GOVERNMENT OF NEPAL

MINISTRY OF PHYSICAL INFRASTRUCTURE AND TRANSPORT

DEPARTMENT OF ROADS

Road Sector Support Project

TERMS OF REFERENCE

of

Inspector of Works

[Contract No. RSSP-DOR-S-IND-1.1(b)]

For

CONSTRUCTION SUPERVISION

OF

Supply and Installation

of

Steel W-Beam Crash Barrier

(Road Safety Works)

on

Tripurasundari (Baitadi)-Satbanjh-Gokuleswor-Darchula & Khodpe-Bajhang Road

August 2015

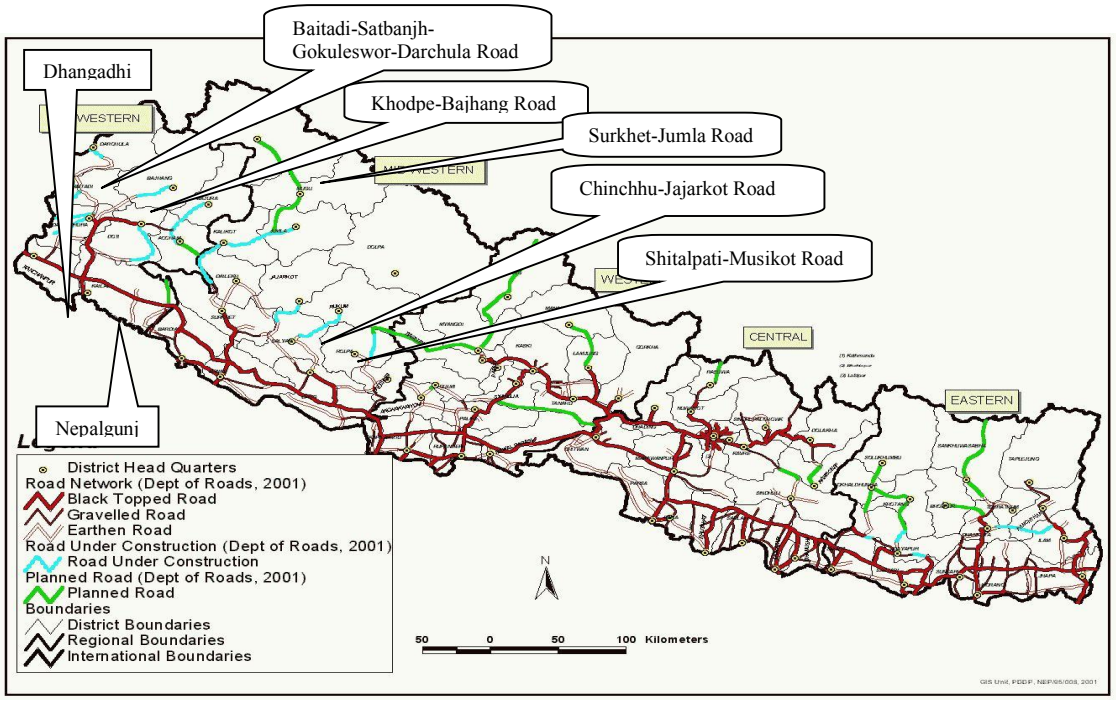
Sanogaucharan, Katmandu

TERMS OF REFERENCE
of
Highway Engineer
For
Consulting Service
For
CONSTRUCTION SUPERVISION OF Supply and Installation of Steel W-Beam Crash Barrier (Road Safety Works)
on
Tripurasundari (Baitadi)-Satbanjh-Gokuleswor-Darchula & Khodpe-Bajhang Road

1. INTRODUCTION AND BACKGROUND

The Government of Nepal has received financing from the World Bank toward the cost of the Road Safety Support Project. Under the project it is intended to install road safety crash barriers in following roads which have been upgraded/ being upgraded:

a) Tripurasundari(Baitadi)-Satbanjh-Gokuleswor-Dharchula Road
b) Khodpe-Bajhang Road
c) Sitalpati-Musikot Road
d) Chinchhu-Jajarkot Road
e) Surkhet-Tallodhungeswor-Dailekh Road
f) Tallodhungeswor-Jumla Road



Probable Storage site: Nepalgunj/Dhangadhi

Road Safety Support Project has procured contracts of *'Supply and Installation of Steel W-Beam Crash Barrier'* in three following contracts which are in bidding stage.

