

# 資料編

## 【資料編】

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- (1) 現地調査時（2012年4月24日）
- (2) 概要説明時（2012年10月18日）

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## 資料 1 調査団員・氏名

### (1) 現地調査

現地調査の調査団員の構成は、以下のとおりである。

氏名	担当	所属
荒津 有紀	総括	国際協力機構 経済基盤開発部 運輸交通・情報通信グループ 次長
荒木 裕	計画管理	国際協力機構 経済基盤開発部 運輸交通・情報通信グループ 運輸交通・情報通信第一課
伊藤 雅文	業務主任／港湾計画	株式会社エコー
日野 功	港湾施設設計／自然条件調査	株式会社オリエンタルコンサルタンツ
土谷 一寿	付帯施設／荷役機械	株式会社オリエンタルコンサルタンツ
山本 雄平	施工・調達計画／積算	株式会社エコー
島山 祐二	環境影響評価	株式会社エコー

### (2) 概要説明

概要説明現地調査の調査団員の構成は、以下のとおりである。

氏名	担当	所属
川上 泰司	総括	国際協力機構 経済基盤開発部 技術審議役
荒木 裕	計画調整	国際協力機構 経済基盤開発部 運輸交通・情報通信グループ 運輸交通・情報通信第一課
伊藤 雅文	業務主任／港湾計画	株式会社エコー
山本 雄平	施工・調達計画／積算	株式会社エコー

資料 2 調査行程

(1) 現地調査

			官団員			コンサルタント団員						
			荒津有紀	荒木 裕	伊藤雅文	田邊早苗	日野 功	土谷一寿	山本雄平	島山祐二		
			総括	計画管理	業務主任/港湾計画	日本人通訳	港湾施設設計 / 自然条件調査	付帯施設/荷役機械	施工・調達計画/積算	環境影響評価		
1	2012/4/7	土					東京→香港					
2	2012/4/8	日					香港→		東京(開空)→香港→			
3	2012/4/9	月								→ヨハネスブルグ→マプト、MTC説明、責機構打合せ		
4	2012/4/10	火								全体協議(MTC及、関係各官庁及び貴機構)		
5	2012/4/11	水					MTC・CFM説明・協議		建設単価調査	MTC・EIA協議		
6	2012/4/12	木					MTC・CFM説明・協議	マプト港視察	建設単価調査	EIAコンサル・協議		
7	2012/4/13	金								MTC・CFM説明・協議、責機構事務所報告		
8	2012/4/14	土								マプト→ナンプラー→ナカラ		
9	2012/4/15	日								団内打合せ、資料整理		
10	2012/4/16	月								全体会議(計画サイト)、計画サイト確認		
11	2012/4/17	火	東京→香港→				ナカラ→ナンプラー→マプト		建設資材調査、採石場調査	CDN・CFN協議		
12	2012/4/18	水	→ヨハネスブルグ→マプト				他ドナー調査	業務主任に同行	測量、地盤調査位置確認	計画サイト確認	建設資材調査(ナカラ)	周辺環境調査
13	2012/4/19	木	MTC協議				関連省庁面談	業務主任に同行	測量開始	岸壁荷役状況調査	建設資材調査(ナカラ)	周辺環境調査
14	2012/4/20	金	MTC協議					業務主任に同行	測量、地盤調査継続	岸壁荷役状況調査	建設資材調査	CDN開取調査
15	2012/4/21	土	マプト→ナンプラー→ナカラ 計画サイト視察					業務主任に同行	測量、地盤調査継続	岸壁荷役状況調査	建設資材調査	周辺環境調査
16	2012/4/22	日	ナカラ→ナンプラー→マプト					業務主任に同行	測量、地盤調査継続	岸壁荷役状況調査	建設資材調査	周辺環境調査
17	2012/4/23	月										
18	2012/4/24	火										
19	2012/4/25	水	大使館報告				消火設備視察、大使館報告	消火設備視察	エプロン、ヤード損傷調査	岸壁ヤード蔵置状況調査	消火設備視察	MTC・EIA協議
20	2012/4/26	木	マプト→ヨハネスブルグ→				マプト→ナンプラー→ナカラ	業務主任に同行	既存排水施設調査	岸壁ヤード蔵置状況調査	建設事情調査	環境影響評価調査
21	2012/4/27	金	→香港→東京					業務主任に同行	オイル岸壁施工方法協議	付帯施設状況調査	建設事情調査	EIAコンサル・協議
22	2012/4/28	土						業務主任に同行	測量、地盤調査継続	岸壁荷役状況調査	建設資材調査	環境影響評価調査
23	2012/4/29	日										
24	2012/4/30	月						業務主任に同行	荷役機械整備状況調査	建設資材調査	環境影響評価調査	
25	2012/5/1	火					PETROMOC開取調査	業務主任に同行	資料整理	維持管理状況調査	PETROMOC開取調査	環境影響評価調査
26	2012/5/2	水					CFMナンプラ開取調査	業務主任に同行	Petromoc協議他	維持管理状況調査	建設単価調査	CFM・EIA協議
27	2012/5/3	木					入出港、ヤード状況調査	業務主任に同行	棧橋構造損傷調査	維持管理計画開き取り調査	建設単価調査	EIAコンサル・協議
28	2012/5/4	金					ヤードオペレーション状況調査	業務主任に同行	棧橋構造損傷調査	維持管理計画開き取り調査	建設単価調査	環境影響評価調査
29	2012/5/5	土					ナカラ→ナンプラー→マプト 団内打合せ		オイルタンカー荷役調査	ナカラ→ナンプラー→マプト 団内打合せ	建設単価調査	環境影響評価調査
30	2012/5/6	日										
31	2012/5/7	月										
32	2012/5/8	火					MTC、CFM協議	業務主任に同行	路盤調査、資料纏め			→香港→東京(開空)
33	2012/5/9	水					MTC、CFM協議	業務主任に同行	ナカラ→ナンプラー→マプト			
34	2012/5/10	木					MTC、JICA事務所報告	業務主任に同行	MTC、JICA事務所報告			
35	2012/5/11	金										

(2) 概要説明

			官団員		コンサルタント団員		
			川上 泰司	荒木 裕	伊藤雅文	山本雄平	田邊早苗
			総括	計画管理	業務主任/港湾計画	施工・調達計画/積算	日本人通訳
1	2012/10/13	土					東京→香港→
2	2012/10/14	日	東京→モンバサ	東京→シンガポール→			→ヨハネスブルグ→マプト
3	2012/10/15	月	モンバサ→ナンプラー→ナカラ ナカラ港視察	→ヨハネスブルグ→マプト			MTC説明
4	2012/10/16	火	ナカラ→ナンプラー→マプト				MTC説明
5	2012/10/17	水					JICA事務所説明・打合せ/関連機関合同ミニッツ協議
6	2012/10/18	木					マプト港視察、ミニッツ協議、ミニッツ署名
7	2012/10/19	金					大使館報告
8	2012/10/20	土	マプト→モンバサ	マプト→ヨハネスブルグ→シンガポール→			最終報告書作成/資料収集
9	2012/10/21	日	モンバサ→東京	→シンガポール→東京			マプト→ヨハネスブルグ→
10	2012/10/22	月					→香港→東京

### 資料 3 関係者(面談者)リスト

#### (1) モザンビーク側関係者

##### Ministério dos Transportes e Comunicações (MTC)(運輸通信省)

Mr. Pedro Augusto Inglês	Secretário Permanente	次官
Dr. Ana Matusse Dimande	Project Coordinator	プロジェクトコーディネーター
Mr. Orlando Manhique		
Mr. Manuel Mário	DNTL	運輸ロジスティック局
Mr. Tomás Julai	DEI	経済投資局
Ms. Ivone A. Pemicelo	DRH	人材局
Mr. Francisco R. Martins	Marine Engineer	港湾技術者

##### Portos e Caminhos de Ferro de Moçambique (CFM)(モザンビーク港湾鉄道公社)

Mr. Miguel Nhaca Guebuza	Administrador	アドミニストレーター
Mr. Aníbal Manave	Assessor do Conselho de Administração	取締役会相談役
Mr. Paulo Tarmamade	Assessor do Conselho de Administração	取締役会相談役
Mr. João Mateus Mabota	Chief Engineer	チーフエンジニア
Ms. Carmona Macobola	Civil Engineer	土木技師
Mr. Radamês Bongece	Assessor	メカニック
Mr. Paulo Tarravane	Assessor	技師
Ms. Marília Bene	Tecnica Ambientalista	環境技術者
Mr. José Joaquim Daúde	Representante da CFM-Nacala	ナカラ代表

