'25.40"E	29°37'23.20"E	29°37'29.42"E	29°37'12.53"E	29°37'12.46"E	29°37'43.69"E



Figure 1.3-4 Water Survey Point (Map)

Table 1.3-18 Result of Water Quality Sampling Analysis

Parameter	Unit	WTZ 01	WTZ 02	WTZ 03	WTZ 04	WTZ 05	WTZ 06
Temperature	°C	25.2	24.4	25.5	25.5	25.2	25.1
Salinity	mg/l	332	331	332	330	330	329
pH	-	9.2	9.3	9.2	9.2	9.3	9.2
Suspended Soil (SS)	mg/l	<1	<1	<1	<1	<1	<1
Chemical Oxygen Demand (COD)	mg/l	5	5	5	5	5	10
Biochemical Oxygen Demand (BOD)	mg/l	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dissolved Oxygen (DO)	mg/l	6.13	6.27	6.49	6.50	6.32	6.35
Coliform Bacilli	ufc/100 ml	#9	9.3 10 ¹	#9	#9	9.3 10 ¹	9.3 10 ¹
Total Nitrogen (T-N)	mg/l	4.2	8.4	9.8	5.6	7.0	7.0
Total Phosphorus (T-P)	mg/l	0.000	0.000	0.000	0.000	0.000	0.010

Incidentally, for calibration of the lake water temperature, pH and dissolved oxygen (DO), water quality calibration kits were utilized at the site. As for November 14, 2011, when the lake water samples were taken at surveying points WTZ1/A and WTZ2/B, the weather turned out to be very windy, and on the following day, November 15, when samples were taken at the other surveying points WTZ3/C to WTZ6/D, the weather was cloudy.

Water quality survey was executed paying attention to possible water contamination (including water analysis of river mouth) by human sewage and putting stress on the surrounding water area, offshore from the rehabilitated wharf, and points of suspected industrial wastewater (for example, coast leaking of waste oil from TANESKO Power Plant). Basically, the following analysis reaches the conclusion that there is some contamination impact from human sewage.

- i) Any pH value is high with 9 and above. Alkali was found however, as Lake Tanganyika, is next to the project site and it has had the feature of around pH 9.5 from ancient times, the influence from human sewage cannot be obtained from pH. The numerical figure of (-6.5

mg/l) of DO shows the feature of high value closer to saturated condition which is same as past research

- ii) As the figure of Coliform count is extremely high (90 to 93 groups per 100ml) and total phosphorus shows higher in Kigoma bay than offshore, especially with the cause of leaking sewage water (in the case of Kigoma city, sewage is treated by septic tank only and discharge into Lake Tanganyika directly through drain), water contamination is considered to be generated by human sewage. And, it is supported by past research data (Chitamwebwa, 1994) showing very high figure of coliform (1000 groups per 100 ml) from 5 points water quality surveys carried out in Kigoma Bay.
- iii) Detected salinity (-0.33 g/l) meets with the past general feature of Lake Tanganyika (conductance rate: -615 μ S/cm) and Kigoma Bay (conductance rate: 630 μ S/cm) understanding from the past research data and nutrition like mineral was found to be contained.

Water quality of Tanzania is regulated to discharge standard and environmental standard shown in Table 1.3-19.

Table 1.3-19 Discharge Standard and Environmental Standard of Water Quality in Tanzania

Item	Unit	Discharge Standard		Environmental Standard				EHS Guideline
		TL	MPC	TL	MPC-1	MPC-2	MPC-3	
pH	–	–	6.5–8.5	–	6.5–8.5	6.5–8.5	6.5–9.0	6–9
TDS	mg/l	2500	3000	1700	2000	2000	2000	
TSS	US/cm ³	60	100	–	–	–	–	
Conductivity	mg/l	400	–	–	–	–	–	
BOD _{20°C}	mg/l	25	30	3.5	5	5	10	30
COD	mg/l	45	60	–	–	–	–	125
Chloride-Cl	mg/l	650	800	170	200	200	400	
Sulphate-SO ₄	mg/l	600	600	500	200	200	200	
Ammonia-N	mg/l	7.5	7.5	0.35	0.5	0.5	0.5	
Nitrate-N	mg/l	50	50	35	50	50	100	
Phosphate-PO ₄	mg/l	6.0	0.5	–	–	–	–	
Cyanide-Total	mg/l	0.1	0.01	0.035	0.5	0.5	0.1	
Oil & Grease	mg/l	1.0	5	0.35	0.5	0.5	5	10
Phenols	mg/l	0.2	0.1	0.0015	0.002	0.002	0.1	
Total Hydrocarbons (dissolved & emulsified)	mg/l	–	–	–	–	–	–	
As	mg/l	0.10	0.1	0.04	0.5	0.05	0.1	
Cd	mg/l	0.10	0.1	0.04	0.5	0.05	0.2	
Cd (Total)	mg/l	0.10	0.1	–	–	–	–	
Cr ⁺⁶	mg/l	0.10	2.0	0.04	0.05	0.05	0.1	
Cu	mg/l	1.0	1	2.5	3	3	4	
Fe (Total)	mg/l	3	5.0	0.75	1	1	1.5	
Pb	mg/l	0.02	0.2	0.75	1	1	1.5	
Hg	mg/l	0.005	0.005	0.00075	0.001	0.001	0.002	
Ni	mg/l	0.2	0.5	0.4	0.05	0.05	0.1	
Zn	mg/l	1.0	0	0.15	0.2	0.2	0.5	

Notes:

TL (Trigger Level) = If this level is exceeded, preparation for source investigation and counter measure will be required.

MPC (Maximum Permissible Concentration) = Permissible standard of domestic wastewater and industrial discharge, stipulated by Water Utilization (Control and Regulation) Amendment Act, 1981.

MPC -1, 2, 3 = permissible standard of below categories 1, 2 and 3.

Category 1: for potable use, swimming pool, soft drinks for food industry, usage by drug industry

Category 2: for livestock breeding, cultivation, recreational usage

Category 3: other usage apart from Category 1, 2; usage for irrigation and general industries, etc.

Table 1.3-20 Results of water quality analysis and the standard of water quality and environment standard

Item	unit	Results of water quality analysis						Discharge Standard		Environmental Standard				EHS Guideline
		WTZ 01	WTZ 02	WTZ 03	WTZ 04	WTZ 05	WTZ 06	TL	MPC	TL	MPC-1	MPC-2	MPC-3	
Temperature	°C	25.2	24.4	25.5	25.5	25.2	25.1	-	-	-	-	-	-	-
Salinity	mg/l	332	331	332	330	330	329	-	-	-	-	-	-	-
pH	-	9.2	9.3	9.2	9.2	9.3	9.2	-	6.5~8.5	-	6.5~8.5	6.5~8.5	6.5~9.0	6.0~9.0
Suspended Solid (SS)	mg/l	<1	<1	<1	<1	<1	<1	-	-	-	-	-	-	50
Chemical Oxygen Demand (COD)	mg/l	5	5	5	5	5	10	45	60	-	-	-	-	125
Biochemical Oxygen Demand (BOD)	mg/l	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	25	30	3.5	5	5	10	30
Dissolved Oxygen (DO)	mg/l	6.13	6.27	6.49	6.50	6.32	6.35	-	-	-	-	-	-	6>*
Coliform Bacilli	ufc/100 ml	#9	9.3 10 ¹	#9	#9	9.3 10 ¹	9.3 10 ¹	-	-	-	-	-	-	400
Total Nitrogen (T-N)	mg/l	4.2	8.4	9.8	5.6	7.0	7.0	50	50	35	50	50	100	10
Total Phosphorus (T-P)	mg/l	0.00	0.00	0.00	0.00	0.00	0.01	6	0.5	-	-	-	-	2

(* indicates the standard of Japan Fishery's water standard)

5) Site Survey and Hearing Survey

a) Residents around the site

Key stakeholders who did not participate in the stakeholders' meeting were local artisanal fishermen (fishing is done from a landing beach neighboring Kigoma Port) and residents living around the access road. Related person with TPA and the person in charge of environmental and social considerations in this project executed the interview survey to have the opinions and comments of these people. At that time, TPA explained the outline of this project briefly and the contents of the influence. The contents, which were the temporary relocation of the embarkation place of the Liemba during the construction period for reconstruction of the existing jetty, driving along the access road would be controlled to one lane, the dust and gas emission from heavy construction vehicles and the noise and vibration that would be generated during the construction of new the access road, were explained to residents by TPA. As for the artisanal fisher folks anchoring their boats in Kigodeko adjacent to the project site, the contents which were about construction and dredging vessels that would cruise and anchor in the water area of the project site and that some water pollution would be generated by construction activities during the construction

period, were explained.

The implementation of this project has been understood as no objections were made from the fishermen and residents. The request commonly submitted from residents through the hearing survey was the construction of drains so as to divert heavy rain during the rainy season when the pavement of the access road (approximately 480m) is done. The summary at that time is shown below.

Table 1.3-21 Summary of Hearing Survey with Neighboring Artisanal Fishermen

Date of hearing survey	Major opinion	Reference information
October 11 (Wed)	<ul style="list-style-type: none"> ● No fear of influence by the rehabilitation of the passenger wharf in this project nor noise from the construction work ● Following facilities were requested to be provided by this project. <ul style="list-style-type: none"> ➢ Sanitary toilet ➢ Dining room ➢ Television ➢ Rescue facility for emergency case ➢ Security Fence ➢ Construction of sanitary toilets at the village of artisanal fishermen 	<ul style="list-style-type: none"> ● The place neighboring to Kigoma Port is called Kigodeko. There exists a landing beach for the artisanal fishermen there, temporary houses for the fishermen's operations also exist. The survey was done with a leader of the fishermen. ● The number of fishing boats and fisherman at the landing at Kigodeko are about 100 and approximately 200 to 300 respectively. Main fishing ground: the offshore ground takes 2 to 4 hours from the landing beach. ● There are no fishing grounds around the existing Kigoma Port. ● Main caught fish species: fresh water sardine, cichlids and lates ● Main fishing method: gill net, a kind of purse seine (lift net) and seine

Table 1.3-22 Summary of Hearing Survey with Residents around Access Road

Date of survey	Major opinion	Reference information
Oct. 21 (Thu) and Oct. 13 (Fri)	<ul style="list-style-type: none"> ● The implementation of this project can be approved and the rehabilitation of the port is considered to be necessary. The noise and dust generation at the time of construction of the access road are not cared about if the countermeasure is carried out. ● Although it is agreed to construct access road, problems to be concerned about are as follows, <ul style="list-style-type: none"> ➢ This place has heavy rain in the rainy season and soil erosion is generated by big water inflow from the highland. Therefore, the access road to be paved is requested to have water drains without fail. And that water drain is requested to have adequate depth and width to cope with the heavy rains 	<ul style="list-style-type: none"> ● There exist 9 houses in total within 100 m from the side of the access road (approx. 480m) to be paved by this project. There is no resident living now in one of these houses. ● Hearing survey was done with 4 houses out of 8. ● The households surveyed had 2 to 8 people and their ages ranged from 30's to 70's and every household had a garden and animals such as chickens, ducks, pigs farmed depended on the household.

	<p>during the rainy season.</p> <ul style="list-style-type: none"> ➤ It is requested not to close the road totally when constructing the access road. It is requested to be able to use one lane at the time of construction since this road is important for the residents. ➤ A house neighboring Kigoma Port has been flooded several times by heavy rain in the rainy season. It is requested to make the water drain function during the construction period as well. 	
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b) Street Vendors along the Sides of the Access Road

According to the person concerned with TPA, there are 3 to 4 vendors doing business (mobile type shops to sell fruits or juices on an easy go table or laying mat) on the side of the access road when the MV Liemba, liner passenger ship is berthed. There are no street vendors if the MV Liemba is not berthed.

According to the simple hearing with the vendors, there were opinions that they are doing business only when the MV Liemba is berthed moving from other places, and therefore, it is appreciated if their business chances are secured around there while constructing the access road. Other than these street vendors, nobody does business on the access road to be paved by this project or within Kigoma Port was confirmed.

c) Other Site Surveys

i) Land for Temporary Yard

The land for the temporary yard to be installed by this project was confirmed as land owned by the TPA with the cadastral map and the site survey with Kigoma/ Ujiji Municipality Office. The place is a bare football field and it could be observed that people concerning TPA were enjoying football games. People concerning TPA do request the return of the football field after installation of the temporary yard. In addition, there is a simple club house with a roof on the football ground, and it is confirmed that illegal residents do not live inside it by the site survey and hearing survey to people concerning TPA. The existence of standing shops in Kigoma Port and on the access road are not confirmed by the site survey. Likewise, the existence of illegal resident in Kigoma Port and along the access road was not confirmed. These are confirmed by the hearing survey to TPA people as well.

ii) Existing General Cargo Warehouse

There exists a general cargo warehouse which is about 100 years old in Kigoma Port and it also functions as a management office for TPA cargoes. This warehouse is two stories high and the ground floor is mainly used as a food related warehouse for such things as grain and vegetable oil. The first floor is used as a cargo management office by TPA and other space is used by 2 companies to handle cargo transportation to Burundi, Democratic Republic of the Congo and Zambia. Although this is going to be demolished after the construction of a new general cargo warehouse

with the implementation of this project, the schedule to demolish it is executed after the Government of Tanzania sets the budget. The office functions for TPA staff are to be relocated to the new general cargo warehouse upon its completion. While, the two companies that do business in the existing warehouse are to relocate according to the fixed date for demolition by the Government of Tanzania.

iii) WFP Tents

In October 2017, there existed 12 rub-hall tents as food storage warehouses owned by WFP (World Food Programme) in Kigoma Port. These 12 WFP tents are installed in rows of 6 on the left and right side of cargo terminal of Kigoma Port. Of these, the 6 tents shown in Photo 1.3-1 need to be removed upon the construction of a new general cargo warehouse by the implementation of this project. WFP has agreed with TPA to remove these 6 tents from the site, and the removal of tents shown in photo 1.3-2 was confirmed by the site survey done in June, 2018. Although the staff of WFP Kigoma Office have attended the stakeholders' meeting held in Kigoma Port, they did not submit any opinions against the removal of the WFP tents or the implementation of this project.

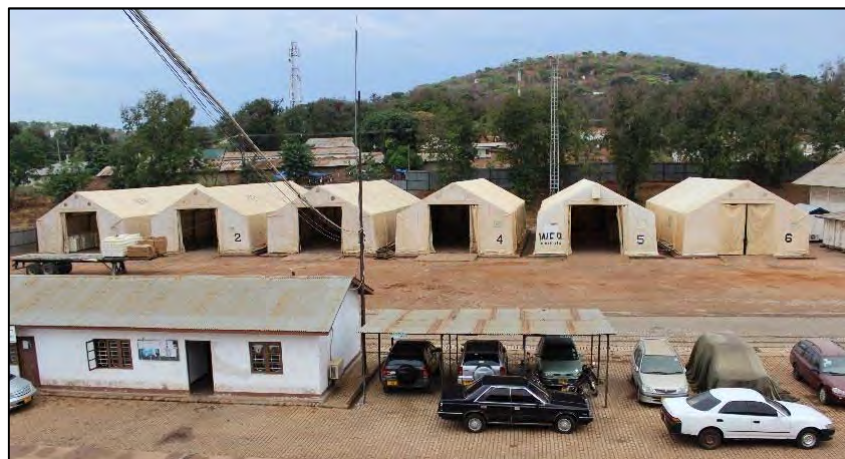


Photo 1.3-1 WFP 6 tents before removal (October, 2017)



Photo 1.3-2 WFP 6 tents after removal (June, 2018)

7) Impact Assessment

a) Categorization of the Project Based on the JICA Guidelines for Environmental and Social Considerations

This project is considered to be classified as category-B according to the JICA Guideline for Environmental and Social Considerations at the time of the preparatory survey of this project. The reasoning is that the adverse effects in view of social and natural environments are not big but their generation can be predicted. In addition, the generation of involuntary resettlement, acquisition of private land and shop relocation are not predicted.

b) Impact Assessment

The impact assessment after surveying Environmental and Social Considerations is per the table below.

Table 1.3-23 Result of impact assessment

Category	No.	Impact Item	Scoping		Assessment after survey		Assessment Reason
			Before and during construction	After completion	Before and during construction	After completion	
Measures for pollution control	1	Air Pollution	B-	D	B-	D	During construction period, dust from the demolition of existing market is generated and discharging gas by construction vehicles is increased. After completion, no influence can be predicted by this project.
	2	Water Contamination	B-	B-	B-	B-	During construction period, water contamination is considered to be generated with the construction on the coastal area. Water contamination can be predicted due to the generation of toilet sewage from the office facility of the new Kigoma Port after completion and public toilets
	3	Waste	B-	B-	B-	B-	During construction period, construction debris will be generated by the demolition of existing buildings at the site. After completion, waste will be generated by littering from Kigoma Port users and others if the garbage pots are not installed properly. No waste affecting soil contamination will be generated in any phases - before construction, during construction and after completion - of this project.

	4	Soil Contamination	D	D	D	D	Soil contamination is not predicted in any phases - before construction, during construction and after completion - of this project. The major reason is that the wastes generated by implementation of this project will not include items that generate soil contamination.
	5	Noise and Vibration	B-	D	B-	D	Noise and vibration by heavy machines and construction vehicles are generated at the site during construction period. No noise nor vibration are predicted to increase after completion.
	6	Land Subsidence	D	D	D	D	Land subsidence is not predicted by this project.
	7	Offensive Odor	D	D	D	D	Offensive odor is not predicted by this project.
	8	Bottom Sediment	D	D	B-	D	Adverse impact on bottom sediment is predicted by the construction activities of this project. Construction activities such as land reclamation (0.35ha) and dredging (0.6ha) will generate the diffusion of sediment soil and the surface soil will flow into the lake thus the construction area of the lake's bottom sediment will be affected.
Natural environment	9	Protected Areas	D	D	D	D	There are no protected areas in the project site and vicinity.
	10	Eco system	B-	D	B-	D	Adverse impact to water area eco system by water contamination and land filling is anticipated with the execution of water area facility construction work by this project.
	11	Hydrological Situation	D	D	D	D	Adverse impact to the hydrological situation is not predicted by this project.
	12	Topography and geology	D	D	D	D	Adverse impact to topography and geology is not predicted by this project.
Social Environment	13	Involuntary resettlement and land acquisition	C	D	D	D	Resettlement is not predicted to happen by construction of the new Kigoma Port nor land acquisition is required.
	14	The poor	D	D	D	D	Adverse impact on the poor is not predicted by this project.
	15	Minorities and Indigenous people	D	D	D	D	Adverse impact on minorities and indigenous people is not predicted by this project.
	16	Local economy such as employment, livelihood, etc.	C	D	B-	D	An impact is predicted for street vendors engaging in business on the access road in Kigoma Port during construction period. After the completion of the new port, no significant negative impacts on employment and livelihood will be generated.

17	Utilization of land and local resources	D	D	D	D	Adverse impact by this project is not found.
18	Water utilization	D	D	D	D	The adverse impact on water utilization by the implementation of this project is not predicted. Major water utilization of construction period will be for the cement and operation of the port which will consume water at the same volume as usual. After the completion of the new port, since there are no specific plans of this project to consume more volume of water, water utilization of operation of the new port will be at the same volume as the present situation. Therefore, the volume of the water utilization will not be significantly increase compared to the present situation.
19	Existing social infrastructure and social service	D	D	B-	D	The adverse impact to the operation of the liner service ship is predicted.
20	Social organization like social capital and local decision-making body.	D	D	D	D	Adverse impact by this project is not found.
21	Uneven distribution of damages and benefits	D	D	D	D	Adverse impact by this project is not found.
22	Conflict of interest in the area	D	D	D	D	Conflict of interest among races does not occur in the existing Kigoma Port. After completion, adverse impact is not predicted by the implementation of this project.
23	Cultural heritage	C	D	D	D	There are no cultural heritage or historic sites at the site and influence from implementation of this project is not found.
24	Landscape	D	D	B-	D	3 big trees located at the border of the site provide shade to local people and have landscape value. During construction period, the influence on tree roots by heavy machines and vehicles to be used in the construction is anticipated.
25	Gender	D	D	B+	B+	As this project plans to install sanitary toilets by sex, a favorable effect for gender is predicted.
26	Children's right	D	D	D	D	Adverse impact by this project is not found.
27	Infectious diseases such as HIV/AIDS	D	D	D	D	Adverse impact by this project is not found.

	28	Vocational environment (including labor safety)	B-	D	B-	D	Accidents for workers is predicted to occur during construction period.
Others	29	Accident	B-	B-	B-	B-	Accidents for workers is predicted to occur during construction period. After completion, traffic accident is anticipated between the vehicles coming to new Kigoma Port and the users and port workers.
	30	Transboundary impact and climate change	D	D	D	D	Adverse impact is not found by this project.

A+/-: Serious impact is predicted

B+/-: Not serious but middle level impact is predicted

C+/-: Impact is unknown

D+/-: Almost no impact is predicted

c) Environmental Mitigation Measure

The system for implementation of mitigation measures for this project is shown in the table below. Prior to construction and construction period, a construction contractor will carry out mitigation measures and report the results to the TPA which will act as a responsible organization except for the aspect of “Existing social infrastructure and social service.” As for the “Existing social infrastructure and social service”, TPA will carry out the mitigation measures and at the same time it will be the responsible organization for this matter. After completion of the new port, TPA will carry out the mitigation measures and at the same time it will be the responsible organization for the aspects indicated on the table below. The TPA will also report the results to the JICA Tanzania office.

Table 1.3-24 Implementation System of Environmental Mitigation Measures

No.	Items of Adverse Impacts for Mitigation Measures	Responsible Organization	Executing / Implementing Organization
Prior to Construction			
1	Existing social infrastructure and social service	TPA	TPA
2	Landscape (conservation of existing 3 large trees)	TPA	Construction Contractor
During Construction Period			
1	Existing social infrastructure and social service	TPA	TPA
2	Local economy such as employment and livelihood	TPA	Construction Contractor
3	Air Pollution	TPA	Construction Contractor
4	Water Contamination	TPA	Construction Contractor
5	Bottom Sediment	TPA	Construction Contractor
6	Waste	TPA	Construction Contractor
7	Noise and Vibration	TPA	Construction Contractor
8	Ecosystem	TPA	Construction Contractor
9	Landscape (conservation of existing 3 large trees)	TPA	Construction Contractor
10	Vocational environment	TPA	Construction Contractor
11	Accidents	TPA	Construction Contractor
After Completion			
1	Water Contamination	TPA	TPA
2	Waste	TPA	TPA
3	Accidents	TPA	TPA

The mitigation measures to the items of adverse impact to be predicted on environmental and social aspects by the implementation of this project is in the below table.

Table 1.3-25 Environmental Mitigation Measures

Item of adverse impact	Assessment	Impact degree (scale, impact area, impact period, frequency, irreversibility, etc.)	Mitigation measure
Air Pollution	B	During construction period, dust from the demolition of existing market is generated and discharging gas by construction vehicles is increased.	<u>During construction period:</u> The mitigation measure to ambient air pollution include the actions not to operate engines of heavy machineries and others during no use time zone, execution of periodical watering to construction site and the vicinity, etc. are planned and carried out.
Water Contamination	B	Water contamination is generated in the neighboring lake during construction period. After completion, going with the generation of toilet sewage from office facility and others, water contamination is predicted.	<u>Planning stage:</u> The mitigation measure to toilet sewage from administration building is to install septic tank satisfying the drainage standards of Tanzania. <u>During construction period:</u> As the measure minimizing water contamination, oil fence is installed at coastal work areas and proper maintenance of machinery is done so as not to leak oil.
Waste	B	During construction period, construction debris is generated such as construction material. After commencement of service, waste is generated by littering in Kigoma Port and the vicinity.	<u>During construction period:</u> The construction debris / waste will be recycled, and the remaining wastes will be transported to the waste disposal center of Kigoma-Ujiji municipal. The concrete debris from construction will be utilized as material for land reclamation and the remaining will be transported to the wastes disposal center managed by the municipal located at Msimba planned to open in 2018. The center has two cells with each capacity of approximately 6 ha in area size and 10m in depth. <u>After completion:</u> Waste treatment by TPA is going to be continued as well.
Noise and vibration	B	There exist resident houses around the project site. Noise and vibration are generated by heavy machines and others during construction period, After completion, noise and vibration are not predicted to increase.	<u>During construction period:</u> Use heavy machines that generate noise sparingly and noise shielding wall is properly installed. The mitigation measure for noise and vibration is planned including regulation for night work and executed.

Bottom Sediment	B-	Construction activities such as land reclamation (0.35ha) and dredging (0.6ha) will affect the lake's bottom sediment.	<u>During construction period:</u> The area of dredging is fixed thus the impact will be inevitable. To mitigate the impact on the bottom sediments, silt curtain will be installed around the construction activity area on the lake to reduce further negative impacts.
Ecosystem	B-	Construction activities on the lake's water area will generate water contamination and impact on bottom sediment of the lake.	<u>During construction period:</u> During construction period, mitigation measures for water contamination and bottom sedimentation are planned and will be implemented to minimize the impact on the ecosystem of the lake.
Local economy such as employment and livelihood	B	It is predicted to impact on street vendors doing business on access road in Kigoma Port during construction period	<u>During construction period:</u> It is possible to minimize troubles for the businesses by having business space even if vehicles are restricted to go through during construction period.
Existing social infrastructure and social service	B	It is anticipated to cause trouble to use the MV Liemba, existing liner ship during construction period.	<u>During construction period:</u> By relocating the boarding place for the MV Liemba to a vacant space in Kigoma Port and making the passenger ship able to operate as it had should minimize troubles for operating the passenger ship.
Landscape	B	3 big trees located along the border of the site provide shade to local people and have landscape value. During construction period, the influence on tree roots by heavy machines and vehicles to be used in the construction is anticipated.	<u>During construction period:</u> These 3 big trees are located along the side of the access road to be paved. Influence can be minimized by protecting the roots on the ground surface.
Vocational environment	B	Accidents are possible to occur for workers during construction period	<u>During construction period:</u> Safety measure such as safety education is carried out with workers.
Accident	B	It is possible that traffic accident will occur by using heavy machines at the site and the vicinity during construction period. Workers are predicted to have accidents as well. After completion, traffic accident or fire are possible in the new Kigoma Port.	<u>During construction period:</u> Safety measure including safety education is carried out with workers. <u>After completion:</u> The reduction of traffic accidents and smooth vehicle traffic can be expected since related staff of the TPA does traffic control continuously.

8) Mitigation Measure and Cost

The cost to execute mitigation measure for environmental and social adverse impacts is as follows,

Table 1.3-26 Mitigation Measure and Cost

No.	Impact Item	Adverse impact degree	Mitigation measure	Responsible organization	Implementation organization	Cost (Tsh)
Planning stage and during construction period						
1	Existing social infrastructure and social service	During construction period, it is predicted to cause troubles for the utilization of the liner ship, MV Liemba, and the work of customs and quarantine.	During construction period, MV Liemba uses low usage rate wharf in Kigma Port. And the work of customs and quarantine are continued in a temporary office near the wharf that the MV Liemba uses.	TPA	TPA	Cost to install temporary tent, etc.: 10 million
2	Air pollution	During construction period, dust generation by demolition of existing market is generated and the discharge of gases from construction vehicles is increased.	The generation of dust, etc. is controlled by watering the road and construction site.	TPA	Contractor	Watering cost is included in the construction cost
3	Water contamination	Water contamination to neighboring lake is generated during construction period.	Oil leakage generated by using heavy machines is controlled by adequate maintenance work on heavy machinery. Education concerning water contamination for workers can also control its generation. In addition, a silt curtain will be installed to mitigate negative impacts.	TPA	TPA	Water quality monitoring cost: 5 million The cost of installing a silt curtain is included in the construction cost
4	Bottom Sediment	Negative impacts on the lake's bottom sediments of the area close to the site will be generated by construction activities.	To mitigate the impact, a silt curtain will be installed during construction period.	TPA	Contractor	The cost of installing silt curtain is included in the construction cost
5	Waste	Generation of waste such as construction material from construction work during construction period is predicted.	Construction debris generated during the demolition of existing building at the site are recycled by TPA and the remaining is transported to waste treatment plant of Ujiji city and disposed.	TPA	Contractor	Disposal cost: included in the construction cost

6	Noise and Vibration	There exist residential property within 100m around the site. Noise and vibration are generated during construction period by heavy machineries and others. After completion, the increase of noise and vibration are not predicted.	Influence on surroundings can be controlled by working daytime as construction working time and no work after 8 pm. And construction workers are encouraged to use heavy machinery and drive vehicles for controlling noise.	TPA	Contractor	Cost is not especially incurred
7	Ecosystem	Aquatic creatures inhabiting lake's bottom of the area close to the existing jetty will have negative influences.	Mitigation measures of water contamination and bottom sediments will act to mitigate the negative impacts on demersal creatures.	TPA	Contractor	The cost of installing silt curtain is included in the construction cost
8	Landscape	It is desired to preserve 3 big trees standing alongside of the access road	Wrapping protection shield around root core part when commencing construction work and avoiding branches being cut when vehicles are passing them.	TPA	Contractor	Cost is not especially incurred
9	Vocational environment	The occurrence of accidents to construction workers is possible during construction period.	The occurrence of accidents can be avoided before they happen by adequate safety education for the usage of heavy machinery and operation of vehicles.	TPA	Contractor	Cost is not especially incurred
10	Accident	During construction period, traffic accidents are possible to occur at the site or the vicinity by using heavy machinery and others.	The installation of safety fence and allocation of traffic control person are done. Adequate safety education is executed for how to use heavy machinery and the operation of vehicles.	TPA	Contractor	Cost is not especially incurred
After completion						
1	Water contamination	With the toilet water sewage from the office facility, etc. after completion, water contamination is predicted.	Septic tank for the toilets of administration building in the new Kigoma Port and final treated sewage is penetration type.	TPA	TPA	Water monitoring cost: 4 million/year
2	Waste	Waste generation can be predicted in Kigoma Port by littering, etc. after completion	TPA piles up waste and entrusts its collection to the city. Waste is transported to designate place by the city and disposed. The treatment of construction debris from the demolition of the existing old warehouse makes it necessary to transport to the city designated place and dispose.	TPA	TPA	Cost for transportation of waste: approximately 36 million/6times
3	Accident	After completion, traffic accidents are possible in the new Kigoma Port	Port traffic rules and regulation are crafted for the purpose of prevention of traffic accidents.	TPA	TPA	Cost is not especially incurred

(8) Monitoring Plan

It is proposed to have system to implement the monitoring plan to be carried out over the 3 stages of before commencing construction, during construction period and after completion. The system of monitoring on the items of environmental and social aspects which are anticipated to have negative impacts is shown on the table below. Prior to the construction of this project, as for the monitoring of “Existing Infrastructure” is planned to be implemented by TPA which will inform JICA Tanzania office of the results. For the monitoring of “landscape (conservation of the 3 large trees)”, it is planned to be implemented by a construction contractor. The results shall be reported by the contractor to both TPA and JICA Tanzania office. Monitoring activities during construction period will be implemented by the contractor and shall be reported by the contractor to both TPA and JICA Tanzania office, except for the aspect of “Existing Infrastructure” which will be implemented by TPA and the results shall be reported to JICA Tanzania office. After the completion of the new Kigoma Port, monitoring will be implemented by TPA and the results shall be reported to JICA Tanzania office.

Table 1.3-27 The Monitoring System

No	Items for Monitoring	Responsible Organization	Executing / Implementing Organization
Prior to Construction			
1	Existing social infrastructure and social service	TPA	TPA
2	Landscape (conservation of exiting 3 large trees)	TPA	Construction Contractor
During Construction Period			
1	Existing social infrastructure and social service	TPA	TPA
2	Local economy such as employment and livelihood	TPA	Construction Contractor
3	Landscape (conservation of existing 3 large trees)	TPA	Construction Contractor
4	Ambient Air	TPA	Construction Contractor
5	Water Quality	TPA	Construction Contractor
6	Waste	TPA	Construction Contractor
7	Noise and Vibration	TPA	Construction Contractor
8	Vocational Environment	TPA	Construction Contractor
9	Prevention of Accidents	TPA	Construction Contractor
After Completion			
1	Water Quality	TPA	TPA
2	Waste	TPA	TPA
3	Prevention of Accidents	TPA	TPA

(9) Stakeholders' Meeting

A stakeholders' meeting was held at the meeting room in the warehouse managed by TPA and sponsored by TPA on October 10, 2017 (Tue) at the time of survey of this project. This meeting was practically the first meeting concerning the implementation of this project. The attendants discussed the facility contents after a simple explanation made by TPA for the facility plan, construction schedule, the schedule for Liemba liner and the temporary relocation of quarantine and customs office during construction of this project. The contents of the meeting were summarized as below. Please note that no opinion was submitted against the implementation of this project from attendees.

Table 1.3-28 Summary of First Stakeholders' Meeting

No./Venue/ Date & time/Number of attendee	Main purpose and name of attendee	Summary (explanations, opinions, etc. submitted in the meeting)
<p>First at Kigoma Port On October 10 (Tue) 4:00 pm to 5:30 Attendees: 14</p>	<p>Purpose: Presentation meeting concerning the implementation of the Kigoma Port Rehabilitation Project by JICA</p> <p>Main attendees:</p> <ul style="list-style-type: none"> ➤ TPA people ➤ TPA Vice Port Master ➤ Japan side survey team ➤ WFP responsible official at Kigoma Port ➤ Kigoma Port Representative of Tanzania Railway ➤ Navy related officer of Kigoma Port ➤ Kigoma Port ➤ Cargo handling company in Kigoma Port ➤ Food cargo handling company around Kigoma 	<p>After simply explaining the summary of the Kigoma Port rehabilitation plan, facility layout plan of this project from TPA, the following discussion came from the attendees.</p> <ul style="list-style-type: none"> ● A question was made whether or not customs and quarantine offices are installed at the lobby to be constructed in the passenger terminal. TPA replied that the booth for customs and quarantine are scheduled to be install at the passenger waiting lobby to be newly constructed. ● Attendee requested to install a room and medical facility for urgent patient from passenger ship in addition to installation of a quarantine booth. TPA replied that consideration will be made for some space to accept one patient but it is difficult to secure space to for a number of patients. And also explained that this project aims for rehabilitation of port facilities therefore, the installation of medical facility is difficult. ● Attendee asked if cargo volume to be handled in the future Kigoma Port will be increased does the new warehouse have enough capacity to handle that additional portion. TPA replied that as the Kigoma port now has limitation on the area to be constructed, it is difficult to construct in away exceeding the existing warehouse capacity. ● Attendee asked that the discharging water from each new facilities clear the sewage standard. ● TPA replied that the discharging water from new facilities are scheduled to be in accordance with the sewage standards of Tanzania. ● Attendee commented that since Kigoma port is an international port, the facilities could be corresponded to epidemics and so forth. TPA replied that the handling of epidemics has to be done by medical facilities like the existing hospital. ● Attendee asked that in the future, if cargo transportation volume by railway will be increased and thus whether or not the capacity of warehouse is enough? TPA replied that considering the vacant space at the port, it is best to have a little bit bigger capacity warehouse now.

(11) Land Acquisition and Involuntary Resettlement

1) Necessity of Land Acquisition or Involuntary Resettlement Related to Project Components

In terms of facilities subjected for rehabilitation or construction related to the project components such as the berth, passenger waiting facility, warehouse within the berth area and access road are all within the port premises. And there are no encroaching residents affected in the site. No obligation for involuntary resettlement nor land acquisition were found necessary.

2) Stakeholders' Meeting

As this project will not generate any involuntary resettlement, commercial relocation and land acquisition, a stakeholders' meeting regarding this matter will not be required. In Tanzania, projects causing adverse impact on people's lives especially the aspect of land acquisition, then projects are required to hold stakeholders' meetings. Stakeholders' meetings are necessary to hold through the preparation period of screening, scoping and TOR of EIA, evaluation period of EIA by NEMC and other stakeholders through to the EIA's approval.

(12) Others

1) Draft of Monitoring Form

a) Monitoring before Commencement of Construction (Draft)

Table 1.3-29 Relocation of Existing Infrastructure Facilities and Preservation of Trees

Classification	Item	Performance State	Frequency/Timing
Existing Infrastructure	Relocation of boarding place to passenger ship, MV Liemba		Monthly starting from 3 months before the commencement of construction work.

Table 1.3-30 Landscape (Conservation of Trees)

Classification	Item	Performance State	Frequency/Timing
Landscape (conservation of 3 large trees)	Conservation status of the 3 large trees along the access road		Monthly starting from 3 months before the commencement of construction work.

b) Monitoring during Construction Period (Draft)

Table 1.3-31 Water Quality

Item	Unit	Survey Value	Survey value before construction	Standard of host country *1	Referred international standard *2	Survey place & frequency
pH	-			6.5-8.5	7.8-8.3	Survey place: 2 places in front of the site Frequency: every 3 months
COD	mg/l			60	<20	
DO	Mg/l				>7.5	
Coli form	MPN/100ml				<1000	
SS	Mg/l				SS artificially added is less than 2mg/l	
Oil	Mg/l			5	Based on no detection	
Turbidity	NTU				<150	

*1: Standard of Tanzania

*2: Standard for fishery water (Japan Fisheries Resource Conservation Association) and USA Maryland State water quality regulations

Table 1.3-32 Waste

Item	Purpose	Survey item	Survey Value	Survey value before construction	Survey place and frequency
Waste Treatment	Confirming the relevancy of treatment and disposal of general waste in Kigoma Port	Hearing survey from TPA staff of Kigoma Port			Survey place: in Kigoma Port every 6 months

Table1.3-33 Air Pollution

Item	Purpose	Survey Item	Survey Value	Survey value before construction	Survey place and frequency
Dust and Discharging Gas	Confirming impact by dust caused by construction vehicles and others during construction period	Hearing survey of scattering situation from surrounding residents			Survey place : project site Frequency: appropriately at the time of strong wind and bringing in of large trucks

Table 1.3-34 Noise and Vibration

Item	Purpose	Survey Item	Survey Value	Survey value before construction	Standard of host country	Survey place and frequency
Noise and Vibration	Confirming the impact of noise and vibration caused by construction vehicles and others during construction period	Hearing survey of noise and vibration from surrounding residents			Not especially specified	Survey place: project site, Frequency: at the time of carrying-in of large trucks and operation of large machineries

Table 1.3-35 Occupational Safety Measures

Monitoring Item	Performance Status	Frequency
Reconfirming safety education for workers and prevention measures of accidents		Every 3 months

Table 1.3-36 Accidents Prevention Measures

Monitoring Item	Performance Status	Frequency
Reconfirming safety education for workers and prevention measures of accidents		Every 3 months

Table 1.3-37 Employment and Livelihood

Monitoring Item	Performance Status	Frequency
Reconfirming available business space for the street vendors		Every 3 months

Table 1.3-38 Relocation of Existing Infrastructure Facilities

Classification	Item	Performance Status	Frequency/Timing
Existing infrastructure	Relocation of boarding place to passenger ship, MV Liemba		Every 3 months

Table 1.3-39 Landscape (Conservation of Trees)

Classification	Item	Performance Status	Frequency/Timing
Landscape (conservation of 3 large trees)	Conservation status of the 3 large trees along the access road		Every 3 months

c) Monitoring after Completion (Draft)

Table 1.3-40 Water Quality

Item	Unit	Survey Value	Survey value before construction	Standard of host country *1	Referred international standard *2	Survey place & frequency
pH	-			6.5-8.5	7.8-8.3	Survey place: 2 places in front of the site, Frequency: every 6 months
COD	mg/l			60	<2	
SS	mg/l				SS artificially added is less than 2mg/l	
Coli form	MPN/100ml				<1000	

*1: Standard of Tanzania

*2: Standard for fishery water (Japan Fisheries Resource Conservation Association)

Table 1.3-41 Waste

Item	Purpose	Survey Item	Survey Value	Survey value before construction	Standard of host country
Treatment of waste	Confirming the relevancy of treatment and disposal situation of general waste in Kigoma Port	Hearing survey to Waste Treatment Committee			Survey place: Kigoma Port every 6 months

Table 1.3-42 Accidents Prevention Measures

Monitoring Item	Performance Status	Frequency
Reconfirming the status of Kigoma Port traffic control, allocation of security guards and prevention measures of accidents		Every 3 months

2) Environmental Check List

Table 1.3-43 Environmental Check List (draft)

	Environmental item	Main checking items	Concrete environmental and social considerations
1 Approval/ Explanation	1. EIA and environmental approval	(a) Was EIA report prepared? (b) Was the EIA report approved by the government of sponsor country? (c) Any additional conditions for the approval of EIA report? If any, Can it be satisfied? (d) Other than the above, were necessary approvals obtained by local competent authorities?	(a) TPA which is the implementation agency in Tanzania prepared the EIA report of this project in 2012 according to the project plan to be implemented. (b) Environmental approval was already issued by the government authority of Tanzania February, 2016. (c) Environmental approval issued has expiry date and the additional condition is to take some actions concerning project implementation within 2 years from the issued date. (d) It is not necessary after obtaining environmental approval of the EIA.

	2. Explanation to local stakeholders	(a) Was proper explanation made to local stakeholders about project content and the impact including information disclosure and gained their understanding? (b) Was comments from residents and others reflected in project content?	(a) Stakeholders' meeting was held on October 10, 2017. Explanation of implementation of this project was made to half of surrounding residents and gained their understanding. Explanations were made to fishermen operating on a neighboring beach and gained their understanding. (b) Comments from residents reflected in the method of lane restriction and installation of drains into the design.
	3 Study of Alternative	(a) Was a number of alternative plans for the project plan studied?	(a) The alternative plans were studied concerning scale and content of constructed facilities.
2 Pollution Measure	1 Ambient Air	(a) Do air pollutant (Sox, NOx, Dust, etc.) discharged from facilities and ancillary facilities of this project meet with the discharge standard, environmental standard of the host country?	(a) Air pollutant is not discharged from the Kigoma Port site area to be constructed. However, as there will be the possibility to generate dust caused by heavy construction vehicles and others during construction period, watering is carried out.
	2. Water quality	(a) Does the discharging water from infrastructure and other ancillary facilities meet with discharge standard, environmental standard of the host country?	(a) It will clear Tanzania discharge water standards by installing proper drainage treatment and sewage facility for the toilets to be constructed in Kigoma Port.
	3. Waste	(a) Are the waste from infrastructure and other ancillary facilities properly treated and disposed according to the rules and regulations of host country?	(a) It is to be treated as general waste, etc. by Waste Treatment Committee of Kigoma Port.
	4. Soil pollution	(a) Does the measure performed not pollute soil and groundwater by discharging, seeping water, etc. from infrastructure facilities and the ancillaries?	(a) Soil pollution is not generated by the implementation of this project.
	5. Noise and Vibration	(a) Does noise and vibration fit together with its standard and others of host country?	(a) There is no concrete value set for the rules and regulations of noise and vibration in Tanzania. Noise and vibration are predicted to be generated with the construction work by this project, however, the generation of noise can be controlled by limiting to day time work only and no night work.
	6. Land Subsidence	(a) Is there any fear that land subsidence is generated when a lot of underground water is pumped up?	(a) Land subsidence is not generated by this project.
	7. Offensive Odor	(a) Are there any offensive odor emission sources and can any protective measures be taken?	(a) General waste, etc. are to be treat by TPA, Kigoma Port.
3 Natural Environment	1. Protected Areas	(a) Does the project site locate within protected areas established by laws of the host country, international treaties and others? Does this project affect protected areas?	(a) The project site is not located on protected areas established by the laws of Tanzania, international treaties and others. And the project does not affect protected areas.
	2. Ecosystem	(a) Does the site include primary forest, tropical natural forest and ecologically important habitat (coral reef, mangrove wetland, tidal flat, etc.)? (b) Does the site include habitat of precious species needing protection	(a) The site is located at existing facilities and does not include primary forest, tropical natural forest and ecologically important habitat (coral reef, mangrove wetland, tidal flat, etc.) (b) The site does not include habitat of precious species needing protection by laws in host

		<p>by laws in the host country, international treaties, etc.?</p> <p>(c) Does the measure execute to decrease impact to ecosystem when significant impact to ecosystem is predicted?</p> <p>(d) Does the water utilization by this project affect the water area environment like a river?</p> <p>Does the measure execute to decrease the impact on aquatic organisms, etc.?</p>	<p>country, international treaties, etc.</p> <p>(c) Significant impact to ecosystem is not predicted.</p> <p>(d) As this project uses clear water as daily life water, there is not impact to underground water or lakes.</p>
	3. Hydrological Situation	(a) Does any adverse impact on a stream of surface water and underground water along with the change of water system by this project?	(a) Impact on the hydrological situation is not generated by this project.
	4. Topography and Geology	(a) Are large-scale changes of topography and geological structure, land subsidence and natural beach loss generated around the site?	(a) There is no impact by the work in this project.
4 Social Environment	1. Resettlement	<p>(a) Is involuntary resettlement by the implementation of this project generated? If yes, is an effort to minimize the impact of resettlement being made?</p> <p>(b) Are proper explanations made to people having to relocate before resettlement concerning compensation and livelihood?</p> <p>(c) Can the survey for resettlement carry out the resettlement action plan including compensation for reacquisition prices and restitution of local infrastructure after resettlement is established?</p> <p>(d) Can compensation money be paid before resettlement?</p> <p>(e) Is the compensation policy prepared in writing?</p> <p>(f) Does the action plan properly considered the socially vulnerable especially such as woman, children, juveniles, minorities and indigenous people of the relocating people.</p> <p>(g) Can obtain an agreement of resettlement before the relocation?</p> <p>(h) Can establish a system to properly execute resettlement, enough implementation capability and budget?</p> <p>(i) Is there a monitoring plan for the impact of resettlement?</p> <p>(j) Is there a framework for complaints established?</p>	<p>(a) Involuntary resettlement is not predicted to occur.</p> <p>(b) Explanatory meeting with local residents is not held due to no generation of resettlement.</p> <p>(c) There is no need due to no generation of resettlement.</p> <p>(d) There is no need due to no generation of resettlement.</p> <p>(e) There is no need due to no generation of resettlement.</p> <p>(f) There is no need due to no generation of resettlement.</p> <p>(g) There is no need due to no generation of resettlement.</p> <p>(h) There is no need due to no generation of resettlement.</p> <p>(i) There is no need due to no generation of resettlement.</p> <p>(j) There is no need due to no generation of resettlement.</p>
	2. Life and Livelihood	(a) Is adverse impact to resident life generated by this project? If yes, does mitigation measure consider it?	(a) There is no need due to no generation of resettlement.
	3. Cultural	(a) Is there any danger of losing archaeological, historical, cultural and	(a) There are 3 big trees having cultural and landscape values on the access roadside and

	Heritage	religiously precious heritages and historic sites by this project? And are there any legal steps in the host country to be considered?	are used as the shade for the local residents and their conservation is required.
	4. Landscape	(a) In case there exists a landscape which is especially considered, is there an adverse impact on it? If yes, can any necessary measure be taken? (b) Is there any fear to lose landscape by large scale accommodation facilities or buildings?	(a) It is desired to conserve 3 big trees on the access roadside. (b) As the facilities are considered to be flat buildings, there is almost no impact to landscape.
5 Others	1. Impact during construction period	(a) Is there any mitigation measure to pollution during construction period (noise, vibration, muddy water, dust, exhaust, waste, etc.)? (b) Is there any adverse impact to natural environment (ecosystem) by construction work? Does mitigation measure prepare for the impact? (c) Is there any adverse impact to social environment by construction work? Does mitigation measure prepare for the impact?	(a) Monitoring items are related to water quality, noise, vibration and waste. (b) The adverse impact to ecosystem by construction work is slightly predicted, however, the impact can be considered to be minimized by mitigation measure such as the measure for water turbidity. (c) It is predicted that accidents generated by vehicles to workers and nearby residents during construction period, and necessary cost and staff allocation to prevent accidents are prepared by the Contractor.
	2. Monitoring	(a) Is monitoring planned and executed on items to be affected out of the above environmental items by the project owner? (b) How were the original planned items, method, frequency, etc. set? (c) Can monitoring system (organization, personnel, equipment, budget, etc.) by the project owner be established? (d) Are the method and frequency of reports to competent authorities from project owner set?	(a) Monitoring items are planned and executed. (b) It is regarded that items, method, frequency, etc. of this project are appropriate. (c) TPA prepares necessary fees and allocates personnel. (d) The execution of work according to the plan with EIA inspection by the host country.
6 Attention	Reference of other environmental checklist	(a) Additional evaluation of checklist concerning roads, railways and bridges is required when necessary (in case an access road, etc. are installed related to infrastructure facilities) (b) Additional evaluation of checklist for transmission, transformation and distribution of power when needed concerning laying telephone lines, steel tower, submarine cable, etc. are required.	(a) Not especially affected and no need to confirm. (b) Not especially affected and no need to confirm.

1-4 Port and Harbor Demand Forecast at Kigoma Port

Kigoma Port consists of the cargo terminal handling international and domestic cargoes, the passenger terminal handling passengers and domestic cargoes and the oil jetty in Kibirizi area handling petroleum.

Main passengers for the Passenger Wharf are from liner passenger ships and partially come from other tramp refugee transport ships, cruising yachts or others. MV Liemba is the only liner passenger ship operated every other week. Therefore, the number of passenger relies on the number of trips made by the liner passenger ship, MV Liemba, and the number of passenger it transports is about 20,000 when it is operated regularly and smoothly. The number of passenger increases when the tramper refugee transport ship is operated.

The age of the MV Liemba is over 100 years old and was built in 1912 as a passenger ship however, it has no corrosion on the hull due to operating in a fresh water lake and could be navigable well into the future with proper maintenance. Unfortunately, there are no operations during the maintenance and repair period causing a decrease in the number of passengers has been recorded because there is no alternative ship. According to MSCL that operates liner passenger ship, stated that the MV Liemba is operated almost at full capacity each trip and though an operation increase is hopefully planned corresponding to passenger demand, but bi-weekly service is the limit for the present situation of only one passenger ship in service. In case that a new passenger ship is adopted, it is scheduled to have services to Kalemie Port and Moba Port located on the opposite shore in the Democratic Republic of the Congo with new passenger demand expected.

According to the Kigoma Port Office, the Government of Tanzania is supposed to build a new passenger ship for Tanganyika Lake in order to promote passenger service and increase the number of passenger. Therefore, although there is the potential demand, the number of passenger before adopting a new passenger ship is considered to be transitioned with about 20,000 passengers/year which is the same as the present situation.

Here are the results of a demand forecast concerning handling cargoes at the Cargo Wharf in Kigoma Port.

(1) Cargo trend at Kigoma Port

The handling of cargoes at the cargo wharf as subject of a demand forecast are divided broadly into international cargoes and domestic cargoes, and its transition is as shown in Table 1.4-1 and Figure 1.4-1.

Concerning international cargoes, although the volume of import cargoes around 2008/2009 was as much as 101,767 tons per year, it shows a downward trend recently. On the contrary, the export cargoes show an increasing trend year to year and recorded the record-high of 92,336 tons in the fiscal year of 2015/2016. As a result, the total export and import cargo handling volume is an increasing trend recently. Main items of export cargoes are maize, food such as wheat and vegetable oil, cement and general cargo. Import cargoes are raw mineral materials from the Democratic Republic of the Congo.

Domestic cargoes are about 1/10 scale and both outward/inward cargoes have fluctuated depending on fiscal year. The biggest volume of domestic cargoes was 10,220 tons in inward 2008/2009 and 8,725 tons in outward of 2012/2013.

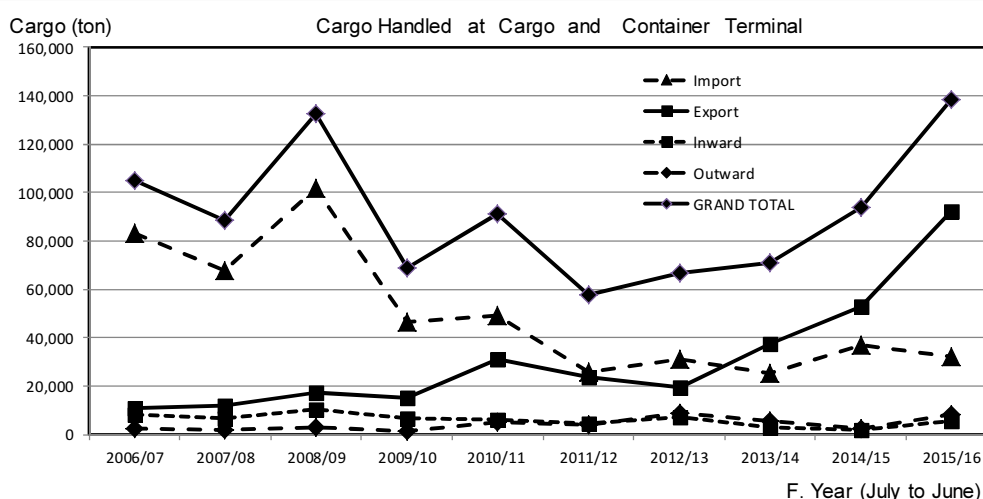
Although, Kigoma Port has a container crane and container loading onto ships is possible, as many ships are not fit for containers and no cargo handling facilities for containers are available in other ports, most of cargoes are handled as bulk cargoes and handling by container cargoes is small.

Table 1.4-1 Annual Transition of Cargo Handling Volume at Kigoma Port

FY (July to June)	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16
Import	83,002	67,960	101,767	46,385	49,174	25,596	31,230	25,155	36,959	32,202
Export	11,117	11,709	17,549	15,008	31,218	23,540	19,222	37,640	52,663	92,336
Sub-total	94,119	79,669	119,316	61,393	80,392	49,136	50,452	62,795	89,622	124,538
Inward	8,336	6,825	10,220	6,461	5,932	4,760	7,394	2,812	1,853	5,670
Outward	2,339	1,915	2,868	1,107	4,957	3,978	8,725	5,484	2,528	8,427
Sub-total	10,675	8,740	13,088	7,568	10,889	8,738	16,119	8,296	4,381	14,097
Grand Total	104,794	88,409	132,404	68,961	91,281	57,874	66,571	71,091	94,003	138,635

(ton)

Source: Year book of TPA



Source: Year book of TPA

Figure 1.4-1 Annual Transition of Handling Cargoes at Kigoma Port

The majority of cargoes handled at Kigoma Port are occupied by international cargoes. Table 1.4-2 is the international cargo statistics obtained from the TPA Kigoma office. Most of the international cargoes are for the Democratic Republic of the Congo and the cargoes for neighboring Burundi are almost nothing including petroleum products. According to the relevant person at Kigoma Port, the cause for the decrease in cargoes to Burundi through Kigoma Port is due to the road construction going to Burundi. Also, these data are calendar year statistics which is different from one taking out of previously described year book.

Table 1.4-2 Annual Transition of Cargo Handling Volume by Country
(ton)

		Year	2010	2011	2012	2013	2014	2015	2016
DRC	Cargo	Import	26,812	23,487	26,748	33,165	23,615	27,712	23,901
		Export	11,082	23,544	11,649	19,345	18,030	37,652	18,030
		Total	39,904	49,042	40,409	54,523	43,659	67,379	43,947
	Liquid	Import	0	8,522	0	8,538	11,472	3,759	5,577
		Export	17,328	7,611	15,194	7,948	3,762	4,256	0
		Total	17,328	16,133	15,194	16,486	15,234	8,015	5,577
Burundi	Cargo	Import	0	0	0	0	0	0	0
		Export	0	0	0	0	0	1,916	0
		Total	0	0	0	0	0	1,916	0

Source: TPA Kigoma Port Office

(2) Trend of International Cargoes at the Dar es Salaam Port

The international cargoes in Kigoma Port consist of domestically generated cargoes and transit cargoes brought in through the central corridor or Tanzania Railway from the Port of Dar es Salaam. Table 1.4-3 and 4 show the volume of handling cargoes to the Democratic Republic of the Congo and Burundi in the Port of Dar es Salaam.

The import cargoes for the Democratic Republic of the Congo show an increasing trend and became 1,147,093 in 2014/2015 and it is transitioned by almost more or less 1 million tons in recent years. The export cargoes also show an increasing trend.

In comparison with the handling volume of Kigoma Port, the total handling volume of Break Bulk and Full Container at the Port of Dar es Salaam transitioned with 300,000 to 450,000 tons, by contrast, Kigoma Port becomes 40,000 to 67,000 tons. As a result of this, the cargoes connected with Kigoma Port out of cargoes through the Port of Dar es Salaam are around 1/10 and it is understood that cargoes to be transported through corridors other than the Central Corridor are dominant.

The cargoes connected to Burundi are the dominant import. With classification by nature, container cargoes are greater than Break Bulk and Dry Bulk and it is assumed that logistics are performed by containers.

