

- a) The work experiences for the proposed key personnel shall be based on actual experiences gained and not from the date of the graduation.
- b) For the **Resident Project Manager**, the work experiences shall be either **full time bridge construction supervision work (Project Management) OR construction execution of permanent bridge**.
- c) The **construction supervision experience of Resident Project Manager** shall be considered only if he/she has carried out supervision for **at least one project** involving a similar type of bridge specifically a **Steel Arch Type Bridge**. Additionally, the work experience must be **supported by relevant document from the Client/employer**.
- d) The **bridge construction execution work experience of the Resident Project Manager** will only be considered if he/she executed **at least one project** involving a similar type of bridge specifically a **Steel Arch Type Bridge**. Furthermore, the work experience must be **supported by relevant documents from the Client/employer**.
- e) **Failing to meet either one of the aforementioned pre-requisite criteria (c or d) shall result in the non-evaluation of qualification and experience of the key personnel, as detailed in the evaluation breakdown.**
- f) For the **site supervisor**, the work experiences for both full time construction supervision and construction execution work experiences shall be considered as specified in detailed break-up of evaluation criteria.
- g) **For the lowest evaluated bidder that qualifies technically despite fulfilling the minimum criteria for the key personnel, the bidder shall commit the employment during the time of signing the contract. Failure to deploy the committed key personnel will result in non-payment of the remunerations . If the Consultant fails to address such deficiencies within reasonable time ascertained by the Client, it shall constitute a fundamental breach of contract.**
- h) Only those work experience record (in CVs) **with supporting documents from its Client/ Employer** shall be considered. If necessary, the supporting documents submitted would be further verified by evaluation committee.
- i) The work experiences for number of construction supervision of bridges carried out and participation by Nationals shall be evaluated and marked only if the proposed key personnel fulfil the minimum specified qualification.
- 5) Consultants are required to make presentation on the evaluation criteria No ii) **"Adequacy of the proposed methodology and work plan in responding to the Terms of Reference"** during the time of bid evaluation to a Technical Committee of the Department.
- The proposed **Resident Project Manager** shall make presentation on how the construction supervision of bridges shall be carried out taking into consideration the international best practices in Construction Project Management and at the same time the skills and know-how of our Contractors. The scores for these criteria shall be

by .

Detailed Break-up of Evaluation Criteria

Description	Score	Percent	Maximum score
I) Experience of the Consultancy Firm (for Class C6)			5.00
a) General Experience as a technical construction supervision consultant (3 pts)			
1) Less than one year	1	33%	2 (42.86% of 7)
3) More than one year	2	67%	
b) Specific Experience relevant to the assignment (i.e. construction supervision of permanent bridge work of span 40m and above (3 pts)			
1) One bridge	1	33%	3 (50% of 7)
2) Two bridges	2	67%	
3) More than two bridges	3	100%	
III) Adequacy of the proposed methodology and work plan in responding to the ToR			25
a) Technical Approach and Methodology for construction supervision (10 pts)			
1) Poor	2	20%	10 (28.6% of 25)
2) Satisfactory	4	40%	
3) Good	8	80%	
4) Very Good	10	100%	
b) Quality Assurance & Quality Control Approaches (10 pts)			
1) Poor	2	20%	10 (28.6% of 25)
2) Satisfactory	4	40%	
3) Good	8	80%	
4) Very Good	10	100%	
c) Work Plan, Organization and Staffing (5 pts)			
1) Poor	1	20%	5 (20% of 25)
2) Satisfactory	2	40%	
3) Good	4	80%	
4) Very Good	5	100%	
III) Key Personnel staff qualification and competence			62
K1: Resident Project Manager (62 pts)			47(75% of 61)
a) Qualification in the relevant field (22 Pts)			22(33.33 % of 60)
1) Master's Degree and above in Civil Engg. with 4 years' experience in full time construction supervision of permanent bridges OR Bachelor Degree in Civil Engg. with 5 years' experience in full time construction supervision of permanent bridges OR Bachelor Degree and above in Civil Engg. with atleast 7 years of work experience in contract work execution of permanent bridges.	22	100%	

