



Hashemite Kingdom of Jordan  
Ministry of Water and Irrigation

## **The United Nations Office for Project Services (UNOPS)**

### **Rehabilitation of the Existing Water Network and Construction of New House Connections in Sarieh District, Irbid**

**Lot 1**

**Tender Documents**

**Preamble & Bills of Quantities**



## TABLE OF CONTENTS

<b>1. INTRODUCTION</b>	<b>1</b>
<b>2. SCHEDULES OF PAYMENTS</b>	<b>6</b>
2.1 PAYMENT UPON "INSTALLATION "	6
<b>3. DESCRIPTION OF BOQ ITEMS</b>	<b>8</b>
3.1 DUCTILE IRON PIPES	8
3.1.1 Supply and Installation of Ductile Iron Pipes C25 Class	8
3.2 HDPE PIPES	9
3.2.1 Supply and Installation of HDPE Pipes, PE100, PN16	9
3.3 SUPPLY AND INSTALLATION OF VALVES	10
3.3.1 Supply and Installation of Isolation Valves	10
3.3.2 Supply and Installation of Air Release Valves	11
3.3.3 Supply and Installation of Washouts	11
3.4 HOUSE CONNECTIONS	12
3.4.1 Supply and Installation of House Connections	12
3.5 Connection AND DISCONNECTION POINTS	13
3.5.1 Connection Points	13
3.5.2 Disconnection Points	14
<b>4. PRELIMINARIES</b>	<b>15</b>
4.1 MOBILIZATION AND SITE INSTALLATION	15
4.2 OFFICE ACCOMMODATIONS	15

# 1. INTRODUCTION

1. The bill of quantities (boq) includes this preamble and the various bills of quantities.
2. The Bidders are required to provide with their offers a full breakdown of the unit price for all items of the Bill of Quantities (BOQ). The breakdown shall be considered as a reference through tenders' analysis stage and also for any modifications or variation orders later on at the construction and execution stage. 3% of the total value of each item (total value of the project) shall be allocated for the Health and Safety requirements stated in the Technical Specification Volume Section 1.15. The breakdown shall include the following activities:

**Main pipe lines:**

Breakdown Activities	Unit Price (USD)
Excavation	
Bedding and Embedment	
Pipe laying	
Warning Tape/ Identifiers	
Backfilling	
Reinstatement	
Testing	
Commissioning and Decommissioning	
Health and Safety Requirements	3% of the total value
Submittal of the As-Built Drawings	
<b>Total</b>	

**House Connection Works:**

Breakdown Activities	Unit Price (USD)
Excavation	
Backfilling including warning Tape /Identifiers	
Concrete layer	
Reinstatement	
HDPE Pipe and fittings	
GI Pipes ,fittings, relocating water meter, cabinet	
Pipes and fittings ,Plumbing works for relocating water meter	
Testing	
Health and Safety Requirements	3% of the total value
Submittal of the As-Built Drawings	
<b>Total</b>	

- The BOQ shall be read in conjunction with the Conditions of Contract, the Technical Specifications, this preamble, and the detailed tender Drawings. The BOQ is a combined material supply & installation BOQ.
- The quantities set out in the BOQ are close estimated quantities required for supply & installation and they shall not be taken as 100% accurate quantities required for the finalisation of the works to be executed by the Contractor in fulfilment of his obligations under the Contract.
- The Bill of Quantities is based on Unit Rates. The Contractor is obliged to initially order within the “ 1st List of Order ”50% (fifty per cent) of the local material needed for the works as an initial required quantity of materials, within one month after awarding the contract, to avoid delays in the installation upon UNOPS approval.

During the initial supply procurement, the Contractor shall review the design drawings and execute the survey work under UNOPS supervision to elaborate so called shop-drawings. As for the final material procurement, so called “2nd List of Order”, the Contractor should supply the quantities needed for the project within 120 days.

UNOPS

Rehabilitation of the Existing Water Network and Construction of New House Connections in Sarieh District, Irbid

Preamble to the Bills of Quantities

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The contractor is obliged to supply 100% of the abroad material needed for the works within 120 days after awarding the contract.

Also, the 2nd List of Order is subjected to UNOPS approval and has also contained material, quantity, manufacturer, country of origin, supplier in accordance with his approved contract.

