
BIDDING DOCUMENTS

Issue Date: 26 November 2019

OPEN NATIONAL BIDDING

for

Procurement of Upgrading of Entrance and Exit Accesses at:

- (i) Le Morne Public Beach*
- (ii) Flic en Flac Public Beach &*
- (iii) Poste La Fayette & Belle Mare Public
Beaches*

Procurement Reference No: BA/OAB/02/2019-20

**Project: Upgrading of Entrance and Exit Accesses
on Public Beaches**

BEACH AUTHORITY

Standard Bidding Document

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PART 1 – Bidding Procedures

Section 1 - Instructions to Bidders

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Section I - Instructions to Bidders

A. General

1. **Scope of Bid**
 - 1.1 The Public Body as defined¹ in Section II “Bidding Data Sheet” (**BDS**) also referred to herein as Employer invites bids for the construction of Works, as **described in the BDS** and Section VII, “Particular Conditions of Contract” (**PCC**).

The name and identification number of the Contract are **provided in the BDS and the PCC**.
 - 1.2 The successful Bidder shall be expected to complete the Works by the Intended Completion Period **specified in the BDS**.
 - 1.3 Throughout these bidding documents, the terms:
 - (a) “writing” means any typewritten or printed communication, including e-mail and facsimile transmission,
 - (b) “day” means calendar day, and
 - (c) Singular also means plural.
2. **Source of Fund**
 - 2.1 The Works shall be financed by the Public Body’s own budgetary allocation, **unless otherwise stated in the BDS**.
3. **Challenge and Appeal**
 - 3.1 Unsatisfied bidders shall follow procedures prescribed in Regulations 48, 49 and 50 of the Public Procurement Regulations 2008 to challenge procurement proceedings and award of procurement contracts or to file application for review at the Independent Review Panel.
 - 3.2 Addresses to forward Challenges or Application for Review are **specified in the BDS**.
4. **Fraud and Corruption**
 - 4.1 The Government of the Republic of Mauritius requires that bidders/suppliers/contractors, participating in procurement in Mauritius, observe the highest standard of ethics during the procurement process and execution of contracts.
 - 4.2 Bidders, suppliers and public officials shall be aware of the provisions stated in sections 51 and 52 of the Public Procurement Act which can be consulted on the website of the Procurement Policy Office (PPO): ppo.govmu.org

¹ See Section IV, “General Conditions of Contract,” Clause I. Definitions.

- 4.3 The Employer will reject a proposal for award if it determines that the Bidder recommended for award has, directly or through an agent, engaged in corrupt, fraudulent, collusive, coercive or obstructive practices in competing for the contract in question;

For the purposes of this Sub-Clause:

- (i) “corrupt practice” is the offering, giving, receiving or soliciting, directly or indirectly, of anything of value to influence improperly the actions of another party;
 - (ii) “fraudulent practice” is any act or omission, including a misrepresentation, that knowingly or recklessly misleads, or attempts to mislead, a party to obtain a financial or other benefit or to avoid an obligation;
 - (iii) “collusive practice” is an arrangement between two or more parties designed to achieve an improper purpose, including to influence improperly the actions of another party;
 - (iv) “coercive practice” is impairing or harming, or threatening to impair or harm, directly or indirectly, any party or the property of the party to influence improperly the actions of a party;
 - (v) “obstructive practice” is deliberately destroying, falsifying, altering or concealing of evidence material to the investigation or making false statements to investigators in order to materially impede an investigation into allegations of a corrupt, fraudulent, coercive or collusive practice; and/or threatening, harassing or intimidating any party to prevent it from disclosing its knowledge of matters relevant to the investigation or from pursuing the investigation
- 4.4 The Employer commits itself to take all measures necessary to prevent fraud and corruption and ensures that none of its staff, personally or through his/her close relatives or through a third party, will in connection with the bid for, or the execution of a contract, demand, take a promise for or accept, for him/herself or third person, any material or immaterial benefit which he/she is not legally entitled to. If the Employer obtains information on the conduct of any of its employees which is a criminal offence under the relevant Anti-Corruption Laws of Mauritius or if there be a substantive suspicion in this regard, he will inform the relevant authority (ies) and in addition can initiate disciplinary actions. Furthermore, such bid shall be rejected.

- 5. Eligible Bidders**
- 5.1 (a) In accordance with CIDB Act 2008, Contractors currently operating in the construction industry have the statutory obligation to be registered with the Construction Industry Development Board (CIDB) accordingly.
- (b) Subject to paragraph (e), Foreign contractors as defined in the CIDB Act will have to apply for and obtain a Provisional Registration prior to bidding for this project. If the contract is awarded to the foreign contractor the latter shall have to apply for and obtain a Temporary Registration before starting the project.
- (c) Contractors whether local or foreign under an existing or intended joint venture will be eligible as a joint venture if, in addition to their respective individual registration, they obtain a Provisional Registration for the joint venture prior to bidding for this project. If an existing or intended joint venture is awarded the contract it shall have to apply for a Temporary Registration prior to starting the project.
- (d) Sub-contractors undertaking works for value Rs 500 000 or above are subject to registration as applicable to Contractors.
- (e) Paragraph (b) shall not apply to Foreign contractors who have been carrying construction works in the construction industry during the 20 years preceding 01 March 2017; and where at least two-thirds, or such other percentage as may be prescribed, of the total number of its or his employees are as citizens of Mauritius.
- (f) A Foreign contractor referred to in paragraph (e) shall, for the purpose of registration, make an application with the CIDB and obtain a valid registration certificate prior to bidding for this project.
- (g) Bidders are strongly advised to consult the website of the CIDB cidb.govmu.org for further details concerning registration of contractors.
- 5.2 (a) Subject to ITB 5.6, a Bidder, and all parties constituting the Bidder, may have the nationality of any country except in the case of open national bidding where the bidding documents may limit participation to citizens of Mauritius or entities incorporated in Mauritius, if so qualified in the BDS.
- (b) Bidder may be natural person, private entity, or government-owned entity or any combination of them in the form of a joint venture.
- (c) Bids submitted by a joint venture of two or more firms as partners shall comply with the following requirements, unless

otherwise stated in the **BDS**:

- (i) the Bid shall include all the information listed in ITB Sub-Clause 6.2 below for each joint venture partner;
- (ii) the Bid shall be signed so as to be legally binding on all partners;
- (iii) the Bid shall include a copy of the agreement entered into by the joint venture partners defining the division of assignments to each partner and establishing that all partners shall be jointly and severally liable for the execution of the Contract in accordance with the Contract terms; alternatively, a Letter of Intent to execute a joint venture agreement in the event of a successful bid shall be signed by all partners and submitted with the bid, together with a copy of the proposed agreement;
- (iv) one of the partners shall be nominated as being in charge, authorized to incur liabilities, and receive instructions for and on behalf of any and all partners of the joint venture; and
- (v) the execution of the entire Contract, including payment, shall be done exclusively with the partner in charge.

5.3 A Bidder shall not have a conflict of interest. All Bidders found to have a conflict of interest shall be disqualified. A Bidder may be considered to have a conflict of interest with one or more parties in this bidding process, if :

- (a) they have a controlling partner in common; or
- (b) they receive or have received any direct or indirect subsidy from any of them; or
- (c) they have the same legal representative for purposes of this bid; or
- (d) they have a relationship with each other, directly or through common third parties, that puts them in a position to have access to information about or influence on the Bid of another Bidder, or influence the decisions of the Employer regarding this bidding process; or
- (e) a Bidder participates in more than one bid in this bidding process. Participation by a Bidder in more than one Bid will result in the disqualification of all Bids in which the party is involved. However, this does not limit the inclusion of the same subcontractor in more than one

bid; or

- (f) a Bidder or any of its affiliates participated as a consultant in the preparation of the design or technical specifications of the contract that is the subject of the Bid; or
- (g) a Bidder, or any of its affiliates has been hired (or is proposed to be hired) by the Employer as Engineer for the contract.

5.4 (a) A bidder that is under a declaration of ineligibility by the Government of Mauritius in accordance with applicable laws at the date of the deadline for bid submission and thereafter shall be disqualified

(b) Bids from contractors appearing on the ineligibility lists of African Development Bank, Asian Development Bank, European Bank for Reconstruction and Development, Inter-American Development Bank Group and World Bank Group shall be rejected.

Links for checking the ineligibility lists are available on the PPO's website: ppo.govmu.org

5.5 Government-owned enterprises in the Republic of Mauritius shall be eligible only if they can establish that they are legally and financially autonomous and operate under commercial law, and that they are not a dependent agency of the Government.

6. Qualifications of Bidders

6.1 All bidders shall provide in Section III, a preliminary description of the proposed work method and schedule, including drawings and charts, as necessary.

6.2 Bidders shall include the information and documents listed hereunder with their bids, unless otherwise **stated in the BDS**. If, after opening of bids, it is found that any document is missing, the Employer may request the submission of that document subject to clause 30. The non-submission of the documents by the Bidder within the prescribed period may lead to the rejection of its bid.

- (a) valid registration certificate with the CIDB;
- (b) copies of original documents defining the constitution or legal status, place of registration, and principal place of business of the Bidder;
- (c) major items of construction equipment proposed to carry out the Contract;
- (d) qualifications and experience of key site personnel and technical personnel proposed for the contract;

- (e) report on the financial standing of the Bidder for the last three years, such as certified copies of Financial Statements/Audited Accounts as filed at the Registrar of Companies before the deadline set for submission of bids;
 - (f) evidence of adequacy of cash-flow capital for this Contract (access to line(s) of credit and availability of other financial resources);
 - (g) authority to seek references from the Bidder's bankers;
 - (h) information regarding any litigation, current or during the last five years, in which the Bidder was/is involved, the parties concerned, the issues involved, the disputed amounts, and awards; and
 - (i) proposals for subcontracting components of the Works amounting to more than 10 percent of the Contract Price.
- 6.3 To qualify for award of the Contract, bidders shall meet the following minimum qualifying criteria:
- (a) 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
 - (b) registered with the CIDB under the class(es) and field of specialisation **specified in the BDS**;
 - (c) proposals for the timely acquisition (own, lease, hire, etc.) of the essential equipment **listed in the BDS**;
 - (d) a Contract Manager/Supervisor with five years' experience in works of an equivalent nature and volume, including no less than three years as Manager or as otherwise **specified in the BDS**; and
 - (e) liquid assets and/or credit facilities, net of other contractual commitments and exclusive of any advance payments which may be made under the Contract, of no less than the amount **specified in the BDS**.²

Pending litigations against the Applicant or any partner of a Joint Venture may result in Disqualification.

B. Contents of Bidding Document

7. Sections of Bidding

- 7.1 The Bidding Document consists of all the Sections indicated below, and should be read in conjunction with any Addenda

² Usually the equivalent of the estimated payments flow over 4-6 months at the average (straight line distribution) construction rate. The actual period of reference shall depend on the speed with which the Government shall pay the Contractor's monthly certificates.

- Document** issued in accordance with ITB 10.
- Section I - Instructions to Bidders (ITB)
 - Section II- Bidding Data Sheet
 - Section III - Bidding Forms
 - Section IV - Evaluation Criteria
 - Section V - Employer's Requirements
 - Section VI – General Conditions of Contract
 - Section VII- Particular Conditions of Contract
 - Section VIII - Contract Forms
- 7.2 The Invitation for Bids issued by the Employer is not part of the Bidding Document.
- 8. Clarification of Bidding Document**
- 8.1 A prospective Bidder requiring any clarification of the Bidding Document shall contact the Employer in writing at the Employer's address **indicated in the BDS**.
- The Employer will respond in writing to any request for clarification, provided that such request is received 15 days prior to the deadline for submission of bids.
- Should the Employer deem it necessary to amend the Bidding Document as a result of a request for clarification, it shall do so following the procedure under ITB 10.
- 9. Site visit/Pre-bid meeting**
- 9.1 Bidders, at the Bidders' own responsibility and risk, are encouraged to visit and examine the Site of Works and its surroundings and obtain all information that may be necessary for preparing their Bids and entering into a contract for construction of the Works. The costs of visiting the Site shall be at the Bidders' own expense.
- 9.2 The Bidder or its designated representative is invited to attend a pre-bid meeting, as **provided for in the BDS**. 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.
- Non-attendance at the pre-bid meeting will not be a cause for disqualification of a bidder.
- 10. Amendment of Bidding Document**
- At any time prior to the deadline for submission of bids, the Employer may amend the Bidding Document by issuing addenda and extend the deadline for submission of bids, if needed.

C. Preparation of Bids

- 11. Cost of Bidding** 11.1 The Bidder shall bear all costs associated with the preparation and submission of its Bid, and the Employer shall in no case be responsible or liable for those costs irrespective of the outcome of the bidding process.
- 12. Language of Bid** 12.1 The Bid, supporting documents as well as all correspondence relating to the bid exchanged by the Bidder and the Employer shall be in English Language.
- 13. Documents Comprising the Bid** 13.1 The Bid shall comprise the following:
- (a) Bid submission Form (in the format indicated in Section III);
 - (b) Qualification information and documentary evidence establishing the Bidder's qualifications to perform the contract;
 - (c) Technical Proposal as per ITB 18.1;
 - (d) completed Bill of Quantities / Activity Schedule;
 - (e) Bid Security as per the format provided in section III or as a subscription to a Bid Securing Declaration in the Bid Submission Form; and
 - (f) any other material required to be completed and submitted by bidders, as specified in ITB **and the BDS**.
- 14. Bid Submission Form and Schedules** 14.1 The Bid Submission Form, Schedules, and all documents listed under ITB 13.1 shall be prepared using the relevant forms, if so provided.
- 15. Alternative Proposal** 15.1 Alternative Technical Proposals and completion dates if allowed shall be indicated in Section V- Specifications. The evaluation methodologies for their consideration shall be given in Section IV.
- 16. Bid Prices and Discounts** 16.1 The Contract shall be for the whole Works, as described in ITB Sub-Clause 1.1, based on the priced Activity Schedule/Bill of Quantities³ submitted by the Bidder.
- 16.2 Bidders shall fill in rates and prices for all items of the Works described in the Bill of Quantities.⁴ Items for which no rate or price is entered by Bidders, shall not be paid for by the Public Body when executed and shall be deemed covered by the other rates and prices in the Bill of Quantities. Corrections, if any, shall be made by crossing out, initialing,

³ In lump sum contracts, delete "priced Bill of Quantities" and replace with "priced Activity Schedule."

⁴ In lump sum contracts, delete "described in the Bill of Quantities" and replace with "described in the drawings and specifications and listed in the Activity Schedule."

dating and rewriting.

16.3 All duties, taxes, and other levies payable by the Contractor under the Contract, or for any other cause, as of the date 14 days prior to the deadline for submission of bids, shall be included in the rates, prices, and total Bid price submitted by Bidders.⁵

16.4 The price to be quoted in the Bid Submission Form shall be the total price of bid after any discount offered.

The discount if any and the conditions of its application shall be indicated separately.

17. Currencies of Bid and Payment

17.1 The bid price and rates shall be in Mauritian Rupees and fixed for the duration of the contract unless otherwise **specified in the BDS.**

17.2 Unless otherwise **specified in BDS** interim payment for Plant and Material on site is applicable as per GCC 39.7.

18. Documents Comprising the Technical Proposal

18.1 The Bidder shall furnish a Technical Proposal including a statement of work methods, equipment, personnel, schedule and any other information as stipulated in the Bidder Qualification Form (section III), in sufficient details to demonstrate the adequacy of the Bidders' proposal to meet the work requirements and the completion time.

19. Period of Validity of Bids

19.1 Bids shall remain valid for a period of 120 days after the bid submission deadline prescribed by the Employer unless otherwise **specified in the BDS.**

19.2 In exceptional circumstances, prior to expiry of the original bid validity period, the Employer may request that the bidders extend the period of validity for a specified additional period. The request and the responses thereto shall be made in writing.

20. Bid Security/Bid Securing Declaration

20.1 The Bidder shall furnish either a subscription to a Bid Securing Declaration or a Bid Security in its original form with its bid as part of its bid, if so **required in the BDS.**

20.2 Bid Security shall be in the form of a Bank Guarantee from a local commercial bank as per the format contained in section III and shall be valid for a period of 30 days beyond the validity period of the bid or beyond any period of extension.

20.3 Any bid not accompanied by an enforceable and substantially compliant Bid Security or a subscription to a Bid Securing Declaration in the Bid Submission Form, if required in accordance with ITB 20.1, shall be rejected by the Employer

⁵ In lump sum contracts, delete "rates, prices, and."

as non-responsive.

20.4 Bid Security shall be forfeited or the Bid Securing declaration exercised for non-compliance on the part of the Bidder for reasons mentioned in the Bid Security format contained in Section III or the Bid Suring Declaration contained as Appendix to the Bid Submission Form.

**21. Format and
Signing of Bid**

21.1 The Bidder shall prepare one original of the documents comprising the bid as described in ITB 13.1 and clearly mark it “ORIGINAL”. In addition, the Bidder shall submit **two copies** of the bid and clearly mark each of them “COPY.” In the event of any discrepancy between the original and the copies, the original shall prevail.

21.2 The original and all copies of the bid shall be typed or written in indelible ink and shall be signed by a person duly authorized to sign on behalf of the Bidder.

D. Submission and Opening of Bids

**22. Sealing and
Marking of Bids**

22.1 Bidders may always submit their bids by mail or by hand. Procedures for submission, sealing and marking are as follows:

(a) Bidders submitting bids by mail or by hand shall enclose the original and each copy of the Bid, including alternative bids, if permitted in accordance with ITB 15, in separate sealed envelopes, duly marking the envelopes as “ORIGINAL”, “ALTERNATIVE” and “COPY.” These envelopes containing the original and the copies shall then be enclosed in one single envelope. The rest of the procedure shall be in accordance with ITB sub-Clauses 22.2.

22.2 The inner and outer envelopes shall:

- (a) bear the name and address of the Bidder;
- (b) be addressed to the Employer as indicated in ITB 22.1;
- (c) bear the specific identification of this bidding process indicated in accordance with ITB 1.1; and
- (d) bear a warning not to open before the time and date for bid opening.

**23. Deadline for
Submission of
Bids**

23.1 Bids shall be delivered to the Employer at the address and no later than the time and date **specified in the BDS**.

The Employer may, at its discretion, extend the deadline for the submission of bids by amending the Bidding Document in

accordance with ITB 10.

- 24. Late Bids** 24.1 Late bids shall not be considered. They will be returned unopened
- 25. Withdrawal, Substitution, and Modification of Bids** 25.1 No bid may be withdrawn, substituted, or modified in the interval between the deadline for submission of bids and the expiration of the period of bid validity specified by the Bidder on the Bid submission Form or any extension thereof.
- 26. Bid Opening** 26.1 The Employer shall open the bids at the time place and address **specified in the BDS** in the presence of Bidders` designated representatives who choose to attend.
- 26.2 The bidders' names, the Bid Prices, the total amount of each bid, any discounts, any alternative bid, bid modifications and withdrawals, the presence or absence of bid security, and such other details as the Employer may consider appropriate, will be announced and recorded by the Employer at the opening.

E. Evaluation and Comparison of Bids

- 27. Confidentiality** 27.1 Information relating to the examination, evaluation, comparison, and post-qualification of bids and recommendation of contract award, shall not be disclosed to Bidders or any other person not officially concerned with such process.
- 27.2 Any attempt by a Bidder to influence the Employer in the evaluation of the bids or Contract award decisions may result in the rejection of its bid.
- 28. Clarification of Bids** 28.1 To assist in the examination, evaluation, and comparison of the bids, and qualification of the Bidders, the Employer may, at its discretion, ask any Bidder for a clarification of its bid. No change in the prices or substance of the bid shall be sought, offered, or permitted, except to confirm the correction of arithmetical errors discovered by the Employer in the evaluation of the bids, in accordance with ITB 31.
- 29. Determination of Responsiveness** 29.1 The Employer`s determination of a bid`s responsiveness is to be based on the contents of the bid itself, as defined in ITB13.
- 29.2 A substantially responsive bid is one that meets the requirements of the Bidding Document without material deviation, reservation, or omission.
- 29.3 The Employer shall examine the technical aspects of the bid submitted in accordance with ITB 18, Technical Proposal, in particular, to confirm that all requirements of Section IV

(Employer's Requirements) have been met without any material deviation, reservation or omission.

29.4 If a bid is not substantially responsive to the requirements of the Bidding Document, it shall be rejected by the Employer and may not subsequently be made responsive by correction of the material deviation, reservation, or omission.

30. Nonconformities, Errors, and Omissions

30.1 Provided that a bid is substantially responsive, the Employer may waive any non-material non-conformity in the bid, request that the Bidder submit the necessary information or documentation, to rectify nonmaterial nonconformities in the bid related to documentation requirements but not related to any aspect of the price of the bid; and shall rectify quantifiable nonmaterial nonconformities related to the Bid Price.

31. Correction of Arithmetical Errors

31.1 Provided that the bid is substantially responsive, the Employer shall correct arithmetical errors on the following basis:

- (a) only for unit price contracts, if there is a discrepancy between the unit price and the total price that is obtained by multiplying the unit price and quantity, the unit price shall prevail and the total price shall be corrected, unless in the opinion of the Employer there is an obvious misplacement of the decimal point in the unit price, in which case the total price as quoted shall govern and the unit price shall be corrected;
- (b) if there is an error in a total corresponding to the addition or subtraction of subtotals, the subtotals shall prevail and the total shall be corrected; and
- (c) if there is a discrepancy between words and figures, the amount in words shall prevail, unless the amount expressed in words is related to an arithmetic error, in which case the amount in figures shall prevail subject to (a) and (b) above.

32. Margin of Preference

32.1 **Unless otherwise specified in the BDS**, Margin of preference shall not apply.

33. Evaluation of Bids

33.1 The Employer shall use the criteria and methodology defined in this clause and no other evaluation criteria or methodologies shall be permitted.

33.2 To evaluate a bid, the Employer shall consider the following:

- (a) the bid price, excluding Provisional Sums and the provision, if any, for contingencies in the Summary Bill of Quantities for admeasurement contracts or Schedule of Prices for lump sum contracts, but including Daywork

items, where priced competitively; and

- (b) price adjustment for correction of arithmetic errors, discounts, non-conformities, due to the supplementary criteria as defined in Section IV, and Margin of Preference, if applicable.

33.3 If this Bidding Document allows Bidders to quote separate prices for different contracts, and to award multiple contracts to a single Bidder, the methodology to determine the lowest evaluated price of the contract combinations, including any discount offered in the Bid Submission Form, is specified in Section IV (Evaluation and Qualification Criteria).

33.4 If the bid for an admeasurement contract, which results in the lowest Evaluated Bid Price, is seriously unbalanced, front loaded or substantially below updated estimates or if any item in the Priced Activity Schedule is front loaded or contains an erroneous amount in the opinion of the Employer, the Employer may after clarification require the Bidder to produce detailed price analysis for any or all items that the amount of the performance security be increased at the expense of the Bidder.

- | | |
|--|---|
| 34. Comparison of Bids | 34.1 The Employer shall compare all substantially responsive bids in accordance with ITB 33 to determine the lowest evaluated bid. |
| 35. Qualification of the Bidder | 35.1 The Employer shall determine to its satisfaction whether the Bidder that is selected as having submitted the lowest evaluated substantially responsive bid meets the qualifying criteria. |
| 36. Employer's Right to Accept Any Bid, and to Reject Any or All Bids | 36.1 The Employer reserves the right to accept or reject any bid, and to annul the bidding process and reject all bids at any time prior to contract award, without thereby incurring any liability to Bidders. |

F. Award of Contract

- | | |
|----------------------------------|--|
| 37. Award Criteria | 37.1 Subject to ITB 36.1, the Employer shall award the Contract to the Bidder whose offer has been determined to be the lowest evaluated bid and is substantially responsive to the Bidding Document, provided further that the Bidder is determined to be qualified to perform the Contract satisfactorily. |
| 38. Notification of Award | 38.1 Prior to the expiration of the period of bid validity, the Employer shall, for contract amount above the prescribed threshold, notify the selected bidder of the proposed award and accordingly notify unsuccessful bidders. Subject to |

Challenge and Appeal the Employer shall notify the selected Bidder, in writing, by a Letter of Acceptance for award of contract. The Letter of Acceptance shall specify the sum that the Employer will pay the Contractor in consideration of the execution and completion of the Works (hereinafter and in the Conditions of Contract and Contract Forms called “the Contract Price”) and the requirement for the Contractor to remedy any defects therein as prescribed by the Contract. Within seven days from the issue of Letter of Acceptance, the Employer shall publish on the Public Procurement Portal (publicprocurement.govmu.org) and the Employer’s website, the results of the Bidding Process identifying the bid and lot numbers and the following information:

(i) name of the successful Bidder, and the Price it offered, as well as the duration and summary scope of the contract awarded; and

(ii) an executive summary of the Bid Evaluation Report.