2) Master's Degree and above in Civil Engg. with 3 years' experience in full time construction supervision of permanent bridges OR Bachelor Degree in Civil Engg. with 4 years' experience in full time construction supervision of permanent bridges OR Bachelor Degree and above in Civil Engg. with 5 years of work experience in contract work execution of permanent bridges.	16.5	75%	
3) Master's Degree and above in Civil Engg. with 2 years' experience in full time construction supervision of permanent bridges OR Bachelor Degree in Civil Engg. with 3 years' experience in full time construction supervision of permanent bridges OR Bachelor Degree and above in civil engg. with 3 years of work experiences in contract work execution of permanent bridges	11	50%	
4) Any others	0%	0%	
b) Experience in construction supervision/contract execution of permanent bridges of span of 40m span (single) and above (25 Pts)			25 (41.67 % of 60)
1) Two bridge	6.25	25%	
2) Three bridges	12.5	50%	
3) Four bridges	21.25	85%	
4) More than four bridges	25	100%	
K2: Site Engineer (15 pts)			15 (25% of 60)
a) Qualification in the relevant field (7.5 Pts)			7.5(12.5% of 60)
1) Diploma in Civil Engg and above. with 4 years' experience in contract execution of permanent bridges OR Diploma in Civil Engineering with 5 years of experience in contract execution of other infrastructures .	7.5	100%	
2) Diploma in Civil Engg and above. with 3 years' experience in contract execution of permanent bridges or Diploma in Civil Engineering with OR 3 years of experience in contract execution of other infrastructures .	5.63	75%	
3) Diploma in Civil Engg and above. with 1 year experience in contract execution of permanent bridges OR Diploma in Civil Engineering with 2 years of experience in contract execution of other infrastructures .	3.75	50%	
4) Any others	0	0%	
b) Experience in execution of permanent bridges of span of 25 m and above OR execution of other infrastructure project of contract duration not less than 12 months (7.5 Pts)			7.5(12.5% of 60)
1) None	0.00	0%	
1) One bridge/ project	3.75	50%	
2) Two bridges/ projects	5.63	75%	
3) Three or more bridges/ projects	7.50	100%	
(IV) Participation by Nationals among proposed key staff			8
a) Non-Bhutanese	0	0%	
b) Involvement of Bhutanese as:			
(1) Resident Project Engineer	4.00	40%	
(2) Resident Project Manager	4.00	100%	

Form FIN-2 Summary of Costs

SN	Personnel	Rate per month (Nu.)	Tentative Duration in months	Amount (Nu.)
1	Monthly Remunerations for the Key Personnel including overheads, in-country travel expenses, taxes, insurances, benefits, etc.:		27	
	a) Resident Project Manager			
	b) Site Supervisor			
2	Monthly Remunerations for the Support Staff including overheads, in-country travel expenses, taxes, insurances, benefits, etc.:			
	a) Office Assistant			
3	Project Vehicle - Pick UP or SUV 1. No (inclusive of driver, fuel, maintenance, etc.) to facilitate easy movement between the bridge site, Project Office, Regional Office for project related works for the Consultant and the Client's Project Engineer			
	(a) Driver			
	b) Hire charge of the vehicle (inclusive of fuel, operation, maintenance of project vehicle, etc.)			
4	Furnished office space both for the Consultant's engineers.			
5	Installation & monthly operating expenses including stationeries for telephone, printer, photocopy machine & e-mail/internet facilities, safety gadgets, etc. for the Consultant' engineers.			
Total Cost				

Footnote: Payments will be made in local currency Ngultrum (Reference to ITC 15.3) and the reimbursable expenses will be paid in actual as specified in ToR and the SC.



SECTION 5

TERMS OF REFERENCE

3.

