REQUEST FOR QUOTATION (RFQ)

RFQ Reference: Financial Mechanisms Project - Building bicycle trails in Llogara National Park
Date: 05 July 2022

SECTION 1: REQUEST FOR QUOTATION (RFQ)

UNDP kindly requests your quotation for the provision of goods, works and/or services as detailed in Annex 1 of this RFQ.

This Request for Quotation comprises the following documents:

   Section 1: This request letter
   Section 2: RFQ Instructions and Data
   Annex 1: Schedule of Requirements
   Annex 2: Quotation Submission Form
   Annex 3: Technical and Financial Offer

When preparing your quotation, please be guided by the RFQ Instructions and Data. Please note that quotations must be submitted using Annex 2: Quotation Submission Form and Annex 3 Technical and Financial Offer, by the method and by the date and time indicated in Section 2. It is your responsibility to ensure that your quotation is submitted on or before the deadline. Quotations received after the submission deadline, for whatever reason, will not be considered for evaluation.

Thank you and we look forward to receiving your quotations.

Issued by:

Signature: ______________________
Name: Nuno Queiros
Title: Deputy Resident Representative
Date: 05 July 2022
## SECTION 2: RFQ INSTRUCTIONS AND DATA

**Introduction**  
Bidders shall adhere to all the requirements of this RFQ, including any amendments made in writing by UNDP. This RFQ is conducted in accordance with the [UNDP Programme and Operations Policies and Procedures (POPP) on Contracts and Procurement](https://www.undp.org/content/undp/en/home/procurement/business/resources-for-bidders).

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

UNDP reserves the right to cancel the procurement process at any stage without any liability of any kind for UNDP, upon notice to the bidders or publication of cancellation notice on UNDP website.

**Deadline for the Submission of Quotation**  
**July 15, 2022 at 14:00 hrs. Tirana Time**  
If any doubt exists as to the time zone in which the quotation should be submitted, refer to [http://www.timeanddate.com/worldclock/](http://www.timeanddate.com/worldclock/).

**Method of Submission**  
Quotations must be submitted as follows:
- **E-tending**
  - Dedicated Email Address
  - Courier / Hand delivery
  - Other (Click or tap here to enter text.)

  Bid submission address: eTendering
  - File Format: PDF Format
  - File names must be maximum 60 characters long and must not contain any letter or special character other than from Latin alphabet/keyboard.
  - All files must be free of viruses and not corrupted.
  - Max. File Size per transmission: 35 MB
  - Mandatory subject of email: N/A
  - Multiple emails must be clearly identified by indicating in the subject line “email no. X of Y”, and the final “email no. Y of Y”.
  - It is recommended that the entire Quotation be consolidated into as few attachments as possible.
  - The bidder should receive an email acknowledging email receipt.

  [For eTendering method, click the link [https://etendering.partnersagencies.org](https://etendering.partnersagencies.org) and insert Event ID information]
  - Insert BU Code and Event ID number

  Detailed instructions on how to submit, modify or cancel a bid in the eTendering system are provided in the eTendering system Bidder User Guide and Instructional videos available on this link: [https://www.undp.org/content/undp/en/home/procurement/business/resources-for-bidders](https://www.undp.org/content/undp/en/home/procurement/business/resources-for-bidders).

**Cost of preparation of quotation**  
UNDP shall not be responsible for any costs associated with a Supplier's preparation and submission of a quotation, regardless of the outcome or the manner of conducting the selection process.

**Supplier Code of Conduct, Fraud, Corruption**  
All prospective suppliers must read the United Nations Supplier Code of Conduct and acknowledge that it provides the minimum standards expected of suppliers to the UN. The Code of Conduct, which includes principles on labour, human rights, environment and ethical conduct may be found at: [https://www.un.org/depts/ptd/about-us/un-supplier-code-conduct](https://www.un.org/depts/ptd/about-us/un-supplier-code-conduct)

Moreover, UNDP strictly enforces a policy of zero tolerance on prescribed practices, including fraud, corruption, collusion, unethical or unprofessional practices, and obstruction of UNDP vendors and requires all bidders/vendors to observe the highest standard of ethics during the procurement process and contract implementation. UNDP's Anti-Fraud Policy can be found at
**Gifts and Hospitality**

Bidders/vendors shall not offer gifts or hospitality of any kind to UNDP staff members including recreational trips to sporting or cultural events, theme parks or offers of holidays, transportation, or invitations to extravagant lunches, dinners or similar. In pursuance of this policy, UNDP: (a) Shall reject a bid if it determines that the selected bidder has engaged in any corrupt or fraudulent practices in competing for the contract in question; (b) Shall declare a vendor ineligible, either indefinitely or for a stated period, to be awarded a contract if at any time it determines that the vendor has engaged in any corrupt or fraudulent practices in competing for, or in executing a UNDP contract.

**Conflict of Interest**

UNDP requires every prospective Supplier to avoid and prevent conflicts of interest, by disclosing to UNDP if you, or any of your affiliates or personnel, were involved in the preparation of the requirements, design, specifications, cost estimates, and other information used in this RFQ. Bidders shall strictly avoid conflicts with other assignments or their own interests, and act without consideration for future work. Bidders found to have a conflict of interest shall be disqualified.

Bidders must disclose in their Bid their knowledge of the following: a) if the owners, part-owners, officers, directors, controlling shareholders, of the bidding entity or key personnel who are family members of UNDP staff involved in the procurement functions and/or the Government of the country or any implementing Partner receiving goods and/or services under this RFQ.

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, operated and managed as an independent business entity, the extent of Government ownership/share, receipt of subsidies, mandate and access to information in relation to this RFQ, among others. Conditions that may lead to undue advantage against other Bidders may result in the eventual rejection of the Bid.