38.2 Until a formal contract is prepared and executed, the notification of award shall constitute a binding Contract.

39. Signing of Contract

39.1 Promptly upon issue of Letter of Acceptance, the Employer shall send to the successful Bidder the Contract Agreement.

39.2 Within twenty-one (21) days of receipt of the Contract Agreement, the successful Bidder shall sign, date, and return it to the Employer.

40. Performance Security

40.1 Within twenty-one (21) days of the receipt of the Letter of Acceptance from the Employer, the successful Bidder shall furnish the Performance Security in accordance with the conditions of contract, using for that purpose the Performance Security Form included in Section VIII (Contract Forms).

40.2 Failure of the successful Bidder to submit the above-mentioned Performance Security or to sign the Contract Agreement within the prescribed delay shall constitute sufficient grounds for the annulment of the award and forfeiture of the bid security.

Preference Security

40.3 The successful bidder having benefitted from a Margin of Preference shall provide a Preference Security, **as specified in the BDS**. 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

- 41. Advance Payment and Security** 41.1 The Public Body shall provide an Advance Payment on the Contract Price as stipulated in the GCC, subject to a maximum amount, as stated in the BDS. The Advance Payment shall be guaranteed by a security as per the format contained in Section VIII.
- 42. Plant and Materials on site** 42.1 Unless otherwise **specified in BDS** interim payment for Plant and Material on site is applicable as per GCC 39.7.
- 43. Debriefing** 43.1 The Employer shall promptly attend to all requests for debriefing for the contract, made in writing, and within 30 days from the date of the publication of the award or date the unsuccessful bidders are informed about the award, whichever is the case, by following regulation 9 of the Public Procurement Regulations 2008 as amended.

Section II- Bidding Data Sheet

A. General	
ITB 1.1	<p>The Public Body is: BEACH AUTHORITY</p> <p>The Works are <i>Upgrading of Entrance and Exit Accesses at:</i></p> <p>LOT 1: Le Morne and Flic en Flac Public Beaches and</p> <p>LOT 2: Poste La Fayette and Belle Mare Public Beaches</p> <p>The name and identification of the Contract are BA/OAB/02/2019/20</p> <p>The Project is <i>Upgrading of Entrance and Exit Accesses on Public Beaches</i></p>
ITB 1.2	The Intended Completion period is 45 days <i>as from date of handing over of site.</i>
ITB 2.1	The Funding Agency is: The Beach Authority
ITB 3.2	<p>The address to file Challenges in respect of this procurement is:</p> <p style="text-align: center;">General Manager Beach Authority 7th Floor, Ebene Heights Building Plot 34, Cybercity Ebene</p> <p>(a) The address to file Application for Review is:</p> <p style="text-align: center;">The Chairman Independent Review Panel, 9th Floor, Wing B Emmanuel Anquetil Building Pope Hennessy Street Port Louis Tel : 2013921</p>
ITB 5.4	The list of debarred firms according to the Debarment process may be obtained from the web site of the Procurement Policy Office: ppo.govmu.org
ITB 6.2	<p>The information required from bidders in ITB Sub-Clause 6.2 is modified as follows:</p> <p>To add: (i) Detailed Programme of Work</p> <p style="padding-left: 40px;">(ii) Methodology of work</p>
ITB 6.2 (g)	The assessment of the financial soundness of the company shall be on a pass/fail basis on its overall performance including its profitability.
ITB 6.3 (b)	(A1) The Contractor shall demonstrate that it is registered with the CIDB under the following class(es): at least GRADE H and specialization in the following area(s) Building/Civil Engineering Works

ITB 6.3 (c)	<p>The essential equipment to be made available for the Contract by the successful Bidder shall be: (All equipment required for Building and Civil Works) including</p> <ul style="list-style-type: none"> • Backhoe loader • Concrete Mixer • Lorry • Roller 10 T
ITB 6.3 (d)	<p>Qualifications requirements for key personnel:-</p> <ul style="list-style-type: none"> • One full time site supervisor who must be a holder of Diploma in Civil Engineering from a recognized university or similar acceptable equivalent qualification and having a minimum 5 years experience in civil engineering works and supervising quality control process on site. • One Civil Engineer having a Degree in Civil Engineering or similar acceptable equivalent qualification and having experience in civil works with a minimum of 5 years experience. <p><i>Signed CVs of the personnel mentioned above should be submitted.</i></p>
ITB 6.3 (e)	<p>The minimum amount of liquid assets and/or credit facilities net of other contractual commitments of the successful Bidder shall be 1 million.</p> <p>The bidder shall submit, together with his bid, updated evidence from a recognized local bank specifying that he has access to financial resources, amounting to a minimum of (1M) one Million MUR, to execute this particular project. The project name should be specified.</p>
B. Bidding Documents	
ITB 8.1	<p>The Public Body's address for clarification is: The General Manager Attention: Secretary of Departmental Bid Committee Address: Beach Authority, 7th Floor, Ebene Heights Building Plot 34, Ebene Cybercity, Ebene</p> <p>Country: Mauritius</p> <p>Telephone: 468 6209/10/11/12</p> <p>Facsimile number: 468 6213</p> <p>Electronic mail address: beachauthority@intnet.mu</p>
ITB 9.2	<p>A pre-bid meeting shall be held as follows:</p> <p><u>Date & Location - Tuesday 10th December at:</u></p> <p>(i) Le Morne Public Beach (Nr Dinarobin) at 13:00 hrs. The contact person is Mr P Chummun, BWI on Mobile No. 5904 8883.</p> <p><u>Date & Location - Wednesday 11th December at:</u></p> <p>(ii) Flic en Flac Public Beach at 13:00 hrs. The contact person is Miss. B. Nundoosing, BWI on Mobile No. 5250 7460.</p>

	<p><u>Date & Location - Thursday 12th December at:</u></p> <p>(iii) Belle Mare then to Poste La Fayette Public Beaches at 13:00 hrs. The contact person is Mr. H. Ramlochun, BWI on Mobile No. 5783 9949.</p>
C. Preparation of Bids	
ITB 13.1 (f)	<p>Any additional materials required to be completed and submitted by the Bidders are as follows:</p> <p>The following schedules shall be submitted with the bid:</p> <p>a) Programme of work with activity schedules. All in compliance with the technical specifications and conditions of contract.</p> <p>b) Brief methodology for undertaking the whole of the works to successful completion.</p>
ITB 17.1	The Contract “is not” subject to price adjustment in accordance with GCC Clause 44.
ITB 17.2	Interim Payment for Plant and Material on site is not applicable.
ITB 19.1	The Bid shall be valid for one hundred and twenty (120) <i>days</i> after the deadline set for the submission of bid, the deadline being counted as day one of the validity period.
ITB 20.1	Bid shall include a subscription to a Bid Securing Declaration
D. Submission of Bids	
ITB 23.1	The deadline for submission of bids shall be Thursday 26th December 2019 by 10:30 hrs @ latest.
	<p>The Employer’s address for the purpose of Bid submission is</p> <p>Beach Authority</p> <p>Attention: The General Manager</p> <p>Address: Beach Authority, 7th Floor, Ebene Heights Building</p> <p style="padding-left: 40px;">Plot 34, Ebene Cybercity, Ebene</p> <p>Country: Mauritius</p> <p>Bids should be deposited in the Tender Box located at the address hereunder not later than the date and time of the deadline hereunder. Late quotations will be rejected.</p>
E. Evaluation and Comparison of Bids	
ITB 26.1	<p>The bid opening shall take place at: Conference room of the Beach Authority</p> <p>Street Address: Plot 34, Ebene Cybercity, Ebene</p> <p>Floor/ Room number: 7th Floor, Ebene Heights Building</p> <p>City: Ebene</p>

	<p>Country: Mauritius.</p> <p>Date: Thursday 26th December 2019</p> <p>Time: 10:45 hrs</p>
ITB 32	N/A
F. Award of Contract	
ITB 40.1	The standard form of Performance security acceptable to the Public body shall be a 'Bank Guarantee'. The Bank guarantee shall be (10 %) of the contract price inclusive of VAT. (NOT APPLICABLE)
ITB 40.3	<p>For contracts up to 100M, the public body shall either retain money from progressive payments to constitute the preference security or request a security in the form of a bank guarantee at the selected bidder's option.</p> <p>For contract above Rs 100M, the preference security in the form of a bank guarantee issued from a local commercial bank shall be submitted at the time of contract award failing which the award of contract may be annulled.</p>
ITB 41	The Advance Payment shall NOT be applicable.
ITB 42.1	Interim Payment for Plant and Material on site is not applicable.

Section III - Bidding Forms

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Bid Submission Form

Date: _____
Bidder's Reference No.: _____
Procurement Reference No.:

To:

We, the undersigned, declare that:

- (a) We have examined and have no reservations to the Bidding Documents, including Addenda issued in accordance with Instructions to Bidders (ITB) Clause 10;
- (b) We offer to execute in conformity with the Bidding Documents the following Works:
_____;
- (c) The total price of our Bid after discounts, if any, offered in item (d) below is:

_____;
- (d) The discounts offered and the methodology for their application are:

_____;
- (e) Our bid shall be valid for a period of **120 days** from the date fixed for the bid submission deadline in accordance with the Bidding Documents, and it shall remain binding upon us and may be accepted at any time before the expiration of that period;
- (f) We hereby confirm that we have read and understood the content of the Bid Securing Declaration attached hereto and subscribe fully to the terms and conditions contained therein, if required. We understand that non-compliance to the conditions mentioned may lead to disqualification.
- (g) If our bid is accepted, we commit to obtain a Performance Security and a Preference Security (if applicable) in accordance with the Bidding Document;
- (h) We, including any subcontractors or suppliers for any part of the contract, do not have any conflict of interest in accordance with ITB 5.4;
- (i) We are not participating, as a Bidder in more than one bid in this bidding process other than alternative offers submitted in accordance with ITB 15;
- (j) Our firm, its affiliates or subsidiaries, including any Subcontractors or Suppliers for any part of the contract, has not been declared ineligible under the laws of Mauritius;

- (k) We are not a government owned entity / We are a government owned entity but meet the requirements of ITB 5.4;⁶
- (l) We hereby “*apply/do not apply*” for Margin of Preference as provided in the bidding document;⁷
- (m) 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 as per the principles described hereunder, during the bidding process and contract execution:
- i. We shall not, directly or through any other person or firm, offer, promise or give to any of the Public Body’s employees involved in the bidding process or the execution of the contract or to any third person any material or immaterial benefit which he/she is not legally entitled to, in order to obtain in exchange any advantage of any kind whatsoever during the tender process or during the execution of the contract.
 - ii. We shall not enter with other Bidders into any undisclosed agreement or understanding, whether formal or informal. This applies in particular to prices, specifications, certifications, subsidiary contracts, submission or non-submission of bids or any other actions to restrict competitiveness or to introduce cartelisation in the bidding process.
 - iii. We shall not use falsified documents, erroneous data or deliberately not disclose requested facts to obtain a benefit in a procurement proceeding.

We understand that transgression of the above is a serious offence and appropriate actions will be taken against such bidders.

- (n) We understand that this bid, together with your written acceptance, shall constitute a binding contract between us, until a formal contract is prepared and executed;
- (o) We understand that you are not bound to accept the lowest evaluated bid or any other bid that you may receive; and
- (p) If awarded the contract, the person named below shall act as Contractor’s Representative:

Name: _____

In the capacity of: _____

Signed: _____

Duly authorized to
sign the Bid for and
on behalf of: _____

Date: _____

Seal of Company _____

⁶ Use one of the two options as appropriate.

⁷ Strike out as appropriate

Appendix to Bid Submission Form

Bid Securing Declaration

By subscribing to the undertaking in respect of paragraph (f) of the Bid Submission form:

I/We* accept that I/we* may be disqualified from bidding for any contract with any Public Body for the period of time that may be determined by the Procurement Policy Office under section 35 of the Public Procurement Act, if I am/we are* in breach of any obligation under the bid conditions, because I/we*:

- (a) have modified or withdrawn my/our* Bid after the deadline for submission of bids during the period of bid validity specified by the Bidder in the Letter of Bid; or
- (b) have refused to accept a correction of an error appearing on the face of the Bid; or
- (c) having been notified of the acceptance of our Bid by the **Beach Authority** during the period of bid validity, (i) have failed or refused to execute the Contract, if required, or (ii) have failed or refused to furnish the Performance Security, in accordance with the Instructions to Bidders.

I/We* understand this Bid Securing Declaration shall cease to be valid (a) in case I/we am/are the successful bidder, upon our receipt of copies of the contract signed by you and the Performance Security issued to you by me/us; or (b) if I am/we are* not the successful Bidder, upon the earlier of (i) the receipt of your notification of the name of the successful Bidder; or (ii) thirty days after the expiration of the validity of my/our* Bid.

In case of a Joint Venture, all the partners of the Joint Venture shall be jointly and severally liable.

Qualification Information

*[The information to be filled in by **bidders** in the following pages shall be used for purposes of post-qualification or for verification of prequalification as provided for in ITB Clause 6. This information shall not be incorporated in the Contract. Attach additional pages as necessary. Pertinent sections of attached documents should be translated into English. If used for prequalification verification, the Bidder should fill in updated information only.]*

1. Individual Bidders or Individual Members of Joint Ventures

- 1.1 Constitution or legal status of Bidder: *[attach copy]*
- Place of registration: *[insert]*
- Principal place of business: *[insert]*
- Valid Registration certificate from the CIDB: *[attach copy]*
- Evidence of signatory authorized to sign the bid (if applicable): *[attach]*
- 1.2 Where the specialization category for which the Bidder is required to be registered does not cover adequately the specialization required for the works Bidder shall provide *[insert number]* of works of a nature and amount similar to the Works performed as prime Contractor over the last *[insert number]* years. *[Also list details of work under way or committed, including expected completion date(s).]*

Project/Contract name and country	Name of client and contact person	Type of work performed and year of completion	Value of contract (national currency)
(a)			
(b)			

- 1.3 Major items of Contractor's Equipment proposed for carrying out the Works. *[List all information requested below. Refer also to ITB Sub-Clause 6.3 (c).]*

Item of equipment	Description, make, and age (years)	Condition (new, good, poor) and number available	Owned, leased (from whom?), or to be purchased (from whom?)
(a)			
(b)			

- 1.4 Qualifications and experience of key personnel proposed for administration and execution of the Contract. *[Attach biographical data. Refer also to ITB Sub-Clause 6.3 (d).]*

Position	Name	Years of experience (general)	Years of experience in proposed position
(a)			
(b)			

1.5 Proposed subcontracts and firms involved. Refer to General Conditions of Contract Clause 7.

Sections of the Works	Value of subcontract	Subcontractor (name and address)	Experience in similar work
(a)			
(b)			

[Bidders have to ascertain that sub-contractors executing works of amount Rs 500 000 are duly registered with the CIDB in accordance with CIDB Act 2008.]

1.6 Financial reports for the last *[insert number; usually 3]* years: Financial Statements, Audited Accounts, etc. *[List below and attach copies.]*⁸

1.7 Evidence of access to financial resources to meet the qualification requirements: cash in hand, lines of credit, etc. List below and attach copies of support documents.

1.8 Name, address, and telephone, telex, and facsimile numbers of banks that may provide references if contacted by the Public Body.

1.9 Information on current litigation(s) in which the Bidder is involved.

Other party(ies)	Cause of dispute	Amount involved
(a)		
(b)		

1.10 Statement of compliance with the requirements of ITB Sub-Clause 5.3.

1.11 Proposed program (service work and schedule). Description, drawings and charts, as necessary, to comply with the requirement of the bidding documents.

2. Joint Ventures 2.1 The information listed in 1.1 - 1.9 above shall be provided for each partner of the joint venture.

⁹ *In lump sum contracts, the “Bill of Quantities” is prepared for information; it is not contractual. The contractual document prepared by the Bidder shall be a “Schedule of Activities.”*

2.2 The information in 1.11 above shall be provided for the joint venture.

2.3 Attach the power of attorney or other acceptable document of the signatory (ies) of the Bid authorizing signature of the Bid on behalf of the joint venture.

2.4 Attach the Agreement among all partners of the joint venture (and which is legally binding on all partners), which shows that

- (a) all partners shall be jointly and severally liable for the execution of the Contract in accordance with the Contract terms;
- (b) one of the partners will be nominated as being in charge, authorized to incur liabilities, and receive instructions for and on behalf of any and all partners of the joint venture; and
- (c) the execution of the entire Contract, including payment, shall be done exclusively with the partner in charge.

3. Additional Requirements

3.1 Bidders should provide any additional information requested in the Bidding Document.

Bill of Quantities

Priced Activity Schedule

Upgrading of Entrance and Exit Access on Parking Areas at Le Morne Public Beaches - LOT 1A

1. Parking Accesses nr Dinarobin Hotel

Site 1: 1 entrance and 1 exit access (TYPE 1)

Site 2: 1 entrance and 1 exit access (TYPE 1)

2. Parking Access nr St Regis Hotel

Site 3: Single entrance and exit access (TYPE 2)

3. Parking Access at Pointe Sud-Ouest

Site 4: Single entrance and exit access (TYPE 2)

Site 5: 1 entrance and 1 exit access (TYPE 1)

Please note that the quantities shown in the bill below are approximate, and will be subject to re-measurement for payment purposes.

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 Conditions of Contract requirements including the following but not limited to Setting out of the works, Site management, Tools, plants and stacking and storage of materials, Insurances, Watchmen, Light and electricity, Signboard, Temporary hoardings, Police requirements	Sum			
2.0	Site clearance, levelling and carting away of debris and other waste materials. Rate to include cutting and carting away of excess asphalt at junction of parking area and existing asphaltic road, if any.	Sum			
3.0	Construction of ground beam Excavation in sand, soil or rock for blinding layer not exceeding 450mm wide down to a maximum depth not exceeding 375mm. rate to include removal of tree roots & stumps and carting away of debris. Level and compact bottom of trenches. Bases and terrace to receive blinding 95% MOD AASHTO. Formwork in class 2 finish. Shutting from any level and including rebates or grooves formers. Casting of 75 mm thick blinding concrete, in situ concrete design mix Grade 15N/mm ² 20mm aggregate to bases. Reinforced in-situ concrete design mix grade 30M/mm ² , 20mm aggregate vibrated, as described in ground beam.	m ³	7		
4.0	Excavation to lines and level (600mm) in any materials including soil and rocks; rate include transport to any distance, stock pile, levelling and any miscellaneous cost including compaction and leveling of the area under excavation. Rate to also include carting away as approved by the Project Manager.	m ³	126		

5.0	Fill with material to level plot to the required formation level. (300 mm thick Spalls laid and compacted with respect to 7% slope or as specified by the Project Manager. Rate to include for supply, spread and compact to BS heavy 95%)	m ³	65		
6.0	Fill with material to level plot to the required formation level. (150 mm thick Crusher run (0-20) rate include supply, spread and compact to BS heavy 95%) and placing of 30 mm rocksand and compacted to level	m ³	35		
7.0	Supply and placing of 'Ever Green blocks. Rate shall include for leveling works and any associated concrete works required to line and levels as indicated by the Project Manager	m ²	220		
8.0	Provision of crush corals (5 – 10 mm) to be used as in fill material; rate to include transport, supply, spread and compaction in Ever green blocks of access and any associated cost that may arise.	m ²	90		
9.0	Allow for the supply and fixing of kerbs Type K1 as per drawings or as approved by the Project Manager inclusive of all excavation, concrete haunching, leveling works required to line and levels as indicated by the Project Manager.	m	115		
Contingencies					8,000
SUB TOTAL (Excluding VAT)					
VAT @ 15%					
GRAND TOTAL (Including VAT)					

Bill of Quantities Priced Activity Schedule

Upgrading of Entrance and Exit accesses at Flic En Flac Public Beach – LOT 1B

8 Accesses along Flic en Flac Public Beach

Please note that the quantities shown in the bill below are approximate, and will be subject to re-measurement for payment purposes.

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 Conditions of Contract requirements including the following but not limited to Setting out of the works, Site management, Tools, plants and stacking and storage of materials, Insurances, Watchmen, Light and electricity, Signboard, Temporary hoardings, Police requirements	Sum			
2.0	Site clearance, levelling and carting away of debris and other waste materials. Rate to include cutting and carting away of excess asphalt at junction of parking area and existing asphaltic road if any.	Sum			
3.0	Excavation to lines and level (600mm) in any materials including soil and rocks; rate include transport to any distance, stock pile, levelling and any miscellaneous cost including compaction and leveling of the area under excavation. Rate to also include carting away of surplus excavated materials as approved by the Project Manager.	m ²	200		
4.0	Levelling of plot with the selected materials to the required formation level. (300 mm thick layer of Spalls. Rate to include for supply, laying and compact to BS heavy 95%)	m ³	60		
5.0	Levelling of plot with the selected materials to the required formation level. (150 mm thick layer of Crusher run (0-20) and 30mm thick layer of unwashed rocksand (0-4). Rate quoted shall include supply, laying and compact to BS heavy 95%)	m ²	160		
6.0	Supply and placing of 'Evergreen blocks'. Rate shall include for leveling works and any associated concrete works required to line and levels as indicated by the Project Manager. The contractor shall seek for approval for different models of evergreen blocks and upon written approval from the Engineer, the latter shall place order.	m ²	160		
7.0	Provision of crush corals (5 – 10 mm) to be used as in-fill material; rate to include transportation facilities, supply, laying and compaction within apertures evergreen blocks and any other associated works.	m ²	64		
8.0	Supply and fixing of kerbs Type K1 as per drawings. Rate quoted shall be inclusive of all excavation, concrete haunching, leveling works and carting away of debris.	m	75		
9.0	Casting of reinforced concrete beams and ramps to support Evergreen blocks; rate to include formwork, levelling, concrete casting and washed rocksand finish, 75 mm blinding layer, preparation of reinforcement and any associated works.	m ³	8		
	CONTINGENCY SUM				25,000
	SUB TOTAL (Excluding VAT)				
	VAT @ 15%				
	GRAND TOTAL (Including VAT)				

Bill of Quantities

SUMMARY PAGE – LOT 1

Upgrading of Entrance and Exit Access on Parking Areas at Le Morne Public Beaches - LOT 1A

Upgrading of Entrance and Exit accesses at Flic En Flac Public Beach – LOT 1B

LOT	DESCRIPTION	AMOUNT (Rs)
1A	TOTAL BILL FOR LOT 1A (Inclusive of Contingency & Exclusive of VAT)	
1B	TOTAL BILL FOR LOT 1B (Inclusive of Contingency & Exclusive of VAT)	
Sub-Total (Excluding VAT)		
VAT @ 15 %		
Grand Total (Including Contingency & VAT)		

Please note that the quantities shown in the bill below are approximate, and will be subject to re-measurement for payment purposes.

Note:

The Authority reserves **the right to split the contract per lot** and to award same to different contractors.

Amount in words (Fixed Price Bid).....

.....including Value Added Tax (VAT)

Name of bidder:

Position.....

Contact No:.....

Email Address.....

Dated this.....Day of.....2019

Signed

Name:.....

In the capacity of.....

Duly authorized to sign on behalf.....

In the capacity of.....

Seal of Company.....

