No.

General Department of Vietnam Customs, Ministry of Finance

The Socialist Republic of Vietnam

IMPLEMENTATION REVIEW STUDY REPORT
ON
THE PROJECT FOR REINFORCEMENT
OF CUSTOM FUNCTIONS OF THE HAI PHONG PORT
IN
THE SOCIALIST REPUBLIC OF VIETNAM

July, 2009

JAPAN INTERNATIONAL CORPORATION AGENCY (JICA)

JAPAN MARINE SCIENCE INC.

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PREFACE

In response to a request from the Government of the Socialist Republic of Vietnam, the Government of Japan decided to conduct an implementation review study on the Project for Reinforcement of Customs Functions of Hai Phong Port in the Socialist Republic of Vietnam and entrusted the study to the Japan International Cooperation Agency (JICA).

JICA sent to Vietnam a study team from 30th March 2009 to 8th April 2009.

The team held discussions with the officials concerned of the Government of Vietnam and conducted a field study at the study area. After the team returned to Japan, further studies were made. Then, a mission was sent to Vietnam in order to discuss a draft basic design, and as this result, 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.

I wish to express my sincere appreciation to the officials concerned of the Government of the Socialist Republic of Vietnam for their close cooperation extended to the teams.

July, 2009

Eiji Hashimoto

Vice-President

Japan International Cooperation Agency

July, 2009

Letter of Transmittal

We are pleased to submit to you the implementation review study report on the Project of Reinforcement of Custom Functions of the Hai Phong Port in the Socialist Republic of Viet Nam.

This study was conducted by Japan Marine Science Inc., under a contract to JICA, during the period from March, 2009 to August, 2009. In conducting the study, we have examined the feasibility and rationale of the project with due consideration to the present situation of Viet Nam and formulated the most appropriate basic design for the project under Japan's Grant Aid scheme.

Finally, we hope that this report will contribute to further promotion of the project.

Very truly yours,

Takino Seiichi

Project manager

Implementation review study on

The Project of Reinforcement of

Custom Functions of the Hai Phong Port.

Japan Marine Science Inc.

Summary

Since the introduction of Doi Moi policy in 1986 the Socialist Republic of Vietnam (hereinafter called "Vietnam") had made steady economic development at high annual growth rates ranging from 8 to 9 % from 1992 to 1997 mainly owing to the increased export and investments from foreign countries. In 1997, the steady economic growth was suspended by Asian Financial Crisis which occurred in July of that year in Thailand and spread over many nations in the region. Vietnam's economy suffered from the sudden drop of the demands caused by the crisis but it was less affected by the Crisis as compared to other nations. Thus, the economy of Vietnam began to recover by mid 1999. The average economic growth rate for the period of seven years from 2000 to 2006 showed 7.5 % and it recorded 8.5 % growth rate in 2008. As the results of the high steady economic growth, the total amount of containers handled at all ports in Vietnam recorded 4.96 million Twenty feet Equivalent Units (TEU) in 2008 which is **4** times of that of 1992. The total annual amount of TEU handled in Vietnam in recent years is still increasing at the rate higher than that of economic growth.

Modernization of Vietnam's Customs commenced substantially when the new Customs Act was established in 2001. In 2003, by establishing Modernization Plan for Customs Innovation and Development (Master Plan), it planned to transform traditional customs into modern ones management by introducing the risk-management methods. As for the international issues, measures to cope with terrorism have intensified globally since the 2001 terrorist attacks to US, and the security of international cargos is the focus of attention in all nations.

In Vietnam, the necessity to introduce anti-terrorism measures and safety inspections is growing responding to anti-terrorism moves in the United States such as the Container Security Initiative (CSI) during and after 2002, and the Safe Port Act, which came into effect in October 2006, and responding to the framework for securing the safety of international trade built by the World Customs Organization (WCO).

Specifically, there is a pressing need to introduce the Association of Southeast Asian Nations (ASEAN) Single Window System in Vietnam, and achieve the target of standardized customs clearance procedures determined by World Trade Organization (WTO) and ASEAN. In order to achieve this target, Vietnam has a two-stage approach: the related domestic systems will be consolidated by 2010, and then international requirements such as ASEAN Single Window will be achieved by 2012.

Hai Phong Port ,Vietnam's major port in the north, located 100 Km east from the capital city Hanoi, and Tan Cang Cat Lai Port in Ho Chi Minh City, Vietnam's major port in the south, handle 2.8 million TEU of container cargo, covering 57% of all container cargos of the country in 2008.

The two major ports face urgent issues such as improving the customs inspection methods and reducing inspection time in accordance with the increase of the container cargos. The present manual container inspection by opening up containers takes 1~2 hours per container. The total duration of customs inspection time has been increasing in proportion to the increased total volume of export/import cargos. Detection of concealed goods in containers is not easy in case of manual inspection and the number of containers to be inspected nearly exceeds the manpower limit, inspection by opening the container is implemented for approximate 49% of the containers. Moreover, customs inspections in Vietnam have been placed too much importance on import cargo, and inspection of export cargo has been insufficient because of the man power shortages. The improvement of customs inspection method and reduction of time for container inspection became the most urgent goal in Vietnam.

Under these circumstances, in July 2006, Government of Vietnam (GOV) requested the Government of Japan (GOJ) the introduction of large scale X-ray equipment at Tan Cang Cat Lai Port and Hai Phong Port and the transfer of X-ray inspection technology under the Grant Aid Scheme.

The GOJ decided to conduct the basic design study, and JICA sent to Vietnam a Study Team (hereinafter "the Team") from 25th December 2007 to 28th January 2008. The team held series of discussions with the officials of GOV concerned and conducted a field study at the study area. The Team investigated the conditions of requested project sites, implementation scheme in Vietnam, natural conditions of project area, and conditions of related infrastructures.

After returning to Japan, the Team conducted further basic design studies on the extents of cooperation policy, specification of equipment, construction method of X-ray inspection buildings, etc. Then, a mission was sent to Vietnam from 26th May to 2nd June 2008 in order to discuss the draft basic design, and undertakings of GOV, and as a result, the Basic Design Report was accepted.

With regard to the number of the requested equipment, it was concluded that one set of ordinary large scale X-ray Inspection Equipment at each port would be sufficient enough to meet the demands because of reasons of:

1) Ordinary large scale X-ray Inspection Equipment can inspect 20 trailers/hour in average
2) By promoting the risk management system for inspection, total number of containers to be inspected can be reduced by random inspection

Required inspection objects varied from machines, smuggled vehicles and other materials, weapons to narcotics. But it was assumed to emphasize in inspecting objects especially smuggling of various machines. For that goal, specifications of the X-ray Inspection Equipment were examined on various factors such as power of X-ray energy, penetration power, and penetration directions.

As to the installation of the X-ray Inspection Equipment, it was planned to construct the shielding facility to protect the Equipment as well as to prevent the leakage of radiation. Because of the nature of the facility and its operating condition, due considerations were given

to:

1) provide radiation shielding walls with sufficient thickness
2) place adequately shielding walls, shielding doors and ventilation holes
3) use highly durable materials

To achieve efficient inspection, the X-ray inspection facility was so located to enable smooth flow of trailers by avoiding intersections of the traffic flows.

As the result of the above mentioned Study, GOJ had decided to implement “THE PROJECT FOR REINFORCEMENT OF CUSTOM_FUNCTIONS OF THE TAN CANG CAT LAI Port, HO CHI MINH CITY” in 2008. In October 2008, Exchange of Notes for the Project was signed. In March 2009, GOV selected the Contractor and the construction has commenced.

As to Hai Phong Port, on the other hand, soft ground condition was discovered at the Project site during the Basic Design stage. Thus, it was agreed between the two Governments that GOV would undertake the work for improving the soft ground conditions at its cost as an antecedent condition for implementing the Project for reinforcing of customs function at the Hai Phong Port.

After then GOV has undertook the ground improvement works. This Implementation Review Study was conducted to review the previous Basic Design, confirm the results of the completed ground improvement works by GOV and re-estimate the Project costs based on the price changes after the Basic Design.

Concerned issues of the ground improvement works at Hai Phong Port project site were:

1) When loads by embankments or structures are applied to the soft clay stratum, phenomenon so called consolidation settlement will occur by squeezing out the underground water and deform the ground.
2) Since the thickness of the soft clay stratum at the site is over 30 m, it was concerned

that large amount of settlement will occur and the settlement will continue for a long duration.

3) As the results of large amount of potential consolidation settlements, there would be various problems such as height difference between the structures on piles and the ground level, inclination or breakage of structures on the ground level, waving of pavement surfaces, rutted pavements, cave in of pavements, breakage of pipes laid in underground, slope changes in drainage channels, etc.

In order to be free from the above mentioned potential problems, sand drain method was applied at the site to improve the soft ground conditions.

Outlines of the sand drain method applied at the site were:

1) Depth of sand piles were 15.5 m
2) Diameter of sand piles were 40 cm
3) Distribution of sand piles were in equilateral triangle shape in 1.2 m pitch
4) It was aimed to achieve some 75 % of total amount of settlements within the first three months to reduce potential problems of settlements

During the site survey in April 2009, it was confirmed that the sand drain ground improvements were executed as designed and planned schedule. Observations of ground settlements at Hai Phong Project site has been done about once a week intervals since April 6, 2009 and total of 8 observation results have been obtained. From the obtained observation results, it became obvious that speeds of settlement at every observation points become moderate as the time pass by. All observation results are within the area of the curve of 1.1 times of calculated settlement/ 2 times of settlement period and the other curve of 2.3 times of calculated settlement/ 2 times of settlement period. From the observation result, the actual settlement behavior is taking 2 times as much period from the calculated value, therefore, when the calculated settlement period is assumed to be 2 times, 90% of settlement to the depth of sand drain piles will be achieved at 118 days (approximately 4 months) and 95 % of settlement will

be achieved at 154 days (approximately 5 months). Because 5 months have passed as of May 1, 2009 since December 1, 2008, it is considered that 95 % of the settlement has been achieved.

As pavement works will be executed in the future, some 20 cm additional settlement is expected to occur to the depth of sand piles. From the observation results, 95 % of settlement will be completed within some 5 months and the remaining settlement is estimated as some 1 cm.

Because of the variations in the strata at the project site, there is a possibility of uneven settlements. However, variations of strata are estimated to be some 13 m in depth which is shallower than the 15.5 m of the sand drain depth. Regardless of the amount of settlement depths, it is estimated that 95 % of settlements will be completed after some 5 months from now within the depths of sand drains. Accordingly, it is deemed possible to adjust differences of elevations caused by uneven settlements by the final resurfacing works and reduce the uneven settlements after facilities are put in use.

On the other hand, amount of consolidated settlement in the deeper strata than the depth of sand drain piles is estimated to be some 10 cm. However, it is deemed that potential settlement will occur only up some 30m in depth at the site and variations in the strata in the regions of this altitude are minimal. Therefore, amount of consolidated settlements beyond 15.5 m in depth are considered to be almost even at the site. In addition, time required to 5 cm consolidated settlement in the region beyond 15.5 m is estimated to require 40 years. Considering very moderate progress of the settlement in the deeper strata beyond 15.5 m, it is considered that the settlement in these strata will cause no serious problems for the planned facilities.

From the above discussion, it is estimated that almost no uneven settlements will occur because of improved grounds by sand drain method. Accordingly, it is considered that the

required conditions of the ground improvement are considered to be satisfied for implementing the Project of reinforcing customs function at the Hai Phong Port.

1. Outline of the Project

There is no alternation in final plan of the Project for the required equipment and facilities from the Basis Design phase. The outline of the Project is as follows.

Equipment and facilities	Purpose	Numbers
Large scale X-ray inspection equipment:	Inspection of container contents by X-ray clairvoyance	One system
Facility for X-ray inspection equipment	1. Container cargo inspection station for X-ray equipment installation and operation ・ Include shield doors and ventilation equipments 2. Office building ・ Remote control room of X-ray system ・ Image analysis room ・ Meeting room ・ Electric control room ・ Machine shop ・ Sleep break room for X-ray operation staffs ・ Toilet facilities Reinforced concrete structure with pile foundation Roof: Steel beam made Roof material: Polyester processed Galvanized steel plate Thickness: 0.6 mm Eaves height: 6,500 mm One storied building Floor area: 1,065.17 square meter	One building

2. Estimate of Project Costs

The main cost for GOV will be soil improvement works at Hai Phong Port, construction of visual inspection facility, warehouse, security measures, water supply arrangements, electric power arrangements, and telephone installation. The total duration of works will be around 18.5 months including tender process.

After the project completion, the Operation and Maintenance of the X-ray facilities and equipment will be undertaken by Hai Phong Customs under the jurisdiction of the General Department of Vietnam Customs (GDVC). GDVC has to prepare new budgets for the operation and maintenance management of the large scale X-ray inspection equipment as this is the first experience for Hai Phong Customs. The operation and maintenance cost is estimated to be around 17 million yen per year, which constitute around 1.3~4.7% of total budget. GDVC is already confirmed to prepare and deliver 25~172 million yen during 5 years until 2012 for the large scale X-ray inspection equipment. GOV has plans to establish "X-ray Inspection Center" as their district branch level organizations, and intend to establish expertise divisions and arrange new staffs. The maintenance of the X-ray equipment will be outsourced to the X-ray system manufacturer.

3. Direct and Indirect Effects

The following effects are expected by implementing the project. All the Vietnamese customs inspectors are the direct beneficiaries of this project, and all the Vietnamese people (85.2 million people in 2007) are the indirect beneficiaries of this project.

(1) Direct effects

1) The inspection time saving per container: Inspection time with X-ray Equipment will be reduced to 15~20 minutes from 60~120 minutes inspection time without X-ray

Equipment and thus improve productivity by 4~6 times.

2) Damages to cargo due to adverse weather conditions can be eliminated by switching from the present outdoor manual container inspection to the non-destructive inspection under the covered area.

3) Anti-terrorism efforts at Hai Phong Customs will be reinforced by thorough inspection.

4) The present manual container inspections which are performed at more than five locations in Hai Phong city will be consolidated into one location, and thus prevents from blocking traffic in container yards. It will also contribute in maintaining safety of traffics in the port and container inspection.

5) By decreasing number of manual inspections in great deal, it will contribute in protecting export/import cargos from potential damages by outdoor manual inspections.

(2) Indirect effects

1) The container inspection will be carried out safely and swiftly, and it will enable to handle more volume of growing import and export cargos in the future.

2) Speedy customs inspection will promote the direct investments from overseas.

3) By shifting from manual open-up container inspection to nondestructive inspection, the efficiency of the GDVC will be improved by reducing the number of surveyors and management works. GDVC will enjoy savings by eliminating open-up container inspection stations in Hai Phong as the result of consolidated inspection station.

4) Cooperating with risk-management system, it will contribute in modernizing Vietnam's Customs inspection system.

5) Introduction of the X-ray Inspection Equipment will significantly promote the computerization of customs inspection. As the result, it will contribute to the early realization of "ASEAN Single Window" and satisfy requirements of the General Customs Bureau of WCO, WTO, and ASEAN.

It is confirmed that this project will have significant value for GOV as it will dissolve the congestion problems of custom inspection, improve efficiency of cargo distribution systems and promote the safety of export/import cargo at Hai Phong Port.

In order to maximize the effects and benefits of this project, GOV should take the followings measures in operation and maintenance of the equipment to be installed and facilities to be completed;

1) Establishing operating system of X-ray Inspection Center

   To review the managing and operating system of X-ray Inspection Center and establish efficient operating system of the center by reforming organizations of Hai Phong Customs concurrently.

2) Establish training program

   Respond efficiently to the training program of the equipment manufacturer and prepare subsequent familiarization and training program to meet requirements of operating system.

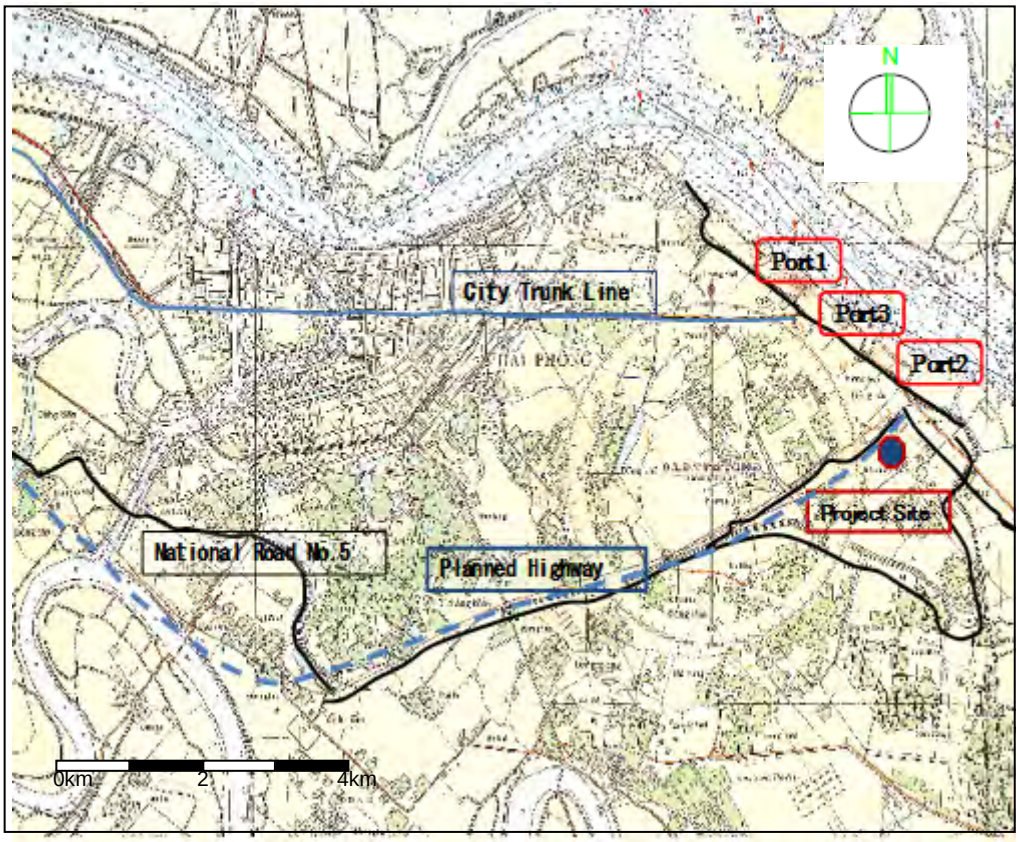
3) Establish computerization program of customs system and risk management modernization program

   Implement computerization of customs system and risk management modernization program as a future operating method for the use of large scale X-ray Inspection Equipment and for improving the efficiency of customs inspection as a whole.

Contents

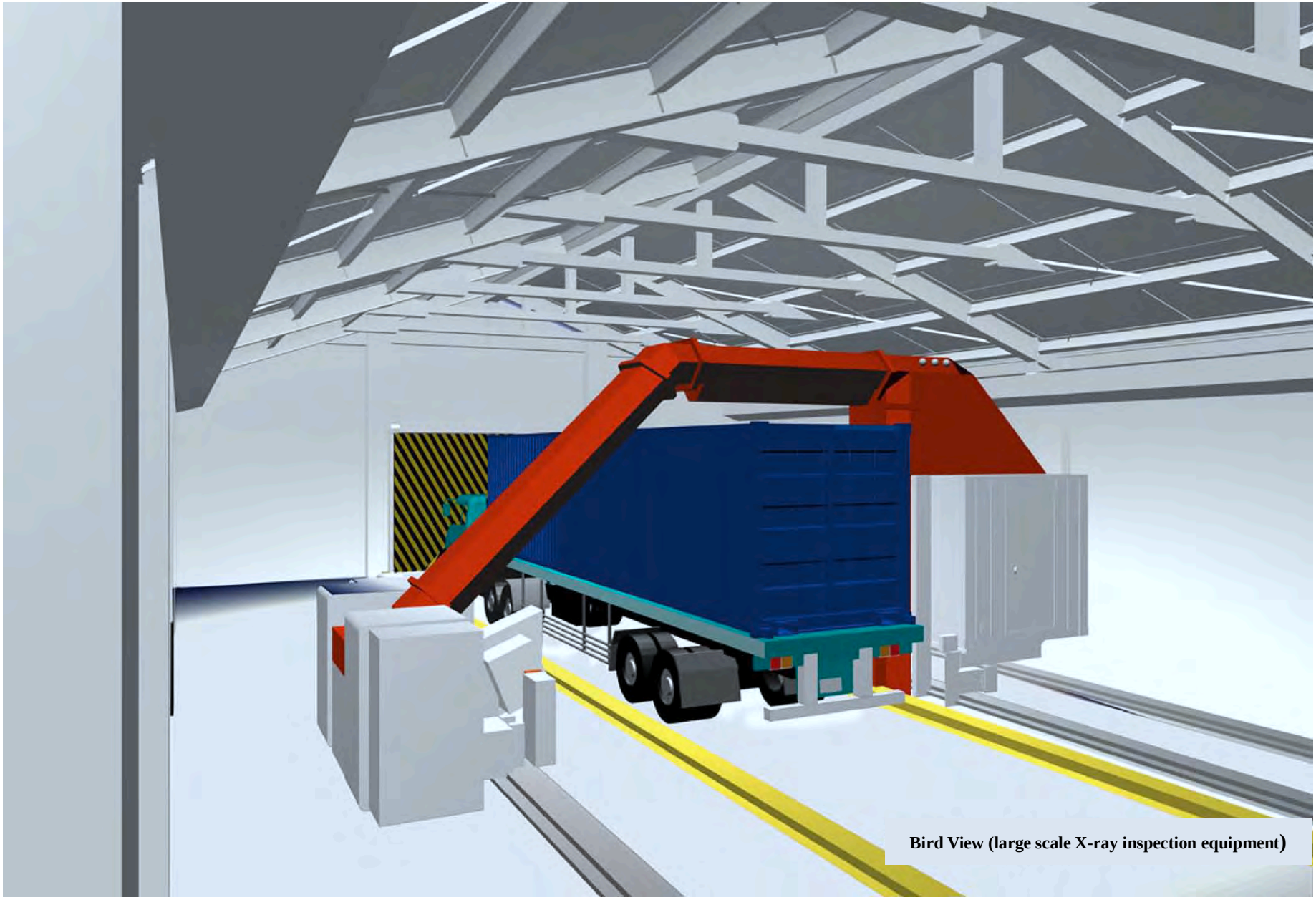
Location Map/Perspective

Location Map



Location Map of Hai Phong Port

Bird Veiw (Hai Phong Site)



Bird View (large scale X-ray inspection equipment)

List of Figures and Tables

Abbreviations

ASEAN	Association of Southeast Asian Nations
ASTM	American Society for Testing and Materials
CSI	Container Security Initiative
DAC	Development Assistant Committee, United Nations
FEU	Forty feet Equivalent Units
GDP	Gross Domestic Product
GDVC	General Department of Vietnam Customs
GL	Ground Line
ICRP	International Commission on Radiological Protection
JIS	Japan Industrial Standard
MeV	Mega Electron Volt
μSV	Micro Sievert
OJT	On the Job Training
PC	Precast Concrete
RC	Reinforced Concrete
TEU	Twenty feet Equivalent Units
WCO	World Customs Organization
WTO	World Trade Organization
VND	Viet Nam Dong
USD	US Dollar
JPY	Japanese Yen

Chapter 1 Background of the project

1-1 Present sector issues

1-1-1 Present conditions and issues

Modernization of the General Department of Vietnam Customs (GDVC) is ranked as a major issue in the modernization plan of the national administrative functions (Master Plan for Development of National Administrative Functions up to 2010). Modernization of Vietnam's Customs commenced substantially when the new Customs Act was established in 2001. In 2002, Five-year Plan for Promoting Information Technology (Master Plan) was prepared. In 2003, by establishing Modernization Plan for Customs Innovation and Development (Master Plan), it planned to transform customs management from traditional to modern one based on risk-management methods. Then, the Customs Act was revised to conform to the international standard in 2005, and various specific procedures related to customs enforcement such as customs taxation, applicable tax rate, and tax collection measures were established in accordance with the export and import duties enacted in 2006 (No. 45/2005/QH11), government ordinance (No. 149/2005/ND-CP), and related ministerial ordinances. According to the modernization plan and revisions of systems, yearly performance targets of individual programs for introducing IT, reforming organizations, and personnel training were determined up to 2010. The introduction of the X-ray inspection systems into Vietnamese Customs is stipulated as the most urgent tasks.

