

7th FLOOR EBÈNE HEIGHTS BUILDING, PLOT 34, EBÈNE CYBERCITY, EBÈNE TEL: 468 6209/10/11/12 – FAX: 468 6213 – EMAIL: <u>beachauthority@intnet.mu</u>

Request for Sealed Quotations for Works

CONSTRUCTION OF PARKING AREA & BEACH ENCLOSURE AT POINTE AUX PIMENTS PUBLIC BEACH

Procurement Reference No: BA/RFQ/03/2023-24

Beach Authority 7th Floor Ebène Heights Building, Plot 34, Ebène Cybercity, Ebène Email: beachauthority@intnet.mu Tel No: 468 6209/10/11/12 Fax No: 468 6213/4686214 Date: 25 October 2023



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A. REQUEST FOR SEALED QUOTATIONS (WORKS) CONSTRUCTION OF PARKING AREA & BEACH ENCLOSURE AT POINTE AUX PIMENTS PUBLIC BEACH

Procurement Reference Number: BA/RFQ/03/2023-24

To Directors As per annexed list

You are hereby invited to submit your best quotation for the works listed hereunder and more fully described in the Schedule of Requirements. Your offer should be made on this form stating other relevant data, with any annex you may wish to attach thereto. Works should be completed **within 90** days from the start date.

We commit ourselves to maintain the highest standard of integrity and ethical principles during all stages of the procurement cycle.

Name of Officer:

Status: Officer In charge Procurement & Supply Date:

Signature

SN	Brief Description of Works	Sub-Total from Priced Activity Schedule	VAT (Rs)	Amount (Rs)
1	Construction of Parking Area & Beach Enclosure at Pointe aux Piments public beach			
			Total	

Quotation Validity period: 90 days after the closing date for bid submission.Works completion: Within 90 days after the start date.Defects Liability Period: 6 months as from the date of taking over of site at completionStart Date: 7 days after the date of signature of Contract AgreementClosing date and time for submission: Monday 27 November, 2023 by 11.00hrs at latestModes of Submission: In sealed envelope to be deposited by hand in Tender boxTender box located at: Beach Authority, 7th Floor Ebène Heights Building, Plot 34, Ebène Cybercity, Ebène

Pre-bid Meeting

Bidders or their designated representatives are invited to attend a pre-bid meeting at **Pointe aux Piments (Nr Cemetery) public beach** on **10 November, 2023 at 10.30 hrs**. The purpose of the pre-bid meeting will be to clarify issues and to answer questions on any matter that may be raised at that stage. **The contact person if Mr. Y. Lallmun on mobile no. 58087774**

I/We declare that I/We **"qualify/do not qualify**" for Margin of Preference and shall, upon request, submit documentary evidence in this respect.

I/We hereby certify that we have taken steps to ensure that no person acting for us or on our behalf will engage in any type of fraud and corruption during our participation in the bidding process and we commit ourselves to observe the same principles if the contract is awarded to me/us and during its execution. We understand that transgression of the above is a serious offence and appropriate actions will be taken against me/us.

I/We are authorized as per the Construction Industry Development Board Act to undertake the work mentioned above and agree to execute same as more fully described hereunder at price(s) quoted by me/us in accordance with the Employer's Conditions of Contract.

Date.....

Bidder's signature / seal

B. SCHEDULE OF REQUIREMENTS

1. SCOPE OF WORKS, SPECIFICATIONS AND PERFORMANCE REQUIREMENTS

a. Scope of Works

<u>Project title</u>: Construction of Parking Area & Beach Enclosure at Pointe aux Piments Public Beach

Project Brief:

The Beach Authority is envisaging to construct a parking area at Pointe aux Piments public beach to promote less vehicular access on the beach. The scope of works is morefully described below.

Scope of works:

The scope of works consists of the following:

- Site clearance, felling of trees of any girth within the site area and removal of stumps under the supervision of a Forest Officer of Pamplemousses Section (Tel: 2438874/2122449). Wooden logs should be cut in length not exceeding 1m and carted away to the Forestry Service.
- 2. Excavation in sand, soil or rock, level and compact to 95% BS Heavy to receive spalls and for construction of Reinforced Concrete Beam. Excavated materials to be stacked in heaps on site for reuse, as indicated by the Employer's representatives. Contractor to inform Employer's representatives well in advance to witness compaction test like Nuclear Densometer test or other tests to be carried out on compacted sub-base. Waste materials and excess spoil to be carted away and coral sand to be laid and levelled on the beach as directed by the Employer's representatives.
- 3. Supply, lay and compact 250mm thick spalls (50-100mm) in layers not exceeding 125mm thick on the sub base to receive crusher run.
- 4. Supply, lay and compact 250 mm thick crusher run (0-31.5mm) in layer not exceeding 125mm to achieve 95% BS Heavy Compaction. Contractor to inform Employer's representatives well in advance to witness compaction test like Nuclear Densometer test or other tests to be carried out on compacted crusher run.
- 5. Supply, lay and compact 50mm thick Rocksand (0.4) on crusher run to receive evergreen blocks.

- 6. Supply and fix of concrete kerbs Type K1 as per drawing inclusive of all excavation and haunching works.
- 7. Supply and placing of evergreen blocks of dimension 600x400x120mm thick and characteristic compressive strength 30MPa to lines and level topped with crushed corals. Sample of evergreen blocks and crushed corals (5-10 mm) with specifications to be submitted for approval prior to placing of order. The Contractor is requested to submit the samples and specifications well in advance to allow sufficient time for delivery of materials.
- Casting of reinforced concrete beam on 75 mm thick blinding layer to support the evergreen blocks as per drawings. The Contractor shall prepare reinforcement for the R.C. structures and seek for approval prior to start concrete work.
- 9. Supply and apply 2 coats of road marking paint (white chlorinated) to demarcate parking slots and stop line on parking area.
- 10. Supply and fixing of directional signs with galvanized metal poles of diameter 50mm and thickness 2.0mm as indicated on drawing. To apply 1 coat of etching primer, 1 coat of undercoat and 2 coats of enamel (gloss finish) white paint.
- 11. Scarification of 150mm in depth in planters and supply of topsoil as shown in drawings. Supply and planting of decorative plants in new planting area (Landscaping area) and in the vicinity of the new parking area as directed by the Employer's representatives.
- 12. Construction of Stone Masonry Wall, 44m long as per drawings. Excavation in sand, soil or rock, levelling of subgrade to receive 50mm thick blinding concrete G15, casting of strip footing and construction of stone masonry wall. Excavated materials to be stacked in heaps on site for reuse, as indicated by the Employer's representatives. Waste materials and excess spoil to be carted away and coral sand to be laid and levelled on the beach as directed by the Employer's representatives.
- 13. Supply and fixing of parapet made up of composite plastic materials, 85m long as per drawings. Sample of composite plastic poles with specifications to be submitted for approval prior to placing of order. The Contractor is requested to submit the sample and specifications well in advance to allow sufficient time for delivery of materials.
- 14. General cleaning of site and carting away of debris during and after completion of the works.
- 15. The contractor shall provide one signboard indicating: **PROJECT TITLE**, **NAME OF CLIENT** AND **NAME OF CONTRACTOR**.

- 16. Contractor shall make provision for compaction tests as indicated by the Employer's representatives and shall submit valid test reports. Compaction test shall be carried out by an accredited laboratory in presence of the Employer's representatives.
- 17. The Contractor shall make provision for 6 concrete test cubes for the casting of the reinforced concrete beams. 2 cubes shall be tested for compressive strength at 7 days and 2 further cubes at 28 days.
- 18. The Contractor shall secure the site by placing warning tape prior to commencement of works including appropriate safety signage.
- 19. The Contractor shall comply with all health and safety regulations during the execution of the works.
- 20. The Contractor should ensure that the site is kept clean at all times during the course of the works and after completion of works.

Specifications

1. General

1.1 First Aid, Welfare and Safety Precautions

The Contractor shall use his best endeavours to ensure the health, safety and welfare at work of his employees including those of his subcontractors, of the public and of all other persons on the Site. His responsibilities shall include:

- (i) To ensure that all employees of the Contractor and any subcontractor are trained in site working practices and systems of work.
- (ii) The presentation to the Engineer of copies of his employer's liability and public liability insurance which should provide cover for the duration of the project.
- (iii) To forward a copy of his safety policy or equivalent Mauritian Requirement to the Engineer.
- (iv) Provision and maintenance of safe and properly illuminated equipment.
- (v) Establishment of safe and well illuminated systems of working.
- (vi) Provision and maintenance in operative conditions of all equipment necessary to render first-aid in case of accidents or other emergencies. This equipment shall be kept in readiness at all sites of the works. The Contractor shall ensure that there are persons available at all such places with a knowledge of simple first-aid procedures and able to administer help in the event of injury.
- (vii) To abide by the safety requirements of the Engineer.
- (viii) Promptly report accidents arising out of or in connection with the performance of the work that caused death, personal injury or damage to property, giving full details and statements of witnesses. Reports shall be made to the Engineer both verbally and in writing.

If anyone claims against the Contractor or any subcontractor as a result of any accident, the Contractor shall promptly report the facts in writing to the Engineer giving full details of the claim.

1.2 Existing Services

The position of all existing services which may be affected by the Works shall be ascertained by the Contractor before work commences. Trial holes shall be excavated in advance of excavation works to locate services as required by the Engineer.

The Contractor shall make such provisions as may be required by the authorities concerned for the support and protection of any water main, sewer, telephone cable, power cable or other services met with on the site, making good at his own expenses any damage to services.

