

**Part 1 General**

**1.1 MEASUREMENT METHOD**

- .1 The Contractor shall, within ten (10) days after receiving an acceptance notice for the contract, provide cost breakdown for global units items.
- .2 The Contractor shall provide, within ten (10) days after receiving an acceptance notice for the contract, a list of equipment and the hourly rates for each of the equipment available for the works.
- .3 The Contractor shall, within ten (10) days after receiving an acceptance notice for the contract, provide a list of hourly rates for his staff.
- .4 The lump sum price and unit prices will include, but not limited to, leasing, equipment installation, equipment, tools, labour, administrative costs, profit, funding, expenditure for work not specifically defined either in the plan, or specifications or any other tender documents, but considered necessary so as to conform to best practices.
- .5 All work described in this specifications, or presented in the plans, or necessary for the completion of all the work specified herein, but not defined as a separate item requiring a fixed rate or unit payment, will be considered as directly or indirectly linked to the overall purpose of the contract and no separate payment will be made for any of these works; the cost of any work that is directly or indirectly linked to the aim of this contract must however be included in the unit prices quoted in the tender.
- .6 The method used to measure labour, tools or materials for the contract will be as follows:
  - .1 Lump sum works: such jobs will be appraised as a global unit. They include, but are not limited to:
    - .1 **Item 1 - Mobilization and demobilization**
      - .1 This item will be measured as a global unit and will include all costs related to the transportation and handling of all equipment and construction of facilities.
      - .2 This item will be paid following a 50% proportion at the beginning of the contract and 50% after premises have been returned to pre-work state and the final cleaning. If some equipment are to be demobilized before the end of the contract, a justified payment may be done upon approval from the Departmental Representative.
      - .3 Mobilization and demobilization costs of dredging/cleaning equipment are not included here, but in item number 3.
    - .2 **Item 2 - Site organization**
      - .1 This item will be measured as a global unit and will include, but not be limited to, the following:
        - .1 Surety and administrative charges;
        - .2 Investigation, planning, management and supervision;

- .3 Permits and request for authorization (municipal, provincial and federal);
  - .4 Management of general waste that is not included in other items;
  - .5 Connection and disconnection of temporary services (electricity, water, etc.);
  - .6 Bills for temporary public services (electricity, telephone, Internet, water, etc.);
  - .7 Supply and construction of temporary fences around construction sites and dismantling them around the different areas (construction site, assembly, storage, etc.);
  - .8 Temporary installations at construction sites;
  - .9 Tidiness at the construction site and final cleaning;
  - .10 Security services, signallers, guards, etc.;
  - .11 All components under section 01 of the specifications. It also includes works indicated in the plans and specifications for which payment was not designated in another measured item.
  - .12 It should be noted that about 30 concrete barriers equipped with chain link fences are available in the area reserved for the Contractor and shall be provided to the Contractor cost-free.
- .2 This item will be paid in proportion of completed work, following bid form costs. The value of this item shall, at no time, go beyond 5% of the total cost for the bid.
- .3 **Item 3 - Mobilization and demobilization of dredging and cleaning equipment**
- .1 This item will be measured as a global unit and will include, but not be limited to, the following:
    - .1 Transportation and parking fees for cleaning and dredging equipment, as well as those used to install foundation for the wooden cribs.
  - .2 This item shall be paid proportionately, that is, 50% when cleaning or dredging begin, and 50% after the placement of the cribs and removal of all dredging equipment from the site, unless they are needed for other operations during the project.
  - .3 Payment for running the cleaning and dredging equipment, as well as those used to lay the foundation will be included in the unit prices of each item for dredging and cleaning.

.4 **Item 4 - Dismantling**

- .1 This item will be measured as a global unit and will include, but not be limited to, the following:
  - .1 Dismantling of cylindrical and homemade fenders at the plant wharf, their respective connection systems, which shall then be handed to the Departmental Representative.
  - .2 Dismantling of mooring bollards and cleats at the plant wharf, which are then handed to the customer.
  - .3 Dismantling of prefabricated concrete edges at the plant wharf, which are then handed to the customer.
  - .4 Dismantling of wharf equipment at the southern main wharf (pile wharf, east of new cribwork) in interference with implementation of works specified in the plans. These equipment include, but are not limited to: fenders, ladders, bollards, support structure, curb. Three fenders shall be recovered for new cribwork.
- .2 This item also includes disposal of non-recovered materials from the demolition site, following applying regulation.