Vietnam became a member of ASEAN in 1995 and a member of WTO in 2007, thus it is urgently needed to upgrade the standards of customs procedures to the international level. As a specific issue, it faces implementation of [Establishment of Single Window System] specified in the protocol of ASEAN. In order to achieve this target, Vietnam has a two-stage approach: the related domestic systems will be consolidated by 2010,

and then international requirements such as ASEAN Single Window will be achieved by 2012.

1-1-2 Development plan

The GDVC recognizes that promoting the modernization of customs procedures, and employing the latest computerized equipment are important issues. It also recognizes that the X-ray Equipment is an important element. Introduction of the large scale X-ray Equipment will transform the traditional customs inspection, which depends on manpower, into a modernized inspection based on objective screening standards, which will shorten inspection times. Furthermore, the effects of the computerized customs system can be further enhanced by connecting the large scale X-ray Equipment online with computerized customs system in the future. Trial introduction of the computerized customs system started in 2000, and trial operation of the computerized customs procedures started at Hai Phong Customs and Ho Chi Minh Customs in 2005. At present, the computerized customs information-processing systems are operated at the center located in the GDVC and at sub-centers located at eight district customs offices across the country.

The present issues are to rationalize customs inspection and respond to an increasing volume of inspection by combining X-ray inspection and innovations in the risk-management system, and to respond equally to export and import cargos in a departure from the present situations where it is obliged to place emphasis on import cargo inspection (At present, the inspection rate of export cargos by opening up containers is 10% and that of import cargos is 30%), and also to plan effective anti-terrorism countermeasures. Other issues are to contribute to the efficiency of cargo distribution as a whole by reducing the customs inspection time with the introduction of the large scale X-ray Equipment, and also to make customs officials respond to

compliance and anti-terrorism measures.

1-1-3 Socio-economic environment

Since the introduction of Doi Moi policy, Vietnamese economy has developed at steady high rate mainly owing to the developing exports and direct investments from foreign countries. The annual economic growth rates from 1992 to 1997 ranged at 8 ~ 9 %. After the tentative slow down of economic growth caused by the Asian currency crisis in 1997, Vietnamese economy recovered from the middle of 1999. The average annual economic growth rate was 7.5 % from 2000 to 2006, and it recorded 8.5% in 2007. The Vietnam's per capita GDP was US$809 in 2007 (IMF). The GDP shares are 24%, 37%, and 39% for primary industries, secondary industries, and tertiary industries, respectively, and the secondary industries are expanding significantly. In recent years, market-oriented economic reforms and integration into the global economy have been promoted; and, in 2007 it achieved formal entry into the WTO. The value of trade increased significantly in 2007, the values of exports and imports increased to US$48.4 billion (increase of 22% over previous year) and US$60.8 billion (increase of 36% over previous year), respectively, indicating significant economic growth. On the other hand, worries such as a chronically trade deficit, immature investment environment, etc. still remain. The major trade items are crude oil, sewing product, textiles, fishery product, etc. are exported, and machinery (parts), petroleum products, fabrics, iron and steel, etc. are imported.

1-2 Background, development, and outline of the grant aid request

The most urgent tasks of Vietnamese Customs are to improve the customs inspection capabilities for both import and export container cargos by reducing durations of cargo inspection with the introduction of X-ray Inspection Equipment, which will improve the efficiency of logistics management, cope with the compliance issues by establishing

objective screening standards of customs inspection through employing X-ray analysis, and enhance security and anti-terrorism measures.

The GDVC recognizes that to promote modernization of customs procedures, employing the latest computerized equipment is one of the important issues, and understands that X-ray equipment is an important element. Vietnam's major ports, Hai Phong Port in the north and Tan Cang Cat Lai in the south, covering 2.8 million TEU (57% of all 3.43 million TEU in 2007) container cargos of the country, face urgent issues such as improving customs inspection methods, which include reduction of inspection times in accordance with an increase of container cargos. The container inspection time, which takes 1~2 hours per container at present, can be significantly reduced to an average of 20 minutes per container by introducing the large scale X-ray Equipment, and the efficiency of cargo distribution will be improved. Meanwhile, it plans to respond to the compliance issues and also anti-terrorism measures, which have been substantially disregarded up until now.

Under these circumstances, GOV has requested GOJ the introduction of large scale X-ray Equipment at Tan Cang Cat Lai and Hai Phong Port under Grant Aid Scheme.

Content of initial request was as follows:

① The large scale X-ray Equipment (specification: 4-6 MeV)
(one unit each for Hai Phong and Tan Cang Cat Lai Port)

② Transfer of X-ray inspection technology

Based on the above requests by GOV, JICA/GOJ has conducted Basic Design Study for Reinforcement of Customs Functions of Major Ports in Vietnam from November 2007 to June 2008. However, during the above said Study period, it became clear that Hai Phong Port site faces soft ground problems. Thus, it was decided that the Project for

Tan Cang Cat Lai Port will proceed as scheduled and the Project for Hai Phong Port will be implemented at the second phase. Exchange of Notes (E/N) for Tan Cang Cat Lai Port Project were signed in October 2008 and the project has commenced since then. As to Hai Phong Port Project, on the other hand, it was agreed between both Governments that GOV would undertake the work for improving the soft ground condition at its cost as an antecedent condition for implementing the Project for reinforcement of customs function at the Hai Phong Port. GOV has been undertaking the required ground improvement works at Hai Phong Port in December 2008.

1-3 Condition of project site and surrounding area

The project site at Hai Phong can accommodate the traffic inflow of containers from the pier without passing through the city, and is positioned at the point where the orbital road of the city crosses National Route 5 and the expressway on which work is scheduled to start in the near future. The site area is 16,000 square meters, which is sufficient for the X-ray inspection station. The site was created by reclaimed swampland, therefore, it was found from soil investigations by boring that ground improvement works are needed and the GOV has been conducting such ground improvement works in December, 2008.

1-3-1 Preparatory situation of related infrastructure

Related new infrastructure of the Hai Phong Port site will be prepared by the GOV. The main electric power, water, and sewerage required for the large scale X-ray Inspection Equipment and facilities could be connected to the facilities from the roads in front of the Project site.

1-3-2 Natural conditions

(1) Results of topographic survey

In the case of Hai Phong Port, the ground plane of the planned premises is flat and lower than the front road (Nguyen Binh Khiem street) surface by approximately 0.45~0.50 m, which is the same sea level as Hon Dau – Do Son – Hai Phong observation points. There are warehouses in the northeast of the premises and a container yard in the southeast area of the premises, and the road to container yard is routed in southwest area adjacent to the premises.

(2) Soil surveys at Hai Phong project sites

From the results of the soil investigation at the Hai Phong Port site, it was disclosed that the ground was composed of the following layers: from ground level (GL) to 1.70 m depth is a loose sand layer; GL-1.70 m~10.20 m is a silt layer of N value 1~3; GL-10.20 m~38.00 m is a silt clay layer of N value 4~10; and at a depth of more than GL-38.00 there is a sand layer of N value greater than 52. Considering functionality, it employs a pile foundation using a sand layer of N value greater than 52 in depth more than GL-38.00 m as a supporting layer. The survey results proved that the Hai Phong site needs the ground improvement before commencing a construction work. Accordingly, GOV had conducted the ground improvements by sand drain methods.

(3) Climate conditions

1) Climate

The entire land area of Vietnam is located south of the northern circle and extends near the equator. Therefore, it is heavily affected by the southwest monsoon. It is affected by typhoons during the period from July to November, and in particular, the central part of the nation is liable to be affected. Hai Phong has a temperate climate, and the rainy season is from April to October.

Temperature: The average minimum temperature in Hai Phong is 13.7 degrees in January, the average maximum temperature is 32.9 degrees in July, and the average temperature during the past five years has been 24.5 degrees.

Table 1-1 Temperature, Rainfall, and Humidity of Hai Phong

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Mean Temperature (Centigrade)	16.4	18.1	19.8	24.2	27.0	28.8	28.6	27.8	27.2	25.2	22.2	18.2
Mean Rainfall (mm)	17.4	20.6	25.0	49.2	256.6	282.2	422.8	360.6	202.8	46.8	46.4	12.6
Mean Humidity (%)	81.0	88.2	86.2	86.0	84.2	84.8	85.0	87.2	80.6	77.8	79.6	74.6

Note: Bai Chai Weather Station (Mean 2002～2006)

2) Temperature

The mean minimum temperature at Hai Phong is 13.7 degree Centigrade in January, and mean maximum temperature is 32.9 degree Centigrade in July. The mean temperature for five-year period from 2002 to 2006 is 24.5 degree Centigrade.

3) Rainfall

The average annual rainfall in Hai Phong was 1,512 mm for five-year period from 2002 to 2006.

4) Humidity

The average humidity in Hai Phong was 78.5% for the five-year period from 2002 to 2006.

5) Sunshine hours

The average sunshine hours/year for the five-year period from 2002 to 2006 was 1,416 hours in Hai Phong.

6) Natural disasters

In Hai Phong, because the infrastructure has yet to be improved, the roads suffer from flooding by heavy rainfalls accompanied by typhoons. Therefore, equipment in the inspection room and the floor of the office building will be established at an elevated location of 900 mm above ground level.

1-3-3 Consideration to the environment

Applicable Standards of Recommendation of International Commission on Radiological Protection (ICRP-60) will be observed to protect from radiation leakage accidents.

Chapter 2 Contents of the Project

2-1 Basic Concept of the Project

(1) Overall goals and Project Objectives

The overall goals of this project are to enhance the inspection capability of the Vietnam Customs, and modernize the Customs of the Socialist Republic of Vietnam (hereafter simply called "Vietnam"). In more specific terms, the objectives of this project are to improve the customs inspection capability for handling both import and export container cargoes by reducing inspection time for cargo through the introduction of X-ray Inspection Equipment. Furthermore objectives are to reinforce security and anti-terrorism measures.

(2) Project Outline

The volume of container cargo handled in the Vietnam is increasing at a pace that even surpasses its rate of economic growth. Since the 9.11 Terrorist Attacks, measures to cope with terrorism have been intensified globally, and the security of international cargo is the focus of attention in all nations.

In Vietnam, the necessity to introduce anti-terrorism measures and safety inspections is growing responding to anti-terrorism moves in the United States such as the Container Security Initiative (CSI) during and after 2002, and the Safe Port Act, which came into effect in October 2006, and responding to the framework for securing the safety of international trade built by the World Customs Organization (WCO).

There is a pressing need to introduce the ASEAN Single Window, and achieve the target of standardized customs clearance procedures determined at World Trade Organization (WTO) and ASEAN by introducing X-ray inspection equipment to enhance the efficiency of customs inspection. With the above-mentioned situation

serving as the background, it is expected that this project would improve the efficiency of customs inspection and customs inspection capability. To achieve the above targets, it is anticipated that customs inspection efficiency and customs inspection capabilities at Hai Phong Port can be enhanced by introducing large scale X-ray inspection systems.

The Large scale X-ray inspection equipment and related facilities will be procured under the Project, which are necessary to reinforce the customs functions at Hai Phong Port, one of the major ports in Vietnam:

2-2 Basic Design of the Requested Japanese Assistance

2-2-1 Design Policy

(1) Basic Principles

The basic principles are to introduce the large scale X-ray systems in order to accommodate the increasing demands of containers for customs inspection by reducing the number of containers to be inspected by manual inspection, and by reducing the time necessary for the customs inspection. For this purpose, procurement of the large scale X-ray equipment and construction of the X-ray inspection building shall be conducted at Hai Phong Port. Based on the request of the GOV and the results of the site investigation, the project will be conducted based on following principles.

① Principles for the X-ray equipment

Followings are the principles for the X-ray equipment specification

a. X-ray energy

The 6 MeV of X-ray penetration power is employed as the main target cargo for inspection are the smuggled machines and its parts out of other

items such as machines, cars, weapons, and narcotics.

b. Penetration strength

   330 mm of iron penetration power is employed to meet the variety of cargo to be inspected.

c. Process speed

   Process speed of 20 trailers per hour is applied so that one large scale X-ray equipment can take over all the manual container inspection at Hai Phong Port.

d. Penetration direction

   One direction system is employed as it can detect variety of cargo efficiently and economically.

For the specific specification of the large scale X-ray Inspection Equipment, it is assumed that one set of the equipment is sufficient to cover the present inspection of all containers for customs clearance, taking into account the anticipated reduction of inspection rate because of the promotion of risk-management system in the future. Table 2-1 shows the future prospects of container inspection at Hai Phong Port.

Table 2-1 Demands Forecast of Container Throughput and Number of X-ray Inspection (Hai Phong)

Year	2006 (actual)	2007 (actual)	2008 (forecast)	2009 (forecast)
Container Throughput(TEU)	569,000	780,000	820,000	940,000
No. of container for Customs procedures (TEU)	369,850	522,600	549,400	629,800
Inspection Ratio	53%	49%	49%	49%
No. of Container to be inspected (TEU)	196,020	256,074	269,206	308,602
No. of Container to be inspected (FEU)	147,015	192,056	201,905	231,452
X-ray system capabilities	168,000FEU/Year (20trailers/hour *24hour*350days/Year)			

The total container throughput in Hai Phong is 780 thousand TEU in 2007, among which around 520 thousand TEU are inspected in Hai Phong Customs Office. Thus, inspection rate was 49 % (mean value for export and import). The container throughputs are expected to increase to 549 thousands TEU in 2008 (5% increase from the previous year), and 629 thousands TEU in 2009 (15% increase from the previous year). The number of inspected container is estimated to be some 200 thousands Forty feet Equivalent Unit (FEU: 40 feet container conversion) in 2008, and some 230 thousands FEU in 2009, provided that the inspection rate remain unchanged as 49% as was in 2007. By simple calculation, around 20% of containers in 2008 and 38% of containers in 2009 should be inspected manually because the expected demands in these years exceed capacities of X-ray system.

GDVC have plans to lower the inspection rate by promoting the risk management system, and the inspection rate will be lowered from 2008. The target containers will be decreased in number and divided into two criteria, red line and yellow line. The red line criteria containers will be prioritized to the X-ray inspection and the yellow line containers will be the secondary targets for the X-ray inspection. Based on this premise, one unit of X-ray inspection system is judged to suffice the demands in Hai Phong.

② Principles for Facilities

In designing X-ray building, an integrated system plant incorporating X-ray inspection space, image analyzing office, and other system components is planned. The Office building will be composed of a remote control room, an image analysis room, a meeting room, an electric control room, a machine shop, and a sleep break room for X-ray operation staffs. Suitable protection against radiation leakage will be arranged by wall thickness, structure of protection doors, air outlet arrangements and etc. Facility arrangement will be made by giving due considerations for smooth traffic flow line from inspection building and manual inspection site as well as the traffic flows of trailers to be inspected and other cars.

③ Ground conditions at Hai Phong Port

The soil investigations by boring at Hai Phong site revealed the necessity of ground improvements. GOV had conducted additional geological survey in order to formulate the ground improvement plan. Based on the survey results, GOV has been conducting the ground improvement works by sand drain methods. GOV will continue monitoring the sinking level of the site even after the ground improvement works are complete and inform GOJ when the consolidated settlement is stabilized. The Hai Phong project will be started after confirming the stabilization of the consolidation

settlement.

(2) Policy for natural conditions

Hai Phong where large scale X-ray inspection equipment would be installed is located in the region notorious for high temperatures and humidity. Therefore, the large scale X-ray inspection equipment must be sufficiently capable of demonstrating satisfactory performance under such adverse natural environmental conditions. Furthermore, the large scale X-ray inspection equipment should be installed indoors so that it is free from the adverse effects of natural conditions such as wind, rain, and flooding. The walls of the building should be of a steel-reinforced concrete structure, finished with cement mortar. The galvanized corrugated steel sheets of roof will be coated with polyester resin to resistant against salty atmosphere from the sea at Hai Phong.

The field survey in Hai Phong site revealed the possibilities of suffering from flooding of the site. There is no reliable data available about flooding, but records show occasional flooding per year near the site due to heavy rainfalls accompanied by typhoons and insufficient discharge arrangements. Although the X-ray system is moisture proof, the repair of X-ray system submerged in water would take long time. Long time interruption of X-ray inspection will hinder constant and efficient operation of the inspection system. The ground floor level of Hai Phong inspection building will be raised 900 mm above the ground level to be free from the flooding. The value 900 mm is adopted after considering 20 years of maximum rainfall probability in Hai Phong and adding the margin stipulated in Japanese urban planning regulations. The X-ray building is arranged to keep safe slope for the raised entrance and exit for the trailers.

(3) Policy for socio-economic conditions

It is well understood that GOV intends to promote export industries as one of important forces to drive its economic developments. To that goal, GOV wishes to assure its trading partners that GOV will comply with the codes of WTO to secure the safety of cargoes. GOV also wishes to enhance the efficiency of customs inspection of export/import cargoes. These principles are taken into consideration for designing the inspection facilities as well as selecting the large scale X-ray inspection equipment.

(4) Procurement policy

None of the large scale X-ray inspection equipment is manufactured in Vietnam currently, so it is necessary to procure the equipment either from Japan or a third party nation(Development Assistant Committee, United Nations ;DAC). Cements and aggregates, which serve as raw materials for constructing buildings to accommodate these systems, will be procured in Vietnam

Installation, adjustments, and trial operation of large scale X-ray inspection equipment will be undertaken by specialist engineers dispatched from the manufacturer or its agent. These engineers shall provide guidance for starting up these system components as well as for normal operations.

(5) Policy for utilizing regional sub-contractors

The facility for the large scale X-ray inspection equipment is designed carefully based on the specifications of the X-ray system, installation standards, and security measures for X-ray shielding. The construction of the facility will require sufficient experiences in securing process control, quality control, and preventing leakage of X-ray. Vietnamese sub-contractors directed by well experienced Japanese construction company could be employed in this regards.

(6) Policy related to the technical guidance to implementing organization

Large scale X-ray inspection equipment is to be introduced to the GDVC, Hai Phong for the first time. Hence, sufficient considerations should be given to post-introduction training for operating staffs and establishing a management system. GDVC intends to establish the "X-ray Inspection Center" at its district branch office based on the 2 shifts operation composed of 18 staffs for one shift (9 staffs for X-ray inspection and analysis and another 9 staffs for manual inspection outside the building). A 24 hour/3 sifts operation will be employed in the future with the increase in amount of target containers. GDVC also intends to employ specialized company for maintenance of the X-ray inspection center by consulting with the X-ray equipment manufacturer and utilizing the contract with the manufacturer for maintenance/management of the equipment. GDVC intends to train its staffs by dividing them into a few groups (one group: around 20 staffs) by utilizing the manufacturers training system. Above circumstances should be respected to promote the project.

Thus, a soft component is not made into the object of this project. As to the X-ray operation, analysis of images and the maintenance/control of the equipment, it is considered that the initial training and technical guidance to be provided by the manufacturer will be most efficient. Thus, no budget is allocated for the soft components in the Project costs.

(7) Policy for setting the grade of large scale X-ray inspection equipment

When determining the grade for large scale X-ray inspection equipment, consideration must be given to its compliance with service objectives and demands for maintenance. It should be noted that the 6 MeV of X-ray penetration power is employed mainly to inspect potential smuggled machines, vehicles and their parts among other cargoes such as weapons and narcotics.

(8) Policy related to work method, procurement method, and work period

1) Competitive bidding

A competitive bidding is to be implemented for procurement of equipment and facilities for the project. The large scale X-ray inspection equipment is a set of sophisticated non-destructive testing equipment, free from technical difficulties, and capable of undisturbed operation without failures. Because it is crucial in bidding to give sufficient consideration for capability of safety management to prevent radiation leakages, a pre-bidding qualification assessment should be considered.