Terms of Reference (ToR)

1. Background:

The Department of Surface Transport has the responsibility to maintain a total of 381 bridges of various types with total length of 13,390 mtr in the country. Out of the total of **381 existing bridges** on the national highways, Dzongkhag/GC roads & farm roads, **171** bridges are temporary bailey and bailey suspension bridges on National highways & Dzongkhag roads. Built in the 70's & 80's most of these existing bridges have outlived their design lives and are being used with reduced loading capacity and strict load limitations. Some of these old bridges are washed away by monsoon floods or damaged by vehicles carrying excessive loads beyond its capacity. On account of this fact, the temporary Bailey Bridges are planned for replacement by permanent ones with higher load carrying capacity.

The existing Tsangchuthama Bridge is located at Phuntshothang, along Deothang- Samrang Secondary National Highway and it comprises of two spans: one span constitute a Prestressed box girder of span 48.8m and second span constitute of Bailey bridge of 120ft (37.5m) with truss configuration of DDR (Double-Double Reinforced) having total bridge span of 85.39 meters. The Bailey bridge was originally constructed in 2005 with loading capacity of 18MT. The bridge was subsequently strengthened recently using old serviceable bridge parts to increase the load carrying capacity from 18MT to 30MT.

With increase in vehicular traffic including heavy vehicles over the years, this bridge with single lane (3.227m) and limited load carrying capacity has become inadequate to the demand of the road users. The existing bridge does not have pedestrian walkway which also poses risks to commuters and school going children. Further with ongoing major projects and quarry sites located within the vicinity of the bridge, it has become a paramount importance to upgrade and replace the existing Bailey bridge with permanent bridge of high load carrying capacity and wider carriage width.

The construction of new Tsangchuthama Bridge, which is 100m span and is of Steel Tied Arch Type, involves complex engineering process, necessitating the early identification of risks and implementation of appropriate safety measures. It is vital to ensure the construction adheres to the approved designs and specification to ensure the structural integrity & longevity of the bridge. In addition, proper and continuous monitoring of construction schedule is crucial to ensure that the work progresses as planned, minimizing the risk of project delays and cost over runs.

Thus considering the complexity and scale of the project, an extensive monitoring, supervision, and implementation of quality assurance and quality control measures are imperative. To achieve this, bridge construction works must be supervised by a professional Supervision Consultancy. A Supervision Consultancy would bring specialized knowledge and extensive experience to the project, providing technical guidance and timely solutions to challenges that may arise during construction. Furthermore, the consultancy would serve as a vital link between the Client, Contractor, and other stakeholders, ensuring seamless communication and coordination, thus reducing the likelihood of misunderstandings and facilitating the smooth execution of the project.



2. Details of the Bridge:

Name of Bridge:	Tsangchuthama
Span of the Bridge:	100 meters
Location:	Phunsthochang, Deothang – Samrang SNH
Bridge Type:	Steel Tied Arch.
Loading class:	Envelope of Double- lane of IRC Class A or single lane of IRC Class 70R (wheeled), whichever is critical.
No. of lanes:	2 lanes
Carriageway width:	7.5 meter
Footpath:	1.5 meter on both sides with cobble stamped finishing
Railings:	Suitable railings with traditional architectural features/painting and drainage outlets to be provided.
Lighting:	Lighting system on bridge & approach road.
Approach road:	Approach Road with smooth curves and transition with appropriate gradient on both the banks.
River Training Works:	Appropriate River Training Works
Project Duration:	30 months

3. Scope of the Consultancy Services:

As the Client's representative, the consultant's nominated Resident Project Manager will oversee and manage the project, ensuring that the construction is carried out in accordance with the design drawings, technical specifications, quality standards, and contractual conditions. The consultant, acting as the Client's representative, shall have the authority and power necessary to deliver the project successfully in terms of quality and cost.

However, the Resident Project Manager will consult the Client closely with respect to the following:

- (i) Approval to revise the design drawings.
- (ii) Approving variation orders/additional items that have financial implications.
- (iii) Approving subletting of any part of the works.
- (iv) Approving time extensions.



