**INVITATION TO BID**

**Construction of Prespa Lake Docking Marine**

**Restoration of Prespa Lake Ecosystem**

FYR of Macedonia

****

**United Nations Development Programme**

June, 2013

**Section 1. Letter of Invitation**

Skopje

June 27, 2013

**ITB 19/2013 Construction of Prespa Lake Docking Marine**

The United Nations Development Programme (UNDP) hereby invites you to submit a Bid to this Invitation to Bid (ITB) for the above-referenced subject by **July 25, 2013 at 12:00.**

This ITB includes the following documents:

Section 1 – This Letter of Invitation

Section 2 – Instructions to Bidders (including Data Sheet)

Section 3 – Schedule of Requirements and Technical Specifications

Section 4 – Bid Submission Form

Section 5 – Documents Establishing the Eligibility and Qualifications of the Bidder

Section 6 – Technical Bid Form

Section 7 – Price Schedule Form

Section 8 – Form for Performance Security

Section 9 – Form for Advanced Payment Guarrantee  
Section 10 – Contract to be signed, including General Terms and Conditions for Civil Works

Section 11 – Technical drawings

Your offer, comprising of a Technical Bid and Price Schedule, together in a sealed envelope, should be submitted in accordance with Section 2.

You are kindly requested to submit an acknowledgment letter to UNDP to the following address:

**UNDP  
REF: ITB 19/2013 for Construction of Prespa Lake Docking Marine  
DO NOT OPEN BEFORE 25 July, 2013 at 12:00 a.m.  
8ma Udarna Brigada 2, 1000 Skopje**

Should you require any clarification, kindly communicate with the contact person at procurement.mk@undp.org

UNDP looks forward to receiving your Bid and thanks you for your interest in UNDP procurement opportunities.

Yours sincerely,

UNDP Procurement Official

**Section 2: Instruction to Bidders[[1]](#footnote-1)**

**Definitions**

1. *“Bid”* refers to the Bidder’s response to the Invitation to Bid, including the Bid Submission Form, Technical Bid and Price Schedule and all other documentation attached thereto as required by the ITB.
2. *“Bidder”* refers to any legal entity that may submit, or has submitted, a Bid for the supply of goods and provision of related services requested by UNDP.

1. *“Contract”* refers to the legal instrument that will be signed by and between the UNDP and the successful Bidder, all the attached documents thereto, including the General Terms and Conditions (GTC) and the Appendices.
2. “*Country”* refers to the country indicated in the Data Sheet.
3. *“Data Sheet”* refers to such part of the Instructions to Bidders used to reflect conditions of the tendering process that are specific for the requirements of the ITB.
4. *“Day”* refers to calendar day.
5. *“Goods”* refer to any tangible product, commodity, article, material, wares, equipment, assets or merchandise that UNDP requires under this ITB.
6. *“Government”* refers to the Government of the country where the goods and related services provided/rendered specified under the Contract will be delivered or undertaken.
7. *“Instructions to Bidders”* refers to the complete set of documents which provides Bidders with all information needed and procedures to be followed in the course of preparing their Bid
8. *“ITB”* refers to the Invitation to Bid consisting of instructions and references prepared by UNDP for purposes of selecting the best supplier or service provider to fulfil the requirement indicated in the Schedule of Requirements and Technical Specifications.

1. *“LOI”* (Section 1 of the ITB) refers to the Letter of Invitation sent by UNDP to Bidders.
2. *“Material Deviation”* refers to any contents or characteristics of the bid that is significantly different from an essential aspect or requirement of the ITB, and (i) substantially alters the scope and quality of the requirements; (ii) limits the rights of UNDP and/or the obligations of the offeror; and (iii) adversely impacts the fairness and principles of the procurement process, such as those that compromise the competitive position of other offerors.
3. *“Schedule of Requirements and Technical Specifications”* refers to the document included in this ITB as Section 3 which lists the goods required by UNDP, their specifications, the related services, activities, tasks to be performed, and other information pertinent to UNDP’s receipt and acceptance of the goods.

1. *“Services”* refers to the entire scope of tasks related or ancillary to the completion or delivery of the goods required by UNDP under the ITB.
2. “*Supplemental Information to the ITB”* refers to a written communication issued by UNDP to prospective Bidders containing clarifications, responses to queries received from prospective Bidders, or changes to be made in the ITB, at any time after the release of the ITB but before the deadline for the submission of Bid.
3. **GENERAL**
4. UNDP hereby solicits Bids as a response to this Invitation to Bid (ITB). Bidders must strictly adhere to all the requirements of this ITB. No changes, substitutions or other alterations to the rules and provisions stipulated in this ITB may be made or assumed unless it is instructed or approved in writing by UNDP in the form of Supplemental Information to the ITB.

2. Submission of a Bid shall be deemed as an acknowledgement by the Bidder that all obligations stipulated by this ITB will be met and, unless specified otherwise, the Bidder has read, understood and agreed to all the instructions in this ITB.

3. Any Bid submitted will be regarded as an offer by the Bidder and does not constitute or imply the acceptance of any Bid by UNDP. UNDP is under no obligation to award a contract to any Bidder as a result of this ITB.

4. UNDP implements a policy of zero tolerance on proscribed practices, including fraud, corruption, collusion, unethical practices, and obstruction. UNDP is committed to preventing, identifying and addressing all acts of fraud and corrupt practices against UNDP as well as third parties involved in UNDP activities. (See

<http://www.undp.org/about/transparencydocs/UNDP_Anti_Fraud_Policy_English_FINAL_june_2011.pdf> and <http://www.undp.org/content/undp/en/home/operations/procurement/procurement_protest/> for full description of the policies)

5. In responding to this ITB, UNDP requires all Bidders to conduct themselves in a professional, objective and impartial manner, and they must at all times hold UNDP’s interests paramount. Bidders must strictly avoid conflicts with other assignments or their own interests, and act without consideration for future work. All Bidders found to have a conflict of interest shall be disqualified. Without limitation on the generality of the above, Bidders, and any of their affiliates, shall be considered to have a conflict of interest with one or more parties in this solicitation process, if they:

### 5.1 Are, or have been associated in the past, with a firm or any of its affiliates which have been engaged UNDP to provide services for the preparation of the design, Schedule of Requirements and Technical Specifications, cost analysis/estimation, and other documents to be used for the procurement of the goods and related services in this selection process;

### 5.2 Were involved in the preparation and/or design of the programme/project related to the goods and related services requested under this ITB; or

### 5.3 Are found to be in conflict for any other reason, as may be established by, or at the discretion of, UNDP.

In the event of any uncertainty in the interpretation of what is potentially a conflict of interest, Bidders must disclose the condition to UNDP and seek UNDP’s confirmation on whether or not such conflict exists.

6. Similarly, the following must be disclosed in the Bid :

* 1. Bidders who are owners, part-owners, officers, directors, controlling shareholders, or key personnel who are family of UNDP staff involved in the procurement functions and/or the Government of the country or any Implementing Partner receiving the goods and related services under this ITB; and

6.4 Others that could potentially lead to actual or perceived conflict of interest, collusion or unfair competition practices.

### Failure of such disclosure may result in the rejection of the Bid.

7. The eligibility of Bidders that are wholly or partly owned by the Government shall be subject to UNDP’s further evaluation and review of various factors such as being registered as an independent entity, the extent of Government ownership/share, receipt of subsidies, mandate, access to information in relation to this ITB, and others that may lead to undue advantage against other Bidders, and the eventual rejection of the Bid.

8. All Bidders must adhere to the UNDP Supplier Code of Conduct, which may be found at this link: <http://web.ng.undp.org/procurement/undp-supplier-code-of-conduct.pdf>

1. **CONTENTS OF BID**

**9. Sections of Bid**

Bidders are required to complete, sign and submit the following documents:

* 1. Bid Submission Cover Letter Form (see ITB Section 4);
  2. Documents Establishing the Eligibility and Qualifications of the Bidder (see ITB Section 5);
  3. Technical Bid (see prescribed form in ITB Section 6);
  4. Price Schedule (see prescribed form in ITB Section 7);
  5. Bid Security, if applicable (if required and as stated in the DS nos. 9-11, see prescribed Form in ITB Section 8);
  6. Any attachments and/or appendices to the Bid (including all those specified under the **Data Sheet**)

1. **Clarification of Bid**

10.1 Bidders may request clarification of any of the ITB documents no later than the number of days indicated in the **Data Sheet** (DS no. 16) prior to the Bid submission date. Any request for clarification must be sent in writing via courier or through electronic means to the UNDP address indicated in the **Data Sheet** (DS no. 17). UNDP will respond in writing, transmitted by electronic means and will transmit copies of the response (including an explanation of the query but without identifying the source of inquiry) to all Bidders who have provided confirmation of their intention to submit a Bid.

10.2 UNDP shall endeavor to provide such responses to clarifications in an expeditious manner, but any delay in such response shall not cause an obligation on the part of UNDP to extend the submission date of the Bid, unless UNDP deems that such an extension is justified and necessary.

1. **Amendment of Bid**

11.1 At any time prior to the deadline for submission of Bid, UNDP may for any reason, such as in response to a clarification requested by a Bidder, modify the ITB in the form of a Supplemental Information to the ITB. All prospective Bidders will be notified in writing of all changes/amendments and additional instructions through Supplemental Information to the ITB and through the method specified in the **Data Sheet** (DS No. 18).

11.2 In order to afford prospective Bidders reasonable time to consider the amendments in preparing their Bid, UNDP may, at its discretion, extend the deadline for submission of Bid, if the nature of the amendment to the ITB justifies such an extension.

**C. PREPARATION OF BID**

1. **Cost**

The Bidder shall bear any and all costs related to the preparation and/or submission of the Bid, regardless of whether its Bid was selected or not. UNDP shall in no case be responsible or liable for those costs, regardless of the conduct or outcome of the procurement process.

1. **Language**

The Bid, as well as any and all related correspondence exchanged by the Bidder and UNDP, shall be written in the language (s) specified in the **Data Sheet** (DS No. 4). Any printed literature furnished by the Bidder written in a language other than the language indicated in the **Data Sheet**, must be accompanied by a translation in the preferred language indicated in the **Data Sheet**. For purposes of interpretation of the Bid, and in the event of discrepancy or inconsistency in meaning, the version translated into the preferred language shall govern. Upon conclusion of a contract, the language of the contract shall govern the relationship between the contractor and UNDP.

1. **Bid Submission Form**

The Bidder shall submit the Bid Submission Form using the form provided in Section 4 of this ITB.

1. **Technical Bid Format and Content**

Unless otherwise stated in the **Data Sheet** (DS no. 28), the Bidder shall structure the Technical Bid as follows:

15.1 Expertise of Firm/Organization – this section should provide details regarding management structure of the organization, organizational capability/resources, and experience of organization/firm, the list of projects/contracts (both completed and on-going, both domestic and international) which are related or similar in nature to the requirements of the ITB, manufacturing capacity of plant if Bidder is a manufacturer, authorization from the manufacturer of the goods if Bidder is not a manufacturer, and proof of financial stability and adequacy of resources to complete the delivery of goods and provision of related services required by the ITB (see ITB Clause 18 and DS No. 26 for further details). The same shall apply to any other entity participating in the ITB as a Joint Venture or Consortium.

15.2 Technical Specifications and Implementation Plan – this section should demonstrate the Bidder’s response to the Schedule of Requirements and Technical Specifications by identifying the specific components proposed; how each of the requirements shall be met point by point; providing a detailed specification and description of the goods required, plans and drawings where needed; the essential performance characteristics, identifying the works/portions of the work that will be subcontracted; a list of the major subcontractors, and demonstrating how the bid meets or exceeds the requirements, while ensuring appropriateness of the bid to the local conditions and the rest of the project operating environment during the entire life of the goods provided. Details of technical bid must be laid out and supported by an Implementation Timetable, including Transportation and Delivery Schedule where needed, that is within the duration of the contract as specified in the **Data Sheet** (DS noS. 29 and 30).

Bidders must be fully aware that the goods and related services that UNDP require may be transferred, immediately or eventually, by UNDP to the Government partners, or to an entity nominated by the latter, in accordance with UNDP’s policies and procedures. All bidders are therefore required to submit the following in their bids :

* + 1. A statement of whether any import or export licences are required in respect of the goods to be purchased or services to be rendered, including any restrictions in the country of origin, use or dual use nature of the goods or services, including any disposition to end users;
    2. Confirmation that the Bidder has obtained license of this nature in the past, and have an expectation of obtaining all the necessary licenses, should their bid be rendered the most responsive; and
    3. Complete documentation, information and declaration of any goods classified or may be classified as “Dangerous Goods”.
  1. Management Structure and Key Personnel – This section should include the comprehensive curriculum vitae (CVs) of key personnel that will be assigned to support the implementation of the technical bid, clearly defining their roles and responsibilities. CVs should establish competence and demonstrate qualifications in areas relevant to the requirements of this ITB.

In complying with this section, the Bidder assures and confirms to UNDP that the personnel being nominated are available to fulfil the demands of the Contract during its stated full term. If any of the key personnel later becomes unavailable, except for unavoidable reasons such as death or medical incapacity, among other possibilities, UNDP reserves the right to render the Bid non-responsive. Any deliberate substitution of personnel arising from unavoidable reasons, including delay in the implementation of the project of programme through no fault of the Bidder, shall be made only with UNDP’s acceptance of the justification for substitution, and UNDP’s approval of the qualification of the replacement who shall be either of equal or superior credentials as the one being replaced.

15.4 Where the **Data Sheet** requires the submission of the Bid Security, the Bid Security shall be included along with the Technical Bid. The Bid Security may be forfeited by UNDP, and reject the Bid, in the event of any or any combination of the following conditions:

1. If the Bidder withdraws itsoffer during the period of the Bid Validity specified in the **Data Sheet** (DS no. 11), or;
2. If the Bid Security amount is found to be less than what is required by UNDP as indicated in the **Data Sheet** (DS no. 9), or;
3. In the case the successful Bidder fails:
4. to sign the Contract after UNDP has awarded it;
5. to comply with UNDP’s variation of requirement, as per ITB Clause 35; or
6. to furnish Performance Security, insurances, or other documents that UNDP may require as a condition to rendering effective the contract that may be awarded to the Bidder.
7. **Price Schedule**

The Price Schedule shall be prepared using the attached standard form (Section 7). It shall list all major cost components associated with the goods and related services, and the detailed breakdown of such costs. All goods and services described in the Technical Bid must be priced separately on a one-to-one correspondence. Any output and activities described in the Technical Bid but not priced in the Price Schedule, shall be assumed to be included in the prices of the items or activities, as well as in the final total price of the bid.

1. **Currencies**

All prices shall be quoted in the currency indicated in the **Data Sheet** (DS no. 15). However, where Bids are quoted in different currencies, for the purposes of comparison of all Bid:

* 1. UNDP will convert the currency quoted in the Bid into the UNDP preferred currency, in accordance with the prevailing UN operational rate of exchange on the last day of submission of Bid; and
  2. In the event that the Bid found to be the most responsive to the ITB requirement is quoted in another currency different from the preferred currency as per **Data Sheet** (DS no. 15), then UNDP shall reserve the right to award the contract in the currency of UNDP’s preference, using the conversion method specified above.

1. **Documents Establishing the Eligibility and Qualifications of the Bidder** 
   1. The Bidder shall furnish documentary evidence of its status as an eligible and qualified vendor, using the forms provided under Section 5, Bidder Information Forms. In order to award a contract to a Bidder, its qualifications must be documented to UNDP’s satisfactions. These include, but are not limited to the following:
   2. That, in the case of a Bidder offering to supply goods under the Contract which the Bidder did not manufacture or otherwise produce, the Bidder has been duly authorized by the goods’ manufacturer or producer to supply the goods in the country of final destination;
   3. That the Bidder has the financial, technical, and production capability necessary to perform the Contract; and
   4. That, to the best of the Bidder’s knowledge, it is not included in the UN 1267 List or the UN Ineligibility List, nor in any and all of UNDP’s list of suspended and removed vendors.

18.2 Bids submitted by two (2) or more Bidders shall all be rejected by UNDP if they are found to have any of the following:

1. they have at least one controlling partner, director or shareholder in common; or
2. any one of them receive or have received any direct or indirect subsidy from the other/s; or
3. they have the same legal representative for purposes of this ITB; or
4. they have a relationship with each other, directly or through common third parties, that puts them in a position to have access to information about, or influence on the Bid of, another Bidder regarding this ITB process;
5. they are subcontractors to each other’s bid, or a subcontractor to one bid also submits another Bid under its name as lead Bidder; or
6. an expert proposed to be in the bid of one Bidder participates in more than one Bid received for this ITB process.  This condition does not apply to subcontractors being included in more than one Bid.
7. **Joint Venture, Consortium or Association**

If the Bidder is a group of legal entities that will form or have formed a joint venture, consortium or association at the time of the submission of the Bid, they shall confirm in their Bid that : (i) they have designated one party to act as a lead entity, duly vested with authority to legally bind the members of the joint venture jointly and severally, and this shall be duly evidenced by a duly notarized Agreement among the legal entities, which shall be submitted along with the Bid; and (ii) if they are awarded the contract, the contract shall be entered into, by and between UNDP and the designated lead entity, who shall be acting for and on behalf of all entities that comprise the joint venture.

After the bid has been submitted to UNDP, the lead entity identified to represent the joint venture shall not be altered without the prior written consent of UNDP.  Furthermore, neither the lead entity nor the member entities of the joint venture can:

1. Submit another Bid, either in its own capacity; nor
2. As a lead entity or a member entity for another joint venture submitting another Bid.

The description of the organization of the joint venture/consortium/association must clearly define the expected role of each of the entity in the joint venture in delivering the requirements of the ITB, both in the bid and in the Joint Venture Agreement.  All entities that comprise the joint venture shall be subject to the eligibility and qualification assessment by UNDP.

Where a joint venture is presenting its track record and experience in a similar undertaking as those required in the ITB, it should present such information in the following manner:

1. Those that were undertaken together by the joint venture; and
2. Those that were undertaken by the individual entities of the joint venture expected to be involved in the performance of the services defined in the ITB.

Previous contracts completed by individual experts working privately but who are permanently or were temporarily associated with any of the member firms cannot be claimed as the experience of the joint venture or those of its members, but should only be claimed by the individual experts themselves in their presentation of their individual credentials.

If the Bid of a joint venture is determined by UNDP as the most responsive Bid that offers the best value for money, UNDP shall award the contract to the joint venture, in the name of its designated lead entity, who shall sign the contract for and on behalf of all the member entities.

1. **Alternative Bid**

Unless otherwise specified in the **Data Sheet** (DS nos. 5 and 6), alternative bid shall not be considered. Where the conditions for its acceptance are met, or justifications are clearly established, UNDP reserves the right to award a contract based on an alternative bid.

1. **Validity Period**

21.1 Bid shall remain valid for the period specified in the **Data Sheet** (DS no. 8), commencing on the submission deadline date alsoindicated in the **Data Sheet** (DS no. 21). A Bid valid for a shorter period shall be immediately rejected by UNDP and rendered non-responsive.

21.2 In exceptional circumstances, prior to the expiration of the Bid validity period, UNDP may request Bidders to extend the period of validity of their Bid.The request and the responses shall be made in writing, and shall be considered integral to the Bid.

1. **Bidder’s Conference**

When appropriate, a Bidder’s conference will be conducted at the date, time and location specified in the **Data Sheet** (DS no. 7). All Bidders are encouraged to attend. Non-attendance, however, shall not result in disqualification of an interested Bidder. Minutes of the Bidder’s conference will be either posted on the UNDP website, or disseminated to the individual firms who have registered or expressed interest with the contract, whether or not they attended the conference. No verbal statement made during the conference shall modify the terms and conditions of the ITB unless such statement is specifically written in the Minutes of the Conference, or issued/posted as an amendment in the form of a Supplemental Information to the ITB.

**D. SUBMISSION AND OPENING OF BID**

1. **Submission** 
   1. The Technical Bid and the Price Schedule **must** be submitted together and sealed together in one and the same envelope, delivered either personally, by courier, or by electronic method of transmission. If submission will not be done by electronic means, the Technical Bid and Price Schedule must be sealed together in an envelope whose external side must :
2. Bear the name of the Bidder;
3. Be addressed to UNDP as specified in the **Data Sheet** (DS no.20); and
4. Bear a warning not to open before the time and date for Bid opening as specified in the **Data Sheet** (DS no. 24)**.**

If the envelope is not sealed nor labeled as required, the Bidder shall assume the responsibility for the misplacement or premature opening of Bid due to improper sealing and labeling by the Bidder.

* 1. Bidders must submit their Bid in the manner specified in the **Data Sheet** (DS nos. 22 and 23). When the Bid is expected to be in transit for more than 24 hours, the Bidder must ensure that sufficient lead time has been provided in order to comply with UNDP’s deadline for submission. UNDP shall indicate for its record that the official date and time of receiving the Bid is the actual date and time when the said Bid has physically arrived at the UNDP premises indicated in the **Data Sheet** (DS no. 20).
  2. Bidders submitting Bid by mail or by hand shall enclose the original and each copy of the Bid, in separate sealed envelopes, duly marking each of the envelopes as “Original Bid” and the others as “Copy of Bid”. The two envelopes, consisting of original and copies, shall then be sealed in an outer envelope. The number of copies required shall be as specified in the **Data Sheet** (DS no. 19)**.** In the event of any discrepancy between the contents of the “Original Bid” and the “Copy of Bid”, the contents of the original shall govern. The original version of the Bid shall be signed or initialed by the Bidder or person(s) duly authorized to commit the Bidder on every page. The authorization shall be communicated through a document evidencing such authorization issued by the highest official of the firm, or a Power of Attorney, accompanying the Bid.
  3. Bidders must be aware that the mere act of submission of a Bid, in and of itself, implies that the Bidder accepts the General Contract Terms and Conditions of UNDP as attached hereto as Section 11.

1. **Deadline for Submission of Bid and Late Bids**

Bid must be received by UNDP at the address and no later than the date and time specified in the **Data Sheet** (DS no. 20 and 21).

UNDP shall not consider any Bid that arrives after the deadline for submission of Bid. Any Bid received by UNDP after the deadline for submission of Bid shall be declared late, rejected, and returned unopened to the Bidder.

1. **Withdrawal, Substitution, and Modification of Bid**

25.1 Bidders are expected to have sole responsibility for taking steps to carefully examine in detail the full consistency of its Bid to the requirements of the ITB, keeping in mind that material deficiencies in providing information requested by UNDP, or lack clarity in the description of goods and related services to be provided, may result in the rejection of the Bid. The Bidder shall assume any responsibility regarding erroneous interpretations or conclusions made by the Bidder in the course of understanding the ITB out of the set of information furnished by UNDP.

25.2 A Bidder may withdraw, substitute or modify its Bid after it has been submitted by sending a written notice in accordance with ITB Clause 23, duly signed by an authorized representative, and shall include a copy of the authorization (or a Power of Attorney). The corresponding substitution or modification of the Bid must accompany the respective written notice. All notices must be received by UNDP prior to the deadline for submission and submitted in accordance with ITB Clause 23 (except that withdrawal notices do not require copies). The respective envelopes shall be clearly marked “WITHDRAWAL,” “SUBSTITUTION,” or MODIFICATION”.

25.3 Bid requested to be withdrawn shall be returned unopened to the Bidders.

25.4 No Bid may be withdrawn, substituted, or modified in the interval between the deadline for submission of Bid and the expiration of the period of Bid validity specified by the Bidder on the Bid Submission Form or any extension thereof.

1. **Bid Opening**

UNDP will open the Bid in the presence of an ad-hoc committee formed by UNDP of at least two (2) members. If electronic submission is permitted, any specific electronic Bid opening procedures shall be as specified in the **Data Sheet** (DS no. 23).

The Bidders’ names, modifications, withdrawals, the condition of the envelope labels/seals, the number of folders/files and all other such other details as UNDP may consider appropriate, will be announced at the opening. No Bid shall be rejected at the opening stage, except for late submission, for which the Bid shall be returned unopened to the Bidder.

1. **Confidentiality**

Information relating to the examination, evaluation, and comparison of Bid, and the recommendation of contract award, shall not be disclosed to Bidders or any other persons not officially concerned with such process, even after publication of the contract award.

Any effort by a Bidder to influence UNDP in the examination, evaluation and comparison of the Bid or contract award decisions may, at UNDP’s decision, result in the rejection of its Bid.

In the event that a Bidder is unsuccessful, the Bidder may seek a meeting with UNDP for a debriefing. The purpose of the debriefing is discussing the strengths and weaknesses of the Bidder’s submission, in order to assist the Bidder in improving the bid presented to UNDP. The content of other bid and how they compare to the Bidder’s submission shall not be discussed.

**E. EVALUATION OF BID**

1. **Preliminary Examination of Bid**

UNDP shall examine the Bid to determine whether they are complete with respect to minimum documentary requirements, whether the documents have been properly signed, whether or not the Bidder is in the UN Security Council 1267/1989 Committee's list of terrorists and terrorist financiers, and in UNDP’s list of suspended and removed vendors, and whether the Bid are generally in order, among other indicators that may be used at this stage. UNDP may reject any Bid at this stage.

1. **Evaluation of Bid**
   1. UNDP shall examine the Bid to confirm that all terms and conditions under the UNDP General Terms and Conditions and Special Conditions have been accepted by the Bidder without any deviation or reservation.
   2. The evaluation team shall review and evaluate the Bids on the basis of their responsiveness to the Schedule of Requirements and Technical Specifications and other documentation provided, applying the procedure indicated in the **Data Sheet** (DS No. 25). Absolutely no changes may be made by UNDP in the criteria after all Bids have been received.
   3. UNDP reserves the right to undertake a post-qualification exercise, aimed at determining, to its satisfaction the validity of the information provided by the Bidder. Such post-qualification shall be fully documented and, among those that may be listed in the **Data Sheet** (DS No.33), may include, but need not be limited to, all or any combination of the following :
      1. Verification of accuracy, correctness and authenticity of the information provided by the bidder on the legal, technical and financial documents submitted;
      2. Validation of extent of compliance to the ITB requirements and evaluation criteria based on what has so far been found by the evaluation team;
      3. Inquiry and reference checking with Government entities with jurisdiction on the bidder, or any other entity that may have done business with the bidder;
      4. Inquiry and reference checking with other previous clients on the quality of performance on on-going or previous contracts completed;
      5. Physical inspection of the bidder’s plant, factory, branches or other places where business transpires, with or without notice to the bidder;
      6. Testing and sampling of completed goods similar to the requirements of UNDP, where available; and
      7. Other means that UNDP may deem appropriate, at any stage within the selection process, prior to awarding the contract.
2. **Clarification of Bid**

To assist in the examination, evaluation and comparison of bids, UNDP may, at its discretion, ask any Bidder to clarify its Bid.

UNDP’s request for clarification and the Bidder’s response shall be in writing. Notwithstanding the written communication, no change in the prices or substance of the Bid shall be sought, offered, or permitted, except to provide clarification, and confirm the correction of any arithmetic errors discovered by UNDP in the evaluation of the Bid, in accordance with ITB Clause 35.

Any unsolicited clarification submitted by a Bidder in respect to its Bid, which is not a response to a request by UNDP, shall not be considered during the review and evaluation of the Bid.

1. **Responsiveness of Bid**

UNDP’s determination of a Bid’s responsiveness will be based on the contents of the Bid itself.

A substantially responsive Bid is one that conforms to all the terms, conditions, and specifications of the ITB without material deviation, reservation, or omission.

If a Bid is not substantially responsive, it shall be rejected by UNDP and may not subsequently be made responsive by the Bidder by correction of the material deviation, reservation, or omission.

1. **Nonconformities, Reparable Errors and Omissions**
   1. Provided that a Bid is substantially responsive, UNDP may waive any non-conformities or omissions in the Bid that, in the opinion of UNDP, do not constitute a material deviation.
   2. Provided that a Bid is substantially responsive, UNDP may request the Bidder to submit the necessary information or documentation, within a reasonable period of time, to rectify nonmaterial nonconformities or omissions in the Bid related to documentation requirements. Such omission shall not be related to any aspect of the price of the Bid. Failure of the Bidder to comply with the request may result in the rejection of its Bid.
   3. Provided that the Bid is substantially responsive, UNDP shall correct arithmetical errors as follows:

### if there is a discrepancy between the unit price and the line item total that is obtained by multiplying the unit price by the quantity, the unit price shall prevail and the line item total shall be corrected, unless in the opinion of UNDP there is an obvious misplacement of the decimal point in the unit price, in which case the line item total as quoted shall govern and the unit price shall be corrected;

### if there is an error in a total corresponding to the addition or subtraction of subtotals, the subtotals shall prevail and the total shall be corrected; and

### if there is a discrepancy between words and figures, the amount in words shall prevail, unless the amount expressed in words is related to an arithmetic error, in which case the amount in figures shall prevail subject to the above.

* 1. If the Bidder does not accept the correction of errors made by UNDP, its Bid shall be rejected.

**F. AWARD OF CONTRACT**

1. **Right to Accept, Reject, or Render Non-Responsive Any or All Bid**

33.1 UNDP reserves the right to accept or reject any Bid, to render any or all of the Bids as non-responsive, and to reject all Bids at any time prior to award of contract, without incurring any liability, or obligation to inform the affected Bidder(s) of the grounds for UNDP’s action. Furthermore, UNDP is not obligated to award the contract to the lowest price offer.

33.2 UNDP shall also verify, and immediately reject their respective Bid, if the Bidders are found to appear in the UN’s Consolidated List of Individuals and Entities with Association to Terrorist Organizations, in the List of Vendors Suspended or Removed from the UN Secretariat Procurement Division Vendor Roster, the UN Ineligibility List, and other such lists that as may be established or recognized by UNDP policy on Vendor Sanctions.(See <http://www.undp.org/content/undp/en/home/operations/procurement/procurement_protest/>

1. **Award Criteria**

Prior to expiration of the period of Bid validity, UNDP shall award the contract to the qualified and eligible Bidder that is found to be responsive to the requirements of the Schedule of Requirements and Technical Specification, and has offered the lowest price (See DS No. 32).

1. **Right to Vary Requirements at the Time of Award**

At the time of award of Contract, UNDP reserves the right to vary the quantity of the goods and/or related services, by up to a maximum twenty five per cent (25%) of the total offer, without any change in the unit price or other terms and conditions.

1. **Contract Signature**

Within fifteen (15) days from the date of receipt of the Contract, the successful Bidder shall sign and date the Contract and return it to UNDP.

Failure of the successful Bidder to comply with the requirement of ITB Section F.3 and this provision shall constitute sufficient grounds for the annulment of the award, and forfeiture of the Bid Security if any, and on which event, UNDP may award the Contract to the Bidder with the second highest rated Bid, or call for new Bid.

1. **Performance Security**

A performance security, if required, shall be provided in the amount and form provided in Section 9 and by the deadline indicated in the **Data Sheet** (DS no. 14), as applicable. Where a Performance Security will be required, the submission of the said document, and the confirmation of its acceptance by UNDP, shall be a condition for the effectivity of the Contract that will be signed by and between the successful Bidder and UNDP.

1. **Bank Guarantee for Advanced Payment**

Except when the interests of UNDP so require, it is the UNDP’s preference to make no advanced payment(s) on contracts (i.e., payments without having received any outputs). In the event that the Bidder requires an advanced payment upon contract signature, and if such request is duly accepted by UNDP, and the said advanced payment exceeds 20% of the total Bid price, or exceed the amount of USD 30,000, UNDP shall require the Bidder to submit a Bank Guarantee in the same amount as the advanced payment. A bank guarantee for advanced payment shall be furnished in the form provided in Section 10.