1.3 Damage to Essential Public Services

In the event of the Contractor damaging water, sewerage, electricity or telephone services, whether these have been marked or not, the Contractor shall immediately inform the authority concerned. The Authority concerned will carry out the repairs, and shall inform the Contractor through the Engineer in writing of the damage and repairs carried out.

In some cases where water supply pipelines are damaged the Contractor may be instructed to effect the necessary repairs under the supervision of the Operations Section of the Central Water Authority and consequently, close liaison will be required on the part of the Contractor.

The Contractor shall pay for the cost of repairs within one month of receiving the account. In the event of the Contractor failing to pay the account within one month, the Engineer's Representative will, if required to do so, inspect the accounts to ensure that they are reasonable and shall then request the Employer to deduct the sum which is assessed as reasonable from any monies due to the Contractor.

1.4 Water and Power Supplies for Use on the Works

The Contractor shall be solely responsible for the location, procurement and maintenance of a water supply adequate in quality and quantity to meet his obligations under the Contract.

The Contractor shall also make his own arrangements for power supplies and shall be solely responsible for the location, procurement and maintenance of a power supply, adequate to meet his obligations under the Contract.

The rates entered in the Bill of Quantities shall be deemed to include for all obligations for the location, procurement and maintenance of adequate water and power supplies and shall be deemed to include for all costs in association therewith.

1.5 Contractor's Orders to be approved

Before ordering any materials for incorporation in the Works, the Contractor shall inform the Engineer of the names of the persons or firms from whom he desires to obtain such materials, and except as regards minor and unimportant matters, no order of such materials shall be given except with the sanction of the Engineer.

The Contractor shall keep the Engineer fully advised of all orders and delivery dates of all materials.

Notwithstanding the fact that sanction shall have been given in accordance with the above paragraph, the Engineer may forbid the use of any such materials if upon delivery, they are found to be defective, or he considers them unsuitable for incorporation in the Works. Such rejected materials shall be removed from the site forthwith.

1.6 Rejected Materials and Defective Work

Materials of work, which in the opinion of the Engineer, do not comply with the Specification, shall be classified as rejected materials or defective work and shall be cut out and removed from the Works and replaced as directed by the Engineer.

1.7 Storage of Materials

Materials and components shall be stored in such a manner as to preserve their quality and condition to the standards required by the Contract. The quantity of materials and components stored on the Site shall be consistent with that necessary for efficient working. The Contractor shall be responsible for ensuring that adequate quantities of approved materials are stored on Site to avoid delays to the Construction Programme.

1.8 Protection of Works

The Contractor shall take all steps necessary to protect the Permanent Works and all stores and materials from the effects of inclement weather. He shall be entirely responsible for any delay, damage or loss arising therefrom.

1.9 Construction and Checking of Work

The Contractor shall be solely responsible for and shall provide all labour, tools, plant, lifting tackle and other equipment required for the construction of the Works.

No operative shall be allowed to execute any type of work that is normally carried out by a skilled tradesman unless he is thoroughly experienced and proficient in the trade concerned. Supervisors and operatives may be required to demonstrate their proficiency or produce a certificate of competence to the satisfaction of the Engineer. As each part of the Works is erected, it shall be subject to the approval of the Engineer.

1.10 Unauthorised Persons

No unauthorised persons are to be allowed on to any part of the Site and the Contractor shall take steps to prevent this and instruct his Foremen and Watchmen accordingly.

1.11 Joint Measurement of Extras

In such cases as the Contractor deems it necessary to execute any work, or provide any materials which he feels entitled to claim as extras, he shall obtain written permission from the Engineer before commencing such work.

He shall make arrangements for the works or materials to be measured jointly with the Engineer, and the quantities agreed. Failure to obtain authority to commence any such work shall entitle the Engineer not to approve such claims.

The Engineer shall at all times have full access to the Contractor's timekeeper or otherwise although this shall in no way bind the Engineer to value the work other than by remeasurement.

1.12 Temporary Works

All land to be permanently used or occupied by the Works will be provided by the Employer, prior to the commencement of the Works wherever possible. When no longer required for the Contract, all such provision shall be left or dismantled and disposed of as directed by the Engineer and their Sites shall immediately be cleaned and left as far as practicable the same condition as that obtained immediately prior to occupation.

1.13 Backfill of Excavations and Trenches

The Contractor immediately upon completion and approval of work shall backfill in layers all excavations and trenches which may have arisen to the approval of the Engineer. He shall clear and level any mounds or heaps of earth, and cart away all rubbish which may have become superfluous.

The Contractor shall bear and pay all costs, charges, damages and expenses which may have been incurred or sustained on account or in consequence of any accident which may happen by reason of excavations and trenches connected with the Works.

1.14 Clearance of Site on Completion

The Contractor is required to ensure that all debris, Contractor's offices, store rooms, plant, excess material, spoil etc. caused as a result of the Works are to be removed from the site on completion. Removal and clearance are to be at the approval of the Engineer. The cost of such removal and cleaning works is deemed to be covered in the appropriate BOQ item.

1.15 Inspection by Engineer during Defects Liability Period

The Engineer will give the Contractor due notice of his intention to carry out any inspections during the Defects Liability Period and the Contractor shall upon receipt of such notice arrange for a responsible representative to be present at the time and dates named by the Engineer.

The Contractor shall render all necessary assistance and take note of all matters and things to which his attention is directed by the Engineer. Any remedial or other work instructed by the Engineer shall be executed forthwith.

1.16 Quality of Workmanship

Workmanship shall comply with the requirements of the Specification and BS 8000 and all other specified Standards and Codes of Practice. If no relevant clauses are included in the Specification and if no Standard or Code of Practice is specified, then workmanship shall be to the satisfaction of the Engineer.

1.17 Quality Control

The Contractor shall be responsible for quality control in respect of all materials and workmanship, and shall also be required to demonstrate that the required quality is being achieved. The Contractor shall provide evidence of the suitability of his quality control procedures and those of his subcontractors, both before they are instituted and during the progress of the Works. Notwithstanding the inspection and testing carried out by or under the direction of the Engineer, any failure by the Contractor or his subcontractors or suppliers shall not relieve the Contractor of his responsibility to meet the contractual requirements for quality.

1.18 Costs

All costs incurred by the Contractor in demonstrating that his proposed materials comply with Specification shall be borne by the Contractor.

1.19 Copies of Orders

Except where specifically agreed to the contrary in writing, the Contractor shall, at the time of placing the order, furnish to the Engineer copies in duplicate of all orders given for materials for incorporation in the Permanent Works together with two copies of every drawing referred to in the orders.

The Contractor shall, within 7 days of receiving the information, notify the Engineer of the estimated dates for delivery to the Site for all major materials and materials, which are critical for the programme.

2. Materials

2.1 General Filling Materials - Granular Sub-Base Material (Crusher Run)

The aggregate shall consist of crushed stone which is tough and durable roughly cubical in shape and free from excess of flat, and/or elongated particles, clay, topsoil or other deleterious matter, and shall be to the approval of the Engineer.

The rock from which the stone is to be produced shall comply with the following:

		Sub-Base	Base
Aggregate Crushing Value	Maximum	32%	30%
Los Angeles Abrasion Value	Maximum	40%	35%
Sodium Sulphate Soundness Test	Maximum	20%	12%
Flakiness Index	Maximum	35%	30%

The grading shall conform to the grading requirements given in the table below and the particle size distribution shall be a smooth curve within and approximately parallel to the grading envelope.

B.S. Sieve Size (mm)	Percentage Passing by Weight
75	100
50	95-100
37.5	85-100
10	45-100
5	25-85
0.6	8-45
0.075	0-10

The sampling of materials shall be in accordance with BS 812. The percentage passing No. 0.425 sieve shall be NON-PLASTIC. Stone shall be free of all foreign matter.

Where the crusher run material is deficient in the fine aggregate, and in the opinion of the Engineer the Contractor has made every reasonable effort to produce the required grading, the Engineer will allow admixing of crusher fines. No extra payment will be made for providing and mixing in of such fines. Added fines should be non-plastic and from rock meeting the requirements for crusher run.

2.2 Precast Concrete Products

Precast concrete units shall be provided by an approved specialist supplier or may be manufactured by the Contractor if the Contractor's samples and workmanship are approved.

Structural Precast Concrete

Structural Precast Concrete materials and workmanship shall be in accordance with BS 8110.

The precast units shall be cast under cover and shall so remain for at least 7 days during which period they shall be kept damp or otherwise efficiently cured. No units shall be erected until 21 days after casting except with the written approval of the Engineer.

No unit shall be erected until it has been approved by the Engineer as being free from defects and all surfaces are to the required standard. All precast units shall be marked with an individual identification. Lifting hooks are to be attached only to those positions shown on the detail drawings or as specified by the Engineer.

2.3 Paints and Painting Materials

Galvanized iron and steelwork shall be treated with calcium plumbate or a two-pack etching primer.

Priming paint for metal shall comply with the relevant provisions of the appropriate British Standard, as set out below:

Туре	BS
Lead-based	2523, Type B or C
Calcium plumbate	3698, Type A
Metallic zinc-rich (organic media)	4652

Paint remover shall be non-flammable, solvent-based and comply with BS 3761.

2.4 Precast Concrete Kerbs, Channels, Edgings and Quadrants

Precast concrete kerbs, channels and edgings shall be hydraulically pressed and they, and precast concrete quadrants, shall comply with BS 7263: Part 1. Where kerbs of channels are required to be laid to a radius of 12m or less, components of the appropriate radius shall be used.