6. The permanent works shall be subject to measurement as practised in unit price contracts, notwithstanding any general or local customs, except where otherwise specifically described or prescribed in the Contract.
7. The unit rates and unit prices in the BOQ shall, except where otherwise provided in the Contract cover all the Contractor's obligations under the Contract, such as verification survey (setting-out), pipe and valve tracing, indication and marking in the field, preparation of Shop Drawings, labour, materials, supervision, stores management, maintenance, insurance, profit, overheads, risk, taxes and duties for the proper construction and completion of the works including testing, operational training of nominated staff, maintenance during the defects liability phase, and remedy works of detects as specified in Contract.
8. Payments will be made strictly according to actual measurement of units in the field. Any supply & installation for which no unit rate exists in the BoQ, such unit prices will be requested from the Contractor prior to execution of such works on the day of amendment.
9. All works necessary in one area must be finalised (final road reinstatement excepted) before a permit for excavation in the next area will be given.
10. The prices and rates entered by the Contractor in the BOQ shall cover the complete and finished supply & installation in final position as required by the Contract Document including all costs and expenses which may be required in and for the construction and maintenance of the works together with all risks liabilities, insurance and obligations imposed or implied by the Contract.
11. The rates entered by the Contractor in the BOQ are deemed to include all costs and expenses involved with the works (installations) including (but not limited to) the following:
  - A. The provision, storage, transport, handling, delivery of procured material, equipment, use, distribution and maintenance of all materials, plant, equipment, machinery, and tools including all costs, charges, dues, demurrage, or other outlays involved in transport and importation,
  - B. The provision and maintenance of all staff and labour and their payment, accommodation, transport fares and other requirements,

- C. Setting out, including the location and preservation of survey markers, measurement and supervision, update of tender drawings to works drawings in regard to actual proposed pipe location,
- D. The provision, operation, maintenance, and removal upon completion of the Contract of all Contractors' site installations,
- E. The provision, storage, transport, use, handling, distribution and maintenance of all consumable stores, fuel, water and electricity for the Contractor's site installations,
- F. The provision and maintenance of all temporary detours, of traffic control measures and of reinstatement upon completion of the existing roads,
- G. Paying fees and giving notice to Authorities,
- H. Emergency water supply to customers of YWC if necessary,
- I. Preservation of a clean site and reinstatement of site after completion of works,
- J. Protection of adjoining property,
- K. All contractual submissions by the Contractor,
- L. All quality control measures including inspections and tests,
- M. All works and materials of permanent and temporary nature required for execution of works in compliance with regulation and specification given by authorities,
- N. Damage caused to the works under construction, plant, materials and consumable stores by weather,
- O. Repairs to the works either prior to or during the defects liability period,
- P. Co-ordination with other Contractors or Authorities carrying out work either in connection with or adjacent to the works,
- Q. Overheads, on-costs and profit,
- R. Exchange Rate fluctuations,
- S. Material cost increases,
- T. All temporary works including watching, lighting and temporary access,

- U. Clearing away rubbish as it accumulates and keeping the site in a tidy condition.
12. A price or rate shall be entered against each item in the BOQ whether quantities are stated or not. Items against which no price or rate is entered shall be deemed to be included in other units or items of the BOQ. The unit price or rate entered against any item shall take precedence over any miscalculation in the total sum against that item. Where separate items have not been provided in the BOQ for work required under the Contract then the cost of such work shall be deemed to have been included in the prices and rates for other items.
13. The total quantity included in the final measurement of each item shall be measured to the nearest integer relative to that item, or to one decimal place if so indicated in the BOQ.
14. The pipe quantities and house connections are expected to be in the paved streets. However, in the case of the need for construction in natural ground surfaces, 15% of the price provided for construction in asphalt surfaces shall be deducted for the same item.
15. The following abbreviations are used in the Bill of Quantities:

mm	millimetre
m	meter
m <sup>3</sup>	cubic meter
m <sup>2</sup>	square meter
km	kilometre
kg	kilogram
t	tonne
No	number
h	hour
mth	month
%	percentage
OD	Outside Diameter
DN	Diameter Nominal
PN	Pressure Nominal
L	length
LS	Lump Sum
JOD	Jordanian Dinar
USD	US Dollar
CP	Connection Point
HC	House connection
GI	Galvanized Iron

