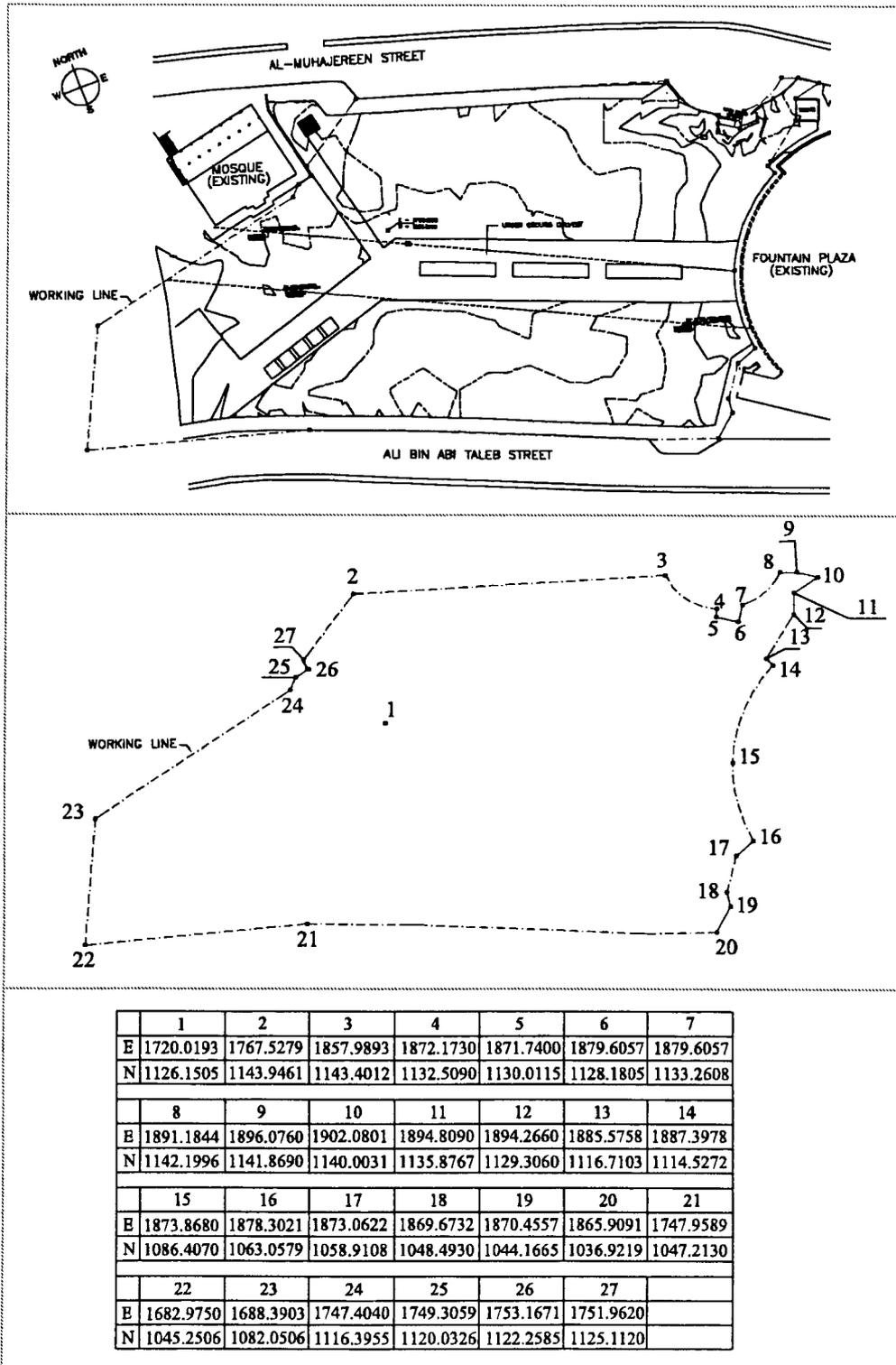


Chapter 5. Construction Planning

5.1. Project Site

The project site is shown in Figure 5.1. The site should be handed over to the contractor for the construction period, during which the contractor shall have all responsibilities for the site.

Figure 5.1 Map of the Construction site



Source: JICA Study Team

5.2. Temporary Works

All temporary works are the responsibility of the contractor. Program of all temporary works shall be submitted to and approved by GAM and/or relevant agencies prior to the commencement of actual implementation of the temporary works on the site.

5.2.1. Temporary Facilities

(1) Construction access road

The site is directly facing to the existing arterial roads; Al-Muhajreen Street and Ali Bin Abi Talib Street to the north and south respectively, as shown in Figure 5.1.

The existing roads could be utilized as the access road for construction and no specific access road will be required. The main access road should be determined under coordination with the Transportation Department of GAM.

(2) Contractor's office, workshop, material storage, parking, etc.

Though it has been agreed with GAM, the area in front of the Mosque as shown in Figure 5.1 could be utilized as the site for necessary temporary facilities. It may be possible for the contractor to select a space(s) in the construction site for the facilities during the construction if the implementing agency allows.

(3) Testing room and equipment

In Amman there are public and private laboratories where the tests can be conducted. The contractor can select laboratories. The brochure of the laboratories selected and items tested by the laboratories should be submitted to GAM for their acceptance prior to conduct of the tests.

(4) Utility Services for the construction works

1) Water supply

It is confirmed by GAM that the contractor can obtain water supply from the existing main pipe running along the northern boundary of the site, but subject to permission from Amman Water Authority.

2) Electrical power supply

It is also confirmed by GAM that the contractor can obtain electrical power supply from the existing transmission line running along the northern boundary of the construction site, but under coordination with Jordan Electrical Power Company.

3) Telecommunications

For the telephone, it may be practical to utilize mobile telephones. Cable lines, however, may be required for the facsimile line and also internet/e-mail lines. It is confirmed that the lines can be obtained at the main telephone line along the northern boundary of the site, under coordination with Jordan Telecommunication Company.

4) Toilet and Sewerage

The site is located in the sewerage network area managed by the Execution and Coordination Department of GAM, and therefore the sewerage for the construction period can be connected to the existing sewerage collection pipe running along the northern boundary of the site.

5) Normal solid waste disposal from the contractor's office

The Execution and Coordination Department of GAM should collect the normal solid waste and dispose of it according to their own system. If not, the contractor should apply an appropriate system and measures under their own responsibility.

6) Disposal of excess soil and debris

The excess soil and debris should be disposed of to an area(s), which should be designated under the coordination with the Execution and Coordination Department or the respective municipality. The necessary measures to mitigate environmental impacts should be taken by the contractor.

The final solutions of the utility services accepted by the relevant agencies should be submitted to GAM in written form prior to the construction on the site.

5.2.2. Traffic Control Measures

In general, the contractor should not hinder the existing traffic flows of both vehicles and pedestrians by the construction activities without introducing any alternative flow lines. Plans of alternative traffic flow lines should be submitted and coordinated with the Traffic Department of GAM.

(1) General activities which need traffic control measures

- 1) Entry and exit of construction vehicles
- 2) Activities to connect utility lines (both temporary and permanent) to the existing main/transmission lines along the site boundary

(2) Pedestrian flow in Amman City Plaza

The pedestrian flow connecting Fountain Plaza, Mosque and City Hall at the centre of the site/Amman City Plaza should be re-routed to the pedestrian walk of the existing southern or northern road.

5.2.3. Safety and Security Measures

In general, the contractor shall be responsible for safety of the people living in the adjacent areas and of passing vehicles and pedestrians surrounding the site throughout the construction period.

(1) Safety measures at an access point(s)

The contractor should determine an access point(s) for the construction vehicles to the construction site and notify to GAM for their acceptance. At the access point, the contractor should provide safety measures for the vehicles and pedestrians passing the existing road(s) on which the access point will be located.

(2) Security measures

Provision of a temporary fence or the like surrounding the construction site is recommended in order to avoid unnecessary entry of people and vehicles as well as to protect construction materials and equipment from theft.

5.3. Environmental Considerations

The project basically helps to improve the environmental condition of the project area. In

addition, the project site is located in the city centre of Amman City where little natural environment can be seen. The environmental examination concludes that possible negative impacts arising from the proposed project are limited to the human environment. It also confirms that the flood risk which was pointed out in the previous studies is solvable by appropriate design of the project, and appropriate actions are incorporated into the design of the National Museum to address this issue.

The table 5.1 summaries the key adverse impacts and the proposed mitigation measures at both stages of construction and operation. The proposed mitigation measures are different according to their nature, and the identified information is classified into that which should be described in tender document and others.

Table 5.1. Potential Impacts and Proposed Mitigation Measures

Impacts	Caused by	Mitigation measures
Air Pollution: - cause nuisance to the neighbouring residents by dust	- construction work	- provide sheets for dust control - watering for dust control
Water Pollution: - wastewater may degrade water quality	- construction work	- secure reliable and regular inspection - provide wastewater management facility
Noise & Vibration Pollution: - cause nuisance to the neighbouring residents	- construction work	- provide noise protection sheets - restrict working hours
Traffic & Safety: - cause pedestrian disturbance - increase traffic jams	- construction work and transportation	- conduct traffic control - secure detour (if necessary) - avoid rush hours
Waste Pollution: - construction debris clogs drain pipes - generate huge volume of construction waste	- construction work	- ensure disposal sites and transportation for construction wastes - enhance recycling of the wastes

Source: JICA Study Team

5.4. Construction Method and Construction Schedule

The contractor should plan the most appropriate construction method and construction schedule. They should be submitted to GAM for their approval prior to the commencement of the work on the site.

5.4.1. Construction Method

The contractor should notify to GAM for their acceptance construction methods for particular work items as well as the general methods including utilisation plan of construction machines and labour force.

The following are the items to be taken into consideration in the construction method:

(1) Boundary of Construction Site

The construction site faces public roads on its north and south sides, and also faces landscaped park on its east and west sides as shown in Figure 5.1. The contractor, therefore, shall enclose completely the site boundary with paint galvanised corrugated sheet fence. The contractor shall obtain approval from the local authority for the boundary hoarding.

(2) Care against damaging the existing road

Pavement of sidewalk and vehicle lane of Al Muhaireen Street, at the southern edge, may be damaged by the excavation for foundations, since the excavation is rather deep. The damaged portions should be well re-constructed by the contractor.

Roads and other areas adjacent to project premises shall be maintained free from dirt, dust, etc. by washing down as often as necessary.

(3) Temporary excavation to secure the culvert

The construction site is newly developed land created by filling up Wadi Abdoun with construction waste. With due consideration on the above condition, special care against collapse of earth shall be taken when temporary excavation work is carried out.

In addition, when excavation work on the north side of the existing culvert is carried out for the construction of the basement structure of the main building, it is advisable that not only the north side but also the south side of the culvert shall be excavated to avoid damage to the culvert caused by imbalance of soil pressure.

(4) Minimise disturbance to the adjacent residents

The construction site is surrounded by urban facilities and private residents. Therefore, additional efforts shall be exercised to abate dust and noise causing a nuisance in the vicinity of existing buildings or premises. Used water shall be controlled and disposed of as necessary for proper execution of the work and protection of facilities.