Contract ID No.	**Road Name**
Slice-1: RSSP-DOR-W-ICB-1.1	Tripurasundari (Baitadi)-Satbanjh-Gokuleshwor-Darchula and Khodpe-Bajhang Road
Slice-2: RSSP-DOR-W-ICB-1.2	Sitalpati-Musikot, Chinchhu-Jajarkot and Surkhet-Tallodhungeswor-Dailekh Road

Slice-3: RSSP-DOR-W-ICB-1.3	Tallodhungeswor-Jumla Road

Road Safety Support Project, Foreign Cooperation Branch, Department of Roads under the Ministry of Physical Infrastructure and Transport intends to apply part of the proceeds for consulting service of the Highway Engineer. The scope of the Individual Consultant to assist construction supervision of ***Supply and Installation of Steel W-Beam Crash Barrier (Road Safety Works) on*** *Tripurasundari (Baitadi)-Satbanjh-Gokuleswor-Darchula & Khodpe-Bajhang Road (hereinafter called 'Works')*.

2. OBJECTIVES

The objective of the consulting service of Highway Engineer is to assist in construction supervision of the ***Works***.

3. SCOPE OF WORK

The Highway Engineer and Inspector of Works will assist the supervision team and cause to implement the scope of services herein defined for the ***Works*** . The scope of services shall include but shall not necessarily be limited to the following:

(a) Familiarization and review of the design work for the appropriateness and adequacy of designs and the working drawings.
(b) Assist in discharging the Engineer's duties in the administration of contracts and supervision of construction.
(c) Assist in monitoring and evaluating project progress
(d) Assist in finalization regarding required modifications/additions/deletion in design and specification during construction
(e) Assist in periodic checking of contract quantities and a constant check on the cost estimate
(f) Assist in preparation of site specific EMAP within one month of signing of the contract to ensure that the recommendations of the "Environmental Management Guidelines" of the Road sector in Nepal are implemented in the project.

4. Team Composition and Tasks

Following professionals are required to undertake the task.

- ***Highway Engineer:***

Broad Qualification and Requirements:

A. Education
Minimum : Graduate degree in Civil Engineering
Preferable : Master Degree in Highway /Construction Management / Related field in Highway Engineering.

B. Experience
a) General Civil Engineering Works
Minimum : 5 years
Preferable : 10 years

b) Experience in Road projects
Minimum : 3 years
Preferable : 5 years

C. Experience in design and construction supervision of Road project

- *design of one road project*
- *construction supervision of two road projects*

D. Language :Capable of communicating fluently in English Language

- **Inspector of Works-1:**

  [Tripurasundari (Baitadi)-Satbanjh-Gokuleshwor-Darchula Road]

  Broad Qualification and Requirements:

  A. Education
  Minimum : Certificate/ Diploma in Civil Engineering
  Preferable : Bachelor Degree in Civil Engineering

  B. Experience
  a) General Civil Engineering Works
  Minimum : 3 years
  Preferable : 5 years

  b) Experience in Road projects
  Minimum : 1 no.
  Preferable : 3 no.

- **Inspector of Works-2:**

  [Khodpe-Bajhang Road]

  Broad Qualification and Requirements:

  A. Education
  Minimum : Certificate/ Diploma in Civil Engineering
  Preferable : Bachelor Degree in Civil Engineering

  B. Experience
  a) General Civil Engineering Works
  Minimum : 3 years
  Preferable : 5 years

  b) Experience in Road projects
  Minimum : 1 no.
  Preferable : 3 no.

