JORDANIAN CUSTOMS DEPARTMENT
THE MINISTRY OF FINANCE
THE HASHEMITE KINGDOM OF JORDAN

PREPARATORY SURVEY REPORT
ON
THE PROJECT
FOR
THE ENHANCEMENT OF BORDER SECURITY
AT
AL-KARAMAH BORDER CROSSING
IN
JORDAN

MAY 2012

JAPAN INTERNATIONAL COOPERATION AGENCY

ORIENTAL CONSULTANTS CO., LTD.

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PREFACE

Japan International Cooperation Agency (JICA) decided to conduct the preparatory survey and entrust the survey to Oriental Consultants, Co., Ltd.

The survey team held a series of discussions with the officials concerned of the Government of the Hashemite Kingdom of Jordan, and conducted a field investigations. As a result of further studies in Japan, the present report was finalized.

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

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

May, 2012

Kyoko Kuwashima
Director General,
Industrial Development and Public Policy Department
Japan International Cooperation Agency

SUMMARY

1 Background of the Project

1) Background of the Border Security Sector

a) Current Situation of the Sector

The Al-Karamah Border Crossing is located about 360 km from Amman, the capital of Jordan, on the border between Jordan and Iraq. It is on the major route connecting Bagdad, in Iraq, with Amman, and is the only border crossing along the 181 km border that Jordan shares with Iraq. In 2006, the perpetrators of a terrorist incident in Amman entered Jordan through the Al-Karamah Border Crossing. On December 3, 2010, terrorists crossed the same border and exploded two cars in suicide bombings. Incidents such as these demonstrate that the Al-Karamah Border Crossing continues to be a source of instability. In addition, given the continuing risk of weapons and explosives entering Jordan from Iraq, this border remains one that Jordan is highly focused on. To add to the problem, in accordance with its agreement with Iraq, the United States has withdrawn all its military units stationed in that country by the end of 2011. Following that, the US has been losing much of its power of deterrence, and it is assumed that the risk to Jordan will increase.

The number of people passing through the Al-Karamah Border Crossing was much lower at one time due to limitations on the passage of buses, taxis and private vehicles. However, in 2008, these numbers began trending upward from a low point, and in 2010, more than 300,000 people entered Jordan here. The number of vehicles crossing the border also began increasing suddenly in 2009, and in 2010, approx. 200,000 vehicles crossed into Jordan. The major reason for this was the increase in imports of crude oil from Iraq. Additionally, demand for consumer goods revived in Iraq is seen as another reason for the increased border traffic[1]. Yearly exports in 2008 and 2009 were almost double those in 2007 and earlier.

It is necessary to maintain an inspection system that can handle the above-mentioned flows of people and goods, while at the same time ensure public safety. The equipment used for security checks at the Al-Karamah Border Crossing includes X-ray and gamma ray inspection equipment provided under a comprehensive US support package. However, 7 to 9 years have passed since this equipment was installed. Concerning the current vehicle inspection equipment, there are a number of problems primarily due to aging but also regarding performance and throughput. Concerning inspection equipment for hand-carried baggage, the problems are that two of the three units available are already out of commission, and performance of the single operating unit is insufficient. Because of this, inspection of all hand-held baggage is now performed manually. There are no metal detectors or

[1] Most of Jordanian transporters transship exporting commodities to vehicles to/from Iraq at Business Trade Plaza at the border to avoid security and administrative risks in Iraq. Their unloaded vehicles thus re-enter Jordan. Increase in exports results in an increase of in-bound traffic, therefore requiring efficient and appropriate inspection of such unloaded vehicles.

passenger-side inspection machines.

b) Upper Level Plan for the Sector

The Government of Jordan has formulated the “Border Security Program” and made efforts to strengthen security measures at the border in legislating against terrorism recurrence prevention and so forth. In addition, it is attempting to strengthen the inspection system at each border, with support of the U.S.

In-bound contraband to Jordan is typically weapons and explosives, or illegal medicine. At the Al-Karamah border, the program intends to strengthen surveillance for weapon and explosive inflow, especially because of the situation in the neighboring country, Iraq.

c) Project Purpose

The purpose of the Project is to install and replace security screening / customs inspection equipment such as the X-ray system at the Al-Karamah border. In this way, it attempts to maintain, or even improve, inspection throughput and to intercept movements of terrorists and dangerous substances. Ultimately, it is expected to contribute to security stabilization in the region as well as efficient mobility of the people and commodities that are vital for economic and social activities.

2) Background of the Request for Grant Aid

Because of this situation, the Government of Jordan requested grant aid assistance, of which the major contents were X-ray inspection equipment, to the Government of Japan in August 2008.

In response to the request, JICA conducted a preliminary survey in March 2011 prior to the full preparatory survey. The preliminary survey verified the validity and necessity and an agreement was made with the Jordanian side on coverage by Japan’s Grant Aid after determining the minimum required scope.

2 Outline of Preparatory Survey and Components of Japan’s Grant Aid

1) Implementation of Preparatory Survey

After the preliminary survey, an independent administrative agency, Japan International Cooperation Agency (JICA), dispatched an Outline Design Survey mission to Jordan from September 18 to October 17, 2011. The Survey Team discussed the survey with the Ministry of Finance, Jordanian Customs, the Ministry of Planning and International Cooperation and others, confirmed the scope of the request, performed field reconnaissance, investigated operation and maintenance aspects, and examined equipment and infrastructure plans. After returning to Japan, the Survey Team exercised full-scale outline design tasks including project cost estimates, and then compiled the results of each task into the “Draft Report.” From January 19 to 29, 2012, JICA dispatched another mission to explain the Draft Report and confirm its contents with the Jordanian side counterpart.

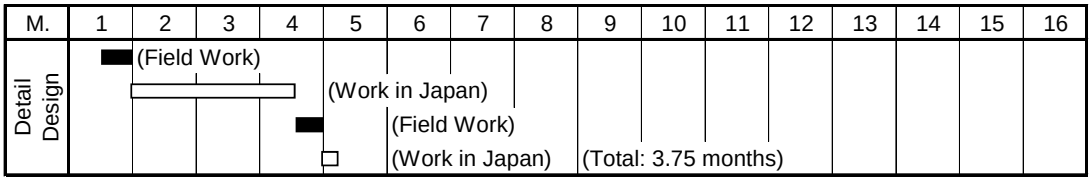
2) Components of Japan's Grant Aid Equipment

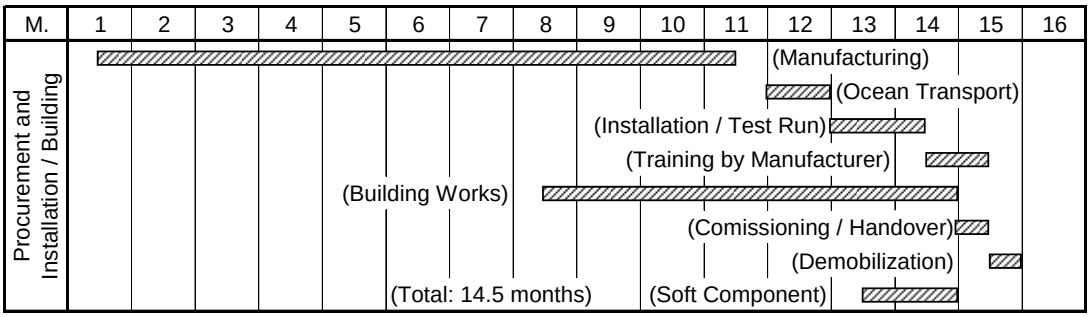
The components of Japan's Grant Aid equipment in the Project have been determined as follows, through discussions and further examination in Japan.

Description	Purpose of Use	Quantity
1. Portal type X-ray inspection machine for Cargoes and oil tankers	The X-ray inspection machine shall be installed at the screening checkpoint for security screening / customs inspection of the loaded / unloaded container trailers, trucks and oil tankers.	1 unit
2. X-ray inspection machine for passenger cars and other small vehicles	The X-ray inspection machine shall be installed at the screening checkpoint for security screening / customs inspection of the occupied passenger cars and other small vehicles.	1 unit
3. Walk-through metal detector	The equipment shall be installed in the passenger inspection room, for women and men, for security screening / customs inspection of the passengers before entering Jordan.	2 units
4. X-ray inspection system for baggage	The equipment shall be installed in the passenger inspection building for security screening / customs inspection of passenger baggage.	1 unit
a. A building to house an X-ray inspection machine for cargoes and oil tankers	The building shall facilitate a security screening / customs inspection operation, accommodating Equipment No. 1.	392.25 ㎡
b. A building to house an X-ray inspection machine for passenger cars and other small vehicles	The building shall facilitate a security screening/ customs inspection operation, accommodating Equipment No. 2.	217.36 ㎡

3 Project Implementation Schedule and Rough Cost Estimates

The time required for implementation of the Project is 3.75 months for detailed design and 14.5 months for procurement and installation / building works. Rough cost for the Project is estimated at 544 million yen, of which 542 million yen for Japanese side and 2 million yen for Jordanian side.





4 Project Evaluation

The Project is high in relevance and effectiveness, judging from the results of the preparatory survey.

1) Relevance

a) Beneficiary

Direct beneficiaries are approx. 30 economic operators and approx. 300,000 in-bound passengers, who will benefit from the shorter time spent for security screening / customs inspection.

Indirect beneficiaries are approx. 6,000,000 of the general public nationwide in Jordan and approx. 30,000,000 of the public in the neighboring country, Iraq.

b) Urgency

It has been at least seven to nine years since the existing equipment granted by aid from the United States of America was manufactured. Decline of the inspection throughput due to machine trouble will immediately result in stagnation of the physical distribution at Al-Karamah border. Urgency of the Project is high to avoid fatal trouble of the old equipment, which will soon reach its operational life.

c) Non-profitability

The Project will bring no earnings, and its ultimate objective is improvement of border security.

d) Human Security

The Project contributes to the stability of public welfare and therefore provides human beings with the basic rights of security and safety.

e) Operation, Maintenance and Management

Jordanian Customs has already acquired technology and human resources at the necessary level to operate and maintain the grant equipment, through experiences as a user of similar equipment through the Project.

Therefore, provided there is operational guidance by equipment manufacturer(s) as well as Soft Components (technical assistance) by the consultant, there will not be a problem in operation, maintenance or management of the grant equipment.

f) Contribution to National Middle-Long Term Plans

The Project contributes to the upper level plan, namely the Border Security Program, and also to the international obligation of customs administration as a member of WCO.

g) Consistency with Japan’s ODA Policy

The Project is consistent with Japan’s ODA Country Policy as well as subsequent

development plans.

2) Effectiveness

a) Quantitative Effects

- Saturation level for inspection of cargo trucks and oil tankers using high-energy X-ray with material discrimination ability: from 0% (without the Project as of 2011) to 100% (with the Project).
- Required time for inspection of cargo trucks and oil tankers: from 2 to 15 minutes per one cycle (without the Project as of 2011) to 0.5 minutes per one cycle (with the Project).
- Carbon dioxide gas that is generated by engine idling of cargo trucks and oil tankers for heating in the winter will be reduced by 200 to 300 tons of CO_2 per annum by eliminating the waiting time for inspection.

b) Qualitative Effects

- Centralized operation at one site improves work more efficiently compared with the existing three to four site dispersed operation.
- High-energy X-ray with material discrimination ability improves the accuracy of detection.
- Decline of inspection due to trouble with old machines is eliminated.
- Inspection of passenger cars and other small vehicles becomes ample in capacity and reduces the waiting time for inspection from Iraq into Jordan.
- Unpleasant hand searches for passenger and baggage inspection are reduced.
- Assistance through Soft Components is a universal issue that can also be applied to the other border facilities; thus, a significant effect is expected through the technology transfer.

Undertakings by the Jordanian side are preconditions for effective and efficient implementation of the Project, as follows:

- Acquisition of human resources for operation and maintenance
- Allocation of budget for operation and maintenance
- Continuity of institutional policy for border security

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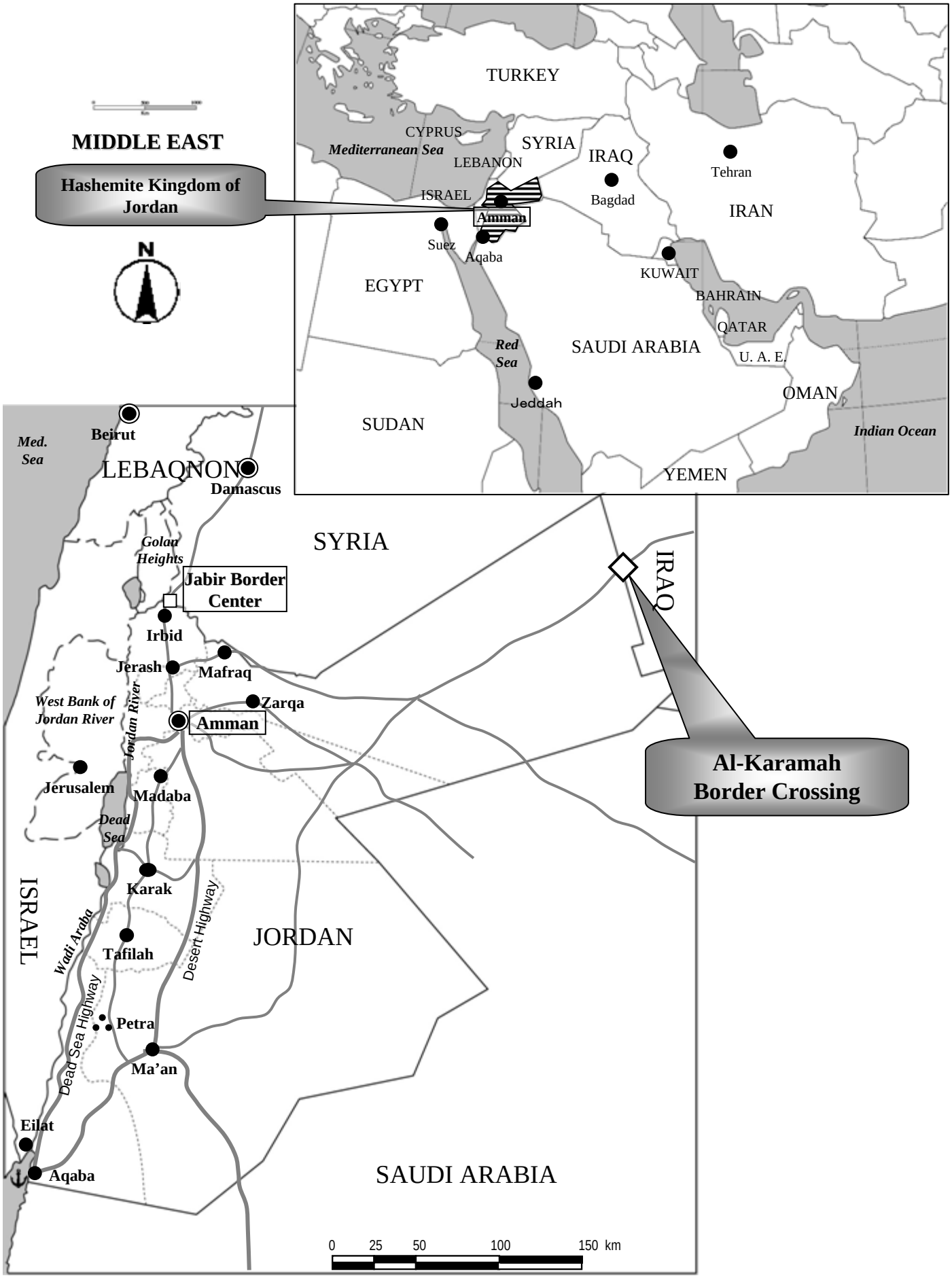
List of Abbreviations

Abbreviation	Denotation
ACI	American Concrete Institute
ASHRAE	American Society of Heating, Refrigerating and Air-Conditioning Engineers
ASTM	American Society for Testing and Materials
ASYCUDA	Automated SYstem for CUstoms Data
BSI	British Standards Institute
CCTV	Closed Circuit Tele-Vision
DIN	Deutsche Industrie Normen
EDCO	Electric power Distribution COmpany
FAT	Factory Acceptance Test
GID	General Intelligence Directorate
GTZ	German Technical Assistance Agency
ICRP	International Commission on Radiogical Protection
JAEC	Jordan Atomic Energy Commission
JNRC	Jordan Nuclear Regulatory Commission
JTC	Jordan Telecom Company
MDF	Main Distribution Board
MOPIC	Ministry Of Planning and International Cooperation
MPWH	Ministry of Public Works and Housing
PSD	Public Security Directorate, Ministry of Interior
SAT	Site Acceptance Test
SPD	Surge Protection Device
TSA	Transportation Security Administration
UPS	Uninterrupted Power Supply
WCO	World Customs Organization
WTO	World Trade Organization



Location Map (1) Al-Karamah Border Crossing

Location Map (2) Project Site

Cargo Inspection Building

Passenger Car and Small Vehicle Inspection Building

CHAPTER 1
BACKGROUND OF THE PROJECT

Chapter 1 Background of the Project

1-1 Background of the Border Security Sector

1-1-1 Current Situation of the Sector

The Al-Karamah Border Crossing is located about 360 km from Amman, the capital of the Hashemite Kingdom of Jordan (hereafter Jordan), on the border between Jordan and Iraq. It is on the major route connecting Bagdad, in Iraq, with Amman, and is the only border crossing along the 181 km border that Jordan shares with Iraq. To prevent smuggling, a 1.5 to 3 m ditch was constructed along the entire border with Iraq, and the military patrols the border to discourage illegal immigration.

In 2006, the perpetrators of a terrorist incident in Amman entered Jordan through the Al-Karamah Border Crossing. On December 3, 2010, terrorists crossed the same border and exploded two cars in suicide bombings. Incidents such as these demonstrate that the Al-Karamah Border Crossing, the only one on the border between Iraq and Jordan, continues to be a source of instability. In addition, given the continuing risk of weapons and explosives entering Jordan from Iraq, this border remains one that Jordan is highly focused on.

To add to the problem, in accordance with its agreement with Iraq, the United States has withdrawn all its military units stationed in that country by the end of 2011. Following that, the US has been losing much of its power of deterrence, and it is assumed that the risk to Jordan, which is pro-US and allows US bases on its soil, will increase. Al-Qaeda is located in the northern region of Iraq, and next to Baghdad is seen as an area of insecurity due to terrorism and other incidents. It is vital that Jordan establish terrorism countermeasures at Al-Karamah, which is on the border with this area, in order to maintain public safety.

Currently, as imports of crude oil from Iraq increase, all crude oil must be transshipped at the border crossing as part of measures to maintain public safety. In the near future, the plan is to allow oil tankers from Iraq to enter Jordan directly. In light of this, it will be necessary to strengthen the ability to perform inspections by using inspection machinery with greater penetration power.

The number of people passing through the Al-Karamah Border Crossing was much lower at one time due to limitations on the passage of buses, taxis and private vehicles. However, in 2008, these numbers began trending upward from a low point, and in 2010, 316,938 people entered Jordan here. The number of vehicles crossing the border also began increasing suddenly in 2009, and in 2010, 195,941 vehicles crossed into Jordan.

The major reason for this was the increase in imports of crude oil from Iraq. Additionally, demand for consumer goods revived in Iraq, and there was an increase in exports of foodstuffs, chemical products, plastic products, metal products, and various types of equipment and electronic goods, among many

others. This is seen as another reason for the increased border traffic.[1] Yearly exports in 2008 and 2009 were almost double those in 2007 and earlier.

It is necessary to maintain an inspection system that can handle the above-mentioned flows of people and goods, while at the same time ensure public safety. The equipment used for security checks at the Al-Karamah Border Crossing includes X-ray and gamma ray inspection equipment provided under a comprehensive US support package. However, 7 to 9 years have passed since this equipment was installed. Concerning the current vehicle inspection equipment, there are a number of problems: for gamma ray equipment, performance declines over time due to the half-life of the gamma rays; the equipment has insufficient ability to penetrate thick steel plates; compared to the newest equipment, much more time is required at inspection stations; and there is insufficient data storage capacity for images. Concerning inspection equipment for hand-carried baggage, the problems are that two of the three units available are already out of commission, and the detecting range of the single operating unit is insufficient; in addition, the images it does produce are exceedingly blurred. Because of this, inspection of all hand-held baggage is now performed manually. There are no metal detectors or passenger-side inspection machines, so everyone is subject to physical searches and pat-downs.

1-1-2 Upper Level Plan for the Sector

The Government of Jordan has formulated the “Border Security Program,” and has made efforts to strengthen security measures at the border in legislating against terrorism recurrence prevention and so forth. In addition, it is attempting to strengthen the inspection system at each border with support of the U.S.

In-bound contraband to Jordan is typically weapons and explosives, or illegal medicine. At the Al-Karamah border, the program intends to strengthen surveillance for weapon and explosive inflow, especially because of the situation of the neighboring country, Iraq.

1-1-3 Project Purpose

The purpose of the Project is to install and replace security screening / customs inspection equipment such as the X-ray system at the Al-Karamah border. In this way, it attempts to maintain, or even improve, inspection throughput and to intercept movements of terrorists and dangerous substances. Ultimately, it is expected to contribute to security stabilization in the region as well as efficient mobility of the people and commodities that are vital for economic and social activities.

[1] Most Jordanian transporters transship exporting commodities to vehicles to/from Iraq at Business Trade Plaza at the border to avoid security and administrative risks in Iraq. Their unloaded vehicles thus re-enter Jordan (refer to subsection 2-2-1-1). Increase in exports results in an increase of in-bound traffic, therefore requiring efficient and appropriate inspection of such unloaded vehicles.

1-2 Outline of Request for Grant Aid

1-2-1 Formation of the Request

Because of this situation, the Government of Jordan requested grant aid assistance, of which the major contents were X-ray inspection equipment, to the Government of Japan in August 2008. The request is so written that the Government of Jordan has the intention to allocate the leading role of security inspection to Jordanian Customs in the future, in place of the current Public Security Directorate (PSD) under Ministry of Interior and General Intelligence Directorate (GID). Moreover, the overall goal of the Project is confirmed in the request; i.e. to promote security stabilization as well as physical distribution between Jordan and Iraq, and other neighboring countries such as Saudi Arabia indirectly.

Table 1-2-1 shows the contents of the original request.

Table 1-2-1 Contents of the Original Request in August 2008

Requested Equipment	Quantities
Cargo inspection system (X-ray or Gamma Ray)	
- Stationary cargo inspection system	3 units
- Mobile inspection system	2 units
- Infrastructure (hangers and paved area)	
Baggage inspection system (X-ray)	
- Three Dimensions X-ray inspection system	2 units
- Conventional dual energy X-ray inspection system	8 units
Body inspection systems	
- Portal walkthrough (ion detection IMS technology) system	2 units
- Walkthrough metal detector	6 units
- Portable ion detection system (trace detectors IMS technology)	4 units

In response to the request, JICA conducted a preliminary survey in March 2011 prior to the full preparatory survey. The preliminary survey verified the validity and necessity, examined the situation regarding the existing equipment including traffic volume of freight vehicles and passenger cars as supposed objects of the requested equipment, then agreed with the Jordanian side on coverage by Japan's Grant Aid, with the minimum required scope as shown in Table 1-2-2. The preliminary survey also suggested the necessity of Soft Components (Technical Assistance), as requested by the Jordanian side, for proper operation and maintenance management of the grant equipment.

Table 1-2-2 Agreed Scope for Grant Aid Assistance as of Preliminary Survey

Agreed Scope	Quantities
A X-ray inspection machine which would be able to efficiently inspect cargoes sand oil tankers with sufficient penetration capacity	1 unit
A portal type of X-ray inspection machine which would be able to efficiently and properly inspect passenger cars and other small vehicles	1 unit
Equipment for proper inspection of passengers and their luggage	

1-2-2 Implementation of Preparatory Survey

To implement the Government of Japan's decision to conduct a preparatory survey for the Project, an independent administrative agency, the Japan International Cooperation Agency (JICA), dispatched an Outline Design Survey mission to Jordan from September 18 to October 17, 2011. The Survey Team discussed the survey with the Ministry of Finance, Jordanian Customs, Ministry of Planning and International Cooperation and others, confirmed the scope of the request, performed field reconnaissance, investigated operation and maintenance aspects, and examined equipment and infrastructure plans. After returning to Japan, the Survey Team exercised full-scale outline design tasks including project cost estimates, and then compiled the results of each task into a "Draft Report." From January 19 to 29, 2012, JICA dispatched another mission to explain the Draft Report to confirm its contents with the Jordanian side counterpart.

1-3 Outline and Readiness of Human Resources

The executing agency of the Project is Jordanian Customs under the supervision of the Ministry of Finance. Three organizations: the Ministry of Public Works and Housing, Public Security Directorate of Ministry of Interior, and the General Intelligence Directorate will participate in addition to the executing agency. Jordanian Customs will be the contractual party for procurement of consulting services as well as equipment supply under Japan's Grant Aid assistance. The other organizations are to undertake their responsibilities according to each legal power and jurisdiction.

Table 1-3-1 Executing Agencies of the Project

Organization	Role	Note
Jordanian Customs, Ministry of Finance	Leading executing agency / Contractual party in implementation stages	First experience in Japan's Grant Aid projects
Ministry of Public Works and Housing	Cooperation in construction of infrastructure	Many experiences in Japan's Grant Aid projects
Public Security Directorate of Ministry of Interior	Cooperation in operation and maintenance	No experience in Japan's Grant Aid projects
General Intelligence Directorate	Cooperation in operation and maintenance	No experience in Japan's Grant Aid projects

1-3-1 Human Resources of the Executing Agency

The leading section of the Project in Jordanian Customs is the Telecommunications and Electronic Control Directorate in the central government, while Al-Karamah Customs House is the local host. Jordan is a World Trade Organization (WTO) member country and Jordanian Customs joined the World Customs Organization (WCO) on January 1st, 1964.

The Telecommunications and Electronic Control Directorate has already been preparing to acquire manpower that is necessary for the operation and maintenance of grant equipment, as explained in subsection 2-4-1, "Human Resources Required for Operation and Maintenance."

1-3-2 Human Resources of the Existing Operation and Maintenance

Existing security screening / customs inspection equipment in Al-Karamah border facilities is open throughout the year.

Table 1-3-2 gives their operational hours. These operational hours are to be maintained at the time of grant equipment introduction, and toward the future. Table 1-3-3 gives the human resources deployed for operation and maintenance at present. It infers a flexible solution in the working arrangement.

Table 1-3-2　Operational Hours of the Existing Equipment

Inspection Objects	Operational	Hours
Cargo trucks / oil tankers	7:30 ～ 14:00	6.5 hours
(typical in summer)	16:00 ～ 20:30	4.5 hours + overtime
Passenger cars / small vehicles	24 hours	
Passengers and their baggage	24 hours	

Table 1-3-3　Operators for the Existing Equipment

As of March 2011		
12 men/shift × 2 shifts =	24 men	from Jordanian Customs, PSD, and GID
Maintenance engineer	1 man	
Total	25 men	One shift ≈ 6 hours

As of September 2011		
(Number of operators)		
2 men/shift × 2 shifts =	4 men	from Jordanian Customs
	18 men	from PSD
Total	22 men	One shift ≈ 8 hours
		24-hour operation by 22 men
(Example working arrangement)		
Morning Shift	8 to 9 men	
Evening Shift	8 to 9 men	
Overnight Shift	4 to 6 men	
Total	22 men	
(Example task assignment)		
Relocatable Gamma-Ray (East)	1 man	
Relocatable Gamma-Ray (West)	1 man	
Relocatable X-Ray	1 man	
Mobile Gamma-Ray	2 men	
Mobile X-Ray	2 men	
Stand-by	1 man	
Total	8 men	

1-3-3 Educational Training System

The Jordanian Customs Training Center is located in the Amman suburb Al-Jubaiha area. It provides extensive training courses shown below. Target trainees are Jordanian Customs own officers, commercial operator's employees, and practical personnel from neighboring countries in the customs business.

1: Customs program
2: Management program
3: Finance and accounting program
4: Computer program
5: Linguistic program
6: Special operation program
7: Urgent program related to the needs of the customs business

Appendix 7 presents the list of training programs actually provided in the year 2011 from January to October.

This training center is already providing image analyses training on X-ray inspection for baggage. Procurement of simulator equipment that enables advanced image analyses training is currently under process, and a new training program is planned to start in June 2012. The advanced image analyses program will consist of classroom lectures (basic knowledge) and technical practice (using the simulator). A detailed curriculum is being prepared.

1-3-4 Operation and Maintenance of Site Infrastructure

A private service provider, Al-Hack Inc., serves for electric power and clean water to all the Al-Karamah border facilities. The company stations resident service staff at the site.

1-4 Environmental and Social Considerations

The Project is classified as category "C" under "JICA Environmental Society Consideration Guidelines." Therefore, small negative influences on the environment and society are expected. There will be no influence exerted on the ambient surroundings or the society specifically from the implementation of the Project.

1-5 Natural Conditions

1-5-1 Geography

Jordan is a country with an area of 89 thousand square kilometers and population of 5.95 million (2009). It is surrounded by Saudi Arabia to the east and south, Israel and Palestine to the west, and Iraq and Syria to the north and northeast.

About 80% of the country is desert and arid land. The western end of the country has a salty depression around the Dead Sea and the Jordan Valley at the northern end of the Great Rift Valley of Africa running from north to south. This region has been developed as an agricultural area taking advantage of the mild climate and advanced irrigation system. East of the Jordan Valley are high plateaus called the Jordanian Highlands, which are thickly populated and include the capital city of Amman.

1-5-2 Climatic Conditions

Since the annual precipitation is only 93 mm on average, the domestic and industrial water supply comes from underground water. Jordanian-Iraqi border territories, where Al-Karamah is located, are on highlands at an altitude of 800 m.

The nearest available meteorological data is at Al-Ruwayshid, whose altitude is 686 m. According to the latest record for the two years from October 2009 to September 2011:

- Highest temperature for two years: 47.2 ℃
- Lowest temperature for two years: -2.4 ℃
- Maximum wind speed for two years: 81.3 km/h

Snow occasionally falls in the winter.

1-5-3 Geotechnical Conditions

Geotechnical investigations were performed by a local sub-consultant at the proposed locations of the buildings that will house the equipment. The results prove relatively good geotechnical conditions as discussed in subsection 2-2-2-4, “Architectural Design.” The foundation design for the buildings will be based on the results. The earthquake zone level is “1” according to the Jordan Building Code (see subsection 2-2-4-5, “Quality Control Plan”). Seismic conditions are less severe than for the building constructed in Queen Alia – Amman International Airport (QAIA) under the Project for Improvement of Airport Security Equipment at QAIA in Jordan.

CHAPTER 2
CONTENTS OF THE PROJECT

Chapter 2 Contents of the Project

2-1 Basic Concept of the Project

2-1-1 Overall Goal and Project Purpose

The Government of Jordan enacted the "Border Security Program" as a higher-level plan of the Project, and has taken efforts to enhance border security, to establish laws for counter terrorism, and so forth. Especially at the Al-Karamah Border, due to the situation in the neighboring country of Iraq, the government has tightened surveillance on inbound weapons and explosives with the support of the United States.

The U.S. has provided equipment to inspect for inbound weapons, explosives, and illegal drugs crossing the border under a comprehensive support package. Equipment used for security screening and customs inspection at the Al-Karamah Border; however, is insufficient in functionality as well as throughput, exceeding its economic life shortly. Immediate replacement of the equipment is therefore deemed necessary.

The Project aims to install and replace the security screening and customs inspection equipment, such as X-ray machines, to maintain or improve the ability of security screening and customs inspection, to interrupt terrorists and contraband, and to contribute to stability in security and efficient mobility of people and goods in the region.

Table 2-1-1 Overall Goal and Project Purpose

Overall Goal	Mobility of people and goods becomes more efficient through more stabilized security status in the region.
Project Purpose	Terrorism prevention measures including the prevention of illegal goods are strengthened with further enhanced functions of customs and security enforcement at the Al-Karamah Border by installing modern scanning equipment.
Expected Achievement	Equipment is provided, including buildings to house the equipment, at the Al-Karamah Border for security screening and customs inspection.
Indicators	1. Security screening and customs inspection equipment of high capability has been provided, and security screening and customs inspection are being implemented for vehicles, cargo, passengers, and baggage. 2. Time spent for security screening and customs inspection has been reduced to 0.5 minutes (with project) from 2 to 15 minutes (at present) for one cargo or oil tanker X-ray inspection.
Proposed Equipment by Japanese Side	1. X-ray inspection machine for cargoes and oil tankers and building to house the equipment 2. X-ray inspection machine for passenger cars and other small vehicles and building to house the equipment 3. Walk-through metal detector 4. X-ray inspection system for baggage

Equipment No. 1

Equipment No. 2

Eq. No. 3

Equipment No. 4

2-1-2 Inputs, Activities and Outputs

The Project is to undertake the works shown in Figure 2-1-1 aiming at the aforesaid overall goal. It is expected that security screening and customs inspection equipment will be improved at the Al-Karamah Border Crossing. Among the inputs to be undertaken, the scope of works to be provided under the Japan Grant Aid Project will cover the procurement and installation of equipment and provision of the building facilities necessary for its installation as shown in Table 2-1-2.