##### Corredor de Desenvolvimento do Norte (CDN)(北回廊開発株式会社)

Mr. Amado Mabasso	CEO	CEO
Mr. Luiz Martins	Director de Operações	オペレーションマネージャー
Mr. Agostinho Langa	Director do Porto	ナカラ港ダイレクター
Mr. Lucas José Cipriano	Director de Operações	オペレーションダイレクター
Cap. António F. Cândido	Director da Manutenção Portuária	港湾維持管理ダイレクター
Mr. Cremildo Madeira	Coordenador do Ambiente/Segurança	環境安全担当調整員
Mr. Romero Justino	Director Executivo	前 CEO
Mr. Fabio Duarte	Assistente Executivo	前エグゼクティブアシスタント

Porto do Norte (PN) (北部港湾会社)

Mr. João P. M. Fernandes      Portos do Norte-Assessor da      相談役  
Administração

Ministério da Energia (エネルギー省)

Ms. Natálie M. Teodor      Gabinete do Ministro Assessora      大臣室 燃料担当アドバイザー  
para a Área de Combustível

Ms. Jorgina Manhengane      Gabinete do Ministro Assessora      大臣室 燃料担当アドバイザー  
para a Área de Combustível

Gabinete das Zonas Económicas de Desenvolvimento Acelerado (GAZEDA)

(開発促進経済特区事務所)

Ms. Cármen Paula F.E. Quembo

PETROMOC

Mr. Danilo Laice      PETROMOC/NACALA      NACALA 責任者  
-Superintendente

(2) 日本国関係者

在タンザニア日本国大使館

橋本 栄治      特命全権大使  
井ノ口 一善      経済協力班 専門調査員

JICA モザンビーク事務所

那須 隆一      所長  
宮崎 明博      次長  
梁瀬 直樹      次長  
大野 雪子      企画調整員(インフラ、有償資金協力)

資料 4 討議議事録(M/D)

(1) 現地調査時(2012年4月24日)

**MINUTES OF DISCUSSIONS  
ON THE PREPARATORY SURVEY  
ON  
THE PROJECT OF URGENT REHABILITATION  
OF  
NACALA PORT DEVELOPMENT  
IN  
THE REPUBLIC OF MOZAMBIQUE**

In response to a request from the Government of the Republic of Mozambique (hereinafter referred to as "Mozambique") and based on the results of the preceding Data Collection Survey in November 2011, Japan International Cooperation Agency (hereinafter referred to as "JICA") in consultation with the Government of Japan, decided to conduct a Preparatory Survey on the Project for the Urgent Rehabilitation of Nacala Port Development (hereinafter referred to as "the Project").

JICA sent the Preparatory Survey Team (hereinafter referred to as "the Team"), which is headed by Yuki Aratsu, Group Director for Transportation and ICT, Economic Infrastructure Department, JICA, and is scheduled to stay in the country from April 7, 2012 to May 11, 2012.

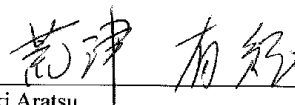
The Team held a series of discussions with the officials of the Government of Mozambique and conducted a field survey at the Project area.

In the course of discussions and the field survey, both sides confirmed the main items described on the attached sheets. The Team will continue further studies and prepare a Preparatory Survey Report.

Maputo, April 24<sup>th</sup>, 2012



Ana M. Matusse Dimande  
Coordinator  
Nacala Port Development Project  
Ministry of Transport and Communications  
Republic of Mozambique



Yuki Aratsu  
Leader of the Preparatory Survey Team  
Group Director for Transportation and ICT  
Economic Infrastructure Department  
Japan International Cooperation Agency

## ATTACHMENT

### 1. Objective of the Project

The objective of the Project is to urgently rehabilitate deteriorated facilities of North Wharf and to provide urgently required cargo handling equipment in Nacala Port.

### 2. Project site

The site of the Project is shown in Annex-1.

### 3. Responsible and Implementing Organizations

3-1. The responsible ministry and implementing organization of the Project is the Ministry of Transport and Communications (hereinafter referred to as "MTC"). The organization chart of MTC is shown in Annex-2

### 4. Items requested by the Government of Mozambique

4-1. After discussions with the Team, the items described below were finally requested with priority order by the Government of Mozambique.

- (1) Repair of North Wharf with installing Fenders
- (2) Pavement of Apron at North Wharf
- (3) Container Yard Pavement at North Wharf (Expansion of Yard)
- (4) Reach Stacker: 4 units
- (5) RTG 2 units
- (6) Fire Fighting System
- (7) Loading and Unloading Arm for Liquid Bulk Cargoes

4-2. JICA will assess the necessity, relevancy and degree of urgency of the requested items through the survey and will recommend to the Government of Japan for approval.

4-3. The outputs and results of "The Project for Improvement of Nacala Port" (Technical Cooperation) will also be considered when assessing the necessity, relevancy and degree of urgency of the Project components.

### 5. Japan's Grant Aid Scheme

5-1. The Mozambican side has shown a full understanding of the Japan's Grant Aid Scheme explained by the Team, as described in Annex-3 and Annex-4.

5-2. The Mozambican side will take the necessary measures, as described in Annex-5 for smooth implementation of the Project, as a condition for the Japan's Grant Aid to be implemented.

### 6. Environmental and Social Considerations

6-1. The Mozambican side agreed to take necessary measures to give due consideration and social considerations in the implementation of the Survey, in accordance with the JICA



Guidelines for Environment and Social Considerations(April, 2010).

6-2. The Mozambican side informed the present status of Environment Impact Assessment (EIA) approval. The Team informed the Mozambican side that the EIA approval is prerequisite for the Project appraisal in Japan. The Mozambican side agreed to submit the report to JICA Mozambique Office by the end of June, 2012.

6-3. The Mozambican side also agreed that

- 1) JICA may disclose on its website the EIA report and environmental certifications
- 2) JICA may disclose on its website the monitoring results conducted by MTC in accordance with the Monitoring Plan for the Project, which will be described in the Preparatory Survey Report and/or will be agreed on Minutes of Meetings.

7. Schedule of the Survey

7-1. The consultants will proceed to further studies until 11 May, 2012.

7-2. JICA will submit to the Mozambican side the result on the review of the cost shown in the previous F/S report and will propose optimal components of the Project by mid-July.

7-3. JICA will prepare a draft Preparatory Survey report and dispatch a team in order to explain its contents to the Mozambican side around October, 2012.

7-4. When the contents of the draft Preparatory Survey report are accepted in principle by the Government of Mozambique, JICA will complete the final report and send it to the Government of Mozambique around November, 2012.

8. Other relevant issues

8-1. The Mozambican side strongly requested that the Team shall take into considerations the urgency of the Project and civil works shall be commenced within CY2013. The Team took notes of the request and promised to transfer the request to the concerned authorities.

8-2. The Mozambican side strongly requested the Reports stipulated above in Article 7 shall be prepared in both English and Portuguese. The Team promised to deliver the request to JICA Headquarters.

8-3. Both sides agreed that installation of fenders along the South Wharf in Nacala Port should be conducted by Corridor de Desenvolvimento do Norte SA (hereinafter referred to as "CDN"). In implementation of expansion of a new container yard in the North Wharf, CDN should demolish the Warehouse No.2 and No.3, and relocate the transformer facility located in the yard pavement area as shown in Annex-1 before commencement of the works under the Grant Aid.

8-4. The Mozambique side agreed that:

- 1) Customs duties, internal taxes, and other fiscal levies which may be imposed in Mozambique

with respect to the purchase of the products and the services shall be reimbursed. The budget required for the reimbursement stated above should be prepared by MTC.

- 2) The necessary documents such as TITULO should be issued for customs clearance of the products that may be imported for implementation of the project.