Table 1.4-3 Annual Transition of Cargo Volume for the Democratic Republic of the Congo at the Dar es Salaam Port

	(DWT)					
	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16
Imports						
Break Bulk	30,514	20,987	19,422	35,066	56,005	25,398
Dry Bulk	0	0				
Liquid Bulk	284,775	385,528	312,421	465,148	590,461	641,759
Full Container	390,140	332,127	369,683	463,568	500,627	321,451
Sub - Total	705,429	738,642	701,526	963,782	1,147,093	988,608
Exports						
Break Bulk						
Liquid Bulk						
Full Container	223,619	237,109	263,851	388,675	495,716	476,239
Sub - Total	223,619	237,109	263,851	388,675	495,716	476,239
Grand Total	929,048	975,751	965,377	1,352,457	1,642,809	1,464,847

Source: Year book of TPA

Table 1.4-4 Annual Transition of Cargo Volume Connected with Burundi at the Dar es Salaam Port

	(DWT)					
	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16
Imports						
Break Bulk	92,834	17,388	5,620	10,128	9,912	8,702
Dry Bulk	22,375	19,225	20,053	26,977	0	28,145
Liquid Bulk	157,500	160,871	136,856	173,923	170,847	186,119
Full Container	143,433	125,910	124,650	122,859	131,944	110,859
Sub - Total	416,141	323,392	287,179	333,887	312,703	333,825
Exports						
Break Bulk						
Liquid Bulk						
Full Container	23,175	14,524	21,001	12,272	13,468	17,219
Sub - Total	23,175	14,524	21,001	12,272	13,468	17,219
Grand Total	439,316	337,916	308,180	346,159	326,171	351,044

Source: Year book of TPA

(3) Surrounding Situation of Kigoma Port

The following items can be listed as the surrounding situations that affect cargo volume at Kigoma Port.

1) Political Situation of the East Part of the Democratic Republic of the Congo

Many of the cargoes handled in Kigoma Port are connected to the eastern part of the Democratic Republic of the Congo and water transportation across Lake Tanganyika is dominant. Although the cargo handling volume at Kigoma Port and the Port of Dar es Salaam show increasing tendency, it is considered to be affected by political change of the country.

2) Situation of the Central Corridor

Although the road of the Central Corridor is proceeded to construct between Tabora and Kigoma, unpaved portions still remain. A detour route at the border with Burundi is used for land transportation to Kigoma.

3) Situation of the Tanzania Railway Line

Tanzania Railways Corporation brought in new locomotive engines and increased in number its train to 3 to 4 per week intending to increase transportation capacity. Their cargo volume is increasing by being competitive with truck transportation with discounting 20% off transportation fees from 2017. It is considered that in the future railway transportation will increase since the number of transportation days between Dar es Salaam and Kigoma are equivalent.

There is a flood prone area between Tabora and Kigoma and the service is suspended from flooding for long periods of time in the rainy season and there is hope that it will improve in the future.

Regarding railways, Tanzania Intermodal and Rail Development Project financed by the World Bank has been implemented between Dar es Salaam and Isaka area, thus it is expected to enhance the railway transportation. Also, apart from the rehabilitation of present narrow gauge railways, construction of standard gauge railways between Dar es Salaam and Mwanza via Tabora is planned, and construction contract for its section from Dar-es Salaam and Makutupora (Dodoma) has been already made. Although, the project does not cover the section from Tabora to Kigoma, railway rehabilitation and construction in the Central Corridor has been certainly making a progress.

4) Inland Container Terminal Plan in Katosho

The TPA prepared a plan for an Inland Container Terminal (ICT) in Katosho in the interior of Kigoma, assuming that transit cargoes such as minerals and agricultural products connected with the Democratic Republic of the Congo and Burundi will increase through the Kigoma Port. According to the person at the TPA Kigoma Port Office, the construction of the ICT is not proceeding.

5) Industrial Location around Kigoma Port

As the development plan around Kigoma Port, it seems that no action was taken to implement a Special Economic Zone (SEZ) located at the east side of the Kigoma Air Port that was once planned. Other than this, no new development project has been confirmed in the vicinity of Kigoma Port or the Tanzania side of Lake Tanganyika. Therefore, it is considered that there will be no big change of the social economic structure in the hinterland.

With the above situations around Kigoma Port, big changes that will affect cargo demand cannot be found and the demand forecast is considered to be possible by means of trend analysis of cargo volume.

(4) Demand Forecast of Kigoma Port

The demand forecast of cargo volume in Kigoma port has a limitation in accuracy of forecasting value due to the uncertain factors like the political situation in the Democratic Republic of the Congo which is its biggest trade partner. Here, long-term demand forecast is not performed but the demand forecast for the year of 2024/2025 as the target which is about 5 years after completion of the project is performed.

It is understood from Figure 1-4-2 annual transition of cargo handling volume in Kigoma Port that the export cargo volume from the fiscal year of 2006/2007 shows a long increase trend. While, the import cargo volume has changed to increase from 2011/2012 although it had been in a decreasing trend from 2006/2007 and it is considered that this trend is going to continue into the future as well. Therefore, concerning the demand forecast of international cargoes, future cargo volume is forecasted by trend analysis based on the actual cargo volume from 2006/2007 to 2015/2016. Concerning import cargo volume, as it changed from decreasing trend to increasing trend in 2011/2012, it is forecasted by trend analysis based on the actual cargo volume from 2011/12 to 2015/16. While, concerning domestic cargo, as an apparent trend cannot be found due to the sharp fluctuations and the change of social structures around Lake Tanganyika was not confirmed, the average value of the best 3 years of actual values from the fiscal year of 2006/2007 to 2015/2016 is to continue .

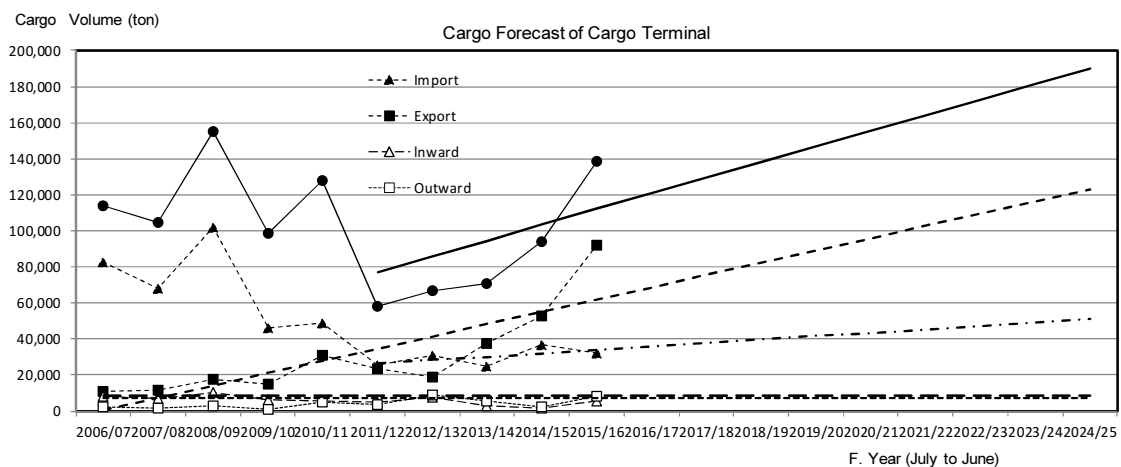


Figure 1.4-2 Future Forecast of Handling Cargo Volume in Kigoma Port

Figure 1.4-2 shows the result of future forecast for international cargo by trend analysis. The forecast result of international cargoes at the end of fiscal year of 2024/25 is as shown in Table 1.4-5 and it is forecasted that the cargo handling volume in Kigoma Port will increase to reaching about 1.4 times of 2015/2016. The increase of cargo handling volume in Kigoma Port is dependent on export cargoes mainly to the Democratic Republic of the Congo and must pay attention to matters affected by the political situation of the country.

Table 1.4-5 Forecasted Cargo Handling Volume in Kigoma Port (ton)

Cargo handling volume		2015/16 fiscal	2024/25 fiscal
International cargo	Import	32,202	51,063
	Export	92,336	123,088
Domestic cargo	Inward	5,670	8,650
	Outward	8,427	7,545
Total		138,635	190,347

Chapter 2 Contents of the Project

Chapter 2 Contents of the Project

2-1 Project Summary

2-1-1 Basic Concept of Project

(1) Project Policy

Kigoma Port is an international port located on the east coast of Lake Tanganyika where it is in the western part of the United Republic of Tanzania. The Central Corridor runs through it connecting the Republic of the Congo, Burundi and Zambia to the Tanzania Central Railway through the inland of the country along with roads to the Port of Dar es Salaam. Giving it an important position in view of national security not only for Tanzania but also the surrounding countries as a route of commodity import and export like daily goods and natural resources and as a base for the flow of people as well. Furthermore, Kigoma Port functions as a hub port of the Central Corridor and is expected to expand with future cargo demand coinciding with the construction of railway and road networks. With a master plan prepared for Kigoma Port, it is ready to advantage of the situation. However, big increases of cargo volume were not found after the survey in 2011.

Some background first, approximately 100 years have passed since the construction of Kigoma Port and the safety of port facilities is beset by deterioration and the urgency of rehabilitation of the passenger terminal and general cargo warehouse is higher than the need for new facility construction to respond to future cargo demand. Tanzania is a member of the International Maritime Organization (IMO) and Kigoma Port on Lake Tanganyika is required to respond to its standards as an international port and also to the International Convention for the Safety of Life at Sea (SOLAS convention).

In planning the rehabilitation of the passenger terminal at Kigoma Port, it aims at improving passenger safety and upgrading of efficiency as well as it conforms to the SOLAS convention. The objective is for passenger ships to be able operate for passenger and cargo transportation along the coast of Lake Tanganyika and into the hinterland as well, so, the plan must include handling cargoes.

In planning the rehabilitation of the general cargo warehouse, it aims at securing the safety of port workers to use the general cargo warehouse and improvement of cargo handling efficiency.

With the above as the positioning of this project, planning is done considering the following matters.

- Safety port
- Efficient port
- Clean port
- Comfortable and attractive port for passengers

(2) Basic Concept of the Plan

Four requested components from the Application for Japan's Grant Aid in April 2009 are described below.

- Construction of Passenger Wharf
- Construction of Passenger Terminal Building
- Construction of Cargo Warehouse
- Construction of Access Road

And there were additional requests for necessary facilities in view of required items for an international port and SOLAS Convention.

- Navigation aid: Beacon
- Lighting facility

Furthermore, the following components were added, selected from additional components requested in December 2016.

- Additional construction of canopy for the passenger terminal building
- New construction of a general cargo warehouse

Concerning the passenger terminal building, it was requested to secure an indoor passage and to change the location of the TPA office and toilet with the changes for passenger flow lines at departure.

As the basic concept of plan, the following points are concerned with considering the utilizing situation of existing facilities and natural conditions related to Lake Tanganyika.

- Improvement plan so as to solve problems with respect to existing functions
- Improvement plan so as to be able to make existing function reappeared safely and efficiently
- Planning wharf facilities so as to be able to cope with the natural conditions of Lake Tanganyika, especially, the future lowering of lake water levels as well.

2-1-2 Study on Requested Component

Concerning requested and additionally requested facilities, the following implementation policy is explained showing the necessity and urgency of the facilities in order to study the relevancy.

(1) Civil Facilities

1) Passenger Wharf

【Necessity and Urgency】

- The existing passenger wharf has poor facilities and there is a problem to secure the safety of passengers.
- Urgent need for the rehabilitation of wharf facilities is necessary due to the aging and significant deterioration.
- Flow lines of passenger and cargo are concentrated in the same spot and it is necessary to improve it for security, safety and efficiency.

- Acquisition of land is required since efficient cargo handling cannot be done, as well as, the land for the wharf is too narrow and congested by passengers and cargoes.
- Safety as an international passenger facility and correspondence to the SOLAS convention are required.
- There are problems on the security of utilization by passengers at night and night work due to poor lighting facilities.
- Passenger terminal is unpaved which is an obstacle for the gender and usage by the disabled.

【Implementation Policy】

It is possible for the passenger wharf to be implemented by the Japanese side with the following points.

- Recipient country has some difficulty in disbursing the high estimated project cost.
- Capabilities of planning, designing and construction by the recipient country are not sufficient.
- Main members of the structure (steel material) shall be procured from Japan.
- Making considerations for gender and usage by the disabled, the wharf will be paved.

2) Access Road

【Necessity and Urgency】

- The access road is unpaved in spite of the important infrastructure for passing vehicles like taxis for passengers and port people and ship repair people in addition to large and small sized cargo trucks for cargo transportation.
- As road is unpaved although a ditch for a trench is installed and compaction of the road surface is done, periodical maintenance and repair are required.
- The road surface has tracks, pot holes and scoured parts. From rain water there are random puddles here and there and traveling performance is bad.
- The gradient of the road is 6%, that is steeply sloped. As rainwater flows when there is heavy rain driving a vehicle on the unpaved road becomes dangerous.
- Space in front of the wharf is unpaved in spite of utilizing for passengers' movement, waiting space, dropping off and picking people with vehicles zone or car parking. There are many puddles when it is raining, and therefore, usage is troubling.
- The increase of large sized vehicles is anticipated with the improvement of the passenger wharf and the frequency of maintenance and repair shall be higher. There is a gate to the container wharf nearby and utilization by container vehicles is assumed.

【Implementation Policy】

Pavement of the access road is expected to be executed by the Japanese side.

- The access road is the only road that connects between the main road and passenger wharf. It is required to be maintained in good condition throughout the year, including the rainy season, and supply for the needs of the port users. Therefore, it shall be included in this project component.

- As to the space at the entrance of passenger wharf, it is an important facility being utilized as waiting space for passengers and a car parking facility, and therefore, the pavement shall be made as part of the access road.

(2) Building Facilities

1) Passenger Terminal Building

【Necessity and Urgency】

- The number of passengers has increased that are standing ready outside of the port since the system has been changed to that passengers cannot come into the port until the ticket gate opens.
- Although a passenger waiting shelter is newly constructed outside of the port as a waiting facility for passengers, the capacity is not adequate. As passenger cannot come into the port until the ticket gate is opened, it ends up that many passenger who cannot be accommodated in the passenger waiting shelter are standing ready at the open space in front of the entrance.
- The shelter facility in the port is not provided as a passenger waiting facility but is used as a cargo weighing facility.
- Ticket office, CIQ facility with Customs, Immigration and Quarantine are aged, deteriorated and inconvenient.
- Service facilities for passenger such as the kiosk and toilet are poor and do not meet passengers' needs.
- It shall be necessary to remove existing facilities in view of access for construction and layout plan of the project at the time of construction works.

【Implementation Policy】

The Passenger Terminal Building is expected to be implemented by the Japanese side with the following points.

Passenger waiting room shall be the plan to add on a cargo weighing shelter and CIQ facility on the requested facility contents.

- Removal of the Cargo weighing shelter is necessary for the execution of construction work.
- Removal of the Customs, Immigration and Quarantine facilities is necessary due to deterioration in addition to the above.
- Canopy is installed over entrance portion of passenger terminal building in order to improve the convenience of waiting passenger who cannot be accommodated in the passenger waiting shelter.
- Gender and the usage by disabled are accommodated.
- Scale of facility is assumed to be larger.
- Recipient country has some difficulty in disbursing the high estimated project cost.
- In addition to the newly constructed passenger waiting shelter by the TPA, a canopy is additionally constructed on the passenger terminal building to improve the convenience of passenger who are standing ready outside.

2) Warehouse for Passenger Cargo

【Necessity and Urgency】

- Shelter for the passengers is now used for a cargo counter, cargo weighing and fee collection as the current cargo weighing shelter, and furthermore, it is sharing a part of the cargo storing function which is a problem for security.
- For loading cargoes onto passenger ships, they are brought to the wharf from the surrounding area of Kigoma. Judging from the situation of handling cargoes, part of the cargoes are confirmed to be brought in advance of a ship's arrival and a storage facility to store them is regarded as necessary.
- Unloaded cargoes from a passenger ship are taken out of the port area immediately after unloading by consignees. As there is no facility to temporarily store them around the wharf when it is raining, their solution is to cover the cargoes with water proof sheets temporarily until a delivery vehicle arrives.
- There is no cargo storage facility in the wharf despite the necessity to store them temporarily, to be bonded in customs inspection or lost articles from the operation of the passenger wharf.
- The cargo weighing shelter which becomes the temporary storage place is to be demolished due to the construction of the passenger terminal building.

【Implementation Policy】

It is assumed that the necessity of a large scale cargo shed written in the application letter is low and it is possible to exclude from the project components. However, as a part of the cargoes are temporarily stored in advance and lost articles and bonded cargoes may be borne, this project copes to have a cargo storage place in conjunction with the Passenger Terminal Building.

And concerning unloading cargoes, they are hardly affected by rain as delivery vehicles can access closer to the wharf as well as cargo handling becomes more effective by the implementation of this project.

3) Relocation of the general cargo warehouse

【Necessity and Urgency】

- Existing general cargo warehouse is badly deteriorated, there are numerous cracks by neutralization and exposed portions of reinforced bars from falling cover portion of concrete. The floor slab is crumbled on the 1st floor and cannot be used for storage leaving only the use of the ground floor as a warehouse, but there still exists an office operating on the 1st floor.
- Annually about 2 earthquake occur around the project site. There is a risk that a loose section modulus in the original pillars will break when an unanticipated quake occurs, and therefore, it is urgently required to be demolished.
- Although the ground floor warehouse space is dedicated as a cargo handling warehouse mainly for foodstuff and so forth, it is partly used for storing construction materials like cement and

sanitation is not secured.

- Cargo handling by forklift cannot be operated effectively because of the columns which spans are 7m in both directions of the girders and beams with the purpose of structural support column spacing in the existing general cargo warehouse.
- As there is an uneven part in the apron from the backside of the cargo terminal to the general cargo warehouse and the road width is narrow, cargo handling is troubled. According to the increase of cargo volume, securing a wider apron is desired, but the existing general cargo warehouse is the obstacle.

【Implementation Policy】

Not only securing safety for the building and port workers but also corresponding to future cargo demand, it is supposed to secure a wide cargo handling space by demolishing the existing general cargo warehouse and is planned for the general cargo warehouse to relocate to the backside of the port area.

A newly constructed general cargo warehouse will be a structure without columns as much as possible so that cargo handling machinery can come into the warehouse in order to improve cargo handling efficiency.

(3) Requested and Planned Components

Based on the study results of necessity and urgency of the above requested components and the coping policy, the following components shown in Table 2.1.2-1 shall be executed as the project by the cooperation. And each component is set up at the design outline.

Table 2.1.2-1 Requested and Planned Components

Facility	Requested component		Content at Planning
	Size	Area	
Passenger Wharf	140m × 63m (except 7.0 m of existing jetty portion)	8,820m ²	Implementing as the project
Passenger Terminal Building	25 × 20m	500m ²	Implementing as the project
Cargo Storage	50 × 20m	1,000m ²	Implementing as a part of Passenger Terminal Building
Access Road	Length 800 × Width 12m		Implementing as the project, including pavement of open space in front of Passenger Wharf
Navigation Aid	Additionally requested		Beacon is installed as safety measure of passenger wharf
Lighting Facility	Additionally requested		Implementing as requesting item of SOLAS convention in passenger wharf
General cargo warehouse	Renovation of existing facility		Execution by new construction as objective cooperation

(4) Correspondence to Accessibility and Gender in Consideration of Disability

Passenger flow line, sign board, toilets, security lights, anticrime measures, etc. are considered so that everyone can use the facilities comfortably regardless of age or disability status of users when the port facilities, building, etc. are planned and designed.

The Tanzania Development Vision 2025 and National Policy on Disability are listed as the national plans and policy for fields which are related to policy for disability in Tanzania is described. (Source: JICA Related data to disability by country, Tanzania, March 2009). Concerning the plan and design of facilities, although enhancement of accessibility to public facilities is described, laws to regulate the specification of concrete facilities like Japan's Barrier-Free Act are not established. According to the hearing survey with the construction consultant in Tanzania, it was said that buildings with more than 3 stories need to install an elevator as far as hospitals are concerned.

This problem will not occur concerning accessibility by the disabled in the passenger terminal building due to it being a flat building with no uneven parts with access from the open space in front of the wharf. Adequate space, handrails and signboards are allocated at the toilets for women and men in the passenger terminal building. As the departure of passenger ships sometimes occur after nightfall, security lights will be installed for the security of women and children when loading.

Concerning the general cargo warehouse, as it is rare to be used by the disabled, the accessibility has not been design concern.

2-2 Outline of the Project

2-2-1 Basic Policy

(1) Basic Policy on the Layout Plan of the Passenger Wharf

1) Functions of the Passenger Wharf Facility

Layout plan of passenger wharf is made based on the flow lines of passengers and cargoes at the existing facilities and effective and safe facilities shall be planned. Necessary function and improvement methods to each facility are as shown in Table 2.2.1-1.

Table 2.2.1-1 Function and Implementation Policy of Each Requested Component

Requested Facility	Functions	Existing Facility	Improvement by Project
Passenger Wharf	<ul style="list-style-type: none">- Embarkation & Disembarkation of Passenger- Loading & Unloading of Cargoes- Cargo Handling- Operation of Cargo Handling Vehicles and Equipment- Berthing of Small Boats	<ul style="list-style-type: none">- Existing Passenger Wharf- Pontoon of North Side	<ul style="list-style-type: none">- Improvement of passenger wharf- Improvement of Berth Facility- Expansion of Wharf Area

Passenger Terminal Building	<ul style="list-style-type: none"> - Ticket Sales - Customs, Immigration and Quarantine Services - Waiting for Ship Departure by Passenger - Weighing Accompanied Baggage & Collection of Excess Charge - Weighing & Charge of Cargoes - Temporary Storage of Cargoes - Internal Meeting of Port Staff - Simple Works - Sheltering from rainfall 	<ul style="list-style-type: none"> - Passenger Waiting Shelter - Cargo Weighing Shelter - CIQ Facility (Customs, Immigration & Quarantine) - Ticket Booth 	<ul style="list-style-type: none"> Construction of Passenger Terminal Building - Administration Offices - Booth for Customs, Immigration & Quarantine - Booth of Ticketing and Security - Ticket Sales Booth - Service Facilities such as KIOSK and Toilet - Passenger Waiting Space - Weighing and Charge Collection Facility - Temporary Storage of Cargoes - Meeting and Simple Works and etc.
Cargo Shed	<ul style="list-style-type: none"> - Storage of Cargoes 	<ul style="list-style-type: none"> - Cargo weighing shelter is used for temporary storage of cargos - Repair tools and equipment for maintenance of passenger ship is stored in store house. 	<ul style="list-style-type: none"> - Allocated in Passenger Terminal Building - No facility to store cargoes found in the existing facilities.
Access Road	<ul style="list-style-type: none"> - Passage of cargo handling and port user's vehicles - Passenger move 	<ul style="list-style-type: none"> - Unpaved road with two lanes (481 m in length) - Ditches for drain at both ends 	<ul style="list-style-type: none"> Pavement on road
General Cargo Warehouse	<ul style="list-style-type: none"> Storage of cargoes Checking cargo movement Management · Administration 	<ul style="list-style-type: none"> Cargo warehouse (foodstuff) Manager room Checking cargo movement (in warehouse) Space 	<ul style="list-style-type: none"> Warehouse construction of the equivalent capacity · Foodstuff warehouse · Valuable goods warehouse · Office (Administration/Accounting/Statistic/Security) · Office to check cargo-in/out · Meeting room/toilet/kitchen

(2) Layout Plan of Passenger Wharf Facility

Each facility plan is set considering the functions required from the berth facility, on-land facility and passenger waiting building at the passenger wharf, the situation of flow lines of passengers and cargoes and the problems of existing facilities. The layout of each facility at the wharf is planned according to the layout plans shown in Figure 2.2.1-1. The figure shows the

inclusion of a storage house for tools and equipment now there at the passenger wharf and at the same time, small boats that cannot be berthed in conjunction with the relocation of existing pontoon shall be moored at the north berth.

Now, the water area in front of the north berth is not going to be dredged in view of environmental consideration.

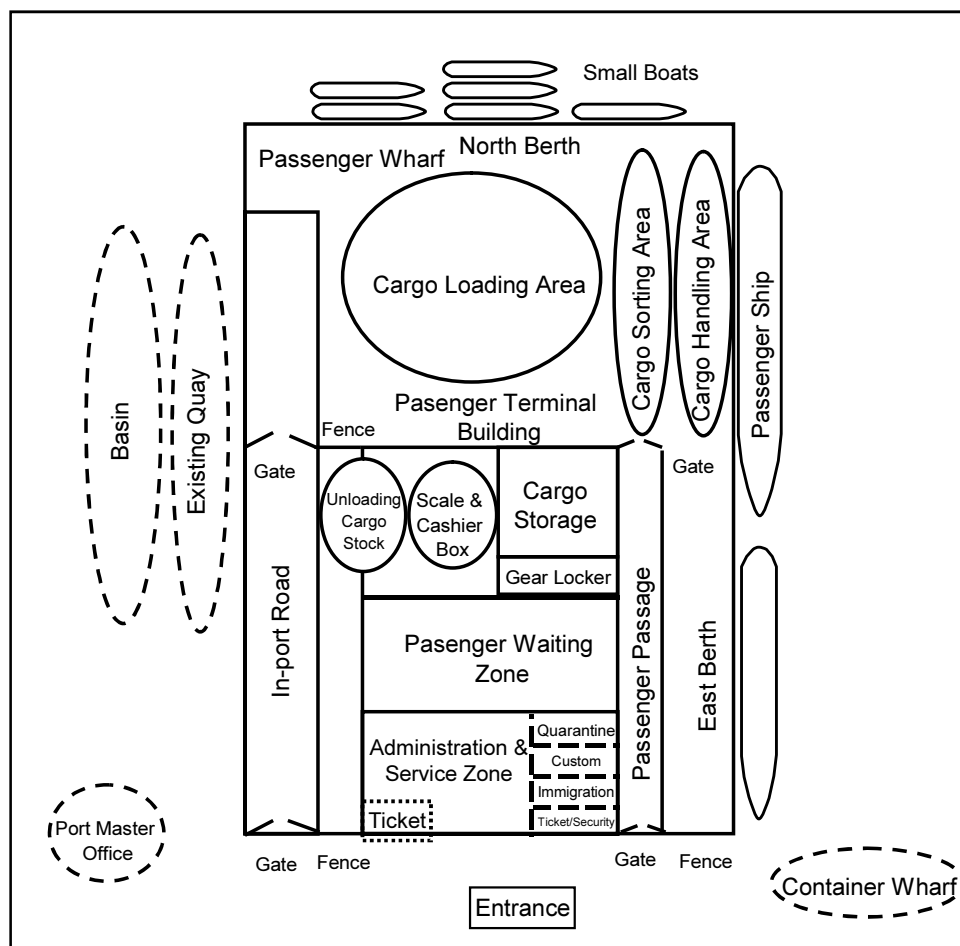


Figure 2.2.1-1 Layout Plan of Passenger Wharf Facilities

(3) Flow Line of Passenger Wharf

The flow lines of passenger and cargoes using the passenger wharf shall be per Figure 2.2.1-2, 3 when the planned facilities of the passenger wharf are implemented according to the above layout plan.

1) Flow Line of Passengers

i) Flow Line of Passengers at Disembarkation

Passenger disembarked from the passenger ship move along the passenger lane and move to the outside after being checked by Quarantine, Customs and Immigration.

ii) Flow Line of Passengers at Embarkation

Boarding passengers wait at the passenger waiting shelter, open space in front of the wharf and under the canopy to be newly installed on the passenger terminal building until the ticket gate opens after purchasing a ticket. In the case of a passenger having excessive luggage is to pay an excess fee at the weighing station/warehouse zone. When the ticket gate opens, passengers move along with passengers passing into immigration, customs and quarantine and come into the passenger terminal building. After that, upon completion of departure preparation of the passenger ship, passengers come onto the wharf and board the foot by foot.

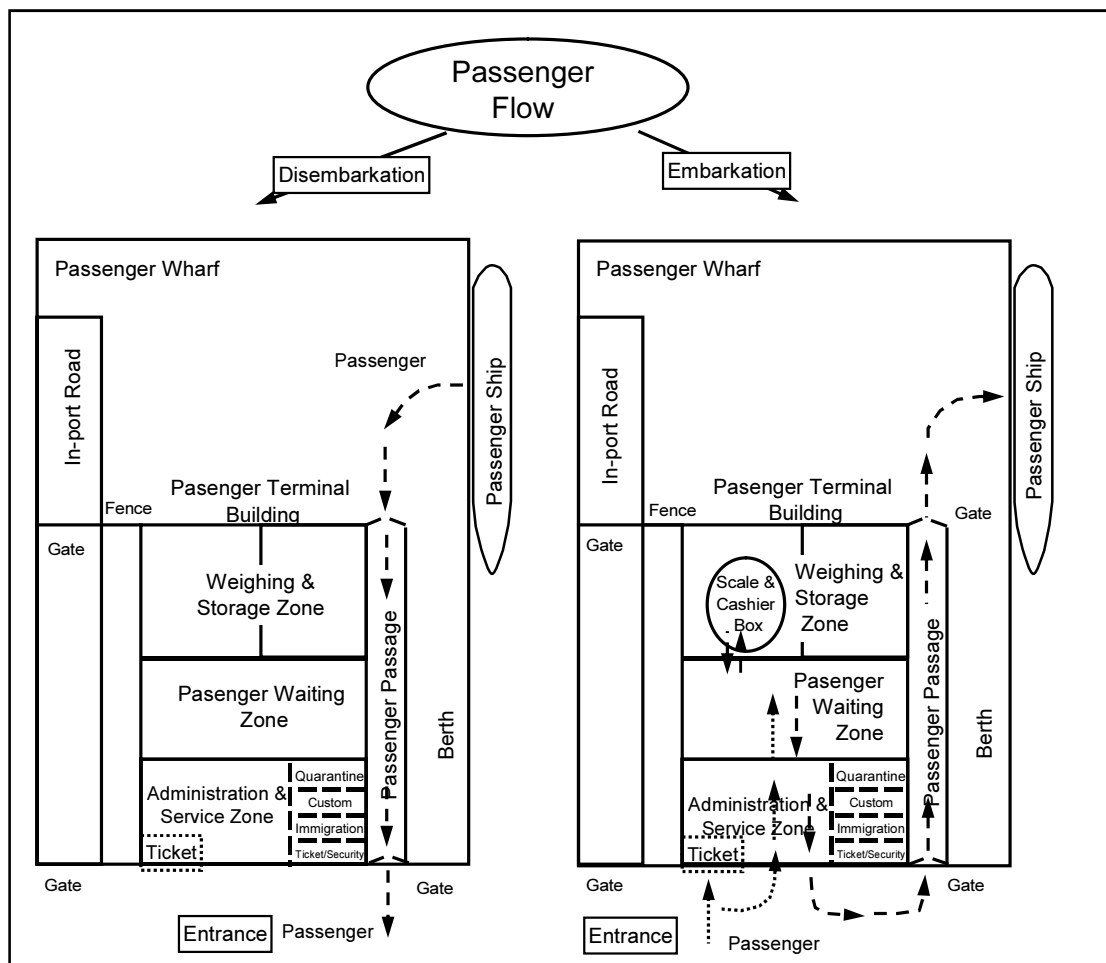


Figure 2.2.1-2 Flow Line of Passenger in Passenger Wharf

2) Cargo Flow Line in the Passenger Terminal

i) Flow Line at Cargo Unloading

The cargoes are unloaded and stored at the cargo sorting area after unloading by cargo handling machinery that are installed at the cargo handling area along the berth, ship's crane and workers. After that, cargoes are carried out by vehicles waiting in the vehicle waiting area.

ii) Flow Line at Cargo Loading

The cargoes brought in by cargo handling vehicles are unloaded at the temporary cargo stock

after paying the freight and measuring the weight. These cargoes and the cargoes stored temporarily at the cargo storage area are conveyed to the cargo handling area by workers or equipment as needed when the ship is ready to receive them. The cargoes are loaded onto the passenger ship by cargo handling equipment, ship geared crane or cargo handling workers.

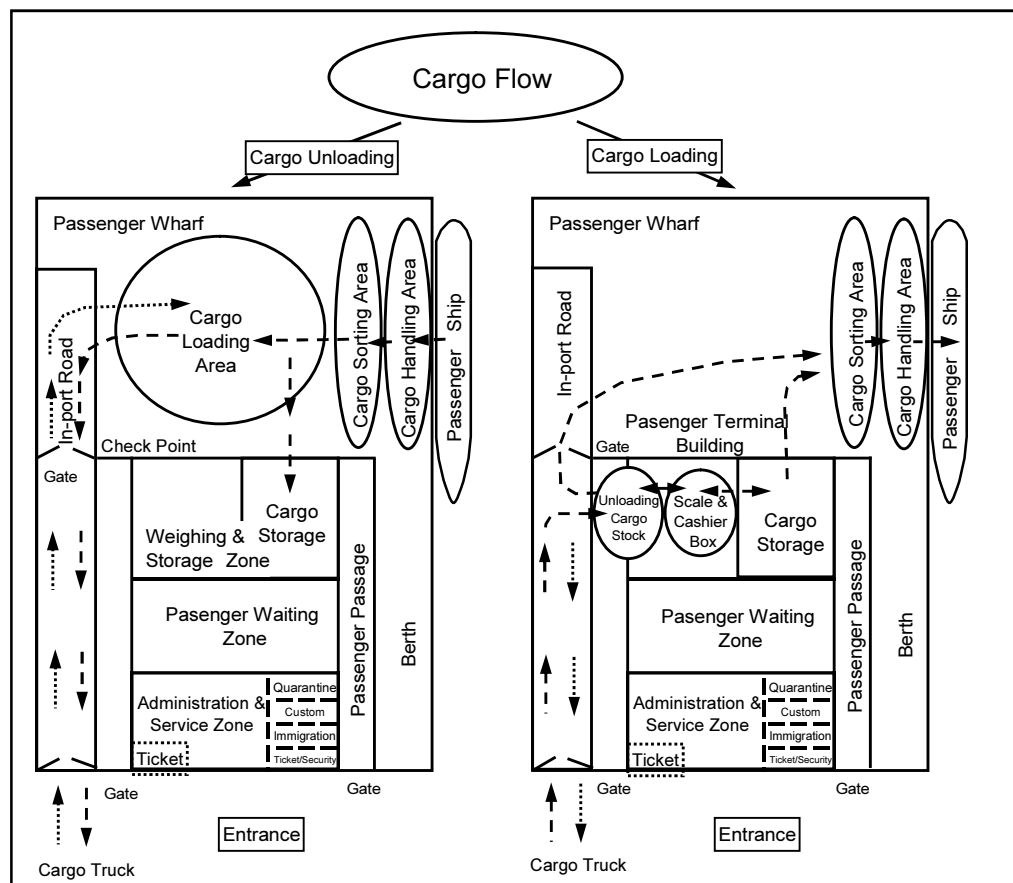


Figure 2.2.1-3 Flow Line of Cargo in Passenger Wharf

(4) Facility Layout Plan of General Cargo Warehouse (New Construction)

Facility function layout in present Kigoma Port is as shown in Figure 2.2.1-4, is largely divided by “Cargo Function Zones” on the east side of the port nearby the entrance for general cargoes. The “Container Function Zone” on the east side of the port is for container cargo only, and the “WFP Zone” on the back side of the Port is leased land.

Concerning suitable land for the construction of the new general cargo warehouse, it is desirable to follow the future plans of the “Kigoma Port Development Plan”. At the same time, it also desirable to demolish the existing general cargo warehouse as soon as possible because of the high risk of deterioration and the improvement of cargo handling efficiency can be expected if a wider space for cargo sorting and handling can be secured on the backside of the cargo wharf.

With the above, in this project as shown in Figure 2.2.1-5, as well as newly constructing the general cargo warehouse on the east side of the existing WFP Zone, it is understood that the project effect is expected to be better efficiency of cargo handling work by the demolition of the existing general cargo warehouse by the government of the host country.

TPA agrees with the above thought and now is coordinating the return of leasing land with WFP. And as TPA plans to relocate TPA administration office near the entrance zone in the future, it is desirable to construct closer to the entrance as much as possible for the office's function in the general cargo warehouse.

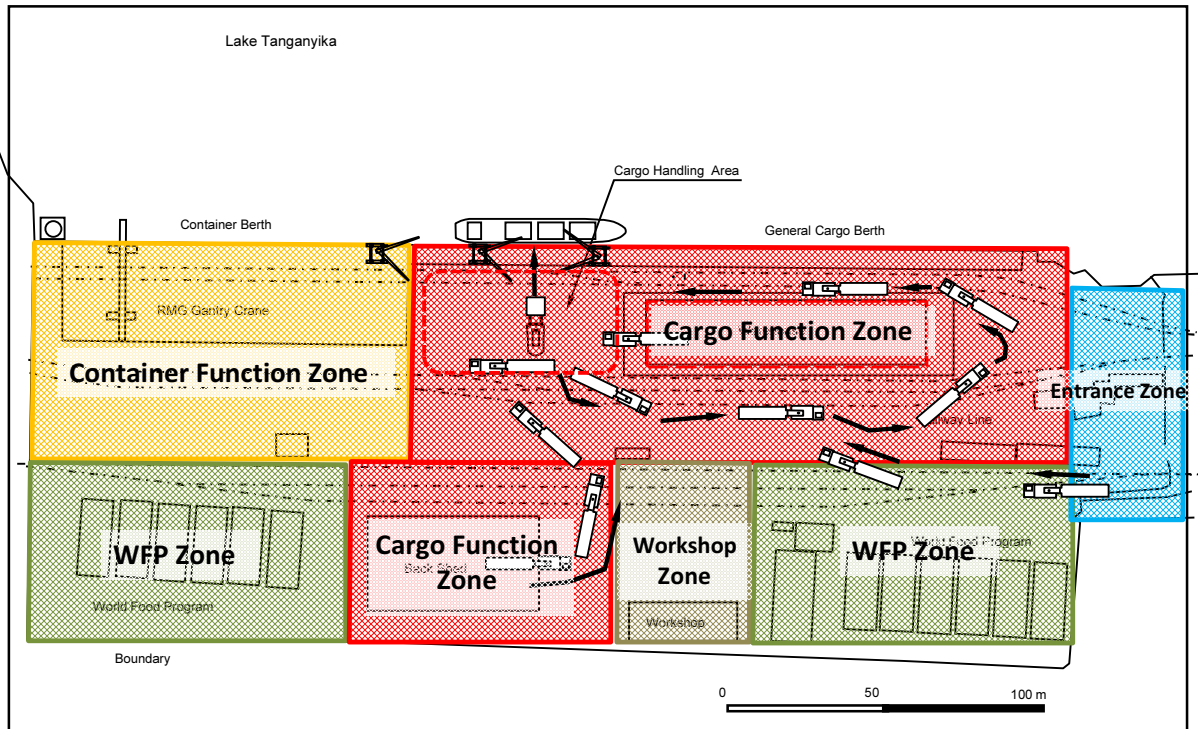


Figure 2.2.1-4 Present Function Situation in Kigoma Port

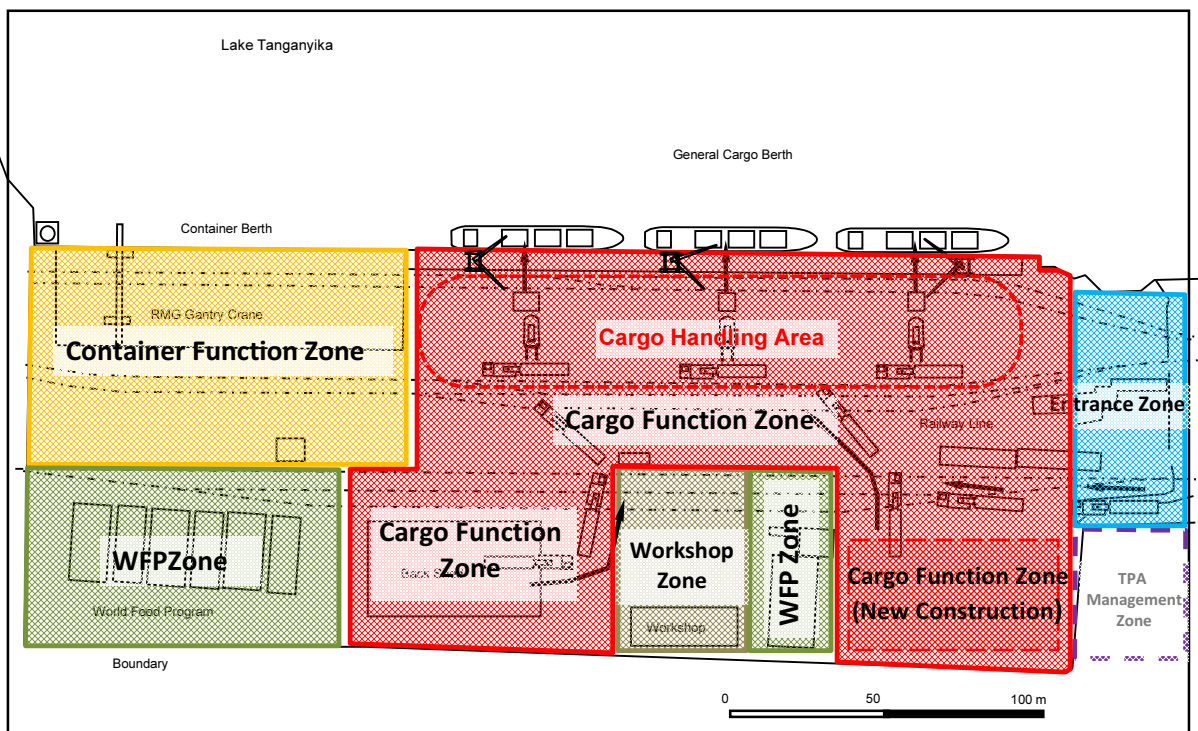


Figure 2.2.1-5 Layout Plan of Cargo Function Zone Considering Future Plan

(5) Function Layout Plan of the General Cargo Warehouse (new construction)

Concerning the function location of the newly constructed general cargo warehouse, as well as securing capacity of foodstuff at the existing general cargo warehouse and so as to be able to collaborate with the future relocation place of TPA administration office as to the office function and the layout to the east side of the building where is the cargo gate side in the cargo wharf is considered.

And concerning the layout of foodstuff storing space, as shown in Figures 2.1.2-6 and 7, the layout can be freely changed due to taking out a columns structure in the warehouse. The South wall of the warehouse is identical with south sidewall of the small warehouse in the cargo handling and machine maintenance site. Open space area in front of the facility, as well as securing maximum space for cargo sorting and handling, greater convenience with the cargo handling work can be attained by installing a canopy. The east side wall face is identical with present west side face of the 6 WFP tents.

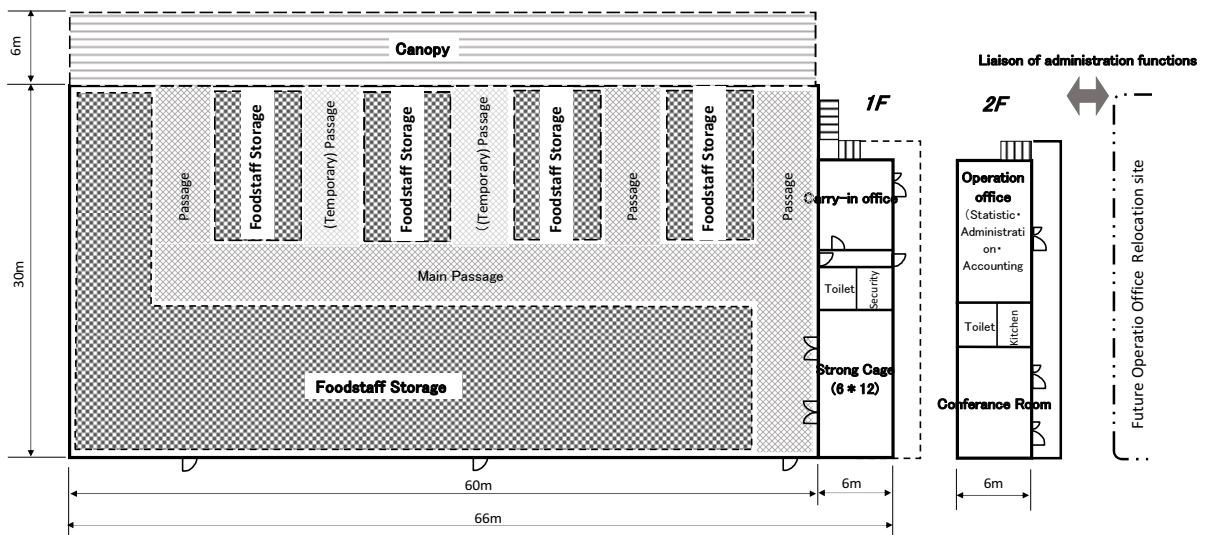


Figure 2.2.1-6 Function Layout Plan-1 in General Cargo Warehouse (basic layout)

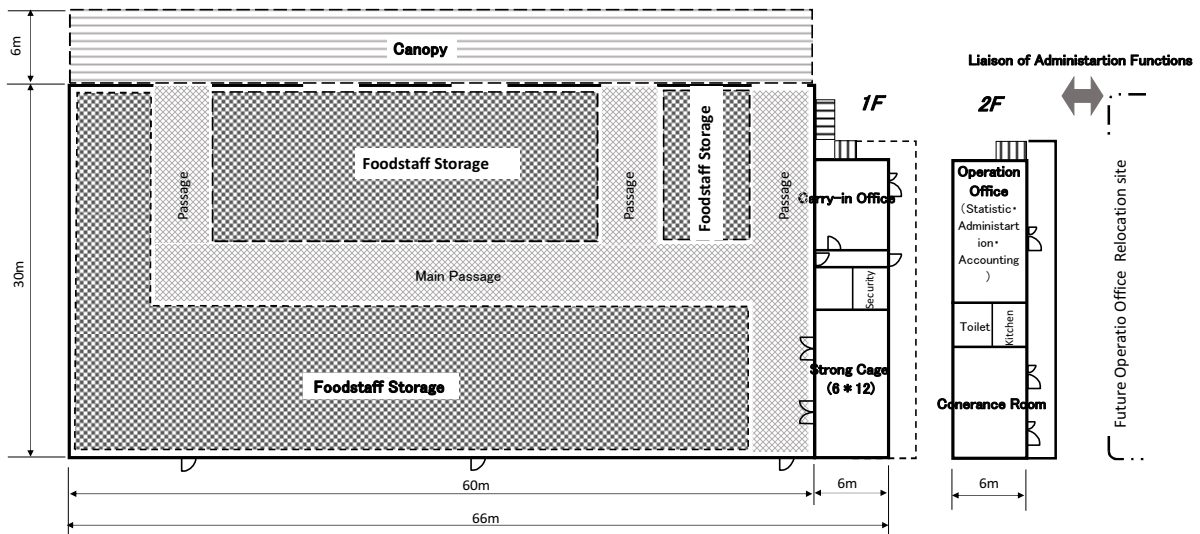


Figure 2.2.1-7 Function Layout Plan-2 in General Cargo Warehouse (when cargo volume increases)

(6) Necessary Facilities Demolished or Relocated

Necessary facilities to be demolished or relocated with the implementation of this project are as shown in Table 2.2.1-2. And as wharf facilities cannot be used during the construction of this project, the relocation of the pontoon berthing to a temporary passenger facility or the end of the wharf is necessary with the candidate site as shown in Figure 2.2.1-8.

The demolition of each facility shall be performed before the construction commencement of the project facilities by the hand of the government of Tanzania.

Table 2.2.1-2 Demolition Facilities Required by the Project

Facility	Functions	Reasons of Removal	Improvement by Project
CIQ and Ticket Sales Facility	<ul style="list-style-type: none"> - Ticket Sales - Customs - Immigration - Quarantine 	<ul style="list-style-type: none"> - Aging & Deteriorating - Located at Entrance Part of Site and Access for Construction Works 	<ul style="list-style-type: none"> - New Facility by Project of Passenger Terminal Building
Cargo Weighing Shelter	<ul style="list-style-type: none"> - Waiting for Ship Departure by Passengers - Weighing of Accompanied Baggage and Charge Collection - Weighing Cargoes and Charge Collection - Temporary Storage of Cargoes - Internal Meeting - Simple Works - Sheltering from Rainfall 	<ul style="list-style-type: none"> - Some Aging - Located at Access for Construction Works and Required Land Area for Project 	<ul style="list-style-type: none"> - New Facility by Project of Passenger Terminal Building
Pontoon (Relocation)	<ul style="list-style-type: none"> - Landing & Boarding to / from Small Boats - Mooring of Small Boats (Boats of Customs, Immigration, National Park) 	<ul style="list-style-type: none"> Plan by TPA 	<ul style="list-style-type: none"> - Catered by New Berth Facility of North Side with Approach Steps
Storehouse for Ship Repairing Tools	<ul style="list-style-type: none"> - Storehouse for maintenance materials and tools of passenger ship 	<ul style="list-style-type: none"> -To use empty Container House - Easy Relocation - Reallocation of project facilities 	<ul style="list-style-type: none"> - New Facility by Project of Passenger Terminal Building
WFP 6 tents	<ul style="list-style-type: none"> Warehouse made of tent owned by WFP and store foodstuff for Refugee Support 	<ul style="list-style-type: none"> East side 6 tents which are located at the place where general cargo warehouse is relocated shall be demolished 	<ul style="list-style-type: none"> By TPA
Existing General Cargo Warehouse	<ul style="list-style-type: none"> Warehouse for storing general cargoes 	<ul style="list-style-type: none"> It will be unnecessary going with the construction of new general cargo warehouse 	<ul style="list-style-type: none"> TPA will demolish after completion of project facilities

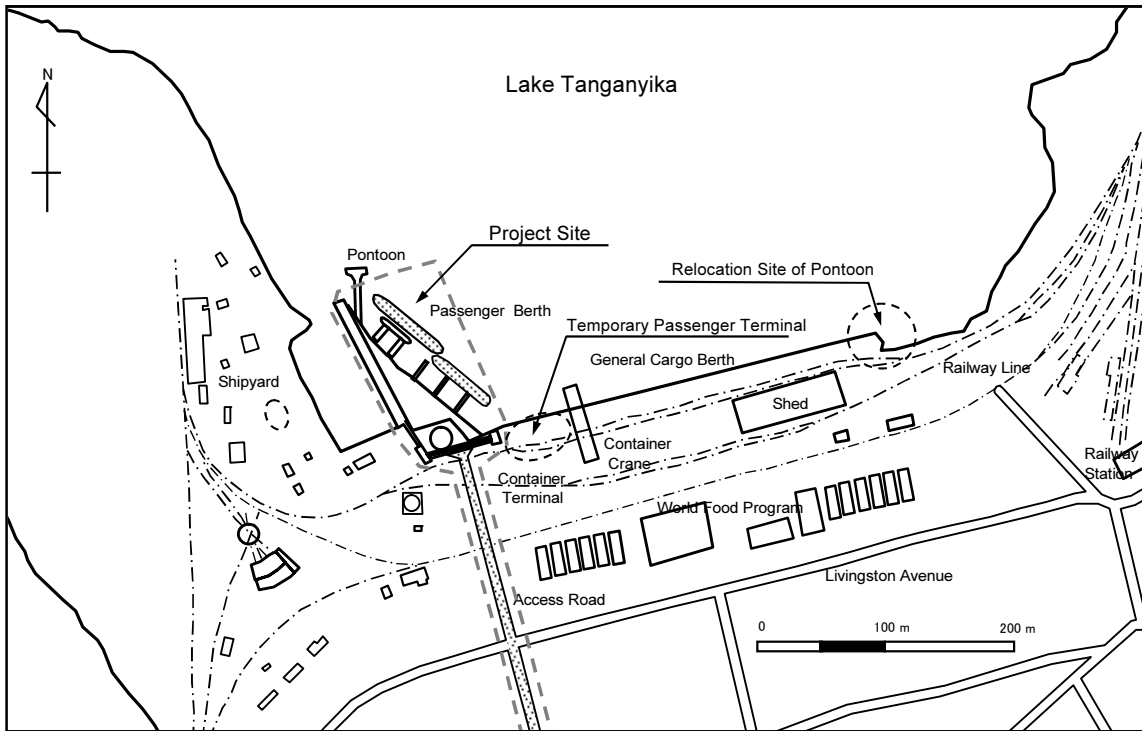


Figure 2.2.1-4 Location Map for the Temporary Facilities for the Implementation of the Project

2-2-2 Basic Plan

2-2-2-1 Basic Plan for Passenger Wharf

Following policies shall be executed in establishing the basic plan for the passenger wharf.

(1) Target Ships

In this project, ships owned by Marine Services Company Ltd. (MSCL) that use Kigoma Port as a home port shall be the target ships for planning. As other cargo ships are considered temporary, the design ships are set up referring to the sizes of ships servicing in Lake Tanganyika.

With the above design conditions, ships shown in Table 2.2.2.1-1 are listed as the design ships for the berthing facility plan in the passenger wharf.

Table 2.2.2.1-1 Ship Particulars for Planning

Name of Ship	Flag	Built Year	Type	Gross Tonnage	LOA(m)	Draft(m)
MV Teza	Burundi	1984	Cargo	1,880	60.0	3.6
MV Liemba	Tanzania	1913	Passenger	755	71.4	3.0
MV Mwongozo	Tanzania	1982	Passenger	800	59.5	2.5
MT Sangara	Tanzania	1981	Tanker	385	38.8	2.0

(2) Basic Plan for Design Water Depth

The water depth of the berth takes into consideration the passenger ship MV Liemba with a 3.0m draft, which is the deepest draft of the existing passenger ships. However, it is assumed that the ship draft shall be 3.6m when the new ship is allocated in 2017 as scheduled. As this berth neighbors upon the cargo berth, it is considered that a cargo ship will be temporarily berthed. MV Teza has the deepest draft of 3.6m out of the cargo ships servicing in Lake Tanganyika is equivalent to the new allocated ship. Therefore, the berth in the passenger wharf is set up for a draft of 3.6m for design ship and is studied further considering allowance for shoaling depth and future drawdown of the lake water levels.

According to “Technical Standards and Commentaries for Port and Harbor Facilities in Japan” (The Ports & Harbors Association of Japan), necessary water depth of berth is set up as standard considering keel clearance (more than 10% of full draft) like a ship’s up & down on the full draft of the design ship. In this project, it is considered that a ship’s movement is small due to the calm wave conditions at the project site and the keel clearance shall be regarded as 10%.

$$\begin{aligned}\text{Necessary Berth Water Depth} &= \text{Max. Draft of Design Ship} + \text{Margin (10\% or more)} \\ &= 3.6\text{m} + 3.6 \times 0.1 = 4.0\text{m}\end{aligned}$$

Although in case of Lake Tanganyika, there is no daily fluctuation of water levels from tides like ports and harbors facing an ocean, there is seasonal fluctuation due to the different water levels between rainy and dry seasons. Drawdown of water level with about 4 cm annually was observed, although the correlation is poor, from the records of water level fluctuation during 1995 to 2009 in

Kigoma. Therefore, in order to cope with future drawdown of lake water level, for the time being, drawdown portion for future approx. 10 years shall be included in water depth for the berth.

Drawdown of Lake Water Level

= Annual Drawdown of Lake Water Level x approx. 10 years

= 0.04m/year x 10 years \doteq 0.5m

And, as sand sedimentation becomes obvious in the adjacent cargo wharf and container wharf in Kigoma Port, dredging is currently executed at the water area in front of the berth by cutter suction dredger. As sand sedimentation at passenger wharf cannot be neglected after construction of facilities, a 0.5 m allowance for shoaling depth is included in order to cope with future sand sedimentation. In addition, if the sand sedimentation is generated more than the above, maintenance dredging shall be made by the existing cutter suction dredger owned by the TPA and the restoration of berth water depth shall be made.

Therefore, the design berth water depth as shown in Figure 2.2.2.1-1, each 0.5 m shall be included as the allowance by drawdown of lake water level and the shoaling by sand sedimentation in the future and sets up as follows,

Design Berth Water Depth

= Water Depth of Berth + Drawdown of Lake Water Level + Shoaling Water Depth

= 4.0m + 0.5m + 0.5m = 5.0m

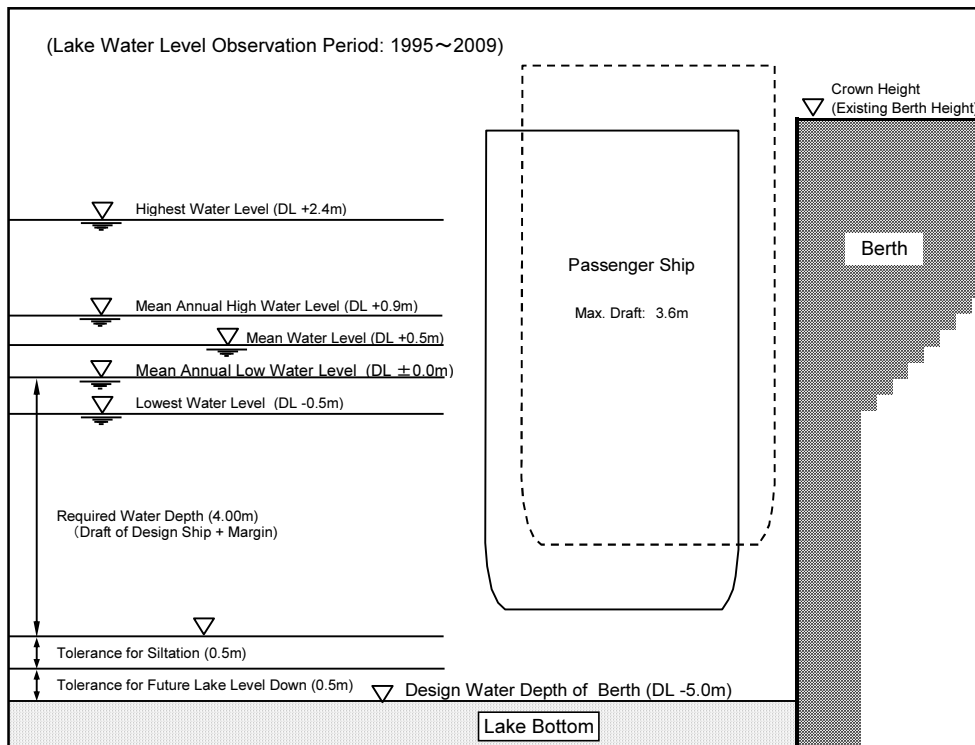


Figure 2.2.2.1-1 Design Water Depth of Berth

Water depth of this berth is equivalent to the water depth in other ports like Kasanga Port

where liner passenger ships are calling (4 m), Lagosa Port, Kalya Port, Karema Port and Kipili Port where they are rehabilitating at present by a Community Service Project (5 m). It is regarded as relevant that the berth water depth of the main ports of neighboring countries are from 3.0 to 4.0 m.