**General Conditions of Contract**

Any Purchase Order or contract that will be issued as a result of this RFQ shall be subject to the General Conditions of Contract

Select the applicable GTC:
- [x] General Terms and Conditions / Special Conditions for Contract,
- [ ] General Terms and Conditions for de minimis contracts (services only, less than $50,000)
- [ ] General Terms and Conditions for Works

Applicable Terms and Conditions and other provisions are available at UNDP/How-we-buy

**Special Conditions of Contract**

- [x] Cancellation of PO/Contract if the delivery/completion is delayed by [30 days]
- [ ] Others [pls. specify]

**Eligibility**

A vendor who will be engaged by UNDP may not be suspended, debarred, or otherwise identified as ineligible by any UN Organization or the World Bank Group or any other international Organization. Vendors are therefore required to disclose to UNDP whether they are subject to any sanction or temporary suspension imposed by these organizations. Failure to do so may result in termination of any contract or PO subsequently issued to the vendor by UNDP.

It is the Bidder’s responsibility to ensure that its employees, joint venture members, sub-contractors, service providers, suppliers and/or their employees meet the eligibility requirements as established by UNDP.

Bidders must have the legal capacity to enter a binding contract with UNDP and to deliver in the country, or through an authorized representative.

**Currency of Quotation**

Quotations shall be quoted in Albanian Lek (ALL)

**Joint Venture, Consortium or Association**

If the Bidder is a group of legal entities that will form or have formed a Joint Venture (JV), Consortium or Association for 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 JV, Consortium or Association jointly and severally, which shall be evidenced by a duly notarized Agreement among the legal entities, and submitted 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 the member entities comprising the joint venture, Consortium or Association. Refer to Clauses 19 – 24 under Solicitation policy for details on the applicable provisions on Joint Ventures, Consortium or Association.

**Only one Bid**

The Bidder (including the Lead Entity on behalf of the individual members of any Joint Venture, Consortium or Association) shall submit only one Bid, either in its own name or, if a joint venture, Consortium or Association, as the lead entity of such Joint Venture, Consortium or Association. Bids submitted by two (2) or more Bidders shall all be rejected if they are found to have any of the following:

- a) they have at least one controlling partner, director or shareholder in common; or b) any one of them receive or have received any direct or indirect subsidy from the other/s; or
- b) they have the same legal representative for purposes of this RFQ; or
- c) 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 RFQ process;
- d) 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
- e) some key personnel proposed to be in the team of one Bidder participates in more than one Bid received for this RFQ process. This condition relating to the personnel, does not apply to subcontractors being included in more than one Bid.

**Duties and taxes**

Article II, Section 7, of the Convention on the Privileges and Immunities provides, inter alia, that the United Nations, including UNDP as a subsidiary organ of the General Assembly of the United Nations, is exempt from all direct taxes, except charges for public utility services, and is exempt from customs restrictions, duties, and charges of a similar nature in respect of articles imported or exported for its official use. All quotations shall be submitted net of any direct taxes and any other taxes and duties, unless otherwise specified below:

- ☒ be inclusive of VAT and other applicable indirect taxes
- ☐ be exclusive of VAT and other applicable indirect taxes

**Language of quotation**

English

Including documentation including catalogues, instructions and operating manuals.

**Documents to be submitted**

Bidders shall include the following documents in their quotation:

- ☒ Annex 2: Quotation Submission Form duly completed and signed
- ☒ Annex 3: Technical and Financial Offer duly completed and signed and in accordance with the Schedule of Requirements in Annex 1
- ☒ Company Profile.
- ☒ Registration certificate;
- ☐ List and value of projects performed for the last XXXX years plus client’s contact details who may be contacted for further information on those contracts;
- ☐ List and value of ongoing Projects with UNDP and other national/multi-national organization with contact details of clients and current completion ratio of each ongoing project;
- ☒ Statement of satisfactory Performance (Certificates) from the top 3 clients in terms of Contract value in similar field;
- ☐ Completed and signed CVs for the proposed key Personnel;
- ☐ Other Click or tap here to enter text.

**Quotation validity period**

Quotations shall remain valid for 90 days from the deadline for the Submission of Quotation.

**Price variation**

No price variation due to escalation, inflation, fluctuation in exchange rates, or any other market factors shall be accepted at any time during the validity of the quotation after the quotation has been received.