Bill of Quantities

Priced Activity Schedule

Upgrading of Entrance and Exit accesses at Poste La Fayette Public beach – LOT

2A

2 Accesses at Poste La Fayette Public beach – TYPE 1

Please note that the quantities shown in the bill below are approximate, and will be subject to re-measurement for payment purposes.

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 Conditions of Contract requirements including the following but not limited to Setting out of the works, Site management, Tools, plants and stacking and storage of materials, Insurances, Watchmen, Light and electricity, Signboard, Temporary hoardings, Police requirements	Sum			
2.0	Site clearance, levelling and carting away of debris and other waste materials. Rate to include cutting and carting away of excess asphalt at junction of parking area and existing asphaltic road if any.	Sum			
3.0	Excavation to lines and level (600mm) in any materials including soil and rocks; rate include transport to any distance, stock pile, levelling and any miscellaneous cost including compaction and leveling of the area under excavation. Rate to also include carting away of surplus excavated materials as approved by the Project Manager.	m ²	62		
4.0	Levelling of plot with the selected materials to the required formation level. (300 mm thick layer of Spalls. Rate to include for supply, laying and compact to BS heavy 95%)	m ³	20		
5.0	Levelling of plot with the selected materials to the required formation level. (150 mm thick layer of Crusher run (0-20) and 30mm thick layer of unwashed rocksand (0-4). Rate quoted shall include supply, laying and compact to BS heavy 95%)	m ²	52		
6.0	Supply and placing of ' Evergreen blocks'. Rate shall include for leveling works and any associated concrete works required to line and levels as indicated by the Project Manager. The contractor shall seek for approval for different models of evergreen blocks and upon written approval from the Engineer, the latter shall place order.	m ²	52		
7.0	Provision of crush corals (5 – 10 mm) to be used as in-fill material; rate to include transportation facilities, supply, laying and compaction within apertures evergreen blocks and any other associated works.	m ²	25		
8.0	Supply and fixing of kerbs Type K1 as per drawings. Rate quoted shall be inclusive of all excavation, concrete haunching, leveling works and carting away of debris.	m	25		
9.0	Casting of reinforced concrete beams and ramps to support Evergreen blocks; rate to include formwork, levelling, concrete casting and washed rocksand finish, 75 mm blinding layer, preparation of reinforcement and any associated works.	m ³	2.5		
CONTINGENCY SUM					25,000
SUB TOTAL (Excluding VAT)					
VAT @ 15%					
GRAND TOTAL (Including VAT)					

Bill of Quantities

Priced Activity Schedule

Upgrading of Entrance and Exit accesses at Belle Mare Public Beach - LOT 2B

10 Accesses along Belle Mare Public Beach - Type 1

Please note that the quantities shown in the bill below are approximate, and will be subject to re-measurement for payment purposes.

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 Conditions of Contract requirements including the following but not limited to Setting out of the works, Site management, Tools, plants and stacking and storage of materials, Insurances, Watchmen, Light and electricity, Signboard, Temporary hoardings, Police requirements	Sum			
2.0	Site clearance, levelling and carting away of debris and other waste materials. Rate to include cutting and carting away of excess asphalt at junction of parking area and existing asphaltic road if any.	Sum			
3.0	Excavation to lines and level (600mm) in any materials including soil and rocks; rate include transport to any distance, stock pile, levelling and any miscellaneous cost including compaction and leveling of the area under excavation. Rate to also include carting away of surplus excavated materials as approved by the Project Manager.	m ²	200		
4.0	Levelling of plot with the selected materials to the required formation level. (300 mm thick layer of Spalls. Rate to include for supply, laying and compact to BS heavy 95%)	m ³	60		
5.0	Levelling of plot with the selected materials to the required formation level. (150 mm thick layer of Crusher run (0-20) and 30mm thick layer of unwashed rocksand (0-4). Rate quoted shall include supply, laying and compact to BS heavy 95%)	m ²	160		
6.0	Supply and placing of 'Evergreen blocks'. Rate shall include for leveling works and any associated concrete works required to line and levels as indicated by the Project Manager. The contractor shall seek for approval for different models of evergreen blocks and upon written approval from the Engineer, the latter shall place order.	m ²	160		
7.0	Provision of crush corals (5 – 10 mm) to be used as in-fill material; rate to include transportation facilities, supply, laying and compaction within apertures evergreen blocks and any other associated works.	m ²	64		
8.0	Supply and fixing of kerbs Type K1 as per drawings. Rate quoted shall be inclusive of all excavation, concrete haunching, leveling works and carting away of debris.	m	100		
9.0	Casting of reinforced concrete beams and ramps to support Evergreen blocks; rate to include formwork, levelling, concrete casting and washed rocksand finish, 75 mm blinding layer, preparation of reinforcement and any associated works.	m ³	8.5		
CONTINGENCY SUM					35,000
SUB TOTAL (Excluding VAT)					
VAT @ 15%					
GRAND TOTAL (Including VAT)					

Bill of Quantities

SUMMARY PAGE – LOT 2

Upgrading of Entrance and Exit accesses at Poste La Fayette Public beach – LOT 2A

Upgrading of Entrance and Exit accesses at Belle Mare Public Beach – LOT 2B

LOT	DESCRIPTION	AMOUNT (Rs)
2A	TOTAL BILL FOR LOT 2A (Inclusive of Contingency & Exclusive of VAT)	
2B	TOTAL BILL FOR LOT 2B (Inclusive of Contingency & Exclusive of VAT)	
Sub-Total (Excluding VAT)		
VAT @ 15 %		
Grand Total (Including Contingency & VAT)		

Please note that the quantities shown in the bill below are approximate, and will be subject to re-measurement for payment purposes.

Note:

The Authority reserves **the right to split the contract per lot** and to award same to different contractors.

Amount in words (Fixed Price Bid).....

.....including Value Added Tax (VAT)

Name of bidder:

Position.....

Contact No:.....

Email Address.....

Dated this.....Day of.....2019

Signed

Name:.....

In the capacity of.....

Duly authorized to sign on behalf.....

In the capacity of.....

Seal of Company.....

Form of Bid Security (Bank Guarantee)

.....*Bank's Name and Address of issuing Branch or Office*.....

Beneficiary: *Name and Address of Public Body*.....

Date:

BID GUARANTEE No.:

We have been informed that*name of the Bidder*..... (hereinafter called "the Bidder") has submitted to you its bid dated..... (hereinafter called "the Bid") for the execution of*name of contract* under Invitation for Bids No.....*IFB number* ("the IFB").

Furthermore, we understand that, according to your conditions, bids must be supported by a bid security.

At the request of the Bidder, we*name of Bank* hereby irrevocably undertake to pay you any sum or sums not exceeding in total an amount of*amount in figures*..... .(*amount in words*.....) upon receipt by us of your first demand in writing accompanied by a written statement stating that the Bidder is in breach of its obligation(s) under the bid conditions, because the Bidder:

- (a) has modified or withdrawn its Bid after the deadline for submission of its bid during the period of bid validity specified by the Bidder in the Form of Bid; or
- (b) has refused to accept a correction of an error appearing on the face of the Bid; or
- (c) having been notified of the acceptance of its Bid by the Public Body during the period of bid validity, (i) has failed or refused to sign the contract Form, if required, or (ii) has failed or refused to furnish the performance security, in accordance with the Instructions to Bidders.

This guarantee shall expire: (a) if the Bidder is the successful bidder, upon our receipt of copies of the contract signed by the Bidder and the performance security issued to you upon the instruction of the Bidder; or (b) if the Bidder is not the successful bidder, upon the earlier of (i) our receipt of a copy of your notification to the Bidder of the name of the successful bidder; or (ii) thirty days after the expiration of the Bidder's Bid.

Consequently, any demand for payment under this guarantee must be received by us at the office on or before*Public Body to insert date*.....*Bank's seal and authorized signature(s)*.....

Section IV - Evaluation Criteria

This section contains supplementary criteria that the Employer shall use to evaluate bids.

1. Evaluation

In addition to the criteria listed in ITB 33 the following criteria shall apply:

(a) Adequacy of Technical Proposal

Evaluation of the Bidder's Technical Proposal will include an assessment of the Bidder's technical capacity to mobilize key equipment and personnel for the contract consistent with its proposal regarding work methods, scheduling, and material sourcing in sufficient detail and fully in accordance with the requirements stipulated in Section V (Employer's Requirements).

(b) Multiple Contracts

Pursuant sub-clause 1.1 of the Instructions to Bidders, if Works are grouped in multiple contracts, evaluation will be as follows: N/A

(c) Completion Time

An alternative Completion Time, if permitted under ITB 15.1, will be evaluated as follows: N/A

(d) Technical Alternatives

Technical alternatives, if permitted under ITB 15.1, will be evaluated as follows: N/A

(e) Margin of Preference- N/A

PART 2 – Employer’s Requirements

Section V - Employer's Requirements

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Drawings for Belle Mare Public Beach.....	Annex 4 (I-IV)

B. SCHEDULE OF REQUIREMENTS

SCOPE OF WORKS, SPECIFICATIONS AND PERFORMANCE REQUIREMENTS

Project Title:

Upgrading of Entrance and Exit Accesses on Parking Areas at Le Morne Public Beaches.

Project Brief

The Beach Authority is envisaging to Upgrading of Entrance and Exit Access on Parking Areas at Le Morne Public Beaches to ease vehicular access to the public beach.

1. Parking Access nr Dinarobin Hotel

Site 1: 1 entrance and 1 exit access

Site 2: 1 entrance and 1 exit access

2. Parking Access nr St Regis Hotel

Site 3: Single entrance and exit access

3. Parking Access at Pointe Sud-Ouest

Site 4: Single entrance and exit access

Site 5: 1 entrance and 1 exit access

Scope of works

The scope of works is as follows:

1. Clearing of site & Carting away of wastes

- Clearing of site from roots, boulders, stones and roots.
- Carting away of debris generated from clearing of site

2. Upgrading of access

- Excavation and construction of ground Beam on 75mm thick blinding layer to support eco blocks as per drawings. Contractor shall prepare reinforcement for R.C structures and seek for approval prior to start of work.
- Excavation of 300 mm topsoil/sand/soil over an area of about 230 m² at entry and exit. Work should include watering and compaction of subgrade to achieve 95% BS Heavy compaction.
- Supply, lay and compact of 150 mm thick hardcore filling materials (spalls) on the sub base at entry and exit.
- Supply and lay of 150 mm thick crusher Run 0/20 on hardcore filling to be watered and compacted in layers, not exceeding 150 mm to achieve 95 % BS Heavy compaction at entry and exit.

- Supply and fix of concrete kerbs type K1 over a length of about 200 m as per drawing. Sample and specification sheet of kerb to be submitted for approval prior to placing on site.
- Supply and place of 'Evergreen blocks' to lines and level topped with crushed corals (as per specification) at entry and exit. Sample and specification sheet of Evergreen block and crushed corals to be submitted for approval prior to place on site.

Note:

- i. The Contractor shall allow for the placing of signboard with name of client, name of contractor and name of project prior to start of works on site.**
- ii. Contractor to make provision for two (2) compaction test for subgrade and two (2) compaction tests for crusher run, per access or as indicated by the Engineer and shall submit a valid test report. Test shall be carried out by a certified laboratory.**
- iii. The Contractor shall secure the site using warning tape or hoarding as instructed by the Engineer prior to commencement of works including appropriate safety signages.**
- iv. The Contractor should ensure that all safety and security measures are taken during the execution of the works.**
- v. The Contractor should ensure that the site is kept clean at all times during the course of the works.**
- vi. Exact location and area to access to be determined on site.**
- vii. Contractor should ensure access to public beach for beach users at all time.**

B. SCHEDULE OF REQUIREMENTS

SCOPE OF WORKS, SPECIFICATIONS AND PERFORMANCE REQUIREMENTS

Project Brief

Upgrading of Entrance and Exit accesses at Flic En Flac Public Beach

Project Brief

The Beach Authority is envisaging to **upgrade Entrance and Exit accesses at Flic En Flac Public Beach** to ease vehicular access to the parking area.

Scope of works

The scope of works is as follows:

3. Clearing of site & Carting away of debris

- Removal of Casuarina (filao) roots protruding to the surface, if any.
- Removal of flaky and elongated stones, if any.
- Site clearance and carting away of debris and any other waste materials.

4. Upgrading of access

- Excavation of sand to a depth not exceeding 600 mm. Excavated materials to be stacked in form of heaps on site for reuse, as indicated by the Engineer or its representatives.
- Supply, laying and compaction of 300 mm thick hardcore filling materials (spalls 100-150mm) on the sub base at entry and exit and to achieve 95% BS Heavy Compaction.
- Supply and laying of 150 mm thick crusher run 0/20 on hardcore filling to be compacted in layers, not exceeding 150 mm to achieve 95 % BS Heavy compaction at entry and exit.
- Supply and laying of 30 mm thick crusher run 0/4 on crusher run to be compacted in layers, not exceeding 30 mm at entry and exit.
- Supply and fix of concrete kerbs Type K1.
- Supply and place of 'Evergreen blocks' to lines and level topped with crushed corals at entry and exit. Sample of Evergreen blocks and crushed corals with specifications to be submitted for approval prior to placing order.
- Casting of reinforced concrete ramps and ground beam on 75 mm thick blinding layer to support 'Evergreen' blocks as per drawings. Contractor shall prepare reinforcement for the R.C. structures and seek for approval prior to start the work.

Note:

- viii. The Contractor shall allow for the placing of signboard with name of project, name of client and name of contractor and contract ref/No. prior to start of works on site.
- ix. Contractor shall make provision for compaction tests as indicated by the Engineer and shall submit a valid test report. Test shall be carried out by certified laboratory.
- x. The Contractor shall secure the site by placing warning tape prior to commencement of works including appropriate safety signage.
- xi. The Contractor shall comply with all health and safety regulations during the execution of the works.
- xii. The Contractor should ensure that the site is kept clean at all times during the course of the works.
- xiii. Exact Location and area of access to be determined on site.
- xiv. Where entrance and exit accesses of the same parking lot shall be upgraded, the Contractor must ensure that the public should be able to use one of the accesses at all times. Hence, one access of the same parking lot shall be upgraded at one time.

B. SCHEDULE OF REQUIREMENTS

SCOPE OF WORKS, SPECIFICATIONS AND PERFORMANCE REQUIREMENTS

Project Title:

Upgrading of Entrance and Exit accesses at Poste La Fayette Public Beach

Project Brief

The Beach Authority is envisaging upgrading Entrance and exiting access to ease vehicular access to the beach.

Scope of works

The scope of works is as follows:

5. Clearing of site

- Stripping brushwood, vegetation and felling of trees with girth not exceeding one meter
- Clearing away brush roots and vegetation (grass)
- Filling in holes left by the roots with compacted materials approved by the engineer to the existing ground level or to sub grade level.
- Temporary barriers and signs
- Loading, carting away and disposal of all excess materials to stockpile as instructed by the engineer or to spoil tips located by the contractor
- Any miscellaneous cost arising

6. Upgrading of access

- Excavation of sand to a depth not exceeding 600 mm. Excavated materials to be stacked in form of heaps on site for reuse, as indicated by the Engineer or its representatives.
- Supply, laying and compaction of 300 mm thick hardcore filling materials (spalls 100-150mm) on the sub base at entry and exit and to achieve 95% BS Heavy Compaction.
- Supply and laying of 150 mm thick crusher run 0/20 on hardcore filling to be compacted in layers, not exceeding 150 mm to achieve 95 % BS Heavy compaction at entry and exit.
- Supply and laying of 30 mm thick crusher run 0/4 on crusher run to be compacted in layers, not exceeding 30 mm at entry and exit.
- Supply and fix of concrete kerbs Type K1.
- Supply and place of 'Evergreen blocks' to lines and level topped with crushed corals at entry and exit. Sample of Evergreen blocks and crushed corals with specifications to be submitted for approval prior to placing order.
- Casting of reinforced concrete ramps and ground beam on 75 mm thick blinding layer to support 'Evergreen' blocks as per drawings. Contractor

shall prepare reinforcement for the R.C. structures and seek for approval prior to start the work.

Note:

- xv. **The Contractor shall allow for the placing of signboard with name of project, name of client and name of contractor and contract ref/No. prior to start of works on site.**
- xvi. **Contractor shall make provision for compaction tests as indicated by the Engineer and shall submit a valid test report. Test shall be carried out by certified laboratory.**
- xvii. **The Contractor shall secure the site by placing warning tape prior to commencement of works including appropriate safety signage.**
- xviii. **The Contractor shall comply with all health and safety regulations during the execution of the works.**
- xix. **The Contractor should ensure that the site is kept clean at all times during the course of the works.**
- xx. **Exact Location and area of access to be determined on site.**
- xxi. **Where entrance and exit accesses of the same parking lot shall be upgraded, the Contractor must ensure that the public should be able to use one of the accesses at all times. Hence, one access of the same parking lot shall be upgraded at one time.**

B. SCHEDULE OF REQUIREMENTS

SCOPE OF WORKS, SPECIFICATIONS AND PERFORMANCE REQUIREMENTS

Project Title:

Upgrading of Entrance and Exit accesses at Belle Mare Public Beach

Project Brief

The Beach Authority is envisaging upgrading Entrance and exiting **access** to ease vehicular access to the beach.

Scope of works

The scope of works is as follows:

1. Clearing of site

- Stripping brushwood, vegetation and felling of trees with girth not exceeding one meter
- Clearing away brush roots and vegetation (grass)
- Filling in holes left by the roots with compacted materials approved by the engineer to the existing ground level or to sub grade level.
- Temporary barriers and signs
- Loading, carting away and disposal of all excess materials to stockpile as instructed by the engineer or to spoil tips located by the contractor
- Any miscellaneous cost arising

2. Upgrading of access

- Excavation of sand to a depth not exceeding 600 mm. Excavated materials to be stacked in form of heaps on site for reuse, as indicated by the Engineer or its representatives.
- Supply, laying and compaction of 300 mm thick hardcore filling materials (spalls 100-150mm) on the sub base at entry and exit and to achieve 95% BS Heavy Compaction.
- Supply and laying of 150 mm thick crusher run 0/20 on hardcore filling to be compacted in layers, not exceeding 150 mm to achieve 95 % BS Heavy compaction at entry and exit.
- Supply and laying of 30 mm thick crusher run 0/4 on crusher run to be compacted in layers, not exceeding 30 mm at entry and exit.
- Supply and fix of concrete kerbs Type K1.
- Supply and place of 'Evergreen blocks' to lines and level topped with crushed corals at entry and exit. Sample of Evergreen blocks and crushed corals with specifications to be submitted for approval prior to placing order.

- Casting of reinforced concrete ramps and ground beam on 75 mm thick blinding layer to support 'Evergreen' blocks as per drawings. Contractor shall prepare reinforcement for the R.C. structures and seek for approval prior to start the work.

Note:

- i. **The Contractor shall allow for the placing of signboard with name of project, name of client and name of contractor and contract ref/No. prior to start of works on site.**
- ii. **Contractor shall make provision for compaction tests as indicated by the Engineer and shall submit a valid test report. Test shall be carried out by certified laboratory.**
- iii. **The Contractor shall secure the site by placing warning tape prior to commencement of works including appropriate safety signage.**
- iv. **The Contractor shall comply with all health and safety regulations during the execution of the works.**
- v. **The Contractor should ensure that the site is kept clean at all times during the course of the works.**
- vi. **Exact Location and area of access to be determined on site.**
- vii. **Where entrance and exit accesses of the same parking lot shall be upgraded, the Contractor must ensure that the public should be able to use one of the accesses at all times. Hence, one access of the same parking lot shall be upgraded at one time.**

Drawings

This Bidding Document includes *the following* drawings.

Upgrading of Entrance and Exit Accesses on Public Beaches

List of Drawings

Details	Details
Le Morne Public Beach	Annex 1 (I-VII)
Flic en Flac Public Beach	Annex 2 (I-VI)
Poste La Fayette Public Beach	Annex 3 (I-IV)
Belle Mare Public Beach	Annex 4 (I-IV)

TEST FOR CONCRETE

1.0 CONCRETE

1.1 Scope of Section

This section covers concrete and mortar required in the Permanent Works other than the special concretes and mortars specified in other sections of the Specification.

1.2 Definitions

Structural concrete is any class of concrete which is used in reinforced, prestressed or unreinforced concrete construction, which is subject to stress and which is required to comply with Clause 1.4.

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.

1.3 Materials for Concrete

1.3.1 General

The Contractor shall submit to the Employer's Representative full details of all materials which he proposes to use for making concrete. No concrete shall be placed in the Permanent Works until the Employer's Representative 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 Employer's Representative.

1.3.2 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 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 which 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 Employer's Representative. The tests shall be in accordance with Test A1 in Appendix B, and the Contractor shall supply two copies of each test certificate to the Employer's Representative.

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 Employer's Representative, 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 Employer's Representative 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.

The Contractor shall keep full records of all data relevant to the manufacture, delivery, testing and use of all cement used in the Permanent Works and shall provide the Employer's Representative with two copies thereof.

1.3.3 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 normal 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 SO_3 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 percentage of the weight of cement in the mix:-

For prestressed concrete, steam cured concrete or concrete containing sulphate resisting or supersulphated 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 SO_3 of all 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 40mm aggregate and above, not more than 40
For nominal 20mm aggregate and below, not more than 35.

(i) 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 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.

1.3.4 Aggregates for Mortar

Aggregates for mortar shall conform to BS 1200

1.3.5 Testing Aggregates

(a) Acceptance testing

The Contractor shall deliver to the Employer's Representative samples containing not less than 50 kg of any aggregate which he proposes to use in the Permanent Works and shall supply such further samples as the Employer's Representative may require. Each sample shall be clearly labelled to show its origin and shall be accompanied by all the information called for in BS 882.

Tests to determine compliance of the aggregates with all the requirements of Clauses 1.3.3 or 1.3.4 shall be carried out by the Contractor in a laboratory acceptable to the Employer's Representative. If the tested materials fail to comply with the Specification, further tests shall be made in the presence of the Contractor and the Employer's Representative and acceptance of the material shall be based on such tests.

The acceptance tests carried out by the Contractor shall generally be on three representative samples of fine and coarse aggregates taken in the presence of the Employer's Representative. Total numbers of tests required for acceptance are as follows:-

Test	Fine Aggregates	Coarse Aggregates
Water absorption	-	3*
Flakiness Index	-	3*
Shell Content determination	-	3*
Test for shell content (Where required)	-	1
10% Fines test or aggregate impact value	-	3*
Grading	3*	3 on each nominal size
Chloride content	3*	3*
Sulphate content	3*	3*
Soundness	-	3*
Petrographic examination	As required, minimum 3	As required, minimum 3
Clay, silt and dust determination	3	3
Organic impurities	3	3

* One test on each sample

If at any time a significant physical or chemical change in the nature of the coarse or fine aggregate occurs, or a new source of aggregate is used, the Employer's Representative may direct that some or all of the acceptance testing is repeated.

(b) Routine Testing

The Contractor shall carry out routine testing of aggregates for compliance with the Specification during the period in which concrete is being produced for the Permanent Works. The tests set out below shall be performed on aggregates from each separate source on the basis of one set of tests for each day on which aggregates are delivered to Site provided that no set of tests shall represent more than 250 tonnes of fine aggregate nor more than 500 tonnes of coarse aggregate, and provided also that the aggregates are of uniform quality. If the aggregate from any source is variable, the frequency of testing shall be as instructed by the Employer's Representative.

Grading	BS 812
Silt and clay content	BS 812
Moisture content	BS 812

In addition to the above routine tests, the Contractor shall carry out the following tests at the frequencies stated:

Moisture content: As frequently as may be required in order to control the water content of the concrete as required by the Specification.

Chloride content: As frequently as may be required to ensure that the proportion of chlorides in the aggregates does not exceed the limit stated in the Specification.

The Contractor shall take account of the fact that when the chloride content is variable it may be necessary to test every load in order to prevent excessive amounts of chloride contaminating the concrete. For this purpose the Contractor shall use the rapid field test (the Quantab test). In the

event of disagreement regarding the results of the field test, the chloride content of the aggregate shall be determined in the laboratory as described in BS 812 (the Volhard test).