2.5 Precast Paving Blocks

Precast concrete paving blocks shall comply with the relevant provisions of BS 6717: Part 1.

3. Excavation and Earthworks

3.1 Definitions

Required excavation is the excavation required solely for the Permanent Works and does not include excavation for Temporary Works, working spaces, access and the like.

A foundation is that part of the ground on which Permanent Works will be constructed.

A formation is a surface on which earthworks operations, or a stage of operations, have been completed.

Spoil is excavated material which is unsuitable for use in the Permanent Works or is material which is surplus to the requirements of the Permanent Works.

Suitable filling material is material which is not unsuitable as defined hereunder and which is approved by the Engineer for use in the Permanent Works.

Unsuitable material is material which in the opinion of the Engineer falls into one or more of the following classifications: -

- (a) material from swamps, marshes and bogs;
- (b) peat, timber, tree roots and stumps, refuse and material containing degradable matter;
- (c) material susceptible to spontaneous combustion;
- (d) material in a frozen condition;
- (e) material with an organic content exceeding two per cent as determined by Test No.8 of BS 1377 Determination of organic matter content;
- (f) material which is too wet for compaction in accordance with the Specification;
- (g) material containing chlorides, sulphates or other chemicals in quantities which will be injurious to the Permanent Works; any other material which is not approved by the Engineer.

3.2 General Requirements for Excavation and Earthworks Ground Levels

Before any excavation or earthwork is commenced, the site of the excavation or earthworks shall be surveyed by the Contractor in a manner and to the extent required by the Engineer

Excavated Surfaces

All excavated surfaces shall be finished neatly to the lines and levels shown on the Drawings unless such lines and levels are shown as nominal.

When such lines and levels are stated to be nominal, the final lines and levels will be instructed by the Engineer to take into account the conditions of the ground exposed as the excavation nears the nominal lines and levels shown on the Drawings and the Contractor may be required to carry out the excavation in more than one stage in order to arrive at the final lines and levels.

In material other than rock the surface shall be left not less than 150 mm above its final level until immediately before commencing Permanent Works construction.

Excavated surfaces which will remain permanently exposed on completion of the Permanent Works shall be cleared of all loose material, pieces of rock, debris, rubbish and the like and left neat and tidy.

Supports to Excavations

The responsibility of the Contractor for the safety and care of the Works under the Contract shall include taking the following measures:

- (i) The Contractor shall excavate the sides of excavations which are not positively supported to slopes which will remain stable.
- (ii) The sides of excavations which are not cut to a stable slope shall be properly and adequately supported to the extent necessary to ensure stability during the period of construction of the Permanent Works and the excavation shall then be backfilled unless otherwise indicated on the Drawings.
- (iii) No materials, plant or other load shall be placed so close to any excavation that the stability of the sides of the excavation is endangered.
- (iv) The Contractor shall remove or otherwise secure by barriers, net or other means any material which might fall and thereby cause damage to the Permanent Works or injury to any person.

The Contractor shall be responsible for the installation and subsequent removal of all necessary sheeting, timbering, strutting, shoring and the like to secure the excavations, to prevent any movement of adjacent ground and to ensure the safety of workmen and freedom from damage to structures, buildings, streets, sewers, drains, walls, services or any other thing.

Records of Excavation

After completion of each section of Permanent Works excavation, the Contractor shall provide the Engineer with a record of the excavation.

The record shall comprise all relevant information including the following:

- (i) the location of the excavation
- (ii) the elevation of the original ground and of any groundwater which is encountered during the excavation
- (iii) the measures taken to deal with groundwater

- (iv) the elevation, thickness and classification of all strata encountered
- (v) the instructed and actual profiles of the excavation.

3.3 Disposal of Excavated Material

Unless areas within the Site have been designated in the Contract or agreed by the Engineer as spoil areas, all spoil shall be disposed of in areas to be found by the Contractor outside the Site.

All spoil tips shall be formed with side slopes which will remain stable under all conditions to which they will be subject and the tops shall be graded to prevent the ponding of water. When tipping of spoil has been completed, spoil tips shall be trimmed and graded to present a neat and tidy appearance.

Temporary stockpiles of material for later use in the Works shall be formed with side slopes which will remain stable under all conditions to which they will be subject and the tops shall be graded to prevent the ponding of water.

Different materials shall be placed in separate spoil tips or stockpiles unless otherwise agreed by the Engineer. Spoil tips and stockpiles shall be placed so that there is no risk of material obstructing or polluting watercourses.

3.4 Backfill

Backfill material shall consist of excavated material, free from boulders having any one dimension greater than 150mm. Backfill material shall also be free of tree roots, rubbish and organic material and shall be subject to the approval of the Engineer.

4. Formwork for Concrete

4.1 Definitions

4.2

Formwork means the surface against which concrete is placed to form a face, together with all the immediate supports to retain it in position while concrete is placed.

Falsework means the structural elements supporting both the formwork and the concrete until the concrete becomes self-supporting.

A formed face is one which has been cast against formwork.

An exposed face is one which will remain visible when construction has been completed. *Construction of Formwork and Falsework*

Formwork and falsework shall be so constructed that they will support the loads imposed on them by the fresh concrete together with additional stresses imposed by vibrating equipment and by construction traffic, so that after the concrete has hardened the formed faces shall be in the positions shown on the Drawings within the tolerances set out in specifications.

Joints in formwork for exposed faces shall, unless otherwise specified, be evenly spaced and horizontal or vertical and shall be continuous or form a regular pattern.

All joints in formwork including formwork for construction joints shall be tight against the escape of cement and fines. Where reinforcement projects through formwork, the form shall fit closely round the bars.

Formwork shall be so designed that it may be easily removed from the work without damage to the faces of the concrete. It shall also incorporate provisions for making minor adjustments in position, if required, to ensure the correct location of concrete faces. Due

allowance shall be made in the position of all formwork for movement and settlement under the weight of fresh concrete.

Where overhangs in formwork occur, means shall be provided to permit the escape of air and to ensure that the space is filled completely with fully compacted concrete.

Formwork shall be provided for concrete surfaces at slopes of 30° to the horizontal or steeper. Surfaces at slopes less than 20° may be formed by screeding. Surfaces at slopes between 20° and 30° shall generally be formed unless the Contractor can demonstrate to the satisfaction of the Engineer that such slopes can be screeded with the use of special screed boards to hold the concrete in place during vibration.

Horizontal or inclined formwork to the upper surface of concrete shall be adequately secured against uplift due to the pressure of fresh concrete. Formwork to voids within the body of the concrete shall also be tied down or otherwise secured against floating.

The external angles on concrete surfaces shall be formed with 25 mm chamfers unless otherwise instructed by the Engineer.

Supports for formwork may be bolted to previously placed concrete provided the type of bolt used is acceptable to the Engineer. If metal ties through the concrete are used in conjunction with bolts, the metal left in shall not be closer than 50 mm to the face of the concrete.

Formwork shall not be re-used after it has suffered damage which is sufficient to impair the finished surfaces of the concrete.

Where circumstances prevent easy access within the form for cleaning and inspection, temporary openings for this purpose shall be provided through the formwork.

4.3 Preparation of Formwork

Before any reinforcement is placed into position within formwork, the latter shall be thoroughly cleaned and then dressed with a release agent. The agent shall be either a suitable oil incorporating a wetting agent, an emulsion of water suspended in oil or a low viscosity oil containing chemical agents. The Contractor shall not use an emulsion of oil suspended in water nor any release agent which causes staining or discolouration of the concrete, air holes on the concrete surface, or retards the set of the concrete.

In order to avoid colour differences on adjacent concrete surfaces, only one type of release agent shall be used in any one section of the Works.

In cases where it is necessary to fix reinforcement before placing formwork, all surface preparation of formwork shall be carried out before it is placed into position. The Contractor shall not allow reinforcement or prestressing tendons to be contaminated with formwork release agent.

Before placing concrete all dirt, construction debris and other foreign matter shall be removed completely from within the placing area. Before concrete placing commences, all wedges and other adjusting devices shall be secured against movement during concrete placing and the Contractor shall maintain a watch on the formwork during placing to ensure that no movement occurs.

4.4 Removal of Formwork

Formwork shall be carefully removed without shock or disturbance to the concrete. No formwork shall be removed until the concrete has gained sufficient strength to withstand safely any stresses to which it may thereby be subjected.

The minimum periods which shall elapse between completion of placing concrete and removal of forms are given in below Table and apply to ambient temperatures higher than 10°C.

Alternatively, formwork may be removed when the concrete has attained the strength set out in Table below, provided that the attained strength is determined by making test cubes and curing them under the same conditions as the concrete to which they refer.

Compliance with these requirements shall not relieve the Contractor of his obligation to delay removal of formwork until the removal can be completed without damage to the concrete.

Position of Formwork	Minimum Period for Temps. over 10°C	Strength to be Attained
Vertical or near vertical faces of mass concrete	24 hours	0.2 C
Vertical or near vertical faces of reinforced walls, beams and columns	48 hours	0.3 C
Underside of arches beams and slabs (formwork only)	4 days	0.5 C
Supports to underside of arches, beams and slabs	14 days	С

TABLE: Minimum Periods for Formwork Removal

NOTE: C is the nominal strength for the class of concrete used.

As soon as the formwork has been removed, bolt holes in concrete faces other than construction joints which are not required for subsequent operations shall be completely filled with mortar sufficiently dry to prevent any slumping at the face. The mortar shall be mixed in the same proportions as the fine aggregate and cement in the surrounding concrete and with the same materials and shall be finished flush with the face of the concrete.