2) Bidders

Large scale X-ray inspection equipment is to be procured from manufacturers in Japan or a third-party nation (DAC). To complete a building with a complete radioactive ray leak preventing performance, it is necessary to select a sufficiently experienced construction company with a high technical capability. In this specific connection, a special competitive bidding procedure in which a joint venture system covering Japanese trading firm and/or manufacturers of large scale X-ray inspection equipment affiliated by Japanese construction companies who undertake construction work for large scale X-ray inspection equipment are considered to be eligible in a bidding.

3) Implementation period

The work period is assumed to be approximately 12.5 months from contract signing until taking over of the equipment for Hai Phong Port.

2-2-2 Basic Plan (Construction Plan/Equipment Plan)

Table 2-2 Specifications of the large scale X-ray inspection equipment

Equipment No.	Equipment：Large scale X-ray inspection equipment	Quantity:1 set
Component: Equipment 1 set		
Specifications： 1.Equipment Electrons energy: 6 MeV Penetration: no less than 330 mm steel Scanning rate: no less than 20 cars/hour Irradiation: one way 2. Resolution IQI: 4% or less CI : 2% or less In air : 1 mm or less 3. Operability: 365 days/year (including 15 days for maintenance service) 4. X-Ray operator annual working hours: 2190 hours/year 5. Safety of Facility Applicable Standards: Recommendation of International Commission on Radiological Protection ICRP-60 Radiation protection method: Concrete structure Safety measure: External walls of radiation protection 9μSV/hour		

Table 2-3 Specifications of the large scale X-ray inspection facility

Facility	Purpose	Numbers
Facility for X-ray Inspection Equipment	1. Container cargo inspection station for X-ray equipment installation and operation ・ Include shield doors and ventilation equipment 2. Office building ・ Remote control room of X-ray system ・ Image analysis room ・ Meeting room ・ Electric control room ・ Machine shop ・ Sleep break room for X-ray operation staffs ・ Toilet facilities etc. Reinforced concrete with pile foundation Roof: Steel beam structure Roof material: Polyester processed Galvanized steel plate Thickness: 0.6 mm Eaves height: 6,500 mm One storied building Floor area: 1,065.17 square meter	One building

2-2-2-1 Facility Plan at Hai Phong Port

(1) Basic plan

The design of the large scale X-ray inspection equipment permits installation at outdoors, but it is desirable to install it at indoors if the stability of operating environment and the necessary dust prevention measures are taken into account. In this specific connection, an integrated system incorporating X-ray inspection space, image analyzing and monitoring office, and other system components are planned.

As a countermeasure against potential flooding in the vicinity of the Hai Phong project site, the floor level of the inspection building is set at GL+900 mm.

1) Floor Plan

To accommodate a trailer which is loaded with a 40 feet container in the X-ray inspection zone, the length and width of the inspection zone is necessary as much of approximately 37 m x 20 m. The length is determined considering some marginal length, and width is determined also considering movable areas of the X-ray equipment and spaces for maintenance other than the dimensions of trailer and container.

To enable easy access for heavy loaded trailers to the raised inspection zone, gentle slopes (1/16) are provided for ingress and egress roads to/from the inspection station. To avoid the danger of radioactive leakage, the wall thickness in the direction of irradiation is to be 400 mm, and no opening is provided whatsoever. The wall thickness at the side receiving the reflected X-ray is to be 300 mm, taking into account the attenuation of the X-ray energy.

The office space for controlling the large scale X-ray inspection equipment and image analysis is to have the same length of the X-ray inspection zone under the structural consideration, and provision of inspection room, store room for spare parts and tools, sleeping space for operators, taking into account their service on an around-the-clock basis. Shower room, and electrical service room are also planned. Summing the necessary floor areas for these rooms, the width is to be approximately 9 m. The X-ray inspection staffs are composed of 9 persons in one team including operators, image analysts, and responsible chief staff. The table arrangement of the drawing is just for reference. 1~2 persons in the reception desk and trailer guides outside the building will be arranged. The X-ray system will be operated 24 hours per day by three shifts. A napping room is arranged for staff to rest. Two kinds of simple kitchen rooms and shower rooms are also arranged..

Because the floor level is set at an elevation of GL+900 mm, the dimensions of the approach to the inspection site for trailers and the entrance for operating members are made larger.

2) Sectional planning

Height of trailers with containers to be inspected will be 4,100 mm above the floor level. Considering additional space necessary for maneuvering X-ray equipment above the trailers as well as for maintenance of the X-ray equipment, total height will be 6,000 mm above the floor level. As the result, elevation of the inner space will be 8,100 mm above the ground level. The sectional planning of the inside the facility will be set at an elevation of GL+900.

3) Structural planning

The structure of the building is mainly made by a reinforced concrete Rahmen type structure, which is generally employed in Vietnam and is economic. The wall structures around the space for the X-ray cargo security inspection system are to be of an iron-reinforced concrete construction, and the wall thicknesses are to be 300 mm (inner walls), and 400 mm (outer walls), considering the effects of X-rays. The roofing is to be of a steel-framed roof construction. The X-ray inspection space is to be provided with pillars and part of the beam is to be constructed with a reinforced concrete structure to provide a generous space for inspection. Roof supporting beams are to be provided with heavy steel frames. All four faces of the walls for the inspection space are to be of an iron-reinforced concrete construction, taking into account the need for radiological protection. The adjacent office structure is to be of a concrete block construction finished with mortar to ensure a light-weight structural body. Although this is a project planned amidst existing port and harbor facilities from the results of soil investigations revealed that the bearing stratum is GL - 41,000 mm

at Hai Phong. Thus, the length of piles is set as L = 39, 000 mm which would be a connection of 13.0m+13.0m+13.0m. Piles are often used in port and harbor construction works, and locally produced trustworthy PC piles are to be used in the design.

(2) Planning for local natural conditions

As previously mentioned, on-site assessment revealed that there have been submergences at the Hai Phong project site because of heavy rainfalls accompanied by typhoons and defective drainage system. Although the X-ray inspection system is designed as damp-proof, it is expected to require a long period before resuming operation if the system undergoes submergence even once. The extended period of out-of-service condition of the system will induce un-operational status of the system. To avoid such a state of disorder floor level must be raised above the ground level that surrounds the building to prevent submergence. The value of 900 mm above the ground level is adopted after considering 20 years of maximum rainfall probability in Hai Phong region and adding the margin stipulated in Japanese urban planning regulations.

For earthquake-resistant design, the base shear coefficient is taken to be Co = 0.05 in accordance with the national standard of Vietnam. For wind-resistant design, the reference wind velocity is taken to be 30 m/sec in accordance with the national standard of Vietnam.

(3) Auxiliary equipment

Under the agreement between GOV and GOJ, a power distributing station shall be constructed by GOV at the site including power supply connection to the station from the outside. Thus, it is planned to provide a power feeder from the station within the

site of the project, and electric cable is laid to the distribution box in the electrical service room of the inspection building. The sizes of the cables are designed to fit for the required electric power levels of each facility. Power supply will be 3-phase alternate current of 380 V. The 380 V will be supplied to X-ray equipment from the distribution box of the electrical service room. Other electrical supplies to the administration office, lighting facilities, etc. will be 220 V mono phase current after transforming at the distribution box.

GOV shall install water supply line from the outside to the main valve near the inspection building. From the said main water supply valve, water supply pipes will be laid as necessary to distribute water in the building and other places.

Two drainage lines for rain water and sewage at and around the building to the main drainage ditch will be constructed by the Project. GOV will bear the cost to construct drainage channel from the main drainage ditch to the main drainage pipe outside the site.

2-2-2-2 Layout Plan

Selection of the installation site of the large scale X-ray inspection equipment

irst, the location of the plant of the Hai Phong project was planned at the remotest area from the front road as viewed from the admission side. During the analytical assessment of the site after completing an on-site survey, it was revealed that the site is vulnerable to submergence due to flooding; and, to counter such a disadvantage, the installation site was removed to near the entrance and the floor elevation of the plant was increased by 900 mm above the ground level as a countermeasure against such submergence as well as to secure gentle access slopes for chassis of trailers. The inclination of the ingress and egress paths for trailers were determined on the drawing by checking two critical points: one is that the tail end of the chassis of a trailer does

not come into contact with the ground surface when the trailer starts climbing the ingress path, and the other is that the bottom face of the chassis does not rub against the ground shortly before completing the climb of the slope. As a result, the inclination was set at 1/16 considering the necessary safety factor. Because a safe angle of inclination cannot be secured at the original site, consultations were arranged with the Government of Vietnam and the location was determined at the site shown in Fig. 2-1.

At the Hai Phong project site, arrangement of admission and exit was given special consideration so that smooth traffic is available between the various container yards of the city and the inspection site where traffic is congested. Furthermore, it was also necessary to provide a space to pool waiting trailers before and after receiving X-ray inspection. For this reason, special spaces to pool trailers were arranged at the admission side as well as at the exit side between the entrance at the road side and the exit and the large scale X-ray Inspection Equipment. The GOV acquired the total area of 3,000 sq.m at the site for spaces of inspection station, open manual inspection, warehouse, vehicle parking and traffic circulations as indicated in the drawing.

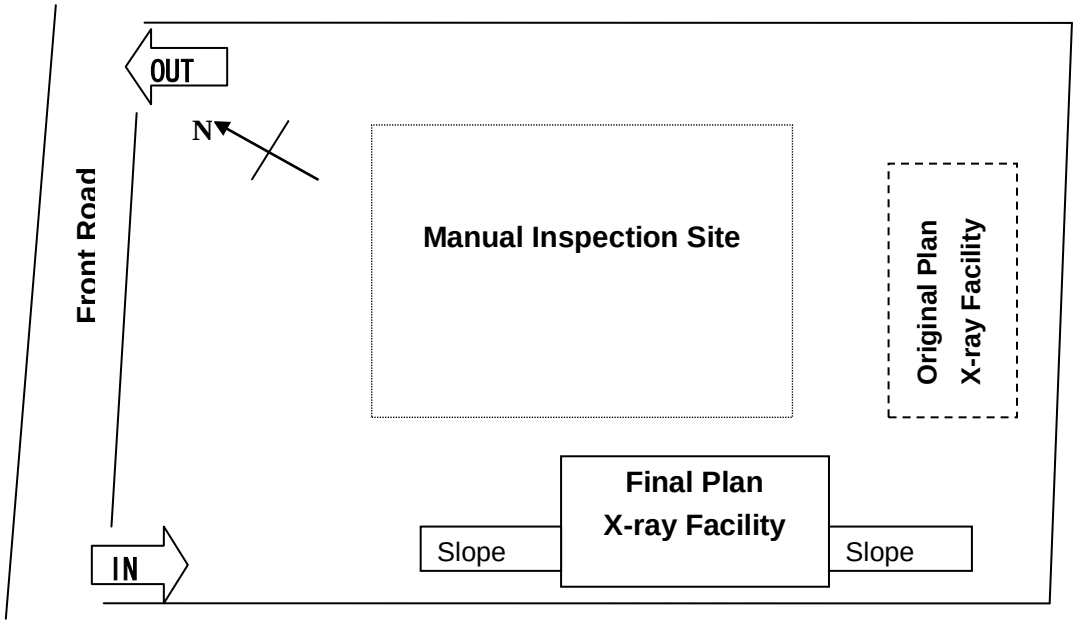


Fig. 2-1 Layout plan of Hai Phong site

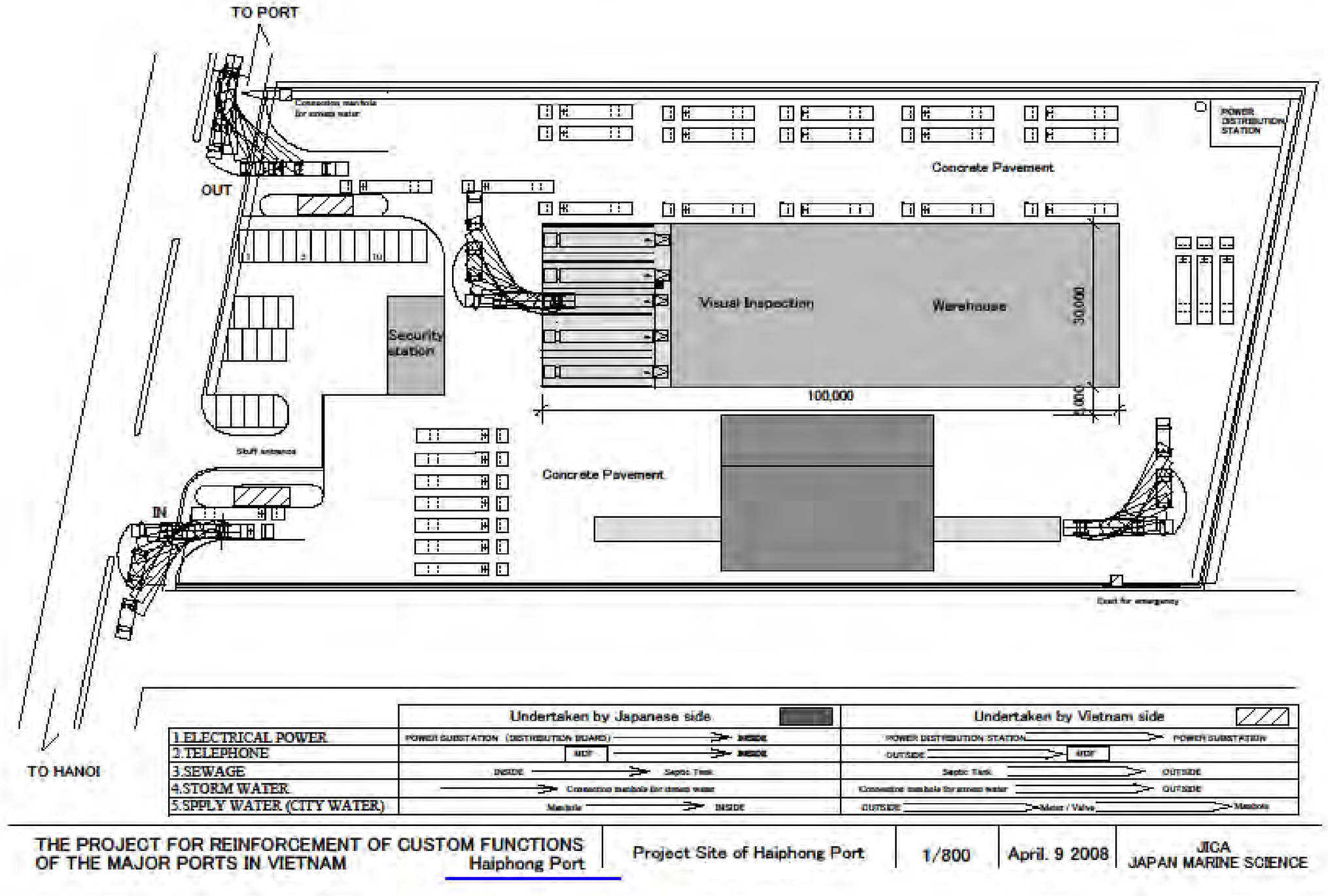


Fig. 2-2 Layout plan of large scale X-ray inspection equipment and Facility at Hai Phong

2-2-2-3 Local Conditions of Hai Phong Project Site

The project site at Hai Phong is reclaimed swamp land. Soil investigation by boring at the projected site revealed that there are layers of silt and soft silt clay beneath the surface soil layer of lose sand. Without the treatment of those soft layers, it was judged that the heavy trailer traffics and dead loads of inspection building would cause consolidation settlements. Uneven settlements at the building floor would cause cracking of the floor, change of floor levels at various spots and interrupt normal operation of X-ray equipment. Uneven settlements at the yard would cause cracking and level changes on the pavements and hinder smooth traffic movements. These concerns derived from poor soil conditions at the site were reported to GOV and requested GOV to execute ground improvement works at its cost. GOV agreed to commence the construction of the inspection station upon confirming the stabilization of the ground after the soil improvement works by GOV. The Implementation Review Study Team dispatched to Vietnam in April, 2009 confirmed that the ground improvement works had been completed in December 2008.

(1) Outline of Ground Improvement Works

The ground of Hai Phong site is composed of 1.7 m of loose sand layer and thick accumulated silt and silt clay layers resulting in weak ground. These strata are called as alluviums which were created during the latest Glacial Period some 20 thousand years ago and very young strata by geologic terms. When embankment works or construction of building is executed on the strata, there is strong possibility to cause consolidated settlements by squeezing out the underground water. Since they are composed of very soft silt and silt clay, they are of very weak bearing strengths and thus unsuitable for constructing large scale and heavy structures.

(2) Substructures of Building

When construct a large scale structure or an important structure on these alluvium strata, it is necessary to deploy piles as substructures to support the upper structures by penetrating piles through soft strata and reaching the bearing stratum underneath the alluviums. If structure is small scale and relatively light, it may be possible to bear the loads by flat substructure as an economical solution. If not it would require ground improvement or require piles to support the loads. In case of the inspection station building this time, piles are used since it is the important facility and X-ray equipment will not allow uneven settlement of its supporting floor for its normal operations.

(3) Consolidation Settlement

When loads by embankments or structures are applied on to the silt clay stratum, phenomenon so called consolidation settlement will occur by squeezing out the underground water and deforming the ground. Since the thickness of the silt and silt clay strata at the site is over 30 m, it was concerned that large amount of settlement will occur and the settlement will continue for a long duration.

Because of large amount of potential consolidation settlements, there would be various problems such as height difference between the structures on piles and the ground level, inclination or breakage of structures on the ground level, waving of pavement surfaces, rutted pavements, cave in of pavements, breakage of pipes laid in underground, slope changes in drainage channels, etc.

In order to be free from the above mentioned potential problems, sand drain method was applied at the site to improve the soft ground conditions.

The sand drain method is to install pile-shaped sands into the silt and silt clay strata,

apply surcharge above the area and accelerate draining water out of the soft strata by capillary phenomena.

Outlines of the sand drain method applied at the site were:

1) Depth of sand piles were 15.5 m

2) Diameter of sand piles were 40 cm

3) Distribution of sand piles were in equilateral triangle shape in 1.2 m pitch

It was aimed to achieve some 75 % of total amount of settlements within the first three months to reduce potential problems of settlements

It was confirmed during the Site Survey this time in April 2009 that the sand drain works have been conducted properly in accordance with the design and as scheduled.

(4) Confirmation of State of Ground Improvement

Confirmed status and schedule of the ground improvement works are as shown in Table 2-4.

Table 2-4 Status and Schedule of Ground Improvement

Period	Content	Description
June 1, 2008～June 8, 2008	Soil investigation before ground improvement	Boring at 10 places Soil property test Planning ground improvement
November 14, 2008～ December 2, 2008	Undertake sand drain method	7724 sand piles, 1.2m pitch Diameter of sand pile 40cm, Depth of sand pile 15.5m
November 29, 2008～ December 4, 2008	Undertake sand mat work	Level ground at elevation 4.3m Thickness some 0.45m
January 20, 2009	Measure soil level elevation	General spirit leveling
February 5, 2009～ February 10, 2009	Soil investigation after ground improvement	Boring at 5 places Soil property test Test of confirming bearing capacity
April 6, 2009 (Scheduled to implement measurement once a week)	Setting subsidence measurement point, Measure of soil level elevation	Setting Measurement points at 9 places.

By site investigation, inspecting records of survey and improvement works and interviewing the contractor of the ground improvement during the Site Survey, it has been confirmed that characteristics of the sand materials used and amount used for the sand drain were in accordance with the design.

(5) Status of Settlements after Ground Improvement Works

Sketch of cross section of the sand drain and planned pavement is illustrated in Fig. 2-3 below.

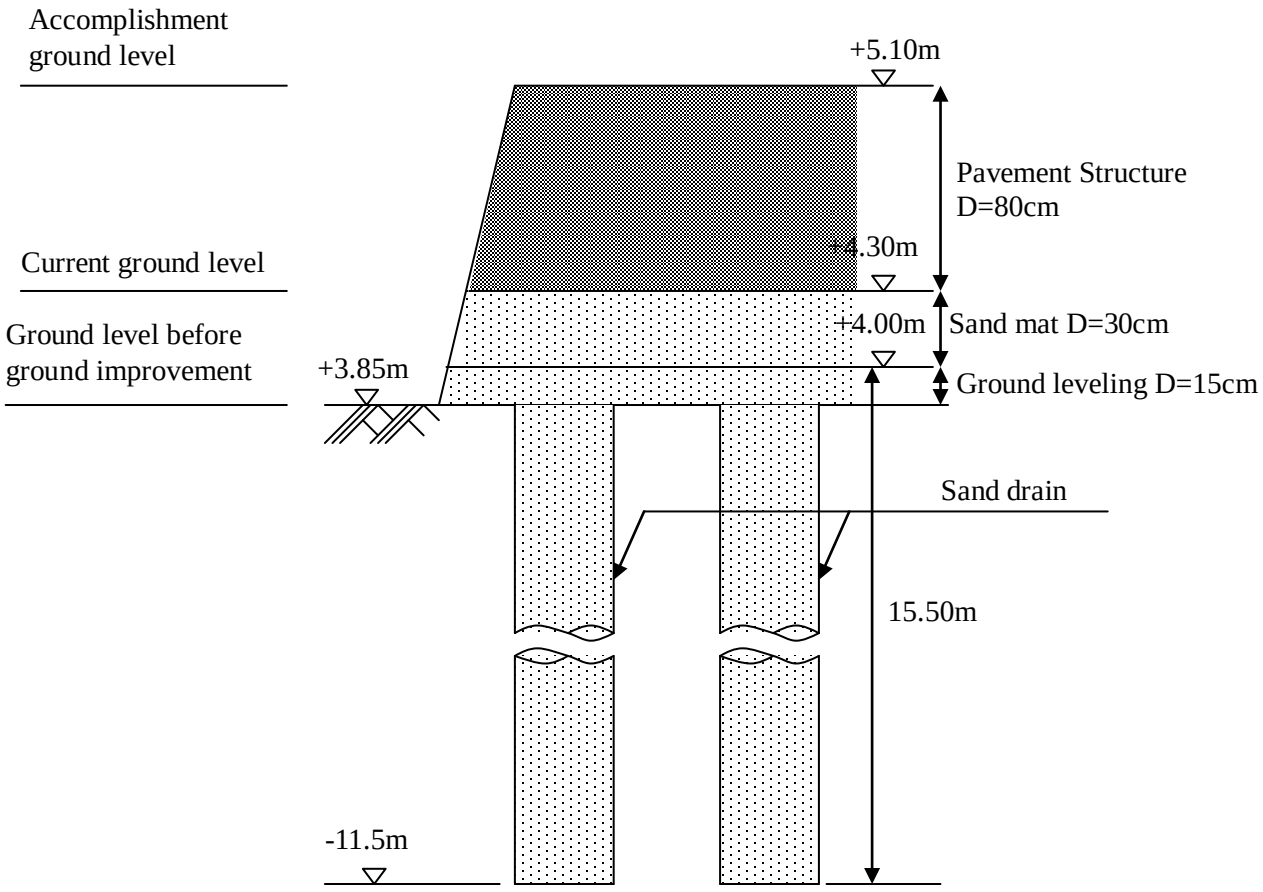


Fig. 2-3 Sketch of cross section of the sand drain and planned pavement

Before starting the ground improvement works, the elevations of the existing grounds were generally 3.85 m with a small amount of undulations at spot to spot. With average thickness of 15 cm sand layer, the existing ground surfaces were leveled off and construction plane of sand drain pipes were set at 4.00 m in elevation. Depth of the tip of sand drain piles was below 15.5 m from the construction plane or – 11.5 m in elevation. Right after completion of sand drain piles, 30 cm thick sand-mats in average were spread as surcharge and thus elevation of the top of sand-mats were approximately 4.3 m. As of April 2009, the areas were left untouched and waiting for

stabilization. In the later stage, 80 cm thick pavements will be placed above the treated ground. Under such existing condition of layers, expected amounts of consolidation settlements have been estimated as shown hereinafter.

