TENDER NO. KPA/228/2025-26/PDM

PROPOSED REHABILITATION AND EXTENSION OF PELELEZA JETTY

TENDER DOCUMENT

VOLUME I

JUNE 2026

KENYA PORTS AUTHORITY
P.O BOX 95246 - 80104
MOMBASA,
KENYA
Tel: +254 41 2112999 / 2113999 Pilot Lines
Tel: +254 709 092999 / 709 093999 / 730 653999 Cellular
Website: www.kpa.co.ke
Email: tenders@kpa.co.ke

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INVITATION TO TENDER

DATE: JUNE 2026

TENDER NO. **KPA/228/2025-26/PDM**

TENDER NAME: **PROPOSED REHABILITATION AND EXTENSION OF PELELEZA JETTY**

1. The Kenya Ports Authority invites sealed tenders for the construction of **PROPOSED REHABILITATION AND EXTENSION OF PELELEZA JETTY.**

2. Tendering will be conducted under Open National Competitive Method using a standardized tender document. Tendering is open to all qualified and interested Tenderers.

3. Tender documents may be viewed and downloaded for free from the KPA website www.kpa.co.ke. Tenderers who download the tender document must forward their particulars immediately to tenders@kpa.co.ke to facilitate any further clarification or addendum.

4. Enquiries can be made via email address tenders@kpa.co.ke.

5. Bidders are advised to regularly visit the KPA website to obtain any additional information/addendum on the tender**. All addenda/additional information on the tender shall be posted on the KPA website as they become available.**

6. There shall be a **MANDATORY SITE VISIT scheduled on MONDAY 22ND JUNE 2026. Bidders to meet at 1000Hours at Procurement Conference Room, New Service Area (Kapenguria), KILINDINI MOMBASA.**

7. Tenders shall be quoted be in Kenya Shillings and shall include all taxes. Tenders shall remain valid for 210 days from the date of opening of tenders.

8. Tenderers shall be required to submit a Tender Security amounting to **Kenya Shillings Three Million (Kshs. 3,000,000.00) or USD Equivalent** in the form of a Banker's guarantee or an Insurance Company Guarantee issued by an insurance firm approved by the Public Procurement Regulatory Authority (PPRA), letter of credit or guarantee by a deposit taking microfinance institution, Sacco society, the Youth Enterprise Development Fund or the Women Enterprise Fund valid for 240 days from the date of tender opening in the format provided in the tender document.

9. The Tenderer shall chronologically serialize all pages of the tender documents including any attachments submitted in the format 1,2,3,4,5,.....n (where n is the last numerical page number).

10. All Tenders in **one** original plus **one copy of original and a PDF soft copy of the original in a flash disk & *Priced BoQ in excel format***, properly filled in, and enclosed in plain envelopes must be marked as follows:

TENDER NO. KPA/228/2025-26/PDM

PROPOSED REHABILITATION AND EXTENSION OF PELELEZA JETTY

"DO NOT OPEN BEFORE 1000 HOURS ON FRIDAY 26TH JUNE 2026".

11. Completed tenders must be delivered to the address below on or before **1000HOURS ON FRIDAY 26TH JUNE 2026**. Electronic Tenders *will not* be permitted.

12. Tenders will be opened promptly after **1030HOURS ON FRIDAY 26TH JUNE 2026**. Tenders will be publicly opened in the presence of the Tenderers' designated representatives who choose to attend at the address below.

13. Late tenders will be rejected.

14. The addresses referred to above are:

A. Address for Submission of Tenders.

i) Tender Box located at the **BUS TERMINUS**
PORT MAIN PEDESTRIAN GATE NO. 8,
KILINDINI, MOMBASA

ii) THE GENERAL MANAGER SUPPLY CHAIN MANAGEMENT
KENYA PORTS AUTHORITY
KIPEVU HEADQUARTERS 4TH FLOOR
FINANCE BLOCK III, DOOR BLK-3.4.3
KILINDINI MOMBASA
Phone: +254 (41) 2113600/ 2113999
E-mail: tenders@kpaco.ke

B. Address for Opening of Tenders.

i) Procurement Conference Room
New Service Area (Kapenguria)
KILINDINI MOMBASA

15. KPA is committed to the fight against corruption and adheres to high standards of integrity in its business operations. Bidders and the general public are encouraged to report any unethical behavior immediately to any of the following anonymous hotline service:-
    - Hotline number: **0794272376**
    - Email: stopcorruption@kpa.co.ke
    - KPA website www.kpa.co.ke under the Report corruption tab

Eveline I. Shigoli
GENERAL MANAGER SUPPLY CHAIN MANAGEMENT
FOR: MANAGING DIRECTOR

VISION, MISSION, &CORE VALUES

Vision

World class ports of choice.

Mission

To provide efficient and competitive port services to facilitate global trade

Core Values

Customer Focus: Service excellence is key to our operations and we endeavor to exceed customer expectations.

Integrity: We uphold fairness, honesty, professionalism and transparency in all our undertakings.

Teamwork: We embrace team spirit in all that we do.

Care: We care for our staff, the communities around us and are sensitive to the environment

Innovation: The Authority will invest and leverage on research, development and innovation to ensure that the Kenya Ports stay ahead of the curve in improving efficiency in their processes.

Kenya Ports Authority
Environment, Health & Safety Policy

Kenya Ports Authority recognizes the impacts caused by our activities and services and therefore undertakes to employ environmentally friendly practices and to provide safe and healthy working and operating environment for all employees, contractors, customers, port users and visitors. KPA demonstrates this commitment through the implementation of an Integrated Management System based on ISO 14001:2015 and ISO 45001:2018.

To accomplish this commitment KPA shall:

1. Implement sound and environmentally friendly practices aimed at preventing pollution, efficient waste containment and management and protection of the environment from negative environmental impacts arising from all aspects of our operations.
2. Engage our stakeholders including but not limited to contractors, suppliers and business partners in a manner that will ensure compliance with EMS/OSH standards, designed procedures and other relevant legal requirements whilst encouraging them to protect the environment.
3. Comply with all applicable environmental and occupational health and safety legal and other requirements.
4. Eliminate hazards and reduce occupational health and safety risks in order to prevent work-related injuries and ill health.
5. Enhance consultation and participation of workers and/or their representatives in development and roll-out of health and safety policies.
6. Educate and train employees and the community on safe working and environmentally friendly practices in order to create a culture of safety and sustainable environmental improvement and stewardship.
7. Regularly review and continually improve the EMS/OSH management system to enhance performance and to conform to changing trends.
8. Provide adequate funds and resources to accomplish the established EMS/OSH objectives and targets and for the maintenance and improvement of the Integrated Management System based on ISO 14001:2015 and ISO 45001:2018.

The Managing Director and Top Management of the Port are responsible and accountable for effective implementation of this Policy.

Capt. William K. Ruto, MBS, AFNI
MANAGING DIRECTOR

1st July 2024

KEBS ISO 9001:2015 Certified Org. No. 087

KENYA PORTS AUTHORITY
QUALITY AND INFORMATION SECURITY POLICY

Our Vision

"World-class ports of choice"

Our Quality And Information Security Policy Statement

We are committed to complying with the requirements of ISO 9001:2015 Quality Management System (QMS) and ISO 27001:2022 Information Security Management System (ISMS) Standards, applicable statutory regulations and aligning our management system policies and processes with Risk Management.

Our Strategic Objectives

1. Attain a customer satisfaction index of 75%
2. Improve port efficiency by 41%
3. Promote a safe and healthy working environment with zero accidents
4. Increase common transit market share by 7%
5. Increase profitability to KES 20 billion by 2027/2028
6. Increase employee productivity index to 2
7. Promote 100% compliance to legal and regulatory requirements and good governance principles

We shall;

- provide efficient and competitive port services to facilitate global trade through enhanced customer service, operational excellence, governance and the preservation of confidentiality, integrity, and availability of information
- ensure that this policy and Management System objectives are aligned to the Authority's Strategic Objectives
- effectively implement and continually improve our Management System policies, processes and capabilities
- review these objectives for suitability on an annual basis in accordance with the Authority's Performance Management Framework

Kenya Ports Authority shall ensure that the Quality & Information Security Objectives are established at revelant functions and processes with the organisation.

Capt. William K. Ruto, AFNI
MANAGING DIRECTOR

Date: 29th August, 2023

KEBS ISO 9001:2015 Certified Org. No. 087

PART 1 - TENDERING PROCEDURES

SECTION I: INSTRUCTIONS TO TENDERERS

A. GENERAL PROVISIONS

1. Scope of Tender

1.1 The Procuring Entity, as defined in the Appendix to Conditions of Contract, invites tenders for Works Contract as described in the tender documents. The name, identification, and number of lots (contracts) of this Tender Document are **specified in the TDS.**

2. Fraud and Corruption

2.1 The Procuring Entity requires compliance with the provisions of the Public Procurement and Asset Disposal Act, 2015, Section 62 "Declaration not to engage in corruption". The tender submitted by a person shall include a declaration that the person shall not engage in any corrupt or fraudulent practice and a declaration that the person or his or her sub-contractors are not debarred from participating in public procurement proceedings.

2.2 The Procuring Entity requires compliance with the provisions of the Competition Act 2010, regarding collusive practices in contracting. Any tenderer found to have engaged in collusive conduct shall be disqualified and criminal and/or civil sanctions may be imposed. To this effect, Tenders shall be required to complete and sign the "Certificate of Independent Tender Determination" annexed to the Form of Tender.

2.3 Tenderers shall permit and shall cause their agents (where declared or not), subcontractors, sub-consultants, service providers, suppliers, and their personnel, to permit the Procuring Entity to inspect all accounts, records and other documents relating to any initial selection process, pre-qualification process, tender submission, proposal submission, and contract performance (in the case of award), and to have them audited by auditors appointed by the Procuring Entity.

2.4 Unfair Competitive Advantage -Fairness and transparency in the tender process require that the firms or their Affiliates competing for a specific assignment do not derive a competitive advantage from having provided consulting services related to this tender. To that end, the Procuring Entity shall indicate in the **Data Sheet** and make available to all the firms together with this tender document all information that would in that respect give such firm any unfair competitive advantage over competing firms.

3. Eligible Tenderers

3.1 A Tenderer may be a firm that is a private entity, a state-owned enterprise or institution subject to ITT 3.8, or an individual or any combination of such entities in the form of a joint venture (JV) under an existing agreement or with the intent to enter into such an agreement supported by a letter of intent. In the case of a joint venture, all members shall be jointly and severally liable for the execution of the entire Contract in accordance with the Contract terms. The JV shall nominate a Representative who shall have the authority to conduct all business for and on behalf of any and all the members of the JV during the tendering process and, in the event the JV is awarded the Contract, during contract execution. Members of a joint venture may not also make an individual tender, be a subcontractor in a separate tender or be part of another joint venture for the purposes of the same Tender. The maximum number of JV members shall be specified in the **TDS.**

3.2 Public Officers of the Procuring Entity, their Spouses, Child, Parent, Brothers or Sister. Child, Parent, Brother or Sister of a Spouse, their business associates or agents and firms/organizations in which they have a substantial or controlling interest shall not be eligible to tender or be awarded a contract. Public Officers are also not allowed to participate in any procurement proceedings.

3.3 A Tenderer shall not have a conflict of interest. Any tenderer found to have a conflict of

interest shall be disqualified. A tenderer may be considered to have a conflict of interest for the purpose of this tendering process, if the tenderer:

a) Directly or indirectly controls, is controlled by or is under common control with another tenderer; or

b) Receives or has received any direct or indirect subsidy from another tenderer; or

c) Has the same legal representative as another tenderer; or

d) Has a relationship with another tenderer, directly or through common third parties, that puts it in a position to influence the tender of another tenderer, or influence the decisions of the Procuring Entity regarding this tendering process; or

e) Any of its affiliates participated as a consultant in the preparation of the design or technical specifications of the works that are the subject of the tender; or

f) any of its affiliates has been hired (or is proposed to be hired) by the Procuring Entity as Engineer for the Contract implementation; or

g) Would be providing goods, works, or non-consulting services resulting from or directly related to consulting services for the preparation or implementation of the contract specified in this Tender Document or

h) Has a close business or family relationship with a professional staff of the Procuring Entity who:

   i. are directly or indirectly involved in the preparation of the Tender document or specifications of the Contract, and/or the Tender evaluation process of such contract; or

   ii. may be involved in the implementation or supervision of such Contract unless the conflict stemming from such relationship has been resolved in a manner acceptable to the Procuring Entity throughout the tendering process and execution of the Contract.

3.4 A tenderer shall not be involved incorrupt, coercive, obstructive or fraudulent practice. A tenderer that is proven to have been involved in any of these practices shall be automatically disqualified.

3.5 A Tenderer (either individually or as a JV member) shall not participate in more than one Tender, except for permitted alternative tenders. This includes participation as a subcontractor in other Tenders. Such participation shall result in the disqualification of all Tenders in which the firm is involved. Members of a joint venture may not also make an individual tender, be a subcontractor in a separate tender or be part of another joint venture for the purposes of the same Tender. A firm that is not a tenderer or a JV member may participate as a subcontractor in more than one tender.

3.6 A Tenderer may have the nationality of any country, subject to the restrictions pursuant to ITT3.9. A Tenderer shall be deemed to have the nationality of a country if the Tenderer is constituted, incorporated or registered in and operates inconformity with the provisions of the laws of that country, as evidenced by its articles of incorporation (or equivalent documents of constitution or association) and its registration documents, as the case may be. This criterion also shall apply to the determination of the nationality of proposed subcontractors or sub-consultants for any part of the Contract including related Services.

3.7 A Tenderer that has been debarred from participating in public procurement shall be ineligible to tender or be awarded a contract. The list of debarred firms and individuals is available from the website of PPRA www.ppra.go.ke.

3.8 A Tenderer that is a state-owned enterprise or a public institution in Kenya may be eligible to tender and be awarded a Contract(s) only if it is determined by the Procuring Entity to meet the following conditions, i.e. if it is.

   i. A legal public entity of Government and/or public administration,

   ii. financially autonomous and not receiving any significant subsidies or budget support from any public entity or Government, and

iii. operating under commercial law and vested with legal rights and liabilities similar to any commercial enterprise to enable it compete with firms in the private sector on an equal basis

3.9 Firms and individuals shall be ineligible if their countries of origin are:

i. as a matter of law or official regulations, Kenya prohibits commercial relations with that country, or

ii. by an act of compliance with a decision of the United Nations Security Council taken under Chapter VII of the Charter of the United Nations, Kenya prohibits any import of goods or contracting of works or services from that country, or any payments to any country, person, or entity in that country

A tenderer shall provide such documentary evidence of eligibility satisfactory to the Procuring Entity, as the Procuring Entity shall reasonably request

3.10 Foreign tenderers are required to source at least forty (40%) percent of their contract inputs (in supplies, local subcontracts and labor) from citizen suppliers and contractors. To this end, a foreign tenderer shall provide inits tender documentary evidence that this requirement is met. Foreign tenderers not meeting this criterion will be automatically disqualified. Information required to enable the Procuring Entity determine if this condition is met shall be provided for this purpose in *"SECTION III-EVALUATION AND QUALIFICATION CRITERIA, Item 9".*

3.11 Pursuant to the eligibility requirements of ITT3.10, a tender is considered a foreign tenderer, if the tenderer is not registered in Kenya or if the tenderer is registered in Kenya and has less than 51 percent ownership by Kenyan citizens. JVs are considered as foreign tenderers if the individual member firms are not registered in Kenya or if are registered in Kenya and have less than 51 percent ownership by Kenyan citizens. The JV shall not subcontract to foreign firms more than 10 percent of the contract price, excluding provisional sums.

3.12 The National Construction Authority Act of Kenya requires that all local and foreign contractors be registered with the National Construction Authority and be issued with a Registration Certificate before they can undertake any construction works in Kenya. Registration shall not be a condition for tender, but it shall be a condition of contract award and signature. A selected tenderer shall be given opportunity to register before such award and signature of contract. Application for registration with National Construction Authority may be accessed from the website www.nca.go.ke.

3.13 The Competition Act of Kenya requires that firms wishing to tender as Joint Venture undertakings which may prevent, distort or lessen competition in provision of services are prohibited unless they are exempt in accordance with the provisions of Section 25 of the Competition Act, 2010. JVs will be required to seek for exemption from the Competition Authority. Exemption shall not be a condition for tender, but it shall be a condition of contract award and signature. A JV tenderer shall be given opportunity to seek such exemption as a condition of award and signature of contract. Application for exemption from the Competition Authority of Kenya may be accessed from the website www.cak.go.ke.

3.14 A Kenyan tenderer shall be eligible to tender if it provides evidence of having fulfilled his/her tax obligations by producing a valid tax compliance or valid tax certificate issued by the Kenya Revenue Authority.

4. Eligible Goods, Equipment, and Services

4.1 Goods, equipment and services to be supplied under the Contract may have their origin in any country that is not ineligible under ITT3.9. At the Procuring Entity's request, Tenderers may be required to provide evidence of the origin of Goods, equipment and services.

4.2 Any goods, works and production processes with characteristics that have been declared by the relevant national environmental protection agency or by other competent authority as harmful to human beings and to the environment shall not be eligible for procurement.

5. Tenderer's Responsibilities

5.1 The tenderer shall bear all costs associated with the preparation and submission of his/her tender, and the Procuring Entity will in no case be responsible or liable for those costs.

5.2 The tenderer, at the tenderer's own responsibility and risk, is encouraged to visit and examine and inspect the Site of the Works and its surroundings and obtain all information that may be necessary for preparing the tender and entering into a contract for construction of the Works. The costs of visiting the Site shall be at the tenderer's own expense.

5.3 The Tenderer and any of its personnel or agents will be granted permission by the Procuring Entity to enter up on its premises and lands for the purpose of such visit. The Tenderer shall indemnify the Procuring Entity against all liability arising from death or personal injury, loss of or damage to property, and any other losses and expenses incurred as a result of the examination and inspection.

5.4 The tenderer shall provide in the Form of Tender and Qualification Information, a preliminary description of the proposed work method and schedule, including charts, as necessary or required.

B. CONTENTS OF TENDER DOCUMENTS

6. Sections of Tender Document

6.1 The tender document consists of Parts 1, 2, and 3, which includes all the sections specified below, and which should be read in conjunction with any Addenda issued in accordance with ITT10.

PART 1 Tendering Procedures
Section I - Instructions to Tenderers (ITT)
Section II - Tender Data Sheet (TDS)
Section III - Evaluation and Qualification Criteria
Section IV - Tendering Forms

PART 2 Works Requirements
Section V - Drawings
Section VI - Specifications
Section VII - Bills of Quantities

PART 3 Conditions of Contract and Contract Forms
Section VIII - General Conditions of Contract (GCC)
Section IX - Special Conditions of Contract (SC)
Section X - Contract Forms

6.2 The Invitation to Tender Notice issued by the Procuring Entity is not part of the Contract documents.

6.3 Unless obtained directly from the Procuring Entity, the Procuring Entity is not responsible for the completeness of the Tender document, responses to requests for clarification, the minutes of a pre-arranged site visit and those of the pre-Tender meeting (if any), or Addenda to the Tender document in accordance with ITT 10. In case of any contradiction, documents obtained directly from the Procuring Entity shall prevail.

6.4 The Tenderer is expected to examine all instructions, forms, terms, and specifications in

the Tender Document and to furnish with its Tender all information and documentation as is required by the Tender document.

7. Clarification of Tender Document, Site Visit, Pre-Tender Meeting

7.1 A Tenderer requiring any clarification of the Tender Document shall contact the Procuring Entity in writing at the Procuring Entity's address **specified in the TDS** or raise its enquiries during the pre-Tender meeting if provided for in accordance with ITT 7.2. The Procuring Entity will respond in writing to any request for clarification, provided that such request is received no later than the period specified in the **TDS p**rior to the deadline for submission of tenders. The Procuring Entity shall forward copies of its response to all tenderers who have acquired the Tender documents in accordance with ITT 7.4, including a description of the inquiry but without identifying its source. If so specified **in the TDS**, the Procuring Entity shall also promptly publish its response at the web page identified in the **TDS**. Should the clarification result in changes to the essential elements of the Tender Documents, the Procuring Entity shall amend the Tender Documents following the procedure under ITT 8 and ITT 22.2.

7.2 The Tenderer, at the Tenderer's own responsibility and risk, is encouraged to visit and examine and inspect the site(s) of the required contracts and obtain all information that may be necessary for preparing a tender. The costs of visiting the Site shall be at the Tenderer's own expense. The Procuring Entity shall specify in the **TDS** if a pre- arranged Site visit and or a pre-tender meeting will be held, when and where. The Tenderer's designated representative is invited to attend a pre-arranged site visit and a pre-tender meeting, as the case may be. The purpose of the site visit and the pre-tender meeting will be to clarify issues and to answer questions on any matter that may be raised at that stage.

7.3 The Tenderer is requested to submit any questions in writing, to reach the Procuring Entity not later than the period specified in the **TDS** before the meeting.

7.4 Minutes of a pre-arranged site visit and those of the pre-tender meeting, if applicable, including the text of the questions asked by Tenderers and the responses given, together with any responses prepared after the meeting, will be transmitted promptly to all Tenderers who have acquired the Tender Documents. Minutes shall not identify the source of the questions asked.

7.5 The Procuring Entity shall also promptly publish anonymized (*no names*) Minutes of the pre-arranged site visit and those of the pre-tender meeting at the web page identified **in the TDS**. Any modification to the Tender Documents that may become necessary as a result of the pre-arranged site visit and those of the pre-tender meeting shall be made by the Procuring Entity exclusively through the issue of an Addendum pursuant to ITT 8 and not through the minutes of the pre-Tender meeting. Non-attendance at the pre-arranged site visit and the pre-tender meeting will not be a cause for disqualification of a Tenderer.

8. Amendment of Tender Documents

8.1 At any time prior to the deadline for submission of Tenders, the Procuring Entity may amend the Tender Documents by issuing addenda.

8.2 Any addendum issued shall be part of the Tender Documents and shall be communicated in writing to all who have obtained the Tender Documents from the Procuring Entity. The Procuring Entity shall also promptly publish the addendum on the Procuring Entity's website in accordance with ITT 7.5.

8.3 To give Tenderers reasonable time in which to take an addendum into account in preparing their Tenders, the Procuring Entity should extend the deadline for the submission of Tenders, pursuant to ITT 22.2.

C. PREPARATION OF TENDERS

9. Cost of Tendering

9.1 The Tenderer shall meet all costs associated with the preparation and submission of its Tender, and the Procuring Entity shall not be responsible or liable for those costs, regardless of the conduct or outcome of the tendering process.

10. Language of Tender

10.1 The Tender, as well as all correspondence and documents relating to the tender exchanged by the tenderer and the Procuring Entity, shall be written in the English Language. Supporting documents and printed literature that are part of the Tender may be in another language provided they are accompanied by an accurate and notarized translation of the relevant passages into the English Language, in which case, for purposes of interpretation of the Tender, such translation shall govern.

11. Documents Comprising the Tender

11.1 The Tender shall comprise the following:

a) Form of Tender prepared in accordance with ITT 12;
b) Schedules including priced Bill of Quantities, completed in accordance with ITT 12 and ITT 14;
c) Tender Security or Tender-Securing Declaration, in accordance with ITT 19.1;
d) Alternative Tender, if permissible, in accordance with ITT 13;
e) Authorization: written confirmation authorizing the signatory of the Tender to commit the Tenderer, in accordance with ITT 20.3;
f) Qualifications: documentary evidence in accordance with ITT 17 establishing the Tenderer's qualifications to perform the Contract if its Tender is accepted;
g) Conformity: a technical proposal in accordance with ITT 16;
h) Any other document required in the **TDS**

11.2 In addition to the requirements under ITT 11.1, Tenders submitted by a JV shall include a copy of the Joint Venture Agreement entered into by all members. Alternatively, a letter of intent to execute a Joint Venture Agreement in the event of a successful Tender shall be signed by all members and submitted with the Tender, together with a copy of the proposed JV Agreement. Change of membership and conditions of the JV prior to contract signature will render the tender liable for disqualification.

12. Form of Tender and Schedules

12.1 The Form of Tender and Schedules, including the Bill of Quantities, shall be prepared using the relevant forms furnished in Section IV, Tendering Forms. The forms must be completed without any alterations to the text, and no substitutes shall be accepted except as provided under ITT 20.3. All blank spaces shall be filled in with the information requested. The Tenderer shall chronologically serialize all pages of the tender documents submitted.

12.2 The Tenderer shall furnish in the Form of Tender information on commissions and gratuities, if any, paid or to be paid to agents or any other party relating to this Tender.

13. Alternative Tenders

13.1 Unless otherwise specified in the TDS, alternative Tenders shall not be considered.

13.2 When alternative times for completion are explicitly invited, a statement to that effect will be included in the **TDS**, and the method of evaluating different alternative times for completion will be described in Section III, Evaluation and Qualification Criteria.

13.3 Except as provided under ITT13.4 below, Tenderers wishing to offer technical alternatives to the requirements of the Tender Documents must first price the Procuring Entity's design as described in the Tender Documents and shall further provide all information necessary for a complete evaluation of the alternative by the Procuring Entity, including drawings, design calculations, technical specifications, breakdown of prices, and proposed construction methodology and other relevant details. Only the technical alternatives, if any, of the Tenderer with the Winning Tender conforming to the basic technical requirements shall be considered by the Procuring Entity.

13.4 When specified in the **TDS**, Tenderers are permitted to submit alternative technical solutions for specified parts of the Works, and such parts will be identified in the **TDS**, as will the method for their evaluating, and described in Section VI, Works' Requirements.

14. Tender Prices and Discounts

14.1 The prices and discounts (including any price reduction) quoted by the Tenderer in the Form of Tender and in the Bill of Quantities shall conform to the requirements specified below.

14.2 The Tenderer shall fill in rates and prices for all items of the Works described in the Bill of Quantities. Items against which no rate or price is entered by the Tenderer shall be deemed covered by the rates for other items in the Bill of Quantities and will not be paid for separately by the Procuring Entity. An item not listed in the priced Bill of Quantities shall be assumed to be not included in the Tender, and provided that the Tender is determined substantially responsive notwithstanding this omission, the average price of the item quoted by substantially responsive Tenderers will be added to the Tender price and the equivalent total cost of the Tender so determined will be used for price comparison.

14.3 The price to be quoted in the Form of Tender, in accordance with ITT 12, shall be the total price of the Tender, including any discounts offered.

14.4 The Tenderer shall quote any discounts and the methodology for their application in the Form of Tender, in accordance with ITT 12

14.5 It will be specified in the **TDS** if the rates and prices quoted by the Tenderer are or are not subject to adjustment during the performance of the Contract in accordance with the provisions of the Conditions of Contract, except in cases where the contract is subject to fluctuations and adjustments, not fixed price. In such a case, the Tenderer shall furnish the indices and weightings for the price adjustment formulae in the Schedule of Adjustment Data and the Procuring Entity may require the Tenderer to justify its proposed indices and weightings.

14.6 Where tenders are being invited for individual lots (contracts) or for any combination of lots (packages), tenderers wishing to offer discounts for the award of more than one Contract shall specify in their Tender the price reductions applicable to each package, or alternatively, to individual Contracts within the package. Discounts shall be submitted in accordance with ITT 14.4, provided the Tenders for all lots (contracts) are opened at the same time.

14.7 All duties, taxes, and other levies payable by the Contractor under the Contract, or for any other cause, as of the date 30 days prior to the deadline for submission of Tenders, shall be included in the rates and prices and the total Tender Price submitted by the Tenderer.

15. Currencies of Tender and Payment

15.1 The currency (ies) of the Tender and the currency (ies) of payments shall be the same.

15.2 Tenderers shall quote entirely in Kenya Shillings. The unit rates and the prices shall be

quoted by the Tenderer in the Bill of Quantities, entirely in Kenya shillings.

a) A Tenderer expecting to incur expenditures in other currencies for inputs to the Works supplied from outside Kenya (referred to as "the foreign currency requirements") shall (if so allowed in the TDS) indicate in the Appendix to Tender the percentage(s) of the Tender Price (excluding Provisional Sums), needed by the Tenderer for the payment of such foreign currency requirements, limited to no more than two foreign currencies.

b) The rates of exchange to be used by the Tenderer in arriving at the local currency equivalent and the percentage(s) mentioned in (a) above shall be specified by the Tenderer in the Appendix to Tender and shall be based on the exchange rate provided by the Central Bank of Kenya on the date 30 days prior to the actual date of tender opening. Such exchange rate shall apply for all foreign payments under the Contract.

15.3 Tenderers may be required by the Procuring Entity to justify, to the Procuring Entity's satisfaction, their local and foreign currency requirements, and to substantiate that the amounts included in the unit rates and prices and shown in the Schedule of Adjustment Data in the Appendix to Tender are reasonable, in which case a detailed breakdown of the foreign currency requirements shall be provided by Tenderers.

16. Documents Comprising the Technical Proposal

16.1 The Tenderer shall furnish a technical proposal including a statement of work methods, equipment, personnel, schedule and any other information as stipulated in Section IV, Tender Forms, in sufficient detail to demonstrate the adequacy of the Tenderer's proposal to meet the work's requirements and the completion time.

17. Documents Establishing the Eligibility and Qualifications of the Tenderer

17.1 Tenderers shall complete the Form of Tender, included in Section IV, Tender Forms, to establish Tenderer's eligibility in accordance with ITT 4.

17.2 In accordance with Section III, Evaluation and Qualification Criteria, to establish its qualifications to perform the Contract the Tenderer shall provide the information requested in the corresponding information sheets included in Section IV, Tender Forms.

17.3 If a margin of preference applies as specified in accordance with ITT33. 1, national tenderers, individually or in joint ventures, applying for eligibility for national preference shall supply all information required to satisfy the criteria for eligibility specified in accordance with ITT 33.1.

17.4 Tenderers shall be asked to provide, as part of the data for qualification, such information, including details of ownership, as shall be required to determine whether, according to the classification established by the Procuring Entity, a particular contract or or group of contractors qualifies for a margin of preference. Further the information will enable the Procuring Entity identify any actual or potential conflict of interest in relation to the procurement and/or contract management processes, or a possibility of collusion between tenderers, and there by help to prevent any corrupt influence in relation to the procurement process or contract management.

17.5 The purpose of the information described **in ITT 17.2** above overrides any claims to confidentiality which a tenderer may have. There can be no circumstances in which it would be justified for a tenderer to keep information relating to its ownership and control confidential where it is tendering to undertake public sector work and receive public sector funds. Thus, confidentiality will not be accepted by the Procuring Entity as a justification for a Tenderer's failure to disclose, or failure to provide required information on its ownership and control.

17.6 The Tenderer shall provide further documentary proof, information or authorizations that the Procuring Entity may request in relation to ownership and control which information on any changes to the information which was provided by the tenderer under ITT 3. The

obligations to require this information shall continue for the duration of the procurement process and contract performance and after completion of the contract, if any change to the information previously provided may reveal a conflict of interest in relation to the award or management of the contract.

17.7 All information provided by the tenderer pursuant to these requirements must be complete, current and accurate as at the date of provision to the Procuring Entity. In submitting the information required pursuant to these requirements, the Tenderer shall warrant that the information submitted is complete, current and accurate as at the date of submission to the Procuring Entity.

17.8 If a tenderer fails to submit the information required by these requirements, its tenderer will be rejected. Similarly, if the Procuring Entity is unable, after taking reasonable steps, to verify to a reasonable degree the information submitted by a tenderer pursuant to these requirements, then the tender will be rejected.

17.9 If information submitted by a tenderer pursuant to these requirements, or obtained by the Procuring Entity (whether through its own enquiries, through notification by the public or otherwise), shows any conflict of interest which could materially and improperly benefit the tenderer in relation to the procurement or contract management process, then:

i. If the procurement process is still on going, the tenderer will be disqualified from the procurement process,
ii. If the contract has been awarded to that tenderer, the contract award will be set aside,
iii. The tenderer will be referred to the relevant law enforcement authorities for investigation of whether the tenderer or any other persons have committed any criminal offence.

17.10 If a tenderer submits information pursuant to these requirements that is incomplete, inaccurate or out-of-date, or attempts to obstruct the verification process, then the consequences ITT 17.8 will ensue unless the tenderer can show to the reasonable satisfaction of the Procuring Entity that any such act was not material, or was due to genuine error which was not attributable to the intentional act, negligence or recklessness of the tender

18. Period of Validity of Tenders

18.1 Tenders shall remain valid for the Tender Validity period specified in the **TDS**. The Tender Validity period starts from the date fixed for the Tender submission deadline (as prescribed by the Procuring Entity in accordance with ITT 22). A Tender valid for a shorter period shall be rejected by the Procuring Entity as non-responsive.

18.2 In exceptional circumstances, prior to the expiration of the Tender validity period, the Procuring Entity may request Tenderers to extend the period of validity of their Tenders. The request and the responses shall be made in writing. If a Tender Security is requested in accordance with ITT 19, it shall also be extended for thirty (30) days beyond the deadline of the extended validity period. A Tenderer may refuse the request without forfeiting its Tender security. A Tenderer granting their quest shall not be required or permitted to modify its Tender.

19. Tender Security

19.1 The Tenderer shall furnish as part of its Tender, either a Tender-Securing Declaration or a Tender Security as specified in the **TDS**, in original form and, in the case of a Tender Security, in the amount and currency **specified in the TDS**. A Tender-Securing Declaration shall use the form included in Section IV, Tender Forms.

19.2 If a Tender Security is specified pursuant to ITT19.1, the Tender Security shall be a demand guarantee in any of the following forms at the Tenderer's option:

i. cash;
ii. a bank guarantee;
iii. a guarantee by an insurance company registered and licensed by the Insurance Regulatory Authority listed by the Authority; or
iv. a guarantee issued by a financial institution approved and licensed by the Central Bank of Kenya, from a reputable source, and an eligible country.

19.3 If an unconditional bank guarantee is issued by a bank located outside Kenya, the issuing bank shall have a correspondent bank located in Kenya to make it enforceable. The Tender Security shall be valid for thirty (30) days beyond the original validity period of the Tender, or beyond any period of extension if requested under ITT 18.2.

19.4 If a Tender Security or Tender-Securing Declaration is specified pursuant to ITT 19.1, any Tender not accompanied by a substantially responsive Tender Security or Tender-Securing Declaration shall be rejected by the Procuring Entity as non-responsive.

19.5 If a Tender Security is specified pursuant to ITT 19.1, the Tender Security of unsuccessful Tenderers shall be returned as promptly as possible upon the successful Tenderer's signing the Contract and furnishing the Performance Security and any other documents required in the **TDS**. The Procuring Entity shall also promptly return the tender security to the tenderers where the procurement proceedings are terminated, all tenders were determined non-responsive or a bidder declines to extend tender validity period.

19.6 The Tender Security of the successful Tenderer shall be returned as promptly as possible once the successful Tenderer has signed the Contract and furnished the required Performance Security, and any other documents required in the **TDS**.

19.7 The Tender Security may be forfeited or the Tender-Securing Declaration executed:
a) if a Tenderer withdraws its Tender during the period of Tender validity specified by the Tenderer on the Form of Tender, or any extension there to provided by the Tenderer; or
b) if the successful Tenderer fails to:
   i) sign the Contract in accordance with ITT 47; or
   ii) furnish a Performance Security and if required in the **TDS**, and any other documents required in the **TDS.**

19.8 Where tender securing declaration is executed, the Procuring Entity shall recommend to the PPRA that PPRA debars the Tenderer from participating in public procurement as provided in the law.

19.9 The Tender Security or the Tender-Securing Declaration of a JV shall be in the name of the JV that submits the Tender. If the JV has not been legally constituted into a legally enforceable JV at the time of tendering, the Tender Security or the Tender-Securing Declaration shall be in the names of all future members as named in the letter of intent referred to in ITT 4.1 and ITT 11.2.

19.10 A tenderer shall not issue a tender security to guarantee itself

20. Format and Signing of Tender

20.1 The Tenderer shall prepare one original of the documents comprising the Tender as described in ITT 11 and clearly mark it "ORIGINAL." Alternative Tenders, if permitted in accordance with ITT 13, shall be clearly marked "ALTERNATIVE." In addition, the Tenderer shall submit copies of the Tender, in the number **specified in the TDS** and clearly mark them "COPY." In the event of any discrepancy between the original and the copies, the original shall prevail.

20.2 Tenderers shall mark as "CONFIDENTIAL" all information in their Tenders which is confidential to their business. This may include proprietary information, trade secrets,

or commercial or financially sensitive information.

20.3 The original and all copies of the Tender shall be typed or written in indelible ink and shall be signed by a person duly authorized to sign on behalf of the Tenderer. This authorization shall consist of a written confirmation as specified in the **TDS** and shall be attached to the Tender. The name and position held by ach person signing the authorization must be typed or printed below the signature. All pages of the Tender where entries or amendments have been made shall be signed or initialed by the person signing the Tender.

20.4 In case the Tenderer is a JV, the Tender shall be signed by an authorized representative of the JV on behalf of the JV, and so as to be legally binding on all the members as evidenced by a power of attorney signed by their legally authorized representatives.

20.5 Any inter-lineation, erasures, or overwriting shall be valid only if they are signed or initialed by the person signing the Tender.

D. SUBMISSION AND OPENING OF TENDERS

21. Sealing and Marking of Tenders

21.1 The Tenderer shall deliver the Tender in a single sealed envelope, or in a single sealed package, or in a single sealed container bearing the name and Reference number of the Tender, addressed to the Procuring Entity and a warning not to open before the time and date for Tender opening date. Within the single envelope, package or container, the Tenderer shall place the following separate, sealed envelopes:

a) in an envelope or package or container marked "ORIGINAL", all documents comprising the Tender, as describedinITT11; and

b) in an envelope or package or container marked "COPIES" all required copies of the Tender; and

c) if alternative Tenders are permitted in accordance with ITT 13, and if relevant:

i) in an envelope or package or container marked "ORIGINAL - ALTERNATIVE TENDER", the alternative Tender; and

ii) in the envelope or package or container marked "COPIES-ALTERNATIVETENDER", all required copies of the alternative Tender.

The inner envelopes or packages or containers shall:

a) Bear the name and address of the Procuring Entity.

b) Bear the name and address of the Tenderer; and

c) Bear the name and Reference number of the Tender.

21.2 If an envelope or package or container is not sealed and marked as required, the *Procuring Entity* will assume no responsibility for the misplacement or premature opening of the Tender. Tenders that were misplaced or opened prematurely will not be accepted

22. Deadline for Submission of Tenders

22.1 Tenders must be received by the Procuring Entity at the address specified in the **TDS** and no later than the date and time also specified in the **TDS.** When so specified in the **TDS**, Tenderers shall have the option of submitting their Tenders electronically. Tenderers submitting Tenders electronically shall follow the electronic Tender submission procedures specified in the **TDS**.

22.2 The Procuring Entity may, at its discretion, extend the deadline for the submission of Tenders by amending the Tender Documents in accordance with ITT 8, in which case all rights and obligations of the Procuring Entity and Tenderers previously subject to the deadline shall thereafter be subject to the deadline as extended.

23. Late Tenders

23.1 The Procuring Entity shall not consider any Tender that arrives after the deadline for submission of tenders, in accordance with ITT 22. Any Tender received by the Procuring Entity after the deadline for submission of Tenders shall be declared late, rejected, and returned unopened to the Tenderer.

24. Withdrawal, Substitution, and Modification of Tenders

24.1 A Tenderer may withdraw, substitute, or modify its Tender after it has been submitted by sending a written notice, duly signed by an authorized representative, and shall include a copy of the authorization in accordance with ITT 20.3, (except that withdrawal notices do not require copies). The corresponding substitution or modification of the Tender must accompany the respective written notice. All notices must be:

a) prepared and submitted in accordance with ITT 20 and ITT 21 (except that withdrawals notices do not require copies), and in addition, the respective envelopes shall be clearly marked "WITHDRAWAL," "SUBSTITUTION," "MODIFICATION;" and

b) received by the Procuring Entity prior to the deadline prescribed for submission of Tenders, in accordance with ITT 22.

24.2 Tenders requested to be withdrawn in accordance with ITT 24.1 shall be returned unopened to the Tenderers.

24.3 No Tender may be withdrawn, substituted, or modified in the interval between the deadline for submission of Tenders and the expiration of the period of Tender validity specified by the Tenderer on the Form of Tender or any extension thereof.

25. Tender Opening

25.1 Except in the cases specified in ITT 23 and ITT 24.2, the Procuring Entity shall publicly open and read out all Tenders received by the deadline, at the date, time and place specified **in the TDS**, in the presence of Tenderers' designated representatives and anyone who chooses to attend. Any specific electronic Tender opening procedures required if electronic Tendering is permitted in accordance with ITT 22.1, shall be as specified in the **TDS.**

25.2 First, envelopes marked "WITHDRAWAL" shall be opened and read out and the envelopes with the corresponding Tender shall not be opened but returned to the Tenderer. No Tender withdrawal shall be permitted unless the corresponding withdrawal notice contains a valid authorization to request the withdrawal and is read out attender opening.

25.3 Next, envelopes marked "SUBSTITUTION" shall be opened and read out and exchanged with the corresponding Tender being substituted, and the substituted Tender shall not be opened, but returned to the Tenderer. No Tender substitution shall be permitted unless the corresponding substitution notice contains a valid authorization to request the substitution and is read out at Tender opening.

25.4 Next, envelopes marked "MODIFICATION" shall be opened and read out with the corresponding Tender. No Tender modification shall be permitted unless the corresponding modification notice contains a valid authorization to request the modification and is read out at Tender opening.

25.5 Next, all remaining envelopes shall be opened one at a time, reading out: the name of the Tenderer and whether there is a modification; the total Tender Price, per lot (contract) if applicable, including any discounts and alternative Tenders; the presence or absence of a Tender Security or Tender-Securing Declaration, if required; and any other details as the Procuring Entity may consider appropriate.

25.6 Only Tenders, alternative Tenders and discounts that are opened and read out at Tender opening shall be considered further for evaluation. The Form of Tender and pages of the Bill of Quantities (to be decided on by the tender opening committee) are to be initialed by the members of the tender opening committee attending the opening.

25.7 At the Tender Opening, the Procuring Entity shall neither discuss the merits of any Tender nor reject any Tender (except for late Tenders, in accordance with ITT 23.1).

25.8 The Procuring Entity shall prepare minutes of the Tender Opening that shall include, as a minimum:

a) The name of the Tenderer and whether there is a withdrawal, substitution, or modification;
b) The Tender Price, per lot (contract) if applicable, including any discounts;
c) Any alternative Tenders;
d) The presence or absence of a Tender Security, if one was required.
e) Number of pages of each tender document submitted.

25.9 The Tenderers' representatives who are present shall be requested to sign the minutes. The omission of a Tenderer's signature on the minutes shall not invalidate the contents and effect of the minutes. A copy of tender opening register shall be issued to a tenderer upon request.

E. Evaluation and Comparison of Tenders

26. Confidentiality

26.1 Information relating to the evaluation of Tenders and recommendation of contract award shall not be disclosed to Tenderers or any other persons not officially concerned with the Tender process until information on Intention to Award the Contract is transmitted to all Tenderers in accordance with ITT 43.

26.2 Any effort by a Tenderer to influence the Procuring Entity in the evaluation of the Tenders or Contract award decisions may result in the rejection of its tender.

26.3 Notwithstanding ITT 26.2, from the time of tender opening to the time of contract award, if a tenderer wishes to contact the Procuring Entity on any matter related to the tendering process, it shall do so in writing.

27. Clarification of Tenders

27.1 To assist in the examination, evaluation, and comparison of the tenders, and qualification of the tenderers, the Procuring Entity may, at its discretion, ask any tenderer for a clarification of its tender, given a reasonable time for a response. Any clarification submitted by a tenderer that is not in response to a request by the Procuring Entity shall not be considered. The Procuring Entity's request for clarification and the response shall be in writing. No change, including any voluntary increase or decrease, in the prices or substance of the tender shall be sought, offered, or permitted, except to confirm the correction of arithmetic errors discovered by the Procuring Entity in the evaluation of the tenders, in accordance with ITT 31.

27.2 If a tenderer does not provide clarifications of its tender by the date and time set in the Procuring Entity's request for clarification, its Tender may be rejected.

28. Deviations, Reservations, and Omissions

28.1 During the evaluation of tenders, the following definitions apply:

a) "Deviation" is a departure from the requirements specified in the tender document;
b) "Reservation" is the setting of limiting conditions or withholding from complete acceptance of the requirements specified in the tender document; and

c) "Omission" is the failure to submit part or all of the information or documentation required in the Tender document.

29. Determination of Responsiveness

29.1 The Procuring Entity's determination of a Tender's responsiveness is to be based on the contents of the tender itself, as defined in ITT 11.

29.2 A substantially responsive Tender is one that meets the requirements of the Tender document without material deviation, reservation, or omission. A material deviation, reservation, or omission is one that, if accepted, would:

a) Affect in any substantial way the scope, quality, or performance of the Works specified in the Contract; or

b) limit in any substantial way, inconsistent with the tender document, the Procuring Entity's rights or the tenderer's obligations under the proposed contract; or

c) if rectified, would unfairly affect the competitive position of other tenderers presenting substantially responsive tenders.

29.3 The Procuring Entity shall examine the technical aspects of the tender submitted in accordance with ITT 16, to confirm that all requirements of Section VI, Works' Requirements have been met without any material deviation, reservation or omission.

29.4 If a tender is not substantially responsive to the requirements of the tender document, it shall be rejected by the Procuring Entity and may not subsequently be made responsive by correction of the material deviation, reservation, or omission.

30. Non-material non-conformities

30.1 Provided that a tender is substantially responsive, the Procuring Entity may waive any non-conformities in the tender.

30.2 Provided that a Tender is substantially responsive, the Procuring Entity may request that the tenderer submit the necessary information or documentation, within a reasonable period of time, to rectify nonmaterial non- conformities in the tender related to documentation requirements. Requesting information or documentation on such non-conformities shall not be related to any aspect of the price of the tender. Failure of the tenderer to comply with the request may result in the rejection of its tender.

30.3 Provided that a tender is substantially responsive, the Procuring Entity shall rectify quantifiable nonmaterial non-conformities related to the Tender Price. To this effect, the Tender Price shall be adjusted, for comparison purposes only, to reflect the price of a missing or non-conforming item or component in the manner specified **in the TDS.**

31. Arithmetical Errors

31.1 The tender sum as submitted and read out during the tender opening shall be absolute and final and shall not be the subject of correction, adjustment or amendment in anyway by any person or entity.

31.2 Provided that the Tender is substantially responsive, the Procuring Entity shall handle errors on the following basis:

a) Any error detected if considered a major deviation that affects the substance of the tender, shall lead to disqualification of the tender as non-responsive.

b) Any errors in the submitted tender arising from a miscalculation of unit price, quantity, sub total and total bid price shall be considered as a major deviation that affects the substance of the tender and shall lead to disqualification of the tender as non-responsive. and

c) If there is a discrepancy between words and figures, the amount in words shall prevail.

31.3 Tenderers shall be notified of any error detected in their bid during the notification of award.

32. Conversion to Single Currency

32.1 For evaluation and comparison purposes, the currency (ies) of the Tender shall be converted into a single currency **as specified in the TDS.**

33. Margin of Preference and Reservations

33.1 A margin of preference may be allowed only when the contract is open to international competitive tendering where foreign contractors are expected to participate in the tendering process and where the contract exceeds the value/threshold specified in the Regulations.

33.2 A margin of preference shall not be allowed unless it is specified so in the **TDS**.

33.3 Contracts procured on basis of international competitive tendering shall not be subject to reservations exclusive to specific groups as provided in ITT 33.4.

33.4 Where it is intended to reserve a contract to a specific group of businesses (these groups are Small and Medium Enterprises, Women Enterprises, Youth Enterprises and Enterprises of persons living with disability, as the case may be), and who are appropriately registered as such by the authority to be specified in the **TDS**, a procuring entity shall ensure that the invitation to tender specifically indicates that only businesses or firms belonging to the specified group are eligible to tender. No tender shall be reserved to more than one group. If not so stated in the Invitation to Tender and in the Tender documents, the invitation to tender will be open to all interested tenderers.

34. Nominated Subcontractors

34.1 **Unless** otherwise stated **in the TDS,** the Procuring Entity does not intend to execute any specific elements of the Works by subcontractors selected/nominated by the Procuring Entity. Incase the Procuring Entity nominates a subcontractor, the subcontract agreement shall be signed by the Subcontractor and the Procuring Entity. The main contract shall specify the working arrangements between the main contractor and the nominated subcontractor.

34.2 Tenderers may propose subcontracting upto the percentage of total value of contracts or the volume of works as specified **in the TDS**. Subcontractors proposed by the Tenderer shall be fully qualified for their parts of the Works.

34.3 Domestic subcontractor's qualifications shall not be used by the Tenderer to qualify for the Works unless their specialized parts of the Works were previously designated so by the Procuring Entity **in the TDS** as can be met by subcontractors referred to hereafter as 'Specialized Subcontractors', in which case, the qualifications of the Specialized Subcontractors proposed by the Tenderer may be added to the qualifications of the Tenderer.

35. Evaluation of Tenders

35.1 The Procuring Entity shall use the criteria and methodologies listed in this ITT and Section III, Evaluation and Qualification Criteria. No other evaluation criteria or methodologies shall be permitted. By applying the criteria and methodologies the Procuring Entity shall determine the Lowest Evaluated Tender in accordance with ITT 40.

35.2 To evaluate a Tender, the Procuring Entity shall consider the following:

a) Price adjustment in accordance with ITT 31.1(iii); excluding provisional sums and contingencies, if any, but including Day work items, where priced competitively;

b) Price adjustment due to discounts offered in accordance with ITT 14.4;

c) converting the amount resulting from applying (a) and (b) above, if relevant, to a

single currency in accordance with ITT 32;

d) price adjustment due to quantifiable non material non-conformities in accordance with ITT 30.3; and

e) any additional evaluation factors specified **in the TDS** and Section III, Evaluation and Qualification Criteria.

35.3 The estimated effect of the price adjustment provisions of the Conditions of Contract, applied over the period of execution of the Contract, shall not be considered intender evaluation.

35.4 Where the tender involves multiple lots or contracts, the tenderer will be allowed to tender for one or more lots (contracts). Each lot or contract will be evaluated in accordance with ITT 35.2. The methodology to determine the lowest evaluated tenderer or tenderers based on one lot (contract) or based on a combination of lots (contracts), will be specified in Section III, Evaluation and Qualification Criteria. In the case of multiple lots or contracts, the tenderer will be required to prepare the Eligibility and Qualification Criteria Form for each Lot.

36. Comparison of Tenders

36.1 The Procuring Entity shall compare the evaluated costs of all substantially responsive Tenders established in accordance with ITT 35.2 to determine the Tender that has the lowest evaluated cost..

37. Abnormally Low Tenders and Abnormally High

Tenders Abnormally Low Tenders

37.1 An Abnormally Low Tender is one where the Tender price, in combination with other elements of the Tender, appears so low that it raises material concerns as to the capability of the Tenderer in regards to the Tenderer's ability to perform the Contract for the offered Tender Price or that genuine competition between Tenderers is compromised.

37.2 In the event of identification of a potentially Abnormally Low Tender, the Procuring Entity shall seek written clarifications from the Tenderer, including detailed price analyses of its Tender price in relation to the subject matter of the contract, scope, proposed methodology, schedule, allocation of risks and responsibilities and any other requirements of the Tender document.

37.3 After evaluation of the price analyses, in the event that the Procuring Entity determines that the Tenderer has failed to demonstrate its capability to perform the Contract for the offered Tender Price, the Procuring Entity shall reject the Tender.

Abnormally High Tenders

37.4 An abnormally high tender price is one where the tender price, in combination with other constituent elements of the Tender, appears unreasonably too high to the extent that the Procuring Entity is concerned that it (the Procuring Entity) may not be getting value for money or it may be paying too high a price for the contract compared with market prices or that genuine competition between Tenderers is compromised.

37.5 Incase of an abnormally high price, the Procuring Entity shall make a survey of the market prices, check if the estimated cost of the contract is correct and review the Tender Documents to check if the specifications, scope of work and conditions of contract are contributory to the abnormally high tenders. The Procuring Entity may also seek written clarification from the tenderer on the reason for the high tender price. The Procuring Entity shall proceed as follows:

i. If the tender price is abnormally high based on wrong estimated cost of the contract, the Procuring Entity may accept or not accept the tender depending on the Procuring Entity's budget considerations.

ii. If specifications, scope of work and/or conditions of contract are contributory to the abnormally high tender prices, the Procuring Entity shall reject all tenders and may retender for the contract based on revised estimates, specifications, scope of work and conditions of contract, as the case may be.

37.6 If the Procuring Entity determines that the Tender Price is abnormally too high because genuine competition between tenderers is compromised (*often due to collusion, corruption or other manipulations*), the Procuring Entity shall reject all Tenders and shall institute or cause competent Government Agencies to institute an investigation on the cause of the compromise, before retendering.

38. Unbalanced and/or Front-Loaded Tenders

38.1 If in the Procuring Entity's opinion, the Tender that is evaluated as the lowest evaluated price is seriously unbalanced and/or front loaded, the Procuring Entity may require the Tenderer to provide written clarifications. Clarifications may include detailed price analyses to demonstrate the consistency of the tender prices with the scope of works, proposed methodology, schedule and any other requirements of the Tender document.

38.2 After the evaluation of the information and detailed price analyses presented by the Tenderer, the Procuring Entity may as appropriate:

a) accept the Tender; or
b) require that the total amount of the Performance Security be increased at the expense of the Tenderer to a level not exceeding a 10% of the Contract Price; or
c) agree on a payment mode that eliminates the inherent risk of the Procuring Entity paying too much for undelivered works; or
d) reject the Tender,

39. Qualifications of the Tenderer

39.1 The Procuring Entity shall determine to its satisfaction whether the eligible Tenderer that is selected as having submitted the lowest evaluated cost and substantially responsive Tender, meets the qualifying criteria specified in Section III, Evaluation and Qualification Criteria.

39.2 The determination shall be based upon an examination of the documentary evidence of the Tenderer's qualifications submitted by the Tenderer, pursuant to ITT 17. The determination shall not take into consideration the qualifications of other firms such as the Tenderer's subsidiaries, parent entities, affiliates, subcontractors (other than Specialized Subcontractors if permitted in the Tender document), or any other firm(s) different from the Tenderer.

39.3 An affirmative determination shall be a prerequisite for award of the Contract to the Tenderer. A negative determination shall result in disqualification of the Tender, in which event the Procuring Entity shall proceed to the Tenderer who offers a substantially responsive Tender with the next lowest evaluated price to make a similar determination of that Tenderer's qualifications to perform satisfactorily.

40. Lowest Evaluated Tender

40.1 Having compared the evaluated prices of Tenders, the Procuring Entity shall determine the Lowest Evaluated Tender. The Lowest Evaluated Tender is the Tender of the Tenderer that meets the Qualification Criteria and whose Tender has been determined to be:

a) Most responsive to the Tender document; and
b) The lowest evaluated price.

41. Procuring Entity's Right to Accept Any Tender, and to Reject Any or All Tenders

41.1 The Procuring Entity reserves the right to accept or reject any Tender and to annul the Tender process and reject all Tenders at any time prior to Contract Award, without there

by incurring any liability to Tenderers. In case of annulment, all Tenders submitted and specifically, Tender securities, shall be promptly returned to the Tenderers.

F. AWARD OF CONTRACT

42. Award Criteria

42.1 The Procuring Entity shall award the Contract to the successful tenderer whose tender has been determined to be the Lowest Evaluated Tender.

43. Notice of Intention to enter into a Contract

43.1 Upon award of the contract and prior to the expiry of the Tender Validity Period the Procuring Entity shall issue a Notification of Intention to Enter into a Contract/Notification of award to all tenderers which shall contain, at a minimum, the following information:

a) the name and address of the Tenderer submitting the successful tender;
b) the Contract price of the successful tender;
c) a statement of the reason(s) the tender of the unsuccessful tenderer to whom the letter is addressed was unsuccessful, unless the price information in (c) above already reveals the reason;
d) the expiry date of the Standstill Period; and
e) instructions on how to request a debriefing and/or submit a complaint during the stand still period;

44. Stand still Period

44.1 The Contract shall not be signed earlier than the expiry of a Standstill Period of 14 days to allow any dissatisfied tender to launch a complaint. Where only one Tender is submitted, the Standstill Period shall not apply.

44.2 Where a Standstill Period applies, it shall commence when the Procuring Entity has transmitted to each Tenderer the Notification of Intention to Enter into a Contract with the successful Tenderer.

45. Debriefing by the Procuring Entity

45.1 On receipt of the Procuring Entity's Notification of Intention to Enter into a Contract referred to in ITT 43, an unsuccessful tenderer may make a concerns regarding their tender. The Procuring Entity shall provide the debriefing within five days of receipt of the request.

45.2 Debriefings of unsuccessful Tenderers may be done in writing or verbally. The Tenderer shall bear its own costs of attending such a debriefing meeting.:

46. Letter of Award

46.1 Prior to the expiry of the Tender Validity Period and upon expiry of the Standstill Period specified in ITT 42.1, upon addressing a complaint that has been filed within the Standstill Period, the Procuring Entity shall transmit the Letter of Award to the successful Tenderer. The letter of award shall request the successful tenderer to furnish the Performance Security within 21 days of the date of the letter.

47. Signing of Contract

47.1 Upon the expiry of the fourteen days of the Notification of Intention to enter into contract and upon the parties meeting their respective statutory requirements, the Procuring Entity shall send the successful Tenderer the Contract Agreement.

47.2 Within fourteen (14) days of receipt of the Contract Agreement, the successful Tenderer shall sign, date, and return it to the Procuring Entity.

47.3 The written contract shall be entered into within the period specified in the notification of award and before expiry of the tender validity period.

48. Performance Security

48.1 Within twenty-one (21) days of the receipt of the Letter of Award from the Procuring Entity, the successful Tenderer shall furnish the Performance Security and, any other documents required in the **TDS**, in accordance with the General Conditions of Contract, subject to ITT 38.2 (b), using the Performance Security and other Forms included in Section X, Contract Forms, or another form acceptable to the Procuring Entity. A foreign institution providing a bank guarantee shall have a correspondent financial institution located in Kenya, unless the Procuring Entity has agreed in writing that a correspondent bank is not required.

48.2 Failure of the successful Tenderer to submit the above-mentioned Performance Security and other documents required in the **TDS** or sign the Contract shall constitute sufficient grounds for the annulment of the award and forfeiture of the Tender Security. In that event the Procuring Entity may award the Contract to the Tenderer offering the next Best Evaluated Tender.

48.3 Performance security shall not be required for contracts estimated to cost less than the amount specified in the Regulations.

49. Publication of Procurement Contract

49.1 Within fourteen days after signing the contract, the Procuring Entity shall publish the awarded contract at its notice boards and websites; and on the Website of the Authority. At the minimum, the notice shall contain the following information:

a) name and address of the Procuring Entity;
b) name and reference number of the contract being awarded, a summary of its scope and the selection method used;
c) the name of the successful Tenderer, the final total contract price, the contract duration.
d) dates of signature, commencement and completion of contract;
e) names of all Tenderers that submitted Tenders, and their Tender prices as read out at Tender opening.

50. Procurement Related Complaint and Administrative Review

50.1 The procedures for making Procurement-related Complaints shall be specified in the **TDS.**

50.2 A request for administrative review shall be made in the form provided under contract forms.

SECTION II - TENDER DATA SHEET (TDS)

The following specific data shall complement, supplement, or amend the provisions in the Instructions to Tenderers (ITT). Whenever there is a conflict, the provisions herein shall prevail over those in ITT.

ITT Reference	PARTICULARS OF APPENDIX TO INSTRUCTIONS TO TENDERS
	A. General
ITT 1.1	The name of the contract is **PROPOSED REHABILITATION AND EXTENSION OF PELELEZA JETTY** The reference number of the Contract is **TENDER NO. KPA/228/2025-26/PDM**
ITT 2.4	The information made available on competing firms is as follows: **NONE**
ITT 3.1	The maximum number of members in the Joint Venture shall be: **Two**
B. Contents of Tender Document	
ITT 7.1	The Tenderer will submit any request for clarifications in writing at email address, tenders@kpa.co.ke no later than **5 days** before deadline of submission of tenders.
ITT 7.2	There shall be a **MANDATORY SITE VISIT scheduled on MONDAY 22ND JUNE 2026. Bidders to meet at 1000Hours at Procurement Conference Room, New Service Area (Kapenguria), KILINDINI MOMBASA.**
ITT 7.3	The Tenderer will submit any request for clarifications in writing at email address, tenders@kpa.co.ke no later than 3 days before the meeting.
ITT 7.5	The Procuring Entity's website where Minutes of the pre-Tender meeting and the pre-arranged pretender will be published is www.kpa.co.ke
C. Preparation of Tenders	
ITT 11.1 (h)	The Tenderer shall submit the following additional documents in its Tender: ***all duly completed and signed mandatory tendering forms under section IV***
ITT 13.1	Alternative Tenders ***"shall not be"*** considered.
ITT 13.2	Alternative times for completion ***"shall not be"*** permitted.
ITT 13.4	Alternative technical solutions ***"shall not be"*** permitted.
ITT 14.5	The prices quoted by the Tenderer ***"shall not"*** be subject to adjustment during the performance of the Contract.
ITT 15.2(a)	Foreign currency requirements **not allowed.**
ITT 18.1	The Tender validity period shall be **210** days from the date of tender opening.
ITT 18.2	The Number of days beyond the expiry of the initial tender validity period will be **30** days.
ITT 19.1	Tenderers shall be required to submit a Tender Security amounting to **Kenya Shillings Three Million (Kshs. 3,000,000.00) of USD Equivalent** in the form of a Banker's guarantee or an Insurance Company Guarantee issued by an insurance firm approved by the Public Procurement Regulatory Authority

ITT Reference	PARTICULARS OF APPENDIX TO INSTRUCTIONS TO TENDERS
	(PPRA), letter of credit or guarantee by a deposit taking microfinance institution, Sacco society, the Youth Enterprise Development Fund or the Women Enterprise Fund valid for 240 days from the date of tender opening in the format provided in the tender document.
ITT 19.5	Other documents required are Signed Contract Agreement
ITT 20.1	In addition to the original of the Tender, the number of copies is**: one original** plus **one copy of original and a PDF soft copy of the original in a flash disk & *priced BoQ in excel format.***
ITT 20.3	The written confirmation of authorization to sign on behalf of the Tenderer shall consist of ***a Power of Attorney.*** The name and position held by each person signing the authorization **must** be typed or printed below the signature. *The Power of Attorney* ***must show the name and specimen signature*** *of the person authorized to sign the documents.* ***This applies to only limited companies and Partnerships.***
D. Submission and Opening of Tenders	
ITT 21.2	A tender package or container that cannot fit in the tender box shall be received as follows: **Office of the General Manager Supply Chain Management** located in Finance Block III.
ITT 22.1	For **Tender submission purposes** only, the Procuring Entity's address is: **THE GENERAL MANAGER SUPPLY CHAIN MANAGEMENT** **KENYA PORTS AUTHORITY** **KIPEVU HEADQUARTERS 4TH FLOOR** **FINANCE BLOCK III, DOOR BLK-3.4.3** **MOMBASA, KENYA** **Phone: +254 (41) 2113600/ 2113999** **E-mail: tenders@kpa.co.ke** **The deadline for Tender submission is:** Date: **FRIDAY 26TH JUNE 2026** Time: ***BEFORE 1000HOURS.*** Tenderers ***"shall not"*** have the option of submitting their Tenders electronically.
ITT 25.1	Tender opening shall be at the **Procurement Conference Room.** Date: **FRIDAY 26TH JUNE 2026** Time: ***1030HOURS***
E. Evaluation, and Comparison of Tenders	
ITT 30.3	Subject to section 79(2)(b) of the Public Procurement and Asset Disposal Act 2015, any arithmetic errors in the submitted tender arising from a miscalculation of unit price, quantity, subtotal and total bid price shall be considered as a major deviation that affects the substance of the tender and shall lead to disqualification of the tender as non-responsive.
ITT 32.1	The currency that shall be used for Tender evaluation and comparison purposes to convert at the selling exchange rate all Tender prices expressed in various currencies into a single currency is **KENYA SHILLINGS.**

ITT Reference	PARTICULARS OF APPENDIX TO INSTRUCTIONS TO TENDERS
	The source of exchange rate shall be **The Central bank of Kenya** (mean rate) The date for the exchange rate shall be **the deadline date for Submission of the Tenders.**
ITT 33.2	A margin of preference *"shall not"* apply.
ITT 33.4	The invitation to tender is extended to the following groups that qualify for Reservations: N/A
ITT 34.2	Contractor's may propose subcontracting: Maximum percentage of subcontracting permitted is: *40% of the total contract amount.* Tenderers planning to subcontract more than 10% of total volume of work shall specify, in the Form of Tender, the activity (ies) or parts of the Works to be subcontracted along with complete details of the subcontractors and their qualification and experience
34.3	The parts of the Works for which the Procuring Entity permits Tenderers to propose Specialized Subcontractors are designated as follows: For the above-designated parts of the Works that may require Specialized Subcontractors, the relevant qualifications of the proposed Specialized Subcontractors will be added to the qualifications of the Tenderer for the purpose of evaluation. **NOT APPLICABLE**
ITT 35.2 (e)	Other information or materials required to be completed and submitted by Tenderers: **EVALUATION CRITERIA** Participating bidders are required to provide their best unit rates for each specified area. 1. **Financial Evaluation:** This will entail verifying the financials and checking for arithmetical errors, omissions, and price comparison among the qualified tenderers in accordance with the evaluation criteria.
F. Evaluation, and Comparison of Tenders	
ITT 48.1	Performance Security shall be 10% of the contract sum in form of performance guarantee from a bank with its operations in Kenya in the format provided in Section X – (Contract Forms - Form No. 5 - Performance Security – (Unconditional Demand Bank Guarantee) valid for the contract period.
ITT 50.1	The procedures for making a Procurement-related Complaint are available from the PPRA Website www.ppra.go.ke or email complaints@ppra.go.ke. If a Tenderer wishes to make a Procurement-related Complaint, the Tenderer should submit its complaint following these procedures, in writing to: complaints@ppra.go.ke In summary, a Procurement-related Complaint may challenge any of the following: (i) the terms of the Tender Documents; and (ii) the Procuring Entity's decision to award the contract.

