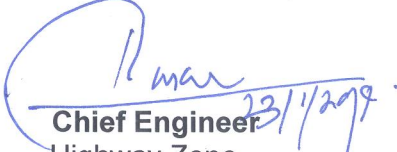


NOTICE INVITING EXPRESSION OF INTEREST (EOI)

The Chief Engineer, Highway Zone, PWD, AP, Itanagar invites Expression of Interest (EOI) from the Consultants presently working in Highway / PWD under Road sector having experience in Roads & Highways consultancy for the following work:

1	Name of Work	Consultancy Services for Feasibility Study and Preparation of Detailed Project Report (DPR) for permanent solution to landslide location and water logging area of the following National Highways in the State of Arunachal Pradesh. 1) Slip Zones of Papu -Yupia - Hoj - Potin Road (NH-713A & NH-13) 2) C/o Culverts at Trijunction of Itanagar-Papu-Yupia- Naharlagun Road 3) C/o Culverts at Bage Tinali on Banderdewa-Itanagar Road 4) Improvement of sinking zone Jairampur-Pangsupass road (Nh-315) 5) Pasighat-Pangin Road (NH-13)
2	Period of completion	2 (Two) Months


The General Terms of Reference (TOR) and other details can be obtained from the office of the Chief Engineer, Highway Zone on any working day from 24.01.2019 to 13.02.2019 in person or may download from website www.arunachalpwd.org and bids shall be opened on 14.02.2019 at 3.00 PM.


Chief Engineer
Highway Zone.
PWD, AP, Itanagar.

No. CEAP(HW)/WTC-137/Consultancy/2018-19/8036-43
Copy to:

Dated 23rd January' 2019

1. PS to Hon'ble Deputy Chief Minister (PWD / Fin), Itanagar.
2. PS to Chief Secretary, Govt. of Arunachal Pradesh, Itanagar.
3. The Commissioner (PWD), Govt. of Arunachal Pradesh, Itanagar.
4. The Chief Engineer (Zone-V), NER, MORTH, New Delhi.
5. The Regional Officer, MORTH, Itanagar (Camp-Tezpur).
6. The Chief Engineer, PWD (EZ / WZ / CZ-A / CZ-B / SID&P / Trg. & Vig. / CSQ) Itanagar.
7. The EE's Highway Division, Naharlagun / Doimukh / Pasighat / Jairampur / Khonsa.
8. M/s


Chief Engineer
Highway Zone.
PWD, AP, Itanagar.

GENERAL TERMS OF REFERENCE (TOR) FOR CONSULTANCY SERVICES FOR PREPARATION OF DETAILED PROJECT REPORTS FOR PERMANENT SOLUTION TO LANDSLIDE LOCATION & WATER LOGGING AREAS OF NATIONAL HIGHWAYS IN ARUNACHAL PRADESH

Name of Work: Consultancy Services for feasibility study and preparation of Detailed Project Report (DPR) for permanent solution to landslide location and water logging area of the following National Highways in the State of Arunachal Pradesh:

- i) Slip Zones of Papu -Yupia - Hoj - Potin Road (NH-713A & NH-13)
- ii) C/o Culverts at Trijunction of Itanagar - Papu -Yupia - Naharlagun Road
- iii) C/o Culverts at Bage Tinali on Banderdewa - Itanagar Road (NH-415)
- iv) Improvement of sinking zone Jairampur - Pangsupass road (NH-315)
- v) Pasighat - Pangin Road (NH-13)

1. Background:

The Highway Zone PWD, Arunachal Pradesh has been entrusted with the implementation of the double laning, Four laning and Maintenance of various National Highway Projects in Arunachal Pradesh. The Department intends to engage qualified Consultants working in Highway/ PWD Road sector for which the General Terms of References (TOR) have been framed as under. This is to cater to the pre-construction activities related to the survey and preparation of segmental strip plans and Detailed Project Report supported by geometric design and working drawings and other appurtenances like Bridges, Culverts, Landslide Mitigation Structure, approach road and road protection works etc.