**Partial Quotes**

- ☒ Not permitted
- ☐ Permitted Insert conditions for partial quotes and ensure that the requirements are properly listed in lots to allow partial quotes.
| **Alternative Quotes** | ☒ Not permitted  
- Not permitted  
- Permitted  
  if permitted, an alternative quote may be submitted only if a conforming quote to the RFQ requirements is submitted. Where the conditions for its acceptance are met, or justifications are clearly established, Click or tap here to enter text. reserves the right to award a contract based on an alternative quote. If multiple/alternative quotes are being submitted, they must be clearly marked as “Main Quote” and “Alternative Quote” |
| **Payment Terms** | ☒ 100% within 30 days after receipt of goods, works and/or services and submission of payment documentation, after completion of the Purchase Order.  
- Other Click or tap here to enter text. |
| **Conditions for Release of Payment** | ☒ Passing Inspection by UNDP  
- Passing all Testing [specify standard, if possible]  
- Completion of Training on Operation and Maintenance [specify no. of trainees, and location of training, if possible]  
- Written Acceptance of Goods, Services and Works, based on full compliance with RFQ requirements  
- Other [pls. specify] |
| **Contact Person for correspondence, notifications and clarifications** | E-mail address: procurement.al@undp.org  
- Attention: Quotations shall not be submitted to this address but to the address for quotation submission above. Otherwise, offer shall be disqualified.  
- Any delay in UNDP’s response shall be not used as a reason for extending the deadline for submission, unless UNDP determines that such an extension is necessary and communicates a new deadline to the Proposers. |
| **Clarifications** | Requests for clarification from bidders will not be accepted any later than 4 (four) days before the submission deadline. Responses to request for clarification will be communicated via email by 10 July 2022 |
| **Evaluation method** | ☒ The Contract or Purchase Order will be awarded to the lowest price substantially compliant offer  
- Other Click or tap here to enter text. |
| **Evaluation criteria** | ☒ Full compliance with all requirements as specified in Annex 1  
- Full acceptance of the General Conditions of Contract  
- Comprehensiveness of after-sales services  
- Earliest Delivery / shortest lead time  
- Other: |
| **Right not to accept any quotation** | UNDP is not bound to accept any quotation, nor award a contract or Purchase Order |
| **Right to vary requirement at time of award** | At the time of award of Contract or Purchase Order, UNDP reserves the right to vary (increase or decrease) the quantity of services and/or goods, 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. |
| **Type of Contract to be awarded** | ☒ Purchase Order  
- Contract Face Sheet (Goods and/or Services) (this template is also utilised for Long-Term Agreement) and if an LTA will be signed, specify the document that will trigger the call-off. E.g., PO, etc.)  
- Contract for Works  
- Other Type/s of Contract [pls. specify] |
<p>| <strong>Expected date for contract award</strong> | 25 July 2022 |</p>
<table>
<thead>
<tr>
<th>Publication of Contract Award</th>
<th>UNDP will publish the contract awards valued at USD 100,000 and more on the websites of the CO and the corporate UNDP Web site.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Policies and procedures</td>
<td>This RFQ is conducted in accordance with UNDP Programme and Operations Policies and Procedures</td>
</tr>
<tr>
<td>UNGM registration</td>
<td>Any Contract resulting from this RFQ exercise will be subject to the supplier being registered at the appropriate level on the United Nations Global Marketplace (UNGM) website at <a href="http://www.ungm.org">www.ungm.org</a>. The Bidder may still submit a quotation even if not registered with the UNGM, however, if the Bidder is selected for Contract award, the Bidder must register on the UNGM prior to contract signature.</td>
</tr>
</tbody>
</table>
ANNEX 1: SCHEDULE OF REQUIREMENTS

Context of the requirement:

Technical Specifications for Goods:

<table>
<thead>
<tr>
<th>Item No.</th>
<th>Minimum technical requirements</th>
<th>Item</th>
<th>Quantity</th>
<th>Expected delivery</th>
</tr>
</thead>
</table>

*Building bicycle trails in Llogara National Park*

*Required work processes to be carried and relevant volumes:*

1. Excavation works 500 m³
2. Borrow 300 m³
3. Rip Rap 100 m³
4. Drainage Structures 15 m³
5. Clearance 1 ls
6. Bridge structures 10 m³
7. Retaining structures 20 m³
8. Signs 30 pieces

The projected trail is a linear layout trail (point to point) starting from the Llogara Tourist Village ending to Dukat Agrotourism. Both start and end points are accessible from the motorway primary road. The trail has a length of approximately 2.3 km and passes through various points of interest, such as Llogara Visitor Centre, various local restaurants, camping fields, including:

- Qafa e thelle
- Qafa e thelle- Dedëhiië’s spring
- Qafa e thelle- Palasa’s river delta
- Caesar’s pass- Ponace’s spring
- Hole of Konduka- Thanasi’s peak
- Palasa’s river delta- Bay of Saint Andre
- Llogara pass- Qore’s peak- Çlka’s peak
- Gropat e Pirit
- Delta of Palasa stream

HLCM-PN/UNDP RFQ – October 2020
# Delivery Requirements

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Information</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Delivery date and time</strong></td>
<td>Bidder shall deliver the goods 6 weeks after PO/contract award at the latest</td>
</tr>
<tr>
<td><strong>Delivery Terms (INCOTERMS 2020)</strong></td>
<td>DELIVERED AT PLACE (DAP)</td>
</tr>
</tbody>
</table>
| **Customs clearance** (must be linked to INCOTERM) | ☒ Not applicable  
Shall be done by:  
☐ Name of organisation (where applicable)  
☐ Supplier/bidder  
☐ Freight Forwarder |
| **Exact Address(es) of Delivery Location(s)** | UNDP Albania  
Skenderbej Street, Gurten Center Tirana, Albania |
| **Distribution of shipping documents (if using freight forwarder)** | N/A |
| **Packing Requirements**                      | N/A                                                                         |
| **Training on Operations and Maintenance**    | N/A                                                                         |
| **Warranty Period**                           | N/A                                                                         |
| **After-sales service and local service support requirements** | N/A |
| **Preferred Mode of Transport**               | Land                                                                        |
ANNEX 2: QUOTATION SUBMISSION FORM

Bidders are requested to complete this form, including the Company Profile and Bidder’s Declaration, sign it and return it as part of their quotation along with Annex 3: Technical and Financial Offer. The Bidder shall fill in this form in accordance with the instructions indicated. No alterations to its format shall be permitted and no substitutions shall be accepted.

<table>
<thead>
<tr>
<th>Name of Bidder:</th>
<th>Click or tap here to enter text.</th>
</tr>
</thead>
<tbody>
<tr>
<td>RFQ reference:</td>
<td>Click or tap here to enter text.</td>
</tr>
</tbody>
</table>

