

**TERMS OF REFERENCE
FOR
Individual Consultant (National)
(STRUCTURE SPECIALIST)**

DHAKA MASS RAPID TRANSIT DEVELOPMENT PROJECT LINE-5: SOUTHERN ROUTE [PRF]

1. Purpose and Objectives

The objective of the Individual Consultancy of the Structure Specialist is to provide technical and analytical support to Project Director and other technical members of the Project Implementation Unit (PIU) for reviewing civil engineering structural design for depot, tunnel and viaduct, underground and elevated stations along the route alignment of MRT Line 5: Southern Route. The consultant will assist overseeing the civil work components of the detailed engineering design under the PRF through providing specific suggestions to the PIU in any issues related to structural engineering of this project.

2. Background and Rationale

Dhaka is one of the most densely populated cities in the world, estimated to be over 20 million at present time and close to 30 million projected in 2035. A huge number of people travel every day by road to places of work, business, education, health care, commerce, leisure, which clog the streets and cause congestion and delays to travel and business. In response to this traffic congestion and to make a significant impact in Dhaka citizens, the Government of Bangladesh (GoB) decided to implement a modern urban transport program for Dhaka, which was formulated in the Strategic Transport Plan (STP) for Dhaka Metropolitan Area (DMA) in 2005 and updated in the Revised Strategic Transport Plan in 2010. In line with RSTP's vision "Green Dhaka with Blue River and Green Urban", an exhaustive transport network is planned on which Metro Line-5 (South) from Gabtoli to Balirpar is one of its backbones.

To evaluate the possibility of a metro project from a technical, financial, environmental and social point of view, a pre-feasibility study has been carried out on March 2019 under ADB financial assistance. The People's Republic of Bangladesh made a loan agreement with Asian Development Bank (ADB) on 11 December 2019 for implementation of Dhaka Mass Rapid Transit Development Project Readiness Financing (PRF) (Line 5, Southern Route). The PRF will assist preparation of feasibility study, detailed engineering design and procurement assistance of the proposed Dhaka Metro Line 5 (Southern Route) Project (the Project of the ensuing Project) to contribute to its high project readiness.

On consequence of it, a contract was signed on 29 March 2021 for consulting services of feasibility study, engineering design and procurement support for the project readiness financing of MRT Line-5: Southern Route between DMTCL and EGIS RAIL S.A (Lead Partner), France JV with Oriental Consultants Global Co. Ltd., Japan, SMEC International Pty Ltd., Australia, Egis India Consulting Engineers Pvt. Ltd., India (collectively said as ESO Consortium).

As per pre-feasibility, Length of MRT line-5: Southern Route is 17.40 km out of which 12.80 km is underground and 4.60 km is elevated. It has total 16 stations. Out of 16 stations, the route requires 12.8 km of underground stations in the central areas of Dhaka and 4 elevated stations. It will start from Gabtoli and end at Balurpar somewhere beyond Aftabnagar. It will be connected with other MRT lines also. The route alignment of MRT line-5: Southern Route is: Gabtoli - Technical - Kallyanpur - Shamoli - College Gate - Asad Gate - Rasel Sqaure - Karwanbazar - Hatirjheel West - Tejgaon - Niketon - Aftabnagar West - Aftabnagar Centre - Aftabnagar East - Desherkandhi – Balurpar. The project will have interchange facilities with the MRT Line-5: Northern Route and proposed Line-2 at Gabtoli Station; with MRT-6 at Karwan Bazar area and the MRT-1 at its Hatirjheel East Station. However, so far study done by ESO, the station location may shift somewhere along the same route alignment. A depot is planned to be constructed at the east end of the line near Dasherbandi area. A depot is planned to be constructed at the east end of the line near Dasherbandi area. The ensuing project will also include equipment components such as rolling stocks, signalling communication system, power supply system, escalators and elevators, screen doors and maintenance equipment. It will be the second east-west metro rail corridor after ongoing MRT line-5: Northern Route.