1.3.6 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.

1.3.7 Water for Concrete and Mortar

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

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

At the commencement of the Works the Contractor shall send a sample of the water proposed for concrete and mortar to an accredited laboratory capable of carrying out the full analysis of potable water in accordance with either the "Analysis of Raw, Portable and Waste Waters" published by Her Majesty's Stationery Office (HMSO) or "The Standard Method of Examination of Water and Waste Waters" published by the American Water Works Association (AWWA). The results of the analysis shall be submitted to the Employer's Representative. The sample of water sent for analysis shall be taken in the presence of the Employer's Representative. If the water selected comes from a reliable portable water source the Contractor shall obtain a copy of a recent analysis from the chemist of the Water Authority. If the Employer's Representative considers this satisfactory the tests required above need not be carried out.

If the source of water is changed it shall be tested as above. If water contains 80 percent of the maximum concentration of impurities properties given above it shall be retested at two monthly intervals.

1.3.8 Admixtures

(a) General

The use of admixtures in concrete may be required under the Contract to promote special properties to the concrete or may be proposed by the Contractor to assist compliance with the Specification.

In all cases the Contractor shall submit to the Employer's Representative full details of the admixture he proposes to use and the manner in which he proposes to add it to the mix. The information provided shall include:

- i. The typical dosage and the detrimental effects of an excess or deficiency in the dosage
- ii. The chemical names of the main active ingredients in the admixture
- iii. Whether or not the admixture contains chlorides, and if so the chloride ion content expressed as a percentage by weight of admixture
- iv. Whether the admixture leads to the entrainment of air when used at the manufacturer's recommended dosage, and if so, the extent to which it does so
- v. Long and short term effects of the admixture on concrete including the effects on different types of cement and aggregates
- vi. Storage life
- vii. Safety precautions required in handling
- viii. Compatibility with other additives
- ix. Compliance with Standards.

The chloride ion content of any admixture shall not exceed 2 per cent by weight of the admixture nor 0.03 per cent by weight of the cement in the mix.

Admixtures shall not mixed together without the consent of the Employer's Representative.

(b) Super Plasticizing Admixtures

Super plasticizing admixtures shall comply with BS 5075 Part 3.

If the Drawings specify or the use of super plasticizing admixtures is subsequently authorised by the Employer's Representative, the Flow Table test carried out in accordance with BS 1881 Part 105 shall be used to control and record workability.

Test cubes shall be made in accordance with BS 1881 except that the concrete shall be placed in the cubes and compacted to the same degree as the concrete placed in the works.

In addition to the normal trial mix cubes required an additional set of cubes shall be made with 1.5 times the intended super plasticizing admixture addition to assess the effect of overdosage on the concrete.

If the super plasticizing additive is not specified but the Contractor requests permission to use it the Employer's Representative shall not approve its use unless full particulars including chemical constituents of the admixture are submitted and the additional trial mixes mentioned above have been carried out and all are considered satisfactory.

The Employer's Representative reserves the right to refuse the use of super plasticizing admixture for concrete required for particular structures.

(c) Air Entraining Agents

In addition to the general requirements, air entraining agents shall be capable of producing an air content in concrete mixes within the limits stated on the Drawings without any tendency to produce excessive air content in the event of prolonged mixing times

The effect of a proposed air entraining agent shall be tested by the Contractor in trial mixes produced in the plant which he proposes to use for the Permanent Works

Air entraining agents shall comply with BS 5075.

(d) Workability Agents

Subject to the agreement of the Employer's Representative, admixtures may be used by the Contractor to assist in meeting the requirements of the Specification or to aid the placing of concrete.

Workability agents shall comply with BS 5075 and shall not have any adverse effect on the properties of the concrete. If a reduction in strength of the concrete is caused, the Contractor shall counteract this by a reduction in water cement ratio or by an increase in cement content.

1.3.9 Other Cementitious Components

(a) Pulverised Fuel Ash

Pulverised Fuel ash shall comply with the requirements of BS 3892 and shall have a carbon content not exceeding seven per cent by weight

The maximum sulphate content of PFA expressed as SO_3 shall be 2.5 per cent by weight of PFA but if the weight of PFA in the mix exceeds the weight of cement in the mix, the maximum content of SO_3 shall be 1.5 per cent.

The maximum SO_3 content of the mix shall not exceed the limit given in clause 1.3.3

The fineness as expressed by the specific surface shall be within the range of Zones B or C in BS 3892, and not more than one test in ten shall show a result falling outside this range.

Pulverised fuel ash shall only be used in conjunction with cement complying with BS 12 and the total sulphate content of the mix from all sources, expressed as SO_3 shall not exceed that stated in Clause 1.3.3(e).

1.4 Design of Concrete Mixes for Structural Concrete

1.4.1 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 in Table 1.1

Table 1.1

CONCRETE CLASSES

Class of Concrete	Minimum Cement Content Kg/m ³	Maximum Water/Cement Ratios		150mm cubes Required Minimum Average 28 day strength (M.A.S) N/mm ²
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

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.

1.4.2 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 1.1 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 1.1 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 7.4.3 shall not be less than the minimum average strength given in Table 1.1 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 C 15 unless otherwise indicated on the drawings.

The Contractor shall submit full details of all the mixes he proposes to use to the Employer's Representative.

1.4.3 Trial Mixes with 150 mm test cubes

For each mix of concrete the Contractor shall in the presence of a representative of the Employer's Representative 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/mm^2 shall be greater than the Minimum Average Strength given in Table 1.1 for the class of concrete tested.

If the 28 day strength determined as above is less than the minimum average strength shown in Table 1.1 plus 2 N/mm^2 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 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 Employer's Representative 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 Employer's Representative 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 Employer's Representative.

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 Employer's Representative, including the type and source of each ingredient , the proposed proportions of each mix and the results of the tests on the trial mixes

1.4.4 Quality Control of Concrete Production (150 mm cubes)

For each class of concrete in production at each plant for use in the Permanent Works, samples of concrete shall be taken at the point of mixing or of deposition as instructed by the Employer's Representative and in the presence of a representative of the Employer's Representative , all in accordance with the sampling procedures described in BS 1881.

The slump of each sample carried out in accordance with BS 1881 shall be determined at the time of sampling.

Samples shall be taken on the basis of one for each 20 m³ of concrete placed but in any case not less than one sample per day or one sample for each pour of concrete placed, whichever is the more frequent.

Three 150 mm test cubes shall be cast from each sample, cured and tested as set out in BS 1881. One cube shall be tested at seven days and two at 28 days.

The average strength of the two cubes crushed at 28 days shall be referred to as one test result.

Concrete shall be deemed to comply with the strength specified if the average strength of any four consecutive test results (8 cubes) exceeds the final average trial mix strength minus 2 N/mm² for the Class of concrete with no single test result (2 cubes) being less than the final average trial mix strength minus 6 N/mm².

1.4.5 Failure to Comply with Requirements

The Contractor shall take any action instructed by the Employer's Representative to remedy concrete that fails to comply with the Specification. Such action may include but is not necessarily confined to the following:

- (a) Adjusting the mix proportions until the concrete again complies with the Specification
- (b) Cutting test cores from the failed concrete and testing in accordance with BS 1881
- (c) Carrying out additional works to overcome the effect of the failed concrete
- (d) Removing the failed concrete
- (e) Increasing the frequency of sampling until control is again established.

1.5 Mixing Concrete

Before any plant for batching, mixing, transporting, placing, compacting and finishing concrete is ordered or delivered to Site, the Contractor shall submit to the Employer's Representative full details including drawings of all the plant which he proposes to use and the arrangements he proposes to make.

Concrete for the Permanent Works shall be batched and mixed in one or more central plants unless the Employer's Representative agrees to some other arrangement.

Batching and mixing plants shall be modern efficient equipment complying with the requirements of BS 1305 and capable of producing a uniform distribution of the ingredients throughout the mass. Truck mixers shall not be used unless the Employer's Representative agrees otherwise, in which case they shall comply with the requirements of BS 4251.

If the plant proposed by the Contractor does not fall within the scope of BS 1305, it shall have been tested in accordance with BS 3963 and shall have a mixing performance within the limits of Table 6 of BS 1305.

Unless the Employer's Representative agrees otherwise, each mixing plant shall be tested for mix variability as set out in Test A 8 in Appendix B before it is used to mix concrete

for the Permanent Works. All mixing operations shall be under the control of an experienced supervisor.

The aggregate storage bins shall be provided with drainage facilities arranged so that drainage water is not discharged to the weigh hoppers. Each bin shall be drawn down at least once per week and any accumulations of mud or slit removed.

Cement and aggregates shall be batched by weight. Water may be measured by weight or volume. The weighing and water dispensing mechanisms shall be maintained in good order. Their accuracy shall be maintained within the tolerances described in BS 1305 and checked against accurate weights and volumes when required by the Employer's Representative.

The weights of cement and of each size of aggregate indicated by the mechanisms employed shall be within a tolerance of plus or minus two per cent of the respective weights per batch agreed by the Employer's Representative.

The Contractor shall provide standard test weights at least equivalent to the maximum working load used on the most heavily loaded scale and other auxillary equipment required for checking the satisfactory operation of each scale or other measuring device. Tests shall be made by the Contractor at intervals to be determined by the Employer's Representative and shall be carried out in his presence.

For the purpose of carrying out these tests, there shall be easy access for personnel to the weigh hoppers. The Contractor shall furnish the Employer's Representative with copies of the complete results of all check tests and shall make any adjustments, repairs or replacements necessary to ensure satisfactory performance.

The nominal drum or pan capacity of the mixer shall not be exceeded. The turning speed and the mixing time shall be as recommended by the manufacturer, but in addition, when water is the last ingredient to be added, mixing shall continue for at least one minute after all the water has been added to the drum or pan.

If the Employer's Representative has reason to doubt the adequacy of the mixing, he may order a variability test as set out in Test A8 in Appendix B and the Contractor shall forthwith carry out such tests, the results of which shall comply with the requirements shown in Appendix B.

The blades of pan mixers shall be maintained within the tolerances specified by the manufacturer of the mixer and the blades shall be replaced when it is no longer possible to maintain the tolerances by adjustment.

Mixers shall be fitted with an automatic recorder registering the number of batches discharged. The water to be added to the mix shall be reduced by the amount of free water contained in the coarse and fine aggregates. This amount shall be determined by the Contractor by a method agreed by the Employer's Representative immediately before mixing begins each day and thereafter as the Employer's Representative directs.

When the correct quantity of water, determined as set out in the Specification, has been added to the mix, no further water shall be added, either during mixing or subsequently. After mixing for the required time, each batch shall be discharged completely from the mixer before any materials for the succeeding batch are introduced.

Mixers which have been out of use for more than 30 minutes shall be thoroughly cleaned before any fresh concrete is mixed and thereafter the first batch of concrete through the

mixer shall contain only half the normal quantity of coarse aggregate. This batch shall be mixed for one minute longer than the time applicable to a normal batch. Mixers shall be cleaned out before changing to another type of cement.

1.6 Transport of Concrete

1.6.1 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 25mm.

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.

1.6.2 Transport and Delivery of Ready Mixed Concrete

(a) Quantity of Concrete

The basis of supply shall be by the cubic metre of fresh, fully compacted concrete. The volume of a given batch of concrete shall be calculated from the total mass of the batch divided by the mass per cubic metre of fresh, fully compacted concrete determined in accordance with BS 1881. The total mass of the batch shall either be calculated as the sum of the masses of all materials used including water, or determined from the gross and tare weights of the vehicle on a weighbridge.

(b) Transport of Concrete

Concrete shall be transported in a truck mixer complying with the requirements of BS 4251 unless the Employer's Representative agrees to the use of non-agitating vehicles. When non-agitating vehicles are used, the mixed concrete shall be protected from the gain or loss of water.

(c) Delivery Time

Concrete shall be discharged from the delivery vehicle within 2 hours after the time of loading, when concrete is transported in truck mixers or agitators, or within 1 hour after the time of loading when non-agitating equipment is used.

The time of loading, defined as the time of contact between cement and aggregates or, when these are surface dry, between cement and added water, shall be recorded on the delivery ticket.

NOTE: the delivery times indicated are arbitrary; the requirement is that concrete has the required workability at the time of discharge. A longer time may be appropriate in cool, humid weather or when retarding admixtures have been used, but a shorter time may be essential in hot weather with rich mixes, or where accelerating admixtures have been used.

(d) Additional Water

No additional water, other than any amount required to produce the specified workability, shall be added to the truck mixer drum before discharge unless specifically required and signed for by the Contractor and as agreed by the Employer's Representative.

(e) Delivery Ticket

Before discharging the concrete at the point of delivery, the supplier shall provide the Contractor with a delivery ticket for each batch of concrete on which is printed, stamped or written the following minimum information:

- name and location of ready-mixed concrete depot;
- serial number of ticket
- date;
- truck number;
- name of purchaser;
- name and location of site;
- grade or mix description of concrete, including minimum cement content if specified;
- specified workability;
- type of cement;
- nominal maximum size of aggregate
- type of name of admixture, if included,
- quantity of concrete in cubic metres;
- time of loading

Space shall be provided for any additional items that have been specified and for the following to be completed on site:

- arrival and departure times of the truck;
- time of completion of discharge;
- extra water added under supervision at the request of the Contractor, or his representative, and his signature, and as agreed by the Employer's Representative.

A copy of each delivery ticket shall be given to the Employer's Representative

1.7 Placing of Concrete

1.7.1 Consent for Placing

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

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

1.7.2 Preparation of Surfaces to Receive Concrete

Excavated surfaces on which concrete is to be deposited shall be prepared as set out in Section 3 of the Specification.

Existing concrete surfaces shall be prepared as set out in Clause 1.13. Before deposition of further concrete they shall be clean, hard and sound and if required by the Employer's Representative 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 Employer's Representative.

If so instructed by the Employer's Representative rock surfaces against which concrete is to be placed shall receive a prior coating of mortar mixed in the proportions similar to those of the fines portion in the concrete to be placed. The mortar shall be kept ahead of the concrete. The mortar shall be well worked into all parts of the excavated surfaces and shall be not less than 5mm thick.

If any fissures have been cleaned out as described in Section 3, they shall be filled with mortar or with concrete as instructed by the Employer's Representative.

The amount of mortar placed at any one time shall be limited so that it does not dry out or set before being covered with concrete.

1.7.3 Placing procedures

The concrete shall be deposited as nearly as possible in its final position. It shall be placed so as to avoid segregation of the concrete and displacement of the reinforcement, other embedded items, or formwork. It shall be brought up in layers approximately parallel to the construction joint planes and not exceeding 500 mm in compacted thickness unless otherwise permitted or directed by the Employer's Representative, but the layers shall not be less than four times the maximum nominal size of aggregate in thickness.

Layers shall not be placed so that they form feather edges nor shall they be placed on a previous layer which has taken its initial set. In order to comply with this requirement, a layer may be started before completion of the preceding layer.

All the concrete in a single bay or pour shall be placed as a continuous operation. It shall be carefully worked round all obstructions, irregularities in the foundations and the like so that all parts are completely full of compacted concrete with no segregation or honeycombing. It shall also be carefully worked round and between waterstops, reinforcement, embedded steelwork and similar items which protrude above the surface of the completed pour.

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 chute, downpipes, trunking, baffles or other appropriate devices.

Forms for walls, columns and other thin sections of significant height shall be provided with openings or other devices that will permit the concrete to be placed in a manner that will prevent segregation and accumulations of hardened concrete on the formwork or reinforcement above the level of the placed concrete

When it is necessary to place concrete under water the Contractor shall submit to the Employer's Representative his proposals for the method and equipment to be employed. The concrete shall be deposited either by bottom-discharging watertight containers or through funnel-shaped tremies which are kept continuously full with concrete up to a level above the water and which shall have the discharging bottom fitted with a trapdoor and immersed in the concrete in order to reduce to a minimum the contact of the concrete with the water. Special care shall be taken to avoid segregation.

If the concrete in a tremie pipe is allowed to fall to such an extent that water enters the pipe, the latter shall be removed from the pour and filled with concrete before being again lowered into the placing position. During and after concreting under water, pumping or de-watering in the immediate vicinity shall be suspended if there is any danger that such work will disturb the freshly placed concrete.

1.7.4 Interruptions to Placing

If concrete placing is interrupted for any reason and the duration of the interruption cannot be forecast or is likely to be prolonged, the Contractor shall immediately take the necessary action to form a construction joint so as to eliminate as far as possible feather edges and sloping top surfaces and shall thoroughly compact the concrete already placed in accordance with clause 1.8

All work on the concrete shall be completed while it is still plastic and it shall not thereafter be disturbed until it is hard enough to resist damage. Plant and materials to comply with this requirement shall be readily available at all times during concrete placing.

Before concreting is resumed after such an interruption the Contractor shall cut out and remove all damaged or uncompacted concrete, feather edges or any other undesirable features and shall leave a clean sound surface against which the fresh concrete may be placed.

If it becomes possible to resume concrete placing without contravening the Specification and the Employer's Representative consents to a resumption, the new concrete shall be

thoroughly worked in and compacted against the existing concrete so as to eliminate any cold joints.

1.7.5 Dimensions of Pours

Unless otherwise agreed by the Employer's Representative, pours shall not be more than two metres high and shall as far as possible have a uniform thickness over the plan area of the pour.

Concrete shall be placed to the full planned height of all pours except in the circumstances described in Sub-Clause 1.7.4. The Contractor shall plan the dimensions of pours in such a way that thermal or shrinkage stresses are minimized.

1.7.6 Placing Sequence

The Contractor shall arrange that as far as possible the intervals between placing successive lifts of concrete in one section of the Permanent Works are of equal duration.

This duration shall normally be not less than three or more than seven days under temperate weather conditions unless otherwise agreed or instructed by the Employer's Representative.

Where required by the Employer's Representative to limit the opening of construction joints due to shrinkage, concrete shall not be placed against adjacent concrete which is less than 21 days old.

If concrete has to be placed against recently cast concrete within a period of less than 21 days, the pour shall be carried out as early as possible after the adjacent pour but precautions shall be taken to minimise shrinkage.

The methods described in Clause 1.9.3 can be used to that effect. However the contractor shall submit for approval his proposed method and programme for placing of concrete.

When the Drawings call for contraction gaps in concrete, these shall be of the widths and in the locations shown on the Drawings and they shall not be filled until the full time interval shown on the Drawings has elapsed.

1.8 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 arrises 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 Employer's Representative 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 100mm 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.

1.9 Curing of Concrete

1.9.1 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 Employer's Representative before the placing of concrete commences in the Permanent Works.

1.9.2 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 1.9.3.

Water used for curing shall be of the same quality as that used for mixing as stated in Clause 1.3.7. 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 in accordance with Test A9 in Appendix B. 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 Employer's Representative, 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 Employer's Representative, 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.

1.9.3 Limitation of Temperature Differentials

The Contractor shall limit the development of temperature differentials in concrete after placing by any means appropriate to the circumstances as accepted by the Employer's Representative which shall include the following:-

- a. Limiting concrete temperatures at placing as set out in Clause 1.11.2;
- b. Use of low heat cement , subject to the agreement of the Employer's Representative;
- c. Insulation of exposed concrete surfaces by insulating blankets. Such blankets shall have a thermal conductance C value less than $1.0 \text{ W/m}^2 \text{ } ^\circ\text{C}$;
- d. Leaving formwork in place during the curing period. Steel forms shall be suitably insulated on the outside;
- e. Preventing rapid dissipation of heat from surfaces by shielding from wind;
- f. Avoiding the use of water sprays when such use would cause rapid cooling of the surface;

1.10 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 1.4.

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.

1.11 Concreting in Hot Weather

1.11.1 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.

1.11.2 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 Employer's Representative 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 Employer's Representative 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 Employer's Representative 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 Employer's Representative shall not relieve the Contractor of any of his responsibilities.

1.11.3 No Additional Payment

Under no circumstances will the Contractor be entitled to receive any additional payment for complying with the requirements of this Clause of the Specification.

1.12 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.

1.12.1 U1 Finish

All surfaces on which no higher class of finish is called for on the Drawings or instructed by the Employer's Representative shall be given a U 1 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.

1.12.2 U2 Finish

The surface shall first be treated as a Class U 1 finish and after the concrete has hardened sufficiently, it shall be floated by hand or machine sufficient only to produce a uniform surface free from screed marks.

1.12.3 U3 Finish

This is hard trowelled surface for use where weather resistance or appearance is important, or which is subject to high velocity water flow. The surface shall be floated as for a U2 finish but to the tolerance stated below. When the moisture film has disappeared and the concrete has hardened sufficiently to prevent laitance from being worked to the surface, it shall be steel-trowelled under firm pressure to produce a dense, smooth uniform surface free from trowel marks.

1.12.4 U4 Finish

The requirement is similar to a U3 finish but the permissible tolerances are smaller

1.12.5 U5 Finish

The concrete surface shall firstly be prepared as a U2 finish and then lightly brushed with a stiff brush to produce a textured finish. The brush used, once approved, shall be kept for the brushed finish only and not used for any other purpose.

1.12.6 Tolerances

The permissible tolerances on free surfaces shall not exceed the values given in Table 1.2

Table 1.2

Surface Tolerances

Class of Finish	Tolerance in mm See notes		
	A	B	C
U1	Not applicable	10	+20 or -10
U2	Nil	10	+20 or -10
U3	Nil	5	+12.5 or -7.5
U4	Nil	2	+6 or -4

Notes:

1. Col. A is the maximum allowable value of any sudden change of level in the surface
2. Col.B is the maximum allowable value of any gradual irregularity of the surface, as indicated by the gap between the surface and a three metre long straightedge or correctly shaped template placed on the surface
3. Col.C is the maximum allowable value of the difference in level or position between a straightedge or correctly shaped template placed on the surface and the specified level or position of that surface.

Where dimensional tolerances are given on the Drawings or elsewhere in the Specification they shall take precedence over those given in Table 1.2.

1.13 Construction Joints

Whenever concrete is to be bonded to other concrete which has hardened, the surface of contact between the sections shall be deemed a construction joint.

Where construction joints are shown on the Drawings, the Contractor shall form such joints in those positions. The location of joints which the Contractor requires to make for the purpose of construction shall be subject to the agreement of the Employer's Representative and details shall be submitted with the Programme of Works required by the Conditions of Contract.

The exact location of all construction joints shall be submitted to the Employer's Representative at least four weeks prior to the start of construction of the relevant part of the works. Construction joints shall be in vertical or horizontal planes except in sloping slabs where they shall be normal to the exposed surface or elsewhere where the Drawings require a different arrangement.

Construction joints shall be so arranged as to reduce to a minimum the effects of shrinkage in the concrete after placing, and shall be placed in the most advantageous positions with regard to stresses in the structures and the desirability of staggering joints.

Feather edges of concrete at joints shall be avoided and any feather edges which may have formed where reinforcing bars project through a joint shall be cut back until sound concrete has been reached.

The intersections of horizontal or near horizontal joints and exposed faces of concrete shall appear as straight lines produced by use of a guide strip fixed to the formwork at the top of the concrete lift, or by other means acceptable to the Employer's Representative.

Construction joints formed as free surfaces shall not exceed a slope of 20 per cent from the horizontal. The surface of the fresh concrete in horizontal or near horizontal joints shall be thoroughly cleaned and roughened by means of high pressure water and air jets when the concrete is hard enough to withstand the treatment without the leaching of cement. The surface of vertical or near vertical joints shall be similarly treated if circumstances permit the removal of formwork at a suitable time.

Where concrete has become too hard for the above treatment to be successful, the surface whether formed or free is to be thoroughly scabbled by mechanical means or wet sand blasted and then washed with clean water. The indentations produced by scabbling shall be not less than 10 mm deep and shall not extend closer than 40 mm to a finished face.