(6) Setting Ground Modal for Examination

Based on the soil investigation results obtained in prior to the ground improvement works, model of the ground has been set as shown in Table 2-5. Physical characteristics of each layer are also assumed based on the soil investigation.

Table 2-5 Ground Model for Examination

Layer No.	Limit depth (GL-m)	Type of soil	Unit Weight γ w(tf/cubic m)	Design e-log p Curve	Design log Cv and log p Curves
①	0.60	sand (buried)	1.90	①	①
②	3.20	clayey silt	1.59	②	②
③	5.50	gritty silt	1.72	③	③
④	9.60	clayey silt	1.62	④	④
⑤	11.00	clayey silt	1.78	⑤	⑤
⑥-1	15.50	clayey silt	1.73	⑥	⑥
⑥-2	23.00	clayey silt			
⑥-3	31.60	clayey silt			
⑦	32.50	clayey silt	1.92	⑦	⑦
⑧	38.00	sandy silt	1.89	-	-
⑨	40.00	sand ～ hard clay	1.90	-	-

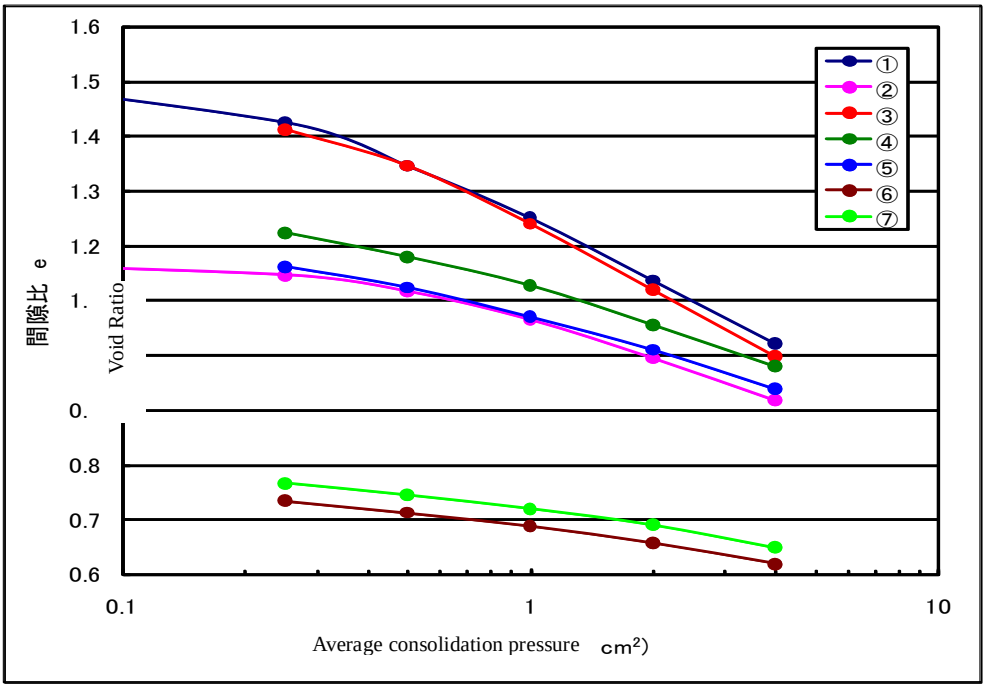


Fig. 2-4 Design e-log p Curves

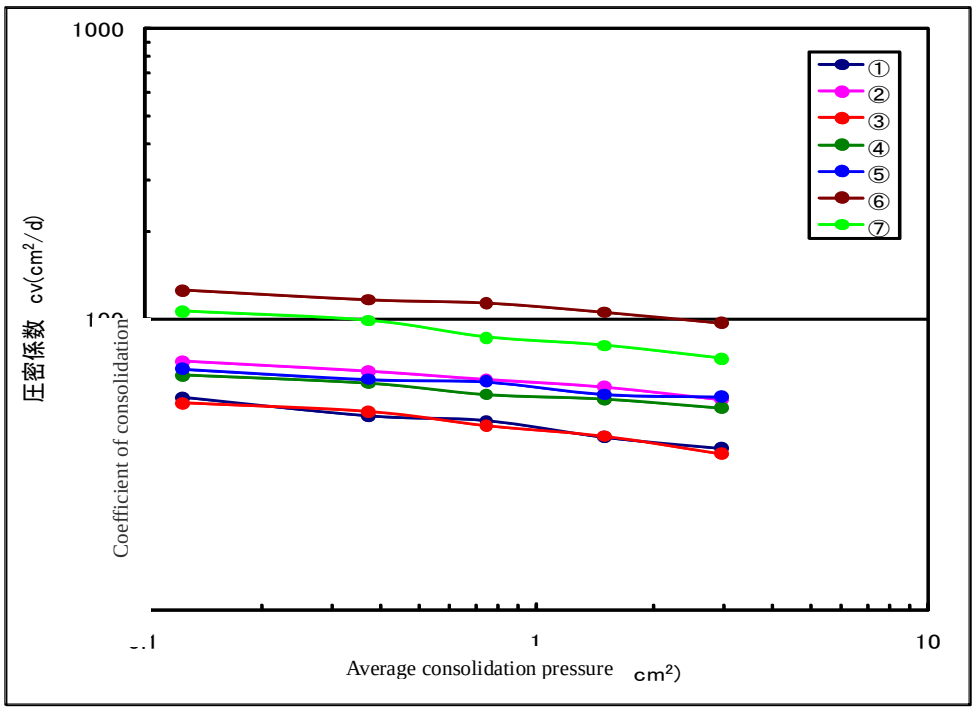
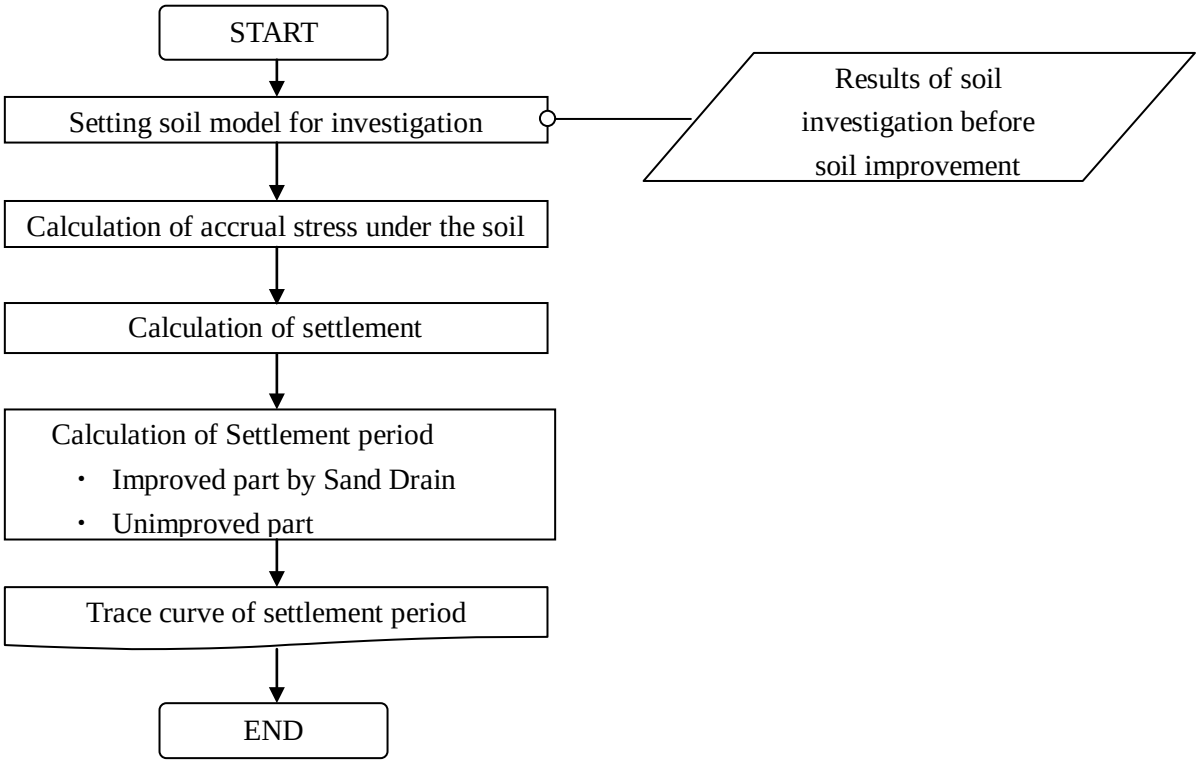


Fig. 2-5 Design log Cv and log p Curves

(7) Method of Examination

Amount and amount of time of settlements are examined by the procedure below.

For details see "4.Method of Examination of Ground Improvement Works" attached in the Appendix.



(8) Examination Results of Settlements

Examination results of settlements for three cases are shown in Table 2-6.

Case 1 is a case which has been considered the settlement condition of the sand mat filling. The settlement forecast has been calculated from the current condition which the elevation of the top of the sand-mats were raised from +3.85m to +4.30m.

Case 2 is a case which has been considered the settlement of the condition after the completion of pavement in the future. 80cm thick pavements will be placed above the sand-mats, thus the elevation of the top of the sand-mats is assumed to be raised from +3.85m to +5.10m.

Case 3 is a case under the same loading condition as Case 2 without improvement to see the picture of the time difference.

Table 2-6 Examination Results of Settlements

Examination Results	Investigation Condition	Amount of Final Settlement(Cal. Value)
Case-1	Settlement of filling to Current ground level with Sand-mats Elevation of the top of the Sand mats were raised from +3.85m→+4.30m In case of sand drain method	Above GL-15.5 m 10.3 cm Below GL-15.5 m 3.6 cm Total 13.6 cm
Case-2	Accomplishment ground level with Sand-mats and Pavement Elevation of the top of the pavement were raised from +3.85m→+5.10m In case of sand drain method	Above GL-15.5 m 29.4 cm Below GL-15.5 m 10.5 cm Total 39.9 cm
Case-3 (reference)	Accomplishment ground level with Sand-mats and Pavement Elevation of the top of the pavement were raised from +3.85m→+5.10m In case of Non-improvement	Above GL-15.5 m 29.4 cm Below GL-15.5 m 10.5 cm Total 39.9 cm

Settlement curves of each examination are shown hereinafter. Two settlement curves are shown for each case for different time scales. For Case-1, observation results of actual settlement are also shown.