Part of the funds from the PRF shall be used for engaging individual consultants with special expertise as advisors to the Dhaka Mass Transit Company Limited (DMTCL), the Implementing Agency of the ensuing Project, and its project implementation unit (PIU) to facilitate implementation of the PRF as well as ensuring the quality of the engineering design to be produced through providing advice on specific issues encountered during the design process.

3. Scope of Services

Provide technical and analytical support to Project Director and other technical members of the Project Implementation Unit (PIU) regarding civil engineering structural design for depot, tunnel, viaduct, underground and elevated stations.

To ensure consistency and optimality of the overall detailed engineering design of the project, the consultant shall work in close coordination with the other individual consultants including Railway Specialist, Railway Civil Engineering Specialist, and Tunnel Expert, to be engaged concurrently by the DMTCL under the project.

4. Detailed Tasks

- Assist the technical team of Project Director in finalizing the structural detailed design by reviewing design reports and drawings for depot, tunnel, viaduct, underground and elevated stations provided by engineering design consulting firm to ensure quality of the deliverables.
- Assist the PIU in verifying the key structural factors, considerations adopted for stations, depot and stabling yard, underground sections and tunnels, viaducts as per the detailed scope of work of the contract documents with the engineering design consultant firm as well as the applicable national standards and good practices, and, to the extent feasible and necessary, international standards and good practices commonly

adopted in the local context. Also, check the technical aspects and design parameter as per the developed design standards in feasibility study reports.

- Assist the PIU in checking the structure, layout, facilities and construction plan for stations, depot and stabling yard, underground sections and tunnels and viaducts as per the requirement.
- Assist the PIU in reviewing the basic design reports and detailed design reports submitted by the engineering design consulting firm. Also, assist the PIU in verifying the documents/reports produced by the engineering design consulting firm for structural design and drawings time to time.
- Assist the PIU in checking the structural drawings in accordance with the specific requirements for design drawings as described in the contract documents with the engineering design consulting firm.
- Assist the PIU in checking the structural calculations and reports submitted for tunnel, station, depot and viaduct.
- Assist the PIU in reviewing and checking the similarity and dissimilarity of design and inputs from other MRT lines in Dhaka so as to provide justified inputs on deliverables. Also, assist the PIU by providing technical suggestion when needs interfacing with other lines.
- Any other related services instructed by client time to time.

5. **Required Qualification**

a. **Educational Qualification:** Bachelor's degree in Civil Engineering or relevant field. Candidates having advanced academic degree. i.e., Masters or PhD/professional qualification/training in structural engineering will be given preference.

b. **General Experience:** Have 15 years of general experience.

c. **Specific Experience:**

- (i) At least 10 years' proven working experience in planning, designing and implementing projects which should include civil structure design
- (ii) Working experience on similar projects in the transport sector, preferably financed by international financing institutions
- (iii) Preferably having advanced abilities to work with software for design and structural analysis

6. **Duration and Location(s) of Assignment**

Required inputs would be 6 months, on staggered time basis, over a period of 2 years (on an on-call basis as and when needed) starting from August 2022. As such the consultant's input will be intermittent. The duty station will be Dhaka for the execution of services.

7. Deliverables/Reporting requirement

The Technical Consultant will report administratively to the Project Director, DMRTDP (Line -5): Southern Route [PRF] and will submit Monthly report on the status of progress of his/her activity and will provide specific reports/notes from time to times as requested by PIU.

8. Counterpart Support by PIU

PIU would provide appropriate office space and other associated facilities necessary to carry out his/her roles and responsibility. It will also provide access to all the necessary information for performing the services, including past reports on the project, the reports to be produced by the engineering design consultant, the applicable standards/specifications/regulations, and data.

9. Selection Method

Selection of the Consultant will follow the procedures for Selection of Individual Consultants as described in the ADB Procurement Staff Instruction (2017, as amended time to time).