Company Profile

<table>
<thead>
<tr>
<th>Item Description</th>
<th>Detail</th>
</tr>
</thead>
<tbody>
<tr>
<td>Legal name of bidder or Lead entity for JVs</td>
<td>Click or tap here to enter text.</td>
</tr>
<tr>
<td>Legal Address, City, Country</td>
<td>Click or tap here to enter text.</td>
</tr>
<tr>
<td>Website</td>
<td>Click or tap here to enter text.</td>
</tr>
<tr>
<td>Year of Registration</td>
<td>Click or tap here to enter text.</td>
</tr>
<tr>
<td>Legal structure</td>
<td>Choose an item.</td>
</tr>
<tr>
<td>Are you a UNGM registered vendor?</td>
<td>□ Yes □ No</td>
</tr>
<tr>
<td>Quality Assurance Certification (e.g. ISO 9000 or Equivalent) (if yes, provide a Copy of the valid Certificate):</td>
<td>If yes, insert UNGM Vendor Number</td>
</tr>
<tr>
<td>Does your Company hold any accreditation such as ISO 14001, or ISO 14064 or equivalent related to the environment? (if yes, provide a Copy of the valid Certificate):</td>
<td>□ Yes □ No</td>
</tr>
<tr>
<td>Does your Company have a written Statement of its Environmental Policy? (If yes, provide a Copy)</td>
<td>□ Yes □ No</td>
</tr>
<tr>
<td>Does your organization demonstrate significant commitment to sustainability through some other means, for example internal company policy documents on women empowerment, renewable energies or membership of trade</td>
<td>□ Yes □ No</td>
</tr>
<tr>
<td>Institutions promoting such issues (If yes, provide a Copy)</td>
<td></td>
</tr>
<tr>
<td>----------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>Is your company a member of the UN Global Compact</td>
<td></td>
</tr>
<tr>
<td>□ Yes □ No</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Bank Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bank Name: Click or tap here to enter text.</td>
</tr>
<tr>
<td>Bank Address: Click or tap here to enter text.</td>
</tr>
<tr>
<td>IBAN: Click or tap here to enter text.</td>
</tr>
<tr>
<td>SWIFT/BIC: Click or tap here to enter text.</td>
</tr>
<tr>
<td>Account Currency: Click or tap here to enter text.</td>
</tr>
<tr>
<td>Bank Account Number: Click or tap here to enter text.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Previous relevant experience: 3 contracts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name of previous contracts</td>
</tr>
<tr>
<td>Client &amp; Reference Contact Details including e-mail</td>
</tr>
<tr>
<td>Contract Value</td>
</tr>
<tr>
<td>Period of activity</td>
</tr>
<tr>
<td>Types of activities undertaken</td>
</tr>
</tbody>
</table>

---

HLCM-PN/UNDP RFQ – October 2020
Bidder's Declaration

<table>
<thead>
<tr>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>

**Requirements and Terms and Conditions:** I/We have read and fully understand the RFQ, including the RFQ Information and Data, Schedule of Requirements, the General Conditions of Contract, and any Special Conditions of Contract. I/we confirm that the Bidder agrees to be bound by them.

I/We confirm that the Bidder has the necessary capacity, capability, and necessary licenses to fully meet or exceed the Requirements and will be available to deliver throughout the relevant Contract period.

Ethics: In submitting this Quote I/we warrant that the bidder has not entered into any improper, illegal, collusive or anti-competitive arrangements with any Competitor; has not directly or indirectly approached any representative of the Buyer (other than the Point of Contact) to lobby or solicit information in relation to the RFQ; has not attempted to influence, or provide any form of personal inducement, reward or benefit to any representative of the Buyer.

I/We confirm to undertake not to engage in proscribed practices, or any other unethical practice, with the UN or any other party, and to conduct business in a manner that averts any financial, operational, reputational or other undue risk to the UN and we have read the United Nations Supplier Code of Conduct: https://www.un.org/Depts/pfd/about-us/un-supplier-code-conduct and acknowledge that it provides the minimum standards expected of suppliers to the UN.

Conflict of Interest: I/We warrant that the bidder has no actual, potential, or perceived Conflict of Interest in submitting this Quote or entering a Contract to deliver the Requirements. Where a Conflict of Interest arises during the RFQ process the bidder will report it immediately to the Procuring Organization's Point of Contact.

Prohibitions, Sanctions: I/We hereby declare that our firm, its affiliates or subsidiaries or employees, including any JV/Consortium members or subcontractors or suppliers for any part of the contract is not under procurement prohibition by the United Nations, including but not limited to prohibitions derived from the Compendium of United Nations Security Council Sanctions Lists and have not been suspended, debarred, sanctioned or otherwise identified as ineligible by any UN Organization or the World Bank Group or any other international Organization.

Bankruptcy: I/We have not declared bankruptcy, are not involved in bankruptcy or receivership proceedings, and there is no judgment or pending legal action against them that could impair their operations in the foreseeable future.

Offer Validity Period: I/We confirm that this Quote, including the price, remains open for acceptance for the Offer Validity.

I/We understand and recognize that you are not bound to accept any Quotation you receive, and we certify that the goods offered in our Quotation are new and unused.

By signing this declaration, the signatory below represents, warrants and agrees that he/she has been authorised by the Organization/s to make this declaration on its/their behalf.

---

**Signature:**

**Name:** Click or tap here to enter text.

**Title:** Click or tap here to enter text.

**Date:** Click or tap to enter a date.
ANNEX 3: TECHNICAL AND FINANCIAL OFFER - GOODS

Bidders are requested to complete this form, sign it and return it as part of their bid along with Annex 2: Quotation Submission Form. The Bidder shall fill in this form in accordance with the instructions indicated. No alterations to its format shall be permitted and no substitutions shall be accepted.

<table>
<thead>
<tr>
<th>Name of Bidder:</th>
<th>Click or tap here to enter text.</th>
</tr>
</thead>
<tbody>
<tr>
<td>RFQ reference:</td>
<td>Click or tap here to enter text.</td>
</tr>
<tr>
<td>Date:</td>
<td>Click or tap to enter a date.</td>
</tr>
</tbody>
</table>

Currency of the Quotation: Click or tap here to enter text.

INCOTERMS: Click or tap here to enter text.