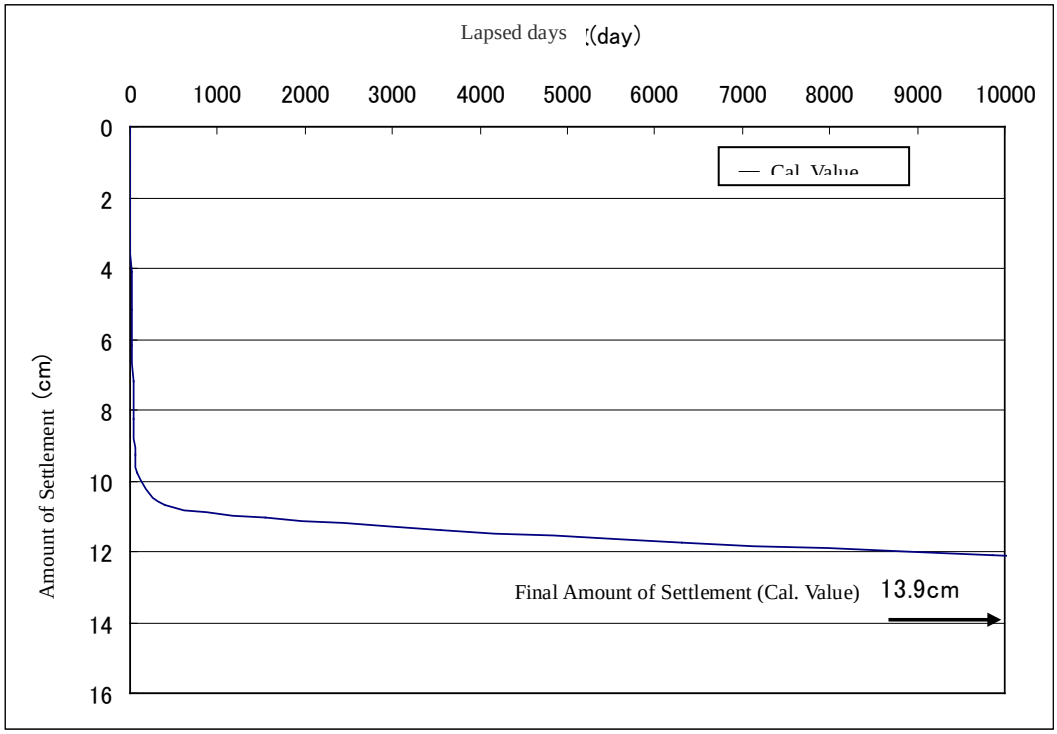


Fig. 2-6

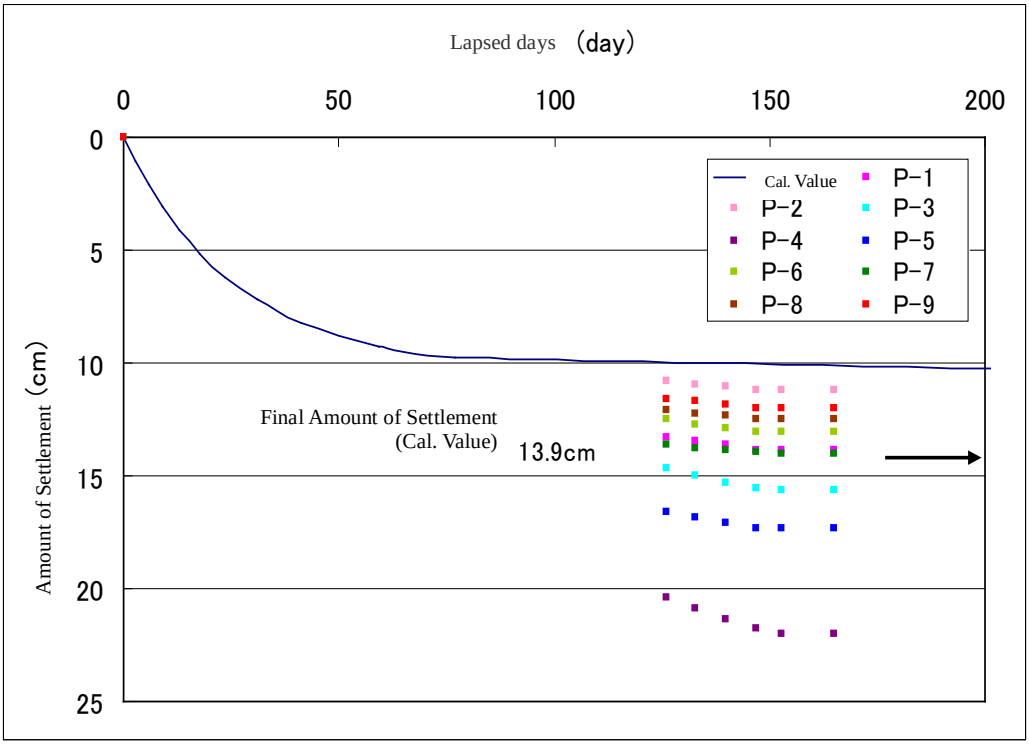


Fig. 2-7

Case-1 Settlement Curve by Sand Drain with Sand-mat

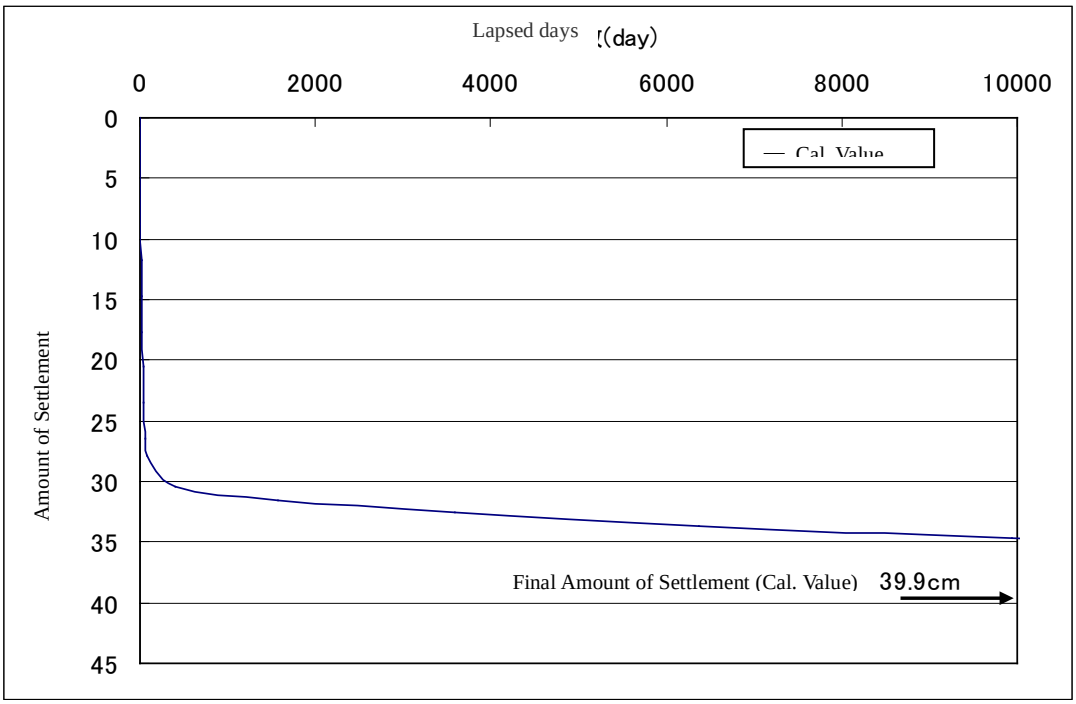


Fig. 2-8

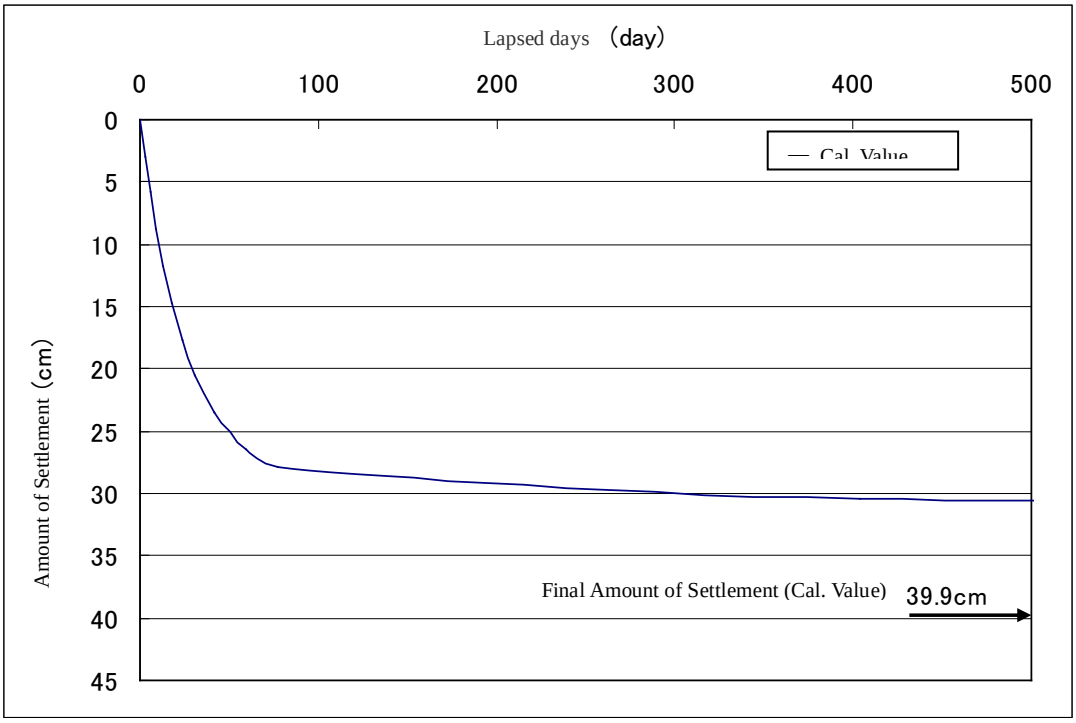


Fig. 2-9

Case-2 Settlement Curve by Sand Drain with Sand-mat and Pavement

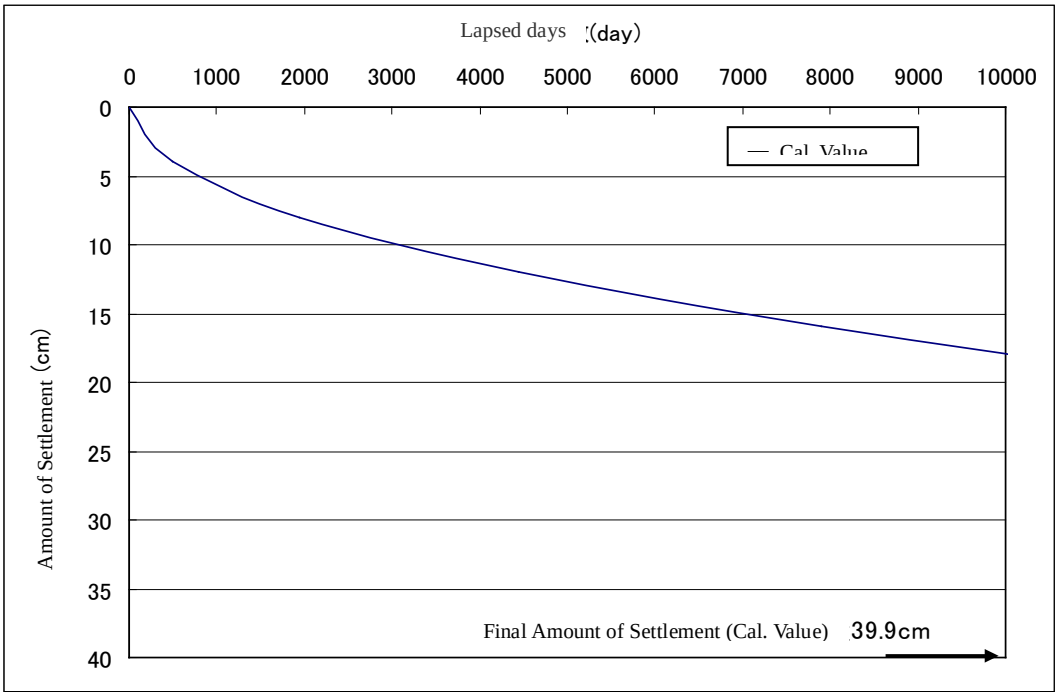


Fig. 2-10

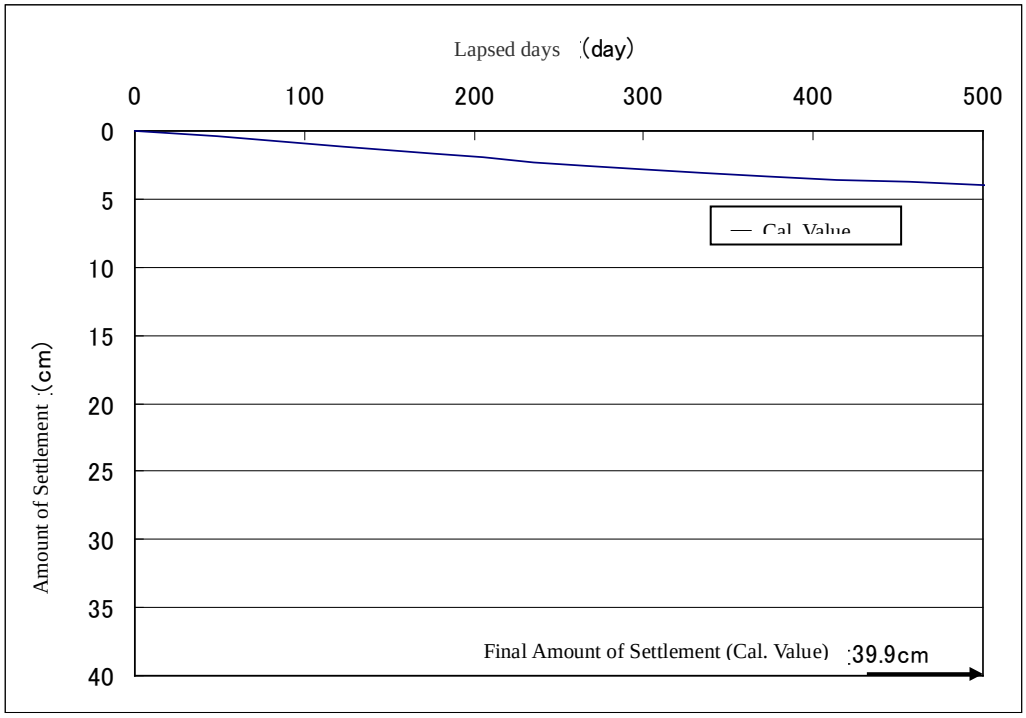
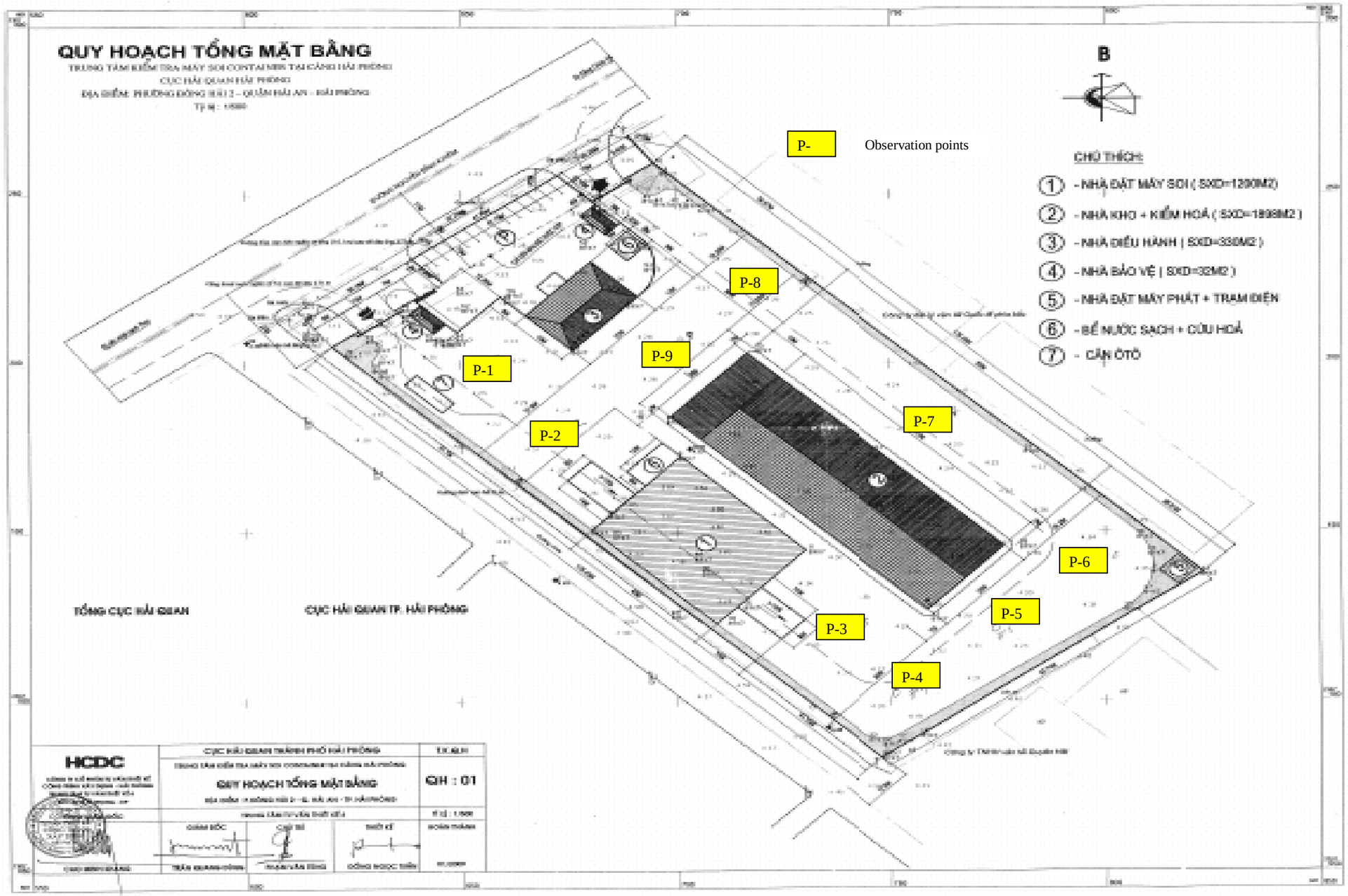


Fig. 2-11

Case-3 Settlement Curve with Sand-mat and Pavement (No Sand Drain)

(9) Observation of settlement after ground improvement

During the Study period, request was made to GOV to observe amount of settlements. Observation points were nine (9) points shown in Fig. 2-12.



Fig,2-12 Nine (9) Observation Points of Settle

(10) Examination Results

Observations on amount of settlements at Hai Phong were made at 9 observation points. Since April 6 through May 15 2009, observations were done at 6 times by approximately one week intervals. Results of observations are tabulated in Table 2-7. Origin point of the elapsed time in the table was assumed as December 1 2008 which was a mid point of placing sand-mats at the site. Amount of settlements is measured by assuming the elevation of top of sand-mat as 4.3 m.

Table 2-7 Results of Settlement Observation

Date of Observation		2008/12/1	2009/4/6	2009/4/13	2009/4/20	2009/4/27	2009/5/3	2009/5/15
Observation Value (Elevation m)	P-1	4.3	4.16698	4.16505	4.16381	4.16153	4.16117	4.16112
	P-2	4.3	4.19206	4.19048	4.18949	4.18763	4.18759	4.18754
	P-3	4.3	4.15329	4.15008	4.14686	4.14438	4.14377	4.14371
	P-4	4.3	4.09585	4.09119	4.08616	4.08217	4.08004	4.08001
	P-5	4.3	4.13394	4.1315	4.12907	4.12691	4.12663	4.12661
	P-6	4.3	4.17478	4.17283	4.17095	4.16921	4.16906	4.16902
	P-7	4.3	4.16375	4.16206	4.16157	4.16059	4.16002	4.16002
	P-8	4.3	4.17932	4.17754	4.17669	4.17516	4.17471	4.17469
	P-9	4.3	4.18423	4.18268	4.18151	4.17987	4.17977	4.17972
Lapsed days		0	126	133	140	147	153	165
Amount of Settlement (mm)	P-1	0	13.302	13.495	13.619	13.847	13.883	13.888
	P-2	0	10.794	10.952	11.051	11.237	11.241	11.246
	P-3	0	14.671	14.992	15.314	15.562	15.623	15.629
	P-4	0	20.415	20.881	21.384	21.783	21.996	21.999
	P-5	0	16.606	16.85	17.093	17.309	17.337	17.339
	P-6	0	12.522	12.717	12.905	13.079	13.094	13.098
	P-7	0	13.625	13.794	13.843	13.941	13.998	13.998
	P-8	0	12.068	12.246	12.331	12.484	12.529	12.531
	P-9	0	11.577	11.732	11.849	12.013	12.023	12.028

Relations between settlements and elapsed time are shown in Fig. 2-13

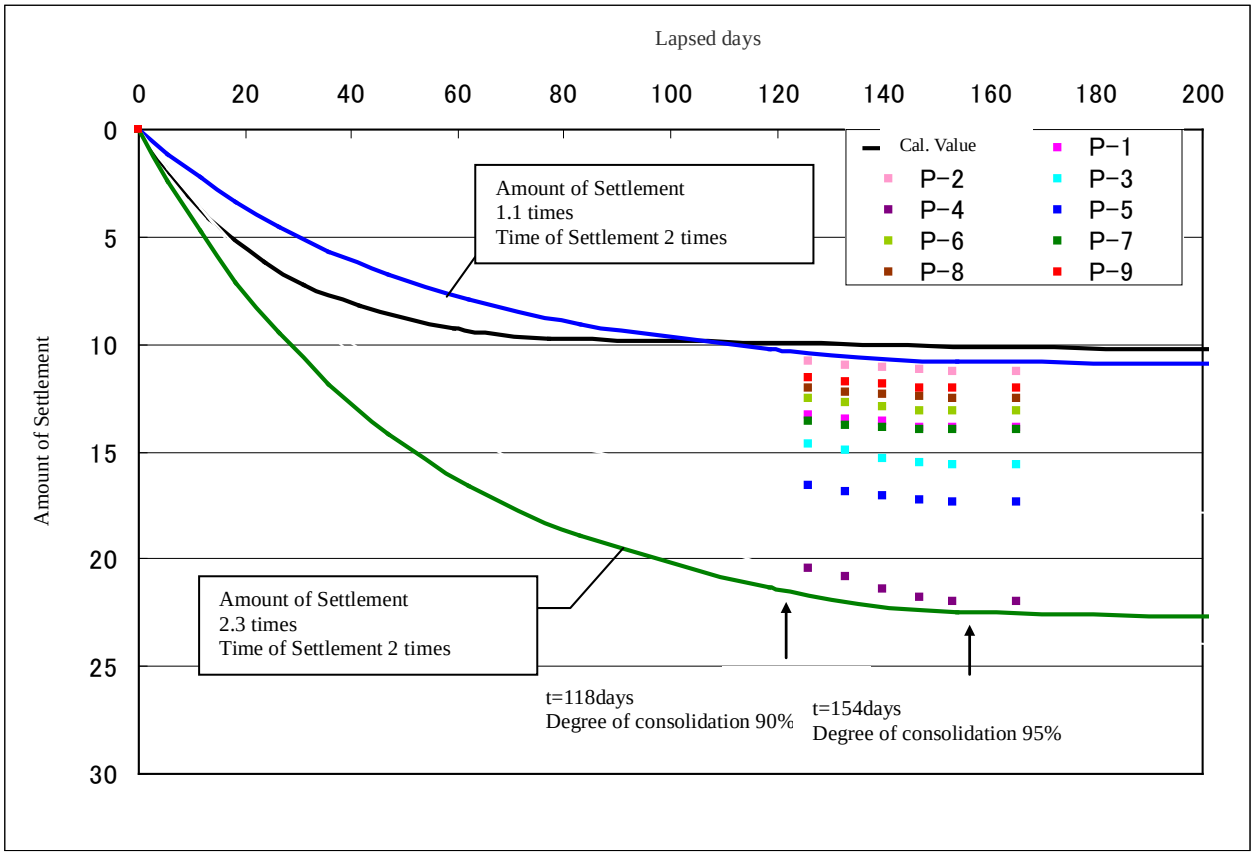


Fig. 2-13 Relations between Settlements and Elapsed Time

Examination results based on the above table and figure as well as expected settlement in the future is discussed hereinafter.

1. Results of Settlement Observation

It is observed at all 9 observation points that the speed of settlements became gradual as time elapse. All observation results are within the area between two settlement curves; one curve of 1.1 times of calculated settlement amount and 2 times of settlement period and another curve of 2.3 times of calculated settlement amount and 2 times of settlement period. According to the results of the observation, the actual

settlement behavior takes two times as of the calculated value, therefore, when settlement period is made 2 times of the calculated value 90 % of settlement will be completed with 118 days (some 4 months) and 95 % settlement will be completed with 154 days (some 5 months) to the depth of sand drain. Since 5 months have passed since December 1, 2008 as of May 1, 2009, it is assumed that more than 95 % settlements have been completed.

2. Expected Amount of Settlement in the Future

As pavement works will be executed in the future, some 20 cm additional settlement is expected to occur to the depth of sand piles. From the observation results, 95 % of settlement will be completed within some 5 months and the remaining settlement is estimated as some 1 cm.

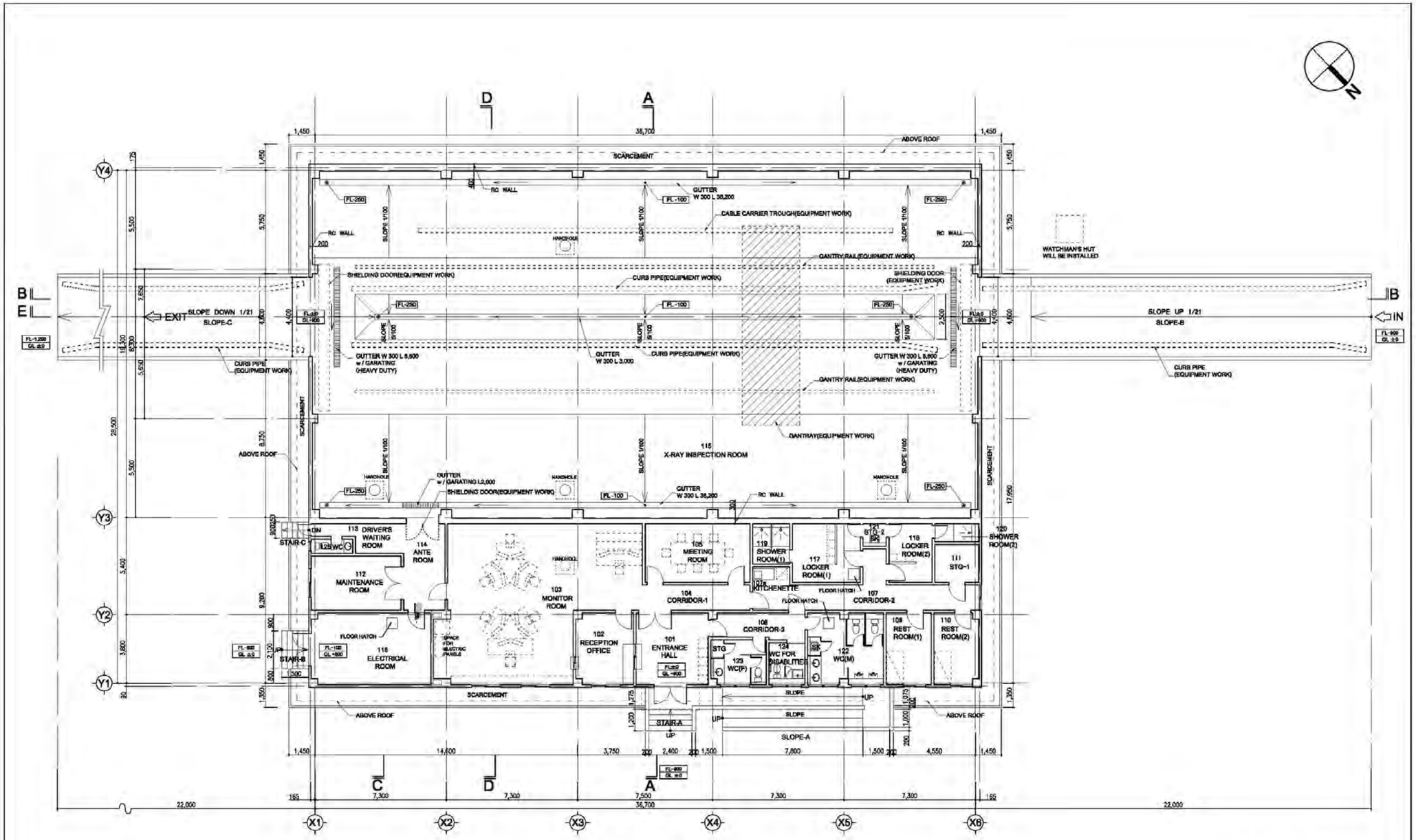
Because of the variations in the strata at the project site, there is a possibility of uneven settlements. However, variations of strata are estimated to be some 13 m in depth which is shallower than the 15.5 m of the sand drain depth. Regardless of the amount of settlement depths, it is estimated that 95 % of settlements will be completed after some 5 months from now within the depths of sand drains. Accordingly, it is deemed possible to adjust differences of elevations caused by uneven settlements by the final resurfacing works and reduce the uneven settlements after facilities are put in use.

On the other hand, amount of consolidated settlement in the deeper strata than the depth of sand drain piles is estimated to be some 10 cm. However, it is deemed that potential settlement will occur only up some 30m in depth at the site and variations in the strata in the regions of this altitude are minimal. Therefore, amount of consolidated settlements beyond 15.5 m in depth are considered to be almost even at the site. In

addition, time required to 5 cm consolidated settlement in the region beyond 15.5 m is estimated to require 40 years. Considering very moderate progress of the settlement in the deeper strata beyond 15.5 m, it is considered that the settlement in these strata will cause no serious problems for the planned facilities.

From the above discussion, it is estimated that almost no uneven settlements will occur because of improved grounds by sand drain method. Accordingly, it is considered that the required conditions of the ground improvement are considered satisfactory for implementing the Project of reinforcing customs function at the Hai Phong Port.