SECTION III - EVALUATION AND QUALIFICATION CRITERIA

1. General Provisions

Wherever a Tenderer is required to state a monetary amount, Tenderers should indicate the Kenya Shilling equivalent using the rate of exchange determined as follows:

a) For construction turnover or financial data required for each year - Exchange rate prevailing on the last day of the respective calendar year (in which the amount for that year is to be converted) was originally established.

b) Value of single contract - Exchange rate prevailing on the date of the contract signature.

c) Exchange rates shall be taken from the publicly available source identified in the ITT 32.1. Any error in determining the exchange rates in the Tender may be corrected by the Procuring Entity.

This section contains the criteria that the Employer shall use to evaluate tender and qualify tenderers. No other factors, methods or criteria shall be used other than specified in this tender document. The Tenderer shall provide all the information requested in the forms included in Section IV, Tendering Forms. The Procuring Entity should use **the Standard Tender Evaluation Document for Goods and Works** for evaluating Tenders.

Evaluation and contract award Criteria

The Procuring Entity shall use the criteria and methodologies listed in this Section to evaluate tenders and arrive at the Lowest Evaluated Tender. The tender that (i) meets the qualification criteria, (ii) has been determined to be substantially responsive to the Tender Documents, and (iii) is determined to have the Lowest Evaluated Tender price shall be selected for award of contract.

2. Preliminary examination for Determination of Responsiveness

The Procuring Entity will start by examining all tenders to ensure they meet in all respects the eligibility criteria and other requirements in the ITT, and that the tender is complete in all aspects in meeting the requirements of "Part 2 – Procuring Entity's Works Requirements", including checking for tenders with unacceptable errors, abnormally low tenders, abnormally high tenders and tenders that are front loaded. Tenders that do not pass the Preliminary Examination will be considered irresponsive and will not be considered further.

The *bid* submission

1. Shall have a table of contents page clearly indicating Sections and Page Numbers **(Mandatory).**

2. Shall have pages in the whole document from the table of contents page numbered in the correct sequence (1,2,3,4,5,.....n (where n is the last numerical page number)) including all appendixes and attachments - ***page numbers MUST be typed, handwritten numbering SHALL NOT be allowed*** **(Mandatory).**

3. Shall be firmly bound and should not have any loose pages. Spiral binding and files (spring and box) are not acceptable **(Mandatory).**

4. Shall be submitted in **one original** plus **one copy of original and a PDF soft copy of the original in a flash disk & *priced BoQ in excel format* (Mandatory).**

5. Shall be signed (where signatures are required) by a duly authorized representative of the firm or any other officer appointed and evidenced by a Power of Attorney **(Mandatory).**

The bid submission shall contain the following documents arranged in the following order:

i. Power of Attorney to sign the bid submission - **ITT 20.3 (Mandatory).**

ii. Particulars of Tendering Company to include: -

a. Certificate of Registration/Incorporation **(Mandatory).**

b. A copy of a valid Tax Compliance Certificate **(Mandatory).**

c. A copy of valid Business Permit (for the year 2026) **(Mandatory).**

d. A copy CR12 from Registrar of Companies or equivalent for limited companies, Name of Proprietor for Sole Proprietor and Names of Partners for Partnerships **(Mandatory).**

e. Copy of National Identification documents for owners/Directors of the company (ID/Passport) (**Mandatory**).

iii. Tenderers shall be required to submit a Tender Security amounting to **Kenya Three Million (Kshs. 3,000,000.00) of USD Equivalent** in the form of a Banker's guarantee or an Insurance Company Guarantee issued by an insurance firm approved by the Public Procurement Regulatory Authority (PPRA), letter of credit or guarantee by a deposit taking microfinance institution, Sacco society, the Youth Enterprise Development Fund or the Women Enterprise Fund valid for 240 days from the date of tender opening in the format provided in the tender document.

iv. All duly completed and signed mandatory tendering forms under section IV **(Mandatory).**

v. Valid/Current Certificate and Practicing License of NCA 2 and above for Roads and other Civil Works (**Mandatory).**

vi. **Code of Conduct for Personnel** (**Mandatory).**
The Bidder shall submit its Code of Conduct that will apply to Contractor's Personnel to ensure compliance with the Contractor's Environmental and Social (ES) obligations under the Contract.

vii. **Management Strategies and Implementation Plans (MSIP) to manage the (ES) risks** (**Mandatory**)
The Bidder shall refer to the following documents, note the risks and mitigation measures and submit a written confirmation (attached as an appendix to the ESMP) to comply with the provided measures:
- ESHS document at the Section VI Works' Requirements
- Annexed Environmental and Social Management Plan (ESMP) at Part no. 4 Bills of Quantities.

viii. Certified copies of Audited Accounts for the last three (3) years 2023, 2024 and 2025.**The Accounts submitted should be audited by a registered auditor and evidenced by Auditor's practicing number (MANDATORY).**

NOTE: Failure to meet any of the above requirements will lead to automatic disqualification and the bidder shall not be eligible for technical evaluation

3. Tender Evaluation (ITT 35)

a) Technical Evaluation Criteria.

i. **Evaluation of the Suitability of the Qualification Form Summary. Bidders shall fill where necessary and provide relevant information in this section. Including Experience, Personnel, Equipment and Financials.**

ii. **Evaluation of the Personnel**

Key staff	**Experience**	**Qualifications**	**Registration and Subscription**
Project manager	At least 15 years with 10 years' experience in similar works	Degree in Civil/Marine Engineering	Registration by EBK Professional Engineer with valid subscription
Site Agent	At least 15 years with 5 years' experience in similar works	Degree in Civil/Marine Engineering	Registration by EBK Professional Engineer with valid subscription
Electrical Engineer	At least 10 years with 5 years' experience in similar works	Degree in Electrical Engineering	Registration by EBK Professional Engineer with valid subscription
Mechanical Engineer	At least 10 years with 5 years' experience in similar works	Degree in Mechanical Engineering	Registration by EBK Professional Engineer with valid subscription
Geotechnical Engineer	At least 10 years with 5 years' experience in similar works	Degree in Mechanical Engineering	Registration by EBK Professional Engineer with valid subscription
Site Surveyor	At least 10 years with 5 years' experience in similar works	Degree in Surveying or equivalent	Registration by Institution of Surveyors of Kenya:
Foreman	At least 10 years with 5 years' experience in similar works	Degree HND Diploma	Registration by relevant registration body with valid subscription)
Health and Safety officer	At least 10 years with 5 years' experience in similar works	Training certificate in Occupational Health and Safety	Academic /professional certificates

The Bidder shall provide details of the proposed personnel and their experience records using Forms PER-1 and PER-2 included in Section IV, Bidding Forms.

iii. **Evaluation of the Equipment**

The Bidder to demonstrate that it has the key equipment listed hereafter or its equivalent:

No.	Main Equipment	Quantity (No), (Minimum)
i.	Crawler crane barge: Over 50 ton	1
ii.	Floating Barge: 2,000-ton class	1
iii.	Concrete batching plant (Min 60m3/hr)	1
iv.	Concrete pump	2
v.	Mobile concrete mixer 6000 Liters and above	2
vi.	Water tanker Minimum 5,000 Litres	1
vii.	Dumpers/Shovel/Bobcat	1
viii.	Excavator 140HP or bigger	1
ix.	Air Compressor with 3 jacks	1
x.	Tipper, Minimum 3 No.	3
xi.	Poker/Foam vibrator	2
xii.	Steel bar bender	2
xiii.	Survey equipment	1 set

4. **Price evaluation:** in addition to the criteria listed in ITT 37.2 (a) – (c) the following criteria shall apply: **Award will be to the Lowest Evaluated Bidder.**

5. **Multiple Contracts**

Applicable.

6. **Alternative Tenders (ITT 13.1)**

Not Applicable.

7. **Margin of Preference is not applicable**

8. **Post qualification and Contract ward (ITT 39),**

Not Applicable

QUALIFICATION FORM SUMMARY

1	2	3	4	5
Item No.	**Qualification Subject**	**Qualification Requirement**	***Document To be Completed by Tenderer***	***For Procuring Entity's Use (Qualification met or Not Met)***
PRELIMINARY EVALUATION				
1	Nationality	Nationality in accordance with ITT 3.6	Forms ELI – 1.1 and 1.2, with attachments	
2	Tax Obligations for Kenyan Tenderers	Has produced a current tax clearance certificate or tax exemption certificate issued by the Kenya Revenue Authority in accordance with ITT 3.14.	Form of Tender	
3	Conflict of Interest	No conflicts of interest in accordance with ITT 3.3	Form of Tender	
4	PPRA Eligibility	Not having been declared ineligible by the PPRA as described in ITT 3.8	Form of Tender	
5	State- owned Enterprise	Meets conditions of ITT 3.8	Forms ELI – 1.1 and 1.2, with attachments	
6	Goods, equipment and services to be supplied under the contract	To have their origin in any country that is not determined ineligible under ITT 3.9	Forms ELI – 1.1 and 1.2, with attachments	
7	History of Non-Performing Contracts	Non-performance of a contract did not occur as a result of contractor default since 1st January 2019.	Form CON-2	
8	Suspension Based on Execution of Tender/Proposal Securing Declaration by the Procuring Entity	Not under suspension based on-execution of a Tender/Proposal Securing Declaration pursuant to ITT 21.7	Form of Tender	
9.	Priced Bill of Quantities	Fill all rates, and amounts, NO Alterations of the Quantities accepted, All bidders own Corrections must be Countersigned	Bills of Quantity in the Prescribed Format	
10.	Annual Practicing License with the National Construction Authority	Proof of registration with the National Construction Authority in Category-NCA 2 and above Roads and other Civil Works	Copy of Current NCA registration and Practicing License	
11.	Tax Obligations for Kenyan Tenderers	Has produced a current tax clearance certificate or tax exemption certificate issued by the Kenya Revenue Authority in accordance with ITT 3.14	Provide Valid Tax Compliance Certificate	
12.	Serialization of the Bid	Bidders shall sequentially serialize all pages of each tender	The Serialization MUST be numerically	

1	2	3	*4*	*5*
Item No.	**Qualification Subject**	**Qualification Requirement**	***Document To be Completed by Tenderer***	***For Procuring Entity's Use (Qualification met or Not Met)***
		submitted. Any written Pages or document attached or inserted Documents MUST be sequentially serialized.	sequential starting from Numeric 1.	
13.	Completeness of tender document	The person or persons signing the bid shall initial all pages of the bid where entries have been made. Bidders shall own all alterations made to the tender document. Bidders shall duly fill all relevant forms/schedules provided for in the document that requires entries	All pages with entries (Typed or hand written) must be initialed. Any alterations made in the tender document must be countersigned. All relevant Forms/ Schedules shall be duly filled	
14.	Proposed weightings	Dully filled and Signed Schedule: BASIC PRICES FOR MATERIALS AND LABOUR	Bidder to fill Schedule : Basic Prices for Materials and Labour	
TECHNICAL EVALUATION				
15.	Pending Litigation	Tender's financial position and prospective long-term profitability still sound according to criteria established in FORM 3.1 and assuming that all pending litigation will NOT be resolved against the Tenderer.	Form CON – 2	**1 Marks**
16	Litigation History	No consistent history of court/arbitral award decisions against the Tenderer since 1st January 2021.	Form CON – 2 If a bidder fails to disclose, shall be disqualified Reference to be made to Procuring entities records A bidder (Company and/or Director(s)) with any history of nonperformance losses 10 Marks	
17.	Financial Capabilities	(i) The Tenderer shall demonstrate that it has access to, or has available, liquid assets, unencumbered real assets, lines of credit, and other financial means (independent of any contractual advance payment) sufficient to meet the construction cash flow requirements estimated as **Kenya Shillings *200,000,000*** equivalent for the subject	Form FIN – 3.1, with attachments Attachments include: Audited accounts for last three (3) years 2025, 2024 and 2023 or 2024, 2023 and	

1	2	3	4	5
Item No.	**Qualification Subject**	**Qualification Requirement**	***Document To be Completed by Tenderer***	***For Procuring Entity's Use (Qualification met or Not Met)***
		contract(s) net of the Tenderer's other commitments.	2022 Current Ratio more than 1 = 1 marks Equity Capital Ratio less than1 = 1 Marks Positive Working Capital = 1 marks Operating Cash flow more than 1 = 1 marks All pages must be initialed and stamped by both a practicing Auditor registered with ICPAK and one of the Directors. Auditor practicing membership number from ICPAK must be indicated and a valid practicing license shall be provided.	**4 Marks**
		(ii) The Tenderers shall also demonstrate, to the satisfaction of the Procuring Entity, that it has adequate sources of finance to meet the cash flow requirements on works currently in progress and for future contract commitments. (iii) The audited balance sheets or, if not required by the laws of the Tenderer's country, other financial statements acceptable to the Procuring Entity, for the last *three (3) years* shall be submitted and must demonstrate the current soundness of the Tenderer's financial position and indicate its prospective long-term profitability.	• Line of Credit • Bank statements Etc.	**1 Marks**
18.	Average Annual Construction Turnover	Minimum average annual construction turnover of Kenya Shillings *1,000,000,000* equivalent calculated as total certified payments received for contracts in progress and/or completed within the last *three (3)* years, divided by *3* years. In the case of a Joint Venture (JV),the domestic partner shall	Form FIN – 3.2 Attachments include Financial Statements	**2 Marks**

1	2	3	*4*	*5*
Item No.	**Qualification Subject**	**Qualification Requirement**	***Document To be Completed by Tenderer***	***For Procuring Entity's Use (Qualification met or Not Met)***
		demonstrate an average annual construction turnover Of **Kshs 300,000,000**.00for the same period, also calculated based on total gross certified payments received.		
	Current Commitments/Work load Analysis	The total value of outstanding works on the on-going contracts should not exceed the average annual construction turnover for the last three (3) years. In case of a JVs, the above requirement shall apply.	Form FIN-3.4 If the value of the outstanding Works and the new commitment is more than the operating cash flow (based on the last audited financial statement) of the bidder, the bidder loses one marks	**1 mark**
19.	General Construction Experience	Experience under construction contracts in the role of prime contractor, JV member, sub-contractor, or management contractor for at least the last *5* years, starting 1st January *2021*	**4.** Form EXP – 4.1 Attach Letters of Award and Completion Certificates	**2.5 Marks**
20.	Specific Construction & Contract Management Experience	Participation in contract (s) of a similar nature with minimum cumulative value of KSh. 500 million (Five hundred million) as filled in Form EXP 4.2(a) that have been satisfactorily and substantially completed by the bidder, as a prime contractor, joint venture member, management contractor or sub-contractor in the last [5 years] prior to the tender opening date. In case of a Joint Venture (JV) All members combined must meet requirements)	Form EXP 4.2(a) Provide Letters of Award and Completion Certificates For subcontracted works, the bidder should provide the following; • Award letter of the main • contractor • Award letter of the subcontract.	**6 Marks**

1	2	3	4	5
Item No.	**Qualification Subject**	**Qualification Requirement**	***Document To be Completed by Tenderer***	***For Procuring Entity's Use (Qualification met or Not Met)***
21.	4.2 (b) Specific Construction & Contract Management Experience– Key Activities	For the above and any other contracts [substantially completed and under implementation] as prime contractor, joint venture member, or Subcontractor in the last five(5) years and Application submission deadline, a minimum construction experience in the following key activities successfully completed: Construction of Jetty to entail: ➢ Driving of piles: Minimum length – 1,500 m ➢ Concrete works: Minimum 75,000 m^2.	Provide Letters of Award and Completion Certificates	**6 Marks**
22.	Contractors key equipment	Bidders shall declare they have possession/Ownership of various equipment as proposed to be used in the Project by providing Logbooks that demonstrate proof of ownership For Bidders planning to hire, they shall provide an Active Lease Agreement in Place that can be used during the Project Life. The copy of logbooks of the lessor(s) shall also be provided	(Form EQU)	**35 Marks**

Main Equipment	Quantity (No) (Minimum)	Marks (Score)	
		Owned	Hired/ leased
➢ Crawler crane barge: Over 50 ton	1	6	2.5
➢ Floating Barge: 2,000 ton class	1	8	4
➢ Concrete batching plant (Min 60m3/hr)	1	8	4
➢ Concrete pump	2	2	1
➢ Mobile concrete mixer 6000 Liters and above	2	1	0.5
➢ Water tanker Minimum 5,000 Litres	1	1	0.5
➢ Dumpers/Shovel/Bobcat	1	1	0.5
➢ Excavator 140HP or bigger	1	2	1
➢ Air Compressor with 3 jacks	1	1	0.5
➢ Tipper, Minimum 3 No.	3	3	1.5
➢ Poker/Foam vibrator	2	1	0.5

1	2	3	4	5
Item No.	**Qualification Subject**	**Qualification Requirement**	***Document To be Completed by Tenderer***	***For Procuring Entity's Use (Qualification met or Not Met)***
	➢ Steel bar bender: 2 / 1 / 0.5 ➢ Survey equipment: 1 set / 1 / 0.5			
23.	Contractor's Representative and Key Personnel	Tenderers must demonstrate that it will have a suitably qualified Contractor's Representative and suitably qualified (and in adequate numbers)Key Personnel, as listed below (In case of a Joint Venture (JV) All members combined must meet requirements) Qualification and experience of the following key personnel	(Form PER. 1 and PER. 2) Curriculum Vitae (CVs) of the Proposed Key Staff must be presented in the provided format and duly signed by the proposed individual. Copies of certificates and Annual Practicing Licenses (for Engineers) and Academic Certificates for all staff is mandatory.	**36.5 Marks**

Key staff	Experience	Qualifications	Registration and Subscription	Marks (Score)
Project manager	At least 15 years with 10 years' experience in similar works	Degree in Civil/Marine Engineering	Registration by EBK Professional Engineer with valid subscription	5 marks
Site Agent	At least 15 years with 5 years' experience in similar works	Degree in Civil/Marine Engineering	Registration by EBK Professional Engineer with valid subscription	5 marks
Electrical Engineer	At least 10 years with 5 years' experience in similar works	Degree in Electrical Engineering	Registration by EBK Professional Engineer with valid subscription	5 marks
Mechanical Engineer	At least 10 years with 5 years' experience in similar works	Degree in Mechanical Engineering	Registration by EBK Professional Engineer with valid subscription	5 marks
Geotechnical Engineer	At least 10 years with 5 years' experience in similar works	Degree in Mechanical Engineering	Registration by EBK Professional Engineer with valid subscription	5 marks
Site Surveyor	At least 10 years with 5 years'	Degree in Surveying or	Registration by Institution of	3 marks

1	2	3	4	5
Item No.	**Qualification Subject**	**Qualification Requirement**	***Document To be Completed by Tenderer***	***For Procuring Entity's Use (Qualification met or Not Met)***
		<table><tr><td></td><td>experience in similar works</td><td>equivalent</td><td>Surveyors of Kenya:</td><td></td></tr><tr><td>Foreman</td><td>At least 10 years with 5 years' experience in similar works</td><td>Degree HND Diploma</td><td>Registration by relevant registration body with valid subscription)</td><td>3 marks</td></tr><tr><td>Health and Safety officer</td><td>At least 10 years with 5 years' experience in similar works</td><td>Training certificate in Occupational Health and Safety</td><td>Academic /professional certificates</td><td>2.5 marks</td></tr></table>		
24.	Proposed methodology	Adequacy and quality of the proposed methodology	• Provide a detailed Work Methodology • Procedure on execution of activities as outlined in the BoQs • Allocation of machinery/labour in execution the activities • Procedures in quality control of the activities described in BoQs • Provide a Methodology on safety during the construction period Work plan/ Program of Works (PoW) To be submitted in A3 Size Paper well legible Fonts • PoW captures Monthly outputs for each activity • PoW details BoQ Quantities, Units and Rates • PoW is superimposed with Cashflow • Site Organization and staffing	**5 Marks**

1	2	3	4	5
Item No.	**Qualification Subject**	**Qualification Requirement**	***Document To be Completed by Tenderer***	***For Procuring Entity's Use (Qualification met or Not Met)***
NOTE: Bidders that provide false information shall automatically be disqualified and recommended for debarment pursuant to clause 41(d)of Public Procurement and Asset Disposal Act, 2015				
NOTE: Bidders must attain a minimum technical score of 80 points to be considered for further (financial) evaluation.				
FINANCIAL EVALUATION: **The lowest evaluated bidder shall be subjected to Financial Evaluation which include but not limited to sensitivity analysis of the rates to detect abnormally low bids or abnormally high bids or unbalanced tenders or front loaded. Treatment of Abnormally Low Bid/Abnormally high Bid/ Unbalanced bid.** **The Procuring Entity may undertake an analysis of bidders' rates which are potentially lower/higher than the known prevailing market rates. The bidders shall be required to provide objective justification including supporting documents on derivation of their rates within stipulated time to the Procuring Entity**				

SECTION IV – TENDERING FORMS

QUALIFICATION FORMS

1. FOREIGN TENDERERS 40%RULE.
2. TENDERER'S ELIGIBILITY- CONFIDENTIAL BUSINESS QUESTIONNAIRE
3. Form EQU: EQUIPMENT.
4. FORM PER -1.
5. FORM PER-2.
6. TENDERERS QUALIFICATION WITHOUT PRE-QUALIFICATION.
   - 6.1 FORM ELI-1.1.
   - 6.2 FORM ELI-1.2.
   - 6.3 FORM CON –2.
   - 6.4 FORM FIN –3.1.
   - 6.5 FORM FIN –3.2.
   - 6.6 FORM FIN –3.3.
   - 6.7 FORM FIN –3.4.
   - 6.8 FORM EXP -4.1.
   - 6.9 FORM EXP - 4.2(a).
   - 6.9 FORM EXP - 4.2 (a) (cont.).
   - 6.10 FORM EXP -4.2 (b).

OTHER FORMS

7. FORM OFTENDER.
8. FORM OF TENDER SECURITY - DEMAND BANKGUARANTEE.
9. FORM OF TENDER SECURITY (TENDERBOND).
10. FORM OF TENDER-SECURINGDECLARATION.
11. APPENDIX TO TENDER.

TECHNICAL PROPOSAL FORMS

Site Organization.

Method Statement.

Mobilization Schedule.

Construction Schedule

QUALIFICATION FORMS

1. FORM EQU: EQUIPMENT (MANDATORY)

The Tenderer shall provide adequate information to demonstrate clearly that it has the capability to meet the requirements for the key equipment listed in Section III, Evaluation and Qualification Criteria. A separate Form shall be prepared for each item of equipment listed, or for alternative equipment proposed by the Tenderer.

Item of equipment		
Equipment information	Name of manufacturer	Model and power rating
	Capacity	Year of manufacture
Current status	Current location	
	Details of current commitments	
Source	Indicate source of the equipment ☐ Owned ☐ Rented ☐ Leased ☐ Specially manufactured	

Omit the following information for equipment owned by the Tenderer.

Owner	Name of owner	
	Address of owner	
	Telephone	Contact name and title
	Fax	Telex
Agreements	Details of rental / lease / manufacture agreements specific to the project	

2. FORM PER -1 (MANDATORY)

Contractor's Representative and Key Personnel Schedule

Tenderers should provide the names and details of the suitably qualified Contractor's Representative and Key Personnel to perform the Contract. The data on their experience should be supplied using the Form PER-2 below for each candidate.

Contractor' Representative and Key Personnel

1.	**Title of position: Contractor's Representative**	
	Name of candidate:	
	Duration of appointment:	[*insert the whole period (start and end dates) for which this position will be engaged*]
	Time commitment: for this position:	[*insert the number of days/week/months/ that has been scheduled for this position*]
	Expected time schedule for this position:	[*insert the expected time schedule for this position (e.g., attach high level Gantt chart*]
2.	**Title of position:** *[_____]*	
	Name of candidate:	
	Duration of appointment:	[*insert the whole period (start and end dates) for which this position will be engaged*]
	Time commitment: for this position:	[*insert the number of days/week/months/ that has been scheduled for this position*]
	Expected time schedule for this position:	[*insert the expected time schedule for this position (e.g. attach high level Gantt chart*]
3.	**Title of position:** *[_____]*	
	Name of candidate:	
	Duration of appointment:	[*insert the whole period (start and end dates) for which this position will be engaged*]
	Time commitment: for this position:	[*insert the number of days/week/months/ that has been scheduled for this position*]
	Expected time schedule for this position:	[*insert the expected time schedule for this position (e.g. attach high level Gantt chart*]
4.	**Title of position:** *[_____]*	
	Name of candidate:	
	Duration of appointment:	[*insert the whole period (start and end dates) for which this position will be engaged*]
	Time commitment: for this position:	[*insert the number of days/week/months/ that has been scheduled for this position*]
	Expected time schedule for this position:	[*insert the expected time schedule for this position (e.g. attach high level Gantt chart*]

3. FORM PER-2: (MANDATORY)

Resume and Declaration - Contractor's Representative and Key Personnel.

Summarize professional experience in reverse chronological order. Indicate particular technical and managerial experience relevant to the project.

Name of Tenderer

Position [*#1*]: [*title of position from Form PER-1*]		
Personnel information	Name:	Date of birth:
	Address:	E-mail:
	Professional qualifications:	
	Academic qualifications:	
	Language proficiency: *[language and levels of speaking, reading and writing skills]*	
Details		
	Address of Procuring Entity:	
	Telephone:	Contact (manager / personnel officer):
	Fax:	
	Job title:	Years with present Procuring Entity:

Summarize professional experience in reverse chronological order. Indicate particular technical and managerial experience relevant to the project.

Project	**Role**	**Duration of involvement**	**Relevant experience**
[main project details]	*[role and responsibilities on the project]*	*[time in role]*	*[describe the experience relevant to this position]*

Declaration

I, the undersigned *[insert either "Contractor's Representative" or "Key Personnel" as applicable]*, certify that to the best of my knowledge and belief, the information contained in this Form PER-2 correctly describes myself, my qualifications and my experience.

I confirm that I am available as certified in the following table and throughout the expected time schedule for this position as provided in the Tender:

Commitment	**Details**
Commitment to duration of contract:	*[insert period (start and end dates) for which this Contractor's Representative or Key Personnel is available to work on this contract]*
Time commitment:	*[insert period (start and end dates) for which this Contractor's Representative or Key Personnel is available to work on this contract]*

I understand that any misrepresentation or omission in this Form may:

a) be taken into consideration during Tender evaluation;
b) result in my disqualification from participating in the Tender;
c) result in my dismissal from the contract.

Name of Contractor's Representative or Key Personnel: [*insert name*]

Signature: _____

Date: (day month year): _____

Countersignature of authorized representative of the Tenderer:

Signature _____

Date: (day month year): _____

4. TENDERER'S QUALIFICATION WITHOUT PRE-QUALIFICATION (MANDATORY)

To establish its qualifications to perform the contract in accordance with Section III, Evaluation and Qualification Criteria the Tenderer shall provide the information requested in the corresponding Information Sheets included hereunder.

4.1 FORM ELI -1.1

Tenderer Information Form
Date: _____

ITT No. and title: _____

Tenderer's name
In case of Joint Venture (JV), name of each member:
Tenderer's actual or intended country of registration: *[indicate country of Constitution]*
Tenderer's actual or intended year of incorporation:
Tenderer's legal address [in country of registration]:
Tenderer's authorized representative information Name: _____ Address: _____ Telephone/Fax numbers: _____ E-mail address: _____
1. Attached are copies of original documents of ¨Articles of Incorporation (or equivalent documents of constitution or association), and/or documents of registration of the legal entity named above, in accordance with ITT 3.6 ¨In case of JV, letter of intent to form JV or JV agreement, in accordance with ITT 3.5 ¨In case of state-owned enterprise or institution, in accordance with ITT 3.8, documents establishing: • Legal and financial autonomy • Operation under commercial law • Establishing that the Tenderer is not under the supervision of the Procuring Entity 2. Included are the organizational chart, a list of Board of Directors, and the beneficial ownership.

4.2 FORM ELI -1.2 (MANDATORY where applicable)

Tenderer's JV Information Form
(to be completed for each member of Tenderer's JV)
Date: _____

ITT No. and title: _____

Tenderer's JV name:
JV member's name:
JV member's country of registration:
JV member's year of constitution:
JV member's legal address in country of constitution:
JV member's authorized representative information Name: _____ Address: _____ Telephone/Fax numbers: _____ E-mail address: _____
1. Attached are copies of original documents of ¨ Articles of Incorporation (or equivalent documents of constitution or association), and/or registration documents of the legal entity named above, in accordance with ITT 3.6. ¨ In case of a state-owned enterprise or institution, documents establishing legal and financial autonomy, operation in accordance with commercial law, and that they are not under the supervision of the Procuring Entity, in accordance with ITT 3.8. 2. Included are the organizational chart, a list of Board of Directors, and the beneficial ownership.

4.3 FORM CON – 2 (MANDATORY)

Historical Contract Non-Performance, Pending Litigation and Litigation History

Tenderer's Name: _____
Date: _____
JV Member's Name_____
ITT No. and title: _____

Non-Performed Contracts in accordance with Section III, Evaluation and Qualification Criteria			
¨Contract non-performance did not occur since 1st January *[insert year]* specified in Section III, Evaluation and Qualification Criteria, Sub-Factor 2.1. ¨Contract(s) not performed since 1st January *[insert year]* specified in Section III, Evaluation and Qualification Criteria, requirement 2.1			
Year	**Non-performed portion of contract**	**Contract Identification**	**Total Contract Amount (current value, currency, exchange rate and Kenya Shilling equivalent)**
[insert year]	*[insert amount and percentage]*	Contract Identification: *[indicate complete contract name/ number, and any other identification]* Name of Procuring Entity: *[insert full name]* Address of Procuring Entity: *[insert street/city/country]* Reason(s) for nonperformance: *[indicate main reason(s)]*	*[insert amount]*
Pending Litigation, in accordance with Section III, Evaluation and Qualification Criteria			
¨ No pending litigation in accordance with Section III, Evaluation and Qualification Criteria, Sub-Factor 2.3. ¨ Pending litigation in accordance with Section III, Evaluation and Qualification Criteria, Sub-Factor 2.3 as indicated below.			

Year of dispute	**Amount in dispute (currency)**	**Contract Identification**	**Total Contract Amount (currency), Kenya Shilling Equivalent (exchange rate)**

		Contract Identification: _____ Name of Procuring Entity: _____ Address of Procuring Entity: _____ Matter in dispute: _____ Party who initiated the dispute: _____ Status of dispute: _____	
		Contract Identification: Name of Procuring Entity: Address of Procuring Entity: Matter in dispute: Party who initiated the dispute: Status of dispute:	
Litigation History in accordance with Section III, Evaluation and Qualification Criteria			
¨ No Litigation History in accordance with Section III, Evaluation and Qualification Criteria, Sub-Factor 2.4. ¨ Litigation History in accordance with Section III, Evaluation and Qualification Criteria, Sub-Factor 2.4 as indicated below.			
Year of award	**Outcome as percentage of Net Worth**	**Contract Identification**	**Total Contract Amount (currency), Kenya Shilling Equivalent (exchange rate)**
[insert year]	*[insert percentage]*	Contract Identification: [indicate complete contract name, number, and any other identification] Name of Procuring Entity: *[insert full name]* Address of Procuring Entity: *[insert street/city/country]* Matter in dispute: *[indicate main issues in dispute]* Party who initiated the dispute: *[indicate "Procuring Entity" or "Contractor"]* Reason(s) for Litigation and award decision *[indicate main reason(s)]*	*[insert amount]*

4.4 FORM FIN – 3.1:

Financial Situation and Performance

Tenderer's Name: _____
Date: _____
JV Member's Name_____
ITT No. and title: _____

4.4.1. Financial Data

Type of Financial information in_____ _ (currency)	**Historic information for previous _____years, _____ (amount in currency, currency, exchange rate*, Kshs e**				
	2018	**Year 2019**	**Year 2020**		
Statement of Financial Position (Information from Balance Sheet)					
Total Assets (TA)					
Total Liabilities (TL)					
Total Equity/Net Worth (NW)					
Current Assets (CA)					
Current Liabilities (CL)					
Working Capital (WC)					
Information from Income Statement					
Total Revenue (TR)					
Profits Before Taxes (PBT)					
Cash Flow Information					
Cash Flow from Operating Activities					

***Refer to ITT 15 for the exchange rate**

4.4.2 Sources of Finance

Specify sources of finance to meet the cash flow requirements on works currently in progress and for future contract commitments.

No.	**Source of finance**	**Amount (Kenya Shilling equivalent)**
1		
2		

3		

4.4.3 Financial documents

The Tenderer and its parties shall provide copies of financial statements for _____years pursuant Section III, Evaluation and Qualifications Criteria, Sub-factor 3.1. The financial statements shall:

a) reflect the financial situation of the Tenderer or in case of JV member, and not an affiliated entity (such as parent company or group member).

b) be independently audited or certified in accordance with local legislation.

c) be complete, including all notes to the financial statements.

d) correspond to accounting periods already completed and audited.

¨ Attached are copies of financial statements1 for the _____years required above; and complying with the requirements

1 If the most recent set of financial statements is for a period earlier than 12 months from the date of Tender, the reason for this should be justified.

4.5 FORM FIN – 3.2: (MANDATORY)

Average Annual Construction Turnover

Tenderer's Name: _____
Date: _____
JV Member's Name_____
ITT No. and title: _____

	Annual turnover data (construction only)		
Year	**Amount Currency**	**Exchange rate**	**Kenya Shilling equivalent**
[indicate year]	*[insert amount and indicate currency]*		
Average Annual Construction Turnover *			

* See Section III, Evaluation and Qualification Criteria, Sub-Factor 3.2.

4.6 FORM FIN – 3.3:

Financial Resources

Specify proposed sources of financing, such as liquid assets, unencumbered real assets, lines of credit, and other financial means, net of current commitments, available to meet the total construction cash flow demands of the subject contract or contracts as specified in Section III, Evaluation and Qualification Criteria

Financial Resources		
No.	**Source of financing**	**Amount (Kenya Shilling equivalent)**
1		
2		
3		

4.7 FORM FIN – 3.4: (MANDATORY)

Current Contract Commitments / Works in Progress

Tenderers and each member to a JV should provide information on their current commitments on all contracts that have been awarded, or for which a letter of intent or acceptance has been received, or for contracts approaching completion, but for which an unqualified, full completion certificate has yet to be issued.

Current Contract Commitments					
	Name of Contract	**Procuring Entity's Contact Address, Tel,**	**Value of Outstanding Work [Current Kenya Shilling /month Equivalent]**	**Estimated Completion Date**	**Average Monthly Invoicing Over Last Six Months [Kenya Shilling /month)]**
1					
2					
3					
4					
5					

4.8 FORM EXP - 4.1 (MANDATORY)

General Construction Experience

Tenderer's Name: _____
Date: _____
JV Member's Name_____
ITT No. and title: _____

Page _____of _____pages

Starting Year	Ending Year	Contract Identification	Role of Tenderer
		Contract name: _____ Brief Description of the Works performed by the Tenderer: _____ Amount of contract: _____ Name of Procuring Entity: _____ Address: _____	
		Contract name: _____ Brief Description of the Works performed by the Tenderer: _____ Amount of contract: _____ Name of Procuring Entity: _____ Address: _____	
		Contract name: _____ Brief Description of the Works performed by the Tenderer: _____ Amount of contract: _____ Name of Procuring Entity: _____ Address: _____	

4.9 FORM EXP - 4.2(a) (MANDATORY)

Specific Construction and Contract Management Experience

Tenderer's Name: _____
Date: _____
JV Member's Name_____
ITT No. and title: _____

Similar Contract No.	**Information**			
Contract Identification				
Award date				
Completion date				
Role in Contract	Prime Contractor ¨	Member in JV ¨	Management Contractor ¨	Sub-contractor ¨
Total Contract Amount			**Kenya Shilling**	
If member in a JV or sub-contractor, specify participation in total Contract amount				
Procuring Entity's Name:				
Address: Telephone/fax number E-mail:				

4.10 FORM EXP - 4.2 (a) (cont.)

Specific Construction and Contract Management Experience (cont.)

Similar Contract No.	**Information**
Description of the similarity in accordance with Sub-Factor 4.2(a) of Section III:	
1. Amount	
2. Physical size of required works items	
3. Complexity	
4. Methods/Technology	
5. Construction rate for key activities	
6. Other Characteristics	

4.11 FORM EXP - 4.2(b)

Construction Experience in Key Activities

Tenderer's Name: _____
Date: _____
Tenderer's JV Member Name: _____
Sub-contractor's Name2 (as per ITT 34): _____
ITT No. and title: _____

All Sub-contractors for key activities must complete the information in this form as per ITT 34 and Section III, Evaluation and Qualification Criteria, Sub-Factor 4.2.

1. Key Activity No One: _

_____

	Information			
Contract Identification				
Award date				
Completion date				
Role in Contract	Prime Contractor ..	Member in JV ..	Management Contractor ..	Sub-contractor ..
Total Contract Amount			**Kenya Shilling**	
Quantity (Volume, number or rate of production, as applicable) performed under the contract per year or part of the year	Total quantity in the contract (i)	Percentage participation (ii)		Actual Quantity Performed (i) x (ii)
Year 1				
Year 2				
Year 3				
Year 4				
Procuring Entity's Name:				
Address: Telephone/fax number E-mail:				

2 If applicable

	Information
Description of the key activities in accordance with Sub-Factor 4.2(b) of Section III:	

2. Activity No. Two
3. .....

OTHER FORMS

5. FORM OF TENDER (MANDATORY)

INSTRUCTIONS TO TENDERERS

i) The Tenderer must prepare this Form of Tender on stationery with its letterhead clearly showing the Tenderer's complete name and business address.

ii) All italicized text is to help Tenderer in preparing this form.

iii) Tenderer must complete and sign CERTIFICATE OF INDEPENDENT TENDER DETERMINATION and the SELF DECLARATION OF THE TENDERER attached to this Form of Tender.

iv) The Form of Tender shall include the following Forms duly completed and signed by the Tenderer.

- *Tenderer's Eligibility- Confidential Business Questionnaire*
- *Certificate of Independent Tender Determination*
- *Self-Declaration of the Tenderer*

Date of this Tender submission: *[insert date (as day, month and year) of Tender submission]*

Request for Tender No.: *[insert identification]*

Name and description of Tender *[Insert as per ITT)*

Alternative No.: [*insert identification No if this is a Tender for an alternative*]

To: [*insert complete name of Procuring Entity*] Dear Sirs,

1. In accordance with the Conditions of Contract, Specifications, Drawings and Bills of Quantities for the execution of the above named Works, we, the undersigned offer to construct and complete the Works and remedy any defects therein for the sum of Kenya Shillings [*[Amount in figures]* _____Keny a Shillings *[amount in words]*_____.

   The above amount includes foreign currency amount (s) of [*state figure or a percentage and currency*] [figures]_____[words]_____.

   The percentage or amount quoted above does not include provisional sums, and only allows not more than two foreign currencies.

2. We undertake, if our tender is accepted, to commence the Works as soon as is reasonably possible after the receipt of the Project Manager's notice to commence, and to complete the whole of the Works comprised in the Contract within the time stated in the Special Conditions of Contract.
3. We agree to adhere by this tender until_____*[Insert date],* and it shall remain binding upon us and may be accepted at any time before that date.
4. Unless and until a formal Agreement is prepared and executed this tender together with your written acceptance thereof, shall constitute a binding Contract between us. We further understand that you are not bound to accept the lowest or any tender you may receive.
5. We, the undersigned, further declare that:

i) *No reservations:* We have examined and have no reservations to the tender document, including Addenda issued in accordance with ITT 28;

ii) *Eligibility:* We meet the eligibility requirements and have no conflict of interest in accordance with ITT 3 and 4;

iii) *Tender-Securing Declaration:* We have not been suspended nor declared ineligible by the Procuring Entity based on execution of a Tender-Securing or Proposal-Securing Declaration in the Procuring Entity's Country in accordance with ITT 19.8;

iv) Conformity: We offer to execute in conformity with the tendering documents and in accordance with the implementation and completion specified in the construction schedule, the following Works: *[insert a brief description of the Works];*

v) Tender Price: The total price of our Tender, excluding any discounts offered in item 1 above is: *[Insert one of the options below as appropriate]*

vi) *Option* 1, in case of one lot: Total price is: [*insert the total price of the Tender in words and figures, indicating the various amounts and the respective currencies*]; Or

Option 2, in case of multiple lots:

a) Total price of each lot [*insert the total price of each lot in words and figures, indicating the various amounts and the respective currencies*]; and

b) Total price of all lots (sum of all lots) [*insert the total price of all lots in words and figures, indicating the various amounts and the respective currencies*];

vii) *Discounts:* The discounts offered and the methodology for their application are:

viii) The discounts offered are: [*Specify in detail each discount offered.*]

ix) The exact method of calculations to determine the net price after application of discounts is shown below: [*Specify in detail the method that shall be used to apply the discounts*];

x)*Tender Validity Period:* Our Tender shall be valid for the period specified in TDS 18.1 (as amended, if applicable) from the date fixed for the Tender submission deadline specified in TDS 22.1 (as amended, if applicable), and it shall remain binding upon us and may be accepted at any time before the expiration of that period;

xi) *Performance Security:* If our Tender is accepted, we commit to obtain a Performance Security in accordance with the Tendering document;

xii) *One Tender Per Tender:* We are not submitting any other Tender(s) as an individual Tender, and we are not participating in any other Tender(s) as a Joint Venture member or as a subcontractor, and meet the requirements of ITT 3.4, other than alternative Tenders submitted in accordance with ITT 13.3;

xiii) *Suspension and Debarment:* We, along with any of our subcontractors, suppliers, Project Manager, manufacturers, or service providers for any part of the contract, are not subject to, and not controlled by any entity or individual that is subject to, a temporary suspension or a debarment imposed by the Public Procurement Regulatory Authority or any other entity of the Government of Kenya, or any international organization.

xiv) *State-owned enterprise or institution:* [*select the appropriate option and delete the other*] [*We are not a state-owned enterprise or institution*] /

[*We are a state-owned enterprise or institution but meet the requirements of ITT 3.8*];

xv) *Commissions, gratuities, fees:* We have paid, or will pay the following commissions, gratuities, or fees with respect to the tender process or execution of the Contract: *[insert complete name of each Recipient, its full address, the reason for which each commission or gratuity was paid and the amount and currency of each such commission or gratuity].*

Name of Recipient	Address	Reason	Amount

(If none has been paid or is to be paid, indicate "none.")

xvi) Binding Contract: We understand that this Tender, together with your written acceptance thereof included in your Letter of Acceptance, shall constitute a binding contract between us, until a formal contract is prepared and executed;

xvii) Not Bound to Accept: We understand that you are not bound to accept the lowest evaluated cost Tender, the Most Advantageous Tender or any other Tender that you may receive;

xviii) Fraud and Corruption: We hereby certify that we have taken steps to ensure that no person acting for us or on our behalf engages in any type of Fraud and Corruption;

xix) Collusive practices: We hereby certify and confirm that the tender is genuine, non-collusive and made with the intention of accepting the contract if awarded. To this effect we have signed the "Certificate of Independent Tender Determination" attached below.

xx) We undertake to adhere by the Code of Ethics for Persons Participating in Public Procurement and Asset Disposal, copy available from_____(*specify website*) during the procurement process and the execution of any resulting contract.

xxi) We, the Tenderer, have completed fully and signed the following Forms as part of our Tender:

a) Tenderer's Eligibility; Confidential Business Questionnaire – to establish we are not in any conflict to interest.
b) Certificate of Independent Tender Determination – to declare that we completed the tender without colluding with other tenderers.
c) Self-Declaration of the Tenderer – to declare that we will, if awarded a contract, not engage in any form of fraud and corruption.
d) Declaration and commitment to the Code of Ethics for Persons Participating in Public Procurement and Asset Disposal

Further, we confirm that we have read and understood the full content and scope of fraud and corruption as informed in "Appendix 1- Fraud and Corruption" attached to the Form of Tender.

Name of the Tenderer: *[*insert complete name of person signing the Tender*]

Name of the person duly authorized to sign the Tender on behalf of the

Tenderer: **[*insert complete name of person duly authorized to sign the Tender*]

Title of the person signing the Tender: [*insert complete title of the person signing the Tender*]

Signature of the person named above: [*insert signature of person whose name and capacity are shown above*] **Date signed** [*insert date of signing*] day of [*insert month*], [*insert year*]

Date signed_____**day of**_____, _____

Notes
** In the case of the Tender submitted by joint venture specify the name of the Joint Venture as Tenderer*
*** Person signing the Tender shall have the power of attorney given by the Tenderer to be attached with the Tender.*

A. TENDERER'S ELIGIBILITY- CONFIDENTIAL BUSINESS QUESTIONNAIRE (MANDATORY)

Instruction to Tenderer

Tender is instructed to complete the particulars required in this Form, *one form for each entity if Tender is a JV.* Tenderer is further reminded that it is an offence to give false information on this Form.

(a) **Tenderer's details**

	ITEM	DESCRIPTION
1	Name of the Procuring Entity	
2	Reference Number of the Tender	
3	Date and Time of Tender Opening	
4	Name of the Tenderer	
5	Full Address and Contact Details of the Tenderer.	1. Country 2. City 3. Location 4. Building 5. Floor 6. Postal Address 7. Name and email of contact person.
6	Current Trade License Registration Number and Expiring date	
7	Name, country and full address (*postal and physical addresses, email, and telephone number*) of Registering Body/Agency	
8	Description of Nature of Business	
9	Maximum value of business which the Tenderer handles.	
10	State if Tenders Company is listed in stock exchange, give name and full address (*postal and physical addresses, email, and telephone number*) of state which stock exchange	

General and Specific Details

b)**Sole Proprietor,** provide the following details.

Name in full_____**Age**_____
Nationality_____**Country of Origin**_____
Citizenship _____

c)**Partnership,** provide the following details.

	Names of Partners	**Nationality**	**Citizenship**	**% Shares owned**
1				
2				
3				

d)**Registered Company,** provide the following details.

Private or public Company_____

State the nominal and issued capital of the Company_____

Nominal Kenya Shillings (Equivalent).....

Issued Kenya Shillings (Equivalent).....

Give details of Directors as follows.

	Names of Director	**Nationality**	**Citizenship**	**% Shares owned**
1				
2				
3				

(e) **DISCLOSURE OF INTEREST- Interest of the Firm in the Procuring Entity.**

i) Are there any person/persons in .... (*Name of Procuring Entity)* who has/have an interest or relationship in this firm? Yes/No.....

If yes, provide details as follows.

	Names of Person	**Designation in the Procuring Entity**	**Interest or Relationship with Tenderer**
1			
2			
3			

ii) **Conflict of interest disclosure**

	Type of Conflict	**Disclosure YES OR NO**	**If YES provide details of the relationship with Tenderer**
1	Tenderer is directly or indirectly controls, is controlled by or is under common control with another tenderer.		
2	Tenderer receives or has received any direct or indirect subsidy from another tenderer.		
3	Tenderer has the same legal representative as another tenderer		
4	Tender has a relationship with another tenderer, directly or through common third parties, that puts it in a position to influence the tender of another tenderer, or influence the decisions of the Procuring Entity regarding this tendering process.		
5	Any of the Tenderer's affiliates participated as a consultant in the preparation of the design or technical specifications of the works that are the subject of the tender.		
6	Tenderer would be providing goods, works, non-consulting services or consulting services during implementation of the contract specified in this Tender Document.		
7	Tenderer has a close business or family relationship with a professional staff of the Procuring Entity who are directly or indirectly involved in the preparation of the Tender document or specifications of the Contract, and/or the Tender evaluation process of such contract.		
8	Tenderer has a close business or family relationship with a professional staff of the Procuring Entity who would be involved in the implementation or supervision of the such Contract.		
9	Has the conflict stemming from such relationship stated in item 7 and 8 above been resolved in a manner acceptable to the		

	Type of Conflict	Disclosure YES OR NO	If YES provide details of the relationship with Tenderer
	Procuring Entity throughout the tendering process and execution of the Contract.		

f) Certification

On behalf of the Tenderer, I certify that the information given above is complete, current and accurate as at the date of submission.

Full Name_____ **Title**

or Designation_____

_____ _____

(Signature) *(Date)*

B. CERTIFICATE OF INDEPENDENT TENDER DETERMINATION (MANDATORY)

I, the undersigned, in submitting the accompanying Letter of Tender to the_____ **[Name of Procuring Entity] for:**_____ **[Name and number of tender] in response to the request for tenders made by:**_____ **[Name of Tenderer] do hereby make the following statements that I certify to be true and complete in every respect:**

I certify, on behalf of_____ **[Name of Tenderer] that:**

1. I have read and I understand the contents of this Certificate;

2. I understand that the Tender will be disqualified if this Certificate is found not to be true and complete in every respect;

3. I am the authorized representative of the Tenderer with authority to sign this Certificate, and to submit the Tender on behalf of the Tenderer;

4. For the purposes of this Certificate and the Tender, I understand that the word "competitor" shall include any individual or organization, other than the Tenderer, whether or not affiliated with the Tenderer, who:
   a) has been requested to submit a Tender in response to this request for tenders;
   b) could potentially submit a tender in response to this request for tenders, based on their qualifications, abilities or experience;

5. The Tenderer discloses that [check one of the following, as applicable:
   a) The Tenderer has arrived at the Tender independently from, and without consultation, communication, agreement or arrangement with, any competitor;
   b) the Tenderer has entered into consultations, communications, agreements or arrangements with one or more competitors regarding this request for tenders, and the Tenderer discloses, in the attached document(s), complete details thereof, including the names of the competitors and the nature of, and reasons for, such consultations, communications, agreements or arrangements;

6. In particular, without limiting the generality of paragraphs (5)(a) or (5)(b) above, there has been no consultation, communication, agreement or arrangement with any competitor regarding:

a) prices;
b) methods, factors or formulas used to calculate prices;
c) the intention or decision to submit, or not to submit, a tender; or
d) the submission of a tender which does not meet the specifications of the request for Tenders; except as specifically disclosed pursuant to paragraph (5)(b) above;

7. In addition, there has been no consultation, communication, agreement or arrangement with any competitor regarding the quality, quantity, specifications or delivery particulars of the works or services to which this request for tenders relates, except as specifically authorized by the procuring authority or as specifically disclosed pursuant to paragraph (5)(b) above;

8. the terms of the Tender have not been, and will not be, knowingly disclosed by the Tenderer, directly or indirectly, to any competitor, prior to the date and time of the official tender opening, or of the awarding of the Contract, whichever comes first, unless otherwise required by law or as specifically disclosed pursuant to paragraph (5)(b) above.

Name_____ **Title Date** _____

[Name, title and signature of authorized agent of Tenderer and Date].

C. SELF - DECLARATION FORMS (MANDATORY)

FORM SD1

SELF DECLARATION THAT THE PERSON/TENDERER IS NOT DEBARRED IN THE MATTER OF THE PUBLIC PROCUREMENTAND ASSET DISPOSALACT 2015.

I, ..., of Post Office Box ..... being a resident of
..... in the Republic of ..... do hereby make a statement as follows: -

1. THAT I am the Company Secretary/ Chief Executive/Managing Director/Principal Officer/Director of
..... *(insert name of the Company)* who is a Bidder in respect of Tender No.
..... for ..... *(insert tender title/description)* for ..... *(insert name of the Procuring entity)* and duly authorized and competent to make this statement.

2. THAT the aforesaid Bidder, its Directors and subcontractors have not been debarred from participating in procurement proceeding under Part IV of the Act.

3. THAT what is deponed to herein above is true to the best of my knowledge, information and belief.

.....	.....	.....
(Title)	**(Signature)**	**(Date)**

Bidder Official Stamp

FORM SD2

SELF DECLARATION THAT THE PERSON/TENDERER WILL NOT ENGAGE IN ANY CORRUPT OR FRAUDULENT PRACTICE

I, ... of P. O. Box ..... being a resident of

..... in the Republic of ..... do hereby make a statement as follows: -

1. THAT I am the Chief Executive/Managing Director/Principal Officer/Director of ..... *(insert name of the Company)* who is a Bidder in respect of Tender No. ..... for ..... *(insert tender title/description)* for ..... *(insert name of the Procuring entity)* and duly authorized and competent to make this statement.

2. THAT the aforesaid Bidder, its servants and/or agents /subcontractors will not engage in any corrupt or fraudulent practice and has not been requested to pay any inducement to any member of the Board, Management, Staff and/or employees and/or agents of ..... *(insert name of the Procuring entity)* which is the procuring entity.

3. THAT the aforesaid Bidder, its servants and/or agents /subcontractors have not offered any inducement to any member of the Board, Management, Staff and/or employees and/or agents of ..... (name of the procuring entity)

4. THAT the aforesaid Bidder will not engage /has not engaged in any corrosive practice with other bidders participating in the subject tender

5. THAT what is deponed to herein above is true to the best of my knowledge information and belief.

.....	.....	.....
(Title)	**(Signature)**	**(Date)**

Bidder's Official Stamp

DECLARATION AND COMMITMENT TO THE CODE OF ETHICS (MANDATORY)

I ..... (person) on behalf of *(Name of the Business/ Company/Firm)* ..... declare that I have read and fully understood the contents of the Public Procurement & Asset Disposal Act, 2015, Regulations and the Code of Ethics for persons participating in Public Procurement and Asset Disposal and my responsibilities under the Code.

I do hereby commit to abide by the provisions of the Code of Ethics for persons participating in Public Procurement and Asset Disposal.

Name of Authorized signatory.....

Sign.....

Position.....

Office address.....

Telephone..... E-

mail.....

Name of the Firm/Company.....

Date.....

(Company Seal/ Rubber Stamp where applicable)

Witness

Name .....

Sign..... Date.....

D. APPENDIX 1- FRAUD AND CORRUPTION

(Appendix 1 shall not be modified)

1. Purpose

2. The Government of Kenya's Anti-Corruption and Economic Crime laws and their sanction's policies and procedures, Public Procurement and Asset Disposal Act *(no. 33 of 2015)* and its Regulation, and any other Kenya's Acts or Regulations related to Fraud and Corruption, and similar offences, shall apply with respect to Public Procurement Processes and Contracts that are governed by the laws of Kenya.

3. Requirements

The Government of Kenya requires that all parties including Procuring Entities, Tenderers, (applicants/proposers), Consultants, Contractors and Suppliers; any Sub-contractors, Sub-consultants, Service providers or Suppliers; any Agents (whether declared or not); and any of their Personnel, involved and engaged in procurement under Kenya's Laws and Regulation, observe the highest standard of ethics during the procurement process, selection and contract execution of all contracts, and refrain from Fraud and Corruption and fully comply with Kenya's laws and Regulations as per paragraphs 1.1 above.

Kenya's public procurement and asset disposal act *(no. 33 of 2015)* under Section 66 describes rules to be followed and actions to be taken in dealing with Corrupt, Coercive, Obstructive, Collusive or Fraudulent practices, and Conflicts of Interest in procurement including consequences for offences committed. A few of the provisions noted below highlight Kenya's policy of no tolerance for such practices and behavior: -

1) a person to whom this Act applies shall not be involved in any corrupt, coercive, obstructive, collusive or fraudulent practice; or conflicts of interest in any procurement or asset disposal proceeding;

2) A person referred to under subsection (1) who contravenes the provisions of that sub-section commits an offence;

3) Without limiting the generality of the subsection (1) and (2), the person shall be: -

a) disqualified from entering into a contract for a procurement or asset disposal proceeding; or

b) if a contract has already been entered into with the person, the contract shall be voidable;

4) The voiding of a contract by the procuring entity under subsection (7) does not limit any legal remedy the procuring entity may have;

5) An employee or agent of the procuring entity or a member of the Board or committee of the procuring entity who has a conflict of interest with respect to a procurement: -

a) shall not take part in the procurement proceedings;

b) shall not, after a procurement contract has been entered into, take part in any decision relating to the procurement or contract; and

c) shall not be a subcontractor for the bidder to whom was awarded contract, or a member of the group of bidders to whom the contract was awarded, but the subcontractor appointed shall meet all the requirements of this Act.

6) An employee, agent or member described in subsection (1) who refrains from doing anything prohibited under that subsection, but for that subsection, would have been within his or her duties shall disclose the conflict of interest to the procuring entity;

7) If a person contravenes subsection (1) with respect to a conflict of interest described in subsection (5)(a) and the contract is awarded to the person or his relative or to another person in whom one of them had a direct or indirect pecuniary interest, the contract shall be terminated and all costs incurred by the public entity shall be made good by the awarding officer. Etc.

In compliance with Kenya's laws, regulations and policies mentioned above, the Procuring Entity:

a) Defines broadly, for the purposes of the above provisions, the terms set forth below as follows:

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 misrepresentation, that knowingly or recklessly misleads, or attempts to mislead, a party to obtain 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 investigation by Public Procurement Regulatory Authority (PPRA) or any other appropriate authority appointed by Government of Kenya 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; or
- acts intended to materially impede the exercise of the PPRA's or the appointed authority's inspection and audit rights provided for under paragraph 2.3 e. below.

b) Defines more specifically, in accordance with the above procurement Act provisions set forth for fraudulent and collusive practices as follows:

"fraudulent practice" includes a misrepresentation of fact in order to influence a procurement or disposal process or the exercise of a contract to the detriment of the procuring entity or the tenderer or the contractor, and includes collusive practices amongst tenderers prior to or after tender submission designed to establish tender prices at artificial non-competitive levels and to deprive the procuring entity of the benefits of free and open competition.

c) Rejects a proposal for award[1] of a contract if PPRA determines that the firm or individual recommended for award, any of its personnel, or its agents, or its sub-consultants, sub-contractors, service providers, suppliers and/ or their employees, has, directly or indirectly, engaged in corrupt, fraudulent, collusive, coercive, or obstructive practices in competing for the contract in question;

d) Pursuant to the Kenya's above stated Acts and Regulations, may sanction or recommend to appropriate authority (ies) for sanctioning and debarment of a firm or individual, as applicable under the Acts and Regulations;

e) Requires that a clause be included in Tender documents and Request for Proposal documents requiring (i) Tenderers (applicants/proposers), Consultants, Contractors,

and Suppliers, and their Sub-contractors, Sub-consultants, Service providers, Suppliers, Agents personnel, permit the PPRA or any other appropriate authority appointed by Government of Kenya to inspect[2] all accounts, records and other documents relating to the procurement process, selection and/or contract execution, and to have them audited by auditors appointed by the PPRA or any other appropriate authority appointed by Government of Kenya; and

f) Pursuant to Section 62 of the above Act, requires Applicants/Tenderers to submit along with their Applications/Tenders/Proposals a "Self-Declaration Form" as included in the procurement document declaring that they and all parties involved in the procurement process and contract execution have not engaged/will not engage in any corrupt or fraudulent practices.

---

[1]For the avoidance of doubt, a party's ineligibility to be awarded a contract shall include, without limitation, (i) applying for pre-qualification, expressing interest in a consultancy, and tendering, either directly or as a nominated sub-contractor, nominated consultant, nominated manufacturer or supplier, or nominated service provider, in respect of such contract, and (ii) entering into an addendum or amendment introducing a material modification to any existing contract.

[2] Inspections in this context usually are investigative (i.e., forensic) in nature. They involve fact-finding activities undertaken by the Investigating Authority or persons appointed by the Procuring Entity to address specific matters related to investigations/audits, such as evaluating the veracity of an allegation of possible Fraud and Corruption, through the appropriate mechanisms. Such activity includes but is not limited to: accessing and examining a firm's or individual's financial records and information, and making copies thereof as relevant; accessing and examining any other documents, data and information (whether in hard copy or electronic format) deemed relevant for the investigation/audit, and making copies thereof as relevant; interviewing staff and other relevant individuals; performing physical inspections and site visits; and obtaining third party verification of information.

FORM OF TENDER SECURITY-[Option 1–Demand Bank Guarantee]

Beneficiary:_____

Request forTenders No:

_____

Date:_____

TENDER GUARANTEE No.:_____

Guarantor: _____

1. We have been informed that_____ (here inafter called "the Applicant") has submitted or will submit to the Beneficiary its Tender (here inafter called" the Tender") for the execution of_____ under Request for Tenders No.____("the ITT").

2. Furthermore, we understand that, according to the Beneficiary's conditions, Tenders must be supported by a Tender guarantee.

3. At the request of the Applicant, we, as Guarantor, hereby irrevocably undertake to pay the Beneficiary any sum or sums not exceeding in total an amount of_____(_____) upon receipt by us of the Beneficiary's complying demand, supported by the Beneficiary's statement, whether in the demand itself or a separate signed document accompanying or identifying the demand, stating that either the Applicant:

(a) has withdrawn its Tender during the period of Tender validity set forth in the Applicant's Letter of Tender ("the Tender Validity Period"), or any extension thereto provided by the Applicant; or

b) having been notified of the acceptance of its Tender by the Beneficiary during the Tender Validity Period or any extension there to provided by the Applicant, (i) has failed to execute the contract agreement, or (ii) has failed to furnish the Performance.

4. This guarantee will expire: (a) if the Applicant is the successful Tenderer, upon our receipt of copies of the contract agreement signed by the Applicant and the Performance Security and, or (b) if the Applicant is not the successful Tenderer, upon the earlier of (i) our receipt of a copy of the Beneficiary's notification to the Applicant of the results of the Tendering process; or (ii) thirty days after the end of the Tender Validity Period.

5. Consequently, any demand for payment under this guarantee must be received by us at the office indicated above onor before that date.

_____

[signature(s)]

Note: All italicized text is for use in preparing this form and shall be deleted from the final product.

FORMAT OF TENDER SECURITY [Option 2–Insurance Guarantee]

TENDER GUARANTEE No.: _____

1. Whereas ..... [*Name of the tenderer]* (hereinafter called "the tenderer") has submitted its tender dated ..... [*Date of submission of tender]* for the ..... *[Name and/or description of the tender]* (hereinafter called "the Tender") for the execution of under Request for Tenders No._____("the ITT").

2. KNOW ALL PEOPLE by these presents that WE ..... of ..... [**Name of Insurance Company**] having our registered office at ..... (hereinafter called "the Guarantor"), are bound unto ..... [*Name of Procuring Entity*] (hereinafter called "the Procuring Entity") in the sum of ..... (Currency and guarantee amount) for which payment well and truly to be made to the said Procuring Entity, the Guarantor binds itself, its successors and assigns, jointly and severally, firmly by these presents.

Sealed with the Common Seal of the said Guarantor this ___day of _____ 20 __.

3. NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION is such that if the Applicant:

a)has withdrawn its Tender during the period of Tender validity set forth in the Principal's Letter of Tender ("the Tender Validity Period"), or any extension thereto provided by the Principal; or

b)having been notified of the acceptance of its Tender by the Procuring Entity during the Tender Validity Period or any extension thereto provided by the Principal; (i) failed to execute the Contract agreement; or (ii) has failed to furnish the Performance Security, in accordance with the Instructions to tenderers ("ITT") of the Procuring Entity's Tendering document.

then the guarantee undertakes to immediately pay to the Procuring Entity up to the above amount upon receipt of the Procuring Entity's first written demand, without the Procuring Entity having to substantiate its demand, provided that in its demand the Procuring Entity shall state that the demand arises from the occurrence of any of the above events, specifying which event(s) has occurred.

4. This guarantee will expire: (a) if the Applicant is the successful Tenderer, upon our receipt of copies of the contract agreement signed by the Applicant and the Performance Security and, or (b) if the Applicant is not the successful Tenderer, upon the earlier of (i) our receipt of a copy of the Beneficiary's notification to the Applicant of the results of the Tendering process; or (ii)twenty-eight days after the end of the Tender Validity Period.

5. Consequently, any demand for payment under this guarantee must be received by us at the office indicated above on or before that date.

_____	_____
[Date]	*[Signature of the Guarantor]*
_____	_____
[Witness]	*[Seal]*

Note: All italicized text is for use in preparing this form and shall be deleted from the final product.

TENDER-SECURING DECLARATION FORM (MANDATORY)

[The Bidder shall complete this Form in accordance with the instructions indicated]

Date:.....*[insert date (as day, month and year) of Tender Submission]*
Tender No.:.....*[insert number of tendering process]*
To:..... *[insert complete name of Purchaser]* I/We, the undersigned,

declare that:

1. I/We understand that, according to your conditions, bids must be supported by a Tender-Securing Declaration.

2. I/We accept that I/we will automatically be suspended from being eligible for tendering in any contract with the Purchaser for the period of time of [insert number of months or years] starting on [insert date], if we are in breach of our obligation(s) under the bid conditions, because we – (a) have withdrawn our tender during the period of tender validity specified by us in the Tendering Data Sheet; or (b) having been notified of the acceptance of our Bid by the Purchaser during the period of bid validity, (i) fail or refuse to execute the Contract, if required, or (ii) fail or refuse to furnish the Performance Security, in accordance with the instructions to tenders.

3. I/We understand that this Tender Securing Declaration shall expire if we are not the successful Tenderer(s), upon the earlier of:
   a) our receipt of a copy of your notification of the name of the successful Tenderer; or
   b) thirty days after the expiration of our Tender.

4. I/We understand that if I am/we are/in a Joint Venture, the Tender Securing Declaration must be in the name of the Joint Venture that submits the bid, and the Joint Venture has not been legally constituted at the time of bidding, the Tender Securing Declaration shall be in the names of all future partners as named in the letter of intent.