<table>
<thead>
<tr>
<th>Item No</th>
<th>Description</th>
<th>UOM</th>
<th>Qty</th>
<th>Unit price</th>
<th>Total price</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Click or tap here to enter text.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Click or tap here to enter text.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Click or tap here to enter text.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Click or tap here to enter text.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>Click or tap here to enter text.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Total Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>VAT (Value Added Tax)</td>
</tr>
<tr>
<td>Other Charges (specify)</td>
</tr>
<tr>
<td><strong>Total Final and All-inclusive Price</strong></td>
</tr>
</tbody>
</table>

Compliance with Requirements

<table>
<thead>
<tr>
<th>Requirement</th>
<th>You Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum Technical Specifications</td>
<td>Yes, we will comply</td>
</tr>
<tr>
<td>Delivery Term (INCOTERMS)</td>
<td>Click or tap here to enter text.</td>
</tr>
<tr>
<td>Delivery Lead Time</td>
<td>Click or tap here to enter text.</td>
</tr>
<tr>
<td>Warranty and After-Sales Requirements</td>
<td>Click or tap here to enter text.</td>
</tr>
<tr>
<td>Validity of Quotation</td>
<td>Click or tap here to enter text.</td>
</tr>
<tr>
<td>Payment terms</td>
<td>Click or tap here to enter text.</td>
</tr>
<tr>
<td>Other requirements [pls. specify]</td>
<td>Click or tap here to enter text.</td>
</tr>
</tbody>
</table>

Other Information:

HLCM-PN/UNDP RFQ – October 2020
<table>
<thead>
<tr>
<th>Estimated weight/volume/dimension of the Consignment:</th>
<th>Click or tap here to enter text.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Country/ies of Origin: (If export licence required this must be submitted if awarded the contract)</td>
<td>Click or tap here to enter text.</td>
</tr>
</tbody>
</table>

I, the undersigned, certify that I am duly authorized to sign this quotation and bind the company below in event that the quotation is accepted.

<table>
<thead>
<tr>
<th><strong>Exact name and address of company</strong></th>
<th><strong>Authorized Signature:</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Company Name</strong></td>
<td>Click or tap here to enter text.</td>
</tr>
<tr>
<td><strong>Address:</strong></td>
<td>Click or tap here to enter text.</td>
</tr>
<tr>
<td><strong>Phone No.:</strong></td>
<td>Click or tap here to enter text.</td>
</tr>
<tr>
<td><strong>Email Address:</strong></td>
<td>Click or tap here to enter text.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Date:</strong></th>
<th>Click or tap here to enter text.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Name:</strong></td>
<td>Click or tap here to enter text.</td>
</tr>
<tr>
<td><strong>Functional Title of Authorised Signatory:</strong></td>
<td>Click or tap here to enter text.</td>
</tr>
<tr>
<td><strong>Email Address:</strong></td>
<td>Click or tap here to enter text.</td>
</tr>
</tbody>
</table>
## Bicycle trails on Llogara NP

### Bill of quantities

<table>
<thead>
<tr>
<th>Item No.</th>
<th>Description</th>
<th>Unit</th>
<th>Quantity</th>
<th>Price</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Excavation</td>
<td>m3</td>
<td>500</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Borrow</td>
<td>m3</td>
<td>300</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Rip Rap</td>
<td>mq</td>
<td>100</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Drainage Structures</td>
<td>ml</td>
<td>15</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Clearance</td>
<td>ls</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Bridge structures</td>
<td>ml</td>
<td>10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Retaining structures</td>
<td>m3</td>
<td>20</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Signs</td>
<td>pc</td>
<td>30</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Additional costs 5%</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>VAT 20%</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
National Consultant on developing design for bicycle trail on Llogara NP

June 2022
# Contents

1. Project background .......................................................... 4  
2. Scope of work ................................................................... 5  
3. Main goals ....................................................................... 5  
4. Principles for sustainable trails ........................................... 6  
5. Project description .......................................................... 6  
   5.1. Project area .................................................................. 6  
   5.2. Trail-specific planning .................................................. 10  
      5.2.1. Trail Layout ......................................................... 10  
      5.2.2. Topographical Survey ........................................... 15  
      5.2.3. Geometric design parameters ............................... 17  
      5.2.4. Design Considerations ........................................ 18  
         5.2.4.1. The Half Rule ............................................... 18  
         5.2.4.2. Sheet Flow .................................................. 19  
         5.2.4.3. Waterbars .................................................. 19  
         5.2.4.4. Clearing Limits ............................................. 21  
         5.2.4.5. Typical cross sections .................................... 22  
         5.2.4.6. Drainage ...................................................... 23  
         5.2.4.7. Retaining wall ............................................... 24  
         5.2.4.8. Bridges ...................................................... 24  
         5.2.4.9. Bill of quantities ........................................... 25  

References ................................................................. 26
National Consultant on developing design for bicycle trail on Llogara NP

Figures

Figure 1. Map of Llogara National Park. In border with Karaburun Natural Park and Karaburun Sazan Marine National Park ....................................................... 7
Figure 2. Map of hiking trails in Llogara-Karaburun Natural Complex ................................................................. 9
Figure 3. Trail Layout ........................................................................ 10
Figure 4. Images from the proposed biking trail ........................................ 11
Figure 5. Images from the proposed biking trail ........................................ 12
Figure 6. Three-dimensional view of terrain .............................................. 15
Figure 7. The proposed biking trail plan .................................................. 16
Figure 8. The trail grade shouldn’t be more than half the grade of the side slope. ................................................ 18
Figure 9. Design elements for a rolling contour trail ...................................... 19
Figure 10. Logs used for waterbars ......................................................... 20
Figure 11. Reinforced armored grade dip.................................................. 20
Figure 12. Clearing Limits ................................................................... 21
Figure 13. Typical cross sections ............................................................. 22
Figure 14. Standard culvert with headwalls .............................................. 23
Figure 15. Retaining wall ................................................................... 24
Figure 16. Multiple Log Stringer Bridge .................................................. 24

Tables

Table 1. Points of interest ........................................................................ 13
Table 2. Trail Characteristics .................................................................. 13
Table 3. Site Coordinates ...................................................................... 15
Table 4. Geometric design parameters .................................................... 17
1. **Project background**

The Government of Albania (GoA) is engaged in a significant improvement toward the management effectiveness of the country’s system of Protected Areas (PAs), covering about 21% of the territory; it is substantially contributing to planning, administration and use of PAs in Albania updating and improving the legal context for the declaration, conservation, administration, management and use of the PAs, and their natural and biological resources as well as facilitating conditions for the development of environmental tourism, public information, education and the generation of direct and indirect economic benefits by the local population as well as the public and private sector.