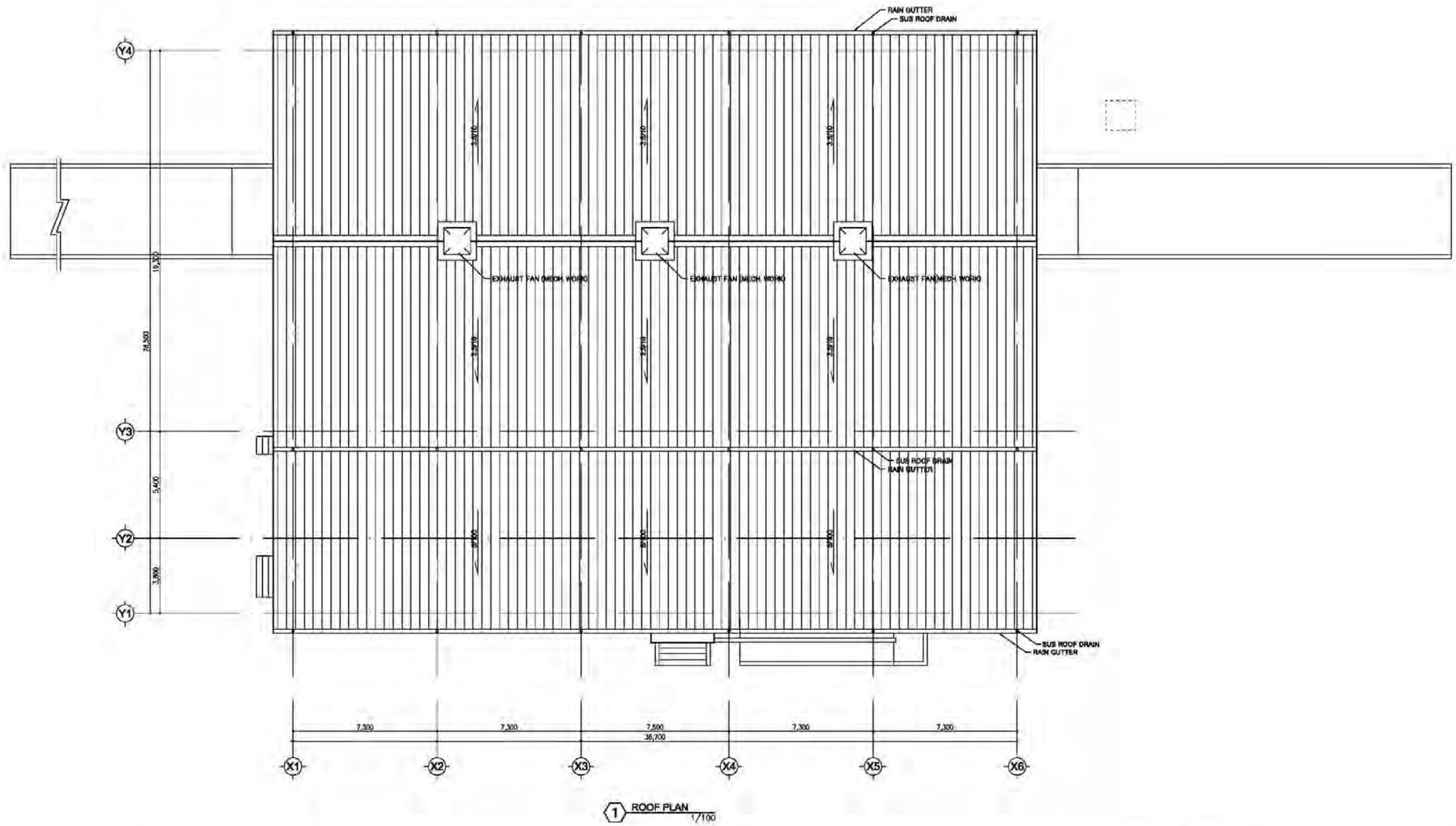
2-2-3 Basic Design Drawings



1 1st FLOOR PLAN 1/100

Width of two rails for the gantry-crane and two curb rail shall be adjusted to the specification of the X-Ray Maker.

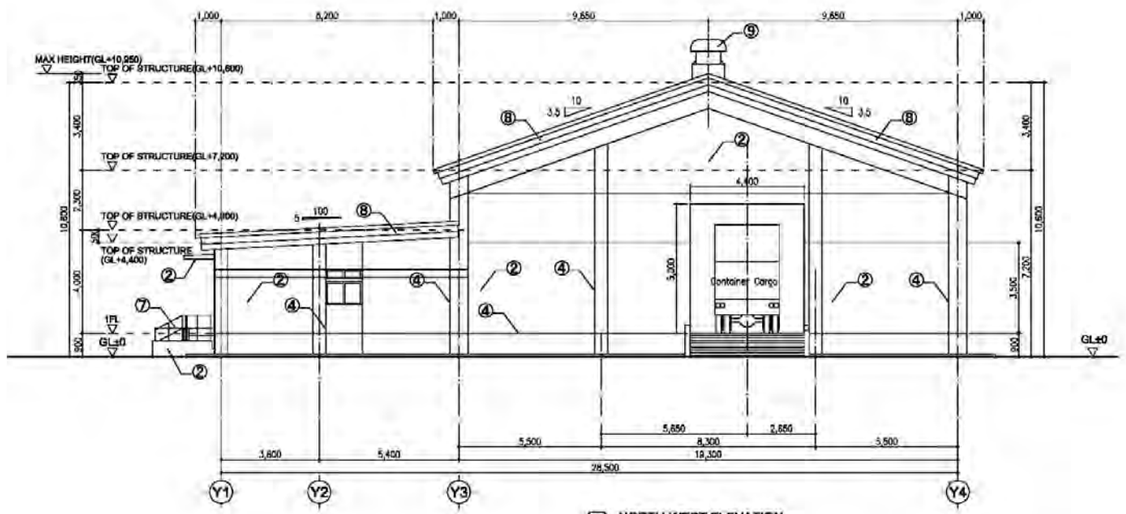
THE PROJECT FOR THE REINFORCEMENT OF CUSTOM FUNCTIONS AT THE HAI PHONG PORT	The indicated scale is applied to only A1 size sheet.	SCALE 1/100 DATE JUL 2009	1st FLOOR PLAN JAPAN MARINE SCIENCE INC.



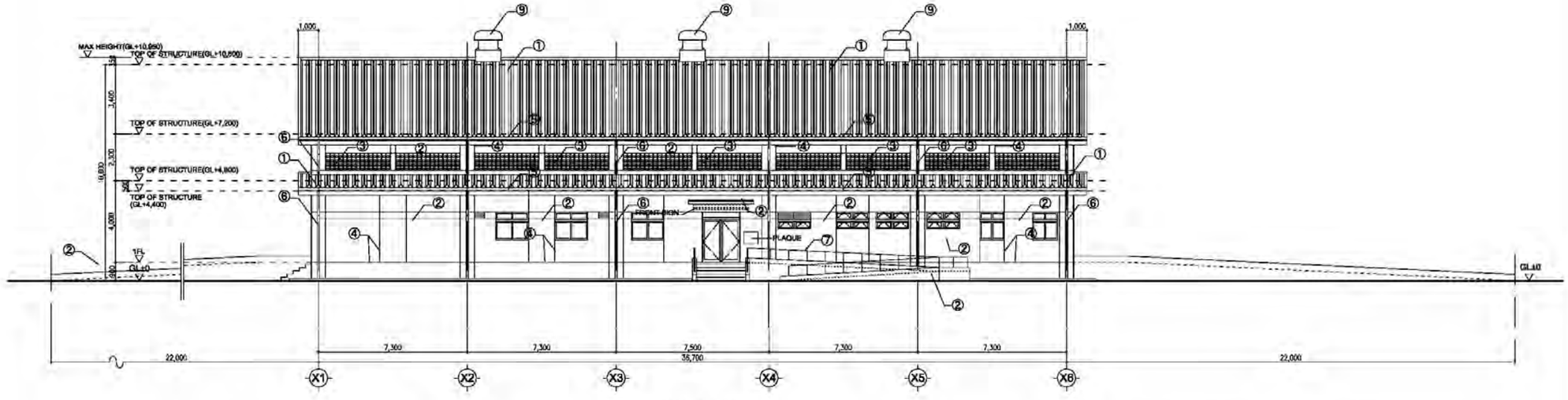
1 ROOF PLAN 1/100

THE PROJECT FOR THE REINFORCEMENT OF CUSTOM FUNCTIONS AT THE HAI PHONG PORT	The indicated scale is applied to only A1 size sheet.	1/100 JUL 2009	ROOF PLAN JAPAN MARINE SCIENCE INC.	A-07

NO.	MATERIAL / FINISH
①	FOLDED POLYESTER RESIN COATED GALVANIZED STEEL SHEET
②	ACRYLIC TEXTURE COAT
③	SCREEN BLOCK w/ACRYRIC RESIN PAINT
④	FALSE JOINT
⑤	RAIN GUTTER/POLYESTER RESIN COATED GALVANIZED STEEL
⑥	RAIN LEADER/POLYESTER RESIN COATED GALVANIZED STEEL
⑦	HANDRAIL/STL w/GDP
⑧	POLYESTER RESIN COATED GALVANIZED STEEL SHEET
⑨	EXHAUST FAN (MECHANICAL WORK)
⑩	



2 NORTH-WEST ELEVATION
1/100



1 NORTH-EAST ELEVATION
1/100

THE PROJECT FOR THE REINFORCEMENT OF CUSTOM FUNCTIONS AT THE HAI PHONG PORT	The indicated scale is applied to only A1 size sheet.	1/100 JUL 2009	ELEVATION-1 A-08 JAPAN MARINE SCIENCE INC.

NO.	MATERIAL / FINISH
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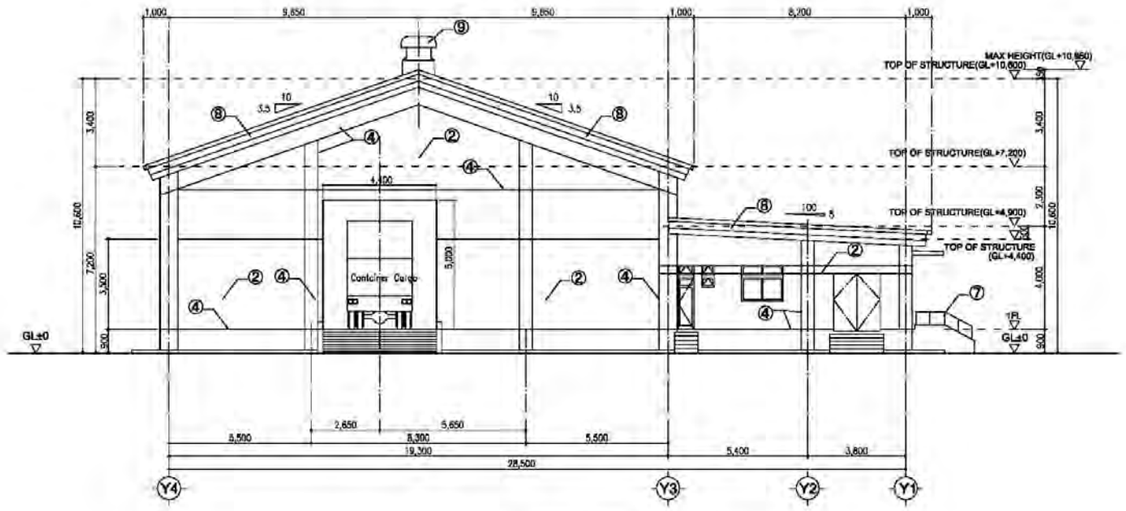
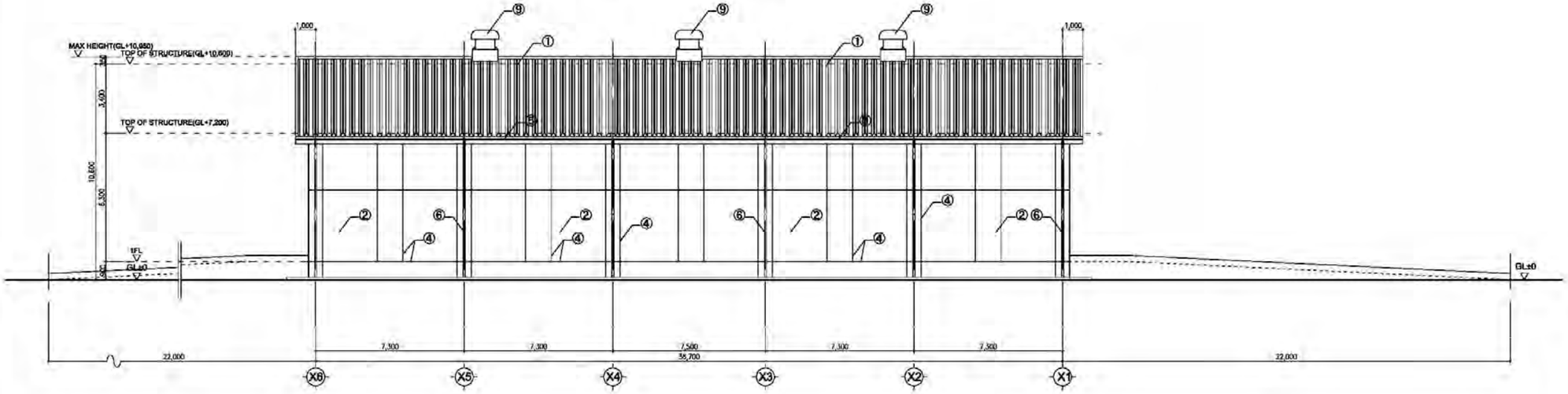
②	ACRYLIC TEXTURE COAT
③	SCREEN BLOCK w/ACRYRIC RESIN PAINT
④	FALSE JOINT
⑤	RAIN GUTTER/POLYESTER RESIN COATED GALVANIZED STEEL
⑥	RAIN LEADER/POLYESTER RESIN COATED GALVANIZED STEEL
⑦	HANDRAIL/STL w/SOP
⑧	POLYESTER RESIN COATED GALVANIZED STEEL SHEET
⑨	EXHAUST FAN (MECHANICAL WORK)
⑩	

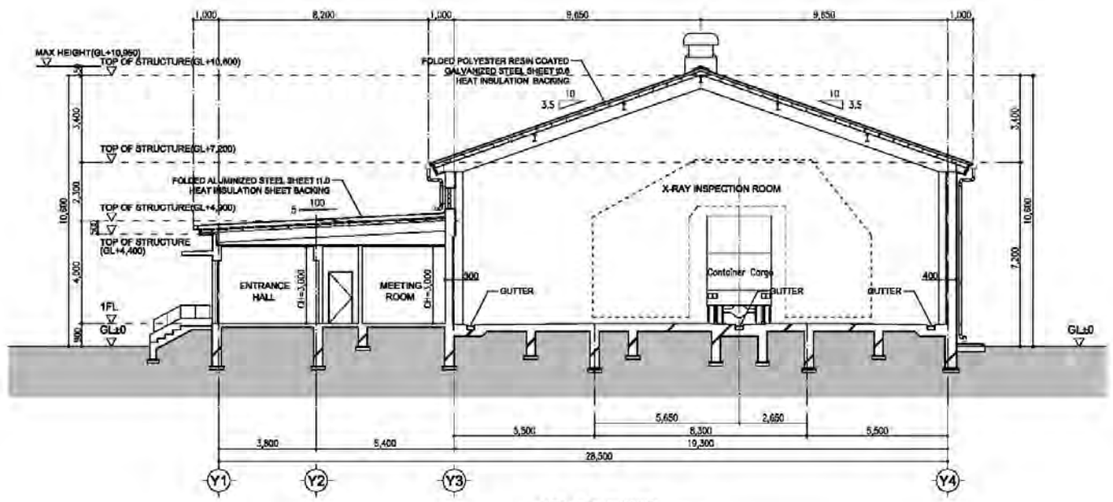


2 SOUTH-EAST ELEVATION
1/100

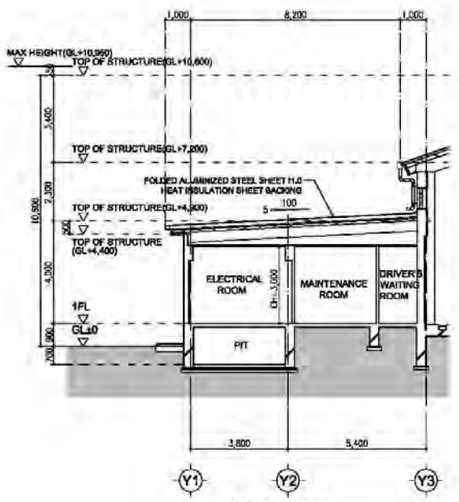


1 SOUTH-WEST ELEVATION
1/100

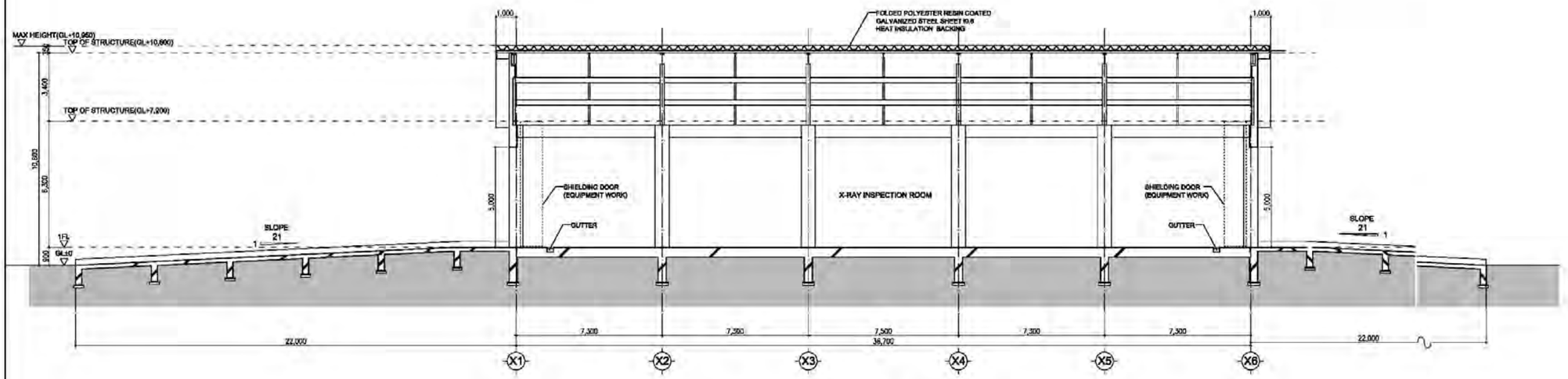
THE PROJECT FOR THE REINFORCEMENT OF CUSTOM FUNCTIONS AT THE HAI PHONG PORT	The indicated scale is applied to only A1 size sheet.	1/100 JUL.2009	ELEVATION-2 JAPAN MARINE SCIENCE INC.	A-09



1 A-A SECTION 1/100



3 C SECTION 1/100



2 B-B SECTION 1/100

THE PROJECT FOR THE REINFORCEMENT OF CUSTOM FUNCTIONS AT THE HAI PHONG PORT	The indicated scale is applied to only A1 size sheet.	SCALE 1/100 DATE JUL. 2009	SECTION / A-10
			JAPAN MARINE SCIENCE INC.

2-2-4 Implementation Plan

2-2-4-1 Implementation Policy

(1) The basic conditions related to engineering and procurement

Need for the proposed procurement: large scale X-ray Inspection Equipment is not manufactured in Vietnam. In this procurement, large scale X-ray Inspection Equipment will be procured from Japan or a third-party country (Development Assistant Committee, United Nation; DAC). With respect to engineering, there are a large number of construction contractors, large or small, in Vietnam, and they are engaged in construction of buildings in Vietnam. From the observation of existing buildings, their technical levels raise some problems relating to detailed finishing techniques when compared to counterparts in Japan, but it may reasonably be considered that they have sufficient capacity to construct medium- or low-rise buildings. General construction materials such as cement, aggregate, and steel fittings used for constructing plants are readily obtainable within the country. However, procurement of steel frames in shapes compatible with those available in Japan might involve some difficulty. Procurement of construction equipment within the country is sufficient and no particular difficulties are considered.

(2) The basic policies when selecting contractors for procurement and product selection

- Specifications prescribed in the bidding document should be met.
- Maintenance management should be easy.
- The support system for solving difficulties and after-delivery service system must have been established.
- Agents are available within Vietnam or neighboring countries and the technical service system has been established.

2-2-4-2 Implementation Conditions

Improvement of Customs inspection capability can be secured only when the large scale X-ray inspection equipment, its operating system, and technical skills of operators are well balanced. It is important to provide guidance for personnel responsible for procurement of equipment, organization, and initial and normal operation. It is a particularly important task to adjust the work process between the GOV and procurement contractors. Timing of placing and installing equipment implemented under the granted cooperation, and timing for providing technical guidance for initial and normal operations of Equipment should be adjusted well to ensure coordinated timing of all phases of these matters.

Infatuation in Vietnam has been significant in recent years. Thus, there are concerns for quality deterioration due to shortages of materials or rises of consumer price. Precautions must therefore be taken for quality control. The results of interview surveys with construction companies in Vietnam suggest that there exist possibilities they could not correspond to sufficient quality control and work process control. Well examined quality control and work process control plans should be adopted and observation of the plan should be confirmed, when local construction companies are sub-contracted. In addition, engineering work for positioning and installing large scale X-ray Inspection Equipment requires extreme precautions, and it is necessary to have detailed advanced meetings and control of site work.

2-2-4-3 Scope of Works

The large scale X-ray inspection equipment plant is designed and planned on the basis of the requirements of equipment specifications, installation standard, and security of X-ray radiological protection, and positioning, installation, and trial runs of the large-scale X-ray Inspection Equipment are carried out under the supervision of equipment procurement supervisors by highly skilled technical staff members of the manufacturer. Demarcation of procurement work should be such that materials

basically belonging to Equipment should be furnished by the Equipment supplier, and the construction contractors should assemble them. With respect to electrical equipment, the primary side cable work up to the switchboard should be undertaken by the construction contractor side, while cable work up to the Equipment should be undertaken by the Equipment supplier. The large scale X-ray Inspection Equipment is a set of high-grade non-destructive inspection equipment, and long manufacturing period and high-precision installation work are required, hence fine adjustments and coordination between procurement contractors, equipment manufacturers, and construction contractor are necessary. It is also important to have sufficient consultations and meetings for quality control in advance and strict observance of the work schedule.

2-2-4-4 Consultant Supervision

This project covers a single-year contract for the Hai Phong Port assuming that contractor agreement for the Hai Phong Port is concluded within ten months from now, and the on-the-site associated work of the large scale X-ray Inspection Equipment is planned with the work schedule described below.

Approval of the design and manufacturing drawings of the large scale X-ray Inspection Equipment is obtained within one month from conclusion of the agreement and manufacture within seven months; they are then subjected to pre-shipping factory inspection and shipped by sea to the Hai Phong Port Port.

In the case of manufacture of the equipment in Europe/United States of America, shipment by sea is assumed to take 25 to 30 days, while with manufacture in Japan, 25 days are assumed. Installation of the system at the site is assumed to take two months, and adjustments and trial runs, one month, during which period guidance on initial and normal operation are provided for the operating personnel of the responsible organization before the acceptance inspection. At the acceptance inspection, checks and collation, performance inspection, and measurement of leakage radiation dose are carried out by a third-party inspection organization under the responsibility of the

procurement contractor, and after confirming compliance with the recommendations of the International Commission on Radiological Protection (ICRP-60), a certificate is issued from a third party organization for official completion of delivery.