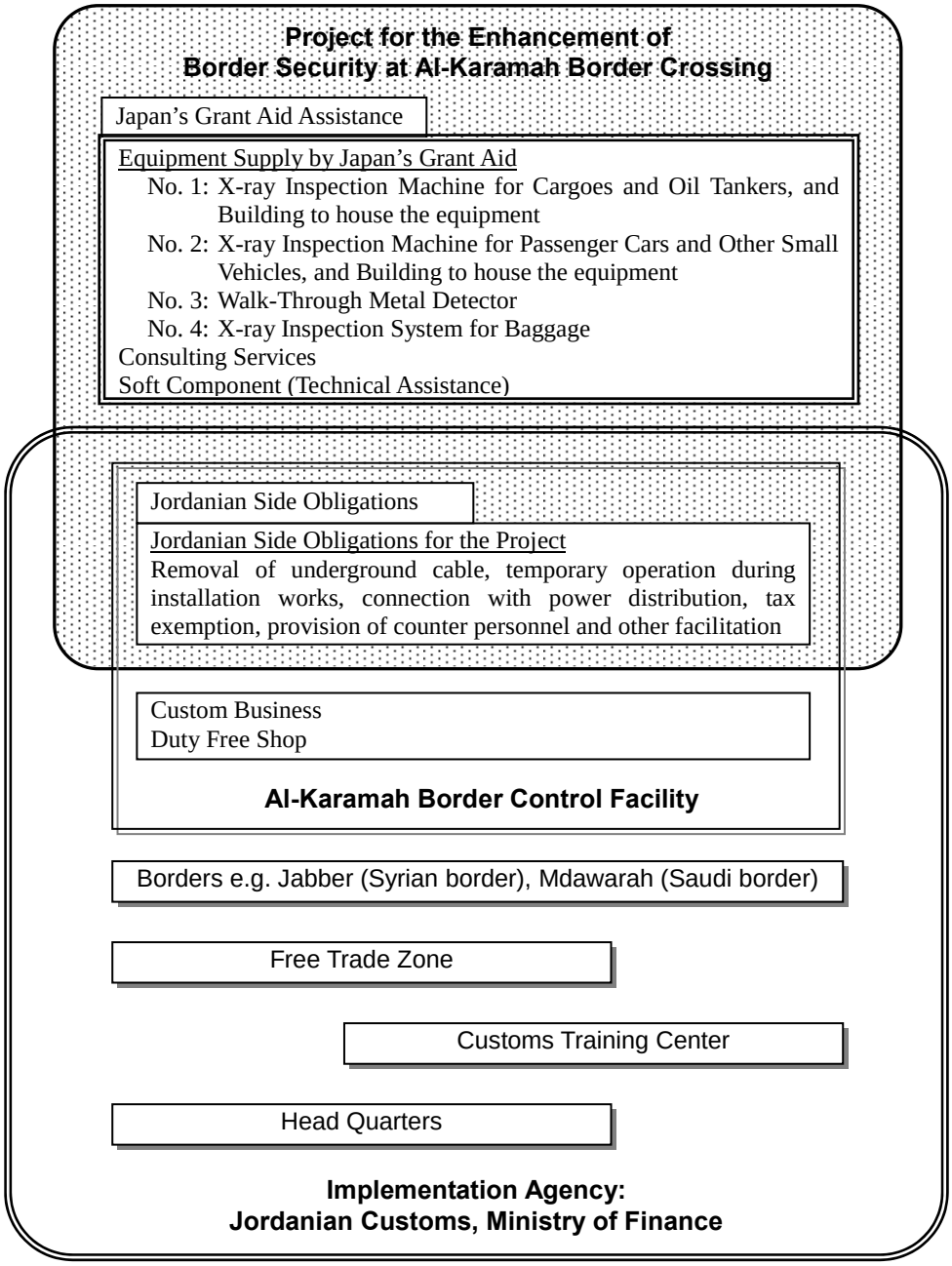


Figure 2-1-1 Scope of Project for the Enhancement of Border Security at Al-Karamah Border Crossing

Table 2-1-2 List of Components of Japan's Grant Aid Assistance

Description	Purpose of Use	Quantity
1. Portal type X-ray inspection machine for Cargoes and oil tankers	The X-ray inspection machine shall be installed at the screening checkpoint for security screening and customs inspection of the loaded / unloaded container trailers, trucks and oil tankers.	1 unit
2. Portal type X-ray inspection machine for passenger cars and other small vehicles	The X-ray inspection machine shall be installed at the screening checkpoint for security screening and customs inspection of the occupied passenger cars and other small vehicles.	1 unit
3. Walk-through metal detector	The equipment shall be installed in the passenger inspection room, for women and men, for security screening and customs inspection of the passengers before entering Jordan.	2 units
4. X-ray inspection system for baggage	The equipment shall be installed in the passenger inspection building for security screening and customs inspection of passenger baggage.	1 unit
a. A building to house an X-ray inspection machine for cargoes and oil tankers	The building shall facilitate a security screening and customs inspection, accommodating Equipment No. 1.	392.25 ㎡
b. A building to house an X-ray inspection machine for passenger cars and other small vehicles	The building shall facilitate a security screening and customs inspection, accommodating Equipment No. 2.	217.36 ㎡

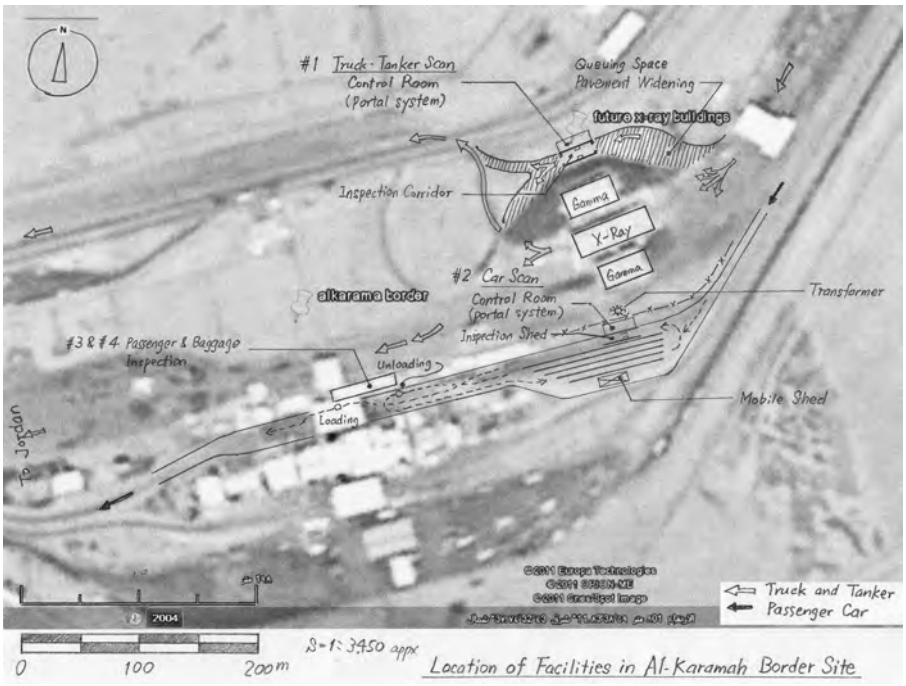


Figure 2-1-2 Location of Equipment to be Installed

2-2 Outline Design of the Japanese Assistance

The outline design of the Japanese Assistance follows the design policies described below to procure X-ray machines for large and small cargo, passenger vehicles and baggage, and metal detectors for passengers, which will enhance the security screening and customs inspection, based on the request by and discussion with the Jordanian side as well as those found through the field survey.

2-2-1 Design Policy

2-2-1-1 Basic Policy

1) The Entire Border Control Facility

The overall system of security screening and customs inspection at the border control facility, for vehicles and passengers incoming from Iraq, applies a process flow consisting of First Inspection, Second Inspection, Third Inspection, and Final Inspection using X-ray and Gamma-ray inspection equipment. The existing security screening and customs inspection equipment has been provided through American military support.

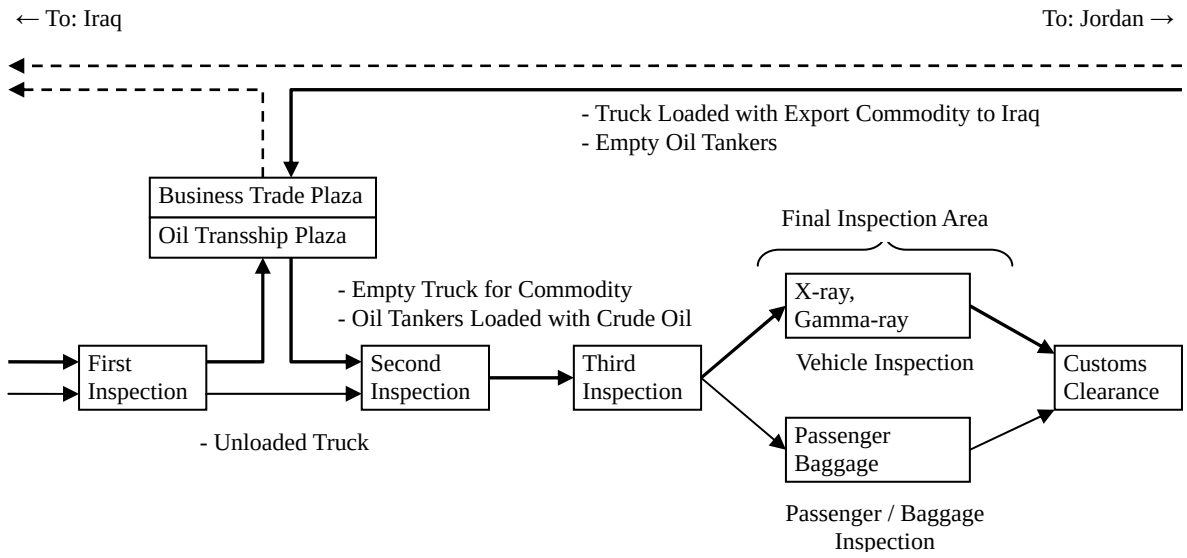


Figure 2-2-1 Overall Security Screening and Customs Inspection Process Flow

This overall system is maintained in the design of the Project for the traffic flow plan and the geometric design of the roadway. Present practices, such as the entry card system, also remain unchanged. The existing equipment is to be operated in parallel as reserve, even after new equipment has been introduced, for seamless transition in the security screening and customs inspection system.

The existing equipment and their hangers will be necessary in the near future. In this outline design, demolition and/or reuse of the existing hangers is not being considered.

2) Basis in Specifying Equipment

a) Equipment No. 1 and No. 2

The requirements suggested by the Jordanian side, as annexed to the Grant request, have been examined by the Japanese side and discussed in the Inception Meetings. The outline of specifications was agreed upon in the Inception Meetings as recorded in the Minutes of Discussion dated September 20, 2011. The following are of priority:

- Drive through system, which eliminates evacuation of the driver during inspection.
- Throughput not less than 100 targets per hour.
- For Equipment No. 1, penetration of not less than 300 mm steel. For the driver's cabin, low energy or equivalent capacity by means of backscatter X-ray should be applied.
- For Equipment No. 2, penetration of not less than 10 mm steel, or equivalent capacity by means of backscatter X-ray.

The Equipment Specifications have been prepared respecting the agreement above considering the availability of current products on the market while securing competitiveness for tendering.

The building facilities to house Equipment No. 1 and No. 2 are included in the scope in order to protect the equipment from the extreme hot and dusty weather conditions by controlling the temperature and dust proofing for effective operations and maintenance.

b) Equipment No. 3 and No. 4

The Equipment has been specified to be ordinary products for general purposes.

3) Siting of Facilities

Construction sites for buildings to house Equipment Nos. 1 and 2 are selected in a vacant land area, in the direction of Jordan from the third inspection area. The layout plan has been developed considering vehicle maneuvering, geographic properties and other natural conditions.

4) Portal or Mobile Configuration of Equipment No. 1

The Team has examined the technical information of the available products whose performance fulfills the requirements, and recommends using a "portal system" for Equipment No. 1 and eliminating the "mobile system" from the choices. The conclusion of their analysis is summarized in Table 2-2-1 below.

Table 2-2-1 Comparison of Portal and Mobile Configuration

"A": Advantageous

Issues	Portal System with Building		Mobile System with Building	
Spec. Compliant Products	• SAIC VACIS IP6500 Full Scan • AS&E Centry Portal • Rapiscan Systems Eagle P60		• Rapiscan Systems Eagle M60 with drive thru option[1]	
Functionality	Good for constant operation		Good for flexible operation	
	Even. Both systems can achieve the same effects. However, a portal system may be more efficient in operation, while mobile features are not important for the purpose.			
Competitiveness	A	Three (3) candidate products		Only one (1) candidate product
	A	Normal tender documents. Bid price can be lower for the portal system because of competition.		Tender documents allowing choice of portal or mobile may cause controversy in tendering.
Maintenance	More durable		Quicker response for repair	
	A	Less frequent trouble because fewer parts need to be moved.		More frequent trouble.

2-2-1-2 Design Policy for Natural Environment

1) Natural Conditions

Attention must be paid to weather with acute temperature changes, protection against dust, and strong ultraviolet rays. No particular policy is required for geotechnical conditions according to the results of geotechnical investigations performed by the local sub-consultant.

2) Environmental Considerations

No particular policy is required because the Project is classified as category "C" under the "JICA Environmental Society Consideration Guidelines."

2-2-1-3 Socio-Economic Design Policy

1) Social Circumstances

Newly introduced equipment generates higher-powered radiation than that of the existing equipment. Design and specification settings must observe national and international regulations in terms of radiation safety.

[1] Note: SAIC's VACIS M6500 is able for "cargo only" in drive-thru mode / Smiths Detection's HCVM-L 6032 viZual is able for "cargo only" in drive-thru mode.

2) Economic Circumstances

The following policies are set to mitigate the cost increase caused by the newly introduced equipment considering the financial conditions of the Government of Jordan.

- Minimal works are to be borne by the Jordanian side in planning the facility layout and in exercising mechanical / electrical design of newly constructed buildings.
- Inclusion of spare parts for two (2) years of physical operations to reduce maintenance expenses after the warranty period of one (1) year.
- Inclusion of soft components (technical assistance) to help in management and training for operation and maintenance.

2-2-1-4 Design Policy for Business Environment on Construction/Procurement

The application to secure permission for the installation of the equipment will be submitted to the Jordan Nuclear Regulatory Commission (JNRC). JNRC will issue a certificate of radiation safety against working environment before hand over.

Considering that certain equipment will require export permission from the concerned government in the country of manufacture, the lead time needed for application purposes must be considered in preparing the procurement schedule.

2-2-1-5 Involvement of Local Contractors and Consultants

Reputable local resources, both contractors and consultants that have capability to handle projects of similar scale, appear to be available. The Project will, to a practicable extent, use this local expertise and labor.

1) Contractors

As policy, buildings are designed to be suitable for construction by local specialist contractors under management of a Japanese prime firm.

2) Consultants

As policy, a local designer is to be involved in the detailed design, especially for design proof against national codes and regulations, building permits, and coordination with undertakings by Jordanian side obligations. For construction supervision, a local resident engineer is appointed for the full duration, while a Japanese supervisor will stay for the minimum required duration in order to reduce manpower cost. Construction activities will thus be continuously supervised.

2-2-1-6 Operation and Maintenance

1) Number of Operators required for Grant Equipment

a) Equipment No. 1 and No. 2

The X-ray screening equipment for vehicles has 2.5 to 5 times higher throughput than the existing equipment. High throughput operation requires multiple image analysts to scan images simultaneously. More human resources are required than the present situation for the existing equipment, which is a one-man operation for re-locatable systems and a two-man operation for mobile systems.

A standard three-man operation is the basis of operation planning, representing the normal status of a throughput of 50 vehicles per hour.

For peak time operation with a throughput of 100 vehicles per hour, a maximum five-man operation is required and additional image analysts must be deployed. Equipment specifications and the design of monitor rooms should incorporate five (5) operators' consoles, accordingly.

Table 2-2-2 Number of Operators Required for Equipment No. 1 and No. 2

Equipment	Equipment No. 1		Equipment No. 2	
Status	Normal	Peak time	Normal	Peak time
System Operator	One (1)	One (1)	One (1)	One (1)
License Plate Reading		One (1)		One (1)
Image Analysts	Two (2)	Three (3)	Two (2)	Three (3)
Total	Three (3)	Five (5)	Three (3)	Five (5)

In addition, remote monitor consoles with necessary software and interface, one (1) each for equipment No. 1 and No. 2, are included in the scope of Japan's Grant Aid.

b) Equipment No. 3

Security officers, who perform body checks by hand search at present, will receive manufacturer's initial operation training, and then operate the equipment.

c)Equipment No. 4

This is a renewal of equivalent existing equipment. The same one (1) or two (2) man operation will be maintained as present.

2) Policy in Transition from Present to Future Operational Organization

The request document for Japan's Grant Aid in 2008 described the wish to transfer border

security to be led by Jordanian Customs in the future. At present, PSD, Public Security Directorate, plays the leading role.

The existing security screening and customs inspection equipment will reach ending of its economic life shortly. Simultaneous operation using new and existing equipment is possible at the time of introduction; however, the existing equipment is going to be gradually phased out. Renewal of the existing equipment, which has been provided by the U.S. military and operated by PSD personnel, has been excluded from the plans. Following this policy, Jordanian Customs, who will operate the new equipment, will gradually become the main actor of the security organization.

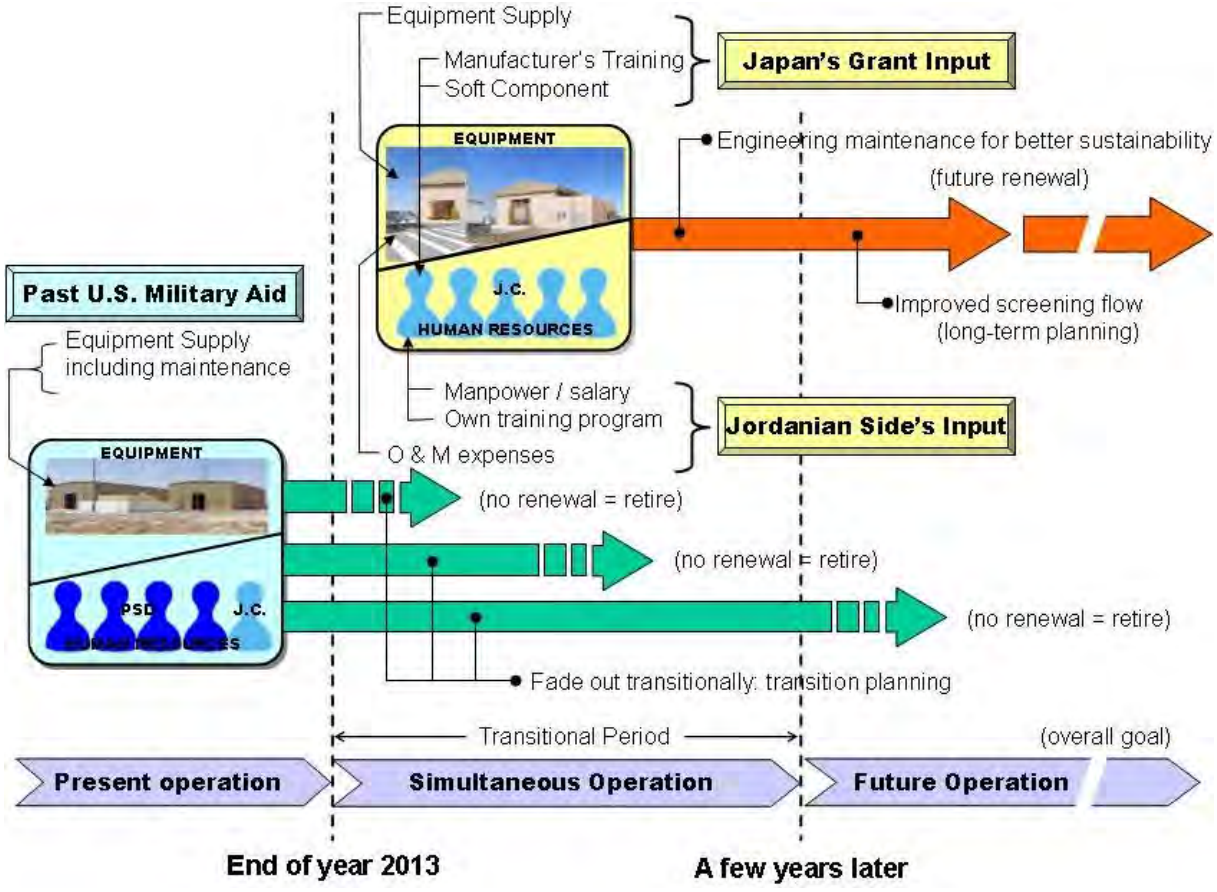


Figure 2-2-2　Security Screening and Customs Inspection Equipment Transition Concept

3)　Policy in Education and Training of Human Resources

The implementing agency has high motivation and technical level.　Self-efforts of Jordanian side (Customs Training Center) and Japanese Grant Aid (training by equipment manufacturer and soft components by Consultant) shall be harmonized appropriately. The Project will provide training required for efficient and effective operation and maintenance under this policy.

2-2-1-7 Grade of Facilities and Equipment

The grade of equipment to be procured will be the standard type widely used at ports, airports and border crossings around the world. The specifications in principle will be prepared to meet international standards with the ultimate objective of ensuring prevention of inflow of dangerous and contraband goods to Jordan. The manufacture's unique specifications should not be considered. Most importantly, the equipment shall be capable of detecting hidden or smuggled firearms, bombs and explosives by use of an X-ray image detection system as a countermeasure against possible terrorism.

The X-ray energy of the equipment for scanning loaded / unloaded container trailers, trucks and oil tankers will penetrate more than 300 mm against steel compared to the existing equipment. An inspection throughput of more than 100 trucks per hour will also be effective in reducing the waiting time.

Additionally, considering that cargo truck and passenger car X-ray inspection equipment will emit high energy, the equipment will be provided with safety devices for health protection in accordance with ICRP (International Commission on Radiological Protection) recommendations and applicable local regulations.

2-2-1-8 Methodology and Procedures for Implementation

1) Type of Tender

Competitive tendering will be adopted for this Project for procurement of equipment.

2) Manufacturer or Trade House Tender

All X-ray inspection equipment including the walk-through metal detector is manufactured by foreign manufacturers. Local construction companies will be able to construct high quality buildings such as equipment buildings. Therefore, it is considered that a trade house will organize equipment manufacturers and local construction companies for tendering.

3) Policy for Contract Period

The procurement and construction schedule will be prepared to ensure that the Project will be completed within the duration called for in the Contract. Special attention will be paid to the interface between equipment procurement and construction in preparing the program.

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

2-2-2-1 Overall Plan

1) Equipment Plan

For the enhancement of border security at the Al-Karamah border crossing into Jordan, provision of the following equipment and construction of the equipment buildings are planned.

(1) One system of a portal type X-ray inspection machine for loaded/unloaded container trailers, trucks and oil tankers is procured, and will be installed alongside the existing Gamma-ray and X-ray equipment buildings in the final screening area.

Consequently, the lack in inspection capability and stagnation of land transportation due to malfunction of the aging equipment will be avoided.

Construction of the building for the new X-ray inspection machine and pavement for a taxiing and queuing area for cargo trucks are included in the Project.

(2) One system of a portal type X-ray inspection machine for occupied passenger cars and other small vehicles is procured, and will be installed at the entrance of the small vehicle queuing area. This will replace the existing deteriorated mobile type X-ray inspection equipment.

Construction of the building for the new X-ray inspection machine and pavement for a taxiing area for small vehicles are also included in the Project.

(3) Two sets of walk-through metal detectors are procured, for women and men, and will be installed in the passenger inspection rooms.

(4) One unit of X-ray screening equipment for baggage is procured, and will be installed in the passenger inspection building. This will replace the aging existing equipment.

2) Security Screening and Customs Inspection Process Flow

a) X-ray Inspection Machine for Cargoes and Oil Tankers

Before carrying out the final screening by X-ray inspection equipment for cargo tracks and passenger cars, three visual inspections are implemented at the Al-Karamah border crossing.

The equipment should therefore be placed at the final screening inspection area without changing the present security screening and customs inspection flow of overall border crossing facilities.

The security screening and customs inspection flow for cargo trucks is shown in Figure 2-2-3.

b) X-ray Inspection Machine for Passenger Cars and Other Small Vehicles

Passenger cars and other small vehicles proceed through an entry road, passport checkpoint, vehicle inspection lanes, and then passenger/baggage inspection in a series. The equipment, therefore, should be placed at the existing vehicle inspection lanes without changing the present security screening and customs inspection flow of overall border crossing facilities. Security flow for passenger cars is shown in Figure 2-2-4.

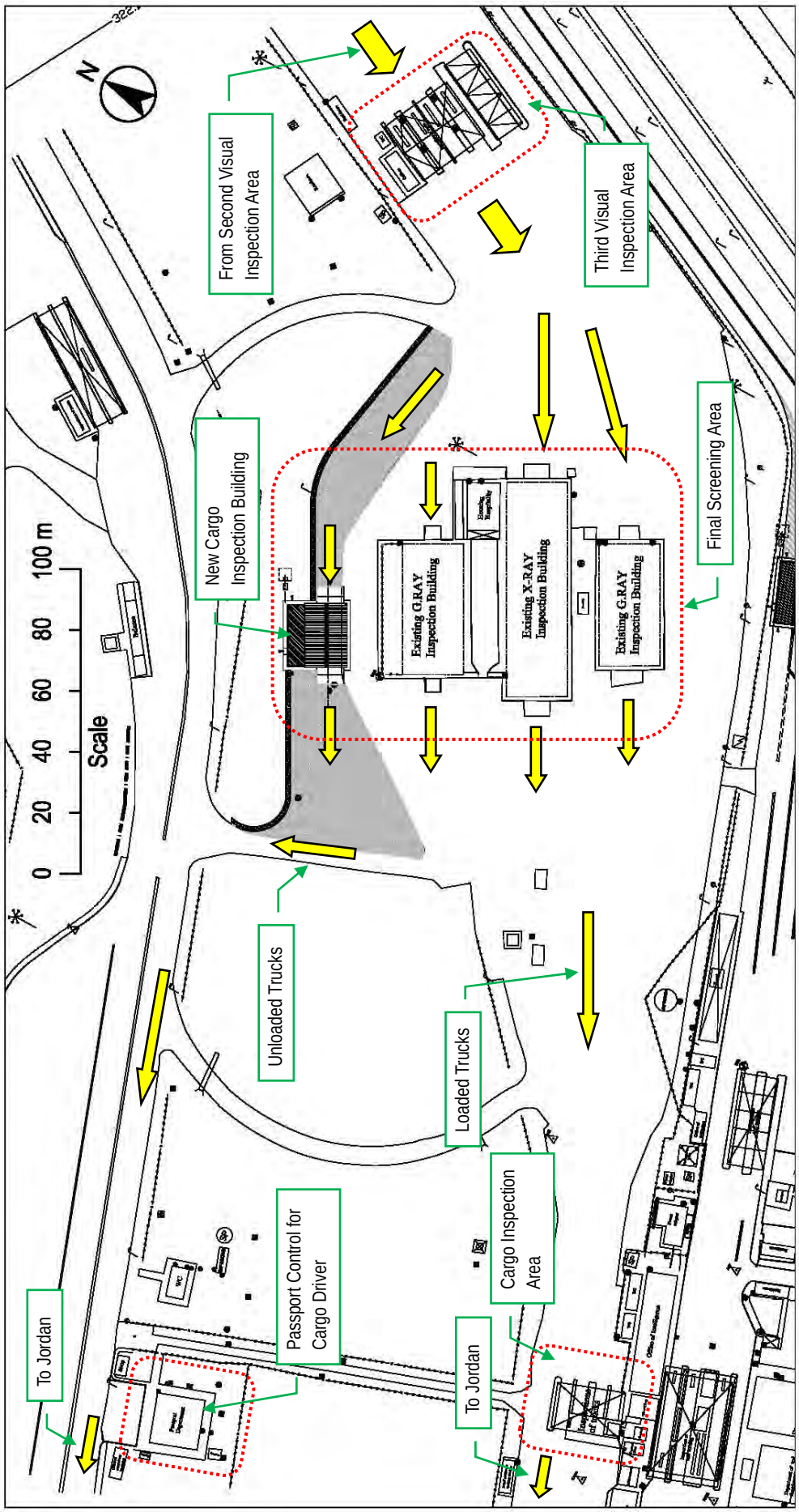


Figure 2-2-3 Security Screening and Customs Inspection Flow for Cargoes and Oil Tankers at Final Screening Area

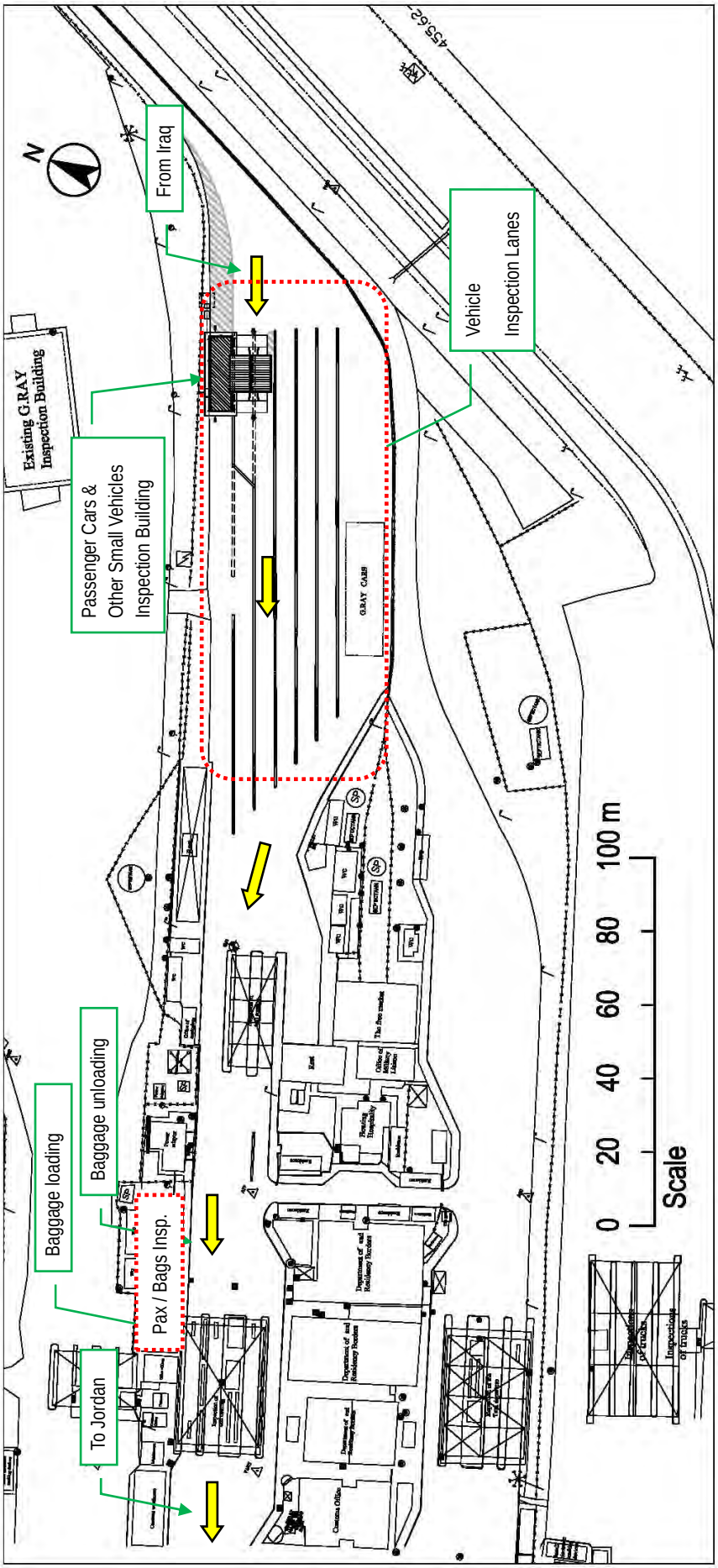


Figure 2-2-4 Security Screening and Customs Inspection Flow for Passenger Cars and Other Small Vehicles

2-2-2-2 Equipment Plan

In order to enhance border security at the Al-Karamah border crossing into Jordan, the equipment listed in Table 2-2-3 will be procured for this Project.

Table 2-2-3 Equipment Plan

Equipment Name	Qty.	Purpose of Use	Major Specifications
Portal type X-ray inspection machine for cargoes and oil tankers	1	• The X-ray inspection machine shall be installed at the screening checkpoint for security screening and customs inspection of the loaded / unloaded container trailers, trucks and oil tankers.	• Scanning size: 2,800 mm(W) x 4,600 mm(H) or more • Scanning height: Above ground, as low as practicable without stage, to 4,600 mm or more, and bumper to bumper • Penetration: not less than 300 mm of steel for cargo section, less than 0.25 μSv per screening for driver cabin scanning with driver inside • Protection against dust: IP64 or more • Compliant with ICRP60 for radiation leakage, and less than 0.5 μSv/hr average dose measurement in operator room and outside X-ray operation corridor without shielding doors • Drive through system with throughput not less than 100 containers / trucks per hour • Ability to discriminate between organic and non-organic material by high and low energy • High ability to discriminate between low density materials (like tobacco and biscuits) • Automatic optical car plate recognition system (OCR) • Ability to be integrated with an IP network to enable remote monitoring from central control room
Portal type X-ray inspection machine for passenger cars and other small vehicles	1	• The X-ray inspection machine shall be installed at the screening checkpoint for security screening and customs inspection of the occupied passenger cars and other small vehicles.	• Scanning size: 2,400 mm(W) x 2,400 mm(H) or more • Scanning height: Above ground, as low as practicable without stage, to 2,400 mm or more, and bumper to bumper • Penetration: not less than 10 mm of steel • Protection against dust: IP64 or more • X-ray energy: Compliant with ICRP60 for radiation leakage, less than 0.25 μSv per screening for driver and passengers • Drive through system (passenger remaining in the vehicle during scan) with throughput not less than 100 cars per hour • Ability to discriminate between organic and non-organic material by high and low energy • High ability to discriminate between low density materials (like tobacco and biscuits) • Automatic optical car plate recognition

Equipment Name	Qty.	Purpose of Use	Major Specifications
			system (OCR) • Ability to be integrated with an IP network to enable remote monitoring from central control room
Walk-through metal detector	2	• The equipment shall be installed in the passenger inspection room, for women and men, for security screening and customs inspection of the passengers before entering Jordan.	• Gate interior dimension: 700 mm(W) x 2,000 mm(H), or more • Target pinpointing: 8 zones, or more • Object of detection: ferrous and none-ferrous metal • Sensitivity control: adjustable to the treat level • Alarm system: visual and audible
X-ray inspection system for baggage	1	• The equipment shall be installed in the passenger inspection building for security screening and customs inspection of the passenger baggage.	• Tunnel size: 1,000 mm x 800 mm or bigger • Conveyer speed: 200 mm/s or faster • Max. conveyer load: 135 kg or heavier • Penetration: 27 mm of steel or thicker • Resolution: 36AWG or clearer • Available automatic visual identification of suspicious items

2-2-2-3 Site Plan and Facility Layout Plan

1) Site Plan

a) Installation Site for X-ray Inspection Machine for Cargoes and Oil Tankers

As discussed in subsections 2-1-1, “Basic Policy” and 2-2-1, “Overall Plan”, the installation site should be placed in the Final Screening Area. This area is sufficiently spacious for equipment, leading lanes before inspection, and standing lanes after inspection. The fourth building will therefore be located adjacent to the existing three buildings for Gamma and X-ray screening equipment. This siting concept is good for simultaneous operation of new and existing equipment, since operators are able to easily move between equipment.

Two locations, i.e. east and west of the existing equipment as shown in Figure 2-2-5, can be alternatives.

In conclusion, the location west of the existing Gamma-ray has been selected through the comparison shown in Table 2-2-4.

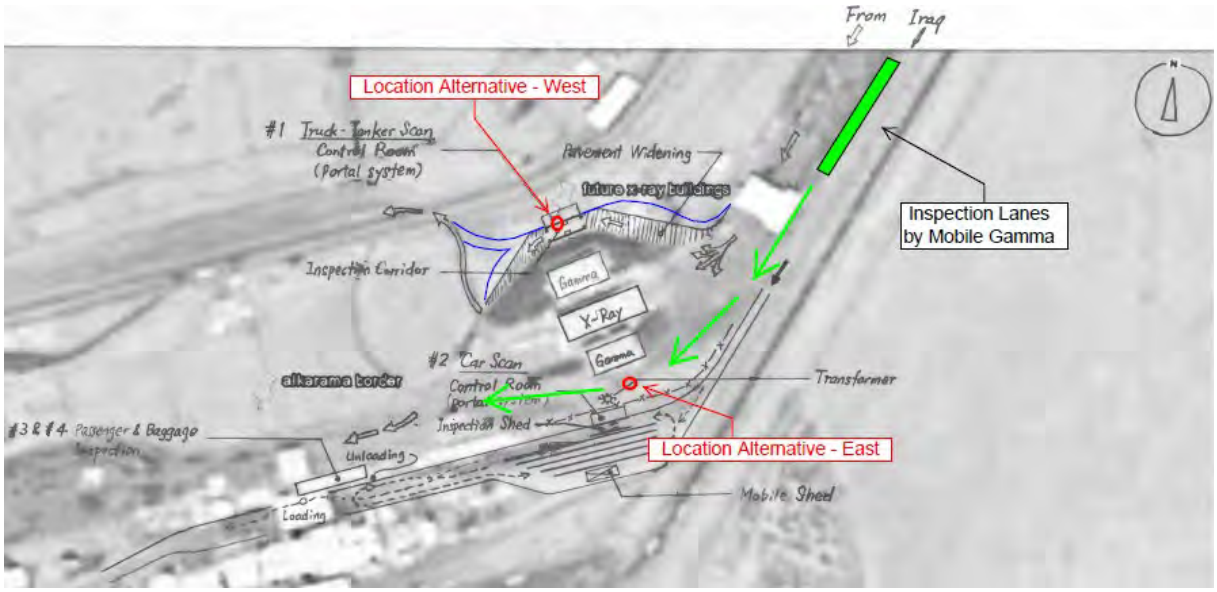


Figure 2-2-5　Alternative Locations for Installation of X-ray Inspection Machine for Cargoes and Oil Tankers

Table 2-2-4　Alternative Locations for Installation of X-ray Inspection Machine for Cargoes and Oil Tankers

Alternative	Alternative Location – West	Alternative Location – East
Space Requirement	Spacious	Separation between existing east Gamma-ray and fence is not sufficient for newly installed equipment plus by-pass lane.
Flexibility in Operation	No problem	Conflicts with present traffic flow after screening by mobile Gamma equipment.
Vehicle Maneuvering	Not smooth, but no problem	Smoother
Evaluation	Selected	Abandoned

b) Installation Site for X-ray Inspection Machine for Occupied Passenger Cars and Other Small Vehicles

The installation site should be located in the Passenger Car / Small Vehicle Screening Lanes.

2) Facility Layout Plan

a) X-ray Inspection Machine for Cargoes and Oil Tankers

The geometry of the leading lane has been designed for maneuverability by inter-state class trailers from the third visual inspection to the equipment so that trailers are able to align straight before entering the equipment. Figure 2-2-6 demonstrates the path of the trailers.

Standing lanes are placed beyond the equipment so that drivers can stop their trailers and receive an “inspected” stamp on their entry cards.

Approximately 13 m of separation is provided between the existing west Gamma-ray and the newly installed equipment for reverse flow for failed vehicles, which are required to be reexamined by X-ray screening.

b) X-ray Inspection Machine for Passenger Cars and Other Small Vehicles

The equipment and its housing building have been laid out occupying three out of six existing lanes as shown in Figure 2-2-7. The traffic flow of failed vehicles, which require reexamination by X-ray screening, and tall buses, which are not able to pass underneath the portal, are also explained in the figure.

c) Passenger and Baggage Equipment

The equipment is to be installed in the existing inspection building. The equipment layout plan is shown in subsection 2-3 “Outline Design Drawings.”