Signed:..... Capacity / title (director or partner or sole proprietor, etc.) ..... Name: ..... Duly authorized to sign the bid for and on behalf of: *[insert complete name of Tenderer]*

Dated on ..... day of ..... *[Insert date of signing]* Seal or stamp

Appendix to Tender

Schedule of Currency requirements

Summary of currencies of the Tender for_____*[insert name of Section of the Works]*

Name of currency	***Amounts payable***
Local currency: _____	
Foreign currency #1: _____	
Foreign currency #2: _____	
Foreign currency #3: _____	
Provisional sums expressed in local currency _____ _____	[To be entered by the Procuring Entity]

PART 2 - WORKS' REQUIREMENTS

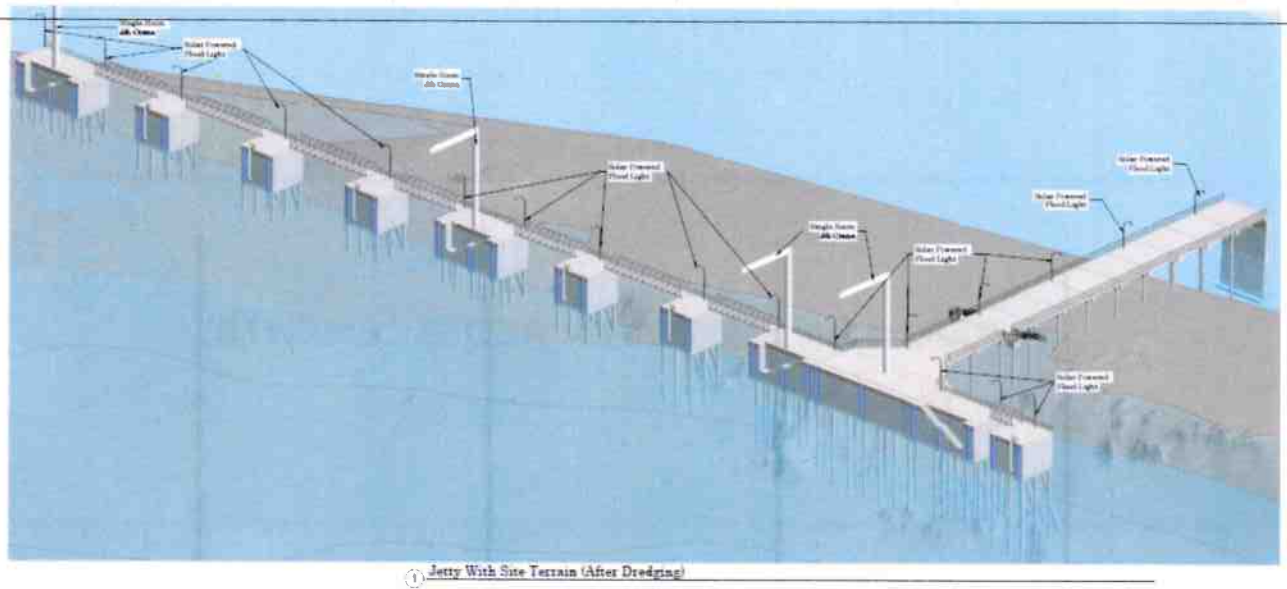
PART II – EMPLOYER REQUIREMENTS

SECTION V – SCOPE OF WORKS

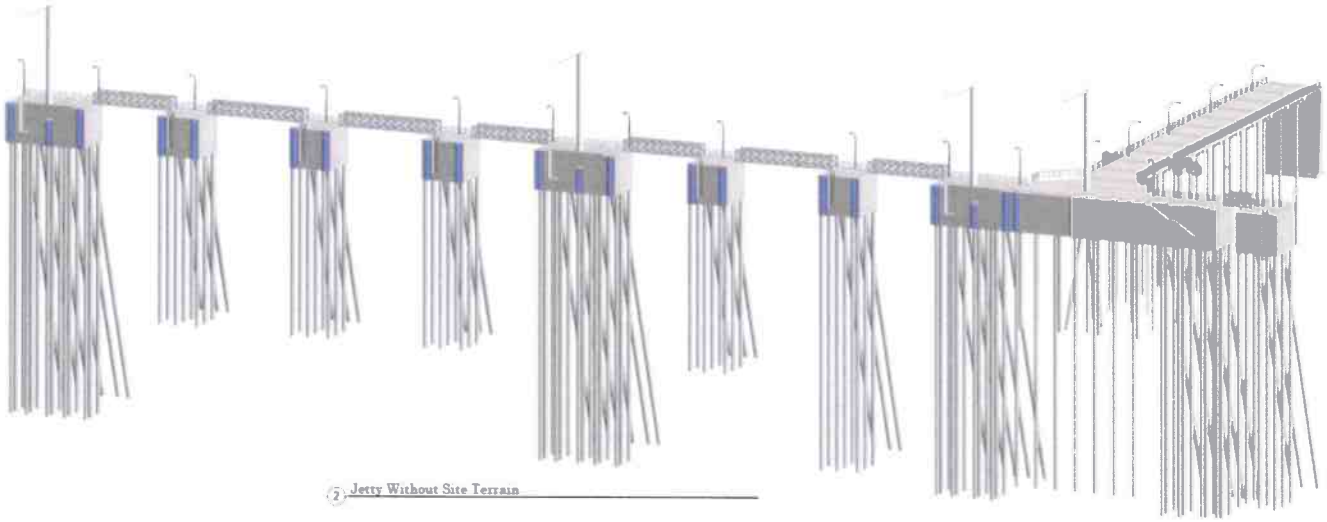
General Scope of Works

General

The Works comprise the demolition of the existing condemned Peleleza Jetty and construction of additional berthing Dolphins, Bollards, fenders, and walkways in the same general location including all auxiliary works.



1 Jetty With Site Terrain (After Dredging)



2 Jetty Without Site Terrain

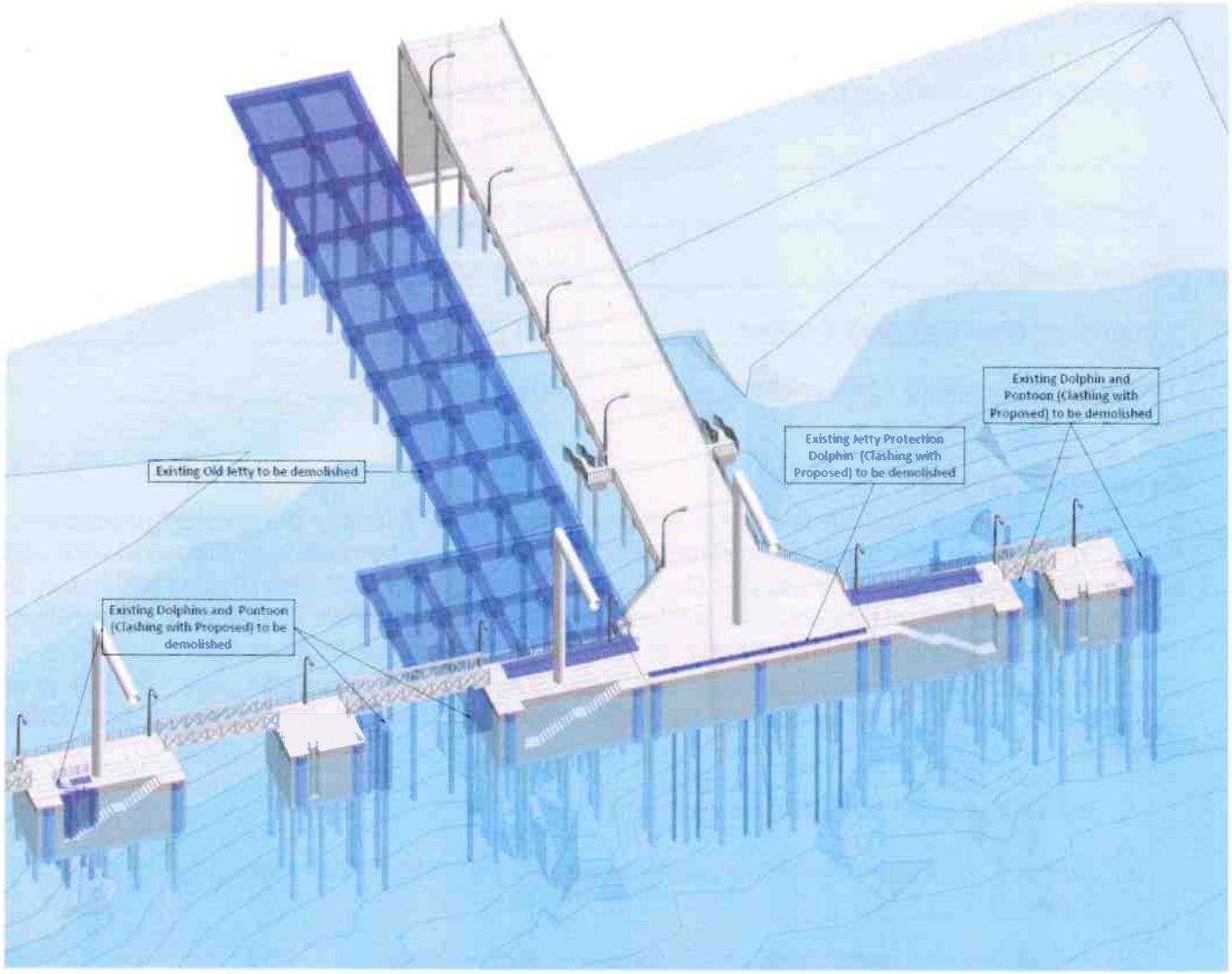


Figure 1: General Layout for the new Jetty Structure

The general layout including details is presented in the Tender Drawings. Briefly, the Works include, but are not limited to:

- ***D****emolition and removal of and disused existing jetty structure*
- ***C****onstruction of Dolphins, installation of fenders, bollards for Peleleza Jetty Phase 2*
- ***C****onstruction of walkways linking Dolphins.*
- ***P****rovision of infrastructure on jetty area including utilities (3 No. New 10 Ton Cranes, Flood Lighting, Monopole security lighting, fuel supply line, electricity, fresh water, etc.)*
- ***D****elivery and installation of fenders, life ladders, bollards and other marine equipment.*

Main Dimensions

The main dimensions of the new Structure are as follows:

Berthing Length	***250.00 m***
Cope level	***5.2 m CD***
Minimum Berthing Line Seabed	***-5m ACD***
Maximum Berthing Line Seabed	***-15m ACD***

Demolition Works

In order to fulfil all requirements for an environmentally friendly demolition procedure, the dismantling of the existing marine structure shall take place by means of diamond wire cutting or diamond saw cutting. The Tender Documents to be prepared for the project will solely allow for one of these two methods. The bidders shall submit with their proposal a comprehensive demolition methodology following one of the above-mentioned techniques.

The demolition of the existing jetty will take place in a systematic way. In the present demolition concept, it is proposed to dismantle the structure according to the following sequence:

1. *Demolition of the reinforced concrete slab*
2. *Demolition of the reinforced concrete beams and Steel Piles steel bracing under jetty.*
3. *Extraction and demolition of the foundation steel piles*
4. *Relocation of Floating Pontoons*

Peleleza Jetty Phase 2 Structure

The existing Peleleza Jetty Phase 2 structure was designed and constructed as a suspended deck structure at a distance of approximately 90m from the shore line. The existing jetty is connected to the landside by means of an access trestle of the same construction design as the main jetty.

The deck of the jetty is of reinforced concrete following a semi-precast construction method. It is mainly composed of following elements:

- *Pile caps as prefabricated elements*
- *Transversal beams as semi-finished elements*
- *Longitudinal panels as semi-finished elements*
- *In-situ topping*

In its finished state, the entire structure is not provided with any expansion joints and is considered as a monolithic constructional body.

The suspended deck is resting on foundation piles. These are arranged vertically and, in order to safely transmit all loads, are driven to refusal.

The lateral stability of the entire structure is given by the pile bents, which act as rigid frames and guarantee for a flexural rigid connection to the transversal beams. This connection consists of a reinforced concrete plug within the tubular steel piles. The reinforcement of this plug is arranged in such a way that it overlaps with the longitudinal reinforcement of the transversal beams allowing for the above-mentioned rigid connection.

The jetty structure is provided with appropriate quay furniture as fender elements, bollards and vertical ladders.

The proposed Dolphins are designed and shall be built by driving 612mm, diameter, 20mm thick tubular piles, infilled with reinforcement cage and in-situ class 30 concrete. There are two dolphins types, 6.4x6.4 Island type and 12.5x6.4 island type, the latter equipped with stairs to access berthing ferries.

The dolphins perform double function of both berthing and mooring.

Revetment Works

The existing revetment in the area immediately adjacent to the land access to the jetty is to be retained.

Utilities

The existing jetty structure shall be re equipped with new (Ducts and cable and pipe racks) to allow for the installation of fresh water, electricity, fuel line for onshore power supply for cold ironing, compressed air (pneumatic) and lightning. Each of the 12 No. Dolphins shall be equipped with light post at the front corner of each dolphin for easy boom reach.

3No. 10 Ton Cranes shall be fixed to 3 No. of the Dolphins as shown on the drawings.

SECTION VI - DRAWINGS

ATTACHED AS VOLUME II

SECTION VII – SPECIFICATIONS.

KENYA PORTS AUTHORITY

PROPOSED REHABILITATION AND EXTENSION OF PELELEZA JETTY

Technical Specifications

Table of Contents

List of Figures and tables

Abbreviations

ACD	Admiralty Chart Datum
approx.	Approximately
bgl	Below ground level
BS	British Standard
CAD	Computer Aided Design
CAPWAP	Control and Provisioning of Wireless Access Points
CD	Chart Datum
DIN	Deutsches Institut für Normung (German Standard)
dwt	Dead weight tonnage
EAU	Recommendations of the Committee for Waterfront Structures (EA 2012, 11th Edition) issued by the Society for Harbour Engineering and th German Society for Soil Mechanics and Foundation Engineering an published by Wilhelm Ernst & Sohn, Berlin/Munich/ Düsseldorf
EC	Eurocode
e.g.	exemplum gratiae = for instance
EN	European Standard
GCP	Galvanic cathodic protection
GRP	Glass reinforced plastic
GRT	Gross Register Tonnage
HAT	Highest Astronomical Tide
H.W.O.S.T.	High water of ordinary spring tide
ICCP	Impressed current cathodic protection
KOT	Kipevu Oil Terminal
KPA	Kenya Ports Authority
LAT	Lowest Astronomical Tide
LOA	Length overall
L.W.O.S.T.	Low water of ordinary spring tide
MHWN	Mean high water neap tide level
MHWS	Mean high water spring tide level
MLWN	Mean low water neap tide level
MLWS	Mean low water spring tide level
MSL	Mean Sea Water Level
nm	Nautical Mile (= 1,852 m)
OPS	Onshore Power Supply (electricity for moored vessels)
PPU	Portable Pilots Unit
RTG	Rubber Tired Gantry

SOT	Shimanzi Oil Terminal
ToR	Terms of Reference
UDL	Uniform distributed load
CAPWAP®	CAPWAP® is registered trade name and mark of specialized hardwar and software used in simulated static load test load-set curve for Pi Integrity testing.

Appendices

A) Ground Data
B) Design Basis
C) As-Built Information
D) Demolition Concept

General Information

Background and Location

KPA intends to demolish and reconstruct dolphins and expand berthing to an existing jetty accommodation of ferries within the Port of Mombasa.

The existing jetty construction was completed in year 2013. It has been used as berthing jetty servicing ferries. The completed jetty then replaced a condemned jetty, which was however demolished. During operations, two Floating pontoons became unserviceable due corros occasioned by loss of protective coating and zinc anodes. One mooring and berthing Dolphin collaps due to overload and accidental impact by design vessels which exceeded installed/ as built moor and berthing capacity by factor of 4. The pontoons and dolphins are proposed to be reinstalled as emergency temporary, measure, but which would have to be incorporated, replaced or demolish completely to create way for dolphins which would resist design vessel berthing and mooring force

The presentation below shows the location and extent of the existing jetty structure and mooring berthing system.

Figure 0-1: Location of site

Local conditions

Preamble

The information and data presented in this Chapter are for guidance of the Contractor, but neitl the Employer nor the Engineer guarantees the correctness of such data and information. T Contractor is obliged to obtain his own information from authorized authorities in Kenya to establ a data base required for the execution of the Works.

Coordinate System and Reference Level

The geographic position of the port is approximately E= 573200 and N= 9549220

The jetty top level has his elevation at +5.2m CD. CD (Chart Datum) is located at 1.97 m below Me Sea Level (MSL).

Temperature, Relative Humidity and Precipitation

Kenya is located in a tropical zone close to the equator, the mean maximum daily temperature about 29°C and the mean minimum daily temperature is about 23°C. The lowest record temperature is rarely below 20°C, whereas the highest temperature seldom exceeds 35°C.

Relative humidity can reach 90%.

Variations in the climatic conditions in Mombasa are attributed to SE Monsoon winds (blowing betwe April and October) and the NE Monsoons (December to February) and oceanic influence. The ra occur during the inter-monsoonal period, with the long rains starting from March to June, while t short rains occur from October to November/December. The mean annual rainfall between 1999 a 2004 was 956 mm, peaking in May and October. The monthly mean rainfall and temperatures in t Mombasa district for the period 1999 – 2004 are presented in **Error! Reference source not foun**

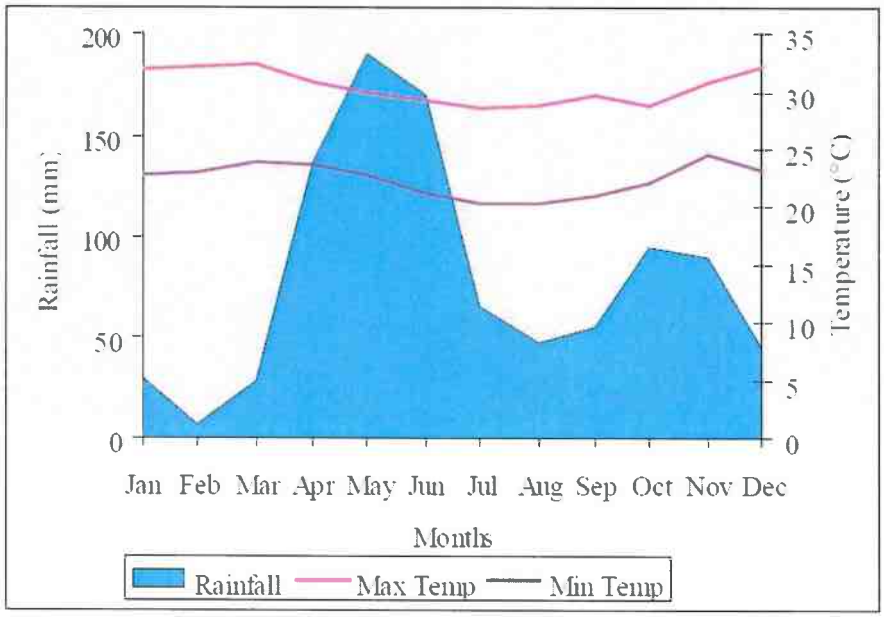


Figure 2 1: *Average Rainfall, Maximum and Minimum Temperatures (1999 – 2004)*

According to the Kenya Meteorological Department the highest rainfall events occurred during ar Nino event in 1997 with a maximum rainfall of 50 mm / hour and 233 mm / day.

Wind and Storms

Wind along the coast of Kenya generally changes with seasons. There are the Northeast Monso from December to February, which is "the dry season" and the Southwest Monsoon from April October, "the rainy season." There are the Inter Monsoon Seasons (March - April and Septembe November).

During the NE Monsoon, according to UNEP (1997), 50% of the time the wind blows from the E (maximum: 7.7 m/s, average: 5 m/s), 29% of the time from the Northeast (maximum: 4m/s average: 3 m/s) and 21% of the time from the North (maximum: 2 m/s, average: 1 m/s). In

Southwest monsoon 75% of the time the wind blows from the South (maximum: 9 m/s, average m/s) and 25% of the time from the Southwest (maximum: 5 m/s, average: 4 m/s).

According to the chart "Basic Wind Speeds in Kenya" the maximum wind speed which has to considered is 31 m/s for the area of Mombasa.

Operations within the port are rarely affected due to high wind speeds.

Visibility

Visibility above and below water can generally regarded as good. The visibility can decrease duri the rainy season and during monsoon rains.

Tidal Water Levels

Given tidal levels are based on the Admiralty Chart Datum No. 666, KPA Tide Tables and P Information for Kenya Ports and Tanzania Harbours, 2014.

- Highest Astronomical Tide (HAT) +4.10 m
- Mean high water spring tide level (MHWS) +3.50 m
- Mean high water neap tide level (MHWN) +2.40 m
- Mean sea water level (MSL) +1.88 m
- Mean low water neap tide level (MLWN) +1.30 m
- Mean low water spring tide level (MLWS) +0.30 m
- Chart Datum:(CD) 0.00 m
- Lowest Astronomical Tide (LAT) -0.10 m

Within this document all levels are referenced to CD.

The tidal levels are observed at Port Kilindini (Lat. 4°04' South, Long. 39°39' East).

Tidal Current

Results of current speed measurements are compiled in **Error! Reference source not found.**. T maximum current speed range from 40 to 120 m/s depending on the location. According measurements the currents alongside the berths vary between 1 and 4 kn.

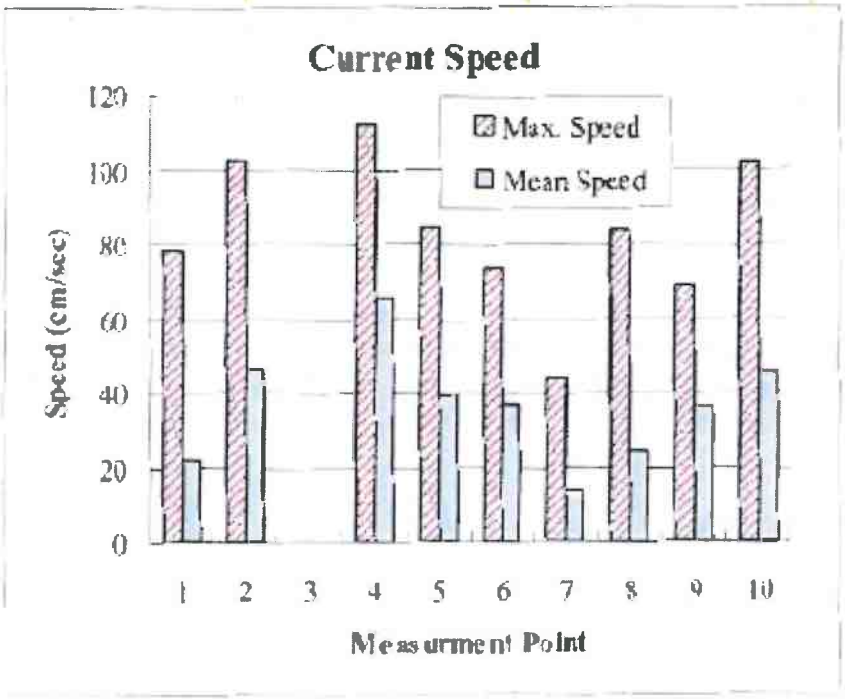


Figure 2 2: Current speeds within the access channel, for locations of the measurement points i referred to Figure 2 3: .

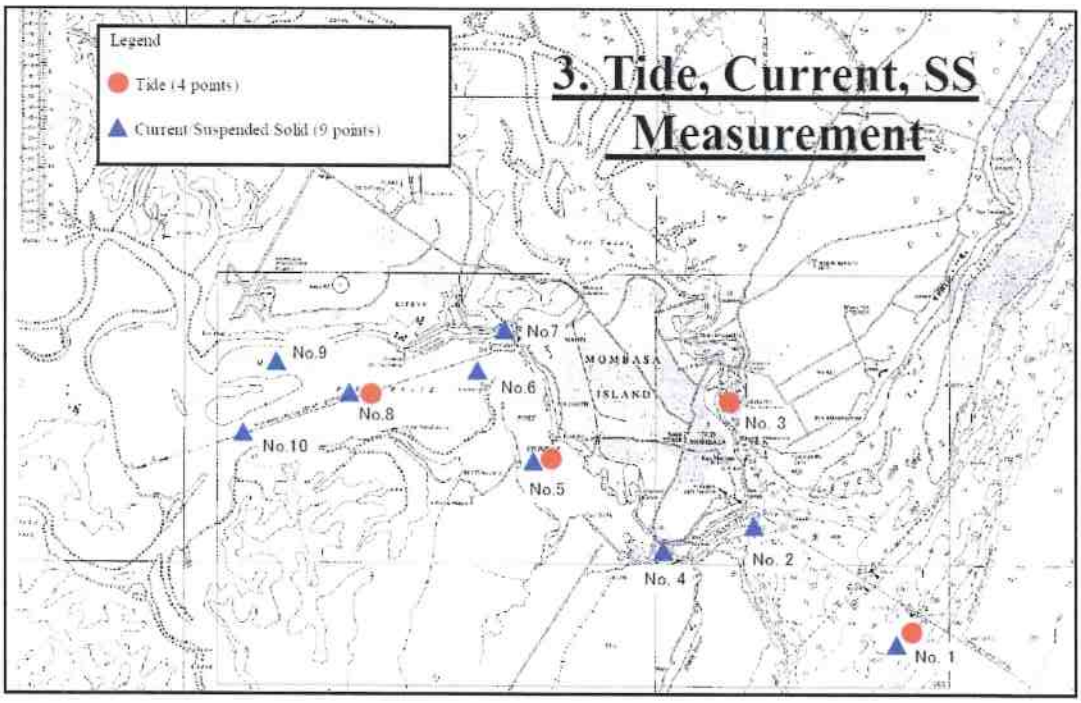


Figure 2 3: Position of current measurements

Wave Heights

General Wave Heights

Waves at Kilindini Harbour are generated by wind and waves inside the harbour are minimal. T results of a wave forecast model are presented in Figure 2-4:.

Wave Direction / Wave Hight (m)	NE	ENE	E	ESE	SE	SSE	S	Total	Acum.%
-0.49									
0.50 - 0.99	22	24	12	762	129			949	13.6
1.00 - 1.49	47	19	17	1,817	99	4		2,003	42.3
1.50 - 1.99	50	48	13	1,454	61	4	5	1,635	65.7
2.00 - 2.49	3	5	2	1,230	56	4	1	1,301	84.3
2.50 - 2.99				750	32	17	3	802	95.8
3.00 - 3.49				221	15	15	4	255	99.5
3.50 - 3.99				14	2	19	3	38	100.0
4.00 - 4.49									
Total	122	96	44	6,248	394	63	16	6,983	
%	1.7	1.4	0.6	89.5	5.6	0.9	0.2	100.0	

Figure 2-4: Results of global wave forecast (2002 – 2006) at Mombasa Entrance Channel

Based on Figure 2-4*:* the design wave was established at 2.0 m with a probability of 65.7 % comi from ESE (see Figure 2-5*: Design wave*).

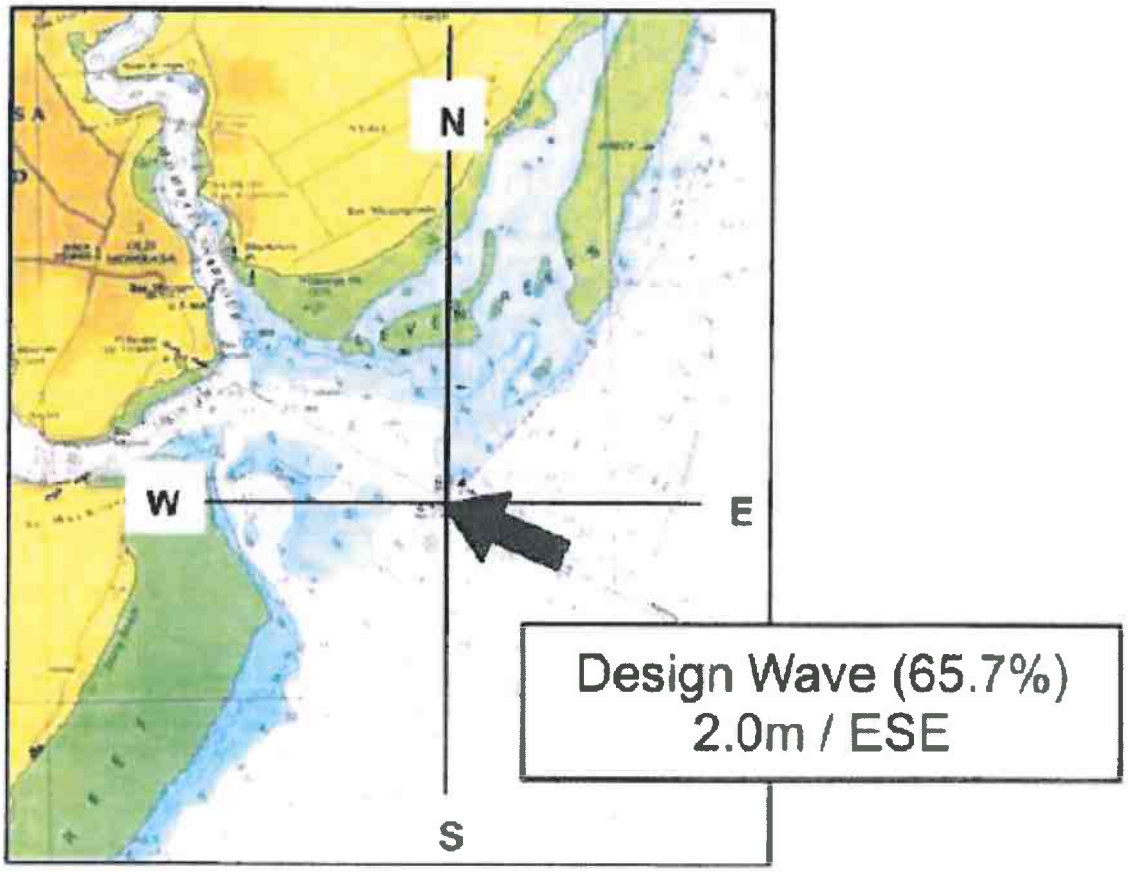


Figure 2-5: Design wave

Wave Heights at the Berths

Due to the sheltered position of the port only waves from the east may enter the port. The maxim wave height was calculated in accordance with the diagram in Figure 2-5*: Design wave* and following input parameter:

- Maximum wind speed: 22.5 m/s

- Fetch length: 4.5 km (see yellow line in Figure 2-7***: Fetch length***)

Based on and the above parameter, the maximum wave height is approximately 0.8 m (see red d in Figure 2-6 ***: Nomogram of deep-water significant wave prediction curves as functions of wi speeds, fetch lengths and wind duration, red dot = wave height***).

It is assumed that a maximum wind speed of 22.5 m/s in combination with a fetch length of 4.5 is conservative, as it is unlikely

- that such strong winds are blowing from south-easterly direction (see Figure 2-4***:***), and
- that those waves coming from a south-easterly direction are passing Ras Kilindini and F Kikangoni undeflected.

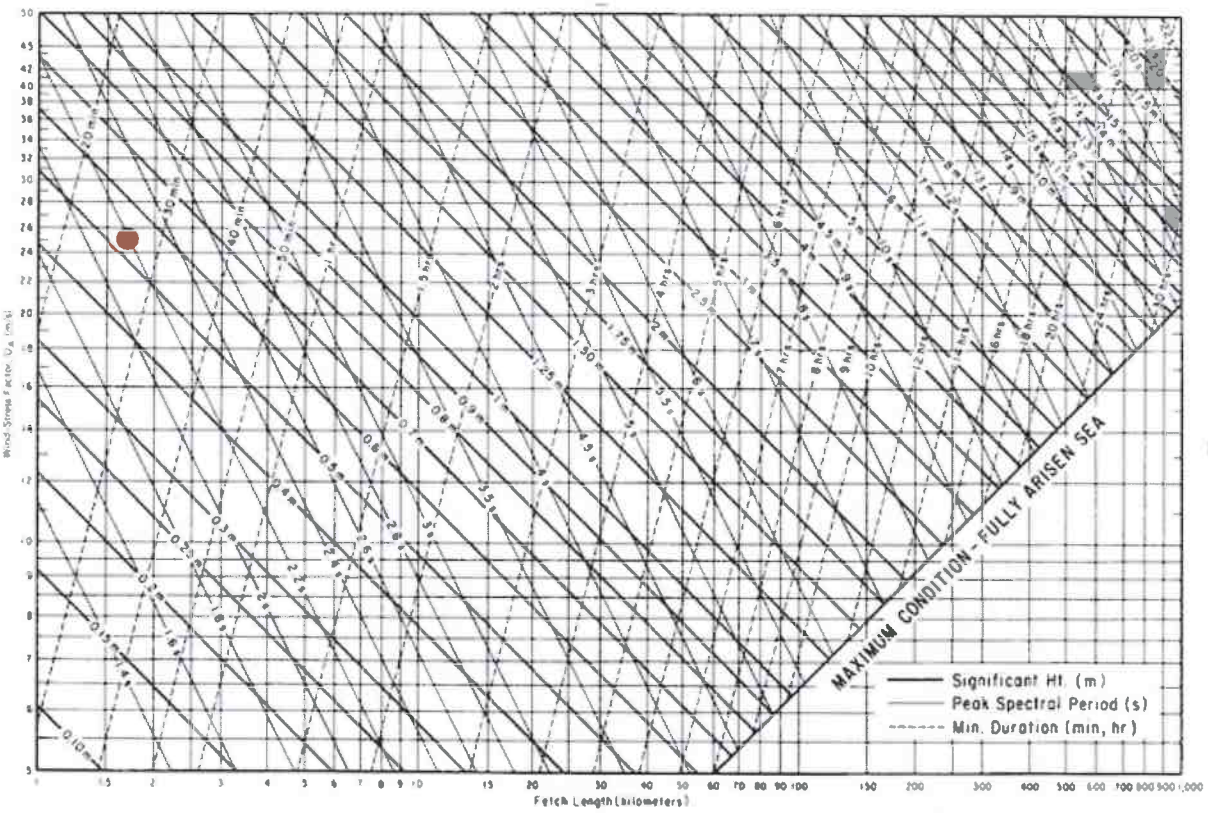


Figure 2-6 : Nomogram of deep-water significant wave prediction curves as functions of wi speeds, fetch lengths and wind duration, red dot = wave height

Figure 2-7: Fetch length

Water Depths

In 2012 the access channel to the port was dredged to a depth of -15 mCD. During this dredg campaign the berth pockets at the berthing line were also restored to their nominal depth.

A bathymetric survey was undertaken in 2006 during design for then capital dredging, and wh compared well with that at design stage. During design, bathymetric survey was carried out in Ju 2023 and the results are presented in the Tender Drawings. The water depth in front of exist Peleleza jetty berthing line is larger than -10m CD. Water depths at proposed extensions of berth a generally -5m to -15m referenced to ACD. A presentation of seabed depth is presented below.

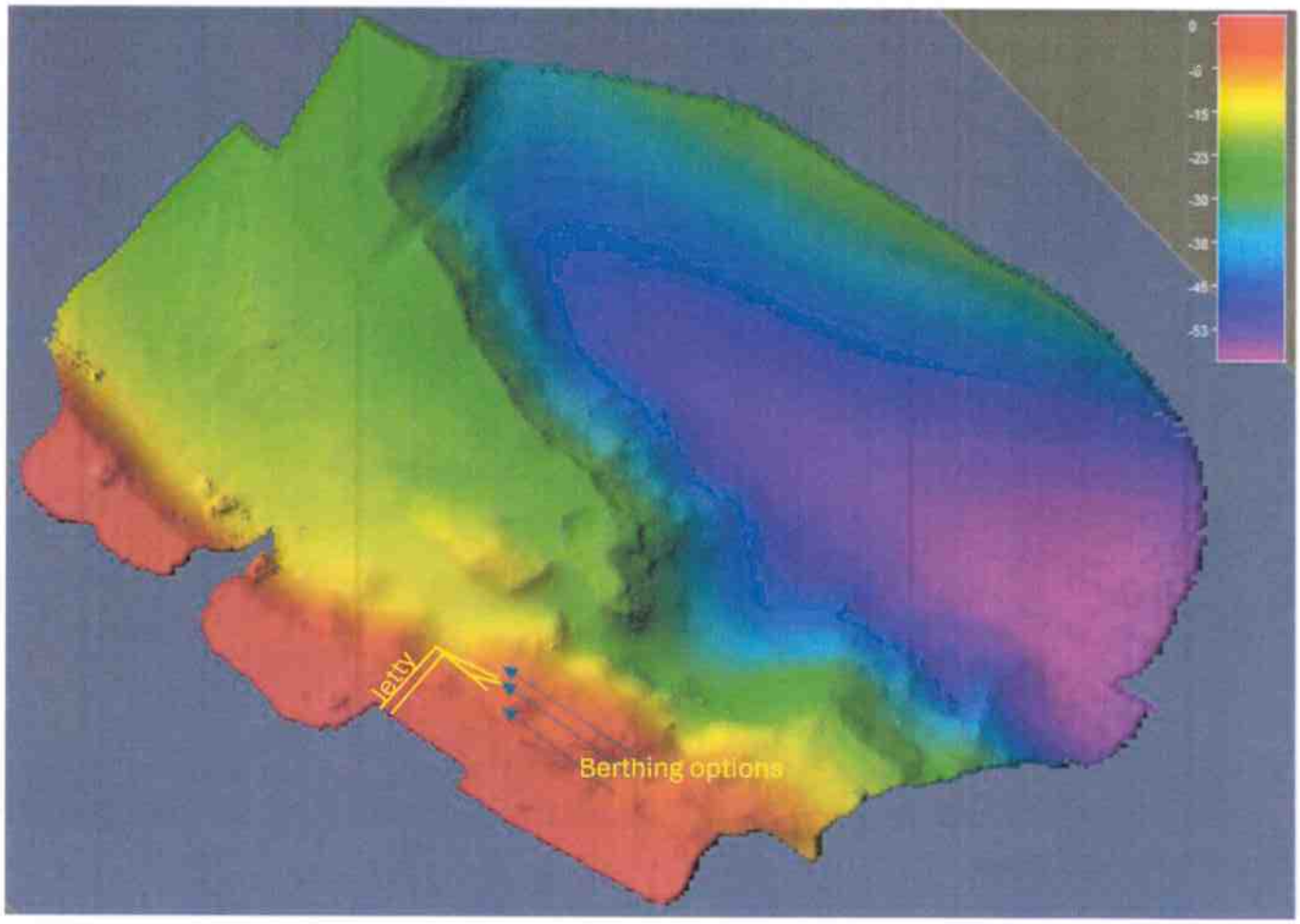


Figure 2-8: Drawing of Seabed depth heat

Figure 2-9: Drawing of sea bed depth contours

Ground Water Levels

Measurements of the ground water levels were performed during the Ground Investigation at boreh BH1 of year 2013 SI indicated that ground water level was encountered around -3.0 m CD to -3.5 CD.

Water Temperature

Due to the tropical climate the water temperatures vary only slightly between approx. 25° C and 2 C during the year.

Corrosion

According to EN 1993 part 5 the corrosion rate for moderate climates is given with 7.50 mm in 1 years (design life), see Table2-1 : ***Corrosion Rate [mm] for piles and sheet piles in fresh water a sea water***.

Table2-1 : Corrosion Rate [mm] for piles and sheet piles in fresh water and sea water

Required Design Life	5 years	25 years	50 years	75 years	100 years
General fresh water (river, shipping canals, ...) in the area of strong corrosive attack (water level)	**0.15**	**0.55**	**0.90**	**1.15**	**1.40**
Highly contaminated fresh water (sewage, industrial waste water, ...) in the area of strong corrosive attack (water level)	**0.30**	**1.30**	**2.30**	**3.30**	**4.30**
Sea water in moderate Climate in the area of strong corrosive attack	**0.55**	**1.90**	**3.75**	**5.60**	**7.50**
Sea water in moderate climate in the area continuously under water or around mean water level	**0.25**	**0.90**	**1.75**	**2.60**	**3.50**

Remarks:

1) The highest corrosion rate is generally located in the splash zone or around low water level unde tidal influences. In most cases, however, are the highest impacts located under water.

2) The stated figures are indicative only. Local conditions shall be considered, as they influence th corrosion rate, which can be higher or lower than the given values.

3) The stated figures for 5 and 25 years are based on measurements by which the other value were extrapolated.

As these values are valid for moderate climates, they have to be increased by a factor of 1.5 to ca for the aggressive marine environment in Mombasa.

Earthquakes

The relevant Kenya code of practice on earthquake engineering indicates that Mombasa is situated a zone of fairly low earthquake classified as a magnitude of VI on the Modified Mercalli Scale earthquake intensity.

In order to cover loads due to seismic activities a horizontal acceleration of ΔH = 0.05 x G (self-weig G) has to be taken into account.

Ground Conditions

The following ground investigation is the result of the designer´s own interpretation of soil data giv in the geotechnical investigations report of 26th March 2013 and supplemental geotechni investigations at the project site dated 21st December 2023. The geotechnical interpretation of t data given in the reports are based on internationally recognised literature and standards.

All soil parameters are to be verified by the contractor after having undertaken confirmatory field a laboratory investigations.

Design Soil Parameters

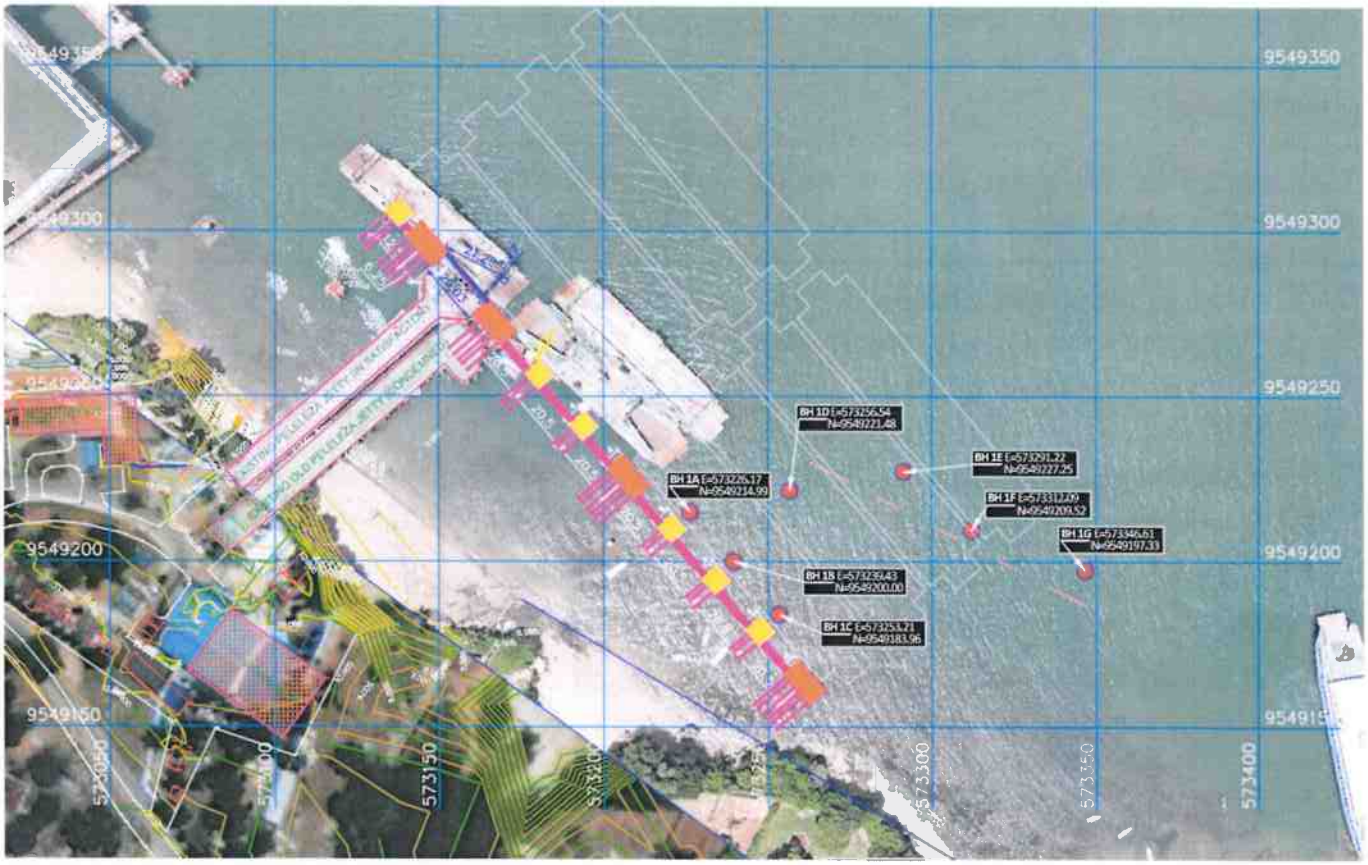


Figure 2-10: Bore Hole Locations Drawing

Table 2-2: Borehole Locations Coordinates

No.	Station	Coordinate (UTM)	Elevation	Depth

		Zone	X	Y	(mAoD)	(mAoD)
1	BH1A	37M	573226.17	9549214.99	0.00	-30.00
2	BH1B	37M	573239.43	9549200.00	0.00	-30.00
3	BH1C	37M	573253.21	9549183.96	0.00	-30.00
4	BH1E	37M	573256.54	9549221.48	-8.5	-38.50
5	BH1F	37M	573312.09	9549209.52	-6.00	-36.80
6	BH1G	37M	573346.61	9549197.33	-7.00	-37.00

AASHTO Soil Classification System (from ASTM M 145)

General Classification	Granular Materials 35% or less passing the 0.075 mm sieve							Silt-Clay Materials >35% passing the 0.075 mm sieve			
Group Classification	A-1		A-3	A-2				A-4	A-5	A-6	A-7
	A-1-a	A-1-b		A-2-4	A-2-5	A-2-6	A-2-7				A-7-5 A-7-6
Sieve Analysis, % passing											
2.00 mm (No. 10)	50 max	---	---	---	---	---	---	---	---	---	---
0.425 (No. 40)	30 max	50 max	51 max	---	---	---	---	---	---	---	---
0.075 (No. 200)	15 max	25 max	10 max	35 max	35 max	35 max	35 max	36 min	36 min	36 min	36 min
Characteristics of fraction passing 0.425 mm (No. 40)											
Liquid limit	---		---	40 max	41 min	40 max	41 min	40 max	41 min	40 max	41 min
Plasticity index	6 max		N.P.	10 max	10 max	11 min	11 min	10 max	10 max	11 min	11 min[a]
Usual types of significant constituent materials	stone fragments, gravel and sand		fine sand	silty or clayey gravel and sand				silty soils		clayey soils	
General rating as a subgrade	excellent to good							fair to poor			

[a]Plasticity index of A-7-5 subgroup is equal to or less than the LL - 30. Plasticity index of A-7-6 subgroup is greater than LL - 30

Figure 2-11: AASHTO Soil classification system

Table 2-3: Soil Classification summary

Hole ID	Depth (m)		Fines (%)	LS (%)	PI (%)	LL (%)	USCS		AASHTO	
	From	To					Name	Symbol	Class	Rating
BH1A	6.0	10.0	16.8	5.8	12.3	28.4	Clayey Sand	SC	A-2-6	Excellent to Good

Hole ID	Depth (m)		Fines (%)	LS (%)	PI (%)	LL (%)	USCS		AASHTO	
	From	To					Name	Symbol	Class	Rating
BH1B	9.0	11.0	29.4	2.9	6.2	22.0	Clayey Sand	SC	A-2-4	Excellent to Good
BH1C	8.0	10.0	24.4	6.3	13.5	32.8	Clayey Sand	SC	A-2-6	Excellent to Good
BH1E	7.0	10.0	19.7	5.7	12.1	26.4	Clayey Sand	SC	A-2-6	Excellent to Good
BH1F	10.0	12.0	25.6	4.9	9.2	21.0	Clayey Sand	SC	A-2-4	Excellent to Good
BH1G	9.0	11.0	21.6	10.3	13.5	28.8	Clayey Sand	SC	A-2-6	Excellent to Good

Table 2-4:Summary of direct shear parameters

Hole ID	Depth (m)		Shear Parameters	
	From	To	Angle of Shear Resistance, $\emptyset'$ (°)	Cohesion, c' (kN/m²)
BH1A	22.00	26.00	25.2	12.26
BH1B	15.00	21.00	24.5	13.73
BH1C	21.00	23.00	22.5	15.50
BH1C	27.00	30.00	22.5	15.5
BH1E	14.00	20.00	23.5	13.79
BH1F	23.00	27.00	20.5	13.95
BH1G	19.00	21.00	18.5	13.50

Table 2-5: Summary of soil UCS

Hole ID	Depth (m)		UCS_{Soil} (kN/m²)	C_u (kN/m²)
	From	To		
BH1A	0	3	57	28.5
BH1A	18	22	57	28.5
BH1B	0	4	45	22.5

BH1B	17	21	45	22.5
BH1C	0	3	33.2	16.6
BH1C	15	21	33.2	16.6
BH1E	18	22	57	28.5
BH1F	17	21	45	22.5
BH1G	15	21	33.2	16.6

Soil Profile

Correction factors for base resistance and skin friction

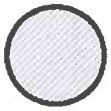
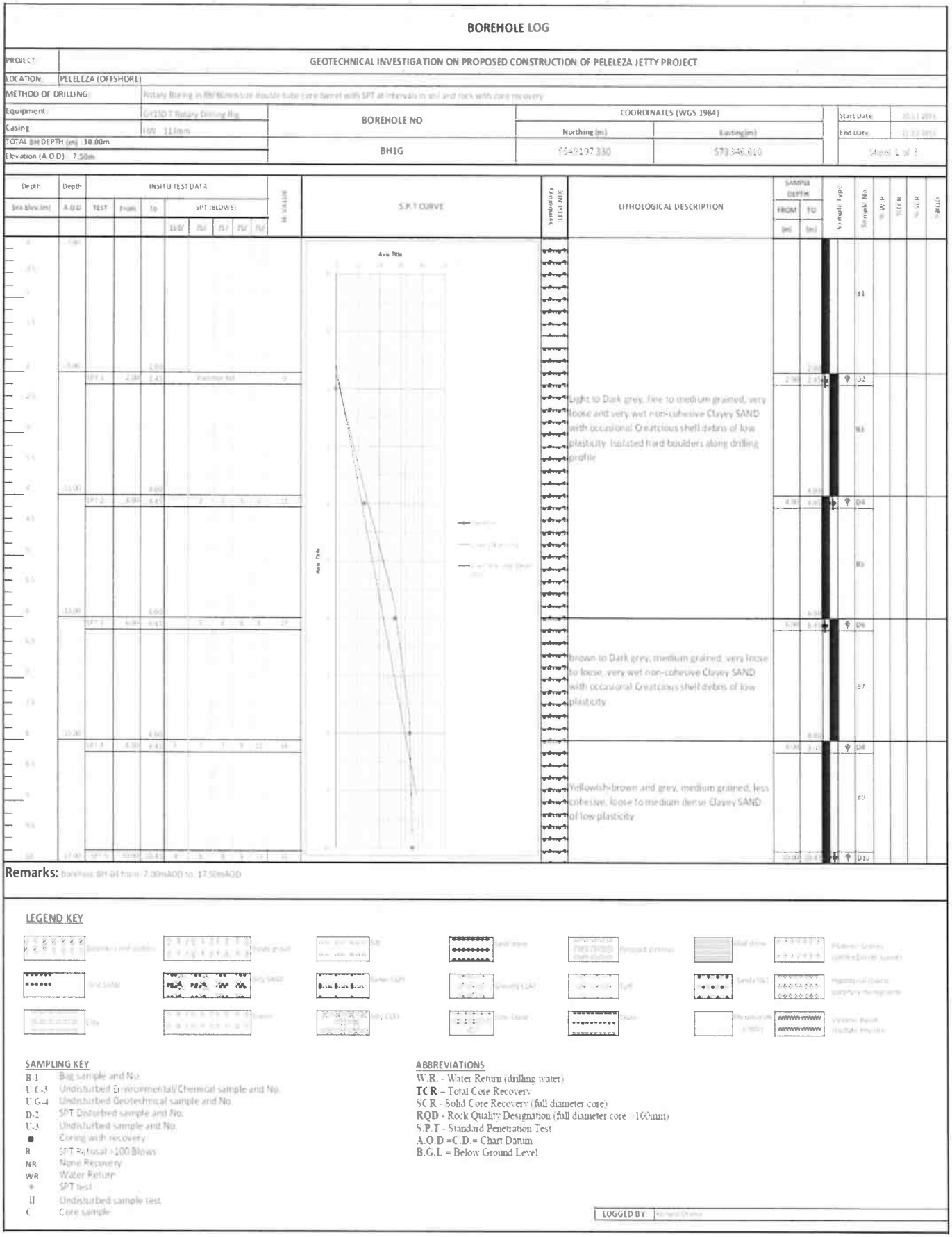
Pile type		η_b [-]	η_s [-]
Reinforced concrete and prestressed concrete		1.00	1.00
Open ended steel tube and hollow box (0.3 m ≤ D ≤ 1.60 m)		$0.95 * e^{-1.2*D}$	$1.1 * e^{-0.63*D}$
Closed steel tube (D ≤ 0.8 m)		0.80	0.60
Steel tube with braced toe		0.80	0.60

Figure 2-12: Correction factors for base resistance and skin friction

Typical Borehole Log (Dec 2023 Report)



BOREHOLE LOG

PROJECT:	GEOTECHNICAL INVESTIGATION ON PROPOSED CONSTRUCTION OF PELELEZA JETTY PROJECT
LOCATION:	PELELEZA (OFFSHORE)
METHOD OF DRILLING:	Rotary Boring in RR/Bonecore double tube core barrel with SPT at intervals in soil and rock with core recovery
Equipment:	GY150 T Rotary Drilling Rig
Casing:	HW 114mm
TOTAL BH DEPTH (m):	30.00m
Elevation (A.O.D):	7.50m

BOREHOLE NO	COORDINATES (WGS 1984)		Start Date:	
	Northing (m)	Easting (m)	End Date:	
BH1G	9549197.330	573 346.610	Sheet 1 of 3	

Depth (Mbelow ms)	Depth A.O.D	INSITU TEST DATA: TEST	From	To	SPT (BLOWS)	S.P.T CURVE	Symbol/Key (TEST NO)	LITHOLOGICAL DESCRIPTION	SAMPLE DEPTH: FROM (m)	TO (m)	Sample Type	Sample No.	% SCR	% SCR	% RQD
								Light to Dark grey, fine to medium grained, very loose and very wet non-cohesive Clayey SAND with occasional Creatcious shell debris of low plasticity. Isolated hard boulders along drilling profile							
								Brown to Dark grey, medium grained, very loose to loose, very wet non-cohesive Clayey SAND with occasional Creatcious shell debris of low plasticity							
								Yellowish-brown and grey, medium grained, less cohesive, loose to medium dense Clayey SAND of low plasticity							

Remarks: Borehole BH 01 from 7.00mAOD to 17.50mAOD

LEGEND KEY

SAMPLING KEY

B-1	Bag sample and No.
U.C-3	Undisturbed Environmental/Chemical sample and No.
U.G-4	Undisturbed Geotechnical sample and No.
D-2	SPT Disturbed sample and No.
U-3	Undisturbed sample and No.
■	Coring with recovery
R	SPT Refusal >100 Blows
NR	None Recovery
WR	Water Return
*	SPT test
II	Undisturbed sample test
C	Core sample

ABBREVIATIONS

W.R. - Water Return (drilling water)
TCR – Total Core Recovery
SCR - Solid Core Recovery (full diameter core)
RQD - Rock Quality Designation (full diameter core >100mm)
S.P.T - Standard Penetration Test
A.O.D =C.D.= Chart Datum
B.G.L = Below Ground Level

LOGGED BY:

Typical Borehole Log (March 2013 SI Report)

SITE INVESTIGATION REPORT

DAILY PRELIMINARY BOREHOLE LOG

BH ref: BH1

Foundation Piling Ltd
P.O. Box 48525
00100 Nairobi

Tel: +254 2 2054656
Fax: +254 2 4445228

Project:	Repairs and upgrading to peleleza mooring jetty	Client:	Kenya Ferry Services	Grid coordinates: E 573209.460 N548941.327
Location:	Peleleza jetty	Engineer:	Maacad Consulting Engineers	UTM zone: 35
Method:	Rotary drilling with HW casing 101mm diameter	elevation GL sea bed:	0.284 CD	Report Date: 15-Jan
				Sheet: 2 of 2

Section no	Sample Label/No	Sample Depth m CD	Core run m	TCR	FI	Legend	Depth below sea bed m	Elev Level CD m	Description
	B1	-0.112m to -1.62m							Loose medium to fine grained brown silt sand SPT N=4
	D2	-1.62m to -2.07m							
	B3	-2.07m to -3.57m							Medium grained brownish sand
	D4	-3.57m to -4.02m							medium to fine grained brownish sand N=5
	B5	-4.02m to -5.52m							
		-5.52m to -5.97m							medium to fine grained brownish sand with deposits of weathered soft coral stone N=35
	B7	-6.07m to -8.02m							
	B8	-8.02m to -9.52m							Medium grained brownish sand N =7
	D9	-9.52m to -9.97m							
	B10	-9.97 to -11.47m							Medium grained brownish sand N =31
	D11	-11.47 to -11.92m							
	B12	-11.92m to -13.52m							medium to fine grained brownish sand with isoleted deposits of soft coral stone N=7
	D13	-13.52m to -13.97m							
		-13.97m to -15.47m							medium to fine grained brownish sand N=10
	D15	-15.47m to -16.97m							
		-15.99m to -17.45							
	D17	-17.45 to -17.92m							Medium to coarse grained brownish sand N =12
	B18	-17.92 to -19.42m							
		-18.45 to -21.45							coarse grained sand with deposits of soft coral N=9
	D19	-21.47m to -21.92m							
		-21.92m to -23.47m							
	D20	-23.47m to -23.92m							N=13
		-23.92m to -25.57m							

LEGEND	GL: ground level; CD Admiralty Chart Datum; B: bulk distrubed sample; D: small disturbed sample; U: undisturbed sample; SPT: standard penetration test; TCR= total core recovery: total length of material recovered expressed as apercentage of core run; : SCR: solid core recovery: total length of solid core expressed as a percentage of core run. FI: number of natural fractures over 1 meter length;

Present State of Project Area / Existing Facilities

General Remarks

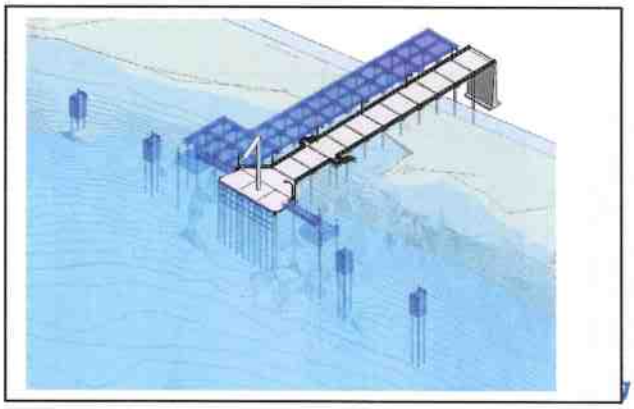
In this Section an indicative description of the existing facilities is given. The Contractor is obliged visit the site and obtain all the relevant information about existing facilities on the project site a along access roads.

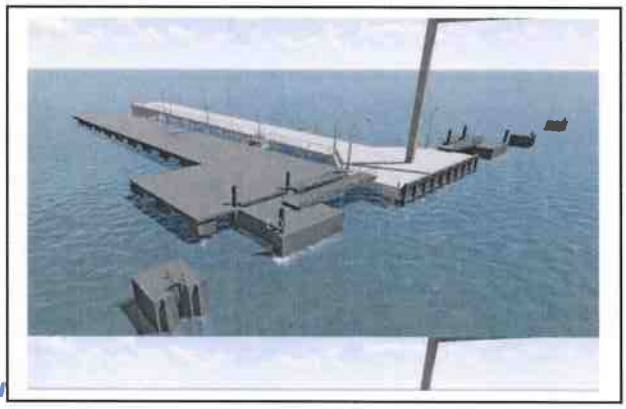
Description of the Condemned Existing Peleleza Jetty Phase

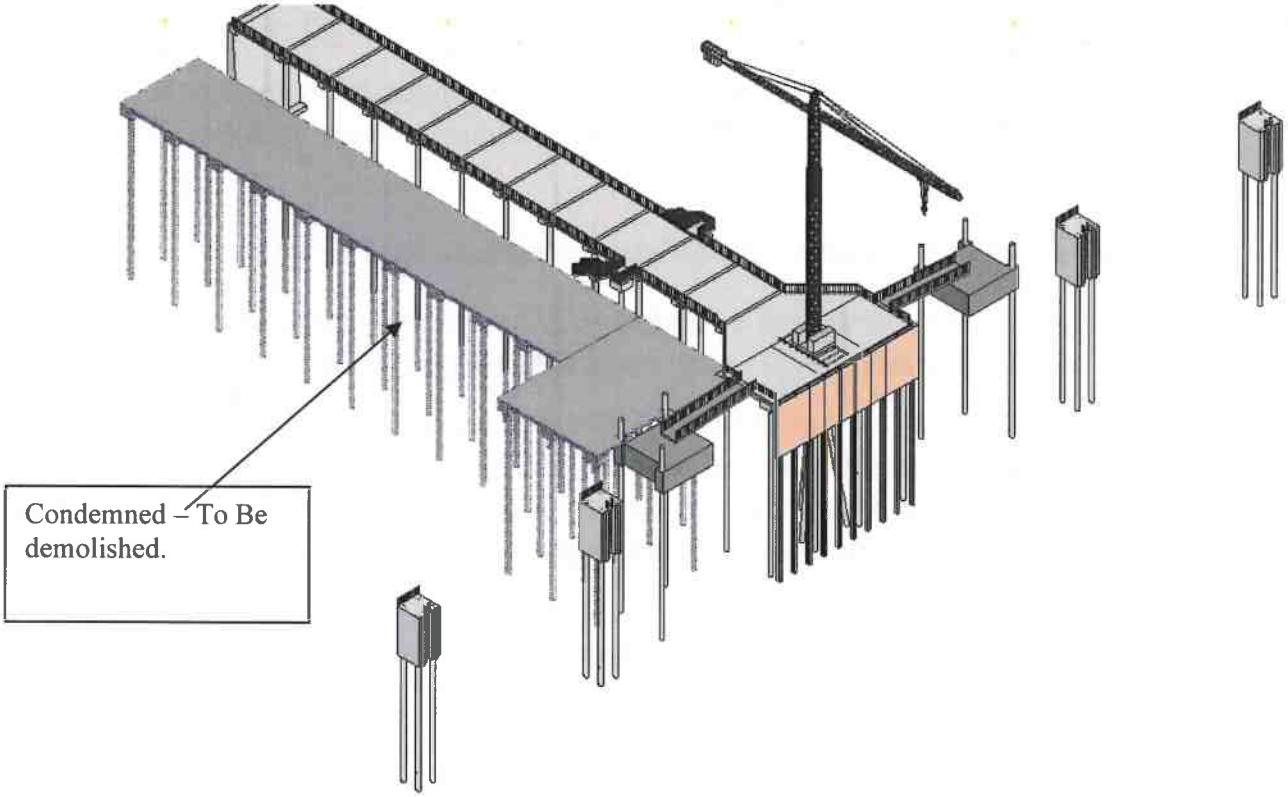
The existing jetty consist in general of a reinforced concrete deck supported on steel piles. The late stability of the structure should be given by vertical bracings between the foundation piles.

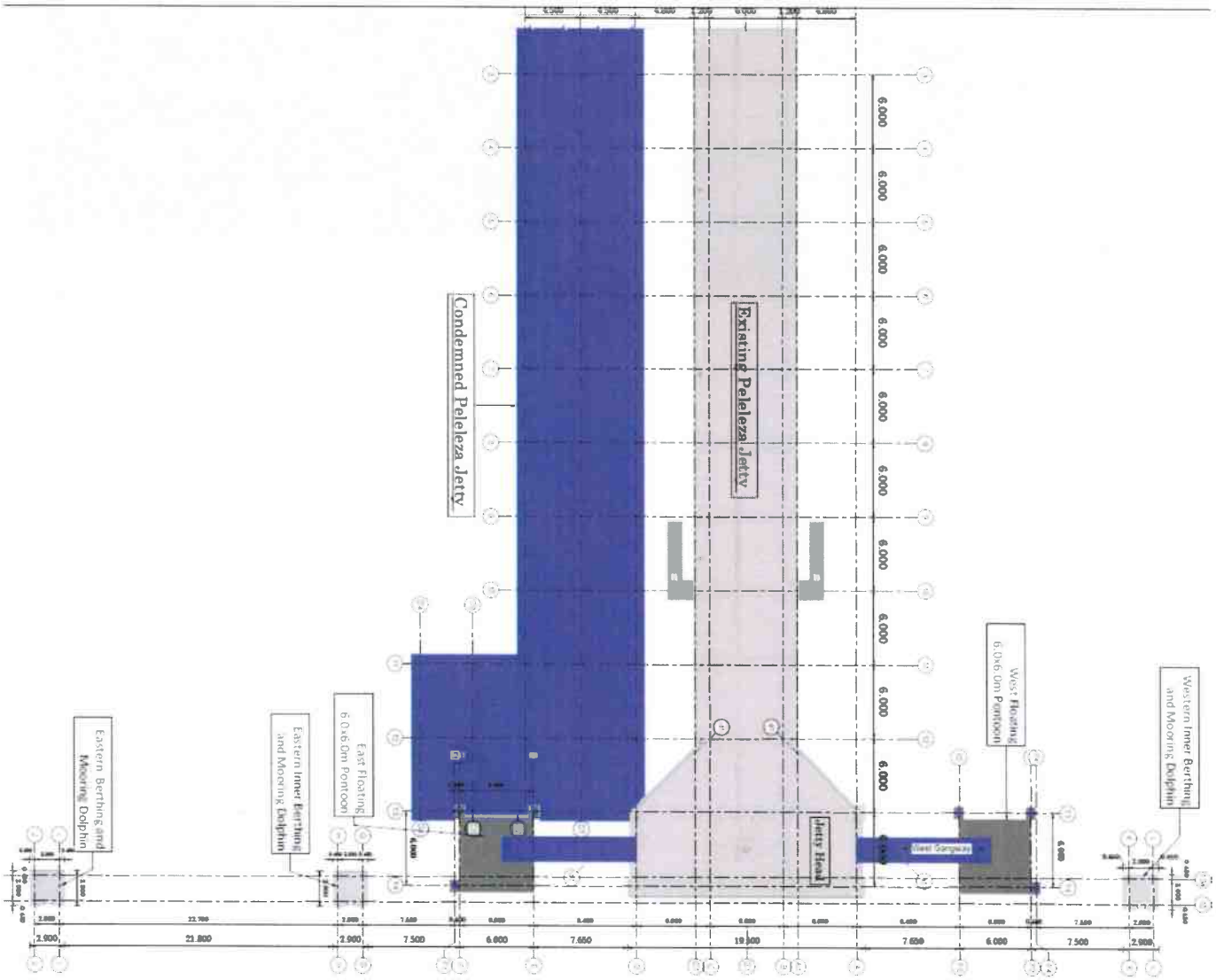
The entire structure shows a high degree of deterioration which obviously leads to a loss of t structural integrity and especially to the loss of lateral stability. The main reason for the reduc structural integrity is on one hand, the corroded vertical bracings from the structure built in 1955 a on the other hand, the inappropriate constructional method of the extension from 1974/1975, wh the lower horizontal strut was not erected.