If instructed by the Employer's Representative the surface of the concrete shall be thoroughly brushed with a thin layer of mortar complying with Clause 1.17, all as set out in Clause 1.7.2 immediately prior to the deposition of fresh concrete. The mortar shall be kept just ahead of the fresh concrete being placed and the fresh layer of concrete shall be thoroughly and systematically vibrated to full depth to ensure complete bond with the adjacent layer.

No mortar or concrete may be placed in position on or against a construction joint until the joint has been inspected and passed by the Employer's Representative.

1.14 Expansion and Contraction joints

Expansion and contraction joints are discontinuities in concrete designed to allow for thermal or other movements in the concrete.

Expansion joints are formed with a gap between the concrete faces to permit subsequent expansion of the concrete. Contraction joints are formed to permit initial contraction of the concrete and may include provision for subsequent filling.

Expansion and contraction joints shall be formed in the positions and in accordance with the details shown on the Drawings or elsewhere in the Specification.

1.15 Records of Concrete Placing

Records, in a form agreed by the Employer's Representative, shall be kept by the Contractor of the details of every pour of concrete placed in the Permanent Works. These records shall include class of concrete, location of pour, date of pour, ambient temperature and concrete temperature at time of placing, moisture contents of aggregates, details of mixes, batch numbers, cement batch number, results of all tests undertaken, location of test cube sample points and details of any cores taken.

The Contractor shall supply to the Employer's Representative four copies of these records each week covering work carried out the preceding week. In addition he shall supply to

the Employer's Representative monthly histograms of all 28 day cube strengths together with accumulative and monthly standard deviations and any other information which the Employer's Representative may require concerning the concrete placed in the Permanent Works.

1.16 Mortar

This clause covers mortar for use ahead of concrete placing, and other uses not covered elsewhere in the Specification.

Mortar shall be composed of fine aggregate complying with Clause 1.3.3 and the type of cement specified in Section 2.0. The mix proportions shall be as stated on the Drawings or if not stated shall be one part of cement to two parts of fine aggregate by weight.

Small quantities of mortar may hand mixed but for amounts over 0.5m³a mechanical mixer shall be used. The water content of the mortar shall be as low as possible consistent with the use for which it is required but in any case the water/cement ratio shall not be more than 0.5.

Mortar which is specified as 'dry pack' shall be mixed with sufficient water for the mix to become cohesive but not plastic when squeezed in the hand. Dry pack mortar shall be rammed into the cavity it is required to fill, using a hand rammer with sufficient force to ensure full compaction.

1.17 Concrete for Non Structural Purposes

Non-structural concrete (NS concrete) shall be used only for non-structural purposes where shown on the Drawings.

NS concrete shall be composed of aggregates complying with all-in aggregate within the grading limits of Table 3 of BS 882, Clause 1.3.3 and the type of cement specified in Section 2.0 or on the Drawings.

The weight of cement mixed with 0.3 cubic metres of combined or all-in aggregate shall not be less than 50 kg. The mix shall be proportioned by weight or by volume. The maximum aggregate size shall be 40 mm nominal.

The concrete shall be mixed by machine or by hand to a uniform colour and consistency before placing. The quantity of water used shall not exceed that required to produce a concrete with sufficient workability to be placed and compacted where required. The concrete shall be compacted by hand or by mechanical vibration.

1.18 Grouting of Pockets and Holes and Underpinning of Baseplates

Pockets and holding-down bolt holes shall be thoroughly cleaned out using compressed air and water jet. Holes drilled by a diamond bit shall be roughened. The pockets and holes shall be filled with grout consisting of cement and clean fresh water mixed in proportion of two parts by weight of cement to one part by weight of water. The pouring of liquid grout shall cease as soon as each hole is filled and any excess grout on the surface of the concrete foundation shall be completely removed and the surface dried off before the next operation proceeds.

The space between the top surface of foundation concrete and the underside of baseplates shall be filled with a special mortar made up in the following proportions:-

Portland cement	50 kg
Fine aggregate.....	50 kg

An additive acceptable to the Employer's Representative shall be added to counteract shrinkage in proportions recommended by the manufacturer.

The special mortar shall be mixed with the lowest water-cement ratio which will result in a consistency of mix of sufficient workability to enable maximum compaction to be achieved.

The special mortar shall then be well rammed in horizontally below the baseplate and from one edge only until it is extruded from the other three sides. The mortar which has extruded shall then be rammed back to ensure complete support without voids.

1.19 Protection of Concrete

Surfaces of concrete which are to be buried shall be protected by an asphaltic material coat approved by the Employer's Representative and applied in accordance with the manufacturer's instructions.

1.20 Hand Mixed Concrete

Concrete for structural purposes shall not be mixed by hand. Where non-structural concrete is required, hand mixing may be carried out subject to the agreement of the Employer's Representative. The mixing shall be done on a hard impermeable surface. The materials shall be turned over not less than three times dry, water shall then be sprayed on and the materials again turned over not less than three times in a wet condition and worked together until a mixture of uniform consistency is obtained.

For hand mixed concrete not more than 0.5 cubic metre shall be mixed at one time. During windy weather efficient precautions shall be taken to prevent cement from being blown away during the process of gauging and mixing.

1.21 Protection of Buried Concrete

1.21.1 Materials

- (a) Plastic sheeting where specified shall be polythene sheeting 250 microns minimum thickness to BS 743 to the approval of the Employer's Representative. The Contractor shall provide suitable samples for approval before any concreting works shall begin.

All joints in the plastic sheeting shall be made with an approved polythene based adhesive tape. This tape shall also be used where tailoring of the sheeting to complicated shapes is necessary, e.g gullies, pipe ducts, etc.

- (b) Bitumen coating shall consist of one priming coat and one finishing coat of an approved bitumen based high build asbestos filled liquid coating.

1.21.2 Concrete in Contact with Ground

Where directed by the Employer's Representative or shown on the Drawings concrete work which will be placed directly against rock or soil or which will subsequently have backfill placed against it will be protected in the following way from the aggressive action of salts contained in rock, soil or groundwater:

- a. Concrete placed directly against cut-face shall be protected by a layer of plastic sheeting laid over the area to be concreted . All laps shall be at least 300mm wide and sufficient surplus sheeting shall be left to enable a margin of at least 300 mm width to project above the ground/concrete interface to be sealed onto the adjacent finished concrete surface with the bitumen coating. Special care shall be taken to avoid damage to the plastic sheeting during concreting.
- b. Formed or free concrete surfaces against which backfill will subsequently be placed will be protected by the application of bitumen coating.

No protection will be applied to surfaces against which concrete will subsequently be placed, except as described in the following sub-clause.

Engineer's specifications

1. GENERAL

1.1 Scope

This specification shall apply to:

- (a) Excavation to foundations
- (b) Reinforced concrete
- (c) Formwork
- (d) Masonry Work

1.2 Responsibility

No approval or acceptance by the Engineer or his representative shall in any way relieve the contractor of his responsibility for the quality of materials, the standard of workmanship, or the strength, durability and appearance of the concrete works and works in general.

2. EXCAVATION

2.1 Excavate to Reduce Level & to Dimensions

Excavate site as shown on drawings to form the foundations to width and depths indicated, the bottom of all excavation to be clean and perfectly level.

2.2 Bottoms of Excavations to Receive Foundations

Excavations must be inspected by the Engineer before any work is to be executed. The surface of the bottoms to excavation shall be surfaced with 50 mm blinding layer of grade 15 concrete and wood floated.

3. CONCRETE

3.1 All workmanship, materials, tests and performance in connection with the concrete work shall be in conformity with the British Standard Code of Practice BS 8110 Part 1 1985 for the design, materials and workmanship for "The Structural Use of Concrete"

3.2 Cement

Cement unless otherwise specified shall be Ordinary Portland Cement complying with the requirements of BS 12 1978 and a manufacturer's certificate of test in accordance with BS 12 shall be supplied for each consignment delivered to site.

3.3 Aggregates

Aggregates shall comply with the recommendations of BS 882 1983. Deviation from BS 882 in respect of grading of aggregates may be accepted subject to the prior approval of the Engineer. Fine aggregate shall be clean, crushed rock sand and coral sand of hard quality and shall be free from earth, salt and organic matter. Coral sand shall be washed in running water.

3.4 Course aggregate shall be crushed basalt stones. Aggregates shall be stockpiled separately on paved areas and on no account on the ground.

3.5 Mixing Water

The water to be used for mixing concrete shall be clean and free from harmful matter, in suspension or solution which significantly affects the setting time or strength or durability of the concrete.

3.6 Reinforcement

Steel reinforcements shall be plain mild steel bars or high yield deformed bars complying with MS 10. At the time of incorporation in the works the reinforcement shall be clean and free from loose rust. Bending and cutting shall be in accordance with BS 4466.

The Contractor shall supply the Engineer with the certificates of the manufacture issued in compliance with MS 10 for the required tests.

3.7 Fixing Reinforcements

Reinforcements shall be accurately placed in position as shown on the drawings and shall be secured against displacement and supported by concrete or metal supports, steel chairs, spacers to ensure the correct position and cover before concreting. No concreting shall be done until the Engineer has inspected the reinforcement and approved the same.

3.8 Concrete Mixes

The Contractor shall design all the concrete mixes called for on the drawings. Ready mixed concrete may be used subject to the approval of the Engineer.

3.9 Quality Control of Concrete

Concrete test cubes shall be made, cured and tested and the results recorded according to the requirements of BS 1881. The frequency at which sampling and testing is called for will be directed by the Engineer.

3.10 Mixing Concrete

Mixing of concrete shall be achieved by mechanical means only. All materials shall be thoroughly dry before the water is added and the mixing of each batch shall continue for a period of not less than two minutes after the water has been added and until there is a uniform distribution of the materials and the mass is uniform in colour.

The concrete shall then be conveyed as quickly as possible to the works and placed while sufficiently plastic to allow for proper compaction. Concrete shall be placed continuously until completion of the part between construction joints as specified.

3.11 Compaction of Concrete

At all times during which concrete is being placed, the contractor shall provide adequate trained and experienced labour to ensure that the concrete is compacted in the forms to the satisfaction of the Engineer. Care shall be taken to fill every part of the forms, to work the concrete under and around the reinforcement without disturbing it. Vibration is required for all concrete.

3.12 Curing

The Contractor shall take all necessary measures to ensure that adequate curing is carried out on all fresh concrete to the satisfaction of the Engineer.

4. FORMWORK

4.1 Materials & Workmanship

Prior to the start of the works the Contractor shall put forward, for approval by the Engineer, the method or system of formworks he proposes to use for the main structural members. Generally all formworks shall be sufficiently strong to carry the loads which will occur before, during and after concreting. All propping shall be at regular intervals and carried by adequate bearers resting on firm ground. Lateral supports shall be sufficiently closely spaced to prevent lateral deflection of the formwork under the effect of vibration and hydraulic pressure of the wet concrete. All joints in the formwork shall be such as to prevent the loss of grout.

4.2 Stripping Formwork

Formwork shall be removed without undue vibration or shock and without damage to the concrete. No formwork shall be removed without the prior consent of the Engineer and the minimum periods that shall elapse between the placing of the concrete and the striking of the formwork will be as follows:

Beam sides, walls and columns	1 day	
Slab soffits (with props left under)		7 days
Beam soffits (with props left under)		10 days

Contractor shall be responsible for consequent of damage arising from early stripping of formwork.

5. MASONRY WORKS

5.1 Cement and Sand

Cement and sand for this trade shall be as specified for "Concrete".

5.2 Mortar for Masonry Work

Mortar for bedding and jointing of stonework shall comprise 1 part of cement to 3 parts of sand by volume.

5.3 Stonework in Walls

All stones for use in walling shall be approved local fieldstone of blue or other colour basalt stone carefully selected according to the type of walling required. Walls to be built to the thickness shown on the drawings and the stones shall be well bonded and all voids filled in solid mortar as described. Wall to be laid at random, i.e uncoursed. Mortar joints shall be raked to depth of 12mm from free of stone work ready for painting.

5.4 Pointing

All joints shall be raked out and pointed with cement and sand (1.3). The pointing will either be recessed; weather struck or flushes as shown on the drawings.

5.5 Cleaning of Stonework

The contractor shall protect the stonework from mortar droppings and wire brush and wash down all walls on completion.

10. SITE WORKS

10.1 Interlocking Concrete Blocks

Blocks/pavers: Specification may be by reference to a standard, by proprietary name, or both for clay pavers to BS 6677 Part 1 (Clause 120) pavers suitable for areas trafficked by pedestrians, motor cars and light vans.

Size: Common work sizes are 200 x 100mm (concrete and clay) and 215 x 102.5 or 210 x 105 (Clay)
Typical thickness are: 50mm – Pedestrian/light vehicular use

Colour/Patterns: Charcoal – Chequer surface pattern

Natural red – dimpled face with chamfered edge
Chamfered edges should be used in paving subject to vehicular traffic.

Bond: If a shaped block/paver can be laid in only one way the item should be deterred, insert e.g 45° herringbone.
Herringbone bond gives the maximum amount of restraint to individual blocks/pavers and should be used in areas subject to regular vehicular traffic.

Types of Paving

Paving should be set above drainage outlets to allow for future consolidated of the paving by traffic.

Laying

Laying generally:

- Ensure that sub-bases are suitably accurate and to specified gradients before laying paving.
- Cut blocks/pavers neatly and accurately without spalling to give neat junctions at edge restraints and changes in bond.
- Select blocks/pavers vertically from at least 3 separate packs in rotation, or as recommended by manufacturer, to avoid colour banding.
- Lay blocks/pavers on a well graded sand bed and vibrate to produce a thoroughly interlocked paving of even overall appearance with regular sand filled joints and accurate to line, level and profile.

Samples: Before placing order submit for approval representative samples. Ensure that delivered materials match samples.

Sand for bedding:

- Naturally occurring clean sharp sand or crushed rock graded as for laying course sand to BS 6717: Part 3, Table 2.
- Clay, silt and fine dust contents not more than 3% by mass.
- Free from deleterious salts, contaminants and cement.
- Obtain from only one source and ensure that all sand supplied has consistent grading.
- Maintain at an even moisture contents which will give maximum compaction during any laying period.

Sand for jointing:

- Clean dry sand graded to BS 6717: Part 3, Table 2.
- Do not use sand that will stain paving blocks.

Compacting and jointing

- o Thoroughly compact blocks/pavers with vibrating plate as laying proceeds but after infilling edges.
- o Apply the same compacting effort over the whole surface.
- o Do not compact within 1 m of the working face.
- o Do not leave uncompacted areas of paving at the end of working periods, except within 1m of unrestrained edges.
- o Check paving after compacting first few metres, then at frequent intervals to ensure that surface levels are as specified: if they are not, lift blocks/pavers and relay.
- o Brush sand into joints, re-vibrate surface and repeat as required to completely fill joints.
- o Avoid damaging kerbs and adjacent work during vibration: Do not begin vibration until kerbs have matured.

Levels of Paving:

Permission deviation from specified levels to be ± 6 mm generally. Paving at drainage outlets to set 6mm above outlet.

Remedial works: During the contract and Defects Liability Period

- Any areas of paving which settle must be re-laid as specified
- Where early trafficking leads to settlement of the jointing sand, refill the joints as specified.

Supplementary Information

PART 3 – Conditions of Contract and Contract Forms

Section VI. General Conditions of Contract

The General Conditions of Contract (GCC) applicable for this procurement is available on the web site of the Procurement Policy Office ppo.govmu.org under Ref. No. **W/GCC10/05-18** dated **21 May 2018**

The GCC can be used for both admeasurement contracts and lump sum contracts.

Section VII. Particular Conditions of Contract

Except where otherwise indicated, all PCC should be filled in by the Employer prior to issuance of the Bidding Documents. Schedules and reports to be provided by the Employer should be annexed.

These clauses should be read in conjunction with the General Conditions of Contract

A. General	
GCC 1.1 (r)	<p>The Employer is The Beach Authority</p> <p>Street: Plot 34, Ebene Cybercity</p> <p>Floor number: 7th Floor, Ebene Heights Building</p> <p>City: Ebene</p> <p>Country: Mauritius</p> <p>Telephone: 468 6209/10/11/12</p> <p>Facsimile number: 468 6213</p> <p>Electronic mail address: beachauthority@intnet.mu</p> <p>Authorised Representative: The Project Officer</p>
GCC 1.1 (v)	<p>The Intended Completion Date for the whole of the Works shall be:</p> <p><i>(i) 45 days as from the date of handing over of site.</i></p>
GCC 1.1 (y)	<p>The Project Manager is The Project Officer of the Beach Authority</p> <p>Street: Plot 34, Ebene Cybercity</p> <p>Floor number: 7th Floor, Ebene Heights Building</p> <p>City: Ebene</p> <p>Country: Mauritius</p> <p>Telephone: 468 6209/10/11/12</p> <p>Facsimile number: 468 6213</p> <p>Electronic mail address: beachauthority@intnet.mu</p>
GCC 1.1 (aa)	<p>The Sites are located at <i>Le Morne and Flic en Flac Public Beaches (LOT 1) and Poste La Fayette and Belle Mare Public Beaches (LOT 2)</i></p>
GCC 1.1 (dd)	<p>The Start Date shall be <i>the date of handing over of site.</i></p>
GCC 1.1 (hh)	<p>The Works consist of <i>Upgrading of Entrance and Exit Accesses on Public Beaches.</i></p>

GCC 2.2	Sectional Completions are: <i>Not Applicable</i>
GCC 2.3(i)	The following documents also form part of the Contract: <ul style="list-style-type: none"> a) Programme of work with activity schedules b) Methodology of work c) List of plants & equipments to be deployed under the current contract d) List of key personnel and corresponding CVs
GCC 3.1	The language of the contract is English The law that applies to the Contract is the law of Mauritius.
GCC 5.1	The Project manager <i>may</i> delegate any of his duties and responsibilities.
GCC 8.1	Schedule of other contractors: NOT <i>applicable</i>
GCC 13.1	Except for the cover mentioned in (d)(i) hereunder, the other insurance covers shall be in the joint names of the Contractor and the Employer and the minimum insurance amounts shall be: <ul style="list-style-type: none"> (a) for the Works, Plant and Materials (<i>for the full amount of the works including removal of debris, professional fee, etc.</i>) (b) for loss or damage to Equipment (<i>for the replacement value of the equipment (min Rs 1,500,000) that the contractor intends to use on site until the taking over by the Employer</i>) (c) for loss or damage to property (except the Works, Plant, Materials, and Equipment) in connection with Contract <i>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.</i> (d) for personal injury or death: <ul style="list-style-type: none"> (i) of the Contractor's employees: Rs 2 million (ii) of other people: Rs 2 million (e) for loss or damage to materials on-site and for which payment have been included in the Interim Payment Certificate, where applicable. <p>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.</p>
GCC 14.1	N/A
GCC 20.1	The Site Possession Date(s) shall be <i>upon signature of contract</i> .
GCC 23.1 & GCC 23.2	Appointing Authority for the Adjudicator: No Adjudicator shall be appointed for this Contract.
GCC 24.	In case a dispute of any kind arises between the Employer and the Contractor in

	<p>connection with, or arising out of, the contract or the execution of works or after completion of works and whether before or after repudiation or other termination of Contract, including any dispute as to any opinion, instruction, determination, certificate or valuation of the Employer's Representative, the matter in dispute shall, in the first place, be referred in writing to the employer's representative, with a copy to the other party.</p> <p>The Employer and the Contractor shall make every effort to resolve the dispute amicably by direct informal negotiation. If, after twenty-eight (28) days, the parties have failed to resolve their dispute or difference by such mutual consultation, then either the Public Body or the Contractor may give notice to the other party of its intention to refer the matter to:</p> <p style="text-align: center;">“ the competent courts of Mauritius”</p>
GCC 24.3	Hourly rate and types of reimbursable expenses to be paid to the Adjudicator: Not applicable.
GCC 24.4	Not Applicable
B. Time Control	
GCC 25.1	The Contractor shall submit for approval a Program for the Works within seven (7) days from the date of the Letter of Acceptance.
GCC 25.3	The period between Program updates is seven (07) days.
C. Quality Control	
GCC 33.1	The Defects Liability Period is: 365 days.
GCC 39.7	Interim Payment for Plant and Material on sites are not applicable.
D. Cost Control	
GCC 41.1 (l)	<p>Adverse weather conditions are rainy weather (at least 10mm rainfall for any welding and painting works), torrential rain and cyclonic weather.</p> <p>If however, during the execution of the Works the Contractor encounters any adverse weather conditions the contractor shall forthwith give notice thereof to the Project Manager. On receipt of such notice, the Project Manager shall, in his opinion such conditions could not have been reasonably foreseen by an experienced contractor, determine any extension of time to which the Contractor is entitled and shall notify the Contractor accordingly.</p> <p>Such determination shall take account of any instruction which the Project Manager may issue to the Contractor in connection therewith, and any proper and reasonable measures acceptable to the Project Manager which the Contractor may take in the absence of specific instructions from the Project Manager.</p>
GCC 43.1	The currency of the Employer's country is: Mauritian Rupees.
GCC 44.1	The Contract <i>is not</i> subject to price adjustment in accordance with GCC Clause 44.

GCC 45.1	The proportion of payments retained is: 10 percent.
GCC 46.1	The liquidated damages for the whole of the Works is Rs 1500 per day. The maximum amount of liquidated damages for the whole of the Works per site is 10 percent of the contract amount.
GCC 47.1	The Bonus for the whole of the Works is <i>Not Applicable</i>
GCC 48.1	The Advance Payments shall be: <i>Not Applicable</i>
GCC 49.1	The standard form of Performance security acceptable to the Public body shall be a 'Bank Guarantee'. The Bank guarantee shall be (10 %) of the contract price inclusive of VAT
E. Finishing the Contract	
GCC 55.1	Not Applicable
GCC 55.2	Not Applicable
GCC 57.2 (g)	Not Applicable
GCC 59.1	The percentage to apply to the value of the work not completed, representing the Employer's additional cost for completing the Works, is fifteen (15) percent of the contract value.

Note: The contractor shall comply to all Health & Safety requirements during the execution of works on site.

Section VIII - Contract Forms

This Section contains forms which, once completed, will form part of the Contract. The forms for Performance Security and Advance Payment Security, when required, shall only be completed by the successful Bidder after contract award.

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Letter of Acceptance

[on letterhead paper of the Employer]

..... *[date]*

To: *[name and address of the Contractor]*

Subject: *[Notification of Award Contract No]*

This is to notify you that your Bid dated *[insert date]* for execution of the . . .
. *[insert name of the contract and identification number, as given in the Appendix to Bid]* .
. for the Accepted Contract Amount of the equivalent of *[insert
amount in numbers and words and name of currency]*, as corrected and modified in
accordance with the Instructions to Bidders is hereby accepted by *(insert name of Public
Body)*.

You are requested to furnish the Performance Security within 21 days in accordance
with the General Conditions of Contract, using for that purpose of the Performance
Security Form included in Section VI (Contract Forms) of the Bidding Document.

Authorized Signature:

Name and Title of Signatory:

Name of Agency:

Attachment: Contract Agreement

Contract Agreement

THIS AGREEMENT made the day of,, between [name of the Employer]. (hereinafter “the Employer”), of the one part, and [name of the Contractor]. (hereinafter “the Contractor”), of the other part:

WHEREAS the Employer desires that the Works known as [name of the Contract]. should be executed by the Contractor, and has accepted a Bid by the Contractor for the execution and completion of these Works and the remedying of any defects therein,

The Employer and the Contractor agree as follows:

1. In this Agreement words and expressions shall have the same meanings as are respectively assigned to them in the Contract documents referred to.
2. The following documents shall be deemed to form and be read and construed as part of this Agreement. This Agreement shall prevail over all other Contract documents.
 - (a) the Letter of Acceptance
 - (b) the Bid
 - (c) the Addenda Nos [insert addenda numbers if any].
 - (d) the Appendix to the General Conditions of Contract
 - (e) the General Conditions of Contract;
 - (f) the Specification
 - (g) the Drawings; and
 - (h) the completed Schedules,
3. In consideration of the payments to be made by the Employer to the Contractor as indicated in this Agreement, the Contractor hereby covenants with the Employer to execute the Works and to remedy defects therein in conformity in all respects with the provisions of the Contract.
4. The Employer hereby covenants to pay the Contractor in consideration of the execution and completion of the Works and the remedying of defects therein, the Contract Price or such other sum as may become payable under the provisions of the Contract at the times and in the manner prescribed by the Contract.