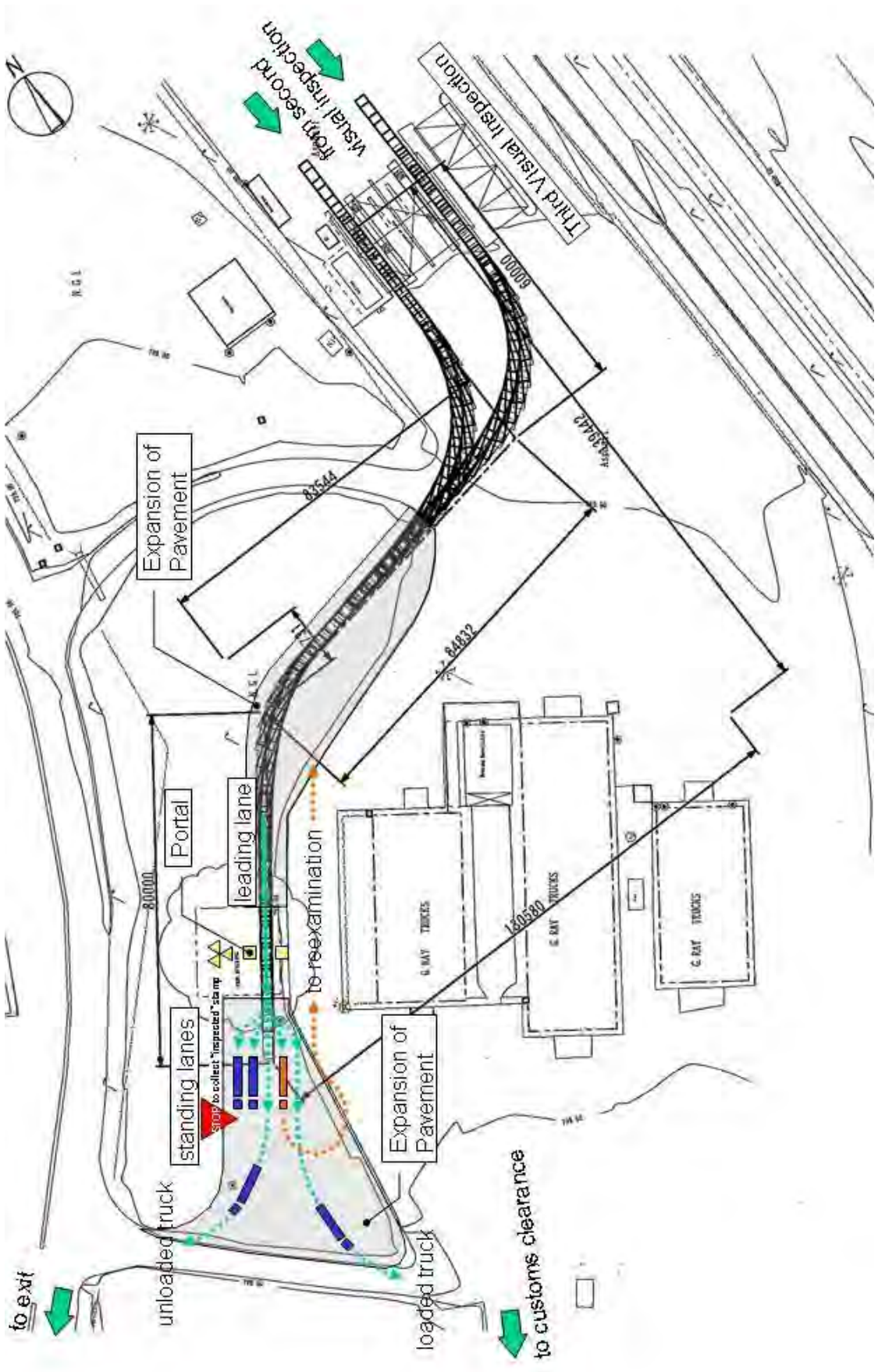


Figure 2-2-6 Facility Layout for X-ray Inspection Machine for Cargoes and Oil Tankers

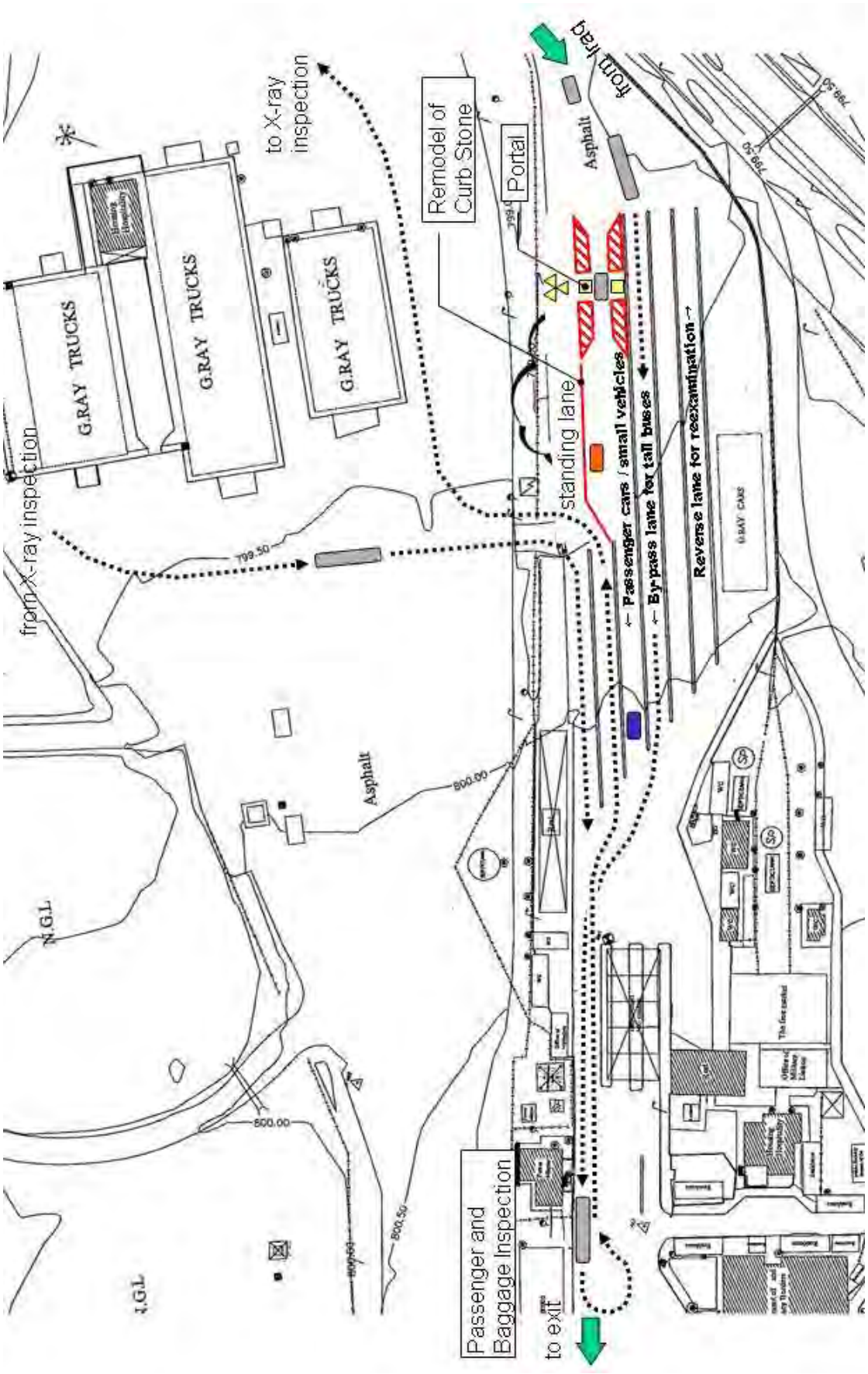


Figure 2-2-7 Facility Layout for X-ray Inspection Machine for Passenger Cars and Other Small Vehicles

2-2-2-4 Architectural Design

The basic design of the buildings in the Project is based on the following design policies with due consideration for the installation conditions of the X-ray machines, prevention of X-ray leakage, and the harsh natural environment at the construction site:

- There are about five manufacturers in the world who can supply the portal X-ray inspection system for cargo, and about three manufacturers in the world who can supply the portal X-ray inspection system for passenger cars, but the dimensions for each system vary. The X-ray inspection building however, will be designed to accommodate a machine made by any manufacturer.
- Prevention of X-ray leakage to the building outside perimeter will be planned in accordance with ICRP-60, to provide a safe working environment to ensure efficient inspection procedures.
- Methods for protection of X-ray machines from the harsh natural environment will be provided, and construction materials will be selected from durable material able to withstand the local climate conditions.

1) Floor Plans

a) Cargo Inspection Building

The Cargo Inspection Building contains the X-ray inspection room and the annex building, which has space for a monitoring room, server room, electrical room, maintenance room and toilets, etc. The floor plan design of the buildings is based on the following design policies.

- The dimensions of the X-ray machines of major manufacturers have been examined; thus, the dimensions of the building will be sufficient to accommodate the machine of any manufacturer.
- The width of the X-ray inspection room will be planned to accommodate the widest machine dimension plus about 2 meters of working clearance for maintenance on each side of the machine.
- The wall material for the X-ray radiation side and traverse side will be reinforced concrete to ensure safety standards, and the thickness of walls will be designed based on the safety standards of ICRP-60 requirements and experience in projects of a similar nature. Thereafter, the thickness to be adopted shall be confirmed with the manufacturer.
- The X-ray machine will be covered by a roof and walls in order to protect it from the strong ultraviolet rays and harsh sand storms at the proposed site.
- The annex building will be planned with prerequisite functions that consist of a monitor room, server room and supplemental rooms. These spaces will be planned compact and functional.

b) Passenger Car and Small Vehicle Inspection Building

The design concept of the floor plan for the Passenger Car and Small Vehicle Building adopts same concept as above. However, this building shall house smaller sized cars and vehicles compared to the Cargo Inspection Building; therefore, the size of the X-ray inspection room will be planned to be adequate for cars and vehicles.

The building area and exterior area of the above two buildings are indicated in the following table.

Table 2-2-5 Buildings and Exterior Areas

Building Name	Building Area (Unit: m^2)	Exterior Area (Unit: m^2)
Cargo Inspection Building	392.25	189.80
Passenger Car and Small Vehicle Building	217.36	160.13

2) Sections and Elevations

a) Cargo Inspection Building

Taking into consideration the height of the X-ray machine and the micro-climate at the site, sections and elevations will be designed based on the following conditions.

- The height of the building will be planned to accommodate the highest machine plus working clearance for maintenance staff and will ensure about 1.5 m from the top of the machine to the bottom of the purlines.
- Louvers will be installed at the top of the walls to exhaust emission gas from vehicles in this room.
- The metal roof covering this room will be installed with insulated sandwich panels to prevent the heat from outside.
- The concrete roof of the annex building will be designed to bear the weight of snow that will slide down from the roof of the X-ray inspection room. In addition, the roof and walls of the monitoring room will be insulated to maintain a comfortable interior temperature.

b) Passenger Car and Small Vehicle Inspection Building

The design concept for sections and elevations for the Passenger Car and Small Vehicles Building adopts the same concepts as mentioned above.

3) Structural Design

a) Basic Design Policy

The structural plan for the Project will be designed under the following conditions.

- The structural design must be safe and rational taking into consideration the natural subsoil conditions of the proposed site.
- The structure should be designed to prevent defects such as excessive deflection, settlement, vibration, etc.
- In addition, the building shall have sufficient safety and durability against earthquakes, strong winds, snow loads, etc.
- Consideration should also be given to local construction and maintenance conditions. In addition, the work process will entail simple and easy construction on the proposed site.

b) Building Standard

The plan will be based on the Jordan Building Standard Code; however, the analysis method and design procedures will be based on the Building Standards of the Architectural Institute of Japan. It was confirmed that materials are available with mill certificates corresponding to various standards such as JIS, ASTM and BS. Basically, all materials must comply with the requirement of JIS or other applicable standards, subject to the approval of the Consultant.

c) Construction Method and Materials to be Used

The structure method is the post and beam reinforced concrete, which is economical and the most prevalent in Jordan. The X-ray inspection room will be constructed of reinforced concrete columns and steel beams from an economical standpoint. The walls of the annex building will be installed concrete blocks and the roof will be constructed of reinforced concrete.

The surrounding walls of the X-ray inspection rooms will be constructed of reinforced concrete, and considering the radiation of X-rays, the wall thickness will be 300 mm (radiation side) and 400 mm (transverse side) in the Cargo Inspection Building. However, the wall thickness of the Passenger Car and Small Vehicle Building will be 200 mm (radiation side) and 400 mm (transverse side) because of the lower levels of X-ray radiation than the cargo X-ray machine.

d) Foundation and Ground

Based on the result of the soil investigations in this Study, it was found that at the Project site for the Cargo Inspection Building, from the surface to GL-2 m is a layer of stiff mixed with limestone gravel, GL-2 m to -7 m are stiff mixed with chert gravel layered with an N-value greater than 12. GL-7 m and below is chert gravel and cobbles and a clayey silt soil layer.

For the Project site for the Passenger Cars and Small Vehicles Inspection Building, from the surface to GL-2 m is a layer of stiff mixed with limestone gravel, GL-2 m to -7 m are marl and chert gravels layers that have an N-value greater than 12, and GL-7 m and below is a chert and limestone gravel layer..

Both buildings will rest on direct foundations (independent foundations) using the existing stiff mixed with chert gravel layer with an elevation of around GL -2 m as a support layer.

e) Seismic design

Seismic design will comply with the Jordan Building Code. The earthquake zone is 1, the earthquake area coefficient is Z=0.075, and the earthquake acceleration speed is Ca=0.12.

f) Wind Pressure

Wind pressure will comply with the Jordan Building Code. The basic speed pressure is 33 m/sec.

g) Snow Load

Snow-loadings will comply with the Jordan Building Code. As the site is located at an altitude of 800 m, the snow load is assumed at 1.25 kN/m^3.

h) Materials Use

Concrete	Foundation to first floor	cylinder strength[1] 24N/mm^2
	Ground floor column, walls and roof	cylinder strength 24N/mm^2
Reinforcement	round steel bar	φ6~φ9
	Deformed bar SD295A	D10~D16
	Deformed bar SD345	D20 and over
Steel	shape steel, steel plate	SS400 SSC400

4) Building Material Plan

a) Basic Policy

The building material plan shall be formulated based on the climatic conditions, the location of the site, the local construction situation, construction period, construction cost, and maintenance and operation costs. In particular, the following matters shall be included:

- Local procurement of construction materials shall be considered to reduce construction costs and shorten the construction period.
- The maintenance and operation costs shall be reduced by considering adaptation to the local climate, resistance against climate and the selection of materials that are easy to maintain.
- It is important to note that the selection of material should be done to satisfy the essential functions of X-ray inspection and for the effectiveness of vehicle inspection and must be considered along with the utility and equipment plans.
- Selection and determination of the building materials and construction methods shall be based on the studies on local procurement or application of local construction methods.

[1] Equivalent or higher cube strength will be permitted in specifying and controlling quality of the concrete works, taking local conditions into consideration.
- Compressive strength: 24 N/sq.mm by cylinder test piece, or 30 N/sq.mm by cube test piece
- Grade of concrete to be produced: Grade C35 by BS5328 “Concrete”

b) Main Finishing Materials

Based on the surveys and studies of materials of the existing buildings and above policies, the building material plan will be formulated. The building materials generally used in local construction sites, such as iron bars and steel, are obtainable in Jordan markets. The policy for selection of materials for this Project will be to adopt local materials as much as possible, taking into consideration material quality and construction methods. Furthermore, it is considered that this policy will enable proper selection and procurement of building materials under the scheme of Japan's Grant Aid assistance.

Based on the above, the selected main materials are as follows:

Table 2-2-6 Selected Main Building Materials

	Cargo Inspection Building	Passenger Car and Small Vehicle Inspection Building
Structure	Reinforced Concrete (partially using steel beams for roof)	
Eaves Height	6,800 mm	6,500 mm
Exterior Finish		
Roof	Corrugated color galvanized sandwich panel（Oblique roof） Urethane waterproofing sheet（Flat roof）	
Soffit	Corrugated color galvanized sandwich panel	
Exterior Wall	Mortar trowel with acrylic texture coat	
Window Door	Aluminum Steel/Aluminum	
Interior Finish		
Floor	Monitor Room/Server Room: Free access floor with PVC tile X-ray Inspection Room: Concrete trowel with liquid chemical concrete hardener Ante Room/WC: Mortar setting bed with ceramic tile	
Wall	Monitor Room/Server Room: Mortal trowel with acrylic paint and plaster board with acrylic paint X-ray Inspection Room: Fair faced concrete with patching plaster with acrylic paint Ante Room: Mortar trowel with acrylic paint WC: Ceramic tile	
Ceiling	Monitor Room/Server Room: System ceiling X-ray Inspection Room: Corrugated color galvanized sandwich panel Ante Room: Decorated plaster board WC: Cement board with vinyl resin enamel	

5) Mechanical and Electrical Design

a) Mechanical Work

(1) Plumbing system

X-ray inspection buildings (the Building) will be provided with toilets and sinks for staff.

Potable water intake pipes in the Building will be connected to the existing water pipe that has been installed adjacent to the Buildings.

There is no sewage treatment plant at the border crossing facility. The drainage system will be designed in the same manner as the existing system and a septic tank will be provided for sewage wastewater from the Buildings.

(2) Air-conditioning and Ventilation System

According to the ASHRAE Fundamentals Handbook, the outdoor conditions for the design of air-conditioning units in Amman are as follows:

Summer DB 34°C, WB 21°C, mean daily range 14°C

Winter DB 2°C

Note: ASHRAE (American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc.) Fundamentals 1997, Amman

Considering the above climate conditions in Amman, an air-conditioning system will be designed for the X-ray monitor room, staff room and server room.

For the air conditioning system, a split type air-cooled heat pump air conditioner will be adopted for energy saving and ease of maintenance and operation.

The design temperatures of the respective rooms are shown below:

Table 2-2-7 Design Conditions for Air Conditioning System

Building	Room	Design Temperature	
		For Cooling	For Heating
Inspection Building	Monitoring Room	26℃	22℃
	Server Room	26℃	－
	Staff Room	26℃	22℃

The toilets in the X-ray inspection building will be equipped with mechanical ventilation to exhaust odor. The electrical room will be provided with mechanical ventilation.

(3) Fire Extinguisher

The X-ray inspection buildings will be furnished with fire extinguishers for fire protection.

b) Electrical System

(1) Power supply system

Currently, the Electricity Distribution Company (EDCO) manages and operates HV 11kV overhead distribution lines and 11kV/400V substations at the border crossing area. It was confirmed that the EDCO will design and install an 11kV/400V substation (pole mounted transformer and distribution board) for the X-ray inspection buildings. Both X-ray inspection

buildings will receive low voltage electric power, 400/230V 3 phase 4 wire from the distribution board installed by the EDCO. The main distribution panel will be installed at respective buildings to hook-up the electric power.

Two walk-through metal detectors will be installed at the existing building and new receptacles for each metal detector will be provided near the metal detector. Wiring of new receptacle circuits will be connected to the existing lighting distribution panel.

An X-ray inspection system for baggage will be installed at the existing building as well, and the existing receptacle will be able to be used to supply power to the above equipment. An isolator will be provided with the existing receptacle for maintenance.

(2) Back up power supply system

According to the EDCO that currently manages and operates the 11kV distribution system, the power supply of the border crossing area is quite stable and manageable. Therefore, emergency generators and an uninterrupted power supply system (UPS system) are not planed for the buildings. However, for major equipment, such as X-ray inspection machines for cargo and oil tankers and baggage, a voltage stabilizer and UPS will be provided in order to ensure safe shutdown of the equipment in case of an electric power breakdown. The stabilizer and UPS will be designed and supplied by an equipment supplier.

(3) Lighting system

Fluorescent lamps will be used for the inspection room and monitor room with due considerations for maintenance and running cost. The X-ray inspection area will be provided with a high-pressured sodium lamp, which is effective for high ceiling areas. The illumination level of each area will follow international standards or JIS (Japanese Industrial Standard). The illumination levels of the relevant rooms are as follows:

Table 2-2-8 Design Conditions for Lighting System

Room	Illumination Level
Monitor Room	300 Lux
X-ray Inspection Area	300 Lux
Maintenance Room	300 Lux
Staff Room	300 Lux
Electrical Room	100 Lux

A battery powered built-in “EXIT” light will be installed appropriately along escape routes.

(4) Telephone and Data Cabling System

No extension telephone system will be provided in the buildings since currently, staff commonly use mobile telephones. However, empty conduits for a telephone system and data cabling will be

provided for future use.

(5) CCTV (Closed Circuit TV) System for X-ray Inspection Building

The supplier of the X-ray inspection machine will design and install a CCTV system that is required only for the inspection machine operation. A general purpose CCTV system that has been installed at existing facilities will be installed by the implementing agency (Jordanian side).

(6) Fire Detection and Alarm System

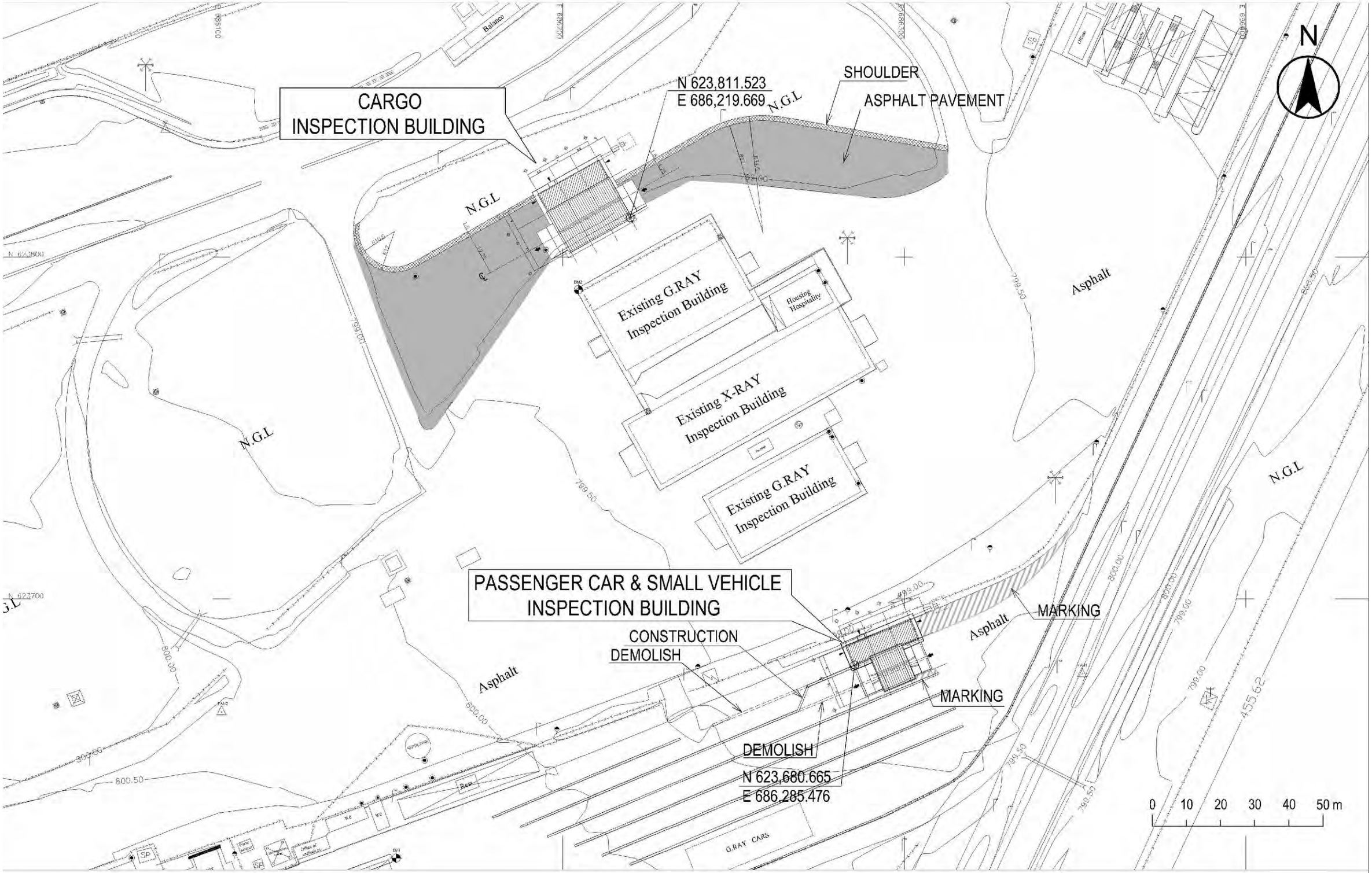
Fire detectors will be provided in every room for fire monitoring and to give evacuation instructions. A fire alarm control panel will be provided with spare contactors to transmit the fire signals to other buildings. The fire alarm systems will be in compliance with the local code.

(7) Lightning Protection System

A lightning protection system will be installed to protect the building structure from damage due to lightning strikes by intercepting such strikes, and safely passing their extremely high voltage currents to the ground. Lightning induces over-voltages in both power and telephone or data lines. A surge-protecting device is to be designed at incoming points of power and telephone or data (which should be installed by the Jordanian side).

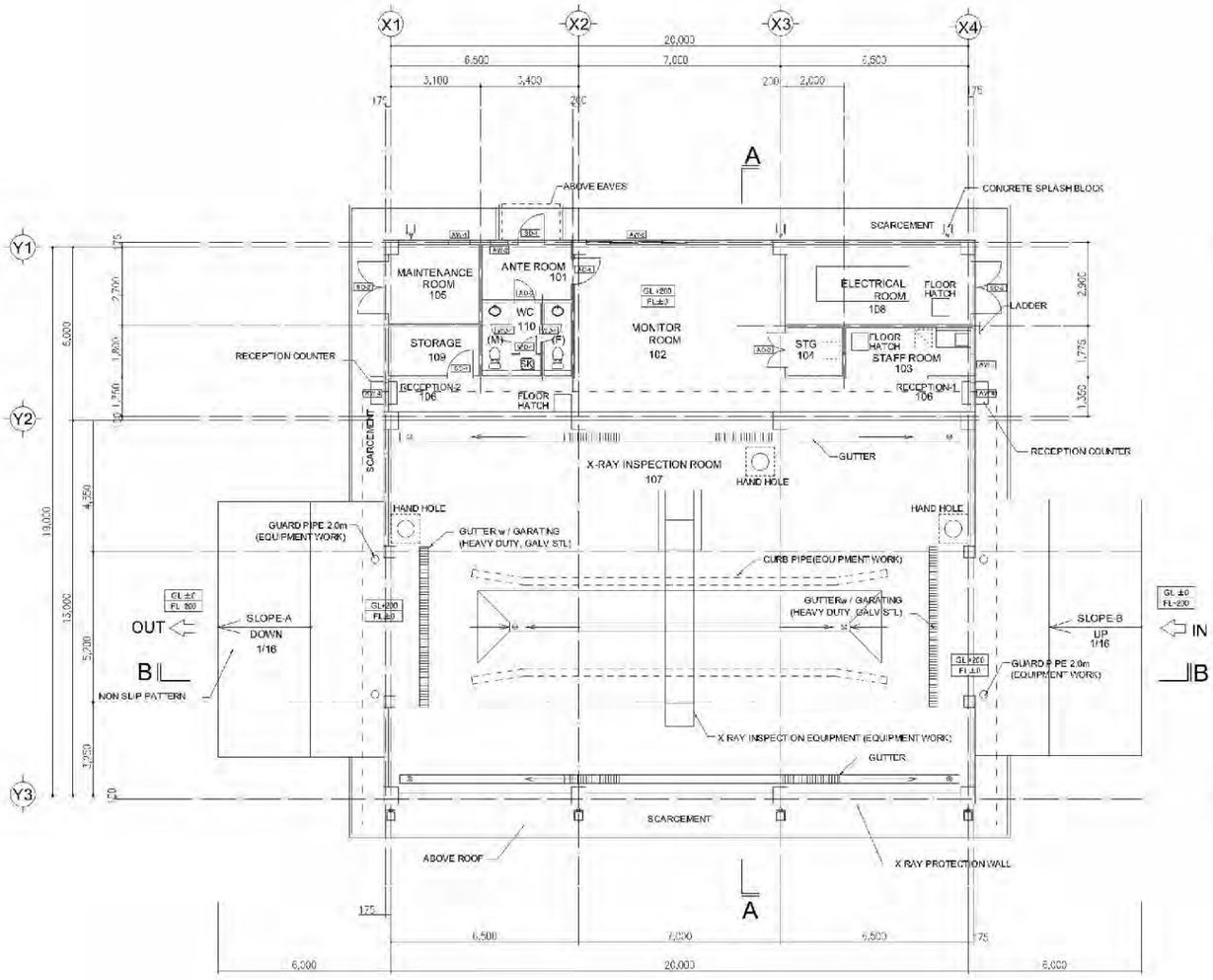
2-2-3 Outline Design Drawings

Dwg. No.	Drawing Title	
A – 01	Site Layout Plan	
A – 02	Cargo Inspection Building	Ground / Roof Floor Plan
A – 03	Cargo Inspection Building	Elevations
A – 04	Cargo Inspection Building	Sections
A – 05	Passenger Car & Small Vehicle Inspection Building	Ground / Roof Floor Plan
A – 06	Passenger Car & Small Vehicle Inspection Building	Elevations
A – 07	Passenger Car & Small Vehicle Inspection Building	Sections
A – 08	Layout of Screening Equipment in the Existing Inspection Building	

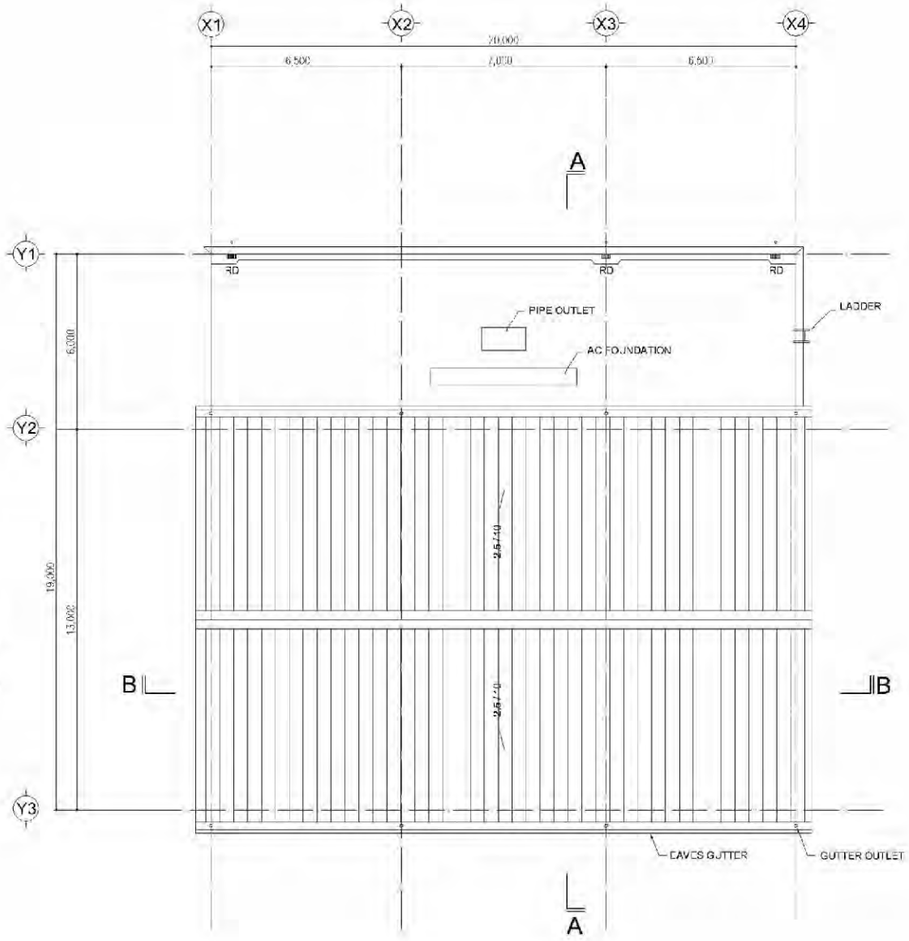


BUILDING LAYOUT PLAN

THE PROJECT FOR THE ENHANCEMENT OF BORDER SECURITY AT AL-KARAMAH BORDER CROSSING IN JORDAN	The indicated scale is applied to only A1 size sheet.	1/500 Dec. 2011	BUILDING LAYOUT PLAN	A-01
			Oriental Consultants Co.,LTD	



GROUND FLOOR PLAN



ROOF PLAN

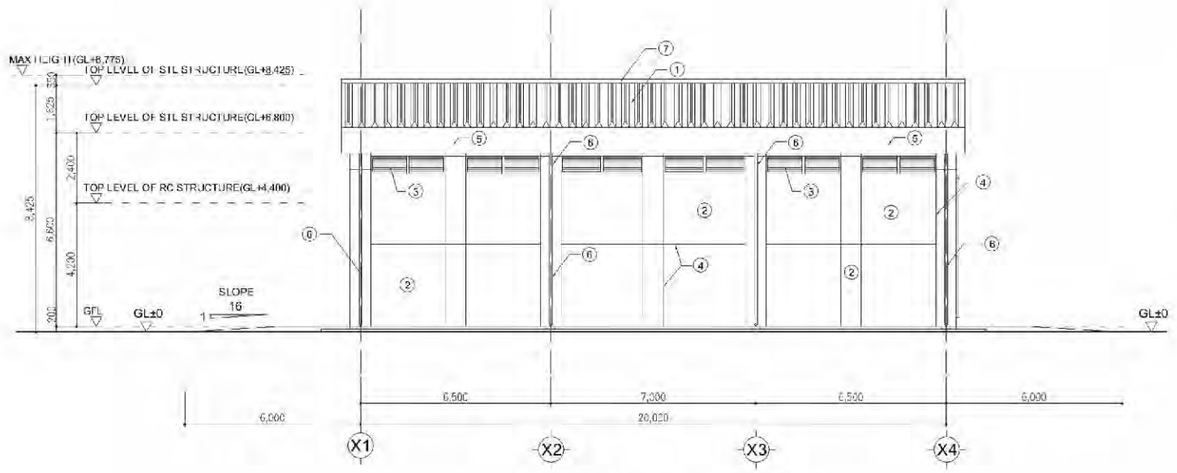
THE PROJECT
FOR THE ENHANCEMENT OF BORDER SECURITY
AT AL-KARAMAH BORDER CROSSING
IN JORDAN

The indicated scale is applied to only A1 size sheet.
The layout and size of each equipment and furniture is reference.