It is also understood that the design ship shall be berthed without any problems since 4.4 m water depth is secured in the case of a 5 m design water depth even under situation of October 2006 which was the minimum water depth, DL-0.5 m (772.9m) during the observation period of lake water levels from 1995 to 2009.

(3) Basic Plan for Water Basin

Center line of the berth in the passenger wharf is set up in the request letter so as to secure a 70 m width parallel to the berth for small boats in the ship repair facility from the base point of the cargo wharf side in the existing wharf. Figure 2.2.2.1-2 shows water area for turning basin when the new allocated ship of MSCCL which has the deepest draft out of our design ships is in the portside berthing. Judging from the sizes of water area facilities in front of the passenger wharf, it is understood to be able to secure enough water area since there is no influence to cargo ships berthing, container wharf and cargo wharf.

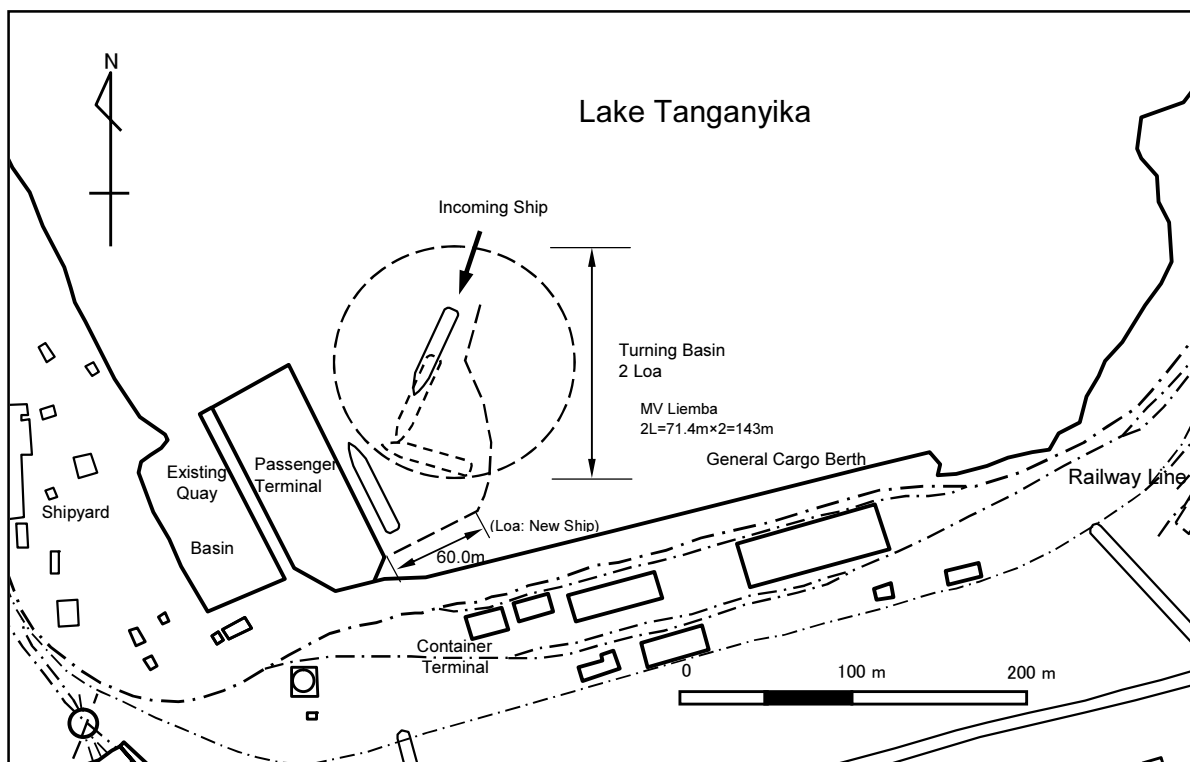


Figure 2.2.2.1-2 Turning Basin in front of Berth

(4) Basic Plan for Berth Length

Figure 2.2.2.1-3 shows location of mooring lines for alongside the ship at the berth, the occupied length at the berth is set up including necessary length ($Loa \times 0.15$) of mooring lines in bow and stern. In this project, the berth length is set up for MV Liemba and MT Sangara occupying and anchoring at the passenger wharf at Kigoma Port as a mother port. In addition, MV Liemba is

the ship that has the longest Loa out of the vessels servicing in Lake Tanganyika.

Berth occupation length of the MV Liemba is calculated as follows,

Berth Occupation Length of MV Liemba

= Loa of Calling Ship x 1.15

= 71.4m x 1.15=82m

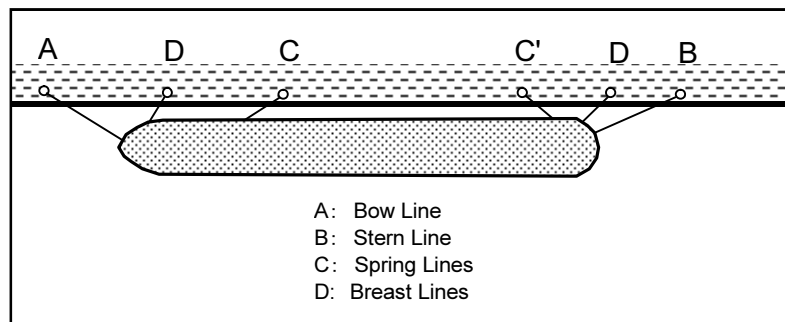


Figure 2.2.2.1-3 Location of Mooring Lines

Berth occupation length of MT Sangara is calculated as being the same as MV Liemba.

Berth Occupation Length of MT Sangara

= Loa of Calling Ship x 1.15

= 38.8m x 1.15=47m

Therefore, the length of berth shall be set up as 130 m so that MV Liemba and MT Sangara can berth at the same time (2 berths).

Berth length = 82m + 47m = 129m → 130m

Additionally, the passenger wharf is used by the MV Liemba, MV Mwangozo and MT Sangara owned by MSCL as their mother port and also to be used by a new passenger ship. As the berth is considered to be occupied by these ships for their maintenance and resting, these ships shall be moved to offshore anchoring areas or the cargo wharf at the time when other passenger ships make port of calls.

(5) Basic Plan for Wharf Width

Wharf width is set up assuming loading and unloading of cargoes from passenger ships. Wharf land area shall be planned with the allocation of cargo loading, handling and sorting work, parking space, turning space of cargo handling vehicles and in-port road.

Necessary function for the wharf is as follows,

- Cargo handling area
- Cargo sorting area

- Cargo loading area
- In-port road

Figure 2.2.2.1-4 shows the setting up of the wharf width based on each necessary width.

Cargo handling area is set up referring to the apron width of the berth. It is stipulated as a 10m width in the case of small vessels with “Technical Standards and Commentaries for Port and Harbor Facilities in Japan” (The Ports & Harbors Association of Japan). The cargo sorting area is set up as a 10m width judging from the present working situation of sorting work at the site. Cargo loading area is set up as 14.0m adding parking space for large sized trucks (maximum length: 12.0 m, maximum width: 2.5 m, maximum height: 3.8 m) and the drive way width. In addition, the width of the in-port road, is 7.0m with road shoulder, 3.0m for adjusting ground level at the site boundary shall be secured. As a result, the project wharf width is set up as follows, and as a part of the driveway width can be possibly combined with the in-port road, the loading area shall be 20.0m in width.

Design Wharf Width

$$\begin{aligned}
 &= \text{Cargo Handling Area} + \text{Cargo Sorting Area} + \text{Cargo Loading Area} + \text{In-port Road} + \text{Road Shoulder} \\
 &= 10.0\text{m} + 10.0\text{m} + 20.0\text{m} + 7.0\text{m} + 3.0\text{m} \\
 &= 50.0\text{m}
 \end{aligned}$$

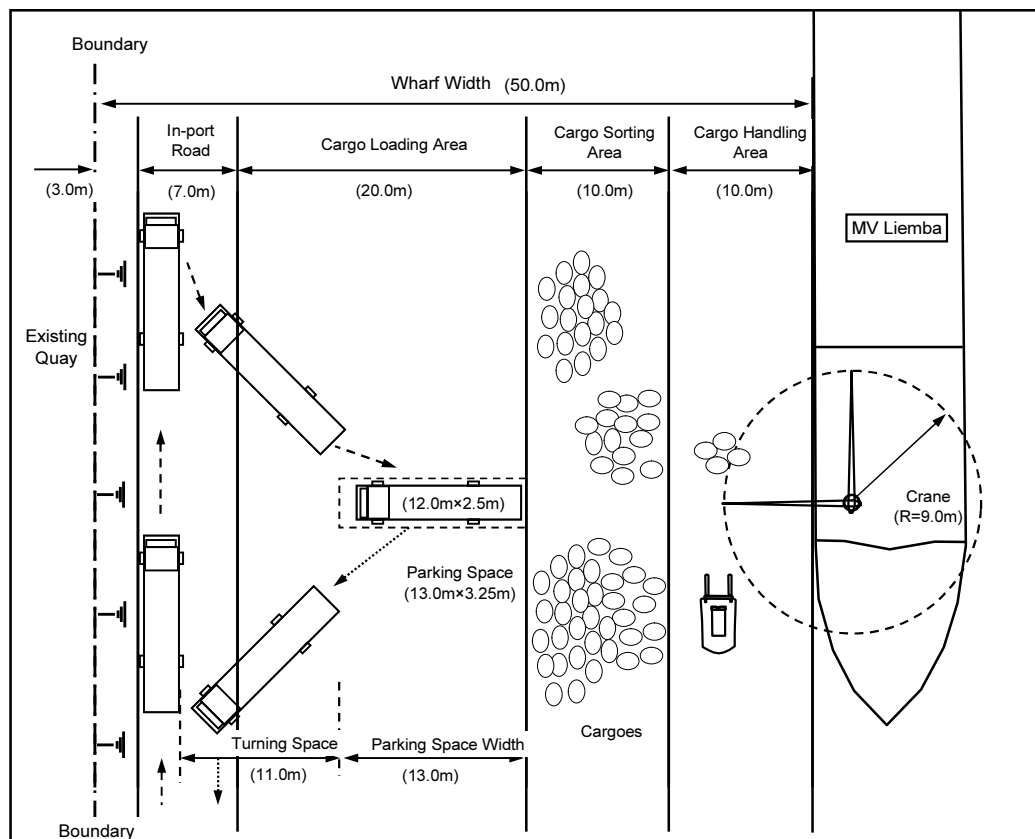


Figure 2.2.2.1-4 Functional Allocation and Necessary Width of Passenger Wharf

(6) Structural Plan for Wharf

In case of ports in Japan, proper structural type is selected out of various types of structures such as gravity-type quay-wall, steel sheet pile quay-wall and pile type jetty considering the berth water depth, ground condition and construction conditions. In this project, comparative design was made for the following three representative types of structures and steel sheet pile type berth has been selected to be able to easily cope with the depth increase by future drawdown of lake water levels.

- Gravity type berth: Concrete block type
- Sheet pile type berth: Steel sheet pile type
- Open type jetty: Steel pipe pile type

Design conditions for the east wharf are as shown below,

Table 2.2.2.1-2 Wharf Design Condition

1) Wharf Size	Height	D.L. +4.0 m
	Planned w. depth	D.L. -5.0 m
	Structural w. depth	D.L. -6.5 m (correspond to lowering of lake water level)
2) Design Ship	Largest design ship	LOA : 71.40 m (MV Liemba) Draft max.: 3.60 m (MV Teza) GT : 755 (MV Liemba)
	Ship berthing speed	0.15 m/s
3) Load Condition	Vertical load	10.0kN/m ² (general cargo terminal)
4) Natural Condition	Tide condition	H.W.L. : DL+1.50 m M.W.L. : DL+0.00 m L.W.L. : DL-0.30 m
	Earthquake	Design seismic intensity (Kh) : 0.15

Figure 2.2.2.1-5 to 7 show the cross-section for each structural formation, 5.0m as design water depth of the wharf and sandy soil with N-value of 10 from the existing results of a soil investigation obtained by the preparatory survey team are set for the preliminary design comparison.

From the comparison table of structure types shown in Table 2.2.2.1-2, it is understood that steel sheet pile type structure is appropriate in its aspects of construction method, economic efficiency, and construction period.

Therefore, steel sheet pile type structure is considered to be appropriate from the comprehensive evaluation in comparison with other structural ideas. And, it is considered that steel sheet pile type is used in the revetment for the small boat basin of the ship repairing facility adjoining to the passenger wharf and this structure is already common in Tanzania as well as it was proposed to use steel sheet pile type as the structure of the berth in the application letter.

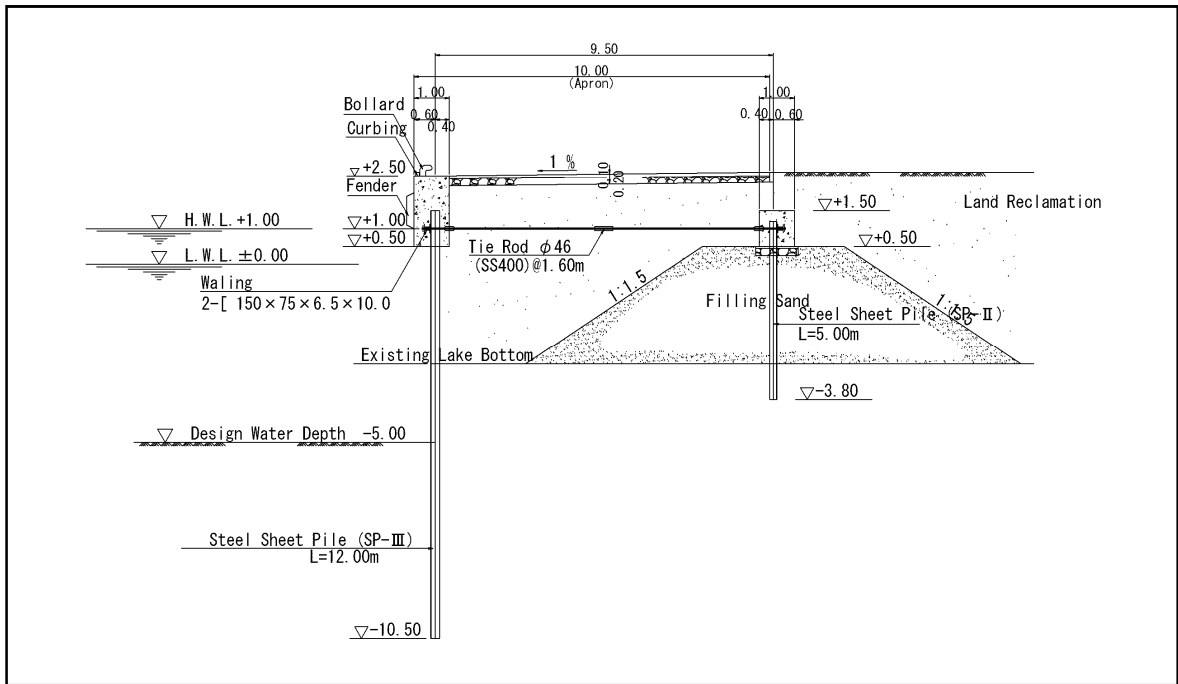


Figure 2.2.2.1-5 Comparative Cross Section of Steel Sheet Pile Type Berth Structure

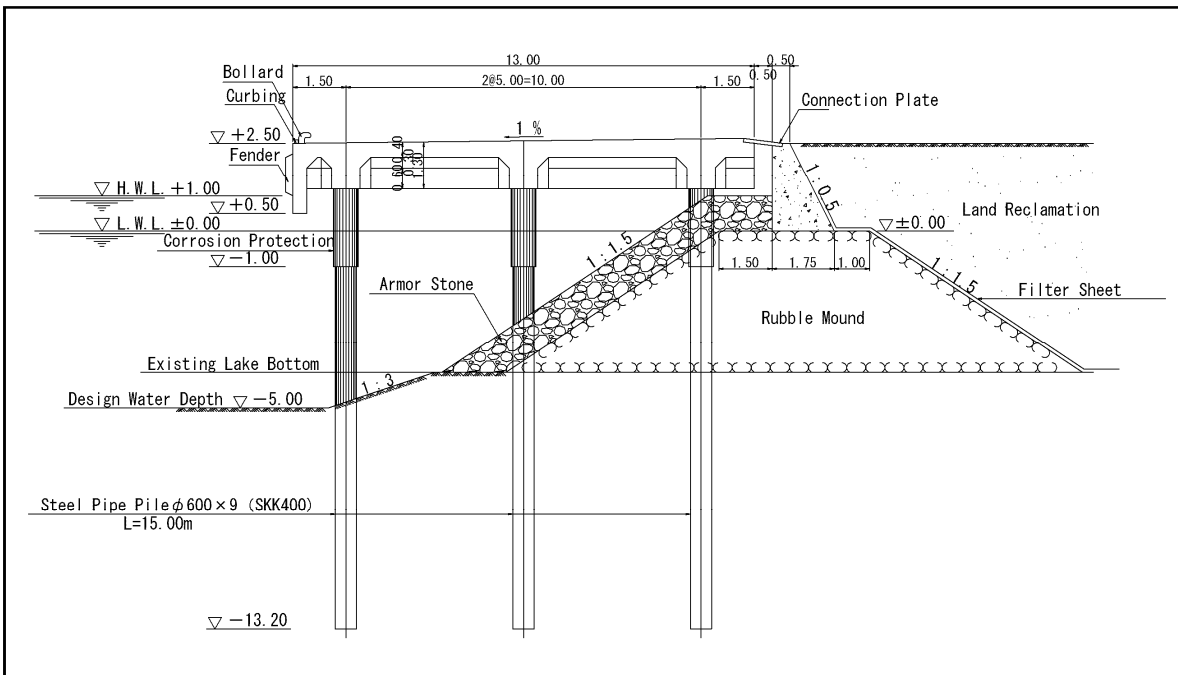


Figure 2.2.2.1-6 Comparative Cross Section of Pipe Pile Type Open Structure

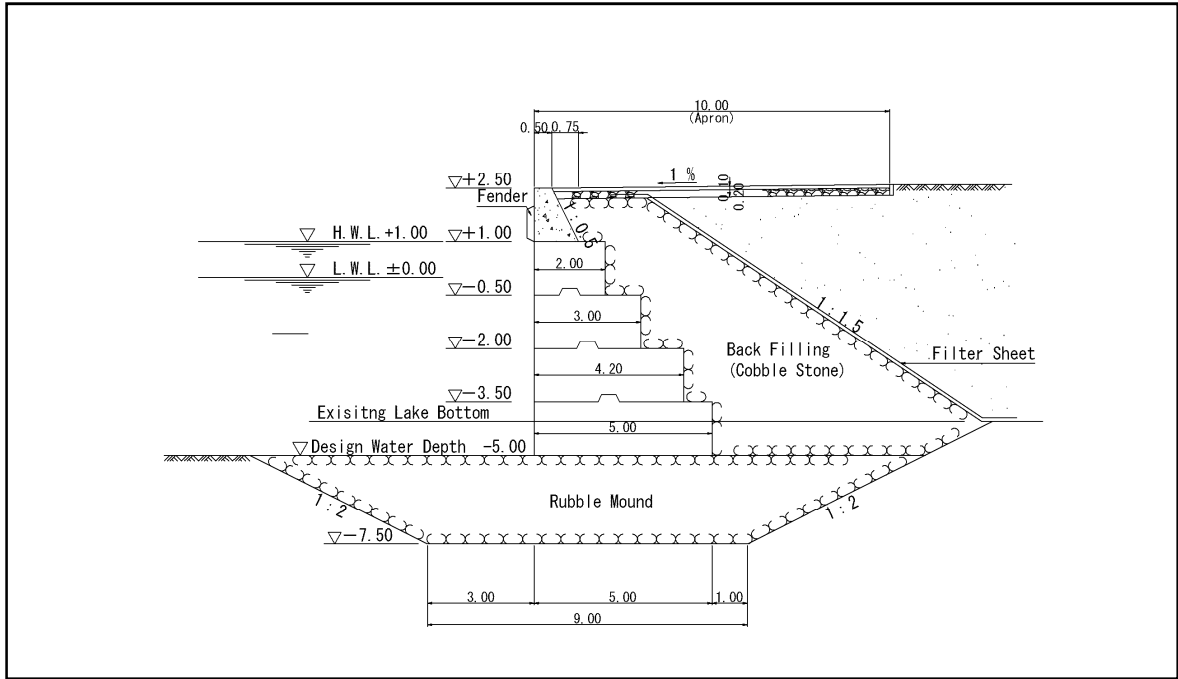

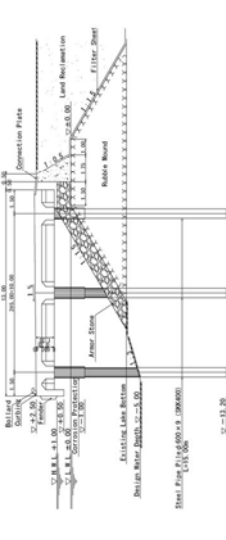
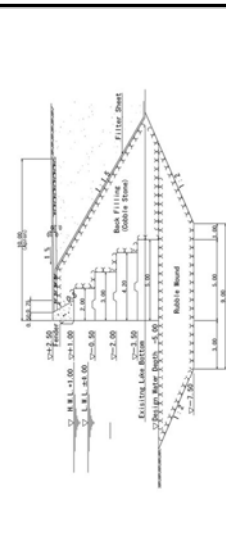


Figure 2.2.2.1-7 Comparative Cross Section of Concrete Block Gravity Type Structure

Table 2.2.2.1-3 Comparison of Alternate Berth Structure

Berth Structure	Steel Sheet Pile Type	Steel Pipe Pile Open Type	Concrete Block Gravity Type
Standard Cross Section (Preliminary Image)			
Construction Material	<ul style="list-style-type: none"> *Steel Sheet Piles for Berth *Anchoring Piles *Coping Concrete on Top *Reclamation 	<ul style="list-style-type: none"> *Steel Pipe Piles *Deck Concrete *Gravel Mound *Armor Quarry Layer of Mound *Reclamation 	<ul style="list-style-type: none"> *Concrete Blocks for Berth *Quarry Material for Back filling *Rubble Stones for Foundation *Sub water Excavation for Mound *Back Filling and Reclamation
Construction Period	○	△	○
Construction Cost	○	x	△
Construction Methodology	<ul style="list-style-type: none"> *Sheet Pile Driven from Landside *Dredging Material Utilized for Reclamation *Small Temporary Construction Yard 	<ul style="list-style-type: none"> *Pile Driven from Waterside by Piling Barge *Placement of Gravel Mound and Armor Quarry Layer from Seaside *Complicated Deck Concrete Casting *Some Difficulty in Dredged Material Utilization *Wide Temporary Construction Yard 	<ul style="list-style-type: none"> *Most of Berth Construction Works from Waterside *Bigger Construction Barge Required *Some Difficulty in Dredged Material Utilization *Extensive Temporary Construction Yard
Procurement	<ul style="list-style-type: none"> *Steel Products Procured from Japan *Concrete Procured Locally 	<ul style="list-style-type: none"> *Steel Pile Procured from Japan *Concrete Procured Locally *Quarry and Gravel Procured Locally *Barge and Construction Vessels Procured from Third Country or Japan 	<ul style="list-style-type: none"> *Rein-forced Bar Procured from Third Country *Concrete Procured Locally *Big Barge and Construction Vessels Procured from Third Country or Japan (Difficulty in Land Transportation)
Quality Control	Easy Control	Relatively Difficult Control	Difficult control
Construction Safety	Relatively Small Subwater Works Safest	Concrete Casting of Complicated Deck Structure Safe	Sub Water Works by Well Skilled Divers from Third Country Less Safe
Future Deepening due to Lake Water Level Down	Most of Works Carried Out from Land Possible	Offshore Construction Works and Many Crane Works Impossible	Difficulty in Sub Water Works of Berth Structure Impossible
Maintenance	○	△	○
Environmental Aspect	New environmental impact by the project is less due to water area already disturbed by ships.	New environmental impact by the project is less due to water area already disturbed by ships. There is no significant differences on reclaimed area.	New environmental impact by the project is less due to water area already disturbed by ships.
Evaluation	◎	△	x

For the drawdown of future lake water levels the case that the depth increase at the berth is assumed. It is necessary to construct a big structure in advance for implementation of a depth increase only the steel sheet pile type method works. The steel sheet pile method requires dredging when depth increase is necessary in setting up the steel sheet pile structure that assumes the future increase beforehand.

Concerning future drawdown of lake water level, as a result of assumptions based on the observation results during 1995 to 2009, it has been assumed as approx. 4cm per year although the correlativity is not so big. In case that the service life of the port related facilities is 50 years, the drawdown of water level is projected as approx. 2.0m. The berth water depth of the current plan includes 0.5m drawdown of the lake water levels and a further 1.5m depth increase is assumed to be necessary.

With the above, cross-section of steel sheet pile is set up assuming the design condition that the lake water level will drawdown 2.0 m in the future as shown in Figure 2.2.2.1-8.

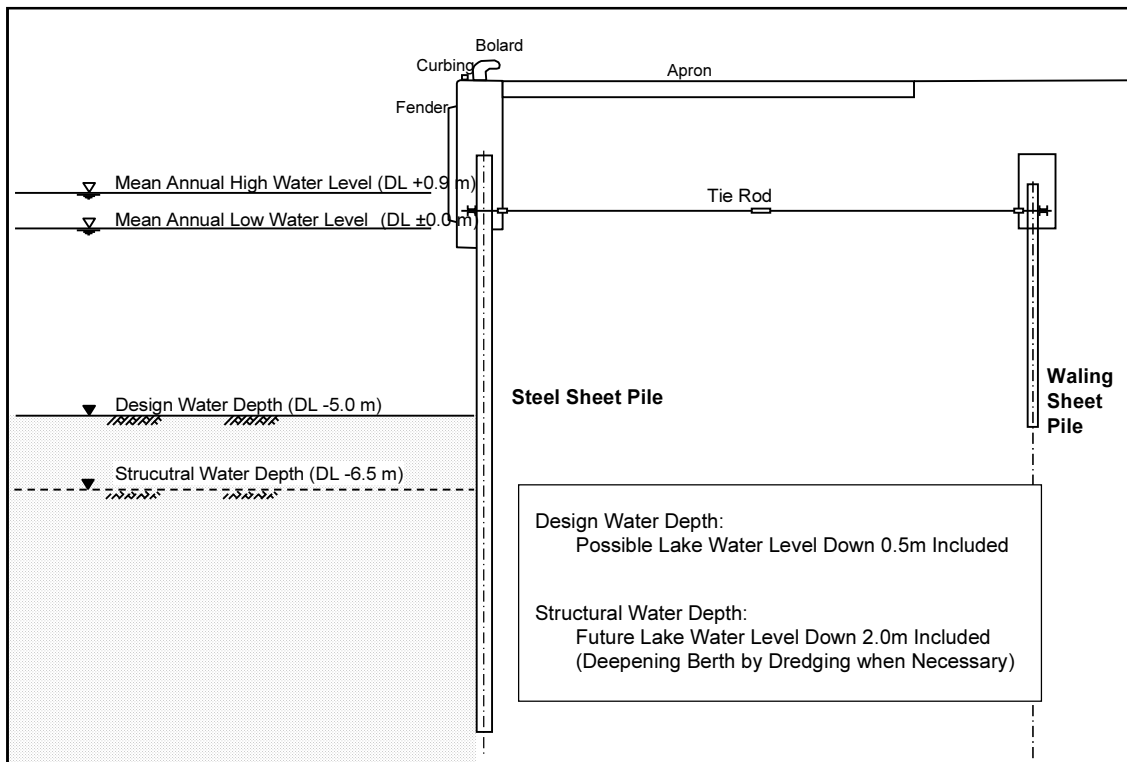


Figure 2.2.2.1-8 Structural Plan of Steel Sheet Pile Type Berth

In case the lake water level drawdown is 2.0m, large scale dredging work will be necessary due to the lower water depth in a wider range of area including the water area in front of the cargo wharf, dredging shall be required to include the surrounding water area when the depth increase becomes necessary. Therefore, in view of this structural aspect, the berth water depth is planned as -5.0m as it was planned to cope with future lake water levels.

(7) Structural Plan of North Berth

North berth shall be planned as a mooring facility for small boats that are currently moored at the pontoon.

The water area in front of the north berth shall not be dredged in view of environmental consideration. As the draft of design of small boats is less than 1.0m, the water depth there is enough and it is possible to be moored without dredging.

Structural type of berth is planned as a steel sheet pile structure same as the east berth. As the freeboard height of small boats is smaller in comparison with other passenger ships, footsteps will be installed at the berth for access of small boats to the wharf.

(8) Dredging Plan Offshore of East Berth

Figure 2.2.2.1-9 shows necessary water area to be dredged in case that berth water depth shall be DL-5.0. Dredging volume is estimated as 5,000m³.

These water areas are the areas where sand sedimentation is easily generated therefore, monitoring of water levels and maintenance dredging becomes necessary upon need.

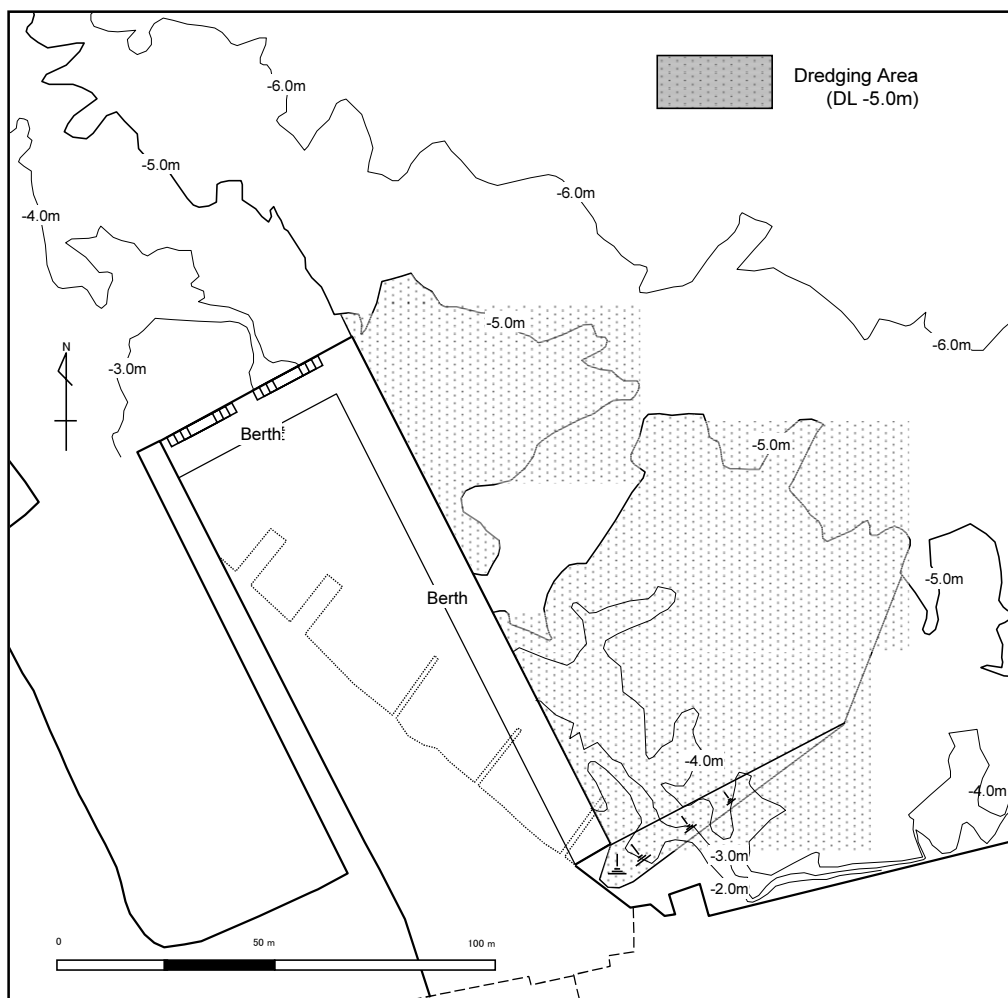


Figure 2.2.2.1-9 Necessary Dredging Area in front of Passenger Wharf

(9) Plan for Beacon

There is no beacon that shows the location of the port when there is poor visibility at night, in rain or in bad weather like heavy fog. Although, it is prohibited to enter into passenger berth at night, as it is necessary to prepare for an emergency case, one beacon shall be installed to clearly specify the location of the passenger wharf.

Size of beacon shall be as per below.

- Type : Beacon
- Quantity : 1
- Color of light : Yellow
- Emitting Part : LED Lantern
- Lighting Range : 5 n. mile

(10) Plan for Lighting Facility

The following facilities are obliged to install lights at an international port facility in accordance with the SOLAS Convention for safe human life on marine structures under IMO.

- Security measure (Access control to and from port facility, cargo control management, monitoring of within and without port facility, etc.)
- Installation of security facility like fencing, lighting, etc.

Therefore, lighting facility shall be installed as necessary for security and as part of security facilities. Five sets of lighting towers are to be installed with respect to the illumination of the ground at 10 lux. Installation of the fence and gate is the obligation of the recipient country according to the guidelines of the Grant Project, these shall be executed by the Government of Tanzania.

(11) Plan for Fuel and Water Supply Facilities

As fuel for passenger ships is supplied by a fuel tank vehicle, it shall not be included in this project. Lake water is now used for the water supply of passenger ships and a water tank truck shall be used when it is needed in the future, therefore, this shall not be included in this project.

2-2-2-2 Plan for the Access Road

Plan for the access road shall be executed by the following policies.

(1) Basic Plan of Access Road

The access road to the passenger wharf is now at 481m long having an 8.0m width from the wharf to the main road as shown in Figure 2.2.2.2-1 and the road surface is unpaved. Since the road width is two lanes and water drains are installed at both ends of the road, therefore the trench water

on the road surface will not be a problem, only pavement on the road surface shall be executed on the existing access road in this project.

The open space in front of the passenger wharf is the starting point of the access road and is also unpaved, therefore, this pavement shall be treated as part of the access road.

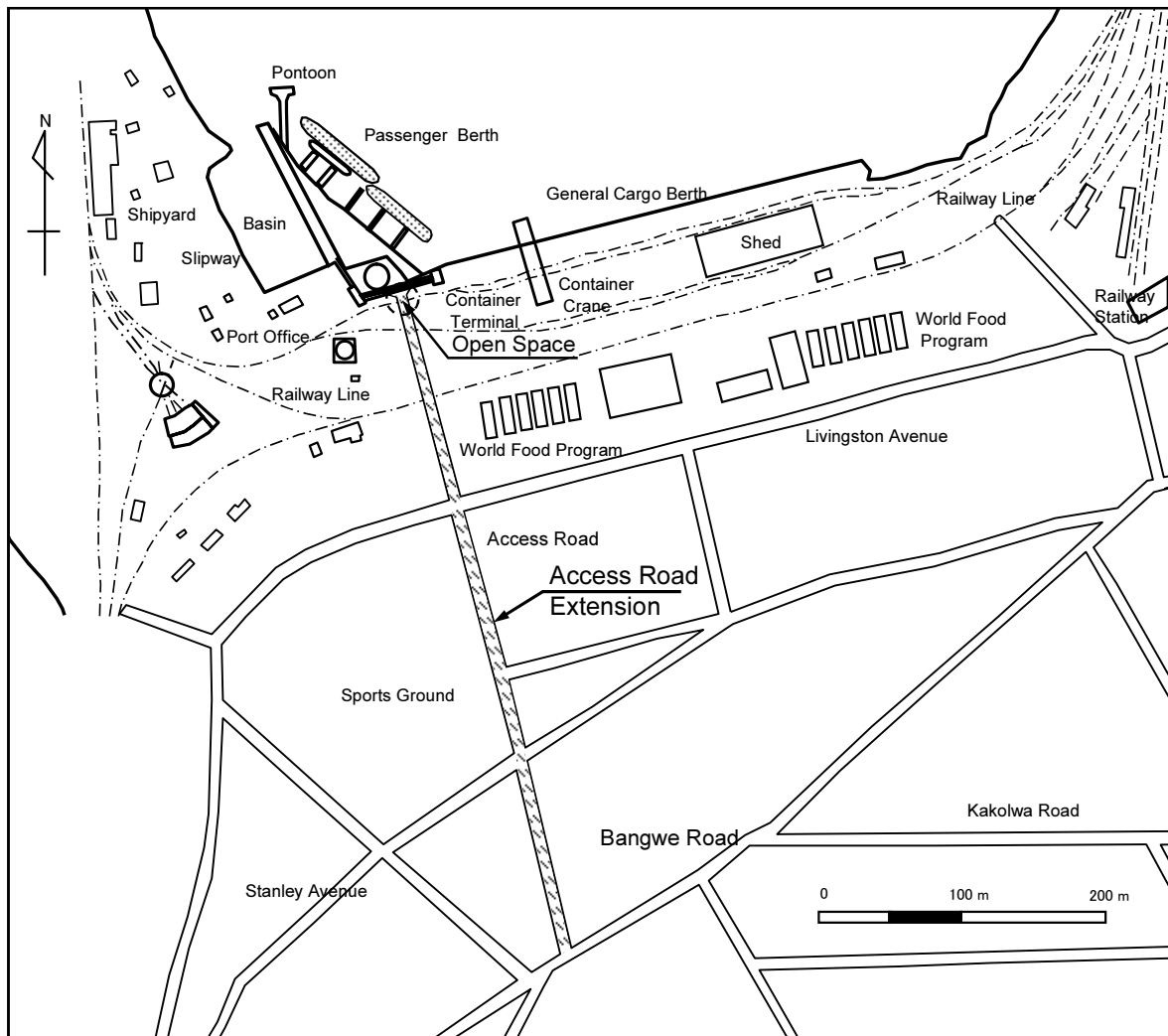


Figure 2.2.2.2-1 Paving Area of Access Road

(2) Basic Policy of the Pavement Method

The pavement of the access road shall be concrete pavement with the reasons of no availability of an asphalt plant nearby Kigoma Port, the small scale pavement work and other reasons as shown in Table 2.2.2.2-1.

Table 2.2.2.2-1 Comparison of Paving Methods of the Access Road

Type	Concrete Pavement	Asphalt Pavement
Feature of Method	<ul style="list-style-type: none"> - Sufficient pavement structure can be obtainable regardless of bearing capacity of sub-grade and unevenness. Thickness of base course can be possibly thinner. - It is good for truck or cargo handling vehicle due to the strength against heavy contact pressure and intensive load. 	<ul style="list-style-type: none"> - Although it is somewhat adjustable for some small uneven subsidence deeper than sub-grade, crack or uneven bump are occurred. - It is basically low strength and weak for intensive load.
	○	△
Productivity	<ul style="list-style-type: none"> - Easy site workability and the concrete plant can be used together with other facilities of the project. - It is producible at normal temperature with the materials of aggregate, cement and water. Production method is easy. 	<ul style="list-style-type: none"> - Plant structure and operation are complicated due to the built in heating burner and dram in the plant. - Production method is complicated since it is produced by adding heat more than 150 degree with the materials of aggregate, asphalt and filler.
	○	△
Workability	<ul style="list-style-type: none"> - Working process is easy by the same routine work as concrete pavements on apron and wharf area in project. - It is comparatively less problem in construction control. 	<ul style="list-style-type: none"> - It is easy to work step by step. As the curing period after installation is short, the service can be commenced immediately. - Construction control is complicated as temperature control and Marshall stability test are associated.
	○	○
Maintenance Work	<ul style="list-style-type: none"> - Durability of pavement is long and economic life is long. - Surface abrasion resistance is big and strong scratch resistant against heavy cargo handling equipment and etc. 	<ul style="list-style-type: none"> - In spite of easy repairing and maintenance works, pavement life is comparatively short as the durability of surface layer is low. Frequent maintenance works are required. - It is weak for heavy static load and cyclic load, generating bumpy and rutting surface easily.
	○	△
Economic Efficiency	<ul style="list-style-type: none"> - Construction cost becomes cheaper as concrete plant can be used together with other concrete works. 	<ul style="list-style-type: none"> - There is no asphalt plant nearby the project site. Since, asphalt plant is necessary to newly build, the possibility is poor due to the pavement scale.
	○	△
Overall Evaluation	○	△

(3) Basic Plan for Access Road

The pavement width of the access road shall be two lanes of 2.75m traffic lane width and allocated road shoulders with 0.75m each, therefore, the pavement width becomes 7.0m as shown in Figure 2.2.2.2-2. There are some areas on the existing access road where the road width becomes a little bit less than 7.0m. In these places, the pavement shall be made on the cross-section where it is possible to pave up to the trench.

Pavement cross-section consists of concrete pavement and base course, and the road surface shall have 1.0% trench slope.

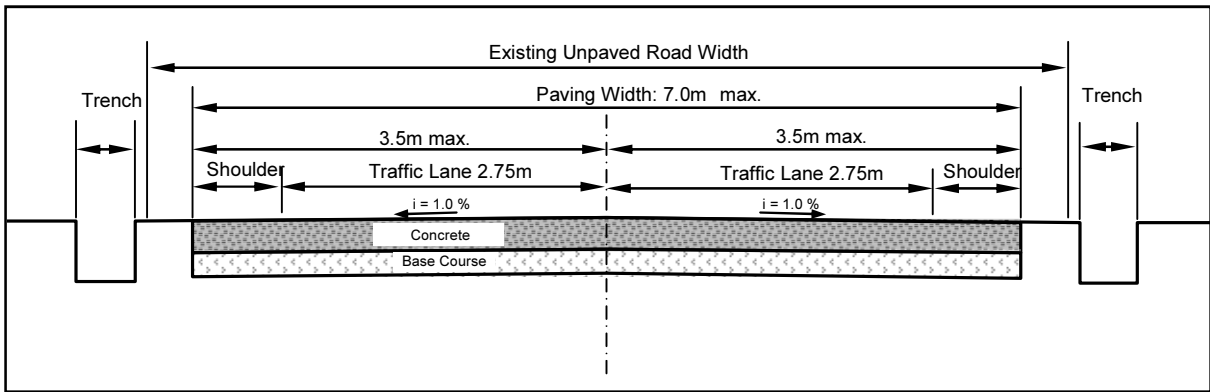


Figure 2.2.2.2 Standard Cross Section of Access Road

(4) Basic Plan of the Open Space in front of Wharf

The open space is the area shown in Figure 2.2.2.2-3 and the same pavement shall be laid as with the access road. Although there are some big trees in the open space, it is the policy to not cut them down as much as possible.

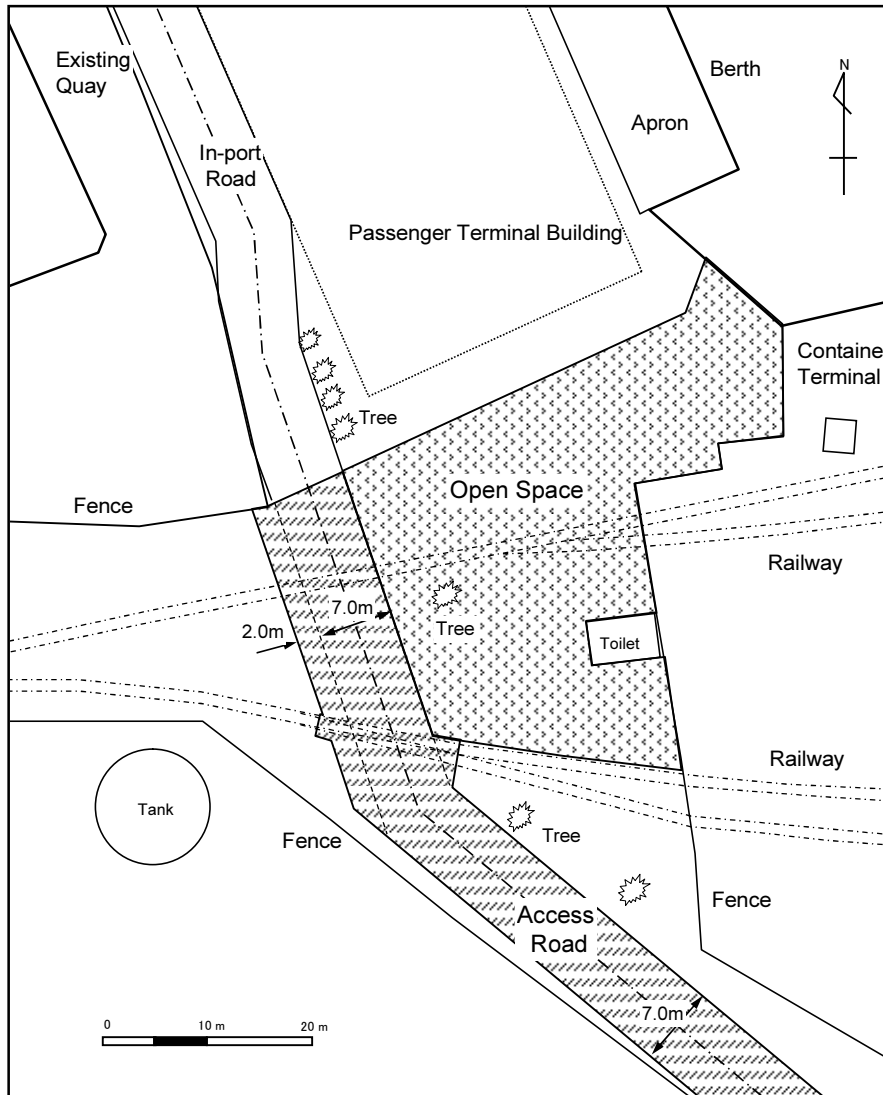


Figure 2.2.2.2-3 Paving Area of Open Space in front of Wharf

2-2-2-3 Basic Plan for the Passenger Terminal Building

(1) Basic Policy for the Passenger Terminal Building

Passenger Terminal Building as shown in the layout plan of the passenger wharf facilities of Figure 2.2.1-1, shall be allocated at the entrance of the passenger wharf. Each function facility shall be allocated at the Administration & Service Zone, Passenger Waiting Zone and Cargo Storage & Weighing Zone.

Table 2.2.2.3-1 shows the number of passengers and volume of handling cargoes for the designs of the facilities. The number of embarkation and disembarkation of passengers is set up as about 500 judging from the monthly number of embarkation and disembarkation of passengers and 600 authorized passenger capacity of the MV Liemba. The cargo handling is set up as 200 ton from the 200 ton of maximum cargo volume of the MV Liemba and the hearing result that the unloading volume is met with just about the maximum loadable volume. Loading cargo volume resulted with about 50 ton that is smaller than the unloading volume.

Table 2.2.2.3-1 Design Number of Passenger and Cargo Volume

Category		Design Quantity
Passenger	Embarkation	500
	Disembarkation	500
Cargo	Loading	50 t
	Unloading	200 t

(2) Plan for Passenger Terminal Building

The following functions shall be allocated at each zone in the passenger terminal building.

【Administration and Service Zone】

- CIQ Facility: Immigration, Customs, Quarantine
- Ticket gate and Security room
- Ticket booth
- TPA (Facility Management) Office
- Service facility: Kiosk, Toilet, Passenger waiting lounge
- Storage
- Passenger passageway

【Passenger Waiting Zone】

- Passenger waiting room
- VIP Lounge

【Cargo Storage and Weighing Zone】

- Weighing space
- Fare collection
- Cargo storage

- Cargo stock
- Gear lockers

(3) Setting up for the Scale of the Administration and Service Zone

The following facilities scales shall be set up for the facilities to be allocated in this zone.

1) CIQ Facility and Ticket Gate & Security Office

CIQ facility consists of immigration, customs and quarantine. They shall use the monitoring system same as the present passenger flow line and be arranged in a series along the passenger flow line. Two officers shall be allocated in each room. Passengers shall move to the booth in front of the administration room at the time of their passage for their monitoring, questioning, and related paperwork shall be made by moving to a room upon need.

The existing booth is 3.7m in width and 2.2m in depth. In his project, the width of the booth is set as 4.0m and secure monitoring booths each with a 1.0m depth facing the passage for the boarding and disembarking passengers. Although 2 officers are stationed in the administration space, they are not always both stationed in there, the room is $4\text{m} \times 3\text{m} = 12.0\text{m}^2$ shall be secured for a desk and two chairs including a questioning space.

A room for two ticket collectors and security officers shall be allocated at the entrance of the passenger passage. Ticket collectors shall move to the front of the booth at the time of passage from this room.

CIQ facility and Ticket Gate & Security Office

= Monitoring Booth (both sides) + Administration Office

= $4\text{m} \times 1\text{m} \times 2 + 4\text{m} \times 3\text{m} = 20.0\text{m}^2$

Ticket gate located at the entrance of the passenger passage is the place where passengers are most congested and the queue of boarding passenger shall be sorted out by equipping it with hand rails.

2) TPA Office

The administration offices for TPA that manages the facilities shall be allocated. Two persons shall always work in these spaces.

The scale of the room is defined as 7.0 to 15.0m^2 as room space per person concerning administration room in the “Architectural Design Data Corpus”, therefore, it is set up as 12.0m^2 . As 2 persons are always working in each room, it sets up as 24.0m^2 .

Space for Manager = $12.0\text{m}^2/\text{person} \times 2\text{ persons} = 24.0\text{m}^2$

3) Toilet Facilities

Concerning the toilets, the utilization situation is that the projected number of passengers, 500,

gather in the passenger waiting room gradually in accordance with departure time, and the number of passenger expected to use the toilets is set up as 400. Usage of toilets by the passengers is limited to the date that passenger ships arrive and depart, and unlike the toilet outside it is considered as a restrictive use facility. The following numbers shall be set up based on the proper amount of equipment for a theater. Toilets for handicapped passenger are prepared in both the women's and men's rooms.

- For male : 4 closet bowls, 4 urinary and 4 wash basin
- For female : 7 closet bowls, 4 wash basin

As the result of allocating closet bowls and wash basins for males and females, the scale of the toilets shall be as follows,

$$\begin{aligned}\text{Toilet Space} &= \text{Toilet for Male} + \text{Toilet for Female} \\ &= 30.0\text{m}^2 + 30.0\text{m}^2 = 60.0\text{m}^2\end{aligned}$$

4) Ticket Booth

2 ticket sales people are planned by referring to the existing ticket sales area (2.0m x 7.6m = 15.2m²).

Since the ticket booth is the most congesting facility before the passenger depart, it shall be allocated at the place separated from ticket gate so it is segregated from passengers that are boarding. The sales windows shall be allocated both inside and outside. In addition, hand rails shall be allocated to sort out the queue of purchasers in front of the ticket sales booth.

$$\text{Ticket Sales Booth Space} = 10.0\text{m}^2/\text{person} \times 2 \text{ persons} = 20.0 \text{ m}^2$$

5) Kiosk

Kiosk shall be allocated as the service facility for passengers. The kiosk shall sell drinks and snacks, as well as fast food. A small sized kitchen and sink for simple cooking and dish washing are equipped inside the space. The scale of the booth is 4m×4m=16m².

6) Entrance Lobby

Entrance lobby shall be allocated for the passengers to use the toilets, kiosk and other service facilities in the center of the passenger waiting zone. The passenger waiting lounge is allocated to accommodate about 40 passengers considering the space to be securable in the zone.

7) Passenger Passage

Boarding passengers will move to the passenger terminal building after going through the ticket gate and undertaking CIQ inspection attaching to the passenger passage. Disembarking

passengers move under the eaves attached to the outside of the passenger terminal building and move to the exit after immigration inspection. Therefore, passage are allocated on both sides at the ticket gate and CIQ facility.

In the passage portion from the ticket gate to the quarantine booth allocates a waist-high partition wall for aligned movement of passengers and the management and these walls install window grating. 2 m width is kept in the passage.

8) Storage Space

A storage space is allocated to store equipment, consumables, etc. in the management and service zone and passenger waiting zone. The scale is considers as around 8m².

(4) Passenger Waiting Zone

1) Passenger Waiting Room

Projected number of passengers is 500. It was found that there are more than 100 passengers on average that arrive right before departure from observation of embarkation passengers, therefore, the number of passengers to be allocated in the passenger waiting room shall be set up as 400, about 80%.

The area of the existing passenger waiting shed is 307m² and 22 benches of 8 seats have been allocated and there are 172 seats available. It is considered that the occupancy load is about 250 passengers since there are a considerable number of passengers who do not sit. Therefore, that considerable number of passengers wait standing up around the waiting shed or the open space in front of the wharf.

As boarding is commenced at 16:00 and completed by departure at 18:00, passengers shall board within 2 hours from ticketing gate passing Customs, Immigration and Quarantine booths moving to the passenger ship.

The scale of the passenger waiting zone is considered to be relevant as 1.0m²/person including the passageway part. As about 40 passengers can be accommodated at the passenger waiting lounge of the administration and service zone in the Passenger Terminal Building, the facility scale for the remaining 360 passengers shall be set up as 60 units of benches for six people be installed.

$$\text{Passenger Waiting Space} = 1.0\text{m}^2/\text{person} \times 360 \text{ persons} = 360\text{m}^2 \rightarrow 363.2\text{m}^2$$

2) VIP Lounge

At the request of TPA, a VIP Lounge with a 20 passenger capacity is allocated in the passenger waiting zone. The scale of the VIP Lounge is considered to be relevant as 1.5m²/person including a small toilet as follows. And in the case when a passenger needs emergency hospitalization, this VIP lounge can be used temporarily.

$$\text{VIP Lounge Space} = 1.5\text{m}^2/\text{person} \times 20 \text{ persons} = 30\text{m}^2 \rightarrow 32\text{m}^2$$

(5) Scale for Setting up the Weighing and Storage Zone

Cargo storing, tool and equipment storing places in addition to measuring equipment space, fare collection booth, and cargo stock area shall be allocated in the weighing and storage zone, referring to the existing facilities contents.

1) Cashier Box and Measuring Scale Space

Cashier box for fare collection and space for the measuring scale is the facility to collect excess fees on carrying baggage of passengers and freight for cargo transportation. 2 people work in the fare collection booth and the administrative work is done as well as the work to collect fares and the existing facility scale is $2.1\text{m} \times 4.3\text{m} = 9.0\text{m}^2$. In this project, the scale is considered to be 10m^2 /person and it is set up as below.

$$\text{Casher Box} = 10.0\text{m}^2 / \text{person} \times 2 \text{ persons} = 20.0\text{m}^2$$

2 measuring scales the same as the existing one shall be allocated in front of the fare collection cashier box. Space of 10.0m^2 / equipment shall be secured since there is the cargo sender waiting for his order, person in charge of weighing and cargo handling worker stand around the measuring equipment.

$$\text{Weighing Space} = 10.0\text{m}^2 / \text{equipment} \times 2 \text{ equipment} = 20.0\text{m}^2$$

2) Cargo Storage

At present, a cargo storage facility is not allocated in the passenger wharf and loading cargoes are basically carried in the morning of departure of the passenger ship. However, as the cargoes that get brought in a day before the departure were found at the time of the field survey, it is assumed that the demand for a cargo storage area shall be bigger in association with the construction of the warehouse.

The setting up of scale for the cargo storage area shall be made with the following prior conditions.

- Type of cargo: Carried in cargoes before departure, cargoes stored temporarily like bonded cargo or lost cargo
- Cargo volume to be carried in before departure date: approx. 20% of 50 ton that is average loading cargo volume
- Carried in cargo volume before departure date = $50\text{t} \times 0.2 = 10\text{t}$
- Volume of temporarily stored cargoes
- Lost cargo, bonded cargo, etc. = 10t

Unit weight of cargo shall be set up as $0.3\text{t}/\text{m}^3$ since it includes big volume items like general merchandise, furniture, food articles, etc judging from the observation of loading cargoes.

Cargo Area

= (Cargoes Carried in before Departure + Temporarily Stored Cargoes) / Void Ratio / Stacking Height

$$= (10 + 10) \text{ t} / 0.3 \text{ t/m}^3 / 1.0 \text{ m} = 67 \text{ m}^2$$

Scale of cargo storage area shall be calculated as follows adding equivalent spaces for cargo occupation area for cargo handling and passage space.

Area of Cargo Storage Area

= Occupation Area of Cargoes x 2.0

$$= 67 \text{ m}^2 \times 2.0 = 134 \text{ m}^2 \rightarrow 124 \text{ m}^2$$

3) Temporary Cargo Stock Area

Cargoes to be loaded onto passenger ship are temporarily stored after being unloaded by a cargo handling vehicle at the side of the temporary cargo storing area, measuring at measuring equipment space, payment of freight at fare collection booth. Cargoes temporarily stored is sequentially loaded onto passenger ships by port workers. This space is very congested with cargoes, consignees and cargo handling vehicles by observing the site working situation. Therefore, as well as studying cargo flow lines, wider space shall be secured and the congestion shall be mitigated.

The setting up of scale for temporarily stored cargo stock facility shall be made with the following prior conditions.