IN WITNESS whereof the parties hereto have caused this Agreement to be executed in accordance with the laws of Mauritius on the day, month and year indicated above.

Signed by: _____
for and on behalf of the Employer

Signed by: _____
for and on behalf the Contractor

in the
presence of: _____
Witness, Name, Signature, Address, Date

in the
presence of: _____
Witness, Name, Signature, Address, Date

Performance Security – NOT APPLICABLE

.....*Bank's Name and Address of Issuing Branch or Office*.....

Beneficiary:*Name and Address of Public Body*.....

Date.....

PERFORMANCE GUARANTEE No.:.....

We have been informed that*name of the Contractor*.....
(hereinafter called "the Contractor") has entered into Contract No.....*reference number of the Contract*..... dated..... with you, for the execution of *name of Contract and brief description of Works*(hereinafter called "the Contract").

Furthermore, we understand that, according to the conditions of the Contract, a performance security is required.

At the request of the Contractor, we *name of Bank*hereby irrevocably undertake to pay you any sum or sums not exceeding in total an amount of *amount in figures (amount in words)*..... such sum being payable in the types and proportions of currencies in which the Contract Price is payable, upon receipt by us of your first demand in writing accompanied by a written statement stating that the Contractor is in breach of its obligation(s) under the Contract, without your needing to prove or to show grounds for your demand or the sum specified therein.

This guarantee shall expire not later than twenty-eight days from the date of issuance of the Certificate of Completion/Acceptance Certificate, calculated based on a copy of such Certificate which shall be provided to us, or on the.....day of,, whichever occurs first. Consequently, any demand for payment under this guarantee must be received by us at this office on or before that date.

.....**Seal of bank and**

Signature(s).....

Sample Form of Preference Security

**Form of Preference Security – NOT APPLICABLE
(Bank Guarantee)**

To: _____ [name of
Employer]

Employer] _____ [address of
Employer]

WHEREAS _____ [name and
addresses of the contractor] (hereinafter called "the Contractor"), has undertaken in
pursuance to Contract No. _____ dated _____ to execute
_____ [name of Contract and brief Description of
Works], (hereinafter called "the Contract");

AND WHEREAS it has been stipulated by you in the said Contract that the
Contractor shall furnish you with a Bank Guarantee by a local commercial bank for the
sum specified therein as security for compliance with his obligation stated in Sub-Clause
49.2 of the Conditions of Contract;

AND WHEREAS we have agreed to give the Contractor such a Bank Guarantee;

NOW THEREFORE we hereby affirm that we are the Guarantor and responsible
to you, on behalf of the Contractor, up to a total of _____ [amount
of Guarantee]⁹, we undertake to pay you, upon your first written demand and without
your having to substantiate such demand any sum within the limit of
_____ [amount of Guarantee].¹

We hereby waive the necessity of demanding the said debt from the Contractor
before presenting us with the demand.

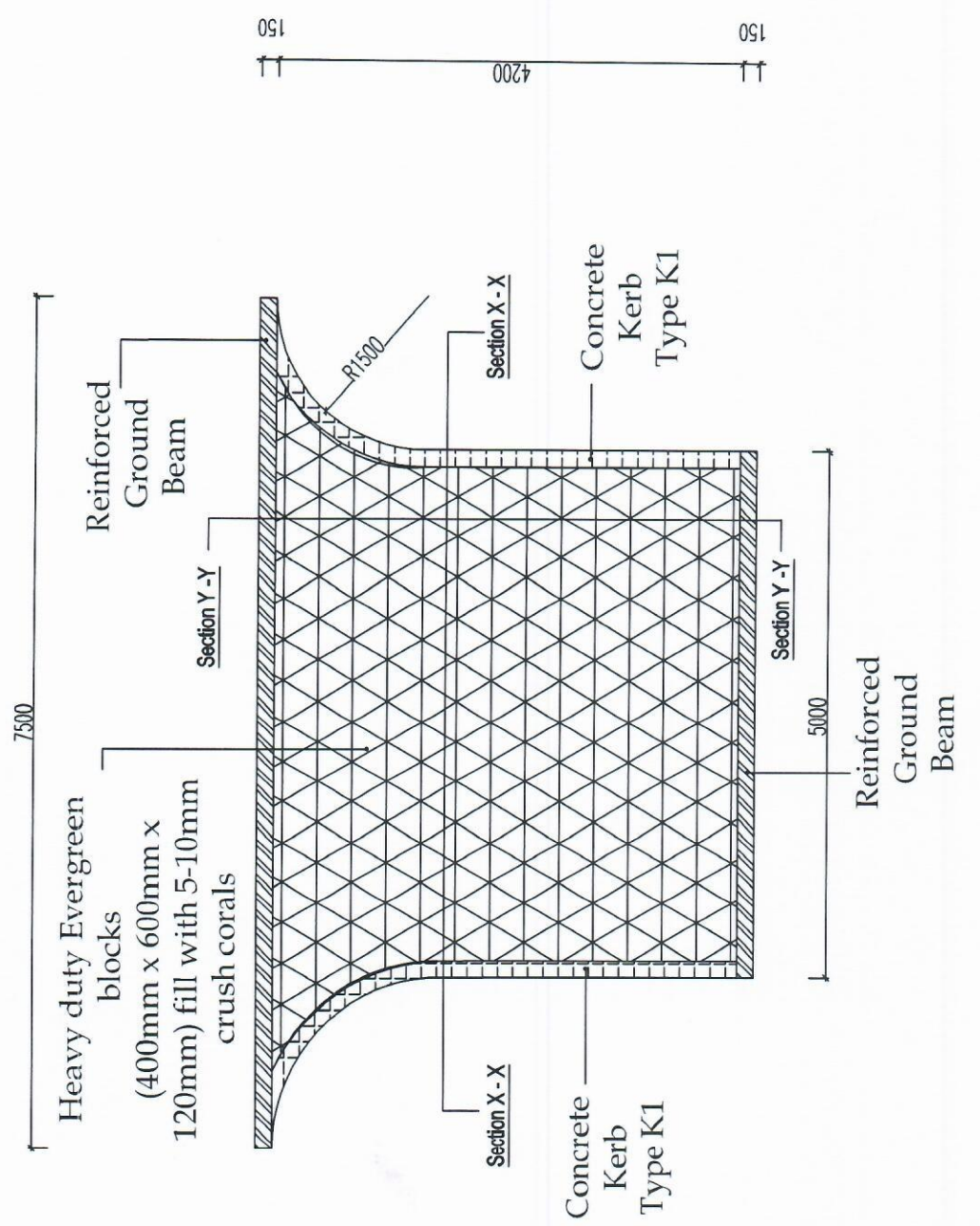
We further agree that no change or addition to or other modification of the terms
of the Contract or of the Works to be performed thereunder or of any of the Contract
documents which may be made between you and the Contractor shall in anyway release
us from liability under this guarantee, and we hereby waive notice of any such change,
addition or modification.

This guarantee is valid until the date of the Completion Certificate.

Signature and Seal of the Guarantor _____
Name of Bank _____
Address _____
Date _____

ANNEX 1

Drawings Le Morne Public Beach (LOT 1A)



Type 1



THE FLOOR
 BEACH AUTHORITY Building
 100, Beach Road
 BEACH CREST
 Tel: 469 88 06/10/11/18
 Fax: 469 88 13



Drawn	Checked	Approved

UPGRADING OF ACCESS AT LE MORNE PUBLIC BEACHES

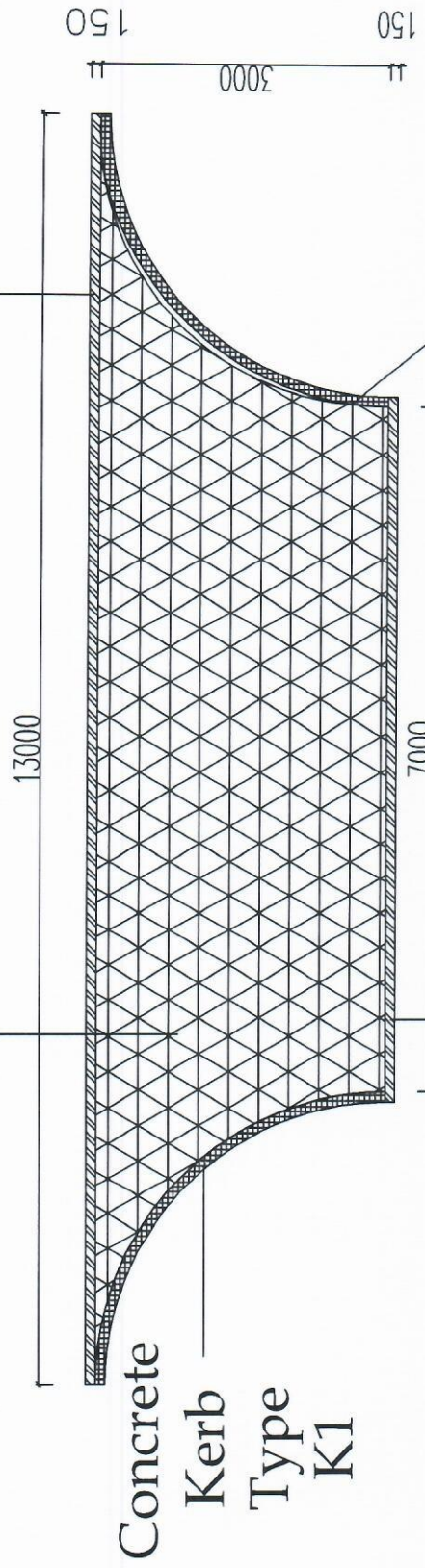
BEACH AUTHORITY

DATE	

NOTES:
 1. See figured dimensions only, do not scale.
 2. All dimensions are in millimetres.

Heavy Duty Evergreen
blocks
(400mm x 600mm x
20mm) fill with 5-10mm
crush corals

Reinforced
Ground
Beam



Concrete
Kerb
Type
K1

Reinforced
Ground
Beam

Concrete
Kerb
Type
K1

Type 2



REVISED	DATE	BY	REASON

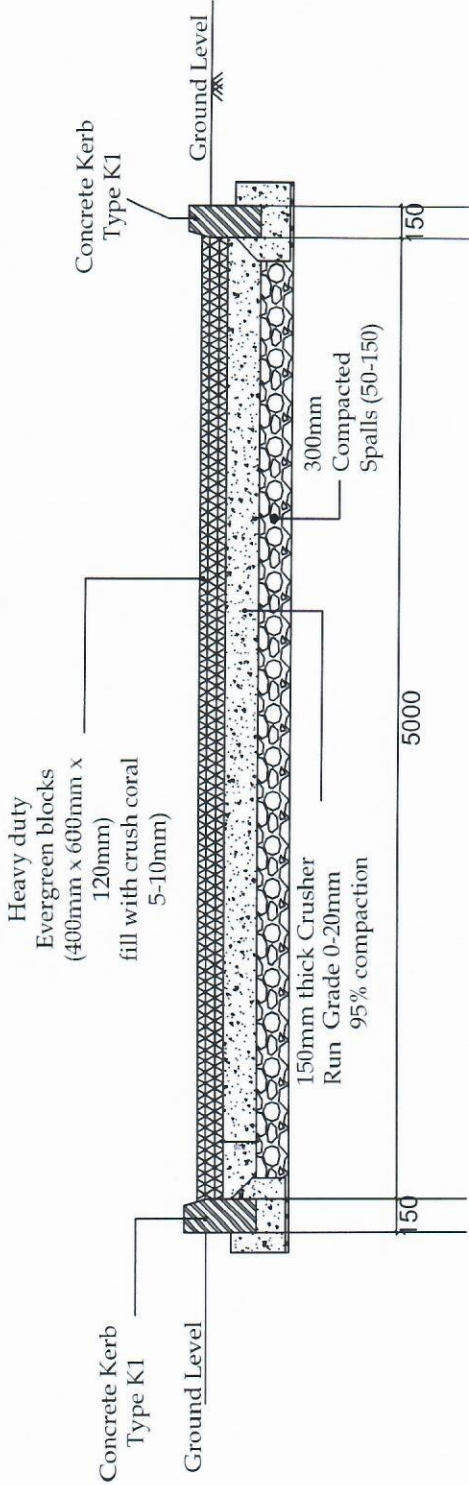
NOTES:
1. General dimensions only, do not scale.
2. All dimensions are in millimeters.

BEACH AUTHORITY

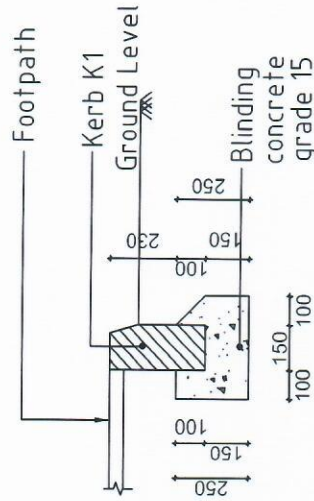
UPGRADING OF ACCESS AT LE MORNE PUBLIC BEACHES

DATE ISSUED: 18/05/2018
PROJECT NAME: Upgrade of Access at Le Morne Public Beaches
DRAWING NO: 18/05/2018/01/01
SCALE: 1:100
DATE: 18/05/2018
PAGE NO: 1/1

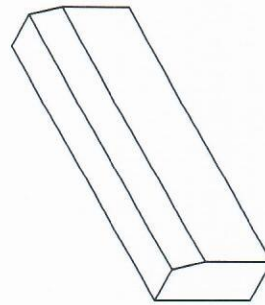
THE FLOOR
PLANNING AUTHORITY Building
100, The Esplanade
MORNE CYRILLIEN
Tel: 448 88 00/10/11/18
Fax: 466 66 13
BEACH AUTHORITY



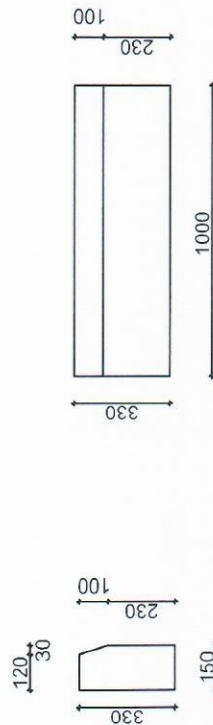
Section X - X



HAUNCHING DETAIL - KERB Type K1



ISOMETRIC VIEW



FRONT

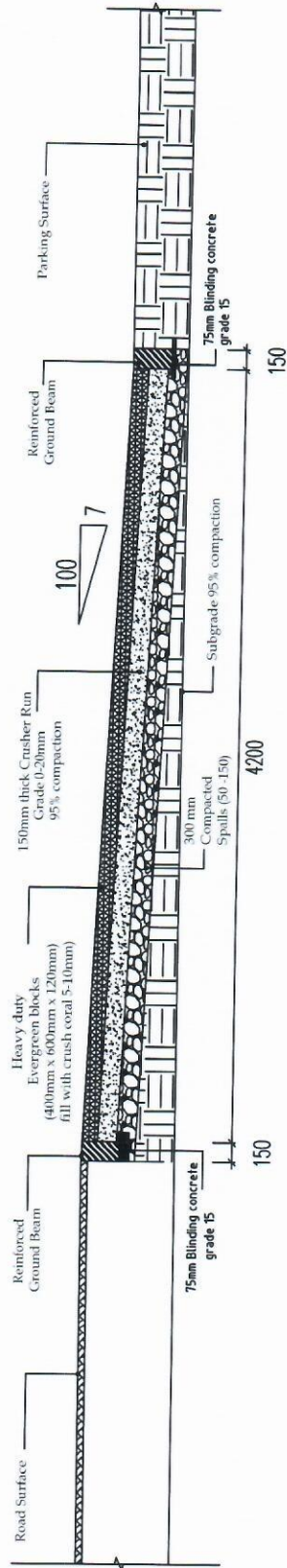
SIDE



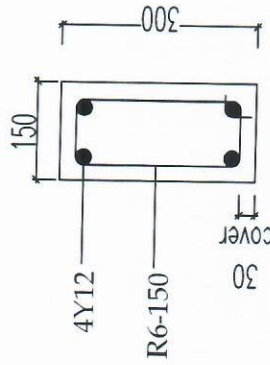
Concrete Kerb - Type 1

<p>FOR THE BEACH AUTHORITY</p> <p>BEACH AUTHORITY</p>		<p>SECTION'S DETAILS</p> <p>Author: []</p> <p>Drawn: []</p> <p>Checked: []</p> <p>Scale: []</p>		<p>DATE</p> <p>15/11/18</p>	
<p>UPGRADING OF ACCESS AT LE MORNE PUBLIC BEACH</p>		<p>PROJECT NO: []</p> <p>DATE: []</p>		<p>FOR THE BEACH AUTHORITY</p> <p>BEACH AUTHORITY</p>	
<p>FOR THE BEACH AUTHORITY</p> <p>BEACH AUTHORITY</p>		<p>PROJECT NO: []</p> <p>DATE: []</p>		<p>FOR THE BEACH AUTHORITY</p> <p>BEACH AUTHORITY</p>	

FOR THE BEACH AUTHORITY
 BEACH AUTHORITY
 Tel: 466 68 09/10/11/18
 Fax: 466 68 13



Section Y-Y



Ground Beam Detail



NOTES:
1. See figured dimensions only do not scale
2. All dimensions are in millimetres.

DATE

BY

Scale

Sheet No.

Rev.

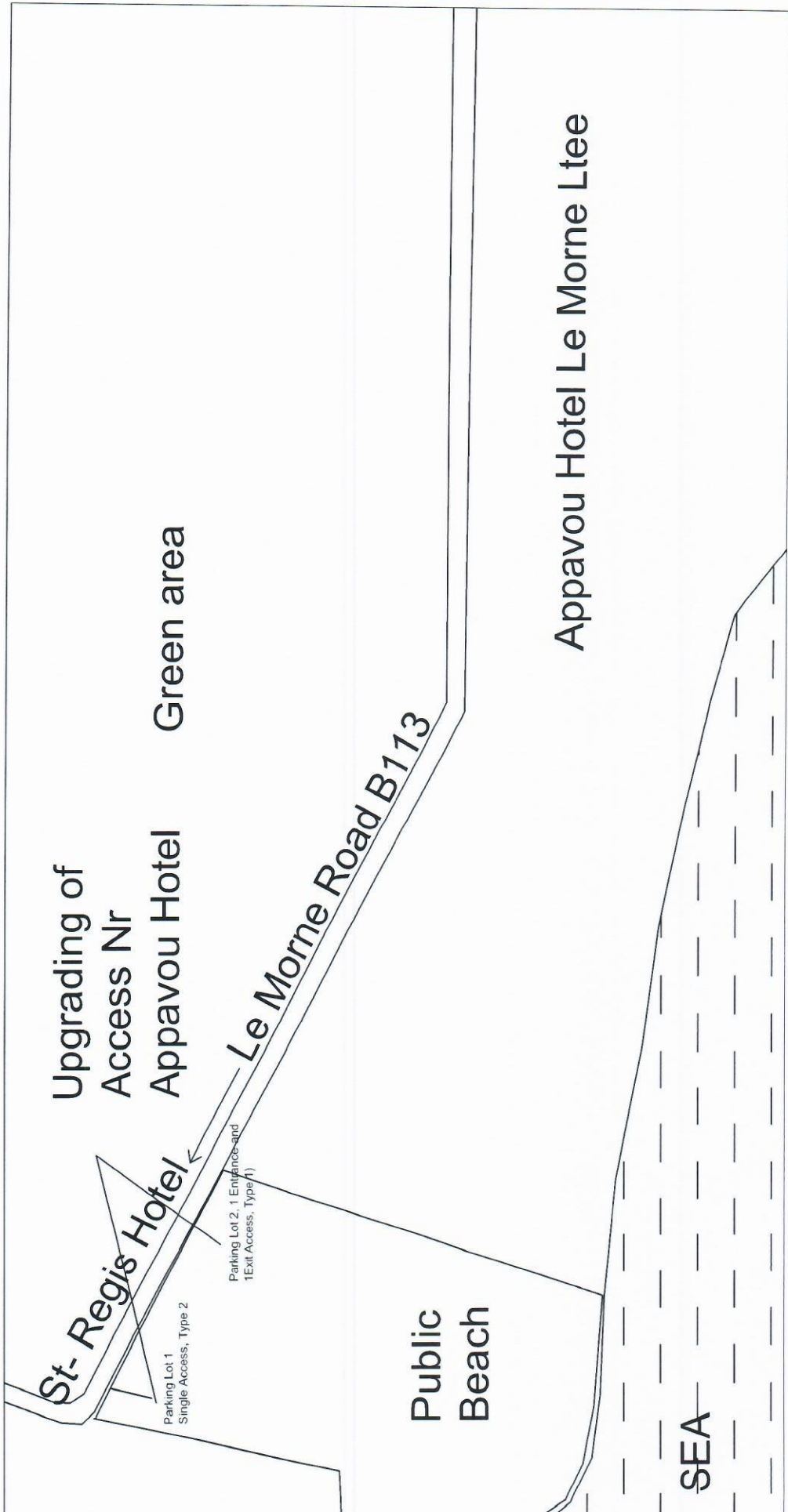
THE FLOOR
BEACH RECREATION BUILDING
BEACH AUTHORITY
BEACH CITY/STREET
Tel: 460 65 09/10/11/18
Fax: 460 65 15



SECTION TITLE		SECTIONS DETAILS	
Project	Page No.	Sheet No.	Rev.