.5 **Item 5 - Prefabricated concrete slabs (cribs 1 to 5)**

- .1 This item will be paid following a global unit and will include the fabrication and installation of prefabricated concrete slabs in the works following the limits specified in the plan.
- .2 The tendered price will include the cost for all labour, machinery, transportation and materials needed for the fabrication and final installation of prefabricated slabs. Materials include, among other thing, but are not limited to, concrete, rebar, formwork, lifting lugs and anchor bolts.
- .3 This item should also include the installation of all steelworks, anchor bolts and lug to be embedded in concrete, galvanizing of items where required, pouring, concrete curing and finishing, waterproofing surfaces and the final installation of the slabs on site, as well as any other work not specifically described, but required to carry out such work in accordance with the plans and specifications.
- .4 The Contractor shall come up with an installation method that takes into account the capacity of new cribwork. See plan for more details.

.6 **Item 6 - Connection structure at southern main wharf**

- .1 This item will be paid following a global unit and will include the construction of a galvanized metal walkway on the structure, following the limits specified in the plan.
- .2 The tendered price will include the cost for all labour, machinery, transportation and materials needed to manufacture and install a galvanized metal bridge including, but is not limited to, a grating,

a support structure, load bearing supports and any other work not specifically described but required to carry out such work following the plans and specifications.

- .2 **Unit price works:** The quantities indicated in the price list are estimated quantities and they can only be increased after a written authorization from the Departmental Representative. No payment shall be made for any additional quantities if the Contractor does not receive prior written authorisation from the Department. Such work is subjected to a unit price agreement and includes, but is not limited to:

- .1 **Item 7 - Repairs to the berlin wall:** On the unit price table, this item shall be broken down into different sub units.

.1 **Item 7.1 – Pre-works underwater inspection**

- .1 This item shall be paid by each working day. It involves an underwater and surface inspection carried out by the Contractor in the presence of Departmental Representative. The inspection will include a statement of damages and a summary report, including a plan of damages to be addressed. The costs for this item include the mobilization and demobilization of divers, equipment and all related expenses. The Contractor shall coordinate the inspection with the users so as to inspect entire wharf face.

.2 **Item 7.2 - Repairs to the berlin wall between axes 1 and 15**

- .1 This item will be measured per square meter, confirmed by pre-works inspection and will include, but not be limited to, costs for materials, transportation, labour, diving and equipment required for repairs on the berlin wall, as specified in the plans and specifications. This item will include, but not be limited to, diving, levelling of the seabed where required, the installation of steel plates, as well as any other work not specifically described, but required to carry out such work, following the plans and specifications.
- .2 On the Unit Price Table, this item shall be broken down as follows.

Item 7.2.1 - Repairs around the tidal zone

Item 7.2.2 - Repairs to the base of berlin wall

.3 **Item 7.3 - Repairs to the berlin wall between axes 16 and 42/43**

- .1 This item will be measured per square meter, confirmed by pre-works inspection and will include, but not be limited to, costs for materials, transportation, labour, diving and equipment required for repairs on the berlin

wall, as specified in the plans and specifications. This item will include, among other things, diving, the installation of equipment for repair, as well as any other work not specifically described, but required to carry out such work, following the plans and specifications. The method must comply with the objectives spelt out in the plans and be approved by the Departmental Representative.

- .2 On the Unit Price Table, this item shall be broken down as follows:

Item 7.3.1 - Repairs around the tidal zone

Item 7.3.2 - Repairs to the base of the berlin wall

.4 **Item 7.4 - Repairs to the berlin wall between axes 42/43 and 47**

- .1 This item will be measured per square meter, confirmed by pre-works inspection and will include, but not limited to, costs for materials, transportation, labour, diving and equipment required for repairs on the berlin wall, as specified in the plans and specifications. This item will include, among other things, the installation of equipment for repair, as well as any other work not specifically described, but required to carry out such work, following the plans and specifications.

.5 **Item 7.5 - Filling behind the berlin wall:**

- .1 This item includes work between axes 14 to 27 and between axes 28 to 47 but will be subdivided on the table of unit prices as follows:

.1 **Item 7.5.1 - Openings in existing structure:**

This item will be paid for each opening carried out and will include, but not be limited to, cost for materials, transportation, labour and equipment required to carry out openings of existing berlin wall to enable backfilling.