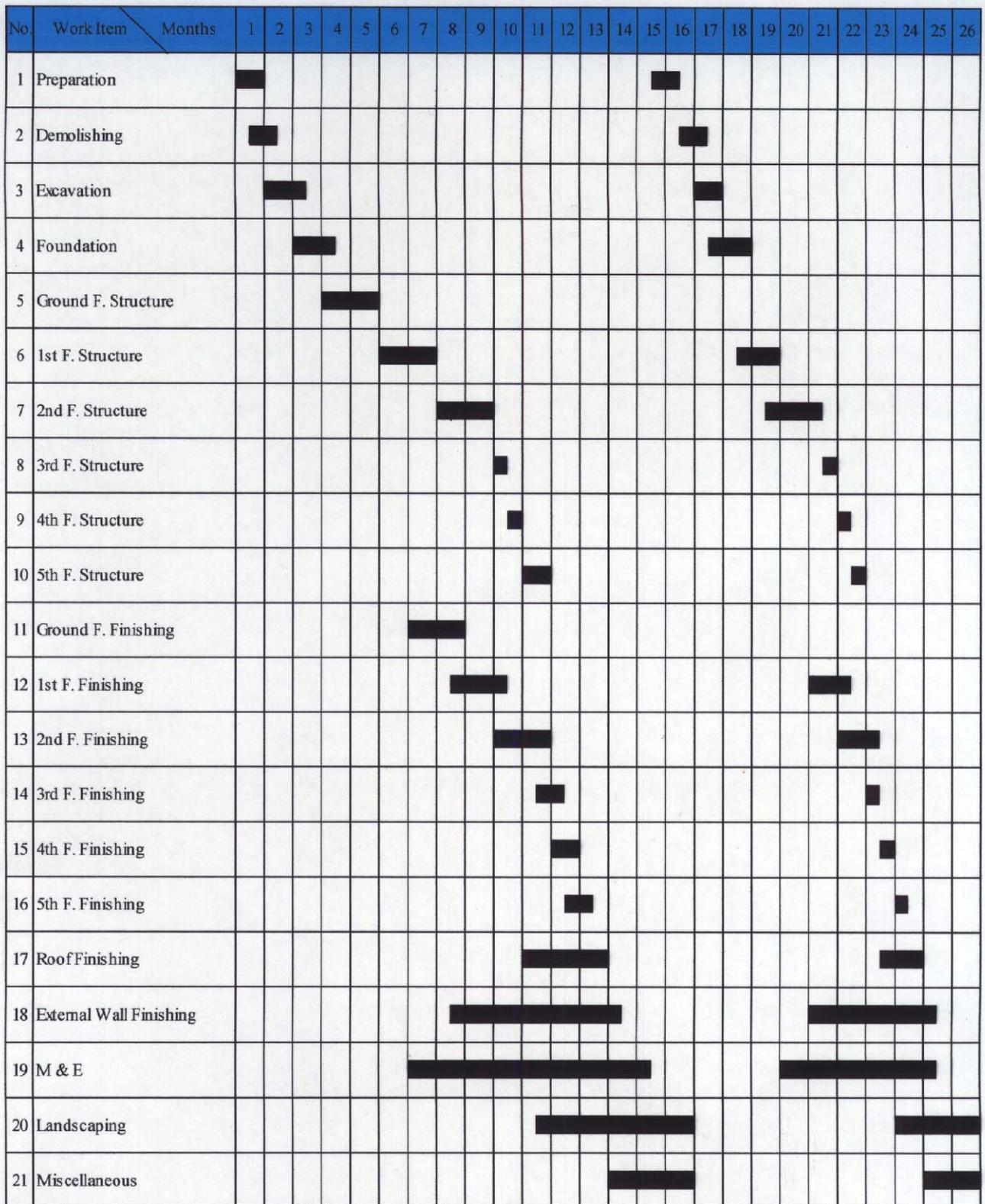
5.4.2. Construction Schedule

A construction schedule, including major work items, recommended by the Study Team is shown in Figure 5.2. The total construction period is estimated as 24 months (2 years) with the defect liability (guarantee) period of one year.

The actual construction schedule should be prepared in CPM by the contractor taking into consideration temporary works and construction methods as well as other conditions of the site, material and labour supply plan on their work program. The construction schedule should be submitted to GAM for their approval prior to the commencement of the work.

The rainy season (from December to February) should be taken into consideration for the preparation of the construction schedule.

Figure 5.2 Construction Schedule



← Phase 1: Lower Parking Area and Greenbelt →

← Phase 2: Upper Parking Area →

Source : JICA Study Team

Chapter 6. Tender and Contract Documents

6.1. Tender Package

This tender is conducted in one package including the following components:

- 1) Building works
- 2) Landscaping and outdoor works
- 3) Exhibition works

6.2. Tender Administration

6.2.1. Agency Responsible for this Tender

The tendering for the National Museum with the procurement method of ICB is conducted by the Government Tenders Directorate (GTD) of the Ministry of Public Works and Housing (MPWH) on behalf of PMU. GTD will organize a Tender Committee composed of staff of the GTD, staff of GAM and MOTA, etc. The various works related to the tender will be assisted by a Project Management Consultant (PMC) assigned for the management of implementation of this sub-project.

The signer of the contract with the Contractor will be the Minister of MPWH.

6.2.2. Procurement Method

According to the guidelines of JBIC this sub-project should adopt International Competitive Bidding (ICB), since the construction cost is estimated not less than 900,000,000 in Japanese Yen (approximately 6 million JD). In the case of ICB, the pre-qualification procedure should be applied before the tender procedure.

Regarding ICB, the contractor's procurement procedures are as shown below and procedures 6), 14) and 18) are the specific requirements by JBIC

- 1) Before making advertisement/notification of the pre-qualification, review and concurrence are required by JBIC on the "Pre-qualification Evaluation Criteria"
- 2) Making advertisement/notification with international media
- 3) Delivery of pre-qualification documents
- 4) Preparation of pre-qualification proposals by attending firms
- 5) Selection of pre-qualified firms
- 6) When pre-qualified firms have been selected, review and concurrence by JBIC on the "Result of Pre-qualification" with the selection procedures, reasons for the choice made, attaching relevant documents are required.
- 7) Issuance of Invitation to Tenderers
- 8) Delivery of Tender Documents to Tenderers
- 9) Conduct Pre-tender Conference by MPWH
- 10) Preparation of Tender by each of the tenderers
- 11) Submission of Tender and Tender Opening
- 12) Tender evaluation

-
- 13) Decision by tender committee
 - 14) After the tendering, before sending a notice of award to the successful tenderer, review and concurrence are required by JBIC on the “Analysis of the Tenders and Proposal for Award” with other documents related to the award, tender documents, etc. as requested by JBIC.
 - 15) Issuance of Notice of Award
 - 16) Negotiation
 - 17) Signing Contract
 - 18) After executing a contract, review and concurrence are required by JBIC on the “Contract” with a duly certified copy of the contract.

6.3. Tender Documents

The tender documents are prepared by the JICA Study Team under the contract with JICA as a technical assistance scheme of the Japanese Government. The documents will be granted to the Jordanian Government after the completion of appraisal by JICA, and the Jordanian Government should legalize and formalize the documents for use in the implementation of the Project.

6.3.1. Pre-qualification Documents

- (1) Pre-qualification documents

6.3.2. Composition of the Documents

The tender documents are composed of Invitation to Tender and five (5) volumes of documents as shown below:

- (1) Invitation to Tender
- (2) Volume -I: Instructions to Tenderers

Form of Tender

1) Appendices

Appendix A:	Schedule of Time, Rates and Conditions
Appendix B:	Form of Agreement
Appendix C:	Form of Tender Security
Appendix D:	Form of Performance Security
Appendix E:	Foreign Currency Requirement
Appendix F:	Form of Advance Payment Security
Appendix G:	Drawing List
Appendix H:	General Construction Schedule
Appendix I:	Temporary Facility Location Map
Appendix J:	Site Investigation Report
Appendix K:	Query Form
Appendix L:	Tender Acknowledgement
Appendix M:	List of Eligible Countries

2) Enclosures

Enclosure No.1: Power of Attorney

- Enclosure No.2: Certification of Submission of Tender Guarantee
- Enclosure No.3: Joint Operation Agreement
- Enclosure No.4: Letter of Association
- Enclosure No.5: Affidavit of Site Inspection
- Enclosure No.6: Basic Program of the Work
- Enclosure No.7: Contractor's Organization Chart
- Enclosure No.8: Outline Construction Plan and Proposed Layout Plan for Temporary Works
- Enclosure No.9: List of Contractor's Equipment to be used on the Works
- Enclosure No.10: List of Major Materials and Plant for the Works
- Enclosure No.11: List of Sub-Contractors/ Suppliers
- Enclosure No.12: List of Intended Import Materials and Plant
- Enclosure No.13: Detailed Monthly Cash Flow of Anticipated Contract Payments
- Enclosure No.14: Breakdown of Major Rates

- (3) Volume -II: Specifications
 - PART-1: General Requirements
 - PART-2: Technical Specifications
- (4) Volume -III: Bill of Quantities
- (5) Volume -IV: Drawings
- (6) Volume -V: Conditions of Contract
 - PART-1: General Conditions of Contract
 - PART-2: Special Conditions of Contract

6.3.3. Order of Contract Documents

The priority among the documents is as follows:

- 1) Contract Agreement
- 2) Letter of Acceptance
- 3) Tender and Notice to Tenderer/Appendix
- 4) Conditions of Contract Part (II)-Special Conditions
- 5) Conditions of Contract Part (I)-General Conditions
- 6) Specifications
- 7) Drawings
- 8) Priced Bill of Quantities

6.4. Type of Tendering

In principle, a type of "Unit Price Base Contract" shall be adopted for this sub-project with the arrangement of a provisional sum for limited work items.

- (1) Provisional Sum

The Provisional Sum means a sum included in the Contract and so designated in the Bill of Quantities for the execution of any part of the construction works or for the supply of goods, materials, plant or services, or for contingencies which sum may be used, in whole or in part, or not at all on the instructions of the Engineer represented by the implementing agency of this

sub-project.

The Contractor shall be entitled to only such amounts in respect of the work, supply or contingencies to which such Provisional Sums relate as the Engineer shall determine in accordance with the contract.

Chapter 7. Cost Estimates and Implementation Plan

7.1. Conditions of Cost Estimates

(1) Estimation Time

The unit prices for the construction works are adopted for the sub-project at the time of the cost estimation in March 2000.

(2) Base Cost for Estimation

The prices for construction materials, rental fees for construction equipment and labour unit rates obtained from the Ministry of Public Works and Housing (Issued in 1998) are adopted as the base cost for the sub-project.

(3) Jordanian Dinar (JD) is used for the cost estimation currency, since the basis of the construction budget for the Project has been referred from the SAPROF Report, prepared in March 1997 by OECF (currently called JBIC).

(4) Exchange Rate

The exchange rate between Jordanian Dinar and US dollar is 0.708 JD, and the exchange rate between Japanese yen and US dollar is 106.08 at the time of March 2000. The following exchange rates are applied:

- US\$1 = 0.708 JD

- 1 JD = ¥150

(5) Price Increase

According to the information on construction costs from the Ministry of Public Works and Housing, the Government of Jordan, the unit prices for construction costs in Jordan have not changed for the last three years, since the construction sector is not active and new construction projects are decreasing, thus competitiveness of contractors is increasing. Therefore, the price increase for the Project is not considered for this cost estimation.

