

PART C TENDER DOCUMENTATION REPORT
(VOLUME I-3: DOCUMENT REPORTS)

CHAPTER 1 INTRODUCTION

1.1 Scope of Work for Tender Documentation

The Reports incorporated in this part are tender documents for both international and local tenders of the specified project and related supplemental study reports. The scope of works in Phase III are preparation of tender documents based on the detailed design reports and drawings which have been approved as Interim Report (3) by the Government of Egypt.

In addition to the above, supplemental reports i.e., construction planning, operation and maintenance of the subject conveyance canal, project cost estimate and project implementation plan, were also prepared during phase III study period by the JICA study team.

1.2 Contract Packages

Tender packages of the subject section of conveyance canal between KM86.500 and Km 132.500 were decided to be divided into four packages by the Project Steering Committee. The summarized demarcation of the facilities is tabulated as the following table.

No. of Package	Location	Major Facilities
Package-1 (Local tender)	KM 86.500- KM108.466	- No.1 open canal : 7.80km, No.2 open canal : 6.67km - Box culvert : 7.50km - Spillway with 2.10km outlet channel - No.1 access road : 1.00km, No.2 access road : 2.80km
Package-2 (International tender)	KM108.466- KM118.560	- Sand settling basin : 0.38km - El Salaam No.7 pumping station : 4 units pump and motor and related facilities - Pressured delivery pipeline : 2,400mm x 3rows x 9.35km - One-way surge tanks : 6 units - Discharge tank : 0.20km - No.3 access road : 5.06km
Package-3 (Local tender)	KM118.560- KM132.500	- No.3 open canal : 13.94km
Package-4 (Local tender)	At KM 108.600 point	- Main power substation 25MVA x 4 units

1.3 Summary of Tender Documentation

Tender documents for each contract consist of following items as shown in the Table.

Tender Package	Tender Method	Required Document	Description
1	Local tender	1. Invitation for tender 2. Conditions and specifications of contract 3. Particular conditions of Contract 4 Bill of quantities 5. Tender drawings	a. Description/instruction of tender b. Form of contract a. General conditions of contract b. Technical specifications a. Particular conditions of contract a. Bill of quantities a. 150 sheets of tender drawings
2	International tender	1. Pre-qualification Documents	a. Invitation for Pre-qualification b. Instructions to Applicants c. PQ forms
		1. Invitation for tender 2. Conditions of contract 3. Conditions of particular application 4. Technical specifications 5. Bill of quantities 6. Tender drawings	a. Description/instruction of tender b. Form of contract a. General conditions of contract a. Particular conditions of contract a. General technical specifications a. 211 sheets of tender drawings a. Preamble and bill of quantities
3	Local tender	1. Invitation for tender 2. Conditions and specifications of contract 3. Particular conditions of Contract 4 Bill of quantities 5. Tender drawings	a. Description/instruction of tender b. Form of contract a. General conditions of contract b. Technical specifications a. Particular conditions of contract a. Bill of quantities a. 150 sheets of tender drawings
4	Local tender	1. Invitation for tender 2. Conditions of contract 3. Technical specifications 4 Tender drawings 5. Bill of quantities	a. Description/instruction of tender b. Form of contract a. General conditions of contract b. Particular conditions of contract a. Particular technical specifications a. 38 sheets of tender drawings a. Bill of quantities

Detailed discussions and study on the above documentation were undertaken in the following respective chapters.

CHAPTER 2 PREQUALIFICATION AND TENDER

2.1 Mode of Contract (International and Local Contracts)

(1) International Contract (Package 2)

The Conditions of Contract to be applied to the Package 2 Contract shall be the Conditions of Contract (International) adopted by Arab National and Regional Development Finance Institutions, which are slightly modified and supplemented in the Conditions of Particular Application to suit the Egyptian situations.

The Engineer for supervision or Works shall be recruited internationally for this Contract.

The contents of the conditions of contract are adjusted to suit the stipulations of the Egyptian Law No. 89 for 1998 (and its Executive Regulations) concerning Biddings.”

The positions and definitions of “the Employer”, “the Contractor” and “the Engineer” shall be as determined by the said Conditions of Contract, which are basically similar to those defined in the FIDIC Conditions of Contract.

(2) Local Contracts (Packages 1 and 3)

The document **General Contract Form 2333B “Committee”** prepared by the MWRI shall be used as the Conditions of Contract for the local contracts for Packages 1 and 3. The clause 69 of the said **General Contract Form 2333B “Committee”** are prepared by referring to the “Contract Form for the Construction of Sheikh Gaber El Sabbah Canal from Km 73.00 to Km 86.50” as an example.

The following paragraph is added to clause 69.

“This Tender together with all conditions thereof is governed by the Egyptian Law No. 89 for 1998 (and its Executive Regulations) concerning Biddings.”

The positions of “the Employer” and “the Contractor” are the same as for the case of international contracts. The Engineer as such is not incorporated in the local contracts. The Contractor may employ a consultant office so that he could deal with eventual changes in design, which may become necessary due to site circumstances, suggest solutions to the problems, which arise in the course of the contract works, or any such eventuality.

As the detailed design is already completed by the JICA Study Team, there is no need of performing the preliminary survey work, nor of conducting the technical calculation nor of preparing the design drawings of the Contract work. However, the Contractor is required to effect adjustments to the original design depending on the site circumstances, to comply with the deviation order by the Employer or to create working (shop) drawings for the actual construction work, or to conduct calculation and designing of the temporary facilities, etc. subject to the Employer’s approval.

(3) Local Contracts (Package 4)

The REA regulations on contracting are adopted.

2.2 Prequalification & Tendering Procedures for International Contract (Package 2)

(1) International Contract (Package 2)

In order to obtain the desired results from the tendering, it is imperative to conduct the prequalification of the tenderers in an optimum way. The stepwise procedures of prequalification and tendering are explained below.

(a) Work Components of Package 2 Contract

The work components of the Package 2 Contract are as follows:

- 1) Pumping station and buildings (Civil Works) : Cost portion about 7%
- 2) Electrical equipment (Motor, Switchgear, etc.) : Cost portion about 16%
- 3) Mechanical equipment (Pumps, Valves, etc.) : Cost portion about 14%
- 4) Pipeline (Pipe material supply and Civil Works) : Cost portion about 61%
- 5) Access road (Civil Works) : Cost portion about 2%

(b) Grouping into Four Categories of Works, i.e.,

- 1) Supply and installation of pumps, etc.: (c) = (Cost portion: 14%)
- 2) Supply and installation of motors, etc.: (b) = (Cost portion: 16%)
- 3) Supply and installation of pipes: (d) = (Cost portion: 61%)
- 4) Civil engineering works: (a) + (e) = (Cost portion: 9%)

(c) Prequalification of Applicant Companies for each Category and Publication of Prequalified Companies

Prequalification application shall be solicited from the companies separately for the following three categories of works, i.e.,

1) Pipeline Works (Installation)

The following two specialized categories of work may be sub-contracted. In that case they are to be called the “Named Specialist Sub-contractors”, and are to be separately and individually pre-qualified through the Pipeline Works applicant.

- Named Specialist Sub-Contractor for Pipe Welding
- Named Specialist Sub-Contractor for Pipe Coating

2) Mechanical Works (Supply and Installation of Pumps, Gates, etc.)

3) Electrical Works (Supply and Installation of Pump Motors, Auxiliary Substation, etc.)

Evaluation for prequalification will be by means of a scoring method as shown below, and each company must score at least 60% for each item of evaluation, and the overall percentage of at least 70% of the full points to prequalify. As a result of the prequalification the eligible companies for each category shall be made public.

Distribution of Evaluation Scoring Points of Pre-Qualification

Categories	Full Points	General Experience	Similar Experience	Financial Capacity	Technical Capability
Installation Steel Pipes	100	10	40	30	20
Supply and installation Pumps, etc.	100	10	55	25	10
Supply and installation Motors, etc	100	10	55	25	10

Notes: Minimum for each item: 60%, Minimum for overall rating: 70%

(d) Pre-Qualification Forms and Allocation of Scoring Points for Items of Pre-Qualification Forms

The evaluation of the pre-qualification (PQ) applicants shall be conducted by assessing the contents of the PQ Forms which each applicant has filled in. The summary of the PQ Forms is tabulated below.