It also includes work required to close opening after backfilling, and any other work not specifically described, but required to carry out this work. The method must comply with the objectives stated in plans and be approved by the Departmental Representative.

.2 **Item 7.5.2 - Backfilling behind berlin wall:**

This item will be measured per metric ton, based on scale receipts and will include, but not be limited to, costs for materials, transportation, labour and equipment required for backfilling of

existing structure, behind berlin wall, using granular materials.

It also includes any other work not specifically described, but required to carry out such work, following the plans and specifications.

**.2 Item 8 - Dredging and cleaning of the seabed**

- .1 This item will be measured in theoretical cubic meters of dredged material, based on bathymetric surveys before and after works. See section 35 20 23 - Dredging, in specification, for more details on this item.
- .2 Other considerations related to dredging and removal of debris:
  - .1 Mobilization and demobilization costs of dredging/cleaning equipment are measured and paid for in item 3.
  - .2 Only materials excavated above the level of the required depth and below the indicated or required side slopes will be measured.
  - .3 The purpose of dredging is to remove poor quality materials down to bedrock to ensure proper performance of crib foundation. The Contractor shall use the most appropriate equipment to maximise effectiveness of excavation.
  - .4 There will be no additional payment for the installation, maintenance and removal of warning buoys marking work zones.
  - .5 There will be no additional payment for waste of time caused by the buoys in dredging areas.
  - .6 There will be no additional payment for the docking and anchorage fees for dredging equipment or any other floating equipment.
  - .7 There will be no additional payment for downtime resulting from operational adjustments in performance.
  - .8 Activities that fall in line with the installation of the dredging equipment and, the Contractor's equipment and crew will not be paid separately, but will be considered as part of the dredging exercise.
  - .9 Filling and settling may occur before the reception of works in areas where the dredging is not completed, or that were previously dredged. The Contractor shall be responsible for clearing the material and completing the dredging of all areas indicated on the plan at the specified depth in view of obtaining the "Certificate of Completion". The removal of carried material during dredging will not be measured separately for payment.

- .10 No additional payment will be made as a result of delays from shipping, at a downtime due to lack of coordination between the contractor and the users.
  - .11 No additional payment will be made due to delays or downtime caused by shipping.
  - .12 No additional payment will be made due to delays caused by environmental constraints.
  - .13 The excavation of material that is carried in the dredging area will not be measured for payment.
- .3 **Item 8.1 - Dredging of material:** On the unit price table, this item shall be broken down as follows:
- .1 **Item 8.1.1 - Dredging of class 2 material:** Dredging will be measured per cubic meters of class 2 material present, according to surveys conducted before and after dredging by the Departmental Representative, following underwater inspection to confirm that the materials were excavated down to bedrock. This item will include costs for labour, machines, transportation and required equipment, as well as any other work not specifically described, but required to carry out such work, following the plans and specifications.
  - .2 **Item 8.1.2 - Dredging of class 1 material:** Dredging will be measured per cubic meters of class 1 material present, according to surveys conducted before and after dredging by the Departmental Representative. This item will include costs for labour, machines, transportation and required equipment, as well as any other work not specifically described, but required to carry out such work, following the plans and specifications.
- .4 **Item 8.2 - Transportation and disposal of dredged material:** On the unit price table, this item shall be broken down as follows:
- .1 **Item 8.2.1 - Transportation and disposal of B-C contaminated material:** This item will be measured in metric tons of materials, based on scale receipts. Payment will include transportation, management and disposal of contaminated dredged material of B-C level to contaminated soil authorized disposal site, approved by the Departmental Representative. The management of contaminated sediments will not be paid separately and will be included in the unit price per ton. The use of sealed bins and drying of materials, if required by the disposal site, will not be paid separately and will be included in the unit price. This item will include costs for labour, machines, transportation and required equipment, as well as any other work not specifically described, but required to carry out such work, following the plans and specifications.