(6) Cost items to be excluded

Land acquisition costs and relocation costs for existing residents and shop owners are not included in accordance with the SAPROF budget. Contingency costs are also not added to the estimation in this study.

(7) Tax Conditions

Custom duties and service tax are excluded for some specific materials and equipment, which are expected to be imported. Custom duties and service tax are included in the unit price for construction materials and equipment.

(8) Measurement System

The Bills of Quantities are prepared in accordance with the standard prepared by the American Institute of Architects (AIA), which is commonly used in Jordan.

The construction work items of the are divided into the following divisions:

Divisions	Work Items
Division –1	General Requirement
Division –2	Site Work
Division –3	Concrete Work
Division –4	Masonry Work
Division –5	Metal Work
Division –6	Wood and Plastic
Division –7	Thermal and Moisture Protection
Division –8	Doors, Windows and Glazing
Division –9	Finishes
Division –10	Specialities
Division –11	Equipment
Division –12	Furnishing
Division –13	Special Construction
Division –14	Convey System
Division –15	Mechanical
Division –16	Electrical

7.2. Project Cost

7.2.1. Direct Cost

An official standard for quantity surveying for buildings is not available in Jordan. At the time of estimation, JST prepared compound costs for main construction works with reference to the information obtained from the Ministry of Public Works and Housing, other large projects currently belong executed and the standard rates of Japan.

(1) Compound Cost

1) Working Hours

The working hours of people in construction field is assumed from 8 o'clock in the morning to 6 o'clock in the afternoon including 2 hours lunch time. Therefore, for the calculation of the compound cost, 8 hours is adopted as the working hours for the sub-project.

2) Efficiency of Local Labour

The work efficiency, as a coefficient, for the project has been computed by utilising the information collected in Jordan with the comparison of the standard efficiency of Japan.

3) Machine Rental Price

The rental prices for construction machines obtained from the Ministry of Public Works and Housing are adopted for the calculation.

7.2.2. Indirect Cost

Rate of indirect costs (Preliminaries and Profit) are analysed and referenced based on the actual sample of prime projects currently executed in Jordan.

(1) Preliminaries

Temporary and Preparation Works

Temporary and Preparation Works include temporary access roads, working yard, temporary building, working facilities, safety expenses, power and water, cleaning, laboratory testing, etc.

For the calculation of the cost of Preliminaries for each Sub-Project, the ratio of 2.5% of the direct cost is adopted.

Site Administration

The site administration cost is including direct personnel cost, site expense, insurance and etc. Based on the analysis of the actual prime projects currently executed in Jordan with the comparison of rate applied in Japan, the rate of the site administration is assumed 11.5% of the direct cost.

For the sub-project, appropriate a sum of 14.0% of the direct construction cost as the Preliminaries include the cost of Temporary and Preparation Works as well as Site Administration.

(2) Profit

Based on the analysis of the actual prime projects currently executed in Jordan with the comparison of rate applied in Japan, the rate of the profit is assumed 10.0% of the direct cost.

For the sub-project, appropriate a sum of 10.0% of the direct construction cost as the profit.

7.2.3. Construction Costs

The construction cost of this sub-project is not specified in this report primarily due to the public availability of this report and the confidentiality of the construction cost prior to the tender. The detailed information on the construction cost, however, has been described in a separate edition, which has been supplied only to the Agencies and Ministries concerned.

7.3. Project Implementation Plan

7.3.1. Execution of the Sub-project

Items to be fulfilled for the overall implementation period of this sub-project, which is categorized as an ICB type of procurement method, are as shown below:

(1) Completion of the JICA Study

JICA plans to complete the Final Report and Tender Documents by the end of August and they may be transferred to the Jordanian Government as soon as possible after finalizing the internal procedures of the Japanese Government.

(2) Procurement of Project Management Consultant (PMC)

A Project Management Consultant (PMC) should be procured before the tender documents will be transferred to the Jordanian side by JICA in order to maintain a smooth transition to the implementation stage under the JBIC Loan from the JICA D/D Stage.

(3) Review and confirmation of the tender documents

The tender documents should be reviewed and updated if any changes are made by the Jordanian side to the contents of the pre-qualification documents and/or tender documents such as tender packaging, scope and employer address. For the review, if required, 0.5 ~ 1 month is allocated.

(4) Tender period

This is categorized in the sub-projects for which the procurement method is ICB. The procurement procedures for ICB sub-projects are stipulated in the JBIC Guideline as follows:

- 1) Before making advertisement/notification of the pre-qualification, review and concurrence are required on the “Pre-qualification Evaluation Criteria” by JBIC
- 2) Preparation and submission of the pre-qualification proposals by the contractor
- 3) When pre-qualified firms have been selected, review and concurrence by JBIC on the “Result of Pre-qualification” with the selection process, reasons for the choice made, attaching relevant documents are required.
- 4) Issuance of the Invitation to Tender to the pre-qualified tenderers
- 5) Pre-tendering conference
- 6) Preparation of tenders by the tenderers
- 7) Tender opening
- 8) Evaluation of Tenders
- 9) After the tendering, before sending a notice of award to the successful tenderer, review and concurrence are required by JBIC on the “Analysis of the Tenders and Proposal for Award” with other documents related to the award, tender documents, etc. as requested by JBIC.
- 10) Sending the notice of award to the successful tenderer
- 11) Negotiation
- 12) Signing the contract
- 13) After executing a contract, review and concurrence are required by JBIC on the “Contract” with a duly certified copy of the contract.

For the above procedures 10 months are scheduled for the tender period.

(5) Construction and As built drawings

As shown in Figure 5.2, the construction period for this sub-project is estimated at 24 months. The contractor should prepare and submit a set of as-built drawings to MPWH within one and a half months after the completion of the construction works (issuance of the completion certificate).

(6) Defect liability (Guarantee) period

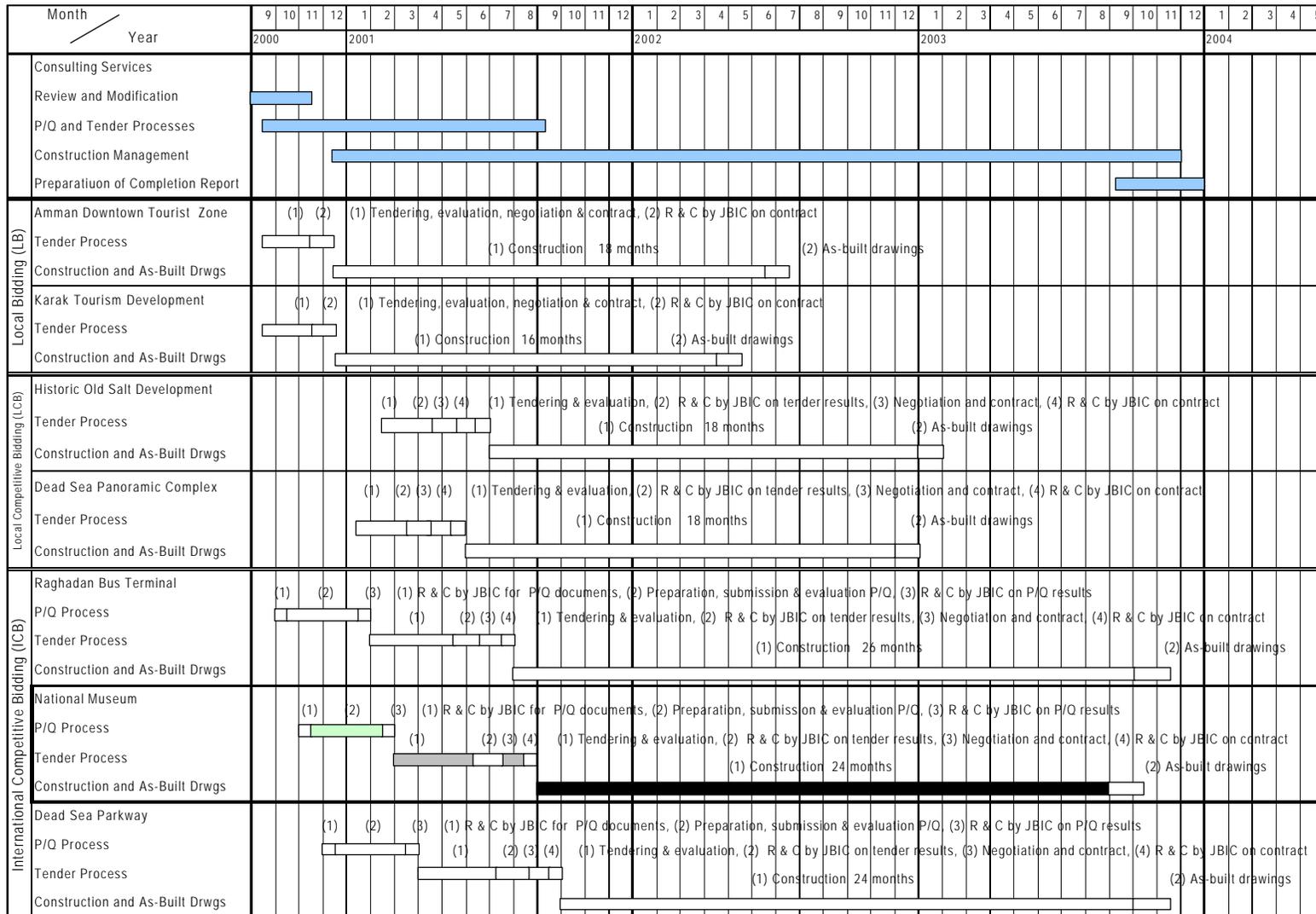
The period for defect liability is 365 days (one-year).

(7) Completion Report

Within 3 months after the completion of the construction works a completion report should be prepared and submitted by the Consultant to MPWH.

An overall project implementation schedule prepared by JST is shown in Figure 7.1

Figure 7.1 Overall Project Implementation Plan



Source: JICA Study Team

Chapter 8. Operation and Maintenance Plan

It has been determined by the Jordanian government that an independent body for operation and maintenance of the National Museum will be established, although all existing museums belong to the Department of Antiquities, MOTA in accordance with the Law of Antiquities.

8.1. Existing Conditions

In order to formulate the Operation and Maintenance Plan for the National Museum, the existing situation of museums in Jordan was studied. Based on this study, opportunities and constraints were defined in comparison with museums in Japan, and functional and financial aspects were further studied.

8.1.1. Museums in Jordan

Jordan has museums at national and regional/site levels, all of which are managed by DOA, MOTA as shown below:

- 1) Jordan Archeological Museum (National Level) in Citadel hill, Amman
- 2) Folklore Museum (National Level) at Roman Theatre in Amman
- 3) Madaba Museum (Site Level) in Madaba
- 4) Jerash Museum (Site Level) at Jerash archaeological site
- 5) Petra Museum (Site Level) at Petra archaeological site
- 6) Karak Museum (Regional/Site Level) in Karak Castle
- 7) Salt Museum (Regional/Site Level) in downtown Salt

As one example of the operation of museums in Jordan, the Jordan Archeological Museum (JAM) located in the Citadel area is examined.