Current capacities to generate, administer and improve PA revenue sources, are still way below the levels required to ensure the effective and efficient management of the entire PAs system. Thus, the Ministry of Tourism and Environment and its agencies will need to have the ability to: (i) secure sufficient, stable and long-term financial resources for protected areas; (ii) allocate these resources in a timely manner and appropriate form to cover the full costs of protected areas; and (iii) ensure that the protected areas are managed effectively and efficiently with respect to conservation and other complementary objectives.

In this regard, the project seeks to assist the government of Albania (GoA) in reducing existing funding gaps for the PAs network, improving the management and cost-efficiencies for each of the PAs and building the financial management capacities of PAs nationwide, by increasing the capacity of the central and regional/local staff, focusing in: (i) building the financial management capacities of the agency responsible for the management of protected areas (NAPA/RAAs); and (ii) demonstrating the efficacy of different financing strategies in a subset of individual PAs. Several mechanisms were developed and tested in 3 protected areas (namely Mountain Dajti NP, Divjake – Karavasta NP and the complex Llogara-Karaburun-Sazan) to increase incomes from conventional financial sources.

In this regard, one of the generating instruments in Llogara NP is to diversify tourism offer by introducing and operating a bicycling trail for visitors and tourists, which as per project estimates shows a great interest. The development of tourism campaigns to incite visitors to bike in the park would be necessary the first few months, whereas integrating bicycles into the offer, could be a good step to bring people to this activity and to encourage ways to discover
National Consultant on developing design for bicycle trail on Llogara NP

this protected terrestrial area through bike riding. The renting facility could be accommodated alongside the visitor center and could consist in an adjoining wooden structure with the sole purpose of bike stocking.

2. Scope of work

The scope of work is designing. The scope of the assignment is to contribute to the improved tourism facilities and infrastructure in Llogara National Park, namely by establishing a sustainable recreational bicycle trail on Llogara NP. In close cooperation with the Regional Administration of Protected Areas of Vlorë, the consultant will have to:

- Analyze and determine the baseline of the project by visiting the site
- Prepare the project idea considering several elements of the activity
- Prepare the project design with all necessary specifications
- Elaborate and provide BOQ (price quotation estimates) for all relevant works envisaged to accomplish proposed measures

3. Main goals

The main goal is designing a trail of:

- physically and ecologically sustainable trail that serve the needs of users while preserving the place and protecting the surrounding environment.
- Develop a sense of ownership and responsibility with the public for stewardship of trails is a key ingredient of creating and maintaining sustainable trails.
- economically sustainable ensuring that the implementing agency has the capacity to economically support the trail over its life cycle.
- Developing a long-term maintenance strategy is a critical aspect of initial trail planning and fundamental to a successful trail program.
4. **Principles for sustainable trails**

Building sustainable trails means providing recreational trail opportunities that limit impact on natural and cultural resources. On the ground, this means building trails that are long-lasting, at grades that will not erode easily, do not impact existing drainages, and are not easily affected by runoff. Trails can meet these conditions through proactive planning, proper siting, sustainable design, and maintenance.

Trails must be responsibly developed to avoid diminishing the natural environment or the experience of being in a natural setting. The objective of this manual is not to limit or preclude trail opportunities, but to embrace and promote them in a sustainable manner, striking a reasonable balance between resource protection and human access and enjoyment. The following are high-level principles for building sustainable trails.

- Features and structures are in scale with the natural environment
- The visual quality of the landscape or specific landscape features is not diminished
- Soil resources are protected from human-caused erosion
- The introduction of invasive species is avoided

**Guiding Principles for Sustainable Trails**

- Avoid Sensitive Ecological Areas and Critical Habitats
- Develop Trails in Areas Already Influenced by Human Activity
- Provide Buffers to Avoid/Protect Sensitive Ecological and Hydrologic Systems
- Use Natural Infiltration and Best Practices for Stormwater Management

5. **Project description**

5.1. **Project area**

Llogara National Park is located in the south of Vlora, at a distance of 40 km, in the Northwest of the mountain range of Çikë – Lungrë. The Çika mountain (2045 m) and the peak named Maja e Qorres (2018 m) are the two highest peaks descending towards the Qafa e Llogarasë (1027 m) and Valley of Dukat located North-West of it.

The park has been proclaimed as a protected area on 1966 and it belongs to the second category of protection according to IUCN. The park surface and borders were revised on
January 2022, with an area of 1,769.2 ha. The National Park is under the administration of the National Agency of Protected Areas, territorially represented by the Regional Administration of Protected Areas in Vlora Region.

Figure 1. Map of Llogara National Park. In border with Karaburun Natural Park and Karaburun Sazan Marine National Park.

The territory of Llogara National Park, from the geomorphologic point of view is composed by limestone and dolomite rocks of the upper Cretaceous and less by formations of flushes and molasses. The presence of the dolomites along tributaries of the western slopes of the Çïka Mountain and Dukati has created the different forms of karsts. Its geographical positions offer different landscape forms, as well as specific climate conditions which have determined the different types of habitats and vegetation, and the floristic and faunistic richness of the Park.

The flora is represented by dominant species like the Bulgarian fir (Abies borisii-regis Mattf.), the European black pine (Pinus nigra), the common box (Buxus sempervirens), the kermes oak (Quercus coccifera), the common yew (Taxus baccata), the European hop-hormbeam (Ostrya carpinifolia) and other species such as the Bosnian pine (Pinus leucodermis Antoine), the evergreen oak (Quercus ilex L.), the Norway maple (Acer platanoides L.), the manna Ash
National Consultant on developing design for bicycle trail on Llogara NP

(Fraxinus ornus L), the black elder (Sambucus nigra L), the common holly (Ilex aquifolium) etc.