Summary of PQ Forms

Categories	Experience and Capability	Items and Document Form - No.	Description
1. Pipe Works Contractor	1. General Experience	Form:A-1 Form:B-1 Form:C-1	(1) Application Letter Form for Qualification (2) Identification of Applicant (3) Annual Contract Amount/No. of Contracts
	2. Similar Experience	Form:D-1 Form:E-1 Form:F-1 Form:G-1	(1) Experience in Similar Works, Completed in the Last 10 Years (2) Similar Works-Detailed Experience Record of the above items - (Completed projects) - ANNEX-1: Steel pipe installation - ANNEX-2: Description of the project (3) List of Current Contracts (4) Detailed Record of Current Contracts
	3. Financial Capacity	Form:H-1 Form:I-1	(1) Financial Statements of Company (Last Five (5) years) (2) Bank Reference from the Bank's Head Office
	4. Technical Capability	Form:J-1 Form:K-1 Form:L-1	(1) List of Key Engineer who could be Assigned to the Project (2) Dossier of Key Personnel (Engineers) proposed for the Works (Details of the above item (1)) (a) Steel pipe welding works (b) Steel pipe lining/coating works (3) List of Major Construction Equipment

2. Contractor Main Pumps and auxiliary mechanical equipment for supply and installation	1.General Experience	Form:A-2 Form:B-2 Form:C-2	(1) Application Letter Form for Qualification (2) Identification of Applicant (3) Annual Contract Amount/No. of Contracts
	2.Similar Experience	Form:D-2 Form:E-2	(1)Experience in Similar Works, Completed in the Last 10 Years (2) Similar Works-Detailed Experience Record of the above items - (Completed projects) - ANNEX-1 : Pump supply record - ANNEX-2 : Description of the project
		Form:F-2 Form:G-2	(3) List of Current Contracts (4) Detailed Record of Current Contracts
	3.Financial Capacity	Form:H-2 Form:I-2	(1) Financial Statements of Company (Last Five (5) years) (2) Bank Reference from the Bank's Head Office
4.Technical Capability	Form:J-2 Form:K-2	(1) List of Key Engineers who could be Assigned to the Project (2) Dossier of Key Personnel (Engineers) proposed for the Works (Details of the above item (1)) (3) Pump works (4) Gate works	
3. Main Motors and auxiliary electrical equipment Contractor for supply and installation	1.General Experience	Form:A-3 Form:B-3 Form:C-3	(1) Application Letter Form for Qualification (2) Identification of Applicant (3) Annual Contract Amount/No. of Contracts
	2.Similar Experience	Form:D-3 Form:E-3	(1) Experience in Similar Works, Completed in the Last 10 Years (2) Similar Works-Detailed Experience Record of the above items - Completed projects) - ANNEX-1 : Motor supply record - ANNEX-2 : Transformer supply record
		Form:F-3 Form:G-3	(3) List of Current Contracts (4) Detailed Record of Current Contracts
	3.Financial Capacity	Form:H-3 Form:I-3	(1) Financial Statements of Company (Last Five (5) years) (2) Bank Reference from the Bank's Head Office
4.Technical Capability	Form:J-3 Form:K-3	(1) List of Key Engineer who could be Assigned to the Project (2) Dossier of Key Personnel (Engineers) proposed for the Works (Details of the above item (1)) (5) Main motors and auxiliary equipment (6) High voltage transformer and auxiliary substation	

In accordance with the overall Distribution of Evaluation Scoring Points of Pre-Qualification described in (c) above, scoring points are allocated for crucial items in the PQ Forms as shown separately for each category of Contract Works in the following table.

Allocation of Scoring Points in PO Forms

A. Pipe Works Contractor

Form	Detailed Evaluation		Point	Remarks
(1) General Experience			10 point	
Form C-1	100M\$ or more (Average)		10.0	150M\$ (90M\$: Civil Works)
	75 - <100 M\$		9.0	
	50 - <75 M\$		8.0	
	25 - <50 M\$		6.0	
	Less than 25 M\$		5.0	
(2) Similar Experience			40 point	
Form E-1	40M\$ or more		25.0	80M\$ (Pipe Works)
	30 - <40 M\$		22.5	
	20 - <30 M\$		20.0	
	10 - <20 M\$		17.5	
	5 - <10 M\$		12.5	
	Less than 5 M\$		0	
Form G-1	Contract amount	Remaining	Point	Remarks
	Pipe related works	percentage		
	40M\$ or more	Less than 50%	15.0	
	40M\$ or more	Less than 70%	12.0	
	20 - <40 M\$	Less than 50%	10.5	
	20 - <40 M\$	Less than 70%	9.0	
	5 - <20 M\$	Less than 50%	7.5	
5 - <20 M\$	Less than 70%	6.0		
Less than 5 M\$		0		
(3) Financial Capacity			30 point	
Form H-1 1) Total Assets	300M\$ or more (Average)		7.0	
	150 - <300 M\$		5.6	
	90 - <150 M\$		3.5	
	Less than 90 M\$		0	
2) Profit	30M\$ or more (Average)		8.0	
	15 - <30 M\$		6.4	
	0 - <15 M\$		4.0	
	0		0	
Form I-1 Capacity of Credit Facility	100M\$ or more		15.0	
	75 - <100 M\$		12.0	
	30 - <75 M\$		7.5	
	Less than 30 M\$		0	
(4) Technical Capacity			20 point	
Form E-1: Pipe installation.	Dia.1000mm, length 1000m or more and			
	5 sites or more		7.0	
	3 - 4 sites		5.6	
	1 -2 sites		3.5	
	Less than above		0	

Form K-1: Experience 20 Years or more as Manager or Deputy Manager	10 pers or more 8 - 9 persons 5 - 7 persons Less than 5 pers	7.0 5.6 3.5 0	
Form L-1 ; Available Construction Equipment for the Contract Works	Bulldozer Scraper Crane	More than 10 More than 10 More than 10	Total 6.0 2.0 2.0 2.0 500 m ³ /day 350 m ³ /day 5 tons

B. Pump Contractor

Form	Detailed Evaluation		Point	Remarks
(1) General Experience			10 point	
Form C-2	More than 10M\$ and 10 contracts		10.0	25M\$
	More than 10M\$ and 5 - 9 contracts		8.0	
	More than 10M\$ and 2 - 4 contracts		6.0	
	More than 10M\$ and 0 - 1 contract		0	
(2) Similar Experience			55 point	
Form E-2	Discharge 600m ³ /min or more and Head 100m or more			
	10 or more contracts		35.0	
	8 - 9 contracts		31.5	
	6 - 7 contracts		28.0	
	4 - 5 contracts		24.5	
	2 - 3 contracts		21.0	
	1 contract		17.5	
Form G-2	Current contract amount	Remaining percentage	Point	Remarks
	10M\$ or more	Less than 50%	20.0	
	10M\$ or more	Less than 70%	18.0	
	6 - <10M\$	Less than 50%	16.0	
	6 - <10M\$	Less than 70%	14.0	
	3 - <6 M\$	Less than 50%	12.0	
	3 - <6 M\$	Less than 70%	10.0	
	1 - <3 M\$	Less than 50%	8.0	
	1 - <3 M\$	Less than 70%	6.0	
(3) Financial Capacity			25 point	
Form H-2	100M\$ or more (Average)		10.0	
1) Total Assets	80 - <100 M\$		9.0	
	60 - <80 M\$		8.0	
	40 - <60 M\$		7.0	
	20 - <40 M\$		6.0	
	Less than 20 M\$		5.0	
2) Profit	10M\$ or more (Average)		5.0	
	5.0 - <10.0 M\$		4.5	
	2.5 - <5.0 M\$		4.0	
	1.0 - <2.5 M\$		3.5	
	0 - <1.0 M\$		3.0	
	Deficit		0	

Form I-2	30M\$ or more	10.0	
Capacity of	20 - <30M\$	9.0	
Credit Facility	10 - <20 M\$	8.0	
	5 - <10 M\$	6.0	
	Less than 5 M\$	5.0	
(4) Technical Capacity		10 point	
Form K-2:(1)	40 pers. or more	8.0	
Pump Engineer	35 - 39 persons	7.2	
Experience 20	30 - 34 persons	6.4	
Years or more	25 - 29 persons	5.6	
	20 - 24 persons	4.8	
	15 - 19 persons	4.0	
	Less than 15	0	
Form K-2:(2)	20 pers or more	2.0	
Gate Engineer	10 - 19 persons	1.6	
Experience 20	5 - 9 persons	1.2	
Years or more	Less than 5 pers	0	

C. Motor Contractor

Form	Detailed Evaluation		Point	Remarks
(1) General Experience		10 point		
Form C-3	10 contracts or more		10.0	32.0M\$
Average	5 - 9 contracts		8.0	
amount more	2 - 4 contracts		6.0	
than 10M\$	0 - 1 contract		0	
(2) Similar Experience		55 point		
Form E-3: (1)	10 or more contracts		20.0	
Output more than	8 - 9 contracts		18.0	
10,000Kw and 10P	6 - 7 contracts		16.0	
	4 - 5 contracts		14.0	
	2 - 3 contracts		12.0	
	1 contract		10.0	
Form E-3: (2)	10,000 units or more		15.0	
Indoor use	5,000 - <10,000		13.5	
switchgear 11KV,	2,500 - <5,000		12.0	
2,000 ampere with	1,500 - <2,500		9.0	
registration	1,000 - <1,500		7.5	
ISO9000	Less than 1,000		0.0	
Form G-3	Current contract	Remaining percentage	Point	Remarks
	10 contracts or more	Less than 50%	20.0	
	10 contracts or more	Less than 70%	18.0	
	6 - 9 contracts	Less than 50%	16.0	
	6 - 9 contracts	Less than 70%	14.0	
	3 - 5 contracts	Less than 50%	12.0	
	3 - 5 contracts	Less than 70%	10.0	
	1 - 2 contracts	Less than 50%	8.0	
	1 - 2 contracts	Less than 70%	6.0	