A general overview is given in the figure below and in the Tender Drawings.






Condemned – To Be demolished.


Condemned Peleleza Jetty
Existing Peleleza Jetty
Eastern Berthing and Mooring Dolphin
Eastern Inner Berthing and Mooring Dolphin
East Floating 6.0x6.0m Pontoon
West Floating 6.0x6.0m Pontoon
Western Inner Berthing and Mooring Dolphin
Jetty Head
6.000
2.900
21.800
7.500
6.000
7.650
19.300
6.000
7.500
2.900

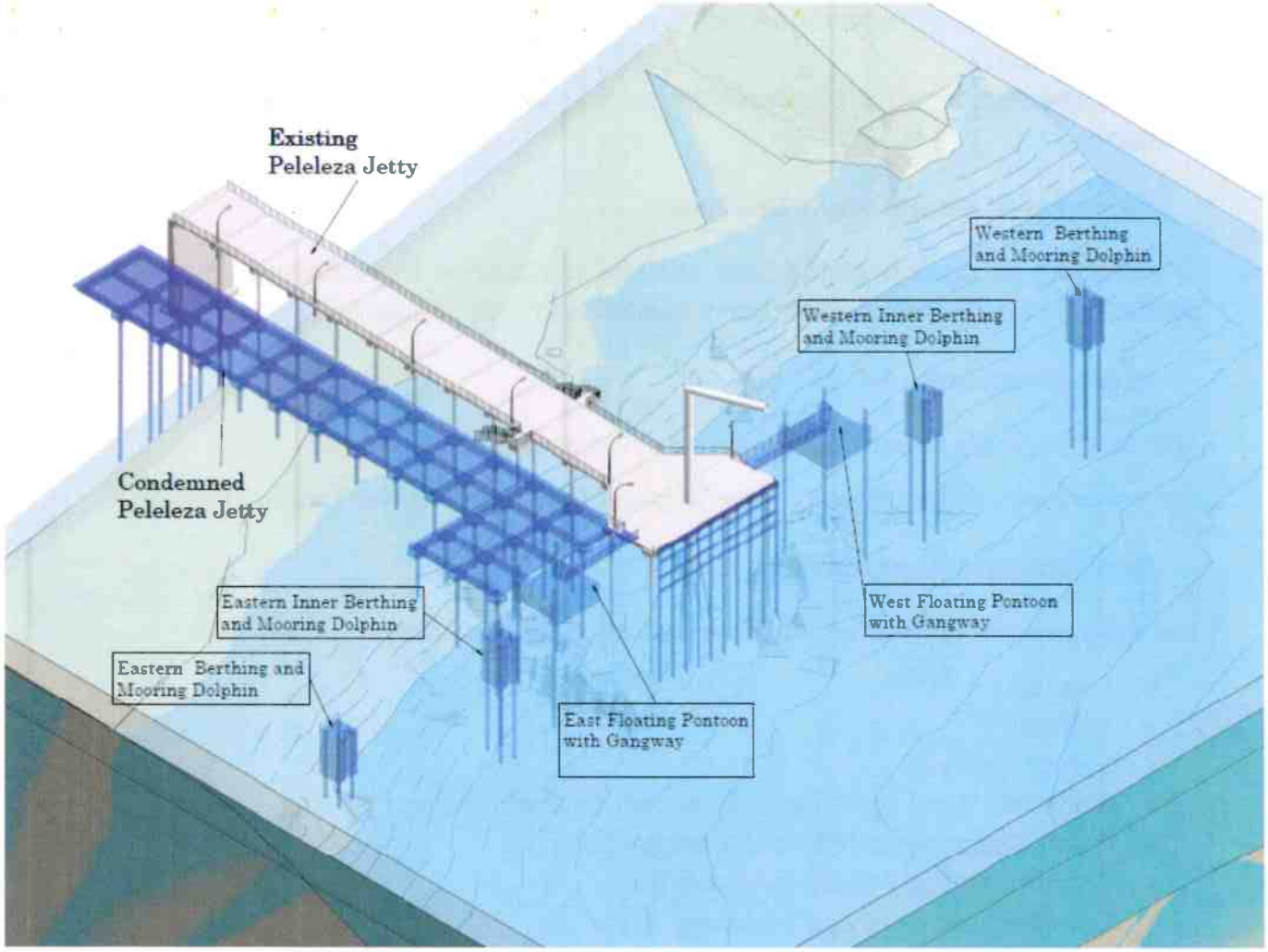


Figure 2-14: Condemned jetty to be demolished

Scope of Work and Construction Sequences

General

It is intended to rehabilitate and extend the Peleleza Jetty at the general location than the existi marine facility, with lengthened berthing line and strengthened mooring and berthing facilities , p of existing facilities are to be demolished prior to commencement of the construction works.

The new jetty dolphins structure are island type of reinforced concrete muff and steel tube pil Walkways are galvanised steel U framed steel trusses.

For a general overview of the Works, it is referred to the Tender Drawings.

Demolition Works

The condemned jetty structures needs to be dismantled and removed to such an extent that it dc not interfere with the construction works for the new jetty. This includes but is not limited to:

- Clearing of the Site
- Dismantling of jetty deck structure incl. pile caps, Mooring Dolphins, Pontoons, fenderi system, cat ladders, bollards walkways.
- Extracting all foundation piles
- Removal of existing slope revetment in the area of the land access of the jetty

- Removal of all existing service lines in close coordination with the Client and the Operator the facility

Further specifications for the demolition works are compiled in Chapter 0 and shown in the Ten Drawings.

Removal of debris from Sea Bed

The existing dredged berthing level shall be maintained by removing any debris which could fall sea bed , including from demolition of condemned jetty, dolphins, pontoons and associated structur

Quay Structure

The existing Quay structure shall be retained as it acts as sea wall.

For a more detailed overview of the Works it is referred to the Tender Drawings.

Facilities and Equipment

The following equipment and facilities will be provided along the quay wall:

- Fenders
- Bollards
- Safety Ladders
- Monopole flood light masts as shown on the drawings
- Fresh Water pipes (Pits and trenches only)
- Onshore Power Supply (pits only)
- Compress air (Pits and trenches only)
- Fuel oil line
- Berthing area Hybrid Solar/ Wind Lighting as shown on the drawings

Further specification for the jetty facilities and equipment are compiled within these specifications a shown in the Tender Drawings.

Revetments

The future landside connection of the jetty will be realised by means of a slope. The seaward inclinat of the revetments varies between 1 : 1.5 and 1 : 3.

The slopes will be protected by a revetment with armour stones. Depending on the anticipated loa (wave impact and/or propeller wash) the composition of the armour layer is changing for the varic sections.

The exact dimensions are shown in the Tender Drawings.

Pavement and Drainage

The pavement works for the project are reduced to the reconstruction of the existing pavem immediately in the area adjacent to the land connection of the access trestle. These will be perform after completion of the marine works.

Utilities

The following utilities will be installed on the jetty area:

- fresh water
- Electricity supply

- lighting
- compressed air
- Fuel line

The exact routing is to be determined yet in close coordination with the Client and Operator.

Corrosion Protection

All steel works will be protected by protective paint, densotape and cathodic protection.

For additional safety and in case the various protection measures show sign of weaknesses afte few years in operation, the subsequent installation of sacrificial anodes will be provided for.

Construction Sequences / Sections

The exact construction sequence is to be specified by the contractor.

All works are to be completed within 12 months after contract award.

General Technical Conditions

Drawings and Documents

Standard Size of Drawings and Documents

(1) Drawings, whether to be supplied by the Employer or the Contractor shall only be prepa according to standard sizes ISO A3 (297 x 420 mm), A2 (420 x 594 mm), A1 (594 x 841 m or A0 (841 x 1189 mm).
(2) Only special drawing paper of excellent dimensional accuracy and high tear resistance shall used for any Execution, Workshop or As-built Drawings produced by the Contractor.
(3) Documents, whether to be supplied by the Employer or the Contractor shall be prepared Standard size ISO A4 (210 x 297 mm), except where particularly agreed otherwise with t Engineer.
(4) All drawings, documents (photos, etc.) of final nature shall be submitted both six fold or otherwise approved by the Engineer as hard copies and on CD-ROM in standard format (rec version of MS Word, Excel, *.dwg or *.dxf format or similar).
(5) In case other than Microsoft standard office software is being used the Contractor shall prov the Employer and the Engineer with complete licences thereof.

Tender Drawings

Tender Drawings are the drawings provided by the Employer and are compiled in Volume II of Tender/Contract Documents. The Tender Drawings show the work to be done under the Contra subject to the provisions for variations in Clause 13 of the FIDIC® Conditions of Contract Construction for Building and Engineering Works Designed by The Employer, Second Edition 201 but they shall not be used for construction purposes unless specific instructions for such use are gi by the Engineer as the work proceeds. In general, the Tender Drawings are intended to indicate scope and complexity of the Works.

Workshop or Execution Drawings

Workshop or Execution Drawings are the drawings to be prepared by the Contractor as per Sectic 3.1.6 hereof and shall show sufficient dimensions, specific and typical details to define the varic features of the Works, thus enabling the Contractor to perform the relevant works or to prepare shop drawings.

Drawings

Wherever the term "Drawings" is used in the Specifications, it shall mean the Tender Drawings and the Workshop respectively Execution Drawings for Permanent Works, approved by the Engineer.

Documents to be supplied by the Employer

(1) The Employer will provide all Tender Drawings for the Permanent Works, except those drawir and calculations to be supplied by the Contractor as per Section 3.1.6 hereof.
(2) Tender Drawings showing the general arrangement of reinforcement will be provided to successful Bidder (the Contractor).
(3) In addition to the number of copies to be provided as per Clause 1.8 of the FIDIC® Conditic of Contract for Construction for Building and Engineering Works Designed by The Employ Second Edition 2017 , one reproducible print will be supplied to the Contractor for prepar the as-built drawings.

Documents to be supplied by the Contractor.

(1) The Contractor is obligated to supply drawings and documents for the Permanent a Temporary Works as detailed under para (3) of this section.
(2) Three copies of the drawings and documents are to be initially supplied for the Enginee approval or information as per Section 3.1.6 whereas another five copies and one reproduci copy are to be furnished to the Engineer for distribution after the Contractor has incorpora all corrections and alterations made by the Engineer on checking.
(3) The drawings and documents to be provided by the Contractor include, but are not limited the following:
   a) Site layout and installation drawings. Detailed site layout plans are to be supplied 6 we after receipt of the Letter of Acceptance at the latest.
   b) Work and construction programmes inclusive of revisions, if required (see Clause 8.3 FIDIC® Conditions of Contract for Construction for Building and Engineering Works Desigr by The Employer, Second Edition 2017).
   c) Surveying and sounding drawings, reports on ground investigations and/or water le observations, if they should be executed under the Contract.
   d) Drawings and calculations for all Temporary Works and construction stages planned by Contractor. This also includes drawings and calculations for any part of the perman structures, which are fully or partially used as Temporary Works or as a support thereof.
   e) Workshop and Execution Drawings and structural calculations for all execution design to provided by the Contractor according to the Specifications and BoQ.
   f) Workshop Drawings and manufacturing instructions for all tubular steel piles, steel sheet p and steel constructions, taking into account the customary practices of the manufactur firm.
   g) Workshop Drawings and specifications for all special equipment items.
      If required for the preparation of Workshop Drawings, additional structural checks must a be executed.
   h) Bar bending schedules for reinforced concrete structures.

i) Reports and records of all tests and material tests to be carried out by the Contractor or suppliers.
j) Drawings, records and reports on specific construction measures to be supplied by t Contractor in accordance with other provisions of the Contract.
k) Quantity surveys and drawings as required for the measurement and payment.
l) As-built drawings, incorporating all changes or amendments made in the course of t construction works, for all Permanent Works, including those for which the Employer h prepared the Tender Drawings.
As-built drawings shall be supplied to the Engineer within 14 days after completion of t particular part of the Works.
m) Brochures and technical literature of all equipment items and fixtures, which are to permanently installed in the Works.
n) All instructions (in the form of lists, manuals and the like), which are required by the Emplo for proper operation, as well as for expert maintenance and repairs of the structures a facilities.

Checking of Employer's Documents by the Contractor

(1) The Contractor is obligated to check thoroughly the Tender Drawings on the basis of the resu of local surveying work, with regard to the correctness of all main dimensions and to info the Employer of corrections considered necessary by him within four (4) weeks af Commencement of the Works.
(2) Before manufacturing, supply and/or execution of any parts of the Works, the Contractor m examine and verify all respective Tender Drawings of the Employer, with regard to the techni feasibility of construction, to the correctness of dimensions, as well as all other aspects, wh are of significance for the execution of construction.
(3) Based on his experience, the Contractor shall call the attention of the Employer circumstances, which should involve a change in the design necessary in his opinion.
(4) Discrepancies still existing in dimensions and other data in the Tender Drawings so examir and verified by the Contractor, insofar as they have a negative effect on the execution construction, are solely at the expense of the Contractor and do not entitle him to any ex claim.

Checking of Contractor's Documents by the Engineer

(1) All drawings and structural calculations prepared by the Contractor for the Permanent Wo are to be submitted to the Engineer for check and approval.
(2) All drawings and supporting calculations prepared by the Contractor for Temporary Works a construction stages are to be submitted to the Engineer for his information and/or commen
(3) The formal approval or the comments of the Engineer do by no means release the Contrac from his sole responsibility and liability for the proper supply, execution and maintenance the Works in accordance with the Contract.

Use of Documents

(1) The execution of Works according to the Tender Drawings of the Employer shall not start unl a copy of the respective drawing checked and signed by the Contractor is delivered to Engineer.
(2) The execution of Works and/or manufacture of materials or equipment according to the work and shop drawings of the Contractor shall not start unless either a copy of the respect

drawing, approved by the Engineer through signature, is available or the approval is convey in writing or by telefax in special cases.

Standards and Specifications

General

(1) The term "Standard" used anywhere in the Specifications means a Standard or Code of Pract relevant to the subject, whether already indicated in the Specifications or otherwise agreed by the Engineer.

(2) Standards referred to in the Specifications or otherwise agreed upon, shall be held to be t edition valid at the date of the Tender.

(3) If Standards conflict with the Specifications, the latter shall govern.

(4) The design, the Contractor's Documents, the execution and the completed Works shall com with the technical standards, building, construction and environmental laws and oth standards applicable to the works, or defined by the applicable laws.

(5) All these Standards and laws shall, in respect of the Works and each section thereof, be thc prevailing when the Works or section are taken over by the Employer under Clause 1: (Performance Certificate) of the FIDIC® Conditions of Contract for Construction for Buildi and Engineering Works Designed by The Employer, Second Edition 2017 .

(6) If changed or new applicable standards come into force in the country after the Commenceme Date, the Contractor shall give notice to the Engineer and (if appropriate) submit proposals compliance. In the event that:

- the Engineer determines that compliance is required, and
- the proposal for compliance constitute a variation,
- then the Engineer shall initiate a variation in accordance with Clause 13 (Variations a Adjustments) of the FIDIC® Conditions of Contract for Construction for Building a Engineering Works Designed by The Employer, Second Edition 2017 .

(7) Wherever reference is made in the Contract to specific standards and codes to be met by t designs, goods and materials to be furnished, and work performed or tested, the provisions the latest current edition or revision of the relevant standards and codes in effect shall app unless otherwise explicitly stated in the Contract.

(8) Any Standard which is utilized for the Works shall determine the absolute minimum requireme to be met by the Contractor's design, testing and construction work or by any other dut within the Contract. Any shortfall to the respective conditions will be followed by automa rejection of any application for consent or approval. However, it is the responsibility of t Contractor to introduce, propose and agree with the Engineer any enhancement of t minimum requirements.

Basic Standards

(1) The Eurocodes (EC) are the basis for the design and execution of the Works:

- Eurocode 0 (EN 1990): Basis of Structural Design
- Eurocode 1 (EN 1991): Actions on Structures
- Eurocode 2 (EN 1992): Design of Concrete Structures
- Eurocode 3 (EN 1993): Design of Steel Structures
- Eurocode 7 (EN 1997): Geotechnical Design
- Eurocode 8 (EN 1998): Design of Structures for Earthquake Resistance
- Eurocode 9 (EN 1999): Design of Aluminium Structures

(2) As supplement thereto, the British Standards (BS), as well as the German Standards (DIN the American Standards (ASTM, ACI, AASHTO) or relevant Kenyan Standards are al applicable.
(3) Where no particular specifications are given for any article or material to be used under t Contract, the relevant European, British, German or American Standards, if existing, sh apply.
(4) Only the SI-system shall be used throughout the Contract.
(5) Angles shall be given in the 360-degree system.

Equivalent Standards

Where standards and codes are national, or relate to a particular country or region, other authoritati standards, which ensure an equal or higher quality than the standards and codes, will be accept subject to the Engineer's prior written approval. Differences between the Standards specified and t proposed alternative standards must be fully described in writing by the Contractor and submitted the Engineer at least 28 days prior to the date by which the Contractor desires the Engineer's approv In the event that the Engineer determines that such proposed deviations do not ensure equal or high quality, the Contractor shall comply with the Standards specified in the Contract or the minimu requirements as defined in the Employer's Requirements, whichever is stricter.

Special Regulations

(1) For all structural members of the waterfront structures and the associated works, t Recommendations of the Committee for Waterfront Structures (EAU 2012, 11th Edition) issu by the Society for Harbour Engineering and the German Society for Soil Mechanics a Foundation Engineering and published by Wilhelm Ernst & Sohn, Berlin/Munich/ Düsseldorf, well as the "Annual Technical Report" printed every year in issue 12 of the technical jourr "Bautechnik", published by Wilhelm Ernst & Sohn, Berlin, are to be taken into account.
(2) For the driving of piles the Recommendations on Piling (EA-Pfähle 2013) issued by the Germ Society for Geotechnics and published by Ernst & Sohn (see above) is to be taken into accou
(3) For excavation works the recommendations of the working group for excavation pits (EAB 20(2nd Edition) issued by the German Society for Geotechnics and published by Ernst & Sohn (s above) has to be considered.
(4) PIANC guidelines shall be observed where relevant.
(5) The Rock Manual "The use of rocks in hydraulic engineering" (2007, 2nd Edition) has to be tak into consideration.
(6) Other international guidelines can be taken into account where applicable.

Standards to be on Site

The Contractor shall obtain and keep on Site at least one copy in English of each Standard and spec regulations which are required for the Works. These Standards and special regulations shall at times be available for inspection and use by the Engineer.

Manufacturers' Directions

The Contractor shall observe the directions of the manufacturers and suppliers, with regard to the u and application of materials and installation of equipment. If these are in conflict with any relev standard or with the Contract, the Contractor shall liaise with the manufacturer and shall propose appropriate solution to the Engineer for consent.

Construction Material and Permanent Equipment

General

(1) All materials, which are earmarked for the construction of the Works shall be of the best qual of their respective kinds as described in the Specifications.

(2) Insofar as certain construction materials or equipment are not mentioned or no additio special tests are specified, the materials must at least meet the respective requirements of t Standards approved by the Engineer.

(3) When any material, article or equipment must comply with a particular Standard, such mate etc. or its original container shall bear the stamp of the registered certification trade mark the relevant Standard.
Alternatively, the Contractor shall submit test certificates, furnished by the manufactur indicating compliance with the Standard.

(4) For all supply items, such as permanent installations, equipment, etc., but also for specia imported materials, the Contractor shall submit leaflets, brochures or at least extens descriptions from different suppliers for Engineer's selection.

(5) Sufficient spare material must be maintained at the Site. Any delays resulting from nc compliance will not be accepted for claims under Clause 20 of the FIDIC® Conditions of Contr for Construction for Building and Engineering Works Designed by The Employer, Second Editi 2017 .

Origin of Materials and Equipment

The Contractor is encouraged to use to maximum extent materials and products from Kenya, alwa provided that they are fully compliant or superior to the specifications of the Contract. Satisfact proof of compliance has to be submitted by the Contractor to the Engineer prior to ordering any su material or equipment.

Material Samples

The Contractor shall submit the following samples of materials and relevant information, to t Engineer for review in accordance with the procedures for Contractor's Documents described Section 0:

- manufacturer's standard samples of materials and samples specified in the Contract, all at t Contractor's cost, and
- additional samples instructed by the Engineer.

Each sample shall be labelled as to origin and intended use in the Works.

Supply Orders

The Contractor shall submit to the Engineer well in advance draft copies of orders or subcontra which he intends to place with any supplier or manufacturer for equipment, materials etc. requi for the Works.

Examination and Tests

(1) Materials, articles or equipment shall be made available or delivered to the Site sufficien before they are required for the Works, enabling the Engineer to take such samples he m consider suitable for examination and testing.

(2) Unless otherwise designated, the costs of all tests, being required in accordance with t Standards or these Specifications, shall be deemed to be included in the rates of the Bills Quantities.

Protection

(1) All materials or other items intended to form a part of the Works, whether during transport storage at Site, shall be adequately protected against contamination, deterioration, dama and the like at any stage for any cause.
(2) Such items, which, in the opinion of the Engineer, became unfit for use in the Works, must removed from the Site and replaced, all at the cost of the Contractor.

Rejection of Materials

(1) Any materials, articles or equipment not in accordance with Standards or the Specifications c be rejected by the Engineer.
(2) Any materials, articles or equipment rejected by the Engineer shall be removed immediat from the Site. Replacement shall be provided by the Contractor at his cost.
In selecting the mode of transportation of replacement, due consideration must be given to t project time schedule by the Contractor.

Manufacturers' Guarantee

Wherever guarantees of operating capacity and efficiency, proper functioning, durability and the l are called for, or where it is specified that the manufacturer shall furnish necessary performance da shall supervise the placing of the equipment, adjust it after installation as necessary and maintair for the required period and perform similar other duties and services, the Contractor shall be h responsible for performance of the specified services and for any default on the part of suppliers/manufacturers.

Workmanship

General

(1) The Contractor shall carry out the manufacture of materials, and all other execution on t Works:
   a) in the manner (if any) specified in the Contract,
   b) in a proper workmanlike and careful manner, in accordance with recognised best practi and
   c) with properly equipped facilities and non-hazardous materials, except as otherwise specif in the Contract.
(2) Workmanship shall be of the best quality appropriate to each category of work and shall be accordance with the Standards and the present state of art.

Information to the Engineer

(1) All operations have to be carried out in close coordination with the Engineer, who is to informed well in advance of the start of any new operation and of the day-to-day activities.
(2) Prior to the commencement of any particular work, the Contractor shall submit details of proposed methods, schedule and sequence of operations to be followed.
(3) No new operation or work in any new area shall be started until the Engineer's consent l been obtained.

Contractor's Responsibility

(1) Notwithstanding any testing and/or approval by the Engineer, the Contractor shall be fu responsible for the quality of the Works in accordance with the Specifications.

(2) Authorization to repair and/or refinish shall not constitute a waiver of the Engineer's right require replacement of any item or work, if and when after such repairing and/or refinish the work is unsatisfactory in his opinion.

Testing and Inspection

General

(1) Testing and inspection of the built-in materials and the completed Works shall follow t Conditions of Contract, the rules of the Quality Assurance Programme and as agreed with t Engineer.

(2) All materials and items intended to form or forming a part of the Works, all workmanship a all work under the Contract shall be subject to the approval of the Engineer and from time time be subjected to such examinations and tests as provided for in the Standards a Specification and as the Engineer may direct at the place of manufacture or of fabrication or the Site, or at any other place or at all or any of such places.

(3) The Contractor shall provide all such attendance, assistance, facilities, instruments, machin plant, equipment, labour, materials, items and transport as required for examining, measuri sampling and testing the work and the quality, weight and quantity of materials and ite intended to form or forming a part of the Works, as and when selected and required by t Engineer's Representative, and the Contractor shall reinstate such work, materials and item necessary in the opinion of the Engineer.

(4) The Contractor shall give notice to the Engineer whenever any work is ready and before it covered up, put out the sight, or packaged for storage or transport. The Engineer shall th either carry out the examination, inspection, measurement or testing without unreasona delay, or promptly give notice to the Contractor that the Engineer does not require to do so the Contractor fails to give the notice, he shall, if and when required by the Engineer unco the work and thereafter reinstate and make good, all at the Contractor's cost.

(5) The costs for samples, sampling, testing and inspection intended and provided for in t Standards and Specifications will not be compensated separately and are deemed to be cove by surcharges and overheads to be included in the rates of the Bill of Quantities.

Samples

(1) Samples shall be taken in accordance with the relevant Standards, and in such a way or such a method and to such a number, that they can be considered to be representative for t full quantity of materials and items from which they are taken or for the workmanship to tested.

(2) Samples submitted for approval of materials and for items to be supplied or of the standard workmanship and which are subsequently approved, will be kept by the Engineer or nominated representatives, who will reject all materials or items or workmanship corresponding in quality and character to the Approved samples.

Tests prior to Delivery

All materials and other items intended to form a part of the Works shall be tested in accordance w the Standards and Specifications before leaving the manufacturer's or supplier's premises. For

Engineer's approval, the Contractor shall obtain and supply test certificates of each consignment frc the manufacturer or supplier as the case may be.

Inspection at Manufacturer's or Supplier's Premises

(1) All materials and equipment forming a part of the Works shall be inspected by the Employ and/or the Engineer or their nominated inspectors to test or to witness the tests of the materi and items to be provided by the Contractor under the Contract before leaving t manufacturer's or supplier's premises.
(2) The Employer, Engineer and the nominated inspectors shall have free access to all such plac of testing, and the Contractor shall impose these conditions on all his sub-contracto manufacturers and suppliers.
(3) The Contractor shall make all arrangements to facilitate due inspection by the delegation of t parties at any of the places where the materials are being manufactured.
(4) The Contractor shall bear all related cost and expenditure, including travelling (domestic a international), boarding and lodging, etc., all of which shall be deemed to be included in t items of the Bills of Quantities for providing the respective materials.
(5) In case the Employer, Engineer or a nominated inspector are away from the Site for more th 10 hours, accommodation in high standard hotels has to be provided.
(6) Flights have to be booked with reputable international airlines. For flights lasting more thar hours, business class seats have to be provided.
(7) The assumed number of people taking part in these inspections are maximum six (6), four (from the Employer and two (2) from the Engineer.

Engineer's Inspection

(1) Whenever considered desirable by the Engineer, inspectors shall be sent to the manufacture or supplier's premises to test or to witness the tests of the materials and items or to insp the manufacture.
(2) The Engineer or his inspectors shall have free access to all such places of testing, and t Contractor shall impose these conditions on all his subcontractors and/or suppliers.

Rejection

(1) If, as result of an examination, inspection, measurement or testing, any materials, design workmanship is found to be defective or otherwise not in accordance with the Contract, t Engineer may reject the materials, design or workmanship by giving notice to the Contract with reason. The Contractor shall then promptly make good the defect and ensure that t rejected item complies with the Contract.
(2) If the Engineer requires these materials, design or workmanship to be retested, the tests sh be repeated under the same terms and conditions. If the rejection and retesting cause t Engineer to incur additional costs, the Contractor shall pay these costs to the Employer.

Engineer's Right to Reject

Neither producing of manufacturer's test certificate, nor the omission of the Engineer to send inspector, nor the presence of the Engineer or the Engineer or his nominated representatives dur testing or manufacture at the manufacturer's or supplier's premises, shall prejudice the right of t Engineer's Representative or the Engineer to reject after delivery to the Site, materials and otl items intended to form a part of the Works, which are found unsuitable or not to be in accorda with the Standards and Specification.

Remedial Work

(1) Notwithstanding any previous test or certification the Engineer may instruct the Contractor t
   a) remove from the Site and replace any materials, which are not in accordance with t Contract,
   b) remove and re-execute any other work, which is not in accordance with the Contract, a to
   c) execute any work which is urgently required for the safety of the works, whether caused an accident, unforeseeable event or otherwise.
   d) The Contractor shall comply with the instruction within a reasonable time, which shall the time (if any) specified in the instruction, or immediately if urgency as specified unc sub-paragraph (c) has been identified.

(2) If the Contractor fails to comply with the instruction, the Employer shall be entitled to empl and pay other persons to carry out the work. Except to the extent that the Contractor wo have been entitled to payment for the work, the Contractor shall pay to the Employer all co arising from this failure.

Quality Assurance Programme

General

(1) Contractor's Quality Assurance Programme (QAP) must ensure that the design, the materi and the Works, including all testing at manufacturer's premises, in-situ testing, pre- and po testing of the Works meet the predetermined criteria stipulated in the Contract.

(2) The Contractor shall, within 42 days of the receipt of the Letter of Acceptance submit to t Engineer for approval his proposal for a comprehensive QAP. In drawing up the proposal, t fundamentals of the Conditions of Contract shall be taken into consideration by the Contract

Organisational Responsibilities

(1) The management and direction of the QAP rests solely with the Contractor's Representati nominated in accordance with Clause 4.3 of the FIDIC® Conditions of Contract for Constructi for Building and Engineering Works Designed by The Employer, Second Edition 2017

(2) The Contractor shall nominate a highly qualified and well-experienced concrete specialist a material testing engineer (the Quality Assurance Engineer - QAE) for the execution and str adherence to the QAP. The QAE shall not otherwise be involved in the direction and supervisi of Contractor's activities being inspected and shall have direct reporting responsibility to t Contractor's Representative as well as to the Engineer. The QAE shall exercise due care facilitate prompt communication on all matters related to the QAP.

(3) Within the QAP the responsibilities shall be distributed as follows:

a) The Engineer

- Analyse, review and approve the QAP elaborated by the Contractor for the purpose of t Contract;
- Analyse, clarify and/or substantiate all regulatory requirements defined by the Standar and the Contract;
- Accept or reject material and workmanship;
- Confirm rectification measures in case of rejected works;
- Control test and inspection data, and

- Monitor and review the QAP, the quality of materials and of the work of the Contractor, the material testing site laboratory and the performance of the QAE in the course of t project, and report to the Employer.

b) The Contractor

- Elaborate the QAP and submit to the Engineer for comments and approval;
- Comply with the Contract and the Standards;
- Demand subcontractor's and manufacturer's adherence to the QAP and the Contract;
- Perform and document the QAP in accordance with the approved programme;
- Propose rectification measures in case of non-complying conditions;
- Verify that tests and inspections are carried out and proper records are being maintainec

c) Material manufacturer

- Perform suitability tests in the factory and adjust material properties to the requirement;
- Supply materials in accordance with the Contract and the Standards;
- Participate in the tests and preparation of guarantee surfaces at site, and
- Perform and document the QAP in accordance with the approved programme and submit documents to the Contractor and Engineer.

d) Material testing site laboratory /QAE

- Inform the Engineer of any testing or inspection well in advance;
- Perform the testing and inspections necessary as per QAP and the Contract;
- Perform and document the QAP to assure validity of the reported results;
- Conduct all testing and inspections in accordance with the Standards;
- Obtain Engineer's concurrence with the test results, and
- Provide the Engineer with timely reports for all testing and inspections performed.

Control of Contractor's Documents

The basic requirements and respective responsibilities are stipulated under Chapter 0, as well as the FIDIC® Conditions of Contract for Construction for Building and Engineering Works Designed The Employer, Second Edition 2017 .

Material Control

General Requirements

(1) The basic requirements and respective responsibilities are stipulated under above sections well as in the FIDIC® Conditions of Contract for Construction for Building and Engineeri Works Designed by The Employer, Second Edition 2017 . The QAP shall assure that t constituent materials forming part of the Works meet the conditions of the Contract prior procurement and use.

(2) Material qualification tests (suitability tests) shall be carried out and results evaluated by t Contractor for compliance with the Contract prior to its proposing for use in the Works to t Engineer.

Manufacturer's Evaluation and Selection

The selection of the material manufacturer(s) shall be based on the evaluation of manufacture capability to fabricate the respective material in accordance with the requirements of the Contra The Contractor is to submit all relevant information to the Engineer for approval.

Procurement Documents

Material procurement documentation is to be submitted to the Engineer prior to final placing of t order(s), to assure that all material specifications, testing and quality control requirements are m To this extent, the procurement document should specify

- The type of work for which the material is required;
- Technical and material requirements including applicable Standards, specifications a drawings;
- Right of access of the Engineer to the manufacturer's facilities, test facilities, records, etc., inspection, and
- Documentation/test reports/application instructions to be prepared and submitted.

All factory quality control records shall be transmitted to the Engineer prior to delivery of the goo to the Site.

Receiving Inspection

A receiving inspection for material supplies shall be performed to verify the

- Identification, completeness and correctness of the supply;
- Damage (if any) to the supply;
- Completeness of documentation to be submitted;
- Acceptance of material by inspection and/or testing, and
- Segregation and handling of rejected material to prevent its inadvertent use.

Storage and Handling of Materials

Adequacy and maintenance of storage and transport facilities shall be verified by suitable activitie

Material Qualifications

Routine quality control tests are to be carried out at the Site in accordance the Contract.

Records

Qualifying as well as routine and quality control records for all materials shall be established. The should include

- manufacturer's test reports and certificates of compliance;
- delivery slips;
- material routine test and quality control reports, and
- qualifications of the personnel.

Inspections and Workmanship

General Requirements

An inspection programme shall be established and implemented to ensure that the construction wo and materials meet the requirements of the Contract. The inspection programme shall cont provisions for specific verification and acceptability of the Works, including implemented field chang

The basic requirements and respective responsibilities are stipulated in Clauses 7, 9 and 12 of t FIDIC® Conditions of Contract for Construction for Building and Engineering Works Designed by T Employer, Second Edition 2017 .

Inspection Programme

The inspection programme shall include check lists for each item of work, and shall include t quantitative and qualitative criteria for acceptance.

Photographs shall be included in the quality assessment inspections, documenting constructi sequence, work progress, construction details and deficiencies.

Inspection Records

Records of all quality assessment inspections shall be submitted promptly to the Engineer in two (copies as the work progresses, but five (5) copies of the complete construction documentation is be submitted to the Engineer prior to tests on completion of the Works or sections thereof.

The QAE shall be responsible for record legibility, retention, validity and transmission.

The form of inspection records is to be co-ordinated and agreed with the Engineer. The records sh at least include the following information:

- Date of inspection;
- Identification and location of structural member inspected;
- Inspection result;
- Acceptance criteria;
- Statement of compliance or non-compliance;
- Special remarks;
- Inspector's name and signature;
- Ambient conditions;
- Comments and signature of the QAE, and
- Comments (if any) and signature of the supervisor.

Testing and Evaluation

(1) The QAP shall include a programme for sampling and testing of all materials to be used in t construction of the Works, to establish reliable data from which the completed Works can evaluated.

(2) All such testing shall be performed by qualified personnel, using standard test methods a frequencies established by the respective standards. The testing programme shall include, l is not limited to, suitability testing and routine qualification of the basic materials to be usec the Works. The site laboratory has to meet at least the requirements of the correspond section.

(3) The extent to which the testing programme addresses each component of the Works deper on its type, functioning and location as well as the environment to which it is exposed, and the assurance the Engineer deem necessary.

(4) Evaluation of test results shall be performed on completion of each testing operation by qualified person, applying the acceptance criteria established in the respective sections.

(5) Any non-conformity of test results identified during the evaluation shall be brought immediat to the attention of the Engineer and the QAE.

(6) A copy of records (2-fold) of all tests performed shall be handed over promptly to the Engin and shall finally be compiled in the construction report of which five (5) copies are to submitted to the Engineer prior to tests on completion of the Works or sections thereof.

(7) The form of test reports shall be agreed with the Engineer and shall at least contain the follow information:

- Date of test;

- Identification and location where the material is used;
- Test method;
- Test results;
- Acceptance criteria;
- Statement of compliance and non-compliance;
- Special remarks;
- Testing personnel name and signature;
- Comments and signature of the QAE, and
- Comments (if any) and signature of the Engineer.

(8) Final evaluation of material tests shall be performed by the Engineer to determine the adequa of the test programme and to ascertain Contractor's compliance with the Contract.

Identification and Resolution of Non-Complying Conditions

General Procedures

(1) Materials and/or executed works, which do not meet the Contract or otherwise agreed crite and requirements, shall be promptly identified for implementation of corrective action.

(2) An active interface between the Contractor and the Engineer shall ensure the pron determination whether a specific condition is to be accepted as it is, repaired, reworked, rejected. Such dispositions are to be documented in a Non-Compliance Register (NCR) alc with the signatures of the Contractor, QAE and the Engineer, and the specific instructions accomplish the repair or rework. Any such records identifying the condition and correct action are to be retained in the construction files and are to be serial numbered and to included in the final construction report.

(3) Within the foregoing context the following definitions may be applied:

"Accepted as it is" a non-complying condition which satisfies functional engineeri requirements, including those of performance, maintainability and fitn for use and safety.

"Repair" a process of restoring an item to an acceptable condition, even though t item may not comply in all respect with the original requirements.

"Rework" a process of restoring an item to the original requirements.

"Reject" a disposition that indicates an item is unsuitable for its intended purpc and cannot reworked or repaired technically sound and economically. Su items shall be segregated or removed.

Non-complying Conditions

Significant non-complying conditions are those of a recurring nature or conditions which co adversely affect the satisfactory performance or appearance of the item of the Works, should th remain uncorrected.

Determining the cause of such conditions, as well as the appropriate corrective actions, shall preclu further similar non-complying conditions and unnecessary expenditures.

Non-conformances

Repaired or reworked items shall be re-inspected. Since repaired items may not comply with t original requirements, criteria for the acceptability of the repair shall be established with the cons

of the Engineer. Reworked items shall generally be re-inspected in accordance with the origir requirements.

Records

The serial numbered NCR shall compile the records and documentation generated through the Q/ and shall furnish evidence of the quality of materials, equipment and the Works, and the Contract through the QAE is responsible for the technical content and accuracy. Records and documents sh be signed or otherwise authenticated and dated by the QAE, the Contractor's Representative as w as the Engineer. An index shall be established and maintained to identify and retrieve a specific reco or records at any time.

The Engineer will implement a programme for ongoing review of records and documents and t Contractor shall facilitate the right of access to all applicable records and documents. The followi compilation lists some of the records and documents that should be applicable:

- Contractual documents;
- Standards (Kenyan, EC, DIN, BS, ACI, etc.);
- Quality procedures and instructions;
- Personnel qualification records;
- Drawings and design calculations;
- Technical specifications;
- Procurement documents;
- Material qualification records;
- Field sketches and working drawings;
- Change orders (Variations);
- Technical reports, photos;
- Inspection and test records;
- Non-conformance reports;
- Shop drawings;
- As-built drawings, etc.

Environmental Regulations

Introduction

The following sections are focussing on the requirements to be observed by the Contractor during t construction period for carrying out the Works.

Methods for Mitigation, Prevention and Treatment during Construction

The Contractor shall comply with the requirements stipulated herein under when planning and carryi out the respective works.

Earth Works

(1) Site clearance and land filling works

- Provide a sufficient amount of watering trucks against dust in hot and windy days at are generating much dust.

- Install dampers for equipment of high noise such as generators to meet the standard required by Law on Environment.
- Canvas is to be used to cover transport means upon carrying construction materials as sa stones when travelling on roads.
- Install drainage culverts or conduits across the project land to prevent local inundation.
- Provide safety-working devices to workers at the site such as masks, safety glasses, bo and safety working clothing.
- Set up cleaning station to wash vehicles before leaving the site.

(2)Transport of materials

- Make plan and arrange reasonably transport and travel routes for trucks. Insp construction facilities to guarantee equipment and machinery is always under the b technical condition.
- Vehicles leaving the site shall be cleaned and washed to remove dust.
- Canvas is to be used to cover facilities transporting earth, sand, stone and debris.
- Provide sufficient watering trucks in dry season in dusty areas.
- Limit transport in rush hours.

(3)Excavation for construction of berths

- Provide sufficient watering truck in dry season in dusty areas.
- Limit transport in rush hours.
- Canvas is to be used to cover facilities transporting earth, sand, stone and debris.

(4)Excavation works for site preparation

- At the dumping area for demolition materials, bulldozer shall be used to levelling till requi elevation.
- Dumping area shall be prepared with trenches with water filtering and drainage to prev from affecting on the surrounding area.
- Time for transportation to and forth dumping area shall be coordinated with the authorit to avoid accidents.

(5)Removal of debris

- Debris hall be dumped in the lagoon and out of project area, unless in the designat dumping area.
- Workers are to be trained to operate the equipment used for removal of debris.
- Sand-draining pipeline should be provided on the dredgers to avoid sand sedimentation riverside.
- Debris generated during construction and demolition shall be prevented from falling in the sea by nets or suitable catching gear.
- Time for transportation and dumping of debris shall be coordinated with the authorities avoid waterway accidents.

(6)Mitigation Methods

- Trucks carrying demolition materials should use canvas to minimize dust.
- Polluted soil at dumping area should be treated by chemical and biological methods.
- Oiled waste, lubricant from engines and other means of construction or transport a prohibited to be discharged into sea. They shall be collected for treatment.
- Workers on engines, trucks, etc. should be trained on environment protection from polluti

Concrete Mixing Works

- Concrete mixing and casting area is to be established away from resident areas.
- Material transporting facilities are to be cleaned from dirt and dust before going in and concrete mixing and casting area.

- Provide sufficient watering-carts in dry season for spraying roads generating much dust.
- Canvas shall be used to cover facilities transporting earth, sand and stone.
- Workers directly involved in the job at the site shall use safety devices such as mask, muffl safety boots, safety helmet, etc.

Drilling Works

- Any drill cutting have to be disposed of by the Contractor in an environmentally friendly wa Sufficient storage and transport capacities have to be provided to accommodate the materi Disposal of the material has to be done at designated and approved dumping sites.
- The use of sealants which might endanger the soil or ground water is permitted. The nc hazardousness of the applied materials has to be proven before executing the works.
- Vibrations and emissions and any other negative impacts of the drilling works on t surrounding areas have to be kept to an absolute minimum.

Pile Driving and Sheet Piling Works

- The Contractor must set up and operate the site in a way that the level of construction noi under consideration of the relevant time corrections does not exceed the emission values the nearest residential areas by more than -5 dB. To achieve this, state of the art machine and low-noise construction equipment shall be employed and sufficiently dimensioned nois protection measures have to be applied. For nearby residential areas immission levels of - dB by day and -40 dB by night apply.
- With the proposal a detailed description of the type and scale of the proposed mitigati measures required to comply with the emission values is to be submitted.
- The Employer may demand the replacement of noise generating equipment in case this v prevent the exceeding of emission values.
- Impacts of pile driving works on the surrounding structures has to be considered and constan monitored during the construction process.
- Vibrations have to be kept to the technically possible minimum.
- To reduce the shock effect on wildlife, the impact energy and impact-frequency shall increased slowly during the beating ramming of the individual piles after the commenceme of ramming.
- Reference is made to R 149 of EAU 2012.

Activities of Vessels, Barges, Trucks and Cranes

- Use only engines causing less pollution of exhaust gas.
- Limit fuel leakage and provide for oil leakage collecting system.
- Control leakage and loss of fuel and construction solid waste dumped into sea.

Workers' Activities

- Domestic wastewater generation is to be managed strictly, provide septic tanks.
- Limit amount of wastewater and solid waste dumped into river.
- Solid waste shall be collected and transported ton an appropriate licenced facility.

Labour Safety, Sanitation and Hazard Prevention

Labour, Safety and Sanitation

- Establish and execute regularly medical check-up program for workers (once a year).
- Train and provide information on labour sanitation.
- Workers working at the Site shall be provided safety working clothing and equipment.
- Sufficient toilet facilities and washrooms are to be provided for the use of the Contractor's st The sewage thereof has to be collected and disposed of to an appropriate licensed facility.

Hazard Prevention

(1) Fire protection
- Dangerous products including inflammable goods shall be monitored and leakage areas storage of leaking dangerous goods be provided.
- Hazard prevention and treatment equipment and facilities will be inspected and maintair regularly.
- Exchange information and liaise with authorities and industries in the neighbourhood hav fire protection equipment when incident occurs.

(2) Oil overflow hazard
- Identify oil overflow locations at Site and surroundings.
- Oil spill prevention plan shall be prepared for Contractor.
- Contractor shall inform the Authorities upon any accident occurs.

Commitment to Environmental Protection

The Contractor shall comply with all regulations to mitigate negative impacts, prevent and prov solution for environment hazards during construction at the Site and shall commit to take all measu to comply with the environment standards of Kenya, including:

(1) Exhaust gas
Concentration of pollutants in exhaust gas of construction equipment will comply w environment standards.

(2) Air environment
Ensure pollutants in exhaust gas of construction equipment emitted into the atmosphere comply with the standard of quality of the air.

(3) Noise
Noise generated from activities of the construction of Works will comply with standards of no in public and resident areas.

(4) Wastewater
Contractor shall ensure wastewater to be treated before discharge in accordance with curr regulations.

(5) Harmful solid waste
Contractor shall be responsible for gathering, storage, treatment and destruction of harm solid waste in accordance with regulations. Contractor shall contract with local companies treatment of harmful waste.

(6) Solid waste
Solid waste shall be collected by Contractor and treated conforming to permitted sanitation a safe requirements.

Use of Explosives

(1) The Contractor shall not use explosives for any purpose without written permission of t competent authorities and the Engineer's consent.
For this purpose, type, characteristics and quantity of the explosive, trans-porting, storing a methods of using, safety procedures, location, as well as day and time of blasting have to stated by the Contractor.

(2) The Contractor has to comply with all laws, regulations, ordinances etc. of the Government a the Police in relation to handling, storage and use of the explosives.

(3) If the Engineer has given his final consent to a particular purpose, the times have to be r coordinated with the competent Authorities and the Engineer in each individual case.
(4) For blasting in the open waters, the Department of Fisheries is also to be contacted and th conditions to be followed.

Environmental Monitoring during Construction Works

The Contractor is obligated to inspect and monitor the environment at and around the Site. The stat of the environment shall be regularly monitored, the data shall be recorded and stored and compar year by year during the construction period.

To ensure that the construction works for the terminal do not badly effect on the quality of t surrounding environment, and that the efficiency of measures to treat the pollution is assessed, least the following program of monitoring the environment quality shall be observed by the Contract during the construction period. All environmental monitoring results are to be presented Contractor's monthly report (Section 0).

Monitoring the Quality of Seawater

- Selective parameters: temperature, pH, salinity, organics, nutrients, heavy metals, coliforn turbidity.
- Equipment used for taking samples and the method of analysing: According to internatio standards.
- Criteria of comparison: Values listed in the Environmental and Social Impact Assessment Stu (2017)

Monitoring the Quality of the Air

- Selective parameters: dust, O2, CO2, H2S, SO2, NO2, CO
- Surveying sites: 7 locations including 5 places in the terminal's area and 2 sites in the industr zones.
- Surveying frequency: twice a year.
- Criteria of comparison: Values listed in the Environmental and Social Impact Assessment Stu (2017).

Monitoring the Fauna

- Selective parameters: abundance, habitat accessibility
- Surveying frequency: twice a year
- Criteria of comparison: see ESIA Study (2017)

Monitoring Critical Ecosystems

- Selective parameters: abundance, presence/absence
- Surveying frequency: twice a year
- Criteria of comparison: see ESIA Study (2017)

Monitoring of Noise/Vibration Level

- Selective parameters: Lmax, Lmin, Ley Levels
- Surveying sites: 7 locations including 3 places in the terminal's area, 2 sites in the indust zones and 2 sites in the residential zones.
- Surveying frequency: twice a year.

- Criteria of comparison: Values listed in the Environmental and Social Impact Assessment Stu (2017).

Monitoring of Effluent Quality

- Selective parameters: BOD, dissolved oxygen, COD
- Surveying sites: Locations of discharge
- Criteria for comparison: Values listed in the Environmental and Social Impact Assessment Stu (2017).

Environmental Reporting System (Audit)

Environmental audits are being used as a tool and an aid to test the effectiveness on environmen efforts stipulated in the EMP. The work of an environmental audit is to assist the regulatory bo (NEMA) to study documents and reports to see whether there are any deviations between targets a results.

For this project, an annual Environmental Audit will be carried out. The Bidder has to include all co arising from this audit in his financial bid.

Reporting and Meetings

Daily Reports

The Contractor shall provide the Engineer daily with the information needed to keep the work regis in good order. The daily reports shall include details of works executed, the number of labour different categories, equipment and materials in use, arrival of essential materials and equipment the works, data on temperatures, rainfall, wind, humidity, water level, wave condition and informati on all other facts and events of importance to the progress of the works, together with reasons delay, if any.

Monthly Progress Reports

The Contractor shall submit comprehensive monthly progress reports in the form accepted by t Engineer, together with detailed schedules showing the volume and percentages of works execute materials and equipment in stock and to be expected during the following month. In case of delays the works affecting the maintaining of the scheduled progress, the Contractor must give detail reasons and justifications therefore and shall advance proposals for making up the lost time.

The first report shall cover the period up to the end of the first calendar month following t commencement date. Reports shall be submitted monthly thereafter, each within 7 days after the l day of the period to which it relates.

Reporting shall continue until the Contractor has completed the Works and the Employer has tak over the Works.

Each report shall include:

a) charts and detailed descriptions of progress, including each stage of design, Contractc Documents, status of approval procedure, procurement, manufacture, delivery to si construction, erection, testing, commissioning and trial operation;
b) updated drawing register, including drawing status and planned submittals;
c) payment / invoice status as well as insurance status;
d) photographs showing the status of manufacture and of progress on the Site;

e) names of the manufacturers, manufacture location, percentage progress of each main item plant and materials, and the actual or expected dates of:
    i. commencement of manufacture,
    ii. contractor's inspections,
    iii. tests, and
    iv. shipment and arrival at the Site;
f) details showing the number of each class of Contractor's personnel and of each type Contractor's equipment on the Site;
g) copies of quality assurance documents, test results and certificates of materials;
h) list of variations and notices given under the Contract;
i) health and safety statistics including details of any hazardous incidents and activities relati to environmental aspects and public relations;
j) comparison of actual versus planned progress, with details of any events or circumstanc which may jeopardise the completion in accordance with the contract, and the measures bei (or to be) adopted to overcome delays.

Progress Photographs

Before the end of each month during the construction period and when ordered by the Engineer, t Contractor shall take digital photographs to document the progress of the Works. A selection photographs shall be submitted to the Engineer, who shall, with the concurrence of the Contract select the photographs as are representative to demonstrate the quality and progress of the Wo and of any special circumstance or occurrence during the respective month. The photos shall printed with the date of occurrence and the coloured prints shall be in the size of 130 * 180 mm. T Contractor shall provide each print with a label, giving brief description of work shown. The progr photos shall be attached to the monthly reports.

Distribution of Reports

The Contractor shall distribute hard copies of the reports as follows:

- 3 copies to the Employer,
- 2 copies to the Engineer,

as well as a soft copy of each complete report (including all attachments) in a single *.pdf-file af the Engineer's approval.

Meetings

Weekly liaison meetings will be held between the Contractor, the Employer and the Engineer; otl concerned parties may be invited as and when appropriate.

The meetings shall focus on issues concerning the Works, including but not restricted to:

- working progress that had occurred during the preceding weeks;
- planned working progress in the following weeks:
- adjustment of the working progress with the time schedule:
- Confirmation of any new information / instructions issued by the Contractor or the Employe Engineer, and
- Confirmation / agreement on revisions.

In particular occasions additional meetings may be held.

Training

The Contractor shall carry out training of Employer's personnel that will be involved in the operat and maintenance of the completed Works. The training is to be carried out before Taking Over of t Works; the Works shall not be considered completed until this training has been completed.

The Contractor has to bear the expense for the training Costs are deemed to be a component of t rates and prices are to be included in the Bill of Quantities for the individual works.

Alternative Design of the Contractor

General Conditions

(1) The Bidder may offer an alternative design for the Works, provided a complete Tender for t Employer's Design is also submitted and all Conditions and Specifications are fulfilled in t alternative design.
(2) The design and calculation bases prescribed in the Specifications are also valid for a Contractor's alternative design. Any necessary supplements to these bases require t Employer's and Engineer's approval.

Documents to be supplied with the Tender

(1) In case of an alternative design, the Bidder shall supply with the Tender, checkable prelimin structural calculations and drawings, as well as descriptions on construction method a sequence.
(2) The Bidder shall supply for the alternative design binding cost compilations in detailed Bill Quantities and a guarantee for the correctness of quantities and costs.

Validity of the Contract

(1) If the Works or any part thereof shall be executed in accordance with an alternative design the Contractor, all conditions and stipulations of the Contract remain in force.
(2) In cases in which the wording of the Contract must be interpreted analogously, only the opin of the Engineer shall be valid.

Materials and Equipment

(1) The construction materials and equipment indicated in the alternative design of the Contrac must fulfil all conditions and stipulations of the Contract to the full extent.
(2) The specifications of additional materials or equipment not provided for in the Contract requ the Employer's and Engineer's approval.

Working Documents

If the Works or any part thereof are constructed as per Contractor's alternative design, all calculatio drawings and other documents necessary for their execution must be prepared by the Contractor the Engineer's satisfaction without additional payment, and submitted in the required number copies for checking and approval by the Engineer.

Contractor's Responsibility for the Alternative Design

(1) The Contractor is the sole designer responsible for the alternative design.
(2) All additional expenses which will incur due to violations of the conditions and stipulations the Contract, or due to errors, defects, shortcomings, omissions and the like in the preparat of the alternative design, or in the cost determination for the construction work, are to be bo solely by the Contractor. He is not authorized to lodge demands or claims of any k

whatsoever with the Employer, which in the opinion of the Engineer are founded on any of t aforementioned circumstances.

Measurement and Payment

All of the works and services described in this chapter are deemed to be included in the relevant itei in the Bill of Quantities and will not be compensated separately.

Site Areas and Installations

Location of Construction Site

The construction site and site areas which will be provided by the Employer to the Contractor a located directly adjacent to the site. The space within and outside the port is very limited and can congested at day and night times. The Contractor will have to take all care to restrict inconvenienc and disturbance to the port operations to the minimum.

If the Contractor needs additional work or storage areas he will have to rent and prepare them outsi the Employer's terminal area under his sole risk and responsibility. For the purpose if interpretati the term "Site" shall include the actual construction site and all working and site areas acquired the Contractor.

The Contractor has to take all care to restrict inconveniences and disturbance to other operations a residential areas as well as to the navigation on the river and canals in the area to the minimum.

Access to the Site

The Construction Peleleza Jetty is located on the Likono ferry jetty. Road connections exist to t area.

The Contractor shall be deemed to have assessed the Site and the road access to the Site, includi load capacity of land, roads and bridges, and to have provided for all costs for the improveme strengthening or repair of such land, roads or bridges, as may be required for or due to t transportation of materials, equipment, etc., to the Site.

The Port of Mombasa is an ISPS (International Ship and Port Facility Security) Code Port and t Project Site is located within the port fence. The Contractor is responsible to apply for Port Acc Passes for all his staff and vehicles that regularly enter and leave the Port sufficiently in advan Vehicles that arrive at the port gates without prior notice or right of access might spend a considera amount of time waiting for clearance.

Contractor's Operations on the Site

The Contractor shall confine his operations to the construction site, and to any additional areas wh may be obtained by the Contractor and agreed by the Engineer as working areas. The Contractor sh take all necessary precautions to keep Contractor's equipment and Contractor's personnel within site and these additional areas, and to keep them off adjacent land.

During the execution of the Works, the Contractor shall keep the Site free from all unnecess obstructions (e.g. unused equipment or surplus materials). The Contractor shall clear away a

remove from the Site (whether onshore or offshore) any wreckage, rubbish and temporary wor which are no longer required.

The Contractor has to do all necessary precautions in order to avoid interference or obstruction terminal operation outside the defined working areas. The unobstructed operation of the termi including mooring and berthing operations take priority over the construction works. This includes t temporary intermission or relocation of works inside the defined working areas

Upon the issue of a Taking-Over Certificate, the Contractor shall demobilise and remove, from tl part of the Site and Works to which the taking over certificate refers, all Contractor's equipme surplus material, wreckage, rubbish and Temporary Works. The Contractor shall leave that part of t Site and the Works in a clean and safe condition.

During construction time beside the terminal operation other construction activities are ongoing.

- roadworks in and around the city of Mombasa
- construction of the new standard gauge railway inside the port area
- several construction activities within the port

The Contractor is committed to make all necessary arrangements and co-ordinations in order minimize interdependency obstruction. The contractor is not entitled to claim additional costs additional time for any interruptions or any other handicaps and difficulties that could occur by otl construction activities (see above).

Project Signboard

A project signboard with a minimum size of 2.5m x 5.0m indicating the nature of the works, t Employer, the Contractor and the Engineer, as well as all legally required project information shall prepared and erected by the Contractor at a location defined by the Employer, and be maintair throughout the Works. The project signboard shall be in colour containing a panoramic overview the project in a height above ground approx. 3.0 m, including foundation.

Apart from the signboard any other publicity on the Site is prohibited.

Site, Working and Storage Areas

Construction Site

(1) The area for the construction of the Peleleza Jetty Phase 2 is limited to the areas shown on t Tender Drawings.
(2) The area for the construction works will be made available by the Employer.
(3) The Contractor may utilize the water-sided areas in coordination with the Authorities a consent of the owners of adjacent land. The Contractor will be solely responsible in this reg and is obliged to adhere to and to maintain any restrictions and / or obligations imposed by t parties involved.

Marking of Construction Site

The construction site and all of the floating plant shall be marked day and night with signs, lights et in co-ordination with the requirements of the competent authorities.

Storage, Accommodation and Working Areas

(1) The Employer will not make available to the Contractor any site area for the purpose of t Works other than the site identified under Section 0.

(2) The Contractor will have to rent, prepare and maintain at his own risk and responsibility a expense any additional site areas to be used as building yard or for preparatory works as w as for accommodating the site offices and living quarters for his personnel if the areas provid by the Employer are not sufficient. However, the site office for the Engineer and his staff h to be provided on the Site Within the KPA project area indicated in the Tender Drawings form of labour camp / accommodation will be permitted due to security reasons (ISPS). T Contractor is deemed to have included all cost in connection with the clearing, repa modification, and pavement as well as of providing offices, utilities, etc. in the cost for s mobilisation, for any and all site areas occupied by him.

Keeping Works free of Water

(1) The Contractor has to make suitable provisions and arrangements and to bear all costs protect the Works against negative effects from rain, flood etc. This includes supply, installati and operation of all necessary equipment and facilities as may be required for keeping t Works free of water.

(2) Notwithstanding any consent by the Engineer to the arrangements made, the Contractor v be held responsible for the sufficiency thereof and any consequences arising from inadequa measures and damages to the Works, any loss of production, additional costs etc. are at t Contractor's risk.

Power Supply

The Contractor has to make his own arrangements and has to provide for and is responsible for t regular supply of power to all equipment and arrangements, including the storage and working area as well as to the actual construction site and places of work, in the capacity and quantities requir for the Works.

Water Supply

If necessary, the Contractor has to make his own arrangements e.g. through installation and operati of deep wells and a purification plant at Site, and has to provide for and is responsible for the regu supply of sufficient quantity of fresh potable water to all equipment and arrangements, including t storage and working areas and office areas, as well as to the actual construction site and places work, in the capacity and quantities required for the Works.

Communication

The Contractor shall provide and maintain telecommunication facilities at the Site, which shall inclu mobile telephones for domestic and international calls, facsimile, high-speed Internet and e-mail.

Contractor's communication systems shall under no circumstances interfere with any oth communication networks or navigation systems used in the area.

Safety Precautions and Medical Attendance

(1) The Contractor shall prior to physically commencing works at the Site prepare a general esca plan for medical and / or emergency situations. The escape plan shall be well coordinated w all public medical & health centres, police, fire brigade and other organisations that co become involved in such emergency situations. The escape plan is to be submitted to t Engineer for approval.

(2) Safety precautions shall include, but are not limited to security fencing, to sound design a measures of temporary works, adequate illumination for night operations, instruction accident prevention for all employees of the Contractor, adequate life protection and lifesav equipment (including but not limited to safety helmets and life jackets), adequate traffic cont and such sign boards, guards, walkways, scaffolds, ladders, bridges, gangways and other saf devices and equipment as may be necessary to prevent accidents or injuries.

(3) The Contractor shall at all times maintain adequate first aid attendance on the site. A sufficie number of the Contractor's employees shall be fully qualified in first aid, so that a first aid m is immediately available in case of accident at any time and at any place, and the persons designated shall be made known to all employees by the posting of their names at a promin place at Site.

The Contractor shall provide, including transport, adequate and approved equipment a facilities throughout the construction period.

In addition the Contractor shall make necessary arrangements with a qualified medical doc to be called to the Site when required for routine or emergency consultation.

Arrangements shall be made by the Contractor with the nearest suitable hospital for t acceptance of urgent cases of sickness or injury.

Arrangements made regarding first aid and medical attendance shall be subject to the appro of the Engineer.

(4) The Contractor shall promptly but in any case within twenty-four (24) hours of the occurrer of any accident at or about the site, or in connection with the execution of the Works under t Contract, report such accident to the Engineer. The Contractor shall also report such accid to the competent Authority, whenever such report is required by law.

Site Installations

(1) The Contractor's preparation of the terminal construction site and of all working and stora areas provided by the Employer and the transport and assembly of all plant and equipment required for the satisfactory execution and completion of the Works, shall include but is r limited to the following:

- Clearing from obstructions, grading, improvement and suitable paving of working a storage areas;
- Protection of existing structures;
- Temporary accesses as required;
- Temporary berth and landing facilities for transport barges and service boats;
- Building and furnishing/outfitting of all required offices, accommodation, workshops, stor material sheds, and sanitary facilities;
- The required installations for generation of power, lighting, production of water, telepho and all related supply lines and distributions;
- The fencing of the site areas as well as the fixing of all required safety and warning sig etc.;

The transport to the Site and assembly ready for use of all required vehicles, construction pla floating equipment, etc., launches, cranes, trucks, batching plant, cutting and weldi equipment, pumps, generators, spare equipment, diving equipment, tools, etc.

(2) The Contractor must submit to the Engineer detailed compilations on the planned constructi equipment with pertinent layout drawings on its set-up location, as well as drawings on t layout of storage and working areas with their approaches.

(3) The Contractor is fully responsible to provide and maintain reasonable sanitary facilities, pro lighting and adequate protection of the Site against accidents, theft and the like.

(4)The Engineer is authorised to check the site installation at any time, and if required, to dema extensions, additions and special repair or maintenance measures.

Coordination with Authorities

(1)The Contractor must generally observe all rules and regulations in force of the vario authorities, which may influence the preparation and/or performance of the Works in any wa
(2)The Contractor shall ensure necessary co-ordination of all activities with the authoriti concerned, well in time.
(3)The Tenderer and Contractor shall be aware that other construction firms or authorities m interfere or work at the same time on or in the neighbourhood of the project area, like ro construction (access road to the terminal), railway track construction on the terminal, etc.
(4)If necessary, the Contractor shall prepare and submit all documents required by the authoriti for obtaining the planning and construction permissions.

Requirements of Port Operations

(1)The Contractor shall position and mark the waterborne site area including all tempora moorings of any floating construction equipment to the approval of the Port Operatio Department of the Employer and the Engineer. The Contractor shall notify the Employer of a such installation well in time, with a copy to the Engineer.
(2)The Contractor shall comply with all directions issued to him by the Employer and the Engine in respect of safety of navigation and the requirements for marking, watching and lighting any structure or construction equipment, which may be used in the construction of the Worl

Protection of Existing Facilities

(1)The Contractor is obligated to undertake all necessary measures in order not to endanger damage any kind of existing facilities, whether above or below ground.
(2)Before commencing the earthworks, the Contractor shall enquire about existing service lin and cables from relevant authorities, which are then to be located and to be carefully mark by him.
Earthworks for exposing supply lines, must always be done manually. Exposed lines are to adequately secured thereby against sagging, breaking or lateral displacement.
(3)If supply lines are encountered in the course of the earthworks, which have not been indicat in the Tender Drawings, nor mentioned by the relevant authorities, the work in this area is be suspended immediately, and the Engineer is to be informed of the uncovered lines withc delay. The place of discovery is to be surveyed and entered in the drawings, by listing all detai Work shall only be resumed at such location, with the Engineer's consent.
(4)When filling the ditches and construction trenches the existing lines are to be properly protect through suitable measures, such as capstones, wire mesh etc., and to be carefully marked.

Site Laboratory

(1)The Contractor shall provide, maintain and staff a site laboratory for the period of the Contra on Site, and shall provide new apparatus and testing equipment needed for the site te specified in these Specifications. All equipment shall be according to international standar and correspond to the metric system.
(2)The Contractor shall employ a qualified soil and material testing engineer and laborat technicians throughout the construction period.
All tests shall only be performed by the Contractor's laboratory engineer and his assistants.
(3)The Contractor shall, at all times, ensure the Engineer's free access to the laboratory checking or executing separate tests on materials used or to be used in the Works, and sh

afford every facility in this respect, including the use of the equipment, assistance of staff a the provision of samples for tests where called for.

(4) Equipment for the testing of the following materials according to the relevant standards list in these Specifications shall be provided as a minimum:

a. Cement
b. Aggregates
c. Grout
d. Concrete
e. Soils
f. Steel
g. Armour Rocks

Protection against Natural Phenomena

The Contractor shall take all reasonable precaution to protect the Works against impacts result from heavy rain as well as from tide, waves, storms and floods and all other natural hazards. Bef any work has begun, the Contractor shall submit to the Engineer the methods he proposes to ap in order to protect the Works.