Annex-1 Project Site

Annex-2 Organization Chart of the Ministry of Transport and Communications

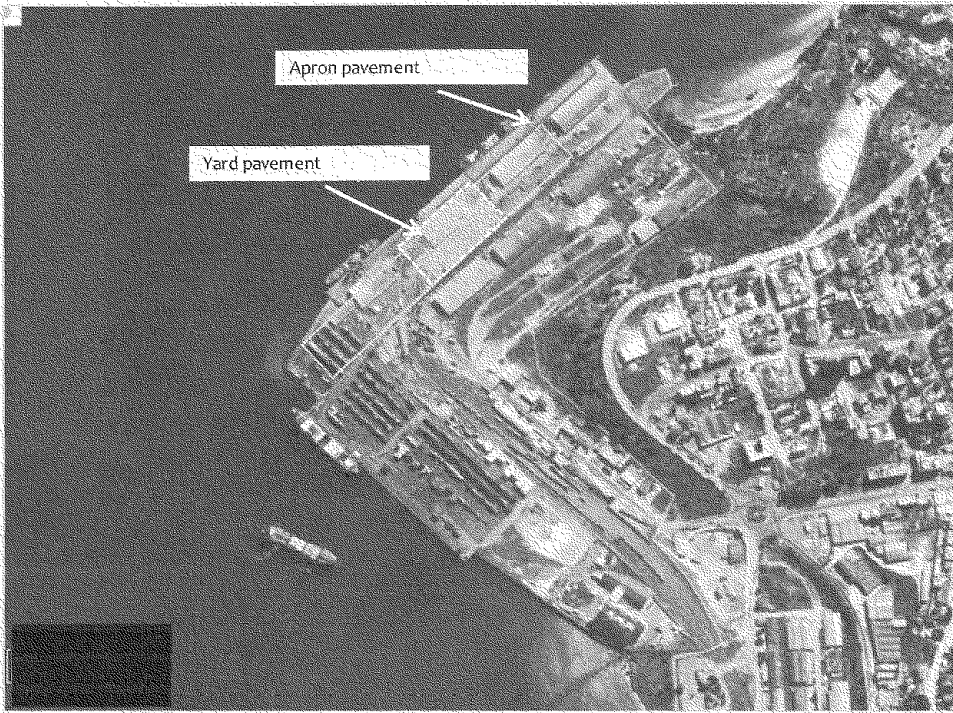
Annex-3 Japan's Grant Aid Scheme

Annex-4 Flow Chart of Japan's Grant Aid Procedures

Annex-5 Major Undertakings to be taken by the Government of Recipient Country

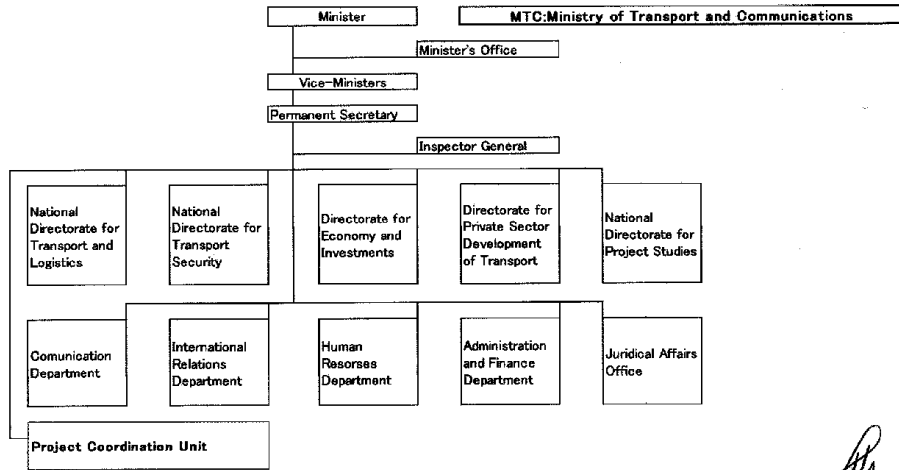
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Proposed Components by Grant Aid Project Team (April 2012)

Annex-2 Organization Chart(MTC)



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*[Handwritten signature]*

The Government of Japan (hereinafter referred to as "the GOJ") is implementing the organizational reforms to improve the quality of ODA operations, and as a part of this realignment, a new JICA law was entered into effect on October 1, 2008. Based on this law and the decision of the GOJ, JICA has become the executing agency of the Grant Aid for General Projects, for Fisheries and for Cultural Cooperation, etc.

The Grant Aid is non-reimbursable fund provided to a recipient country to procure the facilities, equipment and 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. The Grant Aid is not supplied through the donation of materials as such.

#### 1. Grant Aid Procedures

The Japanese Grant Aid is supplied through following procedures :

- Preparatory Survey
  - The Survey conducted by JICA
- Appraisal & Approval
  - Appraisal by the GOJ and JICA, and Approval by the Japanese Cabinet
- Authority for Determining Implementation
  - The Notes exchanged between the GOJ and a recipient country
- Grant Agreement (hereinafter referred to as "the G/A")
  - Agreement concluded between JICA and a recipient country
- Implementation
  - Implementation of the Project on the basis of the G/A

#### 2. Preparatory Survey

##### (1) Contents of the Survey

The aim of the preparatory Survey is to provide a basic document necessary for the appraisal of 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 relevant agencies of the recipient country necessary for the implementation of the Project.
- Evaluation of the appropriateness of the Project to be implemented under the Grant Aid Scheme 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.

The contents of the original request by the recipient country are not necessarily approved in their initial form as the contents of the Grant Aid project. The Outline Design of the Project is confirmed based on the guidelines of the Japan's Grant Aid scheme.

JICA requests the Government of the recipient country to take whatever 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 organization of the recipient country which actually implements the Project. Therefore, the implementation of the Project is confirmed by all relevant organizations of the recipient country based on the Minutes of Discussions.



(2) Selection of Consultants

For smooth implementation of the Survey, JICA employs (a) registered 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 appropriateness of the Project.

### 3. Japan's Grant Aid Scheme

(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 country to make a pledge for assistance, which is followed by the conclusion of the G/A between JICA and the Government of the recipient country to define the necessary articles to implement the Project, such as payment conditions, responsibilities of the Government of the recipient country, and procurement conditions.

(2) 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 country to continue to work on the Project's implementation after the E/N and G/A.

(3) Eligible source country

Under the Japanese Grant Aid, in principle, Japanese products and services including transport or those of the recipient country are to be purchased. When JICA and the Government of the recipient country or its designated authority deem it necessary, the Grant Aid may be used for the purchase of the products or services of a third country. However, the prime contractors, namely, constructing and procurement firms, and the prime consulting firm are limited to "Japanese nationals".

(4) Necessity of "Verification"

The Government of the recipient country or its designated authority will conclude contracts denominated in Japanese yen with Japanese nationals. Those contracts shall be verified by JICA. This "Verification" is deemed necessary to fulfill accountability to Japanese taxpayers.

(5) Major undertakings to be taken by the Government of the Recipient Country

In the implementation of the Grant Aid Project, the recipient country is required to undertake such necessary measures as Annex-5.

(6) "Proper Use"

The Government of the recipient country is required to maintain and use properly and effectively the facilities constructed and the equipment purchased under the Grant Aid, to assign staff necessary for this operation and maintenance and to bear all the expenses other than those covered by the Grant Aid.

(7) "Export and Re-export"

The products purchased under the Grant Aid should not be exported or re-exported from the recipient country.

(8) Banking Arrangements (B/A)

- a) The Government of the recipient country or its designated authority should open an account under the name of the Government of the recipient country in a bank in Japan (hereinafter referred to as "the Bank"). JICA will execute the Grant Aid by making payments in Japanese yen to cover the obligations incurred by the Government of the recipient country or its designated authority under the Verified Contracts.
- b) The payments will be made when payment requests are presented by the Bank to JICA under an Authorization to Pay (A/P) issued by the Government of the recipient country or its designated authority.

(9) Authorization to Pay (A/P)

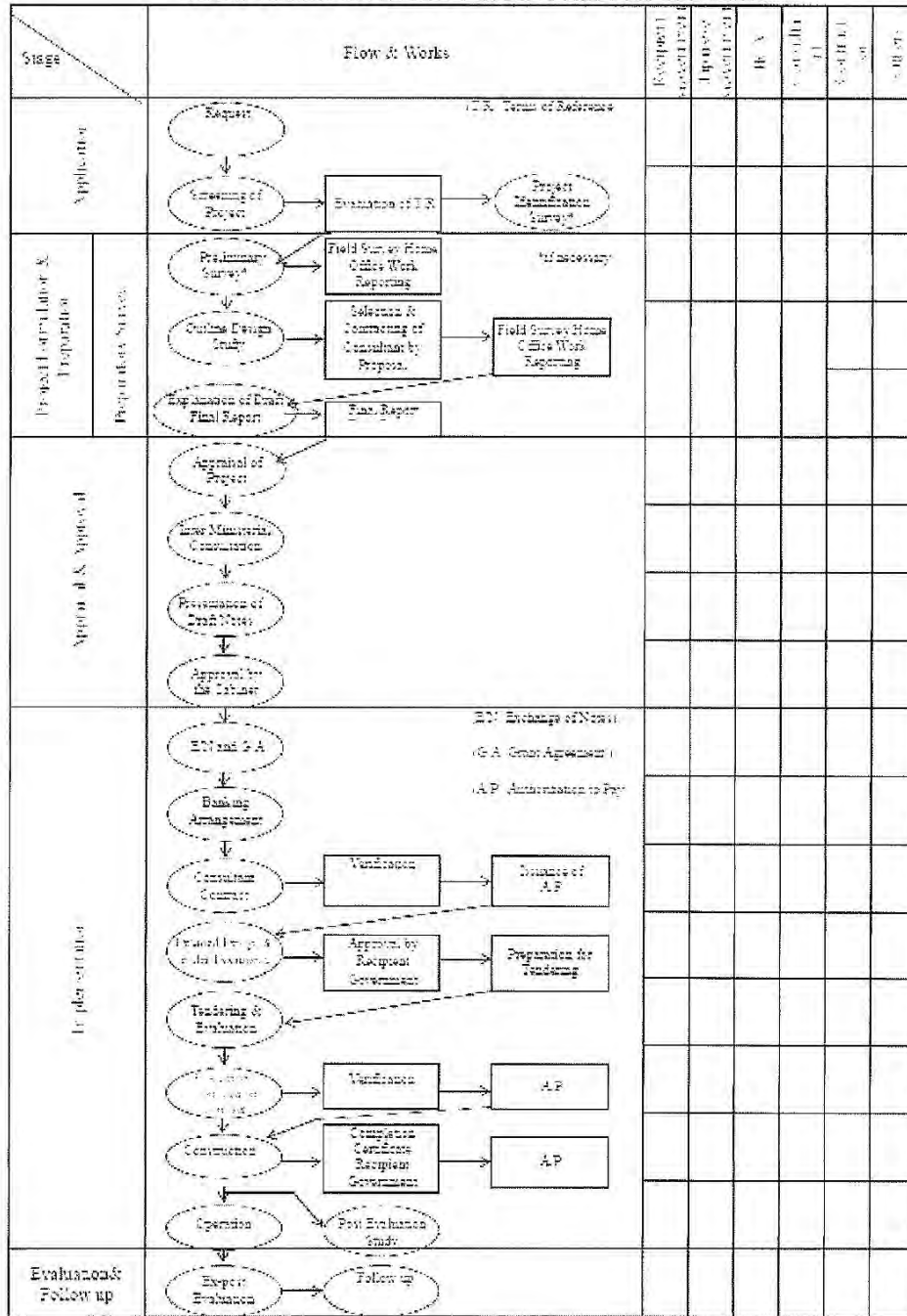
The Government of the recipient country should bear an advising commission of an Authorization to Pay and payment commissions paid to the Bank.