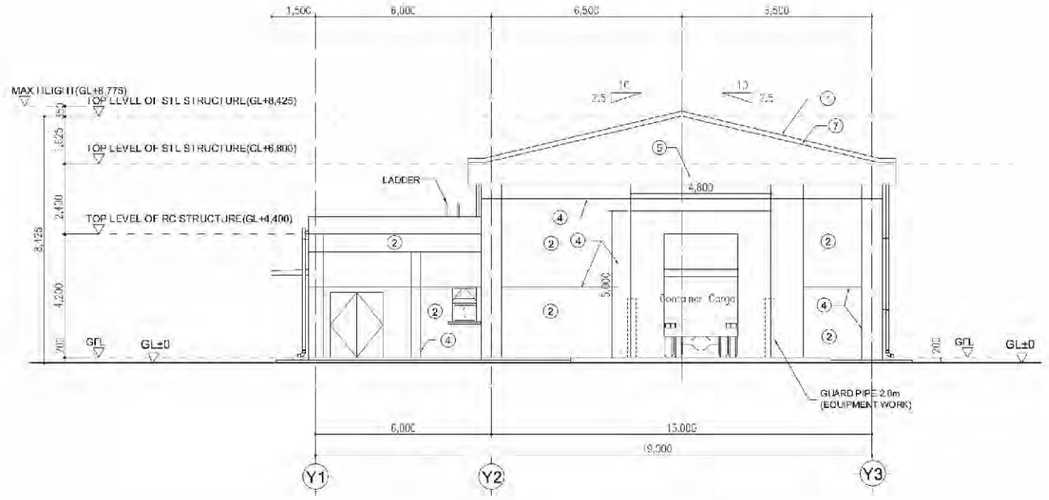
SCALE	1/100
DATE	Dec. 2011
DRAWING TITLE	CARGO INSPECTION BUILDING GROUND AND ROOF FLOOR PLAN
DRAWING NO.	A-02

Oriental Consultants Co.,LTD

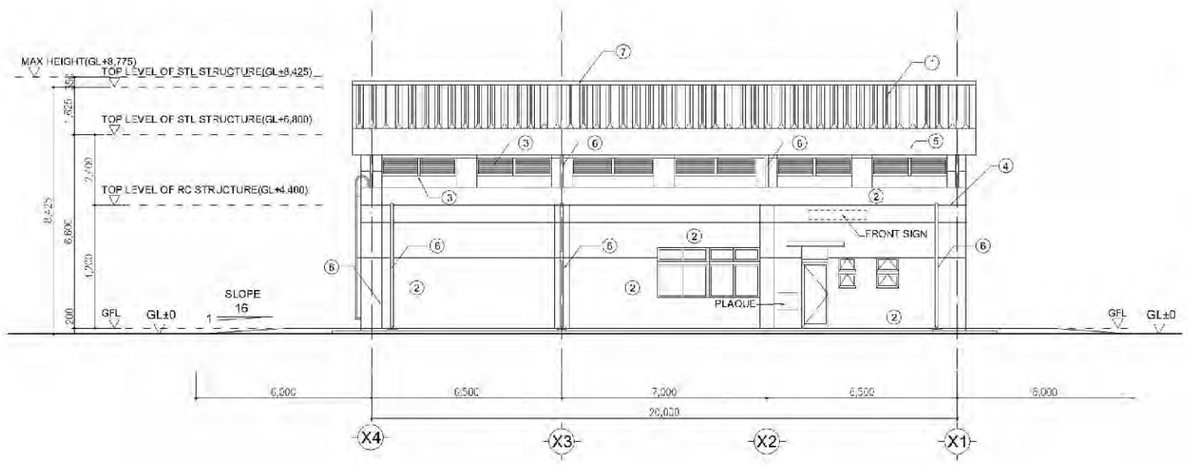
NO.	MATERIAL / FINISH
①	SANDWICHED CORRUGATED COLOR GALVANIZED STEEL PANEL
②	ACRYLIC TEXTURE COAT
③	ANODIZED ALUMINIUM LOUVER
④	FALSE JOINT (CAULKING)
⑤	WALL SANDWICHED COLOR GALVANIZED STEEL PANEL
⑥	RAIN LEADER : PVC 100Ø
⑦	COLOR GALVANIZED STEEL SHEET



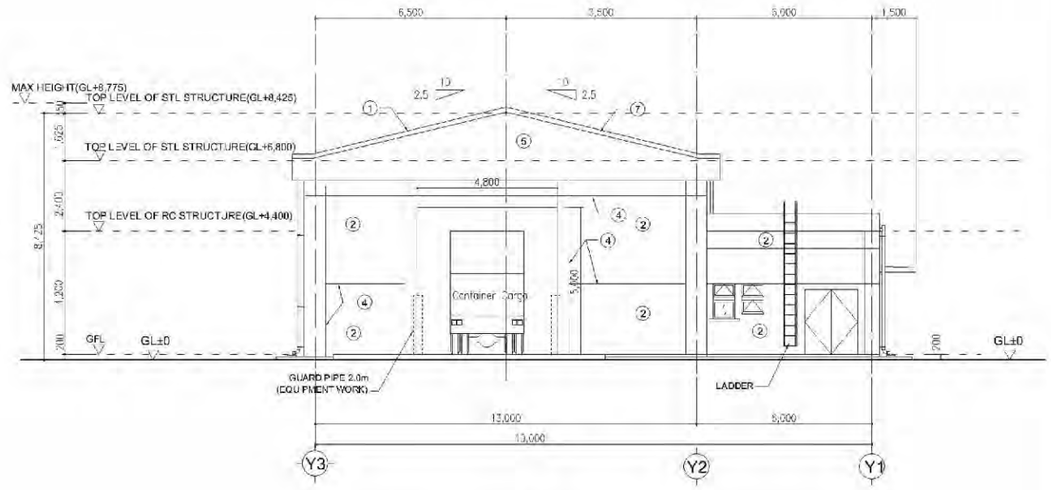
SOUTH SIDE ELEVATION



WEST SIDE ELEVATION

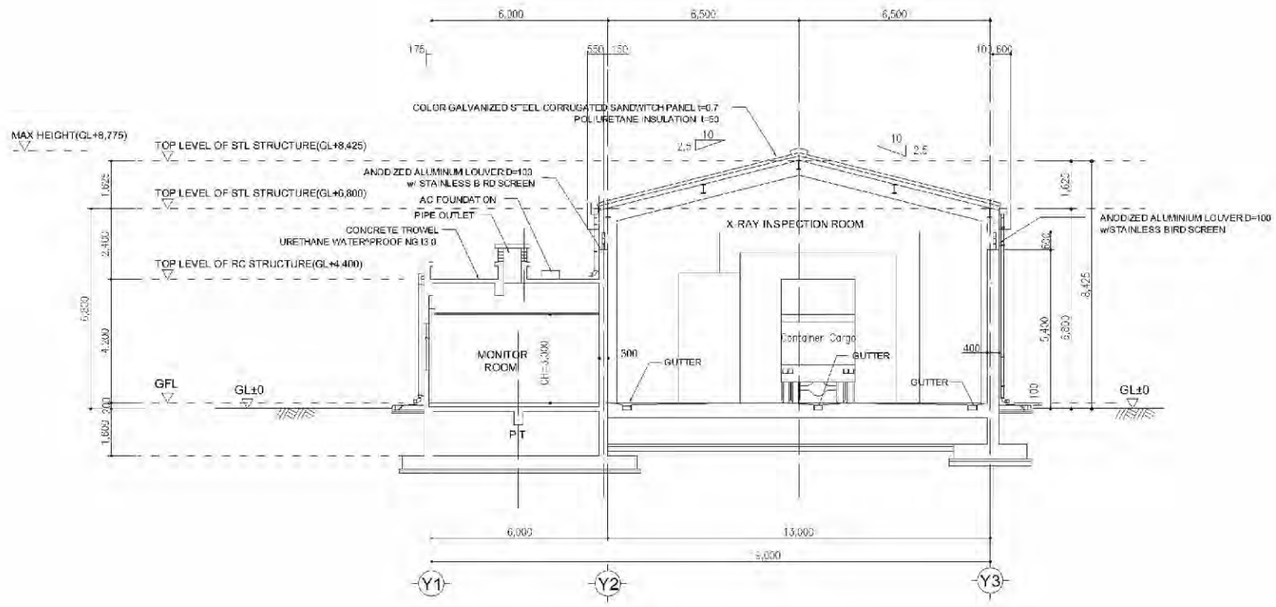


NORTH SIDE ELEVATION

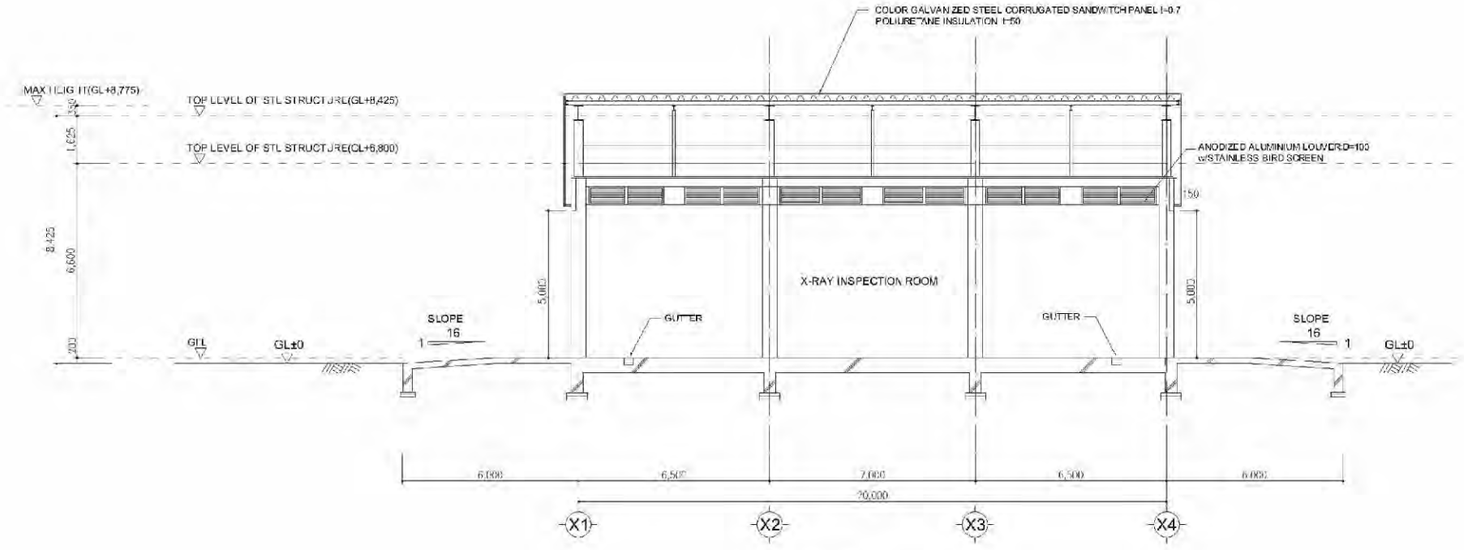


EAST SIDE ELEVATION

THE PROJECT FOR THE ENHANCEMENT OF BORDER SECURITY AT AL-KARAMAH BORDER CROSSING IN JORDAN	The indicated scale is applied to only A1 size sheet. The layout and size of each equipment and furniture is reference.	SCALE 1/100 DATE Dec. 2011	CARGO INSPECTION BUILDING ELEVATIONS A-03 Oriental Consultants Co.,LTD

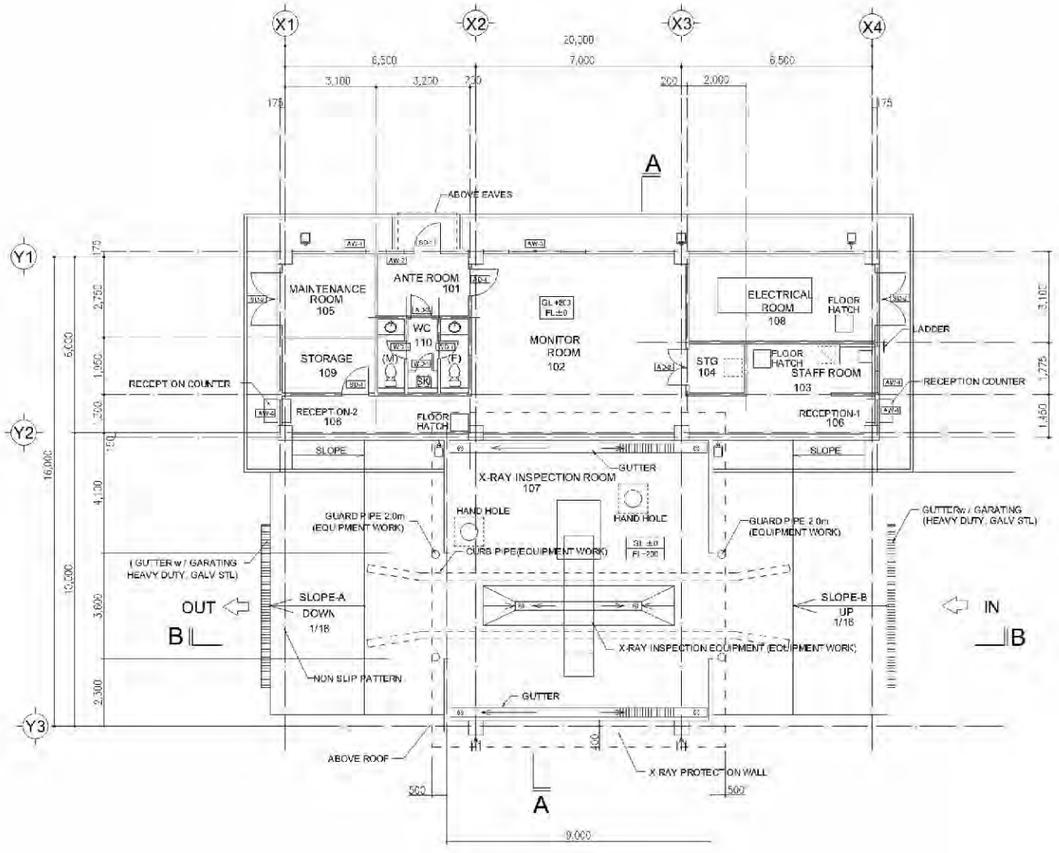


A - A SECTION

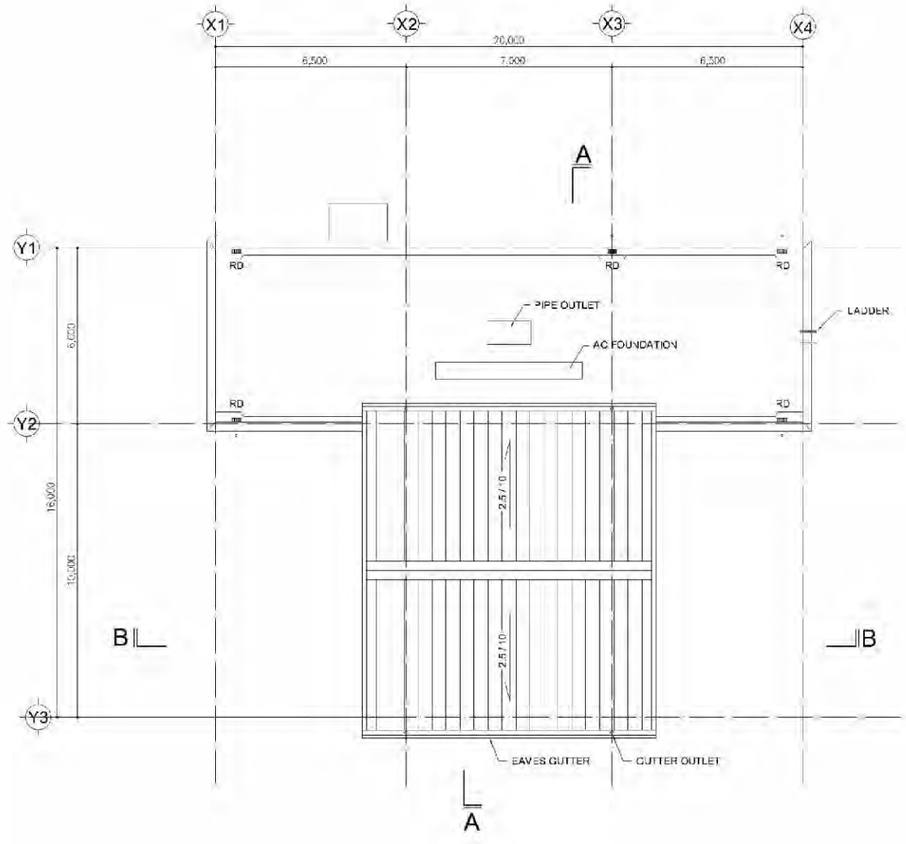


B - B SECTION

THE PROJECT FOR THE ENHANCEMENT OF BORDER SECURITY AT AL-KARAMAH BORDER CROSSING IN JORDAN	The indicated scale is applied to only A1 size sheet. The layout and size of each equipment and furniture is reference.	SCALE 1/100 DATE Dec. 2011	CARGO INSPECTION BUILDING SECTIONS A-04 Oriental Consultants Co.,LTD



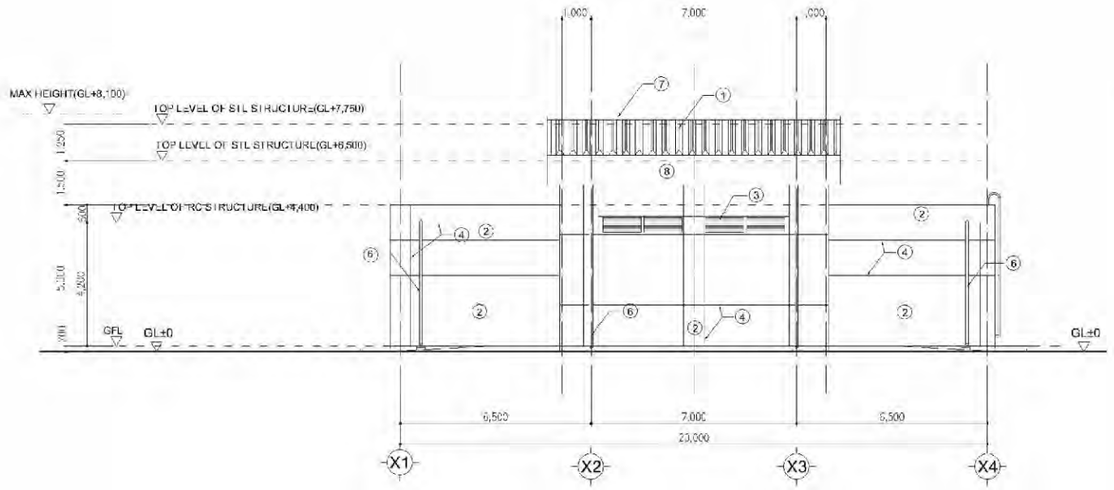
GROUND FLOOR PLAN



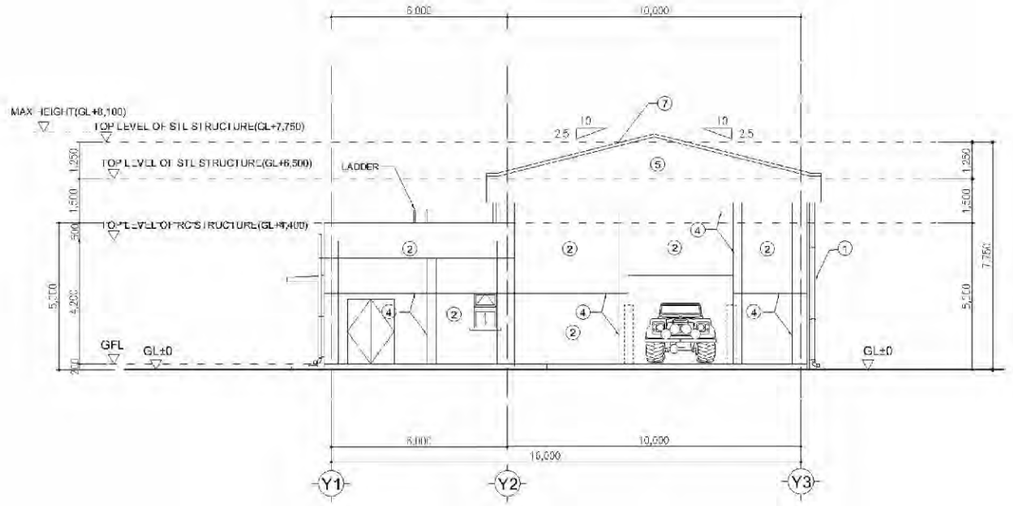
ROOF PLAN

PROJECT TITLE: THE PROJECT FOR THE ENHANCEMENT OF BORDER SECURITY AT AL-KARAMAH BORDER CROSSING IN JORDAN	GENERAL NOTE: The indicated scale is applied to only A1 size sheet. The layout and size of each equipment and furniture is reference.	SCALE: 1/100	SHEET TITLE: PASSENGER CAR & SMALL VEHICLE INSPECTION BUILDING GROUND AND ROOF FLOOR PLAN
		DATE: Dec. 2011	SHEET NO: A-05
		DRAWN BY	Oriental Consultants Co.,LTD
		CHECKED BY	

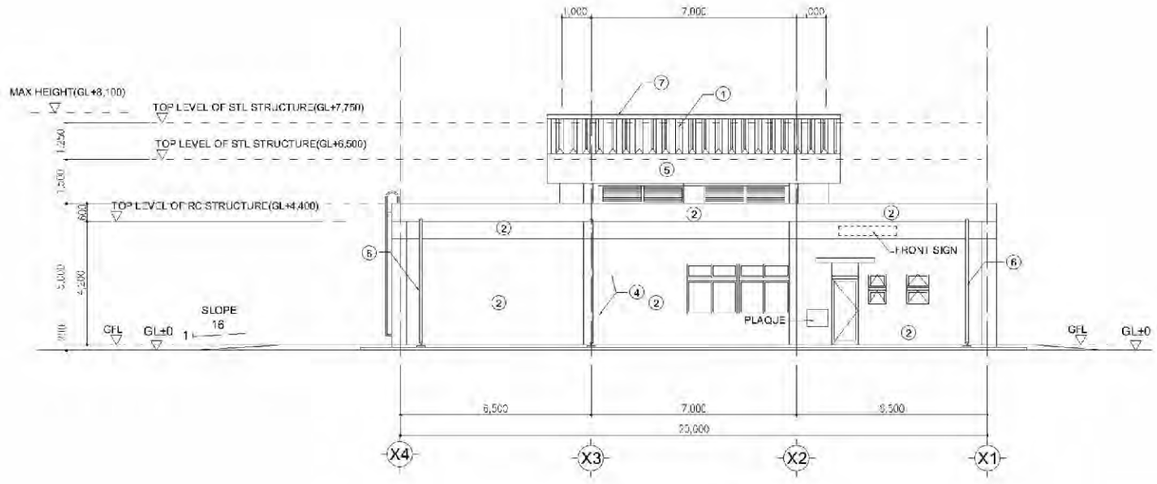
NO.	MATERIAL / FINISH
①	SANDWICHED CORRUGATED COLOR GALVANIZED STEEL PANEL
②	ACRYLIC TEXTURE COAT
③	ANODIZED ALUMINUM LOUVER
④	FALSE JOINT (CAULKING)
⑤	WALL SANDWICHED COLOR GALVANIZED STEEL PANEL
⑥	RAIN LEADER : PVC Φ100
⑦	COLOR GALVANIZED STEEL SHEET



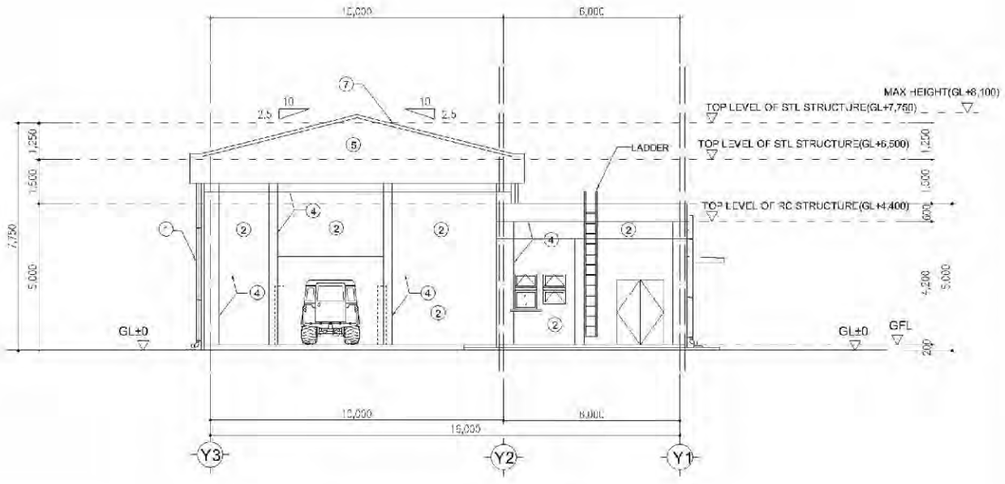
SOUTH SIDE ELEVATION



WEST SIDE ELEVATION



NORTH SIDE ELEVATION



EAST SIDE ELEVATION

THE PROJECT
FOR THE ENHANCEMENT OF BORDER SECURITY
AT AL-KARAMAH BORDER CROSSING
IN JORDAN

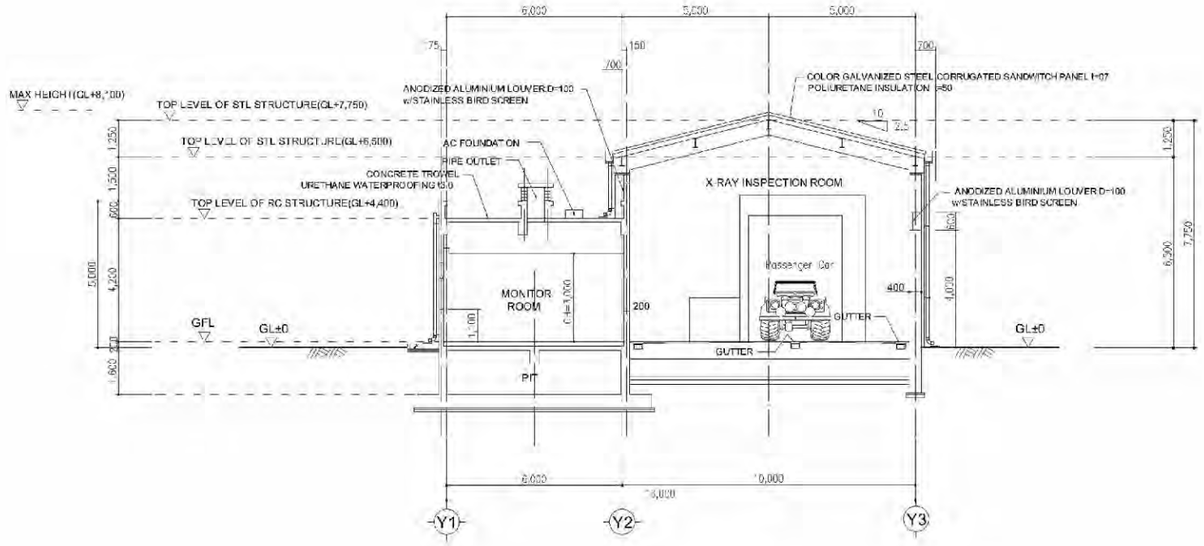
The indicated scale is applied to only A1 size sheet.
The layout and size of each equipment and furniture is reference.

SCALE 1/100
DATE Dec. 2011

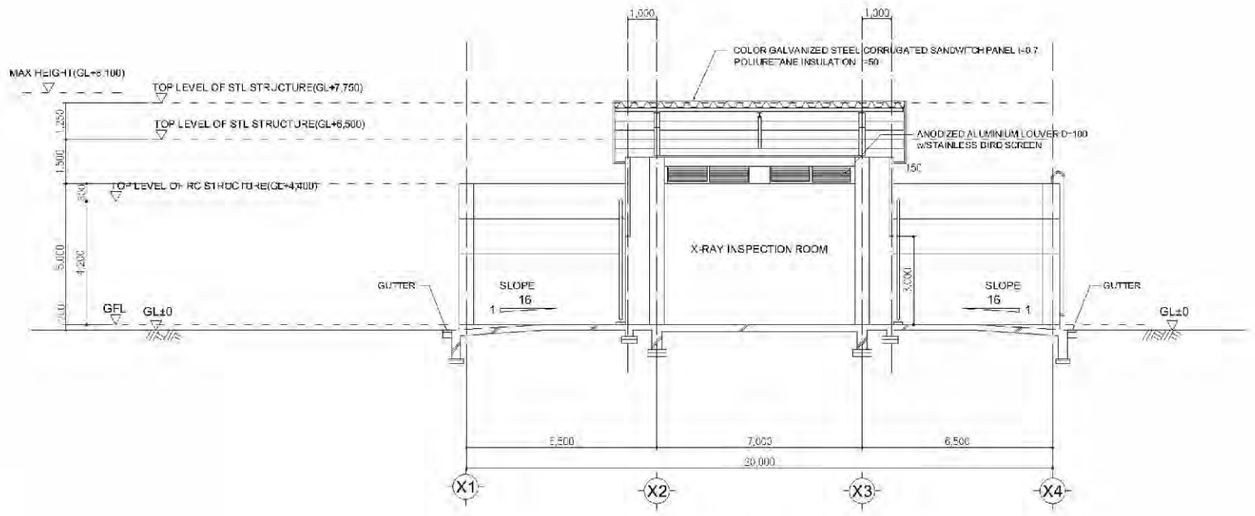
PASSENGER CAR & SMALL VEHICLE INSPECTION BUILDING ELEVATIONS

A-06

Oriental Consultants Co.,LTD

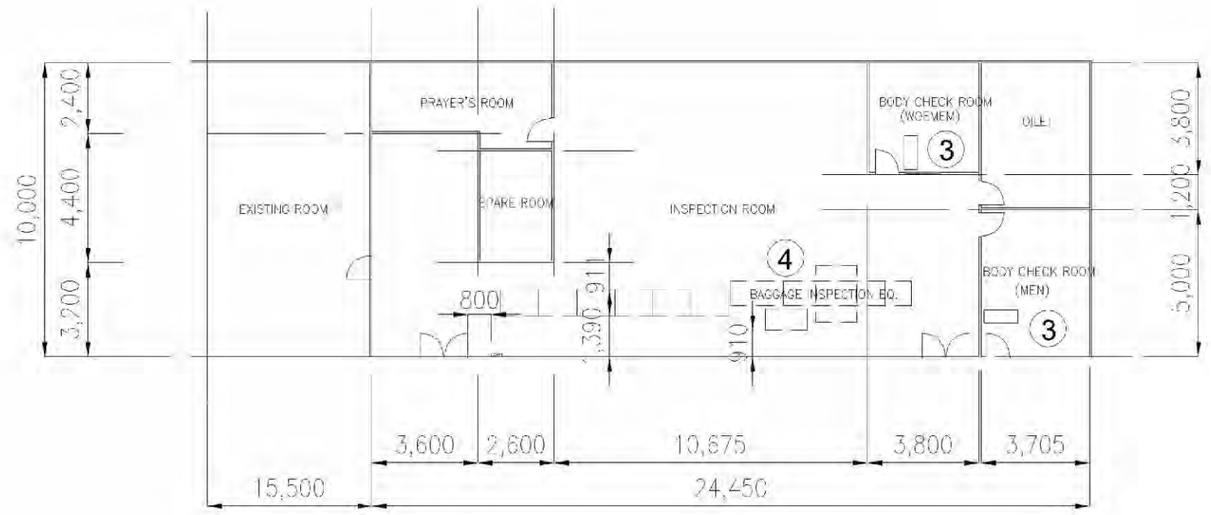


A - A SECTION



B - B SECTION

PROJECT TITLE: THE PROJECT FOR THE ENHANCEMENT OF BORDER SECURITY AT AL-KARAMAH BORDER CROSSING IN JORDAN	REMARKS: The indicated scale is applied to only A1 size sheet. The layout and size of each equipment and furniture is reference.	SCALE: 1/100 DATE: Dec. 2011	TITLE: PASSENGER CAR & SMALL VEHICLE INSPECTION BUILDING SECTIONS DRAWING NO.: A-07
		DESIGNED BY:	Oriental Consultants Co.,LTD



A LAYOUT OF SCREENING EQUIPMENT IN THE EXISTING INSPECTION BUILDING
A03 S=1/100

LEGEND

(3) Walk-through Metal Detector

(4) X-ray Screening Equipment

PROJECT TITLE: THE PROJECT FOR THE ENHANCEMENT OF BORDER SECURITY AT AL-KARAMAH BORDER CROSSING IN JORDAN	GENERAL NOTE: The indicated scale is applied to only A1 size sheet.	SCALE: 1/100; DATE: Nov. 2011	DRAWING TITLE: LAYOUT OF SCREENING EQUIPMENT IN THE EXISTING INSPECTION BUILDING; DRAWING NO.: A-08; DESIGNED BY: Oriental Consultants Co.,LTD

2-2-4 Implementation Plan

2-2-4-1 Implementation Policy

1) Equipment Procurement Policy

Four types of the security screening and customs inspection equipment to be procured for this Project: #1 Portal type X-ray Inspection Machine for Cargoes and Oil Tankers, #2 Portal type X-ray Inspection Machine for Passenger Cars and Other Small Vehicles, #3 Walk-through Metal Detector, and #4 X-ray Inspection System for Baggage, will be manufactured in neither Jordan nor Japan. They will therefore be procured from other countries. Moreover, the equipment, including the primary components such as the linear accelerators (X-ray generators), should be products manufactured by OECD Development Assistance Committee (DAC) signatories considering the sophisticated nature and requirements for a high level of functions, accuracy, and durability.

Equipment shall be selected in accordance with the specifications of the tender documents for ease of maintenance and after-sales services for the supply of spare parts and support in case of breakdown.

Immediate deployment of technicians from the manufacturers is required for technical services during installation, adjustment, commissioning, and training for operation of equipment. Equipment shall be installed under the supervision of manufacturers' engineers in cooperation with local subcontractors.

2) Construction Policy

There are many contractors in Jordan. Of these, Rank-A contractors have quite high construction technology. They can accomplish the construction to be provided by this Project with proper quality, even in consideration of the difficulty and scale.

Therefore, the construction shall be carried out principally by a superior Jordanian contractor under supervision by the Japanese Prime Supplier.

Materials for construction, i.e. cement, aggregate for concrete, reinforcing bars, timber for molds, material for perfection, equipment for architectural facilities, etc. shall be procured in Jordan. These materials are produced in Jordan, or imported but commonly available in local market, they are regarded as local products that satisfy contract conditions under Japan's Grant Aid.

Regarding safety during construction, there are no high risks associated with the construction site located in the administrated border facility.

For relief action in case of accident or disaster, authorized personnel for the construction can use the Dispensary in the customhouse, military facilities nearby, and the general hospital in Al

Ruwayshid City, which is located 80 km from the Project site, depending on need. The hospital is equipped with a lighted helipad. In case of emergency, a patient can be transferred to a hospital in Amman City within one and half hours of a mobilization request.

2-2-4-2 Implementation Conditions

1) Adjustment of Design

The portal components for both #1 X-ray Inspection Machine for Cargoes and Oil Tankers and #2 X-ray Inspection Machine for Passenger Cars and Other Small Vehicles, weighs around 20 tons. The shape and scale of the basement structure varies among manufactures. The manufacturer has not yet been specified at the design stage and thus the drawings shall be adjusted accordingly after tender and contract.

2) Adjustment of Installation Schedule

The portal structure part of #1 X-ray Inspection Machine for Cargoes and Oil Tankers and #2 X-ray Inspection Machine for Passenger Cars and Other Small Vehicles is very large. Thus, Inspection Machines shall be carried into and installed inside the building when the building is almost completed except for the opening to carry in the machines. After that, the building will be completed by closing this opening. Therefore, the construction process shall be coordinated among contractors in advance and shall confirm any duplications or omissions in the scope of works carefully.

3) Factory Acceptance Test in the Presence of Client

Though the equipment will be procured from other countries, the expense of client presence for the Factory Acceptance Test (FAT) shall be excluded from the object of the Grant Aid in consideration of the Aid requirements. The Prime Suppler shall assume full responsibility consistently through manufacturing, transportation, and installation based on the contract and shall finally do a Site Acceptance Test (SAT) and deliver the equipment after completion of installation and adjustment.

However, as the Client, Jordanian Customs strongly hopes to witness the Test. In this Project, Jordanian Customs will cover the cost of their team who will attend the Factory Acceptance Test, if deemed necessary. The manufacturer shall comply with the request upon the condition above. This arrangement shall be noted in the contract terms.

4) Proposal for Maintenance Services

Jordanian Customs will need to understand about future maintenance services, normally provided by the manufacturer or his subsidiaries, after the warranty period. Cost and technical proposal for the maintenance services for two cases namely;

- Case-1: Including spare parts

- Case-2: Without spare parts

shall be submitted together with the tender for Japan's Grant Aid, although the cost will not be covered by Japan's Grant Aid.

2-2-4-3 Scope of Works

The demarcation for procurement of equipment and related construction is shown in Table 2-2-9. Transportation to the site and installation of equipment are principally the scope of equipment supply. Installation work will be carefully executed and strictly comply to the specifications and work schedule.