Clearance of the Site upon Completion of the Works

(1) The whole project area and any site areas availed by the Contractor for execution of the Wo are to be cleared from all obstacles created by the Contractor during execution of the Works of any temporary works and construction plant used by the Contractor, after completion of t Works.

(2) Any sheds, working and storage areas, approaches etc. or handling facilities utilised by t Contractor or his sub-contractors for the purpose of this Contract are to be cleared and reinstated by the Contractor to the satisfaction of the Engineer and of the relevant owner(The Employer will not accept any claim of third parties in respect of Contractor's failure comply with this requirement.

(3) The Engineer will recommend the return of the respective areas to the Employer or owners o after all of the project sites have been cleared to his satisfaction.

Measurement and Payment

Site Mobilisation

The relevant item of the Bill of Quantities is deemed to include all costs for preparation of all s areas, sheds and their approaches as well as for mobilisation and providing of all buildings and facilit and for mobilisation of all construction equipment ready for use, and to the extent required for t Works.

The lump sum price, however, shall neither include any costs for provision and maintenance nor operation (power, water, fuels, lubricants and other supplies) of the machines and equipment dur the construction period, all of which are deemed to be a component of the rates and prices incluc in the Bill of Quantities for the individual works for which the respective machines and equipment to be employed.

Coordination with Authorities

The relevant item of the Bill of Quantities is deemed to include all cost for co-ordination with t authorities and preparation of the documents for the building application.

Maintenance and Operation

All costs for maintaining, operation and protection of the Site and its installations and facilities are be included in the unit rates of the relevant items applicable to the execution of the Permanent Temporary Works.

Protection against Natural Phenomena

The costs of all measures required by the Contractor to protect the works are deemed to be cover by surcharges included in the rates and prices of the Bill of Quantities.

Site Demobilisation

The relevant item of the Bill of Quantities is deemed to include all cost for demobilisation of the Si as well as for its clearance and final reinstatement.

Surveying and Sounding Work

General

(1) Along with the Tender, the Bidder shall submit details of the intended surveying methods a equipment.

(2) The Contractor shall submit to the Engineer methods of the complete setting out of the varic parts of the Works and temporary works, together with the relevant calculations and the varic setting out dimensions thereby obtained.

(3) The Contractor shall make available only high precision survey equipment, suitable to meet t demanded accuracy in locating and surveying the structures, such as DGPS and EDM (Electro Distance Measurement) and high precision level instruments. Data shall be stored in electro format for subsequent processing in digital terrain model and CAD-drawings.

(4) The costs of all surveys and sounding works required for the due performance of the Contra including all costs for providing the required measuring equipment, staff and labourers and preparing the records and drawings are to be included in the unit rates of the Bills of Quantiti

Permanent Survey Points

(1) For horizontal and vertical control the Contractor shall install a contract Bench Mark/Cont Point.

(2) The Contractor is obligated to label or identify the mark, and to protect it for the entire peri of the construction work. The responsibility for shifting or destruction of the contract Ber Mark/Control Point, also by third parties, as well as all resultant consequences rest solely w the Contractor.

(3) Coordinate system and reference level shall correspond to Section 0.

Contractor's Obligation to Check

(1) Immediately after handing over, the Contractor is obligated to check all Contract Bench Ma and related surveying points and to record them in a setting-out plan and in a bench m schedule.

(2) The Contractor has to inform the Engineer of any discrepancy between the coordinates/lev of the given and the checked points.

Scope of Surveying Works

(1)At the commencement of the Works, the Contractor shall install permanent control points selected locations and shall carry out a detailed survey of the x-, y-, z-coordinates of t individual points. This survey shall serve as reference survey for all subsequent control surve

(2)The surveys shall be referred to Contract Bench Marks and coordinates and the results shall recorded in a form to be agreed upon with the Engineer. The location of Contract Bench Mar and reference/control points is to be plotted on layout drawings scaled 1 : 1,000 and submitt to the Engineer.

(3)For the purpose of controlling the Works, the Contractor shall carry out weekly control surve apart from regular survey works to be carried out as the works proceed. Detailed procedur are to be agreed upon with the Engineer at the commencement of the Works.

The survey results are to be processed immediately. In case of major deviations betwe consecutive surveys the Engineer is to be informed immediately.

The survey shall be carried out at the start of Works and shall be repeated after any filli stage, as well as at the time of Taking over the Works.

Accuracy of Surveying Works

(1)The accepted maximum misclosure for a line of levelling closing back on the starting point sh be $\leq (2+5)\sqrt{K}$ (mm), where K is the length of the circuit in kilometres.

(2)The accuracy of the determination of the horizontal control points is mainly based on t standard error of the used EDM equipment. As a guideline misclosure values of a loop traver shall be within the accuracy of a first order traverse, i.e. 1 in 25,000 for unadjusted horizon distances and $2\sqrt{N}$ [sec] for unadjusted horizontal angles (N to be the number of legs of t traverse).

Reference Lines and Levels

(1)At the beginning of the Works, the Contractor and the Engineer shall agree on definition a general setting-out of the check points to be controlled throughout the Works, with referen to the Contract Bench Mark/Control Point.

(2)The general setting-out shall comprise at least the definition of 3 reference lines and reference levels (site bench marks). Survey points shall be located in places not affected the Works.

(3)The Contractor shall draw-up a report to confirm completion of survey operation in the fi and verification of the corrections of reference lines and levels, and submit three copies of t report to the Engineer.

(4)The accuracy of setting-out shall comply with the standard rules of practice for the accuracy building works.

Records of Surveying Works

(1)The Contractor shall maintain a surveyors' record of all surveys and levelling.

(2)The Contractor shall keep up to date, appropriate plans showing the position of all base lin as well as the position and the levels of all Contract Bench Marks and all other bench marl whether of temporary or permanent type, and shall furnish to the Engineer three (3) copies such plans and of each amendment thereof.

Water Level Recording

(1)The Contractor shall provide and install a rigidly fixed water level recording device at the proj site, calibrated through levelling from an approved bench mark.

(2)Readings should be recorded daily in the progress reports.

Removal of debris from Sea-bed

Detailed bathymetric survey drawing has been given as part of Tender documents. In addition these and to the bathymetric survey requirements in BS 6349 Part 5 additional surveys shall be carri out to determine the site bathymetry and soil conditions viz:

a) excessive debris or foreign matter;

b) services; particular attention to undersea fibre optic cables

c) munitions;

d) sensitive structures or installations;

Surveying for Revetment Works

(1) Surveying of all revetment works shall be based on reference points established by t Contractor and approved by the Engineer.

(2) Surveying of under water works (e.g., bathymetric survey) may be accomplished by a suital electronic RTK-DGPS positioning system or similar with an accuracy not exceeding 0.1 m in a direction. Any such positioning system shall be calibrated and documented for the Enginee acceptance before any use in the works.

(3) The Contractor shall further establish and maintain fixed marker poles and templates abc sea water level for the specified revetment profiles. The spacing of marker poles and templa along the revetments shall not exceed 30 m.

(4) Any such marker poles and templates shall be removed after completion and acceptance of t works.

(5) After completion of the revetment and scour protection works, a video diving exploration w video recording of the works shall be undertaken. The video has to be handed over to t Engineer directly after completion of the diving exploration.

Survey Boat

The survey boat shall be minimum of 10 m long twin engine boat equipped with a fully air-conditior cabin capable of accommodating a minimum of six person and the boat operator, together with pro survey equipment mounting facilities and centrally positioned open sea wheel for accommodation echo sounding transducers.

Surveying of Piling Works

(1) Marker pins (if pile installation is executed from land) for the pile positions shall be set out a installed by the Contractor. If piles are driven from floating equipment, the driving equipm shall be positioned with D-GPS or other equivalent positioning systems. Immediately prior installation of the piles, the pile positions shall be checked by the Contractor.

(2) The piles shall be set up at locations as shown in the Tender Drawings and pitched with greatest accuracy. The location of the piles shall be determined by the Contractor with the h of high precision surveying instruments, by using permanent and verified base points/be marks.

(3) Radio communication is to be made available by the Contractor during surveying and subsequent control of the pile installation process.

(4) During pile installation, the alignment of the piles shall be controlled by appropriate measu throughout that process.

In case of any increasing deviation from the designed location, the installation process shall interrupted and the pile realigned in consultation with the Engineer.

(5) Immediately after installation of a pile and removal of any guides, the Contractor shall surv the final location of the pile with reference to fix points and check the adherence to toleran of Section 0, in the presence of the Engineer. Survey records are to be handed over to t Engineer.

(6) After completion of the individual structures, the Contractor has to install permanent surv marks in coordination with the Engineer. These marks shall be accurately surveyed w reference to permanent bench marks by an independent/licenced surveyor. The results are be plotted on a table and drawing, all to be certified by the licenced surveyor. The docume shall be handed over to the Engineer prior to issuing the Completion Certificate.

Surveying of Pavement Works

(1) The Contractor shall make all setting-out of the paved areas to the approval of the Enginee

(2) The Contractor shall as a minimum provide pegs along the edges of the roads and the centrel of other paved areas at a minimum distance of 20 m marked to show the thickness of t pavement layers. This marking shall remain in place for as long as required by the Engineer

Additional Surveys and Soundings

(1) At any stage of the Works, the Engineer may demand additional surveys and soundings in or to control the correctness of work done so far or as otherwise required to check the correct a safe execution of the Works.

(2) The Contractor shall carry out such surveys to the extent and at the time required by t Engineer and submit appropriate records of the same, to the Engineer.

Measurement and Payment

The costs involved with all surveys and sounding works required for the due performance of t Contract, including all costs for providing the required measuring gear, staff and labourers and preparing the records and drawings will not be separately compensated for and are therefore deem to be included in the unit rates of the Bills of Quantities.

Engineer's Facilities

Engineer's Site Office

General

(1)The term "Engineer's site office" refers to the offices to be provided by the Contractor for t Engineer during the various stages of the Works.
(2)The Contractor shall provide and equip the Engineer's site office for the exclusive use of t Engineer.
(3)The Engineer's site office has to be provided at a location directly on or at the construction si
(4)The first offices shall be made available within a period of latest 6 weeks after receipt of t order to commence the Works. The offices shall be provided at places approved by the Engine
(5)The Contractor shall maintain the site office for the entire period of the construction wor including defects Notification Period (DNP).
(6)Upon issuing of the Performance Certificate for the Works the complete site office buildin including furniture and equipment shall be removed by the Contractor and the spaces of la returned to the Employer in good condition.

Site Office Building

The site office shall be located at the respective project site, close to Contractor's site offices.

The site office shall provide space for about 5 to 7 persons and comprise the following rooms:

- 1 meeting room 30 m²
- 1 office room 25 m²
- 2 office rooms 16 m² each
- 2 office room 12 m² each
- 1 store room 12 m²

In addition, adequate kitchen and sanitary facilities (male / female toilet areas), hot and cold wa and all electrical fixtures.

All offices and meeting rooms shall be provided with air-conditioning of adequate capacity.

Shaded car park shall be provided next to the main office for four cars.

Office Equipment and Furniture

The Contractor shall furnish Engineer's site office at least with the following new equipment:

- 1 office desks, 200 x 80 cm,
- 1 office desks, 160 x 80 cm,
- 2 office desks 130 x 80 cm,
- 1 conference table, 120 x 300 cm,
- 8 office armchairs of different categories,
- 6 office receiving chairs,
- 16 chairs for the conference room,
- 8 office file cabinets,
- 6 lockers
- 8 shelves and 2 armoire 1.0 x 2.0m
- 1 cabinet for storing drawings,
- 1 photocopying machine, allowing reduction from DIN- A3 to DIN-A4 size,

- Small office computer network (LAN and Wi-Fi) with;
  - 2 No. Computers; latest generation 16 GB RAM, 1000 GB HD, Wifi and LAN internet at
    20" TFT Monitor, USP-pack, incl. software Microsoft Windows 11 (English), Microsoft Off
    365 with CoPilot, MS Project, MS Visio, Adobe Professional, and AutoCAD 2026, 1 N
    system with 2 x 500 GB HDD, and including all cabling, sockets, network cabinet and
    conditioning system.
- Additional Software:
- 2No. Licenses of MIDAS CIVIL NX 20256 (v2.1) software or latest at the time of purchase w
  3-year maintenance licenses separately for each of the two computers above.
- 2No. Licenses of Revit 2026 software (with Revit 2026 to Midas Link software) or latest at t
  time of purchase with 3 year maintenance licenses separately for each of the two comput
  above.
- 2No. Licenses of Civil 3D 2026 with Autocad software (with Revit 2026 to Midas Link softwa
  or latest at the time of purchase with 3 year maintenance licenses separately for each of t
  two computers above.
- 1 colour plotter for drawing size DIN A0, colour, including network interface card
- 1 colour inkjet printer, A3 paper size, including network interface card
- Voltage stabilisers for all electrical / electronic equipment
- 1 set of shelves each for the filing and storeroom,
- 1 refrigerator, capacity 250 litres,
- 2 water cooler / dispenser
- 1 set of kitchen equipment, cutlery, glasses, etc.

Communication and Internet

(1) The Contractor shall provide and maintain international telephone lines and high-speed Inter
access (minimum 200 Mbit/s) for the Engineer's sole use at the main office complex.
(2) The Contractor shall provide and maintain a telephone installation within Engineer's main off
building with 6 extensions.
(3) The Contractor shall pay for all costs related to the communication facilities covered by t
Section, including all running cost for use of the Internet but not for the telephone line.

Office Operation and Maintenance

(1) The Contractor shall provide and pay for regular power supply, water and potable water, sewa
treatment and disposal. For regular power supply stand-by generators are to be provid
capable to serve the electricity demand for the Engineer's site offices.
(2) The Contractor shall provide for daily cleaning of all of Engineer's site offices and
surrounding.
(3) The Contractor shall provide for all consumable items, printed matters and small off
equipment, as are required by the Engineer to run the office.
(4) The Contractor shall provide security (at least two guards on duty 24 h every day and 7 da
per week).

Transportation Facilities

The Contractor shall provide the following vehicles for the sole use of the Engineer:
(1) One (1) new 7-seater station wagon vehicles of minimum engine capacity 2800cc Turbo die
propelled fully loaded. The vehicles shall be new and the type/model as approved by
Engineer. The vehicle shall revert to the Employer after DNP.

(2)Three (3) new 4WD double cabin pickups of minimum 2800cc Turbo diesel engine capaci complete with weather shields, stainless steel nudge bar, tonneau cover; hard sports typ lockable

(3) two (2) new 14-Seater Van of minimum 2800cc Turbo diesel engine capacity

(4)The Contractor shall pay for the running cost of the vehicles, including tax, comprehensi insurance, fuel and lubricants, service and maintenance, cleaning and drivers.

(5)The Contractor shall provide a service boat for transport and use of the Engineer, Employ and guests to and around the Site throughout the construction period including all running cc and boat driver and lineman. The boat shall be equipped with a cabin and/or fixed roof f protection against rain or sunlight.

(6)In case of any vehicle / service boat being out of operation, the Contractor shall provi equivalent replacement, in co-ordination with the Engineer.

(7)As soon as practically possible after Taking Over the Works by the Employer the vehicle und sub-paragraph (3) above shall be returned to the Contractor, except three Double cabin Pi Ups and the vehicle under paragraph (1), which shall remain available to the Engineer up t time of issuing the Performance Certificate to the Contractor, after which all vehicles here revert to the contractor.

Surveying Equipment

(1)The Contractor shall make available to the Engineer topographic and bathymetric surveyi equipment, staff and labourers and other supporting facilities as and when required by t Engineer for check-surveys.

(2)Only high precision survey equipment suitable to meet the demanded accuracy shall provided.

Radio Communication Equipment

The Contractor shall provide communication equipment for the Engineer and his staff for on-si communication. This can be radios or mobile phones. The Contractor has to guarantee t functionality of the provided equipment at all times. If radios are to be provided their frequency sh be different from the one used by the Contractor and for the Engineer's provision only.

Accommodation for the Engineer

A house for accommodation with two bedrooms each with en-suite bathrooms, with a surface area at least 100 m^2 on an approved location in the vicinity to the port shall be provided for the Enginee This house shall be fully equipped and serviced including furniture, kitchen and washing machir international cable television (DSTV) and guards for 24 hrs a day. Included shall be air conditionin telephone and high-speed internet connections. Provision of and payment for regular cleanin security, power supply, water and potable water, sewage treatment and disposal will be provided fr of cost to the Engineer.

Measurement and Payment

(1)All costs in connection with providing, operating and maintaining of the Engineer's facilities w be measured and paid for as per relevant items of the Bill of Quantities, but only up to the e of the contractual completion date, including approved extensions thereof, if any, or su additional period as instructed by the Engineer in writing.

(2)All costs in connection with the providing of the surveying equipment and supporting faciliti shall be deemed to be covered by surcharges and overheads included in the items of the Bi of Quantities and will therefore not be paid for separately.

Maintenance Manuals

General Requirements

(1) The Contractor shall elaborate a detailed inspection and maintenance programme to be adher to by the Employer after issue of the taking-over certificate for the Works. The programı shall be in such detail to enable the Employer to maintain, adjust and repair all parts of t Works.

(2) The programme shall be drawn in English language and shall include detailed description of t methods and inspection intervals, sample report forms, drawings, material descriptions, e as appropriate, in a Draft Maintenance Manual.

(3) The Contractor shall submit to the Engineer 3 copies of the manual in draft form. On receipt the Engineer's written comments of the submitted draft, the Contractor shall incorporate a alterations and/or amendments and supply 10 copies of the final edition of the maintenar manual to the Employer.

(4) The final edition of the manual shall have rigid binding in plastic cover, and the subject and t name of the project shall be printed on the spine of each volume. The size of pages shall be 4, and of drawings A 3, and the maximum format authorized for bindings shall suit A 4. T final edition of manual shall conform in every respect to the approved draft.

Basic Content of the Manuals

(1) Basically, the manual shall comprise at least the following:

- Detailed description of the items to be maintained, with identification of issues requiri special attention during the inspections;
- Scope and time intervals of the individual inspections;
- Description of methods and tools/equipment to be used for the inspections;
- Sample forms for the various inspections, drawings, diagrams, images or photographs facilitate understanding and improve clarity;
- Methods and materials to be kept available for preventive maintenance measures;
- Precautions and warnings concerning the safety of personnel and protection of t equipment.

(2) The maintenance recommendations shall specify the precautions to be taken and critical poi to be observed, and shall recommend methods enabling interpretation of indications observ in the periodical inspections.

(3) A table should indicate possible observations, with the likely cause(s) and preventive and, remedial actions required for such cases.

(4) The recommendations shall include the preventive maintenance instructions and informati on the materials and measures required. Guidelines shall be presented indicating situations which repairs beyond regular maintenance repairs would have to be initiated. A description a identification of the special materials and tools required for maintenance works shall form p of these instructions.

(5) The Maintenance Manual shall contain all information necessary for ordering repair materi and tools, such as name and address of the manufacturer, identification and reference numl of the respective material and/or item. Any special requirements for storing, handling and sh life of such materials must also be noted.

(6) A list of recommended maintenance materials, tools and equipment for five years shall provided, along with current delivery price ex manufacturers' plant.

Health and Safety at Site

General

(1) The health and safety plan for the construction phase, which is to be prepared by t Contractor, shall meet international standards and the safety plan shall be approved by t Engineer before physically commencing works at the Site. The Contractor's health and safe plan shall be guided by the issues of this Chapter and the otherwise contained information a requirements of the Contract. The bidder has to submit along with the bid a written proje specific Health and Safety Policy.

(2) The health and safety plan shall be in conformity with the respective local and internatio regulations and take into account the Construction (Design and Management) Regulations 20 (CDM Regulations)[3].

(3) The Contractor shall take all measures to safeguard the health and welfare of the persc entitled to be at Site and shall ensure that the Works are carried out in a safe and efficie manner.

(4) The health and safety plan must be aimed at improving the overall management and c ordination of health, safety and welfare throughout the Works to avoid serious and fa accidents and cases of ill health and requires the production of certain documents, namely t health and safety plan and the health and safety file.

(5) The Contractor is required to develop the health and safety plan before work starts on Site a to keep it up to date throughout the construction works.

(6) The degree of detail in the health and safety plan shall be in proportion to the nature, size a level of health and safety risks involved in the project, significant risks need to be addressed detail. The plan shall set out the arrangements for securing the health and safety of everyc carrying out the construction work and all others who may be affected by it. Among others, t plan shall deal with:

- the arrangements for the management of health and safety of the construction work;
- the monitoring systems for checking that the health and safety plan is being followed;
- health and safety risks to those at work, and others, arising from the construction wo and from other work in premises where construction work may be carried out.

(7) For the Works substantial design work will have to be prepared as construction procee Therefore, specific arrangements for carrying out the individual construction measures have be set out in Contractor's health and safety plan. This is important to ensure that the hea and safety aspects of the design works are appropriately taken care of during the construct works.

(8) The Contractor is required to supplement, review and update the health and safety plan as t Works proceed, further design work is completed, and information from subcontractors (if ai starting work becomes available, or unforeseen circumstances or variations to planr circumstances arise.

Contents of Health and Safety Plan

General

The health and safety plan shall include, among others:

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[3] ISBN 978 0 7176 6626 3

- a description of the construction works;
- a general statement of health and safety principles and objectives for the project;
- the management structure and responsibilities of the various members of the project tea whether based at Site or elsewhere;
- information about restrictions which may affect the work (e.g. neighbouring works, util services, vehicular and pedestrian traffic flows and restrictions from the work activities of t Employer).
- arrangements of the Contractor to give directions and to co-ordinate other parties involved w the project.
- the health and safety standards to which the project will be carried out. These may be set terms of statutory requirements or higher standards that the Employer may require in particu circumstances.
- means for informing Employer / Engineer and other parties about risks to their health a safety arising from the environment in which the Works are to be carried out and from t construction work itself.

The Contractor shall ensure that everybody is aware and informed of the plan and moreover th everybody is regularly educated / reminded of the health and safety plan.

The Contractor shall comply with all statutory requirements, the Employer's safety policy and a direction issued by the Employer's safety department or authorised personnel of the Employer as m be issued from time to time. The cost of the provision of all safety precautions, equipment and clothi shall be borne by the Contractor.

All works shall be carried out in a safe manner and free from any danger and shall comply with t relevant legislation of Kenya regarding safety of the works.

All personnel who are in the work area and / or within the operations area of the Employer shall we protection helmets and appropriate boots, and safety belts when they are required by the legislati related to the requirements of Health and Safety in the Work Place. Workers shall either wear hi visibility vests or jackets or shall have appropriate high visibility adhesive stripes attached to th clothing. Life Jackets shall be worn by all staff working over water.

The Contractor shall take all precautions necessary to protect the health and safety of persons whe works may expose workmen and other persons on, or within the vicinity of the site, to conditic which are dangerous or potentially dangerous to health, including the noxious effects of dust, fum liquids, infection, fire, explosion, radiation, or other hazards.

Special care shall be taken by the Contractor and its personnel with regards to height works.

The Contractor shall take suitable precautions to the satisfaction of the Engineer where the followi are encountered:

- Asbestos insulation or sprayed asbestos coatings
- Fibreglass or rockwool insulation
- Flammable or explosive liquids or gasses
- Toxic, infective or contaminated materials
- Radiation or radio-active materials
- Noxious or explosive chemicals
- Tanks or other containers which have been used for storage of explosive, infective contaminated substances.

The Contractor shall provide the protective devices appropriate to the type of hazardous materi and conditions encountered (such as protective clothing, masks, screens, shielding, decontaminati

equipment, seals, coverings, and the like) and ensure that they are used correctly while such wor are in progress and while health risks remain.

The use of safety harnesses appropriately tightened to fixed structures during works to be undertak above ground level is a strict obligation,

Personnel that are found working above ground level without a safety harness or without connecti it to an appropriate fixed structure shall be immediately obliged to leave the site, at the discretion the Engineer, and shall not be allowed to continue working under this Contract. In addition, t Contractor shall be penalised with a penalty equal to that corresponding to one day of failure to comp with the contract period for each of these cases detected during the construction period.

Under no circumstances shall any material coming from the construction works be permitted to dr into the water. If material falls into the harbour accidentally, the Contractor shall recover this mater from the seabed and stockpile or remove it from site as appropriate.

During the works, all personnel of the Contractor shall use hearing protectors appropriate for the le of sound of each task involved.

The Contractor shall report to the Engineer details of any accident as soon as possible after occurrence. In the case of any fatality or serious accident, the Contractor shall, in addition, notify t Engineer immediately by the quickest available means.

Any stoppage of work by the Engineer due to an accident shall not be grounds for an extension time or claim by the Contractor under any clause of the FIDIC® Conditions of Contract for Constructi for Building and Engineering Works Designed by The Employer, Second Edition 2017 .

The Contractor shall maintain such records and make such reports concerning safety, health a welfare of persons and damage to property as the Engineer may from time to time prescribe.

Subcontractors and Suppliers

The Contractor shall ensure that

- all subcontractors being appointed by the Contractor are competent and will make adequa provision for health and safety;
- suppliers of materials to the Contractor will provide adequate health and safety information support their products;
- machinery and other plant supplied for common use will be properly selected, used a maintained; and that operator training will be provided.

Contractor shall ensure that any subcontractor and supplier working at the Site is made aware a informed of the health and safety plan.

Communication and Cooperation

The health and safety plan shall define:

- means for communicating and passing information between the Contractor, his subcontracto the Employer, the Engineer and any other involved parties, the workers on Site and oth whose health and safety may be affected;
- arrangements for securing co-operation between contractors for health and safety purpose
- arrangements for management meetings and initiatives by which the health and saf objectives of the project are to be achieved;

- arrangements for dealing with design work carried out by the Contractor during the constructi phase, ensuring it complies with the duties on designers and resultant information is passed the appropriate person(s);
- arrangements for passing information by the Contractor to the Engineer and the loc authorities about accidents, ill health and dangerous occurrences that require to be notified;
- arrangements that will be made for consulting and co-coordinating the views of workers or th representatives.

Activities with Risk to Health and Safety

The Contractor shall detail and make all arrangements needed for the identification and effecti management of activities with risks to health and safety, by carrying out risk assessment incorporating those prepared by other parties involved with the Works, including those issued by t Employer / Engineer, and including the resultant health and safety method statements. The activities may be specific to each particular part of the Works, and may include:

- the storage and distribution of materials;
- the movement of vehicles an Site, particularly insofar as this affects pedestrian and vehicul safety;
- control and disposal of waste;
- the provision and use of common means of access and places of work;
- the provision and use of common mechanical plant;
- the provision and use of temporary services (e.g. electricity, water supply);
- the provision and use of Temporary Works;
- commissioning, including the use of permit-to work systems;
- protection from falling materials;
- exclusion of unauthorized people.

Control measures to deal with emerging risks shall be clearly set out, including protection of membe of the public.

Emergency Procedures

The Contractor shall describe in detail the emergency arrangements for dealing with and minimizi the effects of injuries, fire and other dangerous occurrences.

Welfare

The Contractor shall detail the arrangements for the provision of welfare facilities for staff and worke at the Site, and shall provide and maintain the same throughout the construction period.

Information and Training for People on Site

The health and safety plan shall detail the planned arrangements by which the Contractor will ensu that people on Site have been provided with:

- health and safety information;
- health and safety training; and
- information about the project (e.g. relevant parts of the health and safety plan);

and that arrangements are being set up for:

- project specific awareness training;
- tool-box or task health and safety talks;

- the display of statutory notices.

Site Rules

The Contractor shall make arrangements for bringing site rules to the attention of those affecte These site rules should be set out in the health and safety plan, and there may be separate rules the Contractor's staff and workers, visitors and other specific groups.

Arrangements for Monitoring

Contractor shall describe and set out a monitoring system to confirm compliance with:

- legal requirements; and the
- health and safety rules developed by the Contractor and agreed to by the Engineer throu regular planned checks, and by carrying out investigations of incidents (whether causing inju loss, or 'near miss') and complaints.

This may involve cooperation and regular meetings between senior management and those w provide health and safety advice to them.

This may also involve monitoring of:

- procedures, e.g. selection of subcontractors / suppliers and the management of certain trade
- on-site standards actually achieved compared to those set for the project;
- reviews throughout the Works, as different trades complete their work and at its conclusion

As a result lessons learnt in terms of the standards that were set and those actually achieved can taken forward to constantly improve health and safety at the Site.

Health and Safety Liaison Meetings

Monthly liaison meetings will be held between the Contractor, the Engineer and the Employer; oth concerned parties may be invited as and when appropriate.

The meetings shall focus on health and safety issues concerning the Works, including but not restrict to:

- Recording of all incidents that had occurred during the preceding weeks;
- Identification and agreement on measures to avoid a re-occurrence of the aforemention incidents;
- Highlighting operations related to the Works that require specific attention during t forthcoming period;
- Confirmation of any new information / instructions issued by the Contractor or the Employe Engineer, and
- Confirmation / agreement on revisions made to the health and safety plan over the precedi weeks.

Employer's Health and Safety Officer

The Employer will assign a health and safety officer (HSO) for monitoring health and safety at Si The HSO is entitled to issue instructions to Contractor's safety officer and to require the immedi removal from the Site of any person who, in the opinion of the Employer, fails to observe prope the provisions of the prevalent health and safety plan.

The Contractor's health and safety plan is subject to approval of the Engineer's health and safe officer.

Health and Safety File

The health and safety file shall be prepared and maintained by the Employer's health and secu officer and the Contractor has to provide all relevant information and documentation for this purp on time.

However, the Contractor remains responsible and shall make appropriate arrangements for pass on information to the concerned authorities promptly in accordance with the local law and regulatio

HIV and AIDS Prevention

Given the increasing seriousness of the HIV/AIDS situation in Kenya and that personnel construction presents a certain risk group for the spread of HIV/AIDS and Sexually Transmit Diseases (STDs), the Contractor shall address this issue adequately. It is a contractual requirem that HIV/AIDS awareness, training and prevention activities are carried out during the construct period.

The Contractor shall conduct an HIV/AIDS awareness programme via an 'Approved Service Provid and shall undertake other measures as are specified below to reduce the risk of the transfer of t HIV virus between and among the Contractor's Employees and their families and the local communi to promote voluntary early diagnosis and to assist affected individuals.

The Contractor shall institute HIV/AIDS awareness and prevention campaigns and training activit through the Approved Service Provider at the start and during the course of construction works o monthly basis. The primary target group is the employed Workforce and full attendance shall guaranteed by the Contractor. The 'Approved Service Provider' shall also include the local populat in HIV/AIDS awareness raising and prevention activities.

HIV/AIDS awareness raising and prevention activities shall include but are not limited to:

- HIV/AIDS awareness raising sessions conducted on a monthly basis with groups of 50-1 guaranteeing the participation of all Employees
- General HIV/AIDS awareness raising campaigns for the Employees and the local populatior proximity to the construction site
- Voluntary counselling and HIV testing shall be made accessible to all workers by the Contrac on site every 3 months
- The Contractor shall have free condoms available at all times at workers toilet and wash facilities as well as at site offices
- Site offices shall display HIV awareness posters and brochures

All measures conducted shall be documented by the Contractor and included in the monthly repc to the Engineer.

Demolishing and Clearing Works

Clearing of Landside Areas

Before handing over the Site, the Employer will remove all artefacts, equipment and all otl superstructure.

The Contractor is responsible to clear the site from any debris, rubbish and waste which is left behi This might include hazardous materials such as used oil cans, plastics, etc. These works have to performed before starting with the demolition works. The waste material has to be disposed in

environmentally friendly manner. Dumping it in excavation pits or burying it under futu constructions is not permitted.

Clearing of Seabed

The sea bed in front of Peleleza Jetty Phase 2 and adjoining areas has to be cleared of all demoliti debris and obstacles. This might include lost fenders, navigational aids and other sunken objec Besides, rocks from the reverted slope might be encountered and have to be removed.

Demolition of Existing Structures

General

(1) The Bidder to describe in his Tender in detail and supported by sketches the proposed metho as well as auxiliary means, equipment, working sequence etc. for the stripping, cuttir dismantling, salvage and complete removal of the structures destined for demolishing.

(2) The term "demolishing" in this Specification means complete breaking, dismantling and remo or salvage of the relevant structures or facilities and equipment. Such structures may be locat above or below the harbour water level and may consist of different kinds or material such steel, concrete, stones, wood, etc.

(3) The Employer and the Engineer do not guarantee or warrant in any way the correctness of da relating to structures to be demolished as are exhibited or indicated in the Specifications or the Tender Drawings. Such data are only provided for Contractor's general information.

(4) The Contractor is deemed to have assessed the volume of demolishing works and associat risks and to have included for all auxiliary works, floating plant, special equipment for salva and underwater works, diving teams etc., in the lump sum rates to be quoted against the ite in the Bills of Quantities, relative to the demolishing of the individual structures.
The Employer does not accept any claim whatsoever by the Contractor on account of additio works, working difficulties etc., arising out of situations or conditions different to those assess by him prior to or after submitting the Tender.

(5) The Contractor shall have satisfied himself as to the actual condition and nature of t structures and material to be demolished and bears the entire risk for the present condition the structures whether above or below water level, for the stability of the structures at stages of strip-ping, dismantling and of complete demolishing in accordance with t Specifications.

(6) Demolition work is to be undertaken well planned, with special care, in order not to endan neither life nor the stability of adjacent structures, and also not to unduly hamper the harb operations. The Contractor is obligated to inform the Engineer daily of the planned demolish works.

(7) Material and equipment obtained from the demolition of existing structures shall become t property of the Contractor.
Unsuitable materials are to be disposed of and the Contractor shall be responsible and arrar for appropriate dumping areas and bear all costs in connection with the final disposal.
Steel sections, rails, piles etc. shall be scrapped at the discretion of the Contractor, but t reasonable scrap value shall be credited to the Employer and already be considered by t Tenderer when fixing the lump sum rates for demolishing works.

(8) Use of explosives, e.g. for separating concrete members, whether above or below water lev is not permitted.

Removal of RC Superstructures

(1) RC-superstructures are reinforced concrete members above or below harbour water level. A collapsed RC-superstructures is to be completely removed from the site.
(2) If the method of cutting, breaking and removal of RC-superstructures results in dumping waste and rubbish, the latter must be completely removed from the ground by the Contract so that no obstacles remain after completion of demolishing works.
(3) Where RC-members must be cut from structures, which are to remain operational, particu care shall be taken in separating the individual members.

Removal of Foundation Piles

(1) Foundation piles of the structures are to be completely extracted.
(2) The methods of removal shall be proposed by the Contractor.
If a pile breaks in the process of its removal or should a pile head otherwise be submerg (e.g. access to deformed piles after salvage of collapsed RC-superstructure), it shall be loca and exposed and completely removed by appropriate means, as aforesaid.
An exception may only be approved by the Engineer with the Employer's consent, if t Contractor can prove that the pile stump head in the ground is located so deep below the n pavement level, that it does not represent an obstacle, neither to regular excavations nor any future proposed foundation or drainage works.

Demolishing of Pavement and Removal of Utilities

(1) The area behind the existing Jetty has to be cleared of all existing pavement, drainage sl and other utilities as far as they pose restrictions for the construction works or for the propos development.
(2) The existing pavement including the subbase has to be removed completely.
(3) Existing utilities such as water and oil pipes and electricity cables have to be taken off t ground and disposed.

Measurements and Payment

(1) Measurement and payment will take place on lump sum basis for the individual structu elements to be demolished or according to quantity survey, as indicated in the Bills Quantities.
(2) If requested by the Contractor, part payment may be approved against individual items, percentage basis, as per achieved progress or works related to the particular item.

Earth Works

Definitions

This Section provides the basis for all earth works. It covers main requirements for materials, pla methods and surveys and the procedures for controlling the quality.

- Dredging shall mean underwater excavation of any soil by land-based or floating equipmen
- Reclamation works shall mean filling of any land or disposal area to designed levels includ soil replacement measures.
- Excavation shall mean excavation of any type of material on shore or on reclaimed land buildings, service lines, roads or embankment revetment, whether in dry or in wet conditio

- Backfilling shall mean filling and compacting of construction pits, excavations and trench etc.

References

/1/ BS 1377 Methods of tests for soils for civil engineering purposes

/3/ DIN 18134 Soil - Testing procedures and testing equipment - Plate load test

/4/ ASTM D 1195 (AASHTO T 221) - Standard Method of Test for Repetitive Static Plate Load Tests Soils and Flexible Pavement Components for Use in Evaluation and Design of Airport and Highw Pavements

Clearing of Construction

(1) The areas to be reclaimed and dredged within the Works shall be cleared of any obstac debris, rubbish, foundations etc. or otherwise unsuitable matter, which would prevent t technically sound filling and compaction of the said areas. Existing structures which will be fill up are excluded.

(2) Clearing of obstacles within the Construction Site, on or below the present harbour bed, mu be carried out to the extent required for the execution of the Works, see also Section 0.

(3) The Contractor shall be responsible for locating and avoiding damage to any pipes, cables other services encountered on the seabed or at any other location.

Dredging

Materials

Capital dredging shall be carried out under separate contract by a separate contractor.

The contractor shall allow and coordinate his activities with third party contractor who shall be carryi out dredging under separate contract.

Reclamation, Soil Replacement and Backfilling Works

General

(1) The earth works are restricted to the area directly adjacent to the landside connection of t access trestle.

(2) The reclamation, soil replacement and backfilling works comprise the placing of specific types to specific permanent locations within the areas as shown on the Tender Drawings.

(3) The Contractor shall control the fill material in order to avoid localized build-up of fine mater and the potential formation of areas of compressible fill. Control of all fill, land based a hydraulic, shall be such as to avoid material which retains significant amounts of water a does not readily drain.

(4) The fill shall attain the specified level of compaction and losses of fines in the discharge wa must be closely controlled.

(5) Testing of placed fill shall be carried out as described in Section 0.

(6) The Contractor shall give details of any further ground improvement techniques to be used areas where testing of the as-placed fill shows that it does not meet the specified compacti or other specified performance criteria.

(7) Above water level, dry fill from any source shall be placed in layers using acceptable materi and approved compaction plant, in accordance with the Specifications.

(8) The Contractor shall not commence filling of any area or backfilling of any structure until t Engineer has given his respective approval.

(9) The Contractor shall take representative samples of the fill material during placement directed by the Engineer. At least three samples shall be taken per day of filling works, an particle size determination be made. Any material found not in conformity with t Specifications will be rejected by the Engineer and shall be removed from Site by t Contractor. Rejection may be made at the source, on the transporting vehicle, or in pla Acceptance of fill will be made only after the materials have been dumped, spread a compacted in place.

(10) Fill shall be carefully placed to avoid ground/slope failure planes, as well as excess loads on any temporary or permanent structure or part thereof.
Backfilling of concrete structures may only start when at least 70 % of the required 28-d concrete-strength has been achieved.

(11) Backfilling in areas of buried pipelines shall only be done when all required pressure te have been satisfactorily performed in conformity with the requirements of the Specificatio The material shall then be filled in layers with a maximal thickness of 0.3 m and uniformly both sides of the pipes over their full length. Special care shall be taken thereby, to assure t wrapping or coating of pipes will not be damaged. Only sand as per Section 0 (3) shall be us for backfill.

Materials

(1) Fill and backfill material shall be granular, free from organic matters and other impurities a free draining. Materials, selected by the Contractor for the individual purposes, have to tested by him and representative samples shall be submitted to the Engineer along with t reports for approval before starting the work. Only approved materials shall be used. T samples will be detained by the Engineer and used for comparison.

(2) Sand fill shall have a maximum silt content (grain size less than 0.063 mm) of 5 % for mate with steep grain size distribution curves, or of 10 % for material with flat curves.

(3) The material used as fill for reclamation of new land areas within the harbour shall satisfy t following requirements:
Graded sand fill:

- Silt fraction (passing 0.063 mm sieve) ≤ 9 per cent
- Organic matter content ≤ 1 per cent
- Material retained by 63 mm sieve 0 per cent
- Coefficient of uniformity $U = D_{60}/D_{10} > 2$

Land Based Plant for Bunds

In order to prevent the loss of suspended sediment outside the reclamation area, the Contracto only permitted to pump material into the reclamation area once the area has been closed off us suitable land fill material or dredged material from stockpiles using conventional land based pla The Contractor will be entirely responsible for the maintenance of all his bunds until the reclamat area is finally handed over.

Compaction

(1) Fill material shall be placed in layers uniformly spread, moistened as far as required and th compacted.
The thickness of the layers depends on the material, type of vibrators and results of compacti tests executed at Site, taking into account an appropriate safety margin.

(2) The type of compaction equipment employed by the Contractor shall be such that the requir densities can be produced consistently. The foreseen equipment shall already be specified the Bidder in his Tender and requires the approval of the Engineer.

(3) Trial compactions shall be performed by the Contractor for each type of fill material, in orc to establish the most economic method to achieve optimum compaction. Based on the resu of such trial compaction fill, it is required to establish the material requirements, the optior water content during compaction, the necessary number of compacting cycles, thickness built-in layers, as well as type and weight of the compaction machines, all subject to Enginee approval.

(4) The Contractor shall, as the filling and compaction works proceed, verify the achieved degr of density.
The density of each layer of fill shall be checked as per EN 1997 and R 178 (EAU 2012) throu taking and testing undisturbed soil samples.
For each 500 m² compacted surface three adjacent points are to be investigated by dens tests.
In addition, the deformation value E_v (M_E) in MN/m² shall be confirmed by Plate Bearing Te: Ø 60 cm as per DIN 18134 or ASTM D 1195 (AASHTO T 221), executed on each 500 m² graded upper ground surface in the area of foundations, roads and parking places.
All samples are to be taken and tests performed in the presence of the Engineer. The Contract shall submit results of all such tests on approved form. The costs for sampling and testing sh be borne by the Contractor and are deemed to be covered by surcharges included in t relevant unit rates.

(5) The required densities and/or deformation values are according to Table 11-2: ***Requir Densities and/or Deformation Values***:

Table 11-2: Required Densities and/or Deformation Values

Layer	**Degree of Density** (EN 1997) I_D [%]	**Deformation Value** (DIN 18134) E_{v2} *) [MN/m²]
Fill up to 2 m below designed finished surface	50	-
Fill less than 2 m below designed finished surface	75	-
Fill up to 1 m below finished surface • Below foundations • Below pavement	75	120

*) The condition E_{v2} * 2.0 E_{v1} (fine grained soils) or E_{v2} * 2.2 E_{v1} (coarse grained soils) is to maintained.

(6) Individual test results may be down by 5 %, but the mean value of adjacent test points m at least correspond to the values specified under para (5).
If tested densities should fall below the above limits at any place, recompaction of such a shall be carried out by the Contractor and new tests executed thereafter.
Should two testing methods lead to different judgement, the more unfavourable result will considered only.

(7) Backfill of pipe trenches up to 500 mm above the top of the pipe shall be placed in layers approx. 50 mm only and each layer shall be compacted carefully by hand ramming.

(8) Portions of fill which, in the opinion of the Engineer, cannot be adequately compacted w rollers or surface vibrators due to inaccessibility shall be placed in layers not exceeding 1 mm and compacted to the specified density by means of approved power tampers, all at additional costs to the Employer.

Method Statement

(1) The Bidder shall sufficiently describe in his Tender the proposed method for reclamation a filling works and indicate also the source and type of fill material.

(2) Any temporary measures for enclosing the reclamation areas must be provided by t Contractor, subject to Engineer's approval. The costs for any such measures are deemed to covered by the unit rates for reclamation fill, except for that portion, which may become permanent part of the embankment revetment.

(3) Filling and compaction of fill above water level shall be carried out as otherwise described Section 0**Error! Reference source not found.**. In case of hydraulic fill the Specifications ap analogously and in addition R 81 (EAU 2012) must be observed.

Excavation

(1) The term "excavation" under this Section shall mean excavation of any type of material shore or on reclaimed land for buildings, service lines, roads or embankment revetme whether in dry or in wet condition, to the lines and grades shown on the Tender Drawings as required by the Engineer.

(2) At all times during construction, the Contractor shall adopt excavation procedures which ensu that the stability of any slope will not be impaired. The Engineer's approval of excavati procedures shall in no way relieve the Contractor of his responsibility for safeguarding t stability of all slopes excavated under this Contract.

(3) All excavated areas shall be drained to the satisfaction of the Engineer. Any surface subsurface water flows, entering or adjacent to the excavation, shall be satisfactorily control by methods acceptable to the Engineer.

(4) After each excavation is completed, the Contractor shall notify the Engineer, and beddi material or blinding shall only be placed after the Engineer has approved the documentation works, tests and analyses, the excavation depth and compaction of the excavated surface.

(5) All excavated materials shall be disposed of as described herein, or may be incorporated in t Works either directly or after stockpiling. Only those materials meeting the appropri specifications may be incorporated in the Permanent Works.

(6) If for any reason excavations were carried out beyond their true line and level as shown on t Tender Drawings or differently from the direction of the Engineer, the Contractor shall, at own cost, make them good to the required line and level with lean concrete, compacted sa or other approved material, and in such a manner as the Engineer may direct.

(7) For excavation works a tolerance of +/- 0.1 m shall apply unless otherwise specified in t Tender Documents.

Revetments and Dams

Scope of Works

(1) The work specified in this Chapter comprises supply and installation of rock material a geotextiles in dams and revetments for protection of reclamation and scour protection agai propeller induced velocities.

(2) Where works are directed to be performed by the Contractor but are not specified in the Ten Documents, the Contractor shall carry them out with full diligence and expedience as a expected for works of this nature under the obligations of the Contractor.

(3) The Contractor shall maintain the riprap revetment until all works on the contract have be completed and accepted. Maintenance shall consist of the repair of damaged areas by a possible causes.

General

(1) The water-sided embankment sloped 1:1.5 to 1:3 shall be protected by an armour layer shown on the Tender Drawings with a minimum thickness of 0.5 m and rock weights of 1 – kg.

The grading shall be as follows:

- D_{15} = 75 mm,
- D_{50} = 200 mm and
- D_{85} = 260 mm.

(2) The scour protection against propeller induced velocities will have to be constructed accordi to the Tender Drawings with a minimum thickness of 0.90 m to 1.4 m and rock weights of – 300 kg. The grading will be as follows:

- D_{15} = 300 mm
- D_{50} = 450 mm and
- D_{85} = 550 mm.

(3) Together with the Tender, the Bidder shall submit details about the selected material (r material and geotextile) including information about the sources and the quality systems of a quarries or manufacturers/suppliers.

(4) At least 14 days before commencement of the construction works, the Contractor shall subi a detailed method statement for the Engineer's approval, taking into account the change water levels, technical requirements, plant employment and diver's assistance, explaining t methods to be adopted for controlling the layer thickness and slopes (surveying work Besides, a traffic management plan has to be prepared (also see Section 0).

(5) The Contractor shall submit a detailed testing schedule to show his self-monitoring and qua insurance system regarding inspection and testing of the delivered rocks and other materia

References

/1/ EN 932 Test for general properties of aggregates

Part 1 Methods for sampling

Part 5 Common equipment and calibration

/2/ EN 13383 Armourstone

Part 1 Specification

Part 2 Test Methods

/3/ EN ISO 9863 Geosynthetics - Determination of thickness at specified pressures

Part 1: Single layers

/4/ EN ISO 9864 Geosynthetics - Test method for the determination of mass per unit area geotextiles and geotextile-related products

/5/ EN ISO 10319 Geosynthetics - Wide-width tensile test

/6/ EN ISO 11058 Geotextiles and geotextile-related products - Determination of water permeabil characteristics normal to the plane, without load

/7/ EN ISO 13934 Textiles - Woven fabrics. Determination of breaking strength and elongation (St method)

/8/ EN ISO 12236 Geosynthetics - Static puncture test (CBR test)

/9/ EN ISO 12956 Geotextiles and geotextile-related products - Determination of the characteris opening size

/10/ RPG of BAW[4] Guidelines for Testing Geotextiles for Navigable Waterways

/11/ CIRIA C683 – The Rock Manual. The use of rock in hydraulic engineering

Rock Material

General

(1) All materials of rock shall be quarry material obtained from approved sources and shall sound, compact, hard, durable, resistant to action of sea water and free of cracks and fissu detrimental for the proper performance of the material in question.

(2) The material shall only be obtained from a quarry selected by the Contractor and approved the Engineer. The Contractor shall not obtain and supply rock from other sources with Engineer's approval.

Approval

(1) No materials shall be used in the Works unless they have been approved beforehand by t Engineer.

(2) The sources from which the stones will be obtained shall be selected well in advance of the ti the stones will be required for the Works. The acceptability of the stones will be determined service records and/or suitable tests. If tests are required, samples of material shall be tak in presence of the Engineer at least 21 days in advance of the time when the placing of t material is expected to commence at site.

(3) The Engineer shall have the right at any reasonable time to make inspections of any propos source nominated by the Contractor at the start of the Contract or any new source propos by the Contractor during the period of the Contract. The Contractor shall provide suitable acc and necessary transport to each site for the Engineer. The Contractor shall submit details the Engineer of the sources from where he proposes to obtain rock at least four weeks bef the start of any operation.

(4) Works done using material not satisfying the Specifications and requirements shall be reject and the Contractor shall carry out the necessary remedial works to the satisfaction of t Engineer or replace with correction materials.

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[4] RPG of BAW Richtlinie zur Prüfung von Geotextilien im Wasserbau - Bundesanstalt für Wasserbau, Deutschland
Guidelines for Testing Geotextiles for Navigable Waterways - Federal Waterways Engineering and Research Institute, Germany

(5) Final approval of any particular quarry or part therefor will depend upon the results obtair from trial blasts carried out by the Contractor.

Density

The average density of quarry stone used for armour/core/filter and cushion layers must be at le 2,600 kg/m³ with 90% of the stones having a density of at least 2,500 kg/m³.

Water Absorption

The average water absorption of quarry stone must be less than 2 % and the water absorption of n out of ten of the individual stones less than 2.5 % according to EN 13383 Part 2.

Resistance to Abrasion

The resistance to wear category has to be at least M_{DE} 30 according to EN 13383 Part 1.

Impurities

Quarried rock shall not contain visually observable or chemically detectable impurities or fore matters in such quantities that these are damaging for the constructive application of the quarr stone or for the environment in which the quarried stone is applied.

Classifications

For specifying the classification requirements of rock materials to be incorporated in the revetme following symbols are used:

W_{LCL}: Lower class limit weight, as shown in Table 11-3 ***: Classifications of Rock Material***.

The class of stone shall not contain more than 15% stones (by weight) below the lower cl limit.

W_{UCL}: Upper class limit weight, as shown in Table 11-3 ***: Classifications of Rock Material***.

The class of stones shall not contain more than 15% (by weight) above the upper mass lin

W_{50}: Average stone weight, defined as total sample weight divided by the corresponding numl of stones. The average weight is usually around the mean of the upper and lower class li weights.

t: Thickness of armour/filter layer

D: mean diameter of individual block

Table 11-3 : Classifications of Rock Material

Designation	W_{LCL}	W_{50}	W_{UCL}	t	D
Armour Layer I	79 kg	243 kg	433 kg	0.5 m	200 mm
Armour Layer II	1.2 kg	24 kg	48 kg	0.9 m	450 mm
Core Material	0.003 kg	2 kg	9 kg	variable	90 mm

For rock armour stones the following additional requirements shall apply:

- The stones shall be rough and angular in shape.
- The maximum stone dimension (length) shall not exceed 3 times the minimum dimension

Sampling

(1) Sampling shall be done according to EN 13383 Part 2 and conform to the general requireme stated in EN 932 Part 1.
(2) The samples of the grading of quarried stone to be inspected shall be taken at random a must be representative.
(3) The stones for rock shape and quality tests shall be chosen at random from samples wh have been taken for the particle and weight distributions.
(4) It shall be ensured that during sampling the grab or other extraction equipment is filled t minimum to ensure the sample is representative for the batch tested.
(5) For sampling from a stockpile measure shall be taken to eliminate the effect of possi segregation.
(6) For the transport of samples, precautions shall be taken so that no material is broken or l and that the sample is not contaminated. Each sample shall be accompanied by a sampli certificate. This certificate shall include the following information:
- The name and location of the quarry or other source where the rock material is produce
- Description and class designation of the rock material;
- Number of stone pieces in the sample;
- The name of the sample taker.

Inspection and Testing

(1) Inspection and testing of rock materials shall be carried out as an integral part of t Contractor's quality control programme with the objective to ensure the quality of all parts the work, also see Section 0.
(2) The following properties of rock armour material shall be tested and fully documented prior commencement of any production or placement of armour layer.
- density (according to EN 13383 Part 2)
- water absorption (according to EN 13383 Part 2)
- resistance to abrasion (according to EN 13383 Part 1)
- weights and gradings (according to EN 13383 Part 2)
- length to thickness ratio (according to EN 13383 Part 2)

(3) The tests shall be carried out in accordance with the test specifications of EN 932 Part 5.
(4) In addition to the tests mentioned above, the Armour Layer I and II have to be tested with t drop test (DT) according to CIRIA C683.

Rejection of Rock Materials

(1) Rock materials which do not meet the specifications stated above and are rejected by t Engineer shall be promptly removed from the Site and replaced by the Contractor at his o costs.
(2) It shall further be the Contractor's responsibility to remove from all sites of the works all surp material, rubbish, debris and material unsuitable for inclusion in the works and dispose ther at a licensed facility.

Handling and Placement of Rock Material

General

Handling and placement of rock materials shall include all work and activities involved with:

- transport from quarry sites to construction area

- unloading/loading and stockpiling and sorting near the construction site
- marine transport
- placement in the permanent works
- shaping and quality control of the different sections of the permanent works.

Transport and Access

The Contractor shall be responsible for all transport of rock materials from quarries to the construct site. A traffic management plan has to be submitted before commencement of the transport of r material to the site containing the following:

- Number and type of transport equipment
- Expected daily transport volume
- Planned routing from rock quarry to project site
- Safety and traffic management measures to minimize influence on public traffic

The access as well as the portion of public roads connected with it shall be kept clean and safe at times.

Placement of Fill Material

Core material shall be placed to the elevations and slopes indicated on the Tender Drawings and accordance with the method and sequence of construction approved by the Engineer. The c material shall be placed to ensure that the larger rock fragments are evenly distributed and the sma rock fragments serve to fill the spaces between the larger rock fragments.

Subject to the written approval of the Engineer, core material may be dumped and tipped to natural slope of the material and left untrimmed provided that the core is built up to the dimensi shown on the Tender Drawings with the material specified for the armour layer.

Alternatively, the dumped material shall then be levelled out to the required slope and position placing with suitable equipment.

Placement of Armour Layer II

Placing shall start at the toe of the embankment in horizontal layers and in such a manner t washing out and disintegration of material are avoided. Rocks shall not be dropped from a height more than 0.30 m.

The thickness is shown in the relevant Tender Drawings. The rocks shall be placed randomly so t the final slope does not appear as a smooth paved surface. This is to ensure good interlocking betw Armour Layer I and Armour Layer II.

Placement of Armour Layer I

The rocks shall be placed at least in two layers. The placing shall be pell-mell e.g. randomly pla so that the final slope does not appear as a paved surface.

Placing should start at the toe of the slope in horizontal layers, working upwards in a careful man as to avoid disturbance or misplacement of the previous layer (especially the core) and mixing washing out, disintegration, sliding etc., and in such a way as to ensure minimum of voids maximum interlocking.

Rocks shall not be dropped from a height of more than 0.50 m.

The theoretical thickness, t, of two layers of armour stones is calculated as:

$t = 2\,x\,\sqrt[3]{(average\ block\ volume)}$

The rocks shall be individually placed and be tightly packed together so as to achieve a bulk tar weight placed of 16 kN/m³ with a tolerance of +1 kN/m³.

When placing stones up to a theoretical border as defined by the cross sections on the Ten Drawings the Contractor shall aim at having the stones protrude through the theoretical border o one third of its area.

Tolerances

Rock materials shall be placed to the following tolerances:

a) Thickness of Armour Layer I -0.00/+0.20 m
b) Thickness of Armour Layer II -0.00/+0.15 m
c) Core levels:
   Crest: -0.1 m/+0.2 m
   Slopes (vertical placing tolerance):
   - Above water level: + 0.10 m
   - Below water level: + 0.20 m
d) Horizontal dimensions:
   Width of crest: -0.1 m/+0.5 m

Where it might be physically impossible to satisfy all of above tolerance requirements, they shall ha preference in the above order.

Settlements

All works shall be carried out to meet the specified lines and elevations at the day of handing over the works.

Every 50 m along the slope, settlement beacons have to be installed on the core material of the da During installation of the armour layers and afterwards, measurements have to be executed recognize any short term and medium term settlements.

The Contractor has to include any settlement within the structure that may occur before the handi over date as a superelevation. This superelevation shall be with materials and in a manner approv by the Engineer.

Inspection and Testing

Measurement profiles shall be taken at intervals along the length of the structure (breakwat seawall, etc.) approved by the Engineer. These will generally be every 20 m. No layer shall be cover by a subsequent layer until the profile of the former layer has been approved by the Engineer.

Above water

Corse and light armour stone gradings can be measured using a probe with a spherical end of diame equal to approx. 50 % of the characteristic dimension of the specified rock (0.5 x D_{n50}) which will connected to staff, GPS antenna or EDM target.

Heavy gradings shall be measured by means of staff linked to a GPS antenna or EDM target prol which for land-based surveys will generally be connected to a staff or EDM target.

Under water

Under water survey techniques involving electronic positioning in combination with multi-beam ec sounders or equivalent shall become subject to the Engineer's acceptance in each case.

Such acceptance will only be given upon thorough documentation and acceptance testing of the sa equipment for compliance with accuracy requirements.

It is referred to Chapter 0 for more information.

Geotextiles

Materials

(1) Terrafix® 609 of Naue[5] or equivalent shall be chosen.

(2) Geotextiles shall be porous, carpet-like materials, made from continuous filame polypropylene, needle punched fibres to form a homogenous sheet. Fibres used in t manufacture of geotextiles and the threads used in joining geotextiles by sewing, shall cons of long chain synthetic polymers, composed of at least 95% by weight polyolefins or polyeste They shall be formed into a stable network such that the filaments or yarns retain th dimensional stability relative to each other, including selvages.

(3) Geotextiles are used in the actual works as a separation layer between core material and sa fill respectively existing ground.

(4) The brand and type of geotextile proposed by the Contractor for the works shall become subje to the Engineer's approval before bringing it to site.

(5) The geotextile shall be polypropylene filter fabric and shall be resistant to air, water a chemical and bacteriological attacks.

(6) Geotextiles manufactured from staple (short) fibres or comprising of reject or mixed fibres n derived from a single source polymer will be rejected.

(7) The fabric shall be manufactured with and preserve the following mechanical properties:

Raw material:	Polyester white, Polypropylene coloured
Mass per unit area:	min. 600 g/m² (according to EN ISO 9864)
Thickness:	5.3 / ≥ 4.5 mm (according to EN ISO 9863-1)
Max. tensile strength, md/cmd:	≥12.0 kN/m (according to EN ISO 10319)
Resistance to static puncture load:	min. 1,200 Nm (according to RPG of BAW)
Resistance to abrasion load:	yes(according to RPG of BAW)
Characteristic opening size:	0.09 mm (according to EN ISO 12956)
Water permeability: (according to EN ISO 11058)	VIH50-Index: 3.75 x 10-2 m
Flow rate$_{H50}$:	37.5 l/sm2
$k_{10.H50}$:	2.86 x 10-3 m/s
Hydraulic filtration efficiency against soil type:	1, 2 und 3 (according to RPG of BAW)

(8) <u>The following documents must be present:</u>

- Internal and external monitoring in accordance with DIN 18200

[5] Naue GmbH & Co. KG, Gewerbestraße 2, 32339 Espelkamp-Fiestel
Telephone: +49 (0)5743 410
www.naue.com

- Quality management system according to EN ISO 9001
- Current CE marking
- Proof of product groups EPD (Environmental-Product-Declaration)
- Resistance (pursuant to Annex B of the corresponding European application standard) f at least 25 years when used without reinforcement function in natural soils with a pH val between 4 and 9 and a bottom temperature of <25 ° C.

(9) Samples and manufacturer's literature of the material with references etc. are to be submitt to the Engineer for approval. Furthermore, a test certificate of the Bundesanstalt für Wasserb (Federal Institution for Hydraulic Engineering), Karlsruhe/Germany, or of an equivalent a approved institution has to be submitted.

Shipment and Storage of Geotextiles

(1) Product labels shall clearly show the manufacturer or supplier name, product type and r number. Each shipping document shall include a notation certifying that the material is accordance with the manufacturer's certificate. Failing such, the material shall not be accepte

(2) Each geotextile roll shall be wrapped with a material that will protect the geotextile fro damage due to shipment, water, sunlight and contaminants. The protective wrapping shall maintained during periods of shipment and storage.

(3) During storage, geotextile rolls shall be elevated off the ground and adequately covered protect them from the following: site construction damage, precipitation, extended ultraviol radiation including sunlight, chemicals that are strong acids or strong bases, flames includi welding sparks, temperatures in excess of 70 °C and any other environmental condition th may damage the physical property values of the geotextile.

Execution of Works

(1) The filter mats shall be stored, handled and placed on the embankment slope in str compliance with manufacturer's instructions, as per Tender Drawings or Engineer's instructior

(2) During installation temporary exposure to sunlight shall preferable not exceed 4 hours. To exposure to direct sunlight in excess of 2 days of a piece of geotextile will lead to rejection the exposed geotextile.

(3) Before installation of the geotextile the surface of placing shall be trimmed and cleared f obstructions, which may damage the geotextile.

(4) The material shall not be torn or punctured or damaged otherwise. If during the course of wo damage to the synthetic filter mats is encountered, remedial work shall be carried out directed by the Engineer.

(5) The geotextile shall be placed loosely on the ground surface with no wrinkles or folds and wi no void spaces between the geotextile and the ground surface. Care shall be taken duri installation so as to avoid damage occurring to the geotextile as a result of the installati process.

(6) Should the geotextile be damaged during installation, a patch shall be placed over the damag area extending 1 m beyond the perimeter of the damage.

(7) The geotextile shall consist of min. 4.5 m wide lengths. The geotextile lengths shall be plac perpendicular to the longitudinal direction of the rubble mound structure with an overlap of least 0.50 m if installed in the dry and at least 1.00 m if installed under water.

(8) The geotextile shall be in one piece from the bottom to the top of the structure. When correct placed on the slope the geotextile shall be smooth and kept in position by weights (e.g. ston or iron bars) preventing the sheet from floating.

(9) No rock or fill material shall be placed on the geotextile sheet before the placing has be accepted by the Engineer.

(10) Placing of subsequent layers shall take place in a manner which will not damage t geotextile.

(11) In under water applications, the geotextile and the riprap protection shall be placed the same day.

(12) Following placement of armour stones, trimming or grading of the slope shall not permitted if it results in movement of the stones directly above the geotextile.

Measurement and Payment

(1) Payment for preparation of slopes is deemed to be included in the unit rates for placing of cc material and armour layers.

(2) The core material will be measured per m^3 on the basis of the Execution Drawings approv by the Engineer and field measurements. Settlements will not be paid for but have to included in the unit rates.

(3) Placing of filter mats will be measured per m^2 surface on the basis of the Tender or Executi Drawings and field measurements, however without any surcharge for overlapping etc.

(4) Rock armour layers will be measured per m^2 surface in accordance with the Tender or Executi Drawings or other field measurements. The measurements have to be backed up by delive notes of the material. If the rocks are delivered by land, trucks have to pass a calibrated wei bridge. If delivery by sea is chosen, the bill of ladings of each vessel have to be submitted the Engineer before arrival of the vessel. The bill of ladings may be checked randomly independent experts. The costs for this have to be included in the rates.

(5) Quantities which become necessary due to inaccuracies or slides will not be compensated fo

Piling Works

Scope of Works

The works covered under this chapter comprise supply, installation and testing of tubular st foundation piles for the jetty structure and access trestle. The bearing piles are open ended tubu steel piles of outer dia. 612 and thickness 20mmmm. The piles shall be installed by an appropri installation method at the contractor´s discretion in order to obtain a characteristic load capacity shown on the piling plans in the Tender Drawings until the required bearing capacity or the desi levels are reached.

In the Tender Drawings the overall piling layout has been defined together with required characteris load bearing capacities.

Based on the Contractor's recommendation a review of pile lengths and introduction of possil measures for improved point resistance shall be carried out by the Engineer after piling the first t piles. The approved piling criteria shall be stated in a piling schedule.

The installation of the permanent piles shall be constantly monitored as specified in Section 0. individual piles are found not to meet the pre-defined performance requirements, necessa strengthening or additional piling shall be carried out.

The Bidder shall submit with his Tender all relevant details of the manufacturer of piles, method piling, the plant and monitoring equipment he plans to use. Alternative piling methods may be us provided it is demonstrated that they satisfy the requirements of the Specification.

References

/1/ EN 1997 Eurocode 7: Geotechnical Design

Part 1 General Rules

/2/ EN 1090 Execution of steel structures and aluminium structures

/3/ EN 10025 Hot rolled products of structural steels

Part 1: General technical delivery conditions

/4/ EN 10204 Metallic products - Types of inspection documents

/5/ EN 10210 Hot finished structural hollow sections of non-alloy and fine grain steels

/6/ EN 10219 Cold formed welded structural hollow sections of non-alloy and fine grain steels

Part 1: Technical delivery conditions

/7/ EN 10220 Seamless and welded steel tubes - Dimensions and masses per unit length

/8/ EN 12699 Execution of special geotechnical works - Displacement piles

/9/ EN 5817 Welding - Fusion-welded joints in steel, nickel, titanium and their alloys (beam weld excluded) - Quality levels for imperfections

/10/ EN ISO 9606 Qualification testing of welders - Fusion welding

Part 1 Steels

/11/ DIN 488 Reinforcing steels

Part 1: Grades, properties, marking

/12/ ASME-Boiler and Pressure Vessel Code

Section V and VIII

Besides, the piling works shall be executed in accordance with EAU 2012 and Section 0, Structu Steel Works.