- Accommodating Cargo: Carry-in cargo for loading onto the passenger ship
- Volume to be temporarily stocked: Carry-in cargoes for loading average about 50 ton and 80% of it shall be the design volume excluding about 20% of cargoes carried in right before the departure of the ship. Although carry-in cargoes are loaded in series onto the passenger ship by port workers, it is considered that a maximum of 30% of them are stored since considerable amount cargoes have been stored at the temporary space from the work observation result.
- Accumulating cargoes volume at the temporary stock space = $50 \text{ t} \times 0.8 \times 0.3 = 12 \text{ t}$

Cargo weight per unit volume shall be set up as 0.2 t/m^3 since fruits like bananas, empty fish boxes and etc. that have bigger void volume are included in addition to general merchandize, furniture, food products, etc. just like the warehouse. And although stacking of cargoes will be more bulky than the accommodation in cargo storage, it sets up as 1.0 m same as the cargo warehouse.

Cargo Occupation Area

= Maximum Temporary Stocking Volume / Void Ratio / Stacking Height

$$= 12 \text{ t} / 0.2 \text{ t/m}^3 / 1.0 \text{ m} = 60 \text{ m}^2$$

Size of temporary stocking area is calculated as below adding equivalent space like passage to the cargo occupation area.

Temporary Stocking Area

= Occupation Area of Temporary Storing Area x 2.0

= 60 m² x 2.0 = 120m²

4) Gear Locker

Warehouse for tools and equipment to maintain and repair passenger ships is now allocated in the wharf. Currently, this is the facility made by laying three 20ft containers side by side with a roof on them and the size is 2.4m x 6.0m x 3= 43.2m². In this project, racks to accommodate equipment and others shall be allocated at both ends of the space and unnecessary equipment and others shall be separately stored and the following space shall be secured.

Space Area for Tools and Equipment

= 2.4m x 6.0m x 3units

= 43.2m² → 3.0m x 8.0m=24.0m²

(6) Planning of the Capacity and Size

A canopy is a newly added component by this survey as being a sunshade and rain cover device since open spaces in front of the ticket office of the passenger terminal building and in front of the entrance to the passenger waiting room easily become the space where many boarding passenger are assembled.

Required scale is to be able to secure enough space for 250 passenger half of the design number of 500 passengers become stagnated considering the congestion with the many ticket purchasing passenger right before departure and the entrance of boarding passengers. Necessary area for 1 passenger shall be 1.3m²/person since temporary space to put luggage and others in addition to waiting passenger holding light luggage or holding infants are unavoidable.

Area of canopy=250 persons × 1.3m²/person =325m²

=27m (width of building and canopy-1m) × 12m (canopy depth) =324m²

(7) Layout Plan of the Passenger Terminal Building

Administration and service zone, passenger waiting zone and cargo storage and weighing zone shall be allocated in the Passenger Terminal Building. Figure 2.2.2.3-1 shows the plane arrangement of facilities included in each zone.

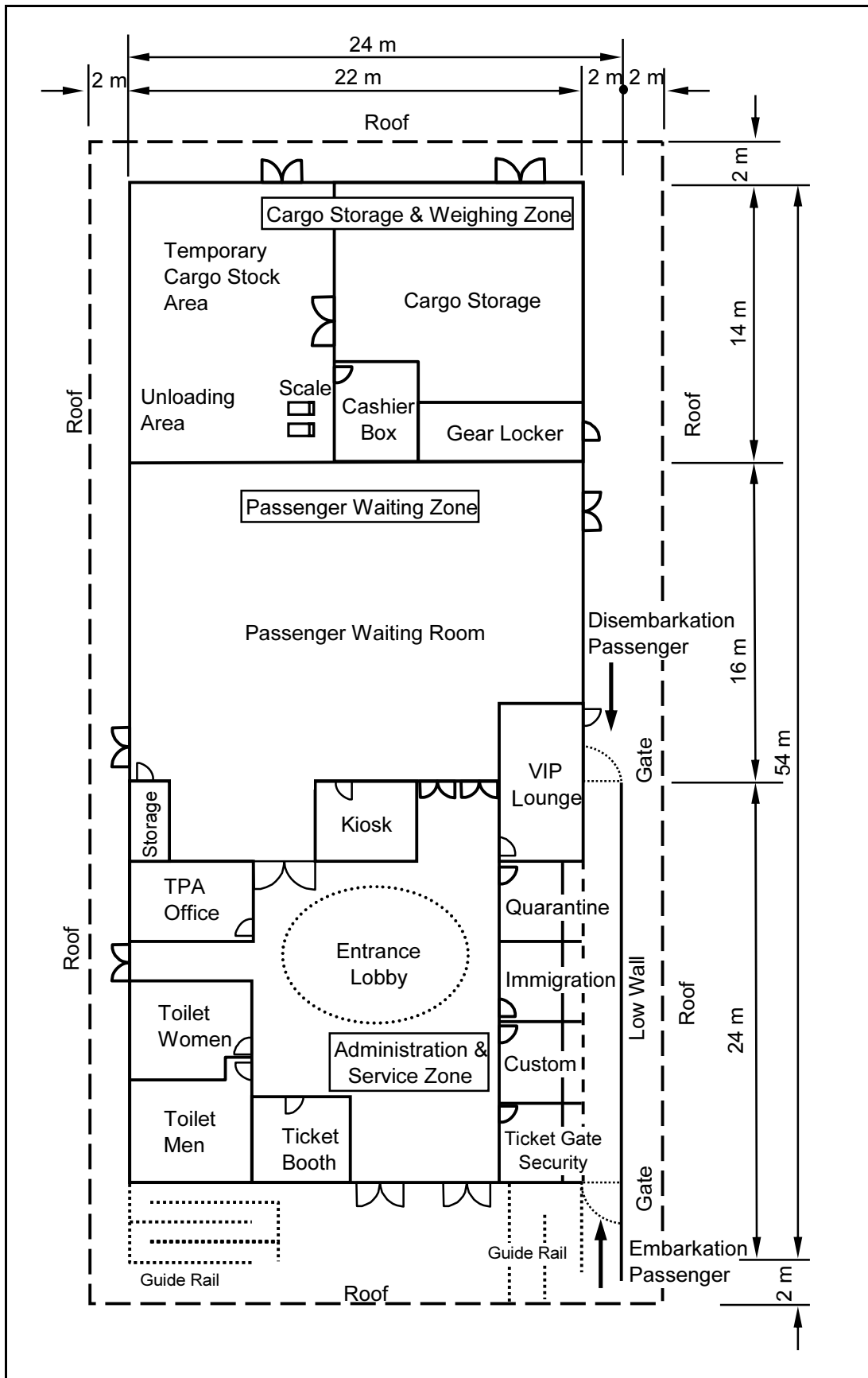


Figure 2.2.2.3-1 Layout Plan of Passenger Terminal Building

(8) Section Plan of the Passenger Terminal Building

Passenger terminal building becomes the building to be used by approximately 500 passenger on a temporary basis about twice a month. At that time, staff for immigration, customs, and others also use this building as an international port. As many people are accommodated, as well as having opening sections on both walls of the passenger terminal building, ceiling height is set as 4,000mm considering the thermal load, etc. The roof is a gable roof with folded sheets and treatment to not transfer heat on the roof to the attic space as possible by means of a heat insulator in the reverse of a metal sheet is made. The gable end of both attics have structures to discharge stuffy heat by installing of ventilation louver. The roof is made of metal and the pitch is low as possible (2.3/10).

2-2-2-4 Basic Plan of the New General Cargo Warehouse

(1) Planning Policy for the New General Cargo Warehouse

New general cargo warehouse as shown in the previous Figure 2.2.1-6 and 7 Function Layout Plan, the office function is allocated near the entrance gate of Kigoma Port thinking of future Relocation Plans of the TPA Office. Foodstuff storage is allocated to the west side of the building considering Kigoma Port Development Plan shown in Figure 3.2.1-5 and also future expansion to workshop side.

Basic thoughts on the facility plan is as follows.

- The inside of the warehouse is without any columns so that bulk cargoes can be allocate freely.
- The inside of the GF warehouse uses natural sun-light effectively for natural ventilation and day lighting.
- Only front and north side have entrances on the ground floor. When the warehouse is used it secures an opening scale so as to move in about half of overall length of a cargo vehicle like a trailer.
- GF warehouse secures a compartmented space with high security for valuable cargoes (it is called a strong cage) separating from the storing space for foodstuff.
- The office area will be built 2 stories high and is planned to have an administration office for warehouse management and a security office on the ground floor and an operations office for the TPA staff, a meeting room and a kitchen on the first floor.
- Toilets are planned to be installed on both floors.
- About 150mm diameter pipe posts are installed in order to protect the entrance shutter of the GF warehouse from trucks and forklifts.

(2) Plan for the New General Cargo Warehouse

Concerning the facility plan of the new general cargo warehouse, the facility scale is set by each function.

1) Storing Function (Warehouse)

a) Storing space for foodstuff (GF)

The existing general cargo warehouse mainly stores foodstuff such as wheat, rice bags, and vegetable oil in bulk. Although cargo volume handling in Kigoma Port shows an increasing trend year to year after 2011, the existing warehouse stores around 1,000 to 2,000 tons. And according to the hearing survey, the capacity of the existing GF warehouse is said to be 3,000 ton.

Actually, the scale of the cargo warehouse is used by foodstuff in total areas except for a 7m wide passage in the center and as 1,176m² is occupied as shown in Figure 2.2.2.4-1, it is considered that the capacity of storing space is appropriate with approximately 3,500m³·ton as maximum assuming to store total with the height of 3m in bulk.

Concerning necessary scale of new general cargo warehouse in this survey of this project, considering that the original request from the TPA was to rehabilitate the existing general cargo warehouse, maximum capacity is secured as same scale as the existing warehouse and maximum 3,780m³·ton is set as shown in Figure 2.2.2.4-2.

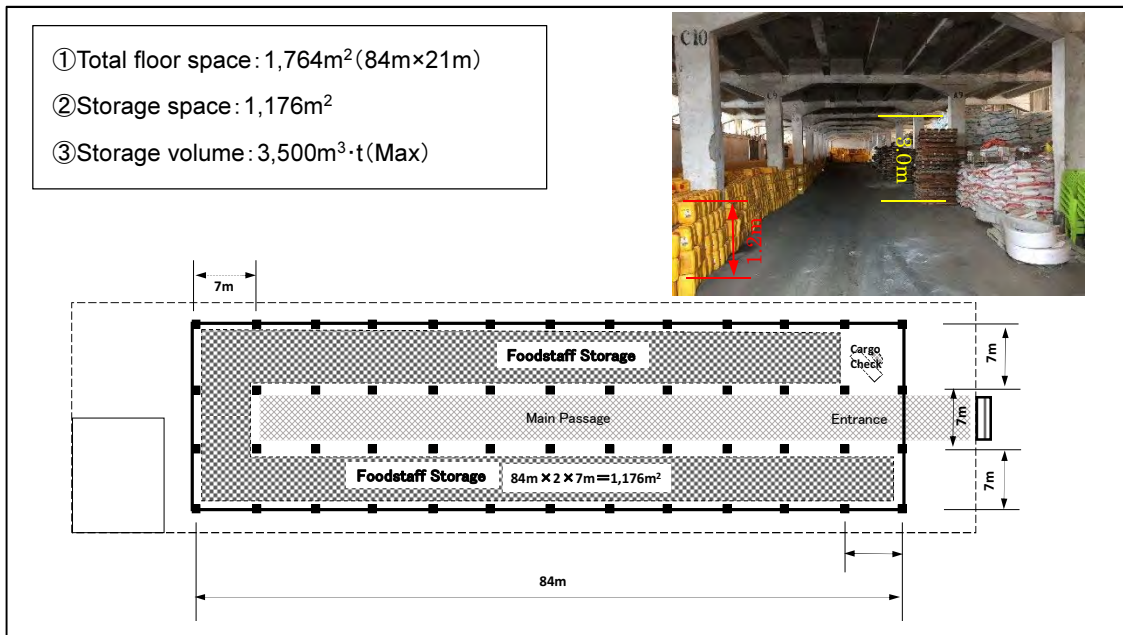


Figure 2.2.2.4-1 Foodstuff Storing Space in Existing General Cargo Warehouse

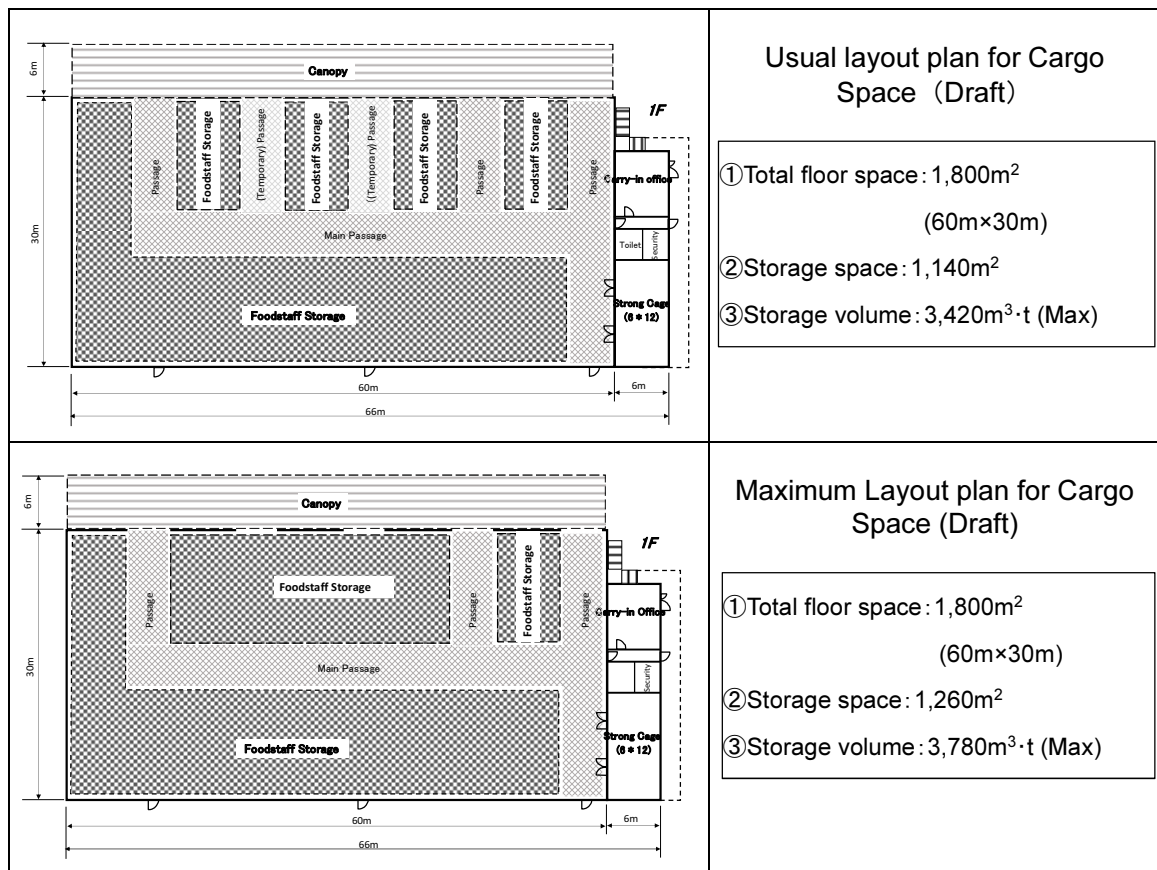


Figure 2.2.2.4-2 Storing Space of New General Cargo Warehouse

b) Strong Cage (GF)

Necessity of a valuable goods warehouse was desired as cargoes other than the present foodstuff through the operation of the TPA. The foodstuff warehouse is unsafe to store valuable goods since it is a wide space without columns and many cargo handling workers and drivers are coming in and out.

In this project, it is set to not store valuable in the same space with foodstuff but to secure a space of about 72m² (6m × 12m) where it is compartmented and tightly secured.

2) GF Office Function

a) Office for warehouse management

The office will be used by 3 TPA staff for checking cargo-in and out. Window with a counter for responding to drivers is installed in the north side wall face. The window also enables watching the inside of the warehouse. The office scale is set as 15.0m² /person calculating from the Architectural Data Collection that says 7.0 to 15.0m² /person.

$$\text{Office space} = 15\text{m}^2/\text{person} \times 3 \text{ persons} = 45 \text{ m}^2$$

b) Security Room (GF)

It is an office for one person.

11.4 m²/person is set as understanding from the standard figure of 7.0 to 15.0 m²/person of the existing office.

$$\text{Space for Security Room} = 11.4 \text{ m}^2/\text{person} \times 1 \text{ person} = 11.4 \text{ m}^2$$

c) Toilet (GF)

It is the toilet facility to be used by the 4 TPA staff people on the first floor. It is equipped with 1 urinal for men, 1 closet bowl and 1 water basin. It will be equipped with a space for a pipe shaft and cleaning implements.

$$\text{Space of toilet for a man} = 3.255\text{m} \times 2.5\text{m} = 8.1 \text{ m}^2$$

3) GF Office Function

a) TPA Management Office (GF: administration/accounting/statistics)

The TPA Management Office is used by the operation manager, assistant manager, staff for statistics and 2 more staff totaling 5 people. Operation manager and assistant manager are in separate independent rooms and the scale of room for the operation manager will consider to have a space for a table and chairs to enable meeting of 2 to 3 people. In addition, it is assumed that the general room for the statistics staff needs a copy machine and printer.

15.0 m²/person is set referring to the standard figure of existing offices 7.0 to 15.0 m²/person.

Space for TPA Management Office

$$= 15.0 \text{ m}^2/\text{person} \times 5 \text{ persons} = 75 \text{ m}^2 \rightarrow 73.0 \text{ m}^2$$

b) Meeting Room (GF)

Meeting room is used for meeting among staff, meetings with neighbors and related organizations. The scale of the meeting room considers that the area of the meeting room used in the existing general warehouse that is 49.0m² (7m × 7m). And a storing room for chairs is installed together in the meeting room. This becomes slightly bigger than the room in the existing facility with column spacing.

$$\text{Space for meeting room} = 6\text{m} \times 8.3\text{m} = 49.8 \text{ m}^2$$

c) Kitchen (GF)

Kitchen is used for hot water supply at lunch time and others by staff and is equipped with a water faucet and sink only. It is allocated to be used from the TPA offices and meeting room.

$$\text{Kitchen space} = 3.525\text{m} \times 2.35 = 8.3 \text{ m}^2$$

d) Toilets (GF: for men and for women)

It equips 1 urinal and 1 closet bowl for men and 1 closet bowl for women intended for the first floor 5 people.

$$\text{Toilet space (for Men and for women)}=2.625\text{m} \times 3.65\text{m}=9.581\text{m}^2$$

(3) Verification for Storing Capacity of the General Cargo Warehouse

1) Cargo Volume of the Existing General Cargo Warehouse

As there is no cargo statistics concerning the general cargo warehouse, the storing cargo volume in the warehouse is predicted as below.

The ratio of cargo volume by import and export and the handling of cargo stored in the general cargo warehouse is as shown in Table 2.2.2.4-1. Stored cargo volume is transitional with 10,000 to 20,000 tons and around 20% of the cargo handling volume on average is stored. In trade type, the storing volume of import cargo is transitional with 6,900 to 9,300 tons and stored its 22.2 to 37.2% in the general cargo warehouse. While the stored volume of export cargo is transitional with 3,600 to 10,900 tons and its 10.7 to 28.9% that is stored.

Table 2.2.2.4-1 Annual Storing Cargo Volume of the General Cargo Warehouse (ton)

FY (July to June)		2012/13	2013/14	2014/15	2015/16	Average
Import	Cargo Volume (A)	31,230	25,155	36,959	32,202	31,387
	Stored Cargo (B)	6,921	9,349	9,012	8,713	8,499
	Stored Rate (B)/(A)	22.2%	37.2%	24.4%	27.1%	27.7%
Export	Cargo Volume (C)	19,222	37,640	52,663	92,336	50,465
	Stored Cargo (D)	3,649	10,891	7,750	9,910	8,050
	Stored Rate (D)/(C)	19.0%	28.9%	14.7%	10.7%	18.3%
Total	Cargo Volume (E)	50,452	62,795	89,622	124,538	81,852
	Stored Cargo (F)	10,570	20,240	16,762	18,623	16,549
	Stored Rate (E)/(F)	21.0%	32.2%	18.7%	15.0%	21.7%

Source: TPA Kigoma Port Office

2) Storing Capacity of the Existing General Cargo Warehouse

The existing general cargo warehouse is a two floor structure, and the first floor is not used for storing general cargoes. The storing capacity of the warehouse is said to be 3,000 tons corresponding to the ground floor according to the TPA Kigoma Port Office and it is assumed that 3,500 tons as maximum by this survey. Annual cargo storing capacity is calculated as below by setting the average storing period of cargo.

Actual number of ships that called at the cargo terminal of Kigoma Port is 250 to 300 ships annually and it means that more than 20 ships call with cargoes to handle in a month. Therefore, the average storing period of cargo is predicted as about 7 days to 2 weeks that the storage charge is free and understanding from the storing situation in the warehouse and calling frequency of cargo

ships. So, annual storing capacity of the general cargo warehouse is calculated as follows.

$$\begin{aligned}\text{Annual storing capacity} &= \text{Storing capacity} \times (365 \text{days} / \text{average storing period}) \\ &= 3,000 \text{ ton} \times (365 \text{days} / 14 \text{ to } 7 \text{days}) \\ &= 78,000 \text{ to } 146,400 \text{ tons/year}\end{aligned}$$

Maximum figure of storing volume in general cargo warehouse becomes 20,240 tons in the fiscal year of 2013/2014 from Table 2.2.2.4-1. Predicted storing volume of the general cargo warehouse is calculated as 78,000 tons/year in case that the average storing period is set as 2 weeks and the fill rate reaches about 26%. Fill rate of the general cargo warehouse during the site survey period was observed as about 30% and it can be considered reasonable thinking of the clearance of the passage portion.

3) Evaluation of Storing Capacity of the New General Cargo Warehouse

The maximum storing capacity is calculated as 3,780 tons in the new general cargo warehouse as the storing capacity is 3,420 tons in the case that the cargo storing site is dispositioned by ordinal. Annual storing capacity in the case of ordinal disposition can be calculated as follows.

$$\begin{aligned}\text{Annual storing capacity} &= \text{maximum storing capacity} \times (365 \text{days} / \text{average storing period}) \\ &= 3,420 \text{ ton} \times (365 \text{days} / 14 \text{ to } 7 \text{ days}) \\ &= 89,200 \text{ to } 178,300 \text{ tons}\end{aligned}$$

Cargo handling volume in Kigoma Port is predicted as 51,000 tons for import and 123,000 tons for export from the prediction result of international cargoes of the target fiscal year of 2024/2025. In case that the ratio to be stored of import and export cargoes in the warehouse makes each average value, annual warehouse storing volume is calculated as follows.

$$\begin{aligned}\text{Annual cargo storing capacity} &= (\text{import cargo annual storing volume}) + (\text{export cargo annual storing volume}) \\ &= 14,100 \text{ ton} + 22,500 \text{ ton} = 36,600 \text{ tons} < 89,200 \text{ ton} \\ &\quad \text{(average storing period: 14 days)} \\ \text{Import cargo annual storing volume} &= 51,000 \text{ tons} \times 27.7\% = 14,127 \text{ tons} \\ \text{Export cargo annual storing volume} &= 123,000 \text{ tons} \times 18.3\% = 22,509 \text{ tons}\end{aligned}$$

And, in the case that the ratio to be stored of import and export cargoes in the warehouse reaches the maximum value, the annual storing volume in the warehouse is calculated as follows.

$$\begin{aligned}\text{Annual cargo storing capacity} &= (\text{import cargo annual storing volume}) + (\text{export cargo annual storing volume}) \\ &= 19,000 \text{ tons} + 35,500 \text{ tons} = 54,500 \text{ tons} < 89,200 \text{ tons}\end{aligned}$$

(average storing period : 14 days)

Import cargo annual storing volume = 51,000 tons x 37.2% = 19,000 tons

Export cargo annual storing volume = 123,000 tons x 28.9% = 35,500 tons

Therefore, based on the predicted figure of international cargoes of the target fiscal year of 2024/25, as a result of calculations of cargo volume to be stored in the general cargo warehouse, even using each maximum figure of import and export cargo storing rate, it becomes less than the annual storing capacity in the warehouse when the average storing period is regarded as 14 days and it is understood that could be stored. And, predicted figures of the general cargo becomes about 60% of the storing capacity and concerning the variation of storing volume, it becomes the result to accept about 1.6 times of the average figure.

In case the cargo storing capacity is exceeded, storing capacity on a temporary basis will be possible by storing in passage portion of the warehouse where it affects less regular cargo handling, promotion of shortening cargo storing periods, storing in containers which are stored at the container yard, etc.

(4) Structural Cross Section of the New General Cargo Warehouse

The plan is to have a space without columns so that bulk cargoes can be freely allocated and less trouble for travelling cargo handling machinery such as forklifts in the warehouse. Considering the procurement of local materials, steel framed structure in the cross-beam direction and with bracing in the purlins direction by means of steel structures are planned. The span between columns is 30m in this case and the roof must be a light one.

1) Floor Height

The height of the floor of the existing general cargo and cement warehouse is as shown in Figure 2.2.2.4-3, both are 5.5 m from the outer platform. The cargo loading height in the warehouse was partially around 4.0m at most in bulk.

And the existing general cargo warehouse and cement warehouse have structures to make cargo-in and out easier by installing a platform on the girders. However, at this moment, it was almost not ever used from the rail cars to the warehouse. A slipway is installed to allow cargo handling machinery like forklifts to go into the warehouse easily in the gable face.

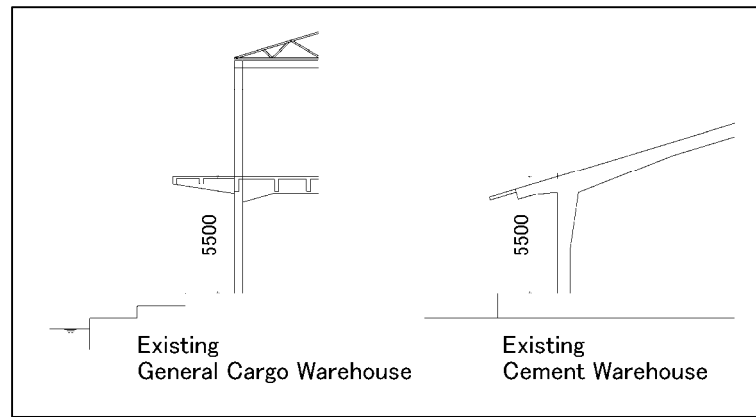


Figure 2.2.2.4-3 Floor Height of Existing General Cargo and Cement Warehouse

With consideration of the above, in this project as shown in Figure 2.2.2.4-4, a flat floor structure same as the ground height is installed so that not only cargo handling machinery like forklifts owned by TPA but loaded truck-trailers can enter into the warehouse.

It is the present situation that cargoes from railcars and containers are all bulky and unload once by manpower and load into the warehouse. From this, there is no need to lay rails for unloading from railcars directly to the cargo storage space and giving priority to convenience of cargo handling vehicles.

It does not make for an uneven level between the yard pavement and the warehouse floor.

From the above, the floor height of the new warehouse as shown in Figure 2.2.2.4-4, shall be 5.5m and 1/10 pitch of roof. High windows installed in the north and south sides for utilizing natural lighting and natural ventilation.

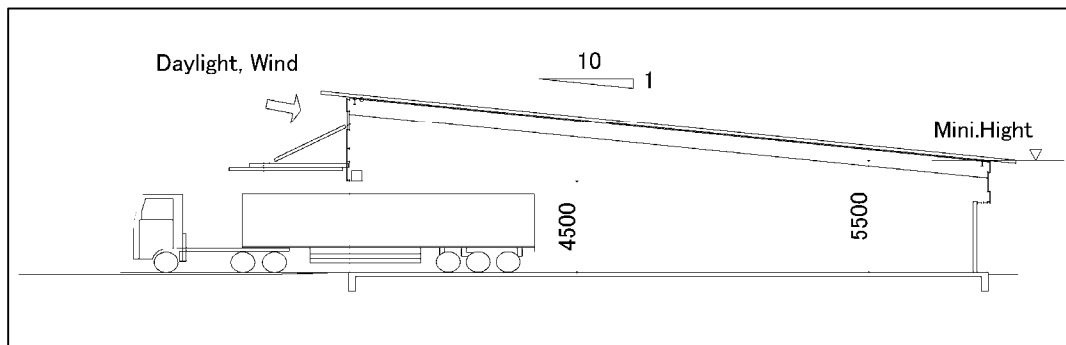


Figure 2.2.2.4-4 Floor height of General Cargo Warehouse in the Project

2) Size of the Entrances and Exits of the Warehouse

The sizes of the entrances of the existing general cargo warehouse and cement warehouse are as shown in Table 2.2.2.4-1. The size is the effective entrance opening.

Table 2.2.2.4-2 Floor Height of Existing General Cargo and Cement Warehouse

Existing warehouse	Height (m)	Width (m)	Location
General cargo warehouse	3.62	3.62	West gable face
	3.4	3.15	GF purlin face (big)
	3.4	2.6	GF purling face (big)
Cement warehouse	5.9	4.0	Gable face

In this project, the space is secured so as to allow a loaded truck trailer like a container enter as previously described. Opening width is as shown in Figure 2.2.2.4-4, container loading part with 2.5m width so as to be able to enter into warehouse and furthermore, have a width margin (each 1m for both sides) that workers can go through on both sides of the vehicle. Concerning the height, the oscillation of vehicles must be considered.

Opening size =B × H=4.5m × 4.5m

2-2-2-5 Structural Plan

As there is no rules and regulations like Building Standards Act in Tanzania, Japan's architectural standards is applied concerning to the structural design.

(1) Foundation

1) Passenger Terminal Building

Foundation construction is commenced after completion of soil filling by civil work in the Passenger Terminal Building. The soil for filling must be dredged soil (sandy soil) and plan independent footing due to the flat building and steel roof. Long term allowable bearing capacity is calculated by $a=50\text{kN/m}^2$.

After completion of backfilling, plate bearing test is performed at the bottom foundation ground level in order to confirm the necessary soil bearing capacity.

2) General Cargo Warehouse

2 plate bearing tests at 1.2m depth from the existing ground surface in front of the south side and backside of north where it is almost the center of the site of the general cargo warehouse (east side of the 6 WFP tents) in this survey were performed. The boring survey were executed in 4 corners.

The ultimate bearing capacity in the results of the plate bearing tests is 350 kN/m^2 and 420 kN/m^2 respectively. The long term allowable bearing capacity is calculated as the maximum figure with 117 kN/m^2 and 140 kN/m^2 assuming the safety rate of 3.

In the 4 corners boring survey, sandstone bed with N value more than 50 was confirmed at GL-about 5.0m in 2 north side places and at GL-about 2.0m in 2 south side places. Sandstone bed is greatly sloped down to the side of Lake Tanganyika.

And in the north side 2 places boring surveys, there exist soft sand layer with N value of 1 and 3 at L-2m over the sandstone bed. The foundation is planned with independent footing supported by sandstone bed with N value 50. Rubble concrete or crushed stones are used to adjust from bottom foundation ground to sandstone bed and allowable bearing capacity is planned with $R_a=100\text{kN/m}^2$ using round numerical value calculated at GL-1.2m.

(2) Seismic Force

Seismic force is calculated by the following formula of Japan Building Standards.

$$C_i = Z \cdot R_t \cdot A_i \cdot C_o$$

C_i : Shearing force coefficient of seismic layer

Z : Damage rate of earthquake that is zonal coefficient according to the past record in the local area (0.7~1.0)

R_t : Numerical value calculated depending on own natural period and ground features of building and it indicates vibration property of building (1.0)

A_i : Numerical value to indicate the distribution by direction of building height for shearing force coefficient of seismic layer (1.0)

C_o : Standard Shearing Coefficient (more than 0.2)

Zonal coefficient $Z=0.8$ (minimum value in Japan) is set. GF seismic force against earthquake is obtained using calculated C_i as below.

$$C_i = 0.8 \times 1.0 \times 1.0 \times 0.2 = 0.16$$

$$C_i \times W = 0.16W$$

(3) Wind Force

Wind force is calculated by the following formula of Japan Building Standards.

$$w = q \cdot C_f$$

$$q = 0.6 \cdot E \cdot V_o^2$$

w : Short term wind force (N/m²)

C_f : Wind force coefficient

Q : Wind pressure (N/ m²)

$E = E_r^2 G_f$ (coefficient to show height direction of wind pressure)

E_r : Coefficient to show height direction distribution of average wind speed)

G_f : Gust response factor

V_o : Standard wind speed (m/sec) (average wind speed of 30 to 46m/sec during 10 minutes at the height of 10m)

$V_o=30\text{m/s}$ that is the minimum value in Japan is set as the wind speed of design standard.

2-2-2-6 Finish Plan of the Building Facilities

The passenger terminal building and new general cargo warehouse are both made having a main frame consisted of column and beam structure. The wall is concrete block in the lower part (CB200) and the upper part is covered by steel sheet. Roof is covered by folded galvalume steel sheet (H=150mm).

Only the office area will be two stories high in the general cargo warehouse and the ground floor will be concrete placed over deck plate.

(1) External Finish of Building Facilities

External finish of each facility is as shown in Table 2.2.2.6-1.

Table 2.2.2.6-1 External Finish of Building Facility

Facility Finish part	Passenger Terminal Building	General Cargo Warehouse
Roof	Folded galvalume steel sheet H=150mm	Folded galvalume steel sheet H=150mm
Eaves Soffit	VE paint finish on cement board	VE paint finish on cement board
Facial Board	SOP paint finish , wood made	-
External Wall	AEP paint finish upon cement mortar paint	Upper: covered by steel siding Lower: AEP paint finish upon cement mortar paint
Baseboard	Mortar finish	Mortar finish
Opening	Aluminum window, aluminum door, steel door and metal shutter	Aluminum window, aluminum door, steel door and metal shutter

(2) Inner Finish of the Building Facilities

Inner finishes of the passenger terminal building and general cargo warehouse are as shown in Table 2.2.2.6-2, 3.

Table 2.2.2.6-2 Inner Finish of the Passenger Terminal Building

Room Place	Ceiling	Wall	Floor
Ticket gate/Security	Decorated gypsum board	Cement mortar + Emulsion paint	RC concrete trowel finish
Immigration/Custom/ Quarantine	Decorated gypsum board	Cement mortar + Emulsion paint	RC concrete trowel finish
Manager Room	Decorated gypsum board	Cement mortar + Emulsion paint	RC concrete trowel finish
Passenger Waiting Room	Decorated gypsum board	Cement mortar + Emulsion paint	RC concrete trowel finish
VIP Lounge	Decorated gypsum board	Cement mortar + Emulsion paint	RC concrete trowel finish
Ticket Booth	Decorated gypsum board	Cement mortar + Emulsion paint	RC concrete trowel finish
Cashier Box	Decorated gypsum board	Cement mortar + Emulsion paint	RC concrete trowel finish
Kiosk	Calcium silicate board with VE finish	Cement mortar + Emulsion paint	RC concrete trowel finish
Gear Locker	Calcium silicate board with VE finish	Cement mortar + Emulsion paint	Cement mortar + Hardener
Cargo Storage	Steel structure	Cement mortar + Emulsion paint	Cement mortar + Hardener
Toilet	Calcium silicate board with VE finish	Spandrel wall: Porcelain tile Upper wall: Cement mortar + AEP Paint	Nonslip porcelain tile

Table 2.2.2.6-3 Inner finish of the General Cargo Warehouse

Place		Ceiling	Wall	Floor
Room				
GF	Storage	Steel structure	Cement mortar + Emulsion paint	Cement mortar + Hardener
	Strong Cage	Deck plate	Cement mortar + Emulsion paint	Cement mortar + Hardener
	Cargo Check Office	Decorated gypsum board	Gypsum board + Emulsion paint	RC concrete trowel finish
	Security Office	Decorated gypsum board	Gypsum board + Emulsion paint	RC concrete trowel finish
	Toilet	Calcium silicate board with VE finish	Spandrel wall: Cement board + Porcelain tile Upper wall: Cement board + AEP paint	Nonslip porcelain tile
	Passage	Calcium silicate board with VE finish	Cement mortar + Emulsion paint	RC concrete trowel finish
1F	Operations Office	Decorated gypsum board	Gypsum board + Emulsion paint	RC concrete trowel finish
	Conference Room	Decorated gypsum board	Gypsum board + Emulsion paint	RC concrete trowel finish
	Kitchen	Calcium silicate board with VE finish	Cement board + AEP paint	RC concrete trowel finish
	Toilet	Calcium silicate board with VE finish	Spandrel wall: Cement board + Porcelain tile Upper wall: Cement board + AEP paint	Nonslip porcelain tile
	Outer Passage	Steel structure	Gypsum board + Emulsion paint	RC concrete trowel finish

Readymade septic tank package is to be installed into the concrete and underground. The finish of the septic tank is as shown in Table 2.2.2.6-4.

Table 2.2.2.6-4 Septic Tank Body Finish

By foundation	Spread foundation
Structural body	RC concrete
Wall	RC concrete
Upper slab	RC concrete

2-2-2-7 Facility Plan

(1) Power Facility

Power in Kigoma city is fed from TANESCO Power Station. High voltage is 380/400V and the low voltage is 220/240V. The main distribution panel of the passenger terminal facility (1. Distribution to ships, 2. Wharf lighting facility and 3. Passenger terminal building) and the new general cargo warehouse are as shown in Figure 2.2.2.7-1.

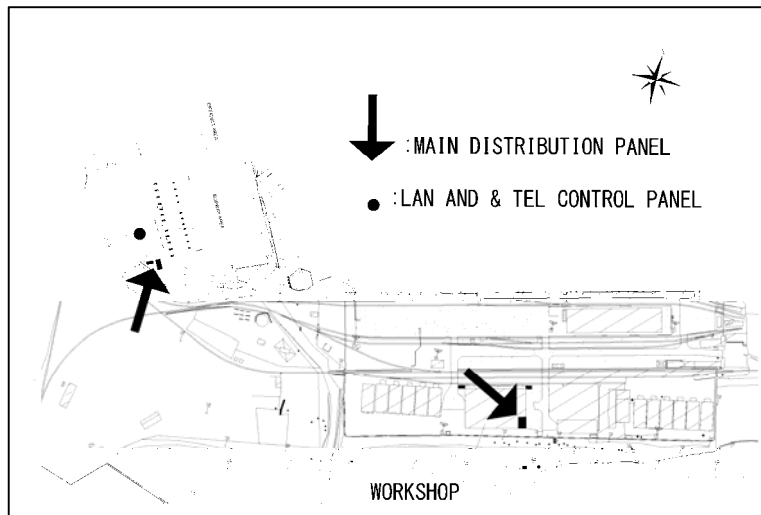


Figure 2.2.2.7-1 Power leading-in locations

Currently, power to the lighting facilities of the passenger terminal, ships, TPA operation offices at the backside of passenger terminal, slipway, wood processing facility, etc. are distributed from the main distribution panel in the switch room shown in Figure 2.2.2.7-1. These are supported by a backup emergency generator with 263.5KVA (360HP). Even considering the necessary power for the new passenger terminal building as it has enough room, the plan is to lead in the incoming panel to be installed underground of the warehouse diverging from the main distribution panel in the switch room. Still, there were a few power failures of less than 1 hour during this survey period.

The existing distribution panel to ships and lighting facilities of the existing wharf are to be demolish and newly installed. The power supply capacity to ships is not changed and that for lighting facilities is slightly increased.

Table 2.2.2.7-1 Necessary Power Capacity of Passenger Terminal Building

	Necessary power capacity (KVA)
General lighting · Plug · Lighting facility	9.0
Air conditioner · Ventilation	12.0
Septic tank	5.0
Water Supply and Drainage Pump	4.0
Total	30.0

Currently, power to each existing facility of the general cargo terminal is distributed from the main distribution panel located at the east side of the maintenance facility of the cargo handling machines. From the outside, high voltage 11KV is directly lead from the power pole at the north side land border. These are supported by a backup emergency generator with 400KVA same as the passenger terminal. As the capacity is enough to supply power to the new general cargo warehouse, the plan is to lead through underground pipe diverging here.

Although there is no need to newly plan since the lighting facilities are installed in the general cargo terminal, flood lights are installed considering the night work at the canopy of the new general cargo warehouse.

Table 2.2.2.7-2 Necessary Power Capacity of New General Cargo Warehouse

	Necessary power capacity (KVA)
General lighting · Plug	21.0
Air conditioner · Ventilation	14.0
Water supply pump · Septic tank	2.0
Large shutter	2.0
Total	39.0

(2) Telephone · LAN Cable · Fire Alarm · Broadcasting Facility

Currently mobile phones are popular though conventional phones are also necessary for liaison with the others. In addition, since it is necessary to secure the data exchange among offices and the communication to the outside by internet, telephone lines and connections of LAN cable in the office related rooms are considered.

Installation of terminal and wiring work related with telephone and LAN wire installation and the distribution of each room related with internet are executed by the government of the host country. However, piping works for these wirings are included in this project.

At this moment, LAN cable is lead to each TPA office located at the backside of the passenger terminal and it is networked. In general, the cargo terminal LAN cable is lead from the outside independently to some facilities but it is not networked. According to the IT engineer of TPA, the plan is to induce the existing network of the general cargo warehouse to each facility in the future. Telephone and LAN cable of the new general cargo warehouse is planned to diverge from the existing network of the passenger terminal. Wiring diagrams of the telephone and LAN cables in the passenger terminal is shown in Figure 3.2.2.7-1.

Speaker and microphone for announcements to passenger are allocated in the passenger terminal building.

(3) Water Supply Facility

Clean water is supplied to Kigoma Port from KUWASA. The water falls freely from a water storage tank installed at a neighboring mountaintop and the water pressure is not high on the project site. Leading location to the passenger terminal building and general cargo warehouse are shown in Figure 2.2.2.7-2. Water meters are installed at every location.

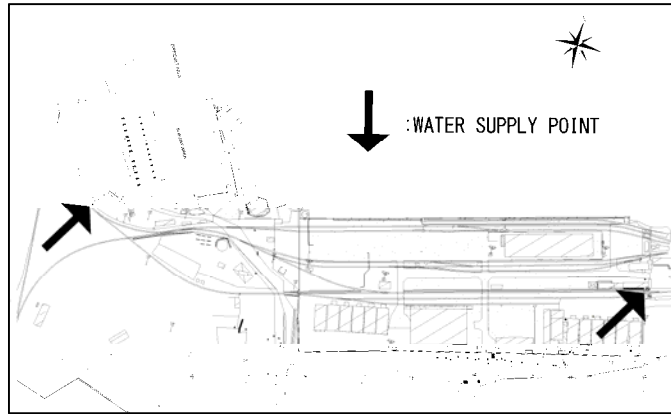


Figure 2.2.2.7-2 Water branch locations

There was no water failure during the survey period but they say that it was more frequent than the number of power failure. The plan is to install a water storing tank.

Concerning water storing tank for the passenger terminal building, a water receiving tank is installed at the backside of the passenger terminal building. The water receiving tank is 10m³, calculated from the water use volume shown below.

Necessary water supply volume (t/day): for passenger ships 4.0 m³, for the waiting facility toilets 3.4 m³, for kiosk 0.3 m³

$$\text{Total } 7.7 \text{ m}^3 \quad (7.7 / 0.8 = 9.625 \text{ m}^3 \rightarrow 10 \text{ m}^3)$$

Concerning the water storage tank for the general cargo warehouse, it is located at the east side of the facility and the capacity is to meet the necessary volume of the kitchen and toilets.

(4) Water Drainage Plan

1) Basic Plan

Concerning discharging water in the planned facilities, there are 3 kinds with 1. rain water from roof, 2. foul water from toilet, 3. miscellaneous discharges from toilet/swash room and kitchen sinks.

Rain water is to discharge to Lake Tanganyika from the passenger terminal building and to discharge directly to the existing ditch located at the south side through underground piping for the general cargo warehouse.

Concerning foul water and miscellaneous discharging water, independent septic tanks are installed at each facility. The same as the rain water, it is finally discharged directly to Lake Tanganyika from the septic tank or through the existing water drain.

The layout of the existing ditch drain of the general cargo warehouse is shown in Figure 2.2.2.7-3.

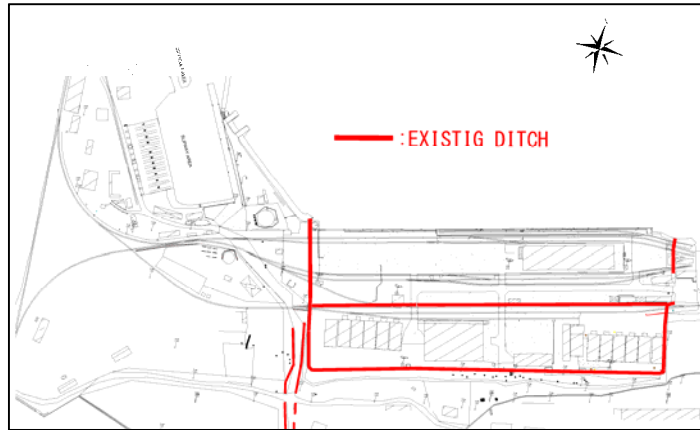


Figure 2.2.2.7-3 Layout of ditch of General cargo terminal

2) Scale of Septic Tank

It is targeted that there will be 400 users in the passenger terminal building and 3 people at the GF warehouse office, 1 person at the GF security office and 5 people at the 1F operation office totaling 9 people plus meeting attendees. Cargo handling workers and drivers working in warehouse are to use the toilet in the front of and west side yard of the general cargo warehouse.

In setting the scale of the septic tanks, the following calculation formula was used from the “Operational guidelines on the design and construction of the septic tank (MLIT Housing Bureau Japanese Architecture administrative conference)

$$nf = 0.0412 \times t \times p \times f \quad \dots\dots\dots (a)$$

$$n\mu = (0.216 + 0.325 / t) \times t \times p \quad \dots\dots\dots (b)$$

t : utilizing time of the facility · staying hours (hour/day) 3 hours

p : Number of users, number of visitors (person) 400 people

f : Use factor of closet bowl (f = 0.5)

nf : Use number of closet bowl (number/day)

nμ : Use number of urinal (number/day)

Totaling miscellaneous water discharged from wash basins of toilet and kiosk in the passenger terminal building, the processing capacity of the septic tank needs to be 3.30 m³/day. And it needs 0.4 m³/day in the general cargo warehouse.

【Density of BOD】

Numerical value of 260mg/L that is utilized in public toilets is used for the density of the inflow BOD to the septic tank. And as the discharge standard in Tanzania establishes BOD as 25mg/L, the septic tank is designed using that numerical value.

Table 2.2.2.7-3 Inflow BOD of septic tank and standard value

Density of inflow BOD	260 mg/L
Density of discharge BOD	25 mg/L

(5) Firefighting Equipment

Automatic fire alarms will be installed in the passenger terminal building of which usage is the passenger terminal where many unspecified people gather.

A fire hydrant water intake will be installed in the general cargo warehouse.

(6) Installing Equipment for Each Facility

Equipment, etc. to be installed in each room in the passenger terminal building are shown in Table 2.2.2.7-4.

Further, concerning telephone and LAN, the work is limited only to piping.

Table 2.2.2.7-4 Equipment of Each Room

Room name	Plug	3phase power supply	Telephone	LAN	Water supply	Ventilation	Air-conditioner	Illuminance
Passenger terminal building								
Ticket gate/Security	○		○	○		○	○	400
Immigration	○		○	○		○	○	400
Custom	○		○	○		○	○	400
Quarantine	○		○	○		○	○	400
Manager room	○		○	○		○	○	400
Passenger waiting room	○					○		300
VIP Lounge	○		○	○		○	○	300
Ticket booth	○		○	○		○	○	400
Casher box	○		○	○		○	○	400
Kiosk	○		○		○	○	○	300
Gear locker	○							300
Cargo storage	○							200
Toilet	○				○	○		200
Terminal		○						10
New general cargo warehouse								
G F	Cargo storage							150
	Strong cage	○						150
	Warehouse office	○		○	○	○	○	400
	Security office	○		○	○	○	○	400
	Toilet	○				○		200
	Corridor							200
1 F	Operation office	○		○	○	○	○	400
	Conference room	○		○	○	○	○	400
	Kitchen	○				○	○	300
	Toilet	○				○	○	200
	Outside passage							100

2-2-2-8 Project Outline

The summary of facilities to be improved by this project is as shown in Table 2.2.2.4-1 to 3. And, the summary of the plane layout for the berth facility and land facility on the passenger wharf is shown in Figure 2.2.2.4-1.

(1) Passenger Wharf

Table 2.2.2.8-1 Outline of Passenger Wharf

Facility	Particulars	Project Plan
East Berth	Target Ship Extension Water Depth	Passenger Ship 130m DL -5.0m
North Berth	Target Ship Extension Water Depth Ancillary Facility	Small Boats and Ships 50m Existing Water Depth Stairway for Small Boats
Wharf Area	Extension Wharf Area Additional Facility Ancillary of Wharf	130m × 50m 6,500m ² Beacon, Security Light Fender and Bollard

(2) Access Road

Table 2.2.2.8-2 Outline of Access Road

Facility	Particulars	Project Plan
Access Road	Extension Width	481m Paving Width 7.0m Traffic Lane 5.5m (2 Lanes), Shoulder 0.75m (Both Sides)
Open Space	Area	949m ²

(3) Passenger Terminal Building

Table 2.2.2.8-3 Outline of Passenger Terminal Building

Facility name	Elements	Contents planned	
Management · Service Zone	CIQ	4m x 4m=16m ² , 3 room	48m ²
	Gate/Security	4m x 4m= 16m ² 1 room	16m ²
	Ticket booth	4m x 5m=20m ² , 1 room	20m ²
	TPA Office	6m x 4m=24m ² , 1 room	24m ²
	KIOSK	5m x 4m=20m ² , 1 room	20m ²
	Toilet	5m x 6m=30m ² , 2 rooms (M/F)	60m ²
	Entrance Lobby	40 persons	
	Cargo Storage	4m x 2m=8m ² , 1 room	8m ²
Passenger Waiting Zone	Passenger waiting room	363.2m ² (360 persons)	363.2m ²
	VIP Lounge	4m x 8m=32m ² (20 persons)	32m ²
Weighing · Warehouse Zone	Casher box	5m x 4m=20m ²	20m ²
	Scale space	5m x 4m=20m ²	20m ²
	Cargo stock area	9mx10m+5mx6m=120m ²	120m ²
	Cargo storage	11mx8m+9mx4m=124m ²	124m ²
	Gear locker	3m x 8m=24m ²	24m ²
Others	Canopy and others		182 m ²
Total floor area			1,478m ²

(4) General Cargo Warehouse

Table 2.2.2.8-4 Outline of General Cargo Warehouse

Facility name	Elements	Contents planned	
Warehouse Zone (GF)	Cargo storage (Food Staff)	31m x 60m=1,860 m ² (1room)	1,860 m ²
	Strong cage	6m x 12.205m=73.2 m ² (1room)	73.2 m ²
Office Function Zone (GF)	Warehouse office	6m x 7.5m=45 m ² (1room)	45 m ²
	Toilet	2.5m x 3.245m=8.1 m ² (male)	8.1 m ²
	Security room	3.5m x 3.245m=11.4 m ² (1room)	11.4 m ²
	Passage	6.0m x 1.5m=9.0m ²	
	Others	Steps, canopy and others 215.4m ²	215.4 m ²
Office Function Zone (1F)	Operation office	6m x 11.85m=71.1 m ² (1room)	71.1 m ²
	Conference room	6m x 8.8m=52.80 m ² (1room)	52.80 m ²
	Storage (meeting room)	6m x 0.885m=5.3 m ²	5.3 m ²
	Toilet	6m x 2.95 -5.85m=11.85 m ² (m/f)	11.85 m ²
	Kitchen	3m x 1.95m=5.85 m ² (1room)	5.85 m ²
Total floor area			2,366 m ²

(5) Facilities and Equipment Installed

Table 2.2.2.8-5 Outline of Facilities and Equipment to be Installed

Name of facility & equipment	Passenger Terminal Building		General Cargo Warehouse	
	Name of room	Q'ty	Name of room	Q'ty
Wooden bench	Passenger waiting lobby	1 set		
Hanging shelf	Kiosk	2	Kitchen	1
Sink	Kiosk	1	Kitchen	1
Cooking table	Kiosk	1		
Microphone & Amplifire	TPA office	1 set		
Speaker	Waiting lobby and etc.	6		
	VIP lounge	1		
	Outside	2		
Fire Alarm & Sensor	Each room	1 each	Each room	1 each
	Waiting lobby and etc.	8	Warehouse	5
	Warehouse	3		

2-2-3 Outline Design Drawing

Drawings of facilities included in the project are shown as follows.