UNOPS

Rehabilitation of the Existing Water Network and Construction of New House Connections in Sarieh District, Irbid

Preamble to the Bills of Quantities

ST	Steel
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16. The item descriptions in the BOQ are only in sufficient detail to ensure identification of the supply & installation covered under the Technical Specifications, Conditions of Contract, and as shown on the detailed Drawings. Therefore, the BOQ shall be read together with the rest of the Tender Documents. Descriptions of the supply & installation given in the specifications or drawings are not necessarily repeated in the identifying descriptions of the items in the BOQ.
17. The items in the BOQ describe in detail, what supply, works and cost shall be included in such a unit. The Contractors pricing the BOQ shall be aware that this BOQ is a UNIT PRICE Contract. The Contractor shall update the submitted Tender Drawings after his survey and pipe detection with his proposal for the new pipe installation locations as "Shop Drawings", which will be subject to approval by UNOPS.
18. For other items to be installed as network Nodes with or without Gate Valves, Air Valves, additional Gate Valves, disconnection of decommissioned pipes, the detail drawings are binding, but subject to amendment on site if necessary.
19. Further requirements for the supply & installation in question may be stated in other clauses in the specification or on the drawings and the Contract rates shall be deemed to also cover the cost of complying with any such further requirements.
20. The materials and equipment offered by the Contractor must fulfil the specifications set for this contract and are binding throughout this Contract.
21. Civil and Building Works should be carried out in accordance with valid Jordanian codes and Specifications. For any contradiction raised regarding general specifications the particular specifications shall prevail.



## 2. SCHEDULES OF PAYMENTS

### 2.1 PAYMENT UPON “INSTALLATION “

The supply & installation described in the Bill of Quantities will be paid only upon completion and acceptance of the supply & works as required by the Contract. The Contractor may request for interim payments at installation not exceeding the following schedule according to the Particular Technical Specifications.

The Contractor has to complete successfully all the activities, as indicated in the tables below for each row, to get the relevant remuneration (per cent in each row) as mentioned in the same row.

#### Pipe Works

Activities to be completed for remuneration	Remuneration in per cent (%) of Total	Remuneration in per cent (%) in Gross Total
Excavation	10%	10%
Bedding, Pipe laying and cover of pipes	10%	20%
Backfilling (1st, 2 <sup>nd</sup> , and 3rd BC layers)	20%	40%
Road reinstatement	20%	60%
Pressure testing	20%	80%
Chlorination, Flushing, Sterilization of the new pipes	5%	85%
Entirely disconnected decommissioned GI and ST pipes	10%	95%
Submittal of the As-Built Drawings	5%	100%

#### House Connections Works (HDPE Pipes)

Activities to be Completed for Remuneration	Remuneration in per cent (%) of Total	Remuneration in per cent (%) in Gross Total
Excavation, Bedding, Pipe laying and cover of pipes	40%	40%
Backfilling, Concrete layer, and reinstatement	40%	80%
Flushing	10%	90%
Submittal of the As-Built Drawings	10%	100%

**House Connections Works (Galvanized Iron, CPVC Pipes)**

Activities to be Completed for Remuneration	Remuneration in per cent (%) of Total	Remuneration in per cent (%) in Gross Total
Installation of pipes and fittings	40%	40%
Relocation and re-installation of existing water meter cabinet	40%	80%
Relocation and re-installation of existing water meter and connection of existing to existing or new pipeline	20%	100%

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### 3. DESCRIPTION OF BOQ ITEMS

The following chapter describing the main BOQ items referring to the attached BOQ, including the main tasks for the mentioned items and the Contractor shall also refer to the drawings, technical specifications, and conditions of contract.

#### 3.1 DUCTILE IRON PIPES

See Technical Specifications and drawings.

The Contractor shall perform detailed shop drawings for the pipelines with diameters 150mm and above, clarifying the actual depth, barriers, location coordinates, connections, valves, and fittings. The Contractor shall submit the drawings for the Engineer's approval.