Table 2-2-9 Demarcation of Works

No	Object	Item	Japan's Grant Aid	Recipient Side
1	Site Clearance	Grading	(None)	
		Pavement	○	
2	Water Supply	T-shaped Separation and Valve	○	
		Piping from T-shaped Separation to Facility	○	
3	Power Supply	Payment for Electrical Power Distribution Company (EDCO)		○
		Connect to Existing 11 kV Distribution Network		○
		11kV/400V Transformer (including Utility Pole), Low Voltage Main Panel, kWh Meter, Processing for Cable-end, Earthworks, Registration Fee		○
		Cabling from Low Voltage Main Panel to Facility	○	
4	Telephone and Communication	Measure for Telephone and Communication		○
5	CCTV	Measure for CCTV System		○
6	Sewage Water	Piping from Facility to Septic Tank	○	
		Septic Tank	○	
7	Underground Utilities	CCTV, Data Cable, etc. and Clearance of Existing Utilities		○
8	Existing X-ray Inspection Device	Clearance of Existing X-ray Screening Equipment for Baggage		○
9	Application for Construction Permits			○

2-2-4-4 Consultant Supervision

After Exchange of Notes (E/N) between the Japanese and Jordanian governments, and Grant Agreement (G/A), an agreement will be concluded for the provision of consulting for the detailed design and supervision services in connection with the implementation of the Project. The consulting services will commence after the verification of JICA in accordance with the procedures for Japan's Grant Aid assistance. The major services to be provided by the consultant are listed as follows:

1) Detailed Design

Based on the results of this Preparatory Survey, Exchange of Notes, and Grant Agreementw, the consultant will carry out the detailed design for the facilities and equipment under the scope of works of the Japanese side. The scope of works will include the preparation of tender documents including drawings and specifications for the approval of the Client. The estimated Project cost will be prepared based on the final drawings.

2) Tender Assistance

The consultant will assist the Client in preparing the evaluation criteria for tenders including the method and process for tendering based on the Grant Aid Guidelines. The consultant will also assist the Client in the preparation of documents listed hereunder and will be assisting the Client in the evaluation of tenders and other services described below.

- Tender announcement
- Delivery of tender documents
- Opening of Tender
- Tender evaluation
- Assistance in negotiation and signing of the contract

3) Procurement Supervision

The consultant will be involved in the supervision of the works to ensure compliance of procured equipment with specification requirements, quality of works, and implementation schedule among other activities.

Two resident procurement supervision engineers will be deployed, for supervision of equipment installation and supervision of final commissioning/hand-over for operation, respectively. Also, an equipment planning engineer will be deployed for the checking and approval of equipment fabrication drawings. For the supervision of building works, one resident architect will be deployed for the duration of the building works.

The construction of buildings and the installation of equipment will be pursued simultaneously

for several months. Supervision of the interfacing and coordination of building contractors and equipment supplier are essential for the smooth implementation of works.

2-2-4-5 Quality Control Plan

1) Quality of Equipment

Manufacturers that can produce equipment to be required in the Project are all first-class companies and thus they will manage the quality control of their products themselves. Therefore, they shall perform the final Site Acceptance Test (SAT) and deliver the equipment after completion of installation and adjustment.

2) Quality of Construction

The buildings to house equipment shall be constructed by a Jordanian contractor; therefore, the quality level shall be based on Jordanian standards. The Jordan National Building Code was issued in 1993 and is composed of 32 codes. The code has been edited based on worldwide standards, i.e. BSI, ACI, ASTM, DIN, and ASHRAE, etc.

There are no concrete factories or ironworks near the Project site so the contractor shall produce concrete and iron materials at the Project site. Attention should be paid to the quality control of the following works:

a) Reinforcing Bar Works

The Consultant will review the mill certificates for which the contractor or a private authorized testing institute shall provide proof that the materials comply with the specifications. Without notice, the Consultant will check the tensile strength of the reinforcing bars in order to test the quality for compliance with the specifications.

b) Concrete Works

1. Cement: Based on the material standard of BSI or ASTM
2. Aggregate (Granularity, Physicality, etc.): Based on the testing standards of ASTM
3. Concrete (Manufacture, Examination, Construction, etc.): Based on BSI 5328 “Concrete.” The sample for compressive strength examination shall be cube shaped.

c) Utility Works

The Consultant shall confirm the specification of materials to ensure that they are based on the “Jordan National Building Code” at the stage of approval, and shall confirm performance of each system by proper examination methods.

d) Record of Works

The Contractor shall direct the subcontractor to submit required documents based on the contract, i.e. Construction Plan, Implementation Schedule, and Drawings, etc., to contribute to quality control of the construction, and shall document the results.

2-2-4-6 Procurement Plan

1) Supplier of Equipment

Four types of security screening and customs inspection equipment for the Project will be procured from countries other than Jordan and Japan since no products manufactured in either country comply with the full requirements of the Project.

The procured equipment shall be provided with a guaranty of one year, technical guidance for operation and maintenance, and the manufacturer shall have a representative branch office in Jordan or in neighboring countries to ensure prompt servicing in case of malfunction to minimize disruption of the border security system at the Al-Karamah border crossing.

Furthermore, it is inevitable to store the spare parts at all times in a suitable location for prompt fixing. Spare parts for two years will be provided by the Project in accordance with the request of the Jordanian side during the outline design study. After the third year, the Jordanian side should prepare the budget for the purchase of necessary spare parts.

Most of the construction materials will be imported through agents. Portland cement and reinforcing bars are available in Jordan. Reinforcing bars produced in Jordan shall comply with Jordanian standards. Steel materials for structural frames will be imported mainly from Saudi Arabia, China and Korea. Products in compliance with JIS are available. Products from Saudi Arabia are generally good in quality with high reliability. Other imported finishing materials are locally available. The countries of origin of equipment and materials are shown in Table 2-2-10.

Table 2-2-10 Equipment Country of Origin

Equipment / Materials	Country of Origin			Remarks
	Jordan	Japan	Others	
Portal type X-ray inspection machine for cargoes and oil tankers			○	US, UK, France
Portal type X-ray inspection machine for passenger cars and other small vehicles			○	US, UK, France
Walk-through metal detector			○	Italy, Singapore
X-ray inspection system for baggage			○	US, Germany, Singapore
Construction materials for building	○			

2) Transportation Plan

All equipment will be procured from other countries, i.e. Europe and the U.S. The equipment will be transferred by ship from the production country to Jordan, through the port of entry at Aqaba Port, finally transferred by truck to the Project site at the Al-Karamah Border Customhouse. It takes one month to ship from the origin country where the equipment is manufactured to Aqaba Port though the shipping service to Aqaba Port operates once a week. It takes one additional week to go through the port of entry. Most of the material for construction of buildings shall be procured in Amman City.

A highway with 2 lanes in each direction is available from Aqaba Port to Amman City. The route is 350 km long and takes 6 hours by large truck. From Amman City to the Al-Karamah Border Customhouse, there is a highway with 1 lane in each direction. The route is 360 km long and takes 8 hours by large truck.

These costs for transportation by ship and truck are included in Equipment Procurement Cost and Construction Cost in the Grant Aid.

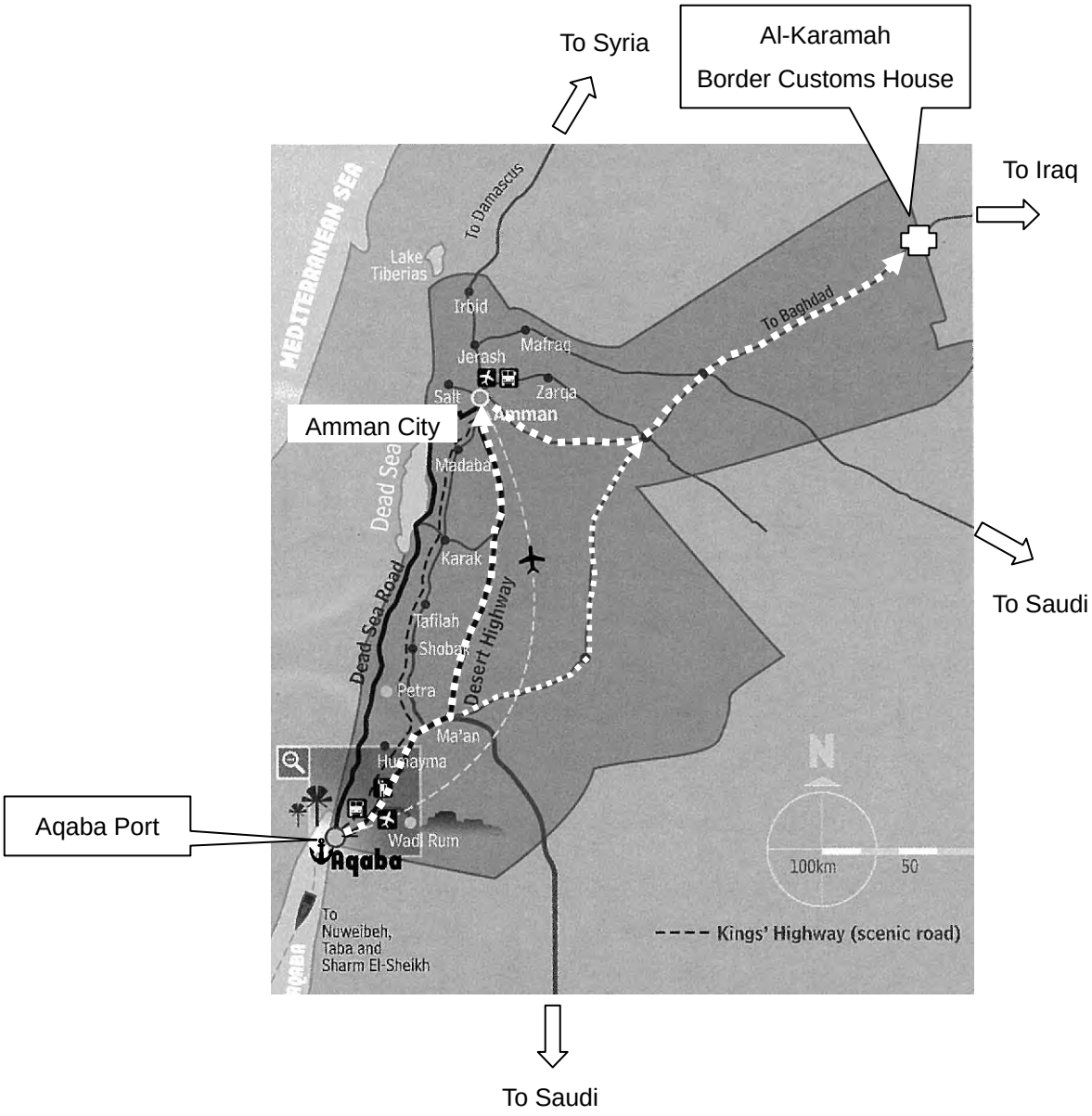


Figure 2-2-8　Route by Land from Aqaba Port to Al-Karamah Border Customhouse

2-2-4-7 Operational Guidance Plan

1) Required Skills and Techniques

Jordanian Customs needs to acquire the following skills and technology to be able to operate and maintain the Japan Grant equipment (hardware).

- Usage and manipulation of newly introduced equipment
- Skills for reading, analyzing, and detecting scanned images by high energy X-ray
- Daily check and maintenance practices of newly introduced equipment
- Preventive maintenance for newly introduced equipment
- Planning and action of seamless transition from present security screening and customs inspection system to new system using newly introduced equipment
- Planning and action of overall operation and maintenance including both existing and new equipment

2) Combination of Education and Training Resource

Self-efforts of Jordan (Customs Training Center) and Japanese Grant Aid (training by equipment manufacturer and soft components by Consultant) shall be harmonized appropriately. The plan is shown in Table 2-2-11.

- Skill for equipment (operation skill and daily maintenance service) shall be taught by manufacturer.
- Total management skill (maintenance plan for long-term) shall be taught through soft components by Consultant.
- Special skill (skill for high level X-ray inspection device) shall be taught by Customhouse Training Center and manufacturer.

The above activities shall be executed in the order shown in Table 2-2-12 for the following reasons:

- Training by manufacturer shall be executed with introduced effective equipment after completion of installation, adjustment and workout.
- Operation training program by manufacturer shall be executed taking the schedule of soft components into consideration.
- For improvement of graphic analysis skill, training by manufacturer shall be executed after completion of the training program by Customhouse Training Center.

Table 2-2-11 Training Plan for

Required Skills and Technology	Trainee	
	Target Group	Pers.
A. Usage and Manipulation of Newly Introduced Equipment		
A.1 Usage and Manipulation of Newly Introduced Equipment		
A.1-1 No. 1: X-ray Inspection Machine for Trucks & Oil Tankers	System Operators	20
A.1-2 No..2: X-ray Inspection Machine for Cars & Small Vehicles	System Operators	20
A.1-3 No. 3. Walk Through Metal Detectors	System Operators	6
A.1-4 No. 4: X-ray Screening Equipment for Baggage	System Operators	6
A.2 Radiation Safety of High Energy X-ray	Management level planners, maintenance engineers, operators	10 pers. x 2 times
B. Planning for Best Utilization of Newly Introduced Equipment		
B. 1 User-level Maintenance of Newly Introduced Equipment		
B.1-1 No. 1: X-ray Inspection Machine for Trucks & Oil Tankers	System Operators	20
B.1-2 No..2: X-ray Inspection Machine for Cars & Small Vehicles	System Operators	20
B.1-3 No. 3. Walk Through Metal Detectors	System Operators	6
B.1-4 No. 4: X-ray Screening Equipment for Baggage	System Operators	6
B.2 Planning of Overall Operation and Maintenance of Equipment Knowledge acquisition of newly introduced equipment Maintenance practices incl. trouble prevention and countermeasures Preparation of checklist / chain of command Preparation of preventive maintenance plan	Management level planners, maintenance engineers, operators	10
B.3 Planning of Overall Management of Equipment Knowledge acquisition of actual and example sites Planning of seamless transition from present to new security inspection systems Planning of human resources Planning of inspection flow improvement	Management level planners	10
C. Reading, Analyzing, and Detecting in Scanned Image by High Energy X-ray		
C.1 Theory Mainly in-class lectures	Image Analyst	30
C.2 Practical (independent to particular model of equipment) Exercise using simulator and image data base	Image Analyst	30
C.3 Practices (for newly introduced equipment; using PC software)		
C.3-1 No. 1: X-ray Inspection Machine for Trucks & Oil Tankers	Image Analyst	20
C.3-2 No..2: X-ray Inspection Machine for Cars & Small Vehicles	Image Analyst	20
C.3-3 No. 4: X-ray Screening Equipment for Baggage	Image Analyst	20

Operations and Maintenance

Size of Activity		Resource
Venue	Number of Days	
Al-Karamah Site	5	Manufacturer's Initial Operation Training (1)
Al-Karamah Site	5	Manufacturer's Initial Operation Training (2)
Al-Karamah Site	1	Manufacturer's Initial Operation Training (3)
Al-Karamah Site	1	Manufacturer's Initial Operation Training (4)
Rental Room in Amman	2	Soft Component Program (3)
Al-Karamah Site	5	Manufacturer's Maintenance Training (1)
Al-Karamah Site	5	Manufacturer's Maintenance Training (2)
Al-Karamah Site	1	Manufacturer's Maintenance Training (3)
Al-Karamah Site	1	Manufacturer's Maintenance Training (4)
	7 days in total	Soft Component Program (2)
Manufacturer's Factory Al-Karamah Site	Factory 3 days, Site 2 days, incl. travel	
Rental Room in Amman	2	
	7 days in total	Soft Component Program (1)
Al-Karamah Site Queen Alia International	Site 3 days, QAIA 1 day, incl. travel	
Rental Room in Amman	3	
Customs Training Center	(under development)	Customs Training Center's own program
Customs Training Center	(under development)	Customs Training Center's own program
Al-Karamah Site	10	Manufacturer's Image Analysis Training (1)
Al-Karamah Site	10	Manufacturer's Image Analysis Training (2)
Al-Karamah Site	1	Manufacturer's Image Analysis Training (3)

Table 2-2-12 Sequence of Training Activities

Training Activities	Sequence
Installation of Equipment	
Image Analysis Course by CustomsTraining Center	
Manufacturer's Training: Image Analysis	
Manufacturer's Training: Initial Operation	
Manufacturer's Training: Maintenance	
Soft Component (Operational Guildance)	

3) Operation Program by Manufacturer

The program shall be provided in the specifications of tender documents along the content shown in Table 2-2-11 and Table 2-2-12. The program shall include not only instruction for initial operation and management but also instruction for graphic analysis.

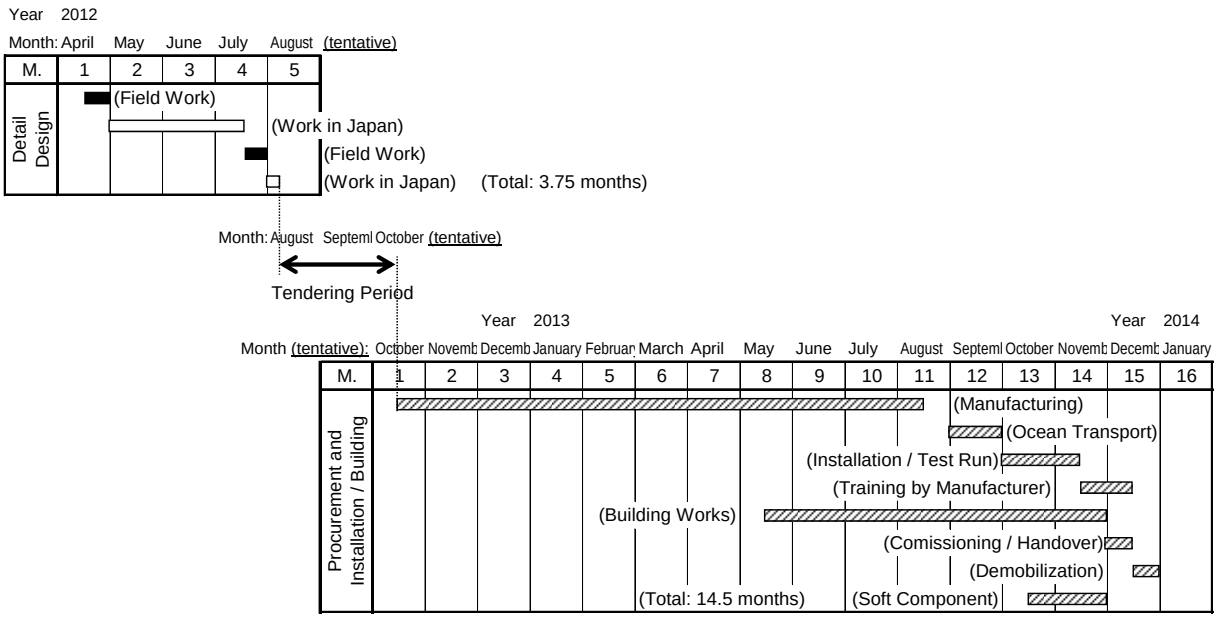
2-2-4-8 Soft Component (Technical Assistance) Plan

Soft components are studied based on Table 2-2-11 and Table 2-2-12 and indicated in Appendix 5. “Soft Component Plan”.

2-2-4-9 Implementation Schedule

The implementation schedule of the Project is shown in Table 2-2-13.

Table 2-2-13 Implementation Schedule



2-3 Obligations of Recipient Country

Upon implementation of the Project with Grant Aid from Japan, the Jordanian side shall be responsible for those items indicated in Subsection 2-2-4-3, "Scope of Works". Both the governments of Jordan and Japan have confirmed to take the following measures:

Table 2-3-1 Outline of Recipient Country Obligations

Timing	Obligations
1. At commencement of Consulting Services	Facilitation of project activities
	Banking Arrangements
	Authorization to Pay for agreement with consultant
2. Before completion of Detailed Design	Application and acquisition of construction permit
3. At commencement of Supply Contract	Authorization to Pay for contract with supplier
	Process for tax exemption
4. Before commencement of construction works	Clearance of underground CCTV and data cables at proposed construction sites for the X-ray inspection buildings
5. Before installation work of equipment	Application and payment to Electrical Distribution Company（EDCO）for electric power connection
	Removal of existing X-ray machine
6. Before manufacturer's training	Personnel arrangement required for operation and maintenance of newly introduced equipment
	Image analyst's training by Customs Training Center for newly deployed operators

2-3-1 Undertakings to be Borne by Jordanian Side

1) Tax Exemption

The Jordanian side will exempt customs duties, domestic taxes and other charges for Japanese nationals entering the country to procure equipment and materials based on the procurement contract of the Project and to implement various activities. The Jordanian side will also facilitate customs clearance of procured equipment and materials and exempt taxes for them.

2) Facilitation of Project Activities

To accord Japanese nationals, whose services may be required in connection with the supply of the products and the services under the verified contract, such conveniences as may be necessary for their entry into Jordan and stay therein for the performance of their work will be provided.

3) Banking Arrangements (B/A), Authorization to Pay (A/P)

The Jordanian side will open a bank account in its name at a Japanese bank and issue Authorization to Pay (A/P) to the bank. Based on the Banking Arrangement (B/A), the Jordanian side should bear an advising commission of an Authorization to Pay and payment commission to the bank.

4) Electrical Power Connection

Application documents for Electrical Power Distribution Company (EDCO). Payment for costs related to low voltage electric hook-up.

5) Construction Permit

Application documents for construction permission.

2-3-2 Works by Jordanian Side

1) Data Cabling

After completion of the Project, the Jordanian side will design and install data cabling / ports as needed, including date port for remote consoles.

2) Internal Phones

After completion of the Project, the Jordanian side will provide internal phones by using existing PABX (Private Automatic Branch Exchange), if necessary.

3) CCTV System

After completion of the Project, the Jordanian side will provide an additional CCTV system as needed.

4) Clearance of Underground Facilities

All underground facilities such as CCTV and data cabling in the Project site will be cleared.

5) Removal of Existing X-ray Machine for Passenger Baggage

The existing X-ray machine will be removed for replacement.

2-4 Project Operation Plan

2-4-1 Human Resources Required for Operation and Maintenance

The department in Jordanian Customs implementing the Project is the Telecommunications and Electronic Control Directorate in the head office and the Al-Karamah Border Customs House at the Project site. Equipment to be procured by the Project will follow the present schedule and is expected to operate on a 24-hour basis every day throughout the year. The human resources required for operation and maintenance are 24 people for operator positions and 2 people as engineers as shown in below. The Telecommunications and Electronic Control Directorate has already started to carry out personnel arrangement in Jordanian Customs to procure the required human resources. The document submitted from Telecommunications and Electronic Control Directorate to the higher authorities, "Annual Human Resources Analysis (the original is in Arabic)," is included in Appendix 7 with the tentative translation into English.

Table 2-4-1 Manpower for New X-ray Machines

Item	Additional Manpower
For #1 Cargo Trucks	Operators: 3 men / shift x 2 shifts = 6 men
For #2 Passenger Cars	Operators: 3 men / group x 6 groups = 18 men Engineers: 2 men
For #3 Metal Detectors	No additional (Present personnel can manage new equipment.)
For #4 Baggage X-ray	No additional (Present personnel can manage new equipment.)

*One shift = 8 hours, 3 shift groups x 2 = 6 groups, Alternate work at home and site

2-4-2 Education and Training of the Human Resources

Education and training of the human resources are to be carried out according to Subsection 2-2-4-7, "Operational Guidance Plan" through both Self-efforts of Jordan (Customs Training Center) and Japanese Grant Aid (training by equipment manufacturing company and soft components by Consultants) appropriately.

2-5 Project Cost Estimation

2-5-1 Initial Cost Estimation

The estimated initial Project's cost to be borne by Japan is shown below. This cost estimate is provisional and will be further examined by the Government of Japan for approval of the Grant.

1) Cost to be Borne by Japan

Total Cost: approx. 542 Million Yen

Item		Cost in Million Yen
Equipment Procurement	X-ray inspection machine for Cargoes and oil tankers X-ray inspection machine for passenger cars and other small vehicles Walk-through metal detector X-ray inspection system for baggage A building to house an X-ray inspection machine for cargoes and oil tankers A building to house an X-ray inspection machine for passenger cars and other small vehicles	486
Consulting Services for Detailed Design, Tendering Assistance, and Procurement Supervision Consulting Services for Soft Component		56

2) Cost to be Borne by the Recipient Country

The tabulation hereunder shows the rough estimated cost to be borne by the Jordanian side. The amount is less than 0.1% of the annual budget of Jordanian Customs; thus, it can be paid without difficulty.

Table 2-5-1 Items and Cost to be Borne by the Recipient Country

(Unit: Jordan Dinar)

Item	Cost	Remarks
Cost for banking arrangements	10,000	Jordanian Customs
Payment for costs related to low voltage electric hook-up for Electrical Power Distribution Company	10,000	Jordanian Customs
Total	20,000	

3) Bases of the Cost Estimates

a) Date estimated

January 2012

b) Exchange rates

1 USD = 77.61 Yen

1 Jordan Dinar = 109.43 Yen

c) Procurement and Construction period

For detailed design, equipment procurement and construction, as shown in Subsection 2-2-4-9, "Implementation Schedule".

d) Others

The estimation was carried out in accordance with the rules and regulations for Japanese Grant Aid.

2-5-2 Operation and Maintenance Cost

Warranty for one (1) year will be provided through the Grant. From the second year however, it should be borne by the recipient country.

Spare parts will be provided through the Grant Aid for two years (for the second and third year). From the fourth year however, they should be borne by the recipient country.

Annual operation and maintenance cost for equipment to be procured by the Project is estimated at approximately JD 500,000 from the fourth year when the spare parts provided through the Grant Aid are depleted. The amount is about 2.0% of the annual budget of Jordanian Customs; thus, it can be paid without difficulty.

Personnel expenses for the operation and maintenance are not expected to increase and are to be carried out by personnel arrangement in Jordanian Customs.

Table 2-5-2 Maintenance Cost Per Annum

(Unit: Thousand Jordan Dinar)

Item	The First Year	The Second and Third Year	From Fourth Year
Maintenance and Service Contract	-	200	200
Spare Parts	-	-	150
Electricity Bill for Equipment	150	150	150
Total	150	350	500

CHAPTER 3
PROJECT EVALUATION

Chapter 3 Project Evaluation

3-1 Preconditions

Judging from the findings in the preparatory survey, the following preconditions have been determined for implementation of the Project.

3-1-1 Human Resources for Operation and Maintenance

Jordanian Customs needs to take the following actions regarding human resources for operation and maintenance of the grant equipment.

- Execution of proposed human resources reallocation, which has already been initiated.
- Provision of an image analyses training course by the Customs Training Center, and completion of the course by newly assigned personnel.

Human resources mentioned above will become the major target group (trainees) for manufacturer's operational guidance as well as Soft Components included in Japan's Grant Aid assistance.

3-1-2 Budget for Operation and Maintenance

The grant equipment will increase operation and maintenance expenses; however, the increased expenses are within a manageable scale for the implementation organization. Since no drastic changes are predicted for the operation and maintenance system in the future, Jordanian Customs needs to allocate a budget for operation and maintenance continuously.

3-1-3 Institutional Policy for Border Security

As expressed in the request for Japan's Grant, the Project has been prepared on the condition that the leading organization that operates and maintains the grant equipment will be shifted from the current PSD to Jordanian Customs. Jordanian Customs needs to lead the organizations concerned and maintain this policy.

3-2 Necessary Inputs by Recipient Country

No site acquisition is newly required because the Project is located inside of the Al-Karamah border facilities. Necessary inputs (undertakings) by the recipient country include the following. The implementation agency understands these inputs and their implementation is feasible.

3-2-1 Power Connection to Grant Equipment and Buildings

The implementation agency is to apply as a new customer and pay for costs related to low voltage hook-up.

3-2-2 Appointment of Personnel such as Engineers

The implementation agency is to appoint the personnel listed below:

- Appointment of the Project Manager
- Selection of trainees for Soft Component programs
- Selection of trainees for manufacturer's operational guidance programs

3-2-3 Obligations as the Employer

The implementation agency is to undertake the following:

- Banking Arrangement (B/A), Authorization to Pay (A/P)
- Import permits, tax exemption regarding foreign equipment
- Construction permits regarding building facilities
- Detour cabling of the existing communication cable laying underground proposed new building sites
- Provision of temporary site areas for works by contractors and consultants
- Removal of the existing X-ray screening equipment for the baggage in the In-bound Passenger and Baggage Inspection Building
- Temporary operation in the In-bound Passenger and Baggage Inspection Building during installation works of the grant equipment
- Procurement of general furniture in grant buildings

3-2-4 Operation and Maintenance after Hand-over

The implementation agency is to allocate a budget and sustain everyday operation and maintenance as aforesaid preconditions.

3-3 Important Assumptions

The following are external conditions that influence overall achievement by the Project. There are no adverse circumstances expected to interfere with the Project.

3-3-1 Overall Security Inspection Process Flow for Inbound Cargo Vehicles

A joint operation among Jordanian Customs, PSD, and GID implements a strict layered inspection at the Al-Karamah Border Crossing facility at present. This strict inspection process flow cannot immediately be simplified in view of the importance of the Al-Karamah Border and the surrounding security risks.

It is characteristic of in-bound cargo vehicle flow that the majority consists of unloaded cargo trucks that carry goods from Jordan to the Business Trade Plaza in the border facility, and then transship the load to other cargo vehicles bound for Iraq. Therefore, the X-ray Inspection Machine for Cargoes and Oil Tankers, one of four kinds of grant equipment, will mainly inspect these unloaded cargo trucks. Customs inspection of in-bound Iraqi goods will be a minor objective.

The Project’s plan is based on the condition that the existing inspection process flow and the transshipment operation are maintained. Exceptionally for oil tankers, most of vehicles with a load of crude oil from Iraq are to receive inspections in the plan.

3-3-2 Traffic Volume of Inbound Passengers and Their Cars

As actual records in the past indicate, passenger movement crossing the border depends heavily on the social situation. For the X-ray Inspection Machine for Passenger Cars and Other Small Vehicles included in the scope of grant equipment, a drive through configuration is specified with throughput sufficient for the current foreseeable traffic volume. This plan is able to absorb fluctuation in traffic volume fairly well.

3-3-3 Reconstruction of Customs Headquarters Building

There is a reconstruction plan for the headquarters building of Jordanian Customs in Amman. Japan's Grant Aid assistance includes remote consoles to be installed in the headquarters building: one set each for cargo and passenger inspection systems. This reconstruction plan should be noted in the Project’s implementation to determine the specific location of installation.

3-4 Project Evaluation

3-4-1 Relevance

Resulting from this preparatory survey, the Project is deemed appropriate for implementation by Grant Aid assistance verified by the following aspects:

1) Beneficiary

Direct beneficiaries are economic operators and in-bound passengers, who will benefit from the shorter time spent for security screening / customs inspection.

- Number of economic operators at Al-Karamah border: approx. 30 companies
- Number of annual in-bound passengers: approx.

Indirect beneficiaries include the general public nationwide and people from neighboring countries.

- The Jordanian population: approx. 6,000,000
- The Iraqi population: approx. 30,000,000

2) Urgency

It has been at least seven to nine years since the existing equipment granted by aid from the United States of America was manufactured. Decline of the inspection throughput due to machine trouble will immediately result in stagnation of the physical distribution at Al-Karamah border. Urgency of the Project is high to avoid fatal trouble of the old equipment, which will soon reach its operational life.

3) Non-profitability

The Project will bring no earnings, and its ultimate objective is improvement of border security.

4) Human Security

The Project contributes to the stability of public welfare and therefore provides human beings with the basic rights of security and safety.

5) Operation, Maintenance and Management

Jordanian Customs has already acquired technology and human resources at the necessary level to operate and maintain the grant equipment through experience as a user of the other similar equipment.

Therefore, provided there is operational guidance by equipment manufacturer(s) as well as Soft Components (technical assistance) by the consultant, there will not be a problem in operation, maintenance or management of the grant equipment.

6) Contribution to National Middle-Long Term Plans

The Jordanian Government places great importance on the Al-Karamah border from both a view of strengthening of security and of the promotion of physical distribution. It formulated the “Border Security Program” regarding strengthening of security, and has requested grant aid from Japan to realize the program in addition to the U.S. support in the past. The Project contributes to the realization.

Moreover, the environment that surrounds international trade and international physical distribution has changed rapidly since the September 11, 2002 attacks in America. The international physical distribution industry is therefore required to prioritize security strengthening and counter-terrorism at entry points. The Project contributes to achieving the duty by the nation’s customs authority as a WCO member.

7) Consistency with Japan’s ODA Policy

According to ODA Country Policy towards declaring "the promotion of the cooperative relationship with Japan,” it has turned to the steadiness of the Middle East as the philosophy of the assistance.

- Jordan plays an important role as a moderate, stabilizing power in the Middle East. Jordan's political and economic stability is crucial for peace in the Middle East.
- It is of great importance when forming a project that it benefits not only Jordan but also neighboring countries located in the “Corridor for Peace and Prosperity,” while ultimately contributing to peace and stability in the Middle East.

The policy has given priority to assistance in the following areas in subsequent development plans: (1) infrastructure development for economic growth; (2) sustainable management of resources and environmental reservation; (3) educational reforms; (4) welfare for socially disadvantaged people; and (5) promotion of stability in the region.

With regard to the promotion of stability in the region, the Project is expected to assist in removing the terrorism threat, stabilizing the region, and enhancing security for people as one of the counter-terrorism / anti-mine programs.

3-4-2 Effectiveness

1) Quantitative Effects

a) Coverage of X-ray Technology in Security Screening / Customs Inspection

Saturation level for inspection of cargo trucks and oil tankers using high-energy X-ray with material discrimination ability: from 0% (without the Project as of 2011) to 100% (with the Project).

b) Time Required for Security Screening / Customs Inspection

Required time for inspection of cargo trucks and oil tankers: from 2 to 15 minutes per one cycle (without the Project as of 2011) to 0.5 minutes per one cycle (with the Project).

c) Carbon Dioxide Reduction

By eliminating the waiting time for inspection, carbon dioxide gas that is generated by engine idling of cargo trucks and oil tankers for heating in winter will be reduced.

Supposing the number of annual in-bound vehicles is 200,000, if each vehicle idles the engine for two hours, in the cold season accounting for one-fourth of a year an annual 100,000 liters of diesel fuel is wasted as shown below:

200,000 vehicles/year ÷ 4 × 1 liters/hour[1] = 100,000 liters/year

Annual carbon dioxide reduction is calculated as shown below:

100,000 liters × 2.62 kg-CO_2/liter[2] = 262,000 kg-CO_2/liter = 262 tons-CO_2

2) Qualitative Effects

a) Benefit Received by Operator Side

- Centralized operation at one site improves work more efficiently compared with the existing three to four site dispersed operation.
- High-energy X-ray with material discrimination ability improves the accuracy of

[1] Fuel consumption rate for idling operation per hour

Passenger Car (gasoline)	0.8 liters
Small Truck (2 ton capacity, diesel)	0.5 to 0.7 liters
Medium Truck (4 ton capacity, diesel)	0.8 to 1.0 liters
Large Truck (10 ton capacity, diesel)	1.3 to 1.8 liters

A rate of 1.0 liter is assumed for rough calculation contained herein.

[2] Equivalent carbon dioxide generation for one liter diesel fuel: 2.62 kg

(Source: Guidelines by Ministry of Economy, Trade and Industry)

detection.

b) Benefit Received by Public Crossing the Border

- Decline of inspection due to trouble with old machines is eliminated.
- Inspection of passenger cars and other small vehicles becomes ample in capacity and reduces the waiting time for inspection from Iraq into Jordan.
- Unpleasant hand searches for passenger and baggage inspection are reduced.

c) Technology Transfer Effect

Soft Components are planned to render the following assistance:

- Recommended practice regarding newly introduced equipment, which is expected to be more efficient and effective
- Operation plan regarding security screening / customs inspection system flow using newly introduced equipment
- Preventive maintenance and renewal plan covering both existing and newly introduced equipment
- Future equipment deployment together with improvement of process flow
- Education on radiation safety including management of restriction zone and accumulated dose

These are universal issues that can also be applied to the other border facilities; thus, a significant effect is expected through the technology transfer.