1. **Vendor Protest**

UNDP’s vendor protest procedure provides an opportunity for appeal to those persons or firms not awarded a purchase order or contract through a competitive procurement process. In the event that a Bidder believes that it was not treated fairly, the following link provides further details regarding UNDP vendor protest procedures: <http://www.undp.org/procurement/protest.shtml>

**Instructions to Bidders**

**DATA SHEET[[2]](#footnote-2)**

The following data for the supply of goods and related services shall complement / supplement the provisions in the Instruction to Bidders. In the case of a conflict between the Instruction to Bidders and the Data Sheet, the provisions in the Data Sheet shall prevail**.**

|  |  |  |  |
| --- | --- | --- | --- |
| **DS No.** | **Cross Ref. to Instructions** | **Data** | **Specific Instructions / Requirements** |
| 1 |  | Project Title: | **Restoration of Prespa Lake Ecosysem** |
| 2 |  | Title of Goods/Services/Work Required: | **Construction of Prespa Lake Docking Marine** |
| 3 |  | Country: | **fyr Macedonia** |
| 4 | C.13 | Language of the Bid: | **English**  French  Spanish  Others (pls. specify) |
| 5 | C.20 | Conditions for Submitting Bid for Parts or sub-parts of the Total Requirements | Allowed *[if yes, describe how, and ensure that requirements properly define the sub-parts]*  **Not allowed** |
| 6 | C.20 | Conditions for Submitting Alternative Bid | **Shall not be considered**  Shall be considered. A Bidder may submit an alternative Bid, but only if it also submits a Bid that meets the base case (i.e., what is originally required by UNDP in this ITB). UNDP shall only consider the alternative bid offered by the Bidder whose Bid for the base case was determined to be a responsive Bid that offers the lowest price. |
| 7 | C.22 | A pre-Bid conference will be held on: | **Time: 11:00h**  **Date: July 5, 2013**  **Venue:** **UNDP CO at 8-ma Udarna Brigada no. 2 (IV floor, Conference room )**  **Minutes of the Pre-tender meeting will be posted at UNDP web site on July 8 2013**  **The UNDP focal point for the arrangement is:**  **procurement.mk@undp.org** |
| 8 | C.21.1 | Period of Bid Validity commencing on the submission date | 60 days  **90 days**  120 days |
| 9 | B.9.5  C.15.4 b) | Bid Security | Required  **Not Required** |
| 12 |  | Advanced Payment upon signing of contract | **Allowed up to a maximum of 15% of contract[[3]](#footnote-3) (Section 9)**  Not allowed |
| 13 |  | Liquidated Damages | Will not be imposed  **Will be imposed under the following conditions:**  Percentage of contract price per day of delay**: 2.5% percent of the delivered price of the delayed works for each week of delay until actual delivery, up to a maximum deduction of 10 percent of the delayed works’ contract price.**  Max. no. of days of delay: **6 weeks**  Next course of action: **Termination of contract** |
| 14 | F.37 | Performance Security | **Required**  **Amount: 10 % of the bid**  **Form:** **enclosed in the ITB (Section 8)**  Not Required |
| 15 | C.17  C.17.2 | Preferred Currency of Bid and Method for Currency conversion | **United States Dollars (US$)**  Euro  **Local Currencyfor domestic bidders (MKD)**  *Reference date for determining UN Operational Exchange Rate :* ***July 2013*** |
| 16 | B.10.1 | Deadline for submitting requests for clarifications/ questions | **10 days before the submission date.** |
| 17 | B.10.1 | Contact Details for submitting clarifications/questions[[4]](#footnote-4) | Focal Person in UNDP: **Procurement Unit**  E-mail address dedicated for this purpose: **procurement.mk@undp.org** |
| 18 | B.11.1 | Manner of Disseminating Supplemental Information to the ITB and responses/clarifications to queries | Direct communication to prospective Bidders by email or fax  **Direct communication to prospective Bidders by email or fax, and Posting on the website[[5]](#footnote-5) http://www.undp.org.mk/default.aspx?LCID=65** |
| 19 | D.23.3 | No. of copies of Bid that must be submitted | **Original : 1 (one), hard copy**  **Copies: 1 (one) copy, hard. In addition to the original of the Bid in a hard copy, the Bidders shall also provide an electronic copy of the full documentation recorded on a CD** |
| 20 | D.23.1 b)  D.23.2  D.24 | Bid submission address | **UNDP REF: ITB 19/ 2013 for Prespa Lake Docking Marine DO NOT OPEN BEFORE 25 July 2013 at 12:00am 8ma Udarna Brigada 2, 1000 Skopje** |
| 21 | C.21.1  D.24 | Deadline of Bid Submission | Date and Time :  **July 25, 2013 12:00 AM** |
| 22 | D.23.2 | Manner of Submitting Bid | **Courier/Hand Delivery**  Electronic submission of Bid[[6]](#footnote-6) |
| 24 | D.23.1 c) | Date, time and venue for opening of Bid | **Date and Time: July 25, 2013 12:00 AM**  **Venue : UNDP Skopje office, 8ma Udarna Brigada 2, Skopje, Macedonia** |
| 25 |  | Evaluation method to be used in selecting the most responsive Bid | **Non-Discretionary “Pass/Fail” Criteria on the Technical Requirements; and**  **Lowest price offer of technically qualified/responsive Bid** |
| 26 | C.15.1 | Required Documents that must be Submitted to Establish Qualification of Bidders (In “Certified True Copy” form only)  *[check all that apply, delete those that will not be required.]* | **☒** **Company Profile**  **☒In the event of joint venture/consortium a duly notarized Agreement among the legal entities shall be submitted along with the bid. (as per Paragraph 19 of instructions to bidders.**  **☒ Notarized copy of the original License “B” for Construction of Bidder issued by MoTC (Ministry of Transport and Communication)**  **☒ Notarized copy of a License “B” for Construction of Bidder’s key personnel issued by Engineer’s Chamber of RM**  **For international companies:**  **International companies are allowed to execute construction works in the country, provided that they present a permit/confirmation for execution of civil works obtained from the State Authority for Urban Planning in Macedonia in accordance with the rules set out in Article 42 of the Law on**  **Construction.**  **☒ Copies of Quality Certificate (e.g., ISO, etc.) and/or other similar certificates, accreditations, awards and citations received by the Bidder, if any;**  **☒Financial statement issued by the Central Registry of Macedonia for the past 2 years of operation (2011 and 2012) showing minimum annual turnover equivalent to three times**  **the value of the financial offer of this bid; For international companies, audited statement for the past 2 years of operation (2011 and 2012) showing minimum annual turnover equivalent to three times the value of the financial offer of this bid for each year; (a Notarized copy is required)**  **The companies are also asked to indicate quick ratio for 2011 and 2012. UNDP will also check the financial accounts to calculate the Quick Ratio. Quick ratio tests the company’s financial strength and liquidity by calculating a company’s liquid assets in proportion to its liabilities. Bidders with financial accounts that show a quick ratio of less than one (1) will be disqualified (as per formula provided)**  **Cash + Account Receivables**  **Quick Ratio = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**  **Current Liabilities**  **☒List of min. 5 similar projects in terms of complexity and value undertaken over the past 5 years (wooden and steel constructions, marine docks, roads, buildings, sewerage and water supply systems, channels and similar) and contact of the clients with e-mail addresses for reference check**  **Certificate of Registration of the business, including Articles of Incorporation, or equivalent document (copy of the original)**  **Confirmation that the company has fulfilled all their past and current obligations concerning the payment of taxes, contributions and other public fees, issued by the Public Revenue Office or equivalent for international companies (for the last year)**  **Document that the company in not bankrupt or has suspended business activities issued by the Central Registry or equivalent entity for international companies.**  **(Original document or Certified/notarized copy of the original document, issued no later than 6 months prior to the deadline for submission of bids; no translation required;**  **CVs of key personal proposed for this assignment: Project Manager and the Site Manager**  **Minimum qualifications and experience of the key personnel proposed for this assignment:**  **1. The Project Manager shall hold minimum license/certification B for execution of construction works in the fields of civil engineering or architecture issued by the Macedonian Chamber of Authorized Architects and Engineers.**  **The Project Manager shall have a minimum of 8 years of professional experience in civil works/construction, and minimum of 5 (five) projects of similar nature to this project (construction of marine docs, roads, buildings and other large structures) in the role of Project Manager.**  **2. The Site Manager shall hold minimum license/certification B for execution of construction works in the fields of civil engineering or architecture issued by the Macedonian Chamber of Authorized Architects and Engineers.**  **The Site Manager shall have a minimum of 8 years of professional experience in civil works / construction, and minimum of 5 (five) projects of similar nature to this project (construction of buildings and other large structures) in the role of Site Manager.**  **Bidders planning to sub-contract any of the works shall specify the activity (ies) or part of the works intended to be subcontracted. The subcontracting component of the works shall not exceed 20% of the volume of the works.**  **Methodology of construction – narrative methodology describing the approach to construction of the docking marine** |
| 27 |  | Other documents that may be Submitted to Establish Eligibility | **n/a** |
| 28 | C.15 | Structure of the Technical Bid and List of Documents to be Submitted | **1. Bid Submission Form (Section 4) 2.Required Documents (all mentioned in the item 26 of Instructions to bidders on Establish Qualification of Bidders) 3. Technical Specifications and Description of offered works;  4. Timetable including transportation and time schedule of works; 5. Quality Certificate (e.g., ISO, etc.) and/or other similar certificates for the goods and equipment required in section 3a Technical Specification and Schedule of Requirements 6. CVs of key personnel** |
| 29 | C.15.2 | LatestExpected date for commencement of Contract | ***August 26, 2013*** |
| 30 | C.15.2 | Maximum Expected duration of contract | **4 months** |
| 31 |  | UNDP will award the contract to: | **One Bidder only**  One or more Bidders, depending on the following factors: |
| 32 | F.34 | Criteria for the Award and Evaluation of Bid | **Award Criteria**  **Non-discretionary “Pass” or “Fail” rating on the detailed contents of the Schedule of Requirements and Technical Specifications**  **Compliance on the following qualification requirements :**  **Bid Evaluation Criteria[[7]](#footnote-7)**  **☒ Minimum no. of years of experience in similar contracts: 5**  **☒ Minimum annual turnover of three times**  **the value of the financial offer of this bid, for each of the past 2 years of operation (2011 and 2012)*;***  **☒ Minimum no. of 5 similar projects in terms of complexity and value undertaken over the past 5 years (wooden and steel constructions, marine docks roads, channels and similar)**  **☒ Quick ratio of ≥ 1**  **☒ Full compliance of Bid to the Technical Requirements;**  **☒ Quality Certificates (standards) for the goods to be supplied;**  **☒ Statement of Warranty on works for a minimum period of 12 months;**  **☒ Performance guarantee (10% of your bid value)**  **☒ Acceptability of the Performance/Delivery Schedule;**  **☒ Appropriateness of the Implementation Timetable to Project Schedule;**  **☒ Compliance with minimum qualifications required for key personnel** |
| 33 | E.29 | Post qualification Actions | **Verification of accuracy, correctness and authenticity of the information provided by the bidder on the legal, technical and financial documents submitted;**  **Validation of extent of compliance to the ITB requirements and evaluation criteria based on what has so far been found by the evaluation team;**  Inquiry and reference checking with Government entities with jurisdiction on the bidder, or any other entity that may have done business with the bidder;  **Inquiry and reference checking with other previous clients on the quality of performance on on-going or previous contracts completed;**  Physical inspection of the bidder’s plant, factory, branches or other places where business transpires, with or without notice to the bidder;  Testing and sampling of completed goods similar to the requirements of UNDP, where available; and  Others |
| 34 |  | Conditions for Determining Contract Effectivity | **UNDP’s receipt of Performance Bond**  UNDP’s approval of plans, drawings, samples, etc.  **Others*****Signing of the contract by the selected bidder*** |
| 35 |  | Other Information Related to the ITB[[8]](#footnote-8) | **The boat lift mentioned in the technical specification will be purchased separately by UNDP and is not part of this ITB). The company will only be responsible for the installation process, under the supervision of the supplier of the boat lift.** |

**Section 3a: Schedule of Requirements and Technical Specifications**

The format is made available in English and Macedonian. Should there be a discrepancy between the English and the Macedonian translation, the English version shall prevail.

**TECHNICAL DESCRIPTION**

* + - 1. **GEOTECHNICAL REPORT**

***1. Introduction***

Limited terrain exploration works have been completed to define the geo-technical conditions for laying the foundations of a dry land access port for anchoring small ships on the Prespa Lake shore.

The goal of the exploration works is to identify the penetration resistance of the soil by a standard dynamics test without plating columns - without piping, in continuity. The laying of the foundation is envisaged to be made with wooden poles, of which a small number on the shore, and the majority located in the lake.

***2.* Terrain Works**

The terrain works were completed in the second half of March, 2013. As part of the terrain exploration works, a spot survey drilling was done from one exploration hole with a depth of H=10.0m’, four standard dynamic penetrations (an SPT-test) until depths of H=10m and ramming of two prototype mini wooden poles with a rectangle profile of 8cm/7.5cm, F=0.06m2.

The exploration hole is located and made on the shore, at the contact of the shore with the water and is shown in a situation in appendix no. 1.

The spot survey drilling was done mechanically, with a GAK-300 set, in a rotation fashion, on dry land and with anchoring. The anchor was placed in wooden boxes and geo-mechanical mapping of the anchor was performed in situ, according to the AC-classification and identification. Properly packed and marked samples were taken and transported to the lab, to have their granulometric composition determined.

An SPT-test, standard dynamic penetration was done with the help of a cone with a D=50.8mm (2’’) diameter and a =600 angle at the top. The ramming was done with a G=63.5kg weight, free fall height of h=76.3cm, нin continuity (not in intervals) until the h=30.4cm cone broke through; for a certain number of blows, the registration of the number of blows was done once the cone had been dug into the ground at a depth of H=50cm. The geographical position of the locations at which the SPT-test was done is shown in a situation (appendix no. 1).

The tests located oh the shore itself - SPT-1 and a sample pole-1 - were done in a mechanical way with a GAK-300 machine set.

The tests in the lake were done with the help of a manual set placed on a F=20m2 (4.5x4.5m) pontoon platform, the central part of which has an opening and an equipment-plate and a guide for centre- and vertical positioning of the set for the SPT-test and the pole.

The first SPT-test was done right next to the exploration probe drilling D-1, and the remaining three along the axis of the profile (the minutes from the SPT-test are shown in appendix no. 5-12).

Test prototype mini poles were rammed into the ground at two locations. The first one is immediately next to the exploration hole (at 1m) on the very shore, and the second trial pole was placed close to the end of the platform - at a distance of 51m from the shore - structural hole (app.no.1).

The first pole was rammed into the ground until depth of H=5m as from the terrain surface. It was tested by being placed under a load with a counter load from the drilling machine loaded with equipment. The load was imposed onto the pole by a hydraulic press, and the pole was placed under a load of 2.3t for a period of 4.5 hours. No sinking of the pole was observed throughout the whole time; the sinking was measured by a micrometer located on legs the bases of which were at a distance of 1.2m from the pole.

The second pole is placed in the lake, up to a depth of 3.2m and at a distance of L=51m from the shore, immediately next to SPT-4. It was rammed into the lake bottom very slowly, using a large number of blows, probably due to the high compactness of the lake sediments, mid- and small size sands, with relative compactness of RD>81%.

To prevent splitting the head while hammering, it is covered by a steel crown - plating made of steel sheet of =3mm and h=10cm. The tip of the pole is sharpened on four sides to ensure symmetry. The tip is protected by a steel sheet plating of =3mm and h=10cm, joined at the very tip.

**3. Geological Profile**

Based on the mapping of the discovered soil materials from the exploration hole, the granulometric composition of such materials, and taking into account the results of the dynamic penetration as well, the following soil materials and their mechanical features may be defined:

0.00-2.00 OL mil-organic dust in a rather loose state (roots, reed, grass, etc.).

2.00-3.40 ML small-grained dusty sand, with low and insignificant elasticity, weakly compacted, poorly consolidated lake sediments, grey color.

3.40-5.20 SFs weakly granulated sand, with insignificant presence of dust, mid- to well-compacted and of a relative compactness RD=34-58%, grey color.

5.20-7.30 SP small-grained sand, clean, well compacted with relative compactness of RD=68-79%, light brown color.

7.30-8.50 SP middle size sand of exceptional cleanness, sharp form grains and highly compacted to a relative compactness of RD>79%, grey color.

8.50-10.00 SFs small-grained sand, with a small percentage of sandy dust, very highly compacted and of a relative compactness RD=81-92%, grey color.

**4. Soil Capacity Calculation**

For such type of objects and the limited scope of exploration works, the scope of data obtained allow for approximately precise defining the conditions for ramming the poles into the ground and calculating the critical and allowed capacity.

The capacity allowed is defined with two methods - the Mayerhof one and the one applying empirical correlation of the results of the dynamic penetration and the capacity allowed.

The physical and mechanical features (internal friction angle and elasticity module, as well relative compactness) were obtained empirically, through correlation formulae of the results of the dynamic penetration.

The results of the calculations of the capacity allowed are given in Table 1 below:

Table 1

|  |  |  |
| --- | --- | --- |
| Poles’ Diameter [m] | Mayerhof Method [KN] | Capacity as per the dynamic penetration results [KN] |
| 0.20 | 189.22 | 2484.84 |
| 0.25 | 295.66 | 3175.76 |
| 0.30 | 425.75 | 3894.55 |
| 0.40 | 756.89 | 5415.79 |

The calculations and minutes of the SPT tests are given in the appendices (app. no. 5 - 8).

**Recommendations:**

* the results of the dynamic penetration indicate that - after a depth of 4.50-5.00m - the layer of weakly granulated sand is compacted to the maximum and of a capacity of 3.30 m and is recommended as a layer for laying the foundations of the poles; or, the foundations are to be laid in a horizon, сса-6.5m as from the surface of the terrain.
* after a depth of 5.50m, the results of the dynamic penetration are rather high and due to the nature of the material in which the dynamic penetration was performed; middle-size grained sand and grains with sharp edges, showing significant resistance to friction. As a result, the values of the internal friction angle obtained by the correlation formula are unrealistically high from this depth on.
* an internal friction angle of = 360 and a compressibility module of Es = 28000 KN/m2 has been adopted
* the results of the calculations of the module of elasticity and relative compactness confirm the good compactness of the layers of weakly granulated sand and - according to these results - rather high resistance is expected when poles are put up in such environment.
* it is recommended that the maximum length of the poles does not exceed L = 8.50-9.0 m, so that they go not more than 2.50 - 3.00m into the layer of weakly granulated, well compacted sand.
* the upper end - the head of the pole is to be cut normally to its axis. A h>10m deep and >6mm thick steel crown - cap is to be placed on the head of the pole during the ramming, so as to protect the pole head against splitting. The tip is to be sharpened to a depth of h>1.5D, and a plating - boot is to be placed on the tip itself, made =6-8mm thick and h=1.25 deep steel sheet.
* Having in mind the type of the facility, the calculated allowed capacities of the proposed diameters of the poles provide sufficient safety for safely laying the foundations. The designed is given freedom to choose the pole diameter needed, depending on the real loads on the facility. It is recommended that the allowed capacities - calculated with the Meyerhof method - are adopted.
  + - 1. **HYDROTECHNICAL REPORT**

**2.1. INTRODUCTION**

**2.1.1. General**

Over the past several years, the influence of a series of factors resulted in bringing the water level down significantly and constant degradation of the Prespa Lake and its surroundings; the water quality has been worsening, underground layers are polluted, a portion of the forests has vanished and the land has eroded.

The reduction of the lake water level by as much as 6.00 m and its staying at the same low levels make the existing port in Stenje around the police station unusable.

As part of the activities aimed at protecting the Prespa park and the ecosystems by all users, several projects funded by a series of agencies and funds have been implemented and supported and assisted by the local authorities, the Ministry of Environment and Physical Planning and UNDP. The special lake monitoring project is underway as part of these activities.

The Prespa Lake Monitoring Project includes several components, one of which being the purchase of a boat equipped with a monitoring equipment, as well as construction of a marine for this boat.

The subject of this basic design is the development of technical documentation for the construction of a marine for the monitoring boats (according to the version adopted in a previous study).

**2.2. LOCATION**

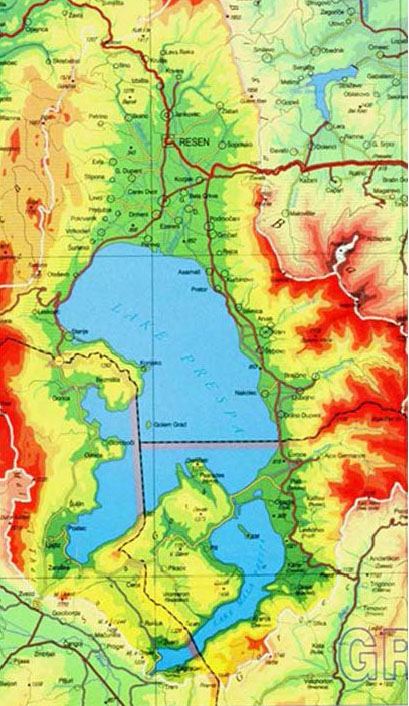
**2.2.1. Macro Location**

***а) Prespa Region***

The Prespa Lake is located in the southwestern part of the country. Parts of the lake also belong to Greece and Albania.

The Prespa Lake is one of the three natural lakes in the country, located in the Prespa Valley. The Prespa Lake consists of the Lake Major and Lake Minor, which are mutually connected. The lakes are at 850m above sea level and are the biggest natural watershed of a tectonic origin in the Balkans. The Prespa Valley is shown on List no. 1 of the appendices.

The total area of the Prespa Valley amounts to 739 km2 and is divided into land (562 km2) and water surface of 177 km2. This geographical space area is laid in the southwestern part of the country, about the crossing of 410 south geographical width and 210 east geographical length. The valley is bound by the mountains of Baba in the east, Galichica on the west, Plakenska and Bigla to the north, and the lower ridges of Galichica to the south.



**Figure 1 - Prespa Lake**

***б) The Village of Stenje***

Stenje is a village in the municipality of Resen, located on the western shore of the Prespa Lake, in the vicinity of the border with Albania, having the geographical coordinates of 40° 56' 31.02"North and 20° 54' 28.54" East.

The village of Stenje is laid along the lake shore. The road going to the border crossing with Albania also leads to the village.

Today, the village has 438 inhabitants (2002 Census). It has a satisfactorily developed infrastructure.



**Figure 2 – Stenje, situation**



**Figure 3 – Stenje, a satellite snapshot**

****

**Figure 4 – Stenje, a panoramic snapshot**

**2.2.2 Micro Location**

Based on the previously conducted analyses, it was decided that the micro location of the newly planned port would be within the location of the former police station. This micro location on the newly planned port was chosen for several reasons, such as:

* There is an already constructed access road
* There is an existing infrastructure
* There is an already built facility that - once reconstructed - will be able to respond to the needs of the monitoring service
* The existing buildings and port are located on a state-owned building



**Figure 5 – Stenje, panoramic (satellite) snapshot of the port location**

****

**Figure 6 – The existing port in Stenje**

**2.3. TECHNICAL SOLUTION**

**2.3.1. General**

The basic design for construction of a marine for the monitoring boat was developed in accordance with the version adopted within a previous technical study. The version adopted envisages the construction of a marine with a main access platform, at both sides of the end of which there are constructions with lifts for elevating the boats to a safe level above the lake water one, as well as two secondary platforms for access to boats.

The first stage of the construction of the marine will result in making it possible for boats to harbor and in completing the construction of one monitoring boat (the construction of which is underway).

The scene for the new port will be set by using the cleared passage through the reed from the shore to the open lake, which will enable access for the police boats.



**Figure 7 – Existing passage through the reed**

**at the foreseen port location**



**Figure 8 – Type of port adopted**

**2.3.2. Input parameters**

***а) Monitoring boat***

One of the monitoring boars (already purchased) is with the following features:

* Length: L = 9,15 m
* Width: B = 3,40 m
* Draft (maximum under water): h = 0,80 m
* Weight: G = 5,0 t



**Figure 9 – Monitoring boat (agreed upon)**

***б) Hydrological Data***

In the period of development of the study (November 2012), the level of the lake water amounted to 844.00 m above sea level

At the time of development of the Basic Design (March 2013), the level of the water in the lake was 844.50 m above sea level.

The probability of water levels with an elevation > 844.00 m above sea level is 100%.

The probability of water levels with an elevation > 845.00 m above sea level is 98%.

The probability of water levels with an elevation > 846.00 m above sea level is 84%.

The level of the lake water at an elevation of 844.00 m above sea level has been defined as the minimum level of the water in the lake (identified and maintained over a longer period over the last ten years).

At the time of development of the Basic Project, the water level rose and was at the elevation of 844.50 above sea level.

The location at which the boat lift is to be built should ensure depth larger than the draft (>0.80 m). It has been decided that it will be hv = 1.30 m, i.e. an elevation of 842.70 m above sea level.

The access platform elevation will be 1.50 m above the lake water level at the time of development of the Basic Design, i.e. 846.00 m above sea level.

The maximum height of the waves at a maximum wind speed of v = 68.04 km is hb = 1.54 m.

The boat elevating lift is to lift the boat to a height above the wave height, i.e. at hl = 1.55 m > hb = 1.54 m. At a reference elevation point of the lake water of 844.50 m above sea level (when the Basic Project was being developed), the boat is to be elevated to an elevation point of 846.50 m above sea level.

Such defined elevation points ensure harboring and safekeeping of the boat for elevation points of the lake water of up to 844.50 m above sea level, which have been the real elevation points over the past dozen of years. In cases when the elevation point of the lake water exceeds the above stated one, the supporting poles will be upgraded to allow for the list construction to be raised to a higher level.

***в) Geo-mechanical Features***

Geo-mechanical exploration works have been done to identify the geo-mechanical features of the soil at the port’s location; an appropriate report was written on this issue.

The terrain works were complete in the second half of March 2013. As part of the terrain exploration works, probe drilling was done at one exploration hole with a depth of H = 10.0 m’, four standard dynamic penetrations (SPT- test) until a depth of H = 10.0 m, and two prototype mini wooden poles with a rectangle profile of 8 cm/7.5 cm, F = 0.06m2 were rammed into the ground.

The exploration hole is located and dug out on shore, at the contact of the water surface with the lakeshore.

An SPT-test, standard dynamic penetration, was performed with the help of a cone of a diameter of D = 50.8 mm (2’’) and an angle at the top of φ = 600. A weight of G = 63.6 kg was used to do the ramming of the cone, the free fall height was h = 76.3 cm, and the ramming was done in continuity (not in intervals) until the cone penetrated to Dh = 30.4 cm at a certain number of blows; the number of blows was registered after the cone was rammed into the ground to a depth of H = 50 cm. The positions of the locations at which the SPT-test was conducted are given in the situation graph in the report.

Based on the mapping of the soil materials found in the exploration hole and the granulometric composition of such materials, as well as taking into account the results of the dynamic penetration (SPT), the following soil materials and their mechanical features may be defined:

0.00-2.00 OL mil-organic dust in a rather loose state (roots, reed, grass, etc.).

2.00-3.40 ML small-grained dusty sand, with low and insignificant elasticity,

weakly compacted, poorly consolidated lake sediments, grey

color.

3.40-5.20 SFs weakly granulated sand, with insignificant presence of dust, mid-

to well-compacted and of a relative compactness RD=34-58%,

grey color.

5.20-7.30 SP small-grained sand, clean, well compacted with relative

**D1 (0.00 - 10.00)**

compactness of RD=68-79%, light brown color.

7.30-8.50 SP middle size sand of exceptional cleanness, sharp form grains

and highly compacted to a relative compactness of RD>79%,

grey color.

8.50-10.00 SFs small-grained sand, with a small percentage of sandy dust, very

highly compacted and of a relative compactness RD=81-92%,

grey color.

For such type of facilities and the limited scope of exploration works, the scope of data obtained allow for approximately precise defining the conditions for ramming the poles into the ground and calculating the critical and allowed capacity.

The capacity allowed is defined with two methods - the Mayerhof one and the one applying empirical correlation of the results of the dynamic penetration and the capacity allowed.

The physical and mechanical features (internal friction angle and elasticity module, as well relative compactness) required were obtained empirically, through correlation formulae of the results of the dynamic penetration.

The dynamic penetration results show that - after a depth of 4.50-5.00m - the layer of weakly granulated sand is compacted to maximum and of a capacity of 3.30 m; this layer is recommended as the one to be used when laying the foundations of the poles, with the foundations laid in a horizon, сса-6.5m calculated from the terrain surface.

After depths of 5.50 m, the dynamic penetration results are rather high and due to the nature of the material into which the dynamic penetration is performed - mid-size grains weakly granulated sand and grains with sharp edges producing high levels of resistance to friction. As a result, the values of the internal friction angle obtained with the correlation formula are unrealistically high after the above depths.

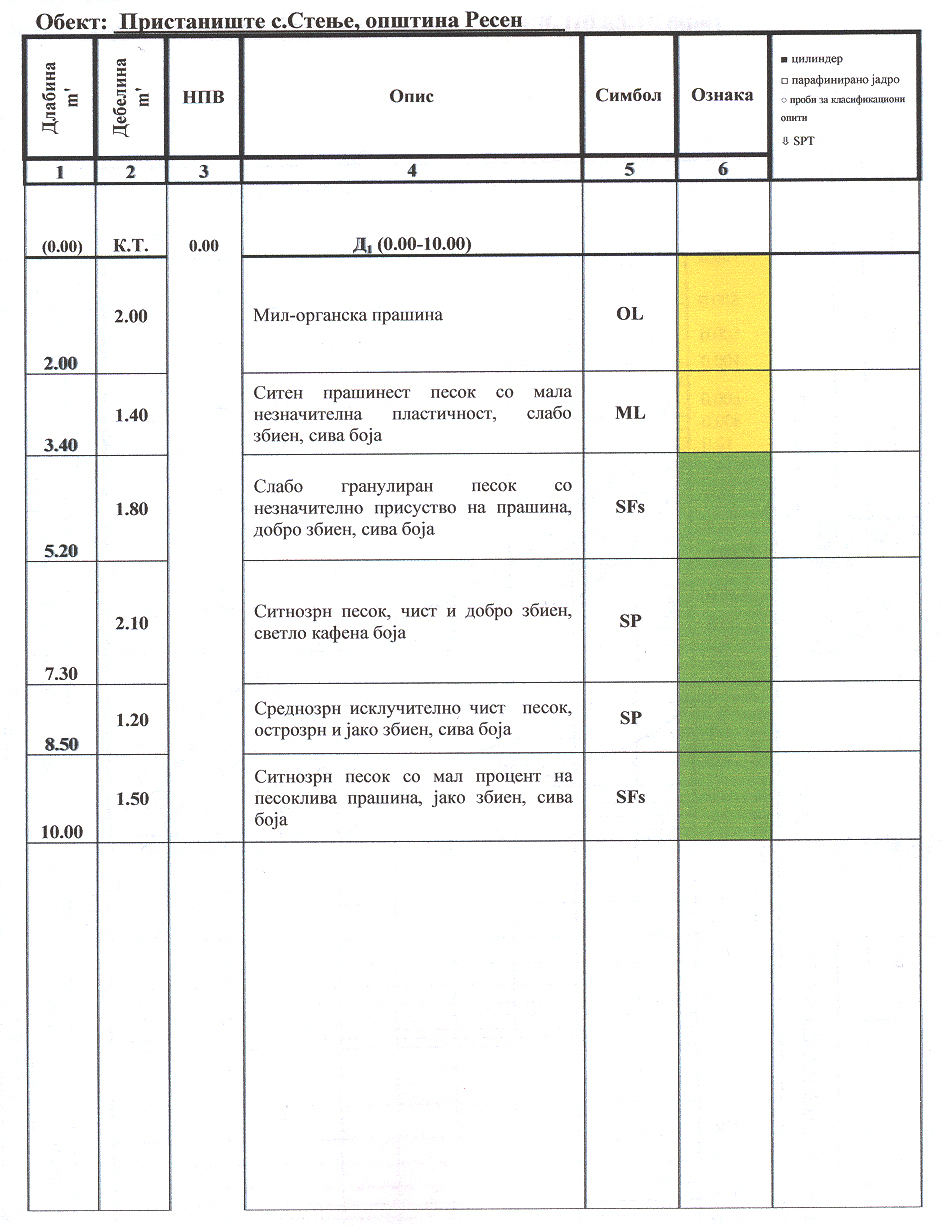
An internal friction angel of ϕ = 360 has been adopted, along with a compactibility module of Es = 28000 KN/m2.

The results of the calculations of the elasticity module and the relative compactness confirm the solid compactness of the layers made of weakly granulated sand, and - based on such results - rather high resistance is expected when poles are put in the ground in such an environment.

It is recommended that the maximum length of the poles does not exceed L = 8.50-9.0 m, so that they penetrate not more than 2.50 – 3.00 m into the layer of weakly granulated and well compacted sand.

The upper part - the head of the pole is to be cut perpendicularly to its axes. To protect the pole head against splitting when being rammed into the ground, a steel crown - cap is to be placed, at a depth of h > 10 cm and with a thickness of d> 6 mm. The tip is to be sharpened to a depth of h>1.5D, and a plating - boot is to be placed on the tip itself, made d=6-8mm thick and h=1.25 deep steel sheet.

Having in mind the type of the facility, the calculated allowed capacities of the proposed diameters of the poles provide sufficient safety for safely laying the foundations. The designed is given freedom to choose the pole diameter needed, depending on the real loads on the facility. It is recommended that the allowed capacities - calculated with the Mayerhof method - are adopted.



Small dusty sand, with insignificant elasticity, weakly compacted, grey color.

weakly granulated sand, with insignificant presence of dust, well-compacted, grey color.

small-grained sand, clean and well compacted, light brown color.

middle size sand of exceptional cleanness, sharp form grains and highly compacted, grey color.

small-grained sand, with a small percentage of sandy dust, very highly compacted, grey color.

**Depth m’**

**Thickness m’**

**NPV**

**Description**

**Symbol**

**Mark**

Cylinder

Paraphyn core

Classification tests

SPT

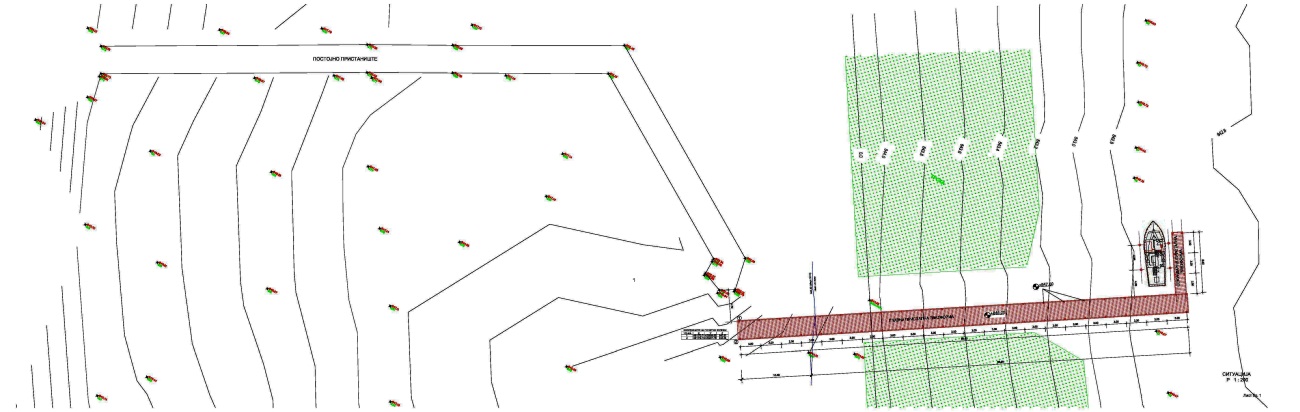
**D1 (0.00 - 10.00)**

**Mil-organic surface**

**Facility: Port at the village of Stenje, municipality of Resen**

**Figure 10 – Geo-mechanical profile**

**2.3.3. Disposition of the Port/Marine**

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**Figure 11 – Disposition**

Item 2.3.1. of the above description already pointed out that the cleared passage through the reed from the shore to the open lake will be used to enable access for the police boats. The cleared passage is 10.00 m wide and 40.00 m long (from the end of the existing port). The elevation point of the lake bottom at the end of the reed band is 843.30 m above sea level.

It is envisaged that the port be placed alongside the reed, on the part facing the village. Not only does such a position ensure free space for other vessels to access the shore, as well, but any new and additional clearing of the reed is thus avoided.