Figure 2.2.3-1	General Layout Plan
Figure 2.2.3-2	General Layout Plan of Passenger Terminal
Figure 2.2.3-3	Cross Section of East Berth
Figure 2.2.3-4	Plan of Sheet Pile Arrangement
Figure 2.2.3-5	Front View of East Berth
Figure 2.2.3-6	Wharf Accessories Arrangement
Figure 2.2.3-7	Detailed Wharf Accessories
Figure 2.2.3-8	General Removal Plan of Existing Facilities
Figure 2.2.3-9	Access Road Location Map
Figure 2.2.3-10	Pavement Plan of Open Space in front of Wharf
Figure 2.2.3-11	Cross Section of Access Road
Figure 2.2.3-12	Layout Plan of Passenger Terminal Building
Figure 2.2.3-13	Elevation Plan of Passenger Terminal Building
Figure 2.2.3-14	General Layout Plan of (New) General Cargo Warehouse
Figure 2.2.3-15	Layout Plan of (New) General Cargo Warehouse (GF)
Figure 2.2.3-16	Layout Plan of (New) General Cargo Warehouse (1F)
Figure 2.2.3-17	Elevation and Cross Section Plan of (New) General Cargo Warehouse
Figure 2.2.3-18	Elevation Plan of (New) General Cargo Warehouse



Figure 2.2.3-1 General Layout Plan

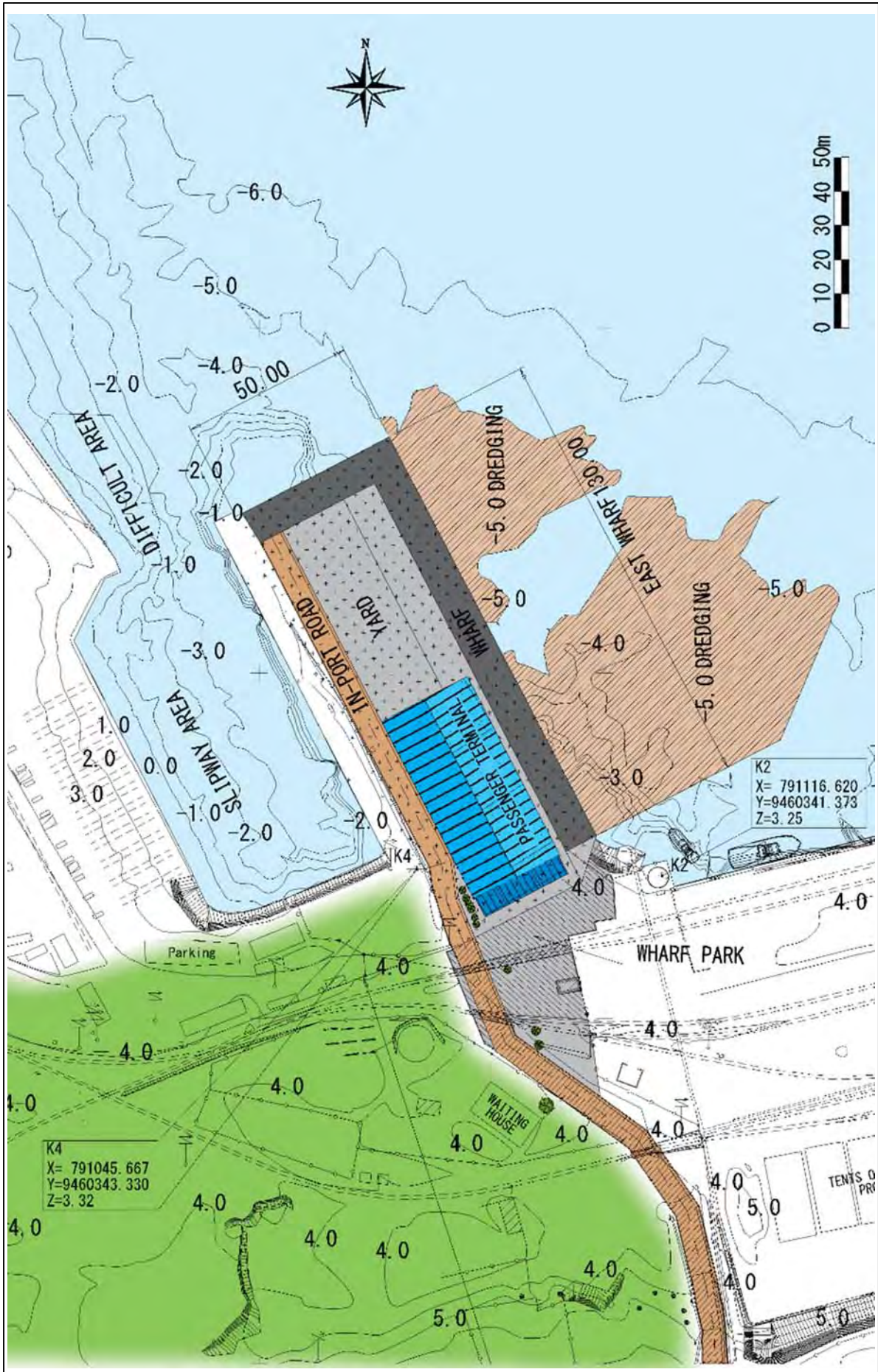


Figure 2.2.3-2 General Layout Plan of Passenger Terminal

TYPICAL CROSS SECTION OF EAST WHARF (1)
(SECTION 1)

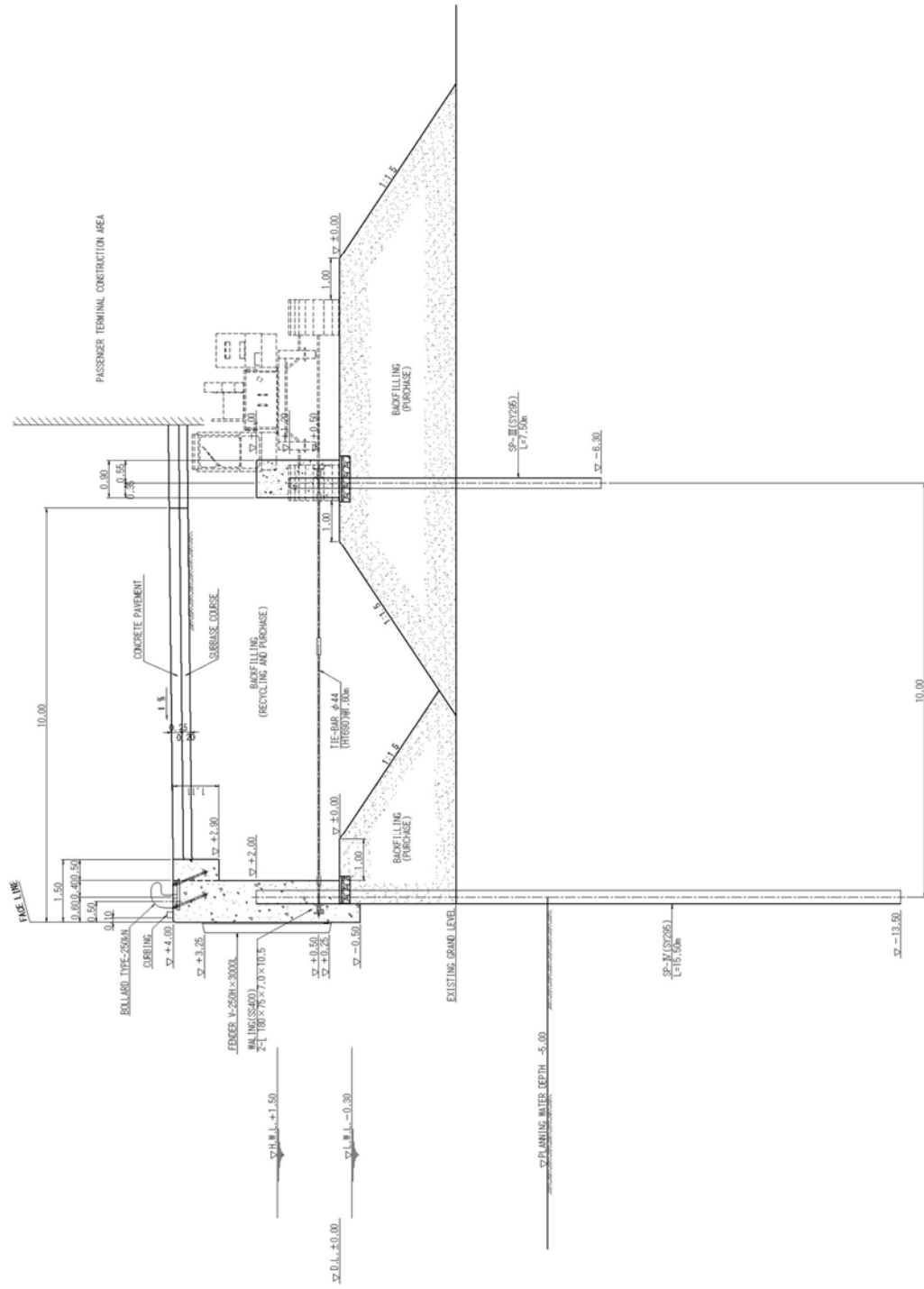


Figure 2.2.3-3 Cross Section of East Berth

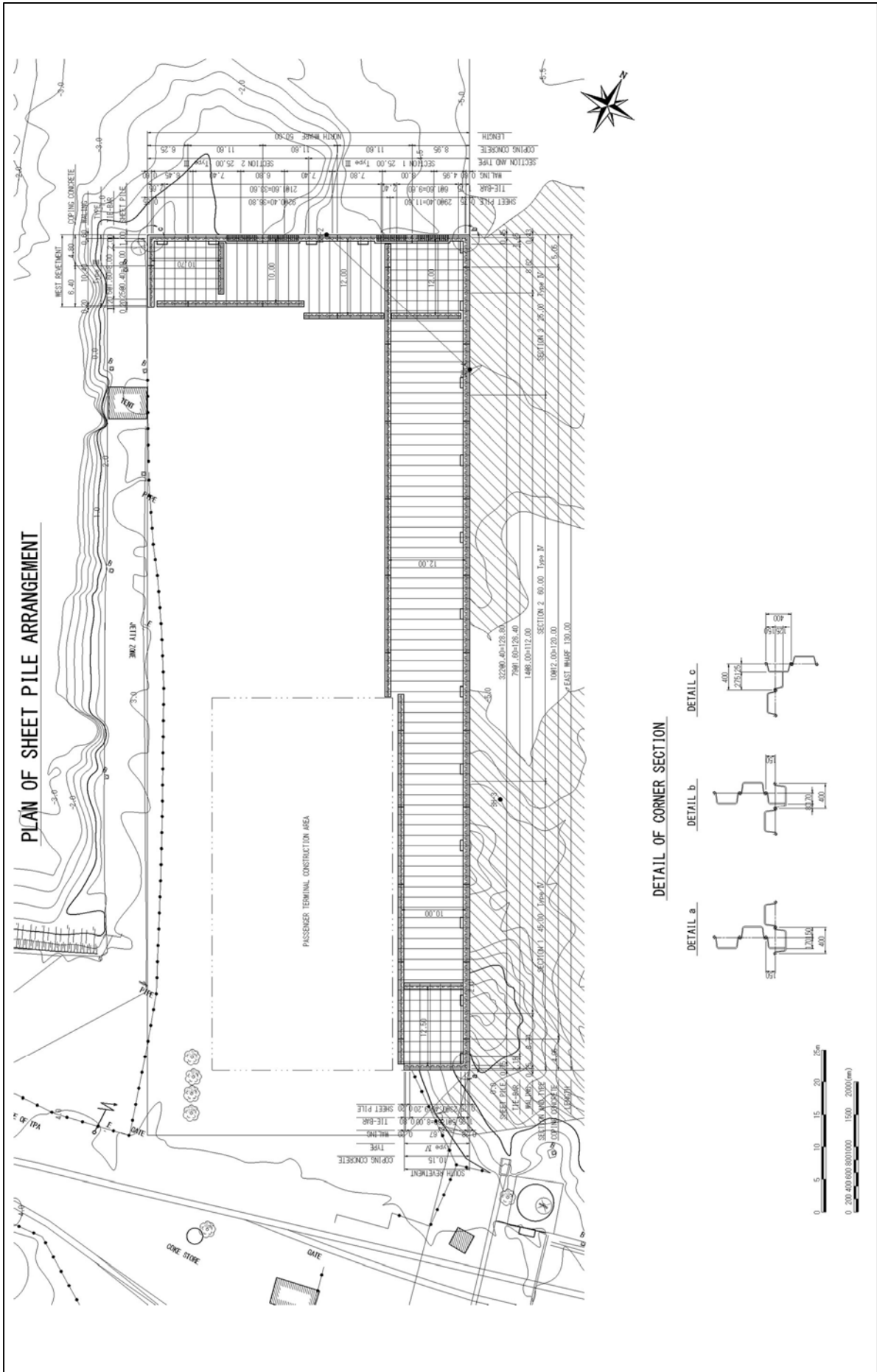
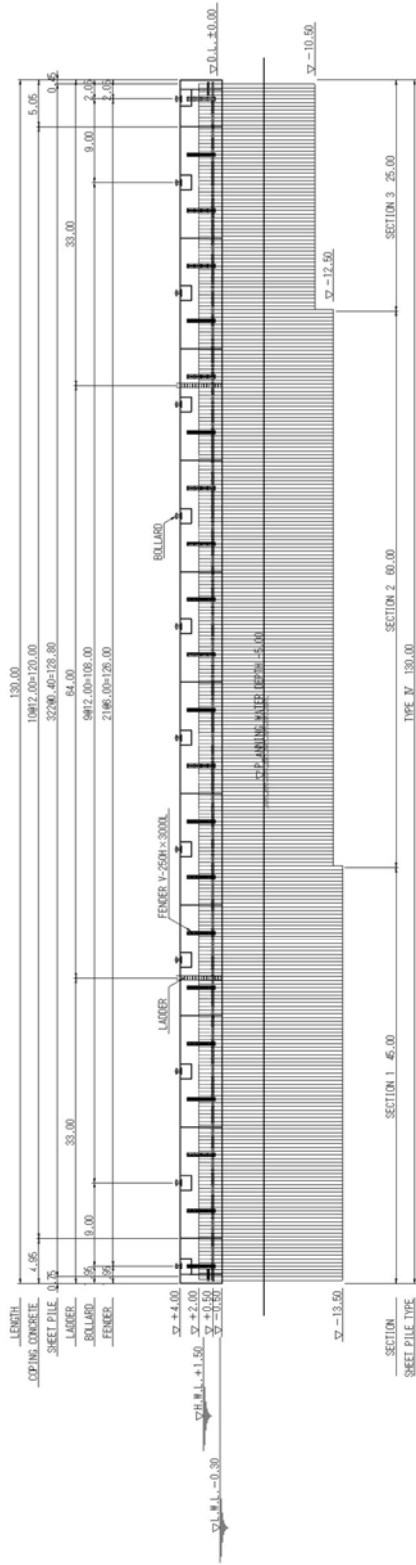


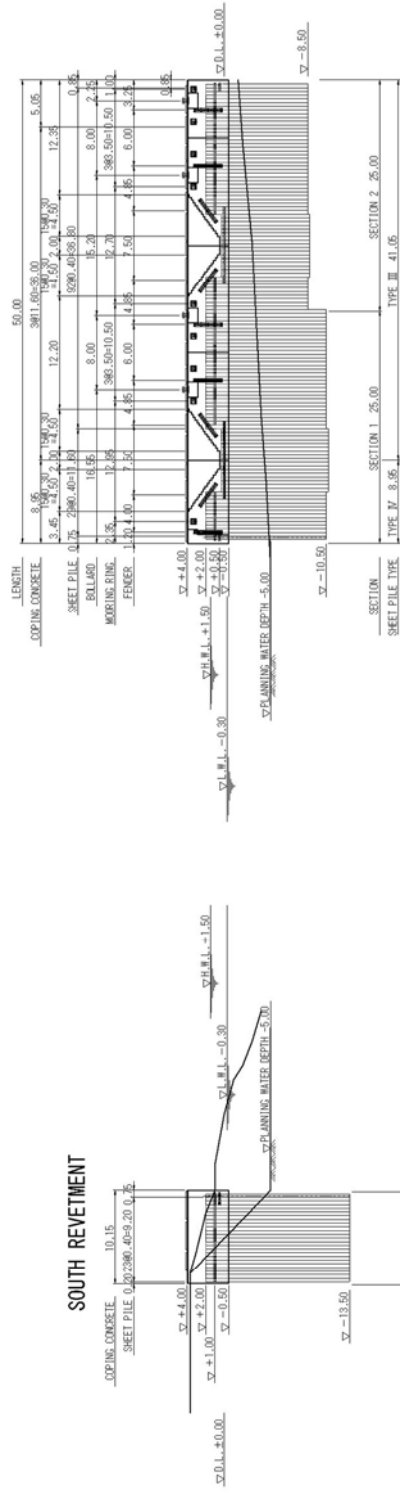
Figure 2.2.3-4 Plan of Sheet Pile Arrangement

FRONT VIEW OF WHARF

EAST WHARF



NORTH WHARF



SOUTH REVITMENT

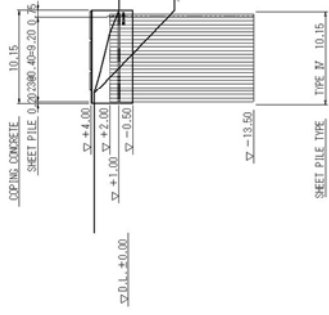


Figure 2.2.3-5 Front View of East Berth

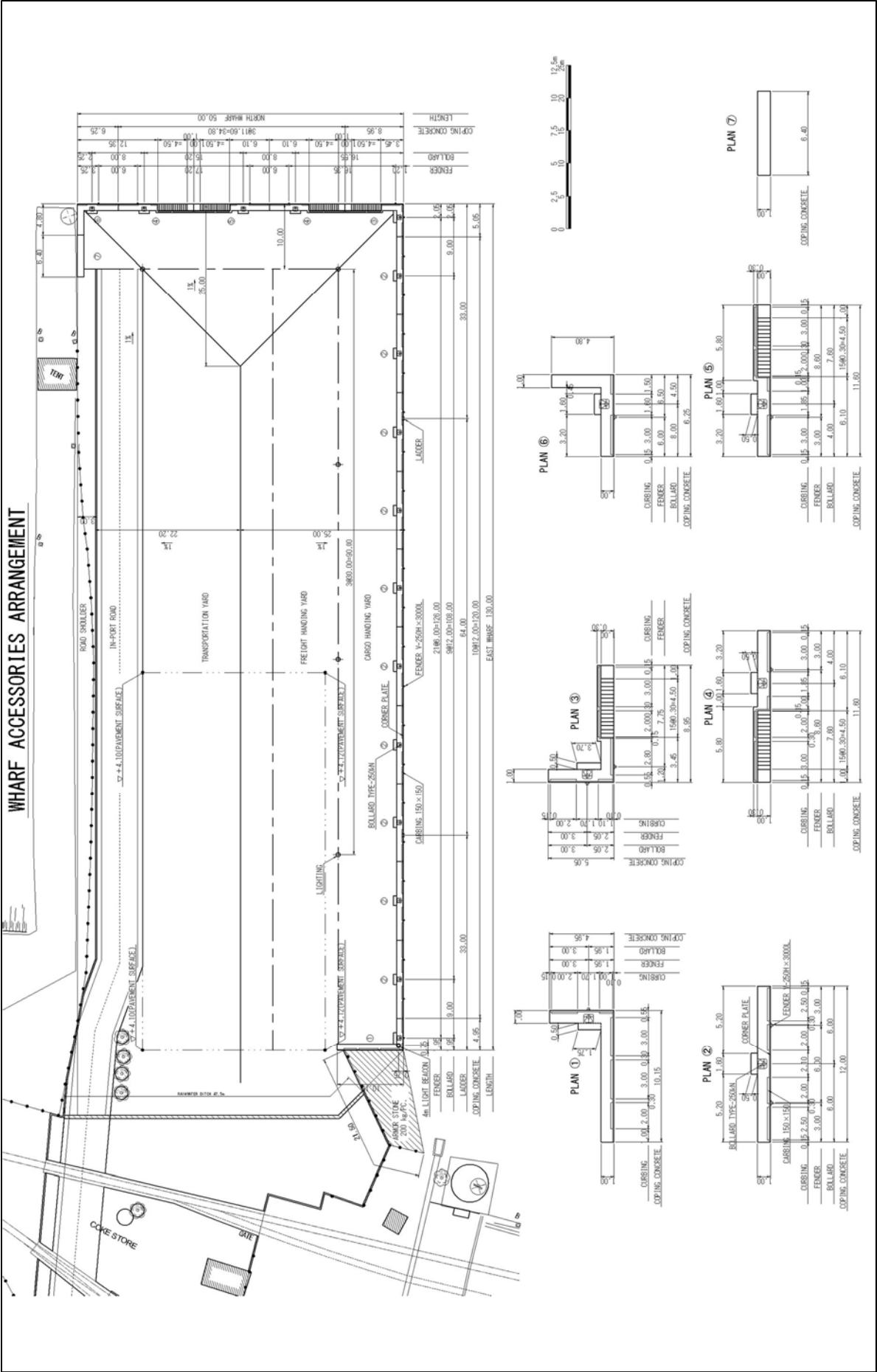


Figure 2.2.3-6 Wharf Accessories Arrangement

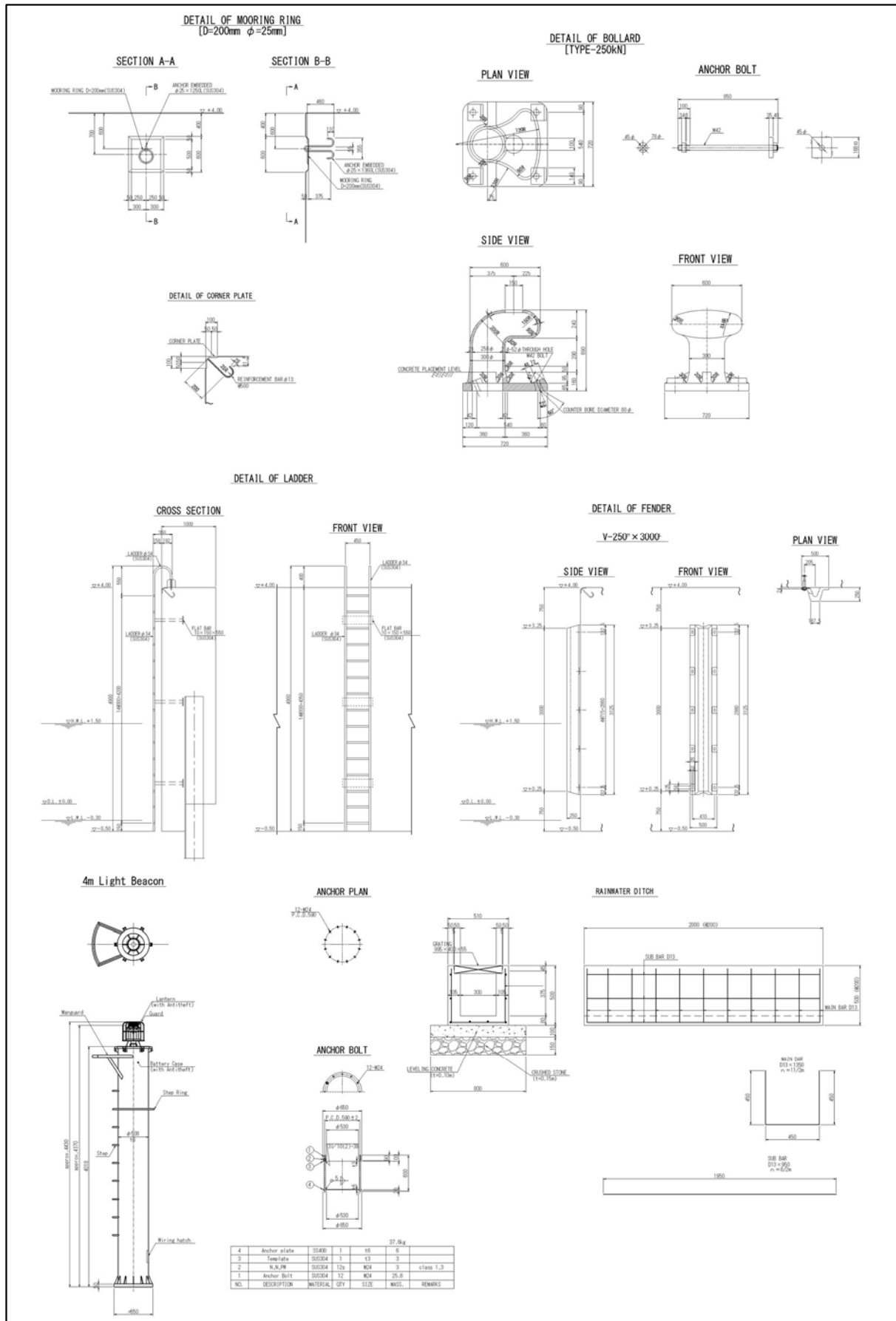


Figure 2.2.3-7 Detailed Wharf Accessories

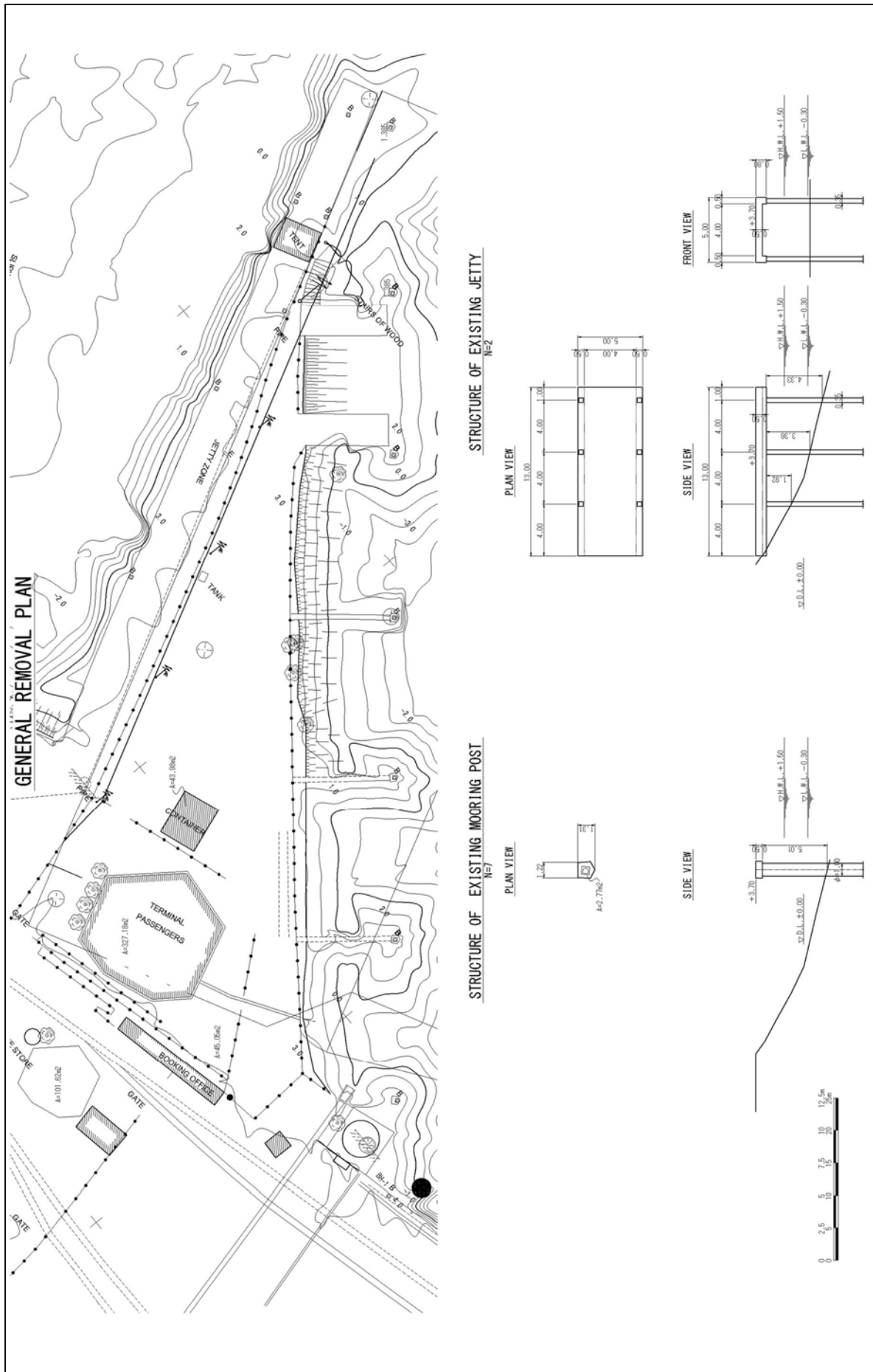


Figure 2.2.3-8 General Removal Plan of Existent Facilities

ACCESS ROAD LOCATION PLAN



Figure 2.2.3-9 Access Road Location Map

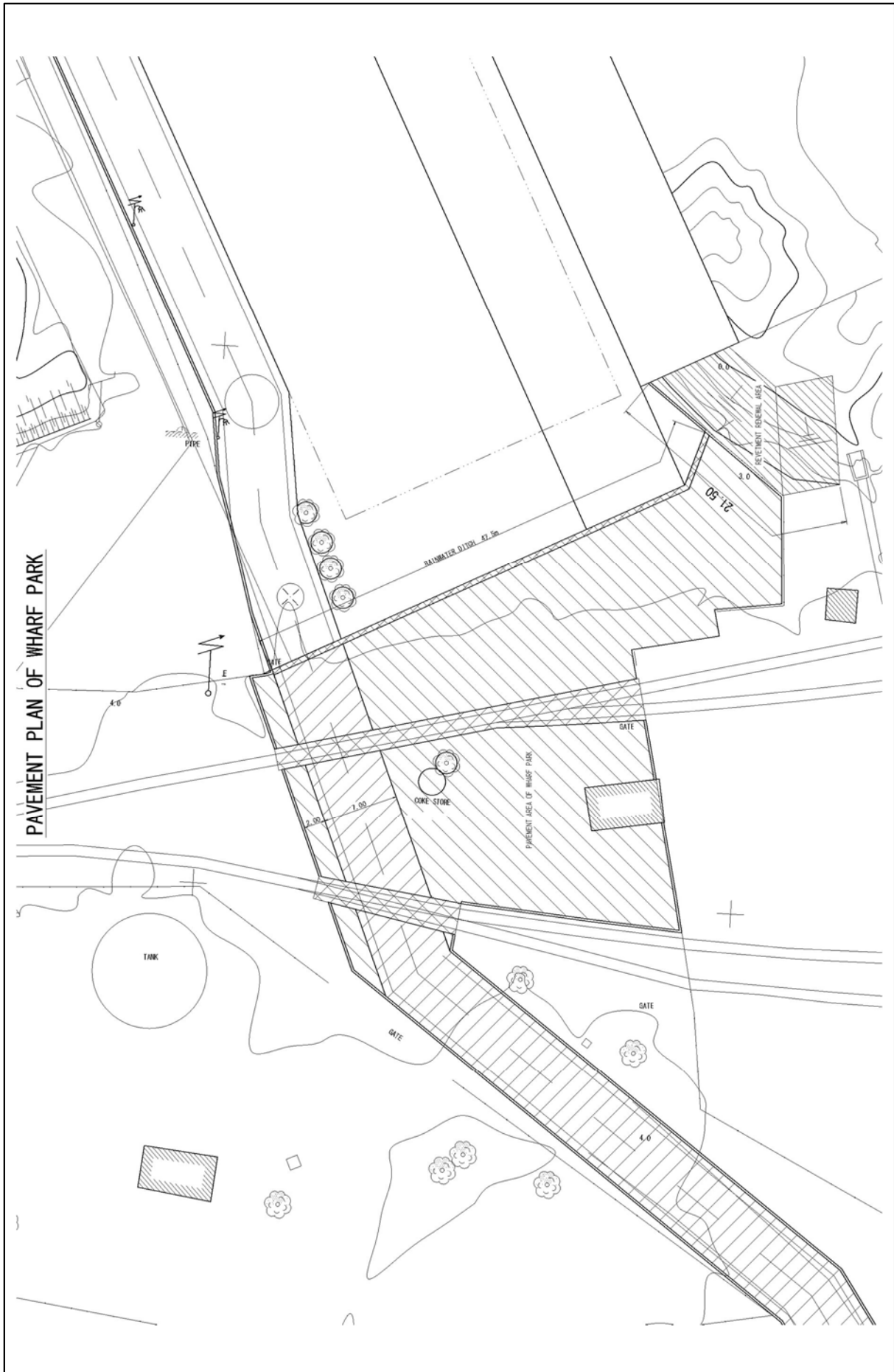


Figure 2.2.3-10 Pavement Plan of Open Space in front of Wharf

CROSS SECTION OF ACCESS ROAD

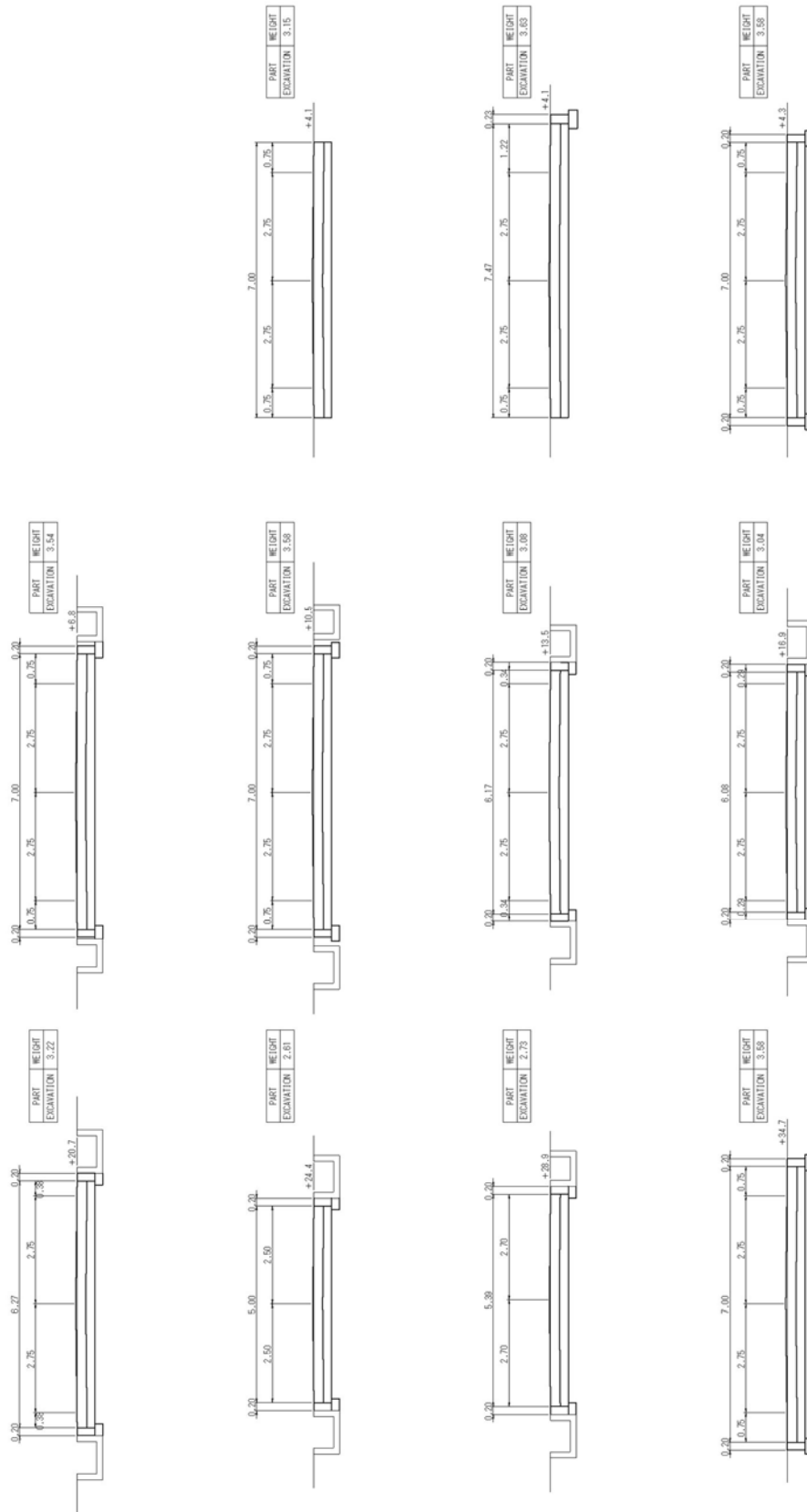


Figure 2.3-11 Cross Section of Access Road

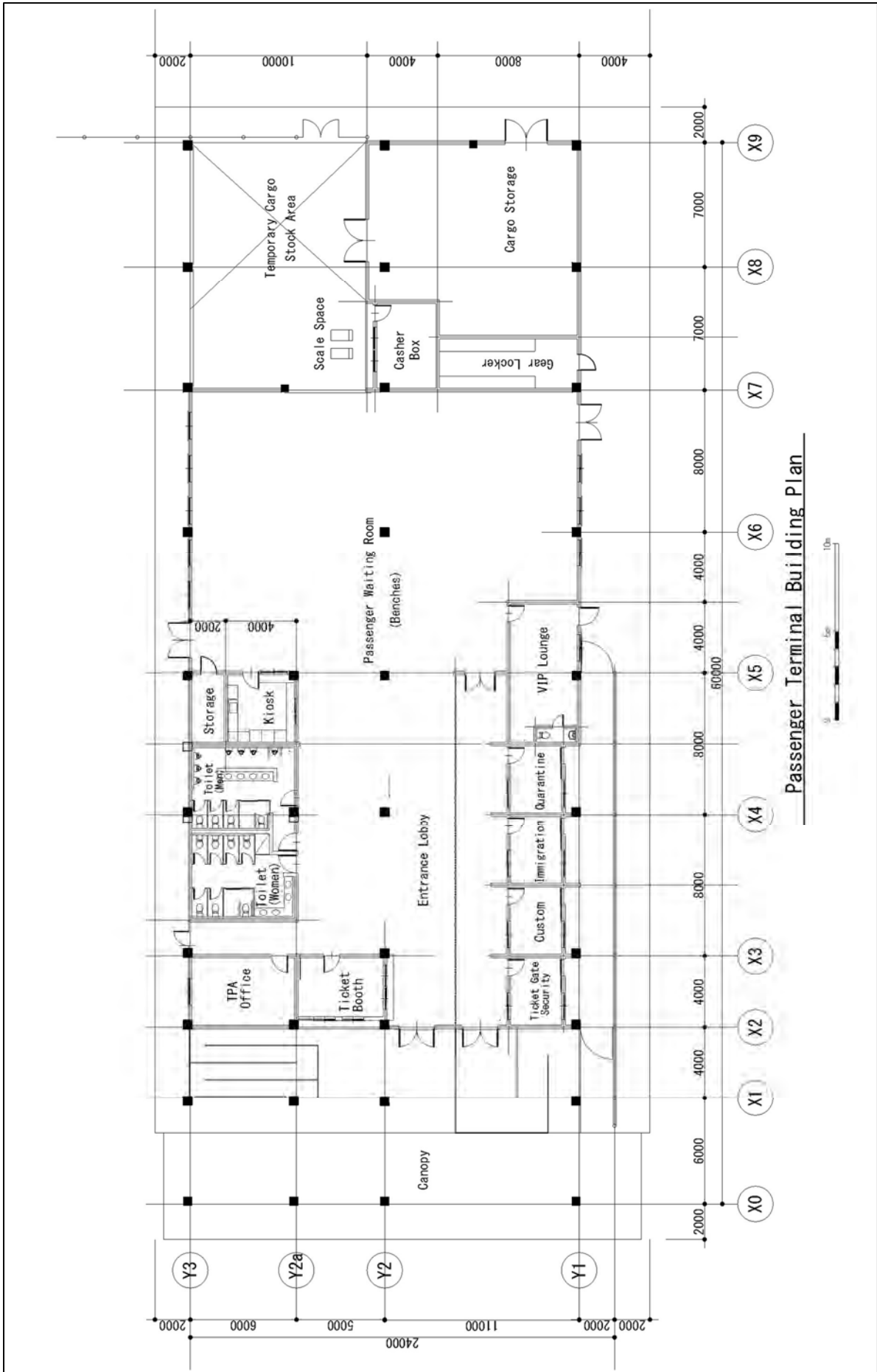


Figure 2.2.3-12 Layout Plan of Passenger Terminal Building

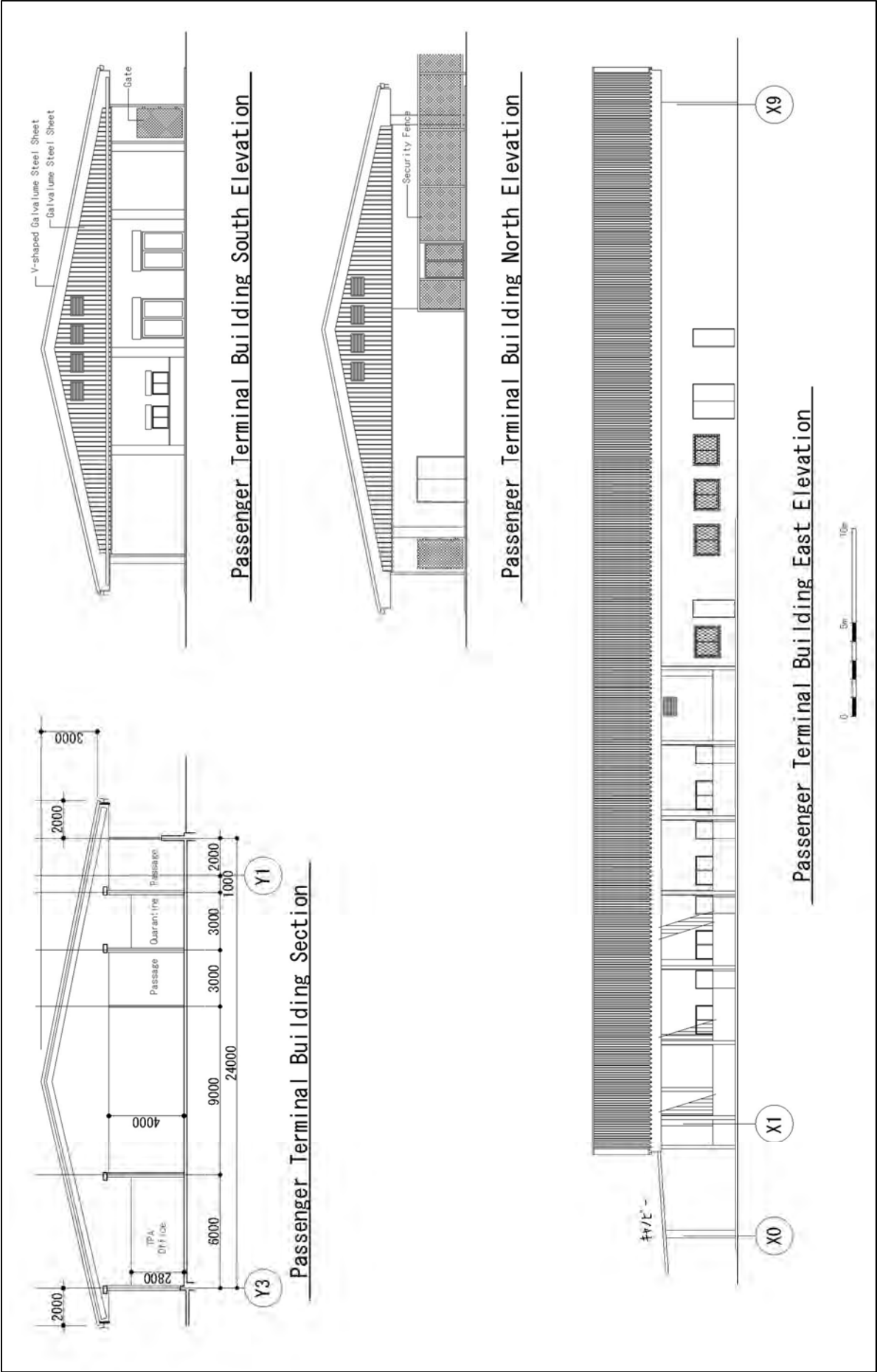


Figure 2.2.3-13 Elevation Plan of Passenger Terminal Building

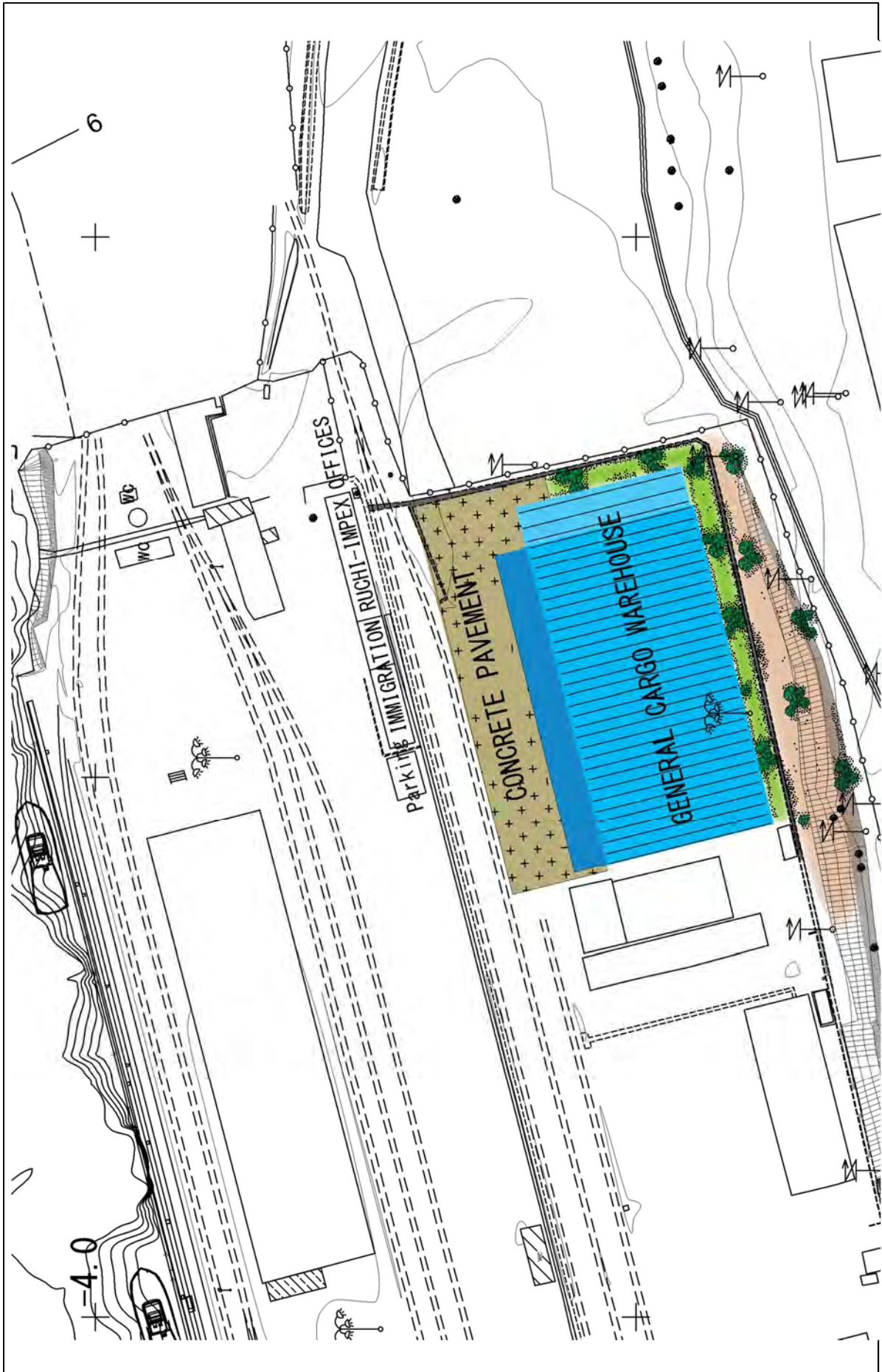


Figure 2.2.3-14 General Layout Plan of (New) General Cargo Warehouse

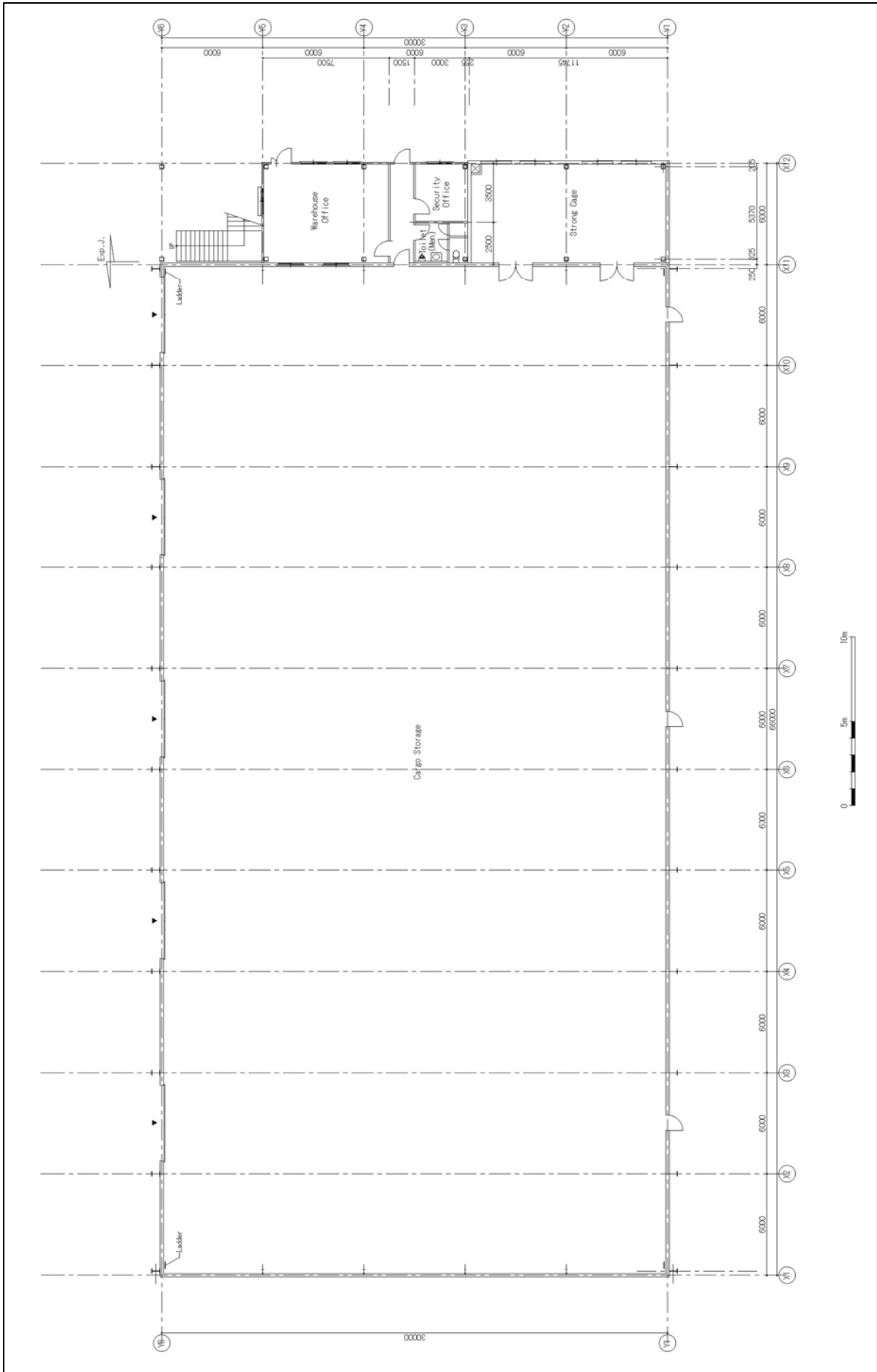


Figure 2.2.3-15 Layout Plan of (New) General Cargo Warehouse (GF)

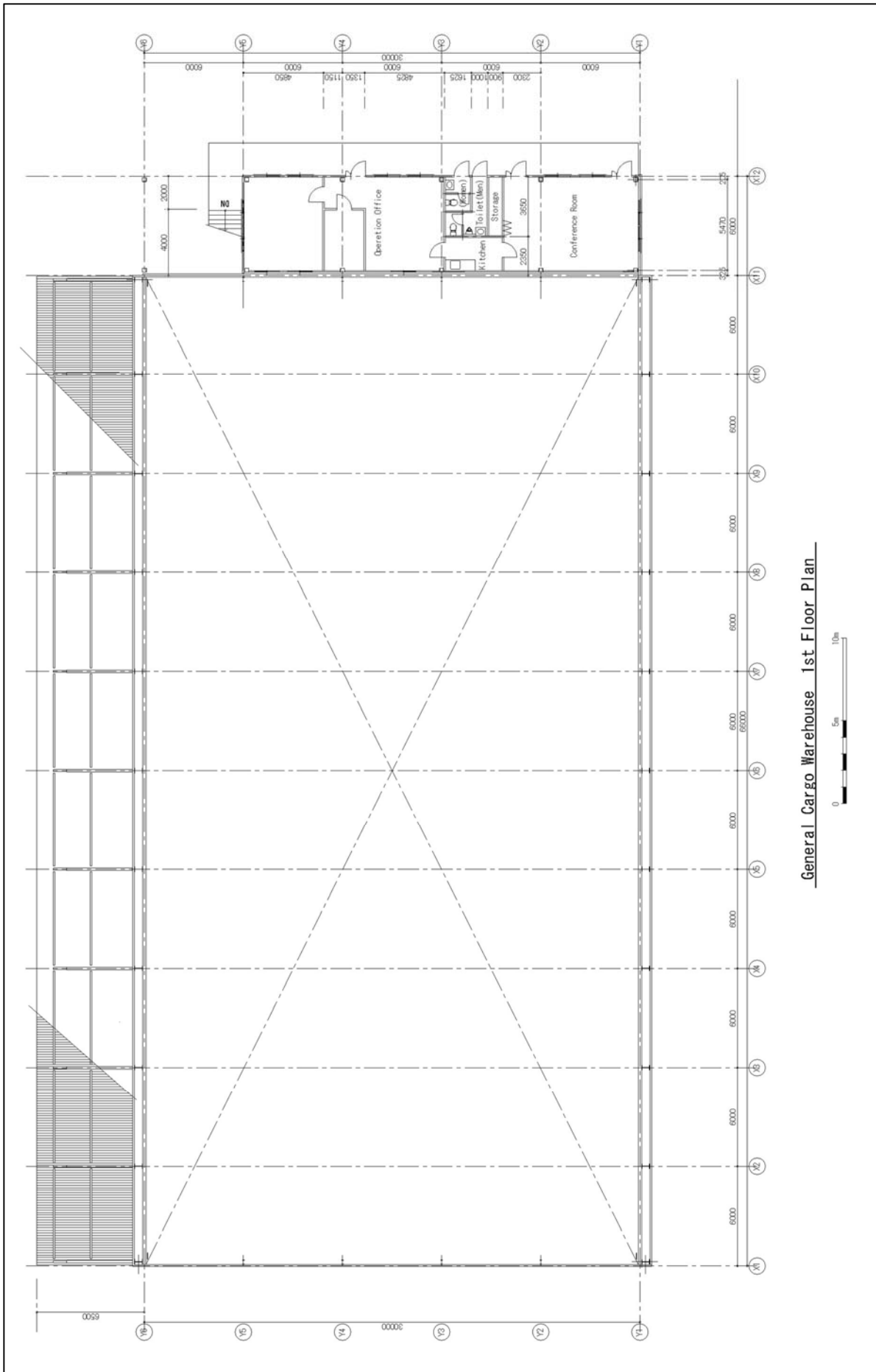


Figure 2.2.3-16 Layout Plan of (New) General Cargo Warehouse (1F)

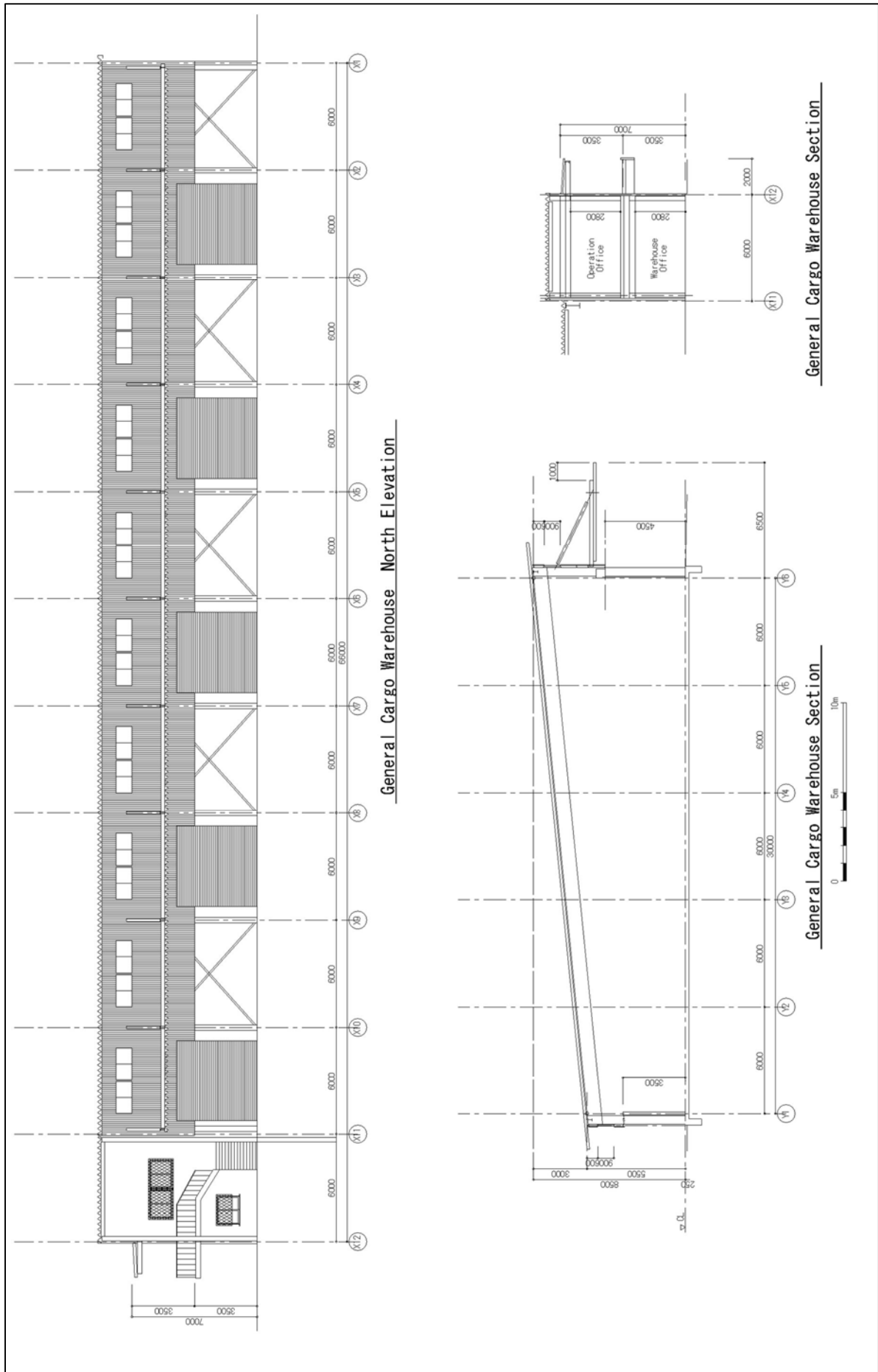


Figure 2.2.3-17 Elevation and Cross Section Plan of (New) General Cargo Warehouse

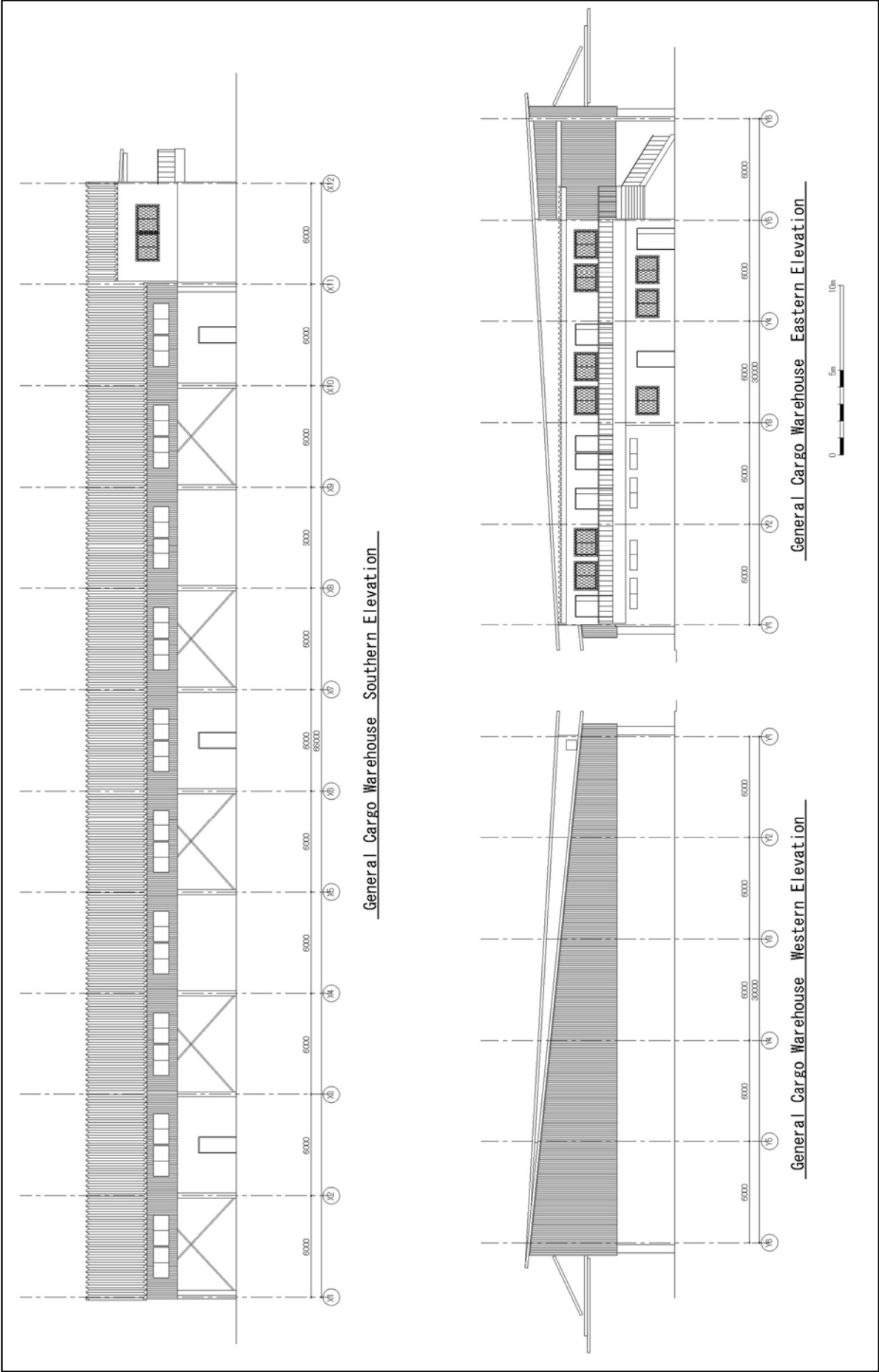


Figure 2.2.3-18 Elevation Plan of (New) General Cargo Warehouse

2-2-4 Construction Plan and Procurement Plan

2-2-4-1 Construction Policy and Procurement Policy

(1) Basic Understanding Concerning Construction and Procurement

1) Basic Information for Construction

a) Domestic Construction Conditions of Tanzania

- i) Both local contractors and overseas based contractors are required to register for a Business License and CRB (Contractors Registration Board) Registration when construction is done in Tanzania. Registered contractors with the CRB are sectioned with architectural ones and civil ones and divided into Classes-1 to 7 depending on the business scale. Contractors ranked as Class-1 are large scale contractors that have no limitation on contract amount. Contractors of Class-7 cannot construct a building more than 2 stories.
- ii) Local contractors (main offices) ranked as Class-1 to 3 of CRB registrations are centered in Dar es Salaam city. There exists contractors experienced with projects that are mainly for roads and bridge implemented by TANROAD under the Japanese Grant Aid Cooperation.
- iii) Local contractors in Tanzania have no experiences with marine and coastal construction such as ports and harbors as a prime contractor.