Supply of Tubular Steel Piles

General

(1) With their Tender, Bidders shall submit details of the proposed manufacturer(s) of steel pile
(2) Bidders shall submit with their Tender full details of the type of tubular steel pile offered, e. seamless or spiral welded. In addition, a preliminary drawing shall be provided showing locat and number of butt welds, if any, of the tubular steel piles in consideration of manufacture requirements.
(3) For the manufacture of steel piles, the Contractor has to prepare the complete Worksh Drawings and to submit the same to the Engineer.

Steel Qualities

Tubular steel piles shall be of steel of grade S 355 JR H, EN 10210, or equivalent highly weldable st quality.

Pile Specification

(1) Pile diameters, wall thickness and section lengths shall be as indicated in the Bills of Quantit and the Tender Drawings.

(2) Steel vanes and special pile points to be welded onto the foundation piles shall be supplied a welded as per Section 0.

Manufacturing and Tolerances

(1) Diameter and unit weight of seamless steel piles shall conform to EN 10220.
(2) Diameter and unit weight of welded steel piles shall conform to EN 10220.
(3) Manufacturing and tolerances shall conform to EN 10210, insofar as no other directives a prescribed in this section.
(4) Length tolerance of the ready steel piles shall be -0/+250 mm.

Delivery

(1) The tubular steel pile sections shall preferably be ready-welded together to complete foundati piles at the manufacturer's plant, ends cut straight.
(2) If tubular piles are to be transported in parts to the Site, proper marking of the tube ends the joints to be welded at site is to be provided for, to ensure accurate fitting. For any b weld to be executed at the storage/working yard, the same principles of Section 0 apply as the welds executed at manufacturer's plant.
(3) The Contractor shall ensure that the piles are available at the time for incorporation in t works – in accordance with the approved piling schedule.

Marking, Handling and Storage

(1) Each pile shall be clearly numbered and its length shown near the pile head using white pai In addition, before being driven, each pile shall be graduated along its length at intervals 250 mm.
(2) All piles within a stack shall be in groups of the same length and on appropriate supports. operations such as handling, transporting and pitching of piles shall be carried out in a manr such that no significant damage occurs to piles and their coatings.

Supply of H-Type Steel Piles

NOT APPLICABLE

Supply of Steel Sheet Piling

NOT APPLICABLE

Supply of Additional Materials for Tubular Steel Piles

General

(1) This section applies to the provision of steel materials required for the manufacturer reinforcement of pile joints, vanes and pile points, as well as for welded-on pile head fitting
(2) Supply of steel vane and pile point material to be welded onto foundation steel piles is cover by Section 0.
(3) The installation of steel vanes and special pile points shall follow Section 0.
(4) Unless otherwise specified in the Tender Drawings, the thickness of all extra material comi into contact with seawater must be at least 12 mm.

Steel Qualities

(1) Only steel qualities equivalent to the respective structural element/steel pile shall be used.

(2) Steel straps for pile joints shall be of grade S355J2, EN 10025.
(3) Reinforcing platings for pile points shall be of steel grade S355J2, EN 10025.
(4) Steel claws for pile head fittings shall be of grade B500, DIN 488.

Pile Butts

(1) Pile butts of steel piles, whether executed at the factory or at site, shall be designated a executed in strict compliance with R 99 (EAU 2012).
(2) Welded joints shall withstand driving stresses. Splices shall be provided, if necessary.
(3) All welding seams shall be tested as per Section 0.
(4) Meeting ends of pile sections to be joined shall be true and formed with a clean perpendicular to the pile axis. The meeting ends shall be made with clean cuts to form a profile in cross section through the metal.
(5) If the tops of driven steel piles are to be fitted with welded joints, these shall not be placed areas with driving deformations. In such cases, the top ends must be cut off to a point w below the limit of deformation, or to at least 10 cm below the pip top in case of no visi deformations.

Pile Head Fittings

Where pile head fittings must be fitted to the top of driven piles, Section 0 is to be followed. addition, Section 0 (3) applies analogously.

Tests and Acceptances

(1) Materials covered by the Chapter shall be inspected and tested as per EN 10210 and deliver with a works test certificate as per EN 10204.
(2) All material tests shall be performed in accordance with "Technical Conditions of Delivery Steel Sheet Piles", R 98 (EAU 2012)
(3) Tubular steel pile sections shall be separated according to diameter, steel grade and differi charge, if any, into lots of 50 units each. Out of each lot one steel pile section shall be subj to destructive tests as per EN 10210.
(4) Non-destructive inspection shall be extended to the full length of all welds.
Dependent on the welding method, the radiological or ultrasonic method shall be appli Evaluation of non-destructive inspection shall follow ASME-Boiler and Pressure Vessel Co Section V and VIII.
(5) Hydrostatic tests need not be carried out for tubular steel foundation piles.
(6) The chemical composition of the steel plate material shall be confirmed by ladle analyses. must meet the requirements set against the steel qualities as per Section 0.
(7) Failed tests may be repeated as per EN 10219. If the conditions stipulated therein cannot fulfilled, the entire lot of steel pile sections will be rejected.
(8) The Employer/Engineer reserves the right to have the material and welding tests supervis by an independent inspector at the pile manufacturer's plant.
(9) All pile sections manufactured in conformity with these Specifications shall be provided w identification markings by the manufacturer as follows:
- Manufacturer's name or mark
- Size in mm
- Steel grade
- No. of test lot.

Any additional marking as deemed useful by the manufacturer/Contractor/Employer Engineer may be agreed upon later on and shall be provided by the manufacturer/Contrac without additional costs to the Employer.

(10) No material or tubular steel pile section shall leave the manufacturer's plant unl concurrence of the test and inspection results with the Specifications has been confirm through presentation of the works test certificates to the Engineer.

(11) Butt welds shall be checked by ultrasonic inspection.

(12) Fillet welds shall be inspected by magnetic particle inspection.

(13) The standards of acceptability by which welding will be judged shall be in accordar with EN ISO 5817, sheet 3, evaluation group BS (butt welds) and group BK (fillet welds).

(14) Welds that are considered defective, are to be cut out and the welds have to be rema and retested to the satisfaction of the Engineer without additional costs.

Welding

Any welding of the tubular steel piles covered in this Chapter shall be as per Section 0.

Protective Coating

(1) Preservation coating, Type I, Section 0, shall cover all exposed and submerged outer p surfaces to a level of about 2.0 m below nominal seabed level or ground level.

(2) All pile sections or the complete piles shall preferably be blasted as per Section 0 and provic with preservation coat Type I, Section 0, already at the pile manufacturer's plant.

(3) Any damage to the coating by transportation and/or pile driving has to be corrected at the Si

(4) If preservation coatings are damaged or have to be completed in the area of pile butts, t affected areas shall be prepared and preserved as per Section 0, according to the type preservation coat relative to the respective steel item.

Pile Tests (prior to construction works)

General

(1) The Contractor shall carry out maintained pile load tests as indicated in the Bill of Quantitie

(2) Pile load tests shall be carried out in accordance with EN 1997, EN 12699 and EA-Piles, where the conditions of this section have to be given due consideration.

(3) The test loadings are to be undertaken as early as possible, so that the results can be tak into account when adopting the design of the foundation piles, if required. The tests sh however, begin at the earliest, 3 weeks after completion of the driving of the respective t piles.

(4) During the pile load tests, pile installation works or other work operations which could aff the load test results are to be suspended in the vicinity of the test location.

(5) All tests are to be carried out under the constant control of a qualified engineer of Contractor, in the presence of the Engineer.

(6) The Contractor shall design the load test facilities and submit detailed documents to Engineer, showing all arrangements, test equipment etc. at least 21 days bef commencement of the pile tests.

Location and Selection of Test Piles

(1) The test piles will be designated by the Engineer in coordination with the Contractor. They be located in areas of which detailed ground investigations are available. However, relev

factors concerning the Contractor's construction sequence etc. will be taken into acco thereby, if possible.

(2) Based on the pile load test results, the number of such tests may be increased, if deem appropriate by the Engineer.

Test Facilities

(1) The load transmitting members must be so designed and dimensioned, that the loading acts the longitudinal axis of the test pile, and that the test facilities do not fluctuate during the te and are secured against tilting.
The Contractor must prepare structural calculations for steel constructions, such as example, traverses, anchorings and other connections, and submit them to the Engineer time.

(2) A clear spacing of 2.5 m or 2.5 x D shall be ensured between supporting piles and test pil where D is the diameter of the pile toe. The higher value is decisive.

(3) Adjacent permanent structure piles may be used as supporting piles, provided the Contrac furnishes proof that these piles will not be adversely affected by this. If additional piles, wh will not be included in the permanent structure, are used as supporting piles, they shall not extracted after completion of the test, but oxy-cut at ground level or as otherwise directed the Engineer.

(4) The test and supporting piles are to be secured against lateral shifting or buckling throu bracings and supports, as per structural requirements.

(5) The hydraulic jacks and pumps must be so efficient, that they can maintain the requi pressure, if possible without fluctuations.
The calibration of the measuring gear to be executed before the test must be rechecked af completion of the test loadings. Applicable calibration curves and certificates are to submitted to the Engineer in this respect.

(6) For determining the pile head movements during the load tests, at least two micrometre c gauges of min. 100 mm measuring sphere are to be installed. They shall be so installed tl they are not influenced by the movement of the loads, the test pile or load anchorir (supporting piles). The movement of the reaction piles shall also be measured with 1 dial gau of min. 100 mm measuring sphere per reaction pile.
The dial gauges shall be calibrated. Certificates are to be submitted to the Engineer.
The Contractor is obligated to have adequate spare dial gauges in stock at Site.

Use of Additional Test Piles

(1) If the Contractor intends to execute the tests on additionally driven test piles, the guid principles of following paras (2) to (6) hold good, in addition to the other conditions of Sect 0.

(2) The location of the test and supporting piles must be coordinated with the Engineer.

(3) Accurate records are to be made on the driving of the additional test piles, refer to Section and 0.

(4) Good ground investigation results must be available and correspond to the ground in the a of the structure. Otherwise, the Contractor must carry out additional borings at his o expense, and/or change the intended location, as the case may be.

(5) Insofar as a test area lies within the structure ground area, neither the test nor the support piles may be extracted. They are to be oxy-cut at or below ground level/harbour bottom, directed by the Engineer.

(6) If a test area lies outside the immediate area of influence of the structure foundation, t Engineer will decide whether the test and supporting piles are to be oxy-cut or extracted.

(7) In non-cohesive types of soil piles shall be extracted in any case. The Contractor is th obligated to restore at least the original, natural degree of density of the soil through additior compacting measures, if deemed necessary by the Engineer in view of future structures other governing aspects.

Tensile Tests for Raked Piles

NOT APPLICABLE

Compression Tests for Vertical Piles

(1) The test load R_g and the number of pile tests are stipulated in the BoQ.

(2) The loading cycles shall be a s follows:

- Small pre-load in order to be able to recognize any defects in the test arrangements
- At least 4 equal steps to reach ½ x R_g
- Unloding in at least 2 equal steps
- Reloading up to R_g in at least 8 equal steps

(3) When the load of ½ x R_g is achieved at the first loading cycle, the latter is to be maintained a period of 24 hours.

(4) Displacement measurements are to be undertaken during each load step after 0, 2, 5, 10, 2 and 40 minutes, as well as after 1, 3, 6, 12, 18, 22, 23 and 24 hours and after completion the load step. If necessary, these intervals have to be cut down in case stronger fluctuatic are recognizable.

(5) The loading has to continue during each load step until the settlement rates have dropped do to 0.1 mm within 5 minutes. Therefore, the Contractor must also record a time-dis-placeme diagram for each test loading, showing the pile head dispacement over (log) t.

(6) If necessary, the steps above ½ x R_g shall be so decreased in the second loading cycle that t load-displacement curve can be clearly recorded. As soon as the pile movements increase, t load increments are to be further reduced, in order to prevent a too rapid movement of t test pile.

(7) All pile movements shall be verified by an independent high precision levelling, at interv resulting from above para (4).

(8) Any foundation pile used as supporting pile for the tests is to be redriven, if the tensile fo applied to it during the compressive test has exceeded 60 % of its own ultimate tensile load determined on the basis of the test results, or if a permanent pile head lifting of more thar mm is ascertained.

Test Records

(1) Detailed pile installation records of the test piles are to be prepared. Besides the data requi by Section 0, pile penetration and driving energy diagrams shall be plotted.

(2) All test and supporting piles shall be surveyed by high precision levelling before and af completion of the load test and the results be recorded.

(3) The Contractor shall keep detailed site records of the tests as per load cycles and time interv stipulated under Sections (7) and 0 or as otherwise agreed by the Engineer.

(4) The Contractor shall draw up comprehensive pile load test reports. The reports must contai

- Layout sketch of the pertinent test and supporting piles.
- Recording of the adjacent bore profiles.

- Driving logs of the test and supporting piles.
- Day and hour at the start and end of each test.
- Water levels for the duration of the tests.
- Data on wind, sun, storm, rain, temperatures and their changes, insofar as the latter oc during the tests.
- Description of the loading and measuring devices, supplemented by drawings, descripti of load application and load relief.
- Certificates of the official testing of all gear measuring pressures and movements.
- Tables indicating all measured numerical values.
- The load-displacement diagram and the time-displacement curves.
- Special occurrences during the test loading, e.g. disturbances in the loading and measuri shifting of the measuring gauges, displacements of the test or supporting piles etc.

(5) The site test and diagrams are to be submitted to the Engineer in triplicate, at the latest 2 d after completion of each test.
The comprehensive reports are to be submitted to the Engineer within 14 days. If the t reports are incomplete or otherwise incorrect, the Engineer will return the same to Contractor, who must thereupon resubmit the revised report, to the satisfaction of Engineer.

Test Evaluation

(1) The ultimate pile load is reached, if one of the following criteria is met:
- if the pile begins to displace
- if permanent displacement of the pile head reaches 0.025 x D (in case the ultimate l does not appear characteristically in the load-displacement diagrams)
- if the heave or settlement rates do not drop down to 0.1 mm within 5 minutes un the maintained load.

(2) The Engineer will comment on the comprehensive test reports and, as the case may be, confi or revise the design depth and relevant driving criteria for the foundation piles.

Installation of Piles

General

(1) The term "pile" in Section 0 shall mean piles of any material.
(2) The term "installation" in this Section shall mean the sinking of piles to their design depth appropriate methods to be proposed by the Contractor in consideration of the prevailing lo and ground conditions and of the Specifications.
(3) The installation equipment and any auxiliary means shall be selected by the Contractor in s a way, that the piles can be installed to their design depth undamaged.
Jetting aid will be permitted by the Engineer only, if the ground permits, if other foundati are not endangered and if the Contractor agrees to comply with the applicable rules a standards (e.g. EN 12699, EAU 2012 and related standards), to the Engineer's satisfaction. any case, jetting may be permitted only up to limited depths. The last 5 m of piles must installed without jetting aid.
In respect of Contractor's responsibility to select appropriate and adequate equipme reference is made to Clause 4.17 of the FIDIC® Conditions of Contract for Construction Building and Engineering Works Designed by The Employer, Second Edition 2017 .

(4) To minimise the risk of longer work interruptions due to breakdown during pile installati operation, the Contractor shall maintain an adequate number of spare equipment (drivi hammers) of the appropriate size at Site.

(5) Already in his tender, the Tenderer must sufficiently describe and explain the equipment a procedure selected by him for installing the piles.

(6) After contract award, the Contractor is obligated to complete the documents submitted wi the Tender not only by data and drawings relating to the installation equipment and to guid destined for the piles, but also by sketches showing the working positions of the installati equipment at the time of installing the individual piles.

(7) If piles shall be installed from a driving trestle, the Contractor must prepare and submit to t Engineer the required structural checks.
Thereby R 140 of EAU 2012 shall be given due consideration.
In case the Contractor wishes to incorporate already driven foundation piles in the drivi frame, he must also prepare the required checks of stress and stability. As such a measure w have effects on the later condition of the piles, the Contractor must carefully design in det all connections between the permanent structure piles and the driving platform. Spec attention must be paid to the fact thereby, that damages to the steel surface preservation c later only be patched with difficulty and at additional expense to the Contractor.

(8) The pile driving gear shall have a sturdy leader, adequately long to permit pitching a installation of piles in full length.
The leader shall be designed to facilitate installation of piles in any direction and at a inclination required by the Tender Design and the working drawings.

(9) In designing the temporary frames for accurate and safe guiding of the piles during pitchi and installation, due consideration must be given to the type and size of the piles, as well to any accessories designed to be attached to the piles prior to installation.
Guide frames shall be equipped with synthetic rollers of adequate size to avoid damage to pil or possibly existent protective coatings during installation.

(10) For pile installation work, only suitable and well-fitting driving caps or pile he reinforcements appropriate to the mode of pile installation and to the size and shape of pile be installed, shall be used. Thereby it shall be ensured, that even at slight progress penetration the pile heads are not or only very little deformed. If the Contractor cannot fu this condition, all therefrom resulting additional works demanded by the Engineer are to borne by the Contractor.

(11) The Contractor must expertly patch all damages to the surface preservation coating the piles or sheet piles, which may have occurred during transportation and installation.

(12) In case the Contractor proposes to install piles not by driving method but by vibratic the following Subsections shall apply analogously. If deemed appropriate by the Contractor a the Engineer particular items may be defined specially in consideration of the Contractor's p installation method, before signing the Contract.

Leaders and Trestles

(1) At all stages during driving and until incorporation in the structure the free length of the p shall be adequately supported and restrained by means of leaders, trestles, temporary suppo or other guide arrangements to maintain position and alignment and to prevent buckling fatigue.

(2) Details in the form of drawings and descriptions on leaders, trestles, etc. as well as on late supports – and showing provisions to minimise damages to the pile during driving and handli

– shall be submitted to the Engineer for his approval in due course before commencement pile driving.

(3) Damages to the coating during handling and driving shall be repaired with a repair syst which is acceptable to the Engineer. Such repair is at the Contractor's expense.

Performance of Driving Equipment

(1) The Contractor shall make his own assessment of suitable type and size of driving equipm and shall provide the Engineer with information on the efficiency and energy of the drivi equipment including when followers are used. Dynamic evaluation and analyses shall provided.

(2) Where a drop hammer is used, the mass of the hammer shall be at least half that of the p For other types of hammer the energy delivered to the pile per blow shall be at least equival to that of a drop hammer of the stated mass. Drop hammers shall not be used from floati craft in such a manner as to cause instability of the craft or significant damage to the pile.

(3) Penetration from ten pile diameters above design toe level to final toe level shall always done by driving.

Length of Piles

(1) Based on performance requirements for the piles as defined in the Tender Drawings and t results of initial test driving and pile load tests of a representative portion of the permane piles, the Contractor shall prepare a detailed schedule for the piling works, including wo programme, estimated pile lengths and pile set, subject to the Engineer's approval.

(2) The length of pile to be driven and any additional lengths of pile to be added during drivi shall comply with the Contractor's schedule unless otherwise specified. During the execution the Works any amendments to the scheduled lengths shall be reported to the Engineer givi adequate notice prior to installation of the piles concerned.

Installation Procedures

(1) The installation procedure shall be such as to avoid damage to the piles.

(2) The Engineer shall be given 24 hours' notice of commencement of the driving of the first t pile.

(3) The Contractor shall give adequate notice and provide all necessary facilities to enable t Engineer to check driving resistances, sets and temporary compressions.

(4) The installation of each pile shall be continuous until the depth or set as required by the desi has been reached. In the event of unavoidable interruption to driving, the pile may be re-driv provided it can be driven to the specified depth and/or resistance or set without damage. follower shall not be used unless the set where applicable is revised in order to take into accou reduction in the effectiveness of the hammer blow.

(5) Installation records shall be made for every pile. This record shall contain the weight and f of the hammer or ram and the number of blows for each 250 mm of penetration, unle otherwise specified.

(6) The Contractor shall inform the Engineer without delay if an unexpected change in drivi characteristics is noted.

(7) Installation caps shall be of cast steel. The packing between installation cap and anvil of t installation hammer shall be selected in consideration of type of pile to be driven, encounter soil resistance and capacity of the installation hammer. In case of timber packing only hardwo shall be used.

(8) For large diameter piles a bell-shaped transition element between pile head and installation c shall be used, in order to ensure perfect transmission of the installation energy into the pile be installed.

(9) Foundation piles shall be driven to the design depth shown in the Tender Drawings and/ Workshop Drawings. The Engineer may alter these levels in consideration of pile load te results and the experience gained during the installation of the piles.
Relevant installation criteria shall be elaborated by the Contractor in consideration of all relati factors and be agreed upon at the appropriate time. However, before reaching the design dep as a rule, installation shall be continued as long as penetration is more than 5 cm with 1 blows at maximum installation energy of hammer, refer to Section 0.

Pile Butts during Installation

(1) Pile butts under the hammer are to be carried out with special care and to the satisfaction the Engineer. Section 0 and R 99 of EAU 2012 must thereby be taken into consideration.

(2) The relevant supplies and services will only be compensated for the lengthening of piles, whi in the opinion of the Engineer are not yet adequately load-bearing when reaching the design depth. The costs of all other butts, which are traceable to an inadequate leader height of t installation gear or to a fault of the Contractor, are to be borne by him.

Installation Records

(1) The Contractor shall give adequate notice and provide all facilities to enable the Engineer check installation resistance.

(2) The sets and temporary compression shall be measured and recorded for each pile at t completion of installation.

(3) For each pile this record shall include information on number of blows for every metre or eve 250 mm of penetration.

(4) The records shall moreover include information on:

a) Pile reference number
b) Type of pile driver
c) Type, weight, drop, mechanical conditions and reference number of hammer a equivalent information for other equipment
d) Date of installation
e) Date of pre-boring, if any
f) Cut-off-level
g) Positions of site welds
h) Level of ground inside the pile
i) Duration of and interruption in installation
j) Serial number and length of pile including lengths of individual parts
k) Seabed and water levels before and after installation
l) Directions and velocity of currents
m) Toe level of pile
n) Details of any obstructions encountered and obstruction time, and other interruptions sequence of work
o) Name and signature of foreman or supervisor in charge.

Such Contractor's records shall be made upon an approved standard form and two signed cop of these records shall be submitted to the Engineer not later than noon of the next working c after the pile was installed.

(5) When a set or resistance is being measured, the following requirements shall be met.
   a) The exposed part of the pile shall be in good condition, without damage or distortion
   b) The dolly and packing, if any, shall be in sound condition.
   c) The hammer blow shall be in line with the pile axis and the impact surfaces shall be f and at right angles to the pile hammer axis.
   d) The hammer shall be in good condition, delivering adequate energy per blow a operating correctly.
   e) The temporary compression of the pile shall be recorded.

(6) The set shall be recorded either as the penetration in millimetres per 10 blows or as the numb of blows required to produce a penetration of 25 mm.

(7) Additionally, the final set of each pile shall be recorded as the number of blows required produce a penetration of 100 mm, together with the time taken for the last 10 blows.

(8) The installation resistance shall be calculated from a suitable and well documented installati formula accepted by the Engineer.

(9) Proof installation shall be carried out by the Contractor. Heaving reached the agreed final s the pile shall be left for 5 minutes before installation again to check the set. If the set (numb of blows per 100 mm) is now reduced, the pile shall be redriven and extended if necessary, that after further proof installation the agreed final set is achieved.

(10) The costs of complying with these requirements shall be included in the Contractor's ra for piling.

Installation Sequence

(1) Piles shall be installed in a sequence to minimise any detrimental effects of heave and late displacement of the ground.

(2) The sequence and method of piling shall limit uplift and lateral movement so that the fi position of each pile is within the specified tolerances. At all times the deflections of each p from its axis as formed shall not be such as to cause damage or impair durability of the pi or any structures or services.

(3) The maximum permitted uplift of each pile due to any one pile driven within a pile centre centre radius of eight pile diameters is 3 mm unless it can be demonstrated that uplift exceedi this amount does not affect the ability of the pile to meet the requirements of this Specificati

(4) The Contractor shall commence installation of working piles taking measures to reduce eliminate uplift until it can be established by site measurements that such measures are longer necessary. Thereafter checks on uplift shall be made by the Contractor at least onc week and the results reported to the Engineer.

(5) If records and measurements show that piles have been laterally displaced so as to be outsi the permitted tolerance, damaged or are of impaired durability the measures the Contrac plans to adopt to enable the piles to comply with the Specification shall be provided to t Engineer.

(6) Laterally displaced piles shall not be corrected by force at the heads, unless the Contractor c demonstrate that the integrity, durability and performance of the piles has not been advers affected.

Tolerances

(1) After installation of piles, the location tolerances must be limited to the most possible minim value, in order to correspond to the allowable tolerance prescribed by the type of the respect structural element and the designed alignment of the piles.

(2) After installation, the position of the pile heads shall not exceed the following tolerances in t horizontal plane:

- steel foundation piles: ± 10 cr

If the above mentioned tolerances are exceeded due to reasons falling under the Contracto responsibility, all additional supplies and services resulting therefrom are to be carried out the Contractor free of charge, in order to meet the design and operational requireme destined for the different structures, to the satisfaction of the Engineer.

(3) The elevation of pile heads shall not deviate from the designed one by more than:

- steel foundation piles: ± 5 cm

If a pile is driven deeper, beyond the foregoing tolerance, and without special reasons approv by the Engineer, all costs for a lengthening of the pile head demanded by the Engineer are be borne by the Contractor.

(4) Cutting of a pile not being installed to the planned depth is exclusively subject to the appro of the Engineer, refer to Section 0 (2).

(5) If in extraordinary cases extracting of an incorrectly installed pile should become necessa with the Engineer's consent, the Contractor must take corresponding measures to re-establ the load-bearing capacity of the soil. All related costs are to be borne by the Contractor, exc if such measures are to be traced back to circumstances, for which the Contractor cannot made responsible, refer to Section 0.

Nuisance and Damage

Damage to adjacent Structures

The Contractor shall carry out the work in such a manner as to reasonably minimise noise, vibrati and other disturbance in order not to cause damage to adjacent structures and services. If in t opinion of the Contractor damage may be caused to other structures or services by his execution the Works he shall immediately notify the Engineer.

Damage to Piles

(1) The Contractor shall ensure that during the course of the work, displacement or damage wh would impair either performance or durability does not occur to completed piles.

(2) Should a pile suffer any breakage, other heavy damages or unacceptable misalignments, t Contractor has to extract and to replace the same, as agreed upon with the Engineer. There the Contractor must prove that the ground in the respective area is compactable and ta suitable measures, in order to re-establish the load-bearing capacity of the soil being disturb by pile extracting. Besides, the Engineer will only then permit the extraction of any ill-driv pile, if other piles are not influenced in their bearing capacity.

(3) In case such damage is due to negligence on the part of the Contractor during execution of t Works, the Contractor must provide at his own expense the replacement of a broken damaged pile, including the improvement works in the soil.

(4) Damages to pile heads resulting from the Contractor's improper work arrangements must rectified to the Engineer's satisfaction, refer to Section 0 (10).

Obstacles

(1) The term "obstacle" within these Specifications shall mean unforeseen artificial obstructi which cannot be reasonably traced by surface inspections and ground obstructions e.g. r layers, boulders in the ground, cemented soil layers and the like, as far as these cannot derived from the data provided in the Contract or by any samples or information which co

also have been exhibited by the Contractor from available borings or trial holes, and wh cannot be penetrated with the appropriate equipment as required under the Contract.

(2) Prior to the installation of piles, the surface in the area where the structures are to be set must be searched by the Contractor through divers for obstacles, which would prevent sou installation of piles. The costs for such investigations are to be included in the unit pric applicable to the installation of piles.

The measures to be taken for eliminating possible obstacles have to be agreed upon with t Engineer. The incurring costs with regard to the removal of obstacles will be refunc separately to the Contractor upon presentation of documentary proof.

(3) Should, in spite of the above precautionary measures, obstacles be encountered during t installation of piles, the Engineer must be informed immediately of this. The further measu are to be taken only in agreement with the Engineer.

(4) For damages to piles, as well as for the additional supplies and services resulting therefrom, for interruptions in the progress of the works due to encountered obstacles, the Contractor v receive an additional remuneration only if the Engineer confirms, that the obstacles could r be located by the Contractor, even if he fulfilled most carefully his contractual obligations.

Non-reaching of Design Depth

(1) If, during installation of the piles, the progress of the installation reduces considerably, t uniformly before reaching the design depth, and if this is not due to exceptional circumstanc (e.g. encountering of an obstacle), the installation of the pile has still to be continued as lo as the penetration is

- more than 5 cm with 100 blows (steel piles)

at maximum installation energy of the appropriate hammer. If the Contractor intends to us procedure other than installation for the installation of the piles, corresponding criteria are be determined and to be agreed upon with the Engineer.

(2) The Engineer will in no case give his consent to cut a pile unless the condition of above pa (1) has been fulfilled.

In case cutting is not considered admissible by the Engineer, the Contractor shall arrange additional measures, or provide more efficient installation equipment if such installati difficulties occur more often, to install the piles to the required depth. However, those measu shall be coordinated with the Engineer.

All expenses for additional measures, equipment etc. shall be borne by the Contractor, if th are due to circumstances for which the Contractor is responsible, refer to Clause 4.17 of t FIDIC® Conditions of Contract for Construction for Building and Engineering Works Desigr by The Employer, Second Edition 2017 .

(3) Pre-boring may be required where pile will not penetrate stiff to hard cohesive soils. Appro of pre-boring must be obtained from the Engineer.

a. The diameter of the pre-bored hole shall not be greater than the inside diameter of t piles
b. Pre-boring shall not advance closer than 2.4 metres above the design depth of the pi unless otherwise directed by the Engineer.
c. The hole shall be drilled within the same accuracy tolerances as specified for the driv pile.
d. Before beginning any pre-boring works, the Contractor shall submit to the Enginee approval details of the procedure and type of equipment he proposes to use.

Inadequate Bearing Capacity at Design Depth

(1)If in the opinion of the Engineer, the required bearing capacity has not yet been achieved, t installation of the piles is to be continued, even when the design depth has been reached. such cases, the pile head is to be lengthened through an expertly prepared butt connection.
(2)The Engineer will give the Contractor relevant instructions at the appropriate time, i. e. afi the results of the first installation work, and which may have to be revised when results of t pile load tests are available.

Inspection and Control of Pile Installation

General

(1)The Contractor shall keep upon the Works a competent site supervisor to be in charge of p construction, installation and monitoring.
(2)The site supervisor must be experienced in the type of pile construction necessitated by t Contract. A curriculum vitae of the supervisor shall be submitted prior to commencement. T whole time of the site supervisor shall be devoted to the piling works. The site supervisor sh not be removed from the Works without the Engineer being notified in advance with at lea one week's notice.
(3)Dynamic pile-testing and analysis of test data shall be carried out by skilled personn adequately trained and experienced in this kind of work and the test methods applied.

Monitoring Programme

(1)The Contractor shall in due course before commencement of any pile installation set up monitoring programme, which, subject to the Engineer's approval, shall provide documentati for each pile of the axial load bearing capacity.
(2)The programme shall be adhered to throughout the piling works, except as approved by t Engineer.
(3)The following minimum requirements shall be observed by the Contractor:
a) Requirements applicable to all piles:
- calculation of the dynamic pile resistance shall be made based on installation recor and an approved installation formula
- non-destructive testing of pile integrity and dynamic response, shall be carried out w a simple wave analysis program (CASE or similar). No restrike of piles for the purpc of testing will be required.

b) Requirements applicable to test piles and to a least 20 pct of the permanent piles, select at random:
- a rigorous dynamic load bearing analysis (CAPWAC or similar) shall be carried out fr the dynamic response at restrike of the pile 1-2 weeks after installation.

(4)If, during installation of a pile, the pile behaviour becomes questionable (e.g. sudden reducti or increase in the penetration depth per measuring interval, moving of the pile head or t like), the installation procedure must be interrupted immediately. In coordination with t Engineer, the reasons for this behaviour are to be investigated and suitable measures implemented. Even if, after checking, the Engineer gives his consent to continue the p installation, the sole responsibility of the Contractor will not be affected by this.

Test Methods during Installation

(1)The number of dynamic high strain pile tests is stipulated in the BoQ. Dynamic pile analy shall be carried out with the objective to:
a) evaluate and verify pile design at preliminary or subsequent stages of work

b) proof-test certain piles as work proceeds
c) evaluate pile stresses during installation (to avoid pile damage)
d) evaluate hammer energies to validate input data for installation formula
e) evaluate parameters to verify wave equation input data

(2) Test piles shall be instrumented with strain transducers and accelerometers with a distance at least 1.5 times the pile diameter from the top of the pile. The sensors have to be moun at opposite sides of the pile in pairs (one strain tranducer and one accelerometer at each s of the pile).The sensors shall be attached rigidly to the pile. The measurement equipment m be sufficiently sensitive.

(3) Measurements of strain shall be made under hammer impact and, at the same time, the mot of the pile is measured as acceleration. Both strain and acceleration shall be measu continuously over time.

(4) The test data from each hammer blow, or from selected hammer blows, shall be recorded further analysis. Weight and drop height of hammer shall be chosen in such a way, t significant displacement of pile is achieved by the blow. The hammer impact has to be appl as centrically as possible. If required, guiding aids shall be constructed.

(5) The most important measurement quantities have to be evaluated during the test for a tim recognition of potential or actual pile damage or measurement problems. The following ite must be observed:

(6) The strain measurement must be set to zero or must remain constant until the time wh impact is imminent.

(7) When calculating force from strain the elastic modulus must be verified from the wave tra time.

(8) The product of force and velocity must be integrated over time for a calculation of the ene transferred into the pile.

(9) Maximum of force, acceleration, velocity and the maximum pile tension force have to determined and documented.

(10) Stress maximum occurring during the impact event have to be determined and record

(11) The pile integrity has to be checked by comparing the time histories of force and veloc

(12) The data shall be processed with the CAPWAP method, giving end bearing capacity a a distribution of the skin friction over the pile length for each test pile.

(13) All test methods and test equipment shall be adopted in compliance with the 'state the art' and carried out by competent personnel, specialised in this kind of testing.

Reporting

(1) During the progress of a test, all records shall be available for inspection by the Engineer.

(2) In addition to this results shall be submitted to the Engineer as follows:

a) A preliminary copy of the test records within 24 hours of completion of a field test.
b) A conclusive report on the test after analysis of all recorded data. The report shall submitted not later than 72 hours after completion of a field test and in all cases in c course for implementation of the required strengthening of the pile, should this beco necessary.

(3) The following data shall be given in the test report in a tabular form:

- Date, starting and completion time of installation
- Pile Identification
- Pile type and weight
- Designed level of pile head
- Pile inclination

- Designed pile length
- Type of installation hammer
- Weight and capacity of installation hammer
- Maximum drop height
- Penetration under dead weight and hammer weight
- Number of blows per decimetre of pile penetration during the entire installation operati respectively vibration period
- Applied drop height/energy of the hammer at individual stages of installation process
- Deviation of pile head position after installation
- Effective installation depth
- Total penetration depth
- Total number of blows
- Cutting length, if any
- Extension length of pile, if butted under the installation hammer
- Position of such butt referred to pile point
- Effective pile length
- Final level of pile head
- Final level of pile point
- Level of terrain at pitching point
- Comments on special incidents, interruptions etc.

(4) For installation of sheet pile bearing and intermediate piles, simplified installation logs may prepared if agreed upon with the Engineer, refer to R 118, EAU 2012.

Auxiliary Works

Temporary Bracing of Driven Piles

(1) The Contractor shall ensure that where required, any permanently free-standing piles temporarily braced or stayed immediately after installation to prevent loosening of the pile the ground and to ensure that no damage resulting from oscillation, vibration or movement occur.

(2) Insofar as the Contractor has not already adequately stiffened the piles in the course of the installation works, he must subsequently stabilize them through the installation of steel bear wales and bracings.

(3) The individual elements are to be so designed and dimensioned, that they can transmit th dead weights, the vertically upward, downward or also horizontally directed reactions of bearing constructions of the precast concrete members or the shuttering etc., and the dir acting horizontal loads from wind or wave pressure, as well as from impacts of lighte launches, tugs, as well as from earthquakes, to the piles, within the scope of permissi stresses.

(4) The beam layers and bracings shall not suffer any appreciable deflections and the pile he no displacements or distortions under the action of the foregoing forces, through which accuracy to size of the concrete members and the concrete texture during the setting proc might be disturbed.

(5) The Contractor shall select the material needed for these Temporary Works and prepare designs, taking into account the requirements for the execution of the relevant construct works. Thereby

- the connections of the beams and bracings to the pile heads must be carried out with spec care, in order to restrict the later required patching work on the piles and their surfa preservation coating (if any) to a minimum,
- the individual elements must be designed technically suitable, in order to ensure qu mounting and dismounting, as well as simple haulage,
- the individual elements must be given a unified system, but provided with adaptable joinir and connections, in order to be able to compensate for inaccuracies during the precedi construction works, especially the installation work,
- individual elements must be dimensioned adequately sturdy, so that repeated use is possil and shocks from wave action etc. are kept away from the concrete during the setti process.

(6) The Contractor must already supply with his Tender, the planned bases of dimensioning a drawings showing the design principles for these Temporary Works and their most importa details (e.g. joinings to the foundation piles). He is furthermore obligated to submit detail drawings and calculations to the Engineer well ahead of the start of, such Temporary Works

Preparation of Pile Heads of Steel Piles

(1) When a pile has been successfully installed the pile head shall be prepared for jointing with t adjoining structural element of the superstructure.

(2) All cutting and welding work shall be executed as per Tender Drawings and the Contracto Workshop Drawings which have been approved by the Engineer, considering the genera applicable Standards for welding works and Section 0.

(3) If load bearing connections are to be welded, such as pile head fittings, welded joints or t like, these shall not be placed in areas with installation deformations. In such cases, the t ends of the piles shall be cut about 10 cm below the limit of deformation and the pile head subsequently extended by an expert pile butt.
Alternatively all bearing welding seams may be fitted below the deformed area, provided t structural dimensions do permit.

(4) As the case may be, the Contractor shall submit a detailed proposal for particular cases a execute all work to the Engineer's satisfaction.

(5) The Engineer is to be notified of the completion of pile head preparation by sections, so that can inspect the works prior to the installation of the reinforcing bars of the concrete structu members respectively of the precast concrete members. If the Contractor neglects to make timely request, and the pile heads become inaccessible the relevant items/members must removed again by the Contractor.

Reinforcement of Pile Points

(1) If deemed necessary by the Contractor, pile points may be suitably reinforced in order achieve a satisfactory result in the pile installation.

(2) Possible reinforcing measures shall be coordinated with the Engineer, and the Contractor sh design and execute the individual measures to the Engineer's satisfaction.

(3) Reinforcing of pile points will not be compensated for separately and the costs are deemed be covered by the rates applicable to the installation of piles, unless those reinforcements a so intended by the Tender Design.

Measurement and Payment

(1) Delivery of foundation steel piles will be measured and paid for after arrival on the site a acceptance by the Engineer according to the delivered tonnage. The delivery rates shall inclu costs of material, transportation, insurance, customs duties, taxes, port fees etc.

(2) Insofar as foundation steel piles must be butted at the factory or at site due to delivery lengt shorter than specified, the involved additional supplies and performances shall be deemed be compensated for by the supply rate entered in the Bills of Quantities covering the respecti steel pile materials.

(3) Quantities of material whose whereabouts cannot be shown by the Contractor will not compensated for, but fully deducted from payments already effected.

(4) Blasting of steel surfaces and preservation coatings will be paid for separately as per Secti 0.

(5) Transportation within the Site and pitching of the piles will be measured and paid per numb

(6) Installation of foundation steel piles will be measured and paid for per linear meter of pil installed in accordance with the Contract and the final installation records. Spare mater ordered by the Contractor will be paid only if and after it became a part of the Permane Works, with the Engineer's approval. The installation rates shall include all costs related installing the piles including auxiliary works such as surveying etc.

(7) Pile butts and oxy-cuts executed under the installation hammer shall be measured per numb but will be paid only, if they are intended by the Tender Design or otherwise agreed by t Engineer.

Those required by the Contractor due to limited capacity of pile installation equipment or d to Contractor's incorrect execution are deemed to be covered by surcharges included in t unit rates, and will not be compensated for separately.

(8) Preparation of pile heads shall be paid per number or by weight, as indicated in the Bill Quantities, refer also to Section 0 (2).

(9) Additional performances required by the Contractor for the sound execution of works, such temporary bracing of piles, diver work etc., are deemed to be covered by the unit rat applicable to the relevant section of work.

(10) Reinforcing of pile points will be compensated for only, if they are so intended by t Tender Drawings.

Costs for pile point reinforcement required by the Contractor are deemed to be covered surcharges included in the unit rates applicable to the installation of piles.

(11) For "obstacles", see Section 0.

(12) The lump sum prices for the test loadings shall include all supplies and performances, well as the costs due to difficulties and interruptions on other construction work which mig result from above tests.

If the Contractor desires to perform the pile load tests on piles other than those of t permanent structure, the costs for supporting or test piles shall also be included in the pric and will not be compensated for separately.

(13) Pile joints will be paid for by number, provided they are so intended as per Tender Desig or otherwise instructed by the Engineer.

Pile joints which are required by the Contractor due to delivery lengths shorter than t specified pile length or due to limitation of Contractor's pile installation equipment will not paid for extra and are deemed to be covered by the unit rates for the supply and/or installati of the piles.

(14) Pile head fittings shall be measured and paid for by theoretical weight in accordance w the Drawings, plus 3 % surcharge for weldings, but without surcharge for rolling toleranc wastage and the like.

Structural Steel Work

Scope of Work

This Section of the specification covers all structural steel works as shown on the Tender Drawir and stipulated in the BoQ. The works comprise but are not limited to:

- Walkways connecting Dolphins
- Fender plates and fender brackets and other parts of the fenders
- Bollards
- Safety ladders
- Guard rails
- Covers of pits and ducts

The work includes the supply of all materials and the provision of all labour, plant, equipme temporary work, installation, testing, completion and maintenance of the works in accordance w the Drawings, these Specifications and instructions from the Engineer.

This Chapter of the Specifications shall be read in conjunction with Section 0 – Piling Works a Section 0 – Berth Equipment.

General

The Contractor shall prepare the complete Workshop Drawings and any supplemental structu calculations required for execution of the works, for all structural steel works in accordance with t Tender Drawings. Thereby the Specification and relevant design criteria, as well as spec requirements for hot-dip galvanizing have to be given due consideration by the Contractor. M dimensions, distances/clearances and other basic data shown in the Tender Drawings shall be adher to, but the Contractor may adjust measurements in coordination with the Engineer to suit t manufacturing and installation requirements.

References

The Standards and Codes of Practice referred to in EN 1090 parts 1 to 6 shall be applied for the st works.

For the standards referred to in EN 1090 which have been replace by new versions or new standa these new versions or standards shall be valid.

The following other standards and Codes of Practice are referred to in these Specifications and sh be considered fully or partly incorporated herein as specified.

/1/ EN 1993 Design of steel structures

Part 1-1: General rules

/2/ EN 1993 Design of steel structures

Part 1-4: Design of joints

/3/ EN 10025 Hot-rolled products of non-alloy structural steel

/4/ EN 10210 Hot finished structural hollow sections of non-alloy and fine grain structural steel

/5/ EN 10222 Steel forgings for pressure purposes

/6/ EN 10250 Open die steel forgings for general engineering purposes

Part 1: General Requirements

Part 2: Part 2: Non-alloy quality and special steels

/7/ EN 14399 High-strength structural bolting assemblies for preloading

/8/ EN ISO 898 Mechanical properties of fasteners made of carbon steel and alloy steel

/9/ EN ISO 1461 Hot dip galvanized coatings on fabricated ferrous products – Specifications and te methods

/10/ EN ISO 3834 Quality requirements for fusion welding of metallic materials

/11/ EN ISO 4034 Hexagon regular nuts (style 1) - Product grade C

/12/ EN ISO 4759 Tolerances for fasteners

/13/ EN ISO 5817 Welding - Fusion-welded joints in steel, nickel, titanium and their alloys (bea welding excluded) - Quality levels for imperfections

/14/ EN ISO 8501 Preparation of steel substrates before application of paints

/15/ EN ISO 9606 Qualification Testing of Welders

/16/ EN ISO 12944 Paints and varnishes – Corrosion protection of steel structures by protective pa systems

/17/ EN ISO 14731 Welding coordination - Tasks and responsibilities

/18/ EN ISO 15614 Specification and qualification of welding procedures for metallic materials

/19/ EN ISO 17635 Non-destructive testing of welds - General rules for metallic materials

/20/ EN ISO 17636 Non-destructive testing of welds - Radiographic testing

/21/ EN ISO 17637 Non-destructive testing of welds - Visual testing of fusion-welded joints

/22/ EN ISO 17638 Non-destructive testing of welds - Magnetic particle testing

/23/ DIN 571 Hexagon head wood screws

/24/ DIN 7349 Plain washers for bolts with heavy clamping sleeves

/25/ DIN 7989 Washers for steel structures - Part 1: Product grade C

/26/ DIN 7990 Hexagon head bolts with hexagon nut for steel structures

Materials

Certificate of Origin

Product analyses according to EN 10025 or EN 10248 for the structural steel incorporated in the Wo shall be included in the certificate of origin, which shall be submitted to the Engineer for ea consignment.

Upon arrival at Site the name of manufacturer, quality (steel grade, No. of Certificate of origin), da of delivery, size and assignment of the material shall be clearly indicated by a works certificat delivery note on each bundle.

Structural Steel

(1) Structural steel work shall be fabricated from killed and specially killed steel complying with 10025 and shall be of the grades shown in the Tender Drawings or Bills of Quantities.

(2) Product analyses according to EN 10025 shall be submitted to the Engineer for the structu steel incorporated in the Works, and shall be identifiable by that steel.

(3) The Contractor may propose alternative grades and sizes of structural steel for use in t Works. Such alternative shall satisfy the requirements of EN 10025 or any other approv standard for the specified grade, and shall have section properties and material thickness least equal to those of the specified sizes. Alternative sections shall only be used with t approval of the Engineer.

(4) Plates shall be US-tested for doubling in width of about 150 mm of welds, and must absolutely free of doubling.

(5) Anchoring devices/plugs shall be of a type licenced for use in construction works by a compet building authority or equivalent testing institute, subject to Engineer's approval.

(6) Mounting bolts are to be hexagonal bolts and units as per dimensions and standards indicat in the Drawings and Bills of Quantities.

(7) Wherever specified, the fixing material shall be supplied galvanized in accordance with EN I 1461.

Mountings, Bolts, Nuts

(1) All mountings, bolts and related accessories are to be supplied hot-galvanized according to ISO 4759.

(2) For steel constructions, HV-bolts with hexagonal nuts and washers as per EN 14399, qual grade 10.9 acc. to EN ISO 4759, as well as hexagonal bolts with hexagonal nuts and wash as per DIN 7990 / EN ISO 4034 / DIN 7989, quality grade 4.6, are to be delivered.

(3) For mounting of timber fenders, threaded bolts d = 30 mm, of St 52, with hexagonal nuts 30, as per EN ISO 4034, are to be supplied. Washers of type A, as per DIN 7989, shall be us

(4) For fastening of synthetic sliding strips, hexagonal timber screws, as per DIN 571, are to delivered. Washers according to DIN 7349 shall be used.

Welding Electrodes

All welding electrodes shall comply with the basic steel material in accordance with applica standards.

Chains and Accessories

A safe working load of min. 300 kN is required for all chains and accessories (shackles, tensione resin anchors etc) to EN 818 or equivalent standard.

All steel shall be hot dip galvanized, and the steel grade and composition shall be compatible w this.

Workmanship

General Requirements

(1) Cutting shall be by saw or laser cutting or by an alternative method that in combination w machining will produce a uniform, ground smooth edge free from notches, cracks, laminatio scale, slag accumulations, drag and tears.

(2) All cut surfaces shall be smoothed by grinding, and free edges shall be rounded with a rad of 2mm.

(3) The work shall be carried out in a properly equipped shop under cover and under the Engine of a competent shop foreman.

(4) All construction tolerances shall be in accordance with general requirements in the standarc All end plate connections shall be carried out to provide full contact pressure.

Bolting

(1) All holes for bolts shall be drilled. All holes for bolts shall be 'normal'.

(2) All bolt heads and nuts shall be provided with washers, and nuts shall be pre-vented frc loosening due to repetitive impacting.

Welding

(1) Welding material for welding of the tubular steel piles and steel sheet piles shall be coordinat between the Contractor and the manufacturer of the piles.

(2) The manufacturer of welded tubular steel piles shall possess a proof of competence to we structural steel as per EN ISO 3834 and EN 1090 or equivalent standard or regulation.

Only welders tested and certified, as per EN ISO 9606 or equivalent standard, for the type of weldi to be executed shall be employed for this work. Relevant certificates are to be handed over to t Engineer.

(3) The welding process shall be confirmed by welding procedure tests, whereby t recommendations of the steel plate manufacturer shall be given due consideration.

(4) All welding seams shall be welded 100 %. The welding seam quality factor shall be v = 1.0.

(5) Pile butts due to delivery lengths shorter than specified shall be designed and executed as p R 99 (EAU 2012), so that the same bearing capacity as the unbutted pile is achieved.

Butt welds between individual tube sections shall meet the requirements set out in this section.

(6) All welding seams shall be tested as per Section 0**Error! Reference source not found.**.

(7) Imperfections or defects in welding seams shall be repaired as far as technically feasib subject to non-destructive testing.

The method of repair shall be established by welding procedure testes, analogously to para (2) abo

(8) Site weldings for jointing individual steel pile sections shall be executed according to t principles of this section, as applicable to welds executed at the manufacturer's plant.

(9) The Contractor or the manufacturer of steel constructions is obligated to submit the proof competence to weld structural steel as per EN ISO 3834 and EN 1090. Only certified weld as per EN ISO 9606 shall be employed for the works. Relevant certificates are to be hanc over to the Engineer.

(10) Welding electrodes, as well as welding method and sequence are to be coordinated w the manufacturer(s) of the steel material. Relevant statements and/or recommendations a to be submitted to the Engineer, well in time before starting the welding works.

(11) All fillet welds are to be measured as per EN 1993 and shall have a thickness of at le a = 6 mm, whereas those coming into contact with seawater, shall correspond at least to a 10 mm, should they not be thicker for structural reasons.

(12) All bearing welds are to be checked through damage-free tests. X-ray or ultraso method shall be applied to all major and most critical welds, whereas magnetic particle

colour penetration tests or equivalent methods shall be used for all other bearing welds. T tests shall be performed according to EN ISO 17635, EN ISO 17636, EN ISO 17637 and EN I 17638.

(13) The standards of acceptability by which welding will be judged shall be as per EN I 14731 and EN ISO 5817 quality level B.

The soundness of the welding procedure selected by the Contractor shall be confirmed by trial wel and tests to the satisfaction of the Engineer.

Welding test and inspection protocols shall be compiled by the Contractor and submitted to t Engineer prior to installing the respective steel item in the Works.

The proposed methods of welding tests as well as the Contractor's shop drawings showing t approximate location of all critical welding shall be submitted to the Engineer well in time befc starting the welding works.

(14) The standards of acceptability by which soundness of welding work will be judged sh be as per EN ISO 5817. The quality of welding shall be inspected according to EN ISO 147 or a standard accepted by the Engineer.

(15) If the Engineer opines that a defect exists in any weld or pass, the Contractor shall u appropriate test methods to confirm the soundness of the weld, or to repair the defect as p requirements.

Repair methods shall be described by the Contractor in a method statement to be approved by t Engineer. Repair of any defective weld shall be subject to Engineer's consent.

Tolerances

(1) Manufacturing tolerances shall meet the applicable standards relative to the individual ste items such as EN 1090.

(2) All steel work shall be set accurately to the agreed lines and levels and must be plumb a level.

Fabrication and Erection

(1) Fabrication and/or erection shall not start until the Contractor's Workshop Drawings have be approved by the Engineer. All dimensions shall be verified at the Site and the Contractor sh be responsible for the accuracy and fit of all materials supplied.

(2) Generally, work shall be shop assembled as far as possible. Exposed faces of work shall be fr of warps, dents, buckles or other distortions. Corners shall be accurately formed to profil shown, and joints shall be tightly fitted and made neat in appearance. Steel sheets shall stiffened or reinforced as far as required. Finished work shall be free from defects detrimen to appearance and performance.

(3) Shop and field connections shall be made as detailed in the Drawings. Where not detailed, sh connections shall be welded and field connections bolted.

Weld splices shall be full penetration butt welds, ground flush where required. Bolted connectic shall be made with high-tensile steel bolts in friction type connections.

(4) Tack welds, which are not part of the welds shown in the Drawings, will not be allowed at str transfer points such as splice plates, header angles and gusset plate connections.

(5) Any material used in splices shall conform to the specification of the material which it is splici

(6) All sharp edges and corners shall be chamfered and left without sharp lines, burrs shall removed.

(7) Members distorted by the heat of welding or hot galvanizing process may be straightened mechanical means which do not damage the material, subject to Engineer's consent.

(8) Temporary bracings must be used where necessary to prevent collapse or distortion of structure during erection, and to maintain the correct position at all stages of the work and during grouting.

(9) Wherever fastenings or anchors are to be built in, the Contractor shall supply all necess templates to ensure satisfactory installation.

(10) Where metals of differing types are in contact with one another they shall be electric separated by using special isolating tape or by painting the connecting surfaces using bitur base paint or by other means as approved by the Engineer.

Protection Coating

(1) Corrosion protections shall be according to Section 0 and as per type specified in the Bills Quantities.

(2) If the complete preservation coat cannot be applied at the manufacturers' premises, at le the first primer coat relative to the specified coating type should be applied at the factory, af blasting the steel surfaces.

(3) Where welds are to be made on Site, the steel is to be free of coating over a distance of 1 mm measured from the edge to be welded, and shall be painted afterwards as Specifications.

(4) The part of steel work to be embedded in concrete shall be free of paint except for overlapping strip 35 mm wide measured from the edge of the concrete. All surfaces shall thoroughly wire brushed to remove loose rust and scale before concrete encasement is pour

Inspection and Testing

General Requirements

(1) All welds are to be checked as per Section 0 (4) and the Engineer is to be informed of su tests.

(2) Closed hollow sections, such as fender panels, shall be pressure-tested for watertightness pr to application of preservation coatings. Any leak must be repaired in coordination with Engineer.

(3) Test and inspection protocols shall be compiled by the Contractor and submitted to the Engin prior to installing the respective steel item in the work.

(4) The Contractor shall prepare and submit provisional shop drawings and welding procedures the Engineer's approval before materials are ordered.

(5) Before start of production a quality plan shall be prepared for the Engineer's approval.

(6) The Contractor shall further prepare a control plan for the works. All control objects listed EN 1090-1 shall be included.

(7) Test certificates for all structural steel shall be provided from the supplier, and all steel materi shall be traceable until taking over of the works.

(8) Other reports in connection with lamination checking, geometry inspection etc. shall prepared in accordance with the Engineer's instructions.

(9) The Contractor shall establish and maintain, during the course of the works, a detailed qual file, containing all quality related documentation, from initial work planning until final t reports. At completion the file shall be handed over to the Employer.

Testing of Welds

(1) The quality of finished welds shall be visually inspected in combination with non-destruct testing in accordance with code requirements.

(2) All specified non-destructive testing shall be part of the Contractor's work, but supplement testing can be instigated by the Engineer at any moment.

(3) All testing shall be made by a fully qualified inspector, independent of the production tea before any application of surface coating.

(4) Detailed, traceable test reports shall be prepared.

(5) The control plan for welding works shall include, but not be limited to, the following items:

- Welding certificates for welders engaged in production
- Procedure specifications
- Test certificates (to be traceable)
- Associated reports on deviations and corrective action

Test Assembly

(1) As a general precaution all steel structures shall be pre-assembled on a plane surface in t workshop for inspection by the Engineer before surface treatment

(2) Each member shall be marked with a code of numbers which will facilitate re-erection at t Site.

Measurement and Payment

(1) All unit rates or lump sum prices for steel items shall include the costs for preparing t Workshop Drawings and any supplemental calculations, materials, manufacture a installation, tests etc., complete in every respect. Costs for blasting, galvanizing and painti are likewise to be included in the prices, if not provided for separately in the Bills of Quantiti

(2) Measurement and payment will be made per weight or by number as indicated in the Bills Quantities, in accordance with the Tender Drawings of the Employer and the Contracto approved Workshop Drawings.

The weight shall be the theoretical weight based on 7.85 t/m³. Surcharges for rolling toleranc wastage and the like will not be considered.

(3) Structural steel or other appropriate measures required by the Contractor for the prop guidance, adjustment and support of prefabricated elements during installation will not be p for separately and have therefore to be included in the prices for the installation of such iten

Passive Corrosion Protection and Coating

Scope of Work

This Chapter of the Technical Specifications covers all passive corrosion protection works as sho on the Tender Drawings and stipulated in the BoQ. Passive corrosion protection shall be applied to

- All tubular steel piles on all surfaces above 2 m below ground level
- Bollards
- Fender plates, fender chains and brackets
- Safety ladders
- Guard rails
- Covers of pits and ducts

The work includes the supply of all materials and the provision of all labour, plant, equipme temporary work, installation, testing, completion and maintenance of the works in accordance w the Tender Drawings, these Specifications and instructions from the Engineer.

General

(1) Where the terms "paint", "coat" and "polish" are used or referred to in the Specification or B of Quantities, they shall be interpreted to mean and include the corrosion protection or surfa finish treatment consisting of any, all or some of the following items:
Sealers, primers, fillers, intermediate and final coats, as more specifically defined hereinaf as to kind and quality and function for various surfaces and finishes.

(2) All primers and paints must be fully suitable under the prevailing local and climatic conditio They shall conform to the applicable standards regarding kind, quality and application and a subject to Engineer's approval regarding quality, colour, tint and finish.
The basic materials entering into the compounding and/or manufacturing of all paints and oth finishes referred to in this Section shall be of best quality and grade of their respective kir for the intended purpose.

(3) All painting materials shall be delivered to the Site in their original unopened containers packages and bear the manufacturer's name, label and brand.

(4) The Contractor shall supply to the Engineer the manufacturer's certificates for ea consignment of material delivered to the job. Such manufacturer's certificates shall certify th the material complies with the above para (2) and in addition shall give:
   - Description of material
   - Vendor's Reference Number
   - Batch Number
   - Quantity in Batch
   - Date of Manufacture
   - Coefficient of Friction of the Priming Coat (at bolted splices)
   - Implementation Manual.

(5) Mixing, thinning and application instructions as indicated by the manufacturer and/or her specified, shall be absolutely adhered to.

(6) All materials shall only be applied by skilled workers and uniformly by using brushes, roll or spray gun, in accordance with the best acceptable practices applying to the class of wo and as approved by the Engineer. It must be ensured, that the protective layers bo satisfactorily on the material and that also excellent bond is achieved between t individually applied layers. All protective layers must be dense, i.e. extensively free of vo and must possess adequate resistance to mechanical stresses, such as occur especia during transport and installation.

(7) No work is to be done under conditions that are unsuitable for obtaining good resu Neither paint nor any other finish treatment shall be applied to wet or damp surfaces unl specially required.

(8) The primer coat to steel members must be applied immediately after approval of the blas surfaces.

(9) Subsequent coats shall differ in colour or tint from the preceding coat, whereas the specif colour of the last coat must be adhered to.

(10) To ensure adequate hardening of the coatings, a drying period of at least 24 hours must allowed for in the application of the individual coatings, but better 48 hours, unless otherw specified by the manufacturer of the coating compound.

(11) Wherever welds are to be made on Site, the steel is to be kept free of coating or to provided with a weldable primer coat of suitable thickness.

(12) Guarantee surfaces are to be provided for to assess the quality of the material and t execution, after coordination with the Engineer.

(13) Repairs of any coating to comply with the Specifications shall be carried out by us techniques, materials and procedures relevant to the coating type, all to the satisfaction the Engineer.

(14) In case finishing coats are applied at Site, all bare or abraded spots of shop coats shall touched up before finishing, using same materials as applied to shop coat, or otl equivalent material, if approved by the Engineer.

(15) Additional coats, other than those specified, but required to achieve the specified quality work, shall be deemed to have been taken into account by the Contractor, when selecti any other paint material. They shall be applied at no additional cost.

(16) Hardware, accessories, plates and other similar items shall be removed prior to painting, otherwise protected during painting operations, and replaced upon completion of t painting works.

(17) Equipment adjacent to walls and ceilings shall be disconnected by workmen skilled in t respective trades and removed to permit the surfaces to be painted. On completion painting, equipment shall be replaced and/or reconnected.

References

/1/ EN ISO 898 Mechanical properties of fasteners made of carbon steel and alloy steel

/2/ EN ISO 1461 Hot dip galvanized coatings on fabricated iron and steel articles - Specifications a test methods

/3/ EN ISO 3269 Fasteners - Acceptance inspection

/4/ EN ISO 4759 Tolerances for fasteners

/5/ EN ISO 12944 Paints and varnishes - Corrosion protection of steel structures by protective pa systems

/6/ ISO 8992 Fasteners - General requirements for bolts, screws, studs and nuts

/7/ BAW – Coating Systems for Hydraulic Steelwork – List of Approved Systems for Seawater

Preparation of Surfaces

(1) Prior to start of any work, the Contractor shall carefully inspect all surfaces to be painted finished and do any corrective work, if required, to ensure the satisfactory execution a durability of his work.

(2) Surfaces must be clean and free from dirt, loose and friable particles. If required, grease, and wax-like agents are to be removed by blast cleaning.
(3) Concrete surfaces are to be roughened by blasting, if so required as per manufacture instructions for application of preservation coats.
(4) Plaster surfaces shall be primed. After application of primer coats, the Contractor shall che all surfaces and do all necessary filling of cracks, indentations and other imperfections in approved manner.
(5) Surfaces to be de-rusted as per Tender Drawings or Bills of Quantities are to be blasted grade Sa 2 1/2 in accordance EN ISO 12944-4, EN ISO 8501-1 and EN ISO 8503-1 or equivale Standards.
(6) The grain size of the blasting material must be coordinated between the Contractor and t supplier of the coating compound.
(7) The surface must be free from dirt, oil and grease.
(8) Average roughness depth $R_Z \geq 50$ microns.

Hot-dip Galvanizing

(1) All work related to hot dip galvanizing shall be carried in dedicated and competent factory w documented experience as approved by the Engineer.
(2) The work, including pre-treatment and finishing works, shall be made in accordance with I ISO 1461.
(3) The following requirements to layer thickness shall be respected:
- Mean coating: 700 g/m2 (~ 100 µm)
- Local minimum: 600 g/m2 (~ 85 µm)

(4) For threaded parts allowance shall be made on mating threads to accommodate the thickne of the coating.
(5) Hot-dip galvanizing of bolts, nuts, washers etc. shall be in accordance with EN ISO 4759, I ISO 898, EN ISO 3269, EN ISO 4759 and ISO 8992. Minimum thickness of zinc coating is microns.
(6) Care has to be taken that the steel parts do not warp during the galvanizing process. If require such items have to be adjusted or to be replaced, as directed by the Engineer.

Protective Coating of Steel

Type I (Steel surfaces directly exposed to sea or sea atmosphere)

Surface preparation:

Blasting of steel surfaces as per Section (5). For galvanized steel parts, the surfaces are to be brush with a detergent, recommended by the manufacturer of the preservation compound, followed thorough washing with water prior to application of the preservation compound. The first primer c is to be deleted in such cases.

First coat:

2-pack highly pigmented zinc-rich primer of low solvent content based on epoxy resin, SikaCor[6] Z R or equivalent approved material.

Minimum dry film thickness: 50 microns.

[6] Sika Deutschland GmbH, Industrial Coatings, Rieter Tal, 71665 Vaihingen / Enz, Germany
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Second coat:

Abrasion resistant, 2-pack coating based on epoxy resin, SikaCor SW-500 or equivalent approv material.

Minimum dry film thickness: 500 microns.

Third coat:

2-pack topcoat based on polyurethane with good gloss and colour retention. Colour: Black.

Minimum dry film thickness: 80 microns.

Total dry film thickness of 3 coats to be 630 microns on an average, refer to Section 0.

Type II (General Steel Construction Items)

Surface preparation:

Blasting of steel surfaces as per Section (5). For galvanized steel parts, the surfaces are to be brush with a detergent, recommended by the manufacturer of the preservation compound, followed thorough washing with water prior to application of the preservation compound. The first primer c is to be deleted in such cases.

First coat:

2-pack highly pigmented zinc-rich primer of low solvent content based on epoxy resin, SikaCor Z R or equivalent approved material.

Minimum dry film thickness: 50 microns.

Second coat:

Abrasion resistant, 2-pack coating based on epoxy resin, SikaCor SW-500 or equivalent approv material.

Minimum dry film thickness: 450 microns.

Third coat:

2-pack topcoat based on polyurethane with good gloss and colour retention. Colour: Black.

Minimum dry film thickness: 80 microns.

Total dry film thickness of 3 coats to be 580 microns on an average, refer to Section 0.

Type III (Metal Work Items)

Surface preparation:

Blasting of steel surfaces as per Section (5). For galvanized steel parts, the surfaces are to be brush with a detergent, recommended by the manufacturer of the preservation compound, followed thorough washing with water prior to application of the preservation compound. The first primer c is to be deleted in such cases.

First coat:

2-pack highly pigmented zinc-rich primer of low solvent content based on epoxy resin, SikaCor Z R or equivalent approved material.

Minimum dry film thickness: 50 microns.

Second coat:

Abrasion resistant, 2-pack coating based on epoxy resin, SikaCor SW-500 or equivalent approv material.

Minimum dry film thickness: 450 microns.

Third coat:

2-pack topcoat based on polyurethane with good gloss and colour retention. Colour: Black.

Minimum dry film thickness: 80 microns.

Total dry film thickness of 3 coats to be 580 microns on an average, refer to Section 0.

Denso-tape shall be applied to all Piles

Protection and Painting of Concrete, Blockwork and Plaster Surfaces

Concrete Surfaces

(1) Type A
All earth-contacted surfaces shall be preserved with two applications of a one-component cc on coal-tar pitch basis, such as Inertol I of Sika Chemie[7], or equivalent approved material.