5. Reinforcement for Concrete

5.1 Materials

This section covers plain and deformed bar reinforcement and steel fabric to be cast into concrete in any part of the Works but does not include prestressing tendons or any other

embedded steel. Reinforcement shall comply with the British Standards indicated on the drawings. The Standards include the following: -

BS 4449	Carbon steel bars for the reinforcement of concrete
BS 4482	Cold reduced steel wire for the reinforcement of concrete
BS 4483	Steel fabric for the reinforcement of concrete

5.2 Storage of Reinforcement

Reinforcement shall be stored on Site either in racks or on a hard impermeable base so that it remains straight and free from contamination.

Any reinforcement which is likely to remain in storage for a long period shall be protected from the weather so as to avoid corrosion and pitting. All reinforcement which has become corroded or pitted to an extent which, in the opinion of the Employer's Representative, will affect its properties shall be removed from Site.

Bending Reinforcement

Cutting and Bending Reinforcement

The Contractor shall cut reinforcement to length and bend it to the shape shown on the schedules within the dimensional tolerances given in BS 8666. Bars shall be bent cold by the application of slow steady pressure. Hooks or right-angle bends shall be formed where called for by the schedules and to the dimensions and tolerances specified in BS 8666. At temperatures below 5°C the rate of bending shall be reduced if necessary to prevent fracture of the steel.

After bending, bars shall be securely tied together in bundles or groups and legibly labelled as set out in BS 8666. Reinforcement shall be thoroughly cleaned and all dirt, scale, loose rust, oil and other contaminants removed before it is placed in the Permanent Works.

Fixing Reinforcement

Reinforcement shall be securely fixed in position within a dimensional tolerance of 20 mm in any direction parallel to a concrete face and within a tolerance of 5 mm at right-angles to a face, provided that the cover is not thereby decreased below the minimum shown on the Drawings.

Unless otherwise agreed by the Employer's Representative, all intersecting bars shall either be tied together with 1.6 mm diameter soft annealed iron wire and the ends of the wire turned into the body of the concrete, or shall be secured with a wire clip of a type agreed by the Employer's Representative.

No splices shall be made in the reinforcement except where shown on the Drawings or agreed by the Employer's Representative. Splice lengths shall be as shown on the Drawings.

Reinforcement shall not be welded except where required by the Contract or agreed by the Employer's Representative.

If welding is employed, the procedures shall be as set out in BS 2640 for gas welding or BS 5135 for metal arc welding.

Full strength butt welds shall only be used for steel complying with BS 4449, and if used on high yield deformed bars complying with BS 4449 the permissible stresses in the vicinity of the weld shall be reduced to those applicable to plain bars complying with that specification.

Mechanical splices shall not be used unless the Employer's Representative agrees otherwise.

The Contractor shall ensure that reinforcement left exposed in the Permanent Works shall not suffer distortion, displacement or other damage.

When it is necessary to bend protruding mild steel reinforcement aside temporarily, the radius of the bend shall not be less than four times the bar diameter for plain bars or six times the bar diameter for high yield bars. Such bends shall be carefully straightened before concrete placing continues, without leaving residual kinks or damaging the concrete round them.

Bars complying with BS 4461 or other high tensile bars shall not be bent after placing in the Works.

Before concrete is placed in any section of the Permanent Works which includes reinforcement, the reinforcement shall be completely clean and free from all contamination including concrete which may have been deposited on it from previous operations.

Steel Reinforcement

All reinforcement storage shall be on wooden supports on a dense, impervious concrete or bituminous slab specially placed for the purpose. The slab or slabs shall be free from dust, sand, soil or other materials which may encroach on the area by reason of wind, vehicular or foot traffic or otherwise. These requirements shall apply equally to reinforcement bending and cleaning areas and to any prefabricated reinforcement storage areas. The concrete or bituminous slabs shall be constructed and fully completed before any reinforcement is delivered to the site.

Tying wire

Tying wire for steel reinforcement shall be 1.6 mm diameter finally annealed mild steel wire, complying with BS 1052.

Cover blocks and spacers for reinforcement

Cover blocks and spacers shall be of the grey-coloured plastic type or of fibre-reinforced concrete and shall be designed to maintain the correct clear cover of concrete over steel reinforcement. They shall be as small as possible consistent with their purpose, and of a shape acceptable to the Engineer. Samples shall be submitted to the Engineer for approval.

Fibre-reinforced concrete cover blocks shall be manufactured with a 10 mm maximum aggregate size and otherwise produced to the same specification as the surrounding concrete.

Spacers shall be rust-proof material and shall not produce staining, or otherwise be detrimental to the concrete or steel.

5.3 Water

Water for making concrete, mortar grout, and for curing shall be clean, fresh and free from matter in solution or suspension in such amounts that may impair the strength or appearance of the concrete, mortar, rendering or grout. The Contractor shall make all

arrangements for obtaining water from sources approved by the Engineer. Water shall comply with the requirements of the Works to BS 3148.

If required by the Engineer, the Contractor shall take samples of mixing water and send them for testing to a nominated laboratory. If the results of the test show that the water is unsuitable, then the Contractor will be responsible for the cost of the tests, otherwise the costs will be recoverable by the Contractor from the Employer.

6 Transport of Concrete

6.1 Site Batched Concrete

The concrete shall be discharged from the mixer and transported to the Works by means which shall prevent adulteration, segregation or loss of ingredients, and which shall ensure that the concrete is of the required workability at the point and time of placing. The loss of slump between discharge from the mixer and placing shall not exceed 25 mm.

The time elapsing between mixing and placing a batch of concrete shall be as short as practicable and, in any case, no longer than will permit completion of placing and compaction before the onset of initial set. If the placing of any batch of concrete is delayed beyond this period, the concrete shall not be placed in the Permanent Works.

7 Concrete

7.1 Definitions

Structural concrete is any class of concrete which is used in reinforced, prestressed or unreinforced concrete construction, which is subject to stress.

Non-structural concrete is composed of materials complying with the Specification but for which no strength requirements are specified and which is used only for filling voids and similar purposes where it is not subjected to significant stress.

A formed surface is a face which has been cast against formwork. A free surface is a horizontal or nearly horizontal surface produced by screeding or trowelling to the level and finish required. A pour refers to the operation of placing concrete into any mould, bay or formwork, etc., and also to the volume which has to be filled. Pours in vertical succession are also referred to as lifts.

Water/cement ratio is the ratio by weight of the free water in the mix divided by the weight of cement in the mix. Free water is the water in the mix excluding water absorbed by the aggregate.

7.2 Materials for Concrete

General

The Contractor shall submit to the Engineer full details of all materials which he proposes to use for making concrete. No concrete shall be placed in the Permanent Works until the Engineer has approved the materials of which it is composed. Approved materials shall not thereafter be altered or replaced by other materials without the consent of the Engineer.

6.3.2 Cement

- (a) Cement shall comply with the appropriate Standards, which include the following: -
 - BS 12 Portland Cement.
 - BS 4027 Sulphate resisting Portland Cement.
 - BS 5075 Concrete Admixtures:
 - Part 1: Accelerating admixtures, retarding admixtures and water reducing admixtures.
 - Part 2: Air entraining admixtures.
 - Part 3: Super plasticising admixtures.

Cement shall be free flowing and free of lumps. It shall be supplied in the manufacturer's sealed unbroken bags or in bulk. Bagged cement shall be transported in vehicles provided with effective means of ensuring that it is protected from the weather. Bulk cement shall be transported in vehicles or in containers built and equipped for the purpose. Cement in bags shall be stored in a suitable weatherproof structure of which the interior shall be dry and well ventilated at all times. The floor shall be raised above the surrounding ground level and shall be so constructed that no moisture rises through it.

Each delivery of cement in bags shall be stacked together in one place. The bags shall be closely stacked but shall not be stacked against an outside wall. If pallets are used, they shall be constructed so that bags are not damaged during handling and stacking. No stack of cement bags shall exceed 3 m in height. Different types of cement in bags shall be clearly distinguished by visible markings and shall be stored in separate stacks.

Cement from broken bags shall not be used in the Permanent Works. Cement in bags shall be used in the order in which it is delivered. Bulk cement shall be stored in weatherproof silos which shall bear a clear indication of the type of cement contained in them. Different types of cement shall not be mixed in the same silo.

The Contractor shall provide sufficient storage capacity on Site to ensure that his anticipated programme of work is not interrupted due to lack of cement having due regard to factors outside the Contractor's control such as transport, weather conditions, holidays and breakdowns.

Cement that has become hardened or lumpy or fails to comply with the Specification in any way shall be removed from the Site. All cement used in the Permanent Works shall be tested by the manufacturer or the Contractor in a laboratory acceptable to the Engineer. The tests shall be in accordance with Test A1 in Appendix A, and the Contractor shall supply two copies of each test certificate to the Engineer. Each set of tests carried out by the manufacturer or Contractor shall relate to not more than one day's output of each cement plant, and shall be made on samples taken from cement which is subsequently delivered to the Site. Alternatively, subject to the agreement of the Engineer, the frequency of testing shall be one set of tests for every 200 tonnes of cement delivered to Site from each cement plant.

Cement which is stored on Site for longer than one month shall be retested in a laboratory acceptable to the Engineer at the rate of one set of tests for every 200 tonnes, and at monthly intervals thereafter. Cement which does not comply with the Specification shall not be used in the Permanent Works.

7.3 Aggregates for Concrete

Aggregates for concrete shall conform to the requirements for fine and coarse aggregates in BS 882.