Table 2.2.4.1-1 Rank of Domestic Contractors

Class	Class Limit for Any Single Contract (in Million Tsh.)		
	Civil	Building	Mechanical
1	Unlimited	Unlimited	Unlimited
2	5,000	3,000	2,000
3	3,000	2,200	1,200
4	1,500	1,200	600
5	750	600	300
6	300	200	150
7	150	120*	75

Source: Contractors Registration Board

b) Construction Condition around Kigoma

- i) There are 7 registered contractors in Kigoma but their business scales are small and ranked as Class-5 to 7 and mainly work on clay pavement, aggregate pavement and brick masonry of flat house in Kigoma. Especially, contractors who belong to Class-7 cannot work anything other than flat buildings.
- ii) The number of registered engineers to ERB of the local contractors registered in Kigoma are about one to two or alike and employ experts and labors for each project.
- iii) In the case of largescale construction, local contractors or overseas based contractors (contractors from China or Korea) are registered in major cities like Dar es Salaam are executing construction work for roads and bridges.
- iv) Road pavement construction work from Kigoma to Tabora, comprising the funds of Tanzania for 30 km from Kigoma to Kidahwe, Saudi Arabia for 65 km from Kidahwe to Uvinza, U.A.E for 65 km from Uvinza to Malagarasi bridge and Korea for 48 km from Malagarasi bridge to Nguruka.

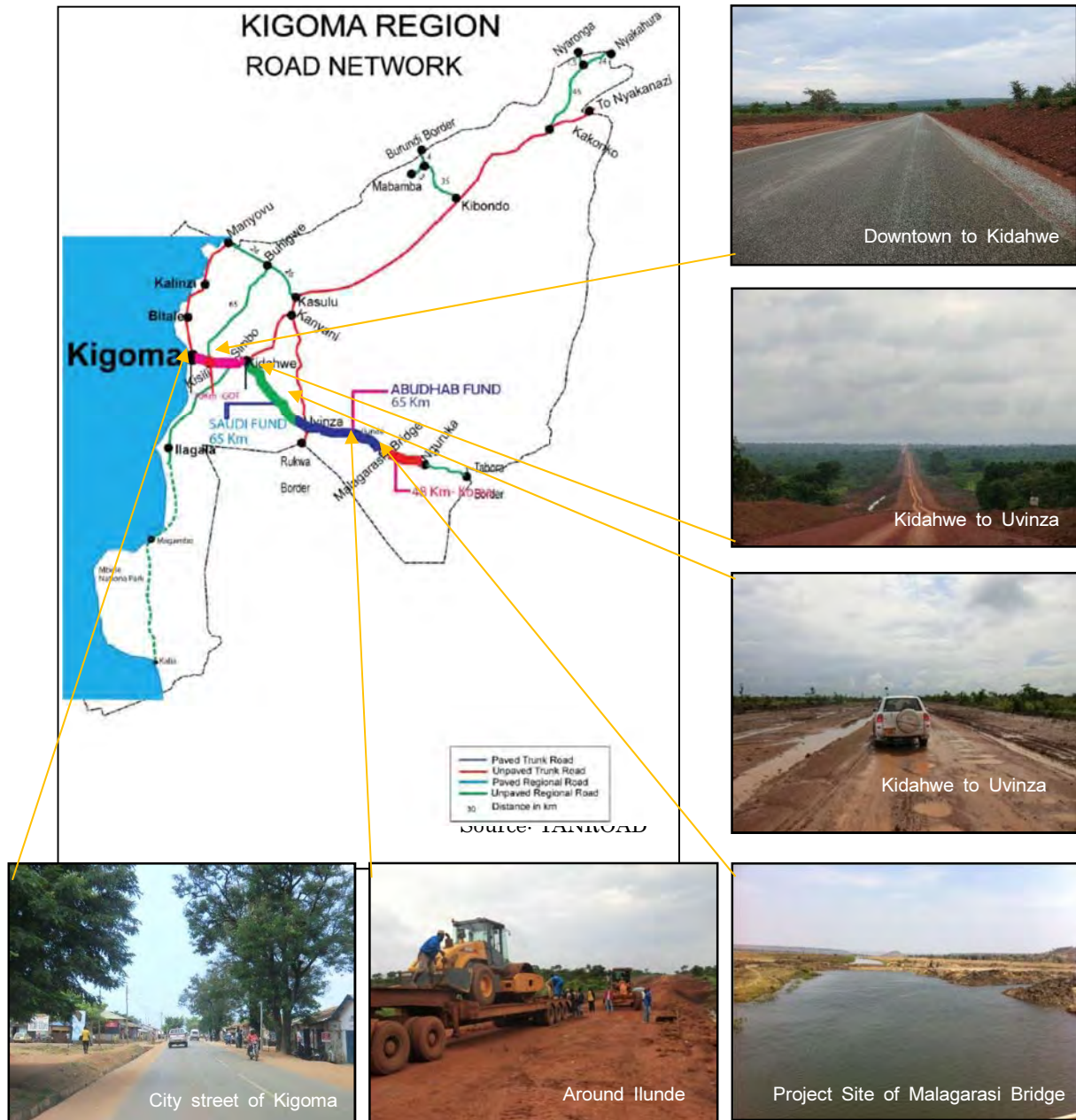


Figure 2.2.4.1-1 Road Projects Implemented in Kigoma

2) Information Concerning Procurement

a) Local Procurement Condition in Tanzania

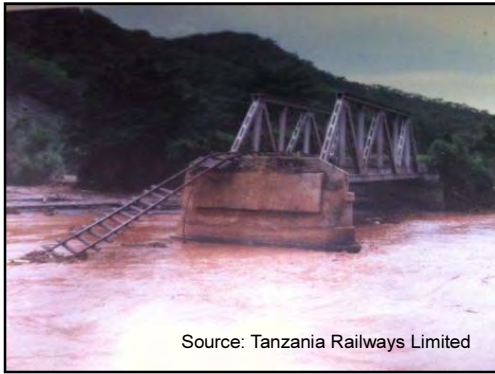
- i) Contractors and construction material suppliers get centered along the Light Industrial Area in Dar es Salaam and Nyerere Road near Julius Nyerere Airport.
- ii) General machinery to be used for road construction and building construction is comparatively easy to procure in Dar es Salaam. However, it is difficult to find crawler cranes with more hoisting capacity than 40 ton or large sized pile driving machines for construction.
- iii) General construction materials such as cement, aggregate, reinforcing steel bars, forming material, interior and exterior materials for building construction, etc. are possible to be procured in Dar es Salaam, but unprocureable in and on the periphery of Kigoma. As for cement,

the supplier uses the cement warehouse in Kigoma port for export to the Republic of Burundi and Republic of the Congo. Therefore, cement can be received in Kigoma after purchase in Dar es Salaam.

- iv) Cement companies or aggregate (quarry) are in Arusha or Tanga near Kilimanjaro and supply to Dar es Salaam as well. There are three cement companies named SIMBA Cement, TWIGA Cement and TEMBO Cement. The SIMBA Cement Company exports to Rwanda and Burundi near Kigoma, and it is possible to be procured from them for Kigoma.
- v) Dar es Salaam Port has a problem with offshore waiting of calling container ships due to congestion caused by shallow water depth and small number of exclusive berths for container ships as shown in Photo 3.2.4.1-1. The efficiency improved to some extent with the new installation of cargo handling machinery and now the situation has been resolve to about a two-week waiting period.
- vi) There are means of railway transport and inland truck transport for construction machinery and materials transported from Dar es Salaam to Kigoma. As railway transportation is heavily influenced by flooding in the rainy season as shown on Photo 3.2.4.1-2, 3, the operating organization, Tanzania Railways Limited (TRL) has no fixed cargo transport schedule. Roads are also influenced by flooding in the rainy season, however, local transportation companies and contractors now stand to use land roads where bypassing is available.
- vii) Transportation distance from Dar es Salaam to Kigoma is approx. 1,600km as shown on Figure 2.2.4.1-2, taking 3 days in case of transportation by common vehicles. However, the cargo transportation period needs 10 days for container transportation and 14 days for the transportation of construction machinery. The reasons that cargo transportation needs more time compared with common vehicles are as follows.
 - a. Application to Ministry of Construction or TRANROAD by the rules of road transportation (Section 114 (1) of The Road Traffic Act) to protect from damage of existing roads.
 - b. There exists restriction on speed and prohibition against night traffic.
 - c. Vehicles have to pass over 7 weigh bridges to Kigoma. Furthermore, the consideration to be escorted by private armed security guards is recommended when passing through the forest zone from Isaka in Shingaya to Kigoma near the border of Burundi. (heard from local transportation company)



Photo 2.2.4.1-1 Offshore Waiting Container Ships off Dar es Salaam Port



Source: Tanzania Railways Limited



Source: Tanzania Railways Limited

Photo 2.2.4.1-2 Destruction of Railway Bridge near Tabora

Photo 2.2.4.1-3 Flood near Dodoma

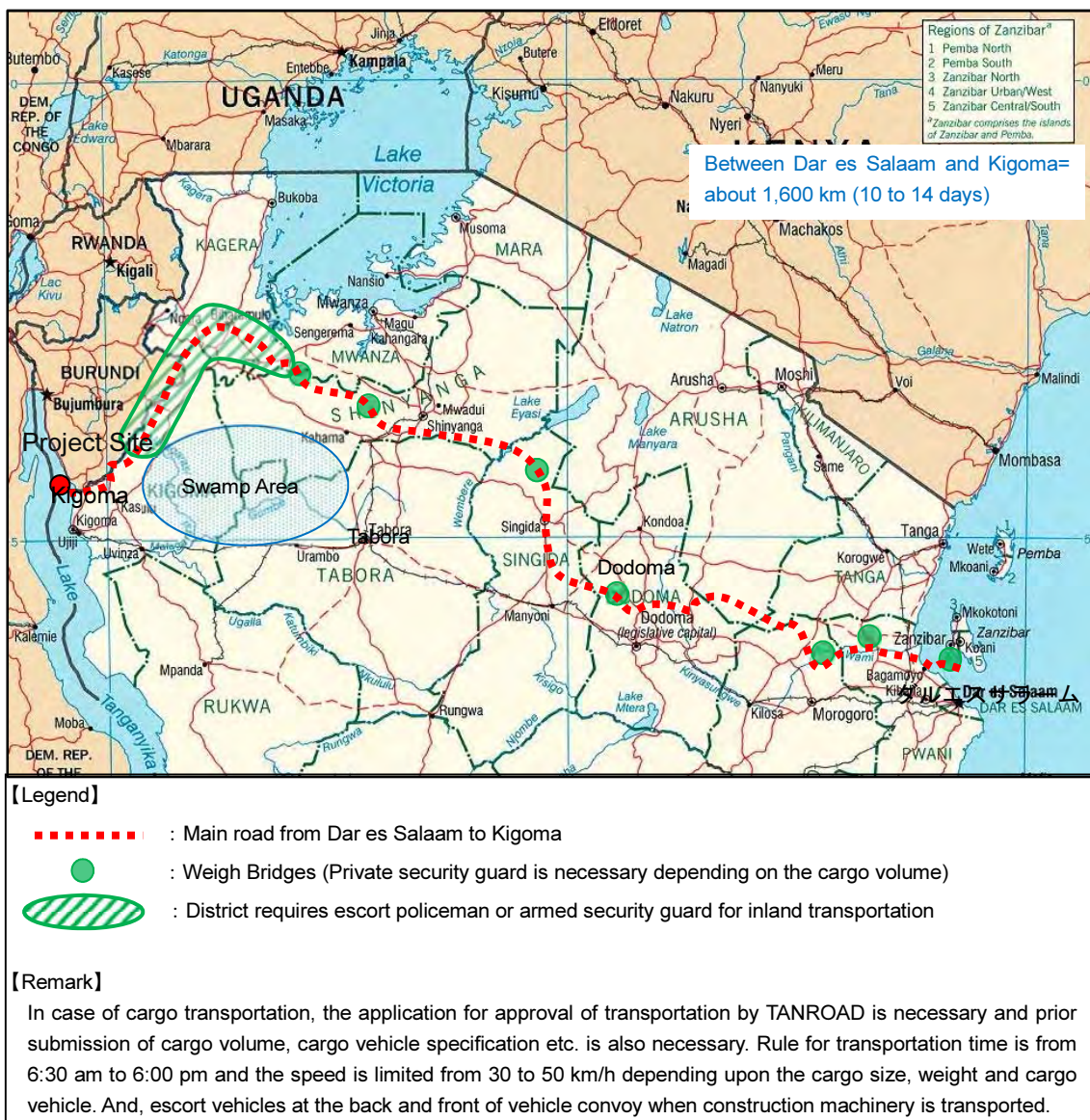


Figure 2.2.4.1-2 Road Transport Route between Dar es Salaam and Kigoma



- These were flood damage in Dar es Salaam during the survey from December 19 to 21. Especially, Kigogo, Jangwani, Kawewhere and Kawe are in the northwest area of Dar es Salaam were flooded above floor level.
- According to TMA, it has been record heavy rains in 57 years and 40 people were killed at that time in December 22 and infrastructure such as roads and bridges were also damaged .

Source: Article of THE CITIZEN dated December 22, 2011

Photo 2.2.4.1-4 Flood in Dar es Salaam experienced during survey period

b) Procurement Condition around Kigoma

- i) There is only one company which is executing construction work at this moment. Although several companies own construction machinery, they are almost scrap machinery by being out of order or aging. And, no concrete plant nor asphalt plant exist around the project site. It is also difficult to procure a barge necessary for the marine work.
- ii) Although building material supply shops have piping material, electric wires, bricks, blocks and etc. are available but they are all small shops. Construction materials for this project considering supply capacity shall be procured from Dar es Salaam.
- iii) Aggregate can be procured from 2 quarries along the Malagarasi River. One is in Ilagala district at the river mouth of the Malagarasi River which is 60km from the project site and another one is around Ilunde district located at an upper steam of the Malagarasi river which is 150 km from the project site. The quarry at Ilagala district is owned by a local construction company and the one at Ilunde district is owned by a Chinese construction company which works for road and bridge construction work. Access roads to the project site for both quarries are unpaved and especially, Ilunde one is far away from the project site and the transportation needs about 5 hours.



Figure 2.2.4.1-3 Road Conditions in Kigoma and Location of Quarries



Photo 2.2.4.1-5 Quarry Site at Ilagala

(2) Basic Information around the Project Site

1) Temporary Yard

A temporary yard required for the construction office, storage for construction material and machinery, aggregate, etc. has been approved to allocate the following land except community open space in the port area by the Kigoma Branch of Tanzania Port Authority.

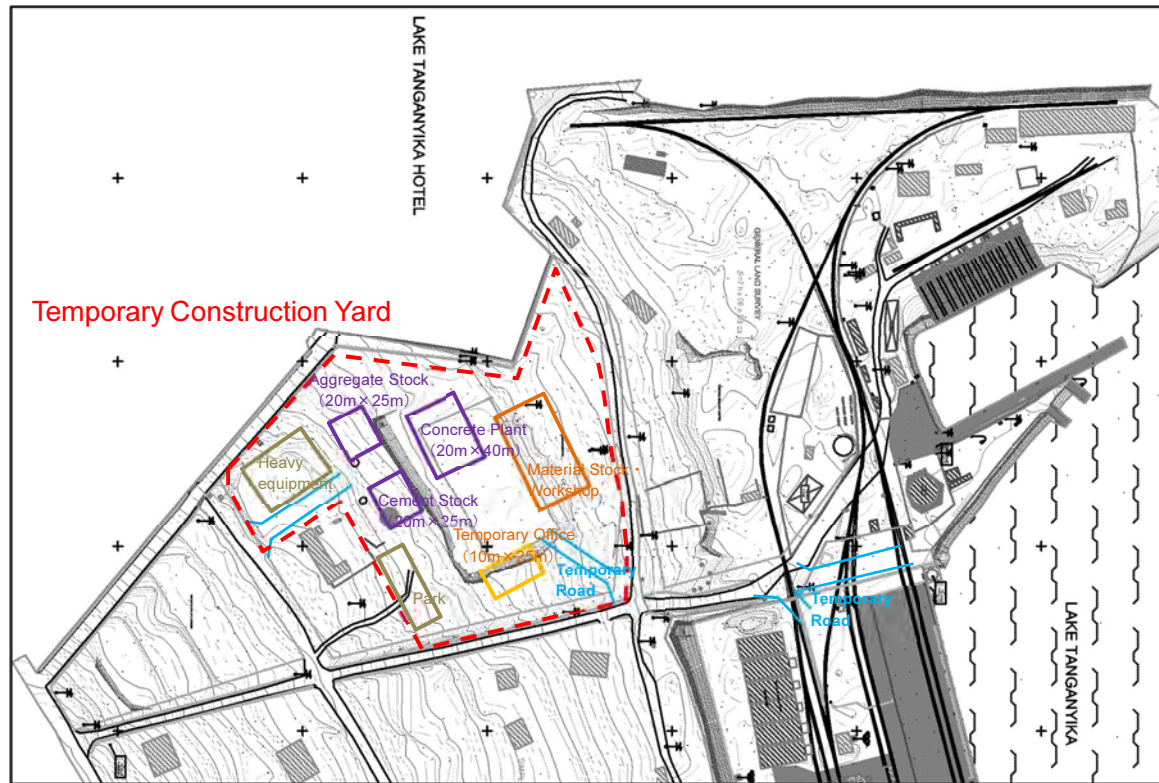


Figure 2.2.4.1-4 Layout Plan of Temporary Construction Yard and Road

2) Dumping Site

Dredging work is currently executed at the water area in front of the cargo wharf in Kigoma Port during the field survey. Dredged sand is dumped off at the lake water area through sand discharging pipe. Access channel of ship repairing boat basin of the Dock Yard was carried out by pump dredger, of which dredged sand was dumped on open space of low ground level on the landside behind the port.

From the results of bottom sediment survey by this study and judging from the dredging work and the result of dredged sand features, as the impact on environment is considered to be minor, the sand disposal derived from dredging works by this project shall be planned to recycle as filling material to the project site.

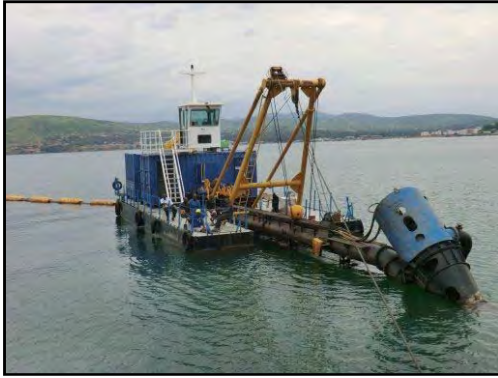


Photo 2.2.4.1-6 Pump Dredger of TPA



Photo 2.2.4.1-7 Inland Dumping Site

3) Pump Dredger

The pump dredger previously working at the Kigoma Port was procured by TPA from Darnen, Netherlands in 2008 and dredging work in the Kigoma Bay area from 2009 with technical support from a dredging company of South Africa and it continued at the time of the field study.

The total crew of the pump dredger is 15 comprising of chief (1), captain (1), chief boat crew (2), boat crew (11) and working 9 hours daily (including 1 hour break) with one watch system. The capacity of the dredger is a maximum dredging depth up to 12 m from the lake surface and 350m³/day has been dredged the bottom conditions around present at Kigoma Port and its pump capacity.

The dredging schedule after dredging Kigoma Port according to the dredger engineer is going to be shifted to Mwanza Port of Lake Victoria and Kyela Port of Lake Nyasa (Lake Malawi). And, the schedule to shift from Kigoma Port to Mwanza port is unknown now.

【Specification of the Pump Dredger】

- Horsepower : 605 ps, 448 KW Ladder length : 19.0 m
- Max dredging : -12.0m Dredging Capability : 350m³/9h (1 day),1 watch

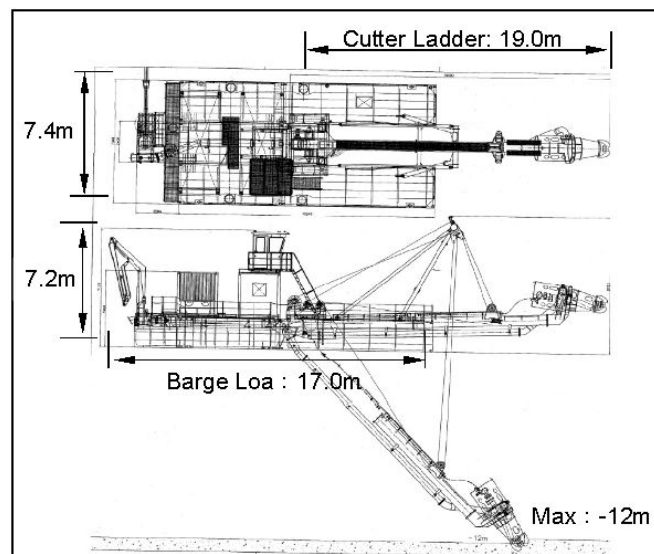


Figure 2.2.4.1-5 Pump Dredger Working in Kigoma Port

4) Price Fluctuation Factor

Concerning the price fluctuation factor in Tanzania, 1.072 is set using 2017 IMF CPI data prospecting the price increase of 17 months from October 2017 to March 2019 (at the time of the proposed bidding).

(3) Basic Matters Concerning Schedule

1) Cabinet Meeting and Exchange of Notes

Implementing this project by the Grant Aid Cooperation, Japan formally commits the grant if E/N and G/A are concluded between the Government of Tanzania and the Government of Japan through the decision of the Cabinet Meeting of the Government of Japan.

2) Detailed Design

After concluding E/N and G/A, service agreement for the design and construction supervision is concluded between a Consultant who has Japanese nationality and the Government of Tanzania and detailed design works is immediately commenced. Necessary period for the detailed design (from the date of Consultant Agreement to Contractor's Contract) is about 7 months.

3) Procedure of Environmental Certification

It is definitely necessary to complete the procedure of environmental impact study before the commencement of construction work and it is assumed that approximately 8 months is necessary as the schedule of environmental certification considering the necessary standardized period of environmental impact study and its reporting.

4) Tender

The Consultant shall make necessary drawings, specifications and cost estimation for the work and documents being necessary for a contractor's tender and contract to select a Japanese Contractor through P/Q and evaluation of tendered documents upon approval of the Government of Tanzania.

5) Application Procedure for Obtaining "Work Permit" and "Tax Exemption"

The procedure concerning the work permit and tax exemption is that necessary documents made by the Contractor and the Consultant shall basically submit them to TPA by the Consultant together, TPA, implementation organization of this project, shall submit them to each related organization upon attaching introduction letter by TPA and Ministry of Transport.

The method of application procedure and the necessary period from the submission of each document to the approval are as follows.

a) Procedure of Obtaining "Work Permit"

The procedure and examination period after submission of documents concerning obtaining a

work permit is as follows and 4 months is necessary only for the examination period. And, depending upon the documents, other application documents need to be submitted together with other documents like TIN (Tax Payer Identification Number) and Tax Exemption Certificate. Therefore, it is ideal for doing the procedures simultaneously and in parallel.

With the above, the period needed from the Business License to the application for Work Permit is about 4 months if the preparation period to make application documents is considered to be included.

Table 2.2.4.1-2 Acquisition Procedure of Work Permit

Application Procedure	Applicable		Content of Procedures	Exam. Period
	Cons	Cont		
(1) Business License Application	●	●	Submit application documents to BRELA (Business Registration Licensing Agency) that is on behalf of Ministry of Industry and Trade and get examinations concerning the Corporation Registration. TIN (Tax Payer Identification Number) shall be obtained in case of grant cooperation project.	1 month
(2) Engineer's Registration (ERB Registration) *Renewal needs every two years	●	●	Engineer's registration shall be made to ERB (Engineers Registration Board). In case of cooperation project, the application shall be made to TPE (Temporary Professional Engineer) or TCE (Temporary Consulting Engineer) as foreign engineer. Application documents shall be as follows, <ol style="list-style-type: none"> 1. Necessary application documents and application fee to TEP and TCE (US\$1,500/person) 2. Contract or Letter of employment signed by employee specifying duration and specific works for which employee will be engaged in while in Tanzania 3. Copy of passport and two photographs 4. Detailed curriculum vitae 5. Copy of residence permit or temporary visitor's permit 6. Original or certified copies of degree certificates 7. Proof of registration in the country of origin or membership with engineering institute Board Meeting is held in general 6 times annually and needs 2 months as maximum for the examination of engineer's registration. In case of overseas cooperation project, about 1 month is required.	1 month
(3) Contractor's Registration (CRB Registration) *Renewal needs every two years	—	●	Contractor's registration shall be made to CRB (Contractors Registration Board). Contractor shall be required to submit following documents in addition to the general application documents. <ol style="list-style-type: none"> 1. Necessary application forms to CRB 2. Current business license by BRELA described in the above 1. 3. Introductory letter by project owner (TPA) 4. Certificate of incorporation or registration 5. Proof of ownership of office 6. CV's of shareholders with certified copy of share certificate 7. CV's of key personnel & certified copy of academic or professional certificate 	2 weeks

			8. Recent photograph of the technical director endorsed at the back by advocate 10. Certified current bank statement 11. Proof of fixed asset ownership 12. Duly filed & signed anti-bribery pledge 13. Company memorandum & articles of association 14. Translation of each application documents and examination certificate	
(4) Application for Work Permit		● ●	Application of work permit shall submit to Immigration and Labor Departments and Immigration Service certifies by stamping on original passport as work permit through the examination of Ministry of Labor. The following documents shall be required to submit when the work permit is necessary. <ol style="list-style-type: none"> 1. Three covering letters to Principal Commissioner of Immigration Service, Labor Commission and Tanzania Investment Centre. 2. Certificate of incentives (summary of project and etc.) 3. Certificate of Incorporation 4. Memorandum and Articles of Association 5. Organization Chart (Project organization and etc.) 6. Business License issued by BRELA 7. Tax Clearance Certificate 8. TIN Certificate 9. Employment contract 10. TIF GForms (3 copies) obtainable at TIC or any Immigration Office 11. Photo copy of passport and Visa 12. Curriculum Vitae 13. Academic/Professional Certificates 14. Seven Photographs 15. Translations of documents/certificates (English or Swahili) 16. Residence Permit: US\$ 1,550/person <p>Remarks: The Consultant must submit Tax Clearance Certificate when he needs.</p>	1.5 months

Remark: Bold letter shows common documents

b) Procedure for "Tax Exemption"

The procedures for taxes consist of 1. VAT (Value Added Tax), 2. Import duty, 3. Fuel tax, 4. Corporate tax, 5. Income tax 6. Stamp duty, withholding tax, etc. and all are required to apply to TRA (Tanzania Revenue Authority).

- i) VAT is exempted subject to the submission of the item list of equipment to be procured in Tanzania before the commencement of construction work of the project to TRA. Description of project name and TIN on the check makes it tax exempted from the time of procurement.
- ii) Import duty is exempted after getting approval from the Ministry of Finance and Planning through TPA producing a master list of material and machinery after getting a TIN number by

the contractor.

- iii) Fuel tax is treated as a tax return subject to the use only for the Grant Aid Cooperation. Therefore, paid taxes shall be refunded by submitting delivery slips of fuel for the project after concluding the contract with the Gas Station.
- iv) Companies from Japan and third countries are exempted from corporate and income taxes, but Tanzanian companies such as subcontractors or employees are not exempted.
- v) Stamp duty is exempted by Government Notice issued by the Ministry of Finance and Planning and withholding tax is by TPA.

In addition, as tax refund for the cost born before completion of the procedure of the above i) and ii) is difficult, it is necessary to complete various procedures before commencing construction work.

Table 2.2.4.1-3 Application for VAT Relief Procedure

Necessary Documents	Content of Documents
(1) VAT Application Form (VAT 220)	List per supplier for quantity, price and VAT price for each TIN, project name and equipment name to be procured shall be described on application document obtained from TRA and submit to TPA with the name of representative, signature and corporation stamp.
(2) Submitting representative name eligible to procure with specimen signature and photography	As the representative who has signing authority on application documents for relief procedure or checks is required therefore, the registration for such more than 2 persons is desirable.
(3) Invoice	This invoice becomes the attachment together with the documents of above (1) and the list by supplier shall be submitted describing items to be procured, quantity, price and VAT price.
(4) TIN	This is the TIN No. obtained at the time business license.
(5) Agreement between the Tanzania Government and the Development Partner Country	Copies of E/N and G/A

6) Transportation Period

As the procurement of material and equipment is difficult for the project site in Kigoma, it shall be procured from Dar es Salaam or Japan. The transportation period from Dar es Salaam or Japan is as follows,

- Japan to Dar es Salaam: Marine transportation 1.5 months, offshore waiting time of container ship 0.5 months
- Dar es Salaam to Kigoma: 2 weeks

(4) Construction and Procurement Policy

- i) As the existing pump dredger owned by TPA cannot be used for marine work for this project.

Kigoma Port is located in the inland of Tanzania, the procurement of a dredging barge, etc. are a difficult situation. Therefore, the procurement plan of working from a barge for dredging, etc. shall be securing a transportable segmented barge to be assembled at the site.

- ii) Sand generated by dredging and excavation works shall be used as filling materials at the project site and the construction method shall be one to execute filling work and piling work at the same time, which contributes to cost reduction.
- iii) Construction companies in Kigoma are small in scale and number of owner engineers, experts and construction machinery is extremely limited. Therefore, it shall be the base that common labor, etc. are procured locally in Kigoma but engineers, experts and main construction machinery shall be procured from Dar es Salaam.
- iv) The procurement of materials and equipment from Dar es Salaam to Kigoma has been troubled by frequent flooding in the case of railroad transportation, and therefore, the transportation method for this project will consider inland road transportation as the basic method, since it took 2 months for the restoration from damage and the cargo transportation schedule by TRC (Tanzania Railways Corporation) is irregular with the situation being equivalent to no schedule.
- v) Local construction companies in Tanzania have no experience with piling work of steel sheet piles, steel pipes, marine work and do not own large scale construction machinery like piling machines or large cranes with a lifting capacity over 35 ton. Therefore, piling work and marine construction work shall consider to procure engineers and construction machinery from a third countries or Japan.
- vi) There are concrete or asphalt plants in Ilunde which is 150km from the urban area of Kigoma and it takes more than 5 hours for transportation, that is unrealistic. Therefore, the pavement conforming apron, yard and access road in the passenger wharf shall be only studied to get supply from a concrete plant to be built near the project site with the view of cost reduction.
- vii) Security of safety control shall be reflected in construction work considering the existing port activities, traffic, pedestrians and community environment.
- viii) In order to proceed the construction work smoothly, close contacts shall be made among the Government of Tanzania, TPA, Consultant and Contractor. As a necessary communication tools other than the government of Kigoma, it is necessary to have an interpreter between English and Swahili.

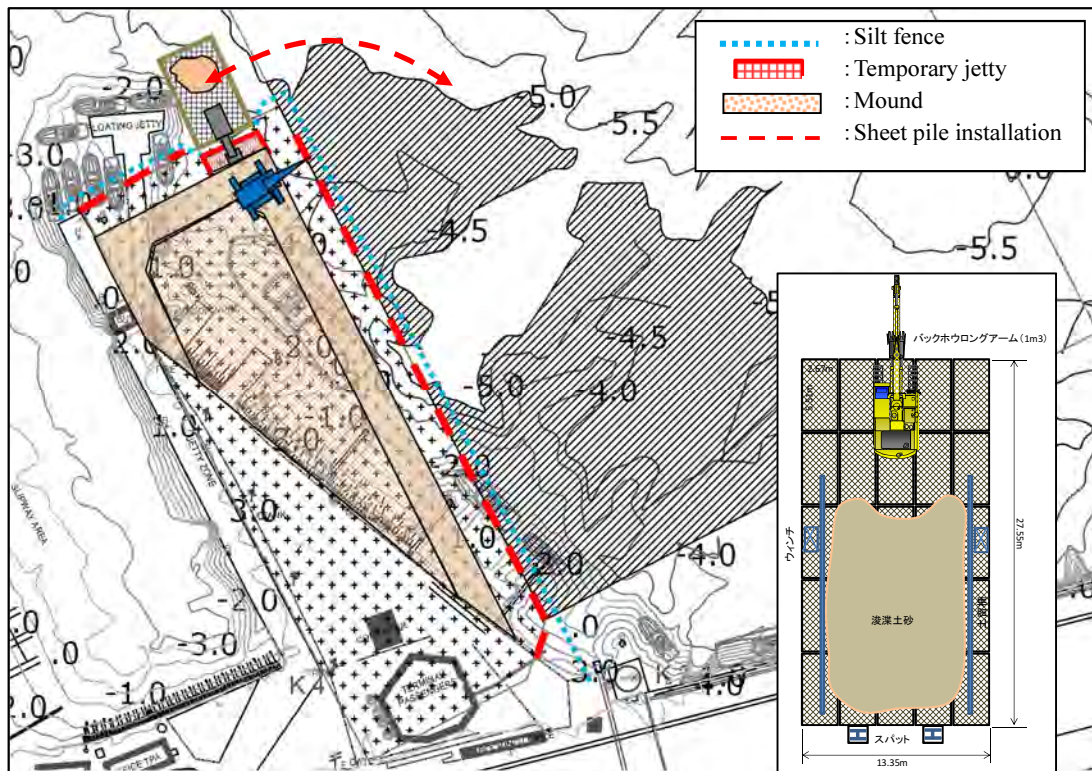


Figure 2.2.4.1-6 Assembly Image of Uni-Float Dredging Barge

2-2-4-2 Points of Concern on Construction Work and Procurement Work

- i) Annual precipitation is about 900 mm that is not much but it affects the transportation of materials and equipment due to flooding from heavy rains in the rainy season from November to April due to the low ground level of Kigoma. Therefore, it is ideal to procure and transport from Dar es Salaam during the dry season from May to October as much as possible.
- ii) It is reported that there used to be robbers on the land roads in the forest zone near the borders with Burundi. Although there is a report that the situation has improved now, but even now policemen or armed guards from security companies are still necessary for transportation from Dar es Salaam to Kigoma according to each local transportation company.
- iii) Taxes borne before the procedures of tax relief are very difficult to request a refund on due to the country's system. Therefore, the tax relief procedure should be complete before the commencement of the project.
- vi) It is considered to take about 4 months for the application of work permits and tax relief procedures. And procurement of materials and equipment concerning VAT shall be made mainly in Dar es Salaam and necessary documents must be periodically submitted to the TRA (Tanzania Revenue Authority) in Dar es Salaam for requesting tax refund in regard to the fuel tax. Therefore, not only a Kigoma but also a Dar es Salaam office is recommended to set up when local offices are considered.
- v) As this construction work shall be rehabilitation work in the existing port, the safety to existing port activities like cargo handling work and passengers shall be considered. The access road

to be the wharf from the outside main road from Kigoma Port is used as a passage road for local resident in addition to the common traffic. Therefore, traffic control safeguards shall be allocated on the road during the construction period and safety measures like installation of fences is necessary upon need.

- vi) Communication language at the project site, Kigoma is mainly by Swahili except the government and TPA officials on Tanzanian side and hotels. For this, local interpreters shall be considered for employment for the activities in Kigoma.
- vii) Quarry is located at Ilagala 60km off from the project site is, judging from the condition of the local construction companies, the transportation of stone material like aggregate is difficult. Therefore, the transportation itself from Ilagala quarry to the project site shall be included in the project.

2-2-4-3 Demarcation of Construction and Procurement

(1) Items Covered by the Japanese Side

- i) Consultant services like detailed design, support to tender work and work supervision
- ii) Provision of all construction materials and labor necessary for Japanese construction work in this project
- iii) Marine and inland transportation and its transportation insurance for imported materials and equipment necessary for Japanese construction work and the procurement of equipment.
- iv) Necessary quality inspection necessary for Japanese construction work and procurement of equipment in this project.
- v) Basic coverage shall be of all the work after leading-in work from the nearest electric pole of the project site as the responsible border point for electricity and all the work after water supply piping inside of the border line of the project site and all the discharging water work for water supply.
- vi) Removal of existing jetties
- vii) Main work: Filling work, Passenger wharf, Passenger Terminal Building including cargo storage, in-port pavement and access road.

(2) Items Covered By Tanzania Side

- i) Acquisition of land for this project construction site
- ii) Relocation of existing pontoon and small barge in front of the jetty
- iii) Removal of existing passenger facility and relocation of passenger functions during construction period
- iv) Relocation of trees at the project site
- v) Securing temporary yard
- vi) Assistance of applications for work permits, ERB & CRB registration and tax relief procedure concerning Japanese and third countries people related to the project.
- vii) Execution of EIA

- viii) Obtaining environmental certificate and construction permit
- ix) Equipment necessary in the Passenger Terminal Building (Desks, chairs, telephone and others)

2-2-4-4 Supervision Plan

In accordance with the policy of the Grant Aid Cooperation by the Government of Japan, consistent and smooth detailed design and supervision work of the project shall be executed by the Consultant who well understands the intent of preparatory study of the cooperation. The Consultant shall dispatch a resident engineer who has enough experiences on work site and have him do supervision and liaison work and in addition, experts shall be sent to support inspections and work direction upon needs.

(1) Supervision Policy and Points of Concern

1) Close Liaison among Related Persons

Close liaison and reporting among the related organizations and people in charge of Tanzania and Japan and the completion of the facilities without delay based on the work schedule shall be the aim.

2) Positive Direction to Contractor

Aiming facilities construction to meet with design drawings, speedy and proper directions and advice shall be made.

3) Consideration of Technical Transfer

The effect as the project of the Grant Aid Cooperation shall be made approaching to do technical transfer concerning work methods and techniques.

4) Realistic Advice on Maintenance

Proper advice and direction on maintenance after handing over the facilities shall be made and smooth operation shall be encouraged.

(2) Construction Work System

1) Cooperation on Contractor's Contract

Selection of the Contractor, decision of the method of Contractor's Contract, making up Contractor's Contract (draft), study of content on the work breakdowns and witness to Contractor's Contract, etc. shall be made.

2) Checking and Confirmation of Shop Drawings

Inspection, etc. shall be made on the shop drawings, materials, finish samples and facilities materials that will be submitted by the Contractor.

3) Direction to Construction Work

Study for work implementation plan and work schedule, etc. direction to contractor and progress report to the Client shall be made. Securing expert workers and stable supply of construction materials and equipment shall be the base conditions to commit to the construction schedule. Enough study on securing needed personnel, transportation of materials and equipment, procurement plan and order of construction work and keep construction schedule shall be obliged to the Contractor.

4) Safety Controls

Safety control system shall be made considering that this project is a rehabilitation work while operating by a resident engineer of the Consultant and all the staff of the Contractor. For that purpose, construction management plan shall be made considering work structure of the project site where large scale heavy vehicles are run and personnel assignment and getting across safety control including third parties.

And, as securing experts are not easy in Kigoma, accident prevention before happening shall be ensured by daily safety training and direction covered by skilled laborers from Dar es Salaam or Japan.

5) Support for Payment Approval Procedure

Content check of invoices and the procedure concerning construction price to be paid during construction and after completion of construction shall be supported.

6) Witness to Inspections

Inspections and directions shall be made on each progress during construction period upon needs. The Consultant shall complete the work upon confirming the completion of construction and the pursuance of contract content and witness to the handing over the contract target and obtain the receipt confirmation by the Client. Periodical reports shall be made to TPA and the Government of Japan on necessary items of work progress during construction period, payment procedures and handing over after completion shall be made.

2-2-4-5 Quality Control Plan

Materials to be used in this construction work shall be controlled by being equivalent to “Common Specification of Port and Harbor Construction” edited by Ministry of Land, Infrastructure, Transport and Tourism (MLIT), “Standard Specification and Commentaries of Architectural Construction Work JASS 5” edited by Architectural Institute of Japan, “Common Specification of Architectural Construction Work” edited by MLIT and “Japanese Industrial Standard” (JIS).

And concrete to be used in this construction work shall execute a design of mixture and the concrete work shall be commenced after quality confirmation like concrete compressive strength,

temperature, air content, etc. executing a trial mix. Test report, control table of concrete strength, control chart (X-R control) shall be made up and the maintenance and control of quality shall be done after commencement of construction work.

2-2-4-6 Procurement Plan of Materials and Equipment

Procurement of materials and equipment necessary to this project shall be done as follows. The materials and equipment that can be supplied locally shall take priority as much as possible through studying the quality the goods and the supply capability of the local business person.

Table 2.2.4.6-1 Procurement Source of Construction Materials (Draft)

Work	Material	Local	Japan
Civil Facility	Filling materials	○	
	Sand and Aggregate	○	
	Stones	○	
	Steel Materials (Re-bar, sheet pile, etc.)		○
	Cement	○	
	Form and Wood	○	
	Ancillary Facility (Beacon Light, Fenders, Bollards)		○
Building Facility	Steel materials (Re-bar, Fabricated Steel)		○
	Cement	○	
	Form and wood	○	
	Fitting	○	
	Roof Materials		○
	Paint	○	
Electricity	Cables	○	
	Wires	○	
	Lighting Equipment	○	
Water	Piping Materials	○	
	Septic Tank (Equipment from Japan)	○	○
	Sanitary Equipment	○	
Air Conditioner	Air Conditioner	○	

(Remark) Final result may be corrected upon the results of cost estimations

Table 2.2.4.6-2 Procurement Source of Construction Machinery (Draft)

Main Construction Machinery		Local	Japan
Bulldozer	21 t	○	
Backhoe	0.6 m ³	○	
Wheel Loader	2.1 m ³	○	
Dump Truck	10 t loading	○	
Truck with Crane	4 t / 2.9t	○	
Truck	11 t Loading Capacity	○	
Trailer	20 t	○	
Truck Crane	25 t Lifting Capacity	○	
Motor Grader	2.8 m	○	
Macadam Roller	8 to 20 t	○	
Tire Roller	8 to 10 t	○	
Agitator Truck	4.5 m ³	○	
Large Size Breaker	600 to 800 kg	○	
Generator	150KVA	○	
Welder	300A	○	
Tugboat	D500Ps	○	
Transport Boat	D50Ps	○	
Line Marker	15 to 20 cm	○	
Crawler Crane	50 t Lifting Capacity		○
Vibration Hammer	60 KVA		○
Water Jet	100 KVA		○
Small Barge			○
Backhoe (Long Arm)	1.0 m ³		○
Batcher Plant	0.5 m ³		○

2.2.4.7 Plan for Initial Operation and Training

Initial operation and training shall not be conducted since the procurement of equipment is not included in this project.

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

Soft component is not done in this project since this is a rehabilitation project of the existing port.

2-2-4-9 Execution Schedule

When this project is executed by the Grant Aid Cooperation of the Government of Japan the Grant Agreement shall be concluded between JICA and the Government of Tanzania after concluding “Exchange of Notes” by both countries. After that, the selection of the Consultant who has Japanese nationality shall be made by the Government of Tanzania and the consultant service agreement shall be concluded between the Government of Tanzania and the Consultant. And, the project will be completed through detailed design, making up tender documents and tender is held for the construction contract and construction work based on the contractor’s contract.

(1) Detailed Design Service

The Consultant shall commence the detailed design through the verification of agreement after concluding the consultant service agreement with the Government of Tanzania. Detailed design drawings, specifications and full set of tender documents like instruction to tenderer are made up. While, the meeting with the implementation agency of the Government of Tanzania shall be held to discuss the project facilities and final approval for full set of tender documents shall be obtained from the Government of Tanzania. Necessary duration of detailed design is about 3 months.

(2) Service for Tender

A contractor (a construction company that has Japanese nationality) who works for this facility construction shall be selected by tender. Tender shall be made from the tender announcement, receipt of expression of interest, preliminary qualification, distribution of tender documents, tender, evaluation of tender result, designation of contractor and contractor's contract in order and takes about 3 months.

(3) Construction Work

1) Work Procedure

Work procedure is as shown below in this project.

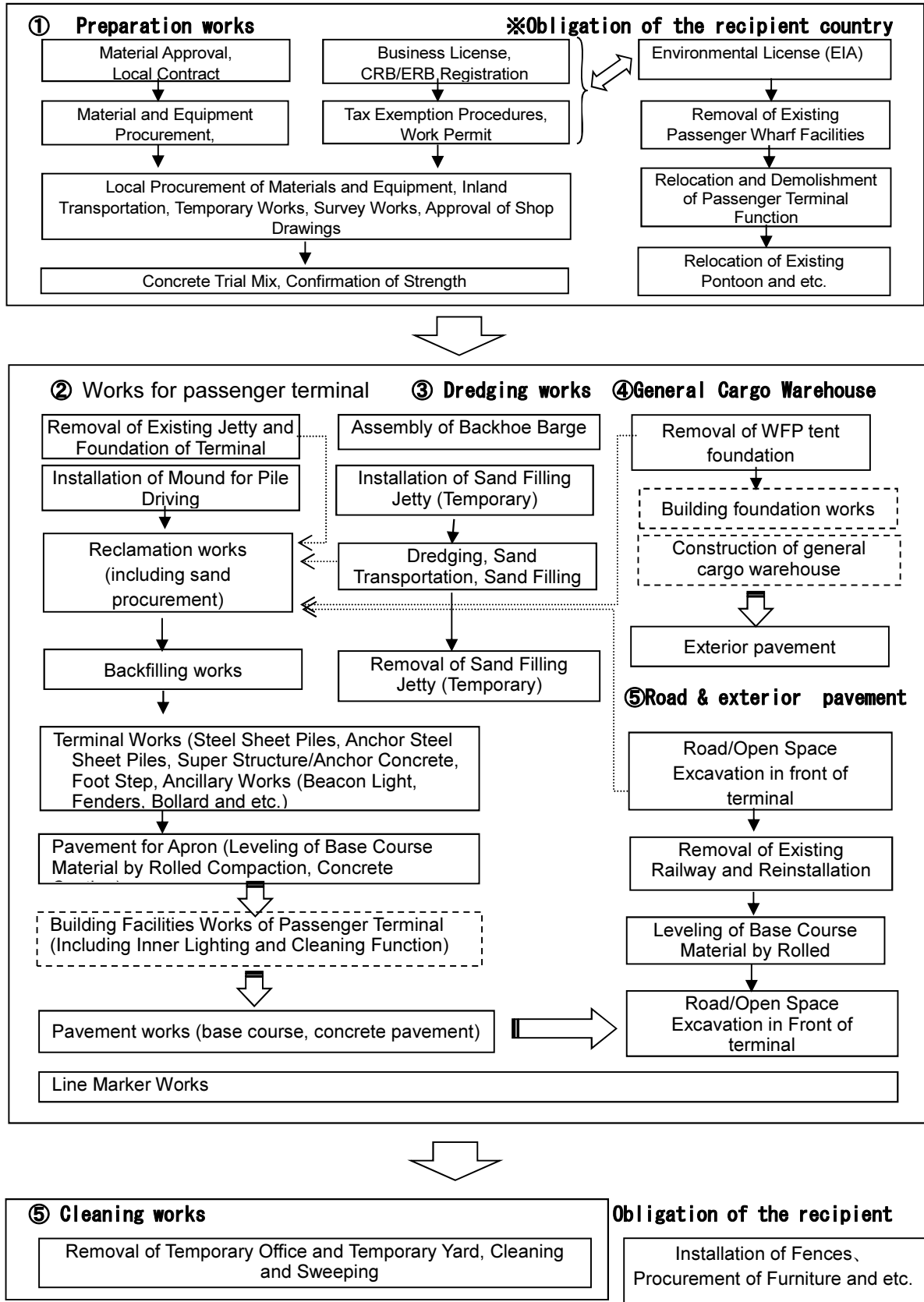


Figure 2.2.4.9-1 Work Procedure

2) Preparation Work

After conclusion of the contractor's contract, the construction work shall be commenced through the verification on the contract note by JICA. When the construction is commenced materials approval, procurement, transportation, tax relief procedures, obtaining business license and work permits, and in addition, construction of temporary yard and temporary construction, and quality confirmation by concrete trial mixture shall be executed as the preparation work.

Necessary period for the preparation work is as shown below and takes about 6.5 months after conclusion of the contractor's contract. Out of these months, 3.5 months are necessary for the procedures in Dar es Salaam.

Table 2.2.4.9-1 Detailed Schedule of Preparation Works

Work items of preparation works	Month	Period	Month										
			1	2	3	4	5	6	7	8			
0 Tender, Contractor's Contract			☆										
1 Preparation works in Japan (verification of contract, material approval, preparation for procurement in Japan)		1.0	█										
2 Manufacturing (2 months), Marine Transportation (2 months including 0.5 months of waiting time offshore)		4.0		█	█	█	█	█	█				
3 Inland transportation		0.5				█							
4 Assembly of construction equipment (dredging barge, batcher plant and crane)		0.5				█							
5 Concrete mixture, confirmation of sepcification strength		1.5					█	█	█				
6 Survey works, Approval of shop drawings		0.5					█						
7 Dispatch to Tanzania		-											
8 Drawing up each application forms (8 to 13) , submission to the Consultant and TPA		0.5		█									
9 Registration of Corporation (taking TIN No. of project by Grant Aid Cooperation)		1.0		█									
10 ERB Registration (Engineer's registration)		1.0			█								
11 CRB Registration (Contractor's registration)		1.0			█								
12 Application for Work Permit		1.5				█	█	█					
13 VAT (tax relief application) (TIN No. is required)		1.0				█							
14 Fuel Tax and Import Tax Application (Refund application)		0.5					█						
15 Temporary office (Kigoma) on temporary yard constructed		1.5					█	█	█				
Main Works	Removal of existing facilities						█	█	█				
	Commencement of main works (terminal&filling)									█	█	█	
	Commencement of main works (possible concrete works)												☆

3) Project Implementation Schedule

Project implementation schedule is as shown in Table 2.2.4.9-2 and it is assumed that about 7 months for detailed design and 22 months for construction works are required.

Table 2.2.4.9-2 Project Implementation Schedule (Tentative)

Mo	2018			2019			2020			2021			Note										
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May		
Expense by Receipt Country ▼	▶																					Extension of effective period and obtaining construction permit for additional EIA	
				▲																			Removal of WFP tents (relocation)
				▲																			Removal of shed in existing passenger terminal and relocation of passenger function
				▲																			Cutting trees in project site
				▲																			Relocation of existing pontoon
				▲																			Securing temporary yard
				▲																			Arrangement of B/A and A/P
				▲																			Cooperation on ERB, CRB, working visa and corporate registration
				▲																			Arrangement for tax exemption
				▲																			Procurement and installation of furniture such as desks and chairs
				▲																			Removal of existing general cargo warehouse
Contract	▶																					E/N	
																						G/A	
																						Consultant Agreement	
Mo	1	2	3	4	5	6	7															Note Final confirmation of project content (confirmation at the site) Detailed design and drawing up of bid documents (works in Japan) Approval of Bid documents (confirmation on site) Announcement, Providing drawings and Pre-bid meeting on site Bid Preparation and Bid Contract with the Contractor and agreement on unit prices	
																							Total 7 months
Mo																						(1) Civil work ① Material approval, Procurement, Manufacturing and Transportation ② Corporate registration, ERB・CRB registration, working visa and tax exemption ③ Preparation and temporary works ④ Removal work for foundation of existing structures ⑤ Dredging works ⑥ Filling works ⑦ Terminal works ⑧ Apron pavement works ⑨ Site pavement works 場内舗装工 ⑩ Exterior pavement of general cargo warehouse ⑪ Access road pavement works ⑫ Cleaning works (2) Building work ① Preparation works (ERB registration and application of working visa) ② General cargo warehouse ③ Passenger waiting room ④ Septic Tank ⑤ Cleaning works	
																							Total 22 months

2-3 Major Undertakings to be Done by the Government of Tanzania

The obligations of the recipient country that were confirmed by the Minutes of the Meeting or others during the period of this study are as follows,

- i) To secure the project Site.
- ii) Execution of additional EIA and acquisition of environmental approval and facility construction approval.
- iii) To secure the land (Project site, temporary yard).
- iv) To remove and relocate existing facilities in the project site.
 - a) Removal of existing WFP tents located on the land to construct the general cargo warehouse.
 - b) Relocation of pontoon and existing barge in front of the jetty.
 - c) Removal and relocation of existing passenger terminal (Passenger waiting shed, warehouse, ticket sales booth, customs, immigration, quarantine facility, etc.).
 - d) Removal of existing fence and the installation of gate for securing the entrance of the temporary road for the construction work.
 - e) Cutting trees at the project site.
- v) To provide necessary equipment, furniture, etc. for TPA office, ticket booth, Kiosk and others in the Passenger Terminal Building and Operation office, Conference Room in the General Cargo Warehouse after their completion.
- vi) To assign full-time staff for operation and maintenance of the facilities and to allocate budget for it.
- vii) Collection of garbage and others in the facility after the completion and periodical maintenance management of septic tank.
- viii) To exempt taxes assessed on materials and equipment to be imported from overseas, the one procured in Tanzania and other levies for the project.
- ix) To exempt taxes and other levies assessed on Japanese nationals whose services under the verified contract and for the performance of their work in Tanzania.
- x) To bear commission for banking arrangements and advising commission of A/P.
- xi) To use facilities constructed under the scheme of the Grant Aid Cooperation of Japan properly and effectively.
- xii) To bear all the expenses other than those to be borne by the Grant Aid by the government of Japan.

2-4 Operation and Maintenance Plan

(1) Operation and Maintenance Structure

Concerning the structure of operation and maintenance of the Kigoam Port, the operation department is allocated that manages the local port including Kigoma Port under the Director General as shown in the organization chart of the Tanzania Port Authority. The operation department is responsible for the operation management of 5 local ports except for Dar es Salaam Port, such as Tanga Port, Mtwara Port facing the Indian Ocean and Kigoma Port in Lake Tanganyika, Mwanza Port in Lake Victoria and Keyla Port in Nyasa Lake. Local office of the Kigoma Port is located in the area of Kigoma Port and the organization consists of Operation Section, Engineering Section, Finance Section, Human Resource Development & Administration Section and Procurement & Supplies Section under the Port Master. The Operation Section is responsible to operate the Kasanga port in Rukwa State as well as other than the passenger wharf, container wharf, cargo wharf and oil jetty of Kigoma Port.

This project is to rehabilitate the existing passenger wharf and construct a new general cargo warehouse and the same operation and maintenance system is considered to be maintained even after the planned facilities are completed. Therefore, there is no need to establish a new operation and maintenance management system for this project, nor is new personnel required.

(2) Method of Maintenance and Management

This plan consists of the rehabilitation of the passenger wharf, pavement of the access road and construction of the passenger terminal building and the maintenance management is done by the Engineering Section of Kigoma Port office. In case the Kigoma Port office cannot work, support from the Civil Section, Hydrography Section, Electrical/Mechanical Section and others of the Tanzania Port Authority can be expected. And, when special cost like future repairs of facilities, etc. shall be necessary it is executed by the support of the Tanzania Port Authority as is conventionally done.

The methods of maintenance and management of the planned facilities are as shown below.