8.1.2. Jordan Archeological Museum (JAM): Outline

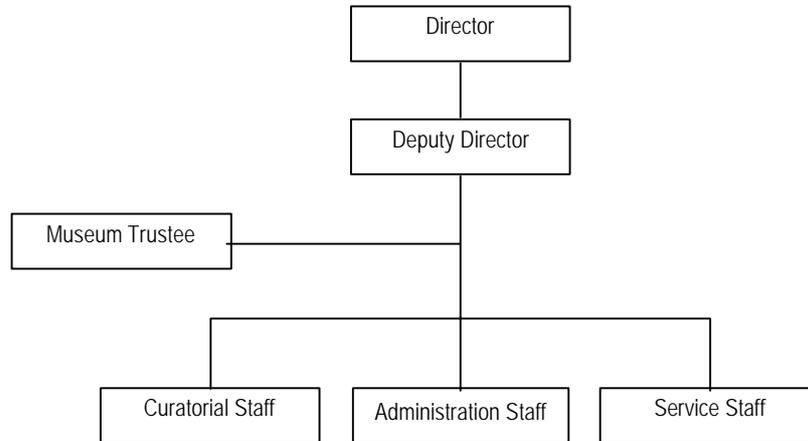
Following are the major items related to the operation of JAM:

- Total Floor Area: 500 m²
- Total Exhibition area: 200m²
- Opening Hours:
 - Weekday except Friday: AM 9:00 ~ PM 3:00
 - Friday: AM 10:00 ~ PM 4:00
 - National Holiday: AM 10:00 ~ PM 4:00
- Opening days: 365 days
- Visitors in a year: 24,800 persons
- Admission Fee
 - Domestic, independent: 0.15 JD for Adults, 0.10 JD for Students
 - Domestic, group: no charge for all
 - International, all: 2.00 JD for all

Organisation

The organisation chart of JAM is as shown in Figure 8.1. JAM belongs to the Archeological Museum Division of the Directorate of Museum under the Directorate General of the Department of Antiquity (DOA), MOTA.

Figure 8.1 Organisation Chart of Jordan Archeological Museum



Source: DOA

Number of Staff

The number of staff available at this moment in JAM is 19 persons as shown below:

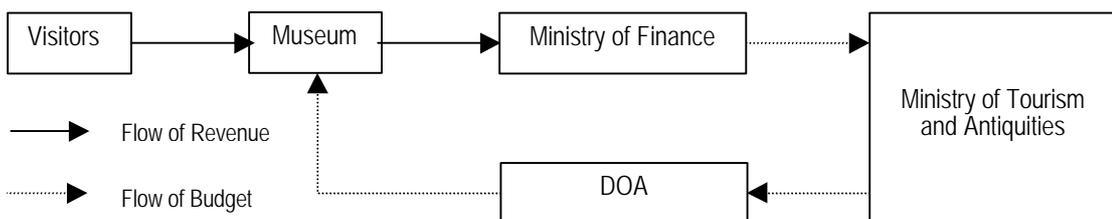
- Director: 1 (cum Curator)
- Deputy Director: - (no person assigned)
- Curatorial Staff: 3 (except the Director)
- Administration Staff: 5 (supported by DOA)
- Service Staff: 10
- Total: 19

For the service staff, staff of Ticket sales, Typist, Exhibition watching, Janitor, Driver, Cleaning and Tea-boy are available, while maintenance staff is supported by DOA.

8.1.3. Flow of Admission Fee and Budget

The flow of admission fee and budget is as shown in Figure 8.2. The admission fee collected from the visitors is directly transmitted to the Ministry Finance through the Museum. The Museum will get the annual budget from the Ministry of Finance through DOA of MOTA.

Figure 8.2 Flow of Admission Fee and Budget



Source: DOA

8.1.4. Examination of JAM

(1) Examination

As shown in Section 8.1.3, Figure 8.2, JAM is operated by the annual budget allocated by the Ministry of Finance. The operation of the Museum is stable since they can get the operation budget annually without relation to the revenue (admission fee), while it seems that motivation of the staff to improve/renew making the exhibition more attractive is spoiled. It seems that the operation system and revenue/budget flow of the museums in Jordan are mostly similar to JAM.

(2) Recommendations

Based on the existing operation system of JAM as well as that museums in Jordan, the following recommendations are made for the operation system of the National Museum:

- To establish a new organisation to manage the Museum through introducing a self sustainable system, although some governmental subsidy will be necessary,
- To give incentives to staff to increase profit,
- To maintain attractiveness with improvement and renewal of the exhibitions, etc., and
- To maximise use of floors/spaces for commercial use in addition to the function as a museum facility, in order to improve financial status of the Museum.

The operation system of the museum is described as being divided into the pre- and post-operation stages.

8.2. Activities required for Pre-opening Stage

The activities required in the pre-opening stage as shown in Figure 8.3 are described here.

8.2.1. Establishment of Preparatory Committee

In order to achieve a successful opening of the Museum and establish an operation body, a Preparatory Committee composed under the coordination of agencies concerned should be established as soon as possible. The most important tasks of the Committee are as follows:

(1) Policy Development

The value of establishing policy statements is that they can be used as a basis for actions, and they are constant points of reference for all involved with the Museum. Therefore, as the operation policy for the Museum, it is planned to elaborate the activities to give back the benefits to the public from the results of the execution of operation and activities. The operation policy should relate to the mission statement and functional objectives such as education, tourism, and national heritage, which provide a framework for its activities.

(2) Establish a detailed museum operation plan

The committee should prepare a final operation plan of the Museum including:

- Operation plan should include the aspects of Museum Administration, Technical (Curatorial) activities, and Public Relations.
- Organisational plan as described below in this Chapter
- Budgeting plan for necessary activities and costs items such as staff salary, promotion costs, operation and maintenance costs, etc.

(3) **Budget Provision**

According to the prepared operation plan, the committee should secure the budget for the pre-opening activities so far.

(4) **Employment of core staff**

Setting up an organised management and operation body, which composed of and supported by the skills and capabilities of those working for the Museum, is the most important task of all. The committee should firstly employ the core staff of the museum operation such as executive staff and curators, who will manage the various activities of the pre-opening stage.

(5) **Establishment of the museum operation body**

Since this is a new project to build a national museum, it will be established with ideas beyond the limits of the existing policies. Therefore, it is required to have an organisation of personnel corresponding with the policy of the Museum.

For the National Museum, Administrative, Technical (curatorial) and Public Relation Departments are emphasised in order to cope with the requirements of the policy of the Museum. A proposed organisation chart is shown in Figure 8.5 in Section 8.3.

8.2.2. Curatorial activities

The curators employed should be in charge of the following activities, since only the list of exhibitions and artefacts was completed at the detailed design stage.

(1) **Re-confirmation of the artefacts to be exhibited**

The list prepared in the D/D stage should be re-confirmed by the curators before starting the following activities.

(2) **Collect data and information**

The detailed data and information to complete the panels, georamas, models, etc. should be collected and supplied by the curators to the exhibition design team.

(3) **Co-ordination with agencies who have authentic artefacts**

Most artefacts listed are in the existing Archeological Museum at Citadel and it is agreed with the Department of Antiquities of MOTa that they can be shifted to the Museum. However, agreement of some of the owners of the artefacts listed is required before they can be shifted to the Museum.

(4) **Preparation of texts**

Texts for the explanation panels and name boards should be prepared in Arabic and English by the curators and supplied to the contractor for completion.

8.2.3. Administrative Activities

(1) **Training**

Some of the core staff, including head of each department and section and curators, should be trained in similar museums abroad according to the function and role of each staff. After completion of the training, the staff understand the operation of the museums and should prepare training programs for the common staff in Jordan. In the procedures the concept of the museum operation will be deeply understood and become practical.

The curators should transfer knowledge and experience about the know-how of management of materials and artefacts, exhibition planning and educational programming learned in the training abroad. Common staff will have training in Jordan by the core staff who complete the training abroad.

The staff in charge of public relations, marketing and promotion, computer engineering and visitor services also require training in order to understand the museum operation concept. The core staff trained abroad should act in principle as trainers of the domestic training for the common staff, however specialists from abroad may be required for this domestic training.

(2) Preparation of operation manuals

Through the training, all staff can understand the museum operation system. The core staff and other staff can then prepare more concrete operation manuals. The manuals will include job description of each position and staff and routine activities such as visitor control and guiding system, security system and cleaning system.

(3) Simulation of the museum operation and management

According to the manuals, simulation of the operation should be conducted before the opening of the museum including:

- ticket selling, reception, visitor guiding,
- explanation of exhibitions,
- computerised information supply system,
- measures for disabled persons,
- visitor services at museum shop and restaurant,
- measures for disaster: fire and emergencies,
- maintenance of facilities, etc.

Through the simulation the manual should be improved.

(4) Other activities

In addition to the activities mentioned above, various activities are required for the opening of the museum.

- Establishing a filing system and other computerised systems
- Promotion and advertisement
- Preparation of brochure, guide book, etc.
- Concession of tenants and negotiation and contract with a tenant(s)
- Preparation of the opening ceremony program
 - Agenda
 - List of persons to be invited and issuance of invitation letters
 - Arrangement of the ceremony space
 - Food and beverages

8.2.4. Responsibility of Actions at Pre-operation Stage

The actions required at the pre-opening stage shown in Figure 8.3 should be taken by various agencies or persons concerned. Every agency or person should fulfil his responsibility

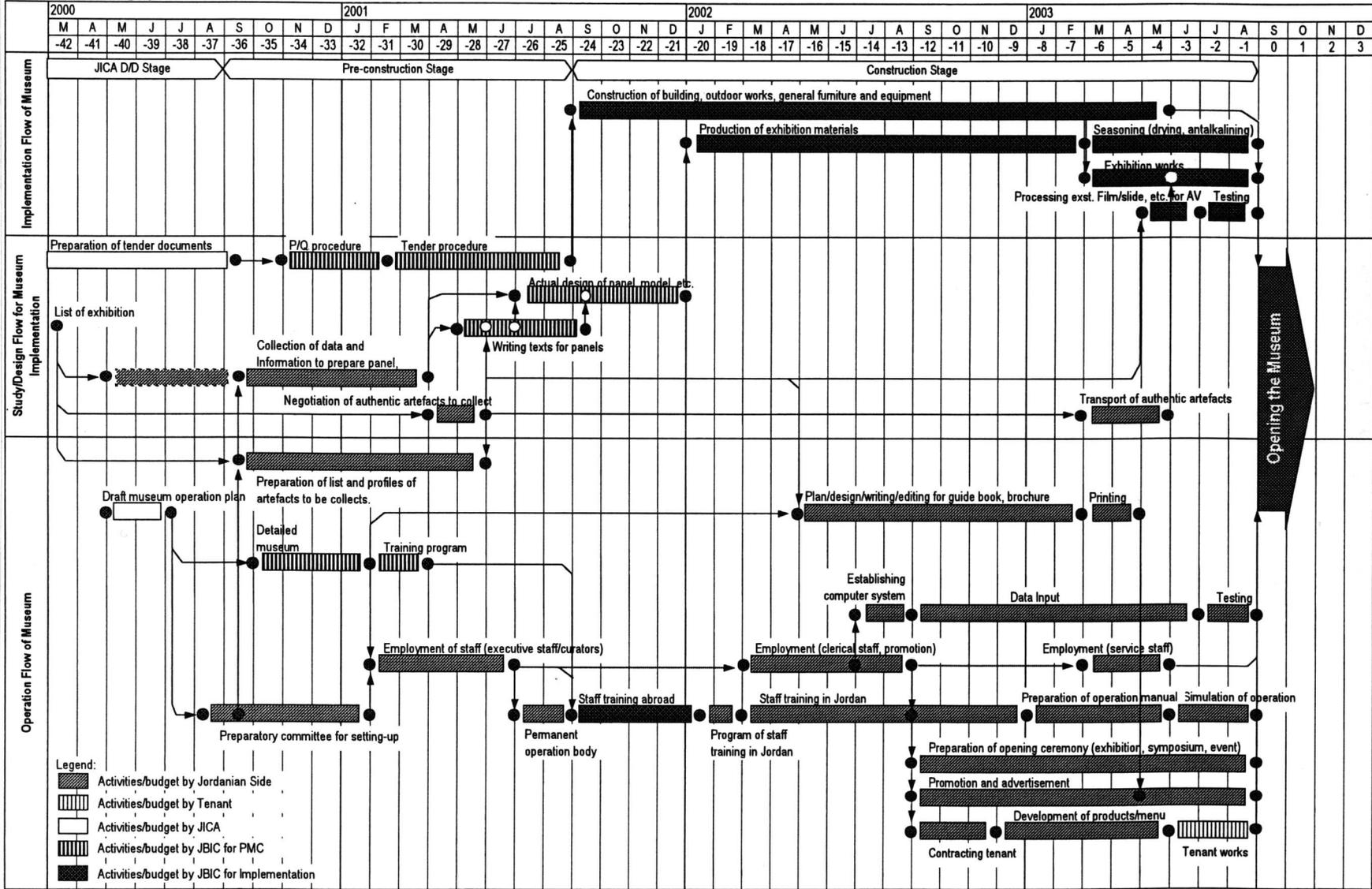
properly and on time, otherwise the opening of the Museum will not be successful. The demarcation of responsibility for each action is shown in Table 8.1.