Fine and coarse aggregates shall separately conform to the requirements set out below:

(a) General Requirements

Aggregate shall be clean, hard, durable and frost resistant and shall not contain iron pyrites, iron oxides (other than magnetite), mica, shale, coal or other laminar, soft or porous materials.

(b) Grading

Fine aggregate shall conform to BS 882 Table 5, Zones C or M. In order to achieve an acceptable grading, it may be necessary to blend materials from more than one source. Coarse aggregates shall be supplied in the nominal sizes specified and shall be graded in accordance with BS 882 for single sized aggregates. A coarse aggregate shall be predominantly angular, rounded or irregular as defined in BS 812, part 1.

(c) Chlorides

The chloride content shall not exceed 0.03 per cent by weight expressed as chloride ion when tested in accordance with BS 812 subject to the further restriction on total chloride content hereunder.

(d) Sulphates

The sulphate content shall not exceed 0.4 per cent by weight expressed as SO3 when tested.

(e) Total Chloride and Sulphate Content

The total chloride content arising from all ingredients in a mix including cement, water and admixtures shall not exceed the following limits, expressed as chloride ion and as a percentage of the weight of cement in the mix: -

For prestressed concrete, steam cured concrete or concrete containing sulphate resisting or super sulphated cement: 0.05 per cent.

For any other reinforced concrete 0.3 per cent in 95 per cent of all test results providing no result is more than 0.5 per cent.

The total sulphate content expressed as SO3 of all the ingredients in a mix including cement, water and admixtures shall not exceed 4.0 per cent of the weight of cement in the mix.

(f) Soundness

As may be required, aggregates shall not show a weight loss of more than 18 per cent using magnesium sulphate.

(g) Alkali Reactive Minerals

No part of the aggregates shall contain any mineral known to have a potential to cause alkali silica, alkali silicate, alkali carbonate or any other damaging chemical reaction between alkalis and aggregates.

The minerals present should be determined, as required, on a range of samples selected to include every mineral type present in the aggregate as a whole irrespective of the proportion of the mineral.

If during the course of the test it is concluded that an unequivocal identification of a potentially reactive mineral is not possible, alternative tests shall be carried out such as to provide the required identification.

(h) Flakiness

Flakiness Index of coarse aggregates when tested in accordance with BS 812 shall be as set out hereunder and not as given in BS 882 Table 1. For nominal 40 mm aggregate and above, not more than 40. For nominal 20 mm aggregate and below, not more than 35.

Shell Content

In addition to the requirements of BS 882, the content of hollow and flat shells shall not be such as will reduce the 28 day strength below the minimum average strength required or reduce the average 28 day strength by more than 5 percent when tested in accordance with BS 1881 when 10 cubes made of concrete with shells are compared with 10 cubes made of concrete with shells removed.

(j) Water Absorption

The coarse aggregate shall not have a water absorption of more than 2.5 per cent when tested as set out in BS 812.

(k) Organic Impurities

Fine aggregate shall be tested as set out in BS 1377 Test 8 and rejected if the percentage of organic matter exceeds 1 percent.

7.4 Aggregates for Mortar

Aggregates for mortar shall conform to BS 1200.

7.5 Delivery and Storage of Aggregates

Aggregates shall be delivered to Site in clean and suitable vehicles. Different types or sizes of aggregate shall not be delivered in one vehicle.

Each type or size of aggregate shall be stored in a separate bin or compartment having a base such that contamination of the aggregate is prevented. Dividing walls between bins shall be substantial and continuous so that no mixing of types or sizes occurs.

The storage of aggregates shall be arranged so that as far as possible rapid drying out in hot weather is prevented in order to avoid sudden fluctuations in water content. Storage of fine aggregates shall be arranged so that they can drain sufficiently before use in order to prevent fluctuations in water content of the concrete.

7.6 Water for Concrete and Mortar

Water for mixing or curing concrete or mortar shall not contain more than the following concentrations of impurities:

The sum of sulphates, alkali carbonates and bicarbonates	Max ppm
Chlorides	1000
Suspended solids	500
Other dissolved solids	2000
Seawater or brackish water shall not be used	2000

7.7 Design of Concrete Mixes for Structural Concrete

Classes of Concrete

The classes of structural concrete to be used in the Permanent Works shall be those shown on the Drawings. The classes are designated on Table 6.1.

CONCRETE CLASSES								
Class of Minimum		Maximum Water/		150mm cubes				
Concrete	Cement	Cement Ratios		Required Minimum				
	Content			Average 28 day strength (M.A.S)				
	Kg/m ³		r	N/mm ²				
		Α	B					
C20	180	0.61	-	20				
C25	200	0.59	-	25				
C30	230	0.57	-	30				
C35A	325	0.53	0.50	35				
C40	350	0.49	0.46	40				

Table 6.1

M.A.S = Required Minimum Average 28-day Strength

Concrete for water retaining shall have a maximum cement content of 400 kg/m3 and maximum water/cement ratios as column B above or as shown on the Drawings. Concrete for other structures shall have maximum water/cement ratios as column A above or as shown on the Drawings.

The coarse aggregate maximum size shall be 20 mm unless 10 mm or 40 mm are shown on the Drawings.

Design of Proposed Mixes

The Contractor shall design the mixes which he proposes to use in the Permanent Works to achieve acceptable workability and resistance to segregation during handling and placing. Mixes shall be designed in accordance with the requirements of BS 5328 and shall also comply with the following requirements:

- (a) The aggregate portion shall be well graded from the nominal maximum size of stone down to the 150-micron size.
- (b) The cement contents shall be as designated in Table 6.1 unless a higher cement content is required to meet the strength requirement.
- (c) The water/cement ratio shall be the minimum consistent with adequate workability but in any case, not greater than that shown in Table 6.1 taking due account of any water contained in the aggregates. The Contractor shall take into account that this requirement may need the inclusion of a workability agent in the mix.
- (d) The workability shall be consistent with ease of placing and proper compaction having regard to the presence of reinforcement and embedded items.
- (e) The crushing strength at 28 days as determined in accordance with Sub-Clause 6.4.3 shall not be less than the minimum average strength given in Table 6.1 plus 2 N/mm2.
- (f) The drying shrinkage determined in accordance with BS 1881 shall not be greater than 0.05 per cent.
- (g) Blinding concrete shall be Class C15 unless otherwise indicated on the drawings.

Trial Mixes with 150 mm test cubes

For each mix of concrete, the Contractor shall in the presence of a representative of the Engineer prepare three separate batches of concrete using the materials which have been approved for use in the Permanent Works and the mixing plant which he proposes to use for the Permanent Works.

Six test cubes shall be cast from each batch. The making, curing and testing of all test cubes shall comply with the requirements of BS 1881. The slump of the concrete carried out in accordance with BS 1881 shall be recorded.

Three cubes from each batch shall be tested for compressive strength at seven days and the remaining three at 28 days. The density of all the cubes shall be determined before the cubes are crushed.

The average value of the crushing strength of the nine cubes tested at 28 days less 2 N/mm2 shall be greater than the Minimum Average Strength given in Table 6.1 for the class of concrete tested.

If the 28-day strength determined as above is less than the minimum average strength shown in Table 6.1 plus 2 N/mm2 the mix shall be adjusted in order to comply. If adjustment of aggregate proportions does not increase the strength the water cement ratio shall be reduced.

If it is then necessary to increase the workability the use of a plasticity additive will be accepted. An increase in cement content will not normally be acceptable.

The average strength of the final nine trial mix 28-day cubes accepted by the Engineer shall be referred to thereafter as the "final trial mix strength". The Contractor shall carry out tests to determine the drying shrinkage of the concrete.

If the Engineer does not agree to a proposed concrete mix for any reason, the Contractor shall amend his proposals and carry out further trial mixes. No mix shall be used in the Permanent Works without the written consent of the Engineer.

Based on the results of the tests on the trial mixes, the Contractor shall submit full details of his proposals for mix design to the Engineer, including the type and source of each ingredient, the proposed proportions of each mix and the results of the tests on the trial mixes.

7.8 Workability

The workability of the fresh concrete should be such that the concrete is suitable for the conditions of handling and placing so that after compaction it surrounds all reinforcement, tendons and ducts and completely fills the formwork.

Workability should be assessed by means of the slump test, compacting factor test or VB consistometer test as appropriate.

7.9 Placing of Concrete

Consent for Placing

Concrete shall not be placed in any part of the Permanent Works until the Engineer's consent has been given in writing, and the Contractor shall give the Engineer at least 18 hours' notice of his intention to place concrete.

If concrete placing is not commenced within 24 hours of the Engineer's consent, the Contractor shall again request written consent as specified above.

Preparation of Surfaces to Receive Concrete

Excavated surfaces on which concrete is to be deposited shall be prepared as set out the Specification above.

Existing concrete surfaces shall be prepared as set out above. Before deposition of further concrete, they shall be clean, hard and sound and if required by the Engineer shall be wet but without any freestanding water.

Any flow of water into an excavation shall be diverted through proper side drains to a sump, or be removed by other suitable methods which will avoid washing away the freshly deposited concrete or any of its constituents. Any underdrains constructed for this purpose shall be completely grouted up when they are no longer required by a method agreed by the Engineer.

Placing procedures

All work shall be completed on each batch of concrete before its initial set commences and thereafter the concrete shall not be disturbed before it has set hard. No concrete that has partially hardened during transit shall be used in the Permanent Works and the transport of concrete from the mixer to the point of placing shall be such that this requirement can be complied with.