- .2 **Item 8.2.2 - Transportation and disposal of class 1 material:** This item will be measured in metric tons of material, based on scale receipts. Payment here will include transportation, management and disposal of class 1 material to an authorized soil disposal site, approved by the Departmental Representative. The management of materials will not be paid separately and will be included in the unit price. The use of sealed bins and drying of materials, if required by the disposal site, will not be paid separately and will be included in the unit price. This item will include costs for labour, machines, transportation and required equipment, as well as any other work not specifically described, but required to carry out such work, following the plans and specifications.
- .5 **Item 8.3 - Cleaning of seabed:** On the unit price table, this item shall be broken down as follows:
  - .1 **Item 8.3.1 - Cleaning:** The item will be measured per hour and include cleaning of the seabed before dredging during works, following the limits specified in the plans. The tendered price will include, but not be limited to, costs for labour, machines, transportation and equipment required for cleaning the seabed, as well as any other work not specifically described, but required to carry out such work, following the plans and specifications.
  - .2 **Item 8.3.2 – Waste disposal and transportation :** The item will be paid per metric tons and will include transportation, management and disposal of debris and trash from the cleaning of the seabed before dredging, according applying regulations. The tendered price will include, but not be limited to, costs for labour, machines, transportation and equipment required for disposal, and the transportation of debris, as well as any other work not specifically described, but required to carry out such work, following the plans and specifications.
- .6 **Item 8.4 - Underwater validation inspection**
  - .1 This item shall be paid each working day. It involves an underwater inspection carried out by the Contractor in the presence of the Departmental Representative. Such inspection aims at establishing that the excavation was effectively carried out right to bedrock and that the cleaning was completed. The costs for this item include the mobilization and demobilization of divers, equipment and all related expenses. The Departmental Representative must approve the result of the inspection before confirming the dredging and cleaning exercise. The foundation cannot be laid before inspection is conducted. Coordinate the inspection with after works bathymetric surveys, refer to specifications.

.3 **Item 9 - Foundation for cribs**

- .1 This item will be measured in theoretical cubic meters installed, based on bathymetric surveys and will include the cost for all labour, machinery, transportation and materials needed to lay the foundation of the wooden on the seabed, as well as levelling. It will also include the following production activities: sorting and sifting, transportation, weighing and mixing of granular material and stones for the construction of the foundation for wooden cribs and other work not specifically described but required to carry out such work in following the plans and specifications.

.4 **Item 10 - Treated wooden cribs 305 x 305 mm (no. 1 to 5)**

- .1 This item will be measured in cubic meters of installed cribs. The tendered price will include the cost of all labour, machinery, transportation and all necessary equipment other than those provided by the Department for the complete construction of cribs and their installation. Materials include, among other things, but are not limited to, ballast stone of 350 to 450 mm in diameter, timbers to complete the structure, the ballast floor, and hardware not supplied by the Departmental Representative.
- .2 This item should also include any other work not specifically described, but required to carry out such work, following the plans and specifications. The measurement will be done from above the top joists to the the lower section of the posts in the vertical axis, at bottom of cribs. No reduction shall be done for voids.

.5 **Item 11 – Slab resurfacing on the existing berlin wall**

- .1 This item will be measured in theoretical square meters of reinforced concrete installed, following limits specified in plans. It includes the supply and installation of rebar, anchor bolts, form work, concrete, curing. This item will include, among other things, but will not be limited to, bush hammering of existing concrete, as well as any other work not specifically described, but required to carry out such work, following the plans and specifications.
- .2 This item must also include all direct and indirect costs linked to works protection and temporary heating during the pouring of concrete in cold weather.
- .3 The heating of water and granular materials, as well as the measures taken to protect concrete in cold weather will not be measured, but considered an integral part of the project.
- .4 Concrete cooling and hot weather protection will not be measured, but considered an integral part of the project.

.6 **Item 12 - Lean concrete**

- .1 This item is paid per theoretical cubic meter and will include, but not limited to, all costs for materials, transportation, labour, equipment required for the supply and pouring of lean concrete between the existing berlin wall and the new cribwork. It includes, among other things, the form work against new cribwork, form work to close lateral ends of the area where concrete is placed, as well as any other work not specifically described, but required to carry out such work, following the plans and specifications.
  - .2 This item must also include all direct and indirect costs linked to the use of insulated blanket when pouring concrete in cold weather or other methods approved by the Departmental Representative.
  - .3 The heating of water and granular materials, as well as the measures taken to protect concrete in cold weather will not be measured, but considered an integral part of the project.
  - .4 Concrete cooling and hot weather protection will not be measured, but considered an integral part of the project.
  - .5 Repair of the existing berlin wall prior to concrete pouring is included and covered by the items under repairs on the berlin Wall.
- .7 **Item 13 - Curb sections**
- .1 This item will be measured per meter and will include the installation of different standard sections of galvanized steel curbs used on the structure according to the limits specified in the plan. The tendered price will include the cost for all labour, machinery, transportation and materials needed for the fabrication and installation of standard galvanized steel curbs. It also includes anchor bolts and grout levelling, as well as any other work not specifically described, but required to carry out such work, following the plans and specifications.
- .8 **Item 14 – 20-ton mooring bollards**
- .1 This item will be measured per unit and will include the installation of 20-ton bollards and a concrete base on structure according to the limits specified in plans. The tendered price will include the cost for all labour, machinery, transportation and materials needed for the supply and installation of 20 ton mooring bollards, including, among other things, but not limited to, bollards, anchor bolts, concrete, rebar, form work, levelling with grout and any other job not specifically described but required to carry out such work following the plans and specifications.
  - .2 This item must also include all direct and indirect costs linked to the protection of works and temporary heating during the casting of concrete in cold weather.