In the park there are present endemic species like: St. John’s wort (Hypericum haplophyloides), the summer snowflake (Acis ionica), the red wild liliums (Lilium calchdonicum L) etc. Also, medicinal plants can be found such as the mountain tea (Sideritis raeseri Boiss. & Heldr.), the common sage (Salvia officinalis L.), the oregano (Origanum vulgare L), spring crocus (Crocus vernus (L.) Hill), autumn crocus (Colchicum autumnale L) and balm mint (Melissa officinalis L.). Fauna is represented by dominant species like the wild boar (Sus scrofa), the gray wolf (Canis lupus), the red fox (Vulpes vulpes), the mustelidae (Common mustelidae), the cape hare (Lepus capensis), the rock partridge (Alectoris graeca), the gray-headed woodpecker (Picus canus), the grass snake (Natrix natrix), vipera (Vipera ammodytes).

Among natural values, the national park has high historical values. In 48 BC, during his war against Pompey, Julius Caesar passed across the park with his army. The place where the army campee was later named after him and since then it has been called "Caesar’s Pass". The site is an important destination in Albania for tourism and leisure activities. Several activities such as hiking, alpine tourism, picnics, are taking place in the area. Actually, tourism has become the main activity of the park, offered mainly by hotels and restaurants operating in the park area. Few efforts have been done so far to promote ecotourism within the park as a toll toward sustainable development of the area. The demand for ecotourism activities is still limited in hiking and picnics, mostly by foreign tourists. Introducing and operating a bicycling trail for visitors and tourists, is estimated to be of great interest. Nevertheless, this activity must be well promoted and integrated in touristic packages for the visitors who access this area and who are willing to discover this protected terrestrial area through bike riding. The most known attractions within the park are the "Flag pine" Natural monument; the two highest peaks of Llogara, "Maja e Çikës and “Maja e Qores”, which offer a fantastic view of Ionian Sea; "Caesar’s Pass," the historical place where Caesar and his army camped during his battles against Pompey. Within the park are marked and mapped 50 km trails that connect these attractions. Some of them are daily trails, which mean that can be done within a day and most of them are categorized as easy. Most of the trails starts from the visitor center and some of them go beyond the border of the park, within Natural Park of Karaburun.
Figure 2. Map of hiking trails in Llogara-Karaburun Natural Complex

- Qafa e thelle
- Qafa e thelle- Dedhile’s spring
- Qafa e thelle- Palasa’s river delta
- Caesar’s pass- Ponace’s spring
- Hole of Konduka- Thanasi’s peak
- Palasa’s river delta- Bay of Saint Andre
- Llogara pass- Qore’s peak- Çika’s peak
- Gropat e Pirit
- Delta of Palasa stream
5.2. **Trail-specific planning**

5.2.1. **Trail Layout**

*Figure 3. Trail Layout*
National Consultant on developing design for bicycle trail on Llogara NP

The projected trail is a linear layout trail (point to point) starting from the Llogara Turist Village ending to Dukat Agroturism. Both start and end point are accessible from the motorway primary road. The trail has a length of approximately 2.3 km and passes through various points of interest, such as Llogara Visitor Center, various local restaurants, camping fields, etc.

Figure 4. Images from the proposed biking trail
Figure 5. Images from the proposed biking trail
National Consultant on developing design for bicycle trail on Llogara NP

**Table 1. Points of interest**

<table>
<thead>
<tr>
<th></th>
<th>Points of interest</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Bike Trail Llogara National Park (Start)</td>
</tr>
<tr>
<td>2</td>
<td>Crossway</td>
</tr>
<tr>
<td>3</td>
<td>Crossway</td>
</tr>
<tr>
<td>4</td>
<td>Crossway Visitor Centre</td>
</tr>
<tr>
<td>5</td>
<td>Crossway Sofo Restaurant (Bridge)</td>
</tr>
<tr>
<td>6</td>
<td>Crossway</td>
</tr>
<tr>
<td>7</td>
<td>Waypoint</td>
</tr>
<tr>
<td>8</td>
<td>Field</td>
</tr>
<tr>
<td>9</td>
<td>Sport Field</td>
</tr>
<tr>
<td>10</td>
<td>Crossway</td>
</tr>
<tr>
<td>11</td>
<td>Sign</td>
</tr>
<tr>
<td>12</td>
<td>Crossway</td>
</tr>
<tr>
<td>13</td>
<td>Field</td>
</tr>
<tr>
<td>14</td>
<td>Crossway</td>
</tr>
<tr>
<td>15</td>
<td>Field</td>
</tr>
<tr>
<td>16</td>
<td>Crossway Dukat Agrotourism</td>
</tr>
<tr>
<td>17</td>
<td>Perroske</td>
</tr>
<tr>
<td>18</td>
<td>Dukat Agrotourism (Finish)</td>
</tr>
</tbody>
</table>

**Table 2. Trail Characteristics**

<table>
<thead>
<tr>
<th>Trail characteristics</th>
<th>Natural surface</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surface type</td>
<td>Natural surface, the predominant trail type in town forests, provide high-quality nature experiences. These trails are typically narrow, following the natural contours of the land, with careful attention paid to slopes, tread compaction, and water drainage to promote sustainable trail design and maintenance.</td>
</tr>
</tbody>
</table>
National Consultant on developing design for bicycle trail on Llogara NP

<table>
<thead>
<tr>
<th>Trail Layout</th>
<th>Linear Trail Layout (Point-to-Point)</th>
<th>The simplest trail layout has a point of origin and a destination. It connects two points or links two trails. This layout should be used where there are points of interest</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trail User Objectives</td>
<td>Nature</td>
<td>Connection to nature. This can be anything from being among a few trees in the middle of the city to remote backcountry. Nature is an important factor for many riders.</td>
</tr>
<tr>
<td>Trail Rating</td>
<td>Easy</td>
<td>For all types of bike users</td>
</tr>
</tbody>
</table>
5.2.2. Topographical Survey