The disposition of the port helps maintain the input parameters required: at the access point, the depth is larger than the boats’ draft (at a minimum elevation point of the lake water of 844.00 m above sea level). In this, the elevation point of the lake bottom is 842.70 m above sea level. The platform is set at 1.50 m above sea level in the lake when the Basic Project was being developed, i.e. at an elevation point of 846.00 m above sea level

With the input parameters adopted, the total length of the port (main access platform) is L = 66.00 m (along the axis, between the poles at both ends). Of this length, at the time of development of the Basic Project, 10.30 m are on land, and the rest is in water. The port being of such length, its end is outside the reed band.

At the end of the access platform, a secondary platform is laid perpendicularly to the first one, to enable access to the boat procured. The length of this access platform is L = 9.00 m (along the axis, between the poles at both ends). In case of realization of the second phase (procurement of yet another boat), one more symmetrical secondary platform will be built, with a matching length.

The start of the main access platform is at a 3.00 m distance from the farther part of the end of the existing port.

**2.3.4. Construction**

The port is in the function of monitoring the Prespa Lake. The main and secondary platform will lead to the boat, which - when not in use - is elevated to a lift protected from water and waves and serves for the purpose of monitoring the Prespa Lake.

The main port platform is of an axis width of 2.85 m (axis width between the poles of 2.60 m) and axis length of 66.0 m, of which 11.40 m on land and the remaining 54.60 m in water). The secondary platform, set at a right angle to the main one, is 1.65 m wide, with a 9.00 m long axis, and entirely in water.

The platforms are supported by wooden poles with a diameter of D = 25 cm, and the boat lift lies on 4 wooden poles, with a diameter of D = 30 cm. The platform poles are positioned at a distance of 3.00 m in a horizontal line, and the traversal distance between the poles is 2.60 m for the main platform and 1.40 m for the secondary one. The total width of the main platform is 2.85 m, and that of the secondary one is 1.65 m. The platform floor is made of wooden planks with a height of 3.8 cm and width of 20 cm. The planks of the main platform lie on wooden beams - two end wooden beans with a cross-cut of 10/20 cm, length of 2.75 cm and one middle wooden beam with a cross-cut of 14/20 and a length of 2.99 m. The middle beam lies on traversal beams with a cross-cut of 14/20 and a length of 2.85 m, set at both sides of each pole. The end beams also lie on the transversal ones, but above the beds of the latter. The traversal beams of the poles lie across cheeks screwed to the poles with 2xM20 and 1xM20 screws, going through the horizontal main pillars and the pole. The cheeks are with a cut-cross of 14/30 and a length of 165 mm. In this part, the pole is processed on both sides, i.e. 2.5 cm canals are made, thus enabling complete contact of the poles with the cheeks. The cheeks outside the pole are of a length of 140 mm and the same width of the traversal main pillar. Sideways to the cheeks and the traversal main pillars, U-profiles 140 are placed on both sides. The planks of the wooden platform lie on end wooden planks with a cross-cut of 10/20 cm and length of 2.75 m. The end beams lie above the beds of the transversal beams, which have a cross-cut of 14/20 and a length of 1.6 m, set at both sides of each pole. The connection of the traversal beams and the poles is the same as the one on the main platform. The connection of the planks and the end and middle beams is secured with two nails under each support. The connection between the end and middle beams with the transversal main pillars Gnp is with angles, a M12 bolt and self-cutting screws.

The poles for the main and secondary platform are with a round cross-cut of a D = 25 diameter, and the poles for the lift with a round cross-cut of a D = 30 diameter. The depth to which the poles are rammed into the ground is defined in accordance with the geo-mechanical report and is 5.50 m above the terrain level + the length of the processed pole tip, which is 50 cm for poles with D = 25 and 60 cm for poles with D = 30 cm, so that the entire length of the poles on the terrain is L1 = 5.50 + 0.50 = 6.00 m, L2 = 5.50 + 0.60 = 6.10 m. Such lengths of putting the poles into the ground are in line with the recommendation of the geo-mechanical report that the poles penetrate not more than 0.5 - 1.0 m in the layer of weakly granulated, well-compacted sand; the D = 25 cm poles for the platforms penetrate 80 cm into this layer, and the poles of d = 30 cm for the lift go 90 cm into the layer. The geo-mechanical report also gives the individual pole capacity allowed, calculated by the Mayerhof method.

The poles need to be specially processed on both ends - at the end going into the terrain, the pole is processed by a spiky four-sided cut and steel boots are placed on such cut pole to protect the pole tip during the ramming, and a steel cone ring is placed on the upper part onto which force is applied, to protect the pole against splitting. Once the poles are rammed to the depth required, the pole that is higher than 50 cm above the required height is cut to the desired one, to remove the upper part that will probably be somewhat damaged by the blows during the ramming. The poles placed in such a way end in a decorative protective metal “cap”. The poles should also be processed in the part where the cheeks onto which the platform lies are placed.

Horizontal and vertical bracings are placed on the platform poles. The vertical ones are in fact two diagonals in the form of an ‘x’, placed on each side of the pole and one on the other side. The horizontal bracings are placed on the external sides of the port and are also x-shaped, but - unlike the vertical ones - these are placed on one side of the pole and, in addition to being screwed to the poles at the ends, they are also screwed one to another in the middle. The bracings are screwed to the poles with 2xM14 in each knot, and with 1xM14 to one another. These horizontal and vertical bracings are with dimensions of 6/20 cm. On the lift poles, only horizontal bracings are placed on the external sides in the form of an ‘x’; these bracings are with dimensions of 10/20 cm in a cross-cut.

In the case of all connections, one plate and two screws are affixed on one side of the screw.

On the D = 30 cm poles - foreseen to the supporting poles for the boat lift - once the lift is installed and the boat is put in place, an overhang for the boat may be constructed of stitchless steel pipes; the cover will be made of a stretched cloth placed only on top of the arches in the roof plane. It is foreseen that the overhang be constructed of Ф76.1 mm б = 3.2 mm, Ф114.3 mm б = 4.0 mm, Ф159 mm б=4.0 mm steel profiles, with the material being 0361 construction steel. The anchor construction is to be developed additionally, depending on the supporting space.

All steel joints are to be zinc-plated, the screws and screw nuts as well and of an 8.8 class, and the overhang is to be minimized and painted in two layers, in order to protect the metal elements against corrosion, as a part of them is in direct, and another part is indirect contact with water.

The wooden construction elements of the platforms and bracings (planks, bracings and main pillars Gnk, Gns and Gnp) need to be appropriately protected against the influence of water by impregnation with chemical conservation means, all in accordance with the rules for construction of wooden ports in water.

Care should be taken regarding the moisture of the wood for constructions directly exposed to water; for such a type of constructions, the wood moisture recommended is 18-20%.

Special attention needs to be paid to the protection at work, as the construction will be put up both in and under water, always in accordance with the legal provisions for such a type of construction facilities.

The entire construction is to be subjected to regular controls, while the connections, i.e. screws need to also be controlled periodically, i.e. depending on the durability of the means for protecting wood against atmospheric influences and insects, wood needs to be coated with primer, color and varnish.

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**Figure 12 – Port built on supporting poles**

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**Figure 13 – Pole tip**

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**Figure 14 – Overhang**

**2.3.5. Boat Lift**

It was already said previously in the technical description that installation of a boat lift is foreseen for elevating the boat to a safe level above the height of the maximum wave.

The boat life consists of an accepting platform (beams), which - when the boat is not harbored - is lowered into the water, to a depth larger than the boat’s draft. When the boat arrives to the port, the platform accepts it and lifts it to the height (elevation point) required.

Item 2.3.2 (Input Parameters) states the elevation points defining the movement of the boat lift, as follows:

* 844,00 m above sea level - the minimum level of the lake water over the past ten years or so
* 844,50 m above sea level - the level of the lake water at the time of development of the technical documentation
* 842,67 m above sea level – elevation point on the terrain, at the place where the boat lift is installed
* 846,50 m above sea level - elevation point on the lift platform when the boat is up
* 843,10 m above sea level - elevation point on the lift platform when the boat is lowered
* 0,80 m - boat draft

These elevation points ensure:

* Accepting the boat at a minimum level of the water in the late over the past ten years or so - 844.00 m above sea level. At this elevation point, the boat bottom is at an elevation point of 843.20 m above sea level and 0.53 m above the elevation point of the terrain at the access point.
* It was adopted that the elevation point on the upper side of the accepting platform of the boat lift is 843.10 m above sea level. This elevation point ensures 10.00 cm larger depth than the needed one, defined by the boat draft.
* The accepting lift platform rises to an elevation point of 846.50 m above sea level. This elevation point is 2.00 m higher than the elevation point of the lake at the time of development of the project (844.50 m above sea level), i.e. 50.00 cm above the height of the maximum wave. Such adopted elevation point of rising of the boat ensures its rising above the height of the maximum wave even when the water level rises to an elevation point of 845.00 m above sea level.

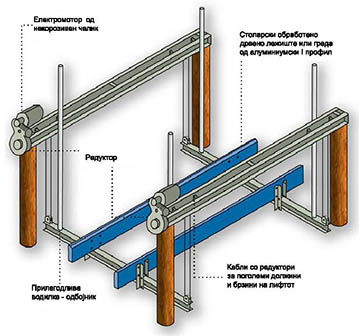
The elevation points adopted define the movement of the lift platform, which is H = 3.40 m (134”).

The boat lift is set on 4 poles, on which the main metal beams of the lift lie. The upper end of the poles onto which the boat lift construction lies is at an elevation point of 847.00 m above sea level.

The supply of the boat lift is not part of this tender. It will be delivered by another supplier hired by UNDP in a separate contract. However, the Construction Contractor responsible for the marine will be responsible for the installation of the boat lift under the supervision of representatives of the supplier.

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**Figure 15 – Two-engine boat lift**

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**Non-corrosive steel electric motor**

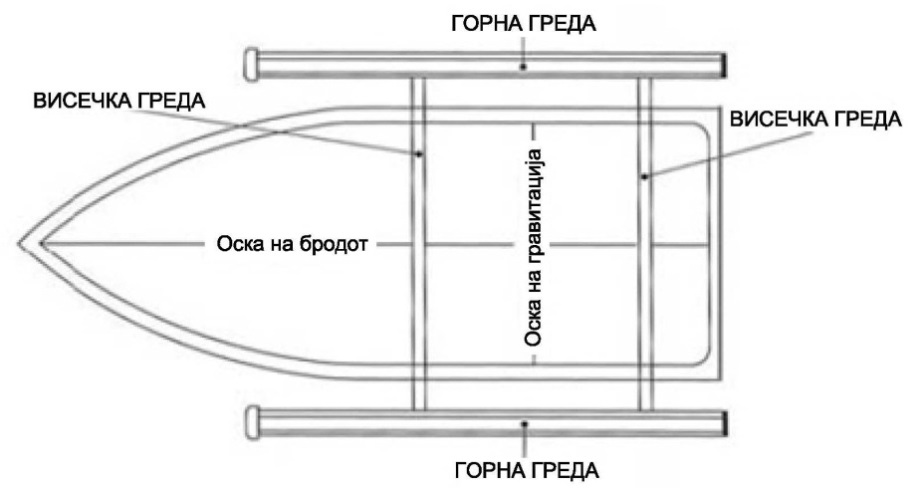
**Carpenter-style processed wooden support or an aluminum I profile beam**

**Reductor**

**Adjustable guiding bar**

**Cables with reductor for a longer and faster lift**

**Figure 16 – Construction of the boat lift with two engines**

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upper beam

hanging beam

hanging beam

upper beam

boat axis

Gravity axis

**Figure 17 –position of the boat in the lift**

The photos of the type of the port, the boat lift and the overhang are from the gallery of referent manufacturers of boat lifts.

* + - 1. **CONSTRUCTION**

The port is in the function of monitoring the Prespa Lake. The main and secondary platform will lead to the boat, which - when not in use - is elevated to a lift protected from water and waves and serves for the purpose of monitoring the Prespa Lake.

The main port platform is of an axis width of 2.60 m and an axis length of 66.0 m, of which 11.40 m on land and the remaining 54.60 m in water. The secondary platform, set at a right angle to the main one, has an axis wide 1.40 m wide and a 9.00 m long axis, and is entirely in water.

In March 2013, the level of the water in the lake was 844.50 m above sea level, the elevation point of the platforms was defined at 846.00 m, and the elevation point of the tip of all poles was set at 847.0o m, i.e. 1.00 m above the platforms.

The platforms are supported by wooden poles with a diameter of D = 25 cm, and the boat lift lies on 4 wooden poles, with a diameter of D = 30 cm. The platform poles are positioned at an axis distance of 3.00 m, and the traversal distance between the poles is 2.60 m for the main platform and 1.40 m for the secondary one. The total width of the main platform is 2.85 m, and that of the secondary one is 1.65 m. The platform floor is made of wooden planks with a height of 3.8 cm and width of 20 cm.

The planks of the main platform lie on wooden beams - two end wooden beans with a cross-cut of 10/20 cm, length of 2.75 m and one middle wooden beam with a cross-cut of 14/20 and a length of 2.99 m. The middle beam lies on traversal beams with a cross-cut of 14/20 and a length of 2.85 m, set at both sides of each pole. The end beams also lie on the transversal ones, but above the beds of the latter. The traversal beams of the poles lie across cheeks screwed to the poles with 2xM20 and 1xM20 screws, going through the horizontal main Gnp pillars and the pole, the cheeks are with a cut-cross of 14/30 and a length of 165 mm. In this part, the pole is processed on both sides, i.e. 2.5 cm canals are made, thus enabling complete contact of the poles with the cheeks and the cheeks outside the pole are of a length of 140 mm and the same width of the traversal main pillar. Sideways to the cheeks and the traversal main pillars, U-profiles 140 are placed on both sides. The planks of the wooden platform lie on Gnk end wooden planks with a cross-cut of 10/20 cm and length of 2.75 m. The Gnk end beams lie above the beds of the Gnp transversal beams, with a cross-cut of 14/20 and a length of 1.65 m, set at both sides of each pole. The connection of the traversal beams and the poles is the same as the one on the main platform. The connection of the planks and the end and middle beams Gnk and Gns is secured with two nails under each support. The connection between the end and middle beams Gnk and Gns with the transversal main pillars Gnp is with angles, a M12 bolt and self-cutting screws.

The poles for the main and secondary platform are with a round cross-cut of a D = 25 diameter, and the poles for the lift with a round cross-cut of a D = 30 diameter. The depth to which the poles are rammed into the ground is defined in accordance with the geo-mechanical report and is 5.50 m above the terrain level + the length of the processed pole tip, which is 50 cm for poles with D = 25 and 60 cm for poles with D = 30 cm, so that the entire length of the poles on the terrain is L1 = 5.50 + 0.50 = 6.00 m, L2 = 5.50 + 0.60 = 6.10 m; such lengths of putting the poles into the ground are in line with the recommendation of the geo-mechanical report that the poles penetrate not more than 0.5 - 1.0 m in the layer of weakly granulated, well-compacted sand; the D = 25 cm poles for the platforms penetrate 80 cm into this layer, and the poles of d = 30 cm for the lift go 90 cm into the layer. The geo-mechanical report also gives the individual pole capacity allowed, calculated by the Mayerhof method and, depending on the pole diameter, the capacity is: D=0.20m Q=189.22Kn, D=0.25m Q=295.66Kn , D=0.30m Q=425.75Kn , D=0.40m Q=756.89Kn.

The poles need to be specially processed on both ends - at the end going into the terrain, the pole is processed by a spiky four-sided cut and steel boots are placed on such cut pole to protect the pole tip during the ramming, and a steel cone ring is placed on the upper part onto which force is applied, to protect the pole against splitting. Once the poles are rammed to the depth required, the pole that is higher than 50 cm above the required height is cut to the desired one, to remove the upper part that will probably be somewhat damaged by the blows during the ramming. The poles placed in such a way end in a decorative protective metal “cap”. The poles should also be processed in the part where the cheeks onto which the platform lies are placed.

The height of the water level, defined at an elevation point of 844.50 m to the upper edge of the platforms is 1.50 m and is defined at an elevation point of 846.00 m, whereas the length of the platforms’ level is extended for an additional 1.00 m, and the upper edge of the pole is defined at an elevation point of 847.00 m.

Horizontal and vertical bracings are placed on the platform poles. The vertical ones are in fact two diagonals in the form of an ‘x’, placed on each side of the pole and one on the other side. The horizontal bracings are placed on the external sides of the port and are also x-shaped, but - unlike the vertical ones - these are placed on one side of the pole and, in addition to being screwed to the poles at the ends, they are also screwed one to another in the middle. The bracings are screwed to the poles with 2xM14 in each knot, and with 1xM14 to one another. These horizontal and vertical bracings are with dimensions of 6/20 cm. On the lift poles, only horizontal bracings are placed on the external sides in the form of an ‘x’; these bracings are with dimensions of 10/20 cm in a cross-cut.

In the case of all connections, one plate and two screws are affixed on one side of the screw.

On the D = 30 cm poles - foreseen to the supporting poles for the boat lift - once the lift is installed and the boat is put in place, an overhang for the boat may be constructed of stitchless steel pipes; the cover will be made of a stretched cloth placed only on top of the arches in the roof plane. It is foreseen that the overhang be constructed of Ф76.1 mm б = 3.2 mm, Ф114.3 mm б = 4.0 mm, Ф159 mm б=4.0 mm steel profiles, with the material being 0361 construction steel. The anchor construction is to be developed additionally, depending on the supporting space; the horizontal and vertical reactions are stated in the part containing the static calculations.

All steel joints are to be zinc-plated - just as the screws and screw nuts - with class 8.8, and the overhang is to be minimized and painted in two layers, to protect the metal elements against corrosion, as a part of them is in direct and another part in indirect contact with the water.

The wooden construction elements on the platforms and the bracings (planks, bracings and the Gnk, Gns and Gnp main pillars) are to be appropriately protected against the impact of water by impregnation with chemical means, all in accordance with the regulations on construction of wooden ports in water.

The minimum stress allowed for these construction elements are to be:

Stress at bending σmd=1000 N/cm2

Stress at stretching σtIId=850 N/ cm2

Stress under pressure σcIId=850 N/ cm2

Stress under pressure vertical to the fibers σc┴d=200 N/ cm2

Stress at erosion τIId=90 N/ cm2

Stress at erosion, vertical forces τmIId=90 N/ cm2

Stress at erosion, vertically to the fibers σc┴d=300 N/ cm2

All wooden poles (both those on land and in water) and cheeks are to be made of solid wood, properly protected against the impact of water by impregnation with chemical means and - following the construction of the poles and bracings - plated with a protective PVC foil, all in accordance with the regulations of construction of wooden poets in water. Care is also to be taken of the quality of the chemical means used in the impregnation process, in order to avoid pollution of the lake water.

The minimum stress allowed for these construction elements are to be:

Stress at bending σmd=1300 N/cm2

Stress at stretching σtIId=1050 N/ cm2

Stress under pressure σcIId=1100 N/ cm2

Stress under pressure vertical to the fibers σc┴d=200 N/ cm2

Stress at erosion τIId=90 N/ cm2

Stress at erosion, vertical forces τmIId=90 N/ cm2

Stress at erosion, vertically to the fibers σc┴d=350 N/ cm2

Care should also be taken regarding the moisture of the construction wood that is directly exposed to water: for such type of constructions, it is recommended that the wood moisture is 18-20%.

Particular attention is to be paid to the protection at work, as the construction will be built both in and under water, all pursuant to the legal regulations and other appropriate technical documentation on protection at work for such type of construction facilities.

The construction is to be controlled on a regular basis and in its entirety; the connections, i.e. screws and screw nuts are to be controlled and tightened up, depending on the durability of the means for protecting the wood against atmospheric influence and insects; for this purpose, it should be painted with primer, color, varnish and other chemical means for protecting wooden constructions in water.

* + - 1. **ELECTRICAL INSTALLATIONS**

**4.1. Introduction**

The Prespa Lake Monitoring Project encompasses several components, including the procurement of two boats equipped with monitoring equipment and the construction of a port for those boats.

In the first stage of the construction of the port, a secondary access platform and a lift construction will be built.

It is foreseen that a connection board is installed for the needs of the port, which will supply electricity to and command the engine drive of the lift envisaged; in addition, one three-phase and three mono-phase connection points will also be provided to connect the boat and to serve any other general needs, such as maintenance of the facility and the boat.

There access platform and the secondary one will be lit, so that they may be used at night.

**2.2. Supply of Electricity**

Electricity will be supplied to the port from the existing switchboard, located at a distance of cca. 12 m from the beginning of the access platform. The switchboard is connected to the existing transformer with a 4x50mm2 + FeZn25x4 cable.

A three-pole automatic fuse of the C25A; 3P, 6KA type will be installed in the existing switchboard, to supply the connection board of the port and the equipment for manual and automatic commands for the lighting of the port platform.

Electricity will be led to the connection board by a Н07-RNF-5х6мм2, installed partially into the ground, in an 18m ditch and in a hard corrugated PVC Ф32 pipe, placed on the construction of the port platform.

The pipe will be installed on the side of the horizontal central wooden beam of 14x20cm on the port platform.

The lights will be connected with a H07-RNF-5x2,5мм2, installed from the external board (HPO) to the beginning of the port platform, in a Ф23mm 0.6x1.2m pipe and in a plastic flexible hose resistant to UV radiation, placed on the side of the 10x20cm sideway wooden beam, above which the lights - poles for external lighting will be mounted.

In parallel with the supply cable, a protective line will be installed to ensure grounding of the metal poles for external lighting. A zinc-plated FeZn 30x4mm track on the port platform will be installed in P/L-Y-1x35mm2 in the part of the route where the cable is placed in the ground.

A connection switchboard is foreseen to cover the needs of the boat and the boat lift; the switchboard will be independent and mounted on the secondary platform. The connection switchboard will be set on a metal support, with two doors. When both doors of the board are closed, it has an IP65 degree of protection, and when the outside door is open, the protection degree is that of IP43.

Two cables of the type H07-RNF-3x2.5mm2 will be placed in a plastic flexible Ф23 pipe, to connect the electromotors (2) of the boat lift.

The protection against voltage of the external lighting and the connection and supply board is of a TN-C/S degree, while the motor drive of the boat lift and the connections in the connection switchboard will be protected by a electricity-differential protection with electricity with an error of 0.03 A.

Atmospheric discharges of the poles for lighting the port platform and the connection switchboard will be prevented by a special grounding, parallel to the supply cable and a FeZn30x4 tape placed in a ditch into the ground. The zinc-plated tape will be connected to the existing external switchboard and to the tape placed in parallel with the 4x50mm2 supply cable.

**2.3. Lighting of the Port Platform**

The lighting of the port platform will be ensured with externally mounted lights - park ones, installed on 2.5 m high metal poles. E27 light-bulbs of a 60W capacity will be used. The external lighting poles will be 2.5 m high and with a Ф25mm-diameter round anchor plate on the lower part of the pole, 100 mm up to a height of 1 m, while the remaining part will be with a diameter of Ф60mm. a protective “cap” is foreseen above the round plate. At a height of H=0.5m, a connection box with a lid will be fit on the first part of the pole; line entry-exit terminals and an automatic B10Al 3P, 6KA fuse will be built into the connection box. When the lid of the connection box is closed, the protection degree is IP54.

The pole is mounted on the wooden platform with 4 screws and screw nuts and supporting metal plates. Two screws, going through the horizontal 10x20cm beam will be 30 cm long, and the two remaining ones will be of a length of 50mm.

The entire material used for mounting and fixing the pole is to be hot zinc-plated.

The poles are placed at a mutual distance of 6m, and the proposed light and light source ensure a level of lighting of 15.7lx on the main platform of the port. The minimum lighting is 12.7lx and the maximum one 20.8lx. The proposed type is Zincometal ASTRA or equivalent, with an energy saving 60W(E27) and 4300lum. bulb - or a similar one, with comparable lighting, technical and mechanical features.

**ТЕХНИЧКА СПЕЦИФИКАЦИЈА**

1. **ГЕОТЕХНИЧКИ ИЗВЕШТАЈ**

***1.* Вовед**

Во рамките на проектот извршени се ограничени теренски истражни работи со цел да се дефинираат геотехничките услови за темелење на сув пристапен док за котвење на мали бродови на обалата на Преспанско Езеро.

Целта на истражните работи е да се определи пенетрационата отпорност на тлото преку стандарден динамички тест без обложни колони-без зацевување, во континуитет. Темелењето е предвидено да се направи со дрвени колови од кои мал број се на брегот, а поголем дел од нив ќе бидат лоцирани во езерото.

***2.* Теренски работи**

Теренските работи се изведени во втората половина на месец Март 2013. Во склоп на теренските истражни работи е извршено сондажно дупчење од една истражна дупнатина со длабочина H=10.0m’ четири стандардни динамички пенетрации (SPT-тест) до длабочина H=10m и набивање на два прототип-мини дрвени колови со правоаголен пресек 8cm/7.5cm, F=0.06m2.

Истражната дупнатина е лоцирана и изведена на обалата, на контакт со водената површина со обалата и истата е прикажана на ситуација пр.бр.1.

Сондажното дупчење е изведено машински со гарнитура GAK-300, ротационо, на суво со јадровање. Јадрото е сложувано во дрвени сандуци, извршено е геомеханичко картирање на истото in situ според АС-класификација и идентификација. Земени се проби уредно спакувани, обележени и транспортирани до лабораторија за одредување на гранулометрискиот состав.

SPT-тест, стандардна динамичка пенетрација извршена е со помош на конус со пречник D=50.8mm (2’’) и агол при врвот =600. Набивањето е вршено со тег G=63.5kg, висина на слободно паѓање h=76.3cm, набивањето е во континуитет (не во интервали) се до продирање на конусот h=30.4cm за одреден број на удари, регистрирањето на бројот на удари е вршено по побивање на конусот до длабочина H=50cm. Местоположбата на локациите каде е извршен SPT- тест се прикажани на ситуација(пр.бр.1).

Опитите кои се лоцирани на самата обала SPT-1 и пробен кол-1 извршени се машински со машинска гарнитура GAK-300.

Опитите во езерото се извршени со помош на рачна гарнитура поставена на понтонска платформа F=20m2 (4.5x4.5m) на која во централниот дел има отвор и опрема-плоча и водилка за центрирање и вертикално поставување на приборот за SPT-тестот и колот.

Првиот SPT-тест е изведен непосредно до истражната сондажна дупнатина Д-1, а останатите три по осовина на профилот (записниците од SPT–тестот се прикажани во прилог бр.5-12).

Пробни-прототип мини колови се изведени-набиени на две локации. Првата локација е непосредно до истражната дупнатина (на 1m) на самата обала, а вториот пробен кол е изведен приближно на крајот од платформата, односно на растојание 51m од обалата-структурната дупнатина (пр.бр.1).

Првиот кол е побиен до длабочина H=5m сметано од површината на теренот. Истиот е пробно оптоварен со контратовар од машината за дупчење натоварена со опрема. Товарот на колот е пренесен со хидраулична преса, а колот е натоварен со 2.3t во времетраење од 4.5 часа. За сето време не е забележано слегнување на колот, слегнувањето е мерено со микрометар поставен на ногари чии ослонци се оддалечени 1.2m од колот.

Вториот кол е побиен во езерото до длабочина 3.2m на растојание од L=51m од обалата непосредно до SPT-4. Побивањето е извршено многу бавно, со голем број на ударци и истото се должи најверојатно поради големата збиеност на езерските седименти, средно и ситнозрни песоци со релативна збиеност RD>81%.

За спречување од расцветување при побивање на главата на колот е поставена челична гривна- навлака од челичен лим =3mm и h=10cm. Врвот на колот е заострен на четири страни за обезбедување на симетричност. Врвот е заштитен со навлака од челичен лим =3mm и h=10cm прицврстена на самиот врв.

***3.* Геолошки профил**

Од извршеното картирање на откриените почвени материјали од истражната дупнатина, гранулометрискиот состав на истите, а земајќи ги во вид и резултатите од динамичката пенетрација (SPT) може да се дефинираат следните почвени материјали и нивните механички карактеристики.

0.00-2.00 OL Мил-органска прашина во многу растресита состојба (корења, трска, трева и слично).

2.00-3.40 ML Ситен прашинест песок со мала незначителна пластичност, слабо збиен, слабо консолидирани езерски седименти, сива боја.

3.40-5.20 SFs Слабо гранулиран песок со незначително присуство на прашина, средно

до добро збиен со релативна збиеност RD=34-58%, сива боја.

5.20-7.30 SP Ситнозрн песок, чист, добро збиен со релативна збиеност RD=68-79%,

светло кафена боја.

7.30-8.50 SP Среднозрн исклучително чист песок, острозрн и јако збиен со релативна збиеност RD>79%, сива боја.

8.50-10.00 SFs Песок, ситнозрн, со мал процент на песоклива прашина, многу јако збиен,

со релативна збиеност RD=81-92%, сива боја.

***4*. Пресметка на носивиот капацитет на почвата**

За ваков вид обекти и ограничениот обем на истражни работи, добиениот обем на податоци овозможуваат приближно прецизно дефинирање на условите за побивање на коловите како и пресметка на критичната и дозволената носивост.

Дефинирањето на дозволената носивост е извршена со две методи и тоа метода на Mayerhof и според емпириска корелација од резултатите од динамичка пенетрација и дозволената носивост.

Потребните физичко-механички карактеристики (агол на внатрешно триење и модул на еластичност, како и релативната збиеност) се добиени емпириски преку корелациони формули од резултатите од динамичка пенетрација.

Резултатите од извршените пресметки на дозолената носивост се дадени во Табела 1:

Табела бр.1

|  |  |  |
| --- | --- | --- |
| Дијаметар на  коловите  [m] | Метода на Маерхов  [KN] | Носивост според резултатите од  динамичката пенетрација  [KN] |
| 0.20 | 189.22 | 2484.84 |
| 0.25 | 295.66 | 3175.76 |
| 0.30 | 425.75 | 3894.55 |
| 0.40 | 756.89 | 5415.79 |

Пресметките и записниците од SPT тестовите се дадени во прилозите (пр.бр.5-8).

**Препораки:**

- Резултатите од динамичката пенетрација укажуваат дека после длабочина од 4.50-5.00m, слојот од слабо гранулиран песок е максимално збиен и е со моќност од 3.30 m, истиот се препорачува како слој за темелење на коловите, односно темелењето да се изврши во хоризонт сса-6.5m сметано од површината на теренот.

- После длабочина од 5.50m резултатите од динамичката пенетрација се доста високи, а се должат на природата на материјалот во која е изведена динамичката пенетрација, среднозрн слабогранулиран песок, и зрна со остри ивици кои даваат голем отпор на триење. Поради ова вредностите на аголот на внатрешно триење добиен според корелационата формула се нереално високи после оваа длабочина.

- Усвоен е агол на внатрешно тирење  = 360 и модул на стисливост Es = 28000 KN/m2.

- Резултатите од пресметките на модулот на еластичност и релативната збиеност ја потврдуваат добрата збиеност на слоевите од слабо гранулиран песок, а според овие резултати се очекува доста голем отпор при побивањето на колови во оваа средина.

- Се препорачува максималната должина на колови да не поминува L = 8.50-9.0 m, така да тие навлегуваат максимално 2.50–3.00m во слојот од слабо гранулиран, добро збиен песок.

- Горниот крај-главата на колот да се одрeжува нормално на неговата осовина. За заштита на главата на колот од расцветување за време на побивањето да се постави челична гривна-капа со длабочина h>10cm и дебелина >6mm. Врвот на колот да се изостри со длабочина h>1.5D, а на самиот врв да се постави навлака-чизма од челичен лим со дебелина =6-8mm и длабочина h=1.25d.

- Со оглед на видот на објектот пресметаните дозволени носивости запредложените

дијаметри на колови даваат доволна сигурност за безбедно темелење. Се остава слобода на проектантот да го одбере потребниот дијаметар на колот во зависност од реалните товари на објектот. Се препорачува да се усвојат дозволените носивости пресметани по методата на Mayerhof.

**2. ТЕХНИЧКИ ОПИС**

**2.1. ВОВЕД**

**2.1.1. Општо**

Во изминатиот повеќегодишен период, поради влијанието на повеќе фактори доаѓа до големо снижување на нивото на водата и постојана деградација на Преспанското Езеро и неговата околина; квалитетот на водата се влошува, доаѓа до загадување на подземјето, губење на дел од шумската покривка и ерозија на земјиштето.

Намалувањето на нивото на водата во езерото и за 6,00 m и негово задржување во подолг период на овие ниски нивоа го прави неупотребливо постојното пристаниште во Стење во кругот на полициската станица.

Во рамките на активностите за заштита на паркот Преспа и заштита на екосистемите од страна на сите корисници на истиот, спроведени се повеќе проекти финансирани од страна на повеќе агенции и фондови, а подржани и помогнати од локалната самоуправа, Министрерството за заштита на природната средина и просторно планирање и УНДП. Како дел од овие ативности во тек е реализација на проектот за специјализиран мониторинг на езерото.

Проектот за мониторинг на Преспанското Езеро опфаќа повеќе компоненти меѓу кои е набавка на два брода опремени со опрема за мониторинг и изградба на пристаниште за истите.

За изградба на пристаништето во текот на 2012 година од страна на Поинт Про Консалтинг е изработена студија во која се разгледувани повеќе можности, односно типови на пристаниште за ваква намена. Предмет на овој основен проект е изработка на техничка документација за изградба на пристаниште за бродовите за мониторинг (според усвоена варијанта во студијата).

**2.2. ЛОКАЦИЈА**

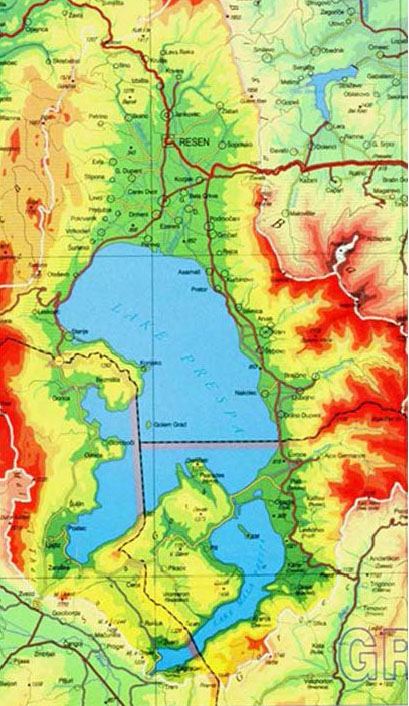
**2.2.1. Макролокација**

***а) Преспански регион***

Преспанското Езеро се наоѓа во југозападниот дел на државата. Делови на езерото припаѓаат и на Грција и Албанија.