Table 8.1 Demarcation of Responsibility at Pre-opening Stage

Activities	Responsible body							
	Jordan Government	Preparatory Committee (PC)	PC Task force Executive Staff	General Staff	PMU Consultants	Contractor	Tenant	Others
A. Operational activities								
A-1 Establishment of preparatory committee	o							
A-2 Employment of executive staff and curators		o						
A-3 Preparation of museum operation plan			o		o			
A-4 Preparation of training program					o			
A-5 Overseas staff training								o
A-6 Employment of clerical staff/promotion staff		o	o					
A-7 Preparation of home training program			o					
A-8 Home training			o					
A-9 Preparation of list of artefacts to be collected			o					
A-10 Plan, design, text writing, editing, printing literature			o	o				
A-11 Employment of service staff		o						
A-12 Preparation of operation manual and simulation			o	o				
A-13 Establishment of computer system, data input and test			o	o				
A-14 Preparation of opening ceremony			o	o				
A-15 Promotion and advertisement			o	o				
A-16 Invitation of tenants, contract		o	o					
A-17 Development of products/menu, Tenant works							o	
B. Study and design activities								
B-1 Procurement of Contractor (P/Q, Tender, Contract)					o			
B-2 Collection of data and information for panels and models			o					
B-3 Writing text for panels and explanation boards			o					
B-4 Final design of panels, models, etc.					o			
B-5 Negotiation with current owners for authentic artefacts			o					
C. Construction activities								
C-1 Construction of building, outdoor works, etc.						o		
C-2 Production of exhibition materials (panels, models, etc.)						o		
C-3 Seasoning the building (drying out concrete)						o		
C-4 Installation of exhibition equipment						o		
C-5 Processing existing film/slides, etc. for AV presentation					o	o		
C-6 Transport and shipping in the authentic artefacts			o					

Source: JICA Study Team

Schedule for Setting-up National Museum



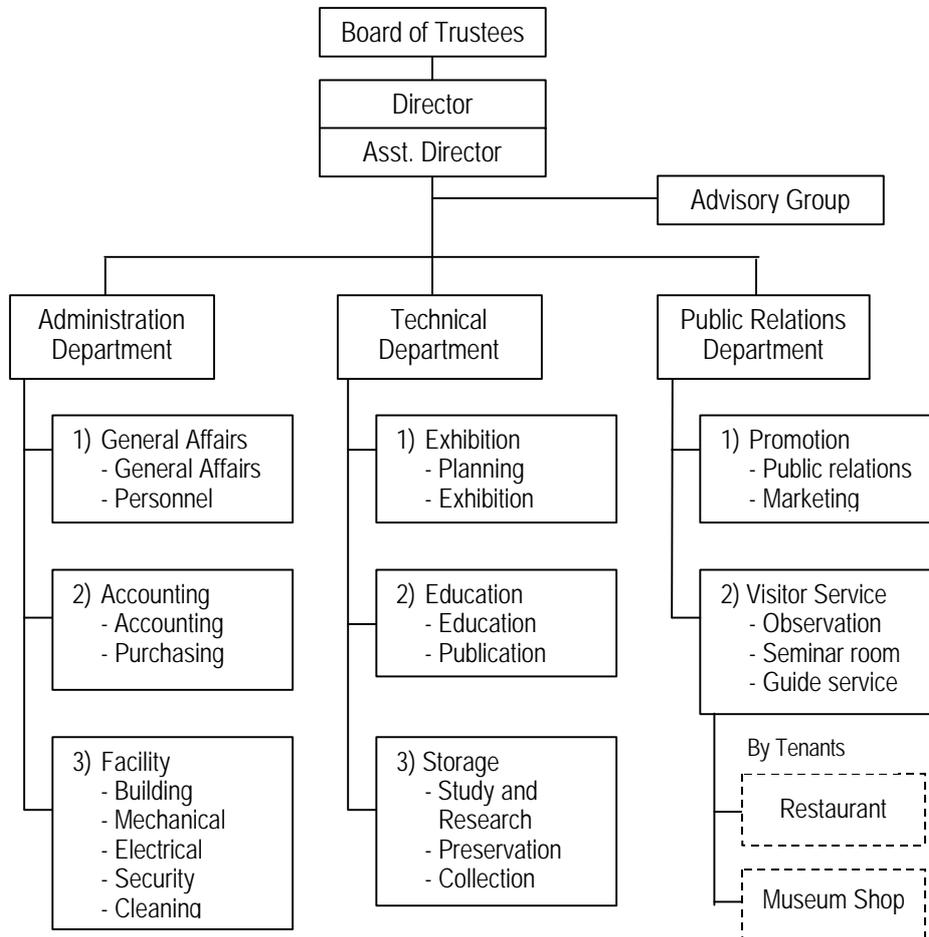
Source: JICA Study Team

Figure 8.3 Flow of Actions required in Pre-opening Stage

8.3. Organisation at Post-opening Stage

The proposed organisation chart for the actual operation of the museum is shown in Figure 8.4. The following is a brief explanation of each department and section.

Figure 8.4 Organisation Chart of Museum Operation



Source: JICA Study team

8.3.1. Board and Advisory Group

(1) Board of Trustees

A Board of Trustees should be established composing of members appointed by the Jordanian Government from the agencies concerned and the board should have overall responsibility of the museum management to the Government. It is generally estimated that about twelve persons is an appropriate number. The Board of Trustees is the final decision maker of the museum management and operation, and the board determines the policy of the museum and financial situation of both revenue and capital.

(2) Advisory Group

The group is a consultancy organisation to the Head of Museum and will be composed of individuals from professional bodies who are able to bring their expertise to bear on the museum's work. The members will give advice to the Head of Museum periodically or

occasionally as requested by the Head.

8.3.2. Administration Department

The museum will need to develop a number of administrative procedures to ensure efficient day-to-day operation. This department has 3 sections and their activities are as follows:

(1) General Affairs

This section is in charge of the general administrative matters of the Museum operation with two sub-sections: 1) General Affairs, and 2) Personnel.

(2) Accounting

The museum's operation plan should incorporate a financial plan, which is the financial mechanism by which the museum operation planning objectives are driven forward. The financial plan should provide a structured budget showing expenditure, anticipated revenue, and cash-flow forecasts. Formal responsibility for managing the finances of the museum is best placed in the hands of one person, normally an Honorary Treasurer, who has appropriate experience in financial matters.

(3) Facility

This section is in-charge of the maintenance of the museum facility including building, mechanical and electrical facilities and cleaning as well as security (guard men and watchers).

The maintenance procedures can save considerable amounts of money by identifying problems at an early stage. In this regard, it is important to establish a regular check of the building, its fixtures and fittings to monitor wear and tear both internally and externally.

8.3.3. Technical Department

The Museum provides the public opportunities to confront original materials related to the cultural and natural heritage, both three-dimensional and two-dimensional, including audio and visual materials. Those collections span all human endeavour and the natural world, and thus the museum has a primary responsibility to care for and manage those collections by exhibiting, collecting, documenting, preserving and conserving, which represent a large part of the museum's activities.

(1) Exhibition

Planning

The curators should prepare an annual plan for the exhibitions as well as events to be held in the temporary exhibition space. The plan should be prepared under the coordination with the sections concerned such as Education, Study and Research and the promotion of them should be conducted under the coordination with the Promotion Section.

The permanent exhibitions also require renewal and improvement, therefore this section should make such study and prepare plans.

Exhibition

- Permanent Exhibition

Regarding the exhibition of the history and culture of Jordan, materials will be exhibited to attract attention and urge the people to visit other museums and ruins in Jordan. For the schoolchildren, the exhibition materials are not only for observing but also for getting

involved in the exhibition. Thus, an exhibition operator will be assigned to guide visitors who participate in exhibitions.

Renewal of the permanent Exhibition

In order to maintain the attractiveness of the Museum the renewal of the exhibition should be undertaken every few years, depending on the future research and collection of new artifacts.

- **Temporary/Special Exhibition**

Special exhibitions of cultural assets from Jordan as well as from overseas countries should be held as much as possible. In order to increase and maintain the attractiveness of the Museum the museum should make efforts to have such special exhibitions as well as events. In Japan a museum has special exhibitions generally 3 or 4 times a year.

(2) Education

Education

Schoolchildren, particularly at primary and early secondary level, are an important sector of the museum's market. The form and extent of that service will vary depending upon the museum's exhibition theme, its collections and the staff and financial resources available. For preparing an operation plan for the Museum, it is very important to draw up an educational policy and establish some form of educational service for schools not only in the region, but also from a broader sense. The provision of an education service will help to build support and understanding for the museum's activities amongst younger visitors. It will also help to ensure that visits to the museum are of real educational value in an exciting and pleasing manner, not simply organised by the school for recreational purposes.

Lectures and symposia on history and culture, etc. should be held for public education in the Seminar Room as well as in the Temporary Exhibition Space according to the annual plan prepared.

Publication

In order to let people know the outcome of the activities of the Museum, guidebooks, exhibition brochures and video materials will be publicised. The publications should include information related to the functions and roles of the Museum not only for visitors but also for people with special interests. A database related to other museums and ruins will be prepared. A consultant for the data processing needs to be involved to assist the visitors.

(3) Storage

Study and Research

1) Art and Sciences Research

To achieve comprehensive research and individual research on archaeology, history and ethnology/culture.

2) Preservation Science

To study technological development in connection with preservation and restoration of cultural properties.