(10) Social and Environmental Considerations

A recipient country must carefully consider social and environmental impacts by the Project and must comply with the environmental regulations of the recipient country and JICA socio-environmental guidelines.



FLOW CHART OF JAPAN'S GRANT AID PROCEDURES





## Major Undertakings to be taken by the Government of Recipient Country

No.	Items	To be covered by Grant Aid	To be covered by Recipient Side
1	To secure lots of land necessary for the implementation of the Project and to clear the sites		●
2	To ensure prompt unloading and customs clearance of the products and to assist internal transportation of the products in the recipient country		
	1) Marine (Air) transportation of the products from Japan to the recipient country	●	
	2) Custom clearance of the products at the port of disembarkation		●
	3) Internal transportation from the port of disembarkation to the project site	●	
3	To ensure that customs duties, internal taxes and other fiscal levies which may be imposed in the recipient country with respect to the purchase of the products and the services be borne by the Government of Recipient country without using the Grant		●
4	To accord Japanese nationals and/or nationals 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 recipient country and stay therein for the performance of their work		●
5	To ensure that the facilities and the products provided under Japan's Grant be maintained and used properly and effectively for the implementation of the Project		●
6	To bear all the expenses, other than those covered by the Grant, necessary for the implementation of the Project		●
7	To bear the following commissions paid to the Japanese bank for banking services based upon the B/A		
	1) Advising commission of A/P		●
	2) Payment commission		●
8	To give due environmental and social consideration in the implementation of the Project		●

(B/A : Banking Arrangement, A/P : Authorization to pay)

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(2) 概要説明時(2012年10月18日)

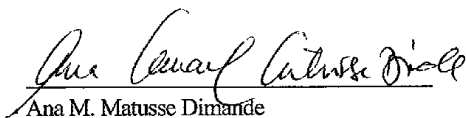
**MINUTES OF DISCUSSIONS  
ON THE PREPARATORY SURVEY  
ON THE PROJECT OF URGENT REHABILITATION  
OF NACALA PORT DEVELOPMENT  
IN THE REPUBLIC OF MOZAMBIQUE**

In October 2012, the Japan International Cooperation Agency (hereinafter referred to as "JICA") dispatched the Preparatory Survey Team (hereinafter referred to as "the Team") on the Project of Urgent Rehabilitation of Nacala port Development (hereinafter referred to as "the Project") to the Republic of Mozambique (hereinafter referred to as "Mozambique"), and through discussions, field surveys and technical examination of the results in Japan, JICA prepared a Draft Final Report of the study.

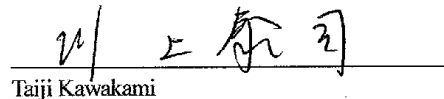
In order to explain and to consult with the concerned officials of the Government of Mozambique on the contents of the Draft Final Report, JICA sent to Mozambique the team for explaining the Draft Final Report. The team is headed by Mr. Taiji Kawakami, Executive Technical Advisor to the Director General, JICA and is scheduled to stay from October 15 to 19, 2012.

As a result of the discussions, both sides confirmed the main items described in the attached sheets.

Maputo, October 18, 2012



Ana M. Matusse Dimande  
Coordinator  
Nacala Port Development Project  
Ministry of Transport and Communications  
Republic of Mozambique



Taiji Kawakami  
Leader of the Preparatory Survey Team  
Executive Technical Advisor to the Director  
General  
Economic Infrastructure Department  
Japan International Cooperation Agency

## ATTACHMENT

### 1. Project Component

1-1. After the discussion during the first Preparatory Survey mission in April 2012, the items described below were requested with priority order by the Government of Mozambique as written in the Minutes of Discussion agreed on April 24<sup>th</sup> 2012.

- (1) Repair of North Wharf with installing Fenders
- (2) Pavement of Apron at North Wharf
- (3) Container Yard Pavement at North Wharf (Expansion of Yard)
- (4) Reach Stacker: 4 units
- (5) RTG 2 units
- (6) Fire Fighting System
- (7) Loading and Unloading Arm for Liquid Bulk Cargoes

1-2. After the discussion during the stay of the team this time, both sides confirmed that 2 Reach Stackers will be procured by Mozambican side and remaining 2 Reach Stackers will be recommended to the Government of Japan (hereinafter referred to as "GoJ") as grant aid project component.

1-3. After the discussion, both sides agreed that the items below will be recommended to GoJ for approval.

- (1) Repair of North Wharf with installing Fenders, Bollards and Water pits
- (2) Pavement of Apron at North Wharf
- (3) Container Yard Pavement at North Wharf (Expansion of Yard)
- (4) Reach Stacker: 2 units
- (5) RTG 2 units
- (6) Fire Fighting System
- (7) Loading and Unloading Arms for Liquid Bulk Cargoes

1-4. Since the Oil supply through Nacala port is indispensable to Mozambican economy, it is necessary to maintain the function of Fuel handling during the construction period of Liquid Bulk Terminal. As an option for preservation of the function of fuel handling, both sides agreed that following countermeasure will be taken:

- The Oil loading/unloading point will be moved from Berth No.4 to the center of the North Warf (Berth No.3) temporarily

Since the depth of the Berth No.3 is slightly shallower than the Berth No.4, the depth of No.3 will be leveled to the depth of No.4 so that the same size of tanker can be moored. In addition, the some section of temporary pipeline will be installed underground not to affect the port activity.

1-5. Both sides agreed that Reach stackers should be delivered as early as possible.

1-6. Mozambican side requested the additional training for regular maintenance especially for port infrastructure other than those included in Grant Aid.

1-7. The commencement of the Project is subject to the approval by GoJ and will be informed by GoJ.



2. Cost Estimation

Both sides agreed that the Project Cost Estimation as attached in Annex-1 should never be duplicated or disclosed to any third parties before the signing of all the contract(s) with contractor(s) for the Project.

3. Japan's Grant Aid Scheme

The Mozambican side understood the Japan's Grant Aid scheme and the necessary measures to be taken by the recipient country as explained by the Team and described in Annex-5, Annex-6 and Annex-7 of the Minutes of Discussions signed on April 24, 2012.

The Mozambican side understands that the Team is not in the position to guarantee implementation of the Project.

4. Schedule of the Study

JICA will complete the final report in accordance with the confirmed items and send it to the Mozambican side, in English around December 2012 and in Portuguese around January 2013.

5. Environmental and Social Considerations

5-1. Ministry of Transport and Communications (MTC) agreed to acquire the approval of EIA report from Ministry of Coordination of Environmental Affairs (MICOA) and inform the result to JICA Mozambique office by the end of October 2012. Also, regarding the environmental license, it should be acquired before the commencement of the bidding process of contractors.

5-2. JICA mission was concerned that the construction of Fire Fighting System was not included within the scope of present EIA, however Mozambican side replied that it is already included and no additional amendment will be necessary for the project.

5-3. The Mozambican side and the JICA mission confirmed information on environmental and social considerations including major impacts and relevant mitigation measures are summarized in the Environmental Checklist attached as Annex-2. The Mozambican side confirmed they will inform JICA of any major changes which affect environmental and social considerations made for the Project by revising it in a timely manner.

5-4. The Mozambican side agreed that the results of environmental monitoring will be provided to JICA as a part of Monthly Progress Report by filling in the monitoring form attached as Annex-3 on a quarterly basis during construction. After the completion of the Project, the Mozambican side confirmed the monitoring form (Annex-3) will be submitted to JICA semiannually or annually for 2 years.