Concrete shall not be placed during rain which is sufficiently heavy or prolonged to wash mortar from coarse aggregate on the exposed faces of fresh concrete. Means shall be provided to remove any water accumulating on the surface of the placed concrete. Concrete shall not be deposited into such accumulations of water.

In drying weather, covers shall be provided for all fresh concrete surfaces which are not being worked on. Water shall not be added to concrete for any reason.

When concrete is discharged above its place of final deposition, segregation shall be prevented by the use of chutes, downpipes, trunking, baffles or other appropriate devices.

7.10 Compaction of Concrete

The concrete shall be fully compacted throughout the full extent of the placed layer. It shall be thoroughly worked against the formwork and around any reinforcement and other embedded items, without displacing them. Particular care shall be taken at arises and other confined spaces. Successive layers of the same pour shall be thoroughly worked together.

Concrete shall be compacted with the assistance of mechanical immersion vibrators, unless the Engineer agrees another method.

Immersion vibrators shall operate at a frequency of between 7000 and 10 000 cycles per minute. The Contractor shall ensure that vibrators are operated at pressures and voltages not less than those recommended by the manufacturer in order that the compactive effort is not reduced.

A sufficient number of vibrators shall be operated to enable the entire quantity of concrete being placed to be vibrated for the necessary period and, in addition, stand-by vibrators shall be available for instant use at each place where concrete is being placed.

Where the concrete contains aggregate with a nominal size of 75 mm or more, vibrators with a diameter of 100 mm or more shall be used.

Vibration shall be continued at each point until the concrete ceases to contract, a thin layer of mortar has appeared on the surface and air bubbles have ceased to appear. Vibrators shall not be used to move concrete laterally and shall be withdrawn slowly to prevent the formation of voids.

Vibration shall not be applied by way of reinforcement nor shall vibrators be allowed to touch reinforcement or other embedded items. The vibrators shall be inserted vertically into the concrete to penetrate the layer underneath at regular spacing which shall not exceed the distance from the vibrator over which vibration is visibly effective.

7.11 Curing of Concrete

General

Concrete shall be protected during the first stage of hardening from loss of moisture and from the development of temperature differentials within the concrete sufficient to cause cracking. The methods used for curing shall not cause damage of any kind to the concrete.

Curing shall be continued for as long as may be necessary to achieve the above objectives but in any case, for at least ten days or until the concrete is covered by later construction whichever is the shorter period.

The above objectives are dealt with in sub-clauses 7.9.2 and 7.9.3, but nothing shall prevent both objectives being achieved by a single method where circumstances permit.

The curing process shall commence as soon as the concrete is hard enough to resist damage from the process, and in the case of large areas or continuous pours shall commence on the completed section of the pour before the rest of the pour is finished.

Details of the Contractor's proposals for curing concrete shall be submitted to the Engineer before the placing of concrete commences in the Permanent Works.

Loss of Moisture

Exposed concrete surfaces shall be closely covered with impermeable sheeting, properly secured to prevent its removal by wind and the development of air spaces beneath it. Joints in the sheeting shall be lapped by at least 300 mm.

If for some reason it is not possible to use impermeable sheeting, the Contractor shall keep the exposed surfaces continuously wet by means of a water spray or by covering with a water absorbent material which is kept wet, unless this method conflicts with Clause 7.9.3. Water used for curing shall be of the same quality as that used for mixing as stated in Clause 5.3. Formed surfaces may be cured by retaining the formwork in place for the required curing period.

If the use of the foregoing methods is inappropriate, surfaces which will not have further concrete bonded to them and which are not to receive an application of a finish may be cured by the application of a curing compound having an efficiency index of at least 90 per cent when tested.

Curing compounds shall contain a fugitive dye to enable the extent of the spread to be seen easily. Curing compound used on surfaces exposed to the sky shall if instructed by the Engineer, contain sufficient finely divided flake aluminium in suspension to produce a complete coverage of the surface with a metallic finish when applied at the rate recommended by the manufacturer.

Curing compounds shall become stable and impervious to the evaporation of water from the concrete surface within 60 minutes of application. The material shall not react chemically with the concrete and shall not crack, peel or disintegrate within three weeks after application.

If instructed by the Engineer, the Contractor shall, in addition to the curing provisions set out above provide a suitable form of shading to prevent the direct rays of the sun reaching the concrete surfaces for at least the first four days of the curing period.

7.12 Protection of Fresh Concrete

Freshly placed concrete shall be protected from rainfall and from water running over the surface until it is sufficiently hard to resist damage from this cause.

No traffic shall be allowed on any concrete surface until such time as it is hard enough to resist damage by such traffic. Concrete placed in the Permanent Works shall not be subjected to any structural loading until it has attained at least its minimum average strength as defined in Clause 7.4.

If the Contractor desires to impose structural loads on newly-placed concrete, he shall make at least three test cubes and cure them in the same conditions as the concrete they represent. These cubes shall be tested singly at suitable intervals in order to estimate the time at which the minimum average strength is reached.

Concreting in Hot Weather

General

The Contractor shall prevent damage to concrete arising from exposure to extreme temperatures, and shall maintain in good working order all plant and equipment required for this purpose.

In the event that conditions become such that even with the use of the equipment the requirements cannot be met, concrete placing shall immediately cease until such time as the requirements can again be met.

Concrete Placing in Hot Weather

During hot weather the Contractor shall take all measures necessary to ensure that the temperature of concrete at the time of placing in the Permanent Works does not exceed 30°C and that the concrete does not lose any moisture during transporting and placing. Such measures may include but are not necessarily limited to the following:

- (a) Shielding aggregates from direct sunshine.
- (b) Sun shields on mixing plants and transporting equipment.
- (c) Cooling the mixing water. If ice is used for this purpose, it shall be in flake form. Lump ice shall not be allowed to enter the tank supplying the mixer drum.
- (d) Covering skips closely with polythene sheet so that the latter is in contact with the concrete.
- (e) Painting all equipment and sunshields white.
- (f) Nightwork, provided that the Engineer has no other reason for refusing permission for nightwork.

Areas in which concrete is to be placed shall be shielded from direct sunshine and rock or concrete surfaces shall be thoroughly wetted if instructed by the Engineer to reduce absorption of water from the concrete placed on or against them.

After concrete in any part of an area has been placed, the specified curing process shall be commenced as soon as possible. If any interval occurs between completion of placing and start of curing, the concrete shall be closely covered during the interval with polythene sheet to prevent loss of moisture.

The Engineer shall have power to order the suspension of concrete production and/or laying when the shade temperature exceeds 30°C if he is not satisfied that the precautions being taken or intended by the Contractor are adequate to prevent the temperature of the concrete rising above 30°C. The possession of this power by the Engineer shall not relieve the Contractor of any of his responsibilities.

7.13 Finishes on Free Surfaces

Horizontal or nearly horizontal surfaces which are not cast against formwork shall be finished to the class shown on the Drawings and defined hereunder.

Ul Finish

All surfaces on which no higher class of finish is called for on the Drawings or instructed by the Engineer shall be given a U1 finish.

The concrete shall be levelled and screeded to produce a uniform plain or ridged surface; surplus concrete being struck off by a straightedge immediately after compaction.

7.14 Tolerances

All parts of formed concrete surfaces shall be in the positions shown on the Drawings within the tolerances set out in Table 5.2.

In cases where the Drawings call for tolerances other than those given in Table 5.2 the Drawings shall rule.

Where precast units have been set to a specified tolerance, further adjustments shall be made as necessary to produce a satisfactory straight or curved line. When the Engineer has approved the alignment, the Contractor shall fix the units so that there is no possibility of further movement.

Class of Finish	Tolerances in mm (See Note 1)					
	А	В	С			
F1	10	10	+25 to -10			
F2	5	10	+ or -15			
F3	2	5	+ or -10			

TABLE 5.2Tolerances

Note 1: The tolerances A, B and C given in the table are defined as follows:

A is an abrupt irregularity in the surface due to misaligned formwork or defects in the face of the formwork.

B is a gradual deviation from a plane surface as indicated by a straightedge 3 m long. In the case of curved surfaces, the straightedge shall be replaced by a correctly shaped template.

C is the amount by which the whole or part of a concrete face is displaced from the correct position shown on the Drawings.

8. Remedial Work to Defective Surfaces

If on stripping any formwork the concrete surface is found to be defective in any way, the Contractor shall make no attempt to remedy such defects prior to the Engineer's inspection and the receipt of any instructions which the Engineer may give.

Defective surfaces shall not be made good by plastering.

Areas of honeycombing which the Engineer agrees may be repaired shall be cut back to sound concrete or to 75 mm whichever is the greater distance. In the case of reinforced concrete the area shall be cut back to at least 25 mm clear distance behind the reinforcement or to 75 mm, whichever is the greater distance. The cavity shall have sides at right-angles to the face of the concrete. After cleaning out with water and compressed air, a thin layer of cement grout shall be brushed on to the concrete surfaces in the cavity and it shall then be filled immediately with concrete of the same class as the main body but with aggregate larger than 20 mm nominal size removed. A form shall be used against the cavity, provided with a lip to enable concrete to be placed. The form shall be filled to a point above the top edge of the cavity.

After seven days the lip of concrete shall be broken off and the surface ground smooth.

Surface irregularities which are outside the limits of tolerance set out in Clause 5.6 shall be ground down in the manner and to the extent instructed by the Engineer.