Table 3. Site Coordinates

<table>
<thead>
<tr>
<th></th>
<th>North</th>
<th>East</th>
<th>Elevation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Start</td>
<td>4453031.969</td>
<td>378843.752</td>
<td>763.55</td>
</tr>
<tr>
<td>End</td>
<td>4451397.684</td>
<td>379604.227</td>
<td>911.13</td>
</tr>
</tbody>
</table>

Figure 6. Three-dimensional view of terrain
Figure 7. The proposed biking trail plan
5.2.3. Geometric design parameters

<table>
<thead>
<tr>
<th>Table 4. Geometric design parameters</th>
</tr>
</thead>
</table>

| Design speed | 20-25 km/h | National and regional standards vary design speed depending on the role of the route in the network and its location. Typically, it means 20 km/h for local and 30 km/h for main cycle routes, with even higher values (35-45 km/h) for cycle highways or outside built-up areas. Regardless of the route category, design speed needs to be increased on inclines/declines. On the other hand, some standards allow somewhat reduced design speed in the intersection area. 10-12 km/h is usually used as the lowest possible threshold; below that speed a standard two-wheeled cycle becomes unstable. |
| Minimum horizontal curve radius | | Nearly all standards agree that a curve radius between 20 and 25 m is required for a design speed of 30 km/h. Requirements vary more both for lower and higher speeds: between 8 and 15 m for 20 km/h and between 25 and 47 m for 40 km/h. |
| Minimum vertical curve radius | 20 m concave 10 m convex | Vertical curves are applied to avoid sudden changes of gradient. They need to ensure comfort and stability of riding, so the bicycle wheel does not jump on concave "bump", or crash into the opposite wall of a convex "hole". Vertical curves, especially concave, have also an impact on sight distance. |
| Minimum sight distances | 20-25 m | A cyclist should be able to see the road ahead of them enough to have time to react to obstacles or other users. The required sight distance calculations involve the reaction time and the time needed to decelerate. |
| Design grade Target Grade Short distances grade | Less than 10% Less than 30% |
5.2.4. Design Considerations

5.2.4.1. The Half Rule

Building sustainable trail grades helps keep maintenance at bay. This design element comes from IMBA’s “Trail Solutions” book (2004). It’s called the half rule. The half rule says that the trail grade should be no more than half the side slope grade (figure 5). This rule really helps when putting trails on gentle side slopes. Fall-line trails let water funnel down, causing erosion and ruts. As side slopes get steeper, trails designed using the half rule can be too steep.

Figure 8. The trail grade shouldn’t be more than half the grade of the side slope.
5.2.4.2. Sheet Flow

When rain falls on hillsides, after the plants have all gotten a drink, the water continues to flow down the hill in dispersed sheets—called sheet flow (figure 6). All the design elements for a rolling contour trail—building the trail into the side slope, maintaining sustainable grades, adding frequent grade reversals, and out sloped tread—let water continue to sheet across the trail where it will do little damage.

![Diagram of Sheet Flow](image)

*Figure 9. Design elements for a rolling contour trail*

5.2.4.3. Waterbars

*Waterbars* are commonly used drainage structures. Make sure that waterbars are installed correctly and are in the right location. Water moving down the trail turns when it contacts the waterbar and, in theory, is directed off the lower edge of the trail. Logs used for waterbars need to be peeled (or treated with preservative), extended at least 300 millimeters (12 inches) into the bank, staked or anchored, and mostly buried. There are many types of waterbars such as timber waterbar, rock waterbar, Reinforced Armored Grade Dip
National Consultant on developing design for bicycle trail on Llogara NP

Log or Treated Timber Waterbar and Anchors

- Embed log 300 mm (12 in.)
- Log flush with tread on downgrade side.
- Top of waterfall 45 to 60°
- Waterbar 300 mm (12 in.)
- Extend log 400 mm (12 in.) beyond edge of trail.
- Top of waterbar is 150 mm (6 in.) above surface or upgrade side.

Anchoring Methods

- Trail tread
- Rock anchor

- Log 300 mm (12 in.)
- Trail tread
- Rock anchor

- Embed 3 in.
- 406 barbed or ring-shank nails
- 50 by 450 mm (2 by 18 in) square hardwood stakes
- 100 mm (4 in.) (min.)
- Steel pin flush with top, rebar #4 by 450 mm (18 in)

Figure 10. Logs used for waterbars

Reinforced Armored Grade Dip

- Drainage
- TOP VIEW
- Direction
- SIDE VIEW
- Riprap tray
- Rock waterbar
- Retainer bar

Figure 11. Reinforced armored grade dip
5.2.4.4. Clearing Limits

Figure 12. Clearing Limits

Clearing height will be 2.5-3.0 m
Trail bed will be 1.5-3.0m
Trailway will be 2.5-4.0m
5.2.4.5. Typical cross sections

TYPICAL TRAIL CROSS SECTIONS

A FULL BENCH SECTION

B BALANCED SECTION

C FLAT SECTION

Figure 13. Typical cross sections
5.2.4.6. Drainage

Standard culverts with headwalls

Figure 14. Standard culvert with headwalls
5.2.4.7. Retaining wall

Figure 15. Retaining wall

5.2.4.8. Bridges

Multiple Log Stringer Trail Bridge

Figure 16. Multiple Log Stringer Bridge
References

- Sign and Poster Guidelines for the Forest Service
- Vermont Town Forest Trail Design Guide
- IMBA Guidelines for a Quality Trail Experience
- Geometric design parameters for cycling infrastructure, ECF
- Guidelines For The Design, Construction And Maintenance Of Visitors And Auxiliary Structures In Protected Areas, NAPA 2020