(3) Financial Capacity		25 point		
Form H-3 1) Total Assets	100M\$ or more		10.0	
	80 - <100 M\$		9.0	
	60 - <80 M\$		8.0	
	40 - <60 M\$		7.0	
	20 - <40 M\$		6.0	
	Less than 20 M\$		5.0	
2) Profit	10M\$ or more		5.0	
	5.0 - <10.0 M\$		4.5	
	2.5 - <5.0 M\$		4.0	
	1.0 - <2.5 M\$		3.5	
	0 - <1.0 M\$		3.0	
	Deficit		0	
Form I-3 Capacity of Credit Facility	30M\$ or more		10.0	
	20 - <30M\$		9.0	
	10 - <20 M\$		8.0	
	5 - <10 M\$		6.0	
	Less than 5 M\$		5.0	
(4) Technical Capacity		10 point		
Form K-3:(1) Electrical Engineers, High Volt. Transformer Experience 20 Years or more	40 pers. or more		5.0	
	30 - 39 persons		4.0	
	20 - 29 persons		3.0	
	10 - 19 persons		2.0	
	Less than 10		0.0	
	Form K-3:(2) Electrical Engineer, High Voltage Main Motor Experience 20 Years or more	40 pers. or more		5.0
30 - 39 persons			4.0	
20 - 29 persons			3.0	
10 - 19 persons			2.0	
Less than 10			0.0	

(e) Formation of Tenderers

At the time of tendering, the pre-qualified component companies shall negotiate among themselves to form a joint venture composed of pre-qualified companies. They shall elect one of them as Lead Partner of the JV. The elected leader shall be subject again to additional post evaluation of his financial solidity (as a leader), and also of his previous management experience (at the stage of tendering). The decision will be notified to the tenderer whether the leader is acceptable or not. If the proposed JV leader is not acceptable to the Employer, the tenderer is allowed to choose another Leader among the same JV members. If all the members are rejected as the leader, the tenderer shall be disqualified.

The pre-qualified companies and the Nominated Specialist Sub-Contractors are allowed to belong to more than one tenderer. However, no company is allowed to be a leader of more than one tenderer.

(f) Evaluation of Tenders

The tenderers will be asked to submit two sealed envelopes, the first, the technical envelope and the second, the financial envelope.

In the technical envelope the tenderers shall fill in the specifications in the spaces indicated in the Tender documents for the permanent plant and equipment of the Project as well as describe his proposed method of completing the contract works in sufficient detail, indicate a preliminary but comprehensive network analysis showing the tenderer's proposed procedure and the program for the Contract Works, CV of the proposed key staff on site, the list of the proposed constructional plant and machinery, and other technical data required in the tender documents. The Technical Committee will evaluate these technical papers on a pass/fail basis.

After the technical evaluation the financial envelopes of only those tenderers who passed the technical evaluation shall be opened and the lowest price tenderer shall be awarded the contract pending finalization of the contract negotiations.

For the process of the study for Pre-Qualification and Tendering for the international Contract (Package 2) refer to ANNEX.

2.3 Tendering Procedure for Local Contracts (Packages 1, 3 and 4)

(1) Prequalification

Prequalification is not applied to the local contracts.

(2) Systems of Local Tender

Two systems are adopted for a local tender, i.e., Tender for a Special Contract and Tender for a General Contract. If the object works are regarded to require special technique or special equipment or machinery, tender for a special contract will be called, subject to the approval of the NSDO chairman. In this case, NSDO shall select a certain number of special local contractors who would be capable of handling such kinds of works. They will be exclusively invited to participate in the tender.

The other system, Tender for a General Contract is called applying a normal procedure of inviting tenders through newspaper publishing.

The presently intended local contracts for Packages 1, 3 and 4 are considered to fall into the category of general contracts. Therefore, the normal procedure will be applied.

(3) Method of Evaluation of the Local Tenders (Two Envelope System)

The tenderers will be asked to submit two sealed envelopes, the first, the technical envelope

and the second, the financial envelope. In the technical envelope the tenderers shall describe his proposed method of completing the contract works in sufficient detail, indicate the part of the works he intends to subcontract, CV of the proposed key staff on site, the list of the proposed constructional plant and machinery, etc. As well as fill in the similar forms to the prequalification forms for the international tender, such as the company's general experience, similar works experience, financial status, technical capacity, etc. The Technical Committee will evaluate these technical proposals and forms on a pass/fail basis.

After the technical evaluation the financial envelopes of only those tenderers who passed the technical evaluation shall be opened and the lowest price tenderer shall be awarded the contract pending finalization of the contract negotiations.

(4) Tender for Local Contracts (Package 4)

As for Package 4 the REA regulations on tendering shall be adopted.

CHAPTER 3 TENDER DOCUMENTS

3.1 Pre-Qualification

The pre-qualification documents consist of:

- Invitation for Pre-qualification
- Instructions to Applicants
 - Appendix A: Drawings
 - Appendix B: Information of the Project

3.2 Tender Documents for International Tendering

The tender documents for international tendering consist of the following:

- Invitation for Tender
- Instructions to Tenderers
- Forms of Tender
- Contract Forms
 - Form of Agreement
 - Performance Bond
 - Retention Money Guarantee
- Conditions of Contract
 - General Conditions
 - Conditions of Particular Application
- Technical Specifications
- Bill of Quantities
- Drawings

3.3 Tender Documents for Local Tendering

The tender documents for local tendering consists of the following:

- General Contract Form 2333B <Committee>
- Article 69 Details and General Conditions
- Technical Specifications of Mechanical Works
- Particular Conditions of Contract
- Bill of Quantities
- Drawings

CHAPTER 4 TECHNICAL AND RELATED REPORTS

4.1 General

Supporting reports to the tender documents were prepared and/or modified from interim report (3) based on the results of detailed design, project cost estimates and project justification by the Study Team. Those reports are as follows;

- Volume VI: Construction Planning Report
- Volume VII: Operation and Maintenance Report
- Volume VIII: Project Cost Estimate
- Volume IX: Project Implementation Plan Report

4.2 Construction Planning Report

This report was compiled on the basis of preliminary estimated working volumes and prospected suitable combination of construction equipment for each construction categories by each contract packages. The reports will contribute to the evaluation of contractor's proposal for detailed construction schedules, which will be submitted in the technical envelope of the tender.

The Employer and Engineer will be able to utilize evaluation and negotiation of contract including unit prices and amounts as well as temporary works and contract periods.

4.3 Operation and Maintenance Report

This report was compiled to describe operation and maintenance manners within the limited canal section between KM86.50 and KM 132.50 of El Sheikh Gaber El Sabbah Canal.

The contents of the report are basic concept of operation and maintenance of the said conveyance canal systems including El Salaam No.7 Pumping Station and long pressured delivery pipelines, safety operation of main pump systems and spillway for emergency case, and proposed organization of the future OM of the facilities constructed, including expected OM cost estimates and procurement schedule for necessary OM equipment.

4.4 Project Cost Estimates Report

Detailed cost estimates was made based on the preliminary computation of construction work volumes for each tender package and unit prices which has been mostly collected from the authorities concerned.

The project costs were estimated dividing into foreign and local currency portion in order to apply Kuwait Development Fund as much as possible. The foreign currency components include the cost of mechanical and electrical equipment of No.7 pumping station and also steel plates to be procured for fabrication of steel pipes based on the government

recommendation.

4.5 Project Implementation Plan Report

The report contains the project digest, implementation plan of not only main conveyance canal but also irrigation and drainage infrastructures within the beneficiary area, project justification by means evaluation of EIRR (Economic Internal Rate of Return) with sensitivity analysis.

In addition to the above, availability of required foreign currency fund could be confirmed using the committed Kuwait Development Fund.

**Study on Procedures for Prequalification
and Formation of Tenderers
for
Conveyance System of El Sheikh Gaber El Sabbah Canal
Between KM108.466 and KM 118.560
El Salaam No.7 (Bir El Abd) Pumping Station (Package 2)**

1. Prequalification Method

1.1 General Concept

In order to obtain intended results from the tendering, it is recommendable to conduct the prequalification of tenderers in an optimum way. The stepwise procedures of prequalification are explained below.

The work components of the present Contract consist of varied fields of engineering, so that a single contractor would not be able to deal alone. There are two methods of conducting prequalification in such a case. Firstly, prospective contractors are called upon to form entities of tenderers consisting of several specialized contractors, either in the form of a joint venture (JV), a single main contractor with subcontractors or a joint venture with some major subcontractors. Each of these tenderers shall be asked to apply for prequalification as a tendering entity.

The second method takes the following procedure. Each contractor with identified specialization applies for prequalification. After announcement of the individually prequalified contractors, they shall negotiate with each other to form tenderers such as a joint venture, single main contractor with others as subcontractors or a joint venture with some as subcontractors.