1) Passenger Wharf Facility

Life time of the berth facility of the wharf is planned and designed for 50 years and particular maintenance is not considered to be required. In order to maintain and use the wharf facilities into the future, it is inevitable to promptly discover damage on land facilities like the apron, in-port road and wharf area in addition to the berth facilities and to repair them properly. After completion of this project, it is required for the Tanzania Port Authority to execute maintenance management like periodical inspections, repair necessary parts, etc.

Water area in front of the east berth is kept planned water depth by initial dredging and it is deeper than that of the nearby container wharf or cargo wharf. These nearby berths have the issue of how to secure berth water depth affected by long-term sedimentation and now dredging work by pump dredger is executed. In this project, the planned water depth is set including 0.5m that is allowance of water depth by future sand sedimentation. However, the siltation is considered to be

unavoidable and maintenance dredging shall be executed promptly in case the water depth is not enough as well as measuring water depths of the berth and surrounding water area periodically.

Periodical inspection items are as follows,

- Water depth of the berth and the water area in front: Confirmation of water depth DL -5.0m
- Substructure of berth (Steel sheet pile): Checking damage, deformation and rust
- Super structure of berth: Checking cracks and damage of Concrete and damage on fenders and bollards
- Apron, in-port road, etc.: Checking cracks, damage, subsidence, etc.
- Lighting facility: Confirmation of lighting conditions and checking for damage

2) Access Road

The maintenance management of the access road in this project is to be done by Tanzania Port Authority. The type of pavement is concrete and it has enough pavement thickness and strength to drive large vehicles to the passenger wharf like cargo trucks.

Concerning the maintenance of the access road, the periodical inspection for the generation of surface subsidence or rutting and in addition, following repair work shall be necessary.

- Patching on the surface of pavement
- Forming and reinforcing of unpaved part between side ditches and road shoulders
- Cleaning side ditches or drainage facility

3) Passenger Terminal Building

As building structures always suffer from rain and wind damage, the maintenance work for the following parts of the passenger terminal building is considered to be necessary.

- Painting on external walls and eaves
- Painting on internal walls and ceilings
- Deterioration and aging of lighting tools

And periodical maintenance is necessary for the septic tank to be used for the sewage treatment of building's toilet facilities. The contents are two points as below.

- Periodical addition of chlorine to be used for the final treatment
- Solid material to be pumped up one or two times per year by vacuum vehicle

It is possible to replace the pump to be used in the septic tank due to the deterioration.

2-5 Estimated Project Cost

2-5-1 Estimated Project Cost under the Scheme of Grant Aid

(1) Cost Borne by the Government of Japan

“Not open to the public until verifying the contract with the Contractor”

(2) Cost Borne by the Government of Tanzania

Cost borne by the Government of Tanzania is shown in below table.

Table 2.5.1-1 Cost Borne by the Government of Tanzania

Descriptions	Amount (Tsh)	Yen equivalent (million yen)
i) Obtaining of EIA and Construction Permit	200,000	Approx. 0.01
ii) Project site clearance - Relocation of existing Pontoon and Barge, - Removal of existing passenger terminal facilities - Partial removal of existing fence and the installation of gate for temporary road for the entrance of temporary road - Cutting trees at the project site	33,200,000	Approx. 1.62
iii) Installation of temporary terminal during the construction period	40,100,000	Approx. 1.96
iv) Commissions to Banking Arrangement	53,000,000	Approx. 2.59
vi) Implement EMP and EMoP during the construction	36,000,000	Approx. 1.76
Vii) Providing necessary equipment, furniture etc. for Passenger terminal building and General cargo warehouse.	90,200,000	Approx. 4.41
Total	252,700,000	Approx. 12.36

(3) Cost Estimation Condition

- i) Cost estimation : October 2017
(reference period of exchange rate: July to September 2017)
- ii) Exchange rate : 1US\$=111.99 yen (TTS rate)
1TZS =0.04989yen (TZS/US\$ calculated by TTB rate)
- iii) Construction period : Implementation schedule of detailed design and construction period are shown in the Work Schedule
- iv) Others : The cost estimation was conducted in conjunction with the scheme of the Grant Aid Cooperation of the Government of Japan

2-5-2 Cost of Operation and Maintenance

(1) Income from Port Operation

The following items are the main port incomes related to the passenger terminal. These items except storage fees have already been collected but these port incomes shall be dependent on the future number of passengers and handling cargoes volume.

- Port Due
- Dockage
- Passenger Handling Fee
- Wharf age
- Storage Charge
- Entrance Fee

As the storage facility is a new facility not part of the existing passenger wharf, new port income can be expected. Cargo storage charge of the Tanzania Port Authority has been set as follows.

- Import and Domestic Incoming Cargoes
 - Within 24 hours : No Charge
 - 2 to 7 days : US\$ 4.00/day/ton
 - 8 to 23 days : US\$ 1.00/day/ton
 - More than 24 days : US\$ 1.50/day/ton
- Export and Domestic Outgoing Cargoes
 - Within 7 days : No Charge
 - More than 7 days : US\$ 1.00/day/ton

(2) Maintenance cost

1) Electricity

Lighting facilities in the passenger terminal:

$$92 \text{ Tsh} + 50.0\text{kwh/month} \times 157\text{Tsh/kwh} = 7,942 \text{ Tsh/month}$$

$$7,942 \text{ Tsh} \times 12 = 95,304\text{Tsh/year}$$

Lighting equipment, air conditioner, etc. of the general cargo warehouse and passenger terminal building:

$$22,646\text{Tsh} + 1,450.0 \text{ kwh/month} \times 157\text{Tsh/kwh} = 230,296 \text{ Tsh/month}$$

$$230,296 \text{ Tsh/month} \times 12 = 2,763,552 \text{ Tsh/year}$$

$$\text{Total : } 2,763,552 \text{ Tsh/year} \times 2 \text{ buildings} = 5,527,104 \text{ Tsh/year}$$

2) Water

General cargo warehouse and Passenger terminal building:

$$600 \text{ m}^3 \times 175 \text{ Tsh/ m}^3 \times 2 = 210,000 \text{ Tsh /month}$$

$$210,000 \text{ Tsh} \times 12 \text{ months} = 2,520,000 \text{ Tsh /year}$$

3) Other Maintenance Costs

- Berth Facility : Maintenance cost shall not be counted for the time being for the berth facility. Annual periodical inspections for the berth water depth, berth structures and auxiliary facilities are necessary.
- Access Road : Maintenance cost shall not be counted for the time being for the access road daily inspection is necessary
- Passenger Terminal Building : Maintenance cost for the septic tank in the amount of Tsh 500,000 is required 2 times /year.
- General cargo warehouse: Maintenance management cost for the septic tank is born by around 5 times of disinfections with chlorine and around 2 times of solids removal same as the passenger waiting room.

Choline sterilization	60,000 Tsh/no. x 5no. x 2	=	600,000 Tsh/year
Solids removal	100,000 Tsh/no. x 2 no.x 2	=	400,000 Tsh/year
• Water Monitoring :			4,000,000Tsh/year
• Cost for transportation of waste:			1,500,000Tsh/year

4) Terminal Maintenance Cost

Ancillary facility such as fenders, bollards, curbs, steps and beacons are to be replaced as maintenance of the passenger terminal facilities. Assuming the life time of these ancillaries as 20 years, it is desirable to secure 30,000,000Tsh/year.

5) Cost of Maintenance Dredging for Necessary Water Depth

Concerning the change of water levels in Lake Tanganyika, maintenance dredging related with the maintenance of water depth such as the wharf and basin is not necessitate for the time being due to the recent increasing trend. Executing annual survey of the sand sedimentation situation around the wharf and the front water and maintenance dredging is performed when necessary. The maintenance dredging is considered to use the suction dredger owned by TPA.

The annual operation and maintenance management cost for execution of this project is estimated as approximately 44.6 million Tsh (approximately 2.2 million yen) as shown in Table 2.5.2-1. TPA manages 65 domestic ports including the Kigoma Port and turns a profit every year as a total. 187,933 million Tsh (approx. 9077 million yen) total annual profit before tax as declared by TPA in 2017. The cost of maintenance management by this project is equivalent to approximately 0.02% and it is well covered by that profit.

As the scale of TPA is increasing year to year including the expansion of the Dar es Salaam Port, Operating Revenue has been annually increasing together with Operating Expense and General and Administrative Expenses. Under such circumstances, the profit is stably grown increasing to 187,933 million Tsh (approximately 9,077 million yen) in 2017 in comparison with the profit before tax 128,933 million Tsh (approximately 6,196 million yen) in 2013. Furthermore, the maintenance management cost (security cost and wharf maintenance cost) can be expected to decrease now through the upgrading of the existing port facilities and the new construction in this project.

With the above, no problems are found in the present operation and maintenance system in Kigoma Port, and the maintenance management cost of this project is quite possible to be allotted by the operation profit in the future as well.

Table 2.5.2-1 Summary of Annual Operation and Maintenance Costs by Implementation of The Project

Expense item	Amount (Tsh/year)
Electric Power Rate	5,622,000
Water Rate	2,520,000
Maintenance Cost	6,500,000
Wharf Maintenance Cost	30,000,000
Total	44,642,000

Chapter 3 Project Evaluation

Chapter 3 Project Evaluation

3-1 Preconditions

Preconditions for the project's implementation are itemized here as follows,

- (1) Securing the project site for this project and utilization control of the water basin.
- (2) Execution of EIA related to the rehabilitation work of this project and obtaining construction permits.
- (3) Project site clearance:
 - Land terminal facilities: passenger shed, CIQ booth, ticket booth, water tank, container warehouse, cutting down unnecessary trees, fences, gates, etc.
 - Water facilities: jetty, dolphin, relocation of pontoon, barge, etc.
 - Facilities in the front open space of the terminal: cutting down unnecessary trees
 - Facilities of the general cargo terminal: relocation of 6 WFP tents (removal was completed in June , 2018)
- (4) Construction of a temporary passenger facility and safety measures for passengers during the construction period.
 - Land facilities: Passenger waiting facility, CIQ booth, ticket booth, access road to the facility, etc.
 - Water facilities: berthing facilities for passenger ships and relocation of existing pontoon, etc.
- (5) Securing a temporary construction yard and dumping site.
- (6) Banking arrangement (B/A), issuing the Authority to Pay (A/P) and smooth payments in accordance with the A/P and the Project Contract.
- (7) Granting conveniences and defrayal of application cost for work permits, registration to ERB and CRB for the Japanese and third countries personnel related to the project.
- (8) Tax exemption concerning procurement and import for construction materials and equipment and a tax refund at the time of procurement of fuels.
- (9) Lead-in of electricity, public water and other necessary ancillary facilities to the project site.
- (10) Arrangement with related organizations:
 - Arrangement with TRL on railway track at the open space in front of the terminal
 - Arrangement with the local government of Kigoma • Ujiji City that controls the access road
 - Arrangement with Kigoma • Ujiji Police Stations for concerns with road regulations during construction period of the access road
 - Permit from the Energy & Water Utilities Regulatory Authority of Tanzania (EWURA) concerning sewage water discharge from septic tank
- (11) Procurement and installation of equipment such as desks, chairs, telephones, etc. that will be necessary after completion of the Passenger Terminal Building.

3-2 Necessary Inputs by Recipient Country

The items that the recipient country should undertake in order to accomplish and maintain the project effects are as shown in Table 3.2-1.

Table 3.2-1 Necessary Inputs by Recipient Country

Timing	Items
(1) Before Construction	<ol style="list-style-type: none"> 1) Additional EIA, construction permits and approval for the project facilities 2) Work permits, Engineers' Registration, Business License of the Corporation and tax exemption for the Japanese and third countries' companies and personnel related to this project 3) Arrangement of temporary passenger terminal facility and relevant on-land facilities during the construction period 4) Tax exemption for construction materials and equipment and tax refund at the time of procurement of fuels for this project 5) Securing necessary land for this project, land for the temporary passenger terminal and land for the temporary yard 6) Project site clearances 7) Utilization and control of the existing passenger terminal and the front water basin 8) Banking arrangement (B/A) and issue of Authorization to Pay (A/P)
(2) During Construction	<ol style="list-style-type: none"> 1) Arrangement of construction work in relation to the nearby railway tracks at the open space in front of the terminal with TRL 2) Adjustment with the city government that controls the roads and police station that will be in charge of road regulations 3) Permit concerning sewage water from septic tank 4) Passengers' security to and in the temporary passenger terminal facilities during the construction period 5) Utilization control of front water area of the project site 6) Verification of payments in accordance with A/P and the Contract
(3) After Completion	<ol style="list-style-type: none"> 1) Proper and effective utilization of project facilities constructed by the Grant Aid Cooperation 2) Periodical checkup and maintenance of Passenger Terminal Facilities 3) Allocation of personnel to operate and maintain the Passenger Terminal 4) Installation of fence and gate in accordance with the SOLAS Convention (if necessary) 5) Procurement and installation of equipment such as desks, chairs, telephones, etc. that will be necessary after the completion of the facilities 6) Introduction of cargo handling equipment for effective cargo handling operations 7) Smooth removal of the existing general cargo warehouses

3-3 Important Assumptions

The external conditions to develop and maintain the effect of the project after completion of the facilities are as shown below.

- (1) Proper utilization as an exclusive terminal for passenger ships.
- (2) Maintenance of the MV Liemba, the old passenger ship, is properly done and she is operated as the main ship in the future as well.
- (3) Ship accidents affecting the utilization of the berthing facility and its front water basin must not be allowed to occur.
- (4) Effective cargo handling operations shall be insured by introducing cargo handling equipment.
- (5) Maintenance dredging shall be done to maintain necessary water depth considering the sand sedimentation at the water basin in front of the berthing facility and possible lake water levels

falling in the future.

- (6) No large scale natural disaster shall happen.
- (7) No unexpected political uncertainty shall occur.

3-4 Project Evaluation

3-4-1 Relevance

(1) Present Situation and Issues of the Sector

Kigoma Port is the international port located on the east coast of Lake Tanganyika and connected with Dar es Salaam by TRL as part of the Central Corridor and functions as the hub port of the Republic of the Congo on the other side of the lake and Burundi to the north. The port facility consists of a passenger terminal, cargo and container terminal, ship repairing facility and the oil jetty of the Kibirizi District which management and operation of are performed by the Kigoma Port Office of Tanzania Port Authority. The passenger terminal is located at the west side of the general cargo terminal and is used as the mother port of ships owned by Marine Services Company Ltd. (MSCL).

The passenger terminal on the project site was built by filling in the east side of a sheet pile type jetty for ship repairs in a triangular shape and a simple concrete pile type jetty in front of a slope-type revetment and dolphin type mooring facilities. The terminal facilities are made of very poor structures, and there are problems such as the shallow water depth of the berthing facility and the possible collapse due to deterioration of the concrete piles of the jetty facility. There are other problems for the land facilities such as the small capacity of the passenger shed relative to the number of passengers and narrow terminal area to handle cargoes from passenger ships. Due to the poor and vulnerable conditions of the passenger terminal, passengers have been forced to disembark and embark through the jetty with the danger of a possible collapse and unstable barge. For cargo handling operation, cargoes are transported through the same dangerous section that the passengers are using, and the work area behind the terminal is too narrow for loading and unloading cargo onto trucks which causes cargo handling operations to be very inefficient. Additionally, the access road connecting the passenger terminal to the main public road and open space in front of the terminal are unpaved which is problematic when it rains.

The deterioration of the existing warehouse which was constructed in 1972 is serious, and there are problems in terms of its safe utilization. The new general cargo warehouse shall be constructed in the hinterland of the port area. This different area from the present location is in consideration of the effective future operation of the general cargo terminal.

By resolving the problems of the passenger facilities, berthing facilities and general cargo warehouse above, the results will lead to improving efficiency and safety of the passenger terminal and general cargo terminal because proper functioning can be achieved instead of hindered as it now is. Thus, relevancy and urgency for the rehabilitation of the passenger terminal and construction of a general cargo warehouse is confirmed.

(2) Consistency with the Development Plan of Kigoma Port

The government of Tanzania established a national long-term development target expressed in “Tanzania Development Vision 2025” as a national development strategy. For reaching their target, the government of Tanzania set up a five-year plan composed of 3 stages. In the second stage from 2016/17 to 2020/21, there is a flagship project for each of the strategic fields. Modernization of the Kigoma port is positioned as part of the development of the Central Corridor together with the development of the Kigoma economic zone.

As a master plan in the transport and traffic field, there was a Transport Sector Investment Programme (TSIP) drawn up in 2007 and revised in 2013. To achieve the goals of the National Strategy for Growth and Reduction of Poverty (NSGRP) and Millennium Development Goals, the TSIP outlines the development plan of the transport and traffic sector which will contribute to pushing up the standard of living for the people and support industrial development. In Phase 2 of the TSIP, as for the transport and traffic sector, development goals and plans from 2012/13 to 2016/17 were drawn up targeting roads, railways, airports, shipping, and pipelines. As a result of development, the TPA and by extension of it managing ports is mentioned.

There was a “Tanzania Ports Master Plan” drawn up in February 2009 as the development plan for the Tanzania Ports Authority. The target is a new port development plan in addition to the rehabilitation of existing ports facing the Indian Ocean such as the Dar es Salaam Port, the largest in Tanzania. It also includes rehabilitation plans of the main ports on Lake Victoria, Lake Tanganyika and Lake Nyasa (Lake Malawi). Expansion Plans for Kigoma Port and Kasanga Port on Lake Tanganyika were drawn up. The increase of future port demand is assumed in the Kigoma Port plan with the development of agriculture and fishing activities in the surrounding area, cargo increases of copper and wood from the Republic of the Congo, shortening of transportation distance by the improvement of railway services and road to Dar es Salaam and other developments. The result, is that an expansion of the cargo terminal has been proposed.

In addition, the Tanzania Ports Authority is targeting comprehensive development of the Kigoma port and neighboring Kibiriz area by making a long-term development plan for the Kigoma port in 2016. The plan is composed of 3 phases. As phase-1 from 2017 to 2021, cargo handling volume will be maximized by effectively utilizing and properly operating the existing facilities. The Central Corridor Transit Transportation Facilitation Agency, organized by the governments of Uganda, Tanzania and Burundi, made the Development of the Central Corridor / Lake Tanganyika Integrated Transport System. As a partner for the development of a passenger terminal and the construction of a general cargo warehouse in Kigoma port, the government of Japan (JICA) was nominated.

With the related master plans from above, the improvement of the passenger terminal is consistent with the port expansion plan for Kigoma Port has been discussed pertaining to consistency with the execution of this project and is acknowledged.

(3) Beneficial Effect

The operational area for passenger ships based at Kigoma Port are Region of Kigoma and Rukwa on the Lake Tanganyika coast, where the poverty ratio of each region approaches 40% and employment expansion with the further promotion of the agriculture and fishing industries including hinterland areas in the future is expected. While the development level of transportation infrastructures is still low and road networks are poor and vulnerable, lake transportation that is regular and low cost has been a life line for local people's travel needs and the distribution of commodities. Kigoma has functioned as the strategic spot for transportation on Lake Tanganyika of Tanzania's Central Corridor connecting to Dar es Salaam via the Tanzania Central Railway and main road networks.

With the rehabilitation of the Kigoma passenger terminal, stable transportation of people and commodities in the coastal areas of Lake Tanganyika shall be possible and the service of passenger and cargo transportation shall be upgraded by the better operation of passenger and cargo ships leading to improvements of a ship's allocation frequency. The improvement of transportation of people and cargoes in coastal areas of Lake Tanganyika and its hinterland will contribute to the vitalization of economic activities, promoting industrial development and is expected to furthermore contribute to area's stability and peace. Therefore, the direct beneficiaries are considered to be the 2.127 million people in the Kigoma Region, 1.004 million people in the Rukwa Region and 0.565 million in the Katavi Region totaling 3.7 million people. As this is located along the Central Corridor connecting to Dar es Salaam, the benefits are considered to extend to the people living along the corridor, in Dar es Salaam and the hinterlands of Kigoma and Rukwa Regions. Just improving the transportation of people and cargo in one key area has the potential to benefit, at least indirectly, most of the population of Tanzania, 44.84 million people. Furthermore, by developing the cargo terminal facilities, transportation to the coastal hinterland of Lake Tanganyika in the Republic of the Congo will be promoted, and similar benefits should accrue to the residents there.

(4) Consistency with the Policies and Principals of the Japanese Cooperation

The Japanese cooperation policy with Tanzania aims for the benefits of growth leading to reduction of poverty as well as sustainable strong economic growth. The strategic fields are agriculture, infrastructure, governance and accountability. Promotion of agricultural and fishery industries through the improvement of logistics is expected as beneficial effects of this project with a resulting increase in employment that leads to poverty reduction is consistent with the policies and principals of the Japanese cooperation.

As stated above, this project widely contributes to the improvement of basic human needs (BHN) and poverty reduction, and the relevance for implementing the Japanese Grant Aid Cooperation for part of this project is confirmed.

3-4-2 Effectiveness

(1) Quantitative Effects

The outcome of quantitative effects by this project is as shown in Table 3.4.2-1.

1) Safety Improvements for Passenger Ships by Direct Berthing

As passenger ship can be directly berth along the terminal with this rehabilitation, it is possible for the passengers to land directly without passing over an unstable barge and dangerous jetty between the ship and terminal avoiding seriously unsafe conditions. Since, the passenger ship is operated every other week, the number of ships to berth directly at the wharf can be estimated as below:

$$\begin{aligned} & \text{Criterion Number of Passenger Ship Berthing} \\ & = (365 \text{ days/year}) / (14 \text{ days/ship}) \\ & = \text{approx. } 26 \text{ ships/year} \end{aligned}$$

2) Shortening of Passenger Embarkation and Disembarkation Time

Between the passenger ship and terminal there is a barge and pier of 30m in length, and it seems to take approximately 3 minutes for embarkation and disembarkation. After the construction of the facility, passenger ships can just berth next to the terminal. Thus, the passengers need not pass over the barge and pier, and the time for embarkation and disembarkation shall be shortened. The amount of time that it can be shortened by is calculated as 40 minutes hypothesizing the number of passengers to be 500 with a physical interval of 0.75 m.

The criterion time for embarkation is 120 minutes from the time that the passenger gate is opened to the time that all passengers have boarded, according to the site survey. The criterion time for disembarkation is 90 minutes from the time that passenger ship is berthed to the time that all passengers get through the passenger's gate and move outside of the port. Therefore, the target time after the construction of the facility shall be set as follow:

As the time from Passenger Terminal Building to the passenger ship is shortened, effective operation of the passenger wharf becomes possible while also reducing the time passengers have to spend at the passenger wharf will be a convenience to all those involved.

$$\begin{aligned} & \text{Target Time} = \text{Criterion Time} - \text{Time Saved} \\ & \text{Target Time for Embarkation} = 120 \text{ minutes} - 40 \text{ minutes} = 80 \text{ minutes.} \\ & \text{Target Time for Disembarkation} = 90 \text{ minutes} - 40 \text{ minutes} = 50 \text{ minutes.} \end{aligned}$$

Table 3.4.2-1 Quantitative Effect (Direct Effect)

Target	Criterion Number (in 2020)	Target Number (in 2023)
Number of Passenger ships directly berthing at the passenger wharf (no. of ship/year)	0	26
Shortening Passenger Embarkation Time (minute/ship)	120	80
Shortening Passenger Disembarkation Time (minute/ship)	90	50

3) Improving Cargo Handling Capacity at the General Cargo Terminal

After the passenger terminal and general cargo warehouse are provided, and the existing warehouse is removed by TPA, the cargo handling capacity at the general cargo terminal will be improved.

At the general cargo terminal, 2 terminal cranes, 5 ton class, are operated. The terminal length which can be used for cargo handling is limited to 60m, equivalent to 1 berth between the general cargo terminal and container berth. The width of the apron at the terminal in front of the general cargo warehouse is narrow, and forces inefficient cargo handling to be carried out.

Cargo handling using a 194m in length general cargo terminal will be feasible by the relocation and construction of a new general cargo warehouse. The length is equivalent to 3 berths for passenger ships. With 3 cranes in total, the current 2 cranes and an additional crane, 30ton class, to be introduced will make the loading and unloading of 3 cargo ships at the same time feasible, and resultantly, cargo handling efficiency will be improved.

Annual cargo handling capacity per berth at the existing terminal shall be assumed as follows:

Present Annual Cargo Handling Capacity per Berth

$$\begin{aligned}
 &= (\text{terminal crane capacity} \times \text{operation hour} / \text{cycle time of terminal crane} \times \text{operation days in a year}) \times 2 \text{ terminal crane} \times \text{efficiency} (0.8) \\
 &= (3 \text{ ton/cycle} \times 8 \text{ hours} / 5 \text{ min.} \times 260 \text{ days}) \times 2 \text{ terminal cranes} \times 0.8 \\
 &= 119,808 \text{ ton/year} \cong 120,000 \text{ ton/year}
 \end{aligned}$$

Cargo handling capacity will be triple, when the existing warehouse is removed and simultaneous cargo handling in 3 berths by 3 terminal cranes is possible. However, the actual cargo handling efficiency will be lower since the rotation speed of terminal cranes in the 30 ton class is slower. Therefore, annual cargo handling capacity under a 3 berths operation scheme can be assumed as follows:

Potential Annual Cargo Handling Capacity by 3 Berths Operation

$$\begin{aligned}
 &= 5 \text{ ton crane} \times 2 \text{ berths} + 30 \text{ ton crane} \times 1 \text{ berth} \\
 &= 74,880 \text{ ton/year} \times 2 \text{ berths} + 37,440 \text{ ton/year} \times 1 \text{ berth} \\
 &\cong 187,200 \text{ ton/year} \cong 187,000 \text{ ton/year}
 \end{aligned}$$

Where,

Annual cargo handling capacity by 5 ton crane

= terminal crane capacity x operation hours / cycle time of crane x operation days
in a year

= 3 ton/cycle x 8 hours / 5 min. x 260 days

= 74,880 ton/year

Annual cargo handling capacity by 30 ton crane

= 3 ton/cycle x 8 hours / 10 min. x 260 days

= 37,440 ton/year

Table 3.4.2-2 Quantitative Effect (Indirect Effect)

Target	Criterion Number (Year 2014)	Target Number (Year 2017)
3) Improvement of cargo handling capacity at the general cargo terminal (Increasing the No. of cargo handling berths)	12,000 ton/year (1 berth)	187,000 ton/year (3 berths)

(2) Qualitative Effects

The outcomes of qualitative effects by this project are as shown below.

- 1) Improvement of commodity distribution and people flow in the Central Corridor by effectiveness of cargo handling and embarkation / disembarkation of passenger ship

The cargo handling effect is improved by the rehabilitation of the passenger terminal and berthing days of a passenger ship are shortened. As a result of the effect of improving passenger ship operations, commodity distribution and flow of people are promoted along the Central Corridor.

- 2) Improvement of safety and amenity by flow line separation between passengers and cargoes and mitigation of congestion

Congestion that exists now at the terminal is mitigated significantly as well as setting flow line of passengers in order by the rehabilitation of the passenger terminal. Furthermore, the service level at the passenger facility is improved distinctly with improved comfort provided by rehabilitating the toilet facilities, passenger waiting area, Kiosk, etc.

- 3) Efficiency of cargo handling in passenger terminal

As passenger ships can be directly berthed at the cargo terminal, it will be possible to load and unload cargoes directly to and from passenger ships by crane. Therefore, cargo transportation in barge and jetty between terminal and passenger ships will no longer be necessary. Eliminating unsafe cargo handling over the dangerous barge and jetty will protect cargo handling workers. Furthermore, the usability of cargo handling vehicles is promoted and mitigation of congestion is attained by securing a wider terminal area.

4) Reduction of distribution costs in the passenger terminal

The safety and efficiency of cargo handling operation are improved with the possible introduction of cargo handling equipment as well as mitigating the congestion at the terminal area by the rehabilitation of the passenger terminal facilities. Furthermore, the traffic performance of cargo handling vehicles is improved by the pavement of the access road, which leads to the reduction of operating costs for the vehicles. As a result, ensuring smooth transportation of commodities makes it possible that distribution costs becomes cheaper.

5) Safe cargo storage in general cargo warehouse

After the general cargo warehouse is newly constructed, safety for cargo storage and those handling it will be improved because such work forced to be done in an old, deteriorated warehouse. In addition, cargo handling efficiency will also be increased since the warehouse will be built without columns inside. Furthermore, a management office facility will be established together with the warehouse, and resultantly cargo storage can be managed more efficiently.

6) Shortening offshore standby time

Improvement of cargo handling capacity and shortening offshore standby time shall be achieved under a 3 berths operation of the general cargo terminal by the removal of the existing cargo warehouse and construction of new warehouse.

With the above contents, the relevancy of this project is sufficient and the efficiency is considered to be significant.

Appendices

【Appendices】

- Appendix-1 Name of Survey Team Member
- Appendix-2 Survey Schedule
- Appendix-3 Interviewee List
- Appendix-4 Minute of Discussion (M/D)
 - Appendix-4.1 M/D (at the time of site survey)
 - Appendix-4.2 M/D (at the time of explanation on summary)
- Appendix-5 Technical Notes
- Appendix-6 Structural Performance Evaluation of Existing General Cargo Warehouse

Appendix-1 Member Name of Survey Team and Sector

(1) Site Survey

Formation of site survey team are as follows,

Name	Assignment	Sector
Katsuichi YABUNAKA	Leader	Executive Technical Advisor to the Director General Infrastructure and Peacebuilding Department JICA
Taisuke MANIWA	Planning Coordinator	Team 2 Transportation and ICT Group Infrastructure and Peacebuilding Department JICA
Yutaka OCHI	Chief Consultant/ Port Planning	ECOH CORPORATION
Kenji KUROKI	Vice Chief Consultant/ Construction Plan and Cost Estimation/ Natural Condition Survey	ECOH CORPORATION
Yoshikazu IZUMIDA	Port Facility Design	ECOH CORPORATION
Yoshiharu MATSUMOTO	Architectural Structure and Reviewer	ECOH CORPORATION
Kazuishi WATABE	Environmental Social Consideration	ICI

(2) Explanation on Project Summary

Survey team member of site survey for explanation on project summary are as follows,

<u>Name</u>	<u>Assignment</u>	<u>Sector</u>
Katsuhide NISHIZONO	Team Leader	Executive Technical Advisor to the Director General Infrastructure and Peacebuilding Department JICA
Taisuke MANIWA	Planning Coordinator	Team 2 Transportation and ICT Group Infrastructure and Peacebuilding Department JICA
Yutaka OCHI	Chief Consultant/ Port Planning	ECOH CORPORATION
Kenji KUROKI	Vice Chief Consultant/ Construction Plan and Cost Estimation/ Natural Condition Survey	ECOH CORPORATION

Appendix-2 Survey Schedule

(1) Site Survey

										KIGOMA	
No. of day	Date	Day	Holiday	Member of the Government of Japan		Members of the Consultant					
				Katsuichi YABUNAKA	Taisuke MANIWA	Yutaka OCHI	Yoshikazu IZUMIDA	Kenji KUROKI	Yoshiharu MATSUMOTO	Kazuishi WATABE	
				Leader	Planning Coordinator	Chief Consultant/ Port Planning	Port Facility Design	Vice chief consultant/ Construction Plan & Cost Estimation/ Natural Condition Survey	Architectural Structure and Reviewer	Environmental Social Consideration	
1	2017/9/23	Sat		Tokyo to Dubai							
2	2017/9/24	Sun		Dubai to Dar Es Salaam							
3	2017/9/25	Mon		Discussion with TPA, courtesy call to MoWTC and explanation on survey summary, collection data from TMEA·AfDB and courtesy call to JICA and explanation on survey summary							
4	2017/9/26	Tue		Courtesy call to MOFP and discussion with TPA headquarter							
5	2017/9/27	Wed		Dar Es Salaam to Kigoma and observation of Kigoma Port							
6	2017/9/28	Thu		Discussion with TPA Kigoma and Kigoma port observation							
7	2017/9/29	Fri		Discussion with TPA and confirmation of port facilities condition							
8	2017/9/30	Sat		Discussion with TPA Kigoma.meeting within a team and organized data							
9	2017/10/1	Sun		Kigoma to Dar Es Salaam							
10	2017/10/2	Mon		Minutes of discussion and signature							Tokyo to Dubai
11	2017/10/3	Tue		Report to Embassy and JICA		Discussion with TPA head quarter and observation of Dar Es Salaam Port		Hearing from construction companies and request for unit prices	Meeting with TPA Head Quarter and observation of Dar Es Salaam	Dubai to Dar Es Salaam	
12	2017/10/4	Wed		Dar Es Salaam to Dubai		Dar Es Salaam to Kigoma					
13	2017/10/5	Thu		Dubai to Tokyo		Discussion with TPA Kigoma and survey port facilities conditions		Control of subcontracting and request for unit prices	Discussion with TPA Kigoma and survey for the structures of cargo warehouse	Discussion with TPA Kigoma and survey for environmental social consideration	
14	2017/10/6	Fri				Discussion with TPA Kigoma and survey facilities conditions		Control of subcontracting and request for unit prices	Discussion with TPA Kigoma and survey for the structures of cargo warehouse	Discussion with TPA Kigoma and survey for environmental social consideration	
15	2017/10/7	Sat				Organizing data and survey for temporary yard		Control of subcontracting and request for unit prices	Survey for temporary yard		
16	2017/10/8	Sun				Data organization and Meeting within a team					
17	2017/10/9	Mon				Discussion with TPA Kigoma and collection of port statistical data		Discussion with TPA Kigoma and survey for temporary plan	Discussion with TPA Kigoma and collection of port statistical data	Discussion with TPA Kigoma and stakeholders	
18	2017/10/10	Tue				Condition survey for port facilities and collection of port statistical data		Survey for port facilities condition, current state of cargo handling machines	Control of subcontracting and collection of unit prices and weather	Condition survey for related infrastructures	Discussion with TPA Kigoma and stakeholders
19	2017/10/11	Wed				Condition survey for port facilities and collection of port statistical data		Condition survey for port facilities and current state of cargo handling machines	Control of subcontracting, collection of unit prices and survey of natural conditions	Condition survey for related infrastructures	Discussion with TPA Kigoma and stakeholders
20	2017/10/12	Thu				Condition survey for port facilities and collection of port statistical data		Condition survey for port facilities and current state of cargo handling machines	Survey for unit prices of construction materials		Discussion with TPA Kigoma and stakeholders
21	2017/10/13	Fri				Discussion with TPA Kigoma and collection of port statistical data		Control of subcontracting, collection of unit prices and survey of natural conditions	Discussion with TPA Kigoma and survey for unit prices for construction materials	Discussion with TPA Kigoma and stakeholders	
22	2017/10/14	Sat	☉			Organized data and meeting within a team					
23	2017/10/15	Sun				Kigoma to Dar Es Salaam					
24	2017/10/16	Mon				Discussion with TPA Head Quarter					
						Confirmation of tax exemption process	Design criteria of civil work	Confirmation of tax exemption process	Building design criteria	Environmental procedure	
25	2017/10/17	Tue				Discussion with TPA on the items being responsible by the Government of Tanzania		Survey for port facilities design	Collecting unit prices and survey for construction prices		Discussion with TPA head quarter and confirmation of Environmental procedures
26	2017/10/18	Wed				Discussion with TPA on trend of other donors		Survey for port facility design	Procedures of tax exemption and working visa	Survey of construction material and collection of unit prices	Discussion with TPA head quarter and confirmation of Environmental procedures
27	2017/10/19	Thu				Discussion with TPA head quarter and confirmation of environmental procedures					
						Data organization		collection of unit prices			
28	2017/10/20	Fri				Report to Embassy and JICA					
29	2017/10/21	Sat				Dar Es Salaam to Dubai					
30	2017/10/22	Sun				Dubai to Tokyo					

(2) Explanation on Summary

No. of day	Date	Day	Holiday	Official (assumed)		Consultant Member	
				Katsuichi YABUNAKA	Taisuke MANAKA	Yutaka OCHI	Kenji KUROKI
				Leader	Planning Coordinator	Chief Consultant/ Port Planning	Vice chief consultant/ Construction Plan & Cost Estimation/ Natural Condition Survey
1	2018/6/17	Sun	☉	Tokyo to Dubai			
2	2018/6/18	Mon		Dubai to Dar Es Salaam			
3	2018/6/19	Tue		Kick-off meeting with TPA, MoWTC and MoFP			
4	2018/6/20	Wed		Dar Es Salaam to Kigoma (traveling) and site survey			
5	2018/6/21	Thu		Discussion with TPA Kigoma			
6	2018/6/22	Fri		Kigoma to Dar Es Salaam Information sharing with CCTTFA (Central Corridor Transit Transport Facilitation Agency)	Meeting with MSCL and Site Survey		
7	2018/6/23	Sat		Organizing data	Organizing data		
8	2018/6/24	Sun		Organizing and meeting within a team	Kigoma to Dar Es Salaam and meeting within a team		
9	2018/6/25	Mon		Minutes of Discussion with TPA			
10	2018/6/26	Tue		Information sharing with TEMA			
11	2018/6/27	Wed		Report to Embassy of Japan and JICA Office			
				Organizing data	Dar Es Salaam to Dubai		
12	2018/6/28	Thu		Dar Es Salaam to Dodoma and discussion with MoWTC and MoFP	Dubai to Tokyo		
13	2018/6/29	Fri		Dodoma to Dar Es Salaam and signature on Minutes of Discussion with TPA			
14	2018/6/30	Sat		Dar Es Salaam to Dubai			
15	2018/7/1	Sun		Dubai to Tokyo			

Appendix-3 List of Parties Concerned in the Recipient Country

(1) Government Office of the United Republic of Tanzania

1) Ministry of Finance and Planning

Ms. Amina Khamis Shaaban	Deputy Permanent Secretary
Mr. John A. Rubuga	Commissioner, External Finance Department

2) Ministry of Works, Transport and Communications

Dr. Leonard m. Chamuriho	Permanent Secretary, Transport Sector
Eng. Rogatus Hussein Mativila	Director of Transport Infrastructure
Eng. Thomas E. Ngulika	Assistant Director, Infrastructure

3) Tanzania Ports Authority (TPA Head Quarter)

Eng. Deusdedit C. V. Kakoko	Director General
Eng. Karim Mattaka	Ag. Deputy Director General
Mr. Stephen Mlabwa	Director of Planning and Investment
Mr. Damas T. Ndawi	Principal Statistical Officer
Eng. Allen T. Banda	Civil Engineering Manager
Mr. John S. Makassy	Principal Business Development Officer
Eng. Oran Mark Mwashihava	Civil Engineer
Mr. Thobias M. Sonda	Chief of Fire, Safety, Health and Environment Unit
Mr. James Hunga Gwagula	Procurement Manager of Works and Consultancy Services Officer

4) Tanzania Ports Authority (TPA Kigoma Office)

Mr. Ajuaye Kheri Msese	Port Master
Mr. Morris C. P. Mchindiuza	Port Master
Mr. D. Katembo, Eng.	Acting Port Master, Port Engineer
Mr. Athumani A. Malibamba	Principal Operation Officer
Mr. Yudas Sukanyi	Port Security Officer
Mr. Machibya Petro	Statistic Clark
Mr. Herman Shimbe	Assistant Finance Officer
Ms. Nyakato Lwamnana	Civil Engineer

5) NEMEC

Mr. Arnold Clemence Kisiraga	Senior Environmental Management Officer
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6) Bank of Tanzania

Mr. Revelian Felix Ngosha	Manager Domestic Markets, Domestic Market Department
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7) Tanzania Revenue Authority

Mr. Sydney B. Mkamba	Principal Tax Officer
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8) Tanzania Fisheries Research Institute (TAFIRI)

Mr. Emmanuel A. Sweke Researcher and Consultant, Aquaculture, Social-ecology, Fisheries
MGMT, EIA

9) Lake Tanganyika Basin

Mr. Chobaliko Erasto Rubabwa Basin Water Officer
Mr. David, Shokora Hydrogeological Principal Technician

10) National Meteorological Agency

Dr. Hashimu Ngonsolo Manager Climatology and Climate change, Data section

11) Kigoma Ujiji Municipal

Mr. Kiza H Chief of Department of Environment and Health

(2) International Organization

1) African Development Bank (AfDB)

Mr. Mariehellen Minja Consultant / Transport Engineer, African Development Fund

2) Trade Mark East Africa (TMEA)

Mr. Smak Kaombwe Infrastructure Director, Central Corridor
Mr. Jamal Mangush Port Productivity Advisor, Tanzania

3) World Food Programme (WFP)

Mr. Riaz Lodhi Head of Supply Chain
Mr. Ernest Bukombe Kigoma Regional Officer

4) Consulate General of the Democratic Republic of the Congo

Mr. Kasongo Yampanya Marcel Commercial Attache

(3) Private Company

1) Marine Service Company LTD. (MSCL), Kigoma

Mr. Joel Gagala Branch Manager (Kigoma)
Ms. Siwema Reuben Administrative Officer (Kigoma)
Mr. Titus Benjamin, Capt. Senior Captain of MV Liemba

2) Tanzania Railways Limited (TRL), Kigoma

Mr. Ally Shamte Station Master
Mr. Salvatory Kimaro Traffic Agent
Mr. Essau Kibuti Carriage and Wagon Examiner

3) KONOIKE CONSTRUCTION CO., LTD (Construction Company in Dar Es Salaam)

Mr. Hidashi Nishimura General Manager, Tanzania Office
Dr. Naftali S. Mshana Deputy General Manager, Tanzania Office

4) SUMITOMO MITSUI CONSTRUCTION CO., LTD. (Construction Company in Dar Es Salaam)

Mr. Nobuhiko Marui Project Manager
Mr. Atsushi Kobayashi Administration Manager

5) MAC CONTRACTORS CO. LTD (Construction Company in Dar Es Salaam)

Eng. Lawrence G Mwakyambiki Director
Mr. Alvin Nkiggi Quantity Surveyor

6) RAVJI CONSTRUCTION LTD. (Construction Company in Dar Es Salaam)

Mr. Kishan Varsani Director
Eng. Peter M. Mahushi Contract Manager

7) CSI CONSTRUCTION (Construction Company in Dar Es Salaam)

Mr. Moh Versi Managing Director
Mr. Vadivel Kannan Project Advisor

8) SIMBA CEMENT (Construction Company in Dar Es Salaam)

Mr. Dhruv Singh General Managing
Mr. Leslie Massawe National Sales Manager

9) Inter-Consult Ltd. (Consultant and Surveyor in Dar Es Salaam)

Mr. Martin David Managing Director
Eng. Menye D. Manga Director Mechanical & Electrical Eng

(4) Japanese Parties

1) Embassy of Japan in Tanzania

Masaharu YOSHIDA Ambassador Extraordinary and Plenipotentiary
Yoko KAMIYAMA First Secretary
Yuji NAKAYAMA First Secretary
Takashi BAN Second Secretary
Kozue ARAKI Coordinator of Economic Cooperation

2) JICA Tanzania Office

Toshio NAGASE Chief Representative
Satoru MATSUYAMA Senior Representative
Hideki YAOI Program Advisor (Infrastructure)
Teruaki FUJII Representative
Shunichi MIZUGAKI Resident Representative
Ms. Masalu Lilian Program Officer, Transport and Regional Integration

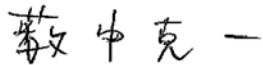
Appendix-4 Minutes of Discussion (M/D)

(1) First Site Survey (Signed on December 7, 2017)

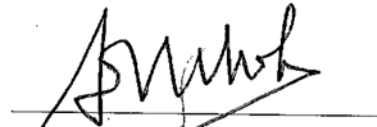
Minutes of Discussions
on
The Additional Preparatory Survey for the Project for
The Rehabilitation of Kigoma Port
in
THE UNITED REPUBLIC OF TANZANIA

In response to the request from the Government of The United Republic of Tanzania (hereinafter referred to as "Tanzania"), Japan International Cooperation Agency (hereinafter referred to as "JICA") dispatched the Additional Preparatory Survey Team for the Outline Design (hereinafter referred to as "the Team") of the Project for The Rehabilitation of Kigoma Port (hereinafter referred to as "the Project") to Tanzania, headed by Mr. Katsuichi YABUNAKA, Executive Technical Advisor to the Director General, from September 24th to October 3rd, 2017. The Team held a series of discussions with the officials of the Government of Tanzania and conducted a field survey. In the course of the discussions, both sides have confirmed the main items described in the attached sheets.

Dar es Salaam, 7th December, 2017

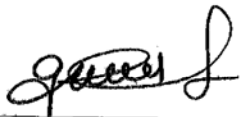


Mr. Katsuichi YABUNAKA
Leader
Preparatory Survey Team
Japan International Cooperation Agency
Japan



Eng. Deuseddit C.V. Kakoko
Director General
Tanzania Ports Authority
Tanzania

(Witness)



Dr. Leonard M. Chamuriho
Permanent Secretary
Ministry of Works, Transport
and Communication (Transport)
Tanzania



Mr. Doto M. James
Permanent Secretary and Pay Master General
Ministry of Finance and Planning
Tanzania

Table 1 - Passenger wharf

Facility	Current project plan
East Berth	Target Vessel : Passenger Ship Extension : 130 m Water Depth : DL-5.0m Ancillary of Wharf : Fender and Bollard
North Berth	Target Ship : Small Boats and Ships Extension : 50 m Water Depth : Existing Water Depth Additional Facility : Stairway for Small Boats Ancillary of Wharf : Fender and Bollard
Passenger Wharf	Wharf Area : 6,500 m ² Additional Facility : Beacon, Security Light
Access Road	Width : Pavement 7.0 m of 2 Lane Road Extension : 481 m, Passenger Terminal to Bangwe Road
Front Open Space of Passenger Terminal	Paving Area : 949 m ²
Passenger Terminal Building	Facility : Administration & Service Zone, Passenger Waiting Zone, Weighing & Storage Zone, Passenger waiting shelter Total Floor Area : 54 m × 24 m = 1,296 m ²

5-2. In addition to the originally requested items listed in table 1 above, the Executing Agency requested the items listed in Table 2.
After the survey and the discussion between the Executing Agency and JICA, both sides agreed and confirmed that items 2) to 9) of table 2 will not be covered in Japan's Grant Aid considering the other funding source described in Annex 6 while the item 1) will be considered for Japan's Grant Aid.

Table 2 - Cargo Wharf

1). Rehabilitation of existing main warehouse building
2). Terminal Equipment
3). Rehabilitation of Container and General Cargo Berth
4). Pavement at Container Terminal
5). Construction of New office building
6). Installation of Utilities

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ATTACHMENT

1. Objective of the Project

The objective of the Project is to improve safety for incoming and outgoing passengers and cargo handling through the rehabilitation of passenger wharf, and on-land port facility of cargo wharf in Kigoma Port, thereby contributing to activate trades and economic activities near Tanganyika Lake.

2. Title of the Preparatory Survey

Both sides confirmed the title of the Preparatory Survey as “the Additional Preparatory Survey for the Project for The Rehabilitation of Kigoma Port”.

3. Project site

Both sides confirmed that the site of the Project is in Kigoma port, which is shown in Annex 1.

4. Responsible authority for the Project

Both sides confirmed the authorities responsible for the Project are as follows:

- 4-1. The Tanzania Ports Authority (TPA) will be the executing agency for the Project (hereinafter referred to as “the Executing Agency”). The Executing Agency shall coordinate with all the relevant authorities to ensure smooth implementation of the Project and ensure that the undertakings for the Project shall be managed by relevant authorities properly and on time. The organization charts are shown in Annex 2.
- 4-2. The line ministry of the Executing Agency is the Ministry of Works, Transport and Communication (MoWTC). The MoWTC shall be responsible for supervising the Executing Agency on behalf of the Government of Tanzania.
- 4-3. Ministry of Finance and Planning (MoFP) shall be responsible for approval of the Project.

5. Items requested by the Government of Tanzania

- 5-1. Both sides confirmed that items requested by the Government of Tanzania are as per table 1 below.

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7). Reconstruction of Access and Internal roads
8). Construction of new jetty for police and military boats to pave way for the new passenger's terminal and jetty
9). Railway repairs within port

5-3. The Government of Tanzania shall submit an official request for the additional items to Government of Japan through a diplomatic channel before the appraisal of the Project, which is scheduled in April, 2018.

5-4. Both sides agreed that main warehouse building should be reconstructed, and that the approximate site of new general cargo warehouse is behind the existing warehouse as shown in annex 1.

5-5 Accordingly, JICA will assess the feasibility of the above requested items through the survey and will report findings and recommendations to both governments of Japan and Tanzania. The final scope of the Project will be decided by the Government of Japan.

6. Procedures and Basic Principles of Japanese Grant

6-1. The Tanzania side agreed that the procedures and basic principles of Japanese Grant as described in Annex 3 shall be applied to the Project.

6-2. As for the monitoring of the implementation of the Project, JICA requires Tanzania side to submit the Project Monitoring Report, the form of which is attached as Annex 4.

6-3. The Tanzania side agreed to take the necessary measures, as described in Annex 5, for smooth implementation of the Project. The contents of the Annex 5 will be elaborated and refined during the Preparatory Survey and be agreed in the mission dispatched for explanation of the Draft Preparatory Survey Report. The contents of Annex 5 will be updated as the Preparatory Survey progresses, and eventually, will be used as an attachment to the Grant Agreement.

7. Schedule of the Survey

7-1. The Team will proceed with further survey in Tanzania until October 20th, 2017.

7-2. JICA will prepare a draft Preparatory Survey Report in English and dispatch a mission to Tanzania in order to explain its contents around middle of April, 2018. The Tanzanian side expressed their expectation for the early completion of the survey.

7-3. If the contents of the draft Preparatory Survey Report is accepted and the

undertakings for the Project are fully agreed by the Tanzania side, JICA will finalize the Preparatory Survey Report and send it to Tanzania around August 2018.

7-4. The above schedule is tentative and subject to change.

8. Environmental and Social Considerations

8-1. The Tanzania side confirmed to give due environmental and social considerations before and during implementation, and after completion of the Project, in accordance with the JICA Guidelines for Environmental and Social Considerations (April, 2010) and according to the local environmental laws.

8-2. The Project is categorized as "B" from the following considerations:

The project is not considered to be a large-scale ports and harbors project, is not located in a sensitive area, and has none of the sensitive characteristics under the JICA guidelines for environmental and social considerations (April 2010), it is not likely to have a significant adverse impact on the environment.

8-3. The Tanzania side confirmed to conduct the necessary procedures concerning the environmental assessment (including stakeholder meetings, Environmental Impact Assessment (EIA) and information disclosure, etc.) and make EIA report of the Project. The addendum of approved EIA Certificate shall be received from the responsible authorities and submitted to JICA prior to Japanese government approval of the grant aid for the Project, which is scheduled around in July, 2018.

8-4. The Tanzania side confirmed that land acquisition outside Kigoma port is not needed for this project.

9. Other Relevant Issues

9-1. The Tanzania side shall, at its own expense, provide the Team with the following items:

- (1) To provide the Team with available relevant data, information and materials necessary for the execution of the Survey.
- (2) To prepare all answers under the mandate of TPA for the Questionnaire presented by the Team until October 22nd and introduce the survey team to public and private organizations for facilitating data collection.
- (3) To appoint counterpart staffs within TPA who will assist the Team to execute the survey.
- (4) To take any measures deemed necessary to secure the safety of the members of the team.

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- (5) To make arrangements to allow the team to bring back to Japan any necessary data, maps and materials related to the Survey, subject to approval by the Government of Tanzania, in order to analyze the project and prepare the reports.
 - (6) To assist the Consultant and relevant survey Companies for field survey under the contract with the Team in customs clearance of equipment such as boring machines, sounding equipment, topographic survey equipment and survey instruments, etc.
- 9-2. Application of Engineer Registration Board (ERB) and Contractor Registration Board (CRB) at the project implementation stage will be undertaken by TPA. Necessary certificates of profession or recognition for submission to ERB and CRB will be prepared and submitted to TPA by the construction company and the consulting company be procured in Japan who will be engaged to undertake the Project.
 - 9-3. Both sides agreed that TPA removes the existing facilities on the new general warehouse site before the tender.
 - 9-4. The construction work is expected to commence in 2019 while the work schedule will be planned based on further examination and subject to change.

Annex 1 Project Site

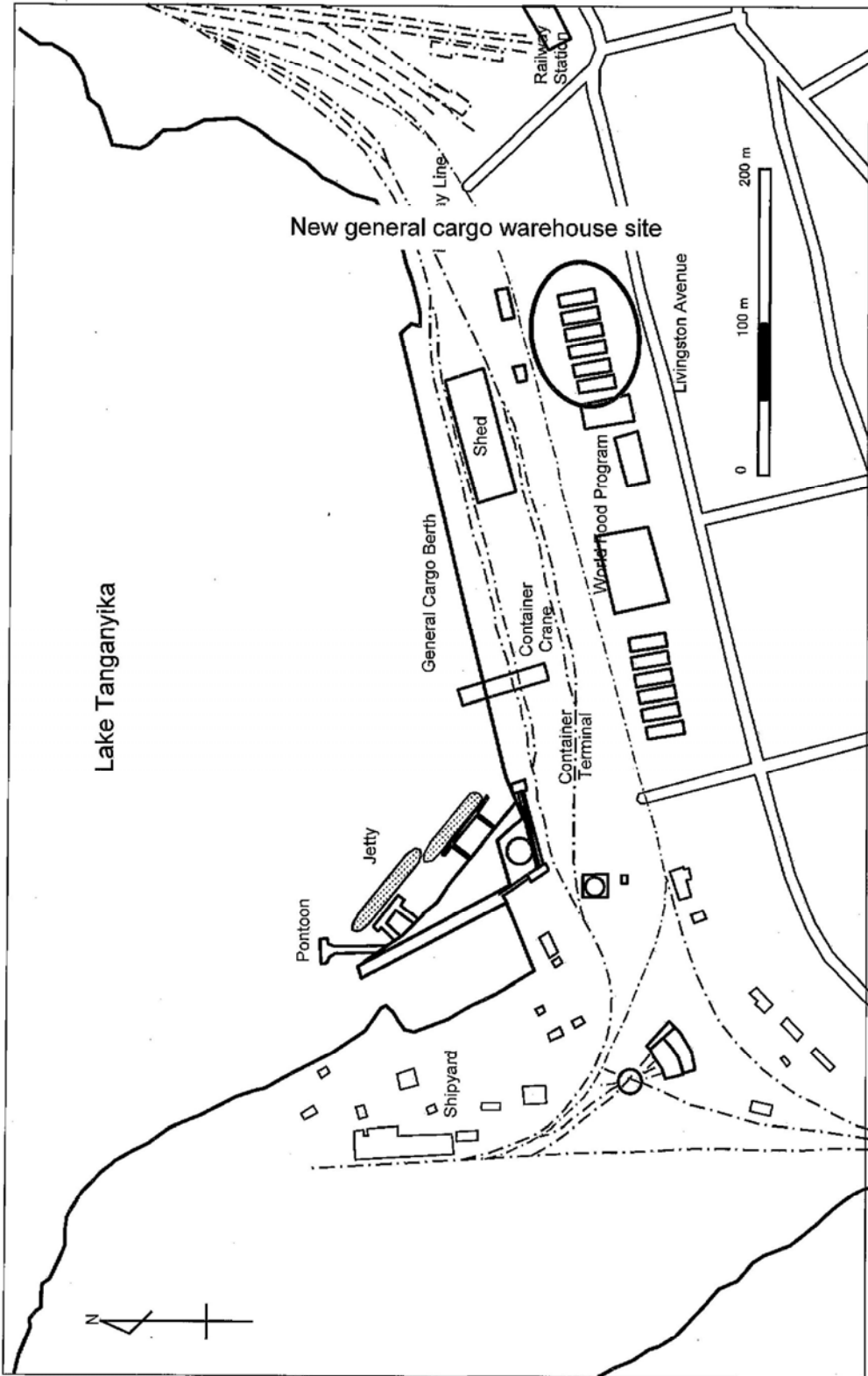
Annex 2 Organization Chart

Annex 3 Japanese Grant

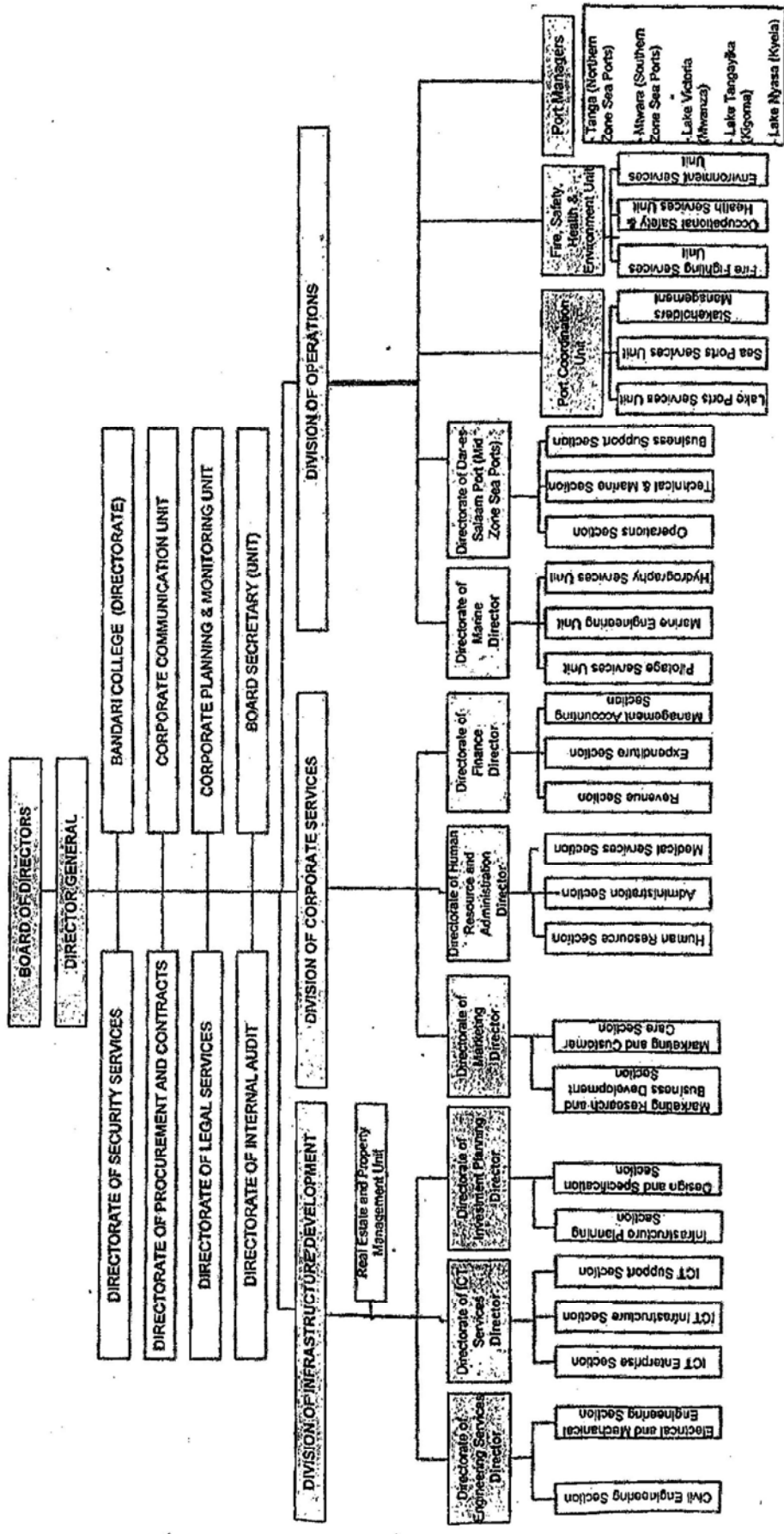
Annex 4 Project Monitoring Report (template)

Annex 5 Major Undertakings to be taken by the Government of Tanzania

Annex 6 Joint Communique of the 1st High Level Ministerial Consultative Meeting on the Development of Central corridor / Lake Tanganyika Integrated Transport System (LTITS) done in Kigoma, United Republic of Tanzania on 27th July, 2017.