Preservation

1) Preservation of Data

To secure storage appropriate to the form, property and scale of the materials.

2) Management of Data

Entering information about an object acquired by the museum into the museum's computerised documentation system based on a significant amount of specialised research and scientific investigation. It is important to organise the system of registration and administration for easy access to data.

3) Presentation of Data to Visitors

To provide a study space open to the public with a reference system for exhibition materials.

Collection and disposal

The acquisition of artifacts for the Museum and the development of the collections are primary concerns of the museum's work. The Museum should develop a clear written policy on the acquisition of items for its collections and disposal. An acquisition and disposal policy must incorporate safeguards to ensure an appropriate degree of protection and public accountability for collections held in trust. Close liaison with other site museums working in Jordan is essential to avoid competition and duplication of effort and expenses.

8.3.4. Public Relations Department

In general museums are in competition with a host of other museums in the region or different forms of leisure attractions and activities in the market place competing for people's time and money. The success of the Museum will depend upon how effectively the museum can defeat that wide-ranging competition by providing better services and facilities than others.

This department consists of 2 Sections of Promotion and Visitor Services, having significant roles to determine whether the operation of the Museum will be successful, together with the Technical Department which has to provide competitive exhibitions to attract visitors.

(1) Promotion

Common Promotion of museum

1) Increasing Visitors

The main revenue source is to be admission fees by visitors. The general promotion to attracting and increasing visitors to the Museum is the responsibility of MOTA. They should co-ordinate and cooperate with travel agents/land operators in Amman as well as in Jordan to involve the National Museum in their tour itinerary for both international and domestic tourists as an important tourist spot.

The new agency should also co-ordinate with the Ministry of Education to organise educational tours of school children for the Museum.

2) Concession to Tenants

Restaurant/cafe terrace

Concession fees for the tenants such as restaurant and café terrace are also another important income source. The Museum is located in Amman City Plaza in which various prestigious cultural facilities such as City hall, Mosque, Fountain Plaza and Auditorium are located. In future this area will be a main gathering place for citizens. The restaurant will be able to serve general citizens of Amman together with the visitors to the Museum.

It is an optional idea that the restaurant sets a marketing media to aim at higher revenue. In this case, the quality of facility and foods should be high.

Museum shop

The shops deal with publications on the Museum, and original goods related to the exhibition in the Museum should be provided for generating revenue. However, not only goods related to be museum, but also souvenir goods of Jordan could be handled, since international visitors will be one of the major markets.

The following are the other activities to be undertaken by this Section:

1) Public Relations

The purpose and activities of the museum will be informed to the people who visit and utilise the Museum. Through brochures, guidebooks, posters, leaflets, regular publications and various media, a particular style and presentation to enhance and reflect the identity of the Museum to the people will have an immense impact onto the development of the museum. The overseas public relations should be handled by MOTA.

2) Group Visitors

In cooperation with the travel agents, tours of the Museum are organised with a special attention to group visitors.

Specific Promotion

Beside the above promotion, some specific activities are required to ensure the financial status of the Museum. Sample activities are shown below:

1) Maximum use of the Museum space

In addition to the above, the museum should have other events and activities to generate more income by utilising various spaces for gatherings and events such as general meetings, ceremonial gatherings for weddings, birthdays, symposia, concerts or festivals. The possible spaces for the gatherings will be offered as follows:

Day-time use

- Seminar Room
- Special exhibition space

Night time use

- Seminar room
- Special exhibition space
- Foyer and entrance hall

2) Fund Raising

Fund-raising from national agencies, charitable trusts, local authorities and individuals needs to be carefully thought through, and a well prepared and vigorous fund-raising campaign will be essential. For these activities, assistance of the Board members will be required, since it is deemed that they have better access to senior levels of business and industrial organisations which will be valuable assets for the fund-raising

(2) Visitor Service

Observation Services

Gallery talks with curators should be held and observation of school students and foreign visitors should be taken into consideration. For the observation of school children, the orientation space is used for guidance. Guidebooks and work sheets should be provided to students prior to the start of orientation. For foreign visitors, English language should be used in exhibitions, pamphlets and guidebooks.

Guide System

Management of the guide system should be handled by this Section. The guide system would be introduced in two ways:

- Provision of guides for various languages
- Provision of a guide system with cassette tape

For the guides, it is required to prepare a guide manual and to have a training system according to the exhibitions in the Museum.

Services by Tenants

The services by tenants, such as the restaurant and café terrace as well as the museum shop, are also supervised by this Section to ensure the tenants are maintaining proper services.

8.3.5. Number of Personnel

At the stage of organising the number of personnel, the standard of museums of Japan is adopted. In addition to that, the conditions of Jordan are taken into consideration.

(1) The Number of Personnel for Museums in Japan

Table 8.2 shows examples of personnel numbers in several of Japan's museums.

Table 8.2 Examples of Personnel Plan

Museum	Total	Administration	Curator
National Ethnological Museum	26	11	15
National History Ethnology Museum	30	14	16
Tokyo National Museum	25	15	10
Nara National Museum	20	12	9
Kyoto National Museum	30	20	9
Average	26	14	12

Source: JICA Study Team

(2) Conditions of museum staff in Jordan

The Jordan Archaeological Museum in Amman, with total floor area of 800 m², has 19 staff including 4 curators, (1 director and 3 assistants), and 15 others as shown in Section 8.1.

Normally in Jordan, two shifts are needed for operation of the museum, especially for the common staff, one in the morning, and another in the afternoon. In comparison with the number of personnel in museums in Japan, staff numbers in Jordan are higher due to such working practice in Jordan.

(3) Number of staff for the Museum

In order to achieve the proper operation of the Museum it is proposed that thirty one (31) line staff are required for the Museum operation as shown in Table 8.3 and 78 common staff for

which the estimation is shown below:

Common Staff

In accordance with the present condition of the museum operation and the contents of the services provided by staff members, the required number of staff is calculated as follows. There is room to discuss among the museum administration personnel on the utilisation of volunteers in the future.

1) Administration

General Affairs

- Driver (2 posts x 2 shifts = 4 personnel)
- Tea Serving Staff (2 posts x 2 shifts = 4 personnel)

Accounting

- Reception and ticket sale (4 posts x 2 shifts = 8 personnel)
- Museum shop (2 posts x 2 shifts = 4 personnel)

Facilities

- Guard at entrance (2 posts x 2 shifts = 4 personnel)
- Patrol guard (5 posts x 2 shifts = 10 personnel)
- Janitor (5 posts x 2 shifts = 10 personnel)
- Maintenance (2 posts x 2 shifts = 4 personnel)

2) Research

Management of Data

- Data processing operator (2 posts x 2 shifts = 4 personnel)

3) Exhibition and Education

Exhibition

- Security (3 posts x 2 shifts + 1 post x 2 shifts = 8 personnel)
- Guide (3 posts x 2 shifts = 6 personnel)
- Exhibition Operator (2 posts x 2 shifts = 4 personnel)

Education

- Educational Counsellor (2 posts x 2 shifts = 4 personnel)
- Assistant, Educational Program (2 posts x 2 shifts = 4 personnel)

Table 8.3 Number of Museum Staff

Section	Line Staff				Responsibility
	Total	Dept. Head	Sect. Chief	Sect. Staff	
Head of the Museum	1	1			
1. Administration Dpt.	9	1	3	5	
(1) General Affairs		(3)	1		
1) General Affairs				1	Legal, Documents, General
2) Personnel				1	Personnel, Training
(2) Accounting		(3)	1		
1) Accountant				1	Budget, Financial Matters
2) Supply				1	Purchase, Supply
(3) Facility		(2)	1		
1) Maintenance				1	Cleaning, Maintenance
2. Technical Dpt.	16	1	4	11	
(1) Exhibition		(3)	1		
1) Planning				1	Exhibition Planner
2) Exhibition				1	Maintenance/Renewal
(2) Education		(3)	1		
1) Education				1	Plan and Execution
2) Publication				1	Publicise Magazine
(3) Storage		(9)	1		
1) Study & Research			1	4	Archaeology, History, Royal, Ethnology, Natural Science
2) Preservation				1	Preservation Engineering
3) Collection				2	Documentation, Collection
3. Public Relations Dpt.	5	1	2	2	
(1) Promotion		(2)	1		
1) Public relations				1	Public affairs & services
2) Marketing					Fund-raising, budget planning
(2) Visitor Service		(2)	1		
1) Observation				1	Group tours,
2) Shops					Sales, catering,
Total	31	3	9	18	

Note: Figure in () shows the total number of staff of each section. Beside the line staff in the Table above, 78 common staff are to be employed.

Source: JICA Study Team

8.4. Training for Museum staff

An important aspect along with managerial aspects such as the business revenue of a museum is the problem of staff, who support museum undertakings and its activities. If each and every museum staff has the consciousness and readiness to operate the museum towards a more desirable direction, his/her daily routine should prove to be readily productive. It is a matter, which cannot be realised merely from the consequences of one's work and endeavours. For a museum to be better managed and operated, all concerned, from the curator and those engaged in art down to service staff, are required to be in joint possession of a fundamental philosophy regarding museum management, such as its social role, etc. It is essential to realise such a goal, training museum staff to improve their temperament by having them acquire knowledge and experience as well as an opportunity to get to know better their occupation.

(1) General programme for training

As a precondition for studying and establishing a staff training program, setting up a general program from establishment of a managerial body, staff recruitment, preparation of a commemorative opening ceremony up to the opening function are required.

(2) Training programme arrangements

The following procedures should be undertaken for the arrangement of the training programme:

- 1) Confirming job details of principal posts
- 2) Examining required backgrounds, qualifications, etc. of candidates for principal posts
- 3) Recruiting for principal posts by special committee including representatives of the preparatory committee
- 4) Preparing staff overseas training program including principal posts

(3) Overseas training

Recruit staff responsible for the branches of administration, research and education or principal post managing staff of subordinate class and have them undergo training at advanced museums in their respective fields. In such respect, UNESCO's International Council of Museums (ICOM) and JICA's (Japan International Cooperation Agency) training program support systems are available.

For the purpose of having management staff, who have studied at overseas museums and completed training, to undertake training of other staff through experience and knowledge which they have acquired, a home training program is to be prepared. Through such a process, a museum management concept will be cultivated and lead to the formation of something which will be worthy in practice. It is during this period that administrative policies such as the role of a museum's various departments and cooperation between them become concrete.

(4) Home Training

When management staff are trained overseas, art department staff who are engaged in museum opening preparatory functions acquire know-how concerning museum activities, such as data and material control, exhibit planning, educational programs, for utilisation in subsequent preparatory activities.

Training staff who are engaged in museum opening undertakings, public relations and solicitation of visitors, engineers who computerise data and materials along with service staff for the purpose of having them all become jointly aware of the museum's administrative policy is essential.

Furthermore, lectures for home training are to be given by management staff who have undergone overseas training, but depending on the contents of the relevant program, it may be necessary to request an overseas museum specialist to be dispatched for the purpose. As joint awareness concerning museum administration is created in the entire organisation, managing staff and other staff will be able to prepare a more specific museum administration manual.

8.4.2. Administrative Simulation just before opening

Actual training relative to reception, guidance, exhibit explanation, computerised information, dealing with the handicapped, parking lot guidance, personal service for customers at shops and restaurants, disaster drills, coping with emergencies, inspecting facilities and equipment, etc. are to be performed based on the manual so prepared. During such simulation training, inadequacies of the manual, if any, will be rectified and preparations made for museum opening.