In the present Contract the second method is more suited for the following reason. In order to encourage formation and participation of as many tenderers, the prequalified specialized contractors should be allowed to participate in more than one tenderer. In this way, if the number of prequalified contractors in a particular field of specialization is limited, it is possible to form more tenderers than that number of contractors by allowing the latter to join more than one tenderer. The only exception to this rule shall be the positions of the lead partner of a joint venture and the main contractor in a formation of a single main contractor with subcontractors.

1.2 Work Components

The scope of works consists of the following components with their approximate cost portions of the Contract:

- (a) Pumping station and buildings (Civil Works) : Cost portion about 7%
- (a) Electrical equipment (Motor, Switchgear, etc.) : Cost portion about 16%
- (a) Mechanical equipment (Pumps, Valves, etc.) : Cost portion about 14%
- (a) Pipeline (Pipe material supply, fabrication and installation) : Cost portion about 61%
- (a) Access road (Civil Works) : Cost portion about 2%

1.3 Identification of Contractors

After detailed comparative study of classification and assignment of component works to contractors as explained in Subclause 2.1, the following four (4) categories of contractors are finally identified.

- 1) Pump works (Supply/ installation of pumps, etc.): (c)
- 1) Motor works (Supply/ installation of motors, etc.): (b)
- 1) Civil works (Pumping station, buildings & roads) with Pipe works (Supply and installation of pipes): (a) + (d) + (e)
- 1) EPC (Engineering, Procurement and Construction) contractor

1.4 Prequalification of Applicant Contractors

(1) Categories of applicants

Two forms of tenderer are considered in the present Contract. One is a joint venture and the other a single main contractor with nominated subcontractors. Individual contractors will be asked to apply separately for either of the four (4) categories of works. They shall become one of the constituting contractors as follows depending on the form of tenderer.

(a) Joint Venture case :

- 1) Pump works (Supply/ installation of pumps, etc.): (c)
- 1) Motor works (Supply/ installation of motors, etc.): (b)
- 1) Civil works (Pumping station, buildings & roads) with Pipe works (Supply and installation of pipes): (a) + (d) + (e)

(b) Single Contractor case

- 1) Pump works(Supply/ installation of pumps, etc.): (c)
- 1) Motor works(Supply/ installation of motors, etc.): (b)
- 1) Civil works(Pumping station, buildings & roads) with Pipe works(Supply and installation of pipes): (a) + (d) + (e)
- 1) EPC (Engineering, Procurement and Construction) contractor

(1) Evaluation

Evaluation for prequalification will be by means of a scoring method as shown below, and each contractor must score at least 60% for each item of evaluation, and the overall percentage of at least 70% of the full points to prequalify. As a result of the prequalification

the eligible contractors for each category shall be made public.

(a) Joint Venture case :

Categories	Full Points	General Experience	Similar Experience	Financial Capacity	Technical Capability
Pump Works Contractor	100	15	45	20	20
Motor Works Contractor	100	15	45	20	20
Civil & Pipe Works Contr.	100	15	20	35	30

Notes: Minimum for each item: 60%, Minimum for overall rating: 70%

(a) Single Contract case

Categories	Full Points	General Experience	Similar Experience	Financial Capacity	Technical Capability
Pump Works Contractor	100	15	45	20	20
Motor Works Contractor	100	15	45	20	20
Civil & Pipe Works Contr.	100	15	20	35	30
EPC Contractor	100	20	30	35	15

Notes: Minimum for each item: 60%, Minimum for overall rating: 70%

Items of prequalification evaluation in the above table are summarized as follows;

General Experience:

The Applicant's general experience in the specialized field of engineering in various projects will be evaluated.

Similar Experience:

The Applicant's experience of executing works of similar nature and complexity in comparable scale to this project will be evaluated.

Financial Capacity:

The turnover/income from large scale contracting, bid capacity and available lines of credit in internationally convertible currency will be evaluated to verify the soundness of the Applicant's financial capacity.

Technical Capability:

- Site Organization: Clear definition of authority and responsibility of each organization unit.
- Personnel Capabilities: Numbers of qualified engineers, specialists and technicians

- with sufficient experience
- Equipment: Testing equipment and facilities as well as construction equipment in full working order (owned, through hire, lease or purchasing)
 - Quality Assurance: The Applicant's own quality assurance system adequate for the execution of the work and conforming to an internationally recognized standard such as ISO 9001. Details of his quality assurance system and a copy of his quality certificates shall be given his pre-qualification application.

The prequalified contractors shall be advised to negotiate with each other and to form one of the specified forms of tenderers described in Clause 2 below.

It is recommendable that none of the prequalified contractors including their partners and associated companies be allowed to belong to more than one tenderer in order to keep as much secrecy as possible among tenderers. The exception to this rule are the partners to or the associated companies of the suppliers and pipe laying contractors of steel pipes as it is known that there are not sufficient number of such local contractors. However, if the number of prequalified contractors of any category is less than six (6), it may be necessary to allow this particular group to join more than one tenderer in order to secure enough number of tenderers.

2 Formation of Tenderers

2.1 Assignment of Works to Contractors

As it would be almost impossible to find individual contractors who are able to perform by themselves all 5 component works mentioned above in Subclause 1.2, it is necessary to classify and assign the works to a certain number of contractors. The following four alternatives are conceivable.

As to the component (d) Pipeline works which would consist of steel pipe supply works and installation works, it is again difficult for a single contractor to conduct all the works on his own. Therefore, the Pipe contractor shall be allowed to sublet part of the works to subcontractors.

(1) Alternative-1 (4 Categories of Contractors)

- 1) Pump works (Supply/ installation of pumps, etc.): (c)
- 1) Motor works (Supply/ installation of motors, etc.): (b)
- 1) Pipe works (Supply/ installation of pipes): (d)
- 1) Civil works (Pumping station, buildings & roads): (a) + (e)

As the components (a) and (e) of Subclause 1.2 are both civil works, they are integrated into one category. The extremely small portion (2%) of the component (e) is another reason for the integration.

Characteristics

The cost portion of the Civil contractor is relatively small with 9% of the total Contract price. This means that more local civil contractors will be able to participate in the Project, which would in turn increase local employment.

A rather wide variation of the cost portions of 4 component contractors (9% to 61%) is unfavorable for the formation of JV's, as each JV partner is to be jointly and severally liable for all the obligations of the JV vis-à-vis the Contract, meaning that in case of default(s) of any partner(s) the remaining partner(s) are obligated to complete the Contract beyond their proportionate financial portion(s). Especially vulnerable are the Pump, Motor and Civil contractors, which have low financial portions.

(2) Alternative-2 (3 Categories of Contractors)

- 1) Pump works (Supply/ installation of pumps, etc.): (c)
- 1) Motor works (Supply/ installation of motors, etc.): (b)
- 1) Civil works (Pumping station, buildings & roads) with Pipe works(Supply and installation of pipes): (a) + (d) + (e)

In this alternative the components (a), (d) and (e) of above Subclause 1.2 are grouped together to form one category which integrates all kinds of civil works of the Contract including supply and installation of steel pipes.

Characteristics

As the Civil works portion ((iv) of Alternative-1) and the Pipe works portion are integrated, a contractor with cost portion of less than 10% does not exist any more compared to Alternative-1, decreasing the difference in financial portions among the component contractors.

As all civil works are integrated together, it would be easy to co-ordinate the activities of civil works within the organization of the Civil contractor as well as for the Main Contractor/ Lead partner.

As a disadvantage it may limit the numbers of participation of local contractors for the category "Civil contractor with Pipe works", because the financial capacity and experience record of some potential local applicants may not meet the requirements for the contractor of this category.

(3) Alternative-3 (5 Categories of Contractors)

- 1) EPC (Engineering, Procurement and Construction) contractor
- 1) Pump works (Supply/ installation of pumps, etc.): (c)
- 1) Motor works (Supply/ installation of motors, etc.): (b)
- 1) Pipe works (Supply/ installation of pipes): (d)
- 1) Civil works (Pumping station, buildings & roads): (a) + (e)

In this alternative, EPC contractor is added to Alternative-1 to be the single Main Contractor. EPC contractors specialize in management and execution of large-scale contracts with various specialized works like the present Project. It may be beneficial to the Project, if such a contractor succeeds in making an offer based on efficient and cost-saving operation and management. The cost portion of EPC contractor is variable depending on the outcome of the agreement with Pipe works contractor and the Civil works contractor.

Characteristics

The purpose of this alternative is to place EPC contractor as the Main contractor and other contractors as Nominated subcontractors to the Main contractor. In this way the Nominated subcontractors are relieved of the risk of having to assume the joint liability in case of default(s) of other contractor(s).

The cost portion of the Civil contractor is relatively small with 9% or less of the total Contract price. This means that more local civil contractors would be able to participate in the Project, which would in turn increase local employment.