UPGRADING OF ACCESS AT LE MORNE PUBLIC BEACH

BEACH AUTHORITY



Green area

Ugrading Access nr St
Regis Hotel (Single
Entrance and Exit Access,
Type 2)

Le Morne Road B113

To Appavou Hotel

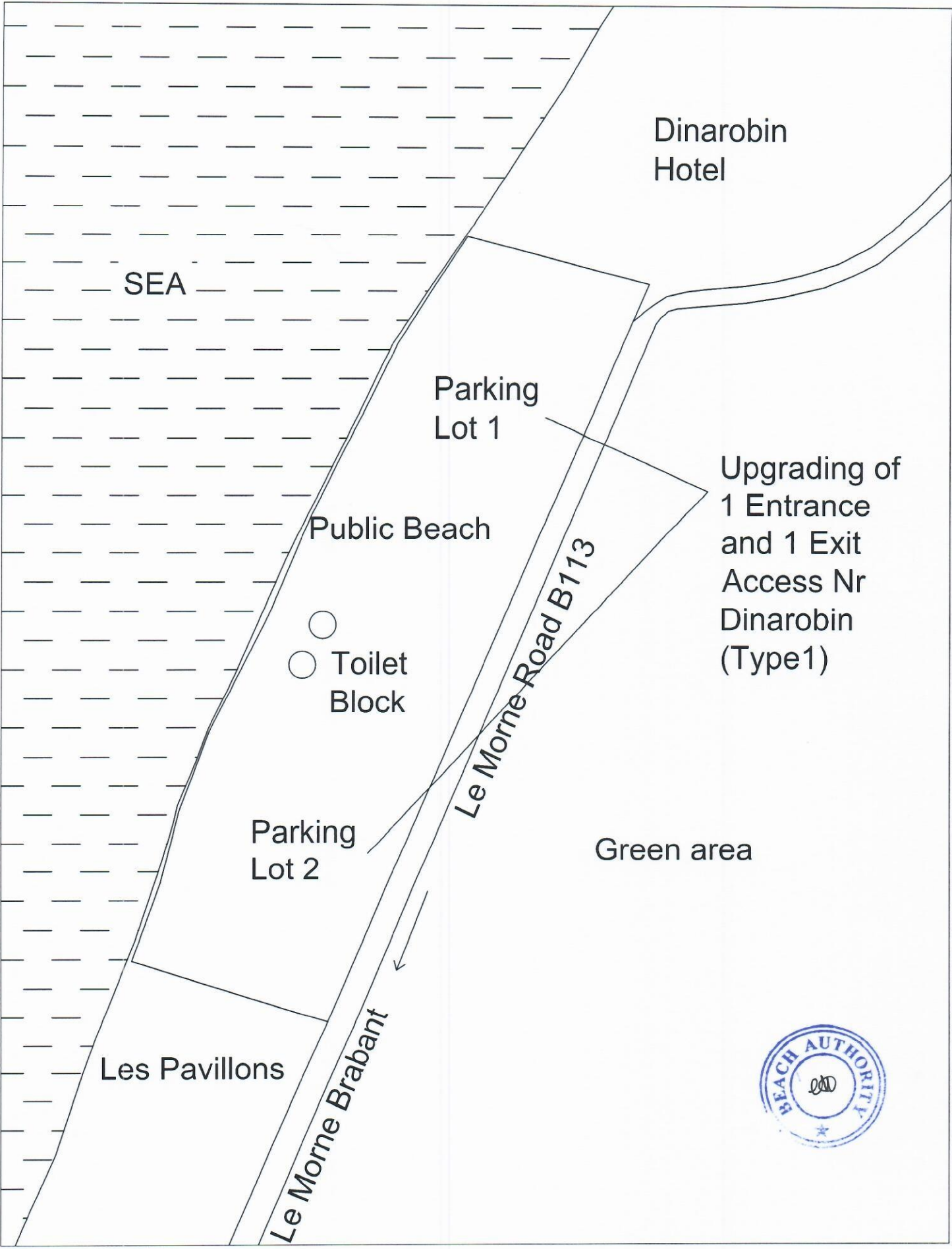
Les Pavillons

Public Beach

St Regis- Starwood
(EX Berjaya)

SEA





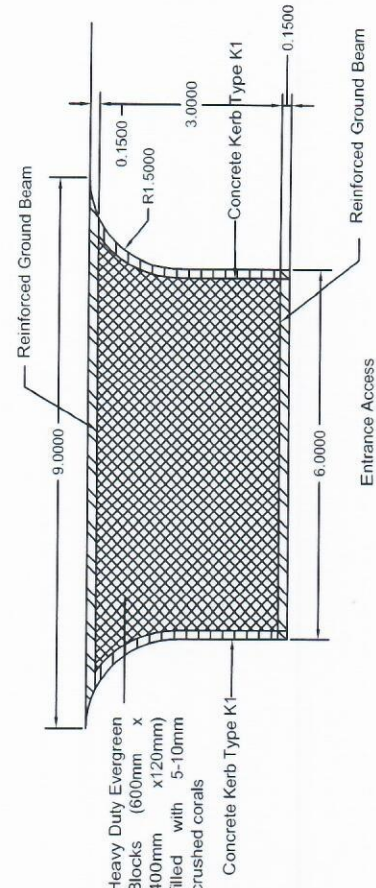
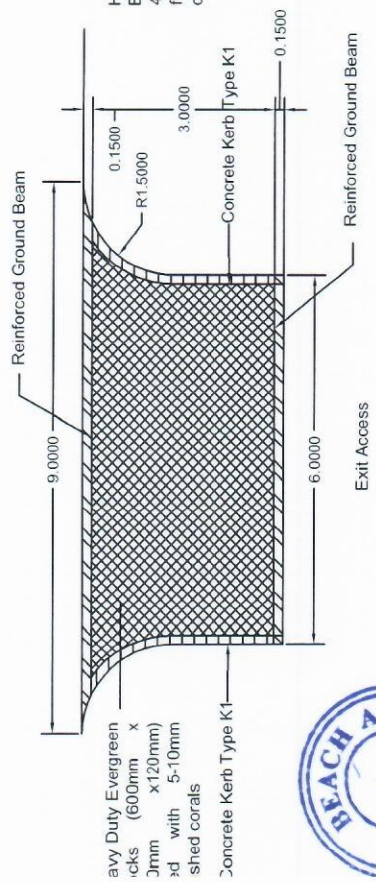
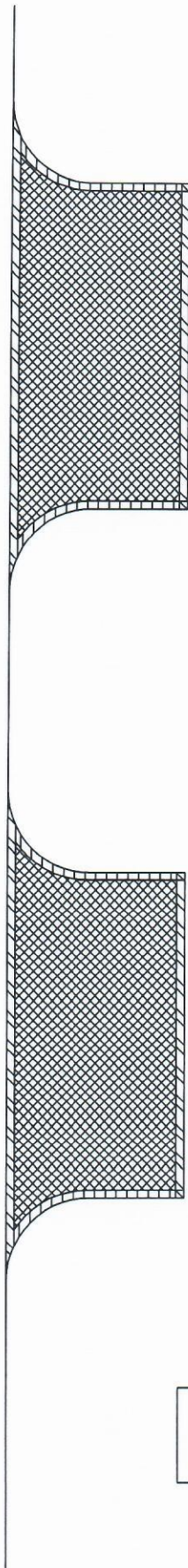
ANNEX 2

Drawings Flic en Flac Public Beach (LOT 1B)

← To Casavalle

To Wolmar →

Beach Authority Sub Office



NOTES:
1. All dimensions are in meters.
2. All dimensions are to center.

UPGRADING OF ACCESS AT PLE EN PLEAC PUBLIC BEACH

BEACH AUTHORITY


 THE PLEAC BEACH AUTHORITY BUILDING
 PLOT 54, WOLMAR
 P.O. BOX 400, CASAVALLE
 WA 600 01 00/10/11/12
 Fax: 400 01 15
 BEACH AUTHORITY

DATE: 17/11/17

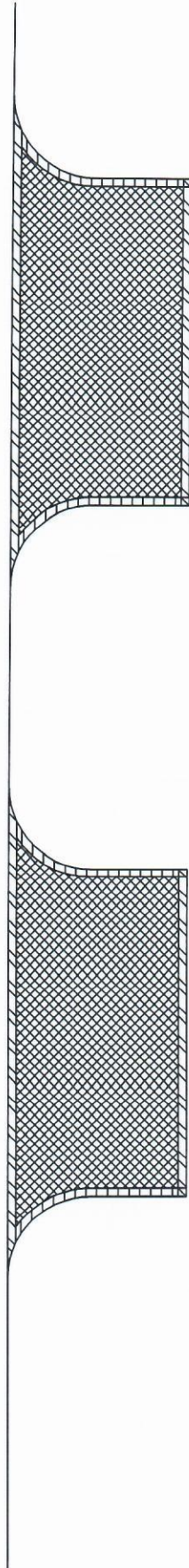
PROJECT: Layout Plan and details

NO. 1	NO. 2	NO. 3	NO. 4	NO. 5

Rayon Vert

To Wolmar

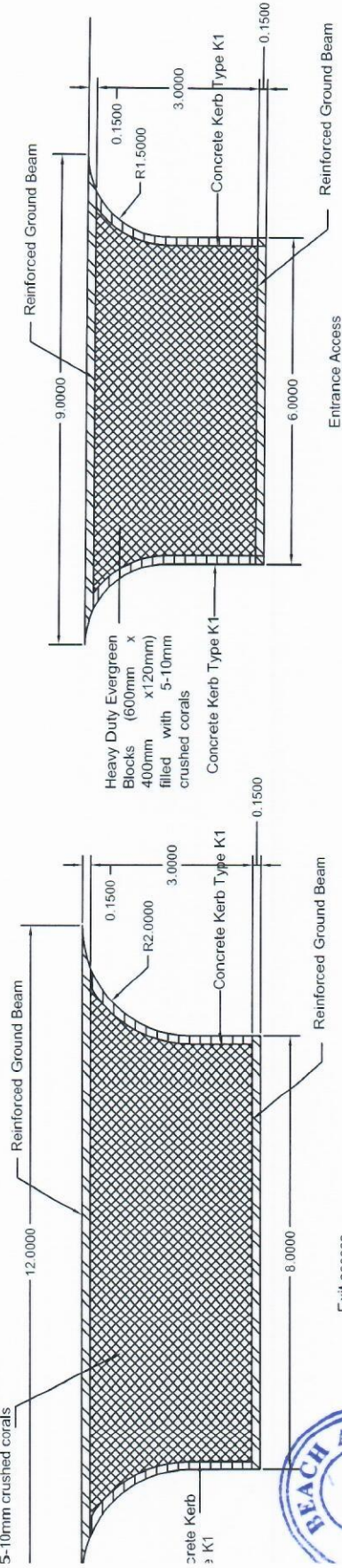
To Cascavelle



Exit Access

Entrance Access

Heavy Duty Evergreen Blocks (600mm x 400mm x 120mm) filled with 5-10mm crushed corals



Exit access

Reinforced Ground Beam

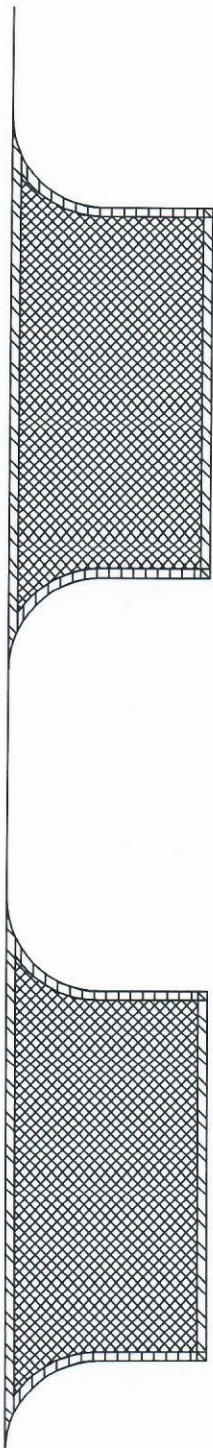


<p>REVISIONS</p>		<p>DATE</p>		<p>BY</p>	
<p>1. See Approved drawings only do not scale</p>		<p>2. All dimensions are in metres</p>		<p>3. All dimensions are in metres</p>	
<p>PROJECT</p>		<p>DATE</p>		<p>BY</p>	
<p>UPGRADING OF ACCESS AT PISC EN FLAC PUBLIC BEACH</p>		<p>DATE</p>		<p>BY</p>	
<p>BEACH AUTHORITY</p>		<p>DATE</p>		<p>BY</p>	
<p>THE FLOOR AREA ENCLOSURE BUILDING PLOT 34, BEACHWAY, SAI KHEE, CB 00/10/11/13</p>		<p>DATE</p>		<p>BY</p>	
<p>BEACH AUTHORITY</p>		<p>DATE</p>		<p>BY</p>	

Om SPA

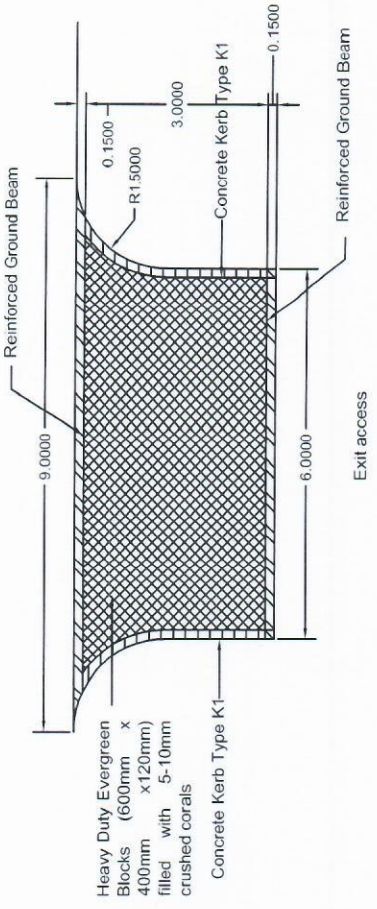
To Wolmar 

 To Cascavelle



Exit Access to upgrade

Entrance Access not to be upgraded



Heavy Duty Evergreen Blocks (600mm x 400mm x 120mm) filled with 5-10mm crushed corals

Concrete Kerb Type K1

Reinforced Ground Beam

R1.5000

3.0000

Concrete Kerb Type K1

0.1500

Reinforced Ground Beam

9.0000

6.0000

Exit access



7th FLOOR
 BEACH SECURITY BUILDING
 FLOOR 34,
 BEACH SECURITY
 Tel: 485 53 09/10/11/12
 Fax: 485 53 15



BMP TITLE Layout Plan and Details			
Proj Name	Sheet No.	Scale	Rev
Author	Proj No. 3		

UPGRADING OF ACCESS AT FIC EN FLAC PUBLIC BEACH

BEACH AUTHORITY

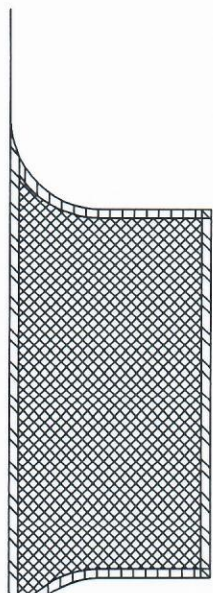
NOTES
 1. All proposed dimensions shall be set out.
 2. All dimensions are in meters.

REVISION	DATE

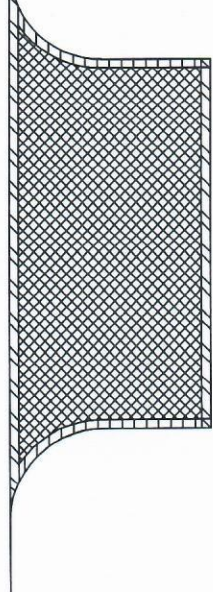
Beach Side Apartments

To Wolmar 

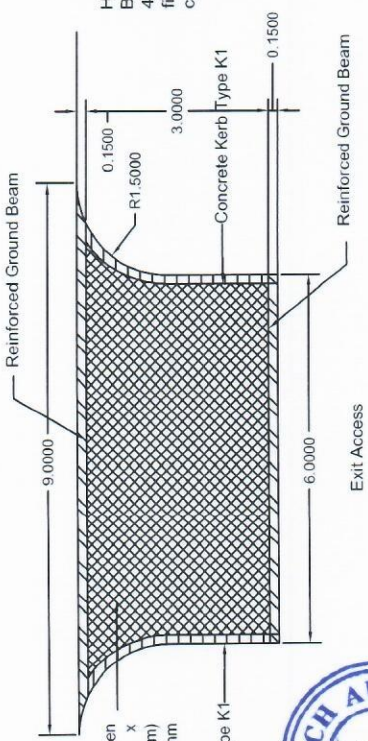
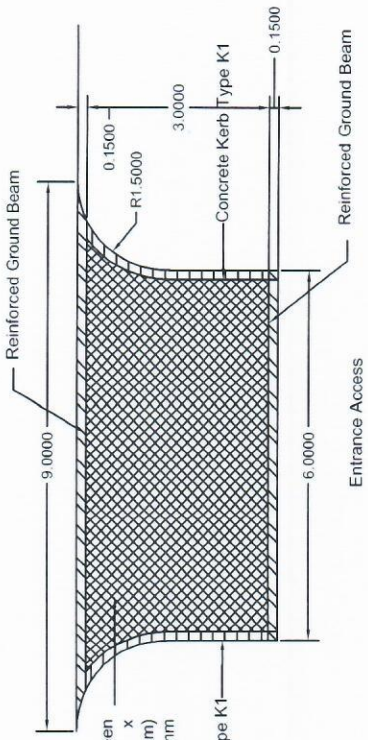
 To Cascavelle



Entrance Access



Exit Access

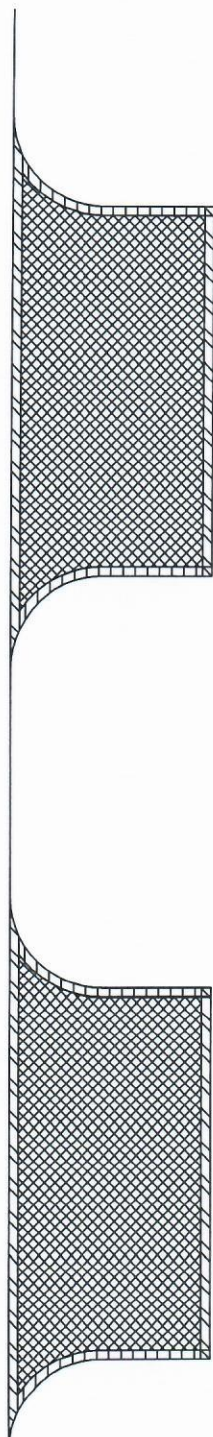


<p>THE FLOOR BEACH SIDE APARTMENTS BUILDING BEACH SIDE APARTMENTS BUILDING BEACH SIDE APARTMENTS BUILDING Tel: 459 88 06/10/11/18 Fax: 459 88 18</p>	
<p>UPGRADING OF ACCESS AT FLC EN FLAC PUBLIC BEACH</p>	
<p>BEACH AUTHORITY</p>	
<p>NOTES 1. All dimensions are in meters. 2. All dimensions are in meters.</p>	
<p>DATE</p>	<p>SCALE</p>
<p>PROJECT</p>	<p>DATE</p>
<p>DESIGNER</p>	<p>DATE</p>
<p>CHECKER</p>	<p>DATE</p>
<p>APPROVED</p>	<p>DATE</p>

Zub Express

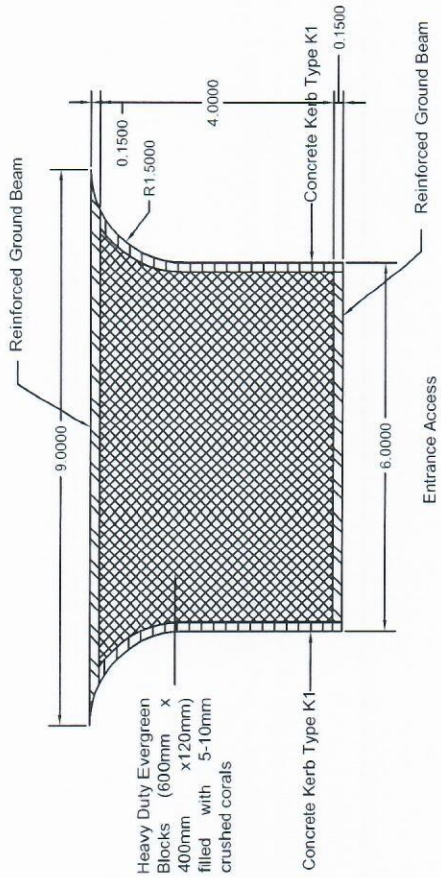
To Cascavalle

To Wolmar

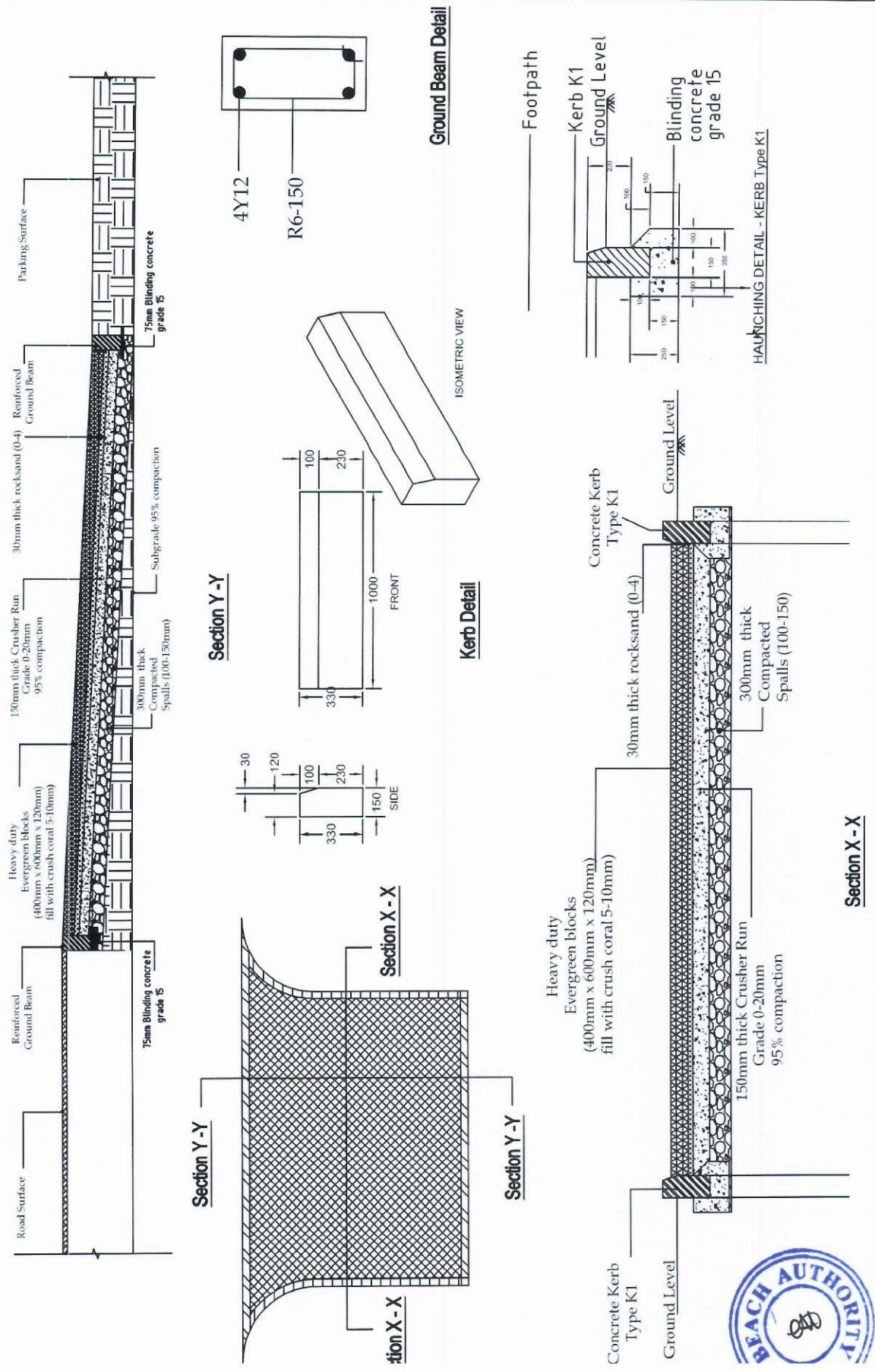


Exit Access not to be upgraded

Entrance Access to upgrade



BEACH AUTHORITY 1. The Award dimensions may be not match. 2. All dimensions are in meters.	DATE: _____ DRAWN: _____ CHECKED: _____ SCALE: _____ SHEET NO. _____ TOTAL SHEETS: _____	BEACH AUTHORITY BEACH APPROPRIETY THE FLOOR BEACH APPROPRIETY BUILDING FLOOR 04, BEACH APPROPRIETY, Tel: 490 43 00/10/14/18 Fax: 490 08 18
	PROJECT: UPGRADING OF ACCESS AT FLC EN FLAC PUBLIC BEACH DRAWING TITLE: Layout Plan and details	