- .3 The heating of water and granular materials, as well as the measures taken to protect concrete in cold weather will not be measured, but considered an integral part of the project.
- .4 Concrete cooling and hot weather protection will not be measured, but considered an integral part of the project.

.9 **Item 15 - Ladders**

- .1 This item will be measured per unit and will include the installation of safety ladders on the structure, following limits specified in plan. The tendered price will include the cost for all labour, machinery, transportation and materials needed for the supply and installation of fire escape ladders, including, among other things, but not limited to, galvanized steel components and anchors, two fenders on both sides of ladder and fabricated metal, as well as any other job not specifically described but required to carry out such work following the plans and specifications.

.10 **Item 16 - Fenders:** On the unit price table, this item shall be broken down as follows:

.1 **Item 16.1 - New fenders**

- .1 This item will be measured per unit and will include the installation of fenders on the structure, following the limits specified in the plan. The tendered price will include the cost for all labour, machinery, transportation and materials needed for the supply and installation of fenders, including, among other things, but not limited to, fabricated metal and hardware required to install them as well as any other job not specifically described but required to carry out such work following the plans and specifications.

.2 **Item 16.2 - Recovered fenders**

- .1 This item will be measured per unit and will include modification to recovered fenders and installation on the west side of crib. The tendered price will include the cost for all labour, machinery, transportation and materials needed for the supply and installation of fenders, including, among other things, but not limited to, fabricated metal and hardware required to install them as well as any other job not specifically described but required to carry out such work following the plans and specifications.

.11 **Item 17 - Articulated Concrete Block Mats (ACBM)**

- .1 This item will be measured per meter square and will include the placement of articulated concrete block mats on the structure,

following the limits specified in the plan. The tendered price will include the cost for all labour, the team of divers, machinery, transportation and materials needed for the supply and installation of articulated concrete block mats, including, among other things, but not limited to, ACBMs and attachment system, as well as any other job not specifically described but required to carry out such work following the plans and specifications.

.12 **Item 18 - Protective posts**

- .1 This item will be measured per unit and will include the installation of protective bollards on the structure, following the limits specified in the plan. The tendered price will include the cost for all labour, machinery, transportation and materials needed for the supply and installation of protective posts, including, among other things, but not limited to, bollards and anchor bolts, as well as any other job not specifically described but required to carry out such work following the plans and specifications. On the unit price table, this item shall be broken down as follows:

Item 18.1 - Fixed protective posts

Item 18.2 - Detachable protective posts

.13 **Item 19 - Extension of the rock armor protection**

- .1 This item will be measured per metric ton installed for each category of stones and will include, but not be limited to, costs for materials, transportation, labour and equipment required to extend the rock armour protection from the southern main wharf to new crib. It also includes any other work not specifically described, but required to carry out such work, following the plans and specifications. On the unit price table, this item shall be broken down as follows:

Item 19.1 - Stones weighing 500-1500 kg

Item 19.2 - Stones weighing 50-150 kg

.14 **Item 20 - Slope transition at southern main wharf**

- .1 This item will be measured per unit and will include the supply and installation of rebar, form work, concrete, curing. This item will include, among other things, but will not be limited to, wire mesh, anchor rods, laying and finishing of concrete, as well as any other work not specifically described, but required to carry out such work, following plans and specifications.
- .2 This item must also include all direct and indirect costs linked to the protection of the works and temporary heating during the casting of concrete in cold weather.

- .3 The heating of water and granular materials, as well as the measures taken to protect concrete in cold weather will not be measured, but considered an integral part of the project.
- .4 Concrete cooling and hot weather protection will not be measured, but considered an integral part of the project.

**END OF SECTION**