The services to be provided by the consultant shall include, but not limited to the following:

1. Full time supervision at the project site of the construction works by qualified and experienced engineers together with engineers of the Client and the Contractor.
2. Review & approve the contractor's work program, method statement, etc.
3. Review and approve the Quality Assurance Plans and Programs of the contractor.
4. Joint material testing, reviewing the test reports and certification of quality to ensure compliance with the technical specification.
5. Review & approve the fabrication, assembly, erection of steel members/hangers including the connections/joints in compliance to the design & technical specification
6. Accepting or rejecting any parts or parts of the completed works
7. Overall quality control and quality administration/ assurance.
8. Review and approval of shop/fabrication drawings, construction methodology, temporary works, staging/shoring etc.
9. Carry out measurements and review billing along with Client and Contractor's representatives.
10. Construction progress monitoring and evaluation.
11. Organize meetings (such as monthly progress review meeting, etc.) at the site regarding laboratory tests of materials, progress, plans, workmanship, labour, quality assurance and quality control and specifications.
12. Review monthly progress report submitted by Contractor and present during the monthly meetings. The report shall be in the form of **S-curve** and clearly showing the planned and earned values of both physical & financial progress.
13. Implement Occupational Health & Safety (OHS) as per contract agreement.
14. Certification of quality and workmanships on completion of the project.
15. Coordination between the Client and the Contractor.
16. Issue instructions where necessary to prevent delays in the construction works.
17. Monitor environmental impacts in coordination with the client of the project and ensure compliance with regulatory & environmental guidelines
18. Review and ensure on timely submission of as-built drawings at the end of bridge construction works.
19. Preparation and submission of comprehensive Final Project Completion Report.

4. Reports and Documents:

The consultant shall prepare and submit the reports and documents as listed below to the client on the format prepared by the Consultant and approved by the department.

Sl.No	Report	Frequency & Due date	Remarks
1	Progress reports	To be submitted monthly by 10 th of every succeeding month.	3 copies in hard copy.
2.	Final Project Completion Report	One time. To be submitted within 30 days after completion of project.	3 copies in hard and soft copy.

The report and documents submitted by the consultant shall include, but not limited to the following:



I. Progress Report

The monthly progress report shall contain details of physical and financial progress, projected progress of works for the forthcoming periods, quality control reports, minutes of meetings conducted and decisions taken therein, mobilization of resources (consultant and contractors). The report shall clearly highlight the delays during the month, if any, reasons for such delays and recommendations for corrective measures. Work progress photos, charts, material reports, etc. also be included in the report.

II. Final Project Completion Report

The consultant shall prepare a comprehensive final completion report of the construction after completion of the project. The report shall incorporate summaries of the methods of construction, the construction supervision performed, a separate chapter on Quality control report with details of tests conducted during the entire project execution and findings thereof, reference to as-built drawings of the construction, problems encountered and solutions undertaken thereon and recommendations for future projects of similar nature to be undertaken by department.

5. Personnel:

The Consultancy firm shall engage the following key personnel and other support staff to carry out the Services.

a) Key Personnel:

- 1) Resident Project Manager.
- 2) Site Supervisor

b) Support Staff:

- 1) Office Assistant

The key personnel shall meet the following minimum eligibility requirements: -

1) Resident Project Manager:

- a) Master's Degree in Civil Engg. with 2 years' experience in full time construction supervision of permanent bridges. **OR**
- b) Bachelor Degree in Civil Engg. with 3 years' experience in full time construction supervision of permanent bridges, **OR**
- c) Bachelor Degree and above in civil engg. with 3 years of work experiences in contract work execution of permanent bridges.
- d) Must be fluent in English and have good ICT skills & knowledge.

2) Site Supervisor

1. Diploma in Civil Engg. and above with 1 year experience in contract execution of permanent bridges **OR**

2. Diploma in Civil Engg. With 2 years' experience in contract work execution of other infrastructures
3. Must be fluent in English and have good ICT skills & knowledge.

2) **Office Assistant** shall be Bhutanese having passed Class XII.

I) The firm should submit detailed references of similar works executed earlier (both by the firm and the key personnel), detailed Curriculum Vitae (CV) and qualification & experience certificates and the signed letter of commitment from the proposed key personnel.