Преспанското Езеро се состои од меѓусебно поврзаните Големо и Мало Езеро. Езерата се сместени на 850 м.н.в. и истите на Балканот претставуваат најголем природен воден базен со тектонско потекло. Преспанската котлина е дадена на лист бр. 1 од прилозите.

Вкупната површина на Преспанската Котлина изнесува 739 km2 и истата е поделена на копно со 562 km2 и водена површина од 177 km2. Оваа географска просторна целина се простира околу пресекот на во југозападниот дел на земјата околу пресекот на 410 с.г.ш. и 210 и.г.д. Котлината е ограничена со планините Баба на исток, Галичица на запад, Плакенска и Бигла на север и Горбач и пониските огранци на Галичица на југ.



**Слика 1 – Преспанско Езеро**

***б) Село Стење***

Стење е село во општина Ресен лоцирано на западниот брег на Преспанското Езеро во непосредна близина на границата со Албанија, со географски коорди-нати 40° 56' 31.02"Север, 20° 54' 28.54" Исток.

Селото Стење е распослано по должината на брегот на езерото. До него доаѓа и патот кој продолжува кон граничниот премин на границата со Албанија.

Селото денес е со 438 жители (попис од 2002 година). Истото е со задоволително развиена инфраструктура.



**Слика 2 – Стење, ситуација**



**Слика 3 – Стење, сателитска снимка**

****

**Слика 4 – Стење, панорамска снимка**

**2.2.2 Микролокација**

Со претходно извршените анализи е дефинирано микролокацијата на новопредвиденото пристаниште да биде во кругот на локацијата на поранешната полициска станица. Оваа микролокација на новопредвиденото пристаниште е избрана од повеќе причини како:

* Постои изграден пристапен пат
* Постои изградена инфраструктура
* Постои изграден цврст објект кој со реконструкција ќе може да одговори на потребите на службата за мониторинг
* Локацијата на постојните објекти и постојното пристаниште е на земјиште кое е во државна сопственост



**Слика 5 – Стење, панорамска (сателитска) снимка**

**на локацијата за пристаништето**

****

**Слика 6 – Постојно пристаниште во Стење**

**2.3. ТЕХНИЧКО РЕШЕНИЕ**

**2.3.1. Општо**

Основниот проект за изградба на пристаниште за бродовите за мониторинг е изработен според усвоената варијанта во претходно изработена. Со усвоената варијанта е предвидена изградба на пристаниште со главна пристапна платформа на чиј крај од двете страни се предвидени две конструкции со лифтови за издигање на бродовите на безбедно ниво над котата на водата во езерото и две секундарни платформи за пристап до двата брода.

Во првата фаза од изградбата на пристаништето ќе се реализира овозможување на пристанување и издигање на еден мониторинг брод (чија изработка е во тек).

За поставување на новопреденото пристаниште ќе се користи расчистениот премин низ трските од брегот до отворено езеро за пристап на бродовите на полицијата.



**Слика 7 – Постоечки расчистен премин низ трските**

**на местото на предвиденото пристаниште**



**Слика 8 – Усвоен тип на пристаниште**

**2.3.2. Влезни параметри**

***а) Мониторинг брод***

Едниот од бродовите за мониторинг (кој е веќе и нарачан) е со следните карактеристики:

* Должина: L = 9,15 m
* Ширина: B = 3,40 m
* Газ (максимум во вода): h = 0,80 m
* Тежина: G = 5 t



**Слика 9 – Мониторинг брод (договорен)**

***б) Хидролошки податоци***

Во периодот на изработка на студијата (ноември 2012 година) нивото на водата во езерото изнесувало 844,00 м.н.в.

Во периодот на изработка на Основниот проект (март 2013 година) нивото на водата во езерото е 844,50 м.н.в.

Веројатноста на појава на ниво на водата со кота > 844,00 м.н.в. е 100%.

Веројатноста на појава на ниво на водата со кота > 845,00 м.н.в. е 98%.

Веројатноста на појава на ниво на водата со кота > 846,00 м.н.в. е 84%.

Како минимално ниво на водата во езерото (утврдено и задржано во подолг период во последните десетина години) е дефинирано нивото на водата во езерото на кота 844,00 м.н.в.

Во периодот на изработка на Основниот проект нивото на водата е покачено и е на кота 844,50 м.н.в.

Местоположбата на поставувањето на лифтот за бродот треба да обезбеди длабочина поголема од газот на истиот (> 0,80 m). Усвоено е истата да изнесува hv = 1,30 m, односно кота 842,70 м.н.в.

Котата на пристапната платформа е усвоено да биде 1,50 m над нивото на водата во езерото во периодот на изработка на Основниот проект, односно 846,00 м.н.в.

Максималната височина на брановите при максималната брзина на ветерот од v = 68,04 km изнесува hb = 1,54 m.

Лифтот за издигнување на бродот треба да го издигне на височина поголема од височината на бранот, односно за hl = 1,55 m > hb = 1,54 m. При реперна кота на нивото на водата во езерото од 844,50 м.н.в. (период на изработка на Основниот проект), бродот треба да се издигне на кота 846,50 м.н.в.

Вака дефинираните коти обезбедуваат безбедно пристанување и безбедно чување на бродот за коти на нивото на водата во езерото до 844,50 м.н.в., кои се и реални коти во последните дванаесетинa години. Во случај котата на нивото на водата да ја надмине погоре наведената, ќе се изврши надвишување на носечките шипови, со што ќе се овозможи лифтовската конструкција да се издигне повисоко.

***в) Геомеханички карактеристики***

За утврдување на геомеханичките карактеристики на почвата на локацијата на пристаништето извршени се геомеханички истражни работи за што е изготвен и соодветен извештај.

Теренските работи се изведени во втората половина на месец март 2013. Во склоп на теренските истражни работи е извршено сондажно дупчење од една истражна дупнатина со длабочина H = 10.0 m’ четири стандардни динамички пенетрации (SPT-тест) до длабочина H = 10.0 m и набивање на два прототип-мини дрвени колови со правоаголен пресек 8 cm/7.5 cm, F = 0.06m2.

Истражната дупнатина е лоцирана и изведена на обалата, на контакт со водената површина со обалата.

SPT - тест, стандардна динамичка пенетрација извршена е со помош на конус со пречник D = 50.8 mm(2’’) и агол при врвот φ = 600. Набивањето е вршено со тег G = 63.5kg, висина на слободно паѓање h = 76.3 cm, набивањето е во континуитет (не во интервали) се до продирање на конусот Dh = 30.4 cm за одреден број на удари, регистрирањето на бројот на удари е вршено по побивање на конусот до длабочина H = 50 cm. Местоположбата на локациите каде е извршен SPT-тест се прикажани на ситуација во извештајот.

Од извршеното картирање на откриените почвени материјали од истражната дупнатина, гранулометрискиот состав на истите, а земајќи ги во вид и резултатите од динамичката пенетрација (SPT) може да се дефинираат следните почвени материјали и нивните механички карактеристики.

0.00-2.00 OL Мил - органска прашина во многу растресита состојба (корења, трска, трева и слично).

2.00-3.40 ML Ситен прашинест песок со мала незначителна пластичност, слабо збиен, слабо консолидирани езерски седименти, сива боја.

3.40-5.20 SFs Слабо гранулиран песок со незначително присуство на прашина, средно до добро збиен со релативна збиеност RD=34-58%, сива боја.

5.20-7.30 SP Ситнозрн песок, чист, добро збиен со релативна збиеност RD=68-79%, светло кафена боја.

7.30-8.50 SP Среднозрн исклучително чист песок, острозрн и јако збиен со релативна збиеност RD>79%, сива боја.

8.50-10.00 SFs Песок, ситнозрн, со мал процент на песоклива прашина, многу јако збиен, со релативна збиеност RD=81-92%, сива боја.

За ваков вид објекти и ограничениот обем на истражни работи, добиениот обем на податоци овозможуваат приближно прецизно дефинирање на условите за побивање на коловите како и пресметка на критичната и дозволената носивост.

Дефинирањето на дозволената носивост е извршена со две методи и тоа метода на Mayerhof и според емпириска корелација од резултатите од динамичка пенетрација и дозволената носивост.

Потребните физичко-механички карактеристики (агол на внатрешно триење и модул на еластичност, како и релативната збиеност) се добиени емпириски преку корелациони формули од резултатите од динамичка пенетрација.

Резултатите од динамичката пенетрација укажуваат дека после длабочина од 4.50-5.00m, слојот од слабо гранулиран песок е максимално збиен и е со моќност од 3.30 m, истиот се препорачува како слој за темелење на коловите, односно темелењето да се изврши во хоризонт сса-6.5m сметано од површината на теренот.

После длабочина од 5.50m резултатите од динамичката пенетрација се доста високи, а се должат на природата на материјалот во која е изведена динамичката пенетрација, среднозрн слабогранулиран песок, и зрна со остри ивици кои даваат голем отпор на триење. Поради ова вредностите на аголот на внатрешно триење добиен според корелационата формула се нереално високи после оваа длабочина.

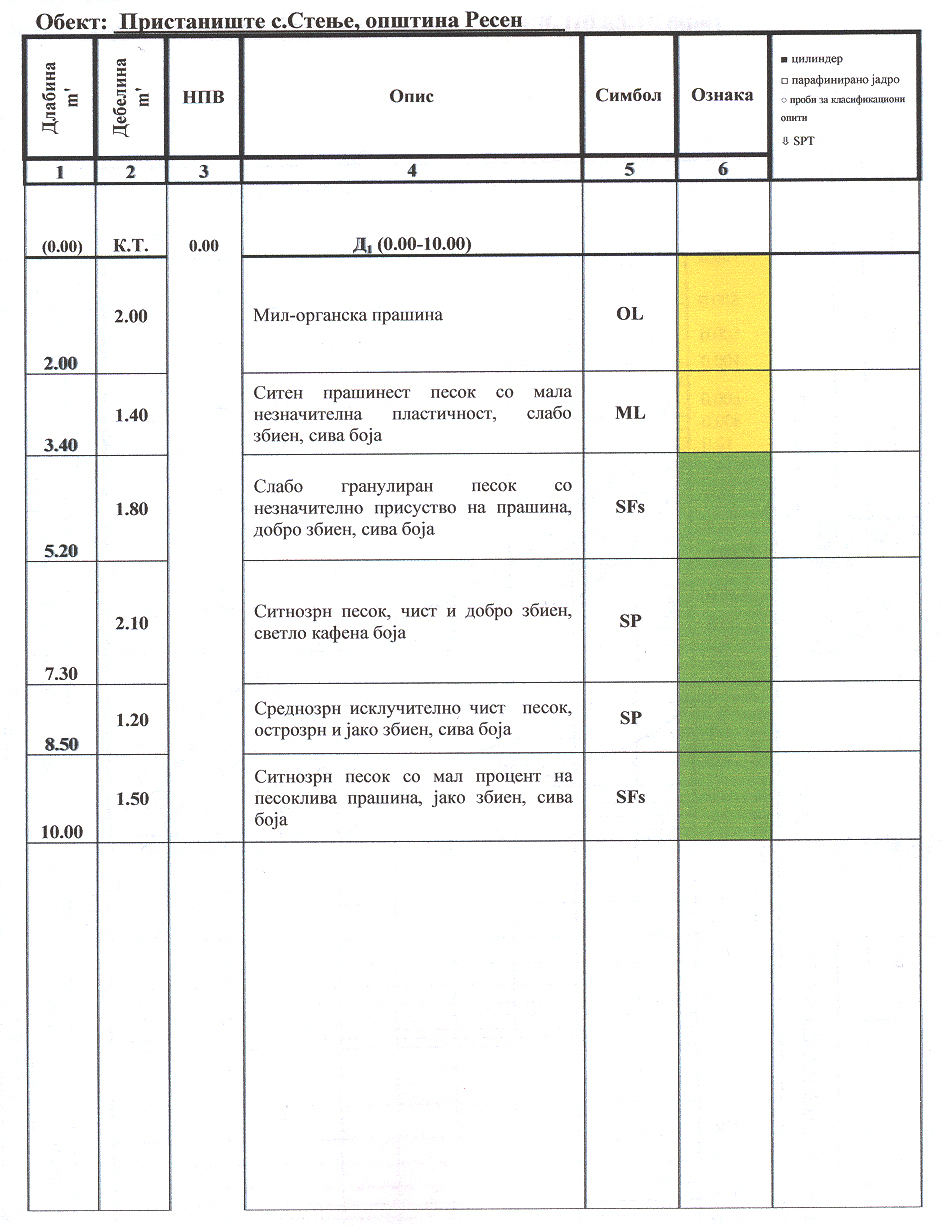
Усвоен е агол на внатрешно тирење ϕ = 360 и модул на стисливост Es = 28000 KN/m2.

Резултатите од пресметките на модулот на еластичност и релативната збиеност ја потврдуваат добрата збиеност на слоевите од слабо гранулиран песок, а според овие резултати се очекува доста голем отпор при побивањето на колови во оваа средина.

Се препорачува максималната должина на колови да не поминува L = 8.50-9.0 m, така да тие навлегуваат максимално 2.50 – 3.00 m во слојот од слабо гранулиран, добро збиен песок.

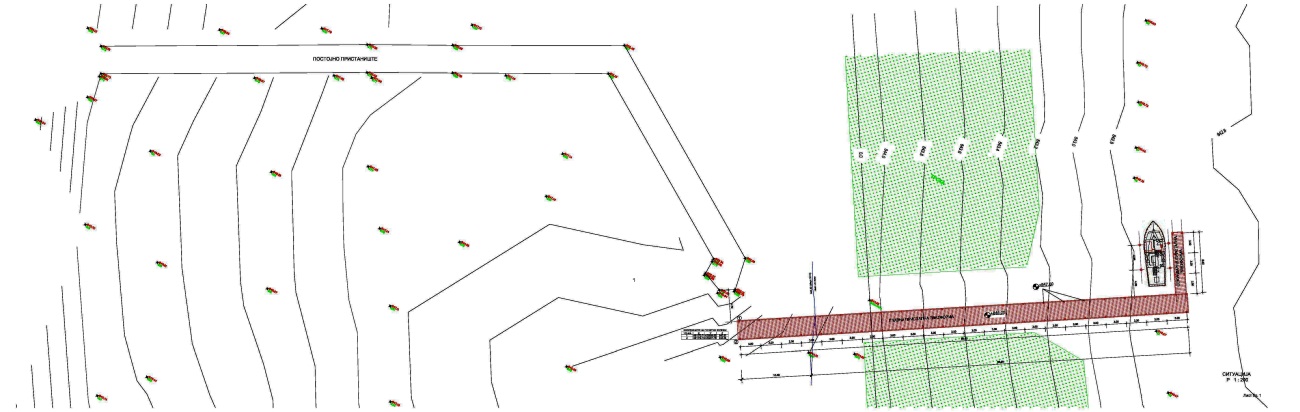
Горниот крај-главата на колот да се одрeжува нормално на неговата осовина. За заштита на главата на колот од расцветување за време на побивањето да се постави челична гривна-капа со длабочина h > 10 cm и дебелина d> 6 mm. Врвот на колот да се изостри со длабочина h > 1.5 D, а на самиот врв да се постави навлака - чизма од челичен лим со дебелина d = 6 – 8 mm и длабочина h = 1.25d.

Со оглед на видот на објектот, пресметаните дозволени носивости за предложените дијаметри на колови даваат доволна сигурност за безбедно темелење. Се остава слобода на проектантот да го одбере потребниот дијаметар на колот во зависност од реалните товари на објектот. Се препорачува да се усвојат дозволените носивости пресметани по методата на Mayerhof.



**Слика 10 – Геомеханички профил**

**2.3.3. Диспозиционо решение на пристаништето**

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**Слика 11 – Диспозиционо решение**

Во точка 2.3.1. од овој опис е веќе кажано дека за поставување на новопреденото пристаниште ќе се користи расчистениот премин низ трските од брегот до отворено езеро за пристап на бродовите на полицијата. Расчистениот премин е со широчина од 10,00 m и должина од 40,00 m (од крајот на постојното приста-ниште). Котата на дното на езерото на крајот од појасот со трски е 843,30 м.н.в.

Пристаништето е предвидено да се постави покрај трските од страна кон селото. Со ваква поставеност се обезбедува слободен простор за пристап и на други пловила до брегот, а истовремено се избегнува ново дополнително расчисту-вање низ трските.

Со диспозиционото решение на пристаништето се запазуваат бараните влезни параметри, односно на местото на пристанување на бродовите длабочина поголема од газот на бродовите (при минимална кота на водата во езерото од 844,00 м.н.в.) При тоа котата на езерското дно е 842,70 м.н.в. Платформата е поставена 1,50 m над нивото на водата во езерото во периодот на изработка на Основниот проект, односно на кота 846,00 м.н.в.

Со усвоените влезни параметри вкупната должина на пристаништето (главна пристапна платформа) изнесува L = 66,00 m (осовински помеѓу крајните шипови). Од оваа должина во моментот на изработка на Основниот проект 10,30 m се на суво а останатото во вода). Со оваа должина крајот на пристаништето е надвор од појасот со трски.

На крајот на пристапната платформа, нормално на истата е поставена секундар-ната платформа за пристап до набавениот брод. Должината на оваа пристапна платформа е L = 9,00 m (осовински помеѓу крајните шипови).. Во случај на реализација на втората фаза (набавка на уште еден брод), симетрично од другата страна ќе се изгради уште една секундарна платформа со должина која ќе одговара на истиот.

Почетокот на главната пристапна платформа е на растојание од 3,00 од најисту-рениот дел од крајот на постојното пристаниште.

**2.3.4.Конструкција**

Пристаништето е во функција на мониторинг на Преспанското езеро. Главната и секундарната платфома ќе водат до бродот кој кога не е во експлоатација е подигнат на лифт заштитен од вода и бранови и служи за мониторирање на преспанското езеро.

Главната платформа на пристаништето е со осовинска ширина од 2.85 m (осовинска ширина помеѓу шиповите 2,60 осовинска ширина) и осовинска должина од 66.00 m од кои 11.40 m се на суво а преостанатите 54.60 m се во вода. Секундарната платформа која во однос на главната е поставена под прав агол е со ширина од 1.65 m и осовинска должина од 9.00 m и целата е во вода.

Платформите се ослонуваат на дрвени колови со дијаметар D = 25 cm, а лифтот за бродот се ослонува на 4 дрвени колови со дијаметар D = 30 cm. Коловите за платформите во подолжен правец се позиционирани на 3.00 m осовинско растојание, а во попречен правец растојанието меѓу коловите изнесува 2.60 m за главната платформа и 1.40 m за секундарната платформа. Вкупната ширина на главната платформа изнесува 2.85 m, а на секундарната 1.65 m. Подот на платформите е од дрвени даски со висина 3.8 cm и ширина од 20 cm. Даските на главната платформа се ослонети на дрвени греди, две крајни дрвени греди со димензии во попречен пресек 10/20 cm, должина од 2.75 cm и една средишна дрвена греда со димензии во попречен пресек 14/20 cm и должина од 2.99 m. Средната греда се ослонува на попречни греди со димензии во попречен пресек 14/20 cm и должина од 2.85 m cm поставени од двете страни на секој кол. Крајните греди исто така се ослонуваат на попречните греди, но тие се ослонуваат над лежиштата на попречните греди. Попречните греди на коловите се ослонуваат преку образи кои се зашрафени за коловите со шрафови 2хМ20 и 1хМ20 кој поминува низ подолжните носачи и колот. Oбразите се со димензии во попречен пресек 14/30 cm и должина од 165 mm. Во тој дел колот е двострано обработен т.е. направено е жлебување од 2.5 cm при што е оформен целосен контакт на коловите со образите. Oбразите надвор од колот се со должина од 140 mm - истата ширина на попречниот носач. Бочно на образите и на попречните носачи се поставени U - профили 140 од двете страни. Даските на секундарната платформа се ослонети на дрвени крајни греди со димензии во попречен пресек 10/20 cm и должина од 2.75 m. Крајните греди се ослонуваat над лежиштата на попречни греди со димензии во попречен пресек 14/20 cm и должина од 1.6 m поставени од двете страни на секој кол. Врската на попречните греди и коловите е иста како кај главната платформа. Врската на даските и крајните и средишната греда е со по два клинци под секој ослонец. Врската на крајните и средишната греда со попречните носачи Gnp е со аголници, болт М12 и саморезни шрафови.

Коловите за главната и секундарната платформа се со кружен попречен пресек со дијаметар D = 25 cm, а коловите за лифтот се со кружен попречен пресек со дијаметар D = 30 cm. Длабината на побивање на коловите е одредена според геомеханичкиот извештај и истата од нивото на теренот изнесува 5.50м + должината на обработениот врв на колот кој за колови D = 25 cm изнесува 50 cm, а за колови D = 30 cm изнесува 60 cm, така да вкупната должина на коловите во теренот изнесува L1 = 5.50 + 0.50 = 6.00 m, L2 = 5.50 + 0.60 = 6.10 m. Со овие должини на побивање на коловие е запазена препораката од геомеханичкиот извештај да коловите навлегуваат максимално од 0.5 m до 1.0 m во слојот од слабо гранулиран, добро збиен песок, коловите со D = 25cm кои се за платфор-мите во овој слој навлегуваат 80 cm, а коловите со D = 30 cm кои се за лифтот во овој слој навлегуваат 90 cm. Во геомеханичкиот извештај е дадена и поединечната дозволена носивост на кол, пресметана по метода на Маерхов.

Коловите на едниот и на другиот крај потребно е посебно да се обработат, на крајот кој влегува во теренот колот се обработува со шилесто четиристано засекување и на така засечениот кол се поставуваат челични папучи како би го заштитиле врвот на колот при побивањето, а на горниот дел каде што се аплицира силата се поставува челичен конусен прстен кој би го заштитил колот од расукување при побивање. Одкако коловите ке се набијат до потребната длабочина, колот кој е со висина нешто поголема од 50 cm од потребната висина се отсекува до потребната висина со што горниот дел кој што најверојатно би бил малце оштетен од ударите при побивањето се отстранува. Така поставените колови на горниот раб завршуваат со украсна заштитна металнa “капа”. Коловите исто така треба да се обработат во делот кај што се поставуваат образите на кои што е ослонета платформата.

На коловите за платформите се поставуваат спрегови во подолжен и попречен правец. Спреговите во попречен правец се две дијагонали во форма х, поставени по една од едната страна на колот и една од другата страна на колот. Спреговите во подолжен правец се поставуваат од надворешните страни на пристаништето и овие спрегови се во форма х меѓутоа за разлика од попречните овие се поставуваат на едната страна на колот, и покрај шрафењето на краевите за коловите и во средината се зашрафуваат меѓу себе. Шрафењето на спреговите со коловите е преку 2 х М14 во секој јазол а спреговите помеѓу себе со 1 х М14. Овие спрегови во попречен и подолжен правец се со димензии 6/20 cm. На коловите за лифтот се поставуваат спрегови само во подолжен правец од надворешните страни во форма х - овие спрегови во попречен пресек се со димензии 10/20 cm.

Кај сите врски на една страна од навојниот шраф се поставува по една плочка и по две навртки.

На коловите D = 30 cm на кои е предвидено да се постави лифт за брод, откако ќе се постави лифтот и бродот ке биде на лице место, може да се направи надстрешница за бродот која е предвидена од безшавни челични цевки и за кровен покривач е предвидено затегнато платно кое се поставува само на лаковите во кровната рамнина. Надстешницата е предвидена од челични профили Ф76.1 mm б = 3.2 mm, Ф114.3 mm б = 4.0 mm, Ф159 mm б=4.0 mm, материјал челик за конструкции 0361. Анкерната конструкција дополнително да се разработи во зависност од просторот за ослонување.

Сите челични спојни елементи да бидат поцинкувани, завртките и навртките да бидат исто така поцинковани и со класа 8.8, а надстрешницата да биде минизирана во два слоја и фарбана во два слоја, како би се заштитиле металните елементи од корозија бидејќи дел од нив се во директен контакт со вода а дел во индиректен.

Дрвените конструктивни елементи на платформите и спреговите (даските, спреговите и носачите Gnk, Gns и Gnp) да бидат соодветно заштитени од дејство на вода, заштита со импрегнација со хемиски конзервански, се според прописите за изградба на дрвени пристаништа во вода.

Да се внимава на влажноста на дрвото за конструкции кои се директно изложени со вода, за ваков тип на конструкции влажноста на дрвото се препорачува да изнесува 18-20%.

Особено да се внимава за заштитата при работа бидејќи конструкцијата ќе се работи во вода и под вода, во се според законските прописи за ваков тип на градежни објекти.

Редовно да се врши контрола на конструкцијата во целост, да се контролираат и дозатегаат врските т.е. навртките и периодично т.е. зависно од трајноста на средствата за заштита на дрвото од атмосверски влијанија и инсекти истото да се премачкува со прајмер, боја и лак.

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**Слика 12 – Пристаниште на шипови**

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**Слика 13 – Врв на шип**

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**Слика 14 – Надстрешница**

**2.3.5. Бродски лифт**

Во техничкиот опис претходно е веќе кажано дека за издигнување на бродот на безбедно ниво над висината на максималниот бран е предвидена монтажа на бродски лифт.

Бродскиот лифт се состои од прифатна платформа (греди) која кога бродот не е во пристаништето е спуштена во вода на длабочина поголема од газот на истиот. Кога бродот ќе дојде во пристаништето платформата го прифаќа и го издигнува на потребната висина (кота).

Бо точка 2.3.2. (Влезни параметри) се наведени висинските коти со кои се дефинира одот на бродскиот лифт и истите се:

* 844,00 м.н.в. - минимално ниво на водата во езерото во последните десетина години
* 844,50 м.н.в. - ниво на водата во езерото во период на изработка на техничката документација
* 842,67 м.н.в. – кота на терен на местото каде се поставува бродскиот лифт
* 846,50 м.н.в. - кота на лифтовската платформа во крената положба на бродот
* 843,10 м.н.в. - кота на лифтовската платформа во спуштена положба
* 0,80 m - газ на бродот

Со овие коти се обезбедува:

* Прифаќање на бродот при минималното ниво на вода во езерото во последните десетина години - 844,00 м.н.в. При оваа кота дното на бродот е на кота 843,20 м.н.в. и е 0,53 m над котата на теренот на пристапното место.
* Котата на горната страна на прифатната платформа на бродскиот лифт е усвоено да биде 843,10 м.н.в. Со оваа кота се обезбедува 10,00 cm поголема длабочина од потребната – дефинирана со газот на бродот.
* Прифатната лифтовска платформа се издигнува на кота 846,50 м.н.в. Оваа кота е 2,00 m повисоко од котата на езерото во периодот на изработка на проектот (844,50 м.н.в.), односно 50,00 cm над висината на максималниот бран. Вака усвоената кота на издигнување на бродот обезбедува негово издигнување над висината на максималниот бран и при покачување на нивото на водата во езерото до кота 845,00 м.н.в.

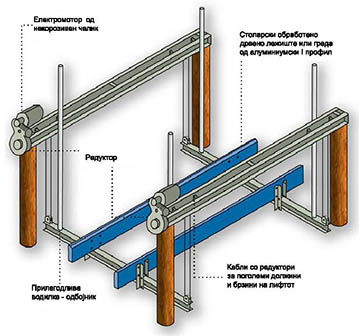
Усвоените коти го дефинираат одот на лифтовската платформа и истиот изнесува H = 3,40 m (134”).

Бродскиот лифт се поставува на 4 шипа на кои се ослонуваат носечките метални греди на лифтот. Горниот крај на шиповите на кој се ослонува конструкција на бродскиот лифт е на кота 847,00 м.н.в.

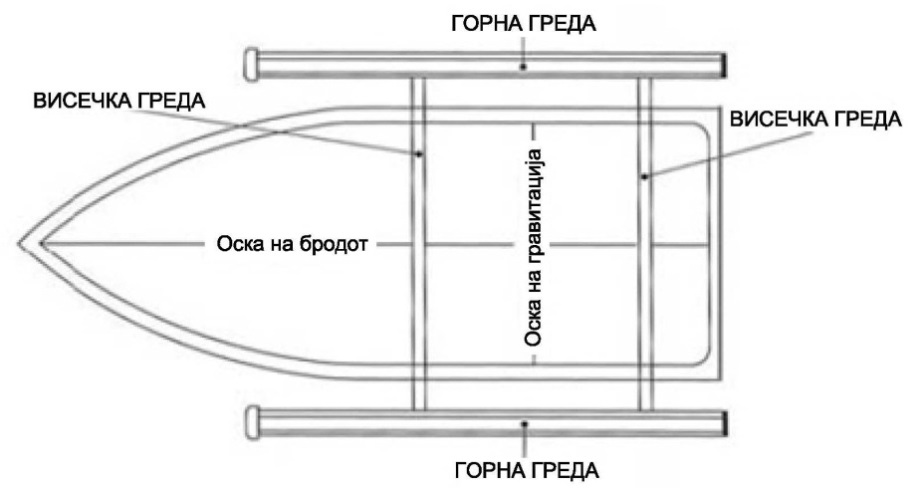
Набавката на бродскиот лифт не е дел од овој тендер. Лифтот ќе биде обезбеден од страна на друга фирма која ќе биде одделно ангажирана од страна на УНДП. Сепак, изведувачот на пристаништето ќе биде одговорен за монтажата на бродскиот лифт под стручен надзор на претставник на добавувачот.

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**Слика 15 – Бродски лифт со два мотора**

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**Слика 16 – Конструкција на бродскиот лифт со два мотора**

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**Слика 17 – Положба на бродот во лифтот**

Фотографиите за типот на усвоеното пристаниште, бродскиот лифт и надстрешницата се од галеријата на референтени производители на бродски лифтови.

**3. КОНСТРУКЦИЈА**

Пристаништето е во функција на мониторинг на Преспанското езеро. Главната и секундарната платфома ќе водат до бродот кој кога не е во експлоатација е подигнат на лифт заштитен од вода и бранови и служи за мониторирање на преспанското езеро.

Главната платформа на пристаништето е со осовинска ширина од 2.60м и осовинска должина од 66.0м од кои 11.4м се на суво а преостанатите 54.6м се во вода, секундарната платформа која во однос на главната е поставена под прав агол е со осовинска ширина од 1.40м и осовинска должина од 9.0м и целата е во вода.

Висинската кота на водата на езерото во март 2013год. изнесува 844.5м, котата на платформите е дефинирана на 846.0м, а котата на врвот на сите колови е дефинирана на 847.0м односно 1.0м над платформите.

Платформите се ослонуваат на дрвени колови со дијаметар Д=25см, а лифтот за бродот се ослонува на 4 дрвени колови со дијаметар Д=30см. Коловите за платформите во подолжен правец се позиционирани на 3.0м осовинско растојание, а во попречен правец растојанието меѓу коловите изнесува 2.6м за главната платформа и 1.4м за секундарната платформа. Вкупната ширина на главната платформа изнесува 2.85м а на секундарната

1.65м. Подот на платформите е од дрвени даски со висина 3.8см и ширина од 20см. Даските на главната платформа се ослонети на дрвени греди, две крајни дрвени греди Gnk со димензии во попречен пресек 10/20см и должина од 2.75м, и една средишна дрвена греда Gns со димензии во попречен пресек 14/20см и должина од 2.99м. Средната греда Gns се ослонува на попречни греди Gnp со димензии во попречен пресек 14/20см и должина од 2.85м поставени од двете страни на секој кол. Крајните греди Gnk исто така се ослонуваат на попречните греди Gnp но тие се ослонуваат над лежиштата на попречните греди. Попречните греди на коловите се ослонуваат преку образи кои се зашрафени за коловите со шрафови 2хМ20 и 1хМ20 кој поминува низ подолжните носачи Gnp и колот, образите се со димензии во попречен пресек 14/30см и должина од 165мм, во тој дел колот е двострано обработен т.е. направено е жлебување од 2.5см при што е оформен целосен контакт на коловите со образите и образите надвор од колот се со должина од

140мм истата ширина на попречниот носач. Бочно на образите и на попречните носачи се поставени У-профили 140 од двете страни. Даските на секундарната платформа се ослонети на дрвени крајни греди Gnk со димензии во попречен пресек 10/20см и должина од 2.75м. Крајните греди Gnк се ослонува над лежиштата на попречни греди Gnp со димензии во попречен пресек 14/20см и должина од 1.65м поставени од двете страни на секој кол. Врската на попречните греди и коловите е иста како кај главната платформа. Врската на даските и крајните и средишната греда Gnk и Gns е со по два клинци под секој ослонец. Врската на крајните и средишната греда Gnk и Gns со попречните носачи Gnp е со аголници, болт М12 и саморезни шрафови.

Коловите за главната и секундарната платформа се со кружен попречен пресек со дијаметар Д=25см, а коловите за лифтот се со кружен попречен пресек со дијаметар Д=30см. Длабината на побивање на коловите е одредена според геомеханичкиот извештај и истата од нивото на теренот изнесува 5.50м + должината на обработениот врв на колот кој за колови Д=25см изнесува 50см, а за колови Д=30см изнесува 60см, така вкупната должина на коловите во теренот изнесува L1=5.50+0.50=6.00m, L2=5.50+0.60=6.10m и со овие должини на побивање на коловие е запазена препораката од геомеханичкиот извештај да коловите навлегуваат максимално од 0.5м до 1.0м во слојот од слабогранулиран, добро збиен песок, коловите со D=25sm кои се за платформите во овој слој навлегуваат 80см, а коловите со D=30sm кои се за лифтот во овој слој навлегуваат

90см. Во геомеханичкиот извештај е дадена и поединечната дозволена носивост на кол,

пресметана по Метода на Маерхов и зависно од дијаметарот на колот носивоста изнесува: D=0.20m Q=189.22Kn , D=0.25m Q=295.66Kn , D=0.30m Q=425.75Kn, D=0.40m Q=756.89Kn .