8.5. Environmental consideration

The project basically helps to improve the environmental condition of the project area. In addition, the project site is located in the centre of Amman City where little natural environment can be seen. The environmental examination concluded that possible negative impacts arising from the sub-project are limited to the human environment. It is also confirmed that the flood risk, which was pointed out in the previous studies, has been solved in the detailed design stage.

Table 8.4 summaries the key adverse impacts and the proposed mitigation measures at both stages of construction and operation.

Table 8.4 Potential Impacts and Proposed Mitigation Measures

Impacts	Actions	Mitigation measures
Water Pollution: - waste water may degrade water quality	- washing of exhibition articles	- provide wastewater management facilities
Waste Pollution: - increasing tourist litter	- increase of tourists	- place litter boxes for collecting general waste - improve capacity of building and existing waste collection system
Traffic & Safety: - increasing traffic nuisance	- increase of visitors and tourist cars	- improve the functions of parking areas

Source: JICA Study Team

8.6. Facility Operation and Maintenance Plan

8.6.1. Facility Operation and Maintenance System

Although the facilities are designed with the utmost emphasis on ease of maintenance and operation, it is advisable to establish a system for efficient maintenance of the facilities taking into consideration the following matters:

- 1) Technical staff responsible for maintenance and operation of facilities and equipment in each field shall be assigned before the construction work is completed.
- 2) Building Contractor shall give on-the-job training in operation, maintenance and inspection of facilities and equipment to the above technical staff, and at the same time provide instruction manuals on maintenance and operation.
- 3) Daily or weekly reports on maintenance and inspection of facilities and equipment shall be prepared by technical staff to make it easy to have a clear grasp of the status of the facilities. Also, a system for stock control of consumables and spare parts, and for efficient procurement of replacement parts shall be established.
- 4) Lists of suppliers who will take care of problems for facilities and equipment shall be clarified.
- 5) The operation agency of the National Museum shall prepare the budget for necessary maintenance and operation expenses and ensure effective and continuous use of the facilities and equipment.

8.6.2. Operation and Maintenance Plan

The activities for operating and maintaining the facilities are as shown below.

O& M	—	Daily O& M	- cleaning, operation, daily inspection
	—	Periodical O& M	- periodical inspection/adjustment, minor repair
	—	Emergency O& M	- emergency inspection, repair, renovation

To establish an overall plan for operation and maintenance, especially for the periodical inspection/adjustment among the above activities, is essential to keep facilities operating in order as planned and to prolong the facilities life.

The inspection and maintenance system of the facilities is shown in Section 8.6.3 below.

In addition, special emphasis shall be placed on the following issues:

(1) Roof

- Highly durable materials are selected for waterproofing of the roof. Periodical inspections and cleaning, however, are necessary to avoid water leaks.
- Gutters and drainpipes, especially, shall be cleared twice a year since they are likely to be filled with dust.

(2) Finishing Materials

- When exterior materials have rusted, rust shall be removed and the metal shall be painted to prevent the spread of rust.
- Rooms shall be kept well ventilated and the finished surfaces of rooms shall be kept clean to prevent from getting rusty and dirty.
- Since floors finished with stone or terrazzo tiles are difficult to repair once scratched, extra care shall be taken when moving heavy objects on such floors.
- Ceiling finish materials shall be handled very carefully since they are easily affected by shocks.

(3) Building Machines

- Building machines shall be operated and inspected by electrical or equipment engineers in accordance with the instructions listed in the instruction manuals.
- When problems are found with a machine, its operation shall immediately be stopped to find out the cause, and remedial measures shall be taken to prevent the trouble from affecting other parts of the machine.

8.6.3. Inspection and Maintenance system

The main points of facility inspection and maintenance to be inspected and adjusted, and suitable inspection periods, are shown in Table 8.5 for the building, and Table 8.6 (1) and (2) for electrical and mechanical equipment.

Table 8.5 Building Inspection and Maintenance System

Part of Building		Inspection Points	Inspection Period
Structure	Footing	<ol style="list-style-type: none"> 1. Crack, deform, damage and settlement 2. Settlement and floating of the building from the ground level. 	3 years
	Column, Girder, Wall, Floor, Roof, Balcony, Stair	Crack, deformation, damage, rust, erosion, deterioration of painting, and loosening of connection.	
Finish	Floor	<ol style="list-style-type: none"> 1. Crack, damage, fragmentation of surface, rust, erosion, abrasion, deterioration of paint, condensation in finishing materials. 2. Performance of waterproofing membrane. 3. Drainage of water exposed area. 	1 year
	Stairs	<ol style="list-style-type: none"> 1. Crack, damage, fragmentation of surface, rust, erosion, condensation, deterioration of paint, and rain leaking in finishing materials. 2. Deformation, damage or deterioration, and installation condition of non-slip. 	1 year
	Wall	<ol style="list-style-type: none"> 1. Crack, deformation, damage, fragmentation of surface, rust, erosion, condensation, deterioration of paint and rain leaking in finishing materials. 2. Crack, damage, and deterioration of sealant. 3. Deformation, rust, erosion or deterioration of paint and installation condition of metallic material. 	Interior 3 years Exterior 1 year
	Door & Window	<ol style="list-style-type: none"> 1. Deformation, damage, abrasion, rust, erosion or deterioration of paint, and condition of working & installation. 2. Crack, deformation, damage, abrasion and deterioration of sealant & airtight material. 	1 year
	Ceiling	<ol style="list-style-type: none"> 1. Crack, deformation, damage, fragmentation of surface, rust, erosion, condensation, deterioration of paint, rain leaking and installation condition of finish. 2. Deformation, damage, rust, erosion or deterioration of paint and installation condition of curtain box & ceiling maintenance hatch. 	Interior 3 years Exterior 1 year
	Roof	<ol style="list-style-type: none"> 1. Crack, damage, deterioration and surface fragmentation of finish & expansion joint 2. Crack, damage or fragmentation of surface, rust and installation condition of parapet & top rail. 3. Performance of waterproofing membrane. 	3 years

Source: JICA Study Team

Table 8.6 (1) Mechanical Inspection and Maintenance

Building utilities		Maintenance Item	Maintenance Period
Boiler	Boiler	1. Checks cracks, damage, rust or corrosion of boiler, accessories and burner. 2. Check operation and sludge inside of burner, blower and protective devices. 3. Water pressure test.	1 month 1 year -ditto-
	Controller	1. Check operation, damage, rust, temp. increase, noise and connection of cables.	1 month
	Other devices	1. Check damage, abrasion, rust, noise, abnormal vibration and leaks of water pump, water softener 2. Check level of lubricant. 3. Check damage to chimney and air pressure. 4. Check cracks, corrosion, sludge inside chimney. 5. Check damage, rust and sludge inside oil tank	1 month -ditto- -ditto- 1 year -ditto-
Chiller	Chiller unit	1. Check cracks, damage, corrosion, rust and abrasion. 2. Check level of gas. 3. Check leakage of gas. 4. Check operation of burner and protective devices.	1 year -ditto- -ditto- -ditto-
	Controller	1. Check operation, damage, rust, temp. increase, noise and connection of cables. 2. Total operation test.	1 year -ditto-
	Other devices	1. Check operation, damage, rust, temp. increase and noise. 2. 2.Check level of lubricant. 3. Check cracks, damage, rust and condition of installation.	1 year -ditto- -ditto-
Air conditioning and ventilation system	Air conditioning and ventilating devices	1. Check damage, rust, corrosion, noise and abnormal vibration and condition of installation 2. Check noise and temp. increase, voltage of power unit.	1 year -ditto-
	Fan	1. Check damage, rust, corrosion, noise and abnormal vibration. 2. Check bearings and shafts.	1 year -ditto-
	Controller	1. Check operation, damage, rust, temp. increase, noise and connection of cables. 2. Check operation of controller and protective devices.	1 year -ditto-
	Pump	1. Check damage, rust, corrosion, noise and abnormal vibration. 2. Check level of lubricant of bearings.	1 year -ditto-
	Duct accessories	1. Check damage, rust, corrosion, noise and abnormal vibration. 2. Check operation of dumper.	1 year -ditto-
	Pipes, valves and traps	1. Check damage, rust and corrosion. 2. Check operation of valves and traps. 3. Check sludge inside traps.	1 year -ditto- -ditto-
	Water supply, drainage system	Water supply and drainage	1. Check damage, rust, corrosion, noise and abnormal vibration. 2. Check lubrication of bearings. 3. Check operation of devices.
Pipes and valves		1. Check damage, rust and corrosion. 2. Check operation of valves.	1 year -ditto-

Source: JICA Study Team

Table 8.6 (2) Electrical Inspection and Maintenance

Building utilities		Maintenance Item	Maintenance Period
Substation	Main Equipment	1. Check condition of installation 2. Check cracks, damage, rust, temp. increase, noise and connection of cables. 3. Check damage, cracks, abrasion of movable parts and lubrication. 4. Check entire system 5. High voltage test of insulation oil.	1 year -ditto- -ditto- -ditto- -ditto- 6 years
	Meters and gauges	1. Check operation of alarm points and preset value	1 year
	Relay	1. Operation test	1 year
Lighting and motor control system	Lighting and motor control devices	1. Check damage inside distribution board, rust, temp. increase, noise and connection of cables. 2. Operation test 3. Operation test of protective devices. 4. Check damage, connection of cables, rust, temp. increase of outdoor lighting fixtures.	1 year -ditto- -ditto- -ditto-
	Feeder	1. Check damage, rust and temp. increase. 2. Check condition of installation and damage or rust on supporting materials.	1 year -ditto-
BMS system	Controller	1. Check damage, rust, temp. increase, noise and connection of cables. 2. Check operation of control devices, indicators and meters.	1 year -ditto-
	Central processor	1. Operation test.	1 year
	Terminal and data logger	1. Evaluate the records. 2. Operation of I/O devices.	1 year -ditto-
Lightning arrester		1. Check condition of air terminals, conductor and connection, damage, rust, etc.	1 year
Outdoor wiring system		1. Check cracks, damage, corrosion, condition and connection of cables. 2. Check damage, corrosion of pipes and supporting materials. 3. Check cracks, damage, level of lid of handhole and manhole. 4. Check deformation, damage and condition of handhole and manhole. 5. Operation test.	6 months -ditto- 1 year -ditto- -ditto-

Source: JICA Study Team

Chapter 9. Financial Analysis

9.1. Methodology

The purpose of the museum management is both to ensure the museum activities are popular, and to offer a good service to society. The key to management is suitable arrangement of museum personnel and maintaining stability of financial stability.

Expenditure and revenue appraisal is based on the budget allotment of the number of personnel, special exhibitions, public relations, restoration of exhibits and research, etc., in representative museums in Japan, and the circumstances in Jordan.

9.2. Expenditure and Revenue

Items to be considered for expenditure and revenue are assumed as shown in Table 9.1.

The basis of the calculation of expenditure and revenue for operation cost is a financially stable plan, namely it estimates low revenue and high expenditure. Accordingly, it does a trial calculation of the expenditure and revenue for operating cost, with reference to museums in Japan and other advanced countries, and the circumstances in Jordan.