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JAPANESE GRANT

The Japanese Grant is non-reimbursable fund provided to a recipient country (hereinafter referred to as “the Recipient”) to purchase the products and/or services (engineering services and transportation of the products, etc.) for its economic and social development in accordance with the relevant laws and regulations of Japan. Followings are the basic features of the project grants operated by JICA (hereinafter referred to as “Project Grants”).

1. Procedures of Project Grants

Project Grants are conducted through following procedures (See “PROCEDURES OF JAPANESE GRANT” for details):

(1) Preparation

- The Preparatory Survey (hereinafter referred to as “the Survey”) conducted by JICA

(2) Appraisal

-Appraisal by the government of Japan (hereinafter referred to as “GOJ”) and JICA, and Approval by the Japanese Cabinet

(3) Implementation

Exchange of Notes

-The Notes exchanged between the GOJ and the government of the Recipient

Grant Agreement (hereinafter referred to as “the G/A”)

-Agreement concluded between JICA and the Recipient

Banking Arrangement (hereinafter referred to as “the B/A”)

-Opening of bank account by the Recipient in a bank in Japan (hereinafter referred to as “the Bank”) to receive the grant

Construction works/procurement

-Implementation of the project (hereinafter referred to as “the Project”) on the basis of the G/A

(4) Ex-post Monitoring and Evaluation

-Monitoring and evaluation at post-implementation stage

2. Preparatory Survey

(1) Contents of the Survey

The aim of the Survey is to provide basic documents necessary for the appraisal of the the Project made by the GOJ and JICA. The contents of the Survey are as follows:

- Confirmation of the background, objectives, and benefits of the Project and also institutional capacity of

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relevant agencies of the Recipient necessary for the implementation of the Project.

- Evaluation of the feasibility of the Project to be implemented under the Japanese Grant from a technical, financial, social and economic point of view.
- Confirmation of items agreed between both parties concerning the basic concept of the Project.
- Preparation of an outline design of the Project.
- Estimation of costs of the Project.
- Confirmation of Environmental and Social Considerations

The contents of the original request by the Recipient are not necessarily approved in their initial form. The Outline Design of the Project is confirmed based on the guidelines of the Japanese Grant.

JICA requests the Recipient to take measures necessary to achieve its self-reliance in the implementation of the Project. Such measures must be guaranteed even though they may fall outside of the jurisdiction of the executing agency of the Project. Therefore, the contents of the Project are confirmed by all relevant organizations of the Recipient based on the Minutes of Discussions.

(2) Selection of Consultants

For smooth implementation of the Survey, JICA contracts with (a) consulting firm(s). JICA selects (a) firm(s) based on proposals submitted by interested firms.

(3) Result of the Survey

JICA reviews the report on the results of the Survey and recommends the GOJ to appraise the implementation of the Project after confirming the feasibility of the Project.

3. Basic Principles of Project Grants

(1) Implementation Stage

1) The E/N and the G/A

After the Project is approved by the Cabinet of Japan, the Exchange of Notes (hereinafter referred to as "the E/N") will be signed between the GOJ and the Government of the Recipient to make a pledge for assistance, which is followed by the conclusion of the G/A between JICA and the Recipient to define the necessary articles, in accordance with the E/N, to implement the Project, such as conditions of disbursement, responsibilities of the Recipient, and procurement conditions. The terms and conditions generally applicable to the Japanese Grant are stipulated in the "General Terms and Conditions for Japanese Grant (January 2016)."

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2) Banking Arrangements (B/A) (See "Financial Flow of Japanese Grant (A/P Type)" for details)

- a) The Recipient shall open an account or shall cause its designated authority to open an account under the name of the Recipient in the Bank, in principle. JICA will disburse the Japanese Grant in Japanese yen for the Recipient to cover the obligations incurred by the Recipient under the verified contracts.
- b) The Japanese Grant will be disbursed when payment requests are submitted by the Bank to JICA under an Authorization to Pay (A/P) issued by the Recipient.

3) Procurement Procedure

The products and/or services necessary for the implementation of the Project shall be procured in accordance with JICA's procurement guidelines as stipulated in the G/A.

4) Selection of Consultants

In order to maintain technical consistency, the consulting firm(s) which conducted the Survey will be recommended by JICA to the Recipient to continue to work on the Project's implementation after the E/N and G/A.

5) Eligible source country

In using the Japanese Grant disbursed by JICA for the purchase of products and/or services, the eligible source countries of such products and/or services shall be Japan and/or the Recipient. The Japanese Grant may be used for the purchase of the products and/or services of a third country as eligible, if necessary, taking into account the quality, competitiveness and economic rationality of products and/or services necessary for achieving the objective of the Project. However, the prime contractors, namely, constructing and procurement firms, and the prime consulting firm, which enter into contracts with the Recipient, are limited to "Japanese nationals", in principle.

6) Contracts and Concurrence by JICA

The Recipient will conclude contracts denominated in Japanese yen with Japanese nationals. Those contracts shall be concurred by JICA in order to be verified as eligible for using the Japanese Grant.

7) Monitoring

The Recipient is required to take their initiative to carefully monitor the progress of the Project in order to ensure its smooth implementation as part of their responsibility in the G/A, and to regularly report to JICA about its status by using the Project Monitoring Report (PMR).

8) Safety Measures

The Recipient must ensure that the safety is highly observed during the implementation of the Project.

9) Construction Quality Control Meeting

Construction Quality Control Meeting (hereinafter referred to as the "Meeting") will be held for quality assurance and smooth implementation of the Works at each stage of the Works. The member of the Meeting will be composed by the

Recipient (or executing agency), the Consultant, the Contractor and JICA. The functions of the Meeting are as followings:

- a) Sharing information on the objective, concept and conditions of design from the Contractor, before start of construction.
- b) Discussing the issues affecting the Works such as modification of the design, test, inspection, safety control and the Client's obligation, during of construction.

(2) Ex-post Monitoring and Evaluation Stage

- 1) After the project completion, JICA will continue to keep in close contact with the Recipient in order to monitor that the outputs of the Project is used and maintained properly to attain its expected outcomes.
- 2) In principle, JICA will conduct ex-post evaluation of the Project after three years from the completion. It is required for the Recipient to furnish any necessary information as JICA may reasonably request.

(3) Others

1) Environmental and Social Considerations

The Recipient shall carefully consider environmental and social impacts by the Project and must comply with the environmental regulations of the Recipient and JICA Guidelines for Environmental and Social Considerations (April, 2010).

2) Major undertakings to be taken by the Government of the Recipient

For the smooth and proper implementation of the Project, the Recipient is required to undertake necessary measures including land acquisition, and bear an advising commission of the A/P and payment commissions paid to the Bank as agreed with the GOJ and/or JICA. The Government of the Recipient shall ensure that customs duties, internal taxes and other fiscal levies which may be imposed in the Recipient with respect to the purchase of the Products and/or the Services be exempted or be borne by its designated authority without using the Grant and its accrued interest, since the grant fund comes from the Japanese taxpayers.

3) Proper Use

The Recipient is required to maintain and use properly and effectively the products and/or services under the Project (including the facilities constructed and the equipment purchased), to assign staff necessary for this operation and maintenance and to bear all the expenses other than those covered by the Japanese Grant.



4) Export and Re-export

The products purchased under the Japanese Grant should not be exported or re-exported from the Recipient.

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PROCEDURES OF JAPANESE GRANT

Stage	Procedures	Remarks	Recipient Government	Japanese Government	JICA	Consultants	Contractors	Agent Bank
Official Request	Request for grants through diplomatic channel	Request shall be submitted before appraisal stage.	x	x				
1. Preparation	(1) Preparatory Survey Preparation of outline design and cost estimate		x		x	x		
	(2) Preparatory Survey Explanation of draft outline design, including cost estimate, undertakings, etc.		x		x	x		
2. Appraisal	(3) Agreement on conditions for implementation	Conditions will be explained with the draft notes (E/N) and Grant Agreement (G/A) which will be signed before approval by Japanese government.	x	x (E/N)	x (G/A)			
	(4) Approval by the Japanese cabinet			x				
3. Implementation	(5) Exchange of Notes (E/N)		x	x				
	(6) Signing of Grant Agreement (G/A)		x		x			
	(7) Banking Arrangement (B/A)	Need to be informed to JICA	x					x
	(8) Contracting with consultant and issuance of Authorization to Pay (A/P)	Concurrence by JICA is required	x			x		x
	(9) Detail design (D/D)		x			x		
	(10) Preparation of bidding documents	Concurrence by JICA is required	x			x		
	(11) Bidding	Concurrence by JICA is required	x			x	x	
	(12) Contracting with contractor/supplier and issuance of A/P	Concurrence by JICA is required	x				x	x
4. Ex-post monitoring & evaluation	(13) Construction works/procurement	Concurrence by JICA is required for major modification of design and amendment of contracts.	x			x	x	
	(14) Completion certificate		x			x	x	
4. Ex-post monitoring & evaluation	(15) Ex-post monitoring	To be implemented generally after 1, 3, 10 years of completion, subject to change	x		x			
	(16) Ex-post evaluation	To be implemented basically after 3 years of completion	x		x			

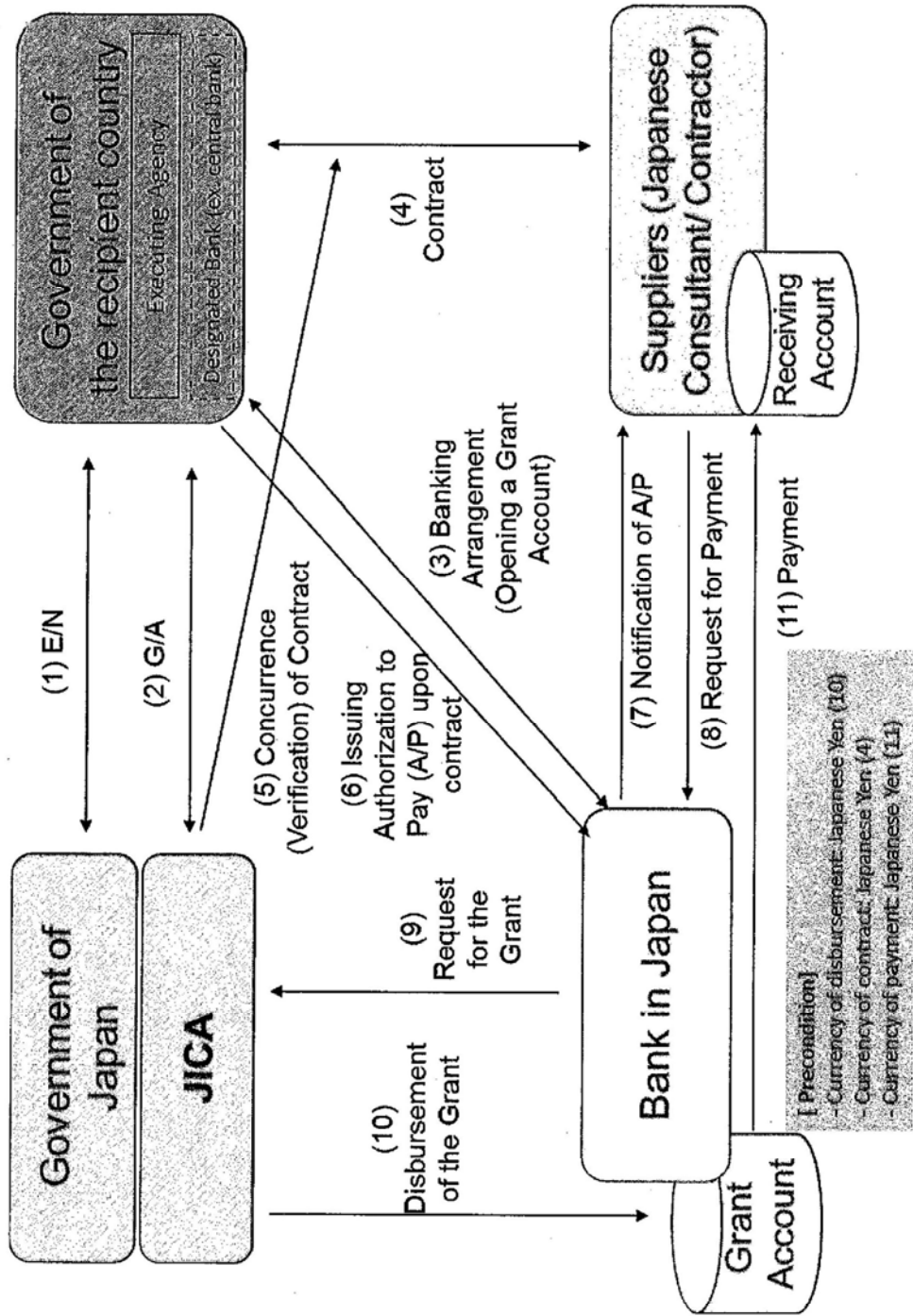
notes:

1. Project Monitoring Report and Report for Project Completion shall be submitted to JICA as agreed in the G/A.
2. Concurrence by JICA is required for allocation of grant for remaining amount and/or contingencies as agreed in the G/A.

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Financial Flow of Japanese Grant (A/P Type)



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Project Monitoring Report
on
Project Name
Grant Agreement No. XXXXXXXX
20XX, Month

Organizational Information

Signer of the G/A (Recipient)	_____ Person in Charge (Designation)
	_____ Contacts
	_____ Address:
	_____ Phone/FAX:
	_____ Email:
Executing Agency	_____ Person in Charge (Designation)
	_____ Contacts
	_____ Address:
	_____ Phone/FAX:
	_____ Email:
Line Ministry	_____ Person in Charge (Designation)
	_____ Contacts
	_____ Address:
	_____ Phone/FAX:
	_____ Email:

General Information:

Project Title	
---------------	--

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G/A NO. XXXXXXX
PMR prepared on DD/MM/YY

E/N	Signed date: Duration:
G/A	Signed date: Duration:
Source of Finance	Government of Japan: Not exceeding JPY _____ mil. Government of (_____): _____

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1: Project Description

1-1 Project Objective

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1-2 Project Rationale

- Higher-level objectives to which the project contributes (national/regional/sectoral policies and strategies)
- Situation of the target groups to which the project addresses

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1-3 Indicators for measurement of "Effectiveness"

Quantitative indicators to measure the attainment of project objectives		
Indicators	Original (Yr)	Target (Yr)
Qualitative indicators to measure the attainment of project objectives		

2: Details of the Project

2-1 Location

Components	Original <i>(proposed in the outline design)</i>	Actual
1.		

2-2 Scope of the work

Components	Original* <i>(proposed in the outline design)</i>	Actual*
1.		

Reasons for modification of scope (if any).

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(PMR)

2-3 Implementation Schedule

Items	Original		Actual
	<i>(proposed in the outline design)</i>	<i>(at the time of signing the Grant Agreement)</i>	

Reasons for any changes of the schedule, and their effects on the project (if any)

2-4 Obligations by the Recipient

2-4-1 Progress of Specific Obligations

See Attachment 2.

2-4-2 Activities

See Attachment 3.

2-4-3 Report on RD

See Attachment 11.

2-5 Project Cost

2-5-1 Cost borne by the Grant(Confidential until the Bidding)

Components			Cost (Million Yen)	
	Original <i>(proposed in the outline design)</i>	Actual <i>(in case of any modification)</i>	Original ¹⁾²⁾ <i>(proposed in the outline design)</i>	Actual
	1.			
Total				

Note: 1) Date of estimation:

2) Exchange rate: 1 US Dollar = Yen

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2-5-2 Cost borne by the Recipient

Components			Cost (1,000 Taka)	
	Original <i>(proposed in the outline design)</i>	Actual <i>(in case of any modification)</i>	Original ^{1)/2)} <i>(proposed in the outline design)</i>	Actual
	1.			

Note: 1) Date of estimation:
 2) Exchange rate: 1 US Dollar =

Reasons for the remarkable gaps between the original and actual cost, and the countermeasures (if any)

(PMR)

2-6 Executing Agency

- Organization's role, financial position, capacity, cost recovery etc,
- Organization Chart including the unit in charge of the implementation and number of employees.

Original *(at the time of outline design)*

name:
 role:
 financial situation:
 institutional and organizational arrangement (organogram):
 human resources (number and ability of staff):

Actual (PMR)

2-7 Environmental and Social Impacts

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- The results of environmental monitoring based on Attachment 5 (in accordance with Schedule 4 of the Grant Agreement).
- The results of social monitoring based on in Attachment 5 (in accordance with Schedule 4 of the Grant Agreement).
- Disclosed information related to results of environmental and social monitoring to local stakeholders (whenever applicable).

3: Operation and Maintenance (O&M)

- 3-1 Physical Arrangement**
- Plan for O&M (number and skills of the staff in the responsible division or section, availability of manuals and guidelines, availability of spareparts, etc.)

Original <i>(at the time of outline design)</i>
Actual <i>(PMR)</i>

- 3-2 Budgetary Arrangement**
- Required O&M cost and actual budget allocation for O&M

Original <i>(at the time of outline design)</i>
Actual <i>(PMR)</i>

4: Potential Risks and Mitigation Measures

- Potential risks which may affect the project implementation, attainment of objectives, sustainability
- Mitigation measures corresponding to the potential risks

Assessment of Potential Risks *(at the time of outline design)*

Potential Risks	Assessment
1. (Description of Risk)	Probability: High/Moderate/Low

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	Impact: High/Moderate/Low
	Analysis of Probability and Impact:
	Mitigation Measures:
	Action required during the implementation stage:
	Contingency Plan (if applicable):
2. (Description of Risk)	Probability: High/Moderate/Low
	Impact: High/Moderate/Low
	Analysis of Probability and Impact:
	Mitigation Measures:
	Action required during the implementation stage:
	Contingency Plan (if applicable):
3. (Description of Risk)	Probability: High/Moderate/Low
	Impact: High/Moderate/Low
	Analysis of Probability and Impact:
	Mitigation Measures:
	Action required during the implementation stage:
	Contingency Plan (if applicable):
Actual Situation and Countermeasures	
(PMR)	

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5: Evaluation and Monitoring Plan (after the work completion)

5-1 Overall evaluation

Please describe your overall evaluation on the project.

5-2 Lessons Learnt and Recommendations

Please raise any lessons learned from the project experience, which might be valuable for the future assistance or similar type of projects, as well as any recommendations, which might be beneficial for better realization of the project effect, impact and assurance of sustainability.

5-3 Monitoring Plan of the Indicators for Post-Evaluation

Please describe monitoring methods, section(s)/department(s) in charge of monitoring, frequency, the term to monitor the indicators stipulated in 1-3.

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Attachment

1. Project Location Map
 2. Specific obligations of the Recipient which will not be funded with the Grant
 3. Monthly Report submitted by the Consultant
- Appendix - Photocopy of Contractor's Progress Report (if any)
- Consultant Member List
 - Contractor's Main Staff List
4. Check list for the Contract (including Record of Amendment of the Contract/ Agreement and Schedule of Payment)
 5. Environmental Monitoring Form / Social Monitoring Form
 6. Monitoring sheet on price of specified materials (Quarterly)
 7. Report on Proportion of Procurement (Recipient Country, Japan and Third Countries) (PMR (final) only)
 8. Pictures (by JPEG style by CD-R) (PMR (final) only)
 9. Equipment List (PMR (final) only)
 10. Drawing (PMR (final) only)
 11. Report on RD (After project)

3

Monitoring sheet on price of specified materials

1. Initial Conditions (Confirmed)

Items of Specified Materials	Initial Volume A	Initial Unit Price (¥) B	Initial total Price C=A×B	1% of Contract Price D	Condition of payment Price (Decreased) E=C-D	Condition of payment Price (Increased) F=C+D
1 Item 1	●●t	●●	●●	●●	●●	●●
2 Item 2	●●t	●●	●●	●●		
3 Item 3						
4 Item 4						
5 Item 5						

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2. Monitoring of the Unit Price of Specified Materials

(1) Method of Monitoring : ●●

(2) Result of the Monitoring Survey on Unit Price for each specified materials

Items of Specified Materials	1st month 2015	2nd month 2015	3rd month 2015	4th	5th	6th
1 Item 1	●	●	●			
2 Item 2						
3 Item 3						
4 Item 4						
5 Item 5						

(3) Summary of Discussion with Contractor (if necessary)

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-
-

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Report on Proportion of Procurement (Recipient Country, Japan and Third Countries)
 (Actual Expenditure by Construction and Equipment each)

	Domestic Procurement (Recipient Country) A	Foreign Procurement (Japan) B	Foreign Procurement (Third Countries) C	Total D
Construction Cost	(A/D%)	(B/D%)	(C/D%)	
Direct Construction Cost	(A/D%)	(B/D%)	(C/D%)	
others	(A/D%)	(B/D%)	(C/D%)	
Equipment Cost	(A/D%)	(B/D%)	(C/D%)	
Design and Supervision Cost	(A/D%)	(B/D%)	(C/D%)	
Total	(A/D%)	(B/D%)	(C/D%)	

Major Undertakings to be taken by the Government of Tanzania

1. Specific obligations of the Government of Tanzania which will not be funded with the Grant

(1) Before the Tender

NO	Items	Deadline	In charge	Estimated Cost	Ref.
1	To open bank account (B/A)	within 1 month after the signing of the G/A	MOFP		
2	To issue A/P to a bank in Japan (the Agent Bank) for the payment to the consultant	within 1 month after the signing of the contract with Consultant	MOFP/ MOWTC/ TPA		
3	To approve variation of the EIA(Conditions of approval should be fulfilled, if any), provide the permission of construction for execution of the project, if necessary and secure the necessary budget for implementation.	before the signing of the G/A	MOWTC/ TPA		
4	To secure project site.	before start of the construction	MOWTC/ TPA		
5	To secure temporary yard, dumping area and access area for the construction works.	before start of the construction	MOWTC/ TPA		
6	To remove and relocate the following facilities. 1) Relocation of pontoon and existing barge in front of the jetty. 2) Removal and relocation of existing function of passenger terminal 3) Removal and relocation of existing fence and gate 4) Cutting trees at the project site 5) Removal of existing facilities on the site of new general cargo warehouse	before start of the construction	MOWTC/ TPA		
7	To construct temporary gates and fences to be necessary for passenger terminal under SOLAS Convention.	before start of the construction	MOWTC/ TPA		
8	To submit Project Monitoring Report (with the result of Detail Design)	before preparation of bidding documents	MOWTC/ TPA		

(B/A: Banking Arrangement, A/P: Authorization to pay, N/A: Not Applicable)

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(2) During the Project Implementation

NO	Items	Deadline	In charge	Estimated Cost	Ref.
1	To issue A/P to a bank in Japan (the Agent Bank) for the payment to the Contractor(s) and Supplier(s)	within 1 month after the signing of the contract(s) with Contractor(s) and supplier(s)	MOWTC/ TPA		
2	To bear the following commissions to a bank in Japan for the banking services based upon the B/A		MOFP		
	1) Advising commission of A/P	within 1 month after the signing of the contract(s)			
	2) Payment commission for A/P	every payment			
3	To ensure prompt unloading and customs clearance at ports of disembarkation in recipient country and to assist the Contractor(s) and the Supplier(s) with internal transportation therein	during the Project	MOWTC/ TPA		
4	To accord Japanese nationals and/or physical persons of third countries whose services may be required in connection with the supply of the products and the services such facilities as may be necessary for their entry into the country of the Recipient and stay therein for the performance of their work	during the Project	MOWTC/ TPA/ POPSM		
5	To ensure that customs duties, internal taxes and other fiscal levies which may be imposed in the country of the Recipient with respect to the purchase of the products and/or the services be exempted.	during the Project	MOFP		
6	To bear all the expenses, other than those covered by the Grant, necessary for the implementation of the Project	during the Project	MOWTC/ TPA/ MOFP		
7	To submit Project Monitoring Report	every 3 month	MOWTC/ TPA		
	1) To submit Project Monitoring Report (final)	within one month after signing of Certificate of Completion for the works under the contract(s)	MOWTC/ TPA		
8	To submit a report concerning completion of the Project	within six months after completion of the Project	MOWTC/ TPA		
9	To provide a disposal area	before start of the construction	MOWTC/ TPA		
10	To provide facilities for distribution of electricity, water supply and drainage and other incidental facilities necessary for the implementation of the Project outside the site(s)				
	1) Electricity The distributing line to the site	before start of the construction	MOWTC/ TPA		
	2) Water Supply The city water distribution main to the site	6 months before completion of the construction	MOWTC/ TPA		
	3) Drainage The city drainage main (for storm, sewer and others) to the site	6 months before completion of the construction	MOWTC/ TPA		
	4) Furniture and Equipment General furniture fire extinguisher	1 month before completion of the construction	MOWTC/ TPA		

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11	To take necessary measure for safety port operation · traffic control · rope off	during the construction	MOWTC/ TPA		
12	To implement EMP and EMoP	during the construction	MOWTC/ TPA		
13	To submit results of environmental monitoring to JICA, by using the monitoring form, on a quarterly basis as a part of Project Monitoring Report	during the construction	MOWTC/ TPA		
14	To implement RAP (livelihood restoration program, if needed)	for a period based on livelihood restoration program	MOWTC/ TPA		

(3) After the Project

NO	Items	Deadline	In charge	Estimated Cost	Ref.
1	To implement EMP and EMoP	for a period based on EMP and EMoP	MOWTC/ TPA		
2	To submit results of environmental monitoring to JICA, by using the monitoring form, semiannually - The period of environmental monitoring may be extended if any significant negative impacts on the environment are found. The extension of environmental monitoring will be decided based on the agreement between TPA and JICA.	for three years after the Project	MOWTC/ TPA		
3	To maintain and use properly and effectively the facilities constructed and equipment provided under the Grant Aid 1) Allocation of maintenance cost and staff 2) Operation and maintenance structure 3) Routine check/Periodic inspection	After completion of the construction	MOWTC/ TPA		
4	To provide necessary equipment, furniture etc. for administration offices, ticket booth, Kiosk and others after completion of facilities.	After completion of the construction	MOWTC/ TPA		
5	To collect trash and sewage water in the passenger terminal and general cargo warehouse after completion of facilities and periodical maintenance management of septic tank.	After completion of the construction	MOWTC/ TPA		
6	To keep the water depth at the berth of Kigoma	After completion of the construction	MOWTC/ TPA		

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2. Other obligations of the Government of Tanzania funded with the Grant

NO	Items	Deadline	Amount (Million Japanese Yen)*
1	(Consulting Service) To implement detailed design, bidding support and construction supervision		
2	(Construction works) 1) To rehabilitate passenger wharf <ul style="list-style-type: none"> · east berth · north berth · passenger wharf · access road · front open space of passenger terminal · passenger terminal building 2) To rehabilitate on-land facility of cargo wharf <ul style="list-style-type: none"> · general cargo warehouse 3) To provide facilities for the distribution of electricity, water supply, drainage and other incidental facilities <ul style="list-style-type: none"> a) Electricity <ul style="list-style-type: none"> · The drop wiring and internal wiring within the site · The main circuit breaker and transformer b) Water Supply <ul style="list-style-type: none"> · The supply system within the site (receiving and/or elevated tanks) c) Drainage <ul style="list-style-type: none"> · The drainage system (for toilet sewer, ordinary waster, storm drainage and others) within the site 4) To remove existing jetties and dolphins (Mobilization) 1) To conduct the following transportation <ul style="list-style-type: none"> a) Marine(Air) transportation of the products from Japan to the recipient country b) Internal transportation from the port of disembarkation to the project site 2) To construct temporary access roads for construction work <ul style="list-style-type: none"> a) Within the site 3) To construct the temporary building for construction work.		
	Total		XXX

*The Amount is provisional. This is subject to the approval of the Government of Japan.

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Joint Communiqué of the 1st High Level Ministerial Consultative Meeting on the Development of the Central Corridor/Lake Tanganyika Integrated Transport System (LTITS), done in Kigoma, United Republic of Tanzania on 27th July, 2017.

The 1st High Level Ministerial Consultative Meeting on the Development of the Central Corridor/Lake Tanganyika Integrated Transport System was officially opened and chaired by Hon. Bagiire Aggrey Henry, Minister of State for Transport in the Ministry of Works and Transport, the Republic of Uganda.

The meeting was also attended by Hon. Prof. Makame M. Mbarawa, Minister of Works, Transport and Communication, United Republic of Tanzania; Hon. Eng. Jean Bosco Ntunzwenimana, the Minister of Transport, Public Works & Equipment; Hon. Ndahayo Isabelle, Minister at the Office of the President in Charge of EAC Affairs and Hon. Pelate Niyonkuru, Minister for Trade, Industry and Tourism, Republic of Burundi; the EAC Secretary General, Hon. Amb. Liberat Mpfumukeko. The Democratic Republic of Congo was represented by Mrs Marie Ngandu Mbaya, in Charge of Stakeholders' Engagement at the CEP COR.

The meeting was also attended by Hon. Brig. Gen (RTD) Emmanuel Maganga, the Kigoma Regional Commissioner; Hon. Zito Zuberi Kabwe, MP, Kigoma Urban Constituency; Hon. Peter Serukamba, MP, Kigoma North Constituency, United Republic of Tanzania; Hon. Juvenal Bigirimana, Governor of Rumonge Province, Republic of Burundi; Representative of Lake Tanganyika Authority, the Private Sector Representatives from Tanzania, Burundi and DRC and the Development Partners, namely TMEA, AfDB and WB.

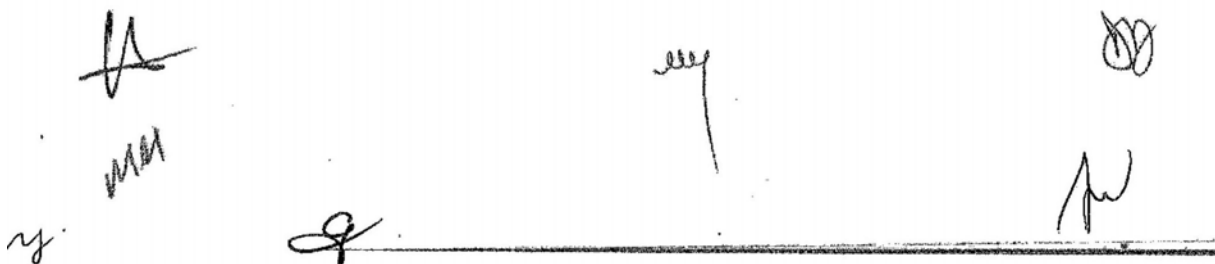
All delegations thanked the Government of the United Republic of Tanzania for hosting the meeting and for the hospitality extended to them.

The Honorable Ministers met in a warm and cordial atmosphere.

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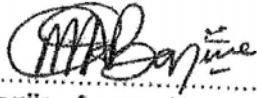
The 1st High Level Ministerial Consultative Meeting:

1. Received and endorsed the Report of the Experts on the Development of the Central Corridor/Lake Tanganyika Integrated Transport System: A Matrix of Key Action Points is attached as Annex 1.
2. Received the Report on resources committed so far to implement the LTITS and commended the Member Countries and the Development Partners for the milestones reached.
3. Directed the Central Corridor Secretariat to mobilise additional resources and coordinate with member countries, the Private Sector and the Development Partners to address the remaining gaps.
4. Commended the Government of the United Republic of Tanzania for launching the construction of the Central Corridor SGR and committed to join efforts to extend the railway network to Burundi (Uvinza-Musongati) and to DRC.
5. Noted additional progress made on the improvements of TPA Operations, the resumption of Tanzania Railways Services from Dar es Salaam to Kigoma and reiterated the need to increase the Block Train Services for DRC and Burundi destined Cargo.
6. Directed that TPA, TRL, TRA and other relevant Institutions come up with an Action Plan (by end of August 2017), in order to start Clearing Services for some DRC and Burundi destined cargo at Kigoma Port; and organize communication and marketing in DRC and Burundi on the benefits of such arrangements, by end of September 2017.
7. Reiterated the need to improve Lake Tanganyika Ports and Transport Services and their intermodal linkages.
8. Noted and Appreciated the efforts of all Developments Partners that continue to support the improvement of the Central Corridor Efficiency.
9. Directed the Central Corridor Secretariat to establish and lead an M&E Framework with the key Stakeholders (Implementing Agencies, Private Sector and Development Partners) and provide Bi-Annual Reports on the progress made in implementing the Lake Tanganyika Integrated Transport System and invited the Development Partners to support this Framework.

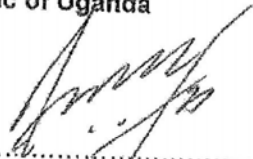
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10. Hailed the coordination provided by the Central Corridor Secretariat in organizing the meeting and the support received from TMEA on the same.

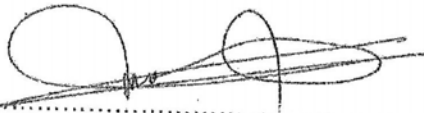
Done and Signed on 27th July 2017, Kigoma, Tanzania:



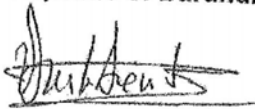
.....
Hon. Baguire Aggrey Henry
Minister of State for Transport
Chair/CCTTFA Inter-State Council of Ministers
The Republic of Uganda



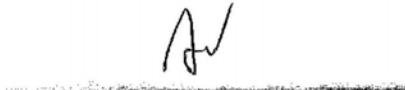
.....
Hon. Prof. Makame M. Mbarawa,
Minister of Works, Transport and Communication
The United Republic of Tanzania



.....
Hon. Eng. Jean Bosco Ntunzwenimana,
Minister of Transport, Public Works & Equipment
The Republic of Burundi



.....
Capt. Diudonne Dukundane
Executive Secretary,
Central Corridor Transit Transport Facilitation Agency





Development of Central Corridor- Lake Tanganyika Integrated Transport System

“High Level Consultative Meeting”

Meeting Report

(July 26th 2017, Kigoma, Tanzania)

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1.0 INTRODUCTION

The High Level Consultative Meeting on the Development of Central Corridor- Lake Tanganyika Integrated Transport System was held on 26th July 2017 in Kigoma Tanzania.

The Meeting was attended by key stakeholders responsible for trade and transport from the Lake Tanganyika riparian member countries of the Central Corridor namely: The United Republic of Tanzania, the Democratic Republic of Congo and the Republic of Burundi. The meeting was also attended by representatives from the EAC Secretariat and the Development Partners involved in the Lake Tanganyika transportation development (Trade Mark East Africa (TMEA), African Development Bank (AfDB) and World Bank (WB). The list of participants is attached as **annex 2**.

1.1 Opening remarks

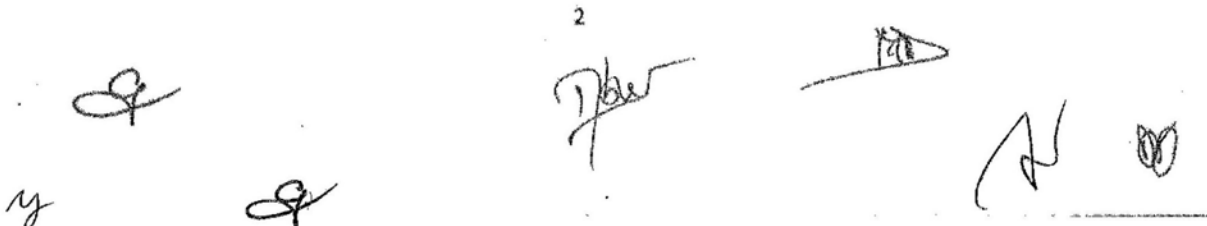
The meeting was officially opened by The Kigoma Regional Commissioner, Brigadier General (Rtd) Emmanuel Maganga. In his opening remarks, he welcomed delegates to Kigoma and thanked the Central Corridor and Member States of the Central Corridor for choosing to prioritise the development of Lake Tanganyika Integrated Transport System and wished the delegates fruitful deliberations.

The Permanent Secretary for Transport in the Ministry of Works, Transport and Communication, United Republic of Tanzania, Dr. Leonard M. Chamuriho, in his remarks highlighted that the High Level Consultative Meeting on the development of Lake Tanganyika Integrated Transport system is an important meeting since it will allow stakeholders to come up with a coordinated approach in the development of Lake Tanganyika transport system.

The Permanent Secretary further informed the Meeting that the Government of the United Republic of Tanzania is commencing construction of the new Standard Gauge Railway (SGR) while maintaining the exiting meter-gauge railway so that Railway services can be maintained. He also informed the meeting that there are projects under way to improve both Dar es Salaam and Kigoma Ports to enable a seamless flow of cargo to Burundi and DRC.

Mr. Déo Mbabarempore, Permanent Secretary in the Ministry of Transport, Public Works and Equipment; Burundi; in his remarks thanked the United Republic of Tanzania and the people of Tanzania for the warm welcome for hosting this meeting in Kigoma. The Permanent Secretary further thanked the CCTTFA for all the support to the Member States and most especially for Burundi. Under CCTTFA facilitation, Block trains were launched from Dar es Salaam to Bujumbura and there is a great impact of 30% reduction in the cost of moving goods to Bujumbura. He advised the meeting to come up with a monitoring matrix so that whatever is agreed upon is closely followed up for implementation.

On behalf of the Permanent Secretary, Ministry of Transport and Ways of Communications of DRC, Madame Marie Ngandu Mbwaya, in her opening remarks re-iterated DRC commitment to implementing the projects that will improve the efficiency of the Central Corridor.

The page contains several handwritten signatures and initials. On the left side, there are two distinct signatures. In the center, there is a large, stylized signature. To the right of this, there is a signature that appears to be 'T.M.' with a horizontal line underneath. Further right, there are two more signatures, one of which is a large, bold 'N'.

She further informed the meeting that DRC is committed to having the key ports around Lake Tanganyika developed notably the ports of Kalundu, Kalemie and Moba to enable seamless flow of cargo. She called on the Development Partners to support the Government of DRC's effort in this endeavor.

All the Heads of delegations thanked the CCTTFA and TMEA for organizing this important meeting and for all facilitation provided; and all development Partners present for their support to the initiative.

2. ADOPTION OF THE AGENDA & PROGRAMME

The agenda and the Program of the meeting was unanimously adopted as follows:

- i. Country Presentations: Countries' perspectives on resolving infrastructure gaps & inefficiencies to enable attracting higher traffic volumes to the Central Corridor
- ii. Private Sector Presentation: Infrastructure and Trade & Transport Facilitation Needs to enable them increase use of the Corridor
- iii. Development Partners Presentations: Ongoing and Planned Interventions
- iv. Break Away Session: Group Discussions
- v. Plenary Session: Plenary: "Recap from group discussions"
- vi. Finalizing and Signing of the Report

3. MEETING DELIBERATIONS

During the Meeting Deliberations, Countries' representatives, Private Sector and Development Partners (i) Acknowledged their major cost advantage of using a multi-modal Port-Rail-Lake Transport System & (ii) Made presentations regarding projects and challenges that should be addressed in order to achieve increased use of Multi-Modal transport facilities along Dar-Kigoma – DRC/Burundi routes.

After presentations, countries broke into group discussions in order to have a common understanding of the issues around various sectors, interacted with Development Partners and came up with recommendations for remedies to the outstanding challenges to improve efficiency.

The meeting recommended that in order to make Kigoma port as a port of destination, CCTTFA Secretariat coordinates an initial assessment mission to Kigoma Port to take place by end of August 2017.

The bottom of the page features several handwritten signatures and initials. From left to right, there is a signature that appears to be 'y', another signature, a signature with a '3' above it, a signature that looks like 'M', a signature that looks like 'W', and a final signature that looks like 'D'.


Monitoring & Evaluation Mechanism

The meeting resolved to set up a coordinated Mechanism and directed the Central Corridor Secretariat to establish and lead an Monitor & Evaluation (M & E) Framework through Coordination with key stakeholders between (Implementing Agencies, EAC, Lake Tanganyika Authority (LTA), Private Sector & Development Partners) and provide the Bi-Annual reports on the progress made in implementing Lake Tanganyika Integrated Transport System.

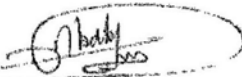
A summary of the outcome of the consultations and the way forward is captured in the Monitoring and Evaluation Matrix in **annex 1**:

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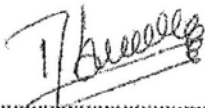
Done on 26th July 2017 in Kigoma, Tanzania



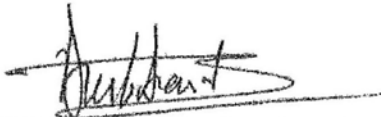
.....
Dr. Leonard M. Chamuriho
Permanent Secretary (Transport)
Ministry of Works, Transport & Communication
The United Republic of Tanzania



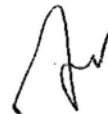
.....
Mr. Deogratias Mbabarempore
Permanent Secretary,
Ministry of Transport, Public Works & Equipment,
The Republic of Burundi.



.....
Ms. Marie Ngandu Mbwaya
On Behalf of the Secretary General,
Ministry of Transport and Ways of Communication
The Democratic Republic of Congo.

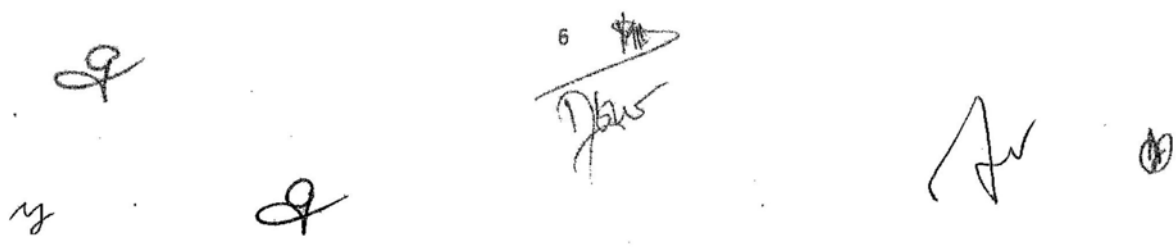


.....
Capt. Dieudonne Dukundane
Executive Secretary
Central Corridor Transit Transport Facilitation Agency
Dar es Salaam-Tanzania



ANNEX 1: MATRIX OF ISSUES & CHALLENGES AS WELL INTERVENTIONS TO ADDRESS THEM

Sector	Sub-Sector	Issues/Challenges	Current and Planned Interventions	Remaining Gaps to be Addressed	Responsible Intervener	Remarks/Timelines
Ports	Capacity Improvement of Kigoma Port		Rehabilitation of Sheds		JICA	July 2018
			Concrete Pavement of Terminal and access road		TMEA	Jan 2018
			Strengthening Quays		TMEA	
			Office buildings around the port		TPA	2017/ 2019
			Realignment of Railway Lines		TMEA	Jan 2018
			Passenger Terminal Design & Construction		JICA	July 2018
			Construct new Security Quay		TPA	2017/ 2019
			Establish Port Yard ICD		TMEA	Jan 2018
			Acquire Cargo Handling Equipment		TPA	2017/ 2019
			Establish Katosho ICD		TPA	2017/ 2019
			Prepare and Install Navigational Aids		TMEA	Jan 2018
			Establish Integrated ICT Systems		TPA	2017/2019
			Upgrade Utility Systems		TPA	2017/2019
		Establish Kigoma as Port of Destination		TPA	2017/2019	
	Improvement of physical		Establish reception facilities -- 1m USD		World Bank	To be firmed up in the



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Sector	Sub-Sector	Issues/Challenges	Current and Planned Interventions	Remaining Gaps to be Addressed	Responsible Intervener	Remarks/ Timelines	
	Infrastructure: World Bank Support to Kigoma Port, Tanzania, Component 1		Dredging of Port Access Channels – 5m USD		World Bank	Identification mission of September 2017	
			Realignment of Cargo Berth – 15 m USD		World Bank		
			Upgrade Fenders – USD 1 m		World Bank		
			Paving Access Road – 3m USD		World Bank		
			Aids to Navigation – 1m USD				
	I. Improvement of port infrastructure at Kigoma			Realignment of key feeder roads and Community Jetty – USD 10m		World Bank	
				Detailed design of Railway intervention: USD 15m		World Bank	
				Rehabilitation and upgrading of Kigoma- Burundi roads – USD 120. For example: Mwandiga – Kagunga (65 kms), Kagunga-Nyanza Lac (25 kms) etc...		World Bank	
	World Bank Component 2 to Tanzania, USD 10m	Improving Institutional infrastructure and Implementation		Technical Assistance to TPA Project Implementation Team USD 4m		World Bank	
				Hydrograph Survey and FS arrangement – USD 2M		World Bank	
				Supervision of Civil Works in Ports- USD 4m		World Bank	
				Supervision of Civil Works In Railway – USD 10m		World Bank	
	AfDB Road support to Tanzania Feasibility Studies			Nyakanazi-Kasulu-Manyovu		AfDB	
				Nyakahura-Kumubuga-Murusagamba-Gahumo 34km		AfDB	
				Kumugube-Rukuge-Muluyalume – 35km		AfDB	

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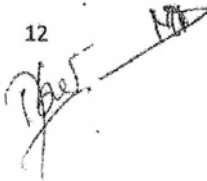
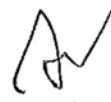

Sector	Sub-Sector	Issues/Challenges	Current and Planned Interventions	Remaining Gaps to be Addressed	Responsible Intervener	Remarks/Timelines
			Chagu – Kazilambwa Road 36km		AfDB	
			May improve inland Port Program in 2019 -		AfDB	
			Mwangongo Jetty		AfDB	
			Mtanga Jetty		AfDB	
	Bujumbura Port JICA component: 28m USD	Rehabilitation and Modernisation	Container Terminal Slipway Dredging		JICA	Organisation of Round Table for Donors within 2 weeks to clarify their commitment
	AfDB/EU Component:		Rehabilitation Equipment	Burundi : 5% Counter part funding	AfDB	
	TMEA Component: 2m		Port Productivity		TMEA	
	Rumonge Port World Bank Component: 10m	New Port	Study Update & Works		WB	
	Kabonga Port AfDB component: 230,000 USD	New Port	FS		AfDB	
	Lake Tanganyika WB component: 48m USD		Transport Programme		WB	
			Safety and Security of Navigation		WB	

Sector	Sub-Sector	Issues/Challenges	Current and Planned Interventions	Remaining Gaps to be Addressed	Responsible Intervener	Remarks/Timelines
	TMEA Component 6.9 m USD		Safety and Security of Navigation		TMEA	
	World Bank Component 1: to DRC Improvement of Physical Infrastructure – USD 44m	Kalemie	Establishment of discharge facilities from the vessels: USD 1 m		World Bank	
Dredging of the Port Area and Access Channel: USD 5 m				World Bank		
Rehabilitation of the Quay: USD 10 m				World Bank		
Additional Covered Storage: USD 2 m				World Bank		
Cargo Handling Equipment: USD 3 m				World Bank		
Kalundu		Establishment of discharge facilities from the vessels: USD 1 m		World Bank		
		Dredging of the Port Area and Access Channel: USD 5 m		World Bank		
		Rehabilitation of the Quay: USD 10 m		World Bank		
		Additional Covered Storage: USD 2 m		World Bank		
		Cargo Handling Equipment – Mobile Crane USD 3 m		World Bank		
Improvement of Key Access Infrastructure		Rehabilitation of key Feeder roads: USD 3m		World Bank		
		Detailed Design of the railway intervention: ~ USD 15m		World Bank		
		Rehabilitation of NRS-Uvira - Lubumbashi: -USD 100m Concept note to be sent to the World Bank		World Bank		

Sector	Sub-Sector	Issues/Challenges	Current and Planned Interventions	Remaining Gaps to be Addressed	Responsible Intervener	Remarks/Timelines
			Kalundu (Uvira-Kamanjola road)	FS	NEPAD Agency	
	World Bank Component 2 support to DRC: Improving Institutional Infrastructure and Implementation Assistance: USD 19m	Improvement of Institutional Framework	Capacity Building/Training for port/Maritime Administration staff USD 1m		World Bank	
Implementation Assistance		Technical Assistance to project Implementation Team: USD 3m		World Bank		
		Supervision of Civil Works: USD 15m		World Bank		
	Baraka Port	Requires initial Assessment	FS and DED			NO Donor Indicated
	OSBP Kasindi, DRC		Civil Works		TMEA	
	OSBP Ruzizi-Ruzizi		FS & Works		TMEA	
	Kalundu Port		Dredging Works		TMEA	
			Rehabilitation of berth		TMEA	
			Rehabilitation of Quay		TMEA	
			Ground handling Equipment		TMEA/ JICA	
	Moba Port		Preparation work (FS&DED), Construction of new works			NO Donor Indicated
Roads	Bujumbura-Rumonge-Nyanza-Lac	Road in very poor condition, needs of urgent rehabilitation	Section Nyanza-Lac /Rumonge : Detailed Engineering study completed Section Rumonge/Bujumbura : the		AfDB ready to fund construction	Timeframe to be determined when donors will commence the project Joint Preparation Mission in September 2017 between

Sector	Sub-Sector	Issues/Challenges	Current and Planned Interventions	Remaining Gaps to be Addressed	Responsible Intervener	Remarks/Timelines
			Detailed Engineering study expected to be completed soon under EAC		AfDB ready to fund construction once study are completed	AfDB, Tanzania & Burundi
	Gahamo-Cankuzo 2018/19	New Road	Feasibility study completed in 2014 needs to be updated. Construction planned in 2019		AfDB	
	OSBP Mugina/Manyovu	New Construction	Joint mission in August 2017 (Burundi-Tanzania) to establish where the facilities will be located		AfDB	
	OSBP Gatumba - Kavimvira	New construction	Feasibility study		WB, TMEA	
	OSBP Kobero 1 M USD	Completion of buildings	Works		TMEA	
SNCC Railway, DRC	Kalemie-Kabalo-Kindu		Studies (FS and DED) Rehabilitation			NO Donor indicated
	Kabalo-Kamina		Studies (FS and DED) Rehabilitation			
	Kindu-Ubundu		Studies (FS and DED) Rehabilitation			
Railway Burundi	Uvinza- Musongati		Standard Gauge Railway, New Construction FS under way			No Donor indicated

Sector	Sub-Sector	Issues/Challenges	Current and Planned Interventions	Remaining Gaps to be Addressed	Responsible Intervener	Remarks/Timelines
SSATP/World Bank Component			Review of the Central Corridor Transit Transport Facilitation Agency's Strategic Plan Support to the Central		SSATP	CCTTFA
			Review of Lake Tanganyika Protocols			LTA
			Corridor Transit Transport Facilitation Agency's Observatory project			CCTTFA








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

ANNEX 1: LIST OF PARTICIPANTS

	NAME	TITLE	Organization	COUNTRY	TELEPHONES	EMAILS
1.	Hon Brig General (RTD) Emmanuel Maganga	Kigoma Regional Commissioner	Kigoma Regional Administration	Tanzania		
2	Hon Peter SERUKAMBA	Member of Parliament	Kigoma North	Tanzania		
3	Hon Zitto Z Kabwe	Member of Parliament	Kigoma South	Tanzania		
4.	Dr Leonard Chamurilho	Permanent Secretary	Ministry of Works, Transport & Communication	Tanzania		
5	Capt Dieudonne Dukundane	Executive Secretary	CC-TTFA	Tanzania		
6	Ms Marie Ngwandu Mbwana	Representative, Secretary General	CEPCOR	DRC		
7	Mbabarempore Dao	Permanent Secretary	Ministry of Transport, Public Works & Equipment	Burundi		
8	Mr John Ndikumwami	Transport Engineer-	African Development Bank- Burundi	Burundi		
9	MR KABURA Leopold	Deputy General Commissioner	Burundi Revenue Authority (OBR)	Burundi		
10	Eric Ntanga	Secretary General	Transport Association of Burundi	Burundi		
11	Ancilla Mteturuye	Director of Customs Programmes & Monitoring	Burundi Revenue Authority (OBR)	Burundi		
12	Benjamin Mbimbi	Vice Chairman	Central Corridor Stakeholders Consultative Committee	TANZANIA		

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13	Severin Kaombwe	Infrastructure Director	TMEA	Tanzania		
14						
15	Vincent Rudahunga	Infrastructure Manager	TMEA	Rwanda		
16	Gabriel Hakizimana	Director of Environment	Lake Tanganyika Authority	Burundi		
17	Jean Mudekereza Namegabe	Chairman Private Sector	Private Sector Federation - FEC South Kivu	DRC		
18	Kaimu Mkeyenge	Senior Research Officer	Tanzania Revenue Authority	Tanzania		
19	Beno Mathiasy Nzowa	Asst Manager Transit Control	Tanzania Revenue Authority	Tanzania		
20	Jepherson Michal NNKO	Acting Manager Design & Standards	Tanzania Roads Agency (TANROADS)	Tanzania		
21	Ally Ahmed Saburi	S.S. Bakhresa & Co Ltd	S.S. Bakhresa & Co Ltd	Tanzania		
21	Vincent Nibayubahe	Director General	Burundi Roads Agency (Office de Route)	Burundi		
22	Kashoto Mutombo	Deputy Director - Operations	DRC Railways - SNCC	Lubumbashi - DRC		
23	Jeanne - Catherine Milokwa	Deputy Commissioner	DGDA	Kinshasa, DRC		
24	Musa Patrick Tamba	Senior Transport Engineer	African Development Bank	Tanzania		
25	Bonaventure Sintobakwira	Director General	Global ports	Burundi		
26	Mamamdi Mohamed Ben Ali	Representative, Azom Burundi	Bakhresa Grain Milling	Burundi		
27	Robert Cheriff Ndate	Assistant Director -	ARNOLAC	Burundi		



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		Commercial & Financier				
28	Yedan YAYA	Regional Integration Pillar – Lead	World Bank/SSATP	Nairobi, Kenya		
29	Nzoyihera Alme	Country Representative, Burundi & DRC	TMEA	Burundi		
30	Kongolo Sumail Pierre	Regional Director- Great Lakes	SNCC	Kalemie, DRC		
31	Katembo David Crispin	Acting Port Manager	Kigoma Port	Kigoma, Tanzania		
32	Mwambapa Juma Sethi	Assistant Director	Ministry of Industry, Trade & Investment	Tanzania		
33	Gerard Nyandwi	General Manager	Maritime Authority – AMPF-Burundi	Burundi		
34	Kazaura Kamugisha	Director Infrastructure	EAC Secretariat	Arusha/Tanzania		
35	Moma Sumali Serge	Coordinator	COPIREP/Lubumbashi	DRC		
36	Ruhuza Samwel Mugisha	Businessman	SPENAN Investment Ltd	Kigoma/Tanzania		
37	Mangushi Jamal Mubarak	Port Productivity Advisor	TMEA	Tanzania		
38	Emmanuel Rutagengwa	Head, Transport Policy & Planning	CCTTFA Secretariat	Tanzania		
39	Eng. Charles Sabiti	Head of Infrastructure	CCTTFA Secretariat	Tanzania		
40	Melchior Barantandikiye	Head of Logistics & Transit Facilitation	CCTTFA Secretariat	Tanzania		



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41	Natay Costaph	Head of Finance & Administration	CCTTFA Secretariat	Tanzania		
42	Mohammed Kisamfu	IT Specialist	CCTTFA Secretariat	Tanzania		
43	Faraja Mgwabati	Communications Specialist	CCTTFA Secretariat	Tanzania		
44	Allen David Natal	Senior Transport Specialist	World Bank	Dar es Salaam, Tanzania		



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