##### 3.1.1 Supply and Installation of Ductile Iron Pipes **Class C**

The item for supply & installation of Ductile Iron pipes includes, but not limited to the following:

- Supply and installation of Ductile Iron pipelines and all required fittings and accessories according to the Technical Specifications,
- Marking of pipe trench location,
- Cutting of road surface (asphalt) and removal of asphalt,
- Careful removal and storage of sidewalk tiles or plastering stones,
- Excavation in any type of soil of trench to the depth of bottom of pipe plus sand bedding according to diameter as specified in the Specifications,
- Trench protection by timbering,
- Transport and disposal of excavated material,
- Import of appropriate sand, sand bedding below, aside and above pipe according to Specifications and detailed drawings,
- Including all required thrust blocks and encasement whenever required in accordance with the technical specifications and drawings,
- Backfilling of trench with imported material compaction in layers according to Specifications of the authority owning the road,
- Supply and Installation of a warning and tracing tape for pipes according to the technical specifications,
- Reinstatement of surfaces as specified in the detailed standard drawings and to the specifications of the authority owning the road,
- Cleaning and flushing the interior of the pipes after installation,

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- Pressure testing of pipeline, including the filling of the line with water for the entire pipeline section including bends and T-Pieces`, Valves, AV, WO and also with all pipe saddles installed as part of the main pipe,
  - Provision of the testing equipment, water shall be supplied and paid by the Contractor,
  - Flushing of the pipeline,
  - Chlorine, disinfection of the pipeline,
  - Final flushing and tests,
  - Survey of the new pipeline and elaboration of as-built drawings,
  - Including all required test pits to locate the connections and disconnection points.
  - Including disconnection of any redundant pipe, reconnection / immigrate of all connections whenever required, whether allocated inside or outside the project area and all connection points between new pipes.

## 3.2 HDPE PIPES

### 3.2.1 Supply and Installation of HDPE Pipes, PE100, PN16

The item for supply & installation of HDPE tertiary pipes, PE100, PN16, ISO63 and above, in classic trench excavation includes, but not limited to the following:

- Supply and installation of a linear meter of HDPE pipeline according to the Technical Specifications,
- Installation of HDPE pipes using trenchless technology, where needed, as per the BOQ
- All electro-fusion fittings, connectors, and bends,
- Marking of pipe trench location,
- Cutting of road surface (asphalt) and removal of asphalt,
- Careful removal and storage of sidewalk tiles or plastering stones,
- Excavation in any type of soil of trench to the depth of bottom of pipe plus sand bedding according to diameter as specified in the Technical Specifications,
- Trench protection by timbering,
- Transport and disposal of excavated material,
- Supply of appropriate sand, sand bedding below, aside and above according to Technical Specifications and detailed drawings,
- Including all required thrust blocks and encasement whenever required in accordance with the technical specifications and drawings,

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- Supply and Installation of HDPE pipes, inclusive cutting and chamfering of ends,
  - Backfilling of trench with imported material, compaction in layers of 20cm according to Specifications of the authority owning the road,
  - Supply and Installation of a warning and tracing tape for pipes according to the technical specifications,
  - Reinstatement of surfaces as specified in the detailed standard drawings and to the specifications of the authority owning the road,
  - Cleaning and flushing the interior of the pipes after installation,
  - Pressure testing of pipeline according EN 805, including the filling of the line with water for the entire pipeline section including bends and T-Pieces, Valves, AV, WO and also with all pipe saddles installed as part of the main pipe, as indicated in the technical specifications,
  - Including provision of the testing equipment, water shall be supplied and paid by the Contractor,
  - Test according EN 805 with Test certificate and procedure,
  - Flushing of the pipeline,
  - Chlorine, disinfection of the pipeline,
  - Final flushing and tests,
  - Survey of the new pipeline and elaboration of as-built drawings,
  - Disconnection, reconnection / immigrate of all connections, whether allocated inside or outside the project area which are connected to the existing pipe network lines and all connection points between new pipes.

### **3.3 SUPPLY AND INSTALLATION OF VALVES**

See Technical Specifications and drawings.