(4) Alternative-4 (4 Categories of Contractors)

- 1) EPC (Engineering, Procurement and Construction) contractor
- 1) Pump works(Supply/ installation of pumps, etc.): (c)
- 1) Motor works(Supply/ installation of motors, etc.): (b)
- 1) Civil works(Pumping station, buildings & roads) with Pipe works(Supply and installation of pipes): (a) + (d) + (e)

In this alternative, EPC contractor is added to Alternative-2 to be the single Main Contractor. It may be beneficial to the Project by the same token as Alternative-3, i.e., if such a contractor succeeds in making an offer based on efficient and cost-saving operation and management. The cost portion of EPC contractor is variable depending on the outcome of the agreement with the Civil and Pipe works contractor.

Characteristics

The purpose of this alternative is to place EPC contractor as the Main contractor and other contractors as Nominated subcontractors to the Main contractor. In this way the Nominated subcontractors are relieved of the risk of having to assume the joint liability in case of default(s) of other contractor(s).

As all civil works are integrated together, it would be easy to co-ordinate the activities of civil works within the organization of the Civil contractor as well as for the Main Contractor.

As a disadvantage it may limit the numbers of participation of local contractors for the category "Civil contractor with Pipe works", because the financial capacity and experience

record of some potential local applicants may not meet the requirements for this category of contractor.

2.2 Formation of Tenderers

The form of tenderer shall be either a Joint Venture consisting of a few contractors or a Single Main Contractor with subcontractors. The partners to the Joint Venture or major subcontractors to the Single Main Contractor shall all be prequalified for the scope of works to which they are assigned. An abbreviation (PQ) is attached hereinafter to such prequalified contractors. In the following subclauses, the term “Nominated Subcontractor” means such subcontractors as are prequalified.

Conceivable alternatives of the tenderer formation for both Joint Venture case and Single Contractor cases are tabulated in Table – A and Table – B, respectively.

Table -A Comparative Summary of the Alternatives (1) - Joint Venture (JV) Case

Case	Category of Alternative	Lead Partner	Partner	Nominated Subcontractor	Subcontractor	Remarks
JV-1	1	Pump S/I	Pipe C. Civil C.	Motor S/I under Pump C.	Pipe supply Pipe laying under Pipe C.	Refer to Fig.-1
JV-2	1	Pipe C.	Pump S/I Civil C.	Motor S/I under Pump C.	Pipe supply Pipe laying under Pipe C.	Refer to Fig.-2
JV-3	2	Pump S/I	Civil C. with Pipe Works	Motor S/I under Pump C.	Pipe supply under Civil C. with Pipe Works	Refer to Fig.-3
JV-4	2	Civil C. with Pipe Works	Pump S/I	Motor S/I under Pump C.	Pipe supply under Civil C. with Pipe Works	Refer to Fig.-4

- Notes :
- (1) Pump S/I: Pump supply and installation contractor
 - (2) Pipe C.: Pipeline construction contractor
 - (3) Civil C: Civil contractor for pumping station and access road construction
 - (4) Motor S/I under Pump C.: Contractor for Motor and electric equipment supply and installation to be nominated subcontractor under Pump S/I
 - (5) Civil C. with Pipe Works: Construction of all civil works including Pipeline works

Table - B Comparative Summary of the Alternatives (2) - Single Contractor (SC) Case

Case	Category of Alternative	Main Contractor	Nominated Subcontractor	Subcontractor	Remarks
SC-1	1	Pump S/I	Pipe C. Civil C. Motor S/I	Pipe supply Pipe laying under Pipe C.	Refer to Fig.-5
SC-2	1	Pipe C.	Pump S/I Civil C. Motor S/I	Pipe supply Pipe laying under Pipe C.	Refer to Fig.-6
SC-3	2	Pump S/I	Motor S/I Civil C. with Pipe Works	Pipe supply under Civil C. with Pipe Works	Refer to Fig.-7
SC-4	2	Civil C. with Pipe Works	Pump S/I Motor S/I	Pipe supply under Civil C. with Pipe Works	Refer to Fig.-8
SC-5	3	EPC.	Pump S/I (+)Motor S/I Civil C. Pipe C.	Pipe supply Pipe laying under Pipe C.	Refer to Fig.-9
SC-6	4	EPC.	Civil C. with Pipe Pump S/I (+) Motor S/I	Pipe supply under Civil C. with Pipe Works	Refer to Fig.-10

- Notes :
- (1) Pump S/I: Pump supply and installation contractor
 - (2) Pipe C.: Pipeline construction contractor
 - (3) Civil C.: Civil contractor for pumping station and access road construction
 - (4) Motor S/I under Pump C.: Contractor for Motor and electric equipment supply and installation to be nominated subcontractor under Pump S/I
 - (5) Civil C. with Pipe Works: Construction of all civil works including Pipeline works
 - (6) EPC: Engineering, Procurement and Construction contractor

2.3 Selection of Best Forms of Tenderers

(1) Basic Conditions of Formation

- In order to achieve the best performance and safety of the pump systems, a good relationship and cooperation between the contractor of the main pumps and related mechanical equipment and the contractor of the main motor and electric facilities is vital. The motor is considered to be an integral part of the pump and it is usually the Pump contractor who takes the overall responsibility for the functionality of the pump and motor as a unit. In this sense it is specified hereinafter that Motor contractor (PQ) become the Nominated Subcontractor to Pump contractor (PQ).
- Civil contractor (PQ) for construction of the pumping station shall make subcontract(s) with steel pipe supplier(s) (any contractor(s)) and steel pipe laying contractor(s) (any contractor(s)) or only steel pipe supplier(s) (any contractor(s))

- EPC contractor (PQ) shall possess a capability, as the main contractor, to manage and operate overall co-ordination and smooth implementation of the project, as well as a capacity in terms of financial stability and reliability.

(1) Recommendable Alternatives for Tender Formation

From the above mentioned concepts, Recommendable alternatives are selected hereinafter based on the basic conditions of formation mentioned above under (1) and Tables-A and -B.

(a) Joint Venture case

- Case <JV-3> (see also Figure-3):

Lead partner:

- Pump contractor (PQ)

Partner:

- Civil contractor with Pipe works (PQ)

Nominated Subcontractor to Pump contractor:

- Motor contractor (PQ)

Subcontractors to Civil contractor with Pipe works:

- Max. 3 Pipe suppliers (any)
- Max. 3 Civil contractors (any)

- Case <JV-4> (see also Figure-4):

Lead Partner:

- Civil contractor with Pipe works (PQ)

Partner:

- Pump contractor (PQ)

Nominated Subcontractor to Pump contractor:

- Motor contractor (PQ)

Subcontractors to Civil contractor with Pipe works:

- Max. 3 Pipe suppliers (any)
- Max. 3 Civil contractors (any)

From the viewpoint of overall reliability of construction, the case JV-4 is more reliable than case JV-3, because financial position of the Joint venture is more important for successful execution of the contract works.

(b) Single Contractor case

- Case <SC-3> (see also Figure-7):

Main contractor:

- Pump contractor (PQ)

Nominated Subcontractor to Pump contractor:

- Motor contractor (PQ)
- Civil contractor with Pipe works (PQ)

Subcontractors to Civil contractor with Pipe works:

- Max. 3 Pipe suppliers (any)
- Max. 3 Civil contractors (any)

- Case <SC-4> (see also Figure-8):

Main Contractor:

- Civil contractor with Pipe works (PQ)

Nominated Subcontractors:

- Pump contractor (PQ)

Nominated Subcontractor to Pump contractor:

- Motor contractor (PQ)

Subcontractors to Pipe contractor:

- Max. 3 Pipe suppliers (any)
- Max. 3 Civil contractors (any)

- Case <SC-6> (see also Figure-10):

Main Contractor:

- EPC contractor (PQ)

Nominated Subcontractors:

- Pump contractor (PQ)
- Civil contractor with Pipe works (PQ)

Nominated Subcontractor to Pump contractor

- Motor contractor (PQ)

Subcontractors to Civil contractor with Pipe works:

- Max. 3 Pipe suppliers (any)
- Max. 3 Civil contractors (any)

In order to function as the Main Contractor, the technical and financial capability and strength are two most important factors for a smooth progress of the Contract works. From this viewpoint case <SC-4> and case < SC-6> are reasonable and suitable forms of tenderer. The comparative study of these selected contract formations are tabulated below:

Comparative Study of Contractor Formations

Contractor Form	Advantages	Disadvantages
1. JV Contract (Case JV-4) (Alternative-2 Category)	<ol style="list-style-type: none"> 1. Principle of joint and several liability of Joint Venture give more security to the Employer. 2. As Civil Contractor experienced in various aspects of engineering works is Lead partner of JV, it will be able to manage and co-ordinate with ease the whole works including mechanical and electrical facilities. 3. As the financial portion of Civil Contractor is large with about 70% of Contract price, it would be relatively easy for it to manage financially the whole Contract. 	<ol style="list-style-type: none"> 1. The financial portion of Pump contractor is about 14% of the Contract price. Yet he is liable as JV partner for the whole Contract obligations, which may make him hesitate to join JV.
2. Single Contractor (Case SC-4) (Alternative-2 Category)	<ol style="list-style-type: none"> 1. As the Main Contractor takes all the responsibility for the Contract, he must be technically and financially strong. As the Civil Contractor experienced in pipe works is Single Main Contractor, it will be able to manage and co-ordinate with ease the whole works including mechanical and electrical facilities. 2. As the financial portion of Civil Contractor is large with about 70% of Contract price, it would be relatively easy for it to manage financially the whole Contract. 	<ol style="list-style-type: none"> 1. As the single Main Contractor must take all the responsibility for the Contract, he must be a very able and experienced all-round contractor both technically and financially. It may be difficult to find such a contractor, and very careful prequalification must be conducted.
3. Single Contractor (Case SC-6) (Alternative-4 Category)	<ol style="list-style-type: none"> 1. The single Main Contractor must take all the responsibility for the Contract. An efficient management is essential for expedient execution of the Contract works. In this sense a very experienced EPC contractor is suited for his capability of mobilizing and managing contracts like the present project with many aspects of advanced engineering such as big capacity pumps and large diameter pipes. 2. As the financial portion of Civil Contractor is large with about 70% of Contract price, it would be relatively easy for it to manage financially the whole Contract. 	<ol style="list-style-type: none"> 1. Considering all the responsibility that the single Main Contractor must take for the Contract, he must be a very able and experienced all-round contractor both technically and financially. Therefore a very careful pre-qualification must be conducted to ensure the selection of a desired contractor. 2. Slightly more cost than other cases may be involved for the overhead for EPC contractor.

2.4 The Best Recommended Form among All the Alternatives

The three alternatives selected in the previous subclause have advantages and disadvantages as shown in the table. The selection of the most favorable formation of tenderer would depend on the principle preferred by the client. The basic principles of these three alternatives are as follows:

(1) JV Contract (case JV-4) (Alternative-2 category)

The characteristics of a contract with a JV are the joint and several responsibilities of all the JV partners towards the Contract. If the contractor is a JV, the partner(s) are obligated to fulfill all the responsibilities of the Contract in case of default(s) of other partner(s). This arrangement will ensure the client full achievement of the contract works, which is an added guarantee to the client.

(1) Single Contractor (case <SC-4>) (Alternative-2 category)

The tenderer is a single Main contractor with other major contractors as nominated subcontractors. This position is held by a Civil and Pipe contractor who occupies the largest portion (about 70%) of the Contract works. He would be able to manage the whole contract works more easily supported by his stronger financial position coupled with his experience in the pipeline works and construction of the pumping station.

(3) Single Contractor (case <SC-6>) (Alternative-4 category)

The tenderer is a single Main contractor. This position is held by an EPC (Engineering, Procurement and Construction) contractor. EPC contractors specialize in management as well as in execution of large-scale contracts with various specialized works like the present Project. It may be beneficial to the Project, if such a contractor succeeds in making an offer based on efficient and cost-saving operation and management.