Section Y-Y

Section X-X

Kerb Detail

Ground Beam Detail

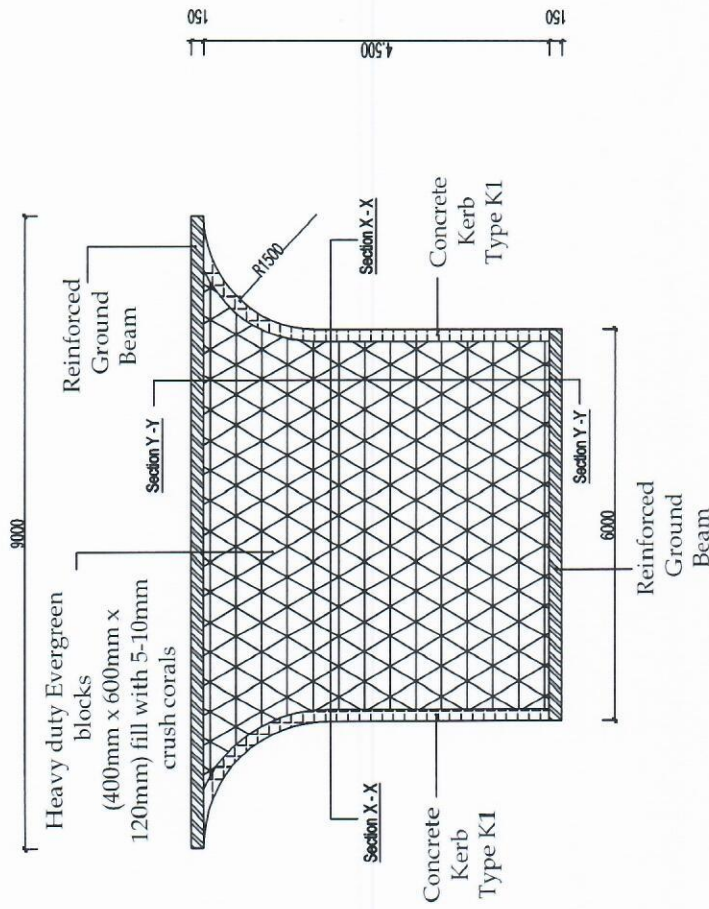
Section X-X



REVISION	DATE	BY	CHKD	SCALE	PAGE NO. OF	PAGE NO. OF	SECTION DETAILS		THE FLOOR BEACH SECURITY BUILDING FLOOR 04, BEACH AUTHORITY Tel: 455 08 09/10/11/12 Fax: 455 08 18
UPGRADING OF ACCESS AT FLC EN FLAC PUBLIC BEACH								BEACH AUTHORITY	

ANNEX 3

Drawings Poste La Fayette Public Beach (LOT 2A)



Type 1



7TH FLOOR
 BEACH SERVICES BUILDING
 POST LA FAYETTE
 BEACH AUTHORITY
 TEL 400 08 09/10/11/12
 FAX 400 08 13



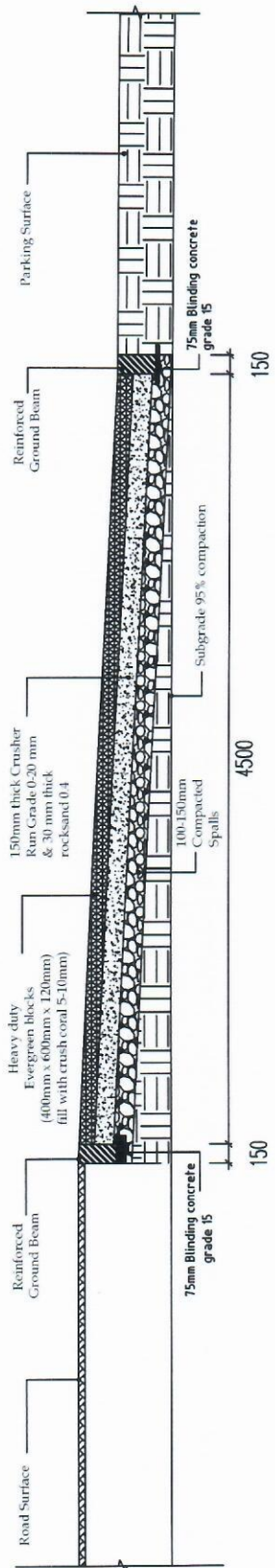
DATE	REVISED	LAYOUT PLAN
NO. NAME	NO. NAME	NO. NAME
DATE	DATE	DATE

UPGRADING OF ACCESS AT POST LA FAYETTE

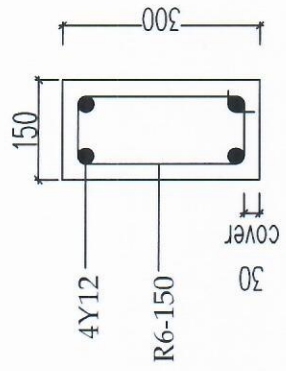
BEACH AUTHORITY

NOTES:
 1. The figure dimensions only do not match.
 2. All dimensions are in millimeters.

DATE	REVISED



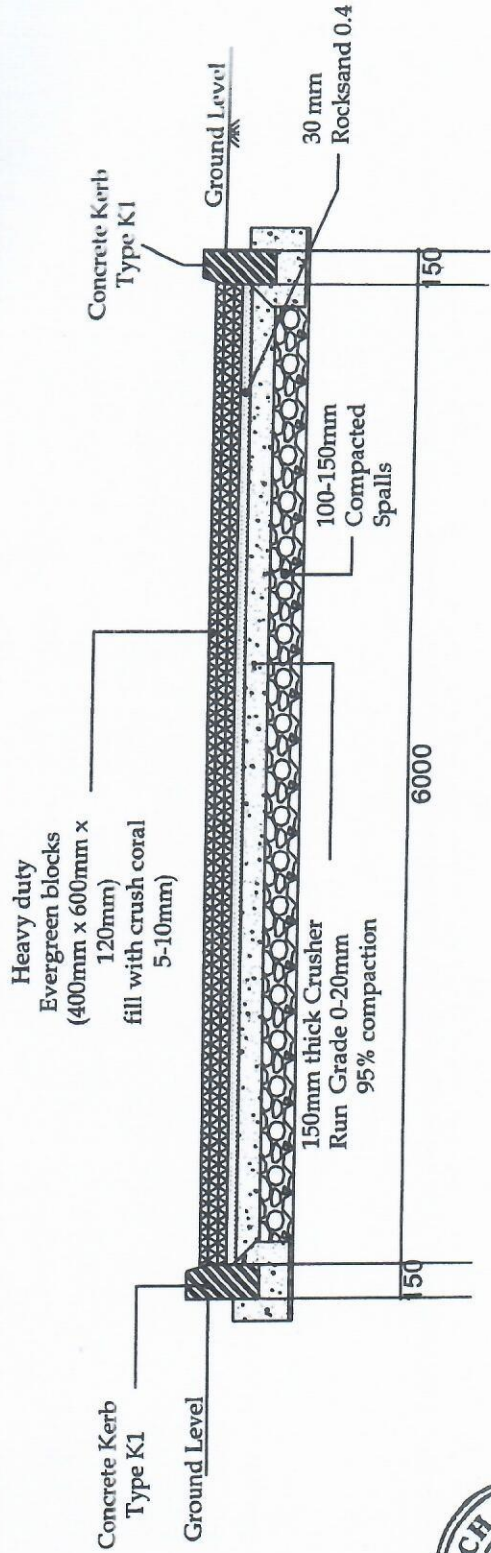
Section Y-Y



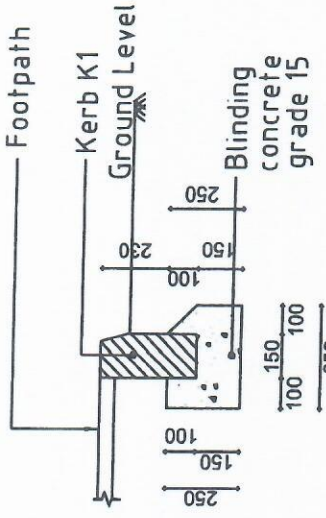
Ground Beam Detail



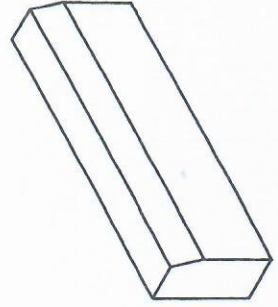
<p>DATE</p>	<p>SECTION DETAILS</p>			<p>7TH FLOOR BEACH AUTHORITY BUILDING PLOT 34, SYDNEY Tel 450 43 06/10/11/18 Fax 450 43 13</p>
	<p>Rev</p>	<p>Scale</p>	<p>Sheet No</p>	
<p>UPGRADING OF ACCESS AT POST LA FAYETTE</p>		<p>BEACH AUTHORITY</p>		<p>DATE</p>
<p>NOTE: 1. The figure dimensions only do not scale. 2. All dimensions are in millimeters.</p>				



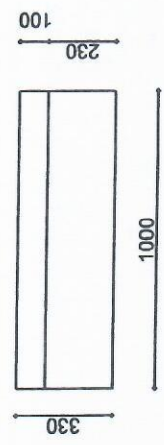
Section X - X



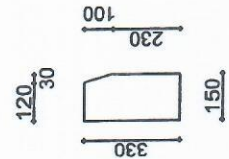
HAUNCHING DETAIL - KERB Type K1



ISOMETRIC VIEW




FRONT



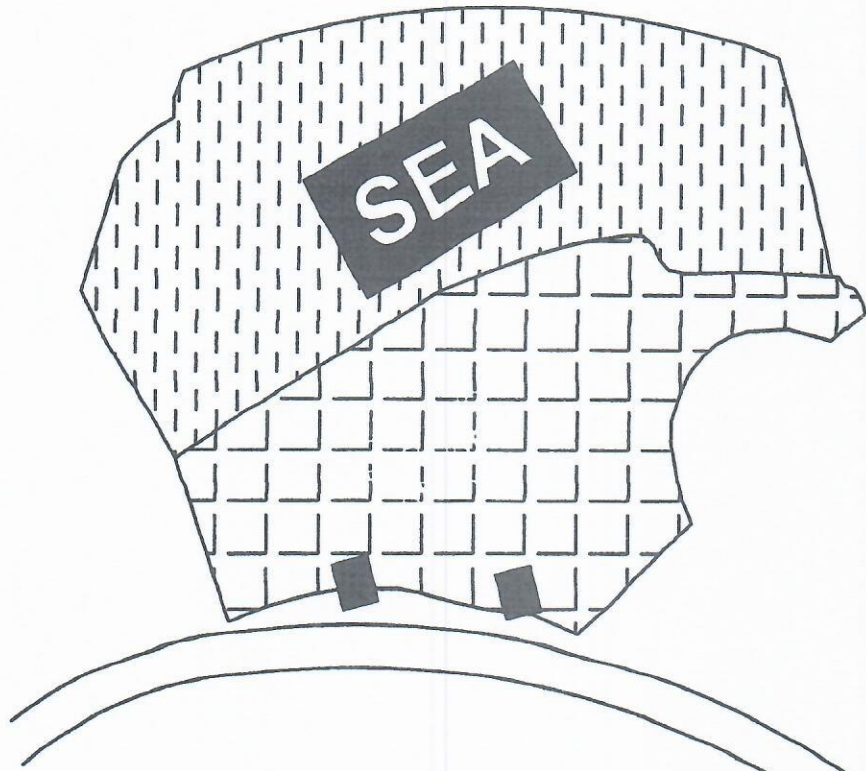
SIDE

Concrete Kerb - Type 1



		UPGRADING OF ACCESS AT POST LA FAYETTE	
DATE: _____ DRAWN BY: _____ CHECKED BY: _____ APPROVED BY: _____	PROJECT NO: _____ SHEET NO: _____	PUN PLANNING ENGINEERING CONSULTANTS 100, Beach Road, Singapore 189734 Tel: 65 6336 8888 Fax: 65 6336 8810	

To Roche Noires



To Bras Deau B15 POUDDRE D'OR POSTE DE FLACQ ROAD

KEY

Proposed access



Scale	1:1000
Author	Beach Authority
Project No.	
Page No.	

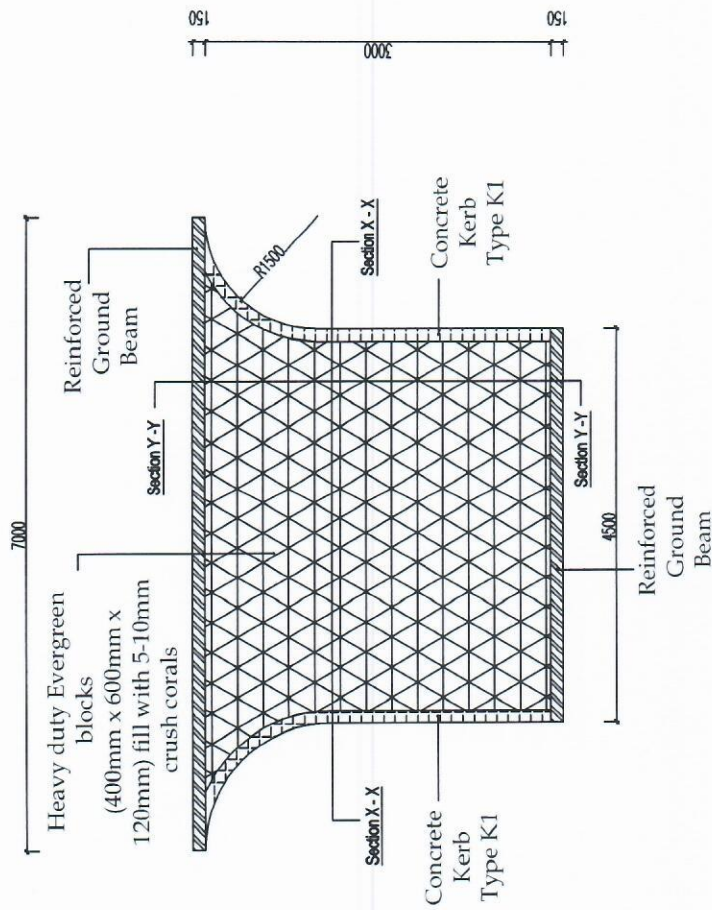
Upgrading of access at Post La Fayette Public Beach

BEACH AUTHORITY

DATE	
BY	
FOR	

ANNEX 4

**Drawings Belle Mare Public Beach
(LOT 2B)**



Type 1



7TH FLOOR
 BEACH RESOURCES BUILDING
 PLOT 34,
 BEACH AUTHORITY
 Tel 468 83 06/10/11/18
 Fax 468 83 13



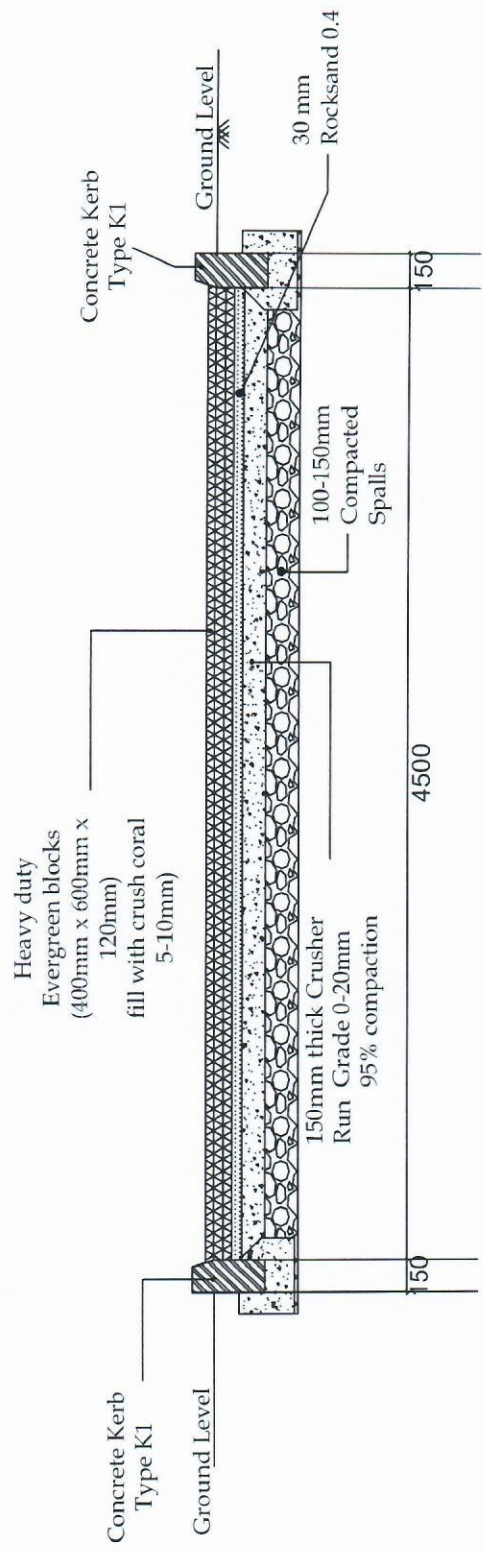
LAYOUT PLAN			
No. Name	Sheet No.	Scale	Rev.

UPGRADING OF ACCESS AT BELLE MARE
 PUBLIC BEACH

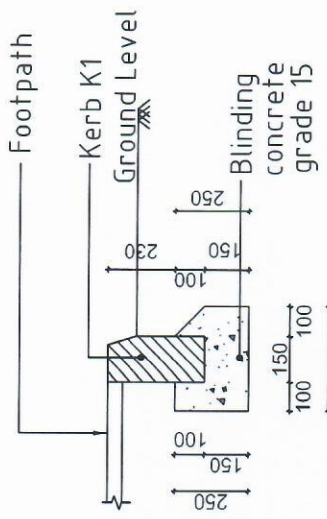
BEACH AUTHORITY

DATE	

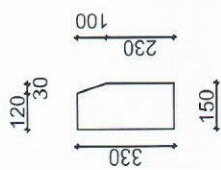
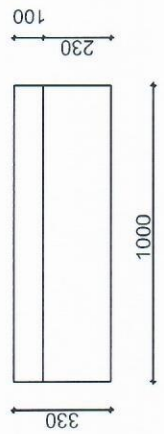
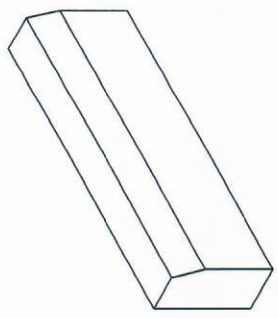
NOTES:
 1. See figured dimensions only, do not scale.
 2. All dimensions are in millimetres.



Section X - X



HAUNCHING DETAIL - KERB Type K1

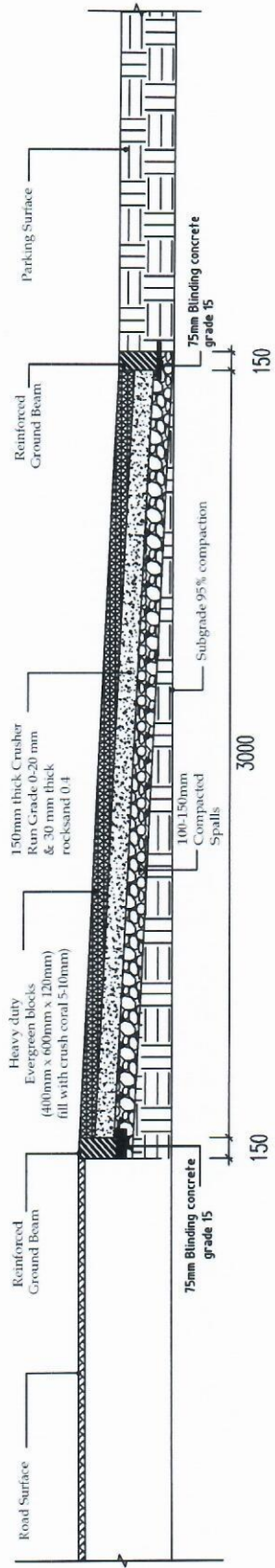


Concrete Kerb - Type 1

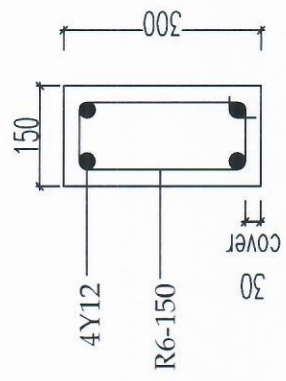
<p>DATE</p> <p>BY</p> <p>CHECKED</p> <p>APPROVED</p>	<p>SECTION DETAILS</p> <p>Page No. _____</p> <p>Total _____</p>	<p>THE PROJECT</p> <p>UPGRADING OF ACCESS AT BELLE MARE PUBLIC BEACH</p>	<p>THE FLOOR</p> <p>MARKS ENGINEERS Building</p> <p>PLAT 94,</p> <p>MARKS ENGINEERS</p> <p>PLANNING OFFICE</p> <p>10/11/18</p> <p>Page 408 of 515</p>
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NOTES:

- The figure dimensions are in millimeters.
- All dimensions are in millimeters.



Section Y-Y

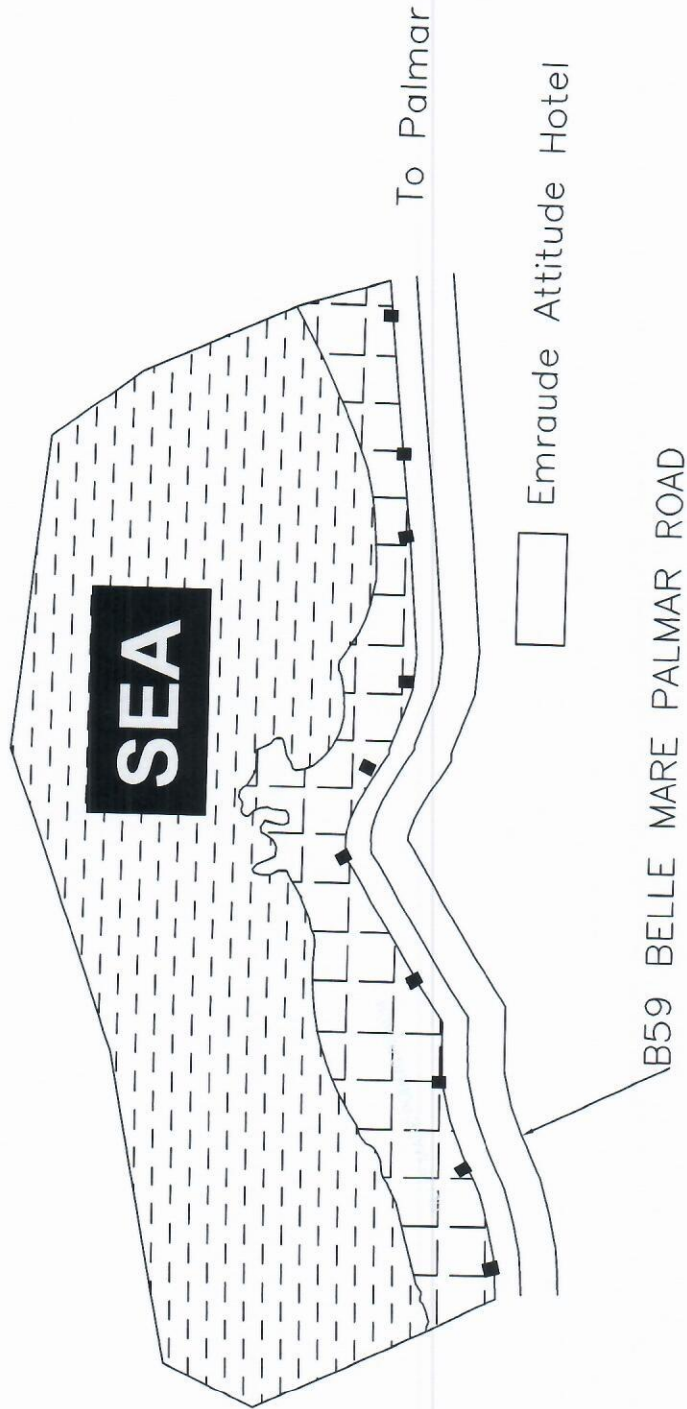


Ground Beam Detail



UPTURN DATE BY	BEACH AUTHORITY		UPGRADING OF ACCESS AT BELLE MARE PUBLIC BEACH		BEACH AUTHORITY 17TH FLOOR BEACH SERVICES BUILDING PLOT 54, BEACHES DRIVE, MAREE, SA TEL: 465 48 00/10/11/12 FAX: 465 09 15
	SECTION DETAILS No. Name No. Name	Sheet No. No. Name	Date No. Name	Date No. Name	

NOTES:
 1. The figured dimensions only do not match.
 2. All dimensions are in millimeters.



Post de Flacq

KEY

■ Proposed access



DATE	NOTES	B59 BELLE MARE PALMAR ROAD		Location Plan		Scale		Date	
		Upgrading of access at Belle Mare Public beach		Project No.	Sheet No.	Scale	1:100	1:100	1:100
		BEACH AUTHORITY		