#### **3.3.1 Supply and Installation of Isolation Valves**

The item for supply and installation of isolation Valves includes, but not limited to the following:

- Supply and installation of material according to the Technical Specifications,
- Cutting of road surface (asphalt) and removal of asphalt,
- Careful removal and storage of sidewalk tiles or plastering stones,
- Excavation in any type of soil of trench to the depth of bottom of connecting pipe plus sand bedding according to the Technical Specifications,

- Supply and install of all concrete and civil works required in the technical specifications and drawings,
- All mounting parts and manhole cover according to the Technical Specifications,
- Securing and protection of the trench/pit,
- Disposal of excavated material,
- Supply and installation of extension spindles whenever required based on the technical specifications and drawings,
- Backfilling of trench with imported material, compaction in layers of 20cm according to Specifications of the authority owning the road,
- Reinstatement of surfaces as specified in the detailed standard drawings and according to the specifications of the authority owning the road,
- Supply and installation of surface boxes, after backfilling and reinstatement of surface whenever required in accordance with the technical specifications and drawings,
- All construction, civil and concrete material and works for the Isolation Valve Chambers, according to the Technical Specifications and drawings,
- Installation either into existing or new installation in new system.

### **3.3.2 Supply and Installation of Air Release Valves**

The item for supply and installation of Air Release Valves includes, but not limited to the following:

- Supply and installation of material according to the Technical Specifications and drawings,
- Cutting of road surface (asphalt) and removal of asphalt,
- Careful removal and storage of sidewalk tiles or plastering stones,
- Excavation in any type of soil of the trench to the depth of bottom of connecting pipe plus sand bedding according to the Technical Specifications and drawings,
- Securing and protection of the trench/pit,
- Disposal of excavated material,
- Supply and installation of combination Air Valve and all required material in accordance with the technical specifications and drawings,
- All construction, civil and concrete material and works for the Air Valve Chambers, according to the Technical Specifications and drawings,
- All mounting parts and manhole cover according to the Technical Specifications and drawings,
- Backfilling of trench with imported material, compaction in layers of 20cm according to Specifications of the authority owning the road,

- Reinstatement of surfaces as specified in the detailed standard drawings and according to the specifications of the authority owning the road,
- Installation either into existing or new installation in new system.

### 3.3.3 Supply and Installation of Washouts

The item for supply and installation of a Wash-Out includes, but not limited to the following:

- Supply and installation of material including pipes, valves, fittings, accessories ... etc., according to the Technical Specifications and drawings,
- Cutting of road surface (asphalt) and removal of asphalt,
- Careful removal and storage of sidewalk tiles or plastering stones,
- Inclusive Excavation in any type of soil of the trench to the depth of bottom of connecting pipe plus sand bedding according to the Technical Specifications,
- Securing and protection of the trench/pit,
- disposal of excavated material,
- Wash-out pipe, shall be extended to such a length to reach the discharge area as required for every particular site conditions,
- All construction, civil and concrete material and works for the Wash-out, according to the Technical Specifications and drawings,
- All construction works of the discharge chamber as per drawings,
- All mounting parts for fixing the pipe,
- Backfilling of trench with imported material, compaction in layers of 20cm according to Specifications of the Municipality of Irbid and / or MPWH,
- Reinstatement of surfaces as specified in the detailed standard drawings and according to the Specifications of the authority owning the road,
- Installation either into existing or new installation in new system.

## 3.4 HOUSE CONNECTIONS

See Technical Specifications and drawings.

### 3.4.1 Supply and Installation of House Connections

- The rates for replacement of existing and/or new house connection are deemed to include but not limited to the following: -
  - Survey of the site, existing pipelines, customers and meters, and elaboration of shop drawings
  - Excavation in any kind of soil of trench to the depth of bottom of pipe plus sand bedding according to diameter as specified in the Technical Specifications