5-5. The Mozambican side agreed that monitoring for Environmental and Social considerations should be conducted by Project Management Unit (hereinafter referred to as "PMU") under MTC and Mozambique Ports and Railways (CFM) in accordance with the Monitoring Plan for the Project described in the Preparatory Survey Report and EIA report.

5-6. The Mozambican side confirmed it will take stipulated procedures for information disclosure in accordance with Regulations for the Environmental Impact Assessment Process (Decree 45/2004 of

29 September and Decree 42/2008 of 4 November. In addition, the JICA mission requested the Mozambican side to disclose the monitoring results to local project stakeholders, and the Mozambican side agreed to disclose monitoring results on their website.

5-7. The Mozambican side agreed JICA's disclosure of provided monitoring results in the monitoring form (Annex-3) on its website.

6. Other Relevant Issues

6-1. Both sides confirmed that the following undertakings should be carried out by the Mozambican side at the Mozambican expenses for the Project.

- (1) To secure land (Project Site, Temporary Yard, Disposal Area)
- (2) To remove/relocate existing utilities (Warehouses No.2, the transformer substation facility in the container yard pavement) by the end of June, 2013 before the bidding process starts in July, 2013.
- (3) To procure additional two 2 reach stackers other than those covered by the Grant stipulated in 1-3. (4).
- (4) To provide fenders along the South Wharf.
- (5) To reimburse customs duties, internal taxes, and other fiscal levies that may be imposed in Mozambique with respect to the purchase of the products and services. The necessary budget for the reimbursement should be prepared by MTC.
- (6) To issue the necessary documents such as TITULO for customs clearance of the products that may be imported for implementation of the project.
- (7) To accord Japanese nationals and/or nationals of third countries whose services may be required in connection with the supply of the products and services such facilities as may be necessary for their entry into the recipient country and stay therein for the performance of their work.
- (8) To bear all the expenses, other than those covered by the Grant Aid, necessary for the implementation of the project.
- (9) To assist, if necessary, to issue licenses, permission and other procedures for the commencement of the Project.

6-2. The Mozambican side shall bear the following costs as a condition for the Japan's Grant Aid to be implemented.

- (1) The commissions for the banking services based upon Banking Arrangement (B/A)
- (2) The advising commission of the Authorization to Pay (A/P)

6-3. The Mozambican side shall secure enough budget and personnel necessary for the operation and maintenance of the facilities and equipment either constructed or supplied by the Project.

6-4. The Mozambican side will give additional comments if any about the draft final report to JICA Mozambique office by 31th October 2012. The Team will examine them and may reflect on the final report.

Annex-1 Project Cost Estimation

Annex-2 Environmental Checklist

Annex-3 Monitoring Form



<Confidential>

Annex-1

**Project Cost Estimate**

「施工・調達業者契約認証まで非公表」



<Confidential>

Annex-1

「施工・調達業者契約認証まで非公表」



Annex-2 Environmental Checklist

Category	Environmental Item	Main Check Items	Yes: Y No: N	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
1 Permits and Explanation	(1) EIA and Environmental Permits	(a) Have EIA reports been already prepared in official process? (b) Have EIA reports been approved by authorities of the host country's government? (c) Have EIA reports been unconditionally approved? If conditions are imposed on the approval of EIA reports, are the conditions satisfied? (d) In addition to the above approvals, have other required environmental permits been obtained from the appropriate regulatory authorities of the host country's government?	(a) N (b) N (c) N/A (d) N	(a) The project proponent-MTC is currently in the process of preparing the EIA for "Nacala Port Short-term Development Project". (b) The EIA report will be approved around October in 2012 by MICOA. (c) Unknown (d) There are no environmental permits required other than the EIA.
	(2) Explanation to the Local Stakeholders	(a) Have comments of the project and the potential impacts been adequately explained to the Local stakeholders based on appropriate procedures, including information disclosure? Is understanding obtained from the Local stakeholders? (b) Have the comment from the stakeholders (such as local residents) been reflected to the project design?	(a) Y (b) Y	(a) During the preparatory survey, three stakeholder meetings were conducted to obtain their opinions about the proposed development plan. A consultation meeting was also held specifically with the local fishermen. In general, the stakeholders were fully supportive of the project. There were no objections from the fishermen as well. A public consultation meeting was also held as part of the EIA process in September, 2012. (b) No opinions were raised at the above mentioned stakeholder meetings during the preparatory survey that required any changes to the project design. The comment from the September meeting will be reflected to the design of Nacala Port Short-term Development Project.
	(3) Examination of Alternatives	(a) Have alternative plans of the project been examined with social and environmental considerations?	(a) Y	(a) Alternatives on improvement of the pier for liquid bulk cargoes were examined by taking into account aspects such as environmental impacts, project effect and cost.
	(1) Air Quality	(a) Do air pollutants, such as sulfur oxides (SOx), nitrogen oxides (NOx), and soot and dust emitted from ships, vehicles and project equipments comply with the country's emission standards? Are any mitigating measures taken?	(a) Y	(a) The port will need to strengthen its environmental management to minimize air pollution from port activities, especially regarding bulk cargo handling, exhaust emissions from trucks and fugitive dust emission from stockyard. These will be considered in the EIA.



Annex-2 Environmental Checklist

Category	Environmental Item	Main Check Items	Yes: Y No: N	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
2 Pollution Control	(2) Water Quality	(a) Do effluents from the project facilities comply with the country's effluent and environmental standards?	(a) N/A	<p>(a) In general there will be no major effluent sources from the port.</p> <p>(b) All ships should be required to comply with regulations and standards stipulated in the MARPOL convention.</p> <p>(c) There will be no major additional sources of oil and toxicant leakages. The project will also install a new oil loading/unloading arm, which should reduce the risk of oil spillage from the oil loading/unloading operation.</p> <p>(d) The project includes no modification of water areas, such as shoreline modifications, reduction in water areas, and creation of new water areas.</p> <p>(e) The project includes no land reclamation.</p> <p>The EIA will provide a Waste Management Plan (WMP)</p>
		(b) Do effluents from the ships and other project equipments comply with the country's effluent and environmental standards?	(b) N/A	
		(c) Does the project prepare any measures to prevent leakages of oils and toxicants?	(c) N	
2 Pollution Control	(3) Wastes	(d) Does the project cause any alterations in coastal lines and disappearance/appearance of surface water to change water temperature or quality by decrease of water exchange or changes in flow regimes?	(d) N	
		(e) Does the project prepare any measures to prevent polluting surface, sea or underground water by the penetration from reclaimed lands?	(e) N	
		(a) Are wastes generated from the ships and other project facilities properly treated and disposed of in accordance with the country's regulations?	(a) Y	
	(4) Noise and Vibration	(b) Is offshore dumping of dredged soil properly disposed in accordance with the country's regulations?	(b) N/A	<p>(a) All wastes generated from port activities should be treated and disposed in accordance with the relevant regulations and norms. The EIA will provide a Waste Management Plan (WMP)</p> <p>(b) The project generates neither dredged materials nor soils.</p> <p>(c) There should be neither dumping nor discharge of toxicants.</p>
		(c) Does the project prepare any measures to avoid dumping or discharge toxicants?	(c) N/A	
		(a) Do noise and vibrations from the vehicle and train traffic comply with the country's standards?	(a) N/A	
		(b) Are there any odor sources? Are adequate odor control measures taken?	(a) N	
(5) Subsidence	(a) In the case of extraction of a large volume of groundwater, is there a possibility that the extraction of groundwater will cause subsidence?	(a) N	<p>(a) There are no noise and vibration standards for vehicle and train traffic. However, the port will need to strengthen its environmental management to minimize noise emissions, especially from cargo trucks. These will be considered in the EIA taking into consideration the WHO guidelines and SANS 10103 Code of Practice.</p> <p>(a) There will be no extraction of groundwater.</p> <p>(a) There will be no major odor sources.</p>	
	(a) Are there any odor sources? Are adequate odor control measures taken?	(a) N		
	(a) Are adequate measures taken to prevent contamination of sediments by discharges or dumping of hazardous materials from the ships and related facilities?	(a) N/A		
(6) Odor	(a) Are adequate measures taken to prevent contamination of sediments by discharges or dumping of hazardous materials from the ships and related facilities?	(a) N/A	<p>(a) Anti-fouling paints used by ships may continue to contaminate sediments. The port should therefore encourage ships to refrain the use of harmful anti-fouling paint. Ratification of the AFS Convention is also recommended.</p> <p>The EIA will provide a Waste Management Plan (WMP).</p> <p>(a) There are no protected areas in the vicinity of the project site.</p>	
	(a) Are adequate measures taken to prevent contamination of sediments by discharges or dumping of hazardous materials from the ships and related facilities?	(a) N/A		
(7) Sediment	(a) Are adequate measures taken to prevent contamination of sediments by discharges or dumping of hazardous materials from the ships and related facilities?	(a) N/A	<p>(a) There are no protected areas in the vicinity of the project site.</p>	
	(a) Are adequate measures taken to prevent contamination of sediments by discharges or dumping of hazardous materials from the ships and related facilities?	(a) N/A		
2 Pollution Control	(1) Protected Areas	(a) Is the project site located in protected areas designated by the country's laws or international treaties and conventions? Is there a possibility that the project will affect the protected areas?	(a) N	
		(a) Is the project site located in protected areas designated by the country's laws or international treaties and conventions? Is there a possibility that the project will affect the protected areas?	(a) N	