Коловите на едниот и на другиот крај потребно е посебно да се обработат, на крајот кој влегува во теренот колот се обработува со шилесто четиристано засекување и на така засечениот кол се поставуваат челични папучи како би го заштитиле врвот на колот при побивањето, а на горниот дел каде што се аплицира силата се поставува челичен конусен прсрен кој би го заштитил колот од расукување при побивање, одкако коловите ке се набијат до потребната длабочина, колот кој е со висина нешто поголема од 50см од потребната висина се отсекува до потребната висина со што горниот дел кој што најверојатно би бил малце оштетен од ударите при побивањето се отстранува. Така поставените колови на горниот раб завршуваат со украсна заштитна металан “капа”. Коловите исто така треба да се обработат во делот кај што се поставуваат образите на кои што е ослонета платформата.

Висината од нивото на водата дефинирана на висинска кота 844.50м до горниот раб на платформите изнесува 1.50м и е дефинирана на висинска кота 846.00м, а должината на колот од нивото на платфомите се продолжува за дополнителен 1.00м и горниот раб на колот е дефиниран на висинска кота 847.00м.

На коловите за платформите се поставуваат спрегови во подолжен и попречен правец. Спреговите во попречен правец се две дијагонали во форма х, поставени по една од едната страна на колот и една од другата страна на колот. Спреговите во подолжен правец се поставуваат од надвошните страни на пристаништето и овие спрегови се во форма х меѓутоа за разлика од попречните овие се поставуваат на едната страна на колот, и покрај шрафењето на краевите за коловите и во средината се зашрафуваат меѓу себе. Шрафењето на спреговите со коловите е преку 2хМ14 во секој јазол а спреговите помеѓу себе со 1хМ14, овие спрегови во попречен и подолжен правец се со димензии 6/20см. На коловите за лифтот се поставуваат спрегови само подолжен правец од надворешните страни во форма х, овие спрегови во попречен пресек се со димензии 10/20см.

Кај сите врски на една страна од навојниот шраф се поставува по една плочка и по две навртки.

На коловие Д=30см на кои е предвидено да се постави лифт за брод, одкако ке се постави лифтот и бродот ке биде на лице место може да се направи надстрешница за бродот која е предвидена од безшавни челични цевки и за кровен покривач е предвидено затегнато платно кое се поставува само на лаковите во кровната рамнина. Надстешницата е предвидена од челични профили Ф76.1мм б=3.2мм, Ф114.3мм б=4.0мм, Ф159мм б=4.0мм, материјал челик за конструкции 0361. Анкерната конструкција од неподвижни лежишта дополнително да се разработи во зависност од просторот за ослонување, хоризонталните и вертикалните реакции се наведени во делот на статичката пресметка.

Дрвените конструктивни елементи на платформите и спреговите (даските, спреговите и носачите Gnk, Gns и Gnp) да бидат соодветно заштитени од дејство на вода, заштита со имрегнација со хемиски конзервански, се според прописите за изградба на дрвени пристаништа во вода.

Минималните дозволени напрегања за овие конструктивни елементи да изнесуваат:

Напрегање на Свиткување σmd=1000 N/sm2

Напрегање на Затегнување σtIId=850 N/sm2

Напрегање на Притисок σcIId=850 N/sm2

Напрегање на Притисок нормално на влакната σc┴d=200 N/sm2

Напрегање на Смолкнување τIId=90 N/sm2

Напрегање на Смолкнување попречни сили τmIId=90 N/sm2

Напрегање на Смолкнување нормално на влакната σc┴d=300 N/sm2

Сите дрвениколови (коловите на суво и коловите во вода) и образи да бидат од тврдо дрво, соодветно заштитени од дејство на вода, заштита со имрегнација со хемиски конзервански а по изведбата коловите и спреговите да бидат обложени со заштитна пвц фолија, се според прописите за изградба на дрвени пристаништа во вода. Да се води сметка и на квалитетот на хемиските средствата кои што ке се употребуваат за импрегнација, со цел да не дојде до загадување на езерската вода.

Минималните дозволени напрегања за овие конструктивни елементи да изнесуваат:

Напрегање на Свиткување σmd=1300 N/sm2

Напрегање на Затегнување σtIId=1050 N/sm2

Напрегање на Притисок σcIId=1100 N/sm2

Напрегање на Притисок нормално на влакната σc┴d=200 N/sm2

Напрегање на Смолкнување τIId=90 N/sm2

Напрегање на Смолкнување попречни сили τmIId=90 N/sm2

Напрегање на Смолкнување нормално на влакната σc┴d=350 N/sm2

Да се внимава на влажноста на дрвото за конструкции кои се директно изложени со вода, за ваков тип на конструкции влажноста на дрвото се препорачува да изнесува 18-20%.

Особено да се внимава за заштитата при работа бидејќи конструкцијата ќе се работи во вода и под вода, во се според законските прописи и друга соодветна техничка документација за заштита при работа за ваков тип на градежни објекти.

Редовно да се врши контрола на конструкцијата во целост, да се контролираат и дозатегаат врските т.е. навртките и периодично т.е. зависно од трајноста на средствата за заштита на дрвото од атмосверски влијанија и инсекти истото да се премачкува со прајмер, боја, лак и други хемиски средства за заштита на дрвена конструкција во вода.

**4. Технички Опис Електро Инсталации**

**2.1. Вовед**

Проектот за мониторинг на Преспанското Езеро опфаќа повеќе компоненти меѓу кои е

набавна на два брода опремени со опрема за мониторинг и изградба на пристаниште за истите.

Предметот на овој проект е изградба на техничка документација за изградба на

пристаниште за бродовите за мониторинг, со изградба на главна пристапна платформа на чиј крај од двете страни се предвидени две конструкции со лифтови за издигање на бродовите на безбедно ниво и две секундарни платформи за пристап до двата брода.

Бо прва фаза од изградбата на пристаништето ќе се реализира изградбата на една

секундарна платформа за пристап до бродот и една конструкција со лифт.

За потребите на пристаништето предвидено е да се изведе еден приклучен ормар од кој

ќе се напојува и командува моторниот погон на предвидениот лифт и ќе се обезбедат еден трофазен и три монофазни шуко приклучоци за приклучување на бродот како и за општи потреби – одржување на објектот и бродот.

За пристанишната платформа о секундарната платформа предвидено е осветлување со кое ќе се овозможи користење на пристанишната платформа во ноќни услови.

**2.2. Напојување со ел. Енергија**

Напојувасњето на пристаништето со ел. Енергија ќе се изведе од постоечки разводноприклучен ормар кој е лоциран на растојание од с.с.а. 12 м. Од 77почетокот

на пристанишната платформа.

Разводно приклучниот ормар со одеземен кабел 4х50мм2 + FeZn25x4mm е поврзан на

постоечка трафостаница.

Во постоечкиот разводен ормар предвидено е да се монтира еден трополен автоматски

осигурач тип С25А;3Р,6КА за напојување на приклучниот ормар на пристаништето и опремата за мануелно и абтоматско командување на осветлувањето на пристанишната платформа.

Напојувањето на приклучниот ормар за пристаништето ќе се изведе со кабел Н07-RNF5х6мм2 поставен делумно во земја во ров (18м) и во ртута „Јувидор“ цевка Ф32 поставена на конструкција од пристанишна платформа.

Цевката се монтира на бочната страна од подлжната централна дрвена греда 14џ20см на

пристанишната платформа.

Светилките се поврзуваат со кабел H07-RNF-5x2,5мм2 , поставен од надворешниот ормар (НРО) до почеток на пристанишмната платформа во цевка во ров 0,6х1,2м. и во пластично совитливо црево отпорно на UV зрачење; Ф23мм; поставен на бочната страна од страничната дрвена греда 10х20см. Над која се монтираат светилките-столбовите за надворешно советлување.

Паралелно со напојниот кабел се поставува и заштитен вод, за заземјување на металните столбови за надворешно осветлување. Во делот на трасата каде кабелот се полага во земја се поставува поцинкована лента FeZn 30x4mm а на пристанипната платформа воф P/L-Y-1x35mm2.

За потребите на бродот и бродскиот лифт предвиден е приклучен разводен ормар,

слободностоечки кој се монтира на секундарната платформа. Приклучнио-разводниот ормар епредвидено да биде слободносотечки поставен на метално постоље, со две врати. При затварање на двете врати ормарот има степен на заштита IP65, а при отварање на надворешната вратаормарот има степен на заштита IP43.

За приклучување на електромоторите (2) од бродскиот лифт, предвидено е да сепстават

два кбали тип H07-RNF-3x2,5мм2 поставени во метално пластифицирнао совитливо црево Ф23.

Заштитата од допирен напон еза надворешното осветление и за приклучно доводниот

ормар е со степен TN-C/Ѕ, а за затита на моторниот погон од бродскиот лифт и приклучоците воприклучниот разбоден ормар предвидено е струјно-диференцијална заштита со стртуја на грешкаод 0,03А.

За заштита от атмосверски празненања на столбовите за осветлување на пристанишната

платформа и приклучно разводнииот ормар предвидено е посебно заземјување паралелно со напјниот кабел и FeZn30x4mm во земја во ров. Поцинкуиватата лента 30х4ммпредвидено е да се поврзе со постојниот надворешен разводен ормар и лентата која е поставена паралелно со напојниот кабел 4x50mm2.

**2.3. Осветлување на пристанишната платформа.**

Осветлувањето на плристанишната платформа предвидено е да се изведе со светилки за надворешна монтажа – парковски светилки, поставени на метални столбови со висина од 2,5м. Во светилките предвидено е да се уградат сијалици со грло Е27 и моќност од 60W. Столбовите за надворешно осветление се со висина од 2,5м со кружна анкер плоча Ф250мм дијаметар на долниот дел од столбот 100мм до висина од 1м и останатиот дел Ф60мм.Над кружната анкер плоча предвидена е заштитна „капа“. Во првиот дел на столбод на висина Н=0,5м е поставена приклучна кутја со капак, во која се вградени редни клеми влез-излез и еден автоматски осигурач В10А;3Р,6КА. При затворен капак на приклучната кутија степенот на заштита е IP54 2.

Столбот се монтира на дрвената платформа со 4 навртки и заврстки и помошни метални

плочи. Две навртки кои поминуваат низ подолжната греда 10х20см се со должина од 30см, а останаите две со должина од 50мм.

Целокупниот материјал кој се користи за монтажа и присврстување на столбот треба да

биде топлопоцинкуван.

Столбовите се поставуваат на меѓусебно растојание од 6м, а со предложената светилка и

светлосниот извор се постигнува ниво на осветленеие од 15,7lx на главната платформа од пристаништето. Минималната осветленост е 12,7lx а максималната е 20,8lx. Предложената светилак тип Zincometal ASTRA со штедлива сијалица од 60W(E27) и 4300lum. или слична со споредливи свелотехнички и механички карактеристики.

Section 3b: Related Services

Further to the Schedule of Requirements in the preceding Table, Bidders are requested to take note of the following additional requirements, conditions, and related services pertaining to the fulfillment of the requirements :

|  |  |
| --- | --- |
| Exact Address of Delivery/Installation Location | **The site area, the village of Stenje is located 23 km western of Resen.** |
| Customs, if needed, clearing shall be done by: | **☒ UNDP**  ☐ Contractor  ☐ Freight Forwarder |
| Inspection upon delivery | **The quality and timeliness of the construction works will be controlled through regular technical supervision in accordance with the relevant legal requirements. For this purpose UNDP will hire authorized Supervising Engineer with relevant qualifications.  The structure (access) will be subject to standard commissioning procedure in accordance to the existing legal requirements.** |
| Payment Terms | **☒ On a monthly basis, within 30 days upon UNDP’s receipt of invoice/IPC by the supervisor, duly signed with supporting documents: daily logs, measurement sheets, related drawings** |
| Conditions for Release of Payment | ☐ Pre-shipment inspection *[pls. provide details]*  ☐ Inspection upon arrival at destination *[pls. provide details]*  **☒ Finalization of works**  **☒ Testing**  ☐ Training on Operation and Maintenance *[pls. provide details]*  **☒ Written Acceptance of Works based on full compliance with ITB requirements**  ☐ Others |
| After-sale services required | **☒ Warranty on performed works for minimum period of 12 months**  **☒ Technical Support**  **☒ Repair**  ☐ Others |
| All documentations, including catalogs, instructions and operating manuals, shall be in this language | **☒ English**  ☐ French  ☐ Spanish  ☐ Others |

Section 4: Bid Submission Form[[9]](#footnote-9)

*(This should be written in the Letterhead of the Bidder. Except for indicated fields, no changes may be made in this template.)*

Insert: Location

Insert: Date

To: [*insert: Name and Address of UNDP focal point]*

Dear Sir/Madam:

We, the undersigned, hereby offer to supply the goods and related services required for **ITB 19/2013 Prespa Lake Docking Marine** in accordance with your Invitation to Bid dated June 25, 2013. We are hereby submitting our Bid, which includes the Technical Bid and Price Schedule.

We hereby declare that :

1. All the information and statements made in this Bid are true and we accept that any misrepresentation contained in it may lead to our disqualification;
2. We are currently not on the removed or suspended vendor list of the UN or other such lists of other UN agencies, nor are we associated with, any company or individual appearing on the 1267/1989 list of the UN Security Council;
3. We have no outstanding bankruptcy or pending litigation or any legal action that could impair our operation as a going concern; and
4. We do not employ, nor anticipate employing, any person who is or was recently employed by the UN or UNDP.

We confirm that we have read, understood and hereby fully accept the Schedule of Requirements and Technical Specifications describing the duties and responsibilities required of us in this ITB, and the General Terms and Conditions of UNDP’s Standard Contract for this ITB.

We agree to abide by this Bid for *[insert: period of validity as indicated in Data Sheet].*

We undertake, if our Bid is accepted, to initiate the supply of goods and provision of related services not later than the date indicated in the Data Sheet.

We fully understand and recognize that UNDP is not bound to accept this Bid, that we shall bear all costs associated with its preparation and submission, and that UNDP will in no case be responsible or liable for those costs, regardless of the conduct or outcome of the evaluation.

We remain,

Yours sincerely,

Authorized Signature [*In full and initials*]:

Name and Title of Signatory:

Name of Firm:

Contact Details:

*[please mark this letter with your corporate seal, if available]*

Section 5: Documents Establishing the Eligibility and Qualifications of the Bidder

Bidder Information Form[[10]](#footnote-10)

Date: *[insert date (as day, month and year] of Bid Submission*]

ITB No.: *[insert number of bidding process]*

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|  |  |  |
| --- | --- | --- |
| 1. Bidder’s Legal Name *[insert Bidder’s legal name]* | | |
| 2. In case of Joint Venture (JV), legal name of each party: *[insert legal name of each party in JV]* | | |
| 3. Actual or intended Country/ies of Registration/Operation: *[insert actual or intended Country of Registration]* | | |
| 4. Year of Registration in its Location: *[insert Bidder’s year of registration]* | | |
| 5. Countries of Operation | 6. No. of staff in each Country | 7.Years of Operation in each Country |
| 8. Legal Address/es in Country/ies of Registration/Operation:*[insert Bidder’s legal address in country of registration]* | | |
| 9. Value and Description of Top three (3) Biggest Contract for the past five (5) years | | |
| 10. Latest Credit Rating (Score and Source, if any) | | |
| 11. Brief description of litigation history (disputes, arbitration, claims, etc.), indicating current status and outcomes, if already resolved. | | |
| 12. Bidder’s Authorized Representative Information  Name: *[insert Authorized Representative’s name]*  Address: *[insert Authorized Representative’s Address]*  Telephone/Fax numbers: *[insert Authorized Representative’s telephone/fax numbers]*  Email Address: *[insert Authorized Representative’s email address]* | | |
| 13. Are you in the UNPD List 1267.1989 or UN Ineligibility List ?  YES or  NO | | |
| 14. Attached are copies of original documents of:  All eligibility document requirements listed in the Data Sheet  ☒ License “B” for Construction of Bidder issued by MoTC  ☒ License “B” for Construction of Bidder’s key personnel issued by Engineer’s Chamber of RM | | |

Joint Venture Partner Information Form (if Registered)[[11]](#footnote-11)

Date: *[insert date (as day, month and year) of Bid Submission*]

ITB No.: *[insert number of bidding process]*

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|  |  |  |
| --- | --- | --- |
| 1. Bidder’s Legal Name: *[insert Bidder’s legal name]* | | |
| 2. JV’s Party legal name: *[insert JV’s Party legal name]* | | |
| 3. JV’s Party Country of Registration: *[insert JV’s Party country of registration]* | | |
| 4. Year of Registration: *[insert Party’s year of registration]* | | |
| 5. Countries of Operation | 6. No. of staff in each Country | 7.Years of Operation in each Country |
| 8. Legal Address/es in Country/ies of Registration/Operation: *[insert Party’s legal address in country of registration]* | | |
| 9. Value and Description of Top three (3) Biggest Contract for the past five (5) years | | |
| 10. Latest Credit Rating (if any) :Click here to enter text. | | |
| 1. Brief description of litigation history (disputes, arbitration, claims, etc.), indicating current status and outcomes, if already resolved. Click here to enter text. | | |
| 13. JV’s Party Authorized Representative Information  Name: *[insert name of JV’s Party authorized representative]*  Address: *[insert address of JV’s Party authorized representative]*  Telephone/Fax numbers: *[insert telephone/fax numbers of JV’s Party authorized representative]*  Email Address: *[insert email address of JV’s Party authorized representative]* | | |
| 14. Attached are copies of original documents of:*[check the box(es) of the attached original documents]*  All eligibility document requirements listed in the Data Sheet  Articles of Incorporation or Registration of firm named in 2.  In case of government owned entity, documents establishing legal and financial autonomy and compliance with commercial law. | | |

Section 6: Technical Bid Form[[12]](#footnote-12)

|  |
| --- |
| ***INSERT TITLE OF THE ITB*** |

|  |  |
| --- | --- |
| **Name of Bidding Organization / Firm:** |  |
| **Country of Registration:** |  |
| **Name of Contact Person for this Bid:** |  |
| **Address:** |  |
| **Phone / Fax:** |  |
| **Email:** |  |

|  |
| --- |
| **SECTION 1: EXPERTISE OF FIRM/ ORGANISATION** |
| *This section should fully explain the Bidder’s resources in terms of personnel and facilities necessary for the performance of this requirement.*  1.1 Brief Description of Bidder as an Entity: Provide a brief description of the organization / firm submitting the Bid, its legal mandates/authorized business activities, the year and country of incorporation, and approximate annual budget, etc. Include reference to reputation, or any history of litigation and arbitration in which the organisation / firm has been involved that could adversely affect or impact the delivery of goods and/or performance of related services, indicating the status/result of such litigation/arbitration.  1.2. Financial Capacity:Based on the latest Audited Financial Statement (Income Statement and Balance Sheet) describe the financial capacity (liquidity, stand-by credit lines, etc.) of the bidder to engage into the contract. Include any indication of credit rating, industry rating, etc.  1.3. Track Record and Experiences: Provide the following information regarding corporate experience within at least the last five (5) years which are related or relevant to those required for this Contract.   |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | | **Name of project** | **Client** | **Contract Value** | **Period of activity** | **Types of activities undertaken** | **Status or Date Completed** | **References Contact Details (Name, Phone, Email)** | |  |  |  |  |  |  |  | |  |  |  |  |  |  |  | |  |  |  |  |  |  |  | |  |  |  |  |  |  |  | |

|  |
| --- |
| **SECTION 2 - SCOPE OF SUPPLY, TECHNICAL SPECIFICATIONS, AND RELATED SERVICES** |
| *This section should demonstrate the Bidder’s responsiveness to the specification by identifying the specific components proposed, addressing the requirements, as specified, point by point; providing a detailed description of the essential performance characteristics proposed; and demonstrating how the proposed bid meets or exceeds the specifications.*  2.1. Scope of Supply: Please provide a detailed description of the goods to be supplied, indicating clearly how they comply with the technical specifications required by the ITB (see below table); describe how the organisation/firm will supply the goods and any related services, keeping in mind the appropriateness to local conditions and project environment.   |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | **Item No.** | **Description/ Specification of Goods** | **Source/ Manufacturer** | **Country of Origin** | **Qty** | **Quality Certificate/ Export Licences, etc. (indicate all that applies and if attached)** | |  |  |  |  |  |  | |  |  |  |  |  |  |   *A supporting document with full details may be annexed to this section*  2.2. Technical Quality Assurance Mechanisms: The bid shall also include details of the Bidder’s internal technical and quality assurance review mechanisms, all the appropriate quality certificates, export licenses and other documents attesting to the superiority of the quality of the goods and technologies to be supplied.  2.3. Reporting and Monitoring: Please provide a brief description of the mechanisms proposed for this project for reporting to the UNDP and partners, including a reporting schedule.  2.4. Subcontracting: Explain whether any work would be subcontracted, to whom, how much percentage of the work, the rationale for such, and the roles of the proposed sub-contractors. Special attention should be given to providing a clear picture of the role of each entity and how everyone will function as a team.  2.5. Risks / Mitigation Measures: Please describe the potential risks for the implementation of this project that may impact achievement and timely completion of expected results as well as their quality. Describe measures that will be put in place to mitigate these risks.  2.6 Implementation Timelines: The Bidder shall submit a Gantt Chart or Project Schedule indicating the detailed sequence of activities that will be undertaken and their corresponding timing.  2.7 Statement of Full Disclosure: This is intended to disclose any potential conflict in accordance with the definition of “conflict” under Section 4 of this document, if any.  2.8 Other: Any other comments or information regarding the bid and its implementation. |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **SECTION 3: PERSONNEL** 3.1 Management Structure: Describe the overall management approach toward planning and implementing the contract. Include an organization chart for the management of the contract, if awarded.  3.2 Staff Time Allocation: Provide a spreadsheet will be included to show the activities of each personnel involved in the implementation of the contract. Where the expertise of the personnel is critical to the success of the contract, UNDP will not allow substitution of personnel whose qualifications had been reviewed and accepted during the bid evaluation. (If substitution of such a personnel is unavoidable, substitution or replacement will be subject to the approval of UNDP. No increase in costs will be considered as a result of any substitution).  3.3 Qualifications of Key Personnel. Provide the CVs for key personnel (Team Leader, Managerial and general staff) that will be provided to support the implementation of this project. CVs should demonstrate qualifications in area of expertise relevant to the Contract. Please use the format below:   |  |  |  |  | | --- | --- | --- | --- | | **Name:** | |  | | | **Role in Contract Implementation:** | |  | | | **Nationality:** | |  | | | **Contact information:** | |  | | | **Countries of Relevant Work Experience:** | |  | | | **Language Skills:** | |  | | | **Education and other Qualifications:** | |  | | | **Summary of Experience:** *Highlight experience in the region and on similar projects.* | | | | | Relevant Experience (From most recent): | | | | | **Period: From – To** | **Name of activity/ Project/ funding organisation, if applicable:** | | **Job Title and Activities undertaken/Description of actual role performed:** | | *e.g. June 2010-January 2011* |  | |  | | *Etc.* |  | |  | | *Etc.* |  | |  | | **References (minimum of 3):** | *Name*  *Designation*  *Organization*  *Contact Information – Address; Phone; Email; etc.* | | | | **Declaration:**  I confirm my intention to serve in the stated position and present availability to serve for the term of the proposed contract. I also understand that any wilful misstatement described above may lead to my disqualification, before or during my engagement.  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Signature of the Nominated Team Leader/Member Date Signed | | | | |  | | | | |

Section 7: Price Schedule Form[[13]](#footnote-13)

The Bidder is required to prepare the Price Schedule as indicated in the Instruction to Bidders.

The Price Schedule must provide a detailed cost breakdown of all WORKS, goods and related services to be provided, from unit price to lot prices. Separate figures must be provided for each functional grouping or category, if any.

Any estimates for cost-reimbursable items, such as travel of experts and out-of-pocket expenses, should be included in the offered pricing.

The format shown on the following pages is suggested for use as a guide in preparing the Price Schedule. The format includes specific expenditures, which may or may not be required or applicable but are indicated to serve as examples. The format shall also be made available in Microsoft Excel.