2. PRICED ACTIVITY SCHEDULE

Construction of Parking Area & Beach Enclosure at Pointe aux Piments Public Beach

Priced Activity Schedule

Item No.	Brief Description of Works	Unit of measure	Qty	Unit Price (Rs)	Total Price (Rs)
1.0	To allow for costs related to Preliminaries and General Items requirements including the following but not limited to Setting out of the works, Site management, Contractor's Tools, plants, stacking and storage of materials, Insurances, Watchmen, Light and electricity, warning tapes, Police requirements, etc.	Sum			
2.0	Provision of signboard indicating Project Name, Name of Client and Name of Contractor as illustrated in drawing No. BA-PAP-P-01.	No.	1		
3.0	General cleaning of site upon completion of works, including demolition and construction debris.	Sum			
4.0	Site clearance, felling of trees, uprooting of stumps and carting away of wooden logs at nearest Forestry Station.	No.	18		
5.0	Excavation works				
5.1	Excavation in sand, soil or rock 670mm deep or more and level to receive crusher run. Rate to include transport to any distance, stock pile, levelling and any miscellaneous cost including compaction to 95% BS Heavy and leveling of the area under excavation. Coral sand to be spread as directed by Employer's representatives and excess spoil to be carted away.	m ³	350		
5.2	Excavation in sand, soil or rock 375mm deep and 300mm wide to receive blinding layer for RC Beam. Rate to include removal of tree roots & stumps and carting away of debris. Rate to also include cutting and carting away of excess concrete at junction of parking area and footpath.	m ³	3.5		
6.0	Construction of RC Beam at entrance and exit accesses Level and compact bottom of trenches, bases to receive blinding 95% MOD AASHTO. Formwork in class 2 finish. Shutting from any level and including rebates or grooves formers. Casting of 75mm thick blinding concrete, in situ concrete grade of 15N/mm ² , 14-20mm aggregate to bases. Reinforced in-situ concrete design mix grade 30N/mm ² , 14-20mm aggregate vibrated, as per on drawing no. BA-PAP-P-03 and BA-PAP- P-05.	m	29		
7.0	Allow for the supply and fixing of kerbs type K1 as per drawing no. BA-PAP-P-03 and BA-PAP-P-05 inclusive of all excavation, concrete haunching, levelling works and concrete works.	m	127		

8.0	Fill with material to level plot to the required formation level. Supply and lay 250mm thick compacted spalls (50-100) in layers not exceeding 125mm thick.	m ²	520	
9.0	Fill with material to level plot to the required formation level. Supply and lay 250mm thick compacted crusher run (0-31.5mm) in layers not exceeding 125mm thick. Rate to include compaction to 95% BS Heavy Compaction.	m ²	520	
10.0	Supply, lay and compact 50mm thick rocksand (0.4) on crusher run to receive evergreen blocks.	m ²	520	
11.0	Supply and placing of evergreen blocks of dimensions 600mm x 400mm x 120mm thick. Rate shall include for leveling works and any associated concrete works required to line and levels as indicated by the Employer's representatives.	m ²	520	
12.0	Allow for supply and spread of 2 coats of road marking paint (white chlorinated) 80 mm wide to demarcate parking slots as per drawing no. BA-PAP-P-03.	m	70	
13.0	Allow for supply and spread of 2 coats of road marking paint (white chlorinated) 300 mm wide for STOP LINE at exit access as per drawing no. BA-PAP-P-03.	m	10	
14.0	Provision of Crushed Corals (5-10mm) to be used as in fill material; rate to include supply, spread and compact to the required formation level.	m ³	23	
15.0	Landscaping works			
15.1	Scarify 150mm thick in sand and level plot to receive topsoil in planters.	m ²	50	
15.2	Supply and lay 150mm thick topsoil in planters.	m ²	50	
15.3	Supply and planting of Bottle Palm Trees (trunk diameter of approximately 225mm). Rate quoted shall also include for backfilling and levelling with sand, daily maintenance and watering of same over a duration of 6 months as from the completion date.	nr	60	
16.0	Supply and fix directional signs with galvanized metal pole of diameter 50mm and thickness 2.0mm as shown on drawing no. BA-PAP-P-04. Rate to include excavation in soil, concrete works, associated fittings, levelling of metal pole, backfilling and levelling of excavated area and carting away of spoil as directed by Employer's representatives. Note: No entry and STOP signages to be mounted on same pole as shown in drawing. No Entry and One-way signages to be mounted on same pole.			
16.1	One way sign	nr	2	
16.2	No Entry sign	nr	4	
16.3	STOP sign	nr	2	
16.4	Parking	nr	3	
16.5	Painting of metal poles with 1 coat of etching primer, 1 coat of undercoat and 2 coats of enamel (gloss finish) white paint.	Sum		
17.0	Construction of Stone Masonry Wall			
17.1	Construction of Stone Masonry Wall as per drawings BA-PAP-P-03 and BA-PAP-P-05. Rate shall include for excavation in any materials.	m	44	

	levelling of subgrade, casting of 50mm thick blinding concrete G15, casting of strip footing and coping, inclusive of formwork, concrete G30 and reinforcement, sound undecomposed blue basalt stone, cement mortar (1:3), rendering of coping, etc.				
18.0	Composite Plastic Parapet				
18.1	Supply and fixing of parapet made up of composite plastic materials, as per drawings BA-PAP-P-02 and BA-PAP-P-06. Rate shall include for excavation in any materials, levelling, casting of mass concrete G30	m	85		
		CON	FINGE	NCY SUM	50,000
	5	SUB TOTAL	(Exclu	ding VAT)	
VAT @ 15%					
	GRA	AND TOTAI	L (Inclu	ding VAT)	

Priced Activity Schedule Authorised By:

Name:	Signature:
Position:	Date:
Contact Number:	Email Address:
Name of Company:	
Seal of Company:	

LIST OF DRAWINGS

- 1. BA-PAP-P-01 Signboard details
- 2. BA-PAP-P-02 Location Plan
- 3. BA-PAP-P-03 Parking Layout
- 4. BA-PAP-P-04 Signages
- 5. BA-PAP-P-05 Parking details
- 6. BA-PAP-P-06 Parapet details

Note: Drawings are at **ANNEX**

Construction of Parking Area & Beach Enclosure at Pointe aux Piments Public Beach

SN	Category of Worker	Years of Service	Daily Basic Wage/Rs	Monthly Basic Wage/Rs
1	<u>Supervisor – Site Agent (minimum x 1)</u>			
	Employee 1			
	Employee 2 (if any)			
2	Leading Hand – Foreman (minimum x 2)			
	Employee 1			
	Employee 2			
	Employee 3 (if any)			
3	Stone Mason (minimum x 1)			
	Employee 1			
	Employee 2 (if any)			
4	<u>Skilled Employee – Mason or others (minimum x 2 of either</u> Superior Grade, Grade 1 or Grade 2)			
	Employee 1 Grade			
	Employee 2 Grade			
	Employee 3 Grade (if any)			
	Employee 4 Grade (if any)			
5	Multiskilled employee (if any)			
	Employee 1, skills in			
	Employee 2, skills in			
6	<u>Unskilled Person – General Worker (minimum x 5)</u>			
	Employee 1			
	Employee 2			
	Employee 3			
	Employee 4			
	Employee 5			
	Employee 6 (if any)			
	Employee 7 (if any)			

Bidders' capabilities to remunerate their workers in compliance with the relevant remuneration orders.

Note:

- i. Bidders are required to mandatorily fill this form for assessment in compliance with relevant remuneration orders pursuant to Directive no. 68 of the Procurement Policy Office
- ii. The prices included in this form should be included in the total amount quoted in the priced activity schedule

C. INSTRUCTIONS TO BIDDERS

1. Submission of Quotations

- 1.1 Quotations comprising of Section A and the Priced Activity Schedule in Section B must be submitted as stated in the RFQ: by hand in sealed envelopes marked in the lower left hand corner of the envelope "SEALED QUOTATION FOR Construction of Parking Area & Beach Enclosure at Pointe aux Piments public beach BA/RFQ/03/2023-24 and deposited in a Tender Box at 7th Floor Ebène Heights Building, Plot 34, Ebène Cybercity, Ebène.
- 1.2 All sections of a RFQ shall be filled; where a section is not applicable, the letters N/A shall mean NOT Applicable and the letters N/Q shall mean NO Quote.

2. Eligibility Criteria

To be eligible to participate in this bidding exercise, Bidder should:

- (a) be duly registered with the CIDB under the grade that would allow him to perform the value of works for which he is submitting his bid in the field of either Building Construction Works or Civil Engineering Works
- (b) have a Business Registration Card
- (c) a Valid Trade Licence.

Qualification Criteria

- (i) The Bidder should have at least two years experience in building / civil engineering works and should submit documentary evidence. The Authority may contact the Employer of the bidder for further information on those contracts
- (ii) The bidder should have carried out two projects of similar nature of the past five years
- 2.1 In accordance with CIDB Act in force, Contractors have the statutory obligation to be duly registered with the Construction Industry Development Board (CIDB) to undertake works accordingly.

Note: Bidders may consult the website of the CIDB <u>cidb.govmu.org</u> for further details concerning registration of contractors

General Instructions

- 1. Price quoted should be inclusive of all necessary costs, taxes and transportation cost.
- 2. Non- compliance with the related specifications may lead to the cancellation of the award and forfeiture of any claim for complete.
- 3. The Bidder to arrange its own security & safety measures during the execution of the work.

3. Selection and Decision

3.1 Selection shall be based on the lowest price offered, subject to compliance with scope of works, specifications, quality standards, acceptable completion period in accordance with the General Terms and Conditions

4. Margin of Preference (as per latest directive issued from PPO)

1. A Margin of Preference for employment of local manpower shall be applicable as follows: (a) For International Bidding

A bidder, incorporated in the Republic of Mauritius and employing a minimum of 80% or more of local manpower of the total man-days deployed for the execution of a Works contract, shall be eligible for a preference of 15 %.