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Annex-2 Environmental Checklist

Category	Environmental Item	Main Check Items	Yes: Y No: N	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
3 Natural Environment	(2) Ecosystem	(a) Does the project site encompass primeval forests, tropical rain forests, ecologically valuable habitats (e.g., coral reefs, mangroves, or tidal flats)?	(a) Y	(a) There are small patches of mangrove, seagrass, small communities of corals and tidal flat near the North Wharf. (b) There are no protected habitats of endangered species in the vicinity of the North Wharf. (c) Repair and pavement of the North Wharf does not cause the impacts on the ecosystem. (d) There is no possibility that repair and pavement of the North Wharf will adversely affect aquatic organisms. (e) There is no possibility that the project will adversely affect vegetation and wildlife of coastal zones.
		(b) Does the project site encompass the protected habitats of endangered species designated by the country's laws or international treaties and conventions?	(b) N	
	(c) If significant ecological impacts are anticipated, are adequate protection measures taken to reduce the impacts on the ecosystem?	(c) Y		
	(d) Is there a possibility that the project will adversely affect aquatic organisms? Are adequate measures taken to reduce negative impacts on aquatic organisms?	(d) N		
(3) Hydrology	(a) Do the project facilities affect adversely flow regimes, waves, tides, currents of rivers and etc if the project facilities are constructed on/by the seas?	(e) Is there a possibility that the project will adversely affect vegetation or wildlife of coastal zones? If any negative impacts are anticipated, are adequate measures taken to reduce the impacts on vegetation and wildlife?	(e) N	
		(a) Do the project facilities affect adversely flow regimes, waves, tides, currents of rivers and etc if the project facilities are constructed on/by the seas?	(a) N	
(4) Topography and Geology	(a) Does the project require any large scale changes of topographic/geographic features or cause disappearance of the natural seashore?	(a) Is involuntary resettlement caused by project implementation? If involuntary resettlement is caused, are efforts made to minimize the impacts caused by the resettlement?	(a) N	(a) There is no installation of port and harbor facilities that will cause an alteration of topographic and geologic features. (b) There is no installation of port and harbor facilities that will cause an alteration of topographic and geologic features.
		(b) Is adequate explanation on compensation and resettlement assistance given to affected people prior to resettlement?	(b) N	
(1) Resettlement		(c) Is the resettlement plan, including compensation with full replacement costs, restoration of livelihoods and living standards developed based on socioeconomic studies on resettlement?	(c) N	
		(d) Are the compensations going to be paid prior to the resettlement?	(d) N	
		(e) Are the compensation policies prepared in document?	(e) N	
		(f) Does the resettlement plan pay particular attention to vulnerable groups or people, including women, children, the elderly, people below the poverty line, ethnic minorities, and indigenous peoples?	(f) N	
		(g) Are agreements with the affected people obtained prior to resettlement?	(g) N	
		(h) Is the organizational framework established to properly implement resettlement? Are the capacity and budget secured to implement the plan?	(h) N	
		(i) Are any plans developed to monitor the impacts of resettlement?	(i) N	
		(j) Is the grievance redress mechanism established?	(j) N	
		(a) Is involuntary resettlement caused by project implementation? If involuntary resettlement is caused, are efforts made to minimize the impacts caused by the resettlement?	(a) N	
		(b) Is adequate explanation on compensation and resettlement assistance given to affected people prior to resettlement?	(b) N	

Annex-2 Environmental Checklist

Category	Environmental Item	Main Check Items	Yes: Y No: N	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
4 Social Environment	(2) Living and Livelihood	(a) Is there a possibility that the project will adversely affect the living conditions of inhabitants? Are adequate measures considered to reduce the impacts, if necessary?	(a) Y	(a) The construction vehicles that travel through the access road may cause nuisance (e.g. air pollution, noise) to the local residents. (b) The project will not adversely affect the livelihoods of inhabitants. (c) Improvement of North Wharf will not adversely affect the existing water traffic and road traffic in the surrounding areas. (d) Implementation of regular health checks and education programs are recommended to reduce the risk of spreading of infectious diseases.
		(b) Is there a possibility that changes in water uses (including fisheries and recreational uses) in the surrounding areas due to project will adversely affect the livelihoods of inhabitants?	(b) N	
		(c) Is there a possibility that port and harbor facilities will adversely affect the existing water traffic and road traffic in the surrounding areas?	(c) N	
		(d) Is there a possibility that diseases, including infectious diseases, such as HIV will be brought due to immigration of workers associated with the project? Are considerations given to public health, if necessary?	(d) Y	
		(e) Is there a possibility that the project will damage the local archeological, historical, cultural, and religious heritage? Are adequate measures considered to protect these sites in accordance with the country's laws?	(a) N	
4 Social Environment	(3) Heritage	(a) Is there a possibility that the project will adversely affect the local landscape? Are necessary measures taken?	(a) N	(a) There are no heritages in or near the project site.  (e) Impacts on the landscape are negligible as the project area lies under a designated port/industrial area.  (a) There are no ethnic minorities and indigenous peoples near the project site. (b) See above.
		(a) Are considerations given to reduce impacts on the culture and lifestyle of ethnic minorities and indigenous peoples?	(a) N/A	
		(b) Are all of the rights of ethnic minorities and indigenous peoples in relation to land and resources respected?	(b) N/A	
		(a) Is the project proponent not violating any laws and ordinances associated with the working conditions of the country which the project proponent should observe in the project?	(a) N	
		(b) Are tangible safety considerations in place for individuals involved in the project, such as the installation of safety equipment which prevents industrial accidents, and management of hazardous materials?	(b) Y	
4 Social Environment	(6) Working Conditions	(c) Are intangible measures being planned and implemented for individuals involved in the project, such as the establishment of a safety and health program, and safety training (including traffic safety and public health) for workers etc.?	(c) Y	(a) The project proponent will not be violating any laws and ordinances associated with the working conditions of the country which the project proponent should observe in the project. (b) Tangible safety considerations will be in place for individuals involved in the project, such as the installation of safety equipment which prevents industrial accidents, and management of hazardous materials. (c) Intangible measures will be planned and implemented for individuals involved in the project, such as the establishment of a safety and health program, and safety training (including traffic safety and public health) for workers etc. (d) Appropriate measures will be taken to ensure that security guards involved in the project not to violate safety of other individuals involved, or local residents. The EIA will provide an Environmental Management Plan.
		(d) Are appropriate measures taken to ensure that security guards involved in the project not to violate safety of other individuals involved, or local residents?	(d) Y	



Annex-2 Environmental Checklist

Category	Environmental Item	Main Check Items	Yes: Y No: N	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
5 Others	(1) Impacts during Construction	<p>(a) Are adequate measures considered to reduce impacts during construction (e.g., noise, vibrations, turbid water, dust, exhaust gases, and wastes)?</p> <p>(b) If construction activities adversely affect the natural environment (ecosystem), are adequate measures considered to reduce impacts?</p> <p>(c) If construction activities adversely affect the social environment, are adequate measures considered to reduce impacts?</p>	<p>(a) Y (b) Y (c) Y</p>	<p>(a) Various measures are planned to prevent or minimize pollution from construction activities. Following are some of the planned countermeasures:                      [Air pollution measures]                      - Use of well maintained trucks and implementation of regular vehicle maintenance.                      - Covering of truck loading space with sheet cover to minimize dust spills                      - Loading and unloading bulk construction should be in areas protected from the wind on in calm conditions.                      - Vehicles carrying dusty materials should be washed before leaving the site (washing facilities should be available).                      - Limit access to construction site to construction vehicles only                      - Impose vehicle speed restrictions on the construction site                      - Maintain high moisture content on exposed surface and roads by spraying with water                      [Noise pollution measures]                      - Use of well maintained trucks and implementation of regular vehicle maintenance                      - Strict abidance of speed limit and avoidance of unnecessary reworking                      - Avoidance of night-time travelling of trucks whenever possible                      [Waste disposal]                      - Construction wastes (wastes of concrete and asphalt) are properly disposed to the dumping site in the city.                      (b) See 3(2)(c).                      (c) Various pollution measures are planned to prevent or minimize impact on the local residents and local fishermen. See (a) above.</p> <p>The EIA will provide an <u>Environmental Management Plan</u>.</p>

Annex-2 Environmental Checklist

Category	Environmental Item	Main Check Items	Yes: Y No: N	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
	(2) Monitoring	(a) Does the proponent develop and implement monitoring program for the environmental items that are considered to have potential impacts? (b) What are the items, methods and frequencies of the monitoring program? (c) Does the proponent establish an adequate monitoring framework (organization, personnel, equipment, and adequate budget to sustain the monitoring framework)? (d) Are any regulatory requirements pertaining to the monitoring report system identified, such as the format and frequency of reports from the proponent to the regulatory authorities?	(a) Y (b) Y (c) Y (d) Y	Confirmation of Environmental Considerations (Reasons, Mitigation Measures) (a) The proponent develops and implements monitoring program for the environmental items. (b) The monitoring in the construction and operation phases is recommended as follows respectively: - Air quality monitoring (4/year and 2/year) - Noise level measurement (4/year and 2/year) - Meeting with fishermen (2/year and 1/year) - Meeting with local residents (2/year and 1/year) (c) During the implementation stage of the project, the MTC and the CFM will establish a project management unit (PMU), and the adequate monitoring framework will be established by the PMU. (d) Will be established by the PMU. The EIA will provide an Environmental Monitoring Plan.