The format is made available in English and Macedonian. Should there be a discrepancy between the English and the Macedonian translation, the English version shall prevail.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **BILL OF QUANTITIES - ПРЕДМЕР** | | | | | | |
|  |  |  |  |  |  |  |
| No/Бр | Description | Опис | Measure/Мерка | Qty/Кол | Unit price/Единечна цена | Total/Вкупно |
|  |  |  |  |  |  |  |
| **I** | **HYDRO-CONSTRUCTION WORKS ХИДРО-ГРАДЕЖНИ РАБОТИ** | | | | | |
| 1 | Marking the port | 1. Обележување на пристаништето. | LS | 1 |  | 0.00 |
| 2 | Supply, transport and ramming poles (piles) for putting up the accessing platforms in the port. The wooden piles are to be impregnated (protection by impregnation with chemical conservation means to ensure protection against impact of water. Use environment -friendly impregnation materials). Four-sided cuts are to be made on the tip of the pile that goes into the ground and a steel shoe is to be placed on the so processed tip to ensure protection during the driving. The steel boot is to be made of steel sheet with thickness of d = 6 - 8 mm and a depth of h = 1.25 d. The upper end - the head of the pile is to be cut vertically to its axis. | Набавка, транспорт и набивање на дрвени шипови (колови) за поставување на пристапните платформи на пристаништето. Дрвените шипови да бидат импрегнирани (заштита со импрегнација со хемиски конзервански за заштита од дејство на вода. Да се користат еколошки материјали за импрегнација). Врвот на колот кој влегува на теренот да се обработи со шилесто четиристано засекување и на така засечениот врв да се поставуви челична папуча за заштита при побивањето. Челичната папуча (чизма) да биде изработена од челичен лим со дебелина d = 6 – 8 mm и длабочина h = 1.25 d. Горниот крај -главата на колот да се одрeжува нормално на неговата осовина. |  |  |  |  |
|  | To save the head of the pill from splitting while being hammered into the ground, a steel crown - cap is to be placed, with a depth of h > 10 cm and a thickness of d > 6 mm. Once the piles are driven deep enough, the part of the pill that is higher than necessary is cut down to the right height, removing the most upper part that would anyway be damaged by the hammering and placing a decorative metal "cap". The pillsare with the following dimensions and driving position: | За заштита на главата на колот од расцветување за време на побивањето да се постави челична гривна - капа со длабочина h > 10 cm и дебелина d > 6 mm. Одкако коловите ке се набијат до потребната длабочина, колот кој е со висина нешто поголема од потребната висина се отсекува до потребната висина со што горниот дел кој што најверојатно би бил малку оштетен од ударите при побивањето се отстранува и се поставува украсна заштитна металнa “капа”. Шиповите (коловите) се со следните димензии и местоположба на побивање: |
|  | - Ф25 cm - driving into dry earth. Mid length of hammering into the ground H1 = 5.50 m. Mid length of a finished pill Hpill = 7/42 m. | - Ф25 cm - набивање на суво. Средна должина на набивање во терен H1 = 5,50 m. Средна должина на завршен кол Hкол = 7,42 m. | pcs/пар | 10 |  | 0.00 |
|  | - Ф25 cm - driving in water (work on floating platform in the lake). Mid length of driving into the ground H1 = 5.50 m. Mid length of a finished piill Hpill = 8.97 m. | - Ф25 cm - набивање во вода (работа на пливачка платформа во езеро). Средна должина на набивање во терен H1 = 5,50 m. Средна должина на завршен кол Hкол = 8,97 m. | pcs/пар | 43 |  | 0.00 |
|  |  |  |  |  |  |  |
| No/ Бр | Description | Опис | Unit of measure/Мерка | Qty/Кол | Unit price/Единечна цена | Total/Вкупно |
|  | - Ф30 cm -driving in water (work on floating platform in the lake). Mid length of drivring into the ground H1 = 5.50 m. Mid length of a finished pill Hpill = 9.83 m. | - Ф30 cm - набивање во вода (работа на пливачка платформа во езеро). Средна должина на набивање во терен H1 = 5,50 m. Средна должина на завршен кол Hкол = 9,83 m. | pcs/пар | 4 |  | 0.00 |
| 3 | Supply, transportation and installation of wooden elements for building the platform and their supporting constructions made of impregnated wood (protection by impregnation with chemical conservation means to protect it against impact of water. Use environment -friendly impregnation materials). | Набавка, транспорт и монтажа на дрвени елементи за изработка на платформите и носечките конструкции на истите од импрегнирано дрво (заштита со импрегнација со хемиски конзервански за заштита од дејство на вода. Да се користат еколошки материјали за импрегнација). | m3 | 24.20 |  | 0.00 |
|  | - Main access platform - beams | - Главна пристапна платформа - греди |
|  | 10/20 cm, L = 2.75 cm (n = 44) | 10/20 cm, L = 2,75 cm (n = 44) |
|  | - Main access platform - beams | - Главна пристапна платформа - греди |
|  | 14/20 cm, L = 2.99 cm (n = 22) | 14/20 cm, L = 2,99 cm (n = 22) |
|  | - Main access platform - beams | - Главна пристапна платформа - греди |
|  | 14/20 cm, L = 2,84 cm (n = 46) | 14/20 cm, L = 2,84 cm (n = 46) |
|  | Secondary access platform - beams | - Секунд. пристапна платформа - греди |
|  | 10/20 cm, L = 2.75 cm (n = 6) | 10/20 cm, L = 2,75 cm (n = 6) |
|  | Secondary access platform - beams | - Секунд. пристапна платформа - греди |
|  | 14/20 cm, L = 1.65 cm (n = 8) | 14/20 cm, L = 1,65 cm (n = 8) |
|  | - Horizontal bracing (M. A. pl. ) - in water | - Спрегови попречни (Г.П.Пл.) - во вода |
|  | 6/20 cm, L = 3.23 cm (n = 36) | 6/20 cm, L = 3,23 cm (n = 36) |
|  | - Horizontal bracing (M. A. pl. ) - on land | - Спрегови попречни (Г.П.Пл.) - на суво |
|  | 6/20 cm, L = 2.85 cm (n = 10) | 6/20 cm, L = 2,85 cm (n = 10) |
|  | - Horizontal bracing (S. A. pl. ) | - Спрегови попречни (С.П.Пл.) |
|  | 6/20 cm, L = 2.33 cm (n = 8) | 6/20 cm, L = 2,33 cm (n = 8) |
|  | - Vertical bracings (M. A. pl + S. A. pl.) | - Спрегови подолжни (Г.П.Пл.+ С.П.Пл.) |
|  | 6/20 cm, L = 3.58 cm (n = 44) | 6/20 cm, L = 3,58 cm (n = 44) |
|  | - Vertical bracings (lift) | - Спрегови подолжни (Лифт) |
|  | 10/20 cm, L = 5.40 cm (n = 4) | 10/20 cm, L = 5,40 cm (n = 4) |
|  | - Boards (flooring) | - Даски (под) |
|  | 3,8/20 cm, L = 2.85 cm (n = 334) | 3,8/20 cm, L = 2,85 cm (n = 334) |
|  | 3,8/20 cm, L = 1.65 cm (n = 47) | 3,8/20 cm, L = 1,65 cm (n = 47) |
|  | - Cheeks (hard wood) (M. A. pl. + S. A. pl) | - Образи (тврдо дрво) (Г.П.Пл.+С.П.Пл.) |
|  | 14/30 cm, L = 0.165 m (n = 106) | 14/30 cm, L = 0,165 m (n = 106) |
| 4 | Supply, transportation and installation of steel zinc-plated profiles. . | Набавка, транспорт и монтажа на челични поцинкувани профили. | kg | 751.00 |  | 0.00 |
|  | - U 140 profile L = 0.48 m (n = 60) | - U 140 профил L = 0,48 m (n = 60) |
|  | - L 75.100.7 profile L = 0.10 m (n = 288) | - L 75.100.7 профил L = 0,10 m (n = 288) |
| 5 | Production and installation of steel shoes made of steel sheet d=6-8 mm and h=1.25 d for D = 25,00 cm pickets | Изработка и монтажа на челични папучи од челичен лим d=6-8 mm и длабочина h=1.25 d за шипови D = 25,00 cm. |  |  |  | 0.00 |
|  | - for D = 25.00 cm pickets | - за шипови D = 25,00 cm. | pcs/пар | 53 |  | 0.00 |
|  | - for D = 30.00 cm pickets | - за шипови D = 30,00 cm | pcs/пар | 4 |  | 0.00 |
| No | Description | Опис | Measure/Мерка | Qty/Кол | Unit price/Единечна цена | Total/Вкупно |
| 6 | Production and installation of steel rings (steel crown - cap with a depth of h>10 cm and a thickness of d>6 mm). | Изработка и монтажа на челични прстени (челична гривна - капа со длабочина h>10 cm и дебелина d>6 mm). |  |  |  |  |
|  | - for D = 25.00 cm pickets (n = 53) | - за шипови D = 25,00 cm (n = 53) | kg | 693.00 |  | 0.00 |
|  | - for D = 30.00 cm pickets (n = 4) | - за шипови D = 30,00 cm (n = 4) | kg | 63.00 |  | 0.00 |
| 7 | Production and installation of steel decorative caps. | Изработка и монтажа на челични украсни капи. |  |  |  |  |
|  | - for D = 25.00 cm pickets (n = 53) | - за шипови D = 25,00 cm (n = 53) | kg | 257.00 |  | 0.00 |
| 8 | Supply, transportation and installation of steel zinc-plated screws, plates and screw nuts. | Набавка, транспорт и монтажа на челични поцинкувани завртки, плочки и навртки. |  |  |  |  |
|  | - М20 8.8 L = 645 mm screw | - Завртка М20 8.8 L = 645 mm | pcs/пар | 162 |  | 0.00 |
|  | - М20 5.8 plate | - Плочка М20 5.8 | pcs/пар | 324 |  | 0.00 |
|  | - М20 8.8 screw nut | - Навртка М20 8.8 | pcs/пар | 648 |  | 0.00 |
|  | - Self-tapping screw М10х199 | - Саморезна завртка М10х199 | pcs/пар | 288 |  | 0.00 |
|  | - М12 8.8 L = 190 mm screw | - Завртка М12 8.8 L = 190 mm | pcs/пар | 100 |  | 0.00 |
|  | - М12 5.8 plate | - Плочка М12 5.8 | pcs/пар | 200 |  | 0.00 |
|  | - М12 8.8 screw nut | - Навртка М12 8.8 | pcs/пар | 400 |  | 0.00 |
|  | - М14 8.8 L = 470 mm screw nut | - Завртка М14 8.8 L = 470 mm | pcs/пар | 432 |  | 0.00 |
|  | - М14 8.8 L = 500 mm screw | - Завртка М14 8.8 L = 500 mm | pcs/пар | 8 |  | 0.00 |
|  | - М14 8.8 L = 600 mm screw | - Завртка М14 8.8 L = 600 mm | pcs/пар | 8 |  | 0.00 |
|  | - М14 8.8 L = 190 mm screw | - Завртка М14 8.8 L = 190 mm | pcs/пар | 50 |  | 0.00 |
|  | - М14 8.8 L = 300 mm screw | - Завртка М14 8.8 L = 300 mm | pcs/пар | 2 |  | 0.00 |
|  | - М14 8.8 screw nut | - Навртка М14 8.8 | pcs/пар | 2,000 |  | 0.00 |
|  | - 50.50.5 (SG = 101 kg ) plate | - Плочка 50.50.5 (SG = 101 kg ) | pcs/пар | 1000.00 |  | 0.00 |
| 9 | Supply, transport and installation of a protective hood made of round steel profiles minimized and painted in 2 layers; together with a protective impregnated cloth. | Набавка, транспорт, изработка и монтажа на заштитна надстрешница од округли челични профили минизирани во 2 слоја и фарбани во 2 слоја, комплет со заштитно импрегнирано платно. |  |  |  |  |
|  | - Ф76.1 mm d = 3.2 mm L = 130.00 m | - Ф76.1 mm d = 3.2 mm L = 130.00 m | kg | 747.50 |  | 0.00 |
|  | - Ф114.3 mm d = 4.0 mm L = 51.64 m | - Ф114.3 mm d = 4.0 mm L = 51.64 m | kg | 562.90 |  | 0.00 |
|  | - Ф159.0 mm d = 4.0 mm L = 24.50 m | - Ф159.0 mm d = 4.0 mm L = 24.50 m | kg | 374.90 |  | 0.00 |
|  | - Impregnated cloth | - Импрегнирано платно | m2 | 66.60 |  | 0.00 |
| 10 | Construction of embankment at the start of the access platform of crushed limestone compacted in layers of max.30cm | Изработка на насип на почетокот на пристапната платформа од дробеник со набивање во слоеви. | m3 | 5.34 |  | 0.00 |
| No/Бр | Description | Опис | Measure/Мерка | Qty/Кол | Unit price/Единечна цена | Total/Вкупно |
| 11 | Installation of a complete ship lift (to be purchased separately by UNDP.(Suppyling of the boat lift is not a part of this ITB). The company will only be resopnsible for the installation process, under the supervision of the supplier of the boat lift. | Mонтажа на комплет бродски лифт (ќе биде набавен посебно од страна на УНДП. Набавката на бродскиот лифт не е дел од овој тендер). Компанијата ќе биде одговорна само за монтажа под стручен надзор од страна на добавувачот на лифтот). | LS | 1.00 |  | 0.00 |
| 12 | Marking the route of the water inflow pipes from the connection point to the start of the platform. | Обележување на на трасата на доводот за вода од приклучната точка до почетокот на платформата. | m | 120.00 |  | 0.00 |
| 13 | Excavation of the trench IV category for laying the pipes. Trench width B=60 cm, depth H=80 cm. | Ископ на земја IV категорија за ров за полагање на цевките. Ширина на ровот B=60 cm, длабочина H=80 cm. | m3 | 57.60 |  | 0.00 |
| 14 | Rough and fine planning the trench bottom. | Грубо и фино планирање на дното на ровот. | m2 | 72.00 |  | 0.00 |
| 15 | Backfilling the trench with selected material from the excavation by compaction in layers max 30 cm | Затрпување на ровот со пробран материјал од ископот со набивање во слоеви max 30cm. | m3 | 57.60 |  | 0.00 |
| 17 | Installtion of marking tape | Поставување на трака за обележување. | m | 120.00 |  | 0.00 |
| 18 | Supply, transportation and installation of polypropylene HDPE PN10 SN8 pipes in thetrench, from the connection point to the start of the platform. | Набавка, транспорт и монтажа на полипропиленски водоводни цевки во ровот од приклучната точка до почетокот на платформата. |  |  |  |  |
|  | OD25 (Ф3/4“) | OD25 (Ф3/4“) | m | 120.00 |  | 0.00 |
| 19 | Supply, transportation and installation of polypropylene HDPE PN10 SN8 pipes below the access platforms, complete with the joining material and joints for holding the pipes together. | Набавка, транспорт и монтажа на полипропиленски водоводни цевки под пристапните платформи, комплет со споен материјал и шелни за прицврстување (носење) на цевките. |  |  |  |  |
|  | OD25 (Ф3/4“) | OD25 (Ф3/4“) | m | 74.00 |  | 0.00 |
| 20 | Connecting the water pipeline to the water supply for the monitoring facility (after the water meter shaft). | Поврзување (приклучување) на доводниот цевковод на доводот на вода за објектот за мониторинг (после водомерната шахта). | LS | 1 |  | 0.00 |
| 21 | Testing the supply pipeline | Испитување на доводниот цевковод. | m | 194.00 |  | 0.00 |
| 22 | Disinfecting of the water supply pipeline | Дезинфекција на доводниот цевковод. | m | 194.00 |  | 0.00 |
|  | I. SUBTOTAL HYDRO/CIVIL WORKS- ПОД-ЗБИР - ХИДРО/ГРАДЕЖНИ РАБОТИ: | | |  |  | **0.00** |
| **II** | **ELECTRICAL WORKS - ЕЛЕКТРИЧНА ИНСТАЛАЦИЈА** | | | | | |
|  |  |  |  |  |  |  |
| No | Description | Опис | Measure/Мерка | Qty/Кол | Unit price/Единечна цена | Total/Вкупно |
|  |  |  |  |  |  |  |
| 1 | Supply, installing and connecting the following equipment to the existing switchboard (foreseen in the project for networking the space about the port): | Набавка на опрема, вградување и поврзување, во постоечки разводен ормар (предвиден со проект за умрежување на просторот околу пристаниште) на следната опрема: |  |  |  |  |
|  | - C25A;3P;6KA automatic fuse | - Автоматски осигурач С25А;3Р;6КА | pcs/пар | 1.00 |  | 0 |
|  | - B16A;1P;6KA automatic fuse | - Автоматски осигурач В16А; 1Р; 6КА | pcs/пар | 3.00 |  | 0 |
|  | - B6A;1P;6KA automatic fuse | - Автоматски осигурач В6А; 1Р; 6КА | pcs/пар | 1.00 |  | 0 |
|  | - 24 hr/15 min. time relay | - Временско Реле 24часа/15мин | pcs/пар | 1.00 |  | 0 |
|  | - 26-51-10P/K switch | - Прекинувач 26-51-10Р/К | pcs/пар | 1.00 |  | 0 |
| 2 | Excavation and backfilling of cable trench in layers 0.6x1.2m | Ископ на ров и изатрупување на истиот во слоеви откако ќе се постават каблите. Ровот е со димензии (0,6х1,2м) | m’ | 18.00 |  | 0 |
| 3 | Supply and installation of a H07-RNF-5G6mm2 cable from NRO to PRO, partially into a trench and in a corrugated PVC Ф32m’ pipe | Набавка и полагање на кабел од NRO до PRO, тип H07-RNF-5G6mm2 делумно во готов земјен ров и во крута јувидур цевка Ф32 | m’ | 96.00 |  | 0 |
| 4 | Supply and laying a H07-RNF-5Gamm2 cable for an external lighting light. The cable is laid in a length of 18m in a ready-made ground ditch and a plastic flexible and UV resistant pipe. | Набавка и полагање на кабел, за светилка за надворешно осветление тип H07-RNF-5G2,5mm2. Кабелот се полага 18м. Во готов земјен ров, и во пластично совитливо црево отпорно на UV зрачење. | m’ | 128.00 |  | 0 |
| 5 | Supply and installation of PVC cable duct Ф32m’ pipe, complete with bends and joints. The pipe is installed on the side of the lower central 14x20 cm wooden beam, according to the detail enclosed. | Набавка и монтажа на крута јубидур цевка Ф32, комплет со колена и шелни. Цевката се монтира на бочната страна од долната централна дрвена греда 14џ20цм, према приложен детаљ. | m’ | 76.00 |  | 0 |
| 6 | Supply and installation of a plastic flexible UV resistant Ф23 pipe, complete with joints. The pipe is installed on the inner side of the 10x20cm wooden beam, above which the lights are mounted as per the details enclosed. | Набавка и монтаќа на пластично совитливо црево Ф23, отпорно на UV зраци, комплет со шелни. Цревото се монтира на внатрешна страна од дрвена греда 10х20см над која се монтираат светилките према приложен детаљ. | m’ | 90 |  | 0 |
| 7 | Supply and installing a P/L-Y-1x35 conductor line for grounding the metal poles and the connection board. The conductor is laid in parallel with the flexible pipe, on plastic supporters and is fixed to the plate on the external lighting metal pole with an appropriate cable boot. The average length of the connections is 7.2m. A full set is paid for per piece. | Набавка и полагање на вод P/L-Y-1x35 за заземјување на металните столбови и приклучното ормарче. Проводникот се поставува паралелно со совитливото црево, на пластични опфатници и со соддветна кабел папуча се спојува на анерната плоча на металниот столб за надворешно осветлување. Проечна должина на врските е 7,2м. За се комплет се плаќа од бр. | pcs/пар | 15 |  | 0 |
| 8 | Supply and installation of zinc-plated FeZn30x4mm tape into a ready-made ground ditch, from NRO to the beginning of the port. | Набавка и полагање на поцинкувабна лента FeZn30x4mm во готов земјен ров од NRO до почеток на пристаниште. | m’ | 18 |  | 0.00 |
| No | Description | Опис | Measure/Мерка | Qty/Кол | Unit price/Единечна цена | Total/Вкупно |
| 9 | Supply of material, production and installation of a connection/supply board. The board is made of metal sheet with a thickness of 2mm2, set on a piedestal and with a double door.  When closed, the board’s degree of protection is IP65, while when the outside door is open, this protection id IP43. | Набавка на материјал, изработка и монтажа на приклучно-доводен ормар.  Ормарот е метален од лим со дебелина од 2мм2, поставен на постоље со двојна врата. Затворениот ормар е со степен на заштита IP65,а при отварање на надворешнаата врата IP43. |  |  |  |  |
|  | The board is equipped with: | Ормарот е опремен со: |
|  | 1x power differential joint Fio 25/0,03A | 1х Струјна диференцијална склопка Fio 25/0,03A |
|  | 1х С16А;3Р;6КА automatic fuse | 1х Автоматски осигурач С16А;3Р;6КА |
|  | 3х С16А; 1Р; 6КА automatic fuse | 3х Автоматски осигурач С16А; 1Р; 6КА |
|  | 2х С10А; 1Р; 6КА automatic fuse | 2х Автоматски осигурач С10А; 1Р; 6КА |
|  | 2х 2G-10-90/U switches | 2х Прекинувачи 2G-10-90/U |
|  | 1х 3х380V:16A five-pole connection, built-in, industrial type | 1х Петополна приклулница 3х380V:16A вградна индустриси тип |
|  | 3х 230V; 16А; three-pole connection, built-in, industrial type | 3х Трополна приклучница 230V; 16А; вградна, индустриски тип |
|  | Seals, line terminals and other small accessories. | Бртвеници, редни клеми и друг ситен монтажен материјал кој не е специфициран. |
|  | A full set is paid for per piece. | За се комплет се плаќа од број. | pcs/пар | 1 |  | 0.00 |
| 10 | Supply and installing material, mounting and connecting the cables on both sides (in PRO and connection boxes for the boat lift). H07-RNF-3x2.5mm2 cable, laid in a plastic-plated Ф23 “SAPPA” pipe (the basic project envisages a boat lift with two ax1KS motors).  The completion of this position is to be harmonized with the boat lift to be procured. For a full set - cable, protection pipe, installation and connection works - the price paid is per meter of length. | Набавка на инсталационен материјал, монажа и поврзување на кабловите на двете страни во (во ПРО и приклучни кутии за бродски лифт) Кабел H07-RNF-3x2,5mm2 поставен во пластифициранo "SAPPA" црево Ф23. (со основниот проект предвиден е бродски лифт со два мотора 2х1КЅ). Изведбата на оваа позиција да се усклади со бродскиот лифт кој ќе биде набавен. За се комплет, кабел, заштитно црево, монтажа и поврзување се плаќа од метар должен, | m' | 18 |  |  |
| 11 | Supply and installation of an external lighting pole of H=2.5m Ф1=100mm, Ф2=60mm and with a Ф-250, d=3mm anchor plate and a protective cap for such plate. | Набавка и монтажа на столб за надводрешно осветлување H=2,5m Ф1=100мм, Ф2=60мм со анкерна плоча Ф-250, d=3mm и заштитна капа за анкерна плоча. | pcs/пар | 14 |  | 0.00 |
|  | A connection box with 5 line terminals of 2.5mm2 for both entry and exit, as well as a B10A 1P automatic fuse wired to the light with NYY-3x1.5mm2 is built into the pole. The pole is mounted on a wooden construction plate using accessory material such as a metal zinc-plated 250х10х3mm plate and two 75х100х3mm plates, two Ф=14, L=30 bars on both ends processed to have machine-made M14/50 screw lines, two M14/60 screw nuts and other small material. All accessory materials are to be hot zinc-plated and then painted in grey color, electrostatical (the mounting is done in accordance with the details enclosed) | Ви стилбот е вградена приклучна кутија со 5 редни клеми 2,5мм2 за влез и излен како и автоматски осигурач B10A 1P и ожилена до светилка со NYY-3x1,5mm2. Столбот се монтира на плато-дрвен конструкција со користење на помошен материјал како пто се метална поцинкувана плоча 250х10х3мм и две плочу 75х100х3мм, две шипки Ф=14, L=30 на двата краја обработени со машински навој М14/50, две навртки со завртка М14/60 и друг ситен материјал. Сите помошни маеријали да бидат топло поцинкувани а потоа офарбани во сива боја, електростатски (монтажа се изведува према приложени детаљи), |
| 12 | Supply and installation of a light for external lighting, a light similar to an “ASTRA1” type with a E27 light base, energy saving bulb of 60W; 4300lum, adjusted for “planting” onto a 60mm-diameter pole (the mounting is done according to the details enclosed). | Набавка монтажа на светилка за надворешно осветление, праковска светилка слична на тип „ASTRA1“со фасонка Е27, штедлива сијалица од 60W; 4300lum, приспосоебена нза нонажа „насадување“ на столб со дијаметар од 60мм. (монтажата се изведува према приложени детаљи). | pcs/пар | 14 |  | 0 |
|  | II. SUBTOTAL ELECTICAL WORKS - ПОД-ЗБИР ЕЛЕКТРИЧНИ РАБОТИ | | |  |  | **0.00** |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
|  | **SUMMARY** | | | | | |
|  |  |  |  | | | |
|  | **HYDRO-CONSTRUCTION WORKS** | **ХИДРО-ГРАДЕЖНИ РАБОТИ** | **0.00** | | | |
|  | **ELECTICAL WORKS** | **ЕЛЕКТРИЧНИ РАБОТИ** | **0.00** | | | |
|  | **SUBTOTAL 1** | **ПОДЗБИР** | **0.00** | | | |
|  | **VAT 18%** | **ДДВ 18%** | **0.00** | | | |
|  | **Grand total** | **ВКУПНО** | **0.00** | | | |
|  |  |  |  | | | |

**Section 8: FORM FOR PERFORMANCE SECURITY[[14]](#footnote-14)**

*(This must be finalized using the official letterhead of the Issuing Bank. Except for indicated fields, no changes may be made in this template.)*

To: UNDP

*[Insert contact information as provided in Data Sheet]*

WHEREAS [*name and address of Contractor*] (hereinafter called “the Contractor”) has undertaken, in pursuance of Contract No. Click to enter dated Click to enter , to deliver the goods and execute related services Click here to enter text. (hereinafter called “the Contract”):

AND WHEREAS it has been stipulated by you in the said Contract that the Contractor shall furnish you with a Bank Guarantee by a recognized bank for the sum specified therein as security for compliance with his obligations in accordance with the Contract:

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

NOW THEREFORE we hereby affirm that we are the Guarantor and responsible to you, on behalf of the Contractor, up to a total of [*amount of guarantee*] [*in words and numbers*], such sum being payable in the types and proportions of currencies in which the Contract Price is payable, and we undertake to pay you, upon your first written demand and without cavil or argument, any sum or sums within the limits of *[amount of guarantee as aforesaid*] without your needing to prove or to show grounds or reasons for your demand for the sum specified therein.

This guarantee shall be valid until a date 30 days from the date of issue by UNDP of a certificate of satisfactory performance and full completion of services by the Contractor.

### SIGNATURE AND SEAL OF THE GUARANTOR BANK

Date .......................................................................................................................

Name of Bank .........................................................................................................

Address .................................................................................................................

Section 9: Form for Advanced Payment Guarantee[[15]](#footnote-15)

*(This must be finalized using the official letterhead of the Issuing Bank. Except for indicated fields, no changes may be made in this template.)*

*\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ [Bank’s Name, and Address of Issuing Branch or Office]*

**Beneficiary:** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ *[Name and Address of UNDP]*

**Date:** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ ++++++++++++++

**ADVANCE PAYMENT GUARANTEE No.:** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

We have been informed that *[name of Company]* (hereinafter called "the Contractor") has entered into Contract No. *[reference number of the contract]* dated *[insert: date]* with you, for the provision of *[brief description of ITB requirements]* (hereinafter called "the Contract").

Furthermore, we understand that, according to the conditions of the Contract, an advance payment in the sum of *[amount in words]* (*[amount in figures]*) is to be made against an advance payment guarantee.

At the request of the Contractor, we *[name of Bank]* hereby irrevocably undertake to pay you any sum or sums not exceeding in total an amount of *[amount in words]* (*[amount in figures]*)[[16]](#footnote-16) upon receipt by us of your first demand in writing accompanied by a written statement stating that the Contractor is in breach of its obligation under the Contract because the Contractor has used the advance payment for purposes other than toward providing the goods and related services under the Contract.

It is a condition for any claim and payment under this guarantee to be made that the advance payment referred to above must have been received by the Contractor on its account number \_\_\_\_\_\_\_\_\_\_\_ at *[name and address of Bank]*.

The maximum amount of this guarantee shall be progressively reduced by the amount of the advance payment repaid by the Contractor as indicated in copies of certified monthly statements which shall be presented to us. This guarantee shall expire, at the latest, upon our receipt of the monthly payment certificate indicating that the Consultants have made full repayment of the amount of the advance payment, or on the \_\_ day of \_\_\_\_\_\_\_\_\_\_\_, 2\_\_\_, 20\_\_ whichever is earlier. Consequently, any demand for payment under this guarantee must be received by us at this office on or before that date.

This guarantee is subject to the Uniform Rules for Demand Guarantees, ICC Publication No. 458.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

*[signature(s)]*

*Note: All italicized text is for indicative purposes only to assist in preparing this form and shall be deleted from the final product.*

Section 10: Contract

|  |
| --- |
| MODEL CONTRACT FOR WORKS |

Date \_\_\_\_\_\_\_\_\_\_\_\_\_

Dear Sir/Madam,

Ref.: \_\_\_\_\_\_/ \_\_\_\_\_\_\_/ \_\_\_\_\_\_[**INSERT PROJECT NUMBER AND TITLE**]

The United Nations Development Programme (hereinafter referred to as "UNDP"), wishes to engage your company, duly incorporated under the Laws of \_\_\_\_\_\_\_\_\_\_ **[INSERT NAME OF THE COUNTRY]** (hereinafter referred to as the "Contractor") in order to perform \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ **[INSERT SUMMARY DESCRIPTION OF THE WORKS]** (hereinafter referred to as the "Works"), in accordance with the following Contract:

**1.Contract Documents**

1.1 This Contract is subject to the UNDP General Conditions for Civil Works, \_\_\_\_\_\_\_\_\_\_\_\_\_\_ **[INSERT REVISION NUMBER AND DATE FROM THE CONTRACTS DOCUMENTS LIBRARY]**, attached hereto as Annex I. The provisions of such Annex shall control the interpretation of this Contract and in no way shall be deemed to have been derogated by the contents of this letter and any other Annexes, unless otherwise expressly stated under section 4 of this letter, entitled "Special Conditions".

1.2 The Contractor and UNDP also agree to be bound by the provisions contained in the following documents, which shall take precedence over one another in case of conflict in the following order:

a) this letter;

b) the Technical Specifications and Drawings [ref. ......dated........], attached hereto as Annex II;

c) the Contractor's Tender \_\_\_\_\_\_\_\_\_\_\_ **[IF THE CONTRACT IS ON THE BASIS OF UNIT PRICE, INSERT: including the Priced Bill of Quantities]**  [ref......, dated ........], as clarified by the agreed minutes of the negotiation meeting[[17]](#footnote-17) [dated........], not attached hereto but known to and in the possession of both parties.

1.3 All the above shall form the Contract between the Contractor and UNDP, superseding the contents of any other negotiations and/or agreements, whether oral or in writing, pertaining to the subject of this Contract.

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ [INSERT NAME AND ADDRESS OF**

**THE CONTRACTOR]**

**2. Obligations of the Contractor**

2.1 The Contractor shall commence work within \_\_\_ **[INSERT NUMBER OF DAYS]** days from the date on which he shall have been given access to the Site and received the notice to commence from the Engineer, and shall perform and substantially complete the Works by ../../.... **[INSERT DATE]**, in accordance with the Contract. The Contractor shall provide all materials, supplies, labour and other services necessary to that end.

2.2 The Contractor shall submit to the Engineer the Programme of Work referred to in Clause 13 of the General Conditions by ../../.... **[INSERT DATE]**.

2.3 The Contractor represents and warrants the accuracy of any information or data provided to UNDP for the purpose of entering into this Contract, as well as the quality of the Works foreseen under this Contract in accordance with the highest industrial and professional standards.

**OPTION 1 (FIXED PRICE)**

**3. Price and Payment**[[18]](#footnote-18)

3.1 In full consideration of the complete and satisfactory performance of the Works under this Contract, UNDP shall pay the Contractor a fixed contract price of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ **[INSERT CURRENCY & AMOUNT IN FIGURES AND WORDS]**.

3.2 The price of this Contract is not subject to any adjustment or revision because of price or currency fluctuations or the actual costs incurred by the Contractor in the performance of the Contract.

3.3 Invoices shall be submitted by the Contractor to the Engineer upon achievement of the corresponding milestones and for the following amounts:

MILESTONE[[19]](#footnote-19) AMOUNT DATE

Upon signature of

Contract ............ ../../....

......... ............ ../../....

Upon substantial

completion of Works ........... ../../....

Upon final

completion of Works ........... ../../....

**OPTION 2 (COST REIMBURSEMENT)**

**3. Price and payment**

3.1 The total estimated price of the Contract is contained in the Bill of Quantities and amounts to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ **[INSERT CURRENCY & AMOUNT IN FIGURES AND WORDS]**.

3.2 The final price of the Contract will be determined on the basis of the actual quantities of work and materials utilized in the complete and satisfactory performance of the Works as certified by the Engineer and the unit prices contained in the Contractor's financial proposal. Such unit prices are fixed and are not subject to any variation whatsoever.

3.3 If the Contractor foresees that the final price of the Contract may exceed the total estimated price contained in 3.1 above, he shall so inform the Engineer without delay, in order for UNDP to decide, at its discretion, to increase the estimated price of the Contract as a result of a larger quantity of work/material or to reduce the quantity of work to be performed or materials to be used. UNDP shall not be responsible for payment of any amount in excess of that stipulated in 3.1 above unless this latter amount has been increased by means of a written amendment of this Contract in accordance with its paragraph 8 below.

3.4 The Contractor shall submit an invoice for \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ **[INSERT AMOUNT AND CURRENCY OF THE ADVANCE PAYMENT IN FIGURES & WORDS]** upon signature of this Contract by both parties, invoices for the work performed and materials utilized every \_\_\_\_\_\_\_\_\_ **[INSERT PERIOD OF TIME OR MILESTONES]** and a final invoice within 30 days from the issuance of the Certificate of Substantial Completion by the Engineer.[[20]](#footnote-20)

*[THE FOLLOWING CLAUSES ARE COMMON TO OPTIONS 1 & 2 AND MUST BE NUMBERED ACCORDING TO THE OPTION CHOSEN FOR ARTICLE 3]*

3.@ UNDP shall effect payment of the invoices after receipt of the certificate of payment issued by the Engineer, approving the amount contained in the invoice. The Engineer may make corrections to that amount, in which case UNDP may effect payment for the amount so corrected. The Engineer may also withhold invoices if the work is not performed at any time in accordance with the terms of the Contract or if the necessary insurance policies or performance security are not valid and/or in order. The Engineer shall process the invoices submitted by the Contractor within 15 days of their receipt.

3.@ Payments effected by UNDP to the Contractor shall be deemed neither to relieve the Contractor of its obligations under this Contract nor as acceptance by UNDP of the Contractor's performance of the Works.

3.@ Payment of the final invoice shall be effected by UNDP after issuance of the Certificate of Final Completion by the Engineer.

**4. Special conditions**[[21]](#footnote-21)

4.1 The advance payment to be made upon signature of the contract by both parties is contingent upon receipt and acceptance by UNDP of a bank guarantee [[22]](#footnote-22)for the full amount of the advance payment issued by a Bank and in a form acceptable to UNDP.[[23]](#footnote-23)

4.2 The amounts of the payments referred to under section 3.6 above shall be subject to a deduction of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ **[INSERT PERCENTAGE OF TOTAL CONTRACT PRICE THAT THE ADVANCE REPRESENTS]** % (... percent) of the amount accepted for payment until the cumulative amount of the deductions so effected shall equal the amount of the advance payment.[[24]](#footnote-24) Should the cumulative amount of the deductions so made be lower than the amount of the advance payment after the date of substantial completion of the Works, UNDP may deduct the amount equal to the difference between the advance payment and the cumulative deductions from the payments due after substantial completion or may recover such amount from the bank guarantee referred to in 4.1 above.

4.3 The Performance **[SELECT BOND/GUARANTEE]** referred to in Clause 10 of the General Conditions shall be submitted by the Contractor for an amount of \_\_\_\_\_ **[INSERT -PERCENTAGE OF THE TOTAL]**

**ESTIMATED OR FIXED PRICE OF THE CONTRACT IN THE CASE OF A GUARANTEE AND 30% IN THE CASE OF A BOND]**.[[25]](#footnote-25)

4.4 ***[THE USE OF THIS CLAUSE REQUIRES APPROVAL BY THE PROJECT DIRECTOR/UNDP* *PROGRAMME OFFICER*]** The Contractor may submit invoices for materials and plant stored at the Site, provided they are necessary and adequate for the performance of the Works and they are protected from weather conditions and duly insured as per the instructions of the Engineer.

4.5 The liability insurance referred to in Clause 23 of the General Conditions shall be taken out by the Contractor for an amount of.............**[CONSULT THE ENGINEER FOR APPROPRIATE AMOUNT]**.

4.6 According to Clause 45 of the General Conditions, the liquidated damages for delay shall be \_\_\_ **[INSERT PERCENTAGE]** of the price of the Contract per week of delay, up to a maximum of 10% of the final price of the Contract.

**5. Submission of invoices**

5.1 One original and one copy of every invoice shall be submitted by mail by the Contractor for each payment under the Contract to the Engineer's address specified in clause 8.2.

5.2 Invoices submitted by fax shall not be accepted by UNDP.

**6. Time and manner of payment**

6.1 Invoices shall be paid within thirty (30) days of the date of their receipt and acceptance by UNDP.

6.2 All payments shall be made by UNDP to the following Bank account of the Contractor:

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ [NAME OF THE BANK]**

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ [ACCOUNT NUMBER]**

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ [ADDRESS OF THE BANK]**

**7. Modifications**

7.1 Any modification to this Contract shall require an amendment in writing between both parties duly signed by the authorized representatives of the Contractor and UNDP.

**8. Notifications**

8.1 For the purpose of notifications under the Contract, the addresses of UNDP and the Contractor are as follows:

**For the UNDP:**

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ [INSERT NAME OF RR OR DIVISION CHIEF]**

Chief

United Nations Development Programme

Ref. \_\_\_\_\_\_/\_\_\_\_\_\_/\_\_\_\_\_\_ **[INSERT CONTRACT REFERENCE & NUMBER]**

Telex:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Fax:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Cable:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**For the Contractor:**

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

[Insert Name, Address and Telex,

Fax and Cable Numbers]

8.2 For the purposes of communications with the Engineer, the address of the Engineer shall be as follows:

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

[Insert Name, Address and Telex,

Fax and Cable Numbers of the Engineer]

**OR**

8.2 UNDP shall communicate as soon as possible to the Contractor after the signature of the Contract, the address of the Engineer for the purposes of communication with the Engineer under the Contract.

If the above terms and conditions meet with your agreement as typed in this letter and in the Contract Documents, please initial every page of this letter and its attachments and return to this office one original of this Contract, duly signed and dated.

Yours sincerely,

**[INSERT NAME OF RR or Bureau/Division Director]**

For [Insert name of the company/organization]

Agreed and Accepted:

Signature \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Title \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Date \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

# General Conditions of Contract for Civil Works

1. Definitions

2. Singular and Plural

3. Headings or Notes

4. Legal Relationships

5. General Duties/Powers of Engineer

6. Contractor's General Obligations/Responsibilities

7. Assignment and Subcontracting

8. Drawings

9. Work Book

10. Performance Security

11. Inspection of Site

12. Sufficiency of Tender

13. Programme of Work to be Furnished

14. Weekly Site Meeting

15. Change Orders

16. Contractor's Superintendence

17. Contractor's Employees

18. Setting-Out

19. Watching and Lighting

20. Care of Works

21. Insurance of Works, Etc.

22. Damage to Persons and Property

23. Liability Insurance

24. Accident or Injury to Workmen

25. Remedy on Contractor's Failure to Insure

26. Compliance with Statutes, Regulations, Etc.

27. Fossils, Etc.

28. Copyright, Patents and Other Proprietary Rights, and Royalties

29. Interference With Traffic and Adjoining Properties

30. Extraordinary Traffic and Special Loads

31. Opportunities for Other Contractors

32. Contractor to Keep Site Clean

33. Clearance of Site on Substantial Completion

34. Labour

35. Returns of Labour, Plant, Etc.

36. Materials, Workmanship and Testing

37. Access to Site

38. Examination of Work Before Covering Up

39. Removal of Improper Work and Materials

40. Suspension of Work

41. Possession of Site

42. Time for Completion

43. Extension of Time for Completion

44. Rate of Progress

45. Liquidated Damages for Delay

46. Certificate of Substantial Completion

47. Defects Liability

48. Alterations, Additions and Omissions

49. Plant, Temporary Works and Materials

50. Approval of Materials, Etc., Not Implied

51. Measurement of Works

52. Liability of the Parties

53. Authorities

54. Urgent Repairs

55. Increase and Decrease of Costs

56. Taxation

57. Blasting

58. Machinery

59. Temporary Works and Reinstatement

60. Photographs and Advertising

61. Prevention of Corruption

62. Date Falling on Holiday

63. Notices

64. Language, Weights and Measures

65. Records, Accounts, Information and Audit

66. Force Majeure

67. Suspension by the UNDP

68. Termination by the UNDP

69. Termination by the Contractor

70. Rights and Remedies of the UNDP

71. Settlement of Disputes

72. Privileges and Immunities

73. Security

74. Audit and Investigations

75. Anti-Terrorism

Appendix I: Formats of Performance Security

Performance Bank Guarantee

Performance Bond

1. **DEFINITIONS**

For the purpose of the Contract Documents the words and expressions below shall have the following meanings:

1. "Employer" means the United Nations Development Programme (UNDP).
2. "Contractor" means the person whose tender has been accepted and with whom the Contract has been entered into.
3. "Engineer" means the person whose services have been engaged by UNDP to administer the Contract as provided therein, as will be notified in writing to the Contractor.
4. "Contract" means the written agreement between the Employer and the Contractor, to which these General Conditions are annexed.
5. "The Works" means the works to be executed and completed under the Contract.
6. "Temporary Works" shall include items to be constructed which are not intended to be permanent and form part of the Works.
7. "Drawings" and "Specifications" mean the Drawings and Specifications referred to in the Contract and any modification thereof or addition thereto furnished by the Engineer or submitted by the Contractor and approved in writing by the Engineer in accordance with the Contract.
8. "Bill of Quantities" is the document in which the Contractor indicates the cost of the Works, on the basis of the foreseen quantities of items of work and the fixed unit prices applicable to them.
9. "Contract Price" means the sum agreed in the Contract as payable to the Contractor for the execution and completion of the Works and for remedying of any defects therein in accordance with the Contract.
10. "Site" means the land and other places on, under, in or through which the Works or Temporary Works are to be constructed.
11. **SINGULAR AND PLURAL**

Words importing persons or parties shall include firms or companies and words importing the singular only shall also include the plural and vice versa where the context requires.

1. **HEADINGS OR NOTES**

The headings or notes in the Contract Documents shall not be deemed to be part thereof or be taken into consideration in their interpretation.

1. **LEGAL RELATIONSHIPS**

The Contractor and the sub-contractor(s), if any, shall have the status of an independent contractor vis-à-vis the Employer. The Contract Documents shall not be construed to create any contractual relationship of any kind between the Engineer and the Contractor, but the Engineer shall, in the exercise of his duties and powers under the Contract, be entitled to performance by the Contractor of its obligations, and to enforcement thereof. Nothing contained in the Contract Documents shall create any contractual relationship between the Employer or the Engineer and any subcontractor(s) of the Contractor.