What is most important in this Project is the interface between the construction work of the plant and the installation work of the large scale X-ray Inspection Equipment. Before such time when the X-ray cargo security inspection system is delivered to the site for the necessary site work, there should be consultations with the construction side so that consent is reached on the scope of work and detailed work specifications.

2-2-4-5 Quality Control Plan

For the large scale X-ray inspection equipment, design drawings and specifications should be confirmed with the procurement contractor and manufacturer, and the manufacturing drawings should be checked and collated.

At the manufacture of large scale X-ray inspection equipment, inspection of major system components common to pre-shipment inspection at the factory are witnessed, and performance inspection are confirmed by us. Inspections before shipment are entrusted to a third-party organization, whereby various parts of the system are checked and collated. The permanent local procurement supervisors undertake control of equipment, installations, adjustments, trial runs, initial operation guide and normal operation guide, taking delivery, acceptance inspection, and delivery services from the time of delivery of equipment to the installation site, thereby maintaining product quality.

In the quality control of the large scale X-ray Inspection Equipment, compliance of the equipment with specifications and safety requirements, and appropriateness of materials and workmanship should be verified. Final confirmation of safety related to radiological protection of the equipment is verified by measuring leakage radioactive dose.

The most critical area of plant construction in terms of product quality is the inspection space having a reinforced concrete structure. Because each of the external

walls plays a vital role in protecting human bodies from leakage of X-rays, concrete must be cast with extreme care so that no void or porous part in the concrete is created. Force-feeding of concrete by pumping is available in Vietnam; as a result, concrete pumping is more workable than by other methods of concrete casting, but sufficient consideration is required to determine the favorable casting height and filling concrete to corner portions by adequately using vibrators, etc.

2-2-4-6 Procurement Plan

Construction materials and equipment necessary for installing large scale X-ray Inspection Equipment (cable conduit pipes, concrete re-pavement, etc.) and multi-purpose materials and products are to be locally manufactured or procured.

Machinery necessary for constructing the plant of this project is either possessed by the local contractor or is available by leasing.

General materials and equipment used for the construction of the plant of this project are available in Vietnam; therefore, use of special materials and Equipment should be avoided in the design.

Table 2-8 Origin Countries for Equipment

Name of Equipment	Origin Country			Note (Countries to Procure)
	Vietnam	Japan	Third Countries	
Large scale X-ray inspection equipment		○	○	DAC
Percentage (%)	0	0~100	0~100	

Table 2-9 Origin Countries for Construction Materials

Name of Equipment	Origin Country			Note (Countries to Procure)
	Vietnam	Japan	Third Countries	
Materials	○			
Steel	○			
Cement	○			
Aggregate	○			
Construction Machine	○			
Percentage (%)	100	0	0	

2-2-4-7 Transport

The equipment for Hai Phong Port will be transported from the port of origin country to Hai Phong Port in the form of sea container and will be delivered to the prepared site in the port. The transport from the prepared site in the port to the project site (500 m from the port) will be done by truck. The final custom clearance will be done in Hai Phong Port. The final custom clearance will be done in Hai Phong Port.

The inland transportation cost in Viet Nam will be borne by GOJ.

2-2-4-8 Initial Operation Training and Maintenance Guidance Scheme

The manufacturer's engineers shall provide technical guidance to the Custom technical personnel in relation with assembly, connection, operation, adjustments, control procedure, operating procedure, and adjustments of monitor screens of the large scale X-ray Inspection Equipment, and shall confirm that the equipment is capable of operating normally. Three weeks of training program on scanning procedure, inspection/analysis procedures, analytical inspection method on monitor screens, processing method of results, will be implemented.

2-2-4-9 Equipment installation and operation training

Assembling, installation and initial alignment of the large scale X-ray inspection equipment shall be guided by well experienced engineers and carried out in a team setting. The manufacturer's engineer team is supposed to be composed of 2 supervisors (equipment engineer and electric engineer), 3 engineers (machinery, electric, and system engineers), 3 local engineers (machinery, electric, and system engineers) from service stations in South East Asia.

The training program by the manufacturer will consist of followings;

① Assembly, connection, operation, adjustments, control procedure, operating procedure, and adjustments of monitor screens of the large scale X-ray Inspection Equipment and system

② Checking and maintenance procedures of the equipment

③ Scanning method, data analysis method on the screen, judgment criteria, result processing method, etc.

④ Utilization of the "Operation and Maintenance Manual"

⑤ Safety control method

2-2-4-10 Implementing Schedule

(1) Prerequisite for drafting Implementing Plan Process

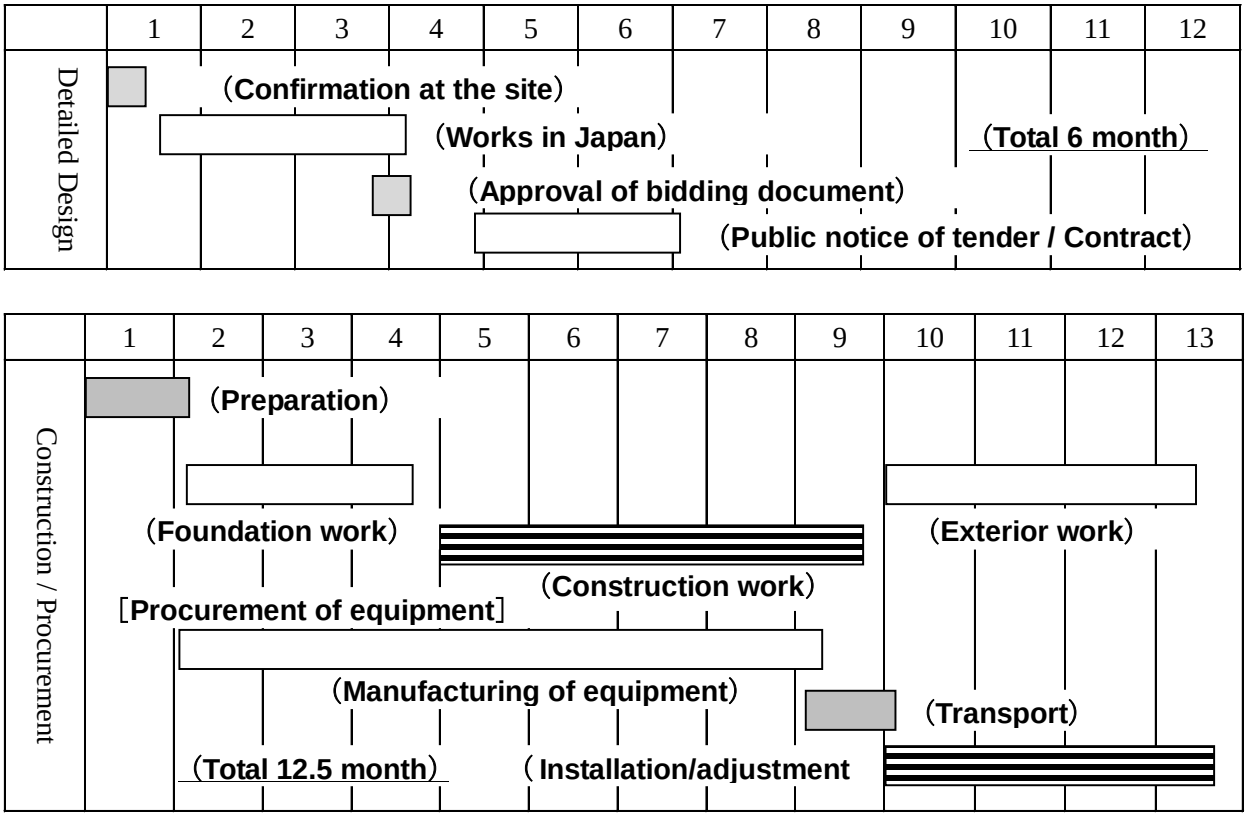
Assuming that preparations of implementing design of this project and bidding documents begin 19 months before the delivery time, bidding notice for contractors is announced five months later, and contractors are selected within two months thereafter. Work Schedule is prepared assuming that the work period is 12.5 months, within which period procurement of equipment, associated civil engineering work, and construction work can be completed.

(2) Implementation work schedule

The Implementation Work Schedule of the Hai Phong Port project is shown below. In the Work Schedule, in addition to consultant's implementation design;

implementation processes including procurement process related to large scale X-ray cargo security inspection equipment, product manufacture by procurement contractors, inspection before shipment, shipping inspection, transportation by sea, installation, adjustments, trial runs, guidance of the initial operation, and guidance on normal operation, final inspection before delivery, and delivery are shown in the Table 2-10.

Table 2-10 Implementation Schedule



2-3 Obligations of Recipient Country

2-3-1 Obligations of the GOV

Upon implementing this granted project, the following procedures and preparations shall be undertaken by the GOV.

(1) Procedures

The GOV should undertake the following procedures as applicable without delay.

① Exemption of tax and duties

② Facilitation of project activities

③ Provisions of banking agreement

④ Authorization of payments

(2) Preparations for work implementation

Work to be shared by the GOV for implementation is shown in 3.2. With respect to this matter, the implementing organization should submit a document stating that the Government of Vietnam has carefully prepared and undertaken the duties assigned to Vietnam before E/N.

① Entry permit to the project area and execution permit for construction work

② Support for safe work

③ Provision of spaces for material storage yard and work office during the project work period (about 12.5 months)

2-3-2 Undertakings by the recipient country

Followings are the undertakings by the recipient country which is confirmed mutually.

(1) Ground Consolidation Works・Pavement

(2) Building Certification

(3) Security Equipment

Fence, Entrance/Exit, Security System

(4) Office, Warehouse, Visual inspection Facility

(5) Water Supply Facility

Works up to Main Valve to the X-ray Facility

(6) Electric Facility

Works up to Incoming Panel

(7) Telephone Facility

Works up to MDF

(8) Sewage Facility

Septic tank construction and works up to Manhole for X-ray Facility

(9) Storm Water Facility

Installing drainage square and work up to external drainage

Year	2009									2010											
Month	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Project Approval																					
Execution Design																					
Quantity Survey																					
Detail Design and Budget Approval																					
Preparing Tender Documents																					
Announce Tender																					
Evaluation and Signing Contract																					
Pavage, Road, Water Supply and Drainage Electric System and other Construction																					
Construct Operation Ridge																					
Construct Storage and Facility for Inspection by Opening Containers																					
Construct Fence, Gate and Others																					

2-3-3 Cost to be borne by the GOV

Budget performance of the GDVC from 2004 to 2008 is shown in Table 2-11. The budgets in 2008 are approximately 1,319.4 billion VND (about 9,500 million Yen) for General Department of Vietnam Customs, and approximately 110 billion VND (about 740 million Yen) for Hai Phong Customs, and they will tend to increase yearly. The mean yearly increase rates for the past 3 years are 26% for Hai Phong Customs.

The initial project cost to be borne by the GOV is estimated to be 37,100 million VND for Haiphong Customs. GDVC intend to distribute 37,400 million VND for Hai Phong Customs from 2008 to 2010 as shown in Table 2-12.

Table 2-11 Budgets of the General Department of Vietnam Customs and Hai Phong Customs

(1) The General Department of Vietnam Customs

(Unit: million VND)

Year	2004	2005	2006	2007	2008	2009	2010
Personnel costs	269,225	333,790	455,936	601,152	659,700	754,599	777,448
Travel expenses and others	113,233	143,343	180,364	214,716	229,500	264,808	291,788
Facility operation and maintenance costs (engineering and facility)	133,373	222,893	107,872	136,500	230,000	540,000	540,000
Facility operation and maintenance costs (office)	110,000	90,000	170,000	90,000	200,200	263,433	163,433
Others	108,169	59,094	61,828	60,031	0	0	0
Total	734,000	849,120	976,000	1,102,400	1,319,400	1,822,840	1,772,669

(2) Hai Phong Customs

(Unit: million VND)

Hai Phong Customs			
Year	2006	2007	2008
Personnel costs	30,898	38,270	45,924
Travel expenses and others	7,050	14,000	16,442
Facility operation and maintenance costs (engineering and facility)	5,757	33,670	10,000
Facility operation and maintenance costs (office)	14,269	22,229	30,000
Others	8,998	1,854	0
Total	66,972	110,023	102,366

Note: Budget use period starts January and closes December.

Table 2-12 The X-ray system related budget for Hai Phong Customs

(Unit: million VND)

	2008	2009	2010	2011	2012
Hai Phong	23,700	6,400	7,300	3,500	4,000

2-3-4 Implementation Capabilities of the Government of Vietnam

2-3-4-1 General Evaluation

To achieve the project goal, Operation and Maintenance of the equipment must be carried out appropriately. This will be brought only by good coordination in terms of the organization structuring and the financial capability of the implementing body, and education and training programs where technical cooperation may be included.

2-3-4-2 Implementation structure of the Government of Vietnam

The responsible and implementing organization is GDVC, Ministry of Finance. Banking Treasury and Finance Department in GDVC will be in charge of Agreement (B/A) and Approval for Payment. Hai Phong Customs will be in charge of operation and maintenance of this project.

2-3-4-3 Status of Operation and Maintenance regime

The Operation and Maintenance system is now at the stage of an extensive examination by Vietnamese side. GDVC is planning to establish a new regulation for operating X-ray center including organizational structure, staff allocation and operation/maintenance. According to their plan, the X-ray center will be under the

direct control of Hai Phong Customs Department. The center is ranked as sub-department in their organizational structure. The centers will be operated by 18 staffs (9 for operators inside the facility and 9 for outside staff for visual inspection) in one sift. The 2 shifts per day system will be employed as the starting stage of operation. They are prepared to move to 3 shifts per day system with the increase of inspection demands such as the increase of applications and the extension of port operation hours. The daily maintenance of the X-ray system will be covered by outsourcing agencies under the contract with the manufacturer.

2-3-4-4 Operation and Maintenance cost for the project

The Hai Phong Customs draw up budgets related to its operation and management and submit an application for budgets to GDVC (July). GDVC files an application for budgetary appropriation to the Ministry of Finance after examining the application (August). Notice on approved budget is given by GDVC to Hai Phong Customs (December), and budgets are executed. As can be seen in the above, the administrative system of budgetary appropriation has been established.

The results of trial calculation of annual maintenance costs of the large scale X-ray inspection equipment that are to be borne by GDVC are given in Table 2-13. The annual maintenance management expenditure of the large scale X-ray Inspection Equipment to be shared by GDVC is estimated to be approximately 140,000 US$ (17 million yen). In view of the sound condition of budget preparation, it is judged that the financial burden of maintenance management expenditure can be sufficiently undertaken without any difficulty. It was confirmed that inspection fees arising from the service of the large scale X-ray Inspection Equipment are not levied.

Table 2-13 Estimated cost for Operation and Maintenance of large scale X-ray inspection equipment

Item	Description	Annual Cost in US Dollar
X-ray inspection system	(Averaged market price of Japanese and overseas manufacturers) Spare parts : 109,285 US Dollar Maintenance and inspection service fee: 36,430US Dollar (Twice a year)	$145,715
Electricity	Demand of wattage: 46.6 kW/h (for X-ray system and facility)	$15,175
Water supply	Water consumption: 3.5 m3/day	$1,218
Others	Office stationery and etc.	$7,879
Total		$169,987

2-3-4-5 Technical levels for maintenance

It is difficult to evaluate the technical level of Vietnamese side as this is the first experience for GDVC to operate large scale X-ray inspection equipment. But, it should be noted that Vietnamese side is trying its best effort to meet the requirement by establishing new organizations at district branch office level with new expertise divisions and staff to implement the project, and planning to adopt a few group training programs hosted by maker (20 persons in one group) to bring up X-ray system operators after the initial operation and maintenance training programs of this project.

2-4 Project Operation Plan

Regarding the operation of the equipment and facilities, structure and staff shall be requested to meet the following.

2-4-1 Basic Principle for Management and Operation

GDVC undertakes Operation and Maintenance of the large scale X-ray inspection equipment to be provided at Hai Phong. GDVC plans to set up new sections in the Hai

Phong Customs which take care of the provided equipment and facilities.

2-4-2 Features of Equipment and Plant

The large scale X-ray inspection equipment to be introduced through this project represents those newly introduced to major international ports and harbors, guidance of operations by manufacture for starting up is essential. It is necessary to gain experiences through on-the-job training to develop image-analyzing techniques. It was confirmed that manufacturers are ready to conclude a service agreement with the Customs for equipment maintenance including regular inspection. In accordance mutatis mutandis with recommendations of the International Commission on Radiological Protection (ICRP-60), precautions are necessary in design and engineering of shield structures to prevent leakage of X-rays. In addition, safety management for inspecting personnel is needed

2-5 Project Cost Estimation

2-5-1 Cost to be born by the GOV

This grant aid project aims to introduce innovative equipment and plant, and there is a certain burden to be borne by the GOV for implementing the project. It is necessary to obtain provisions of utilities including power supply and space for accommodating plant and equipment at Hai Phong.

(1) The Initial project cost to be borne by the GOV is estimated at 249.8 million JPY as shown in Table 2-14. Project site is a property of GDVC and thus there should be no cost for land acquisition. In addition to the figures shown in the table, GOV shall provide and connect necessary utilities to the site.

Table 2-14 Cost to be borne by the recipient country

(Unit：million VND)

Item	Hai Phong
Safety measures	1,425
Visual inspection facility warehouse and others	19,055
Water supply arrangement	425
Electric power arrangement	1,800
Telephone arrangement	650
Sewage/Storm sewer arrangement	1,750
Soil improvement （completed）	11,032
Pavement	7,690
B/A and AP service charge	300
Project administration cost	1,500
Total	45,627

(2) Forecast of cost changes

It is observed that construction rush in Vietnam has become moderate in recent years. According to the interviews with contractors in Hanoi and Hai Phong, prices of construction materials has been increasing up until the fall of 2008 but they have been stabilized since then.

Price increase rate in December as compared with the December of the previous years are shown in Table 2-15. As of April 2009, there is no data available for 2008.

Table 2-15 Price increase rate as compared to the previous year

(Source: Statistic Department, Ministry of Finance, GOV)

Year	2003	2004	2005	2006	2007
Increase rate	103.0%	109.5%	108.4%	106.6%	112.6%

On the other hand, Table 2-16 shows similar figures by IMF. Figures for 2009 and 2010 are forecast values by IMF. In the table, it showed high increase rate of 123 % in 2008.

Table 2-16 Price increase rate as compared to the previous year (Source: IMF)

Year	2007	2008	2009	2010
Increase rate	8. 349%	23. 115%	6. 000%	5. 000%

Predicted value of 2009 and 2010 is a forecast

These figures in both tables above are illustrated in Fig. 2-14

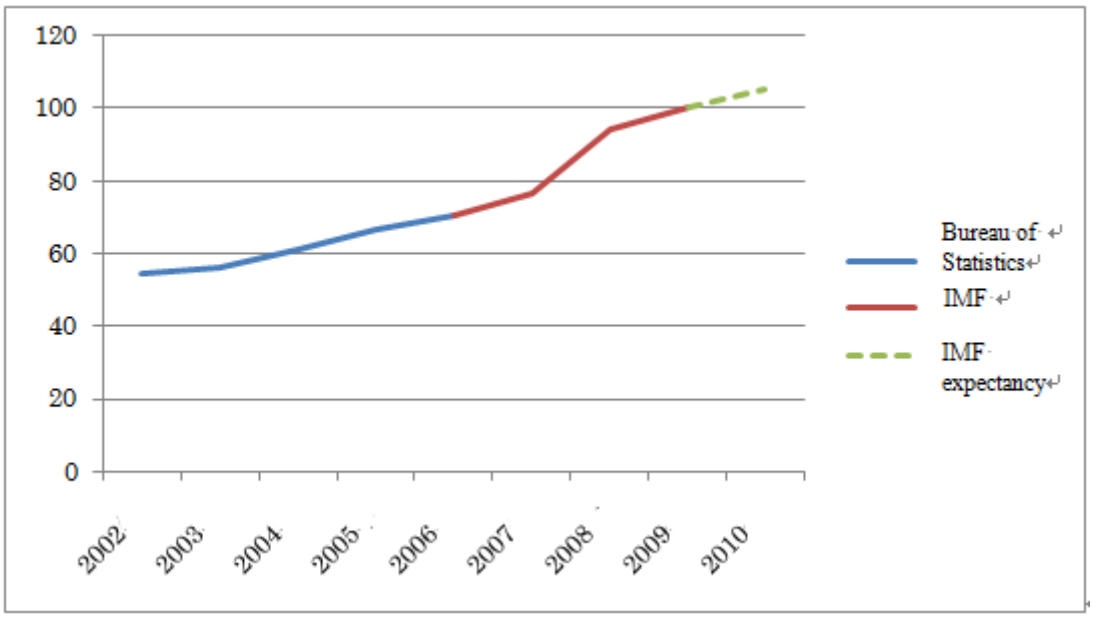


Fig. 2-14 Comparisons of Prices in December in each Year

Lowest prices of labors and construction materials obtained from three different Vietnamese contractors in Hanoi and Hai Phong during the Study in Vietnam in April 2009 are tabulated in Table 2-17.

Table 2-17 Lowest Prices of Labors and Construction Materials

	Labor Unit Price		Material Unit Price		
	Laborer	Form Carpenter	Rebar	Iron Frame	Ready Mix Concrete
Period of Implementation Review Study(2009/04)	11.19	13.89	1,145.57	1,479.00	79.65
Period of BD (2008/01))	7.00	9.00	840.00	900.00	72.00
Appreciation rate (15 months)	1.599	1.540	1.364	1.643	1.106
Annual basis（Appreciation rate＊12/15）	47.92%	43.20%	29.12%	51.44%	8.48%

Since the prices related to the construction has become stabilized it is considered reasonable to adopt IMF's forecasted increase rate for the future price increases. Assuming that price increase rates are 6 % and 5 % for 2009 and 2010 respective.

2-5-2 Operation and Maintenance Cost

The large scale X-ray inspection equipment and facilities installed at the Hai Phong Port under this project represent the second project of the Customs of Vietnam; therefore, it is necessary to make preparations for Operation and Maintenance cost in association with implementation of this project as an addition of new working assets. The annual cost for maintenance and management of this large scale X-ray inspection equipment is estimated at approximately 2,556 million dong (US$145,715), and annual cost such as overheads, utilities, and telephone services are assumed to be approximately 426 million dong (US$24,271). Accordingly, annual cost for Operation and Maintenance of equipment and facility are estimated at approximately 2,982 million dong (US$169,987) for the Hai Phong Port.