II) For uniformity in evaluation for skilled and experienced manpower committed, the following shall apply:

a) The work experiences for the proposed key personnel shall be based on actual experiences gained and not from the date of the graduation.

b) For the **Resident Project Manager**, the work experiences shall be either **full time bridge construction supervision work (Project Management)** OR **construction execution of permanent bridge**.

c) The **construction supervision experience of Resident Project Manager** shall be considered only if he/she has carried out supervision for **at least one project** involving a similar type of bridge specifically a **Steel Arch Type Bridge**. Additionally, the work experience must be **supported by relevant document from the Client/employer**.

d) The **bridge construction execution work experience of the Resident Project Manager** will only be considered if he/she executed **at least one project** involving a similar type of bridge specifically a **Steel Arch Type Bridge**. Furthermore, the work experience must be **supported by relevant documents from the Client/employer**.

e) **Failing to meet either one of the aforementioned pre-requisite criteria (c or d) shall result in the non-evaluation of qualification and experience of the key personnel, as detailed in the evaluation breakdown.**

f) For the **site supervisor**, the work experiences for both full time construction supervision and construction execution work experiences shall be considered as specified in detailed break-up of evaluation criteria.

g) **For the lowest evaluated bidder that qualifies technically despite fulfilling the minimum criteria for the key personnel, the bidder shall commit the employment during the time of signing the contract. Failure to deploy the committed key personnel will result in non payment of the remunerations. If the Consultant fails to address such deficiencies within reasonable time ascertained by the Client, it shall constitute a fundamental breach of contract.**

h) Only those work experience records (in CVs) with supporting documents from its Client/ Employer shall be considered. If necessary, the supporting documents submitted would be further verified by the evaluation committee.

i) The work experiences for the number of bridges supervised and participation by Nationals shall be evaluated and marked only if the proposed key personnel fulfil the minimum specified qualifications and the years of experience.

III) The firm shall submit a signed letter of commitment of the key technical personnel proposed for the assignment. **Failure to submit the signed letter of commitment will result in non-evaluation of the particular key personnel.**

IV) The key personnel and other support staff have to be deployed full time for construction supervision works during the time of Services and shall not have any other works assigned to them. **The Resident Project Manager and the Resident Engineer should be made available for the Services tentatively from May 2025**

V) The man-month input for the Services shall be as follows:

- Resident Project Manager – 27 months
- Site Supervisor – 27 months
- Office Assistant – 27 months

In case of early completion of bridge construction works, the man-month input for the Services shall be accordingly reduced and the Consultants shall have no right to claim any extra payments or compensation for the reduced man-month inputs.

In case of delay in completion of bridge construction works, the man-month input shall be extended on need basis by the Client with prior approval from the competent authority.

6. Support Services and Facilities (to be provided by the Client):

The following services and facilities will be made available by the Client:

1. One Project Engineer from the Department as counterpart local engineer.
2. All the available studies, reports and data, drawings, etc. relevant to the project.
3. Liaison with local authorities and other stakeholders.

7. Support Services and Facilities (to be arranged by the Consulting Firm):

The consulting firm shall arrange the following at the site as a part of the supervision consultancy contract:

1. Site office with adequate facilities for the Consultant's engineer
2. Employ an Office Assistant to do the secretarial jobs of both the Consultant's engineer and the Client's Project engineer.
3. Office furniture, equipment and monthly operating allowances, including telephone, computer and its accessories, printer and a photocopier. etc.
4. Office stationeries required during the project period.

5. Transportation for the consulting and the Client's engineers (1 No. pickup equivalent to Pick Up or SUV): To facilitate easy movement between the bridge site, Project Office & Regional Office for project related works.
6. Adequate internet and e-mail facilities at the site office.
7. Safety equipment for the Consultant's and the Client's engineers.

The structure and facilities of the site office for the Consultant's engineers shall be as per the Client's acceptable Standards.

The office equipment such as computer, printer, photocopier, table, chairs, etc. on completion of the project will be retained with the consultant. Therefore, due consideration should be made while making the financial proposals for the above items.