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- Cutting of road surface (asphalt) and removal of asphalt
  - Careful removal and storage of sidewalk tiles or plastering stones
  - Trench protection by timbering
  - Transport and disposal of excavated material to the places permitted by the competent authorities and according to their instructions
  - Supply of appropriate sand, sand bedding below, aside, and above according to Technical Specifications and detailed drawings
  - Inclusive Backfilling of trench with imported material, compaction in layers according to Specifications of the authority owning the road
  - Supply and Installation of a warning and tracing tape for pipes according to the technical specifications
  - Reinstatement of surface on the payment with tiles or plastering stones
  - Reinstatement of road surfaces as specified in the detailed standard drawings and according to the specifications of the authority owning the road
  - Cleaning and flushing the interior of the pipes after installation
  - Pressure testing of pipeline according to EN 805, including the filling of the line with water for the entire pipeline section including bends and T-Pieces, Valves, AV, and also with all pipe saddles installed as part of the main pipe, as indicated in the technical specifications
  - Including provision of the testing equipment, water shall be supplied and paid by the contractor
  - Test according to EN 805 with Test certificate and procedure
  - Connection point on the water pipeline in front of the plot with all needed fittings
  - HDPE, Galvanized Iron and CPVC pipelines inclusive cutting and chamfering of ends
  - Supply of Material and Installation of single House Connection HDPE Pipes PE100, PN16, according to the Technical Specifications and drawings
  - Plastic film coated galvanized iron pipes
  - All accessories, bends, tees, reducers, nipples, gate valves, ball valves
  - CPVC buried pipes if required for reconnection to existing internal plumbing system
  - Disconnection and plugging of existing house connection pipe
  - All ancillary items and labour and equipment used in all the above
  - Relocation and re-installation of the customers' existing water meters and existing customer water cabinets including all needed fittings and accessories and replacement of any fittings and water cabinets, if



required, in accordance with the Technical Specifications and Typical Detail Drawings and with coordination with YWC and as per YWC specifications

## **3.5 CONNECTION AND DISCONNECTION POINTS**

See Technical Specifications and drawings.

### **3.5.1 Connection Points**

- Connection points of new to existing pipes are given separately.
- Each connection point is classified according to the existing pipe diameter.
- Connection points are enumerated.
- Extension of any pipe up to 10 meters for connection purposes shall be covered in the unit price of the connection item.
- The rate for connection to existing pipe diameter  $\geq 150\text{mm}$  are deemed to include:
  - Supply of associated isolating gate valves
  - Connection point chamber, concrete, excavation shoring, and backfilling, levelling, compaction reinstatement, blinding and reinforcing steel, fittings, dismantling pieces, flanges and puddle flanges, ladder or steps
  - Testing
  - Reinstatement
- The rate for connection to existing pipe diameter  $\leq 100\text{mm}$  are deemed to include:
  - Supply of associated isolating gate valves, saddle and ferrules
  - Surface box
  - Fittings, dismantling pieces, flanges, and puddle flanges
  - Testing
  - Reinstatement

### 3.5.2 Disconnection Points

- Disconnection of existing pipelines is given separately,
- Disconnection of existing pipelines are enumerated,
- The rate for disconnection points works include the following:
  - Locating and excavating of disconnection points,
  - Supply of all necessary equipment, materials, and fittings, sealing of disconnection point,
  - Proving disconnection of abandoned pipe to the satisfaction of the Engineer,
  - Backfilling and reinstatement, and all required to complete the works according to the specifications and drawings.

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## 4. PRELIMINARIES

### 4.1 MOBILIZATION AND SITE INSTALLATION

Site installation in accordance with special Conditions of the Technical Specifications including all facilities required for the construction and installation works on site of the project. **In addition to the advance payment requirements mentioned in the Contract, the advance payment amount for the project will be subject but not limited to the complete fulfilment of the mobilization items by the Contractor as listed and will not be released by UNOPS until such items meet the full satisfaction of the Engineer.**

The items of Mobilization & Site installation include the following:

- Supply, transport and installation of machinery, equipment, and plant,
- Contractor site staff
- Storage of material and equipment,
- Safeguarding of the site installations,
- Elaboration of the site installation plan(s),
- Earthwork (cleaning, profiling, levelling, excavations etc.) necessary for the site installation,
- The site installation includes provision of a site laboratory according to the Technical Specifications and conditions for UNOPS Staff.

### 4.2 OFFICE ACCOMMODATIONS

The item for the office accommodations for UNOPS includes the following:

- UNOPS Field office in a central location with all facilities and furniture provided for the duration of the Contract according to the Particular Technical Specifications and conditions.
- Accommodation for any delays or extension as indicated in the Particular Technical Specifications.
- The cost includes provisions for communication as indicated in the Particular Technical Specifications and Conditions.
- The item for the office accommodations UNOPS representatives as well as indicated in the BOQ.