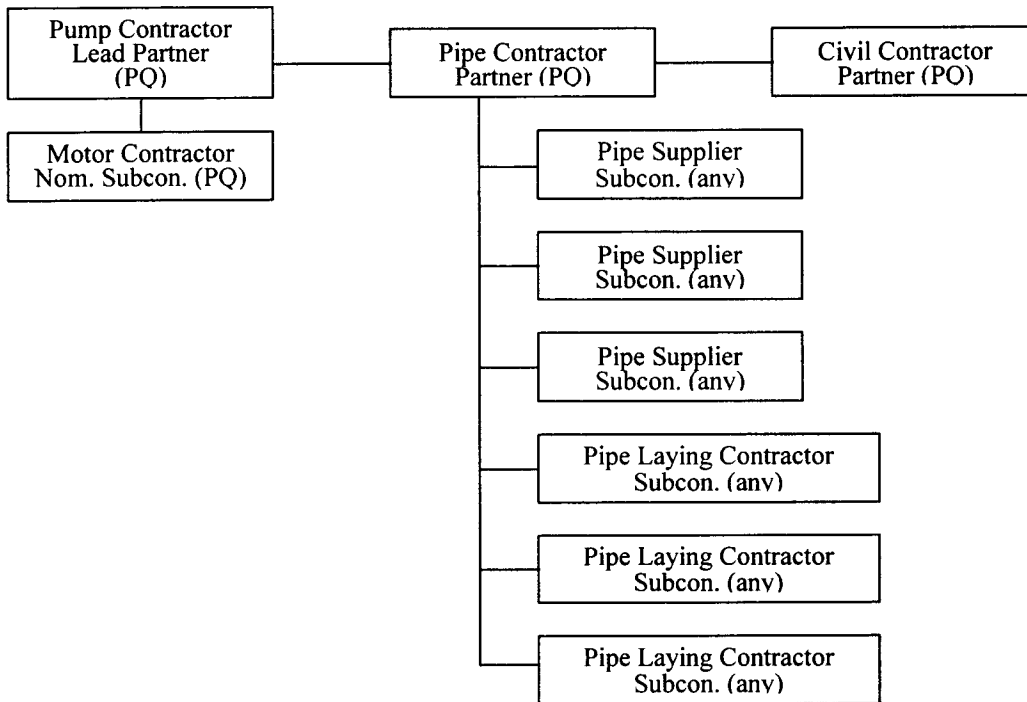


Figure – 1 Case <JV - 1>

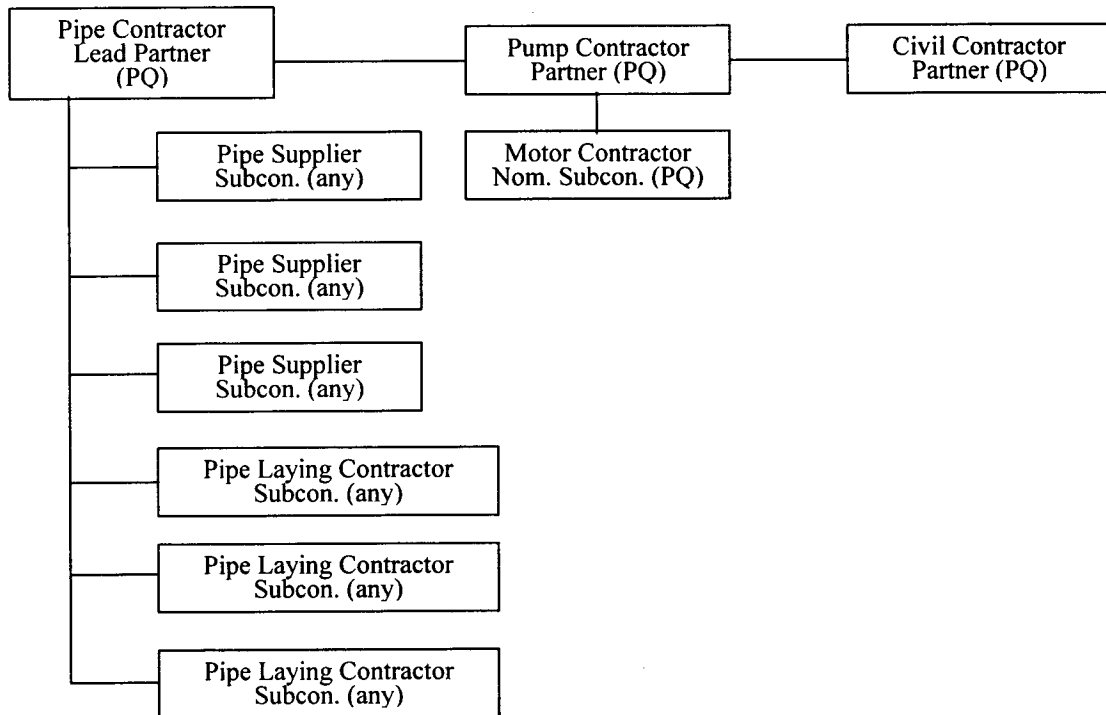


Figure – 2 Case <JV - 2>

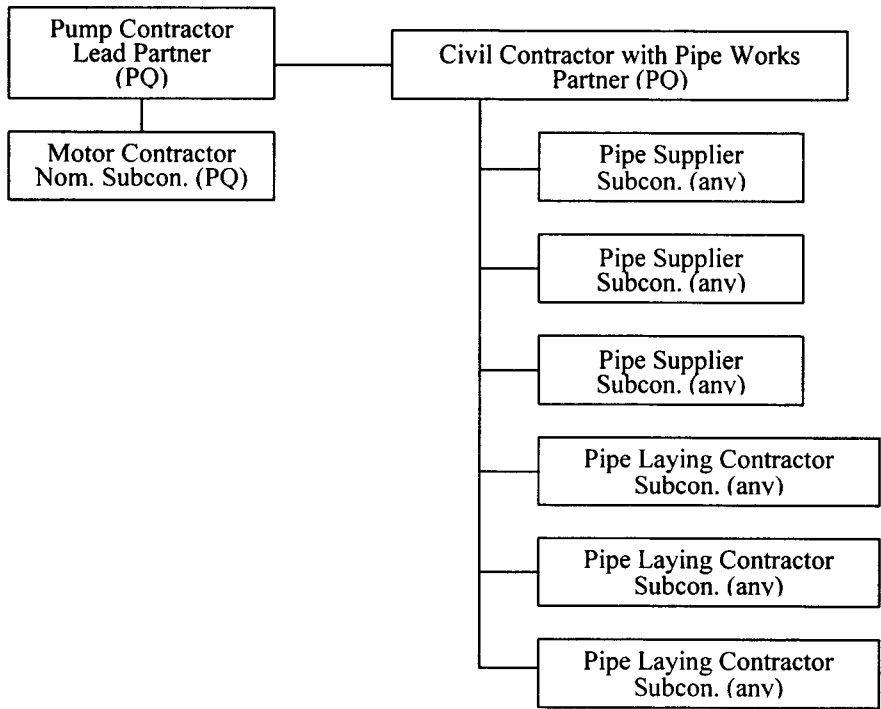


Figure – 3 Case <JV - 3>

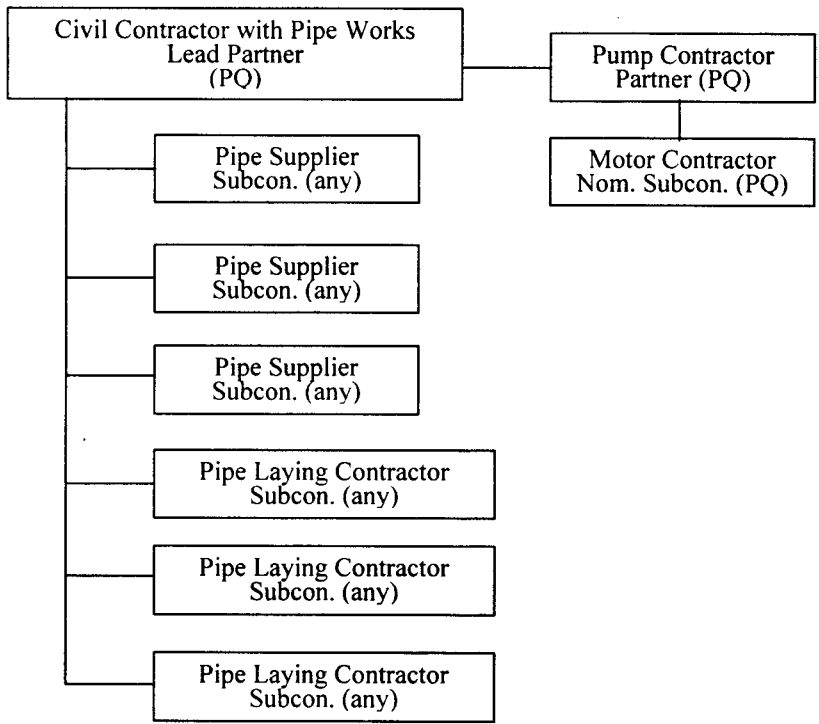


Figure – 4 Case <JV - 4>

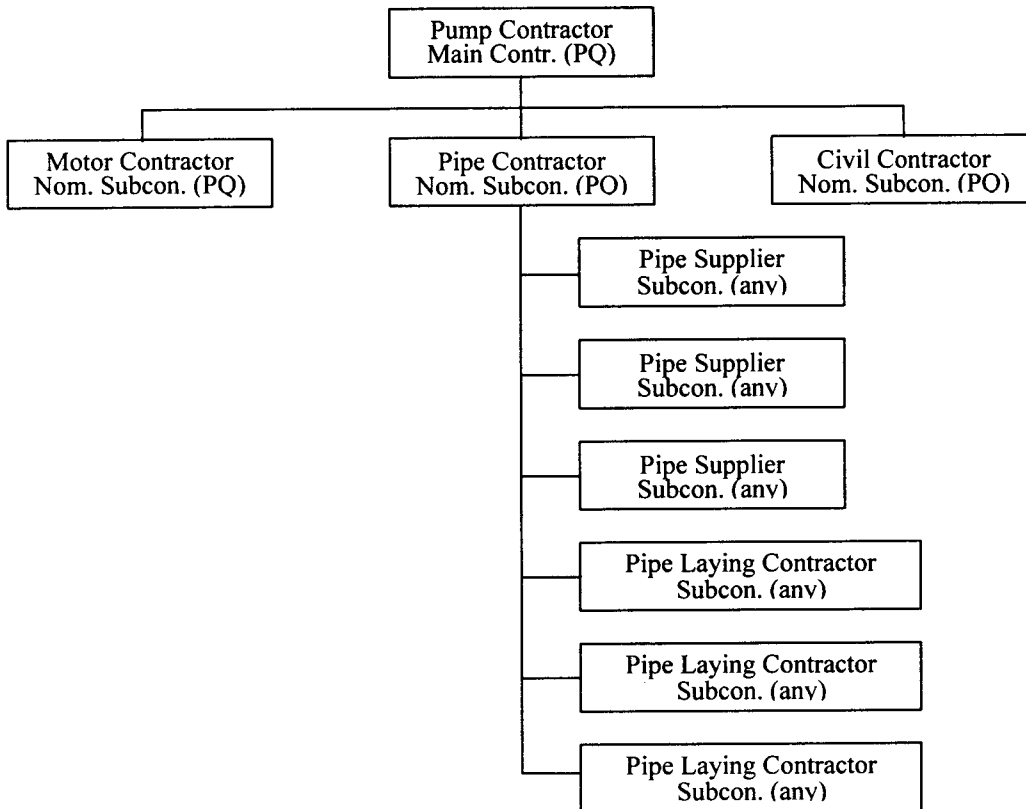


Figure – 5 Case <Single Contractor - 1>

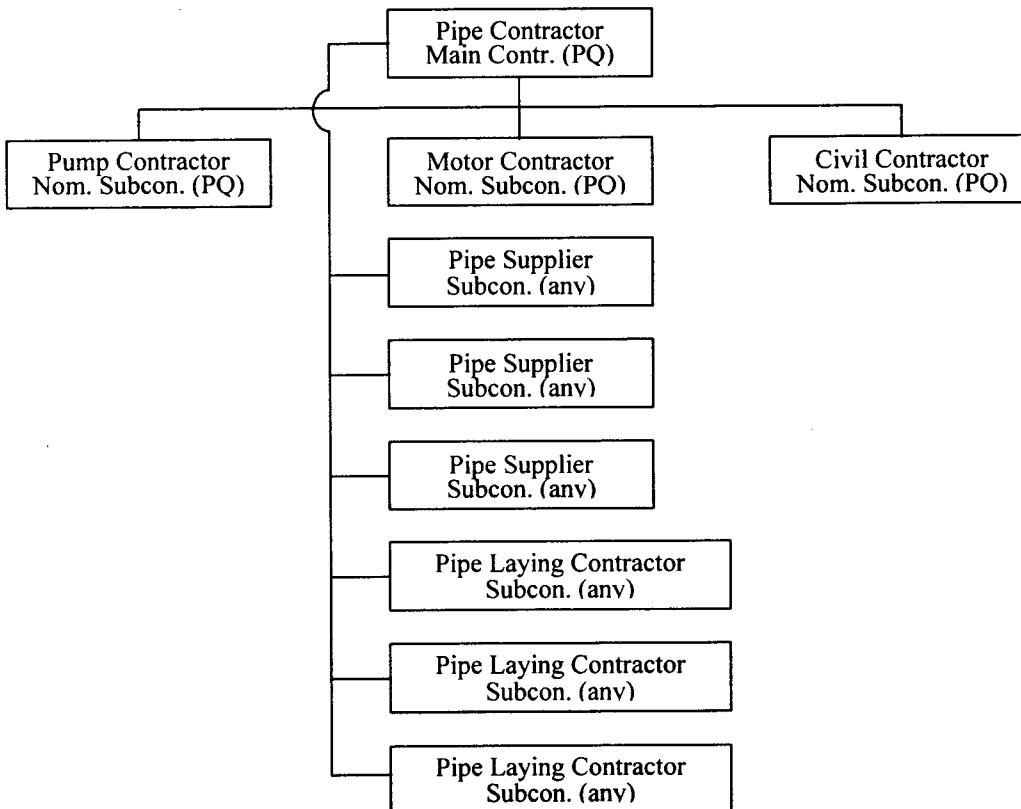


