

**Ministry of Infrastructure and Transport, Royal Government of Bhutan****ACCELERATING TRANSPORT AND TRADE CONNECTIVITY IN EASTERN SOUTH ASIA – BHUTAN PHASE 1 PROJECT****Terms of Reference for Consulting Services****Bridge and Structure Specialist****(individual Consultant for intermittent services)****1. Background**

The deepening relationship among Bangladesh, Bhutan, India, and Nepal on regional trade and transport is reflected by the increasing number of regional and bilateral connectivity agreements. However, although trade between them has been increasing over the years, opportunities for growth through regional trade remain largely untapped.

Low regional trade reflects the high cost of connectivity. Several factors account for the high cost, including inadequate transport and trade infrastructure, cumbersome regulations, manual processes, and protective tariffs and non-tariff barriers. The Trade Restrictiveness Index, which captures the trade policy distortions that each country imposes on its import bundle, shows South Asia with the greatest protection compared to any other region.

However, despite the region's large road, rail, and waterway networks, the degree of multimodal freight movement is limited at the national level, and even less for cross-border freight traffic. Each of the modes of transport has largely evolved separately, with only nascent efforts to facilitate multimodal transport operations. An effort will, therefore, be required to strengthen the road, waterway, and railway networks and develop freight markets that allow more efficient coexistence and interfaces between the transport modes. This also entails providing last-mile connectivity by improving congested and less-developed road sections connecting to international borders and other trade gateways.

To overcome some of these impediments to regional trade and connectivity, the Royal Government of Bhutan (RGOB), with financial support from the World Bank, has conceived a multi-phase project: Accelerating Transport and Trade Connectivity in Eastern South Asia (ACCESS).

The objective of the proposed project is to increase the efficiency and resilience of trade and transport along selected corridors in Bhutan. The proposed project is expected to reduce trade and transport costs through (i) an increase in throughput at priority border points; (ii) a reduction in average travel time for vehicles along selected regional corridors; (iii) a reduction in annual fatalities on program corridors; and (iv) increase the number of people provided with improved climate resilient road access along regional corridors.

Using a portion of Project Preparation Advance from the World Bank The Department of Surface Transport (DoST) intends to contract an appropriately qualified individual interested in rendering consulting services for planning, design review and construction phase technical backstopping for bridges and high retaining structures. The services will be procured following the World Bank's Procurement Regulations for IPF Borrowers, July 2016, And Revised November 2020.

**2. Objectives**

The main objective of the consulting services is to review technical proposals and designs submitted by design consultants and provide technical backstopping during the construction of different types and spans of bridges and retaining structures.

### 3. Scope of Services

- Review the available secondary data on climate, hydrology, topography, geology, seismicity, traffic patterns, etc. to check the bridge design parameters. Familiarize herself/himself with the Bhutan bridge design code and related aspects.
- Check the appropriateness of the bridge location, type, span, and width based on the submitted design by the firm tasked with the design.
- Check the standards, codes, and methodology used in design.
- Check the relevancy and reliability of the analysis and design software used.
- Check the constructability of the reviewed designs at the proposed location.
- See if all the required work items, equipment and materials required for the proposed bridge are considered in the Bill of Quantities and Specifications.
- Review the design from a value engineering perspective and find ways to optimize costs.
- Ascertain the quality assurance tests required for construction materials, piles and other bridge elements.
- Ascertain the need to change the type and depth of the designed foundation and other bridge elements due to unforeseen factors during construction.
- Provide suggestions to resolve contractor's claims and variation proposals.
- Guide, train and support the Employer's technical staff on manual and software-based reviews of the designed bridge elements.
- Help to introduce more cost-effective measures for bridge construction.
- Help with capacity enhancement of the Bridge Division of DOST.
- Suggest specific technical interventions and adaptive measures against climate change vulnerabilities.
- Review the technical guidelines and standards used by the Employer on bridge design and maintenance, and if necessary, suggest policy-level interventions in planning, designing and constructing bridges.
- Identify appropriate relevant training opportunities and field visits for the Employer's technical staff.
- Any other bridge/structure-related tasks requested by the employer.
- Visit sites to verify if needed or asked by the employer

### 4. Qualifications

- Education: Graduate in Civil Engineering, preferably master's degree in Bridge Engineering, Structural Engineering, or a related topic.
- Experience: 15 years of general experience as a Structural Engineer in bridge design, imparting training on the design, construction, and maintenance of bridges. Specific experience in designing and construction-phase backstopping for over 2,000 m of RCC-girder, pre-stressed, box-girder, and steel bridges. At least two bridge design and one construction project completion experience are required. Proficient in the use of at least two different analysis and design software packages. Advanced user of MS Excel or other tools to review or develop cost estimates. Designing and construction-phase backstopping of bridges parallel to existing bridges will be an advantage.
- Language: Fluency in written and spoken English.

**5. Duration of Services**

6. The consultant will be selected for 1 year with intermittent input of 30 days within 12 months. The contract duration may be increased based on the need of the Project and the performance of the consultant.

**7. Supervisor and Reporting Requirements**

The consultant shall report to the Project Director/Component Manager. He/she shall prepare reports and slide presentations on the assigned tasks.

**8. Remuneration and Compensation**

The consultant shall be provided with the remuneration and benefits as per the contract.

The contract will mention a daily or hourly input per year, which shall include all his overhead, social charges and other associated costs and insurance premiums.

The international and local travel as well as accommodation during visits to Bhutan and the logistics for the training rendered locally shall be reimbursed. Any income tax or other direct tax to be paid by the consultant in Bhutan shall also be reimbursed.

Training and study visits organized for the Employer's technical staff shall be paid separately.

**9. Facilities to be provided by the Employer**

The consultant shall be provided with working space at DOST office with basic furniture, internet access, stationery and photocopying facility during her stay in Bhutan.

The Consultant is expected to bring his/her own laptop with the required software to render the expected services.

**10. Selection Process**

Selection of the consultant will be carried out in accordance with the approved selection methods for Individual Consultants as stated in the "World Bank's Procurement Regulations for IPF Borrowers, September 2023.