Table 9.1 Items of Expenditure and Revenue

Expenditure		
	Item	Application
Personnel Expenditure	Director	Monthly salary + bonus + allowance
	Assistant Director	
	Department Head	
	Chief of Section	
	General Staff	
	Service Staff	
Operation Expenses	Special Exhibitions	Exhibition Expense
	Public Relations	Symposium and Lectures, meetings, etc.
		Training programme
		Bulletin
		Guide book
		Poster and advertisement, etc.
	For Exhibit	Collection of exhibits
		Restoration of exhibits
	Studies and Research	Academic society fee, Travelling expense
		Book Purchasing cost, Research report expense
Administrative Expenses	Light and Fuel Expense	Electricity, Water, Sewage and Fuel cost
	Maintenance Cost	Inspection, Repair expenses
	General Cost	Convention, Communication, Supplies and Miscellaneous expenses
Revenue		
	Item	Application
Operation Revenue	Exhibition	Admission fee
	Educational spreading	Lecture and short course attendance fee
	Income by Publication	Sales of publications
Facilities Rent	Rental fee	Museum shops
		Restaurant

Source: JICA Study Team

9.2.1. Expenditure

(1) Cost for personnel

- It is calculated based on present salary of museum staff in Jordan and the number of personnel and service staff of the new museum.
- Annual cost of personnel is calculated based on the estimated monthly salary by SAPROF and estimated allowance (approximately 4 times of the monthly salary).
- The estimated monthly salary by SAPROF
3,000JD, 1,500JD, 800JD, 400JD (depending on position)
- The annual salary with allowance for the museum staff is assumed by position as:
 - Director 48,000 JD
 - Assistant director 24,000 JD
 - Head of department 16,000 JD
 - Chief of section 12,800 JD
 - General staff 8,000 JD
 - Service staff 4,800 JD

(2) Operating cost

Calculations have been made by the means quoted in the existing museums in Jordan for required items

- 1) Items which can be referred to the existing museum in Jordan are estimated by converting the planned facilities or number of personnel
- 2) Items which cannot be referred to the existing museum in Jordan are estimated by the ratio of the operating cost of the national museum in Japan of 1990.

Table 9.2 Ratio of operating cost against Total Expenditure (%)

Items		Tokyo National Museum	Kyoto National Museum	Nara National Museum	Total
Operation Cost	Special Exhibition	4.8	13.6	13.9	8.3
	Public Relations	1.1	0.8	0.4	0.9
	Data and Materials Collection	0.3	0.1	0.2	0.3
	Restoration of Data	7.8	3.2	1.6	5.7
	Studies and Research	0.3	0.0	0.0	0.2
	Total	14.2	17.8	16.2	15.3

Source: National Museums in Japan

The ratio shows on which items emphasis in museum activities is laid. For museums in Japan, it is clear that holding special exhibitions several times a year, which will generate publicity and attract large numbers of visitors, is the key to successful operation.

(3) Administrative cost

- 1) Utility costs are estimated by maximum demand of facilities
 - Electricity and fuel 250,000JD
 - Water and sewage 20,000JD
 - Total 270,000JD
- 2) Maintenance cost is 20% of the utility costs

3) General expense is 10% of the total expenditure

The expenditure does not include depreciation and taxes because of administration by government or local public bodies. Accordingly, in case of administration by incorporated foundation or the third sector, it is taken them into consideration.

9.2.2. Revenue

(1) Operation revenue

1) Admission fee is estimated based on anticipated number of visitors and the intended fee

Anticipated number of visitors under the planned facilities are higher than those of the National Museum in Japan. To achieve this number of visitors, attractive special exhibitions will be held, as described in 9.2.1 (2) "Operating Cost". It is impossible to achieve this without attractive special exhibitions and various events in the news to appeal to the groups which do not usually go to museums.

2) Education spreading revenue is 72% of the public relations cost

3) Income by publication is 70% of public relations

Table 9.3 Ratio of Operation Revenue against Public Relation Revenue (%)

ITEM		Tokyo National Museum	Kyoto National Museum	Nara National Museum	Average
Operation Revenue	Education Spreading Revenue	61.4	68.6	186.9	71.7
	Income by Publication	47.0	128.3	144.3	70.4

Source: National Museums in Japan

(2) Rental fee

Calculations have been made by the means quoted hereunder for required items.

1) Rental fee (shops, restaurants) based on floor space and relevant unit price per square meter.

Example of a high-class shopping mall in Amman

A tenant occupying some 100 square meters would have to pay roughly 10,000 JD per annum plus a service fee of 20%. The monthly sum would come to some 10.0 JD per square meter.

It is assumed that the restaurant and the museum shop could charge an amount of 10.0 JD/m²/month, the same as the high-class shopping mall, according to the following reasons:

- Advantage of the location in Amman City Plaza which can attract many citizens visiting the Plaza
- Prestige as the facility of the National Museum

2) Fee for use of facilities

Example of a conference room in a high-class hotel in Amman and at the Dead Sea

The fee is 150 JD per day regardless of the size of the conference room and a charge of 2.5 JD - 5 JD per person for tea service.

Nevertheless, the fee for a large-sized conference hall amounts to 200 JD per day which covers use of the hall and tea service and a further 50 JD is charged for miscellaneous expenses.

3) Parking space is available gratis

(3) Other revenue

Other revenues such as subsidies, contributions are not assumed.

9.3. Considerations on Financial Status

9.3.1. Visitors and Admission Fees

A provisional calculation of expenditure and revenue for National Museum are performed based on the number of visitors assumed under the facilities plan and number of visitors required to achieve break-even.

Visitors

According to the information supplied by MOTA the number of foreign visitors to the Amman City is 502,342 in 98/99. It is roughly estimated that approximately 70% (= 350,000 numbers) of the foreign visitors will visit the National Museum. For the local visitors, it is estimated that 50% of the number of foreign visitors (= 175,000 numbers) will be attracted to the Museum with all efforts can be paid.

Admission Fees

The admission fee for the local visitors is kept as 0.15 JD, which is the current fee to the Jordan Archaeological Museum, while 5.0 JD is set for foreign visitors to get financial source to cover the initial investment, especially the construction costs, as much as possible, although the fees may be determined in political considerations finally

9.3.2. Considerations on the Calculation Results

According to the calculation results shown in Table 9.4, the following are the conclusions regarding the financial status of the Museum:

- The balance between the revenue and expenditure becomes 430,608 JD in 98/99.
- In order to return the initial investment of the National Museum, such as costs for construction and pre-opening stage, etc., even the black-ink balance of 430,608 JD per year at 98/99 is still not sufficient situation to cover the initial costs.
- In order to secure profit on the return of the initial costs:
 - Number of visitors, especially foreign visitors should be secured and increased under the cooperation with MOTA.
 - The other profitable businesses described in Table 9.4 should make efforts to increase the rental use of the floors/spaces, such as seminar room, special exhibition hall, and even permanent exhibition halls for any type of gatherings.

Table 9.4 Provisional Calculation of Expenditure and Revenue

Expenditure				
Item		Number/Personnel	Expenditure per Annum (JD)	Amount (JD)
Personnel Expenditure	Director	1	48,000	48,000
	Assistant Director	1	24,000	24,000
	Department Head	3	16,000	48,000
	Chief of Section	8	12,800	102,400
	General Staff	18	8,000	144,000
	Service Staff	78	4,800	374,400
	Sub Total			740,800
Operating Expense	Special Exhibitions	Exhibition Expense		118,690
	Public Relations	Lectures, Short course and Poster Production costs etc.		12,870
	Data and Materials Collection and restoration	Data and Materials Collection		4,290
		Restoration of Exhibits		81,510
	Studies and Research	Academic society fee, Book purchase cost, Report printing expense		2,860
Sub Total			220,220	
Administrative Expenses	Utility Costs	Electricity, Water, Sewage and Fuel cost		270,000
	Maintenance Cost	Equipment maintenance and inspection, Repair expenses		54,000
	General Cost	Convention, Communication, Supplies and Miscellaneous expenses		128,502
	Sub Total			452,502
Total				1,413,522
Revenue				
Item		Admission fee	Number of Visitors	Amount (JD)
Operation Revenue	Admission fee (Relative ratio to plan) 100%	Tourist (5JD)	350,000	1,750,000
		Local Citizen (0.15JD)	175,000	26,250
		Sub Total	525,000	1,776,250
	Education Spreading Revenue	Lecture and short course attendance fee		9,270
	Revenue publication	Sales of Publications		9,010
Sub Total			1,794,530	
Facilities Rent Revenue	Rental fee	Shops	10JD*90 m ² *12months	10,800
		Restaurant	10JD*240 m ² *12months	28,800
	Facilities usage fee	Lecture hall	200JD*50days	10,000
	Sub Total			49,600
Total				1,844,130
Balance (Revenue – Expenditure)				+430,608

Source: JICA Study Team

Chapter 10 Issues to be resolved in further stage

There are still many issues to be resolved by the Jordanian side to proceed further in the implementation stage.

10.1. Particular Issues

(1) Review of Tender Package

The tendering/contract package as well as signing agency of the contract and tender type by package will be confirmed prior to the commencement of the procurement procedures. The packaging of the tender should be updated according to the actual situation of each sub-project/component described hereunder.

(2) Establishment of operation body of museum facilities

It is essential to establish a preparatory organisation for the operation and management as well as assignment of personnel for the permanent organisation, especially for the Museum, as soon as possible. In order to prepare and train those personnel for the operation of National Museum, the preparatory organisation should be established.

(3) Contract with tenants

In order to avoid double investments, since tenants often change them according to their own marketing/operation strategies, and the minimisation of investment to finishing works for the facilities, which will be operated by tenants, the following decision was made by GAM, and requested basically to apply the same conditions to all other facilities concerned. The finishing conditions for tenants and shops are as follows:

Ceiling	Wall	Floor	Utility	Others
Paint	Plaster & Paint	Terrazzo Tile	Plug end	Installation of Shutter

(4) Demarcation of Exhibition Works

The works related to the exhibition of new museums should be defined and clearly demarcated between the contractor and the Jordanian sides. The Jordanian side basically carries out follow up software supply and collection works before the opening of the Museum.

The following table is shown for basic understanding of the scope of works of the Jordanian side and contractors:

Items	Done by the Jordanian Side	Done by Contractors
Show Cases/Stands	-	Fabrication
Audiovisual	Software Supply (Videos, Slides, and Films)	Installation of Equipment
Exhibition Panels	Software Supply (Maps, Photos, Drawings, and/or Descriptions)	Installation of Frames and Boards with supplied maps/photos/drawings/descriptions
Exhibition Plates and Signs	Software Supply (Interpretation texts, Drawings and/or Logos)	Installation of Plates and Lettering in accordance with supplied texts
Authentic Materials and Artefacts	Collection, Transportation and Installation	-

Software supply means that necessary to facilitate original text and interpretation of collected artefacts, and to provide basic scenario of AV and explanation drawings by the Jordanian side

with the support of a consultant employed under the JBIC scheme.

(5) Confirmation of pipes

It was reported that a pipe(s) for drainage or sewerage is running beside the underground culvert, but no detailed information was given during the design stage. The exact location, depth and size of pipe(s) should be confirmed to determine whether there is any influence on the designed building and its layout.

(6) Negotiations should be carried out with the owners of artefacts in order to confirm that they are available for use as exhibits of the Museum.