1. **GENERAL DUTIES/POWERS OF ENGINEER**
2. The Engineer shall provide administration of Contract as provided in the Contract Documents. In particular, he shall perform the functions hereinafter described.
3. The Engineer shall be the Employer's representative vis-à-vis the Contractor during construction and until final payment is due. The Engineer shall advise and consult with the Employer. The Employer's instructions to the Contractor shall be forwarded through the Engineer. The Engineer shall have authority to act on behalf of the Employer only to the extent provided in the Contract Documents as they may be amended in writing in accordance with the Contract. The duties, responsibilities and limitations of authority of the Engineer as the Employer's representative during construction as set forth in the Contract shall not be modified or extended without the written consent of the Employer, the Contractor and the Engineer.
4. The Engineer shall visit the Site at intervals appropriate to the stage of construction to familiarize himself generally with the progress and quality of the Works and to determine in general if the Works are proceeding in accordance with the Contract Documents. On the basis of his on-site observations as an Engineer, he shall keep the Employer informed of the progress of the Works.
5. The Engineer shall not be responsible for and will not have control or charge of construction means, methods, techniques, sequences or procedures, or for safety precautions and programs in connection with the Works or the Temporary Works. The Engineer shall not be responsible for or have control or charge over the acts or omissions of the Contractor (including the Contractor's failure to carry out the Works in accordance with the Contract) and of Sub-contractors or any of their agents or employees, or any other persons performing services for the Works, except if such acts or omissions are caused by the Engineer's failure to perform his functions in accordance with the contract between the Employer and the Engineer.
6. The Engineer shall at all times have access to the Works wherever and whether in preparation or progress. The Contractor shall provide facilities for such access so that the Engineer may perform his functions under the Contract.
7. Based on the Engineer's observations and an evaluation of the documentation submitted by the Contractor together with the invoices, the Engineer shall determine the amounts owed to the Contractor and shall issue Certificates for Payment as appropriate.
8. The Engineer shall review and approve or take other appropriate action upon the Contractor's submittals such as Shop Drawings, Product Data and Samples, but only for conformity with the design concept of the Works and with the provisions of the Contract Documents. Such action shall be taken with reasonable promptness so as to cause no delay. The Engineer's approval of a specific item shall not indicate approval of an assembly of which the item is a component.
9. The Engineer shall interpret the requirements of the Contract Documents and judge the performance thereunder by the Contractor. All interpretations and orders of the Engineer shall be consistent with the intent of and reasonably inferable from the Contract Documents and shall be in writing or in the form of drawings. Either party may make a written request to the Engineer for such interpretation. The Engineer shall render the interpretation necessary for the proper execution of the Works with reasonable promptness and in accordance with any time limit agreed upon. Any claim or dispute arising from the interpretation of the Contract Documents by the Engineer or relating to the execution or progress of the Works shall be settled as provided in Clause 71 of these General Conditions.
10. Except as otherwise provided in the Contract, the Engineer shall have no authority to relieve the Contractor of any of his obligations under the Contract nor to order any work involving delay in completion of the Works or any extra payment to the Contractor by the Employer, or to make any variations to the Works.
11. In the event of termination of the employment of the Engineer, the Employer shall appoint another suitable professional to perform the Engineer's duties.
12. The Engineer shall have authority to reject work which does not conform to the Contract Documents. Whenever, in his opinion, he considers it necessary or advisable for the implementation of the intent of the Contract Documents, he will have authority to require special inspection or testing of the work whether or not such work be then fabricated, installed or completed. However, neither the Engineer's authority to act nor any reasonable decision made by him in good faith either to exercise or not to exercise such authority shall give rise to any duty or responsibility of the Engineer to the Contractor, any subcontractor, any of their agents or employees, or any other person performing services for the Works.
13. The Engineer shall conduct inspections to determine the dates of Substantial Completion and Final Completion, shall receive and forward to the Employer for the Employer's review written warranties and related documents required by the Contract and assembled by the Contractor, and shall issue a final Certificate for Payment upon compliance with the requirements of Clause 47 hereof and in accordance with the Contract.
14. If the Employer and Engineer so agree, the Engineer shall provide one or more Engineer's Representative(s) to assist the Engineer in carrying out his responsibilities at the site. The Engineer shall notify in writing to the Contractor and the Employer the duties, responsibilities and limitations of authority of any such Engineer's Representative(s).
15. **CONTRACTOR'S GENERAL OBLIGATIONS/RESPONSIBILITIES**
16. **Obligation to Perform in Accordance with Contract**

The Contractor shall execute and complete the Works and remedy any defects therein in strict accordance with the Contract, with due care and diligence and to the satisfaction of the Engineer, and shall provide all labor, including the supervision thereof, materials, Constructional Plant and all other things, whether of a temporary or permanent nature, required in and for such execution, completion and remedying of defects, as far as the necessity for providing the same is specified in or is reasonably to be inferred from the Contract. The Contractor shall comply with and adhere strictly to the Engineer's instructions and directions on any matter, touching or concerning the Works.

**6.2 Responsibility for Site Operations**

The Contractor shall take full responsibility for the adequacy, stability and safety of all site operations and methods of construction, provided that the Contractor shall not be responsible, except as may be expressly provided in the Contract, for the design or specification of the Permanent Works or of any Temporary Works prepared by the Engineer.

1. **Responsibility for Employees**

The Contractor shall be responsible for the professional and technical competence of his employees and will select for work under this Contract, reliable individuals who will perform effectively in the implementation of the Contract, respect local customs and conform to a high standard of moral and ethical conduct.

1. **Source of Instructions**

The Contractor shall neither seek nor accept instructions from any authority external to the Employer, the Engineer or their authorized representatives in connection with the performance of his services under this Contract. The Contractor shall refrain from any action which may adversely affect the Employer and shall fulfill his commitments with fullest regard for the interest of the Employer.

1. **Officials Not to Benefit**

The Contractor warrants that no official of the Employer has been or shall be admitted by the Contractor to any direct or indirect benefit arising from this Contract or the award thereof. The Contractor agrees that breach of this provision is a breach of an essential term of the Contract.

1. **Use of Name, Emblem or Official Seal of UNDP or the United Nations**

The Contractor shall not advertise or otherwise make public the fact that he is performing, or has performed services for the Employer or use the name, emblem or official seal of the Employer or the United Nations or any abbreviation of the name of the Employer or the United Nations for advertising purposes or any other purposes.

1. **Confidential Nature of Documents**

All maps, drawings, photographs, mosaics, plans, reports, recommendations, estimates, documents and all other data compiled by or received by the Contractor under the Contract shall be the property of the Employer, shall be treated as confidential and shall be delivered only to the duly authorized representative of the Employer on completion of the Works; their contents shall not be made known by the Contractor to any person other than the personnel of the Contractor performing services under this Contract without the prior written consent of the Employer.

1. **ASSIGNMENT AND SUBCONTRACTING**
2. Assignment of Contract

The Contractor shall not, except after obtaining the prior written approval of the Employer, assign, transfer, pledge or make other disposition of the Contract or any part thereof or of any of the Contractor's rights, claims or obligations under the Contract.

1. **Subcontracting**

In the event the Contractor requires the services of subcontractors, the Contractor shall obtain the prior written approval of the Employer for all such subcontractors. The approval of the Employer shall not relieve the Contractor of any of his obligations under the Contract, and the terms of any subcontract shall be subject to

and be in conformity with the provisions of the Contract.

1. **Assignment of Subcontractor's Obligations**

In the event of a subcontractor having undertaken towards the Contractor in respect of the work executed or the goods, materials, Plant or services supplied by such subcontractor for the Works, any continuing obligation extending for a period exceeding that of the Defects Liability Period under the Contract, the Contractor

shall at any time after the expiration of such Period, assign to the Employer, at the Employer's request and cost, the benefit of such obligation for the unexpired duration thereof.

1. **DRAWINGS**
2. **Custody of drawings**

The drawings shall remain in the sole custody of the Employer but two (2) copies thereof shall be furnished to the Contractor free of cost. The Contractor shall provide and make at his own expense any further copies required by him. At the completion of the Works, the Contractor shall return to the Employer all drawings provided under the Contract.

1. **One copy of Drawings to be kept on Site**

One copy of the Drawings furnished to the Contractor as aforesaid shall be kept by the Contractor on the Site and the same shall at all reasonable times be available for inspection and use by the Engineer and by any other person authorized in writing by the Engineer.

1. **Disruption of Progress**

The Contractor shall give written notice to the Engineer whenever planning or progress of the Works is likely to be delayed or disrupted unless any further drawing or order, including a direction, instruction or approval, is issued by the Engineer within a reasonable time. The notice shall include details of drawing or order required and of why and by when it is required and of any delay or disruption likely to be suffered if it is late.

1. **WORK BOOK**

The Contractor shall maintain a Work Book at the Site with numbered pages, in one original and two copies. The Engineer shall have full authority to issue new orders, drawings and instructions to the Contractor, from time to time and as required for the correct execution of the Works. The Contractor shall be bound to follow such orders, drawings and instructions.

Every order shall be dated and signed by the Engineer and the Contractor, in order to account for its receipt.

Should the Contractor want to refuse an order in the Work Book, he shall so inform the Employer, through the Engineer, by means of an annotation in the Work Book made within three (3) days from the date of the order that the Contractor intends to refuse. Failure by the Contractor to adhere to this procedure shall result in the order being deemed accepted with no further possibility of refusal.

The original of the Work Book shall be delivered to the Employer at the time of Final Acceptance of the Works. A copy shall be kept by the Engineer and another copy by the Contractor.

1. **PERFORMANCE SECURITY**
2. As guarantee for his proper and efficient performance of the Contract, the Contractor shall on signature of the Contract furnish the Employer with a Performance Security issued for the benefit of the Employer. The amount and character of such security (bond or guarantee) shall be as indicated in the Contract.
3. The Performance Bond or Bank Guarantee must be issued by an acceptable insurance company or accredited bank, in the format included in Appendix I to these General Conditions, and must be valid up to twenty-eight days after issuance by the Engineer of the Certificate of Final Completion. The Performance Bond or Bank Guarantee shall be returned to the Contractor within twenty-eight days after the issuance by the Engineer of the Certificate of Final Completion, provided that the Contractor shall have paid all money owed to the Employer under the Contract.
4. If the surety of the Performance Bond or Bank Guarantee is declared bankrupt or becomes insolvent or its right to do business in the country of execution of the Works is terminated, the Contractor shall within five (5) days thereafter substitute another bond or guarantee and surety, both of which must be acceptable to the Employer.
5. **INSPECTION OF SITE**

The Contractor shall be deemed to have inspected and examined the site and its surroundings and to have satisfied himself before submitting his Tender and signing the Contract as to all matters relative to the nature of the land and subsoil, the form and nature of the Site, details and levels of existing pipe lines, conduits, sewers, drains, cables or other existing services, the quantities and nature of the work and materials necessary for the completion of the Works, the means of access to the Site, and the accommodation he may require, and in general to have himself obtained all necessary information as to risk contingencies, climatic, hydrological and natural conditions and other circumstances which may influence or affect his Tender, and no claims will be entertained in this connection against the Employer.

1. **SUFFICIENCY OF TENDER**

The Contractor shall be deemed to have satisfied himself before tendering as to the correctness and sufficiency of his Tender for the construction of the Works and of the rates and prices, which rates and prices shall, except in so far as it is otherwise provided in the Contract, cover all his obligations under the Contract and all matters and things necessary for the proper execution and completion of the Works.

1. **PROGRAMME OF WORK TO BE FURNISHED**

Within the time limit specified in the Contract, the Contractor shall submit to the Engineer for his consent a detailed Programme of Work showing the order of procedure and the method in which he proposes to carry out the Works. In preparing his Programme of Work the Contractor shall pay due regard to the priority required by certain works. Should the Engineer, during the progress of work, require further modifications to the Programme of Work, the Contractor shall review the said program. The Contractor shall also whenever required by the Engineer submit particulars in writing of the Contractor's arrangements for carrying out the Works and of the Constructional Plant and Temporary Works which the Contractor intends to supply, use or construct as the case may be. The submission of such program, or any modifications thereto, or the particulars required by the Engineer, shall not relieve the Contractor of any of his duties or obligations under the Contract nor shall the incorporation of any modification to the Programme of Work either at the commencement of the contract or during its course entitle the Contractor to any additional payments in consequence thereof.

1. **WEEKLY SITE MEETING**

A weekly site meeting shall be held between the UNDP Project Coordinator or engineer, if any, the representative of the Contractor and the Engineer or the Engineer's Representative, in order to verify that the Works are progressing normally and are executed in accordance with the Contract.

1. **CHANGE ORDERS**
2. The Engineer may instruct the Contractor, with the approval of the Employer and by means of Change Orders, all variations in quantity or quality of the Works, in whole or in part, that are deemed necessary by the Engineer.
3. Processing of change orders shall be governed by clause 48 of these General Conditions.
4. **CONTRACTOR'S SUPERINTENDENCE**

The Contractor shall provide all necessary superintendence during the execution of the Works and as long thereafter as the Engineer may consider necessary for the proper fulfillment of the Contractor's obligations under the Contract. The Contractor or a competent and authorized agent or representative of the Contractor approved in writing by the Engineer, which approval may at any time be withdrawn, shall be constantly on the site and shall devote his entire time to the superintendence of the Works. Such authorized agent or representative shall receive on behalf of the Contractor directions and instructions from the Engineer. If the approval of such agent or representative shall be withdrawn by the Engineer, as provided in Clause 17(2) hereinafter, or if the removal of such agent or representative shall be requested by the Employer under Clause 17(3) hereinafter, the Contractor shall as soon as it is practicable after receiving notice of such withdrawal remove the agent or representative from the Site, and replace him by another agent or representative approved by the Engineer. Notwithstanding the provision of Clause 17(2) hereinafter, the Contractor shall not thereafter employ, in any capacity whatsoever, a removed agent or representative again on the Site.

1. **CONTRACTOR'S EMPLOYEES**
2. The Contractor shall provide and employ on the Site in connection with the execution and completion of the Works and the remedying of any defects therein:
3. Only such technical assistants as are skilled and experienced in their respective callings and such sub-agent foremen and leading hands as are competent to give proper supervision to the work they are required to supervise, and
4. Such skilled, semi-skilled, and unskilled labour as is necessary for the proper and timely execution and completion of the Works.
5. The Engineer shall be at liberty to object to and require the Contractor to remove forthwith from the Works any person employed by the Contractor in or about the execution or completion of the Works, who in the opinion of the Engineer is misconducting himself, or is incompetent or negligent in the proper performance of his duties, or whose employment is otherwise considered reasonably by the Engineer to be undesirable, and such person shall not be again employed on the Site without the written permission of the Engineer. Any person so removed from the Works shall be replaced as soon as reasonably possible by a competent substitute approved by the Engineer.
6. Upon written request by the Employer, the Contractor shall withdraw or replace from the Site any agent, representative or other personnel who does not conform to the standards set forth in paragraph (1) of this Clause. Such request for withdrawal or replacement shall not be considered as termination in part or in whole of this Contract. All costs and additional expenses resulting from any withdrawal or replacement for whatever reason of any of the Contractor's personnel shall be at the Contractor's expense.
7. **SETTING-OUT**

The Contractor shall be responsible for the true and proper setting out of the Works in relation to original points, lines and levels of reference given by the Engineer in writing and for the correctness of the position, levels, dimensions and alignment of all parts of the Works and for the provision of all necessary instruments, appliances and labor in connection therewith. If, at any time during the progress of the Works, any error shall appear or arise in the position, levels, dimensions or alignment of any part of the Works, the Contractor, on being required so to do by the Engineer, shall, at his own cost, rectify such error to the satisfaction of the Engineer.

1. **WATCHING AND LIGHTING**

The Contractor shall in connection with the Works provide and maintain at his own cost all lights, guards, fencing and watching when and where necessary or required by the Engineer or by any duly constituted authority for the protection of the Works and the materials and equipment utilized therefor or for the safety and convenience of the public or others.

1. **CARE OF WORKS**
2. From the commencement date of the Works to the date of substantial completion as stated in the Certificate of Substantial Completion, the Contractor shall take full responsibility for the care thereof and of all Temporary Works. In the event that any damage or loss should happen to the Works or to any part thereof or to any Temporary Works from any cause whatsoever (save and except as shall be due to Force Majeure as defined in Clause 66 of these General Conditions), the Contractor shall at his own cost repair and make good the same so that, at completion, the Works shall be in good order and condition and in conformity in every respect with the requirements of the Contract and the Engineer's instructions. The Contractor shall also be liable for any damage to the Works occasioned by him in the course of any operations carried out by him for the purpose of complying with his obligations Clause 47 hereof.
3. The Contractor shall be fully responsible for the review of the Engineering design and details of the Works and shall inform the Employer of any mistakes or incorrectness in such design and details which would affect the Works.
4. **INSURANCE OF WORKS, ETC.**

Without limiting his obligations and responsibilities under Clause 20 hereof, the Contractor shall insure immediately following signature of this Contract, in the joint names of the Employer and the Contractor (a) for the period stipulated in Clause 20(1) hereof, against all loss or damage from whatever cause arising, other than cause of Force majeure as defined in clause 66 of these General Conditions, and (b) against loss or damage for which the Contractor is responsible, in such manner that the Employer and the Contractor are covered for the period stipulated in Clause 20 (1) hereof and are also covered during the Defects Liability Period for loss or damage arising from a cause occurring prior to the commencement of the Defects Liability Period and for any loss or damage occasioned by the Contractor in the course of any operations carried out by him for the purpose of complying with his obligations under Clause 47 hereof:

1. The Works, together with the materials and Plant for incorporation therein, to their full replacement cost, plus an additional sum of ten (10) per cent of such replacement cost, to cover any additional costs of and incidental to the rectification of loss or damage including professional fees and the cost of demolishing and removing any part of the Works and of removing debris of whatsoever nature;
2. The Contractor's equipment and other things brought on to the Site by the Contractor to the replacement value of such equipment and other things;
3. An insurance to cover the liabilities and warranties of Section 52(4);

Such insurance shall be effected with an insurer and in terms approved by the Employer, which approval shall not be unreasonably withheld, and the Contractor shall, whenever required, produce to the Engineer the policy or policies of insurance and the receipts for payment of the current premiums.

1. **DAMAGE TO PERSONS AND PROPERTY**

The Contractor shall (except if and so far as the Contract provides otherwise) indemnify, hold and save harmless and defend at his own expense the Employer, its officers, agents, employees and servants from and against all suits, claims, demands, proceedings, and liability of any nature or kind, including costs and expenses, for injuries or damages to any person or any property whatsoever which may arise out of or in consequence of acts or omissions of the Contractor or its agents, employees, servants or subcontractors in the execution of the Contract. The provision of this Clause shall extend to suits, claims, demands, proceedings and liability in the nature of workmen's compensation claims and arising out of the use of patented inventions and devices. Provided always that nothing herein contained shall be deemed to render the Contractor liable for or in respect of or with respect to:

1. The permanent use or occupation of land by the Works or any part thereof;
2. The right of the Employer to construct the Works or any part thereof on, over, under, or through any land.
3. Interference whether temporary or permanent with any right of light, airway or water or other easement or quasi-easement which is the unavoidable result of the construction of the Works in accordance with the Contract.
4. Death, injuries or damage to persons or property resulting from any act or neglect of the Employer, his agents, servants or other contractors, done or committed during the validity of the Contract.
5. **LIABILITY INSURANCE**
6. **Obligation to take out Liability Insurance**

Before commencing the execution of the Works, but without limiting his obligations and responsibility under Clause 20 hereof, the Contractor shall insure against his liability for any death, material or physical damage, loss or injury which may occur to any property, including that of the Employer or to any person, including any employee of the Employer by or arising out of the execution of the Works or in the carrying out of the Contract, other than due to the matters referred to in the proviso to Clause 22 hereof.

1. **Minimum Amount of Liability Insurance**

Such insurance shall be effected with an insurer and in terms approved by the Employer, which approval shall not be unreasonably withheld, and for at least the amount specified in the contract. The Contractor shall, whenever required by the Employer or the Engineer, produce to the Engineer the policy or policies of insurance and the receipts for payment of the current premiums.

1. **Provision to Indemnify Employer**

The insurance policy shall include a provision whereby, in the event of any claim in respect of which the Contractor would be entitled to receive indemnity under the policy, being brought or made against the Employer, the insurer shall indemnify the Employer against such claims and any costs, charges and expenses in respect thereof.

1. **ACCIDENT OR INJURY TO WORKMEN**
2. The Employer shall not be liable for or in respect of any damages or compensation payable at law in respect or in consequence of any accident or injury to any workman or other person in the employment of the Contractor or any sub-Contractor, save and except an accident or injury resulting from any act or default of the Employer, his agents or servants. The Contractor shall indemnify, hold and save harmless the Employer against all such damages and compensation, save and except as aforesaid, and against all claims, proceedings, costs, charges and expenses whatsoever in respect thereof or in relation thereto.
3. Insurance Against Accident, etc., to Workmen

The Contractor shall insure against such liability with an insurer approved by the Employer, which approval shall not be unreasonably withheld, and shall continue such insurance during the whole of the time that any persons are employed by him for the Works and shall, when required, produce to the Engineer such policy of insurance and the receipt for payment of the current premium. Provided always that, in respect of any persons employed by any subcontractor, the Contractor's obligation to insure as aforesaid under this sub-clause shall be satisfied if the subcontractor shall have insured against the liability in respect of such persons in such manner that the Employer is indemnified under the policy but the Contractor shall require such subcontractor to produce to the Engineer when required such policy of insurance and the receipt for the current premium, and obtain the insertion of a provision to that effect in its contract with the subcontractor.

1. **REMEDY ON CONTRACTOR'S FAILURE TO INSURE**

If the Contractor shall fail to effect and keep in force any of the insurances referred to in Clauses 21, 23 and 24 hereof, or any other insurance which he may be required to effect under the terms of the Contract, the Employer may in any such case effect and keep in force any such insurance and pay such premium as may be necessary for that purpose and from time to time deduct the amount so paid by the Employer as aforesaid from any monies due or which may become due to the Contractor, or recover the same as a debt due from the Contractor.

1. **COMPLIANCE WITH STATUTES, REGULATIONS, ETC.**
2. The Contractor shall give all notices and pay all fees and charges required to be given or paid by any national or State Statutes, Ordinances, Laws, Regulations or By-laws, or any local or other duly constituted authority in relation to the execution of the Works or of any Temporary Works and by the Rules and Regulations of all public bodies and companies whose property or rights are affected or may be affected in any way by the Works or any Temporary Works.
3. The Contractor shall conform in all respects with any such Statutes, Ordinances, Laws, Regulations, By-laws or requirements of any such local or other authority which may be applicable to the Works and shall keep the Employer indemnified against all penalties and liabilities of every kind for breach of any such Statutes, Ordinances, Laws, Regulations, By-laws or requirements.
4. **FOSSILS, ETC.**

All fossils, coins, articles of value or antiquity and structures and other remains or things of geological or archaeological interest discovered on the Site of the Works shall as between the Employer and the Contractor be deemed to be the absolute property of the Employer and the Contractor shall take reasonable precautions to

prevent his workmen or any other persons from removing or damaging any such article or thing and shall immediately upon discovery thereof and before removal acquaint the Employer of such discovery and carry out at the expense of the Employer the Engineer's orders as to the disposal of the same.

1. **COPYRIGHT, PATENT AND OTHER PROPRIETARY RIGHTS, AND ROYALTIES**
2. The Contractor shall hold harmless and fully indemnify the Employer from and against all claims and proceedings for or on account of infringement of any patent rights, design trademark or name or other protected rights in respect of any Plant, equipment, machine, work or material used for or in connection with the Works or Temporary Works and from and against all claims, demands proceedings, damages, costs, charges and expenses whatsoever in respect thereof or in relation thereto, except where such infringement results from compliance with the design or Specification provided by the Engineer.
3. Except where otherwise specified, the Contractor shall pay all tonnage and other royalties, rent and other payments or compensation, if any, for getting stone, sand, gravel, clay or other materials required for the Works or Temporary Works.
4. **INTERFERENCE WITH TRAFFIC AND ADJOINING PROPERTIES**

All operations necessary for the execution of the Works and for the Construction of any Temporary Works shall, so far as compliance with the requirements of the Contract permits, be carried on so as not to interfere unnecessarily or improperly with the public convenience, or the access to, use and occupation of, public or private roads and footpaths to or of properties whether in the possession of the Employer or of any other person. The Contractor shall hold harmless and indemnify the Employer in respect of all claims, demands, 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 therefor.

1. **EXTRAORDINARY TRAFFIC AND SPECIAL LOADS**
2. The Contractor shall use every reasonable means to prevent any of the roads or bridges communicating with or on the routes to the Site from being damaged by any traffic of the Contractor or any of his sub-contractors and, in particular, shall select routes, choose and use vehicles and restrict and distribute loads so that any such extraordinary traffic as will inevitably arise from the moving of plant and material from and to the Site shall be limited as far as reasonably possible and so that no unnecessary damage may be occasioned to such roads and bridges.
3. Should it be found necessary for the Contractor to move any load of Constructional Plant, machinery, preconstructed units or parts of units of work, or other thing, over part of a road or bridge, the moving whereof is likely to damage any such road or bridge unless special protection or strengthening is carried out, then the Contractor shall before moving the load on to such road or bridge, save insofar as the Contract otherwise provide, be responsible for and shall pay for the cost of strengthening any such bridge or altering or improving any such road to avoid such damage, and the Contractor shall indemnify and keep the Employer indemnified against all claims for damage to any such road or bridge caused by such movement, including such claim as may be made directly against the Employer, and shall negotiate and pay all claims arising solely out of such damage.
4. **OPPORTUNITIES FOR OTHER CONTRACTORS**

The Contractor shall in accordance with the requirements of the Engineer afford all reasonable opportunities for carrying out their work to any other contractors employed by the Employer and their workmen and to the workmen of the Employer and of any other duly constituted authorities who may be employed in the execution on or near the Site of any work not included in the Contract or of any contract which the Employer may enter into in connection with or ancillary to the Works. If work by other contractors of the Employer as above-mentioned involves the Contractor in any direct expenses as a result of using his Site facilities, the Employer shall consider payment to the Contractor of such sum or sums as may be recommended by the Engineer.

1. **CONTRACTOR TO KEEP SITE CLEAN**

During the progress of the Works, the Contractor shall keep the Site reasonably free from all unnecessary obstruction and shall store or dispose of any Constructional Plant and surplus materials and clear away and remove from the Site any wreckage, rubbish or Temporary Works no longer required.

1. **CLEARANCE OF SITE ON SUBSTANTIAL COMPLETION**

On the substantial completion of the Works, the Contractor shall clear away and remove from the Site all Constructional Plant surplus materials, rubbish and Temporary Works of every kind and leave the whole of the Site and Works clean and in a workmanlike condition to the satisfaction of the Engineer.

1. **LABOUR**
2. **Engagement of Labour**

The Contractor shall make his own arrangements for the engagement of all labour local or otherwise.

1. **Supply of Water**

The Contractor shall provide on the Site to the satisfaction of the Engineer an adequate supply of drinking and other water for the use of the Contractor's staff and work people.

1. **Alcoholic Drinks or Drugs**

The Contractor shall comply with Government laws and regulations and orders in force as regards the import, sale, barter or disposal of alcoholic drinks or narcotics and he shall not allow or facilitate such importation, sale, gift, barter or disposal by his sub-contractors, agents or employees.

1. **Arms and Ammunition**

The restrictions specified in clause 34.3 above shall include all kinds of arms and ammunition.

1. **Holiday and Religious Customs**

The Contractor shall in all dealings with labour in his employ have due regard to all holiday, recognized festivals and religious or other customs.

1. **Epidemics**

In the event of any outbreak of illness of an epidemic nature the Contractor shall comply with and carry out such regulations, orders, and requirements as may be made by the Government or the local medical or sanitary authorities for the purpose of dealing with and overcoming the same.

1. **Disorderly Conduct, etc.**

The Contractor shall at all times take all reasonable precautions to prevent any unlawful riotous or disorderly conduct by or amongst his employees and for the preservation of peace and the protection of persons and property in the neighborhood of the Works against the same.

1. **Observance by Sub-Contractors**

The Contractor shall be considered responsible for the observance of the above provisions by his Sub-Contractors.

1. **Legislation applicable to Labour**

The Contractor shall abide by all applicable legislation and regulation with regard to labour.

1. **RETURNS OF LABOUR, PLANT, ETC.**

The Contractor shall, if required by the Engineer, deliver to the Engineer at his office, a return in detail in the form and at such intervals as the Engineer may prescribe showing the supervisory staff and the numbers of the several classes of labour from time to time employed by the Contractor on the Site and such information respecting Constructional plant as the Engineer may require.

## MATERIALS, WORKMANSHIP AND TESTING

1. **Materials and Workmanship**
2. All materials and workmanship shall be of the respective kinds described in the Contract and in accordance with the Engineer's instructions and shall be subjected from time to time to such tests as the Engineer may direct at the place of manufacture or fabrication, or on the Site or at all or any of such places. The Contractor shall provide such assistance, instruments, machines, labour and materials as are normally required for examining, measuring and testing any work and the quality, weight or quantity of any materials used and shall supply samples of materials before incorporation in the Works for testing as may be selected and required by the Engineer. All testing equipment and instruments provided by the Contractor shall be used only by the Engineer or by the Contractor in accordance with the instructions of the Engineer.
3. No material not conforming with the Specifications in the Contract may be used for the Works without prior written approval of the Employer and instruction of the Engineer, provided always that if the use of such material results or may result in increasing the Contract Price, the procedure in Clause 48 shall apply.
4. **Cost of Samples**

All samples shall be supplied by the Contractor at his own cost unless the supply thereof is clearly intended in the Specifications or Bill of Quantities to be at the cost of the Employer. Payment will not be made for samples which do not comply with the Specifications.

1. **Cost of Tests**

The Contractor shall bear the costs of any of the following tests:

1. Those clearly intended by or provided for in the Contract Documents.
2. Those involving load testing or tests to ensure that the design of the whole of the Works or any part of the Works is appropriate for the purpose which it was intended to fulfill.

## ACCESS TO SITE

The Employer and the Engineer and any persons authorized by either of them shall, at all times, have access to the Works and to the Site and to all workshops and places where work is being prepared or whence materials, manufactured articles or machinery are being obtained for the Works and the Contractor shall afford every facility for and every assistance in or in obtaining the right to such access.

## EXAMINATION OF WORK BEFORE COVERING UP

No work shall be covered up or put out of view without the approval of the Engineer and the Contractor shall afford full opportunity for the Engineer to examine and measure any work which is about to be covered up or put out of view and to examine foundations before permanent work is placed thereon. The Contractor shall give due notice to the Engineer whenever any such work or foundations is or are ready or about to be ready for examination and the Engineer shall without unreasonable delay unless he considers it unnecessary and advises the Contractor accordingly attend for the purpose of examining and measuring such work or of examining such foundations.

## REMOVAL OF IMPROPER WORK AND MATERIALS

1. **Engineer's power to order removal**

The Engineer shall during the progress of the Works have power to order in writing from time to time, and the Contractor shall execute at his cost and expense, the following operations:

1. The removal from the Site within such time or times as may be specified in the order of any materials which in the opinion of the Engineer are not in accordance with the Contract;
2. The substitution of proper and suitable materials; and
3. The removal and proper re-execution (notwithstanding any previous test thereof or interim payment therefore) of any work which in respect of materials or workmanship is not in the opinion of the Engineer in accordance with the Contract.
4. **Default of Contractor in carrying out Engineer's Instructions**

In case of default on the part of the Contractor in carrying out an instruction of the Engineer, the Employer shall be entitled to employ and pay other persons to carry out the same and all expenses consequent thereon or incidental thereto shall be borne by the Contractor and shall be recoverable from him by the Employer and may be deducted by the Employer from any monies due or which may become due to the Contractor.

## SUSPENSION OF WORK

The Contractor shall on the written order of the Engineer suspend the progress of the Works or any part thereof for such time or times and in such manner as the Engineer may consider necessary and shall, during such suspension, properly protect and secure the Works so far as it is necessary in the opinion of the Engineer. The Employer should be notified and his written approval should be sought for any suspension of work in excess of three (3) days.

## POSSESSION OF SITE

1. **Access to Site**

The Employer shall with the Engineer's written order to commence the Works, give to the Contractor possession of so much of the Site as may be required to enable the Contractor to commence and proceed with the construction of the Works in accordance with the Programme referred to in Clause 13 hereof and otherwise in accordance with such reasonable proposals of the Contractor as he shall make to the Engineer by notice in writing, and shall from time to time as the Works proceed give to the Contractor possession of such further portions of the Site as may be required to enable the Contractor to proceed with the construction of the Works with due dispatch in accordance with the said Programme or proposals, as the case may be.

1. **Wayleaves, etc.**

The Contractor shall bear all expenses and charges for special temporary wayleaves required by him in connection with access to the Site. The Contractor shall also provide at his own cost any additional accommodation outside the Site required by him for the purpose of the Works.

1. **Limits of the Site**

Except as defined below, the limits of the Site shall be as defined in the Contract. Should the Contractor require land beyond the Site, he shall provide it entirely at his own expense and before taking possession shall supply the Engineer with a copy of the necessary permits. Access to the Site is available where the Site adjoins a public road but it is not provided unless shown on the Drawings. When necessary for the safety and convenience of workmen, public or livestock or for the protection of the Works, the Contractor shall, at his own expense, provide adequate temporary fencing to the whole or part of the Site. The Contractor shall not disturb, damage or pull down any hedge, tree or building within the Site without the written consent of the Engineer.

## TIME FOR COMPLETION

1. Subject to any requirement in the Contract as to completion of any section of the Works before completion of the whole, the whole of the Works shall be completed, in accordance with the provisions of Clause 46 and 47 hereof, within the time stated in the Contract.
2. The completion time includes weekly rest days, official holidays, and days of inclement weather.

## EXTENSION OF TIME FOR COMPLETION

If, subject to the provisions of the Contract, the Engineer orders alterations or additions in the Works in accordance with Clause 48 hereof, or if circumstances constituting force majeure as defined in the Contract have occurred, the Contractor shall be entitled to apply for an extension of the time for completion of the Works specified in the Contract. The Employer shall, upon such application, determine the period of any such extension of time; provided that in the case of alterations or additions in the Works, the application for such an extension must be made before the alterations or additions in the Works are undertaken by the Contractor.