Each Consultant shall be responsible for:

Highway Engineer

The scope of services of Highway Engineer shall include but shall not necessarily be limited to the following:

(a) Familiarization and review of the design work with the Project Coordination Team, Foreign Cooperation Branch and the Division Chief/Project In charge to reconfirm the appropriateness and adequacy of designs and the working drawings.

(b) In close co-ordination with the Division chief/Project In charge, work out and agree on an appropriate organizational set up for the Supervision team with line of command.

(c) Assist Division Chief/Project In charge in developing the standard formats for the use of the supervision team for daily inspection of the works, quality assurance, measurement of quantities, monitoring progress and monitoring of claims etc.

(d) Assist Division Chief/Project In charge in discharging the Engineer's duties in the administration of contracts and supervision of construction.

(e) Support and supervise the re- establishment or provision of reference points and the checking of the setting out works undertaken by the contractors.

(f) Assist Inspection, including sample testing, where required, of all materials and workmanship to ensure that they comply with the specifications and design and to recommend actions to be taken, prepare notices to be issued to the contractors, for correction of the situation.

(g) Assist Division Chief/Project In charge in closely monitoring and evaluating project progress and ensuring that the works are executed on schedule and meet the established standards of performance and quality and suggest measures to overcome implementation difficulties.

(h) Assist Division Chief/Project In charge in checking contractor facilities at site regarding its adequacy and capability of their staff to perform works under the contract.

(i) Assist Division Chief/Project In charge in finalization regarding required modifications/additions/deletion in design and specification during construction

(j) Assist Division Chief/Project In charge in certification and acceptance of each part of work as completed by the contractors, measurement of quantities of approved and accepted works and checking and recommending contractor's payment certificates.

(k) Assist Division Chief/Project In charge in periodic checking of contract quantities and a constant check on the cost estimate

(l) Assist Division Chief/Project In charge in assessment, examination of the contractor's claims and interpretation of related contract provisions to arrive at suitable decision with regards to the claims. Claims could be for extension of time, additional payment, deciding new rates and other similar contractual matters.

(m) Assist Division Chief/Project In charge in negotiation with contractors to finalize rates of new work items not included in the Bill of quantities.

(n) Assist Division Chief/Project In charge in preparation of site specific EMAP within one month of signing of the contract to ensure that the recommendations of the "Environmental Management Guidelines" of the Road sector in Nepal are implemented in the project with especial attention to the following:

- *Ensure that all borrow pits are operated and closed according to the environmental requirements*
- *Identify environmentally safe tipping areas for surplus mass of excavated or any other material in addition to that specified in the design specifications. The consultant shall also assist DOR to ensure that the contractor and construction work force is aware and comply with the spoil disposal restrictions.*
- *Ensure that the contractor removes surplus materials and leaves the site in clean condition.*
- *Assist Highway Engineer and Supervision Team, upon completion of the works, in carrying out an inspection of the completed section or sections and assist in establishing the Division Chief the date or dates of completion. The date shall be considered as the date or dates of commencement of the twelve- (12) month maintenance and defect liability period for the sections considered. "As built" drawings shall be prepared. Therefore the Highway Engineer shall review and check to ensure that the "As built" Drawings submitted by the contractor are correct. Approved "As built" drawings shall be enclosed in the Project Completion Report.*

Inspector of Works

The scope of services of Inspector of Works shall include but shall not necessarily be limited to the following:

(a) Assist Highway Engineer and Supervision Team in familiarization and review of the design work with the Project Coordination Team, Foreign Cooperation Branch and the Division Chief/Project In charge to reconfirm the appropriateness and adequacy of designs and the working drawings.

(b) Assist Highway Engineer and Supervision Team in developing the standard formats for the use of the supervision team for daily inspection of the works, quality assurance, measurement of quantities, monitoring progress and monitoring of claims etc.