(b) For National Bidding

(i) A local Small and Medium Enterprise, having an annual turnover not exceeding Rs 100M or a joint venture consisting of local Small and Medium Enterprises having an aggregate annual turnover not exceeding Rs 100M and employing a minimum of 80% or more of local manpower of the total man-days deployed for the execution of a Works contract, shall be eligible for a Margin of Preference of 20 %.

(ii) Any bidder incorporated in the Republic of Mauritius not satisfying the conditions mentioned in (i) above but employing a minimum of 80% or more of local manpower of the total man-days deployed for the execution of a Works contract, shall be eligible for a Margin of Preference of 10 %.

Note: Local manpower shall mean Mauritian nationals, who are on the payroll of the contractor as well as those of subcontractors executing works on the site.

2. Preference Security

(a) For contracts above Rs 100M, the selected bidder having benefitted from the application of the Margin of Preference for employment of local manpower shall submit a preference security in the form of a bank guarantee from a local bank.

(b) For contracts up to Rs 100M, the public body shall, at the selected bidder's option, either retain money from progressive payments to constitute the preference security or request a security in the form of a bank guarantee.

(c) The preference security shall serve as a guarantee for the contractor to fulfill its obligation to employ a minimum of 80% or more of local manpower of the total man-days deployed for the execution of the works.

(d) The amount for the preference security shall be the difference between the price quoted by the selected bidder and that of the lowest evaluated bid which would have been selected for award of contract if the said Margin of Preference was not applicable.

(e) The preference security shall be forfeited by the public body in case of failure on the part of the Contractor to employ at least 80 % of the local manpower in the execution of the works. The defaulting contractor may also be liable to debarment or disqualification under the Public Procurement Act 2006.

3. Contractor's monitoring for employment of local manpower

The contractor, having benefitted from the Margin of Preference, shall from time to time, as may reasonably be requested by the public body, submit reports on the status of employment of local manpower. At the time of works completion, as defined in the bidding document, the contractor shall submit a certified audit report to the public body to substantiate the actual percentage of local manpower employed throughout the execution of the works.

5. Rights of the Employer

The Employer shall have the right to (a) ask for clarifications at time of evaluating quotations, (b) split the contract on an item basis or (c) reject all quotations. The Employer shall not be bound to accept the lowest or any quotation.

6. Notification of Award and Debriefing

- 6.1 The Employer shall after award of contract, exceeding Rs 1 million, promptly inform all unsuccessful bidders in writing of the name and address of the successful bidder and the contract amount.
- 6.2 Furthermore, the Employer shall attend to all requests for debriefing, for contract exceeding Rs 1 million, made in writing, within 30 days the unsuccessful bidders are informed of the award.

D. CONDITIONS OF CONTRACT (to be customised by the Employer)

Any resulting contract shall be placed by means of a Works Order and shall be subject to the General Conditions of Contract (GCC), Ref: **W/RFQ-GCC10/12-21**, for the Procurement of Works (available on website <u>ppo.govmu.org</u>) except where modified by the Particular Conditions of Contract specified hereunder.

- 1. Site: The site is located at Pointe aux Piments (Nr Cemetery) public beach
- 2. Start Date: The start date shall be within 7 days as from the signature of contract agreement
- 3. Works: The Works consist of Construction of Parking Area and Beach Enclosure at Pointe aux Piments public beach.
- 4. **Insurances**: Except for the cover mentioned in 4 (a) hereunder, the other insurance covers shall be in the joint names of the Contractor and the Employer and the minimum insurance amounts shall be:
- (a) for the **Works, Plant and Materials** for the full amount of the Works, professional fee and 15% VAT
- (b) for **loss or damage to Equipment** for the full replacement value of the equipment that the contractor intends to use on site until the taking over by the Employer;
- (c) for **loss or damage to property** (except the Works, Plant, Materials, and Equipment) in connection with Contract for an amount representing the value of the properties that are exposed to the action of the contractor in the execution of the works. It will extend to the property of the Procuring Entity as well: **Rs 5 M**
- (d) for personal injury or death:
 - *i.* of **the Contractor's employees**: Minimum **Rs 5 million**, or any amount which the Contractor deems fit as adequate insurance to cover for its employees for any claim arising in the execution of the Works and shall indemnify the Employer against any claims or proceedings which may be made on the said Employer.
- *ii.* of other people: **Rs 10 million** for Third Party extended to the Employer and its representatives;

The Contractor shall choose to take the insurance covers indicated above as separate covers or a combination of the Contractor's All Risks coupled with the Employer's liability and First Loss Burglary, after approval of the Employer. All insurance covers shall be of nil or the minimum possible deductibles at sole expense of the contractor.

- 5. Intended Completion Date: Within 90 days from the start date
- 6. Possession of Site: The site possession date shall be the start date
- 7. **Defects Liability Period:** The defects liability period is **6 months**.

- Liquidated Damages: The liquidated damages for the whole of the Works are Rs 3000 (excl. VAT) per day. The maximum amount of liquidated damages for the whole of the Works is 10% of the value of works completed excluding VAT.
- 9. **Prices:** Prices quoted shall be firm and fixed during validity period of quotation and for execution of contract. The prices quoted shall include all costs, where applicable, such as transportation to the location for delivery stated in the RFQ, insurance, or any other associated costs.
- 10. Advance Payment: No advance payment shall be applicable for this contract.
- 11. **Payment:** The Employer undertakes to effect payment within 28 days after completion of works to the satisfaction of the Employer and subject to the Contractor submitting all required documents. Final payment shall be adjusted to reflect any noncompliance in the execution of the contract.
- 12. **Health and Safety:** The Contractor shall execute the works in compliance with the provisions of the Occupational Health and Safety Act 2005 pursuant to his obligation to ensure the safety of its employees and third parties.
- 13. Variation: Variation, if any, in the works shall be mutually agreed upon after a review of the work plan prior to start of works. Any variation in the works execution shall be governed as per the provision in the Public Procurement Act.
- 14. **Compensation event:** There shall be no compensation event justifying extension of time except for Force Majeure, delays in handing over of site and such other causes attributable to the Employer that has a direct incidence on work start or progress.
- 15. **Retention money:** The Employer shall withhold 5 % of the value of works completed as retention money which shall be released after 6 months from Date of Completion subject to rectification of any defect(s) to the satisfaction of the Employer. In case the contractor fails to correct any further defect(s) appearing up to the end of the Defect Liability Period, the Project Manager shall assess the cost of having such defect(s) corrected and recover the money from the Contractor.
- 16. **Correction of defects:** The Employer shall give notice to the Contractor of any defects in the works. Every time notice of a defect is given, the Contractor shall correct the notified defect within the length of time specified by the Employer's notice. If the Contractor has not corrected a defect within the time specified in the Employer's notice, the Employer will assess the cost of having the defect corrected and deduct same amount from money due to the Contractor.

17. Labour Clause

The remuneration and other conditions of work of the employees of the Contractor shall not be less favourable than those established for services of the same character in the trade concerned-(i) by collective agreement applying to a substantial proportion of the employees and employers in the trade concerned; (ii) by arbitration awards; or (iii) by Remuneration Orders.

- 18. **Termination:** The Beach Authority may terminate the contract, by not less than thirty (30) days' written notice of termination to the Contractor, if the Contractor does not remedy a failure in the performance of its obligations under the Contract, the Contractor becomes insolvent or bankrupt or the Contractor is unable to perform a material portion of the works for a period of 60 days as the result of Force Majeure or if the Beach Authority wishes to do so for its convenience.
- 19. Assignment: The Contractor shall not assign, transfer, pledge or make other disposition of this Contract or any part thereof, or any of the Contractor's rights, claims or obligations under this Contract except with the prior written consent of the Employer.
- 20. **Removal and replacement of personnel:** The Contractor shall at the request of the Employer and at no additional cost remove and replace any personnel reported for misconduct or poor performance by another person of similar qualification and experience.
- 21. **Settlement of Disputes:** The Parties shall endeavor to settle amicably any dispute, controversy or claim arising out of, or relating to this Works Order or the breach, termination or invalidity thereof. Unless, any such dispute, controversy or claim between the Parties is settled amicably within thirty (30) days after receipt by one Party of the other Party's request for such amicable settlement, such dispute, controversy or claim shall be referred to the competent court of Mauritius.
- 22. With regards to the colourful designs please consult the Website of the Beach Authority on http://www.beachauthority.mu







s	Date: March 20.	22	Scale NTS
	Project Construction of Parking Area at Pointe aux Piments Public beach		
		Sheet BA	A-PAP-P-05



Date Signature Checked

<u>LEGEND</u>	
Lanascaping Area	
Reinforced Concrete Beam 300 mm x 300mm	
NE No Entry sign on Ø 50 mm Galv. metal pole	
o IN 50mm Galv. metal pole	
<u>ST</u> Stop sign on Ø50 mm Galv. metal pole	
- P Parking sign on Ø 50 mm Galv. metal pole	
Date: March 2022 S DUT	cale 200
Project: Construction of Parking Area at Pointe aux Piments P Sheet BA-F	Public beach PAP-P-03



TAILS Date:March 201		Date:March 2022		Scale NTS
	Project:			
Construction of Parking Area at Pointe aux Piments Public			Public beach	
		S	heet BA-	PAP-P-01



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Data, March 20	22	Scalo	
Project		NTS	
Construction of Parking Area at Pointe aux Piments Public beach			
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