Protection of Finished Products / Repairs

(1) It is the responsibility of the Contractor and he shall be held accountable for the expli protection of all finished work until final inspection and acceptance.
(2) The Engineer reserves the right to order replacement or refinishing at no additional cost to t Employer for any and all work damaged.
(3) Repairs to any of the coatings enabling them to comply with the Specification shall be carri out to the satisfaction of the Engineer using techniques, materials and procedures approved detail by the Engineer.

Quality Control and Testing

(1) A test programme shall be defined and implemented for statistical testing of thickness a adherence in accordance with EN ISO 12944.
(2) Each coating applied to steel surfaces shall be checked for dry film thickness by a microte gauge in the presence of the Engineer.
The procedure to be adopted for determining the average dry film thickness of the coating combined coatings shall be to take ten readings at random for every 10 square metres of coat area and to calculate an arithmetical average.
(3) Notwithstanding the area, no more than one reading per group of 10 readings of dry fi thickness shall fall below the specified average dry film thickness by more than 10 % foi particular coating.
If five or more readings per group of 10 readings of dry film thickness do not comply with t Specification, then the entire area shall be rejected.

Measurement and Payment

(1) Works will be measured or paid for per m² or on lump sum basis as specified under t respective items in the Bills of Quantities, after completion of particular areas or items in eve respect.

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[7] Sika Deutschland GmbH, Industrial Coatings, Rieter Tal, 71665 Vaihingen / Enz, Germany
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(2) The unit rates and lump sum prices shall be applicable at any location, height or floor and deemed to include all costs required for complete preservation and painting work, includi preparation of surfaces, finishing, repairing of any damaged coatings and all supplies a performances as specified.

Concrete and Reinforced Concrete for Quay Structure

Scope of Works

This Chapter of the Specification covers all concrete works including:

- Reinforced concrete platform deck slab
- Precast beams
- Precast planks
- Pile caps
- In-situ concrete

The following concrete works are described in the corresponding sections:

- Foundations for lighting masts
- Kerb walls
- Drainage trenches, manholes and outlets of reinforced concrete
- Concrete bedding for drainage pipes
- Concrete Pavement

All concrete works shall be made in accordance with EN 206 and BS 8500 and associated standar with the additional requirements and deviations given in this Chapter.

Concrete Works for the pavement are described in Chapter 0

References

The latest editions of following Standards and Codes of Practice are applicable for the concrete wor and fully or partly incorporated in this Specification:

/1/ EN 1992 Eurocode 2: Design of concrete structures

/2/ EN 206 Concrete

Part 1: Specification, performance, production and conformity

/3/ BS 8500-2 Concrete

Part 2: 2002 Specification for constituent materials and concrete

/4/ EN 13369 Common rules for precast concrete

/5/ EN 524 Steel strip sheaths for prestressing tendons - Test methods

/6/ EN 197 Cement

Part1: Composition, specification and conformity criteria for common cement

/7/ EN 12350 Testing fresh concrete

/8/ EN 12390 Testing hardened concrete

/9/ EN 12620 Aggregates for Concrete

/10/ EN 13670 Execution of concrete structures

/11/ BS 812 Testing Aggregates

/12/ BS 1881 Testing concrete

/13/ EN 1008 Mixing Water for Concrete

/14/ EN 10080 Steel for the reinforcement of concrete

/15/ EN ISO 17660 Welding of reinforcing steel

/16/ EN ISO 3766 Construction drawings - Simplified representation of concrete reinforcement

/17/ BS 4449 Steel for the reinforcement of concrete. Weldable reinforcing steel. Bar, coil and decoil product. Specification

/18/ BS 4483 Specification for steel fabric for the reinforcement of concrete

/19/ EN 933 Tests for geometrical properties of aggregates

/20/ EN 934 Concrete admixtures

/21/ BS 5975 Code of practice for temporary works procedures and the permissible stress design falsework

/22/ EN ISO 9001 Quality Systems

/23/ EN ISO 7619 Rubber, vulcanized or thermoplastic - Determination of indentation hardness

/24/ DIN 1045 Concrete, reinforced and prestressed concrete structures

/25/ DIN 18540 Sealing of exterior wall joints in building using joint sealants

/26/ DIN 53504 Testing of rubber - Determination of tensile strength at break, tensile stress at yie elongation at break and stress values in a tensile test

General

The jetty structure including the access trestle will be executed according to the jointless constructi method. In case of a change of the cross-section geometry due to an alternative technical propos the Bidder has to provide verification for the resistance against strains induced during the constructi phase (hydration of Concrete) and at later stages (temperature).

The Contractor has to illustrate the required curing of the concrete in his method statement, especia regarding the above mentioned jointless construction. The method statement has to be provid before submitting the Execution Drawings.

A suitable concrete mixture has to be submitted at an early stage which will be used for characteris tests performed prior to the commencement of the concreting works. Temperature measuremer have to be undertaken at a test body according to relevant standards.

Materials

Aggregates

Aggregates shall conform to the requirements of EN 206, EN 12620 or other relevant standards.

Aggregates must be sound and durable to resist breakdown in transit or in the mixer, and to res attack in concrete in aggressive environments. The Aggregate particles should have a shape wh allows workable concrete to be made within strict limits of water-cement ratio.

The material must be clean and free of cohesive and organic material, and shall not contain a impurities. Particularly the aggregate materials shall be free of chlorides or sulphates.

The Contractor shall obtain approval of proposed aggregate sources, and shall select suitat aggregate and samples of sand and stone for specified testing before obtaining aggregate.

General Properties

The general properties of aggregates are listed in Table 17-1 ***: General Aggregate Properties***.

Table 17-1 : General Aggregate Properties

Characteristics	Value [%]	Test Methods	Application Fields
Los Angeles (LA) <	35	EN 1097-2	Aggregates > 4 mm
Sand Equivalent >	80	EN 933-8	Range 0 – 5 mm
Sulphate and Sulphur Content <	1	EN 1744-1	All aggregates

Grading

Sand

Fine aggregates (grain size < 5mm) shall meet the requirements of EN 12620 and be graded so th when mixed with the coarse aggregate and cement a concrete of maximum density is produced.

To achieve the required grading crushed sand may be added to natural sand in approved proportior Crushed sand alone may not be used without authorisation of the Client.

The properties of fine aggregates are shown in Table 17-2 ***: Properties of Fine Aggregates***.

Table 17-2 : Properties of Fine Aggregates

Sieve (mm)	0 – 4 mm	0 – 8 mm
0.63	0 – 5	0 – 5
d	-	-
D	85 – 99	90 – 99
1.4 D	95 – 100	98 – 100
2 D	100	100

Where: D: upper limit, d: lower limit

Gravel

The grading of coarse aggregates (grain size ≥ 5 mm) shall be within the limits given in EN 126: Table 3 so that when mixed with the approved fine aggregate and cement a workable concrete maximum density is produced. The densities of the grades of concrete shall be as approved after tes have been carried out on the site.

The use of washed beach sand as fine aggregate may be permitted, providing that the grading a salt content are maintained within the level and washed thoroughly. Before taking sand from any ar the salt content hall be established, and only sand from approved areas shall be used.

The properties of coarse aggregates are shown in Table 17-3 ***: Properties of Coarse Aggregates***.

Table 17-3 : Properties of Coarse Aggregates

Sieve	**Passing [%]**		
	D/d ≤ 2 or D ≤ 11.2 mm		**D/d > 2 or D > 11.2 mr**
d/2	0 – 5	0 – 5	0 – 5
d	0 – 20	0 – 20	0 – 15
D	85 – 99	80 – 99	90 – 99
1.4 D	98 – 100	98 – 100	90 – 99
2 D	100	100	100
Category	G_c 85/20	G_c 80/20	G_c 90/15

Testing of Aggregates

The sampling method shall comply with EN 932-1 and the selection of samples has to be approved the Engineer.

The minimum testing frequency shall be defined by the Contractor according to EN 12620 Annex H

- Every week or every 500 m³ of concrete, if the concrete production is lower than 500 m³ p week.
- For every new delivery of aggregates from a different source or obtained from a differe process

The testing methods and their frequency are listed in

Table17-4 ***: Testing Methods and Frequencies***.

Table17-4 : Testing Methods and Frequencies

Characteristics	**Method**	**Application Field**	**Frequency**
Grain Size	EN 933-1	All aggregates	N
Water Cement	EN 1097-6	Sand	N
Finers Module Diagram	EN 933-1	Coarse Gravel – Pebbles	10 N
Los Angeles	EN 1097-2	Gravel and Pebbles	15 N
Sand Equivalent	EN 933-8	Sand	N

Water Content	EN 1097-6	Gravel and Pebbles	0.2 N

Properties and deleterious substances

The aggregates must fulfil the following criteria ascertained by testing in accordance with BS 812 a EN 12620, unless indicated otherwise, to assess the suitability. The results shall comply with the lim given in EN 12620 or as otherwise stated herein.

Table 17-5 : Properties and Limits

Property	Method of test	Limits
Grading	Sieve analysis BS 812-103 EN 933-2	EN 12620 Ta
Shape	Elongation index (BS812-105.2)	< 25 %
	Flakiness index (BS812-105.1)	< 25 %
Water absorption	Weighing dry and saturated BS 812-109 and ASTM C127 and C128	< 2 %
Soundness	Sulphate resistance ASTM C88 and BS 812-121	Loss after $MgSO_4$ < 10
Drying shrinkage	BS 812-120	< 0.075 %

Aggregate shall not contain any materials that are reactive with alkalis in the aggregate itself or the cement, the mixing water or in water in contact with the finished concrete or mortar in amou sufficient to cause excessive localised or general expansion of the concrete. The Contractor sh initially assess an aggregate source be testing in accordance with ASTM C289. If potential reactiv is indicated, then mortar bar tests in accordance with ASTM C227 shall be carried out and the resu shall comply with the limits given in ASTM C33 for overall effect on the permanent works mix before use of the aggregate is approved.

Table 17-6: Limits for deleterious substances in aggregates

Type of contamination or reactivity	Method of test	Material	Maximum limits (% by weight)
Clay, silt and dust	Wet sieving through a 75 μm sieve	*Coarse aggregates*	
		Natural or fine gravel	1 %
		Crushed rock	3 %
		Fine aggregates	
		Natural sand or crushed gravel	3 %
		Crushed rock	5 %
		Coarse aggregates	2 %

Clay lumps and friable particles	ASTM C142	Fine aggregates	1 %
Chlorides Cl	Analysis following acid extraction (BS 812-117)	Coarse aggregates	0.03 %
		Fine aggregates	0.06 %
Sulphates as SO_3	Analysis following acid extraction (BS 812-118)	Coarse and fine aggregates	0.4 %
Hollow shells	Wet sieving through a 2.36 mm sieve	Coarse and fine aggregates	3 %

Testing

Quality control tests shall be carried out by the Contractor as specified herein. Testing metho standards and test frequencies are given in the table below.

Table 17-7: Tests and testing frequencies for aggregates

	Subject	Standard	Testing frequency on per period of days	
			Aggregates	Sand
a	Grading	BS 812-103	1	1
b	Magnesium sulphate soundness	BS 812-121	30	90
c	Specific gravity and water absorption	BS 812-2	7	7
d	Clay, silt and dust content	BS 812-103	1	1
e	Clay lumps and friable particles	ASTM C142	7	-
f	Organic impurities	ASTM C40, ASTM C87	30	30
g	Acid soluble sulphate an chloride content	BS 812-118 & -119	3.5	1
h	10 % fines value for coarse aggregates	BS 812-111	7	-
i	Elongation and flakiness	BS 812-105.1 & 105.2	3.5	-
j	Potential alkali reactivity	ASTM C289 & C227	Initial only	Initial only

k	Los Angeles abrasion test, if required	ASTM C131 & C535	Initial only	-
l	Drying shrinkage	BS 812-120	Initial only	Initial only
m	Moisture content	BS 812-109	2/day	3/day

Tests a, d and m shall be carried out as indicated or per 100 m^3 whichever is more frequent.

Test certificates are to be submitted to the Client.

Storage

The aggregates shall be separately stored according to grain size, in paved and well-drained areas site.

Approved containers or bins constructed with concrete floors and concrete or timber walls shall used for the storage of aggregates

Storage facilities shall be constructed to ensure effective drainage of all aggregates and protecti from solar radiation.

At no time shall aggregate for use in concrete be allowed to dry completely out and freshwater sh from time to time be sprinkled lightly on the stored aggregates.

The Contractor shall make available samples of the selected aggregates along with verified sie analyses and combined grading curves prior to the preliminary concrete tests. The samples are to packed in suitable containers, marked with data on contents, supplier and date, and turned over the Client for comparing them with later supplies.

The particle size distribution of the aggregates shall be confirmed by sieve analyses to be repeat by the Contractor regularly or as instructed by the Client in case of doubts.

Cement

The cement to be used throughout the works shall be obtained from manufacturer's approved writing and shall comply with the requirements of EN 197-1 and shall be a low-heat Portland bl furnace cement complying with EN 197.

Cement shall comply with the additional requirements in the following table:

Table 17-8 : Additional requirements cement

Property	Test Method	Limits
Acid soluble alkali as Na_2O equivalent	EN 196-21	< 0.6%
Heat of hydration	EN 196-9	< 250 kJ/kg at 7 days
Specific surface	EN 196-6	225 – 350 m2/kg.

The temperature of the cement shall not exceed 65°C at the time of incorporation into a concr mix.

Cement testing

Cement shall be certified by the manufacturer as complying with the requirements of the appropri specification. Before ordering cement, the Contractor shall submit details of the proposed suppl and information on the proposed methods of transport, storage and certification for approval a show that the quantity and quality required can be attained and maintained throughout t construction period. Representative samples of the proposed cement are to be taken and forward to an independent laboratory approved by the Client for analysis before the source is approved. Havi obtained approval, the Contractor shall not change the agreed arrangement without permission.

Each consignment of cement shall be accompanied by a certificate showing the place of manufactu and the results of standard tests carried out on each day's bulk production included in t consignment. Additionally, tests shall be carried out on each consignment. Additionally, tests shall carried out on each consignment of cement on arrival and also at monthly intervals during storage

Cement shall be delivered in sealed and marked bags, and shall be protected from the weather enclosed transfer systems or the Contractor shall provide closed areas, and the cement shall be plac therein upon delivery. Approved precautions shall be taken to prevent cement dust causing nuisance.

Cement Storage

The Contractor shall store the cement so that separate consignments can be identified until the resu of the testing are available. Tests should be carried out for the properties listed in the following ta with test methods and limits to EN, BS or ASTM as appropriate.

Properties to be tested:

- Strength
- Fineness
- Heat of hydration
- Setting time
- Soundness
- Reactive alkali level as Na2O equivalent
- Chloride content
- Loss on ignition
- Insoluble residue
- Tri-calcium aluminate content
- SiO2, MgO, Al2O3, CaO contents
- SO3

Admixtures and Additives

Admixtures complying with EN 934 or ASTM C494 shall be used as a means of:

- achieving workability with the lowest appropriate water-cement ratio in order to achieve durability
- controlling and retarding setting
- reducing bleeding and associated plastic settlement and cracking

Retarders must comply with the requirements of EN 934-2 and EN 934-6.

The Contractor shall submit to the Engineer certificates of approval of the competent authority to prove the particular suitability under the prevalent local conditions. They shall only be used after Contractor's series of trial mix tests have demonstrated positive results.

The Contractor shall submit to the Client certificates of approval of the competent authority to prove the particular suitability under the prevalent local conditions. They shall only be used after Contractor's series of trial mix tests have demonstrated positive results.

Admixtures containing chlorides or other corrosive agents shall not be used.

The concrete tests described in this Section of the Specification shall be incorporated to ensure the specified strengths are achieved and comparison shall be made with concrete manufactured without the admixture to prove that the density has not been reduced through the use of admixtures.

Very strict control is to be maintained to ensure that the correct quantity of admixture is used at all times. The equipment to be used for dispensing and the method of incorporating the admixture in the concrete shall be to the approval of the Client.

Water

The water used for concrete mixing, curing or other designated applications shall be fresh water, clean and free from oil, salt, chlorides, acid, sugar, vegetable, or any other substance injurious to the finished product according to EN 1008.

The Contractor shall make his own arrangements and obtain approval for the provision of fresh water for the manufacture and curing of concrete.

The water shall meet the following requirements:

Table 17-9 : Requirements for water used for concrete

	Substance	**mg/l (ppm)**
a	Chlorides (ion)*	< 350
b	Sulphates SO_3**	< 500
c	Alkali carbonates and bicarbonates	< 750
d	Other dissolved solids***	< 2000
e	Total (a+b+c+d)	< 3000
f	Suspended solids	< 2000

* When chlorides are given as NaCl the conversion to Cl (ion) is as follows: Cl = 0.607 x NaC
** When sulphates are given as SO4 the conversion to SO3 is as follows: SO3 = 0.833 x SO4
*** Excluding (a+b+c)

Water samples from the intended source of supply shall be taken for analyses before any concr work is commenced, and at intervals throughout the duration of the Contract. If the samples unacceptable the Contractor shall either change to a now supply or take steps to improve the exist source, as approved. Test to establish the contents shall be carried out at monthly intervals.

Test certificates are to be submitted to the Client.

Epoxy Resin

Insofar as epoxy resin shall be used for sealing of cracks, the pouring of recesses, repair and patchi work etc., the Contractor shall submit to the Engineer all detailed information, material da processing regulations and the like on the make selected by him, in time. The mixing directions of t manufacturer of the epoxy resin are to be strictly followed and observed.

Bonding Agents

Material used as bonding agent between old concrete members and fresh pours shall be the prod of a reputable manufacturer. Its suitability shall be confirmed to the Engineer by a Certificate Approval of the competent Authority or by test reports verified by a competent testing institution.

Special Cement Mortar

The special cement mortar for grouting prefabricated concrete elements or steel parts shall be mix with an additive agent which shall improve the adhesion to concrete and steel, watertightne abrasion resistance, as well as reduce action of shrinkage.

Only generally permitted additive agents, such as ICOMENT-ADDITIVE DPB of Sika Deutschland[8] equivalent shall be used. In any case, the additive agent must be approved by the Engineer and t processing directions of the supplier followed exactly.

Concrete Mixes and Qualities

General

Concrete shall be designed with durability properties appropriate to the environment in which it constructed and with respect to the specified design service life. The concrete must be produced a tested in accordance with EN 12350.

The Contractor shall carry out his own investigations to determine the aggressiveness of the s water, backfilling, ground and groundwater.

Contractor has to prove the suitability of concrete mix design through serials of trial mixes as p Standards and as otherwise appropriate for the marine / building structures in question. Detailed r design and test reports are to be submitted to the Engineer and the selected mix designs shall not altered during the Works without the consent of the Engineer.

In general, if not otherwise stated in the BoQ, the design of the concrete mix shall meet t requirements of the current standards (DIN, EN, BS, etc.).

Exposition Classes

The following exposition classes apply:

<u>For marine structures under extreme exposure to the environment:</u>

XC4, XS 3 and XA 2 according to DIN EN 206-1,

<u>Concrete for other concrete structures:</u>

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[8] Sika Deutschland GmbH, Industrial Coatings, Rieter Tal, 71665 Vaihingen / Enz, Germany
Telephone: +49 (0)7042 1090
www.sika.de

XC4, XS1, XA1 according to DIN EN 206-1,

Concrete for blinding (subconcrete):

Concrete exposure class X0 according to DIN EN 206-1,

Concrete for any surfaces exposed to traffic of wheeled vehicles:

XM 2, DIN EN 206-1.

The concrete grade and mixture and production process shall provide for an extreme wear resist top surface, which has to be evidenced by appropriate tests.

Compliance with the set requirements shall be evidenced by the Contractor throughout the Works the tests specified in the respective Standards and as per approved Quality Assurance Programme the Contractor.

Resistance Classes

All concrete shall be of class C35/45 if not stated otherwise in the Tender Drawings or the BoQ.

Design Mixes for Structural Concrete

(1) The Contractor shall determine the optimal proportions of all grades of structural concr through preliminary tests in consideration of the conditions of this Section, the intenc transportation and placing method and as otherwise required by EN 1992.
The detailed data, calculations and test results shall be compiled in a report and the propos mix be declared by the Contractor. The report shall be submitted to the Engineer in time bef commencing the concrete works and all test results shall be to the Engineer's satisfaction.

(2) Structural concrete shall be of the grades according to EN 1992 as indicated in the Ten Drawings and Bills of Quantities. Only sulphate resistant cement shall be used.
It shall be a perfectly dense concrete which is waterproof and does possess a high resistar to chemical attack.

(3) The maximum aggregate size shall be determined in consideration of the dimensions of t respective structural members.
Separate preliminary concrete tests shall be executed by the Contractor if combined gradir with different maximum aggregate size are to be used.

(4) The design water-cement ratio shall be as low as practicable, but shall not exceed 0.50. T consistency shall correspond to range F2, EN 1992.

(5) The ultrafines content shall be 400 kg in one m^3 of compacted concrete with a maximı aggregate size of 36 mm. With a maximum aggregate size of 16 mm the ultrafines cont shall be 450 kg in one m^3 of compacted concrete.
The ultrafines content comprised the cement, the aggregate particles of 0 - 0.25 mm size a such quantity of additional material of this particle size range as it is necessary to meet t requirements. Such additional material shall be of natural or artificial mineral substances differently sized particles, which do not impair the quality of the concrete.

Testing Facilities

(1) The Contractor shall provide and maintain a well-equipped laboratory at Site and shall ma available experienced staff for carrying out all preliminary, field and works tests to be perform in connection with the concrete works.

The testing equipment shall be standard equipment, suitable to carry out the tests required Sections 0, 0 and 0 and shall also include calibrated equipment for destructive and nc destructive concrete tests.

(2) Testing machines shall be calibrated. Up to date and verified test certificates shall be submitt to the Engineer.
At regular intervals or in case of doubt, such testing equipment shall again be calibrated a verified, to the Engineer's satisfaction.

(3) Specimen for verification of the compressive strength shall be 200 mm cubes and all strenç test requirements indicated in the Specifications refer to this cube size.
Other specimen sizes may be used with the consent of the Engineer. Standard factors sh then be applied in accordance with EN 1992 for their conversion to cube strength.
If cylindrical concrete specimen may be used for verification of compressive strength, t trowelled contact surfaces must be provided with a capping of special materials to absolut achieve parallel contact surfaces for testing.

Preliminary Concrete Tests

(1) The Contractor shall, with the exception of bending and tensile splitting strength tests, execu all concrete tests as described by and in accordance with EN 12350 and EN 12390 and tl Section.

(2) Evidence shall be produced thereby for each grade of concrete showing that the intend workability, the proposed mix proportion and manufacturing, mixing and transporting meth will produce concrete of the required quality, to the Engineer's satisfaction.

(3) Nine test cubes shall be prepared for each preliminary concrete test.
Three cubes each shall be tested for compressive strength after 3.7 and 28 days.

(4) Three test slabs of 200 x 200 x 120 mm shall be prepared for each preliminary concrete te and tested for watertightness (impermeability) 28 days after concreting, as per EN 12390.

(5) To obtain acceptance, the test results and calculations of the proposed mix, which are to compiled by the Contractor in comprehensive reports, must confirm the following:

Description	Requirement
Combined aggregate curve	Sections 0, 0 (3)
Cement	Section 0
Admixtures	Section 0
Water	Section 0
Cement content	Section 0 (4)
Mix proportion (by calculation)	EN 1992
Water/cement ratio	≤ 0.55
Ultrafines content	Section 0 (6)
Consistency:	

Description	Requirement
by compaction index or by flow table test	v = 1.25 - 1.11 ≤ 40 cm
Air content in fresh concrete max. aggregate size 16 mm max. aggregate size 32 mm	 ≥ 4.0 % by volume ≥ 3.5 % by volume
Volumetric weight of fresh concrete	to correspond reasonably to calculated volumetric weight
Volumetric weight of hardened concrete (taken at date of testing the specimen)	to confirm pore volume
Compressive strength f_{ck} (average of three consecutive cubes)	as specified by EN 1992 for the respective class of concrete
Depth of water penetration (average of test specimen)	50 mm

(6) The declared mix proportion shall be adhered to by the Contractor during the entire constructi period.
If a change should become necessary or desirable for any reason, the Contractor shall repe the preliminary tests and submit a comprehensive test report on the revised declared r proportion, to the satisfaction of the Engineer.

Work Tests

(1) Quality control tests shall be carried out as per EN 12350 and EN 12390 and as directed by t subsection or otherwise by the Engineer.

(2) Water/cement ratio shall be checked for each class of structural concrete used within a d when placing the initial concrete and may be repeated, if concreting continues for a lon period of time during that day.
The water/cement ratios so established shall not exceed the values verified by the declared r proportions.

(3) The actual consistency shall be within reasonable limits of that of the relevant declared r proportion.

(4) Independent of the quantity of concrete placed within a day, six test cubes shall be prepar from each class of concrete used, refer to Section 0 (3). Three cubes each shall be tested compressive strength after 7 and 28 days.
The strength requirements are regarded as fulfilled if the average compressive strength of thr consecutive cubes complies with the values stated in EN 1992 for each concrete class.

(5) Hardening tests may be executed on test cubes for structural members, for which the stren of the concrete must be confirmed at a particular time, e.g. for formwork stripping, lifting precast members, etc.

At least three test cubes shall be prepared for each hardening test and the specimen shall stored directly beside or on these components and be cured in the same manner.

(6) Test slab series for verification of the concrete watertightness shall be prepared weekly, but least a series of 250 m^3 of the particular concrete class placed.
When tested after 28 days, the depth of water penetration shall not exceed 50 mm.

(7) The Contractor shall compile the test results and other data important for the verification of t concrete works, in reports and submit them to the Engineer.
The type of reports, as well as sequence and latest date of their submission must be coordinat with the Engineer.

Quality Tests by the Engineer

(1) The Engineer may undertake independent tests and analyses on materials and concr samples at any time. For this purpose the Contractor shall make available all required materi gear and testing equipment (e.g. also dynamic ball impact testers), as well as compet personnel.

(2) The Contractor shall also take suitable bore cores from completed structures for testing inso as demanded by the Engineer in special case.

(3) The costs incurred to the Contractor are deemed to be covered by surcharge included in t contractual unit prices.

Concrete Members not Complying with Specifications

(1) Where concrete in the Works does not comply with the Specifications, the Engineer may or any or all of the following or any other appropriate action to be taken:
   (i) The drilling of test cylinders in mass concrete and testing the cylinders to destruction compression.
   (ii) The carrying out of load tests or other non-destructive tests on concrete structure.
   (iii) The cutting out and replacement of such volume as is considered defective by t Engineer.
   (iv) Strengthening of the structure in accordance with the requirements and as proposed the Contractor.

(2) The Contractor shall carry out all such tests, investigations, rehabilitation or replacement coordination with and as acceptable to the Engineer without additional costs.

Formwork

General

(1) The Contractor is responsible for the correct design and execution and the safety of formwork.

(2) Attack of waves and currents and high water levels have to be considered in the design a during the execution of the formwork.

(3) The Contractor shall obtain approval of the methods and materials proposed. Details formwork for special finishes shall be approved before materials are ordered. Formwork sl provide concrete of the shape, lines and dimensions shown on the approved Execut Drawings.

(4) Formwork shall be designed for the full hydrostatic head of the wet concrete. Sealing ta should be placed at panel joints to prevent leakage.

(5) Formwork shall be constructed from materials of sufficient strength, supported to prov rigidity during placing and compacting concrete without discernible deflection and shall removable without disturbing the concrete. Internal tiles shall be metal. Removable ties sl be located so that the specified cover to reinforcement is maintained to all surfaces includ that of the tie-holes. If ties are left in the cover shall be as specified for the reinforcement as approved. The cavities shall be roughened and filled with approved non-shrink concrete epoxy mortar.

(6) Formwork panels shall have true edges for accurate alignment and shall be fixed with eitl vertical or horizontal joints. Where chamfers and joints are required the fillets shall be cut provide an even line. Joints shall not permit leakage or grout nor steps and ridges in expos surfaces.

Materials

(1) Formwork shall be constructed from steel, timber of plywood of good quality.

(2) All formwork, whether timber, plywood or steel, which is used repeatedly, must reconditioned or renewed when, in the opinion of the Engineer, it has deteriorated to the ext of adversely affecting the surface finish or quality of the concrete or both.

(3) The formwork shall have a surface which is sufficiently uniform tight and smooth to produc faultless concrete surface free from arises, fins and sandy patches, and conform to the toleral requirements in Section 0.

(4) Construction joints shall leave a regular pattern in the concrete surface. The pat-tern shall submitted beforehand to the Employer's Representative for acceptance.

(5) Only form-clamps of reputable makes and proper steel tie rods and spacers shall be used. rods shall remain embedded in the concrete and they shall terminate no less than 50 mm ins the formed face of the concrete. The fasteners on the ends of rods shall be such that th removal will leave holes of regular shape. The holes shall be filled.

Workmanship

(1) Design of the scaffolding shall be such as to permit fine adjustment of the scaffolding hei and lowering of the scaffolding.

(2) The formwork shall be sufficiently tight to prevent the formation of sandy patches due leakage of cement and fine aggregates.

(3) Sloping surfaces may need to be formed up. Such formwork shall be made up of remova panels of a length which makes it possible to place and vibrate the concrete, and screed excess concrete without difficulty.

(4) Joints in steel plates shall be planed so as to produce a uniform concrete surface with noticeable joints.

(5) Any proposed method of treatment of form surfaces by the application of form oil, was, lacq or any other kind of coating shall be submitted beforehand to the Engineer for his approv Such surface treatment may not cause any discoloration of the concrete surface and may have any other harmful effect whatsoever upon the concrete.

(6) The release agent shall not come into contact with the reinforcement.

(7) The same type and make of release agent shall be used throughout the entire area of any fin in one location. The release agent shall be applied evenly, horizontal surfaces last. T minimum necessary amount of release agent shall be used to obtain a clean release. Excess local collection shall be prevented. The release agent shall be prevented from touching

previously placed hardened concrete, other materials not part of the formwork face a permanent forms to be built into the concrete.

(8) Side forms shall be solidly anchored by means of round bars and form-clamps or by otl acceptable means which are equally effective.

(9) The location of anchor bars and spacers shall, on visible surfaces, be arranged in a regu pattern. The pattern shall be naturally harmonised with the contour line of the construct element. A plan for the locations shall be submitted to the Engineer for approval.

(10) Near construction joints there shall be arranged anchoring which shall be retighter prior to casting being resumed.

(11) Where the anchor bars pass through the formwork, they shall be surrounded by a circu cone pressing hard against the inside of the shuttering so as to leave the anchor bar surrounc by a neat, circular hole in the concrete surface with sharp edges. The depth of the hole sl be at least equal to the specified minimum covering of the reinforcing bars.

Classification of Concrete Finish

(1) The quality of concrete finish for the individual structural members is classified under t relevant items in the Bills of Quantities and Drawings.

(2) Type A finish is for all concrete surfaces which will not be visible later on.
The quality of the type A finish surfaces shall be at least as good as that obtained by the u of properly designed formwork or moulds of closely jointed sawn boards. The surface m reflect the texture of the sawn boards and their joints. Small blemishes caused by entrapp air or water may be permissible but the surface shall be free from voids, honeycombing, other large blemishes.

(3) Type B finish is for all concrete surfaces which will be visible later on (fair-faced concrete).
Type B finish surfaces shall be smooth with true, clear arises, with only very minor surfa blemishes and without staining or discoloration from the release agent. This quality will only achieved by using properly designed forms having a hard, smooth surface.

Construction

(1) The Contractor shall ensure, that all formwork is constructed true to size, adequately suppor and stiffened and as per finish classification, all to the satisfaction of the Engineer.

(2) If required by the Contractor's formwork design, internal metal ties may be used with t consent of the Engineer. The ties or their removable parts shall be extracted without dama to the concrete and the remaining holes shall be filled entirely with mortar. No permaner embedded metal part shall have a cover of less than 35 mm to the finished concrete surfac

(3) The projecting edges and corners of the individual structural members shall be chamfered the insertion of triangular strips. Depending on the type of structural members, the size triangular strips shall be 12 x 12 mm, 25 x 25 mm or 50 x 50 mm, even if this is not specia depicted in the Tender Drawings.

(4) Where drip grooves are required at any structural members for proper design, whether sho in the Drawings or not, the Contractor shall provide them through the insertion of special wc sections.

(5) The inner surfaces of the formwork shall be treated with a recognised release agent, accepta to the Engineer.
Where a concrete surface is to be permanently exposed, only one agent shall be used in entire area.
Release agents shall be evenly applied and contact with reinforcement must be avoided.

When the surface is to receive an applied finish, it must be ensured that the release agen compatible with the finish.

Recesses and Pre-fabricated Installation Parts

(1) All recesses are to be prepared and installed as per Drawings.
They must be secured against displacement during placing of reinforcing bars and subsequ concreting.

(2) Prefabricated installation parts, anchor bolts, etc. must be installed in the formworks with aid of templates, if required, to meet the desired accuracy in their positioning.

(3) All additional supplies and performances, which might result from errors and inaccuracies the constructing of the recesses and in the installation of bolts, anchors, prefabricated pa and the like, are to be borne by the Contractor.

Preparation of the Shuttering for Concreting

(1) Before starting the concreting work, the Contractor shall check the shuttering for safety a accuracy to size, and rectify it if necessary.

(2) The shuttering shall be spotlessly clean. The Contractor shall therefore undertake all necess steps, in order to ensure the absolute removal of pieces of wood, rubbish, dirty water and like.

(3) Insofar as seawater has penetrated to the shuttering surfaces and reinforcing bars before start of concreting, such parts are to be completely cleaned off saline residues, mud and like through thorough flushing with clean water.

(4) The Engineer will only give his consent to the concreting, if the requirements under t subsection have been completely fulfilled.

Striking

(1) Easing and striking of the formwork shall be so done as to avoid damage to the concr members, while the exposed surface shall be protected against damage.

(2) The formwork shall be removed from a structural component, only when the concrete l attained such a strength, that is can, with the degree of safety specified in DIN 1045, resist loads acting at the time of removal of the formwork. However, the period between pouring concrete and striking of formwork shall not fall below the periods shown in the following tat unless the Contractor can satisfy the Engineer that no damage will result from shorter perio

Type of formwork	**Minimum period before striking**
Side formwork of beams	2 days
Soffit formwork to slabs	4 days
Props to slabs	11 days
Soffit formwork to beams	8 days
Props to beams	15 days

Inspection and Control

(1) The Engineer shall be given adequate notice and time – as determined by the Engineer afi discussing with the Contractor – for inspection of form and reinforcement before t reinforcement is closed in and concealed by forms.

(2) Unless otherwise directed by the Engineer, the Contractor shall submit his schemes of formwc and falsework for approval at least 8 weeks before their intended initial use, stating intend number of sets and number and frequency of uses in each case. The Engineer shall be allowe when he wishes, to inspect erected formwork and falsework. The Engineer's approval, howev shall not in any way relieve the Contractor of his full responsibility for the safety of form-wc and falsework.

(3) Vertical movements of the scaffolding, vertical deflections of beams and lateral deflections a distortions of scaffolding and formwork shall be checked throughout the period of casting.

Reinforcement

General

(1) The Contractor is responsible for the design and dimensioning of the reinforcement. He has provide all Workshop Drawings required for execution of the reinforcement works. T Workshop Drawings have to be submitted to the Engineer prior to starting the works whi shall only be executed after the Engineer has reviewed them and released them construction.

(2) The Contractor shall procure reinforcing steel only from reputable manufacturers/suppliers.

(3) Verification of the source of supply shall be prepared by the Contractor and submitted to t Engineer, along with official certificates/licences and test reports.

(4) The Contractor shall prepare detailed bar cutting and bending schedules on the basis of t Workshop Drawings and in consideration of EN ISO 3766 and of any requirement resulting fr the applied bar bending process.

(5) The Contractor shall inform the Engineer of the completion of any reinforcement in time, order to facilitate its inspection and check of conformity with the Execution Drawings well befc the concreting. Relevant formalities shall be agreed upon between the Contractor and t Engineer at the appropriate time.

Materials

(1) Steel reinforcement used in concrete shall be hot-rolled steel bars complying with EN 100 and BS 4449.

(2) Unless otherwise directed the Contractor shall use high yield strength bars class B, designat 'Y' on the Tender Drawings, with a specified characteristic strength of 500 N/mm^2

(3) Each consignment of steel reinforcement shall be supplied with the manufacturer's certific of tests for compliance with BS 4449 and as specified in BS 4449, clauses 16.1 and 16.2.

(4) Steel fabric reinforcement shall comply with BS 4483 and shall be delivered to the site in f mats or pre-bent.

(5) The steel shall be suitably stored on the work site in a way as to avoid salt water spr contamination and/or corrosion to the extent possible. S affected by severe rust will be reject

(6) Binding wire shall be black, annealed, mild steel and with d > 1.5 mm.

Delivery

(1) Reinforcing steel bars and fabrics shall be supplied straight in the standard lengths/sizes.

(2) Each consignment must be accompanied by a works certificate/delivery note identifying t reinforcing steel and high tensile pre-stressing steel by grades and numbers or standard fact marks.

(3) Reinforcing steel shall be stored according to the different grades in a clean, dry place a protected against environmental effects harmful to the steel.

Cutting and Bending

(1) The reinforcement shall be scheduled, cut and bent according to EN 1992 and according to t approved bending schedules.

(2) The reinforcement shall be accurately cut and bent to the shapes shown in the Worksh Drawings approved by the Engineer and in accordance with EN 13670 and DIN 1045.

(3) Reinforcing bars shall only be formed cold. Bending of bars with the aid of heat is not permitt

(4) After bending, the bars shall be marked for identification and stored on a clean and dry surfa by protecting them against adverse environmental effects until their use.

(5) Reinforcing bars, which are not cut or bent true to size and which are unsuitable for structu reasons in the opinion of the Engineer, shall not be installed and must be replaced to t satisfaction of the Engineer.

Placing and Fixing

(1) Before starting the placing work, the Contractor shall check and confirm that the shuttering the structural section to be reinforced has been set up true to size and levels, complete w recesses and related accessories.

The Contractor shall also ensure that all junction surfaces to already concreted structu members are so well roughened through caulking, that no portion of the original surfa remains, apart from the area of visible outer edges. If such edges chip off thereby, t Contractor shall properly recut them by the carborundum disc.

The formwork must also be cleaned off pieces of wood, rubbish, dirt and the like.

(2) All reinforcements must be installed as per steel grades, number of bars, diameters, shap intervals and locations indicated in the Working Drawings.

(3) At the time concrete is placed reinforcement shall be free from loose rust or loose mill sca dirt, mortar spillage, salt, oil, grease or other coating which might destroy or impair the bo between the concrete and the reinforcement. Rust will not be considered loose if, on rubbi with a finger, it leaves only a stain thereon. Particular care shall be taken to protect t reinforcement against salt spray and salt wetting at any time before delivery to site and wh on site, and, shortly before the concrete is poured, to remove any salt found on the surface spite of such precautions, in order to minimize subsequent concrete corrosion.

(4) The number, size, form and position of all steel reinforcing bars, ties, links, stirrups and oth parts of the reinforcement are to be placed in exact accordance with the drawings and kept the correct position in the forms without displacement during the process of vibrating, tampi and ramming the concrete in place.

(5) Spacers, chairs or other supports whether shown in the Tender Drawings or not, shall be us to maintain the reinforcement in its correct position, to the satisfaction of the Engineer.

Spacers shall be of such materials and design as will be durable, not lead to corrosion of t reinforcement, and not cause spalling of the concrete cover.

For any structural member which shall receive fairfaced concrete surfaces, special spacers m be used, which do not impair the specified appearance of the concrete surface.

(6) Any ties, links or stirrups connecting the bars shall be taut so that the bars are properly brac and the inside of their curved parts shall be in actual contact with the bars around which tl are intended to fit. Bars shall be bound together, in a least every other point of intersecti with best black annealed mild steel wire or other approved binders. Binding wire shall be b inwards.

(7) Non-structural connections for the positioning of the reinforcement shall be made with st wire or typing devices. It should be ensured that projecting ends of ties or clips do not encro into the concrete cover. The position of reinforcement shall be checked before and dur concreting.

(8) The minimum cover to reinforcing bars shall be as specified in EN 1992 or R 72 of EAU 20 or as shown in the Tender Drawings.
Where reinforcement is located in relation to only one face of a member (e. g. a straight ba a slab) the actual concrete cover shall be not more than the required minimum cover plu mm on bars up to and including 12 mm size, 10 mm on bars over 12 mm up to and includ 25 mm size, 15 mm on bars over 25 mm size.
Unless specified otherwise the minimum cover to reinforcement, including links, shall minimum 50 mm (nominal 65 mm) on all faces exposed to the marine environment.

(9) Spacing of bars placed in two layers or more and the minimum spacing between bars in same layer shall be as listed below:
   a) Vertical spacing: The maximum of the diameter of the bar or the maximum size aggregate.
   b) Horizontal spacing: The maximum of two bar diameters or the maximum size of aggreg +10 mm.

(10) Bars shall not be displaced laterally from the specified position by more than half a spacing and not into the specified cover zone in order to clear embedded items or penetrati unless permitted by the Engineer.

(11) Laps and joints shall be made only at the points shown in the Tender Drawings or agr by the Engineer. When it is necessary to lap reinforcement at points other than shown in Tender Drawings, the character of the lap shall be coordinated with the Engineer.

(12) Any change in the designed arrangement of reinforcement which may become necess in the course of the works due to actual site conditions or otherwise, must be reported to a coordinated with the Engineer. The Contractor shall record those changes and incorporate th in the as-built drawings.

Welding of Reinforcement

(1) Welded butts of reinforcing bars shall only be carried out with the Engineer's written conse provided they are not intended by the Tender Design.
The Contractor shall demonstrate to the approval of the Engineer that at each location fatigue life, durability and other properties of the member are not adversely affected by proposal.

(2) Tack welding of bars on site is not permitted for fixing purposes, unless other-wise appro by the Engineer.

(3) Welding of reinforcement shall comply with EN ISO 17660. Only qualified welders shall ca out the welding works under the supervision of Contractor's welding engineer. Details of welding method and sequence shall be submitted to the Engineer.

Preparation prior to Casting

(1)The reinforcement must not have metallic contact with steel which is protruding from t concrete surface.
(2)To avoid corrosion at contact points, galvanised structural parts, embedded in the concre may not have metallic contact with the reinforcement.
(3)The reinforcing work shall have been entirely completed in the part of the structure whicl due to be case before the casting of the concrete may commence.
(4)The Engineer shall be allowed ample time to examine the completed reinforcing work bef the casting of the concrete is due to commence.

Inspection and Control

A plan shall be established for receipt, storing and handling of all supplies of reinforcement steel.

This plan shall ensure that the Engineer has been given the possibility to verify the compliar between delivered materials, the markings of the same, and the appurtenant certificates, prior processing, cutting, etc. of the materials. The Contractor shall document his receiving and stor inspections.

All reinforcement, when placed and fixed in the forms, shall be subject to inspection and approval the Engineer before any concrete is placed.

Concrete Production

Plant, Equipment and Batching

(1)The Contractor shall provide a modern and reliable plant for thorough mixing of the aggregat cement and water into a uniform mass within appropriate time and of discharging the r without segregation.
(2)Before embarking upon a concrete placement, the Contractor shall prepare an equipment to ensure that he has available, for immediate use, sufficient equipment in reserve for t batching, mixing, transporting and placing of the concrete that once the casting of a section the structure is in progress, it can be completed as a continuous operation.
The equipment list shall contain information with regard to equipment, brand name and s and shall be kept up-to-date. The Engineer shall have full access to the equipment list.
(3)Those surfaces of the measuring, mixing and transporting equipment that will be in cont with concrete shall be clean at the commencement of the mixing operation.
(4)Before concrete production starts and at least once every month after that, or whene required by the Engineer, the Contractor shall,
a) check and recalibrate each scales and other measuring devises from zero to full capacity the scales,
b) check the efficiency of his mixer by wet screening of fresh concrete.
(5)The Contractor shall notify the Engineer at least 2 working days in advance before his intent to perform these tests.
(6)Daily the Contractor shall check the accuracy of each scales at their zero and at least one otl suitable point.

Mixing

(1)The quantity of cement, the fine aggregate and the various sizes of coarse aggregate shall measured by weight unless otherwise agreed by the Engineer. A separate weighing device sh

be provided for weighing the cement. Alternatively, the cement shall be measured by using full number of bags in each batch.

(2)The amount of water shall be measured by volume or by weight. Any solid admixtures to added shall be measured by weight, but liquid or paste admixtures may be measured by volur or by weight.

(3)The accuracy of the measuring equipment shall be within ± 3 % for the quantity of cemei water or total aggregates being measured and within ± 5 % for the quantity of any admixtu being used. All measuring equipment shall be maintained in clean, serviceable conditions.

(4)The concrete shall be mixed only in power-driven concrete mixers of adequate capacity (rota drum or pan type). The mixing time shall be not less than prescribed by the manufacturer assessing the mixer performance and shall be adapted to the concrete quality to be produce

(5)The Contractor shall have a thorough knowledge of the moisture content of all aggregates they reach the mixer and he shall make such adjustments to the mix as are necessitated changes in the moisture content of the aggregates. Efficient means shall be provided therefo for determining the moisture content of the sand and coarse aggregates at all times.

(6)All concreting materials and plant are to be adequately protected against the effect of ra storms and strong winds.

(7)Where machine-mixing is not possible and if consent has been obtained from the Engineer, t concrete may be mixed by hand as near as possible to the Site where it is to be deposited. Clean mixing bankers or platforms of sufficient area shall be provided for the proper executi of the work. These platforms, if made of timber, shall consist of planks closely jointed so as avoid the loss of grout or liquid from the wet concrete.

The whole of the aggregate and cement shall be turned over on the banker in a dry state least twice. The water shall then be added gradually through a rose head, after which t materials shall again be entirely turned over in a wet state at least three times before leavi the banker.

Concreting

General

(1)The Contractor shall provide the Engineer weekly in advance, with a schedule giving the detail locations of the pours, the approximate extent of pours and the date on which the concrete intended to be placed.

(2)Prior to placing concrete in any location, the Contractor shall provide the Engineer with a writt notice that the preparation of formwork, of reinforcement and of the embedded items etc. the pour has been completed and is ready for inspection. Suitable procedures and formalit shall be agreed upon between the Contractor and the Engineer at the appropriate time.

No concrete shall be placed until all formwork, reinforcement, installation of parts to embedded, bracing of forms and preparation of surface have been completed to the satisfacti of the Engineer. If concreting is not started within 24 hours of inspection, the Engineer's conse shall again be obtained.

(3)The placing of concrete in the open will not be allowed during bad weather, i.e. hea precipitation, storms or the like. If already begun, work is to be interrupted on demand of t Engineer for the foregoing reasons, the sections already concreted are to be protected by t Contractor through suitable measures. The definition "bad weather" shall be at the ent discretion of the Engineer.

(4) During the concreting and setting process, all construction work in neighbouring areas, wh leads to shocks and which could disturb the concrete texture in the opinion of the Engineer to be stopped.

(5) The Contractor's concrete engineer shall be at Site when permanent structural members being cast. The Contractor shall also delegate an adequate number of experienced concr foremen or site engineers who shall supervise and direct the mixing, placing and finishing the concrete works.

(6) The Contractor shall send to the Engineer a daily statement showing the quantities of cem and the number of mixings of each class of concrete used in each section of the Works. The results of the fresh concrete routine test, as well as the number and identification mark the prepared test specimen shall also be listed in this statement.

Preparation for Concreting

(1) All surfaces on which or against which concrete is to be placed, including construction joi between successive concrete pours, reinforcing steel and all embedded items, joint ribbons e shall be thoroughly cleaned through flushing with clean water and/or with compressed air otherwise to remove dirt, mud, debris, grease, oil, dried mortar or grout, loose particles other deleterious matter capable of affecting the good concrete quality, to the satisfaction the Engineer. This may also include steam cleaning of surface spoiled by oil or similar matt sandblasting of reinforcement etc.

(2) The junction surfaces to already completed structural members, which have been prepa through caulking must be thoroughly wetted, so that no water is withdrawn from the fre concrete.
If concreting is carried out against existing older structures, the junction surfaces are to roughened and kept moist for several days, in order to keep the shrinkage differences betwe old and new concrete as slight as possible. However, at the time of being concreted agair the surface of the older concrete must be somewhat dried out.
Immediately before being concreted against, the junction surface is to be covered with cem slurry of suitable consistency, if so ordered by the Engineer.

(3) The surface on which concrete is to be deposited must be made and maintained free fr standing water during concreting operations.
Running water crossing or entering such areas must be brought under control to the satisfact of the Engineer before concreting proceeds.

(4) For the concreting the structural members are to be made accessible through suitable walkwa and the like, supported independently of the reinforcement. All unavoidable necessary tra on fresh concrete shall be made via boards only.

(5) The Contractor shall constantly make available at the Site and use in the Works suitable fr spanning covers, tarpaulins and the like, for the protection of the freshly placed concrete.

Transportation and Placing

(1) The Contractor shall submit to the Engineer full details of the planned measures as to transportation and distribution, as well as to the placing and compaction of the concre whereby all measures shall be to the satisfaction of the Engineer.

(2) Concrete shall be transported from the mixer to the formwork as quickly as possible methods, which will prevent the segregation or loss of any of the ingredients and wh maintain the required workability. It shall be deposited as far as possible in its final state avoid re-handling.

Concrete shall be placed and compacted within 45 minutes of charging the mixer. Partially s material shall not be used in the Works.

(3) The concrete shall be placed in accordance with EN 13670 with the following restrictions:

a) Concrete shall be deposited as nearly as practicable to its final position and in such a manr as to avoid segregation due to re-handling or flowing. The vertical drops shall be no mc than 1.7 metres except where suitable equipment is provided to prevent segregation a where specifically authorized. The concrete shall be placed in approximately horizon layers of no more than 500 mm thickness.

b) Concrete shall be placed at a rate that will permit proper compaction.

c) Concrete shall not be placed if it has partially hardened or has been contaminated by forei materials or before all formwork and falsework required for the pour are completed a adequately braced.

d) Concrete in each section of the work between approved construction joints shall be plac in a continuous operation so that new concrete is placed against plastic concrete to produ a monolithic mass.

e) The Contractor shall ensure that the concrete does not segregate and does not block small structural elements or over the reinforcement and other embedded items.

f) Adequate protection shall be at hand to protect the fresh concrete from sudden rain.

g) When strong winds are likely to be experienced, additional precautions to ensure protecti from installation rain and dust shall also be taken. The Engineer may withhold approval commencement of concreting, until he is satisfied that full and adequate arrangements ha been made.

h) Where concrete is to be placed against an earth surface the surface shall be sealed by blinding layer of 50 to 100 mm to minimize loss of water and prevent fouling.

(4) The use of chutes to convey concrete will not be permitted, except that chutes less thar metres in total length may be used immediately adjacent to or in the forms.
In no case shall concrete be dropped by more than 1.0 m from the bucket or chute. In spec cases, e.g. where water-proof concrete is demanded, the drop must be limited to max. 4 mm.

(5) Working of the concrete shall be done where it has been placed. In no case it shall horizontally transported in the formwork by the vibrator.

(6) The depth of lift to be concreted shall be determined by the Contractor in consultation with t Engineer.

Compaction

(1) Concrete shall be thoroughly compacted by vibration during placing. It shall be thoroug worked around the reinforcement, around any other items or embedded fixtures, as well into the corners of the formwork to form a solid mass free from voids, thus having the requi surface finish when removing the formwork.
Internal vibration may be supplemented by hand spading along the boundaries of the concr and around embedded items, while the concrete becomes plastic by vibratory action.
No excess water shall remain on the top surface of the pour on completion of the compacti It may be necessary therefore to reduce the water content of batches at the top of deep l to compensate for the water gain from the lower levels.
Segregation of mortar and of aggregate due to excessive vibration is to be avoided.
Vibration shall not be applied directly, or through the reinforcement, and not to sections masses of concrete which started hardening or after initial setting.

(2) The vibrators must enable continuous operation. The type and capacity must be particula suitable for the individual sizes and shapes of concrete pours to be carried out.
The vibrators shall work in such a manner that the whole of the mass under treatment adequately compacted at a speed equal to the concrete supply from the mixers. There sho be used at least one vibrator each for every 4 cubic metres of concrete or part thereof plac per hour, with a minimum of 2 vibrators. At least one stand-by vibrator shall be constar available at each point of placement for emergency use.

(3) Concreting shall be carried out continuously and without longer interruptions. Care is to taken thereby, that a horizontal layer covering the entire surface of the concreting sectior poured at least every 25 to 30 minutes, and that the compacting is completed at the latest minutes after mixing the respective concrete portion. This horizontal layer shall have thickness of at least 20 mm in dry, warm and windy weather and at least 40 mm in wet a cold weather.
If longer interruptions have occurred for any reason, and if the Engineer still allows t concreting to be continued, the Contractor shall carefully clean the concrete junction surfa off slurry and take care during vibration, that the concrete older than ¾ of an hour is r disturbed.

(4) During compaction of a new poured concrete layer, the vibrator shall penetrate the previc layer at least 10 cm.

(5) All non-shuttered concrete surfaces must be levelled even and true to profile by means scales. This work shall only be executed by trained masons or skilled concrete workers, where it must be ensured, that the concrete is given a clean, and above all, dense surface.
Except where other finish is specified, concrete slab surface shall be finished by tamping t concrete, followed by screeding and floating with straight edges to bring the surface to t required finish level shown in the Tender Drawings.
While the concrete is still green, but sufficiently hardened to bear a man's weight without de imprint, it shall be wood-floated to a true even plane with no coarse aggregate visible. Sufficie pressure shall be used on the wood floats to bring moisture to the surface. The concrete sh then be hand-trowelled to produce a smooth impervious surface free from trowel marks.
In the case of larger concrete slabs, screeding shall be done by special surface vibrato followed by trowelling as above.

(6) Concrete slabs shall be levelled with a tolerance of 5 mm in 4.0 m, except where special slop are to be provided for drains or otherwise as per Drawings, and finally be compacted appropriate surface vibrators. The surface shall be given the finish specified in the Bills Quantities.

Concreting at High Ambient Temperatures

(1) All measures required by the Contractor for carrying out concreting at high ambi temperatures shall be coordinated with and be acceptable to the Engineer.

(2) The Contractor shall select and adopt measures as are appropriate to ensure that the plac temperature of the concrete is kept as low as possible so that the soundness of the concret structural members is not impaired by the effects of high ambient temperatures.
The measures may be shading of concrete constituents, spray cooling of aggregate stockpil cooling of water etc.
Besides, concreting shall be carried out early in the morning or at night under exceptionally h weather conditions.

(3) The following restrictions apply:

a) Precautions shall be taken to avoid premature stiffening of the fresh mix and to redu water absorption and evaporation losses.

b) If the temperature of the surrounding air is between 32 and 35 degrees C the following sh apply unless otherwise directed by the Engineer:

i. The formwork shall be continuously sprayed with cold water in advance of the concreti and excess water shall be removed from the inside of the forms immediately prior the placement of concrete.

ii. The reinforcement, and the formwork if metal forms are used, shall be protected fr the effects of hot winds and direct sunlight.

iii. Suitable barriers shall be provided to protect the freshly placed concrete from wind, u the concrete has hardened sufficiently to allow it to be covered according to paragra (v) below.

iv. The concrete shall be held to a temperature not higher than 32 °C when placed, by

A. using chilled mixing water, or

B. spraying the coarse aggregate with cold water (adjusting the amount of mixing wa accordingly), or

C. covering the container in which the concrete is transported to the forms, or

D. pouring the concrete early in the mornings, or

E. using any combination of these methods.

v. The concrete shall be mixed, transported, placed and compacted as rapidly as possib and shall then be covered with an impervious membrane (tarpaulin) for at least 48 ho and until moist curing begins.

vi. After the membrane has been removed the surface shall be covered with a curi compound, which shall be approved by the Engineer.

c) Concreting when the surrounding air temperature exceeds 35 degrees C shall be with t Engineer's approval only.

(4) If the Contractor intends to use special retarding or liquefying additives for the concrete mix Section 0 shall be followed. Preliminary concrete tests according to Section 0 must be carri out at the expected placing temperature, to determine and verify the effects of such concr additives.

Retarding effects shall be limited to the period of time reasonably required for mixing, pouri and compaction of the concrete, to reduce the danger of desiccation and formation of crack

(5) Immediately after its compaction, the concrete must be provided with an effective protect against desiccation. Otherwise, high temperatures in combination with strong air flow and l humidity may adversely affect the quality and soundness of the respective structural concr member.

Desiccation of the water contained in the concrete may be prevented by immediately cover the fresh concrete with water-proof and vapour-proof foils or films, by providing a stea saturated air cushion just above the concrete surface or by other appropriate methods to proposed by the Contractor and acceptable to the Engineer.

Finishing

Unformed Surfaces

(1) The platform deck shall be straightened by means of a beam vibrator and finished by s propelled finishing machines which compact, level and float the surface in one or m operations. The finishers shall provide a floated surface so that only minor areas of the d and the top of the edge beams shall be wood floated. Following the finishing machines a work

bridge shall be established from which after-treatment can be performed to ensure that t bridge deck is not touched after the floating.

(2) The treatment shall be carried out without any formation of surplus cement paste in the surfa It is an essential requirement that the surface produced by the floating process is free fr any lumps, holes and arises.

(3) For sloping surfaces, top side shuttering shall be made up in movable panels of a suitable len so as to permit satisfactory casting against the sloping form and the surface to be screeded- in suitable sections.

Formed Surfaces

Unless otherwise specified, visible formed surfaces shall have a smooth off-form finish and unifo overall appearance.

Curing and Protection

(1) Immediately after compaction and finishing all exposed concrete surfaces shall be protect against evaporation of water and any other harmful effect of the weather before the concr reaches an age of 2.5 maturity-hours, by application of a suitable curing product. The meth of curing shall provide a suitable environment for the concrete to mature and prevent harm loss of moisture.

(2) All concrete must be moist cured for a period of time equivalent to not less than 7 days at 20 by a suitable method. Alternatively the forms shall remain in place.
Also during the curing period, the concrete shall be protected from damaging mechani disturbance, such as load stresses, heavy shock, and excessive vibration.

(3) All finished concrete surfaces shall be protected from damage caused by construct equipment, materials or methods, by spraying with water colder than the concrete, application of adverse curing procedures and by rain or running water. Self-supporti structures shall not be loaded in such a way as to overstress the concrete.

(4) The Contractor shall constantly make available at the Site and use in the Works, suitable fr spanning covers, tarpaulins and the like for the protection of the freshly placed concrete.
Such protection measures must be so planned and installed that no chimney-effect occ between the fresh concrete surface and the cover, which could lead to desiccation of the fr concrete and subsequent cracking under certain climatic conditions.
The covers shall be supported as necessary to avoid marking of fresh concrete, permaner exposed to view.

(5) Immediately after placing, compaction and finishing of the fresh concrete, a wet hessian co shall be carefully placed on the concrete and sprayed with fresh water in a manner which not damage the concrete surface. The cover shall remain in place and be kept continuou saturated with fresh water for at least 10 days following the placing of the concrete.

(6) At large exposed horizontal fresh surfaces, e. g. slabs, the saturated hessian cover may removed and the concrete surface thoroughly wetted and covered with loose sand of not l than 5 cm, as soon as practicable after final concrete setting. The sand shall be k continuously saturated with fresh water by spraying for at least 10 days following the plac of the concrete.

(7) The Contractor may use recognized curing agents only with the Engineer's consent.
Such agents must be used in strict compliance with the manufacturer's recommendations.

(8) At high ambient temperatures, special measures must be applied, refer to Section 0.

(9) The process of curing and protection of the concrete during hardening shall be designed so to avoid early thermal cracking due to internal temperature differences over cross sections excessive external restraint during cooling of structural units - e.g. based on a mathemati simulation which incorporates all important factors governing the process and covers all ea hours where the risk of thermal cracking exists.

Measures for the necessary mitigation of temperature gradients must be taken involving o or more of the following precautions:

- adjustment of temperature of fresh concrete
- insulation of new concrete
- heating of adjoining structures of existing concrete
- cooling through embedded cooling pipes.

The necessary measures shall be determined from the mathematical simulation and shall subject to the Engineer's approval.

The development of temperatures in the concrete during all phases of hardening shall verified for compliance with the simulation results by means of concrete thermometers plac in the concrete subject to the Engineer's approval.

The maximum temperature of the concrete during hardening must generally not exceed 50° or 60°C (provided that documentation is made available that no damage to the strength a durability of the concrete will result).

Tamping of Equipment Items and Grouting Recesses

(1) The Contractor shall expertly tamp with concrete, all prefabricated items and equipment whi are to be supplied and/or installed within the scope of the Contract, and shall grout the recess of all appertaining anchorings or of other mounting elements.

For any tamping or grouting works, only the concrete quality or mortar specified in the Drawin or in the Bills of Quantities shall be used.

(2) Installation items and equipment, which the Contractor neither supplies nor mounts as per t Contract, are also to be tamped or grouted by the Contractor, if ordered to do so by t Engineer. Such performances will be separately compensated for according to the unit pric fixed in the Bills of Quantities or as otherwise agreed upon.

Patching of Defects and Damages

(1) The concrete surfaces exposed after stripping shall be inspected by the concrete engineer the Contractor, together with the Engineer. The following standards shall be valid for t assessment of the concrete quality:

- The appearance of the concrete surfaces must conform to the specified classification finish, refer to Section 0,
- the concrete surface must be uniformly smooth, even and free of ridges and oth irregularities,
- the concrete must have a pore-free, dense surface on all sides with no evidence segregation or inadequate compaction,
- no reinforcing bars may be exposed or signs be present, which indicate an inadequa concrete cover of the reinforcing bars,
- no hair cracks shall be visible.

(2) During the inspection the Engineer will determine the type and extent of defects to eliminated.

The Contractor is obligated, if necessary and applicable

- to expose reinforcing bars, which apparently have an inadequate concrete cover, in the ar determined by the Engineer and to bend them inward through suitable measures,
- to caulk out honeycombs and similar defective spots, which are traceable to segregation the concrete,
- to pressure-grout damaged areas, cracks, etc.,
- to seal all hair cracks of a measured width of more than 0.2 mm, with suitable a recognized epoxy resin material,
- to fill air pores or other defects in the concrete surface with cement slurry of suital consistency,
- to seal all holes resulting from the removal of formwork bolts and the like,
- to demolish and reconstruct such structural concrete members which cannot satisfactor be repaired or which are otherwise unfit for the Works in the Engineer's opinion,
- to propose and apply any other proven system or measures according to the type and exte of the defect, in order to achieve a result and appearance acceptable to the Engineer.

(3) Patching work shall begin at the latest 24 hours after stripping, however it shall in no case undertaken prior to carrying out the joint inspection of the concrete by the Contractor and t Engineer.

(4) Patching and repair work shall be executed only through qualified personnel using high qual and recognized materials, e. g. concrete and cement or special mortar. A special bonding age such as suitable epoxy resin and the like, of first class quality shall be used where appropria to also ensure good bonding and adequate denseness in the joints.

(5) All costs for repair and patching work are to be borne by the Contractor.

Sealing of Cracks

(1) Cracks detected in concrete members cast by the Contractor, are to be sealed according to t directives of the Engineer, provided cracked structural concrete members are not rejected the Engineer.

(2) Cracks with a width of less than 0.5 mm, and without any excess of water shall be sealed w a suitable epoxy resin, applied by brush directly onto the crack. The application of epoxy re must be repeated at intervals of 3 to 5 minutes until no epoxy resin penetrates any more ir the crack. Prior to application the crack must be cleaned and prepared as per the directions the manufacturer of the epoxy resin. This method may also be applied for sealing cracks more than 0.5 mm width, if they are located on the top side of horizontal surfaces. In this ca the epoxy resin will be poured into the crack as per recommendation of the manufacturer.

(3) Cracks in vertical, inclined or at the bottom side of horizontal surface of more than 0.5 m width shall be sealed by injection of epoxy resin. The surface of the cracks must be cleane Injection nipples are to be provided at 150 mm to 300 mm intervals and the remaining surfac of the cracks are to be sealed with a thixotropic epoxy resin compound. Prior the injection, t crack shall be cleaned of dust etc. by blowing oil free and clean compressed air through all t injection nipples. In case of cracks in vertical or sloped walls, the injection must start at t lowest nipple.

Preparation and Sealing of Joints

General

(1) This section applies to joints other than those to be laid in concrete floor slabs or in-situ concre pavements.

(2) Joints required by the Contractor but not intended by the Tender Design are in principle subj to the Engineer's Approval.

The location and design of such joints are to be depicted in the Drawings which shall submitted to the Engineer in time. In determining the location of joints, the Contractor sh consider the structural requirements of the respective structural member.

For any joint proposed by the Contractor, the latter shall take into account the conditions unc Section 0.

Materials

(1) Joint Ribbons

Joint ribbons for any type of joint shall be of a seawater, sunlight, oil and bitumen resista durable material. It shall be the make of a reputable manufacturer, such as Superc Waterstop of Expandite[9]. The fabrication of ribbons must be quality supervised by an authoriz institute or authority. Relevant certificates are to be submitted to the Engineer.

The physical properties of the material shall be confirmed by verified test certificates of authorized material testing institute and shall meet the following requirements:

Tensile strength in accordance with DIN 53504:	≥ 10 N/mm²
Elongation at rupture in accordance with DIN 53504:	at +20 °C * 350 %
	at -20 °C * 200 %
Hardness in accordance with EN ISO 7619:	~ 60° Shore

(2) Joint Filler

The joint filler to be installed at joints shall be the make of a recognized manufacturer, such Flexcell or equivalent.

It shall be of a compressible type which can withstand the concrete pressure at the time pouring, but adequately elastic to carry the structural deformations without adverse effects the concrete structure.

(3) Joint Sealer

Joint sealer shall be the make of a recognized manufacturer, such as Thioflex 600 of Fosroc equivalent.

The joint sealing material shall meet the requirements of DIN 18540 and must be resistant seawater, oil, the most common chemicals and sunlight. It shall be of permanent elasticity, suitable to carry the structural deformations and must possess an outstanding adhesion to t concrete.

Joint sealer shall be supplied with primer coats, backing material and/or bond breakers to t joint filler, as required by the manufacturer's recommendations.