(c) Assist Highway Engineer and Supervision Team in discharging the Engineer's duties in the administration of contracts and supervision of construction.

(d) Support and supervise the re- establishment or provision of reference points and the checking of the setting out works undertaken by the contractors.

(e) Assist Highway Engineer and Supervision Team in inspection, including sample testing, where required, of all materials and workmanship to ensure that they comply with the specifications and design and to recommend actions to be taken, prepare notices to be issued to the contractors, for correction of the situation.

(f) Assist Highway Engineer and Supervision Team in closely monitoring and evaluating project progress and ensuring that the works are executed on schedule and meet the established standards of performance and quality and suggest measures to overcome implementation difficulties.

(g) Assist Highway Engineer and Supervision Team in checking contractor facilities at site regarding its adequacy and capability of their staff to perform works under the contract.

(h) Assist Highway Engineer and Supervision Team in finalization regarding required modifications/additions/deletion in design and specification during construction

(i) Assist Highway Engineer and Supervision Team in certification and acceptance of each part of work as completed by the contractors, measurement of quantities of approved and accepted works and checking and recommending contractor's payment certificates.

(j) Assist Highway Engineer and Supervision Team in periodic checking of contract quantities and a constant check on the cost estimate

(k) Assist Highway Engineer and Supervision Team in assessment, examination of the contractor's claims and interpretation of related contract provisions to arrive at suitable decision with regards to the claims. Claims could be for extension of time, additional payment, deciding new rates and other similar contractual matters.

(l) Assist Highway Engineer and Supervision Team in negotiation with contractors to finalize rates of new work items not included in the Bill of quantities.

(m) Assist Highway Engineer and Supervision Team in preparation of site specific EMAP within one month of signing of the contract to ensure that the recommendations of the "Environmental Management Guidelines" of the Road sector in Nepal are implemented in the project with especial attention to the following:

- **Ensure that all borrow pits are operated and closed according to the environmental requirements**
- **Identify environmentally safe tipping areas for surplus mass of excavated or any other material in addition to that specified in the design specifications. The consultant shall also assist DOR to ensure that the contractor and construction work force is aware and comply with the spoil disposal restrictions.**
- **Ensure that the contractor removes surplus materials and leaves the site in clean condition.**
- **Assist Highway Engineer and Supervision Team, upon completion of the works, in carrying out an inspection of the completed section or sections and assist in establishing the Division Chief the date or dates of completion. The date shall be considered as the date or dates of commencement of the twelve-(12) month maintenance and defect liability period for the sections considered. "As built" drawings shall be prepared. Therefore the Highway Engineer shall review and check to ensure that the "As built" Drawings submitted by the contractor are correct. Approved "As built" drawings shall be enclosed in the Project Completion Report.**

The Inspector of Works shall assist the supervision works in either of two roads depending upon the necessity, volume of works, as directed by the Employer.

5. DURATION OF THE CONSULTANT'S SERVICES

5.1 Highway Engineer

5.1.1 Construction Period

The Highway Engineer is expected to begin his services after finalization of his contract with DOR within agreed time frame and his responsibilities shall continue until the completion of the works. The services shall

be for 8 months during the construction phase and 4 months intermittent input during the Defects Liability Period.

However in the event of arbitration or other proceedings after the completion of construction, the Highway Engineer shall be available to assist DOR, under the same conditions of engagement as applicable to this Agreement.

5.1.2 Defects Liability Period

During the Defects Liability period the Highway Engineer's services shall be for four (4) months in intermittent basis and during the period the Highway Engineer shall check and ensure that the contractors are carrying out their contractual obligations with respect to maintenance, repair and reconstruction of the works. Shortly before the end of the Defects Liability period, the Highway Engineer shall carry out thorough inspection of the works and designate the rectification work to be done and supervise the works.

The total estimated professional input of the Highway Engineer during the construction and the defect liability period is twelve (12) months and the service is expected to start from November 2015.