APPENDIX

Appendices

Appendix 1 Member List of the Survey Team

Name	Position	Organization
Mr. Kazuto Tsuji	Leader	JICA
Mr. Eita Narita	Project Coordinator	JICA
Mr. Hayato Nagasawa	Chief consultant / O&M planning	Oriental Consultants Co., Ltd.
Mr. Yoshihiro Urabe	Equipment specialist	Oriental Consultants Co., Ltd.
Mr. Hiroshi Kadowaki	Mechanical & electrical design	Oriental Consultants Co., Ltd.
Mr. Tomoaki Sawabe	Building design/cost estimates (1)	Oriental Consultants Co., Ltd.
Mr. Sumio Morita	Procurement planning/cost estimates (2)	Oriental Consultants Co., Ltd.
Mr. Yoshitsugu Ishikawa	Interpreter	Translation Center Pioneer

Appendix 2　Survey Schedule

Field survey in Jordan

Date			Team Leader (JICA)	Project Coor-dinator (JICA)	Chief Consultant / O&M Planning	Equipment Specialist	Mechanical & Elecrical Design	Building Design / Cost Estimates (1)	Procurement Planning / Cost Estimates (2)	Arabic Interpreter
1	Sep. 18	Sun	From Mongolia	Mobilization						
2	Sep. 19	Mon	Arrival at Amman, 09:20 a.m. 【9】Explanation of the Inception Report							
3	Sep. 20	Tue	Discussion / preparation of Minutes of Discussion							
4	Sep. 21	Wed	Discussion / signing of Minutes of Discussion / Report to Embassy of Japan, andJICA Jordan Office Departure from Amman 17:15 p.m. (for JICA officers only)							
5	Sep. 22	Thu	Mobilization		Preparation for visit to Al-Karamah Border facilities site					
6	Sep. 23	Fri			(Day of rest)					
7	Sep. 24	Sat			Site visit to Jabir bordar crossing site, if situation allows					
8	Sep. 25	Sun			【11】【12】【13】Tasks at Al-Karamah Border facilities site (1)			【16】【17】【18】Survey on Procurement		Support of Chief Consultant
9	Sep. 26	Mon			- ditto -			- ditto -		- ditto -
10	Sep. 27	Tue			- ditto -			- ditto -		- ditto -
11	Sep. 28	Wed			【10】Study for Equipment/Facility Planning		【10】Study on Equipment/Facility Planning, 【25-1】Study on interfaces of Jordanian side works			
12	Sep. 29	Thu			- ditto -		- ditto -			
13	Sep. 30	Fri			(Day of rest)					
14	Oct. 01	Sat			Wrap-up meeting					
15	Oct. 02	Sun			【14】【15】Survey on Procurement		【11】【12】【13】Tasks at Al-Karamah Border facilities site (2)			Support of building designers
16	Oct. 03	Mon			- ditto -		- ditto -			- ditto -
17	Oct. 04	Tue			- ditto -		- ditto -			- ditto -
18	Oct. 05	Wed			【19】【20】【21】Study on Operation and Maintenance		【14】【15】【16】【17】【18】Survey on Procurement			
19	Oct. 06	Thu			同上		【14】【15】【16】【17】【18】Survey on Procurement		Departure from Amman 17:15 p.m.	Support of Chief Consultant
20	Oct. 07	Fri			(Day of rest)				Demobilization	(Day of rest)
21	Oct. 08	Sat			Wrap-up meeting					Wrap-up meeting
22	Oct. 09	Sun			【23】Examination of Environment Issues		【22】Survey of Relevant Laws and Regulations			Support of Chief Consultnat
23	Oct. 10	Mon			【24】Recommendation for Equipment/Facility Planning					- ditto -
24	Oct. 11	Tue			【25】Recommendation for Jordanian Side Obligations					- ditto -
25	Oct. 12	Wed			【26】Recommendation for Operation and Maintenance					- ditto -
26	Oct. 13	Thu			【27】Recommendation for Evaluation of Project Effect Report to Jordan Customs / signing of Technical Notes					- ditto -
27	Oct. 14	Fri			(Day of rest)					- ditto -
28	Oct. 15	Sat			Examination of information material					- ditto -
29	Oct. 16	Sun			Courtesy calls to Embassy of Japan and JICA Jordan Office Departure from Amman 17:15 p.m.					- ditto -
30	Oct. 17	Mon			Demobilization					Demobilization

Explanation of the draft report in Jordan

	Date		Team leader	Coordinator	Equipment planning	buliding planning cost estimation	Translator
1	2012/01/21	Sat	—	22:00 Dep Narita (EK 319)→04:15 Arr Amman (via Dubai EK903)			
2	2012/01/22	Sun	21:20 Dep Narita (EY871)	Discussion about training matter: Ministry of Transport and Depearment of Custum			
3	2012/01/23	Mon	05:10 Arr Abudabi 08:10 Dep Abudabi (EY513) 09:40 Arr Amman	AM : Internal Meeting			
			PM : Meeting with stakeholders Explaination/Discussion/Confirmation about Detail Basic Design and Spec of each Equipment				
4	2012/01/24	Tue	Whole day : Meeting with stakeholders Explaination/Discussion/Confirmation about Detail Basic Design and Spec of each Equipment				
5	2012/01/25	Wed	Whole day : Meeting with stakeholders Draft Minutes of Meeting discussion				
6	2012/01/26	Thu	AM : Signing Minutes of Meeting PM : Report to EOJ and JICA				
7	2012/01/27	Fri	16:30 Dep Amman (EK904) 21:15 Arr Dubai	16:30 Dep Amman (EK 904) →21:15 Arr Dubai			
8	2012/01/28	Sat	04:40 Dep Dubai (EK356) 15:40 Arr Jakrta	02:50 Dep Dubai (EK 318) →17:35 Arr Narita			

Appendix 3 List of Parties Concerned in the Recipient Country

Jordanian Customs Department

Dr. Arif Al・Fityaanie・ الدكتور المهندس عارف الفتياني	Director of Telecommunication and Electronic Control Representative of Jordanian side counterparts
Mr. Kamal Saleh Obeidaat السيد العميد كمال صالح عبيدات	Director of Al-Karamah Border Center
Mr. Adam Musaadah المحامي أدم مساعدة	Lawyer
Eng. Osamah Ahamad Yusuf المهندس أسامة أحمد يوسف	Head of the Command and Control
Mr. Idorees Al・Attaanie السيد ادريس العطاني	Assistant Manager, Al-Karamah Customs House
Mr. Nizaar Husein Raashid السيد نزار حسين راشد	Assistant Manager, Al-Karamah Customs House
Eng. Muhammad Al・Jawarnee المهندس محمد الجوارني	Engineer, Communication
Eng. Naaser Al・Horaanie المهندس ناصر الحوراني	Engineer, Communication

General Intelligence Department: GID

Eng. Majid Al・Heesah المهندس ماجد الحيصة	Border Security, GID
Mr. Mohammad Sultan Jameel Ali السيد محمد سلطان جميل علي	GID's head of Al-Karamah Border Center

Public Security Directorate, Ministry of Interior: PSD

Mr. Quai Abdullah Abu Sinie المقدم قصي عبد الله أبو صيني	National Center for Security and Crisis Management
Mr. Gassan Aaaishu Al・Habaahibah العقيد غسان عايش الهباهبة	National Center for Security and Crisis Management
Mr. Raid Bani-Hani	Responsible officer for site infrastructure, Al-Karamah Border Center

Customs Training Center

Mr. Abedallah A. Joudeh السيد عبد الله علي جودة	Director of Customs Training Center
Mr. Ahmad N. Alkhraisha السيد أحمد نايف الخريشا	Chief of International Cooperation

Mr. Maher Abu Khass السيد ماهر أبو خاص	Chief of Training Program and Trainers

Ministry of Public Works and Housing: MPWH

Eng. Sami Jiries Halaseh السيد سامي جيريس هلاسح	Secretary General

Ministry of Transport: MOT

Eng. Wesam A. Al-Hyari	Project Management Unit, Queen Alia International Airport

Al-Ruwaysid

Mr Iesa Al·Khawaalido السيد عيسى الخوالدة	Mayor of Al-Ruwaysid
Mr. Ahmad Muhammad Othmaan Asshiya-bu السيد أحمد محمد عثمان الشياب	Chief of Al-Ruwaysid Sub-Department, Al-Mafraq Fire Department
Dr Mousa Abu Aqouleh الدكتور موسى أبو عاقولة	Director of Al-Ruwaysid Hospital
Mr. Abdul-Waahid Rushaid السيد عبد الواحد رشيد	Bureau Chief of Al-Ruwaysid Hospital

Electricity Distribution Co.: EDCO

Eng. Saeed H.M.Obeidat	Jordan Valley & Eastern Electricity Distribution District, Executive Manager
Eng. Mohammad Qwasmeh	Jordan Valley & Eastern Electricity Distribution District, Engineer

Royal Jordanian Geographic Center

Mr. Tayseer Darweesh	Head of GIS Section
Eng. Ahed Al-Qatarneh	Engineer

Local Agent for X-ray Equipment (1): DABAS International Group

Mr. Rada Al·Yaas Al·Alaamaat السيد رادع الياس العلامات	Technical Director

Local Agent for X-ray Equipment (2): Alfares Trading & Contracting

Mr. Rifad Al·Farahaan السيد رفاد الفرحان	COO

Minutes of Discussion (Outline Design)

Minutes of Discussions
on the Preparatory Survey
on the Project for the Enhancement of Border Security
at Al-Karamah Border Crossing in Jordan

Based on the results of the Preliminary Survey conducted from March 19, 2011 to March 28, 2011, the Government of Japan decided to conduct a Preparatory Survey on the Project for the "Enhancement of Border Security at Al-Karamah Border Crossing in Jordan" (hereinafter referred to as "the Project") and entrusted the survey to the Japan International Cooperation Agency (hereinafter referred to as "JICA").

The Preparatory Survey Team (hereinafter referred to as "the Team"), headed by Mr. Kazuto Tsuji, Executive Technical Advisor to the Director General, Industrial Development and Public Policy Department, JICA, is scheduled to conduct the survey until October 17, 2011 based on the agreement stipulated in the Minutes of Discussions dated on March 27, 2011 (as shown in Annex 1.)

The Team held discussions with the officials concerned of the Government of Hashemite Kingdom of Jordan (hereinafter referred to as "Jordan") on the Inception Report (as shown in Annex 2).

In the course of the discussions, both sides confirmed the main items described in the attachment.

Amman, September 20, 2011

Mr. Kazuto Tsuji
Leader
Preparatory Survey Team
Japan International Cooperation Agency

Mrs. Khulud J. Habaybeh
Deputy Director General
Customs Department
Ministry of Finance
The Government of Hashemite Kingdom of Jordan

ATTACHMENT

1. Major Requirements requested by the Jordanian side:

1-1. Equipment No. 1, A X-ray inspection machine for cargoes and oil tankers:

1-1-1. The Jordanian side stated that priority should be given to the following specification items:

a. Ability to discriminate between organic and non organic material by high and low energy
b. Drive through system with through put not less than 100 containers/trucks per hour
c. Penetration not less than 300mm steel
   As far as a driver cabin concerned, low energy or equivalent capacity by means of backscatter X-ray should be applied.
d. Weather proof and heavy duty can work under Jordan climate conditions (Al-Karamah climate)
e. Operation and maintenance training and factory acceptance test
f. Ability to be integrated with an IP network to enable remote monitoring from central control room
g. High ability to discriminate between low density materials (like tobacco and biscuits)
h. Automatic optical plate recognition system
i. To comply with international standards for radiation and health safety

The Team understood the priority.
The Jordanian side requested that other requirements in Table 1, the Inception Report be taken into consideration as much as possible. The Team understood that.

1-1-2. The Jordanian side stated that efficiency as described in 1-1-1 b. and capacity as mentioned in 1-1-1 c. are indispensable specifications. The Jordanian side also stated that for the perspective of efficiency, an inspection should be operated without evacuation of a driver. The Team understood the importance of both the capacity and efficiency.

1-1-3. The Jordanian side stated that gamma ray should be excluded as radiation source. The Team understood preference of radiation source.

1-1-4. The Jordanian side stated that equipment, which fulfill specification items as described in 1-1-1 would be supplied by three or four manufacturers. The Team agreed that the Team would confirm whether each manufacturer supplies such equipment.

1-2. Equipment No. 2, A X-ray inspection machine for passenger cars and other small vehicles

1-2-1 The Jordanian side stated that priority should be given to the following specification items:

a. Ability to discriminate between organic and non organic material by high and low energy
b. Drive through system (passenger remaining in a vehicle during scan) with through put: not less than 100

cars per hour.

c. Penetration not less than 10mm steel, or equivalent capacity by means of backscatter X-ray
d. Can inspect vehicles from ground level to top, bumper to bumper, both sides.
e. Automatic optical car plate recognition system (OCR)
f. Weather proof and heavy duty can work under Jordan climate conditions (Al-Karamah climate)
g. High ability to discriminate between low density materials (like tobacco and biscuits)
h. To comply with international standards for radiation and health safety
i. Operation and maintenance training and factory acceptance test
j. Ability to be integrated with an IP network to enable remote monitoring from central control room

The Team understood the priority.

The Jordanian side requested that other requirements in Table 2, Inception Report be taken into consideration as much as possible. The Team understood that.

1-2-2. The Jordanian side stated that efficiency as described in 1-2-1 b. and capacity as mentioned in 1-2-1 c. are indispensable specifications. The Jordanian side also stated that for the perspective of efficiency, an inspection should be operated without evacuation of a driver. The Team understood the importance of both the capacity and efficiency.

1-2-3. The Jordanian side stated that gamma ray should be excluded as radiation source. The Team understood the preference of radiation source.

1-2-4. The Jordanian side stated that equipment, which fulfill specification items as described in 1-2-1 would be supplied by two or three manufacturers. The Team agreed that the Team would confirm whether each manufacturer supplies such equipment.

1-3 Equipment No. 3, Equipment for inspection of passengers

Both sides agreed that a metal detector was acceptable since a body scanner using backscatter X-ray or millimeter wave costs approximately 40 times more than a metal detector.

1-4 Equipment No. 4, Equipment for inspection of their luggage

Both sides agreed that a conventional X-ray screening equipment with dual or multi energy was acceptable.

1-5 Priority of Equipment

Both sides agreed that higher priority should be given to Equipment Nos. 1 and 2, rather than Equipment Nos. 3 and 4.

2 Guarantee Service, Spare Parts, and Supply Guarantee:

2-1. Both sides agreed that one-year guarantee service would be provided in a contract between the Jordanian side and a Japanese supplier under Japan's Grant Aid Scheme.
2-2. Both sides agreed that manufacturer's recommended spare parts would be provided for 2 years under Japan's Grand Aid Scheme.
2-3. Both sides agreed that supply guarantee of spare parts would be provided for 10 years.

3 Soft Component:

Both sides agreed that the Team would study and propose contents of the soft component including items as follows:

3-1 Improvement of image analysis ability, taking scope of training provided by a manufacturer into consideration
3-2 Assistance in transition planning by utilizing existing facilities
3-3 Training for engineering maintenance, taking scope of training provided by a manufacturer into consideration

4 Schedule of the Preparatory Survey:

4-1. The consultants will proceed to further studies in accordance with the Inception Report in Jordan until October 17, 2011.
4-2. JICA will prepare the draft report in English and dispatch a mission in order to explain its contents in February, 2012. Taking comments by the Jordanian side into consideration, JICA will complete the final report and submit its summary to the Government of Japan for cabinet approval.

5. The Project includes supply, installation, commissioning and training under Japan's Grand Aid Scheme in accordance with Annex 1.

Annex 1 Minutes of Discussions of the Preliminary Survey signed on March 27, 2011
Annex 2 Inception Report

Technical Notes
on the Preparatory Survey on the Project for Enhancement of Border Security at Al-Karamah Border Crossing in Jordan

Consultant's members of the JICA Preparatory Survey Team on the captioned project (hereinafter referred to as "the Team") and Jordanian Customs Department, the Ministry of Finance (hereinafter referred to as "JC") confirmed the following technical points:

1. Draft Equipment Specifications

The Team presented draft equipment specifications that fulfill major requirements requested by the Jordanian side as recorded in the Minutes of Discussions dated and signed on September 20, 2011. JC accepted the Draft Equipment Specifications as shown in Attachment-1, as basis for further tasks of the Preparatory Survey including basic design and cost estimates.

2. Further Priority of Equipment

Further to statement in the said Minutes of Discussions, (quote) *"Both sides agreed that higher priority should be given to Equipment Nos. 1 and 2, rather than Equipment Nos. 3 and 4."* (unquote), the order of priority is determined as follows:

1st: Equipment No. 1 X-ray inspection machine for cargoes and oil tankers
2nd: Equipment No. 2 X-ray inspection machine for passenger cars and other small vehicles
3rd: Equipment No. 4 Equipment for inspection of their luggage
4th: Equipment No. 3 Equipment for inspection of passengers

3. Location of Facilities

The Team proposed facility layout plan as shown in Attachment-2. JC agreed on the locations for facilities to house the X-ray inspection machines. The team will proceed with basic design tasks based on the locations, including topographic survey and soil investigations.

4. Architectural Plans

The Team presented draft architectural plans for facilities as shown in Attachment-3. JC accepted the draft plans, in principle.

5. Major Undertakings by the Jordanian Side

Major undertakings regarding construction works to be taken by the Japan's Grant Aid and by the Jordanian side were discussed and agreed as shown in the Attachment-4.

6. Soft Component

It is confirmed that training for improvement of image analysis ability would more appropriately be included in the equipment supply contract than in soft component.

Amman, October 13, 2011

Hayato Nagasawa
Chief Consultant
Oriental Consultants Co., Ltd.
JICA Preparatory Survey Team

13/10/2011

Dr. Aref Al-Fitiani
Director of Telecommunication and Electronic Control
Jordanian Customs Department
The Hashemite Kingdom of Jordan

EQUIPMENT SPECIFICATIONS (DRAFT)

Form-2

Equipment No. :1-01	Equipment Name : Portal Type X-Ray Inspection Machine for Cargoes and Oil Tankers	Qty. : 1 set
Component No. : -	Component Name: -	Qty. : -

Purpose of Use:

The X-ray inspection machine shall be installed at the screening checkpoint at Al-Karamah Border Crossing in order to screen the loaded / unloaded container trailers, trucks and oil tankers.

Installed place: Al-Karamah Border Crossing

Composition:

1. Portal type X-ray inspection machine for loaded / unloaded container trailers, trucks and oil tankers, including scanning of driver cabin with driver (drive through).	: 1 unit
2. Console desk	: 5 units (Operation room; 3 for X-ray image analysis, 2 for CCTV)
3. Server rack	: 1 unit (Server room)
4. Curb pipe	: 2 nos. (X-ray inspection corridor)
5. Protection bollards	: 4 nos. (Entrance to X-ray inspection corridor and after exit)
6. CCTV system for surveillance	: 1 system (Operation room, X-ray inspection corridor and surroundings)
7. CCTV system for OCR	: 1 system (Operation room and X-ray inspection corridor)
8. Signalling system	: 1 system (Entrance of X-ray inspection corridor)
9. Public address system	: 1 system (Operation room and X-ray inspection corridor)
10. Radiation marker	: 2 nos. (Both side of X-ray inspection corridor)
11. Personal instant dose monitor	: 5 sets (Operation room)
12. Geiger-Muller or semiconductor radiation detector	: 2 sets (Operation room)
13. Colour printer	: 1 unit (Operation room)

Specification

1. Portal type X-ray inspection machine for loaded / unloaded container trailers, trucks and oil tankers, including scanning of driver cabin with driver (drive through).	
(1) Installation footprint	: 9,000mm (W) x 4,000 mm (D) x 6,500 mm (H) or less
(2) Mechanical construction	: Steel construction with steel panels. Protection against dust, IP65 or more
(3) Weight unit	: 40,000 Kg or less
(4) Through put	: Not less than 100 containers / trucks per hour with driver
(5) Scanning size	: 2,800 mm (W) x 4,600 mm (H) or more
(6) Scanning level	: From ground to top
(7) Truck speed for scanning	: More than 5km/h
(8) Penetration (steel)	: 300 mm or more for cargo part
(9) Resolution (wire delectability)	: 8 AWG or more
(10) X-ray Energy	: 4 MeV or more for cargo part and safety energy, compliant with ICRP 60 and less than 0.25μSv per screening, for driver cabin

(11) X-ray detector	: L-shaped array
(12) Image presentation	: B/W, colour
(13) Zoom	: 8 times or more
(14) Video resolution	: 1,280 x 1,024 or higher
(15) Contrast sensitivity	: 3% plate (A steel thickness of 2mm imaged behind 100mm of steel) or higher
(16) Image processing function	: Discrimination between organic and non-organic material by high and low energy, : Discrimination between low density materials (like tobacco and biscuits), : Edge enhancement, : Proportional image for the inspected image, : Pseudo colour image : Automatic visual identification of suspicious item for operator assist, : Operator training program, : Automatic image archiving (100,000 images or more), and : RAID-5 filing system shall be provided for the storage of images.
(17) Computer system	: 2 GHz CPU, 4 GB DDR2 SDRAM, 250 GB hard disk, or more. : Display image should be able to be forwarded on the console desk. (Form the first display monitor to the 2nd display monitor).
(18) IP network connection	: Ability to be integrated within an IP network to enable remote monitoring from central control room.
(19) Emergency stops	: Shall be furnished at easy accessible point of operator room, portal and other location.
(20) Scan direction	: The direction of travel can be specified
(21) Counter	: Shall has the counter for the number of inspected vehicles
(22) Self-test and protection function	: Self test shall be carried out when switched on with fault alarm capability, : Self-protection function from over voltage, over current and overheating shall be furnished.
(23) Radiation doses	: Compliant with ICRP 60 for radiation leakage. Less than 0.5μSv/hr in average dose measurement in operator room, and outside X-ray operation corridor without shielding doors.
(24) Air conditioner	: Install in x-ray emission unit.
(25) Power supply	: 100 kVA or less, three-phase four wire 400 / 230V±10% , 50Hz
(26) UPS and stabilizer	: Shall have capability of 20 minutes holding of computer operation and safely shut down of operating system, when AC main power is interrupted. : Shall provide stabilizer to protect the equipment by voltage fluctuations.
(27) Cables, conduits, power outlets and data outlets	: Provide all related materials for the above system including a necessary power cables, data cables, control cables and connecters
(28) Operating temperature	: -15 to +50 deg C.
2. Console desk	
(1) Desk	: Sufficient size for 2 Nos. of display monitors and control console in operation room. Steel and/or aluminium construction.
(2) Display monitor	: 20 inches, 1280 x 10240 or larger colour LCD monitor for X-ray image. 2 sets each desk.
(3) Desk chair	: Fit to use for operator. 5 Nos. Steel and/or aluminium construction.
3. Server rack	: Sufficient size for computer server and hard desk recorder. Steel and/or aluminium construction.
4. Curb pipe	
(1) Install place	: Right and left to inspection vehicle travels in X-ray inspection

	corridor
(2) Exposed height and length	: 200mm form the corridor surface and 15m long
(3) Products	: Cylindrical section, made of steel or stainless steel, anchored into the concrete foundation.
(4) Structural requirement	: Shall withstand 50 kJ, kinematic energy, by vehicle impact.
5. Protection bollards	
(1) Install place	: Both entrance and exit of X-ray inspection corridor
(2) Exposed height	: 2.0 m fixed, form the corridor surface.
(3) Products	: Cylindrical section, made of steel or stainless steel, anchored into the concrete foundation.
(4) Structural requirement	: Shall withstand 150 kJ, kinematic energy, by vehicle impact.
6. CCTV system for surveillance	Shall be monitoring of the gateway to inspection vehicle and the whole facility.
(1) Outdoor type network camera	: CCD 1/4" (or larger) type, 752 x 582 effective pixels or more, PAL signal type, : F-number of lens not more than 1.6 (at wide position), : Four (4) PTZ and four (4) fix cameras or more
(2) Monitor TV	: 20 inches, 1280 x 1024 resolution, or larger colour LCD monitor. 2 sets
(3) Camera control system	: Shall control cameras, up to 16 cameras, and display monitor, : Ethernet 100BASE-T(X) or higher and HDMI data in/out, : Camera and monitor selection shall be possible, : Camera function, lens function and pan/tilt shall be able to control
(4) Digital disk recorder	: Ethernet 100BASE-T(X) or higher. Up to 16 cameras, : Disk capacity 800 GB or more with RAID 5 filing system
(5) Power unit	: AC230V±10%, UPS 20 minutes
(6) Cables, conduits, power outlets and data outlets	: Provide all related materials for the above system including a necessary power cables, data cables, control cables and connecters
7. CCTV system for OCR	Shall capture to OCR of front and rear car license plate number more than 95% of accuracy. OCR shall be integrated with the X-ray images.
(1) Outdoor type network camera	: CCD 1/3" (or larger) type, 1329 x 1049 effective pixels or more, PAL signal type, F-number of lens not more than 1.2 (at wide position). Four (4) PTZ
(2) Monitor TV	: 20 inches, 1280 x 1024 resolution, or larger colour LCD monitor. 2 sets
(3) OCR and system controller	: The captured image shall be converted text via OCR. Camera selection, function, lens function and pan/tilt shall be able to control
(4) Power unit	: AC230V±10%, UPS 20 minutes
(5) Cables, conduits, power outlets and data outlets	: Provide all related materials for the above system including a necessary power cables, data cables, control cables and connecters
8. Signalling system	: Install the signal of Red and Green lamp at entrance, and speed sign in the X-ray inspection corridor for drivers, : Provide all related materials for the above system including sensors, a necessary power cables, data cables, control cables and connecters.
9. Public address system	: Install in the X-ray inspection corridor to provide instructions to drivers form operation room, : Provide all related materials for the above system including 4 nos of speakers, 2 nos of microphones, a necessary power cables, communication cables and connecters.
10. Radiation marker	: Put the radiation marker of JIS standard to both entrance and exit of

	the X-ray inspection corridor.
11. Personal instant dose monitor	: Easy operation and the portable type; 5 sets. : Sensitive to X and μ radiation, β particles, : Direct readout of dose, : Display Sv and rem with prefixes, : Resolution for display 1μSv (0.1mrem) up to 10mSv (1rem), : Dose rate display 0μSv to >4Sv/h, : Memory (10 years data retention without battery), : Audible and visual alarms for dose, dose rate, count down time, read time and failure modes.
12. Geiger-Muller or semiconductor radiation detector	: Easy operation and the portable type; 2 sets. : 15keV to 3MeV of energy range, : Spectrum length (1024 channels), : 100 spectra data storage, : >100kcps throughput, : 0.01μSv to 1000mSv of dose rate, : Available 5 presets of alarm level.
13. Colour printer	: Commercial type network colour laser printer, fit to operation system, A4 or larger paper size, 500 sheets or more paper bin, : Provide all related materials for the above system including a necessary power cables, data cables and connecters.
Spare parts	: Manufacturer's recommended spare parts for two (2) years operation under normal condition shall be supplied, as physical substance other than warranty.
Consumable	: Not required
Warranty	: One (1) year
Remarks (1) Standards of manufacturing	: Conform to U.S. Code of Federal Regulations, 21 CFR 1020.40 for cabinet x-ray systems. Designed for compliance with UL /CE requirements.

EQUIPMENT SPECIFICATIONS

Form-2

Equipment No. : 1-02	Equipment Name : Mobile X-Ray Inspection Machine for Cargoes and Oil Tankers	Qty. : 1 unit
Component No. : -	Component Name: -	Qty. : -

Purpose of Use:

The mobile X-ray inspection machine shall be installed at the screening checkpoint at Al-Karamah Border Crossing in order to screen the loaded / unloaded container trailers, trucks and oil tankers.

Installed place: Al-Karamah Border Crossing

Composition:

1. Mobile X-ray inspection machine for loaded / unloaded container trailers, trucks and oil tankers, including scanning driver cabin with driver in the driver cabin scan mode (drive through).	: 1 vehicle
2. Curb pipe	: 2 nos. (X-ray inspection corridor)
3. Personal instant dose monitor	: 5 sets
4. Geiger-Muller or semiconductor radiation detector	: 2 sets
5. Temporary barricade	: 1 set

Specification

1. Mobile X-ray inspection machine for loaded / unloaded container trailers, trucks and oil tankers, including scanning driver cabin with driver in the driver cabin scan mode (drive through).

(1)	Vehicle Exterior Dimension	: 12,000 mm (L) x 2,500 mm (W) x 4,000 mm (H) or less, when boom is stowed
(2)	Mechanical construction	: Steel construction with steel panels. Protection against dust, IP65 or more.
(3)	Scanning size	: 2,500 mm (W) x 4.500 (H) mm or more
(4)	Scanning level	: From ground to top
(5)	Scanning speed	: 0.4 m/s or more
(6)	Truck speed for scanning in the driver cabin scan mode	: More than 5km/h
(7)	Through put in the driver cabin scan mode	: Not less than 100 containers / trucks per hour with driver
(8)	Penetration (steel)	: 300 mm or more for cargo part
(9)	Resolution (wire delectability)	: 8 AWG or more
(10)	X-ray energy	: 4 MeV or more for cargo part and safety energy, compliant with ICRP 60 and less than 0.25μSv per screening, for driver cabin
(11)	X-ray detector	: L-shaped line sensor
(12)	Image presentation	: B/W, colour
(13)	Zoom	: 8 times or more
(14)	Video resolution	: 1,280 x 1,024 or higher

(15) Contrast sensitivity	: 3% plate (A steel thickness of 2mm imaged behind 100mm of steel) or higher
(16) Image processing function	: Discrimination between organic and non-organic material by high and low energy, : Discrimination between low density materials (like tobacco and biscuits), : Edge enhancement, : Proportional image for the inspected image, : Pseudo colour image : Automatic visual identification of suspicious item for operator assist, : Operator training program, : Automatic image archiving (100,000 images or more), and : RAID-5 filing system shall be provided for the storage of images.
(17) Computer system	: 2 GHz CPU, 4 GB DDR2 SDRAM, 250 GB hard disk, or more. : Display image should be able to be forwarded on the console desk. (Form the first display monitor to the 2nd display monitor).
(18) IP network connection	: Ability to be integrated within an IP network through wireless terminal to enable remote monitoring from central control room.
(19) Emergency stops	: Shall be furnished at easy accessible point driver's cabin, operator room, at each corner of body and other location.
(20) Scan direction	: Forward
(21) Self-protection function	: Self test shall be carried out when switched on with fault alarm capability, : Self-protection function from over voltage, over current and overheating shall be furnished.
(22) Radiation doses	: Compliant with ICRP 60 for radiation leakage. Less than 0.5μSv/hr in average dose measurement in operator room and outside exclusion zone.
(23) Operating temperature	: -10 to +50 C deg.
(24) Display monitor	: 20 inches, 1280 x 10240 or larger colour LCD monitor for X-ray image.
(25) Generator system	: On-board the electrical generator to provide all power necessary for full scanning capability.
(26) Air conditioner	: Install in operator room.
(27) CCTV system for surveillance	: Shall be provided on-board the CCTV system (colour cameras and monitor) and the intercom system for operator and driver to monitor the surrounding of vehicle and the scanning process.
(28) CCTV system for OCR	: Shall capture to OCR of front and rear car license plate number more than 95% of accuracy. OCR shall be integrated with the X-ray images.
(29) Body colour	: To be specified by the Buyer
(30) Number-plate	: Attach the number-plate to travel on the public roadways
(31) Base vehicle requirements	: Power plant of diesel engine, Automatic transmission, Left hand drive, Power steering
(32) Vehicle equipment	: Driver's seat SRS air bag, Anti-lock braking system (ABS), Drivers cabin air-conditioner, DC 13.8 V ±10% power supply in driver 's cabin
(33) Vehicle accessories	: Spare tire, Tire stopper, Emergency stop plate, Smoke candle, Flashlight
(34) Maximum speed	: 80 Km/h or more
2. Curb pipe	
(1) Install place	: Right and left to inspection vehicle travels in X-ray inspection corridor for the portal mode.
(2) Exposed height and length	: 200mm form the corridor surface and 15m long
(3) Products	: Cylindrical section, made of steel or stainless steel, anchored into the concrete foundation.
(4) Structural requirement	: Shall withstand 50 kJ, kinematic energy, by vehicle impact.

3. Personal instant dose monitor	: Easy operation and the portable type; 5 sets. : Sensitive to X and μ radiation, β particles, : Direct readout of dose, : Display Sv and rem with prefixes, : Resolution for display 1μSv (0.1mrem) up to 10mSv (1rem), : Dose rate display 0μSv to >4Sv/h, : Memory (10 years data retention without battery), : Audible and visual alarms for dose, dose rate, count down time, read time and failure modes.
4. Geiger-Muller or semiconductor radiation detector	: Easy operation and the portable type; 2 sets. : 15keV to 3MeV of energy range, : Spectrum length (1024 channels), : 100 spectra data storage, : >100kcps throughput, : 0.01μSv to 1000mSv of dose rate, : Available 5 presets of alarm level.
5. Temporary barricade	
(1) Products	: Made of heavy duty durable plastic or propose as appropriate.
(2) Length in total	: Sufficient to enclose the safety area of main equipment in operation.
(3) Height	: 0.8 m or more
Spare parts	: Manufacturer's recommended spare parts for two (2) years operation under normal condition shall be supplied, as physical substance other than warranty.
Consumable	: Not required
Warranty	: One (1) year
Remarks	
(1) Standards of manufacturing	: Conform to U.S. Code of Federal Regulations, 21 CFR 1020.40 for cabinet x-ray systems. Designed for compliance with UL / CE requirements.

EQUIPMENT SPECIFICATIONS (DRAFT)

Form-2

Equipment No. :2	Equipment Name : Portal Type X-Ray Inspection Machine for Passenger Cars and Other Small Vehicles	Qty. : 1 set
Component No. :	Component Name: -	Qty. : -

Purpose of Use:

The X-ray inspection machine shall be installed at the screening checkpoint at Al-Karamah Border Crossing in order to screen occupied passenger cars and other small vehicles.