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Annex-2 Environmental Checklist

Category	Environmental Item	Main Check Items	Yes: Y No: N	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
6 Note	Reference to Checklist of Other Sectors	(a) Where necessary, impacts on groundwater hydrology (groundwater level drawdown and salinization) that may be caused by alteration of topography, such as land reclamation and canal excavation should be considered, and impacts, such as land subsidence that may be caused by groundwater uses should be considered. If significant impacts are anticipated, adequate mitigation measures should be taken.	(a) N/A	(a) Not applicable.
	Note on Using Environmental Checklist	(a) If necessary, the impacts to transboundary or global issues should be confirmed, if necessary (e.g., the project includes factors that may cause problems, such as transboundary waste treatment, acid rain, destruction of the ozone layer, or global warming).	(a) N/A	(a) Not applicable.

- 1) Regarding the term "Country's Standards" mentioned in the above table, in the event that environmental standards in the country where the project is located diverge significantly from international standards, appropriate environmental considerations are required to be made. In cases where local environmental regulations are yet to be established in some areas, considerations should be made based on comparisons with appropriate standards of other countries (including Japan's experience).
- 2) Environmental checklist provides general environmental items to be checked. It may be necessary to add or delete an item taking into account the characteristics of the project and the particular circumstances of the country and locality in which it is located.

## MONITORING FORM

**Environmental Monitoring Plan-Construction Phase**

No.	Impact	Environmental Monitoring	Frequency	Implementing Entity	Responsible Entity	Monitoring Result
Social Environment						
3	Land Use and Utilization of Local Resources	Regular meetings with representatives of local fishermen	2/year	MTC	MTC/CFM	
11	Sanitation	Regular meetings with representatives of local residents	2/year	MTC	MTC/CFM	
12	Hazards (risk) Infectious Diseases such as HIV/AIDS	Regular meetings with representatives of local residents	2/year	MTC	MTC/CFM	
Pollution						
22	Air Pollution	Regular meetings with representatives of local residents	2/year	MTC	MTC/CFM	
		Measurement of air quality(PM10), 2 points along access roads to the Port	4/year	Construction contractor	MTC/CFM	
23	Water Pollution	Measurement by using a portable turbidity meter	1/week	Construction contractor	MTC/CFM	
25	Waste	Regular meetings with representatives of local residents	2/year	MTC	MTC/CFM	
26	Noise and Vibration	Regular meetings with representatives of local residents	2/year	MTC	MTC/CFM	
		Measurement of noise level, 2 points along access roads to the Port	4/year	Construction contractor	MTC/CFM	
30	Accidents	Regular meetings with representatives of local residents	2/year	MTC	MTC/CFM	

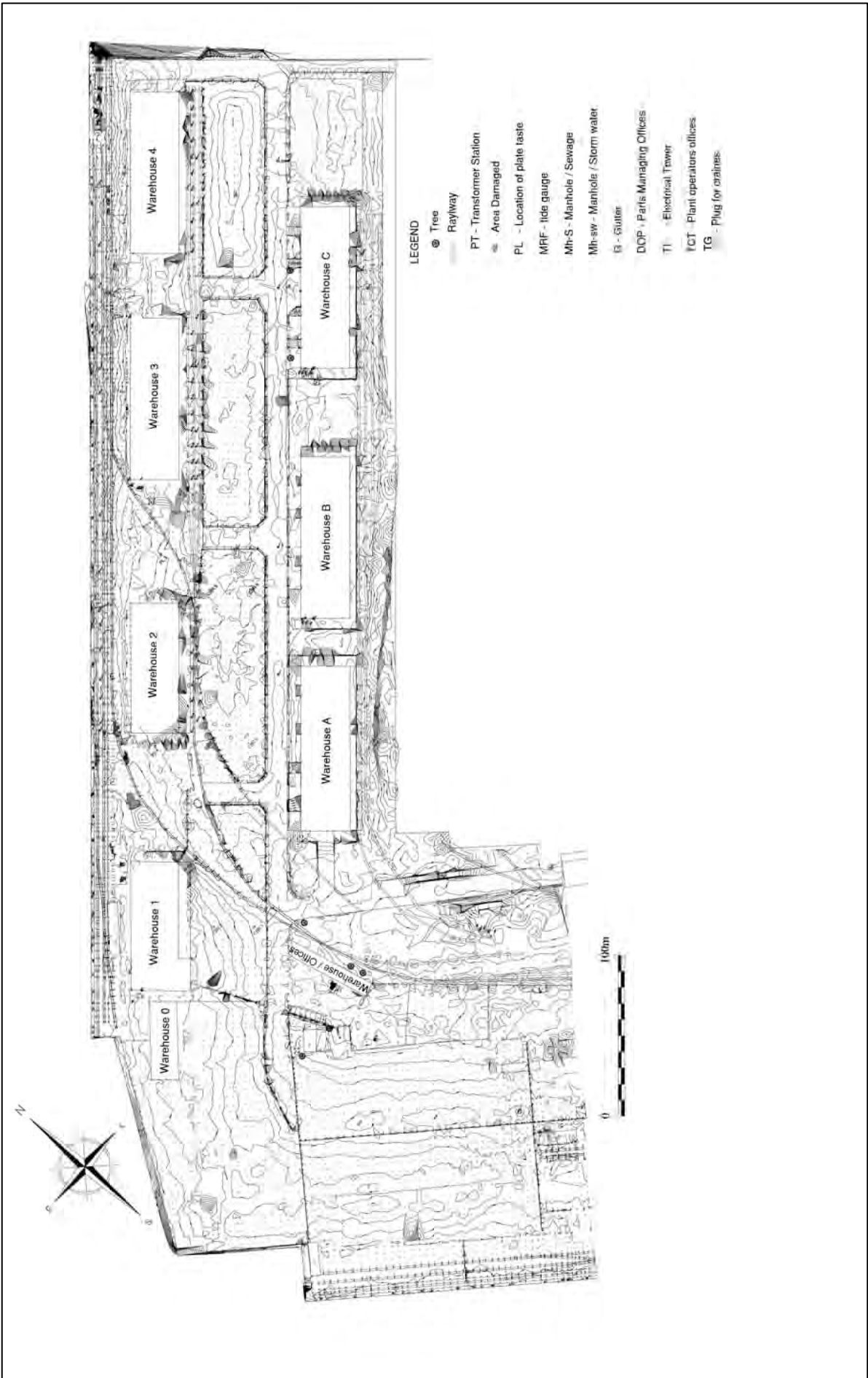
**Environmental Monitoring Plan- Operation Phase**

No.	Impact	Environmental Monitoring	Frequency	Implementing Entity	Responsible Entity	Monitoring Result
Pollution						
22	Air Pollution	Regular meetings with representatives of local residents	1/year	CDN	CDN	
		Measurement of air quality (PM10, SO2, NO2), 2 points along access roads to the Port	2/year	CDN	CDN	
23	Water Pollution	Regular meetings with representatives of local fishermen	1/year	CDN and Ship Owners	CDN	
26	Noise and Vibration	Regular meetings with representatives of local residents	1/year	CDN and Truck Owners	CDN	
		Measurement of noise level, 2 points along access roads to the Port	2/year	CDN	CDN	
29	Bottom Sediment	Regular meetings with representatives of local fishermen	1/year	CDN and Ship Owners	CDN	
30	Accidents	Regular meetings with representatives of local residents	1/year	CDN and Truck Owners	CDN	