5.2 Inspector of Works

5.2.1 Construction Period

The Inspector of Works is expected to begin his services after finalization of his contract with DOR within agreed time frame and his responsibilities shall continue until the completion of the works. The services shall be for 8 months during the construction phase and 4 months intermittent input during the Defects Liability Period.

However in the event of arbitration or other proceedings after the completion of construction, the Inspector of Works shall be available to assist DOR, under the same conditions of engagement as applicable to this Agreement.

5.2.2 Defects Liability Period

During the Defects Liability period the Inspector of Works' services shall be for four (4) months in intermittent basis and during the period the Inspector of Works shall assist the Highway Engineer to check and ensure that the contractors are carrying out their contractual obligations with respect to maintenance, repair and reconstruction of the works. Shortly before the end of the Defects Liability period, the Inspector of Works shall assist the Highway Engineer to carry out thorough inspection of the works and designate the rectification work to be done and supervise the works.

The total estimated professional input of the Inspector of Works during the construction and the defect liability period is twelve (12) months and the service is expected to start from November 2015.

5. REPORTING REQUIREMENT

The Highway Engineer shall keep full records relating to all aspects of the work covered by his service contract. Such records shall be available for inspection to the Employer and shall be handed over to the Division Chief/Project In Charge on completion of its service. In addition to the above, the Highway Engineer shall submit the following Reports during the course of his services:

5.1 Inception Report (Six copies)

Within four weeks of start of the service, the Highway Engineer shall submit an Inception report. The report will include the following:

- Consultant's detail work program, organization setup
- Initial findings of the design review as suggested in the scope of works
- Contractors work schedule and his resources requirement and their mobilization schedule to support the execution of the contractor's work program
- Traffic management plan for management of efficient traffic flow during construction

5.2 Site specific EMAP (Six Copies)

The Highway Engineer shall prepare site specific EMAP before start of the construction works.

5.3 Monthly Progress Reports (six copies)

The Highway Engineer shall prepare a monthly progress reports on the project activities during construction period. The reports shall include physical and financial status of the construction activities, information on validity of various guarantees from the bankers, construction material at site, information on contractor's equipment and their condition, contractor's manpower, contract variation order details, detail on contractor claims (if any) and contractor's activities. Report should also include information on its service.

5.4 Project Completion Report (Ten copies)

On completion of the contract, the Highway Engineer shall prepare a consolidated Final Report covering the whole of the works. The report shall be submitted along with all original records. It should include recommendation on changes to the applied methodology for implementing future similar works, financial statement of the contract, variation in contracts, contractor's claim and consultant's recommendation, and other relevant project information.

5.5 Confidential Report (two copies)

The Highway Engineer shall also support the Supervision Team in preparing a confidential report on the performance of the contractor upon completion of the work.

6. FACILITIES

6.1 To Be Provided by the Employer

The Employer shall provide followings for the performance of its service:

- Related reports and contract documents
- Access to all other necessary available data required for performance of the consultant's duties.

6.2 To be arranged by the Highway Engineer

The Highway Engineer shall arrange the following facilities and the necessary cost shall be born by the Consultant:

- logistic supports lap top, mobile phone for the performance of the service.
- One supervision vehicle (Double cab Pick up) for construction supervision with driver, fuel and maintenance
- Accommodation,

6.2 To be arranged by the Inspector of works

The Inspector of Works shall arrange the following facilities and the necessary cost shall be born by the Consultant:

- logistic supports mobile phone for the performance of the service.
- One supervision motorcycle for construction supervision with fuel and maintenance
- Accommodation,

7. SUPERVISION STAFF

The Division Road Office/ Project In Charge shall depute supervision staff as per agreed supervision team for effective supervision of the works. The Employer intends to employ another independent consultant as an Inspector of Works. The exact composition of the supervision team shall be agreed during the inception period.

8. CONTRACTUAL ARRANGEMENTS

The Highway Engineer's contract will be based on a contract agreement consistent with the World Bank guidelines for consultancy services contracts.