## RATE OF PROGRESS

The whole of the materials, plant and labour to be provided by the Contractor and the mode, manner and speed of execution and completion of the Works are to be of a kind and conducted in a manner to the satisfaction of the Engineer. Should the rate of progress of the Works or any part thereof be at any time in the opinion of the

Engineer too slow to ensure the completion of the Works by the prescribed time or extended time for completion, the Engineer shall so notify the Contractor in writing and the Contractor shall thereupon take such steps as the Contractor may think necessary and the Engineer may approve to expedite progress so as to complete the Works by the prescribed time or extended time for completion. If the work is not being carried on by day and by night and the Contractor shall request permission to work by night as well as by day, then, if the Engineer shall grant such permission, the Contractor shall not be entitled to any additional payment. All work at night shall be carried out without unreasonable noise and disturbance. The contractor shall indemnify the Employer from and against any claims or liability for damages on account of noise or other disturbance created while or in carrying out the work and from and against all claims, demands, proceedings, costs and expenses whatsoever in regard or in relation to such noise or other disturbance. The Contractor shall submit in triplicate to the Engineer at the end of each month signed copies of explanatory Drawings or any other material showing the progress of the Works.

## LIQUIDATED DAMAGES FOR DELAY

1. If the Contractor shall fail to complete the Works within the time for completion prescribed in the Contract, or any extended time for completion in accordance with the Contract, then the Contractor shall pay to the Employer the sum specified in the Contract as liquidated damages, for the delay between the time prescribed in the Contract or the extended time for completion, as the case may be, and the date of substantial completion of the Works as stated in the Certificate of Substantial Completion, subject to the applicable limit stated in the Contract. The said sum shall be payable by the sole fact of the delay without the need for any previous notice or any legal proceedings, or proof of damage, which shall in all cases be considered as ascertained. The Employer may, without prejudice to any other method of recovery, deduct the amount of such liquidated damages from any monies in its hands due or which may become due to the Contractor. The payment or deduction of such damages shall not relieve the Contractor from his obligation to complete the Works or from any other of his obligations and liabilities under the Contract.
2. If, before the time for completion of the whole of the Works or of a Section of the Works, a Certificate of Substantial Completion has been issued for any part or Section of the Works, the liquidated damages for delay in completion of the remainder of the Works or of that Section may, for any period of delay after the date stated in such Certificate of Substantial Completion, and in the absence of alternative provisions in the Contract, be reduced in the proportion which the value of the part or Section so certified bears to the total value of the whole of the Works or Section, as applicable. The provisions of this Sub-Clause shall only apply to the rate of liquidated damages and shall not affect the limit thereof.

## CERTIFICATE OF SUBSTANTIAL COMPLETION

1. **Substantial Completion of the Works**

When the whole of the Works have been substantially completed and have satisfactorily passed any test on completion prescribed by the Contract, the Contractor may give a notice to that effect to the Engineer accompanied by an undertaking to finish any outstanding work during the Defects Liability Period. Such notice and undertaking shall be in writing and shall be deemed to be a request by the Contractor, for the Engineer to issue a Certificate of Substantial Completion in respect of the Works. The Engineer shall, within twenty-one (21) days of the date of delivery of such notice either issue to the Contractor, with a copy to the Employer, a Certificate of Substantial Completion stating the date on which, in his opinion, the Works were substantially completed in accordance with the Contract or give instructions in writing to the Contractor specifying all the work which, in the Engineer's opinion, requires to be done by the Contractor before the issuance of such Certificate. The Engineer shall also notify the Contractor of any defects in the Works affecting substantial completion that may appear after such instructions and before completion of the work specified therein. The Contractor shall be entitled to receive such Certificate of Substantial Completion within twenty-one (21) days of completion, to the satisfaction of the Engineer, of the work so specified and making good any defect so notified. Upon issuance of the Certificate of Substantial Completion of the Works, the Contractor shall be deemed to have undertaken to complete with due expedition any outstanding work during the Defects Liability Period.

1. **Substantial Completion of Sections or Parts of the Works**

In accordance with the procedure in Sub-Clause (1) of this Clause and on the same conditions as provided therein, the Contractor may request the Engineer to issue, and the Engineer may issue, a Certificate of Substantial Completion in respect of any Section or part of the Works which has been substantially completed and has satisfactorily passed any tests on completion prescribed by the Contract, if:

1. a separate time for completion is provided in the Contract in respect of such Section or part of the Works;
2. such Section or part of the Works has been completed to the satisfaction of the Engineer and is required by the Employer for his occupation or use.

Upon the issuance of such Certificate, the Contractor shall be deemed to have undertaken to complete any outstanding work during the Defects Liability Period.

## DEFECTS LIABILITY

1. **Defects Liability Period**

The expression "Defects Liability Period" shall mean the period of twelve (12) months, calculated from the date of completion of the Works stated in the Certificate of Substantial Completion issued by the Engineer or, in respect of any Section or part of the Works for which a separate Certificate of Substantial Completion has been issued, from the date of completion of that Section or part as stated in the relevant Certificate. The expression "the Works" shall, in respect of the Defects Liability Period, be construed accordingly.

1. **Completion of Outstanding Work and Remedying of Defects**

During the Defects Liability Period, the Contractor shall finish the work, if any, outstanding at the date of the Certificate of Substantial Completion, and shall execute all such work of repair, amendment, reconstruction, rectification and making good defects, imperfections, shrinkages or other faults as may be required of the Contractor in writing by the Engineer during the Defects Liability Period and within fourteen (14) days after its expiration, as a result of an inspection made by or on behalf of the Engineer prior to expiration of the Defects Liability Period.

1. **Cost of Execution of Work of Repair, etc.**

All such outstanding work shall be carried out by the Contractor at his own expense if the necessity thereof shall, in the opinion of the Engineer, be due to the use of material or workmanship not in accordance with the Contract, or to neglect or failure on the part of the Contractor to comply with any obligation expressed or implied, on the Contractor's part under the Contract.

1. **Remedy on Contractor's Failure to Carry Out Work Required**

If the Contractor shall fail to do any such work outstanding on the Works, the Employer shall be entitled to employ and pay other persons to carry out the same, and all expenses consequent thereon or incidental thereto shall be recoverable from the Contractor by the Employer, and may be deducted by the Employer from any monies due or which may become due to the Contractor.

1. **Certificate of Final Completion**

Upon satisfactory completion of the work outstanding on the Works, the Engineer shall within twenty eight (28) days of the expiration of the Defects Liability period issue a Certificate of Final Completion to the Contractor. The Contract shall be deemed to be completed upon issuance of such Certificate, provided that the provisions of the Contract which remain unperformed and the Settlement of Disputes provision in the Contract shall remain in force for as long as is necessary to dispose of any outstanding matters or issues between the Parties.

## ALTERATIONS, ADDITIONS AND OMISSIONS

## Variations

The Engineer may within his powers introduce any variations to the form, type or quality of the Works or any part thereof which he considers necessary and for that purpose or if for any other reasons it shall, in his opinion be desirable, he shall have power to order the Contractor to do and the Contractor shall do any of the following:

1. increase or decrease the quantity of any work under the Contract;
2. omit any such work;
3. change the character or quality or kind of any such work;
4. change the levels, lines, positions and dimensions of any part of the Works;
5. execute additional work of any kind necessary for the completion of the Works, and no such variation shall in any way vitiate or invalidate the Contract.
6. **Variations Increasing Cost of Contract or altering the Works.**

The Engineer shall, however, obtain the written approval of the Employer before giving any order for any variations which may result in an increase of the Contract Price or in an essential alteration of the quantity, quality or character of the Works.

## Orders for Variations to be in Writing

No variations shall be made by the Contractor without an order in writing from the Engineer. Variations requiring the written approval of the Employer under paragraph (2) of this Clause shall be made by the Contractor only upon written order from the Engineer accompanied by a copy of the Employer's approval. Provided that, subject to the provisions of the Contract, no order in writing shall be required for any increase or decrease in the quantity of any work where such increase or decrease is not the result of an order given under this Clause but is the result of the quantities exceeding or being less than those stated in the Bill of Quantities.

## Valuation of Variations

The Engineer shall estimate to the Employer the amount to be added or deducted from the Contract Price in respect of any variation, addition or omission. In the case of any variation, addition or omission which may result in an increase of the Contract Price, the Engineer shall communicate such estimate to the Employer together with his request for the Employer's written approval of such variation, addition or omission. The value of any variation, addition or omission shall be calculated on the basis of the unit prices contained in the Bill of Quantities.

## PLANT, TEMPORARY WORKS AND MATERIALS

## Plant, etc., Exclusive Use for the Works

All Constructional Plant, Temporary Works and Materials provided by the Contractor shall, when brought on the Site, be deemed to be exclusively intended for the construction and completion of the Works and the Contractor shall not remove the same or any part thereof (save for the purpose of moving it from one part of the Site to another) without the consent in writing of the Engineer which shall not be unreasonably withheld.

1. **Removal of Plant, etc.**

Upon completion of the Works the Contractor shall remove from the Site all the said Constructional Plant and Temporary Works remaining thereon and any unused materials provided by the Contractor.

## Employer not liable for Damage to Plant

The Employer shall not be at any time liable for the loss of any of the said Constructional plant, Temporary Works or Materials save if such loss results from the act or neglect of the Employer, its employees or agents.

## Ownership of paid material and work

All material and work covered by payments made by the Employer to the Contractor shall thereupon become the sole property of the Employer, but this provision shall not be construed as relieving the Contractor from the sole responsibility for all material and work upon which payments have been made or the restoration of any damaged work or as waiving the right of the Employer to require the fulfillment of all of the terms of the Contract.

## Equipment and supplies furnished by Employer

Title to any equipment and supplies which may be furnished by the Employer shall rest with the Employer and any such equipment and supplies shall be returned to the Employer at the conclusion of the Contract or when no longer needed by the Contractor. Such equipment when returned to the Employer, shall be in the same condition as when delivered to the Contractor, subject to normal wear and tear.

## APPROVAL OF MATERIALS ETC., NOT IMPLIED

The operation of Clause 49 hereof shall not be deemed to imply any approval by the Engineer of the materials or other matters referred to therein nor shall it prevent the rejection of any such materials at any time by the Engineer.

## MEASUREMENT OF WORKS

The Engineer shall, when he requires any part or parts of the Works to be measured, give notice to the Contractor or the Contractor's authorized agent or representative who shall forthwith attend or send a qualified agent to assist the Engineer in making such measurement and shall furnish all particulars required by either of them. Should the Contractor not attend or neglect or omit to send such agent, then the measurement made by the Engineer or approved by him shall be taken to be the correct measurement of the work. The purpose of measuring is to ascertain the volume of work executed by the Contractor and therefore determine the amount of the monthly payments.

## LIABILITY OF THE PARTIES

1. The Works shall not be considered as completed until a Certificate of Final Completion shall have been signed by the Engineer and delivered to the Employer stating that the Works have been completed and that the Contractor has fulfilled all his obligations under Clause 47 to his satisfaction.
2. The Employer shall not be liable to the Contractor for any matter arising out of or in connection with the Contract or the execution of the Works unless the Contractor shall have made a claim in writing in respect thereof before the giving of the Certificate of Final Completion and in accordance with the Contract.

## Unfulfilled Obligations

Notwithstanding the issue of the Certificate of Final Completion, the Contractor shall remain liable for the fulfillment of any obligation incurred under the provisions of the Contract prior to the issuance of the Certificate of Final Completion and which remains unperformed at the time such Certificate is issued. For the purpose of determining the nature and extent of any such obligation the Contract shall be deemed to remain in force between the parties hereto.

## Contractor Responsible

Notwithstanding any other provisions in the Contract documents, the Contractor shall be totally responsible for and shall bear any and all risks of loss or damage to or failure of the Works or any part thereof for a period of ten years after issuance of the Certificate of Final Completion, provided always that such risks, damage or failure result from acts, defaults and negligence of the Contractor, his agents, employees or workmen and such contractors.

## AUTHORITIES

1. The Employer shall have the right to enter upon the Site and expel the Contractor therefrom without thereby voiding the Contract or releasing the Contractor from any of his obligations or liabilities under the Contract or affecting the rights and powers conferred on the Employer and the Engineer by the Contract in any of the following cases:
2. If the Contractor is declared bankrupt or claims bankruptcy or court protection against his creditors or if the Contractor is a company or member of a company which was dissolved by legal action;
3. If the Contractor makes arrangements with his creditors or agrees to carry out the Contract under an inspection committee of his creditors;
4. If the Contractor withdraws from the Works or assigns the Contract to others in whole or in part without the Employer's prior written approval;
5. If the Contractor fails to commence the Works or shows insufficient progress to the extent which in the opinion of the Engineer will not enable him to meet the target completion date of the Works;
6. If the Contractor suspends the progress of the Works without due cause for fifteen (15) days after receiving from the Engineer written notice to proceed;
7. If the Contractor fails to comply with any of the Contract conditions or fails to fulfill his obligations and does not remedy the cause of his failure within fifteen (15) days after being notified to do so in writing;
8. If the Contractor is not executing the work in accordance with standards of workmanship specified in the Contract;
9. If the Contractor gives or promises to give a present or loan or reward to any employee of the Employer or of the Engineer.

Then the Employer may himself complete the Works or may employ any other contractor to complete the Works and the Employer or such other contractor may use for such completion so much of Constructional Plant, Temporary Works and Materials, which have been deemed to be reserved exclusively for the construction and completion of the Works under the provision of the Contract as he or they may think proper and the Employer may at any time sell any of the said Constructional Plant, Temporary Works and unused materials and apply the proceeds of sale in or towards the satisfaction of any sums due or which may become due to him from the Contractor under the Contract.

## Evaluation after Re-entry

The Engineer shall as soon as may be practicable after any such entry and expulsion by the Employer notify the Contractor to attend the necessary evaluation of the Works. In the event that for any reason the Contractor does not attend such evaluation the Engineer shall undertake the said evaluation in the absence of the Contractor and shall issue a certificate stating the sum, if any, due to the Contractor for work done in accordance with the Contract up to the time of entry and expulsion by the Employer which has been reasonably accumulated to the Contractor in respect of the Works he has executed in such case in accordance with the Contract. The Engineer shall indicate the value of the materials whether unused or partially used and the value of construction equipment and any part of the Temporary Works.

## Payment After Re-entry

If the Employer shall enter and expel the Contractor under this Clause he shall not be liable to pay the Contractor any money on account of the Contract until the expiration of the Defects Liability Period, and thereafter until the costs of completion and making good any defects of the Works, damages for delay in completion (if any), and all other expenses incurred by the Employer have been ascertained and their amount certified by the Engineer. The Contractor shall then be entitled to receive only such sum or sums (if any) as the Engineer may certify would have been due to him upon due completion by him after deducting the said amount. But if such amount shall exceed the sum which would have been payable to the Contractor on due completion by him,, then the Contractor shall upon demand pay to the Employer the amount of such excess. The Employer in such case may recover this amount from any money due to the Contractor from the Employer without the need to resort to legal procedures.

## URGENT REPAIRS

If by reason of any accident or failure or other event occurring to, in or in connection with the Works or any part thereof either during the execution of the Works or during the Defects Liability Period any remedial or other work or repair shall in the opinion of the Engineer be urgently necessary for security and the Contractor is unable or unwilling at once to do such work or repair, the Employer may by his own or other workmen do such work or repair as the Engineer may consider necessary. If the work or repair so done by the Employer is work which in the opinion of the Engineer the Contractor was liable to do at his own expense under the Contract, all costs and charges properly incurred by the Employer in so doing shall on demand be paid by the Contractor to the Employer or may be deducted by the Employer from any monies due or which may become due to the Contractor provided always that the Engineer shall as soon after the occurrence of any such emergency as may be reasonably practicable notify the Contractor thereof in writing.

1. **INCREASE AND DECREASE OF COSTS**

Except if otherwise provided by the Contract, no adjustment of the Contract Price shall be made in respect of fluctuations of market, prices of labour, materials, plant or equipment, neither due to fluctuation in interest rates nor devaluation or any other matters affecting the Works.

## TAXATION

The Contractor shall be responsible for the payment of all charges and taxes in respect of income including value added tax, all in accordance with and subject to the provisions of the income tax laws and regulations in force and all amendments thereto. It is the Contractor's responsibility to make all the necessary inquiries in this respect and he shall be deemed to have satisfied himself regarding the application of all relevant tax laws.

## BLASTING

The Contractor shall not use any explosives without the written permission of the Engineer who shall require that the Contractor has complied in full with the regulations in force regarding the use of explosives. However, the Contractor, before applying to obtain these explosives, has to provide well arranged storage facilities. The Engineer's approval or refusal to permit the use of explosives shall not constitute ground for claims by the Contractor.

## MACHINERY

The Contractor shall be responsible for coordinating the manufacture, delivery, erection and commissioning of plant machinery and equipment which are to form a part of the Works. He shall place all necessary orders as soon as possible after the signing of the Contract. These orders and their acceptance shall be produced to the Engineer on request. The Contractor shall also be responsible for ensuring that all sub-contractors adhere to such programs as are agreed and are needed to ensure completion of the Works within the period for completion. Should any sub-contracted works be delayed, the Contractor shall initiate the necessary action to speed up such completion. This shall not prejudice the Employer's right to exercise his remedies for delay in accordance with the Contract.

## TEMPORARY WORKS AND REINSTATEMENT

The Contractor shall provide and maintain all temporary roads and tracks necessary for movement of plant and materials and clear same away at completion and make good all works damaged or disturbed. The Contractor shall submit drawings and full particulars of all Temporary Works to the Engineer before commencing same. The Engineer may require modifications to be made if he considers them to be insufficient and the Contractor shall give effect to such modifications but shall not be relieved of his responsibilities. The Contractor shall provide and maintain weather-proof sheds for storage of material pertinent to the Works both for his own use and for the use of the Employer and clear same away at the completion of the Works. The Contractor shall divert as required, at his own cost and subject to the approval of the Engineer, all public utilities encountered during the progress of the Works, except those specially indicated on the drawings as being included in the Contract. Where diversions of services are not required in connection with the Works, the Contractor shall uphold, maintain and keep the same in working order in existing locations. The Contractor shall make good, at his own expense, all damage to telephone, telegraph and electric cable or wires, sewers, water or other pipes and other services, except where the Public Authority or Private Party owning or responsible for the same elects to make good the damage. The costs incurred in so doing shall be paid by the Contractor to the Public Authority or Private Party on demand.

## PHOTOGRAPHS AND ADVERTISING

The Contractor shall not publish any photographs of the Works or allow the Works to be used in any form of advertising whatsoever without the prior approval in writing from the Employer.

## PREVENTION OF CORRUPTION

The Employer shall be entitled to cancel the Contract and to recover from the Contractor the amount of any loss resulting from such cancellation, if the Contractor has offered or given any person any gift or consideration of any kind as an inducement or reward for doing or intending to do any action in relation to the obtaining or the execution of the Contract or any other contract with the Employer or for showing or intending to show favour or disfavour to any person in relation to the Contract or any other contract with the Employer, if the like acts shall have been done by any persons employed by him or acting on his behalf whether with or without the knowledge of the Contractor in relation to this or any other Contract with the Employer.

## DATE FALLING ON HOLIDAY

Where under the terms of the Contract any act is to be done or any period is to expire upon a certain day and that day or that period fall on a day of rest or recognized holiday, the Contract shall have effect as if the act were to be done or the period to expire upon the working day following such day.

## NOTICES

1. Unless otherwise expressly specified, any notice, consent, approval, certificate or determination by any person for which provision is made in the Contract Documents shall be in writing. Any such notice, consent, approval, certificate or determination to be given or made by the Employer, the Contractor or the Engineer shall not be
2. unreasonably withheld or delayed.
3. Any notice, certificate or instruction to be given to the Contractor by the Engineer or the Employer under the terms of the Contract shall be sent by post, cable, telex or facsimile at the Contractor's principal place of business specified in the Contract or such other address as the Contractor shall nominate in writing for that purpose, or by
4. delivering the same at the said address against an authorized signature certifying the receipt.
5. Any notice to be given to the Employer under the terms of the Contract shall be sent by post, cable, telex or facsimile at the Employer's address specified in the Contract, or by delivering the same at the said address against an authorized signature certifying the receipt.
6. Any notice to be given to the Engineer under the terms of this Contract shall be sent by post, cable, telex or facsimile at the Engineer's address specified in the Contract, or by delivering the same at the said address against an authorized signature certifying the receipt.

## LANGUAGE, WEIGHTS AND MEASURES

Except as may be otherwise specified in the Contract, English shall be used by the Contractor in all written communications to the Employer or the Engineer with respect to the services to be rendered and with respect to all documents procured or prepared by the Contractor pertaining to the Works. The metric system of weights and measures shall be used in all instances.

## RECORDS, ACCOUNTS, INFORMATION AND AUDIT

The Contractor shall maintain accurate and systematic records and accounts in respect of the work performed under this Contract.

The Contractor shall furnish, compile or make available at all times to the UNDP any records or information, oral or written, which the UNDP may reasonably request in respect of the Works or the Contractor's performance thereof.

The Contractor shall allow the UNDP or its authorized agents to inspect and audit such records or information upon reasonable notice.

## FORCE MAJEURE

Force majeure as used herein means Acts of God, war (whether declared or not), invasion, revolution, insurrection or other acts or events of a similar nature or force.

In the event of and as soon as possible after the occurrence of any cause constituting force majeure, the Contractor shall give notice and full particulars in writing to the UNDP and to the Engineer of such force majeure if the Contractor is thereby rendered unable, wholly or in part, to perform its obligations and meet its responsibilities under this Contract. Subject to acceptance by the UNDP of the existence of such force majeure, which acceptance shall not be unreasonably withheld, the following provisions shall apply:

1. The obligations and responsibilities of the Contractor under this Contract shall be suspended to the extent of his inability to perform them and for as long as such inability continues. During such suspension and in respect of work suspended, the Contractor shall be reimbursed by the UNDP substantiated costs of maintenance of the Contractor's equipment and of per diem of the Contractor's permanent personnel rendered idle by such suspension;
2. The Contractor shall within fifteen (15) days of the notice to the UNDP of the occurrence of the force majeure submit a statement to the UNDP of estimated costs referred to in sub-paragraph (a) above during the period of suspension followed by a complete statement of actual expenditures within thirty (30) days after the end of the
3. suspension;
4. The term of this Contract shall be extended for a period equal to the period of suspension taking however into account any special condition which may cause the additional time for completion of the Works to be different from the period of suspension;
5. If the Contractor is rendered permanently unable, wholly or in part, by reason of force majeure, to perform his obligations and meet his responsibilities under the Contract, the UNDP shall have the right to terminate the Contract on the same terms and conditions as provided for in Clause 68 of these General Conditions, except that the period of notice shall be seven (7) days instead of fourteen (14) days, and
6. For the purpose of the preceding sub-paragraph, the UNDP may consider the Contractor permanently unable to perform in case of any suspension period of more than ninety (90) days.

## SUSPENSION BY THE UNDP

The UNDP may by written notice to the Contractor suspend for a specified period, in whole or in part, payments to the Contractor and/or the Contractor's obligation to continue to perform the Works under this Contract, if in the UNDP' sole discretion:

1. any conditions arise which interfere, or threaten to interfere with the successful execution of the Works or the accomplishment of the purpose thereof, or
2. the Contractor shall have failed, in whole or in part, to perform any of the terms and conditions of this Contract.

After suspension under sub-paragraph (a) above, the Contractor shall be entitled to reimbursement by the UNDP of such costs as shall have been duly incurred in accordance with this Contract prior to the commencement of the period of such suspension.

The term of this Contract may be extended by the UNDP for a period equal to any period of suspension, taking into account any special conditions which may cause the additional time for completion of the Works to be different from the period of suspension.

## TERMINATION BY THE UNDP

The UNDP may, notwithstanding any suspension under Clause 67 above, terminate this Contract for cause or convenience in the interest of the UNDP upon not less than fourteen (14) days written notice to the Contractor.

Upon termination of this Contract:

1. The Contractor shall take immediate steps to terminate his performance of the Contract in a prompt and orderly manner and to reduce losses and to keep further expenditures to a minimum, and
2. The Contractor shall be entitled (unless such termination has been occasioned by the Contractor's breach of this Contract), to be paid for the part of the Works satisfactorily completed and for the materials and equipment properly delivered to the Site as of the date of termination for incorporation to the Works, plus substantiated costs resulting from commitments entered into prior to the date of termination as well as any reasonable substantiated direct costs incurred by the Contractor as a result of the termination, but shall not be entitled to receive any other or further payment or damages.

## TERMINATION BY THE CONTRACTOR

In the case of any alleged breach by the UNDP of the Contract or in any other situation which the Contractor reasonably considers to entitle him to terminate his performance of the Contract, the Contractor shall promptly give written notice to the UNDP detailing the nature and the circumstances of the breach or other situation. Upon acknowledgement in writing by the UNDP of the existence of such breach and the UNDP' inability to remedy it, or upon failure of the UNDP to respond to such notice within twenty (20) days of receipt thereof, the Contractor shall be entitled to terminate this Contract by giving 30 days written notice thereof. In the event of disagreement between the Parties as to the existence of such breach or other situation referred to above, the matter shall be resolved in accordance with Clause 71 of these General Conditions.

Upon termination of this Contract under this Clause the provisions of sub-paragraph (b) of Clause 68 hereof shall apply.

## RIGHTS AND REMEDIES OF THE UNDP

Nothing in or relating to this Contract shall be deemed to prejudice or constitute a waiver of any other rights or remedies of the UNDP.

The UNDP shall not be liable for any consequences of, or claim based upon, any act or omission on the part of the Government.

## SETTLEMENT OF DISPUTES

In the case of any claim, controversy or dispute arising out of, or in connection with this Contract or any breach thereof, the following procedure for resolution of such claim, controversy or dispute shall apply.

## Notification

The aggrieved party shall immediately notify the other party in writing of the nature of the alleged claim, controversy or dispute, not later than seven (7) days from awareness of the existence thereof.

## Consultation

On receipt of the notification provided above, the representatives of the Parties shall start consultations with a view to reaching an amicable resolution of the claim, controversy or dispute without causing interruption of the Works.

## Conciliation

Where the representatives of the Parties are unable to reach such an amicable settlement, either party may request the submission of the matter to conciliation in accordance with the UNCITRAL Rules of Conciliation then obtaining.

## Arbitration

Any claim, controversy or dispute which is not settled as provided under clauses 71.1 through 3 above shall be referred to arbitration in accordance with the UNCITRAL Arbitration Rules then obtaining. The Parties shall be bound by the arbitration award rendered in accordance with such arbitration as the final adjudication of any such controversy or claim.

## PRIVILEGES AND IMMUNITIES

Nothing in or relating to this Contract shall be deemed a waiver of any of the privileges and immunities of the United Nations of which the UNDP is an integral part.

## SECURITY

The Contractor shall:

1. put in place an appropriate security plan and maintain the security plan, taking into account the security situation in the country where the services are being provided;
2. assume all risks and liabilities related to the Contractor’s security, and the full implementation of the security plan.

UNDP reserves the right to verify whether such a plan is in place, and to suggest modifications to the plan when necessary. Failure to maintain and implement an appropriate security plan as required hereunder shall be deemed a breach of this contract. Notwithstanding the foregoing, the Contractor shall remain solely responsible for the security of its personnel and for UNDP’s property in its custody as set forth in paragraph 4.1 above.

## AUDIT AND INVESTIGATIONS

Each invoice paid by UNDP shall be subject to a post-payment audit by auditors, whether internal or external, of UNDP or the authorized agents of the UNDP at any time during the term of the Contract and for a period of three (3) years following the expiration or prior termination of the Contract. The UNDP shall be entitled to a refund from the Contractor for any amounts shown by such audits to have been paid by the UNDP other than in accordance with the terms and conditions of the Contract. Should the audit determine that any funds paid by UNDP have not been used as per contract clauses, the company shall reimburse such funds forthwith. Where the company fails to reimburse such funds, UNDP reserves the right to seek recovery and/or to take any other action as it deems necessary.

The Contractor acknowledges and agrees that, at anytime, UNDP may conduct investigations relating to any aspect of the Contract, the obligations performed under the Contract, and the operations of the Contractor generally. The right of UNDP to conduct an investigation and the Contractor’s obligation to comply with such an investigation shall not lapse upon expiration or prior termination of the Contract. The Contractor shall provide its full and timely cooperation with any such inspections, post-payment audits or investigations. Such cooperation shall include, but shall not be limited to, the Contractor’s obligation to make available its personnel and any documentation for such purposes and to grant to UNDP access to the Contractor’s premises. The Contractor shall require its agents, including, but not limited to, the Contractor’s attorneys, accountants or other advisers, to reasonably cooperate with any inspections, post-payment audits or investigations carried out by UNDP hereunder.

## ANTI-TERRORISM

The Contractor agrees to undertake all reasonable efforts to ensure that none of the UNDP funds received under this Contract are used to provide support to individuals or entities associated with terrorism and that the recipients of any amounts provided by UNDP hereunder do not appear on the list maintained by the Security Council Committee established pursuant to resolution 1267 (1999). The list can be accessed via <http://www.un.org/Docs/sc/committees/1267/1267ListEng.htm>. This provision must be included in all sub-contracts or sub-agreements entered into under this Contract.

**Section 11: Drawings**

**Attached separately in a RAR folder called Section 11 Drawings.**

1. *Note: this Section 2 - Instructions to Bidders shall not be modified in any way.* ***Any necessary changes to address specific country and project information shall be introduced only through the Data Sheet.*** [↑](#footnote-ref-1)
2. *All DS number entries in the Data Sheet are cited as references in the Instructions to Bidders. All DS Nos. corresponding to a Data must not be modified. Only information on the 3rd column may be modified by the user. If the information does not apply, the 3rd column must state “n/a” but must not be deleted.* [↑](#footnote-ref-2)
3. *If the advanced payment that the Bidder will submit will exceed 20% of the Price Offer, or will exceed the amount of USD 30,000, the Bidder must submit an Advanced Payment Security in the same amount as the advanced payment, using the form and contents of the document in Section 10* [↑](#footnote-ref-3)
4. *This contact person and address is officially designated by UNDP. If inquiries are sent to other person/s or address/es, even if they are UNDP staff, UNDP shall have no obligation to respond nor can UNDP confirm that the query was officially received.* [↑](#footnote-ref-4)
5. *Posting on the website shall be supplemented by directly transmitting the communication to the prospective offerors.* [↑](#footnote-ref-5)
6. *If this will be allowed, security features (e.g., encryption, authentication, digital signatures, etc.) are strictly required and must be enforced to ensure confidentiality and integrity of contents.*  [↑](#footnote-ref-6)
7. *Pls. reconcile and ensure consistency with the contents of the Technical Specifications*  [↑](#footnote-ref-7)
8. *Where the information is available in the web, a URL for the information may simply be provided.* [↑](#footnote-ref-8)
9. *No deletion or modification may be made in this form. Any such deletion or modification may lead to the rejection of the Bid.* [↑](#footnote-ref-9)
10. *The Bidder shall fill in this Form in accordance with the instructions. Apart from providing additional information, no alterations to its format shall be permitted and no substitutions shall be accepted.* [↑](#footnote-ref-10)
11. *The Bidder shall fill in this Form in accordance with the instructions. Apart from providing additional information, no alterations to its format shall be permitted and no substitutions shall be accepted.* [↑](#footnote-ref-11)
12. *Technical Bids not submitted in this format may be rejected.*  [↑](#footnote-ref-12)
13. *No deletion or modification may be made in this form. Any such deletion or modification may lead to the rejection of the Bid.* [↑](#footnote-ref-13)
14. *If the RFP requires the submission of a Performance Security, which shall be made a condition to the signing and effectivity of the contract, the Performance Security that the Bidder’s Bank will issue shall use the contents of this template* [↑](#footnote-ref-14)
15. *This Guarantee shall be required if the Contractor will require advanced payment of more than 20% of the contract amount, or if the absolute amount of the advanced payment required will exceed the amount of USD 30,000, or its equivalent if the price offer is not in USD, using the exchange rate stated in the Data Sheet. The Contractor’s Bank must issue the Guarantee using the contents of this template.* [↑](#footnote-ref-15)
16. *The Guarantor Bank shall insert an amount representing the amount of the advanced payment and denominated either in the currency/ies of the advanced payment as specified in the Contract.* [↑](#footnote-ref-16)
17. If there are updates to the technical proposal or correspondence exchanged in clarification of certain aspects, reference them too, provided that they are acceptable to UNDP. Otherwise, aspects which resolution is pending should be dealt with in this letter itself or in the Technical Specifications/Drawings, as appropriate. [↑](#footnote-ref-17)
18. This version of section 3 is to be used for fixed price contracts. Fixed price contracts should normally be used when it is possible to estimate with reasonable accuracy the costs of the activities which are the subject of the Contract. [↑](#footnote-ref-18)
19. In the case of advance payments, the amount should not exceed 15%. [↑](#footnote-ref-19)
20. In the case of advance payments, the amount should not exceed 15%. [↑](#footnote-ref-20)
21. Under this Section, the Programme Officer may propose special clauses in order to adapt the model contract to the specific situation. In this sample clause 4, several clauses of common use are given. If they are not required, they should be deleted. [↑](#footnote-ref-21)
22. If the legislation of the Country of the Contractor forbids the use of bank guarantees, a bond may be accepted. [↑](#footnote-ref-22)
23. This clause must be used when an advance payment of $50,000 or more is granted to the Consultant.. [↑](#footnote-ref-23)
24. This clause must be used when an advance payment is granted (whatever the amount) in a cost reimbursement contract. [↑](#footnote-ref-24)
25. The reason for the distinction between a 10% bank guarantee and a 30% performance bond is that bank guarantees are generally unconditional and can be called directly without proof of nonperformance, whereas most performance bonds are conditional and require some proof of nonperformance. There are usually additional costs and time delays incurred with cashing a performance bond and so a higher percentage is requested to cover the extra work involved. Some banks outside of the U.S. may call certain guarantee instruments, “performance bonds or guarantees” although they may only be conditional guarantees. It is important to review the text of the instrument to determine whether it is a conditional or unconditional guarantee. [↑](#footnote-ref-25)