2. Project Information:

The Road Projects are generally located in hilly terrain of Arunachal Pradesh and are existing roads of double lane NH Standard. The Papu-Yupia-Hoj-Potin (Length=48.76 km) road connecting State Capital with Lower Subansiri, Kurung Kumey, Kamla, Upper Subansiri, Kra Dadi and West Siang districts in Arunachal Pradesh has been improved to 2 (double) Laning road. The road portion between Hoj to Potin is unstable/ sinking and has suffered heavy damages during the last monsoon season. Heavy showers in past has caused roadblocks at various places in Papum Pare district, most visibly along the Papu-Yupia-Hoj-Potin section of the highway, that heavy rains and showering have initiated the landslides and erosions which have immensely affected the locations at approximately 18+900 km (Kaan Nallah), 37+200 km (Kala Matti), 38 km (near Yabi village), 39+300 km (Jarna Point) and 40 km (Crusher Point) areas along the highway. Now to solve this problem a permanent solution is demanded and hence it has to be proposed at this stretches. It will be required for avoiding sharp jigs and curves and areas prone to create further land-slides as well as the road shall be protected by the alternatives such that it becomes permanent

solution. For the said problem the solution to provide the bridges, cross-drainage works, road protection structures and drains will have to be provided afresh to suit latest specification of Roads & Bridges of MoRTH.

.The NH-415 is the lifeline to Itanagar, the capital of Arunachal Pradesh. This road was constructed in the year 1976 by CPWD which connecting the two Capital cities Itanagat and Naharlagun. It has a total length of 61 Km, out of which 51 Km in Arunachal Pradesh and the remaining 10 Km in Assam. The portion within Arunachal Pradesh mostly passes through hilly terrain. Due to heavy rainfall and soil condition, flood damages to the road in the form of landslides, washing out of formation, damages to the culverts and drain is very common in every year during rainy season. Construction of culverts at water logged area of Bage Tinali and Tri-junction of Itanagar - Papu -Yupia - Naharlagun Road and protection works are required to protect this road.

The Jairampur-Pangsupass road (NH-315), the part of Stilwel road originating from Assam-Arunachal border and terminating at Pangsupass international border of Indo-Myanmar border. This road is a very important road connecting Jairampur Township. Nampong Township and Pangsupass international border at eastern end. It is often frequented by both domestic and international tourist who are visiting World War-II memorial at Jairampur and Lake of No return at Pangsupass. Due to incessant rainfall during the monsoon season, heavy damages have caused to the road infrastructure like landslides and erosions which have immensely affected the locations at Ch. 31.95 Km to Ch. 35.590 Km, Ch. 39.85 Km to Ch. 39.915 Km and Ch. 45.600 Km to Ch. 45.700 Km. To solve this problem a permanent solution is demanded and hence it has to be proposed at this stretches.

The Pasighat-Pangin Road (Length-71.60 Km) a part of Trans-Arunachal Highway connecting Pasighat the Headquarter of East Siang District with Siang , West Siang and Upper Siang Districts. During the month of July'2017 heavy torrential rainfall occurred in Rotung and its adjoining areas, a large scale damages have been caused on various stretches of this road in the form of landslides, damage to structures and formation washed out. The road stretch from Km 36.210 to 36.390 Km was completely washed out and cut off the connectivity of these Districts with rest of the country during the last monsoon season due to the soil is unstable/ sinking. Hence, permanent solution to protect the slip and landslide area of this road urgently needed.

3. Objective:

The primary objectives are as under:-

- (i) To conduct detail survey of landslide affected site with the help of aerial photography, generation of geo-reference orthomosaic image, generation of 3D

models, generation of Digital Terrain Model (DTM) using photogrammetry, generation of surface contours etc.

- (ii) To conduct road survey using **Total stations/DGPS** for the affected road stretch due to landslide and evolve the best possible & feasible landslide mitigation structure & its alignment for double lane road configuration as per latest IRC standards.
- (ii) To study & preparation of drainage map of the affected area.
- (iii) To prepare the detailed engineering working design and drawings of proposed Landslide Mitigation Structure, approach road, protection works, Cross drainage work and other road appurtenances and prepare Detailed Project Report fit for obtaining sanction of the work from MoRTH as per their latest specification of Roads & Bridges.