The Contractor shall submit to the Engineer a statement from the manufacturer(s) of the jc filler and sealing materials, that these materials are suitable under the prevailing local a structural conditions.

Expansion Joints

(1) The jetty structure will be executed jointless. In case the Contractor proposes an alternat design with expansion joints this proposal will not be evaluated.

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(2) Expansion joints in structures other than the quay wall shall be located and shaped as sho on the Execution Drawings approved by the Engineer. Unless otherwise specified, an approv compressible sheet of filter shall be supplied and placed in the joint to provide freedom for t adjacent concrete slabs or blocks to expand. In certain situations a highly compressible jo filler of foam rubber or other approved material shall be used. The exposed edges of the joi shall be sealed with an approved synthetic rubber or similar resilient sealing compound.

(3) No metal items shall extend through an expansion joint except where shown in detail on t Tender Drawings.

(4) Expansion joints between the individual structure sections represent especially critical are Therefore, the Contractor shall carry out and supervise the preparation of the joints and t placing of joint ribbons, fillers and sealers with particular care.

(5) The formwork of the joints must be prepared with maximum precision. Only the best mate with perfectly plane surfaces shall be used for the forms.

(6) Joint ribbons shall be installed smooth and free of tension. They must be secured in positi using fastening material specially designated for the particular type of ribbon to be install Warping or bending of the ribbons' seals must be prevented with certainty.

(7) Joint filler sheets shall be installed with tight joints between the individual sheets. An adhes shall be used to secure the sheets in place, as per recommendation of the joint fil manufacturer.

(8) Joint sealer shall be installed in consideration of manufacturer's instructions, using prin coats, backing material and/or bond breakers to the joint filler material.

Dummy Joints

(1) In principle, dummy joints should be avoided. However, dummy joints may be required preventing cracks or for other reasons to be justified, depending on the construction sequer and concreting operations employed by the Contractor.
Under all circumstances, number of dummy joints should be kept to a minimum, refer to Secti 0.

(2) Dummy joints must be so designed, that the crack width is limited to a minimum, but t formation of other irregular cracks avoided.
The grooves to be formed by inserting wooden strips on both sides of the joint shall have shape permitting later sealing of the joint by permanent elastic joint sealers or by epoxy-re specially formulated for crack sealing.
At the joint strips, the minimum concrete cover shall be maintained.

(3) Joint ribbons/water stops shall be installed at any dummy joint. Section 0 (1) is applica analogously.

Construction Joints

(1) Construction joints shall be executed in accordance with EN 1992 with the following restrictio
   a) Construction joints shall be located and shaped as shown on the drawings, or as approv by the Engineer.
   b) Before fresh concrete is placed against a hardened concrete surface at a construction joi the surface shall be scrabbled and cleaned so that all loose or soft material, free wat foreign matter and cement skin are removed, while at the time of the placement the surfa shall be damp.
   c) Projecting reinforcement and embedded items, such as dowels, inserts, fabricated st members and pipes shall be carefully located, fixed and sealed in the form of t construction joints.

d) The formwork shall be tightly secured against previously cast or hardened concrete prevent stepping or ridges to exposed surfaces.

(2) The location of construction joints desired by the Contractor shall be depicted in the drawir to be submitted to the Engineer, refer to Section 0 (2).

(3) Horizontal or vertical square strips of suitable size shall be placed in the formwork at construction joints of individual concreting sections, in order to achieve a smooth closure edg The strips shall be removed prior to subsequent concreting of the neighbouring section, a the remaining grooves shall be expertly and cleanly concreted.

(4) The contact surface is to be roughened by chipping, so that no old concrete surface remains

(5) Construction joints must be provided with special seals, such as rear water stops, embedd steel sheet strips and the like, where watertightness of the respective structural member specified.

All such measures must be coordinated with the Engineer in consideration of the requiremer set to the respective structures.

Pre-cast Concrete Members

General

(1) This Section shall be applicable to structural members, which are designated in the Tenc Drawings or Bills of Quantities as precast members. It shall also apply to any member of t Works which are proposed by the Contractor to be executed as precast unit, if approved by t Engineer.

(2) All reinforced precast concrete units shall be manufactured by the Contractor at Site, unle otherwise agreed to by the Engineer. The Contractor shall submit his detailed proposals for t setting up and operation of the manufacturing yard for Engineer's approval.

(3) The Contractor shall prepare Workshop Drawings and also the necessary structural calculatic at his own expense and on the basis of the Specifications and Tender Drawings. Worksh Drawings must show all necessary details required for proper prefabrication, handling a installation. All such documents are subject to the Engineer's approval.

(4) Data defining the schedule of fabrication, stacking, transportation, erection etc., as well equipment proposed for all precast work, are likewise to be submitted to the Engineer.

Preparation and Installation

(1) The precasting yard shall be clean and have horizontal and firm beds of concrete with draina ducts.

(2) As far as preparation of formwork, reinforcement, design, mixing and placing of concrete e is concerned, the Specifications for the in-situ concrete are valid analogously.

(3) All units after stripping shall be marked with oil paint, indicating date of manufacture a identification.

(4) The precast units may be lifted from their casting beds and transported to the storage pla when the average crushing strength of at least three cubes is at least 2½ times the str induced by lifting and stacking, provide the minimum of 3 cube tests is not less than twice st stresses. These cubes have to be prepared in addition to work tests as per Section 0. Necess calculations shall be submitted by the Contractor for Engineer's information.

(5) Stacking shall be arranged in such a manner that the units can be used in the Works in or of age. The stacks shall be shielded from direct sunrays, allowing curing as per Section 0.

(6) Precast units shall not be installed in the Works unless the 28-day cube crushing strength l been confirmed by tests.

(7) All precast elements shall be installed and assembled true to lines and levels, plumb horizon or inclined in strict accordance with the Execution Drawings approved by the Engineer.

(8) Hoisting gear made available by the Contractor shall be specially suited for such work w regard to capacity, operation height and range, and in particular guarantee controlled a accurate lifting, lowering and placing of elements.

(9) The Contractor shall be responsible to provide for the duration of the installation works required supports, bracings, scaffoldings, fixing materials, etc. which are required to ensure safe and smooth assembly of the precast units and with which the elements can be so rigi positioned and connected that no movements occur at the time of grouting the joints bearings. The period necessary to start removal of bracings, supports etc. will depend on t required hardening time of the mortar.

(10) Reinforcing bars may be welded at joints, provided weldability of the steel is ensur and the welding method conforms to applicable standards.

(11) After installation, all exposed work shall be thoroughly cleaned and finished with wa or other methods as approved by the Engineer. The Contractor shall, however, not use any a for such cleaning.

(12) During installation, the tops of all elements in place shall be covered while work there is in progress.

(13) Joints between prefabricated members may be sealed with permanent elastic sealant per Section 0, if so and at locations as ordered by the Engineer.

Marking of Prefab Units

Prefab members shall be unambiguously, discretely, marked for identification of design and date fabrication.

Construction Tolerances

General Requirements

The appearance of all structures shall be such that no visible deviation from the correct form noticeable.

Depressions in horizontal or nearly horizontal surfaces of the permanent structures, which are r permanently submerged, shall not be accepted due to the risk of accumulation of puddles. All su surfaces shall be shaped with a slope of 1% unless otherwise shown in the Tender Drawings.

All visible concrete edges shall be chamfered 25 x 25 mm unless otherwise shown in the Tender Execution Drawings.

Structural elements of dimensions to be susceptible to visible deflections in the permanent structu shall be constructed with a compensating camber subject to the Engineer's approval.

Pre-cast Concrete Members

Dimensional tolerances for precast structural members shall comply with EN 13369 with the followi requirements:

- size and location of penetrations, recesses etc.:

  ± 10 mm

- inserts, brackets, steel members etc. to be embedded and which on the Execution Drawir are shown to be flush with the concrete surface:
  ± 10 mm

In-situ Concrete

Tolerances for formed surfaces of in-situ reinforced concrete are:

- location or structural parts in relation to reference lines and levels: ± 20 mm
- cross sectional dimensions of slabs and beams: -5 / +20 mm
- cross sectional dimensions of walls, copings and bases: 0 / +50 mm
- longitudinal dimensions (less than 20 m): ± 20 mm
- size and location of penetrations, recesses, etc.: ± 10 mm
- inserts, brackets, steel members, etc. to be embedc and which on the Execution Drawings are sho to be flush with the concrete surface: ± 1 mm

For further tolerances it is referred to EN 13670.

The striking of formwork shall be carried out in accordance with EN 13670 with the additio requirements of this Section or as approved by the Engineer.

Stripping of forms shall not be performed prior to the concrete having achieved a matur corresponding to the required period for protection against drying out.

Any part of the structure at a lower level shall have been stripped of formwork and have been fou to comply in all respects with the requirements of the specifications before casting or placing structures above will be allowed by the Engineer.

Measurement and Payment

Formwork

All costs for formwork must be included in the concrete prices and will not be measured and paid separately.

Reinforcement

(1) Reinforcing bars will be measured as per Execution Drawings in consideration of the volume weight of 7.85 t/m³, without additions for rolling tolerances, waste lengths and bending wir
(2) The prices shall include all costs involved with the supply, transportation, storage a protection, the cutting, bending and placing, inclusive of concrete spacers, supports, star etc.
(3) Assembly stands, spacers etc., whether designated in the Execution Drawings or not otherwise demanded by the Engineer will not be measured and paid for separately.
(4) If installation reinforcement must be dismantled under certain circumstances or wh additional reinforcing bars are to be provided on Engineer's instruction, the Contractor is entitled to any compensation, if such additional supplies and/or performances are required a demanded by the Engineer due to the Contractor's faulty execution of the respective work.

Concrete

(1) Concrete works shall be measured and paid for as per theoretical volumes calculated on basis of the Tender and Execution Drawings, or as otherwise approved by the Engineer.

Recesses (e. g. openings in slabs, breakthroughs and the like) with an individual volume more than 0.1 m^2 or 0.05 m^3 shall be deducted.

(2) The prices for concrete works shall include all costs for the complete work and are not limit to the costs of formwork, its support, anchorings, chamfers etc., the required scaffolding, po treatment and, if necessary, repair of concrete, all preliminary and routine tests, as well as t required structural checks and drawings for Temporary Works in connection with the concr works.

(3) The cost for special finishing of exposed concrete surfaces such as anti-skid finish etc. specified levels and slopes shall be included in the unit price applicable to the respect structural member and will not be compensated for separately.

Joints

(1) Expansion Joints

Expansion joints will be paid per number, according to the Execution Drawings. The prices sh include all costs for the different materials and performances relative to the laying and seal of the joints.

(2) Construction Joints

Construction joints generally will not be measured and paid for.

The Contractor is deemed to have covered the costs for all related supplies and performan by surcharges included in the respective concrete prices.

Tamping Equipment Items and Grouting Recesses

The costs resulting from materials and performances in connection with the tamping of installed ite or the grouting of recesses are deemed to be included in the prices for the supply and/or installat of the respective items, and will therefore not be separately compensated for.

Precast Concrete Members

Precast members will be measured and paid for as per Sections 0 to 0.

The installation of precast members already intended by the Tender Design will be measured p number of unit. For any other structural members which may be intended for prefabrication by t Contractor and approved by the Engineer, the installation costs are deemed to be covered by the u rates for the concrete works applicable to the respective member as per Tender Design.

Berth Equipment

General

(1) The works covered by this Chapter shall consist of providing and installing the equipment ite for the quay structure, as per Tender Drawings, Specifications or manufacturer's instructior

(2) The Tenderer is obligated to already indicate in his Tender the intended manufacturer/supp of the equipment/material offered by him. Any later change or deviation has to be approved the Engineer.

Scope of Work

Fenders

(1) The works specified in this Section comprise the complete supply and installation of fender ur for the jetty as shown in the Tender Drawings.

(2) The Contractor shall be responsible for the detailed alignment of the fenders horizontally a vertically, the preparation of Workshop Drawings which have to be submitted with supporti documentation to the Engineer for his approval and supply, installation and commissioning all components of the fender units.

Bollards

(1) The works specified in this section comprise the complete supply and installation of bollards the jetty as shown in the Tender Drawings.

(2) Structural steel works applicable to bolts are specified in Chapter 0. The work covered by t Section includes the supply of all other materials and the provision of all labour, pla equipment, temporary work, installation, testing, completion and maintenance of the bollai in accordance with the Tender Drawings, these Specifications and instructions from t Engineer.

(3) The Contractor shall be responsible for the dimensioning of the bollard foundation includi required additional concrete reinforcement of the quay structure, detailed alignment of t bollards horizontally and vertically, the preparation of detailed Workshop Drawings and supp installation and commissioning of all components of the bollards.

(4) He shall submit all necessary Workshop Drawings with supporting documentation to t Engineer for his approval.

Ladders

(1) The works specified in this section comprise the complete supply and installation of ladders the jetty as shown on the Tender Drawings.

(2) Structural steel works applicable to bolts are specified in Chapter 0. The work covered by t Section includes the supply of all other materials and the provision of all labour, pla equipment, temporary work, installation, testing, completion and maintenance of the ladd in accordance with the Tender Drawings, these Specifications and instructions from t Engineer.

(3) The Contractor shall be responsible for the detailed alignment of the ladders horizontally a vertically, the preparation of detailed installation drawings and supply, installation a commissioning of all components of the bollards.

(4) He shall submit all necessary working drawings with supporting documentation to the Engin for his approval.

References

/1/ EN ISO 527 Plastics - Determination of tensile properties

/2/ EN ISO 1183 Plastics - Methods for determining the density of non-cellular plastics

/3/ EN 1561 Founding - Grey cast irons

/4/ EN ISO 2039 Plastics - Determination of hardness

/5/ EN ISO 8295 Plastics - Film and sheeting - Determination of the coefficients of friction

/6/ DIN 4567 Ladders - Design for ladders for special professional use

/7/ ASTM D412 Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers

/8/ ASTM D1630 Standard Test Method for Rubber Property

/9/ ASTM D2240 Standard Test Method for Rubber Property-Durometer Hardness

/10/ ASTM D624 Standard Test Method for Tear Strength of Conventional Vulcanized Rubber a Thermoplastic Elastomers

/11/ Relevant PIANC and EAU guidelines

Fenders

Material

Steel

(1) Mounting sockets, bolts, suspension chains etc., shall be of the type and size recommended the manufacturer of the fender. The sockets shall be of corrosion resistant material. mounting bolts etc. to be galvanized. Steel grade shall be minimum S235JR.
(2) Reference is made to the requirements specified on the drawings and in Chapter 0.

Buffer Units

(1) SHIBATA[10] fender type V 600, G1.0 or equivalent shall be used. Reference is made to t Tender Drawings.
(2) The properties of the rubber material shall meet the specifications offered by internationa recognised fender manufacturers. It must be resistant to deterioration by oil, grease, ozo UV-rays, seawater and aging.
(3) Steel brackets shall be protected against corrosion at least to the same degree as specified structural steel.
(4) The Contractor shall, before ordering the units, submit the detailed specifications for t Engineer's approval.

Sliding Panels

(1) Low friction sliding panels shall be mounted on the fender shields as shown on the Ten Drawings.
(2) The panels shall be composed of UHMW-PE or HD-PE materials as supplied by major fen manufacturers. The material must be suitable for the particular local conditions, resistant UV-rays, oils, detergents etc. and shall be of a grade with permanent antistatic behaviour.
(3) The physical properties shall meet the following requirements:

- Density: > 0.9 g/cm³ (according to EN ISO 1183)
- Tensile Strength: ≥ 19.0 N/mm² (according to EN ISO 527
- Tearing Strength: > 33.0 N/mm² (according to EN ISO 527
- Ball indentation hardness ≥ 35.0 N/mm² (according to EN ISO 203
- Coefficient of friction < 0.25 (according to EN ISO 8295)
- Yield strength: > 12 MPa (according to ASTM D412)
- Abrasion index: < 400 (according to ASTM D1630)

(4) Dimensional difference of maximum plus/minus 3 mm is allowable in width and thickness.
(5) Mounting bolts and their position shall be in accordance with the manufacture recommendations, and all steel shall be protected against corrosion.

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[10] ShibataFenderTeam, Tarpen 40, Haus 1 b, 22419 Hamburg, Germany
Telephone +49 (0)40 638610 - 0
http://www.fenderteam.com/en/

Workmanship

General Requirements

The design of the new fenders has been prepared with the objective to provide some flexibility in t interface between the piles and the fender shield. The Contractor shall make all provisions to ada the installation to possible, minor deviations in pile positions within the accepted tolerances.

The fenders shall guarantee a spacing of 0.5 m between the vessels hull and the coping beam duri accidental berthing.

Prefabrication

Fabrication of fender panels and pile brackets shall meet all requirements specified for structural ste

Preparation of Piles

Pile ends shall be aligned to the correct top level, shall be properly cleaned and shaped for jointi with the fender panels.

Bolt holes shall be positioned to ascertain the best possible fit in the interface and must not oversized. Holes shall be drilled.

Possible damage to corrosion protection shall be repaired to the general requirements.

Installation and Finishing

Installation of the fender elements shall be planned and carried out in a way that all structures a correctly placed in the unit and that damage to the surface protection of steel is reduced to an absolu minimum. Fender chains shall be moderately tensioned.

Small deviations in pile alignments (limited to a few cm) can be absorbed by forcing the piles into t correct position when tensioning the assembly bolts.

Finishing works shall include repair of all damage to the surface protection of steel.

Measurement and Payment

Measurement shall be made per number of installed fender system including fender bracket, fend panel, buffer unit, etc., complete in every respect.

Bollards

Material

(1) Bollards to be installed in reinforced concrete structures shall be the make of a recogniz bollard manufacturer approved by the Engineer (e.g. Anker Schroeder[11] or ASF[12]).
(2) The bollards shall be made of cast iron EN-GJL-250 or similar approved material.
(3) The bollards shall be designed for a line pull capacity of at least 300 kN. The anchorage sh be the standard type appropriate to the design load.

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[11] Anker Schroeder ASDO GmbH, Hannöversche Straße 48, 44143 Dortmund, Germany
Telephone +49 (0)231 51701-30 - www.asdo.com
[12] Anton Schmoll GmbH, Im Braukhaussiepen 7, 58802 Balve, Germany
Telephone +49 (0)2375 91860 - www.asf-anker.de/en

(4) The bollard anchorage in the structure must be designed for 1.5 times the anticipated lo (here: 1.5 x 300 kN = 450 kN).
(5) The exposed surface of the bollard shall be preserved as per Type I, Section 0.

Workmanship

(1) The Contractor is responsible for the correct installation according to the requirements of t manufacturer.
(2) Before casting the concrete of the quay structure, required fastening bolts, transition piec and additional reinforcement steel have to be provided at the future location of each bolla Tolerances as stipulated by the manufacturer have to be observed.
(3) After the concrete has cured, the bollards have to be installed. A concise connection of ea bollard to the fastening bolts has to be ensured. The underside of the bollards have to be fu in contact with the transition piece. Gaps or voids are not permitted and have to be filled w mortar.

Measurement and Payment

Measurement shall be made per number of installed bollards, complete in every respect.

Ladders

Material

(1) The ladder material shall be steel S235JR, to comply with the required properties of ladd stipulated by R 14 (EAU 2012).
(2) The ladder including mounting and fixing steel parts shall be hot-dip galvanized as per Secti 0 and preserved as per Type I, Section 0.

Workmanship

The Contractor is responsible for the correct installation of the ladders as specified in the Tenc Drawings.

Measurement and Payment

Measurement shall be made per number of installed ladders, complete in every respect.

Aids to Navigation

NOT APPLICABLE

Miscellaneous Equipment

Steel Gratings

(1) For covering intermediate platforms, stair landing slabs and staircases, hot-galvanized gratir of Lichtgitter GmbH [13], Type XP, or equivalent, are to be supplied.
(2) Stairs are to be equipped with welded-on grooved profiles at the front edge of the steps (safe anti-slip edges).

[13] Lichtgitter GmbH, Siemens Str. 1
48703 Stadtlohn, Germany
Telephone +49 (0)2563 9110
www.lichtgitter.de/de_en/

(3) As far as specified in the Bills of Quantities, after hot galvanizing the gratings are to be coat by the dipping process with steel-polyurethane-zinc of Steel Paint GmbH, Kitzingen. Coati thickness at least 50 microns. The surface preparation of the galvanized items is to be execut in coordination with the paint manufacturer.

(4) Hot-galvanized safety fastenings to secure the gratings against displacement and sliding are be supplied.

(5) Each individual grating is to be fastened to the supporting member at least at 4 spots.

Crane Rails

NOT APLICABLE

Pavement and Drainage

NOT APPLICABLE

Appendices

A) Ground Data
B) Design Basis
C) As-Built Information
D) Demolition Concept

To be availed to the successful/winning bidder.

SECTION VIII- BILLS OF QUANTITIES

ATTACHED AS VOLUME III

PART III - CONDITIONS OF CONTRACT AND CONTRACT FORMS

SECTION IX - GENERAL CONDITIONS OF CONTRACT

The Conditions of Contract comprise the "General Conditions of Contract", which form part of t "FIDIC® Conditions of Contract for Construction for Building and Engineering Works Designed by T Employer, Second Edition 2017 " published by the Federation Internationale des Ingenieurs-Conse (FIDIC), and the following "Particular Conditions of Contract", which include amendments a additions to such General Conditions of Contract.

The Bidder / Contractor is obligated to purchase the " FIDIC® Conditions of Contract for Construct for Building and Engineering Works Designed by The Employer, Second Edition 2017 (ISBN 2-884: 022-9) at the following address:

International Federation of Consulting Engineers (FIDIC)

World Trade Center II

P.O.Box 311

1215 GENEVA 15 (Switzerland)

Phone: +41 22 799 4900

Fax: +41 22 799 4901

E-mail: fidic@fidic.org

Internet: www.fidic.org

SECTION X - SPECIAL CONDITIONS OF CONTRACT

APPENDIX TO GENERAL CONDITIONS OF CONTRACT

Sub-Clause	Description
1.1.21 – Country	"Country" means the Republic of Kenya.
1.1.27 – Defects Notification Period	365 Days for each Section
1.1.31– Employer	*A new Sub-clause 1.1.31is added as follows:* "Employer" means: Kenya Ports Authority Kipevu Headquarters P.O.Box 95009-80104 Mombasa Republic of Kenya
1.1.42 – Foreign Currency	"Foreign Currency" means US Dollar (USD)
1.1.81 – Tender	*Add the following paragraph at the end of Sub-Clause 1.1.81:* The word "Tender" is synonymous with the word "Bid" and vice versa. The word "Tender Documents" is synonymous with the word "Bidding Documents" and vice versa.
1.1.84 – Time for Completion	730 Days to complete the works
1.2 – Interpretation	*Add the following paragraph at the end of Sub-Clause 1.2:* In these Conditions, provisions including the expression' Cost plus reasonable profit" require this profit to be five percent (5%) of this Cost.
1.4 - Law and Language	The Contract document shall be drawn up in the ENGLISH LANGUAGE. Communication between the Contractor and the Engineer's Representative shall be in this given language

Sub-Clause	Description
1.5 – Priority of Documents	In sub-paragraph (c) of Sub-Clause 1.5 replace "the Letter of Tender" by "the Letter of Tender including Appendix to Tender" In sub-paragraph (h) of Sub-Clause 1.5 replace the text by "the Schedules including the Bills of Quantities and any other documents forming part of the Contract". The documents forming the Contract shall be interpreted in the following order of priority: a) Agreement, b) Letter of Acceptance, c) Contractor's Bid, d) Special Conditions of Contract, e) General Conditions of Contract, including Appendices, f) Specifications, g) Drawings,
1.12 – Confidential Details	*Add the following Sub-Clause 1.25:* The Contractor shall treat the details of the Contract as private and confidential, except to the extent necessary to carry out obligations under it or to comply with applicable Laws. The Contractor shall not publish, permit to be published, or disclose any particulars of the Works in any trade or technical paper or elsewhere without the previous agreement of the Employer. On completion of the Contract or on instruction from the Engineer the Contractor shall hand over to the Engineer all drawings, data, reports, maps and other similar documents prepared or received in connection with the Contract.
1.15 – Limitation of Liability	*Add the following paragraph at the end of Sub-Clause 1.15:* The total liability of the Contractor to the Employer shall not exceed 115% (one hundred fifteen per cent) of the Accepted Contract Amount.
3.2 – Engineer's Duties and Authority	***The Project Manager is The Manager Projects Development and Management (MPDM), or any other officer appointed in writing by the Employer (Procuring entity). The Project Manager shall act as the primary liaison between the Employer and the Engineer***

Sub-Clause	Description
	Add the following paragraph after the third paragraph o Sub-Clause 3.2": The Engineer shall obtain the specific approval of the Employer before taking action under the following Sub-Clauses of these Conditions: (i) Sub-Clause 4.4: giving consent to a Subcontractor fo a subcontract for which a different subcontractor is named in the Contract; (ii) Sub-Clause 4.12: certifying additional cos determined (iii) Sub-Clause 8.4: agreeing or determining ar extension of the Time for Completion; (iv) Sub-Clause 8.8: suspend progress of part or all the Works; (v) Sub-Clause 10.1: issue the Taking-Over Certificate; (vi) Clause 13: instructing a Variation which is expected to increase the Contract Price; or in any substantial way change the scope, character or quality of the Works. *Add the following paragraph at the end:* If in the opinion of the Engineer an emergency occurs affecting the safety of life or of the works or of adjoining property, the Engineer may, without recourse to the provisions as set out above, and without relieving the Contractor of any of his duties and responsibilities under the Contract, instruct the Contractor to execute all such work or to do all such things as may, in the opinion of the Engineer, be necessary to abate or reduce the risk. The Contractor shall forthwith comply with any such instruction of the Engineer. The Engineer shall determine an addition to the Contract Price, in respect of such instruction, in accordance with Sub-Clause 3.5 *[Determinations]* and shall notify the Contractor accordingly, with a copy to the Employer.
3.8 –Meetings	*A new Sub-Clause 3.6 is added as follows:* The Engineer or the Contractor's Representative may require the other to attend a management meeting in order to review the arrangements for future Works. The Engineer shall record the business of management meeting and supply copies of the record to those attending the meeting and to the Employer. In the record, responsibilities for any action to be taken shall be in accordance with the Contract.

Sub-Clause	Description
	These meetings shall take part at the Engineer's office a or near the Site.
4.1 – Contractor's General Obligations	*Add the following paragraph after the fourth paragrapl of Sub-Clause 4.1* The Contractor must answer in written form al Employer's or Engineer's letters or notes (received ir written form either by mail, fax or e-mail) within three working days after having received such letters or notes
4.2 – Performance Security	*Delete in the second paragraph of Sub-Clause 4.2 the words* "... within 28 days after receiving the Letter o Acceptance," *and substitute them by* "... within 14 days after receiving the Letter of Acceptance," *At the end of the second paragraph of Sub-Clause 4.2 insert:* The Performance Security shall be issued by a banl approved by the Employer either located and registered in the Country or by an internationally operating Banl with a triple A rating. The performance security shall be payable upon Employer's first demand in written form and without cavil or argument. *Add the following paragraphs after the third paragraph o Sub-Clause 4.2:* Without limitation to the provisions of the preceding paragraph, whenever the Engineer determines ar addition to the Contract Price as a result of a change ir cost and/or legislation or as a result of a variation amounting to more than 15 percent of the Contract Price the Contractor, at the Engineer's written request, shal promptly increase the value of the performance security by an equal percentage. The Contractor shall notify the Engineer when providing the performance security to the Employer.
4.3 - Contractor's Representative	*Add to paragraph 3:* The Contractor shall, within Fourteen (14) days of receip of the Engineer's order to commence the works inform the Engineer in writing the name of the Contractor' Representative and the anticipated date of his arrival or site.
4.14 – Avoidance of Interference	*Add the following paragraph:*

Sub-Clause	Description
	The Contractor accepts the priority of the Employer's por / terminal operations with regard to his own activities.
4.15 – Access Route	*Add the following sub-paragraph (f) in Sub-Clause 4.15.* (f) The Contractor shall comply with all the acces requirements of site security / access / egres arrangements and in particular the requirements of th Employer. *Add the following paragraphs at the end of Sub-Claus 4.15:* In case any operation connected with the traffic / acces necessitates diversion, obstruction or closure of any roa or any other "right of way" the approval of the Enginee and the respective competent authorities shall b obtained well in advance. Access routes shall also include access by sea. The Contractor shall at all times observe and comply wit all laws, including regulations and orders relating t navigation and anchoring of floating plant to be use throughout the Works and any instruction that may b given by the Engineer. The Contractor shall carry out hi work strictly in a manner which would not obstruct o endanger the normal use of waterways, anchorages wharves and approaches thereto, whether in th possession of the Employer, or any other persons.
4.20 – Progress Reports	*Under the heading "Each progress report shall include: of this Sub- Clause 4.20 add at the end:* (i) the Contractor's forecast of the cost of the Work expected to be performed within the next three months.
4.21 – Security on the Site	*The following paragraphs are added at the end of Sub Clause 4.12:* The Contractor shall ensure the security of the Site durin the whole period of execution and shall be responsible fo taking the necessary steps to prevent any loss o accident, which may result from carrying out the Works. The Contractor shall take all essential steps, on his ow responsibility and at his expense, to ensure that existin structures and installations on the Site are protected preserved and maintained.

Sub-Clause	Description
4.22 – Contractor's Operations on Site	*Add the following new Sub-Clause 4.22:* All operations necessary for the execution of the Works shall, so far as compliance with the requirements of the Contract permit, be carried on so as not to interfere unnecessarily or improperly with the convenience of the public, or the access to, use and occupation of public or private roads and footpaths or of properties whether in the possession of the Employer or any other person. The Contractor shall save harmless and indemnify the Employer in respect of all claims, proceedings, damages, costs, charges and expenses whatsoever arising out of, or in relation to, any such matters in so far as the Contractor is responsible therefore.
5.1 – Subcontractors	*Add to sub-paragraph (a) the following:* total accumulated value greater than 40% of the Accepted Contract Amount
6.1 – Engagement of Staff and Labour	*Add the following paragraph at the end of Sub-Clause 6.1:* The Contractor shall only employ semi-skilled and unskilled labour who are citizens of the Republic of Kenya or Resident Aliens in possession of all legally required documentation.
6.5 –Working Hours	The normal working hours on the Site shall be in accordance with the applicable labour laws of the Republic of Kenya. Normal working hours are assumed to be 10 hours/day inclusive lunch breaks from 07:00 hrs to 18.00 hrs Monday to Saturday. Whenever the Contractor desires to depart from normal working hours he shall obtain the written approval of the Engineer at least forty-eight (48) hours prior to the contemplated change in operations. No Sunday work will be permitted except in the case of an emergency or if directed by the Engineer. As far as possible, the Contractor shall refrain from working on days which are legal holidays within the area of the Contract. If he desires to work upon any such holidays, he shall request the written approval of the Engineer at least four (4) days in advance of such holidays. If the Contractor fails to give notice in advance of any holiday or fails to obtain the Engineer's written approval for working thereon, such failure shall be

Sub-Clause	Description
	considered as notification that no work on this Contrac is to be done on such a holiday. Whenever, in the judgment of the Engineer, it may be necessary or expedient to do work at night or on Sundays or on holidays or after or before the regular time o ending or beginning labour, such night or overtime work shall be performed by the Contractor without additiona or extra cost to the Employer beyond the price bid for the work.
6.7 – Health and Safety of Personnel	*Include the statement after the word "necessary precautions" Add the following wording at the end of first paragraph:* ", including provision of suitable prophylactics for the Contractor's Personnel, use of appropriate insecticides and alert signs for maintaining hygiene at Site, all in compliance with the regulations of the local health authorities." *The following paragraphs shall be added prior to the last paragraph of Sub-Clause 6.7:* Personnel that are found working above ground leve without a safety harness or without connecting it to an appropriate fixed structure shall not be allowed to continue working under this Contract. In addition, the Contractor shall be penalised with a penalty equal to that corresponding to one day of failure to comply with the contract period for each of these cases detected during the construction period. Any stoppage of work by the Engineer due to an accident shall not be grounds for an extension of time or claim by the Contractor.
6.9 – Contractor's Personnel	*Add the following paragraph to Sub-Clause 6.9:* The Contractor shall comply with and pay all costs including national insurance contributions for all his employees, whether local or foreign, involved in or concerned with the execution of the Works, and all other costs relating to the employment of labour, health working hours and conditions and rates of pay, whether referred to in the Contract or not. The Contractor shall comply with the Country's income tax regulations and pay all associated costs

Sub-Clause	Description
	The Contractor shall be responsible for obtaining the necessary immigration and works permits for al employees imported into Kenya for the execution of the Works and all such costs including national insurance costs shall be deemed to be included in the Contract Price.
6.12 – Key Personnel	*Add the following new Sub-Clause 6.12:* The Contractor may recruit any foreign personnel who are necessary for the execution of the Works. The Contractor is responsible that these personnel are provided with the required residence visas, work permits and national insurance cover, etc., the costs of which shall be deemed to be included in the Contract Price. The Contractor shall be responsible and pay for the return to the place where they were recruited or to their domicile of imported Contractor's Personnel. In the event of the death of any of foreign staff or labour or members of their families in the Country, the Contractor shall similarly be responsible and pay for making the appropriate arrangements for the return or burial.
6.13 – Measures against Pest and Insect Nuisance	*Add the following new Sub-Clause 6.13:* The Contractor shall at all times take the necessary precautions to protect staff and labour employed on the Site from insect and pest nuisance, and to reduce their danger to health. The Contractor shall provide suitable prophylactics for the Contractor's Personnel and shall comply with all the regulations of the local health authorities, including use of appropriate insecticide
6.14 – Alcoholic Liquor or Drugs	*Add the following new Sub-Clause 6.14:* The Contractor shall not, otherwise than in accordance with the Laws of the Country, import, sell, give, barter or otherwise dispose of any alcoholic liquor or drugs, or permit or allow use, importation, sale, gift, barter or disposal by Contractor's Personnel.
6.15 – Arms and Ammunition	*Add the following new Sub-Clause 6.15:* The Contractor shall not give, barter or otherwise dispose of to any person, any arms or ammunition of any kind, or allow Contractor's Personnel to do so or to use them on the Site.

Sub-Clause	Description
6.16 – Festivals and Religious Customs	*Add the following Sub-Clause 6.16:* The Contractor shall respect the Country's recognised festivals, days of rest and religious or other customs.
7.4 – Testing by the Contractor	*Substitute the fourth paragraph of Sub-Clause 7.4 by the following wording:* The Engineer shall give the Contractor not less than 24 hours' notice of the Engineer's intention to attend tests carried out at a maximum distance of 50 km off-site and not less than 4 hours' notice of intention to attend tests carried out on-site, including site laboratories. If the Engineer does not attend at the time and place agreed the Contractor may proceed with the tests, unless otherwise instructed by the Engineer. *Substitute the second last paragraph of Sub-Clause 7.4 by the following wording:* The Contractor shall promptly forward to the Engineer duly certified reports of the tests. When the specified tests have been passed, the Engineer shall endorse the Contractor's test certificate for those tests that were witnessed by him or issue a certificate to that effect. If the Engineer has not attended the tests the results will be deemed to be correct unless the Engineer registers an objection within 14 days after receipt by him of the Contractor's test certificates.
8.1 – Commencement of Work	*Delete the last sentence of the first paragraph of Sub-Clause 8.1 and substitute:* The Commencement Date shall be within 28 days after the Contractor receives the Letter of Acceptance
8.2 – Time for Completion	*Add the following paragraphs at the end of Sub-Clause 8.2:* Time for Completion for Sections according Sub-Clause 1.1.5.6 of Volume I of the Tender Documents is 730 days
8.3 – Programme	*Replace the first sentence of the first paragraph of Sub-Clause 8.3 as follows:*

Sub-Clause	Description
	The Contractor shall submit a detailed time programme to the Engineer within 14 days after the date of the Letter of Acceptance. *Add the following at the end of Sub-Clause 8.3:* The programme shall be submitted in the form of a Gantt Chart, with dates and in consideration of milestones stipulated in the Specification commencing at day 0 for the Commencement Date. A copy (in digital format and as hard copy) of the programme in the latest edition of Microsoft Project format shall be provided to the Engineer. Histograms of the planned number of staff at the Site on a monthly basis shall also be provided, and shall show administrative, civil works, mechanical, electrical and supervisory personnel separately.
8.5 – Extension of Time for Completion	*Add the following sentence at the end of sub-paragraph (e) of Sub-Clause 8.5:* In order for an extension of time to be considered the Contractor shall demonstrate that he has taken all reasonable steps to liaise with the Employer, Employer's Personnel and the Employer's other contractors in order to avoid or reduce delays caused by them.
8.14 – Delay Damages	*Add New Sub Clause 8.14:* Once the applicable limit of delay damages is reached, the Employer will be able to suspend this Contract and hire third parties to complete the Works. Any cost associated with the hiring of third parties to complete the Works shall be recovered from the Contractor. All Delay Damages shall be deducted from Interim and/or from Final Payments.
8.15 – Other Contractors	*Add the new following Sub-Clause 8.13:* The Contractor shall take due account of the presence of other contractors, employed by the Employer or by other parties, who may be working immediately adjacent to or overlapping with the Contractor's Site during part or all of the Contract period. The Contractor will be deemed to have taken all reasonable steps to avoid delay and interference with or from these other contractors and will be expected to cooperate fully with these contractors wherever possible.

Sub-Clause	Description
10.2 – Taking Over Parts	*Add the following at the end of second paragraph of the Sub-Clause 10.2:* For the purpose of interpretation of the second paragraph of this Sub-Clause 10.2 and its sub-paragraphs (a) and (b) the temporary use of parts of the Works as are desired by the Employer and their suppliers and contractors to install, test and commission systems, facilities, equipment, including cranes and termina equipment, and to perform trial operations and training of Employer's personnel, shall not be deemed as Taking-Over by the Employer. The Contractor shall remain liable for such part of the Works until a taking-Over Certificate is issued by the Engineer for the respective section of the Works.
11.10 – Unfulfilled Obligations	*Add the following Sub-Clause 11.10:* The liability of the Contractor for latent defects in building and civil works shall be in accordance with the Governing Law as stated in the Appendix to Tender. However, notwithstanding the provisions of this Law, the period of liability for such defects shall not be less than 10 years from the date of the Performance Certificate.
12.1 – Works to be Measured	*Add the following after the first sentence of Sub-Clause 12.1* Measurements shall be made separately for each Section.
12.3 – Valuation of the Works	*Sub-paragraph (a) of this Sub-Clause 12.3 is deleted completely.*
13.1 – Right to Vary	*Add the following before the last paragraph of Sub-Clause 13.1.* The Employer may omit and/or reduce any work of the Contract and the Contractor is not deemed to be entitled for any compensation or revision of Contract rates in regard with such omission and/or reduction, provided: (i) the total value of such omissions and/or reductions does not exceed 25% of the accepted Contract Price; and (ii) the Employer notifies in writing the omission and/or reduction of the work prior to the Contractor commencing the procurement or other actions of the execution of such work."

Sub-Clause	Description
13.3 – Variation Procedure	*At the end of this Sub-Clause 13.3 the following paragraph shall be added:* The prices for all Variations shall be ascertained by the Engineer in accordance with the following principles: (i) where work is of similar character and executed under similar conditions to work priced in the Bill of quantities, it shall be valued at such rates and prices contained therein; (ii) where work is not of similar character or is not executed under similar conditions, the rates and prices in the Contract shall be used as the basis for valuation so far as is reasonable; (iii) where a Variation is necessitated by default or breach of Contract by the Contractor, any additional cost attributable to such Variation shall be borne by the Contractor.
13.7 – Adjustments for Changes in Cost	*Substitute Sub-Clause 13.7 as follows:* The Contract Price shall not be subject to any adjustment in respect of rise or fall in the cost of labour, Materials, Plant or any other matters affecting the cost of execution of the Contract, except as stipulated in Sub-Clause 13.7
14.1 – The Contract Price	*At the end of this Sub-Clause 14.1 a sub-paragraph (e) as well as two other paragraphs shall be added:* (e) the Contract Price is not dependable on inflation currency exchange rates, price increases in labour material or fuel price nor on any other factors. The Contractor shall be liable for the payment of all taxes duties, fees and other charges including national insurance contributions, work permit costs, general local taxes, and all taxes and regulations current at the time of tendering including but not limited to those applicable in the Country and in the country of origin. Which apply to him or to his staff or employees and these will be deemed to be included in the Contract Price. The Contractor shall be responsible for obtaining all necessary building permits, way leaves and work permits for foreign nationals as prescribed by the laws of the Country.

Sub-Clause	Description
14.3 – Application for Interim Payment Certificates	*Add the following in the third paragraph of Sub-Clause 14.3* applying the percentage of retention that is 10%
14.4 – Schedule of Payments	*The second sentence of the last paragraph of Sub-Clause 14.4 shall be replaced as follows:* The first estimate shall be submitted within 14 days after the date of the Letter of Acceptance.
14.5 – Plant and Materials intended for the Works	*Sub-Clause 14.5 is not applicable and is deleted in its entirety.*
14.6 – Issue of Interim Payment Certificates	*Delete in the second sentence of the first paragraph of this Sub-Clause 14.6 the words* "within 28 days after" *and substitute:* "Within 21 days after" *Add the following sub-paragraph (c) at the end of the 3rd paragraph:* (c) if the Contractor fails to provide drawings diagrams, operating and maintenance instructions or other documentation forming part of the Works, at the times specified in the Contract, payments which become due to the Contractor in accordance with the Contract may be delayed by a period of time equal to the delay in providing the documentation.
14.7 – Payment	*Delete the words of sub-paragraph (a) of Sub-Clause 14.7 completely and substitute:* (a) the first instalment of the Advance Payment within 21 days after receiving the documents in accordance with Sub-Clause 4.2 (Performance Security) and Sub-Clause 14.2 (Advance Payment);" *In sub-paragraph (b) of Sub-Clause 14.7, delete the words* "within 56 days" *and substitute* "within 28 days". *In sub-paragraph (c) of Sub-Clause 14.7, delete the words* "within 56 days" *and substitute* "within 28 days". *Substitute the final paragraph of Sub-Clause 14.7 by the following:* Payments to the Contractor by the Employer shall be made into a bank account nominated by the Contractor in the Country. Payments may be made in Kenyan

Sub-Clause	Description
	Shillings or US Dollars in accordance with the Employer's preference.
14.9 – Release of Retention Money	*Add the following paragraph at the end of Sub-Clause 14.9:* If requested by the Contractor at the time of issuing a Taking-Over Certificate, the Employer, upon the certification by the Engineer, may release the second half of the Retention Money relevant to the Works covered by the Taking-Over Certificate, always provided that the Contractor provides a bank bond by a first-class international bank approved by the Employer, in the form annexed to the Particular Conditions and in amounts and currencies equal to the payment. The Contractor shall ensure that the bank bond is valid and enforceable until the Contractor has executed and completed the Works and remedied any defects, as specified for the Performance Security in Sub-Clause 4.2 The return to the Contractor of any such bank bond shall follow the conditions for Retention Money as stipulated in Sub-Clause 14.9.
14.18 – Consultancy Fees etc. in Case of Delays	*Add the following new Sub-Clause 14.18:* Besides the Liquidated Damages, the Contractor shall also be responsible for the payment of the consultancy fees for the Engineer, expenses on Engineers site facilities etc. for the entire period of delay.
15.2 – Termination for Contractor's Default	*Add the following paragraph at the end of Sub-Clause:* ig) In case the Contractor is persistent in unsafe behaviour and does not show any effort to improve the safety regulations of the Employer
19.1 – General Requirements for Insurances	*Add the following sentence at the end of the 1st paragraph of Sub-Clause 19.1:* The "insuring Party" is the Contractor. *Substitute the 2nd paragraph of Sub-Clause 18.1 as follows:* Wherever the Contractor is the Insuring Party, each insurance shall be affected with reputable solvent insurers and at terms approved by the Employer. These terms shall be consistent with any terms agreed by both Parties before the date of the Letter of Acceptance and shall include a clause of surrender of right to appea

Sub-Clause	Description
	against the Employer, and shall satisfy the criteria set by the legislation of the Country. This agreement of terms shall take precedence over the provisions of this Clause 18.
19.2 – Insurance to be provided by the Contractor	*Add the following at end of Sub-Clause 18.2:* Without limiting the responsibility under this paragraph, the amount of this insurance shall not be less than the Accepted Contract Amount plus a further amount of twenty (20) percent of this value and shall cover loss of, damage to and reinstatement of Works as stipulated under sub-paragraph (e) of this sub-clause. The excess of the insurance for Works shall not exceed 0.05% of the Accepted Contract Amount.
21.1 - Date by which the DAAB shall be appointed	28 days after the Commencement Date
21.1 - The DAAB shall be comprised of	One member agreed upon by both parties
21.1 - List of proposed members of DAAB **-proposed by Employer** **-proposed by Contractor**	
21.2 - Appointment (if not agreed) to be made by	Chartered Institute of Arbitrators, Kenya Branch, Flamingo Towers, Mezzanine 1, Upperhill, Nairobi info@ciarbkenya.org +254722200496 +254734652205
Appendix to Cl. 21 – General Conditions of Dispute Adjudication Agreement	The DAAB shall not be appointed permanently but on ad hoc basis. The respective Appendix of FIDIC "Conditions of Contract for Construction for Building and Engineering Works designed by the Employer", 1999, Second edition 2017 shall be applied, if required.

SECTION X - CONTRACT FORMS

Table of Forms

FORM No 1: NOTIFICATION OF INTENTION TO AWARD

This Notification of Intention to Award shall be sent to each Tenderer that submitted a Tender. Send this Notification to the Tenderer's Authorized Representative named in the Tender Information Form on the format below.

FORMAT

1. For the attention of Tenderer's Authorized Representative
   - *i)* Name: *[insert Authorized Representative's name]*
   - *ii)* Address: *[insert Authorized Representative's Address]*
   - *iii)* Telephone: *[insert Authorized Representative's telephone/fax numbers]*
   - *iv)* Email Address: *[insert Authorized Representative's email address]*

[IMPORTANT: insert the date that this Notification is transmitted to Tenderers. The Notification must be sent to all Tenderers simultaneously. This means on the same date and as close to the same time as possible.]

2. Date of transmission: [*email*] on [*date*] (local time)

This Notification is sent by (*Name and designation*) _____

3. Notification of Intention to Award

   - *i)* Procuring Entity: *[insert the name of the Procuring Entity]*
   - *ii)* Project: *[insert name of project]*
   - *iii)* Contract title: *[insert the name of the contract]*
   - *iv)* Country: *[insert country where ITT is issued]*
   - *v)* ITT No: *[insert ITT reference number from Procurement Plan]*

This Notification of Intention to Award (Notification) notifies you of our decision to award the above contract. The transmission of this Notification begins the Standstill Period. During the Standstill Period, you may:

4. Request a debriefing in relation to the evaluation of your tender

Submit a Procurement-related Complaint in relation to the decision to award the contract.

a) The successful tenderers:

Package No.	Name of successful Tenderer	Address of the successful Tenderer	Contract price of the successful Tenderer
Package No.			
Package No.			
Package No.			
Package No.			
Package No.			

Package No.			

b) Other Tenderers

Names of all Tenderers that submitted a Tender. If the Tender's price was evaluated include the evaluated price as well as the Tender price as read out.

Package No.	Name of Tenderer	Address of the Tenderer	Tender price	evaluated price
Package No.				
Package No.				
Package No.				
Package No.				
Package No.				
Package No.				

5. How to request a debriefing

a) DEADLINE: The deadline to request a debriefing expires at midnight on [*insert date*] (*local time*).

b) You may request a debriefing in relation to the results of the evaluation of your Tender. If you decide to request a debriefing your written request must be made within three (5) Business Days of receipt of this Notification of Intention to Award.

c) Provide the contract name, reference number, name of the Tenderer, contact details; and address the request for debriefing as follows:

i) Attention: [*insert full name of person, if applicable*]

ii) Title/position: [*insert title/position*]

ii) Agency: [*insert name of Procuring Entity*]

iii) Email address: [*insert email address*]

d) If your request for a debriefing is received within the 3 Days deadline, we will provide the debriefing within five (3) Business Days of receipt of your request. If we are unable to provide the debriefing within this period, the Standstill Period shall be extended by five (3) Days after the date that the debriefing is provided. If this happens, we will notify you and confirm the date that the extended Standstill Period will end.

e) The debriefing may be in writing, by phone, video conference call or in person. We shall promptly advise you in writing how the debriefing will take place and confirm the date and time.

f) If the deadline to request a debriefing has expired, you may still request a debriefing. In this case, we will provide the debriefing as soon as practicable, and normally no later than fifteen (15) Days from the date of publication of the Contract Award Notice.

6. How to make a complaint

a) Period: Procurement-related Complaint challenging the decision to award shall be submitted by midnight, [*insert date*] (local time).

b) Provide the contract name, reference number, name of the Tenderer, contact details; and address the Procurement-related Complaint as follows:

i) Attention: [*insert full name of person, if applicable*]

ii) Title/position: [*insert title/position*]

iii) Agency: [*insert name of Procuring Entity*]

iv) Email address: [*insert email address*]

c) At this point in the procurement process, you may submit a Procurement-related Complaint challenging the decision to award the contract. You do not need to have

requested, or received, a debriefing before making this complaint. Your complaint must be submitted within the Standstill Period and received by us before the Standstill Period ends.

d) Further information: For more information refer to the Public Procurement and Disposals Act 2015 and its Regulations available from the Website info@ppra.go.ke or complaints@ppra.go.ke.

You should read these documents before preparing and submitting your complaint.

e) There are four essential requirements:

i) You must be an 'interested party'. In this case, that means a Tenderer who submitted a Tender in this tendering process, and is the recipient of a Notification of Intention to Award.

ii) The complaint can only challenge the decision to award the contract.

iii) You must submit the complaint within the period stated above.

iv) You must include, in your complaint, all of the information required to support your complaint.

7. Standstill Period

i) DEADLINE: The Standstill Period is due to end at midnight on [*insert date*] (local time).

ii) The Standstill Period lasts ten (14) Days after the date of transmission of this Notification of Intention to Award.

iii) The Standstill Period may be extended as stated in paragraph Section 5 (d) above.

If you have any questions regarding this Notification please do not hesitate to contact us. On behalf of the Procuring Entity:

Signature:_____ **Name:**_____

Title/position:_____ **Telephone: Email:** _____

FORM NO. 2 - REQUEST FOR REVIEW

FORM FOR REVIEW(r.203(1))

PUBLIC PROCUREMENT ADMINISTRATIVE REVIEW BOARD

APPLICATION NO.....OF.....20.....

BETWEEN

.....APPLICANT

AND

.....RESPONDENT (Procuring Entity)

Request for review of the decision of the..... (Name of the Procuring Entity of .....dated the...day of .....20.....in the matter of Tender No.....of .....20..... for .....(Tender description).

REQUEST FOR REVIEW

I/We.....,the above named Applicant(s), of address: Physical address.....P. O. Box No..... Tel. No.....Email ....., hereby request the Public Procurement Administrative Review Board to review the whole/part of the above mentioned decision on the following grounds , namely:

1.

2.

By this memorandum, the Applicant requests the Board for an order/orders that:

1.

2.

SIGNED .....(Applicant) Dated on.....day of ...../...20.....

FOR OFFICIAL USE ONLY Lodged with the Secretary Public Procurement Administrative Review Board on.....day of .....20.....

SIGNED

Board Secretary

FORM NO 3: LETTER OF AWARD

[letterhead paper of the Procuring Entity] [date]

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

This is to notify you that your Tender dated *[date]* for execution of the *[name of the Contract and identification number, as given in the Contract Data]* for the Accepted Contract Amount *[amount in numbers and words] [name of currency]*, as corrected and modified in accordance with the Instructions to Tenderers, is hereby accepted by ..... (*name of Procuring Entity*).

You are requested to arrange to sign the Framework Agreement within 28 days in accordance with the Conditions of Contract. On being instructed to commence the contract on any of the packages you have won, by a call-off notification, you will be requested to furnish for the particular package a Performance Security within 28 days in accordance with the Conditions of Contract, and for that purpose, using one of the Performance Security Forms included in Section VIII, Contract Forms, of the Tender Document.

Authorized Signature:.....

Name and Title of Signatory:.....

Name of Procuring Entity.....

Attachment: *Contract Agreement*.....

FORM NO 4: CONTRACT AGREEMENT

THIS AGREEMENT made the_____day of_____, 20__, between

_____of _____ (hereinafter "the Procuring Entity"), of the one part, and_____of (hereinafter "the Contractor"), of the other part:

WHEREAS the Procuring Entity desires that the Works known as_____should be executed by the Contractor, and has accepted a Tender by the Contractor for the execution and completion of these Works and the remedying of any defects therein,

The Procuring Entity 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 Letter of Tender
   c) the addenda Nos____(if any)
   d) the Special Conditions of Contract
   e) the General Conditions of Contract;
   f) the Specifications
   g) the Drawings; and
   h) the completed Schedules and any other documents forming part of the contract.

3. In consideration of the payments to be made by the Procuring Entity to the Contractor as specified in this Agreement, the Contractor hereby covenants with the Procuring Entity to execute the Works and to remedy defects therein in conformity in all respects with the provisions of the Contract.

4. The Procuring Entity 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 Kenya on the day, month and year specified above.

Signed and sealed by_____(for the Procuring Entity)

Signed and sealed by_____(for the Contractor).

FORM NO. 5 - PERFORMANCE SECURITY

[Option 1 - Unconditional Demand Bank Guarantee]

[Guarantor letterhead]

Beneficiary:_____*[insert name and Address of* Procuring Entity*]*

Date:_____*[Insert date of issue]*

Guarantor: [*Insert name and address of place of issue, unless indicated in the letterhead]*

1. We have been informed that_____ _____(hereinafter called "the Contractor") has entered into Contract No._____dated_____with (*name of Procuring Entity*)_____(the Procuring Entity as the Beneficiary), for the execution of

_____**(hereinafter called "the Contract").**

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

3. At the request of the Contractor, we as Guarantor, hereby irrevocably undertake to pay the Beneficiary any sum or sums not exceeding in total an amount of_____(*in words*),[1] such sum being payable in the types and proportions of currencies in which the Contract Price is payable, upon receipt by us of the Beneficiary's complying demand supported by the Beneficiary's statement, whether in the demand itself or in a separate signed document accompanying or identifying the demand, stating that the Applicant is in breach of its obligation(s) under the Contract, without the Beneficiary needing to prove or to show grounds for your demand or the sum specified therein.

4. This guarantee shall expire, no later than the .... Day of ....., 2.....[2], and any demand for payment under it must be received by us at the office indicated above on or before that date.

5. The Guarantor agrees to a one-time extension of this guarantee for a period not to exceed *[six months] [one year],* in response to the Beneficiary's written request for such extension, such request to be presented to the Guarantor before the expiry of the guarantee."

[Name of Authorized Official, signature(s) and seals/stamps].

Note: *All italicized text (including footnotes) is for use in preparing this form and shall be deleted from the final product.*

FORM No. 6 - PERFORMANCE SECURITY

[Option 2– Performance Bond]

[Note: Procuring Entities are advised to use Performance Security – Unconditional Demand Bank Guarantee instead of Performance Bond due to difficulties involved in calling Bond holder to action]

[Guarantor letterhead or SWIFT identifier code]

Beneficiary:_____*[insert name and Address of* Procuring Entity*]*

Date:_____*[Insert date of issue]*.

PERFORMANCE BOND No.:_____

Guarantor: [*Insert name and address of place of issue, unless indicated in the letterhead]*

1. By this Bond_____as Principal (hereinafter called "the Contractor") and_____] as Surety (hereinafter called "the Surety"), are held and firmly bound unto_____ _] as Obligee (hereinafter called "the Procuring Entity") in the amount of_____for the payment of which sum well and truly to be made in the types and proportions of currencies in which the Contract Price is payable, the Contractor and the Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

2. WHEREAS the Contractor has entered into a written Agreement with the Procuring Entity dated the **_____day of_____, 20 , for_____in accordance with the documents, plans, specifications, and amendments thereto, which to the extent herein provided for, are by reference made part hereof and are hereinafter referred to as the Contract.**

3. NOW, THEREFORE, the Condition of this Obligation is such that, if the Contractor shall promptly and faithfully perform the said Contract (including any amendments thereto), then this obligation shall be null and void; otherwise, it shall remain in full force and effect. Whenever the Contractor shall be, and declared by the Procuring Entity to be, in default under the Contract, the Procuring Entity having performed the Procuring Entity's obligations thereunder, the Surety may promptly remedy the default, or shall promptly:

1) complete the Contract in accordance with its terms and conditions; or

2) obtain a tender or tenders from qualified tenderers for submission to the Procuring Entity for completing the Contract in accordance with its terms and conditions, and upon determination by the Procuring Entity and the Surety of the lowest responsive Tenderers, arrange for a Contract between such Tenderer, and Procuring Entity and make available as work progresses (even though there should be a default or a succession of defaults under the Contract or Contracts of completion arranged under this paragraph) sufficient funds to pay the cost of completion less the Balance of the Contract Price; but not exceeding, including other costs and damages for which the Surety may be liable hereunder, the amount set forth in the first paragraph hereof. The term "Balance of the Contract Price," as used in this paragraph, shall mean the total amount payable by Procuring Entity to Contractor under the Contract, less the amount properly paid by Procuring Entity to Contractor; or

3) pay the Procuring Entity the amount required by Procuring Entity to complete the Contract in accordance with its terms and conditions up to a total not exceeding the amount of this Bond.

4. The Surety shall not be liable for a greater sum than the specified penalty of this Bond.

5. Any suit under this Bond must be instituted before the expiration of one year from the date of the issuing of the Taking-Over Certificate. No right of action shall accrue on this Bond to or for the use of any person or corporation other than the Procuring Entity named herein or the heirs, executors, administrators, successors, and assigns of the Procuring Entity.

6. In testimony whereof, the Contractor has hereunto set his hand and affixed his seal, and the Surety has caused these presents to be sealed with his corporate seal duly attested by the signature of his legal representative, this day_of____20___.

SIGNED ON_____on behalfof By____in the capacity

of In the presence of

SIGNED ON_____on behalf of By___in the capacity

of In the presence of

FORM NO. 7 - ADVANCE PAYMENT SECURITY

[Demand Bank Guarantee]

[Guarantor letterhead]

Beneficiary:_____*[Insert name and Address of* Procuring Entity*]*
Date:_____*[Insert date of issue]*

ADVANCE PAYMENT GUARANTEE No.:_____*[Insert guarantee reference number]* **Guarantor:**_____**[***Insert name and address of place of issue, unless indicated in the letterhead]*

1. We have been informed that _____(hereinafter called "the Contractor") has entered into Contract No._____*dated*_____with the Beneficiary, for the execution of _____ (hereinafter called "the Contract").

2. Furthermore, we understand that, according to the conditions of the Contract, an advance payment in the sum

_____(*in words*) is to be made against an advance payment guarantee.

3. At the request of the Contractor, we as Guarantor, hereby irrevocably undertake to pay the Beneficiary any sum or sums not exceeding in total an amount of___(*in words*)[1] upon receipt by us of the Beneficiary's complying demand supported by the Beneficiary's statement, whether in the demand itself or in a separate signed document accompanying or identifying the demand, stating either that the Applicant:

a) has used the advance payment for purposes other than the costs of mobilization in respect of the Works; or

b) has failed to repay the advance payment in accordance with the Contract conditions, specifying the amount which the Applicant has failed to repay.

4. A demand under this guarantee may be presented as from the presentation to the Guarantor of a certificate from the Beneficiary's bank stating that the advance payment referred to above has been credited to the Contractor on its account number_____at___.

5. The maximum amount of this guarantee shall be progressively reduced by the amount of the advance payment repaid by the Contractor as specified in copies of interim statements or payment certificates which shall be presented to us. This guarantee shall expire, at the latest, upon our receipt of a copy of the interim payment certificate indicating that ninety (90) percent of the Accepted Contract Amount, less provisional sums, has been certified for payment, or on the _____ day of_, 2 ,[2] whichever is earlier. Consequently, any demand for payment under this guarantee must be received by us at this office on or before that date.

6. The Guarantor agrees to a one-time extension of this guarantee for a period not to exceed *[six months][one year],* in response to the Beneficiary's written request for such extension, such request to be presented to the Guarantor before the expiry of the guarantee.

[Name of Authorized Official, signature(s) and seals/stamps]

Note: All italicized text (including footnotes) is for use in preparing this form and shall be deleted from the final product.

[1] *~~The Guarantor shall insert an amount representing~~ the amount of the advance payment and denominated either in the currency of the advance payment as specified in the Contract.*

[2] *Insert the expected expiration date of the Time for Completion. The Procuring Entity should note that in the event of an extension of the time for completion of the Contract, the Procuring Entity would need to request an extension of this guarantee from the Guarantor. Such request must be in writing and must be made prior to the expiration date established in the guarantee.*

FORM NO. 8 - RETENTION MONEY SECURITY

[Demand Bank Guarantee]

[Guarantor letterhead]

Beneficiary: _____*[Insert name and Address of* Procuring Entity*]*

Date:_____*[Insert date of issue]*

Advance payment guarantee no. *[Insert guarantee reference number]*

Guarantor: [*Insert name and address of place of issue, unless indicated in the letterhead]*

1. We have been informed that_____*[insert name of Contractor, which in the case of a joint venture shall be the name of the joint venture]* (hereinafter called "the Contractor") has entered into Contract No. _____*[insert reference number of the contract]* dated___with the Beneficiary, for the execution of_____*[insert name of contract and brief description of* Works*]* (hereinafter called "the Contract").

2. Furthermore, we understand that, according to the conditions of the Contract, the Beneficiary retains moneys up to the limit set forth in the Contract ("the Retention Money"), and that when the Taking-Over Certificate has been issued under the Contract and the first half of the Retention Money has been certified for payment, and payment of *[*insert the second half of the Retention Money] is to be made against a Retention Money guarantee.

3. At the request of the Contractor, we, as Guarantor, hereby irrevocably undertake to pay the Beneficiary any sum or sums not exceeding in total an amount of *[insert amount in figures]*_____*([insert amount in words*_____*])*[1] upon receipt by us of the Beneficiary's complying demand supported by the Beneficiary's statement, whether in the demand itself or in a separate signed document accompanying or identifying the demand, stating that the Contractor is in breach of its obligation(s) under the Contract, without your needing to prove or show grounds for your demand or the sum specified therein.

4. A demand under this guarantee may be presented as from the presentation to the Guarantor of a certificate from the Beneficiary's bank stating that the second half of the Retention Money as referred to above has been credited to the Contractor on its account number_____at_____*[insert name and address of Applicant's bank]*.

5. This guarantee shall expire no later than the ..... Day of ....., 2.....[2], and any demand for payment under it must be received by us at the office indicated above on or before that date.

6. The Guarantor agrees to a one-time extension of this guarantee for a period not to exceed *[six months] [one year],* in response to the Beneficiary's written request for such extension, such request to be presented to the Guarantor before the expiry of the guarantee.

[Name of Authorized Official, signature(s) and seals/stamps]

Note: All italicized text (including footnotes) is for use in preparing this form and shall be deleted from the final product.

[1]*The Guarantor shall insert an amount representing the amount of the second half of the Retention Money.*

[2]*Insert a date that is twenty-eight days after the expiry of retention period after the actual completion date of the contract. The Procuring Entity should note that in the event of an extension of this date for completion of the Contract, the Procuring Entity would need to request an extension of this guarantee from the Guarantor. Such request must be in writing and must be made prior to the expiration date established in the guarantee.*

FORM NO. 9 BENEFICIAL OWNERSHIP DISCLOSURE FORM

INSTRUCTIONS TO TENDERERS: DELETE THIS BOX ONCE YOU HAVE COMPLETED THE FORM

This Beneficial Ownership Disclosure Form ("Form") is to be completed by the successful tenderer. In case of joint venture, the tenderer must submit a separate Form for each member. The beneficial ownership information to be submitted in this Form shall be current as of the date of its submission.

For the purposes of this Form, a Beneficial Owner of a Tenderer is any natural person who ultimately owns or controls the Tenderer by meeting one or more of the following conditions:

- *Directly or indirectly holding 25% or more of the shares.*
- *Directly or in directly holding 25% or more of the voting rights.*
- *Directly or indirectly having the right to appoint a majority of the board of directors or equivalent governing body of the Tenderer.*

Tender Reference No.:_____[*insert identification no*] Name of the Assignment:_____*[insert name of the assignment]* to: *[insert complete name of Procuring Entity]*

In response to your notification of award dated_____*[insert date of notification of award]* to furnish additional information on beneficial ownership:_____*[select one option as applicable and delete the options that are not applicable]*

I) We here by provide the following beneficial ownership information.

Details of beneficial ownership

Identity of Beneficial Owner	**Directly or indirectly holding 25% or more of the shares (Yes / No)**	**Directly or indirectly holding 25 % or more of the Voting Rights (Yes / No)**	**Directly or indirectly having the right to appoint a majority of the board of the directors or an equivalent governing body of the Tenderer (Yes / No)**
[include full name (last, middle, first), nationality,			

country of residence]			

OR

ii) We declare that there is no Beneficial Owner meeting one or more of the following conditions: directly or indirectly holding 25% or more of the shares. Directly or indirectly holding 25% or more of the voting rights. Directly or indirectly having the right to appoint a majority of the board of directors or equivalent governing body of the Tenderer.

OR

We declare that we are unable to identify any Beneficial Owner meeting one or more of the following conditions. [If this option is selected, the Tenderer shall provide explanation on why it is unable to identify any Beneficial Owner]

Directly or indirectly holding 25% or more of the shares. Directly or indirectly holding25% or more of the voting rights.

Directly or indirectly having the right to appoint a majority of the board of directors or equivalent governing body of the Tenderer]"

Name of the Tenderer: .....[insert complete name of the Tenderer]___*

*Name of the person duly authorized to sign the Tender on behalf of the Tenderer: ** [insert complete name of person duly authorized to sign the Tender]*

Title of the person signing the Tender: ..... [insert complete title of the person signing the Tender]

Signature of the person named above: ..... [insert signature of person whose name and capacity are shown above]

Date signed ..... [insert date of signing] day of..... [Insert month], [insert year]