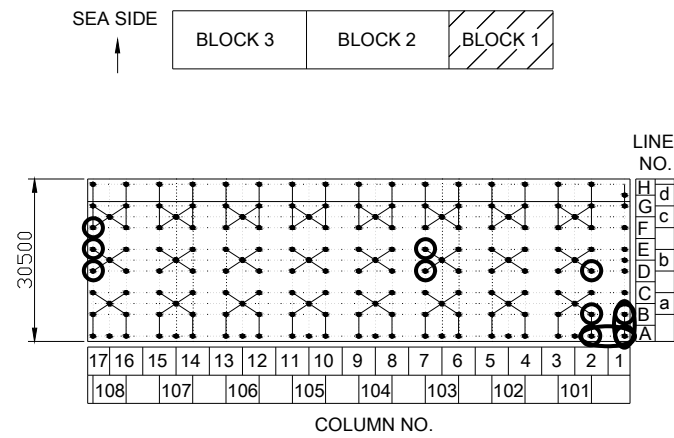



資料 5 地形測量結果

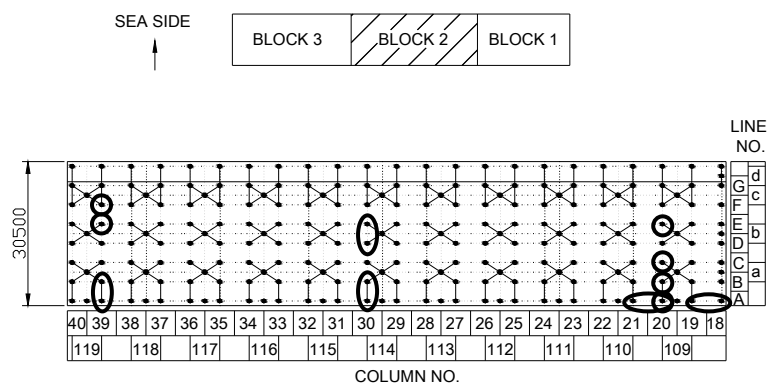


資料 6 棧橋式構造部状況調査結果

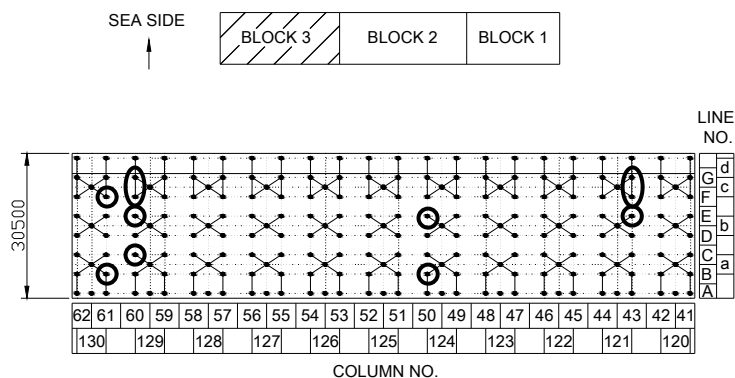
南埠頭および北埠頭 -2010年7月と2012年5月の比較-



LOCATION OF PILES IN CONTAINER TERMINAL BLOCK 1



LOCATION OF PILES IN CONTAINER TERMINAL BLOCK 2



LOCATION OF PILES IN CONTAINER TERMINAL BLOCK 3

○ : Location of Comparison of Pile Head

General layout of piles in Container Terminal (South Wharf)

**Container Terminal: Block 1**

Date : July 2010



Block 1  
Pile 1A and Wall

Date : May 2012



Block 1  
Pile 1A and Wall



Block 1  
Pile 1A



Block 1  
Pile 1A



Block 1  
Slab bet. Pile 1A& 2A-1



Block 1  
Slab bet. Pile 1A& 2A-1

Date : July 2010



Block 1  
Slab bet. Pile 1A& 2A-2

Date : May 2012



Block 1  
Slab bet. Pile 1A& 2A-2



Block 1  
Wall bet. Pile 1A & 2A



Block 1  
Wall bet. Pile 1A & 2A



Block 1  
Pile 1B & 1a



Block 1  
Pile 1B & 1a

Date : July 2010



Block 1  
Pile 2A

Date : May 2012



Block 1  
Pile 2A      → : Damage  
Peel off concrete



Block 1  
Pile 2B-2



Block 1  
Pile 2B-2



Block 1  
Pile 2D-1



Block 1  
Pile 2D-1

Date : July 2010



Block 1  
Pile 2D-2

Date : May 2012



Block 1  
Pile 2D-2



Block 1  
Pile 7D



Block 1  
Pile 7D



Block 1  
Pile 7E-1



Block 1  
Pile 7E-1      ➔ : Damage  
Exposed re-bar

Date : July 2010



Block 1  
Pile 17D-2

Date : May 2012



Block 1  
Pile 17D-2



Block 1  
Pile 17E-2



Block 1  
Pile 17E-2      → : Damage  
Exposed re-bar



Block 1  
Pile 17F-3



Block 1  
Pile 17F-3

**Container Terminal: Block 2**

Date : July 2010



Block 2  
Wall bet. Pile 18A & 19A

Date : May 2012



Block 2  
Wall bet. Pile 18A & 19A



Block 2  
Pile 20A



Block 2  
Pile 20A



Block 2  
Slab bet. Pile 20A & 21A



Block 2  
Slab bet. Pile 20A & 21A



Date : July 2010



Block 2  
Pile 20B

Date : May 2012



Block 2  
Pile 20B



Block 2  
Pile 20C-1



Block 2  
Pile 20C-1



Block 2  
Pile 20E



Block 2  
Pile 20E

Date : July 2010



Block 2  
Pile 30A ~ 30B

Date : May 2012



Block 2  
Pile 30A ~ 30B      → : Damage  
Exposed re-bar



Block 2  
Pile 30D ~ 30E



Block 2  
Pile 30D ~ 30E



Block 2  
Pile 39A ~ 39B



Block 2  
Pile 39A ~ 39B

Date : July 2010



Block 2  
Pile 39E

Date : May 2012



Block 2  
Pile 39E



Block 2  
Pile 39F



Block 2  
Pile 39F

➡ : Damage  
Exposed re-bar

**Container Terminal: Block 3**

Date : July 2010



Block 3  
Pile 43E

Date : May 2012



Block 3  
Pile 43E



Block 3  
Brace bet. Pile 43F & 43G



Block 3  
Brace bet. Pile 43F & 43G



Block 3  
Pile 50B



Block 3  
Pile 50B      → : Damage  
Exposed re-bar

Date : July 2010



Block 3  
Pile 50E-1

Date : May 2012



Block 3  
Pile 50E-1



Block 3  
Pile 60C



Block 3  
Pile 60C



Block 3  
Pile 60E



Block 3  
Pile 60E

Date : July 2010



Block 3  
Pile 60F ~ 60G-1

Date : May 2012



Block 3  
Pile 60F ~ 60G-1



Block 3  
Pile 61B



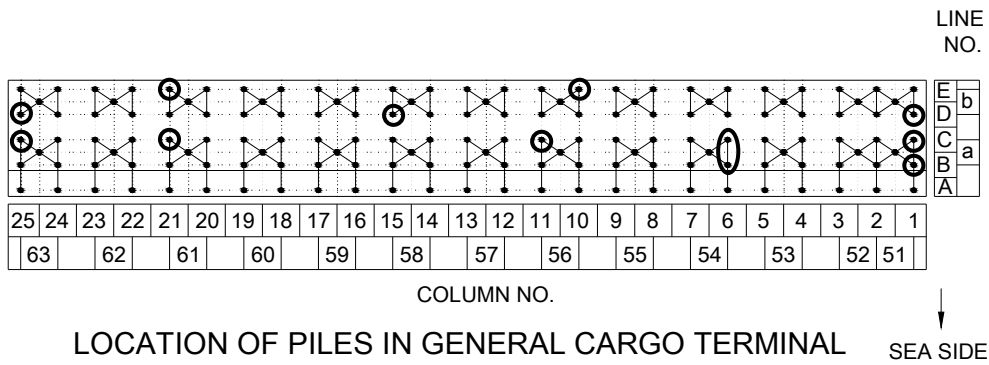
Block 3  
Pile 61B



Block 3  
Pile 61F



Block 3  
Pile 61F



○ : Location of Comparison of Pile Head

**General layout of piles in General Cargo Terminal (North Wharf)**

## General Cargo Terminal

Date : July 2010



Slab nearby Pile 1B

Date : May 2012



Slab nearby Pile 1B



Pile 1B



Pile 1B



Wall and Slab nearby Pile 1C



Wall and Slab nearby Pile 1C



Date : July 2010



Pile 1D

Date : May 2012



Pile 1D



Pile 6B ~ Pile 6C



Pile 6B ~ Pile 6C



Pile 10E



Pile 10E

Date : July 2010



Pile 11C-1

Date : May 2012



Pile 11C-1



Pile 15D



Pile 15D



Pile 21C



Pile 21C

Date : July 2010



Pile 21E

Date : May 2012



Pile 21E



Wall nearby Pile 25C



Wall nearby Pile 25C



Pile 25D



Pile 25D