Installed place: Al-Karamah Border Crossing

Composition:

1. Portal type X-ray inspection machine for occupied passenger cars and other small vehicles (drive through).	: 1 unit
2. Console desk	: 5 units (Operation room; 3 for X-ray image analysis, 2 for CCTV)
3. Server rack	: 1 unit (Server room)
4. Curb pipe	: 2 nos. (X-ray inspection corridor)
5. Protection bollards	: 4 nos. (Entrance to X-ray inspection corridor and after exit)
6. CCTV system for Surveillance	: 1 system (Operation room, X-ray inspection corridor and surroundings)
7. CCTV system for OCR	: 1 system (Operation room and X-ray inspection corridor)
8. Signalling system	: 1 system (Entrance of X-ray inspection corridor)
9. Public address system	: 1 system (Operation room and X-ray inspection corridor)
10. Radiation marker	: 2 nos. (Both side of X-ray inspection corridor)
11. Personal instant dose monitor	: 5 sets (Operation room)
12. Geiger-Muller or semiconductor radiation detector	: 2 sets (Operation room)
13. Colour printer	: 1 unit (Operation room)

Specification

1. Portal type X-ray inspection machine for occupied passenger cars and other small vehicles (drive through).

(1) Installation footprint	: 7,500mm (W) x 3,000 mm (D) x 5,000 mm (H) or less
(2) Mechanical construction	: Steel construction with steel panels. Protection against dust, IP65 or more
(3) Weight unit	: 40,000 Kg or less
(4) Through put	: Not less than 100 passenger cars / other small vehicles per hour with passengers
(5) Maximum scanning size	: 2,700 mm (W) x 2,600 mm (H) or more
(6) Scanning level	: From ground to top
(7) Car speed for scanning	: more than 5km/h
(8) Penetration (steel)	: 10 mm or more
(9) Resolution (wire delectability)	: 8 AWG or more
(10) X-ray Energy	: Safety energy, compliant with ICRP 60 and less than 0.25μSv per screening, for driver and passengers
(11) X-ray detector	: L-shaped array or equivalent system

(12) Image presentation	: B/W, colour
(13) Zoom	: 8 times or more
(14) Video resolution	: 1,280 x 1,024 or higher
(15) Contrast sensitivity	: 3% plate (A steel thickness of 2mm imaged behind 100mm of steel) or higher
(16) Image processing function	: Discrimination between organic and non-organic material by high and low energy or equivalent system, : Discrimination between low density materials (like tobacco and biscuits), : Edge enhancement, : Proportional image for the inspected image, : Pseudo colour image : Automatic visual identification of suspicious item for operator assist, : Operator training program, : Automatic image archiving (100,000 images or more), and : RAID-5 filing system shall be provided for the storage of images.
(17) Computer system	: 2 GHz CPU, 4 GB DDR2 SDRAM, 250 GB hard disk, or more. : Display image should be able to be forwarded on the console desk. (Form the first display monitor to the 2nd display monitor).
(18) IP network connection	: Ability to be integrated within an IP network to enable remote monitoring from central control room.
(19) Emergency stops	: Shall be furnished at easy accessible point of operator room, portal and other location.
(20) Scan direction	: The direction of travel can be specified
(21) Counter	: Shall has the counter for the number of inspected vehicles
(22) Self-test and protection function	: Self test shall be carried out when switched on with fault alarm capability, : Self-protection function from over voltage, over current and overheating shall be furnished.
(23) Radiation doses	: Compliant with ICRP 60 for radiation leakage. Less than 0.5μSv/hr in average dose measurement in operator room, and outside X-ray operation corridor without shielding doors.
(24) Air conditioner	: Install in x-ray emission unit.
(25) Power supply with stabilizer	: 50 kVA or less, three-phase four wire 400 / 230V ± 10% , 50Hz
(26) UPS and stabilizer	: Shall have capability of 20 minutes holding of computer operation and safely shut down of operating system, when AC main power is interrupted. : Shall provide stabilizer to protect the equipment by voltage fluctuations.
(27) Cables, conduits, power outlets and data outlets	: Provide all related materials for the above system including a necessary power cables, data cables, control cables and connecters
(28) Operating temperature	: -15 to +50 deg C.
2. Console desk	
(1) Desk	: Sufficient size for 2 Nos. of display monitors and control console in operation room. Steel and/or aluminium construction.
(2) Display monitor	: 20 inches, 1280 x 10240 or larger colour LCD monitor for X-ray image. 2 sets each desk.
(3) Desk chair	: Fit to use for operator. 5 Nos. Steel and/or aluminium construction.
3. Server rack	: Sufficient size for computer server and hard desk recorder. Steel and/or aluminium construction.
4. Curb pipe	
(1) Install place	: Right and left to inspection vehicle travels in X-ray inspection corridor

(2) Exposed height and length	: 200mm form the corridor surface and 20m long
(3) Products	: Cylindrical section, made of steel or stainless steel, anchored into the concrete foundation.
(4) Structural requirement	: Shall withstand 50 kJ, kinematic energy, by vehicle impact.
5. Protection bollards	
(1) Install place	: Both entrance and exit of X-ray inspection corridor
(2) Exposed height	: 2.6 m height portal type fixed, form the corridor surface.
(3) Products	: Cylindrical section, made of steel or stainless steel, anchored into the concrete foundation.
(4) Structural requirement	: Shall withstand 50 kJ, kinematic energy, by vehicle impact.
6. CCTV system for surveillance	Shall be monitoring of the gateway to inspection vehicle and the whole facility.
(1) Outdoor type network camera	: CCD 1/4" (or larger) type, 752 x 582 effective pixels or more, PAL signal type, : F-number of lens not more than 1.6 (at wide position), : Four (4) PTZ and four (4) fix cameras or more
(2) Monitor TV	: 20 inches, 1280 x 1024 resolution, or larger colour LCD monitor. 2 sets
(3) Camera control system	: Shall control cameras, up to 16 cameras, and display monitor, : Ethernet 100BASE-T(X) or higher and HDMI data in/out, : Camera and monitor selection shall be possible, : Camera function, lens function and pan/tilt shall be able to control
(4) Digital disk recorder	: Ethernet 100BASE-T(X) or higher. Up to 16 cameras, : Disk capacity 800 GB or more with RAID 5 filing system
(5) Power unit	: AC230V±10%, UPS 20 minutes
(6) Cables, conduits, power outlets and data outlets	: Provide all related materials for the above system including a necessary power cables, data cables, control cables and connecters
7. CCTV system for OCR	Shall capture to OCR of front and rear license plate number more than 95% of accuracy. OCR shall be integrated with the X-ray images.
(1) Outdoor type network camera	: CCD 1/3" (or larger) type, 1329 x 1049 effective pixels or more, PAL signal type, F-number of lens not more than 1.2 (at wide position). Four (4) PTZ
(2) Monitor TV	: 20 inches, 1280 x 1024 resolution, or larger colour LCD monitor. 2 sets
(3) OCR and system controller	: The captured image shall be converted text via OCR. Camera selection, function, lens function and pan/tilt shall be able to control
(4) Power unit	: AC230V±10%, UPS 20 minutes
(5) Cables, conduits, power outlets and data outlets	: Provide all related materials for the above system including a necessary power cables, data cables, control cables and connecters
8. Signalling system	: Install the signal of Red and Green lamp at entrance, and speed sign in the X-ray inspection corridor for drivers, : Provide all related materials for the above system including sensors, a necessary power cables, data cables, control cables and connecters.
9. Public address system	: Install in the X-ray inspection corridor to provide instructions to drivers form operation room, : Provide all related materials for the above system including 4 nos of speakers, 2 nos of microphones, a necessary power cables, communication cables and connecters.
10. Radiation marker	: Put the radiation marker of JIS standard to both entrance and exit of the X-ray inspection corridor.

11. Personal instant dose monitor meter	: Easy operation and the portable type; 5 sets. : Sensitive to X and μ radiation, β particles, : Direct readout of dose, : Display Sv and rem with prefixes, : Resolution for display 1μSv (0.1mrem) up to 10mSv (1rem), : Dose rate display 0μSv to >4Sv/h, : Memory (10 years data retention without battery), : Audible and visual alarms for dose, dose rate, count down time, read time and failure modes.
12. Geiger-Muller or semiconductor radiation detector	: Easy operation and the portable type; 2 sets. : 15keV to 3MeV of energy range, : Spectrum length (1024 channels), : 100 spectra data storage, : >100kcps throughput, : 0.01μSv to 1000mSv of dose rate, : Available 5 presets of alarm level.
13. Colour printer	: Commercial type network colour laser printer, fit to operation system, A4 or larger paper size, 500 sheets or more paper bin, : Provide all related materials for the above system including a necessary power cables, data cables and connecters.
Spare parts	: Manufacturer's recommended spare parts for two (2) years operation under normal condition shall be supplied, as physical substance other than warranty.
Consumable	: Not required
Warranty	: One (1) year
Remarks (1) Standards of manufacturing	: Conform to U.S. Code of Federal Regulations, 21 CFR 1020.40 for cabinet x-ray systems. Designed for compliance with UL /CE requirements.

EQUIPMENT SPECIFICATIONS

Form-2

Equipment No. : 3	Equipment Name :Walk-Through Metal Detector	Qty. : 2 units
Component No. : -	Component Name: -	Qty. : -

Purpose of Use:

The equipment shall be installed in passenger inspection room, for woman and man, to screen passenger before enter to Jordan at Al-Karamah Border Crossing.

Composition:

1. Walk Through Metal Detector : 2 units (for woman and man)

Specification

1. Walk Through Metal Detector

(1) Gate interior dimension	: 700 (W) x 2,000 (H) mm, or more
(2) Exterior dimension	: 920 (W) x 2,300 (H) x 700 (D) mm, or less
(3) Target pinpointing	: Multiple (8 zone or more)
(4) Object of detection	: Ferrous and none-ferrous metal
(5) Sensitivity step	: 100 steps or more
(6) Sensitivity control	: Adjustable to the threat level. Setting of the sensitivity shall only be possible by authorized persons.
(7) Sensitivity program	: Shall be covering a complete range of border crossing security application.
(8) Magnetic intensity	: comply with NILECJ-STD-0601 (level 1-5).
(9) Visual alarm	: LED
(10) Audible volume	: Adjustable more than 10 steps
(11) Alarm tone	: Selectable or programmable
(12) Function	: Traffic counter, Alarm counter, Random alarm
(13) Safety	: Shall not give a detrimental effect to pacemaker wearer, pregnant, electrical or electronic devises and magnetic storage media.
(14) Elimination of interference	: Shall be capable to eliminate electrical interfering noise from surroundings.
(15) Power supply	: Single-phase 230V±10%, 50 Hz
(16) UPS and stabilizer	: Shall have capability of 20 minutes holding when AC main power is interrupted. : Shall provide stabilizer to protect the equipment by voltage fluctuations.
(17) Operating temperature	: 0 to 40 C deg.
(18) Certification	: Certified equipment by Authorized Organization

Spare parts	: Manufacture's recommended spare parts for 2 years operation under normal condition shall be supplied, as physical substance other than warranty.
Consumable	: Not required
Warranty	: One (1) year

Remarks

(1) Other Standards	: Conform to the latest international standards for EMC/EMI, IEC

EQUIPMENT SPECIFICATIONS

Form-2

Equipment No. : 4	Equipment Name : X-Ray Inspection System for Baggage	Qty. : 1 set
Component No. : -	Component Name: -	Qty. : -

Purpose of Use:

The System shall be installed at the screening checkpoint in the passenger inspection building in order to screen passenger's baggage at Al-Karamah Border Crossing.

Composition:

1. X-ray screening equipment for baggage : 1 system
2. Console desk for 2 displays : 1 set
3. Extension roller : 2 units
4. Combined test piece : 1 set

Specification

1. X-ray screening equipment for baggage

(1)	Dimension	: 2,200 mm H x 1,450 mm W or less
(2)	Mechanical construction	: Steel construction with steel panels
(3)	Tunnel size	: 1,000 mm x 800 mm or more
(4)	Conveyer height	: 250 to 350 mm
(5)	Max. conveyor load	: 135 kg or more
(6)	Conveyor length	: 500 mm or more from tunnel end at both entrance and exit
(7)	Conveyer speed	: 200 mm/s or more (adjustable, with reversed running function)
(8)	Conveyer control	: Forward/reverse/stop control from console desk
(9)	Resolution (wire delectability)	: 36 AWG or more
(10)	Penetration (steel)	: 27 mm or more
(11)	X-ray generator voltage	: 160 kVp or more
(12)	X-ray detector	: L-shaped array
(13)	Image presentation	: B/W, colour
(14)	Zoom	: 16 times or more
(15)	Video resolution	: 1,280 x 1,024 or higher
(16)	Contrast sensitivity	: 4,096 grey level stored or higher
(17)	Image processing function	: Dual or multi energy detection imaging, Edge enhancement, Threat image projection, Automatic visual identification of suspicious item for operator assist, Operator training program, Automatic image archiving (20,000 images or more)
(18)	Emergency stop button	: Shall be furnished at easy accessible point on screening equipment and console desk.
(19)	Self-protection function	: Self-protection function from over voltage, over current and overheating shall be furnished.
(20)	Radiation leakage	: 0.15 mR/hr or less
(21)	Film safety	: up to ISO 1600 or more
(22)	Power supply	: Single-phase 230 V +/- 10%, 50 Hz
(23)	UPS and stabilizer	: Shall have capability of 20 minutes holding when AC main power is interrupted. : Shall provide stabilizer to protect the equipment by voltage fluctuations.
(24)	Operating temperature	: 0 to 40 C deg.

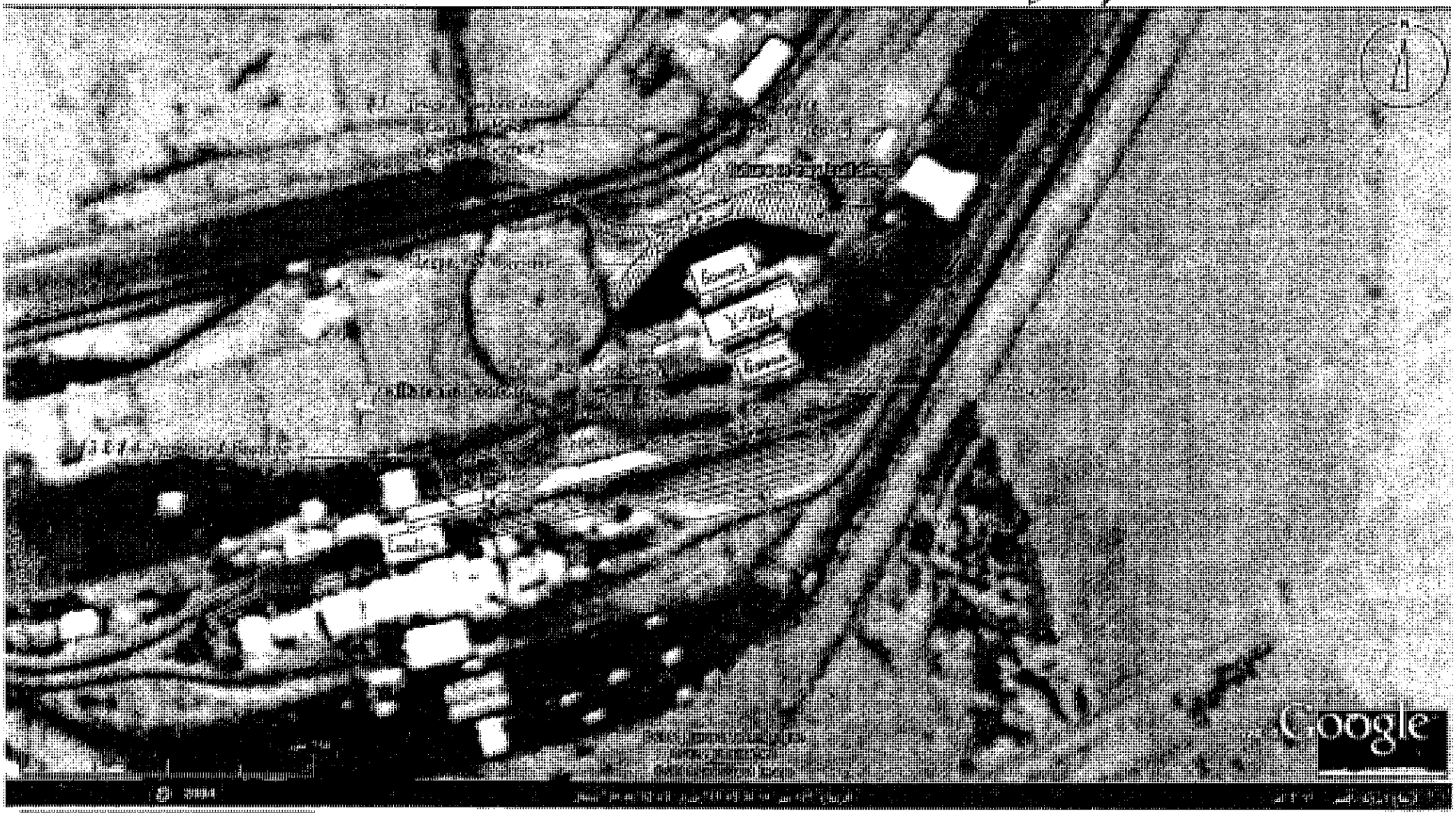
2. Console desk

(1)	Desk and chair	: Independent console desk separated from screening equipment. Sufficient size for 2 no. of display monitors and control console. Steel

	and/or aluminium construction.
(2) Display monitor	: 17 inches or larger colour LCD monitor. 2 Nos. for each screening equipment
3. Extension roller	
(1) Entrance side	: Total length 1.5 m or more including conveyer of screening equipment.
(2) Exit side	: Total length 2.0 m or more including conveyer of screening equipment.
(3) Structure, etc.	: Height, width and shape of extension roller shall conform to conveyer of screening equipment. Legs height of the extension roller shall be adjustable.
4. Combined Test Piece	
(1) Requirement	: Compliance with the latest IATA Security Manual.
Spare parts	: Manufacture's recommended spare parts for 2 years operation under normal condition shall be supplied, as physical substance other than warranty.
Consumable	: Not required
Warranty	: One (1) year
Remarks	
(1) Standards of manufacturing	: Conform to US standard (CFR) and relevant international health and safety regulations.

2011. 10. 13

Attachment-2



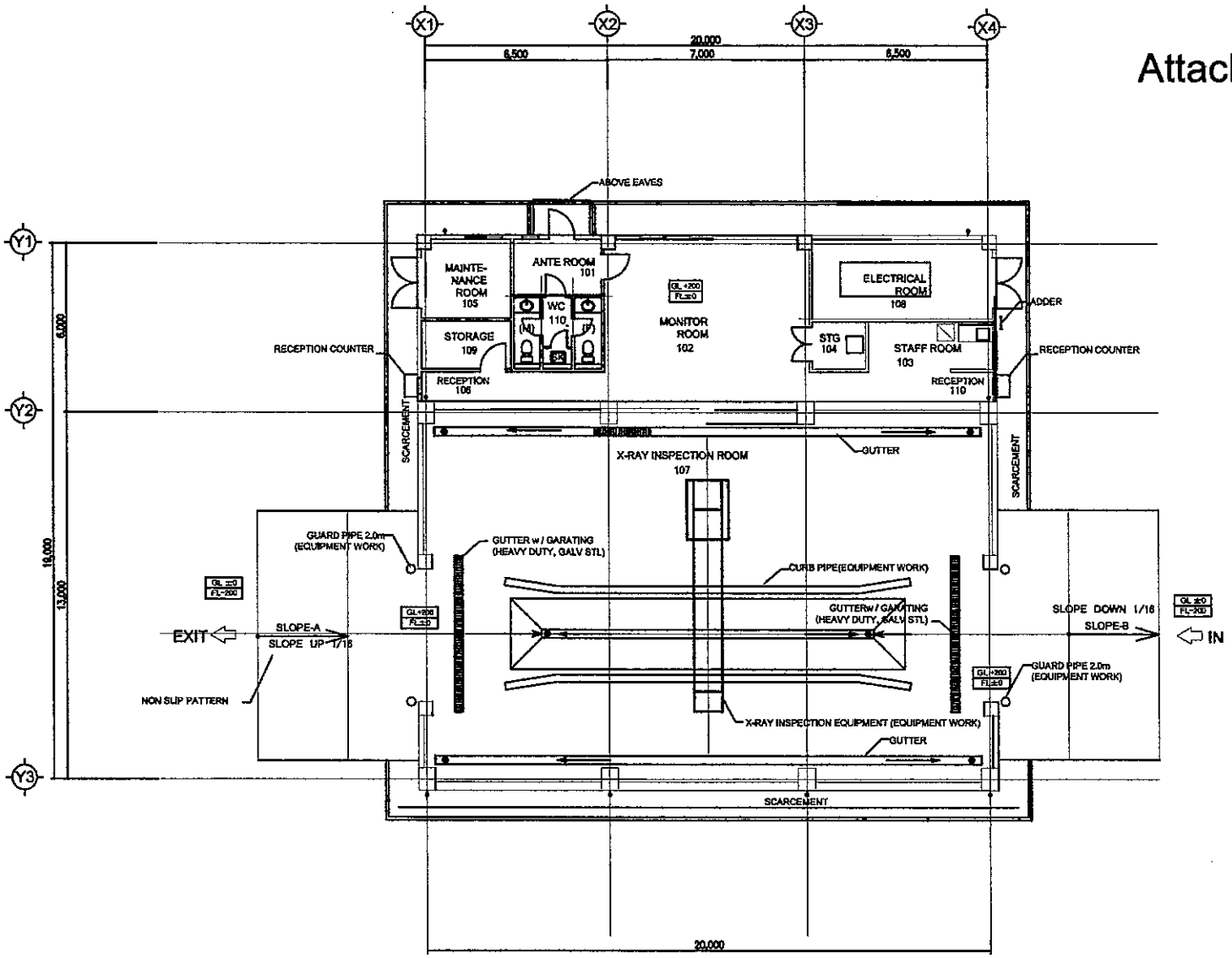
S=1:3450 appx

0 100 200m

⇦ Truck and Tanker
⬅ Passenger Car

Location of Facilities in Al-Karamah Border Site

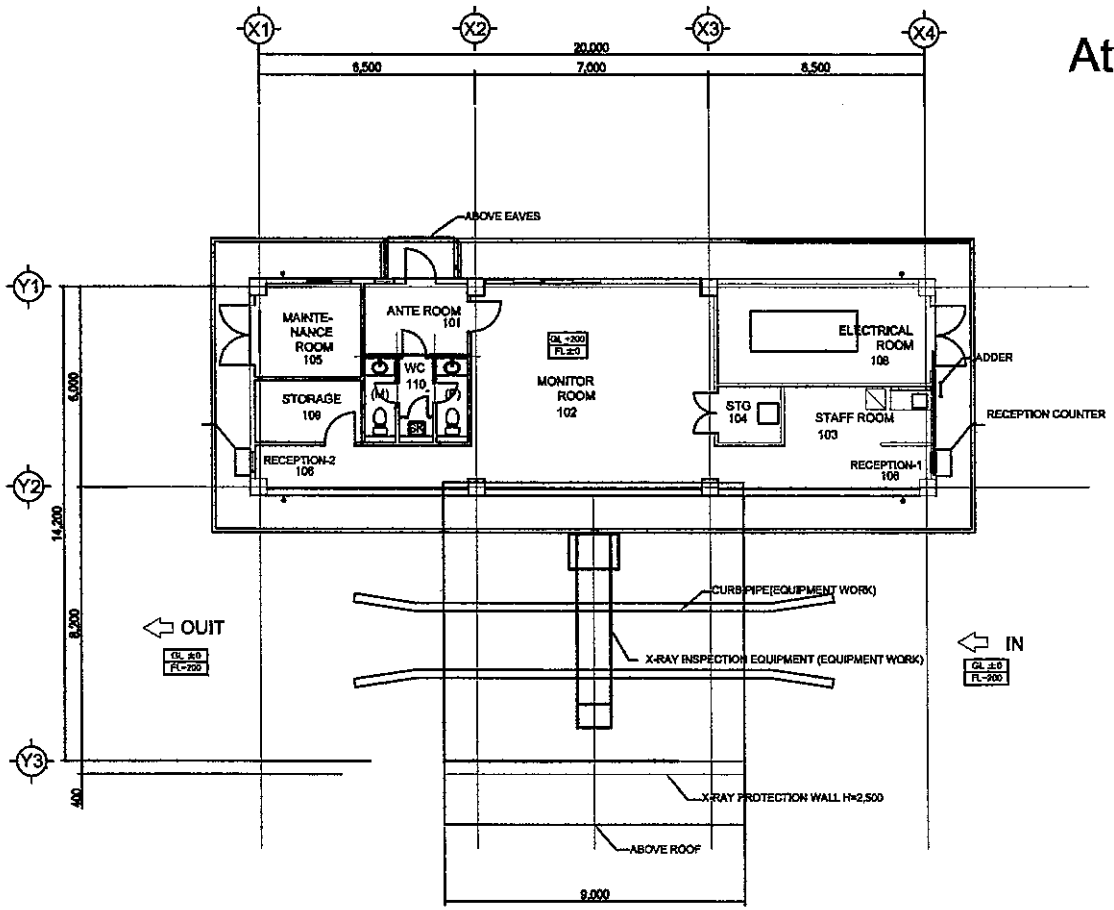
Attachment - 3



1 GROUND FLOOR PLAN

ARCHITECTURAL PLAN FOR X-RAY INSPECTION MACHINE FOR CARGOES AND OIL TANKERS

Attachment - 3



1 GROUND FLOOR PLAN

ARCHITECTURAL PLAN FOR X-RAY INSPECTION MACHINE FOR PASSENGER CARS AND OTHER SMALL VEHICLES

Major Undertakings to be taken by Each Government for the Project

No	Utilities/Equipment	Working item	To be covered by Grant Aid	To be covered by Recipient Side
1	Site Development	Site clearance	Not applicable	
		Paving for queuing space	O	
2	Water Supply	Provide T- Branch with valve	O	
		After T-Branch to facilities	O	
3	Electricity	Application for power supply to Electrical Distribution Company (EDCO)	O	O
		Connection to existing 11kV distribution line		O
		11kV/400 V transformer including, poles, LV Main Panel, kWh meter, cable termination, necessary civil works and registration fee.		O
		From LV Main Panel to facilities	O	
4	Telephone / Communication	Provision of Telephone / Communication System for the facilities		O
5	CCTV	Provision of CCTV System for the facilities		O
6	Sewage Water	From facility to septic tank	O	
		Septic Tank	O	
7	Underground Facilities	Clearance of underground facilities such as CCTV and data cables		O
8	Existing X-ray machine	Removal of existing X-ray machine for Passenger baggage		O
9	Construction Permission			O

Minutes of Discussions
on the Preparatory Survey
on the Project for the Enhancement of Border Security
at Al-Karamah Border Crossing in Jordan
(Explanation of the Draft Report)

From September to October, 2011, the Japan International Cooperation Agency (hereinafter referred to as "JICA") dispatched the Preparatory Survey team on the Project for the "Enhancement of Border Security at Al-Karamah Border Crossing in Jordan" (hereinafter referred to as "the Project") and through discussions, field survey and technical examination in Japan, JICA prepared a draft report of the Preparatory Survey.

In order to explain and to consult with concerned officials of the Government of Jordan on the components of the draft report of the Project, JICA sent to Jordan the Preparatory Survey Team (hereinafter referred to as "the Team"), which is headed by Mr. Kazuto Tsuji, Executive Technical Advisor to the Director General, Industrial Development and Public Policy Department, JICA, from January 23 to 27, 2012.

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

Amman, January 25, 2012

Mr. Kazuto Tsuji Leader Preparatory Survey Team Japan International Cooperation Agency Japan	Mrs. Khulud J. Habaybeh Deputy Director General Customs Department Ministry of Finance The Government of Hashemite Kingdom of Jordan

ATTACHMENT

1. Contents of the Draft Report

   The Jordanian Customs agreed and accepted the contents of the Draft Report (as shown in Annex 1) that was explained by the Team.

2. Confidentiality of the Specification of the Equipment and the Project Cost Estimate

2-1. Confidentiality of the Specification of the Equipment

Both sides agreed that the draft specification is confidential and should never be duplicated or released to any outside parties.

2-2. Confidentiality of the Project Cost Estimate

Both sides agreed that the Project cost estimate is confidential and should never be duplicated or released to any outside parties. The Jordanian side understood that the Project cost estimate is not final and is subject to change.

3. Undertakings by the Jordanian side

   Both sides reconfirmed that the Jordanian side would allocate necessary budget for undertakings which was described in the Draft Report to be conducted in a timely manner.

4. Schedule

   The Draft Report will be submitted to the Japanese cabinet for its approval in February, 2012.

   Both sides agreed to make necessary procedures for the Exchange of Notes and the Grant Agreement which would be signed around April, 2012.

Annex 1. Draft Report

JAPAN INTERNATIONAL COOPERATION AGENCY

THE PROJECT FOR THE ENHANCEMENT OF BORDER SECURITY AT AL-KARAMAH BORDER CROSSING IN JORDAN

SOFT COMPONENT (TECHNICAL ASSISTANCE) PLAN

May 2012

ORIENTAL CONSULTANTS CO., LTD.

CONTENTS

Attachment

1 Background of the Soft Component Work

1-1 Background of the Project and Outlines of the Main Operation

The Al-Karamah Border Crossing is located about 360 km from Amman, the capital of the Hashemite Kingdom of Jordan (hereafter Jordan), on the border between Jordan and Iraq. It is on the major route connecting Bagdad, in Iraq, with Amman, and is the only border crossing along the 181 km border that Jordan shares with Iraq. To prevent smuggling, a 1.5 to 3 m ditch was constructed along the entire border with Iraq, and the military patrols the border to discourage illegal immigration.

In 2006, the perpetrators of a terrorist incident in Amman entered Jordan through the Al-Karamah Border Crossing. On December 3, 2010, terrorists crossed the same border and exploded two cars in suicide bombings. Incidents such as these demonstrate that the Al-Karamah Border Crossing, the only one on the border between Iraq and Jordan, continues to be a source of instability. In addition, given the continuing risk of weapons and explosives entering Jordan from Iraq, this border remains one that Jordan is highly focused on.

To add to the problem, in accordance with its agreement with Iraq, the United States has withdrawn all its military units stationed in that country by the end of 2011. Following that, the US has been losing much of its power of deterrence, and it is assumed that the risk to Jordan, which is pro-US and allows US bases on its soil, will increase. Al-Qaeda is located in the northern region of Iraq, and next to Baghdad is seen as an area of insecurity due to terrorism and other incidents. It is vital that Jordan establish terrorism countermeasures at Al-Karamah, which is on the border with this area, in order to maintain public safety.

Currently, as imports of crude oil from Iraq increase, all crude oil must be transshipped at the border crossing as part of measures to maintain public safety. In the near future, the plan is to allow oil tankers from Iraq to enter Jordan directly. In light of this, it will be necessary to strengthen the ability to perform inspections by using inspection machinery with greater penetration power.

The number of people passing through the Al-Karamah Border Crossing was much lower at one time due to limitations on the passage of buses, taxis and private vehicles. However, in 2008, these numbers began trending upward from a low point, and in 2010, 316,938 people entered Jordan here. The number of vehicles crossing the border also began increasing suddenly in 2009, and in 2010, 195,941 vehicles crossed into Jordan.

The major reason for this was the increase in imports of crude oil from Iraq. Additionally, demand for consumer goods revived in Iraq, and there was an increase in exports of foodstuffs, chemical products, plastic products, metal products, and various types of equipment and electronic goods, among many others. This is seen as another reason for the increased border traffic. Yearly exports in 2008 and 2009 were almost double those in 2007 and earlier.

It is necessary to maintain an inspection system that can handle the above-mentioned flows of people and goods, while at the same time ensure public safety. The equipment used for security checks at the Al-Karamah Border Crossing includes X-ray and gamma ray inspection equipment provided under a comprehensive US support package. However, 7 to 9 years have passed since this equipment was installed. Concerning the current vehicle inspection equipment, there are a number of problems: for gamma ray equipment, performance declines over time due to the half-life of the gamma rays; the equipment has insufficient ability to penetrate thick steel plates; compared to the newest equipment, much more time is required at inspection stations; and there is insufficient data

storage capacity for images. Concerning inspection equipment for hand-carried baggage, the problems are that two of the three units available are already out of commission, and the detecting range of the single operating unit is insufficient; in addition, the images it does produce are exceedingly blurred. Because of this, inspection of all hand-held baggage is now performed manually. There are no metal detectors or passenger-side inspection machines, so everyone is subject to physical searches and pat-downs.

All trade between Jordan and Iraq is conducted over the border they share, and it all passes through one point – the Al-Karamah customs house. For this border customs house, where the danger from inbound weapons and explosives is very high, it is vital that the correct inspection equipment and the personnel to run it are installed, so that they can accurately and quickly inspect the freight vehicles, cars and people passing through, the numbers of which increase every year.

With these conditions as a background, the Jordanian government has requested the cooperation of the Japanese government in the form of grants of X-ray and gamma ray inspection machines. In response, JICA implemented a preliminary survey in March 2011, to confirm the validity of the request and struck an agreement with Jordan to proceed with a preparatory survey (outline design), based on the results of the review of the current situation and needs, that will provide four types of the requested equipment, for a total of five machines. An outline of the agreed-upon grant aid is shown in Table 1.

Table-1 Outlines of the Project for the Enhancement of Border Security at Al-Karamah Border Crossing

Overall Goal	Mobility of people and goods becomes more efficient through more stabilized security status in the region.
Project Purpose	Terrorism prevention measures including the prevention of illegal goods are strengthened with further enhanced functions of customs and security enforcement at the Al-Karamah Border by installing modern scanning equipment.
Expected Achievement	Equipment is provided, including buildings to house the equipment, at the Al-Karamah Border for security screening and customs inspection.
Indicators	I Security screening and customs inspection equipment of high capability has been provided, and security screening and customs inspection are being implemented for vehicles, cargo, passengers, and baggage. II Time spent for security screening and customs inspection has been reduced to 0.5 minutes (with project) from 2 to 15 minutes (at present) for one cargo or oil tanker X-ray inspection.
Proposed Equipment by Japanese Side	I X-ray inspection machine for cargo trucks and oil tankers and building to house the equipment II X-ray inspection machine for passenger cars and other small vehicles and building to house the equipment III Walk-through metal detector IV X-ray inspection system for baggage

Equipment No. I

Equipment No. II

Eq. No. III

Equipment No. IV

Source: Prepared based on preliminary and preparatory survey results.

1-2 Necessity of the Plan

The existing inspection equipment is used to strengthen border security under US support, and the maintenance and use of the equipment is overseen by the Jordanian General Intelligence Department and the Ministry of the Interior, Public Security Directorate. However, the equipment to be installed using this grant aid is to be overseen by the Ministry of Finance, Jordan Customs Department (hereafter, Jordanian Customs), and the original system is scheduled to change to a system of border customs clearance and management. Appropriate guidance will be required for the Jordanian Customs staff members, who will be handling the operation and maintenance of the security screening / customs inspection equipment[1]. In addition, so that the new equipment will be able to take over the work of the existing equipment as soon as it is installed, it may be necessary to consider operating the new and old equipment side-by-side for a period of time. Also, the new equipment includes machines that emit about two times the amount of radiation as the old equipment, so more thorough safety management is required to ensure that safety is maintained through proper equipment handling.

Based on this viewpoint, the Jordanian Customs Training Center plans to implement a certain training program, while the manufacturer(s) is supposed to provide operational guidance under the supply contract of this Grant Aid. The preparatory survey addresses the previously unaddressed training activities, which are necessary to supplement the plans for the operation and maintenance and use of the security screening / customs inspection equipment, including both existing equipment and new equipment.

2 Objective of the Soft Component Work

The objective of the Soft Component Work is to formulate a basis for smooth initiation of operation and maintenance for security screening / customs inspection equipment to be provided by Japan's Grant Aid scheme "THE PROJECT FOR THE ENHANCEMENT OF BORDER SECURITY AT AL-KARAMAH BORDER CROSSING IN JORDAN," under leadership of Jordanian Customs.

3 Outputs of the Soft Component Work

Outputs to be accomplished at the end of the Soft Component Work are as follows:

1. The trainees formulate management plans that are required for good operation and maintenance of the security screening / customs inspection equipment.
2. The trainees understand how to prevent and handle problems with the system and/or malfunctions concerning the security screening / customs inspection equipment operations.
3. The trainees ensure radiation safety against high-energy X-rays that the security screening / customs inspection equipment generates.

[1] In this document, current X-ray and gamma ray inspection equipment at Al-Karamah and inspection equipment provided through this grand aid are referred to as "security screening / customs inspection equipment."

4 Means of Confirming Achievement Level of the Results

Regarding this project, an interactive training program has been devised, with hands-on practice provided for the target group for training ("trainees" below), in addition to lectures, in order to instill the ability to work independently. By having the trainees create their own specific management plans and all manuals, it will be possible to elicit independent action from them going forward, while also providing an index by which to gauge the trainees' understanding and achievement levels. Concerning outputs for which created material is not required (created material, such as plan documents, serve as confirmation indicators), tests will be administered to the trainees to confirm levels of achievement.

Confirmation indicators used as methods for confirming levels of achievement for outputs are displayed below.

Table -2 Indicators for the confirmation of a level of achievement of the outputs

Outputs	Indicators	Means of Acquiring Indicators
1. The trainees formulate management plans that are required for good operation and maintenance of the security screening / customs inspection equipment.	1-1 A security screening / customs inspection equipment transition plan is created by the operation and management planners for the equipment (hereafter planners) receiving training, including provisions for future improvements. 1-2 A human resources management plan is created by the planners receiving training in order to make good use of the security screening / customs inspection equipment. 1-3 A plan for improving the inspection flow following the introduction of the new equipment is created by the planners receiving training.	1-1 Completed transition plan 1-2 Completed human resources management plan 1-3 Completed inspection flow improvement plan
2. The trainees understand how to prevent and handle problems with the system and/or malfunctions concerning the security screening / customs inspection equipment operations.	2-1 The trainees create checklists and chain-of-command charts for preventing problems and handling issues regarding the security screening / customs inspection equipment. 2-2 The trainees create an engineering maintenance plan for preventing problems and handling issues regarding the security screening / customs inspection equipment.	2-1 Completed checklists and chain-of-command charts. 2-2 Completed engineering maintenance plan
3. The trainees ensure radiation safety against high-energy X-rays that the security screening / customs inspection equipment generates.	3-1 At the end of the training period, confirm by scoring more than 80% correct answers on a comprehension test covering fundamental radiation protection safety knowledge.	3-1 Results of comprehension test

Source: Prepared by survey team

5 Activities of the Soft Component Work (input plan)

5-1 Activities

Activities for the expected outputs through the implementation of the Soft Component Work are as shown in Table-3 below:

Table-3 Outputs and activities of the Soft Component Programs

Outputs	Activities
1. The trainees formulate management plans that are required for good operation and maintenance of the security screening / customs inspection equipment.	1-1 Knowledge acquisition of actual and example sites, including site visits to Al-Karamah Border and Queen Alia International Airport as an example case 1-2 Planning of seamless transition from present to new security screening / customs inspection systems 1-3 Planning of human resources required for operation and maintenance of the security screening / customs inspection equipment 1-4 Planning of inspection flow improvement regarding the said transition and future renewal of the equipment
2. The trainees understand how to prevent and handle problems with the system and/or malfunctions concerning the security screening / customs inspection equipment operations.	2-1 Knowledge acquisition of newly introduced equipment, including site visits to Al-Karamah Border and the manufacturer's factory to draft manuals including problem prevention and countermeasures 2-2 Implementation of trainings (or practices) for problem prevention and countermeasures, applying the said draft manual above 2-3 Preparation of checklist for problem prevention and countermeasures / chain-of-command chart 2-4 Preparation of preventive maintenance plan including problem prevention and countermeasures to manage the security screening / customs inspection equipment
3. The trainees ensure radiation safety against high-energy X-rays that the security screening / customs inspection equipment generates.	3-1 Preparation of reading material regarding basics for Radiation Safety of High-energy X-rays 3-2 Lecture on basics for Radiation Safety of High-energy X-rays using the said reading material 3-3 Achievement test at completion

Source: Prepared by survey team

Below are listed the specific training details for achieving the various outputs.