8. Financial Offer:

a. The consulting firm shall quote the remunerations on monthly basis as per Form FIN-2. A detailed breakup is required to be submitted as per Form FIN-3 covering the total consulting period to justify the quoted monthly amount. The remunerations shall include the following:

- Monthly Remunerations for two Key Personnel including overheads, in-country travel expenses, taxes, insurances, benefits, etc.
- Monthly Remunerations for the Support Staff (Office Assistant) including overheads, in-country travel expenses, taxes, insurances, benefits, etc.
- **Project Vehicle - Pickup or SUV 1 No.** (Inclusive of driver, fuel, maintenance, etc.) to facilitate easy movement between the bridge site, Project Office & Regional Office for project related works.
- Furnished office space both for the Consultant and the Client's Project Engineer
- Installation & monthly operating expenses including stationeries for telephone, fax, printer, photocopy machine & e-mail/internet facilities, safety gadgets, etc. for the Consultant and Client's Project Engineer

b. For reimbursable expenses such as travel ex-country (India) for the purpose of Services, the Consultant's Resident Project Manager and/or the Resident Engineer shall be paid lump sum Travel Allowance/Daily Subsistence Allowance (TA/DSA) of Nu. 5,000/- per day. The TA/DSA shall include all the expenses such as accommodation, food, local transport, etc. The airfare shall be for the most direct route and economy class and the same shall be refunded as per actual expenditure.

9. Payment Conditions:

a) Advance Payment:

The Consulting firm is entitled for one-time advance payment of **10% (ten percent)** of the Contract amount after signing of the contract agreement and upon submission of an unconditional Bank Guarantee for an equivalent amount. The advance payment will be subject to adjustment against the interim payments as specified in the contract.

b) Mode of Billing and Payment:

The consultancy fee shall be paid on a monthly basis as per the Contract Agreement. The reimbursable expenses such as for ex-country travel shall be paid and refunded on submission of TA/DSA claims and airfare expenses.

c) Retention money:

5% (five percent) of the bill amount (from every monthly running bill) shall be retained as security deposit. The retention money shall be released upon expiry of the defect liability period of the bridge, which is two years after the date of takeover of the bridge by the Client.



The retention money shall be returned to the consultant upon the submission of an unconditional bank guarantee for an equivalent amount issued by a reputed financial institution and acceptable to the Procuring agency after takeover of the bridge of the Client.

In the event of termination of the contract due to fundamental breach of contract by the consultant and if the consultant fails to pay the penalty determined by the Client, the retention money shall be used to liquidate the imposed penalty.

In the event of need for the rectification of defects during the defect liability period of the bridge, the consultant shall depute the required key personnel for supervision of rectification of defective works. If the consultant fails to depute the key personnel, a portion of retention money shall be used to cover the expenditure of the Client in carrying out the supervision of the rectification works.

10. Consultant's Liability:

1. The consulting firm shall be liable proportionately and as appropriate for the damages caused to both Client and the Contractor resulting from his/ her (Consultant's) negligence or failure to discharge the stipulated duties and responsibilities during the execution of the contract.
2. If the Project is not completed in time, the Consultant will be liable proportionately or fully as appropriate if the delay is attributable to the Consultant not performing the duties in time as per the terms of Contract and/ or if it becomes apparent that the Consultant has deliberately delayed the construction process.
3. The liabilities (if any) for Sl. No. 1 & 2 above shall be decided by the Client with prior approval of the award committee.
4. In case of fundamental breach of contract by the consultant leading to the termination of the contract, the consultant shall be liable for penalty of 20% of the value for the remaining period, subject to a maximum of 10% of the value for the entire contract duration.
5. The Consultant shall have no liability whatsoever for any loss or damage to the Client resulting from any acts or omission of the Contractor; sub-contractors; suppliers; any employees or agents of the Contractor, sub-contractors or suppliers; any officials or any other persons performing part of the Project, which are not in accordance with the Contract or the Consultant's instructions