The Hai Phong Customs that will manage the equipment and facility has acquired budgets for introducing large scale X-ray inspection equipment in 2008, and thus it is considered that there are no financial difficulties for implementing the project.

2-6 Point to consider on implementation of the project

It was recognized in 2008 that executing ground improvement works at Hai Phong project site would be prerequisite for the implementation of Hai Phong project. In June 2008, GOV executed soil investigation at the project site and set up the ground improvement plan. From August 2008, GOV conducted ground improvement works for three month period. After completion of the ground improvement works, GOV has been observing amounts of settlement at the site. The Study in Vietnam in April 2009 confirmed that the ground improvement works has been conducted properly. The Study also confirmed that ground subsidence has been stabilized within 4 months after completion of sand drain works and thus it would not create any significant adverse effects for the implementation of the project. Observations of settlements have been continued and the results have been reported to JICA. Nevertheless, it is recommended to continue the observations at the site and repeat the analysis of the settlements to further confirm the stabilization of the consolidation settlements at the site.

Chapter 3 Project Evaluation and Recommendations

3-1 Project Effect

The following benefits are expected by implementing the project.

(1) Direct effects

1) The inspection time saving per container;- inspection time with X-ray will be reduced to 15~20 minutes from 60~120 minutes without X-ray or increment of productivity by 4~6 times.

2) Reduction of cargo damage due to adverse weather condition by shifting from the present outdoor manual container inspection to the non-destructive inspection at the indoor.

3) Anti-terrorism efforts at Hai-Phong Customs will be reinforced by thorough inspection.

4) The present manual container inspections which are performed at more than five locations in Hai Phong city will be consolidated into one single location. It will reduce traffic congestions in Hai Phong City. Inspection at the single point without opening the containers will also contribute to enhance safety of harbor traffic and container inspection.

5) Decrease of manual inspection number will contribute to the protection of export/import cargos from damage.

(2) Indirect benefits

1) The container inspection will be carried out safely and speedily, and will be capable for handling the growing volume of import and export cargos in the future.

2) Speedy customs inspection will promote the direct investments from overseas.

3) By shifting from manual open-up container inspection to nondestructive inspection, the efficiency of the GDVC will be improved with decreases in the number of surveyors and their management work. Consolidating five different

present inspection stations into a single station will also contribute for GDVC to enable more efficient manpower use.

4) Cooperating with risk-management will contribute to the modernization of Vietnam's Customs inspection.

5) Introduction of the X-ray Inspection Equipment will significantly promote the computerization of customs inspection In turn, it will contribute to the early realization of "ASEAN Single Window" which embodies countermeasures of the General Customs Bureau of the WCO, WTO, and ASEAN.

Followings are expected performance indexes which are expressed, as much as possible, in numerical value by employing large scale X-ray Inspection Equipment.

Table 3-1 Performance Index for the Project

Index	Current status	Effects of introducing large scale X-ray inspection equipment	Target
Inspection site	Hai Phong：5 locations	Bunch up in one site	Risk reduction：1/5
	Tan Cang Cat Lai：Scattering in port	Bunch up in some sites	Risk reduction：1/5 or less
Damage to cargo	There are cases of damage to cargo due to open-up inspection outdoors	No cargo damage due to non-destructive inspection	Safety：100%
Inspection speed	60～120 min/container	15～20 min/container	Efficiency improvement 4-6 times

3-2 Recommendations

1) Establish operating system of X-ray Inspection Center

Review the management and operation system of X-ray Inspection Center and establish the operation system of the center by performing organizational reformation at Hai Phong Customs.

During the implementation of the project, Vietnamese side should invest some necessary equipment to deploy in the X-ray examination center for facilitation of customs inspection in order to utilize the X-ray inspection equipment provided by the project in a effective and efficient manner

2) Establishing training program

The Customs have to prepare an adequate scheme to receive the familiarization and training program of the manufacturer and establish subsequent familiarization and training program responding to the operating system.

3) Computerization of customs system and risk management modernization program

Plan to incorporate computerized program of customs system and risk management modernization program as a future operating method for the large scale X-ray Inspection Equipment and use for improving the efficiency of customs inspection as a whole.

Appendices

1. Member List of the Study Team
2. Study Schedule
3. Minutes of Discussions
4. Minutes of Technical Discussions
5. Decision of GDVC No.79/QD-TCHQ
6. Method of Examination of Ground Improvement Works

1. Member List of the Study Team

Implementation Review Study Team

1	Mr. Kenichi KONYA Team Leader	Japan International Cooperation Agency Economic Infrastructure Department
2	Mr. Seiichi TAKINO Chief Consultant/Operation and Maintenance Planner	Japan Marine Science
3	Mr. Yukio TOYOSHIMA Equipment Planner	Japan Marine Science
4	Mr. Takeyoshi HANADA Architectural Planner/Cost Estimator/ Procurement Planner	Japan Marine Science
5	Mr. Yasunobu YOSHIHARA Port Facility Planner	Japan Marine Science

2. Study Schedule

Implementation Review Study (30th March 2009 – 8th April 2009)

	Date		Team Leader	Chief Consultant/ Operation and Maintenance Planner	Equipment Planner	Architectural Planner/ Cost Estimator/ Procurement Planner	Port Facility Planner
1	30-Mar	Mon	Narita - Hanoi	Narita - Hanoi	Narita - Hanoi	Narita - Hanoi	Narita - Hanoi
2	31-Mar	Tue	Japanese Embassy, JICA, GDVC	Japanese Embassy, JICA, GDVC	Japanese Embassy, JICA, GDVC	Japanese Embassy, JICA, GDVC	Japanese Embassy, JICA, GDVC
3	1-Apr	Wed	Hai Phong Custom Office, Site Investigation	Hai Phong Custom Office, Site Investigation	Hai Phong Custom Office, Site Investigation	Hai Phong Custom Office, Site Investigation	Hai Phong Custom Office, Site Investigation
4	2-Apr	Thu		Hai Phong Custom Office, Site Investigation, to Hanoi	Hai Phong Custom Office, Site Investigation, to Hanoi	Hai Phong Custom Office, Site Investigation, to Hanoi	Hai Phong Custom Office, Site Investigation, to Hanoi
5	3-Apr	Fri	Hai Phong Custom Office Discussion, Conclusion of M/M	Hai Phong Custom Office Discussion, Conclusion of M/M	Hai Phong Custom Office Discussion, Equipment Procurement Investigation	Hai Phong Custom Office Discussion, Equipment Procurement Investigation	Hai Phong Custom Office Discussion, Port Facillity Investigation
6	4-Apr	Sat		to Ho Chi Min	to Ho Chi Min	to Ho Chi Min	Port Facillity Investigation, Hanoi - Narita
7	5-Apr	Sun		Data arrangement, Group meeting	Data arrangement, Group meeting	Data arrangement, Group meeting	Narita
8	6-Apr	Mon		Operation and Maintenance Plan Investigation, Data arrangement, Group meeting	Equipment plan Investigation, Data arrangement, Group meeting	Architectural Plan/ Cost Estimat/ Procurement Plan Investigation, Data arrangement, Group meeting	
9	7-Apr	Tue		Operation and Maintenance Plan Investigation, Ho Chi Min - Narita	Equipment plan Investigation, Ho Chi Min - Narita	Procurement plan Investigation, Ho Chi Min - Naruta	
10	8-Apr	Wed		Narita	Narita	Narita	

3. Minutes of Discussions

Minutes of Discussions
on the Implementation Review Study
on the Project for Reinforcement of Custom Functions
of the Hai Phong Port in the Socialist Republic of Viet Nam

In response to a request from the Government of the Social Republic of Vietnam (hereinafter referred to as "Vietnam"), the Government of Japan decided to conduct a Implementation Review Study on the Project for Reinforcement of Custom Functions of the Hai Phong Port (hereinafter referred to as "the Project") and entrusted the study to the Japan International Cooperation Agency (hereinafter referred to as "JICA").

JICA sent to Vietnam the Implementation Review Study Team (hereinafter referred to as "the Team"), which is headed by Mr. Kenichi KONYA, the Assistant Director for Transportation and ICT Division 1, Economic Infrastructure Department, JICA, and is scheduled to stay in the country from March 30, 2009 to April 7, 2009.

The Team held discussions with the officials concerned of the Government of Vietnam and conducted a field survey at the study area.

As a result of discussions and field survey, both parties confirmed the main items described in the attached sheets. The Team will proceed to further works and prepare the Implementation Review Study Report.

Hanoi, April 3, 2009

Mr. Kenichi KONYA	Mr. NGUYEN NGOC TUC
Group Leader	Deputy Director General
Implementation Review Study Team	General Department of Vietnam
Japan International Cooperation Agency	Customs

ATTACHMENT

1. Objective of the Project

The objective of the Project is to reinforce the custom functions of the Hai Phong Port by providing Security Equipment in order to strengthen counter-terrorism/anti-terrorism measures as well as to facilitate and secure the international trade supply chain.

2. Objective and Scope of the Implementation Review Study

The main objectives of the Implementation Review Study are to examine condition of the Project site, Hai Phong Port, and re-estimate the Project Cost.

Scope of the Implementation Review Study is to hold discussions with relevant organizations including General Department of Vietnam Customs, to conduct field survey, to gather information related to the soil improvement on the land area of the Hai Phong port project site and to gather information on project cost.

Regarding the Minutes of Discussions in the Basic Design Stage (Basic Design Study and Explanation of the Draft Basic Design Report), both side re-confirmed that the contents of the above Minutes including contents of the request, responsible and implementing organization, confidentiality of the Project Information, project cost estimate, and undertakings are still valid. However, regarding the project cost estimate, it will be re-examined following price fluctuation, which will be examined in the course of the Implementation Review Study.

3. Schedule of the Study

(1) The Team will proceed to further study in Vietnam until 7 of April, 2009.
(2) JICA will prepare the final report in English and send it to Vietnam around August, 2009.

4. Monitoring of the condition of the land area of the Hai Phong Project Site

The team requested the Vietnamese side to conduct regular monitoring of the settlement of the land area of the Hai Phong port project site, and to inform JICA Vietnam Office the result of the monitoring once a week with data obtained from settlement plates, starting as soon as possible. After the stability of the soil at the Hai Phong site can be confirmed, Japanese side will start the consideration of implementation and commencement of the Project.

END

4. Minutes of Technical Discussions

Minutes of Technical Discussions
on the Implementation Review Study on
the Project for Reinforcement of Custom Functions of the Hai Phong Port

1. Soil Improvement

(1) The result of soil survey report

1) Viet Nam side submitted the Study Team the soil survey report before soil improvement works. The Study Team confirmed the examination into ground settlement based on the consolidation data.

2) Viet Nam side will collect the information of the angle/inclination of soil layer of surrounding the site and inform the Study Team.

(2) The report of soil improvement works

1) Viet Nam side submitted the Study Team the report of soil improvement works. The Study Team confirmed the report includes;

① The time and date of the execution
② Records of depth of soil improvement
③ Characteristics and quantity of sand for pile
④ Characteristics and thickness of sand mat

2) Viet Nam side informed that the soil improvement works completed for 20 days.

(3) The conditions of ground settlement after soil improvement works

Viet Nam side submitted the Study Team the final survey report including following reports:

1) Load test at 5 points in the site was conducted on February 5th-6th, 2009 and the ground settlement was estimated based on the result of load test.
2) Monitoring of ground settlement was conducted on January 20th, 2009
3) Estimation of the ground settlement based on soil improvement was conducted in accordance with the Viet Nam Standard (H-30).

(4) Viet Nam side and the Study Team have agreed as follows:

1) Viet Nam side will conduct the monitoring every week and it starts the beginning of April, 2009.
2) Number of monitoring point is nine (9).

3) Monitoring method for settlement is by Hinh B.7 of Viet Nam Standard.
4) Viet Nam side will inform the result of the monitoring with data to JICA Viet Nam Office and the Consultant by e-mail.

2. Technical Specifications of large-scale X-ray inspection equipment
Viet Nam side and the Study Team have confirmed that the Technical Specifications of large-scale X-ray inspection equipment is same as the result of Basic Design Study and the technical specifications of large-scale X-ray inspection equipment for Tan Cang Cat Lai Port.

3. Facility for large-scale X-ray inspection equipment
(1) Layout plan
Viet Nam side and the Study Team have confirmed that the Technical Specifications of large-scale X-ray inspection equipment is same as the result of Basic Design Study.

(2) Utility works
The Study Team re-confirmed the demarcation of the following utility works.
It was confirmed that the demarcation of the works are same as the list of the Major Undertakings to be taken by each Government for Hai Phong Port in Annex - 3 of the Inception Report.

- Water Supply
- Electric ower
- Telephone
- Sewage Water
- Storm Water

On the discussion, following technical data is informed by the Vietnam side.
- Electric Power
New substation of the Project for Hai Phong Port will be constructed in the Project Site and technical data are as follows;

Transformer Capacity	:320 kVA, 22 kV / 400 - 230 V, 3 phase 4 wires
Emergency Generator Capacity	:500 kVA

4. Implementation Schedule of Major Undertaking to be taken by Viet Nam side
Viet Nam side confirmed to submit to the Study Team the implementation schedule of facilities such as Office, Store and Visual Inspection facility, Electric supply, Water supply, Sewage and so on to be constructed at the project site by Viet Nam side.
The Study Team requested Viet Nam side to execute the construction works synchronizing with the implementation schedule of this Project.

5. Viet Nam side confirmed that the budget allocation related to X-ray system for Hai Phong Customs has not changed from the result of basic design conducted in 2008.

HANOI April 3, 2009

Mr. Seiichi TAKINO
Chief of the Consultant
Inplementation Review Study Team
Japan International Cooperation Agency

Mr.Nguyen Ngoc Tuc
Deputy Director General
General Department of Viet Nam Customs
Ministry of Finance
The Socialist Republic of Viet Nam

5. Decision of GDVC No.79/QD-TCHQ

BỘ TÀI CHÍNH TỔNG CỤC HẢI QUAN	CỘNG HOÀ XÃ HỘI CHỦ NGHĨA VIỆT NAM Độc lập - Tự do - Hạnh phúc
Số: 79 /QĐ-TCHQ	*Hà Nội, ngày 09 tháng 1 năm 2009*

QUYẾT ĐỊNH

Về việc giao Chủ đầu tư dự án đầu tư xây dựng Trung tâm kiểm tra máy soi container tại cảng Hải Phòng

TỔNG CỤC TRƯỞNG TỔNG CỤC HẢI QUAN

Căn cứ Luật Hải quan ngày 29/6/2001 và Luật sửa đổi, bổ sung một số điều của Luật Hải quan ngày 14/6/2005;

Căn cứ Luật xây dựng ngày 26/11/2003;

Căn cứ Nghị định 96/2002/CP ngày 19/11/2002 của Chính phủ quy định chức năng nhiệm vụ, quyền hạn và cơ cấu tổ chức của Tổng cục Hải quan;

Căn cứ Nghị định số 16/2005/NĐ-CP ngày 07/02/2005 của Chính phủ về quản lý dự án đầu tư xây dựng công trình; Nghị định số 112/2006/NĐ-CP ngày 29/9/2006 của Chính phủ về sửa đổi, bổ sung một số điều của Nghị định số 16/2005/NĐ-CP ngày 07/02/2005 của Chính phủ về quản lý dự án đầu tư xây dựng công trình;

Theo đề nghị của Vụ trưởng Vụ Kế hoạch Tài chính,

QUYẾT ĐỊNH:

Điều 1. Giao Cục Hải quan thành phố Hải Phòng làm chủ đầu tư dự án đầu tư xây dựng Trung tâm kiểm tra máy soi container tại cảng Hải Phòng(Phần việc sử dụng vốn đối ứng phía Việt Nam).

Điều 2. Cục Hải quan thành phố Hải Phòng có trách nhiệm tổ chức triển khai dự án đầu tư xây dựng Trung tâm kiểm tra máy soi container tại cảng Hải Phòng đúng quy định của pháp luật và theo phân cấp.

Điều 3. Quyết định này có hiệu lực kể từ ngày ký. Chánh Văn phòng Tổng cục Hải quan, Vụ trưởng Vụ Kế hoạch Tài chính và Cục trưởng Cục Hải quan thành phố Hải Phòng chịu trách nhiệm thi hành quyết định này./.

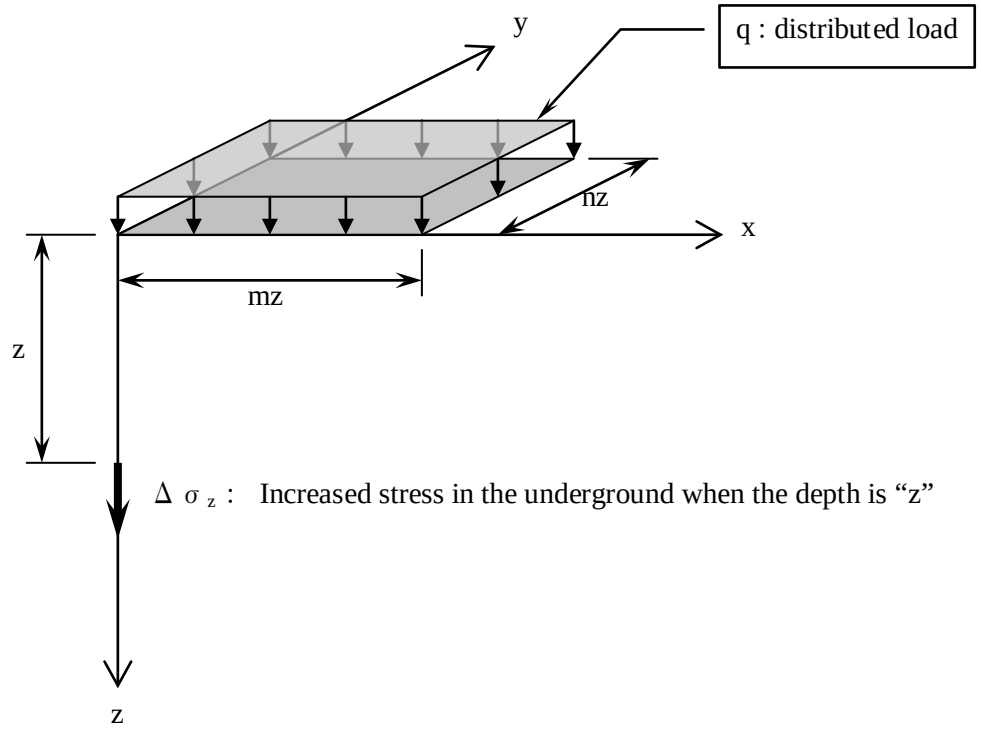
Nơi nhận: - Như điều 3 (3); - Lưu: VT, KHTC (4).	**KT. TỔNG CỤC TRƯỞNG** **PHÓ TỔNG CỤC TRƯỞNG** **Nguyễn Văn Cẩn**

6. Method of Examination of Ground Improvement Works

① Increased stress in the underground under the loads of sand-mat and pavement is obtained by applying Boussinesq equation

$$\Delta\sigma_z = \frac{q}{2\pi}\left\{\frac{m\cdot n}{\sqrt{m^2+n^2+1}}\cdot\frac{m^2+n^2+2}{(m^2+1)(n^2+1)}\right\}+\sin^{-1}\frac{m\cdot n}{\sqrt{(m^2+1)(n^2+1)}}$$

Illustration of Increased Stress in Underground



$\Delta\sigma_z$: Increased stress in the underground when the depth is "z"

② Amount of settlement is estimated by use of underground stresses, stress before ground improvement and increased stress after surcharges.

$$S = \sum_{i=1}^{n} (H_i \cdot \frac{e_0 - e}{1 + e_0})$$

where

S: Amount of settlement

H: Thickness of layer

e_0 : Void ratio before applied loads

e : Void ratio corresponding to stress in underground after loads are applied

③ Settlement period at sand drain construction depth is obtained by Barron's equation

$$T = \frac{d_e^{\,2}}{C_h} \cdot T_h$$

where

T : Settlement period (day)

d_e : Effective diameter range of sand drain (meter)

When piles are in triangle shape, $d_e = 1.050\ d$

d = pitch of sand drain piles d = 1.2 m

Ch : Coefficient of consolidation in horizontal direction (sq m/d), assume Ch=Cv

Th: Values corresponding to coefficient of time shown below

Relations between U and Th

U	0	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	0.95
Th	0	0.0074	0.0156	0.0249	0.0357	0.0485	0.0640	0.0843	0.1126	0.1611	0.2096

$$U = 1 - \exp\left(-8 \cdot \frac{T_h}{F(n)} \right)$$

$$F(n) = \frac{n^2}{n^2 - 1} \cdot \log_e n - \frac{3n^2 - 1}{4n^2}$$

$$n = \frac{d_e}{d_w}$$

where

U: degree of consolidation

dw: diameter of sand drain dw=0.4 m

④ Amount of time of consolidation settlement at the untreated layers (no sand drain piles) was obtained by the formula below assuming both sides draining condition

$$t = \frac{(H/2)^2}{C_v \cdot T_v}$$

where:

t = time (d) required to reach optional average consolidation degree (U)

H: thickness of consolidation layer (m)

Cv: coefficient of consolidation (sq.m/d)

Tv: coefficient of time corresponding to U shown below

U: average degree of consolidation

Relation between U and Tv

U	0	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.85	0.90	0.95
Tv	0	0.008	0.031	0.071	0.126	0.197	0.287	0.403	0.567	0.685	0.848	1.128

As strata which receive consolidation are of multi layers structure, time required for consolidation was obtained by converting the thickness of layers by use of the conversion formula.

$$H = \sum_{i=1}^{n} \left(\sqrt{\frac{C_{v0}}{C_{vi}}} \cdot H_i \right)$$

where:

H: converted thickness of layer subject to consolidation

Cvo: representing value of consolidation coefficient (sq.m/d)

Cvi:consolidation coefficient of i th layer (sq.m/d)

Hi: thickness of i th layer (m)