Output 1: The trainees formulate management plans that are required for good operation and maintenance of the security screening / customs inspection equipment.

Clearly explain the performance of the security screening / customs inspection equipment, and following the installation of the new equipment, explain customs duties and the operation and maintenance of the equipment through lectures and hands-on practice. The lectures will cover the following topics.

a) Configuration of the current X-ray and gamma ray inspection equipment, etc.

b) How to operate the current X-ray and gamma ray inspection equipment

c) Configuration of the newly installed inspection equipment

d) Switching from the current to the new equipment and future equipment updates

e) Human resources and personnel training required for operation and management of the security screening / customs inspection equipment

f) Improvement of the inspection flow using the equipment

After implementing the above training, a workshop will be held with people concerned with Jordanian Customs on the correct way to perform customs duties at the Al-Karamah Border Crossing, and Jordanian Customs personnel and other concerned people in order to facilitate a decision on a security screening / customs inspection equipment management plan.

Output 2: The trainees understand how to prevent and handle problems with the system and/or malfunctions concerning the security screening / customs inspection equipment operations.

Explanations as to the functions and characteristics of the security screening / customs inspection equipment will be provided as a combination of lectures and observations either on-site or at the manufacturer's factory. In addition, lectures will explain how to create checklists for inspecting systems and equipment for malfunctions, a chain-of-command chart for dealing with problems, and training texts (draft manuals) on equipment maintenance to prevent problems and how to handle problems when they do occur. The lectures will cover the following topics.

a) The techniques, skills and planning for daily and periodic inspections

b) Taking climate conditions (heat, sand) into consideration when cleaning the equipment

c) How to handle power outages

d) Appropriate techniques, skills and planning for daily and periodic inspections

e) Examples of malfunctions caused by incorrect operation and safeguard systems

f) How to respond rapidly and correctly when the equipment malfunctions

g) Contracts with maintenance service providers for machine inspections and repairs

After implementing the above training, the creation of a manual by Jordanian Customs officials on preventing and handling problems with the security screening / customs inspection equipment will be facilitated.

Output 3: The trainees ensure radiation safety against high-energy X-rays that the security screening / customs inspection equipment generates.

Training will be provided on the effects caused by exposure to X-rays and gamma rays, and in order to ensure the safety of inspection personnel and other workers in the vicinity, a training text will be created that presents fundamental knowledge concerning radiation protection, and guidance will be provided.

a) The effects of radiation released by the current and new equipment

b) Points to remember concerning radiation protection when operating X-ray or gamma ray equipment

5-2 Inputs

Inputs are summarized in the table below. The training target group (trainees) for this Grant Aid project (the Project for the Enhancement of Border Security at the Al-Karamah Border Crossing) mainly consists of Jordanian Customs personnel who will be in charge of the security screening / customs inspection equipment at the Al-Karamah Border Crossing, and they will be selected from the agencies executing this Grant Aid project: Jordanian Customs, the Ministry of Public Works and Housing, the Public Security Directorate, and the Jordanian General Intelligence Department.

Table-4 Inputs

	Jordanian Side	Japanese Side
Inputs	Trainees (Target Group): (1) Management level planners, maintenance engineers, operators: 10 persons (see Note 1) (2) Maintenance engineers, operators: 10 persons (see Note 2) Training Facilities: Rental Conference Room in Amman - Lecture and work shop-type activities Al-Karamah Site - Observation of actual introduced equipment Manufacturer's factory - Visit for in-depth technical knowledge Queen Alia International Airport - Example site in similar operation Operation and Maintenance Cost: JD 500,000 / Year	Instructors: Corporate Consultants 1. Security Screening Specialist: 1.0 M/M 2. Facilitator: 1.33 M/M 3. Arabic Interpreter: 1.33 M/M Period of Soft Component Work: Forty (40) days from around October 2013

Note 1) To be selected mainly from officers of Jordanian Customs and also General Intelligence Department (GID), Ministry of Public Works and Housing (MPWH), and Public Security Directorate (PSD).

Note 2) Including new engineers and operators currently being requested for the Project

Source: Prepared by survey team

The plan is to provide two corporate consultants to act as lecturers: the above-mentioned Security Screening Specialist (1 person) and Facilitator (1 person). The Security Screening Specialist will be in charge of lectures from the technical perspective, including providing basic knowledge about the newly installed security screening / customs inspection equipment.

The Facilitator will oversee the overall training process, logistics, and creation of reports, in addition to making sure that the trainees themselves smoothly create specific plans and manuals, in order to instill in them a sense of independence.

The training target group (trainees) will mainly be composed of day-shift central government employees and engineers who switch weekly between working in the field and in central government offices (total, about 20 people); because of the length of the training period, certain consideration must be given so that people can be away from their regular job. In addition, trainees will be selected from among new operators who will live in on-site residences and work in shifts, but training will be required before assignment and actual work.

6 Procurement Method of Resources for Soft Component Work

The equipment used for security checks at Jordan's Al-Karamah Border Crossing includes X-ray and gamma ray inspection equipment provided through US support; the operation and maintenance of this equipment is overseen by the Jordanian General Intelligence Department and the Public Security Directory of the Ministry of the Interior. Following the installation of the new equipment, a system will be instituted under which Jordanian Customs will oversee the operation and maintenance of the new security screening / customs inspection equipment, but as for the existing inspection equipment, Jordanian Customs will cooperate with the Jordanian General Intelligence Department and the Public Security Directory of the Ministry of the Interior to provide training. Concerning specialized technical support rather depending on product's characteristics, an agreement has already been reached with the Implementing Agency that the manufacturer(s) in charge of supplying the equipment shall provide trainings under the supply contract; therefore, this Soft Component plan assumes that the corporate consultants will provide more extensive technical assistance for operation and maintenance of the equipment. Of the new equipment, concerning the X-ray equipment for both cargoes and oil tankers / passenger cars and other small vehicles, plans are in place to inspect the actual equipment at the site of installation. Moreover, for trainees who must acquire advanced operation and maintenance technology, there is a plan to visit the factory of the manufacturer(s) in charge of supplying the equipment, for in-depth observations of the equipment and of higher-level maintenance. Concerning inspection equipment for passenger and for hand-held baggage, similar equipment is already in use at the Queen Alia International Airport in Amman, and with the cooperation of airport officials, there is a plan to observe the operation and maintenance of this similar passenger and hand-held baggage inspection equipment.

Concerning the language abilities of the training target group (trainees), since the preliminary survey showed that conducting training solely in English would be very difficult, it will be necessary to secure the services of an Arabic interpreter (1 person). It will also be necessary to translate some portions of the training text and manuals into Arabic.

7 Implementation Schedule of the Soft Component Work

Implementation schedule of the Soft Component Work is as shown in the tables below:

Table-5.1 Implementation Schedule 1
(training of operation and management skills for security screening / customs inspection equipment)

Year	2012			2013								2014
Calendar month	10	11		5	6	7	8	9	10	11	12	1
Months	1	2	…	8	9	10	11	12	13	14	15	16
Equipment manufacturing												
Ocean transport												
Installation, adjustment and test-run												
Training by manufacturer												
Building works												
Commissioning / hand-over												
Removal of temporary facilities / demobilization												
Soft Component work												

Source: Prepared by survey team

Table-5.2 Implementation Schedule 2
(management of training)

Weeks	1	2	3	4	5	6
Days	1	8	15	22	29	36
Trip to Jordan (2 days)						
Training textbook preparation (10 days)						
Activities [1] (7 days)						
Activities [3] (2 days)						
Activities [2] (7 days)						
Activities [3] (2 days)						
Report (1 day)						
Post-monitoring (7 days)						
Return to Japan (2 days)						

Source: Prepared by survey team

8 Outputs of the Soft Component Work

Reports for Soft Component Work are as shown in Table-6 below. Consultants will prepare and submit a Final Report to the Implementing Agency, Jordanian Customs, in English. Consultants will prepare and submit to JICA a Completion Report in Japanese language with the said Final Report attached thereto.

Table-6 List of Reports

1. Final Report (submit English version to Jordanian Side)
   (1) Planning and Implementation of Activities
   (2) Planning and Accomplishment of Outputs
   (3) Factors that have affected Accomplishment of Outputs
   (4) Problems / Issues and Recommendations for Sustainability of Outputs
   (5) Items of documents, etc. as the part of Outputs
2. Completion Report (submit Japanese version to JICA prepared using a format specified in the guidelines)
   (1) Outline of the Project (Name of the Project, Date of E/N, Amount of E/N, Consultant Fee)
   (2) Outline of Soft Component Work (Expenses, Background, Planned Objectives, Planned Outputs, Planned Activities, Assigned Personnel, Participants of Jordanian Side's, Implementing Agency including duration and M/M, Activities Achievement, Situation of Outputs Achievement)
   (3) Issues and suggestions for achieving objectives while sustaining and extending the effects
   (4) Attachments (Implementation Schedule for Soft Component Work, Participants from Jordanian Side, Attendance List, List of Outputs)
   (5) Other materials (Outputs including Final Report submitted to Jordanian Side, their prepared Manuals, distributed Textbook, Results of Achievement Tests and others including Video Clips, Photos, Newspaper Articles, etc., if any)

Source: Prepared by survey team

Jordanian-side outputs that shall be prepared during the Training are as follows:

- Transition plan for security screening / customs inspection equipment
- Human resources plan for security screening / customs inspection equipment operation
- Inspection flow improvement plan
- Checklist for problem prevention and countermeasures / chain-of-command chart
- Engineering maintenance plan for the equipment including problem prevention and countermeasures

9 Rough Project Cost of the Soft Component Work

As shown in the table below, the estimated cost of the Soft Component Work is about 10,725,000 yen. There are no local subletting costs.

Table-7 Rough Project Cost

Item	Amount (thousand yen)
Direct personnel expenses	1,618
Direct expenses	7,035
Overhead costs	2,072
Total	10,725

Source: Prepared by survey team

Nothing is absolute until the results of the tendering on the supply contract about specific name of manufacture(s); however, the projected costs above were calculated using a factory in Manchester, England, as the supposed training inspection site. Depending on the actual results, these numbers may change, and in the case of a large fluctuation, the contract will be amended.

10 Jordanian-side Responsibilities

In order for the equipment installed under this Grant Aid project to continue to function effectively, it is necessary for Jordanian Customs, the overseeing agency, to implement the following.

- Follow the manuals and management plans developed during training for the operation and maintenance of the security screening / customs inspection equipment.
- Revise as necessary the manuals and management plans developed during training.
- Continuously train the personnel concerned with the security screening / customs inspection equipment so that the above-mentioned actions can be continued and improved.

Name of Project: Capacity Building for the Operation and Management Skills for Security screening / customs inspection Equipment
Implementation Period: October 2013 – November 2013
Target Area: Al-Karamah Border Crossing in Jordan
Target Group and Number of Trainees: Twenty (20) officers of Jordanian Customs mainly (Note 1) Prepared on: 16 November 2011

Project Summary	Indicators	Means of Acquiring Indicators	External Factors
Project Goal: To prevent the traffic of terrorists and hazardous materials through the Al-Karamah Border Crossing in an attempt to preserve security in the region, while also ensuring the efficient movement of people and goods that are part of the economic system			• The Al-Karamah Border Crossing will not be closed • Jordan guarantees an operating and maintenance budget for the equipment
Project Objectives: To build technical competence of Jordanian Customs so that operation and maintenance work can be implemented for the security screening / customs inspection equipment at the Al-Karamah Border Crossing.	1. Those who have participated in training can operate and maintain the security screening / customs inspection equipment	1. After-training monitoring	• This Grant Aid project is implemented as planned. • Those who participate in training for this project continue in their jobs operating and maintaining the equipment. • Training in improving image analysis ability continues at the Customs Training Center, preserving operators' skills.
	2. The operation and maintenance of the security screening / customs inspection equipment can be carried out by following the manuals and management plans developed by those participating in training.	2. After-training monitoring	
Outputs: 1. The trainees formulate management plans that are required for good operation and maintenance of the security screening / customs inspection equipment.	1-1 A security screening / customs inspection equipment transition plan is created by the operation and management planners for the equipment (hereafter planners) receiving training, including provisions for future improvements. 1-2 A human resources management plan is created by the planners receiving training in order to make good use of the security screening / customs inspection equipment. 1-3 A plan for improving the inspection flow following the introduction of the new equipment is created by the planners receiving training.	1-1 Completed transition plan 1-2 Completed human resources management plan 1-3 Completed inspection flow improvement plan	• All trainees participate in the training program. • The equipment supplier provides trainings (operational guidance) to improve image analysis ability, nurturing operators for newly installed equipment.
2. The trainees understand how to prevent and handle problems with the system and/or malfunctions concerning the security screening / customs inspection equipment operations.	2-1 The trainees create checklists and chain-of-command charts for preventing problems and handling issues regarding the security screening / customs inspection equipment.	2-1 Completed checklists and chain-of-command charts	

Project Summary	Indicators	Means of Acquiring Indicators	External Factors
	2-2 The trainees create an engineering maintenance plan for preventing problems and handling issues regarding the security screening / customs inspection equipment.	2-2 Completed engineering maintenance plan	
3. The trainees ensure radiation safety against high-energy X-rays that the security screening / customs inspection equipment generates.	3-1 At the end of the training period, confirm by scoring more than 80% correct answers on a comprehension test covering fundamental radiation protection safety knowledge.	3-1 Results of comprehension test	
[Activities] 1-1 Knowledge acquisition of actual and example sites, including site visits to Al-Karamah Border and Queen Alia International Airport as an example case 1-2 Planning of seamless transition from present to new security screening / customs inspection systems 1-3 Planning of human resources required for operation and maintenance of the equipment 1-4 Planning of inspection flow improvement regarding the said transition and future renewal of the equipment	[Input] < Jordanian Side > *Trainees (Target Group):* (1) Management level planners, maintenance engineers, operators: 10 persons (see **Note 1**) (2) Maintenance engineers, operators: 10 persons (see Note 2) *Training Facilities:* Rental Conference Room in Amman - Lecture and work shop-type activities Al-Karamah Site - Observation of actual introduced equipment Manufacturer's factory - Visit for in-depth technical knowledge Queen Alia International Airport - Example site in similar operation *Operation and Maintenance Cost:* JD 500,000 / Year	< Japanese Side > *Instructors: Consultant* 1. Security Screening Specialist: 1.0 M/M 2. Facilitator: 1.33 M/M 3. Arabic Interpreter: 1.33 M/M *Period of Soft Component Work:* Forty (40) days from around October 2013	• Jordanian Customs sends appropriate candidates for training.
2-1 Knowledge acquisition of newly introduced equipment, including site visits to Al-Karamah Border and the manufacturer's factory to draft manuals including problem prevention and countermeasures 2-2 Implementation of trainings (or practices) for problem prevention and countermeasures, applying the said draft manual above 2-3 Preparation of checklist for problem prevention and countermeasures / chain-of-command chart 2-4 Preparation of preventive maintenance plan including problem prevention and countermeasures to manage the security screening / customs inspection equipment			Prerequisites: • Concurrence is obtained from the Jordanian side for this Soft Component work.
3-1 Preparation of reading material regarding basics for Radiation Safety of High-energy X-rays 3-2 Lecture on basics for Radiation Safety of High-energy X-rays using the said reading material 3-3 Achievement test at completion			

Note 1 : To be selected mainly from officers of Jordanian Customs and also General Intelligence Department (GID), Ministry of Public Works and Housing (MPWH), and Public Security Directorate (PSD).

Note 2 : Including new engineers and operators currently being requested for the Project

Source: Prepared by survey team

Appendix 6 References

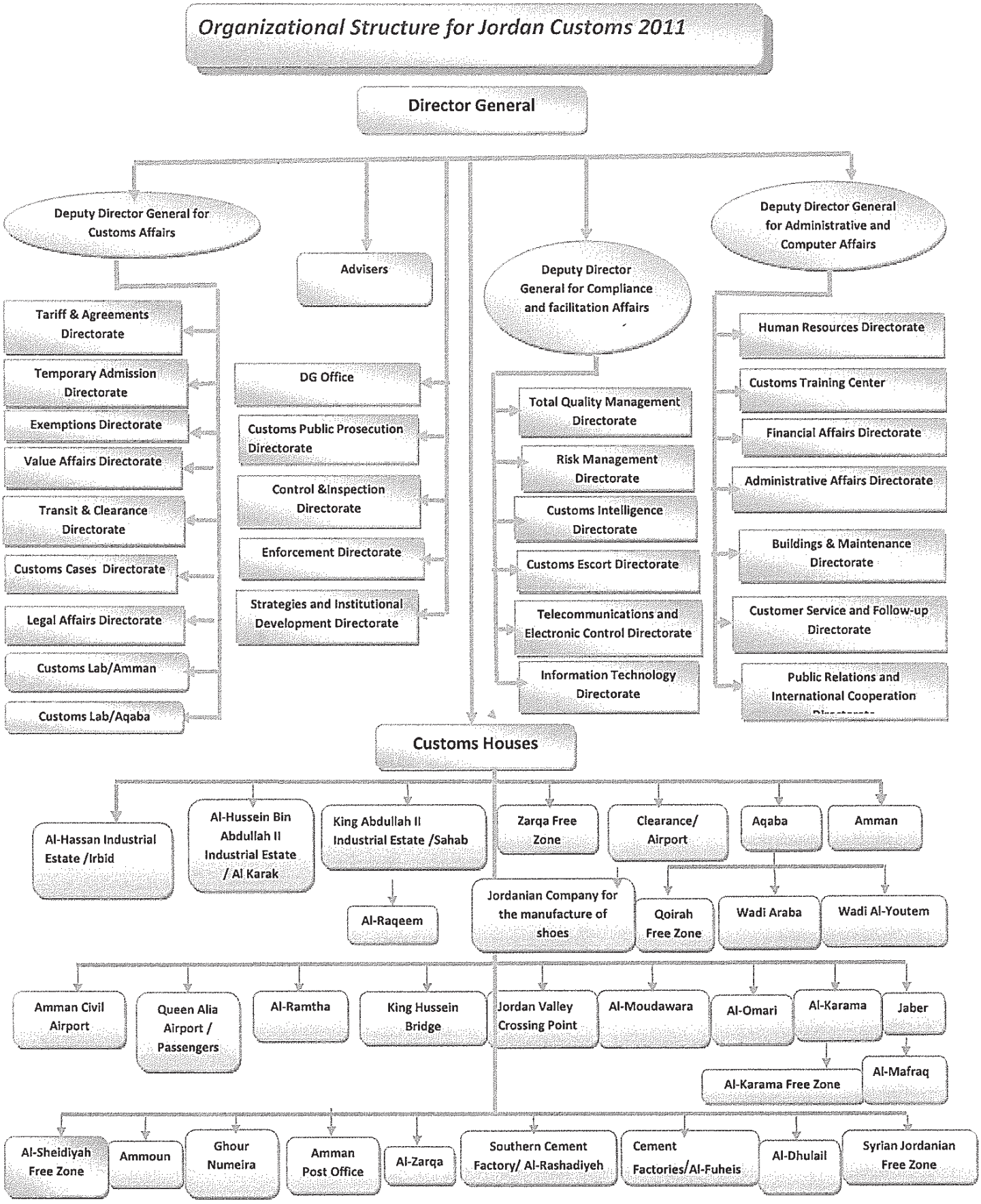
Survey Title: Preparatory Survey (Grant Aid) for the Project for the Enhancement of Border Security at Al-Karamah Border Crossing in Jordan

No.	Title	Media Book / Video / Map / Photo	Original or Copy	Publisher	Year
1	Jordan Building Codes [in Arabic, table of contents in English] (23 volumes)	paper back	original	Jordan National Building Codes Editorial Committee	Latest editions
2	Public Tender Year Book 2010 [in Arabic, partially English]	paper back	original	Ministry of Public Works & Housing	2010
3	Al-Karamah Border Traffic Data (A4 size, 2 sheets)	sheet	original	Presented by Jordanian Customs	2011
4	Jordanian Customs – organization charts (A4 size, 2 sheets)	sheet	original	Presented by Jordanian Customs	2011
5	Jordanian Customs – number of employees (A4 size, 1 sheets)	sheet	original	Presented by Jordanian Customs	2011
6	Jordanian Customs – budget (A4 size, 2 sheets)	sheet	original	Presented by Jordanian Customs	2011
7	Environmental Impact Assessment Regulation [in Arabic]	booklet	PDF	Ministry of Environment	2005
8	Jordanian Customs Training Center – guide [in Arabic]	leaflet	PDF	Jordanian Customs Training Center	不詳
9	Al-Karamah Customs House – entry form for cars [in Arabic]	sheet	copy	Al-Karamah Border Customs House	不詳
10	Al-Karamah Customs House – immigration form [in Arabic]	sheet	copy	Al-Karamah Border Customs House	不詳
11	Al-Karamah Customs House – entry form for trucks [in Arabic]	sheet	copy	Al-Karamah Border Customs House	不詳
12	Al-Karamah Customs House – annual report for 2010 [in Arabic]	sheet	copy	Al-Karamah Border Customs House	2011

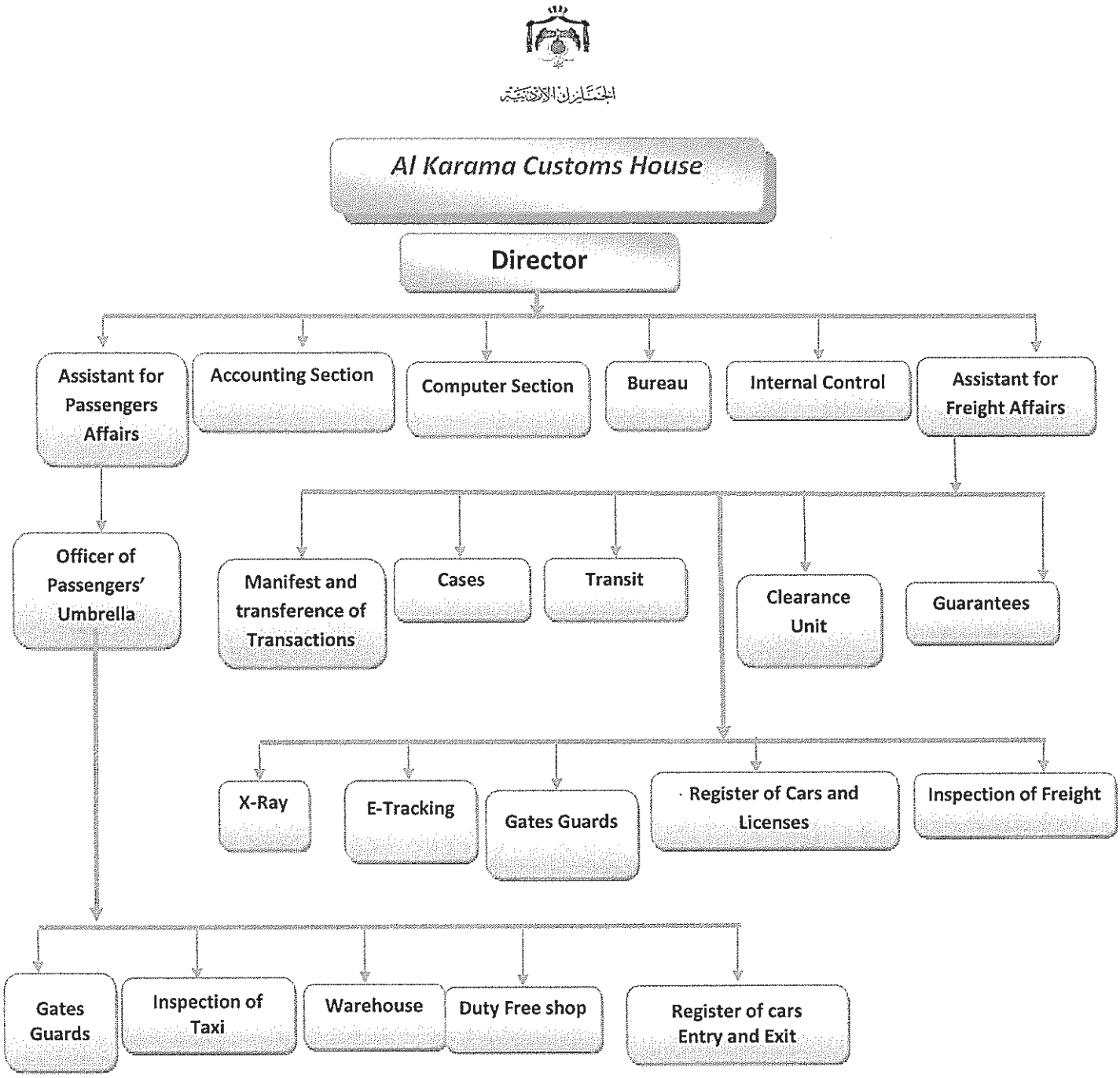
No.	Title	Media Book / Video / Map / Photo	Original or Copy	Publisher	Year
13	Al-Karamah Customs House – report for August 2011 [in Arabic]	sheet	copy	Al-Karamah Border Customs House	2011
14	Annual Human Resources Analysis of Telecommunications and Electronic Control Directorate [in Arabic]	sheet	copy	Presented by Jordanian Customs	2011
15	Geological Map of Tallat Al Bustana and Wadi Al Mirba	large map	original	Natural Recourses Authority	2007
16	Single line diagram for Eastern Electricity Distribution District	CAD data	copy	Electricity Distribution Co.	2011
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					

Appendix 7.Other Relevant Data

Organization Chart of Jordanian Customs



Organization Chart of Al-Karamah Border Customs House



2010/10/10 /月
ヨルダン税関研修所
税関プログラム研修担当
訳⑥ mailed

(2) ヨルダン税関研修所
研修プログラム

مسار برامج جمركية

القيمة الجمركية
النظام المنسق
التحقيق الجمركي
نظام موظفي الجمارك
الترانزيت والتير
الإدخال المؤقت
المستودعات الجمركية
التدقيق الجمركي اللاحق
القضايا الجمركية
الاتفاقيات وقواعد المنشأ
ادارة المخاطر الجمركية
التتبع الإلكتروني
كشف تزوير وتزييف المستندات
النزاهة ومكافحة الفساد الضريبي
المعاينة والتفتيش الجمركي
الملكية الفكرية
التعامل مع المواد الخطرة
مكافحة التهريب
الكشف عن المخدرات
الإجراءات الجمركية لموظفي الجمارك
الإجراءات الجمركية لموظفي القطاع العام
الإجراءات الجمركية لموظفي القطاع الخاص

مسار برامج مالية

[tentative translation]

List of Training Programs in January to October, 2011

List of Training Programs (as of October 10)

Customs Training Programs

Customs Value
Harmonized System
Customs
Office regulations for Customs' employee
Transit
Temporary admission
Bonded warehouse
Post-clearance audit
Customs cases
Agreement and country of origin rules
Customs risk management
Electronic tracking
Detecting forged documents
Countermeasures against corruption
Customs inspection
Intellectual rights
Handling dangerous goods
Countermeasures against smuggling
Detecting drugs
Customs clearance procedure – for Customs' officers
Customs clearance procedure – for public sector employees
Customs clearance procedure – for private sector employees

Presented by director of the Center at the survey team's visit

List contains actual provided programs only. Other proposed programs are excluded.

(12)

2011/10/13/木
JC, オカーマエンジニア殿入手
通信・電子コントロール局年間人材分析

تحليل القوى البشرية السنوي/مديرية الاتصالات والسيطرة

الوظيفة	عدد الموظفين	عدد المعاملات المنجزة في السنة السابقة	معدل انجاز الموظف الواحد من المعاملات	طبيعة دوام الموظف	موقع العمل (ميداني/مكتبي)	مقدار الفائض من الموظفين	مقدار النقص في اعداد الموظفين
قسم المقاسم والاتصالات							
مهندس اتصالات/رئيس قسم	1	المحولة من مديريات الدائرة	حسب المحول	يومي	ميداني+مكتبي	لا يوجد	-
مهندس اتصالات	3	المحولة من مديريات الدائرة	حسب المحول	يومي	ميداني+مكتبي	لا يوجد	-
مهندس اتصالات	1	المحولة من مديريات الدائرة	حسب المحول	يومي	مكتبي	لا يوجد	-
فني اتصالات	1	المحولة من مديريات الدائرة	حسب المحول	يومي	ميداني + مكتبي	لا يوجد	2
مامور مقسم	4	المحولة من مديريات الدائرة	حسب المحول	يومي	مكتبي	لا يوجد	-

الوظيفة	عدد الموظفين	عدد المعاملات المنجزة في السنة السابقة	معدل انجاز الموظف الواحد من المعاملات	طبيعة دوام الموظف	موقع العمل (ميداني/مكتبي)	مقدار الفائض من الموظفين	مقدار النقص في اعداد الموظفين
قسم السيطرة والتحكم							
مهندس اتصالات/رئيس قسم	1	-	-	يومي	ميداني + مكتبي	لا يوجد	لا يوجد
مهندس اتصالات	3	عمل ميداني	ميداني	يومي	ميداني	لا يوجد	2
فني اتصالات	3	عمل ميداني	ميداني	يومي	ميداني	لا يوجد	12 للعمل على اجهزة X-Ray عند توريدها

الوظيفة	عدد الموظفين	عدد المعاملات المنجزة في السنة السابقة	معدل انجاز الموظف الواحد من المعاملات	طبيعة دوام الموظف	الظروف الطارئة المتوقعة: السبب	العدد اللازم	الفترة الزمنية	موقع العمل (ميداني/مكتبي)	مقدار الفائض من الموظفين	مقدار النقص في اعداد الموظفين
قسم التتبع الالكتروني										
رئيس قسم التتبع	1	-	-	يومي	.			مكتبي	لا احد	لا احد
فني تتبع الكتروني	12	-	-	شفتات 24 ساعة	اجازة بدون راتب لاحد الموظفين	1	-	مكتبي	لا احد	ثمانية

توقيع اللجنة الداخلية في المديرية/المركز:

رئيس اللجنة — عضو — عضو — عضو

الاسم — الاسم

التوقيع

نموذج رقم (1)

تحليل القوى البشرية السنوي

المديرية / المركز : الاتصالات والسيطرة الالكترونية

الوظيفة	عدد الموظفين	عدد المعاملات المنجزة في السنة السابقة	معدل انجاز الموظف الواحد من المعاملات	طبيعة الدوام الوظيفي	الظروف الطارئة المتوقعة			موقع العمل (ميداني/مكتبي)	مقدار الفائض من الموظفين	مقدار النقص في اعداد الموظفين	توصيات المديرية/المركز
					السبب	العدد اللازم	الفترة الزمنية				
مدير المديرية	1	حسب خطة العمل	حسب خطة العمل	يومي	اجازة/استقالة وفاة	1		(ميداني/مكتبي)	0	0	
رئ.السيطرة	1	حسب خطة العمل	حسب خطة العمل	يومي	اجازة استقالة/وفاة	1		(ميداني/مكتبي)	0	0	
رئ.التتبع	1	حسب خطة العمل	حسب خطة العمل	يومي	اجازة استقالة/وفاة	1		(ميداني/مكتبي)	0	0	توفير مساعد لرئيس القسم
رئ .المقاسم	1	حسب خطة العمل	حسب خطة العمل	يومي	اجازة استقالة/وفاة	1		(ميداني/مكتبي)	0	0	
مهندس اتصالات	7	حسب خطة العمل	حسب خطة العمل	يومي	اجازة استقالة/وفاة	9		(ميداني/مكتبي)	0	2	
فني اتصالات	4	حسب خطة العمل	حسب خطة العمل	يومي	اجازة استقالة/وفاة	30		(ميداني/)	0	26 2	للعمل على جهازي x-ray الجديدين المشمولات بالتوسعة
فني تتبع	12	700 سيارة متبعة	230 سيارة	يومي	اجازة استقالة وفاة	16		مكتبي	0	4	تشغيل 5 مراكز المشمولة بتوسعة مشروع التتبع
مأمور مقسم	3	المكالمات الواردة للدائرة	-	يومي	اجازة استقالة/وفاة	4		مكتبي	0	1	تم نقل شخص بدون بديل

توقيع اللجنة الداخلية في المديرية :

عضو	عضو	عضو	رئيس اللجنة
عبداللطيف الحارون	رائد الشياب	اسامه يوسف	د.عارف الفتياني

[tentative translation]

Annual Human Resources Analysis of Telecommunications and Electronic Control Directorate

(Director: Dr. Arif)

Section: Relay Station / Communication							
Position	No. of staff	Achieved cases handled in previous year	Average handling cases per staff	Working conditions	Workplace (office or site)	Surplus staff	Shortage staff
Communication Engineer, Section Chief	1	To be transferred by directorates	Dependent	Regular	(office & site)	None	–
Communication Engineer	3	-ditto-	-ditto-	-ditto-	-ditto-	-ditto-	–
Communication Engineer	1	-ditto-	-ditto-	-ditto-	(office)	-ditto-	–
Communication Technician	1	-ditto-	-ditto-	-ditto-	(office & site)	-ditto-	2
Duty officer for the station	4	-ditto-	-ditto-	-ditto-	(office)	-ditto-	–

Section: Control / Command							
Position	No. of staff	Achieved cases handled in previous year	Average handling cases per staff	Working conditions	Workplace (office or site)	Surplus staff	Shortage staff
Communication Engineer, Section Chief	1	–	–	Regular	(office & site)	None	None
Communication Engineer	3	Site duties	Site duties	-ditto-	(site)	-ditto-	2
Communication Technician	3	-ditto-	-ditto-	-ditto-	-ditto-	-ditto-	12, for new X-ray equip.

Section: Electronic Tracking							
Position	No. of staff	Achieved cases handled in prev. year	Average handling cases per staff	Working conditions	Emergency Risk Predicted		
					reason	no. of staff	duration
Tracking Monitor	1	–	–	Regular	–	–	–
Tracking Technician	12	–	–	Arrangement 24 hours shift	Unpaid leave of one staff	1	–

Section: Control / Command		
Workplace (office or site)	Surplus staff	Shortage staff
(office)	None	None
(site)	-ditto-	2

Signature – Directorate / Department Committees:
Section Chiefs, Relay Station / Network
Tracking Monitor / Command
Electronic Tracking Section
Chairman, Committee

Form No. (1)
Annual Human Resources Analysis

Directorate in Jordanian Customs: Communication and Electronic Control

Position	No. of staff	Achieved task volume handled in prev. year	Average handling cases per staff	Working conditions	Emergency Risk Predicted			Workplace	Surplus staff	Shortage staff	Recommen-dation by Director / Head
					reason	no. of staff	duration				
Director	1	by Action Plan	by Action Plan	Regular	leave or resign or death	1		(site & office)	0	0	
Control Monitor	1	- ditto -	- ditto -	- ditto -	- ditto -	1		- ditto -	0	0	
Tracking Monitor	1	- ditto -	- ditto -	- ditto -	- ditto -	1		- ditto -	0	0	Appointment of a deputy
Relay Station Monitor	1	- ditto -	- ditto -	- ditto -	- ditto -	1		- ditto -	0	0	
Communication Engineer	7	- ditto -	- ditto -	- ditto -	- ditto -	9		- ditto -	0	2	
Communications Technician	4	- ditto -	- ditto -	- ditto -	- ditto -	30		(site)	0	**26 (2)**	**for new X-ray equip.**
Tracking Technician	12	700 vehicles	230 veh.	- ditto -	- ditto -	16		(office)	0	4 (5)	for tracking project expansion, five custom houses
Duty Officer for the Station	3	in-coming communication traffic	–	- ditto -	- ditto -	4		(office)	0	1	transfer with no replacement

Note: the "Annual Human Resources Analysis of Telecommunications and Electronic Control Directorate" was prepared regardless of the Project, while the "Form No. (1) " shows number of staff required for newly introduced equipment by the Project , namely 26 staff including 2 engineers.

-over-

Appendix 7　Wording Representing Configuration of Equipment No. 1 X-ray Inspection Machine for Cargoes and Oil Tankers

Wording for Configuration	Mobile Scan Mode	Drive thru / Non-Drive thru	Example	Movement of Equipment	Movement of Objective Vehicle	Driver of Vehicle
Gantry / Re-locatable*		Non-Drive thru		Move forward and backward on rails	Parked	Evacuate during scan
Mobile	Gantry / Drive-by	Non-Drive thru		Move forward and backward by tires	Parked	Evacuate during scan
	Drive thru	Drive thru		Stationary (parked)	Driven by self	Ride in cabin and pass
Portal		Drive thru		Stationary (fixed on ground)	Driven by self	Ride in cabin and pass

*Note: the word of “Re-locatable” in broad sense means “easy to dismantle and re-assemble at another location in short period of time”, while its narrow sense synonym of “Gantry”.