Figure – 6 Case <Single Contractor - 2>

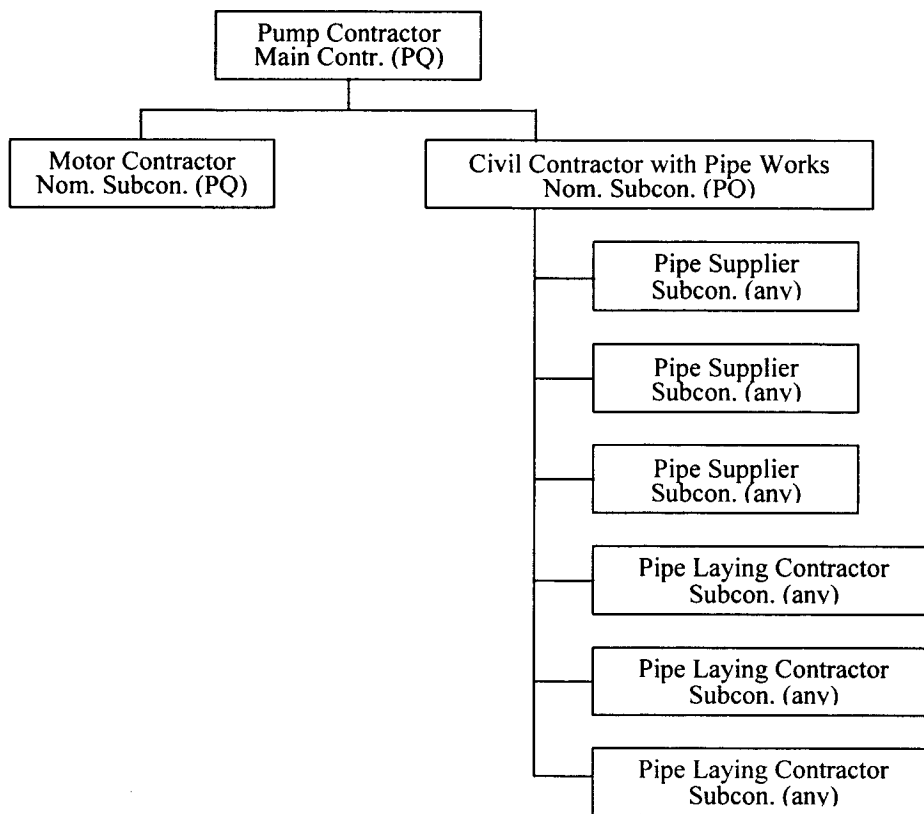


Figure – 7 Case <Single Contractor - 3>

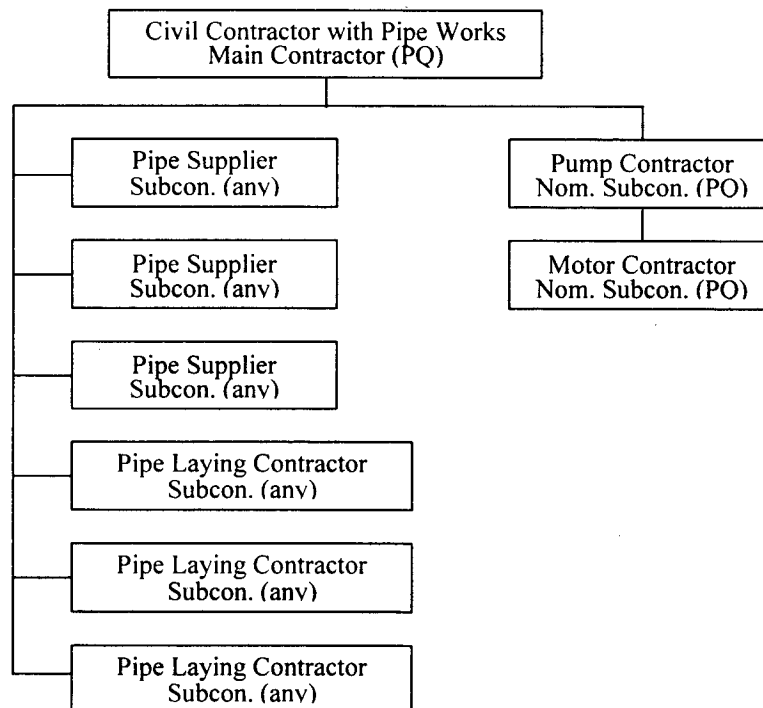


Figure – 8 Case <Single Contractor - 4>

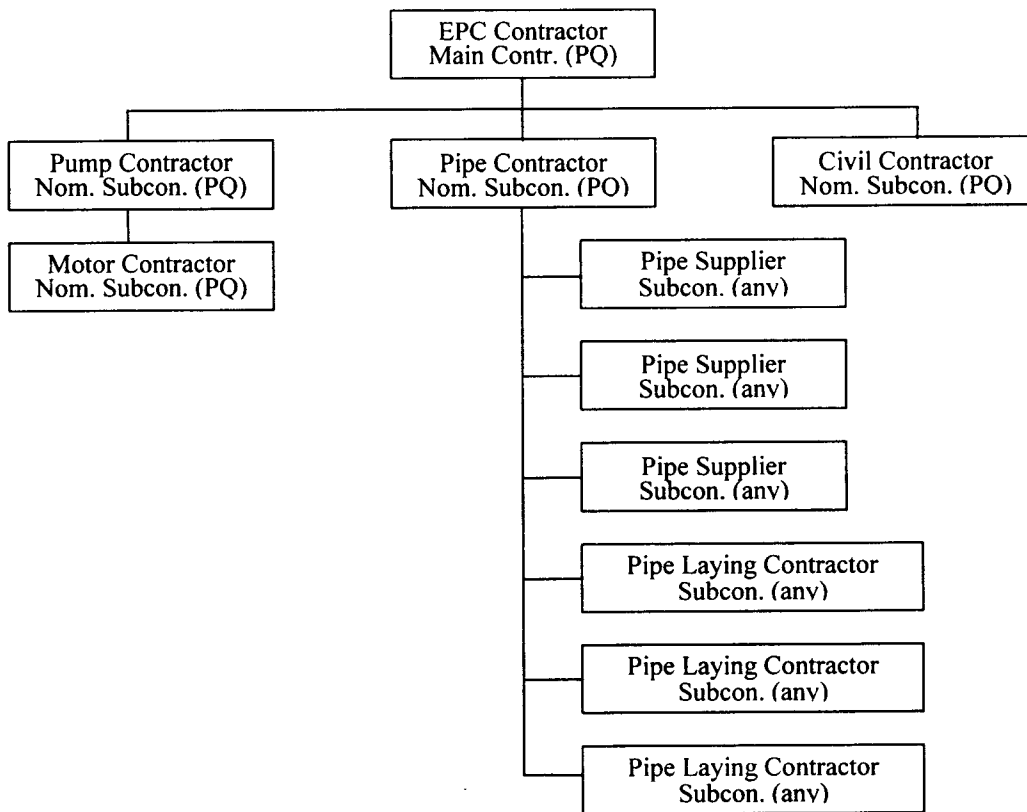


Figure – 9 Case <Single Contractor - 5>

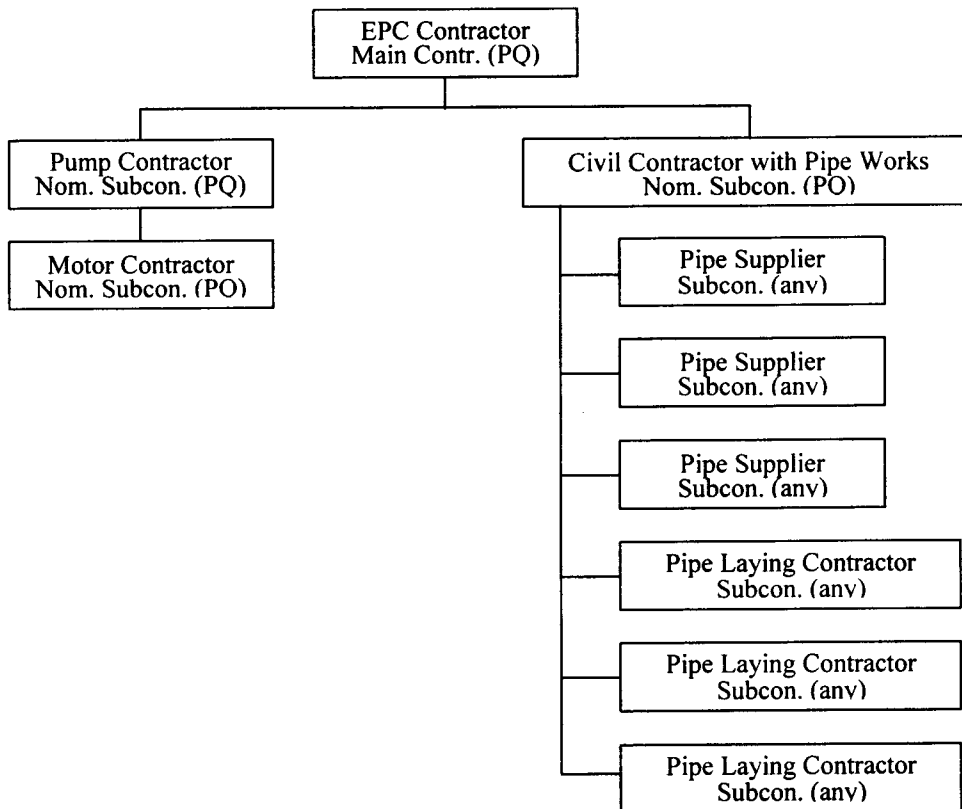


Figure – 10 Case <Single Contractor - 6>