4. **Scope of the Consultancy Services:**

The scope of the consultancy service is to:

- (i) Conduct preliminary and detailed survey including reconnaissance, preliminary survey, pegging and trace cutting, final survey etc. through Total Stations as per IRC: 52 and IRC: SP: 48 with up to date correction slips.
- (ii) Conduct detail survey of landslide affected site with the help of aerial photography, generation of georeferenced orthomosaic image, generation of 3D models, generation of Digital Terrain Model (DTM) using photogrammetry, generation of surface contours etc.
- (iii) Collect geological data, geophysical data, hydraulic data, slope gradient, existing protection works & drainage in sliding zone and compile the data.
- (iv) Prepare the best possible & feasible landslide mitigation structure & its alignment for double lane road configuration as per latest IRC standards.
- (v) Determine the composition and thickness of existing pavement and carry out condition survey of the existing road appurtenances.
- (vi) Conduct representative CBR test on the existing sub-grade as per IRC: 37 in alternate kilometers.
- (vii) Do catchment area/ characteristics/ hydraulic nature of drainage of landslide affected site indicating general drainage pattern, water level, seepage flow, study & preparation of drainage map of the affected area etc. and prepare drainage design as per IRC guidelines.

- (viii) Do investigation for naturally occurring materials and identify suitable quarries for road construction materials including leads.
- ix) Conduct tests for the physical strength characteristics of aggregate materials as per relevant IRC standard.
- x) Conduct sub-soil investigations, collection of soil samples, conduct required laboratory test on soil samples and generation of sub-soil investigation report.
- (xi) Prepare Detailed design of landslide mitigation structure complete in all respect including the geometric design, pavement, other structural elements and protection works etc. The pavement profile should correspond to the specifications of Double lane NH Standards.
- (xii) Prepare detailed working drawings using suitable software, containing all details required for execution of the work.
- (xiii) Prepare the Detailed Project Report of the Landslide mitigation structure Project covering the aspects indicated above for the purpose of obtaining sanction from the Central Ministry and in accordance with Road Ministry's guidelines.
- (xiv) Prepare Bill of Quantities and estimate on current SOR of the Arunachal Pradesh PWD which shall form part of the Detailed Project Report. Wherever necessary, rate analysis be adopted to arrive at workable costs.
- (xv) Assist the Department in appraising the Central Ministry about the aspects covered in the Detailed Project Report in clarification and obtaining sanction.
- (xvi) Assist the Department in Pre-Bid Meeting for replying to queries raised by the Prospective bidders pertaining to provisions and concepts adopted in the Detailed Project Report (DPR).
- (xvii) Prepare EPC document of the project estimate fit for approval of MoRT&H, assisting department for preparation of document till agreement is signed.
- (xviii) To remain associated with the department during the execution of the Road Projects for clarification of the survey and road design data to the Road Developers in consultation with the Department during the period of construction.

5. Sequencing of Report Preparation:

The project preparation activities will be split into stages as brought out below. Each stage will cover a set of activities and shall be followed with a detailed report in respect of each stage. Time schedule in respect of all such activities will be indicated. Consultant shall be

required to complete the same to the satisfaction of the client in all the different stages of study with the time frame indicated in the schedule of submission.

The stages are:

Stage I : Inception Report.

A comprehensive inception report shall cover the following:-

- i) Survey and investigation methodology.
- ii) Project engineering
- iii) Schedule of works indicating various activities.

Stage II : Preliminary Project Reports:

The preliminary project report shall cover the following:

- (i) Detail aerial survey outputs i.e. georeferenced orthomosaic image, 3D models of Digital Terrain Model (DTM), generation of surface contours etc.
- (ii) Detailed working drawings of landslide mitigation structure and Cross drainage work.
- (iii) Alignment plan, longitudinal section and representative cross section of formation work.
- (iv) Sub-Soil Investigation Report.
- (v) Draft DPR containing the survey data, interpretation of the tests and investigations conducted, pavement profile and structures and preliminary cost estimation.

In nutshell the preliminary report shall be prepared as per the guidelines for preparation of project report contained in IRC standards covering the points mentioned above which need approval of the client(Chief Engineer, Highway Zone) for further detailed project preparation.

Stage III : Final Report:

On conveying of approval on the **draft report** by the department (PWD, Highway), the **final report** of the project shall be prepared incorporating the modification and correction suggested by the department. The detailed final project report shall be prepared as per the guidelines given in IRC: SP: 19-2001, Para 17 covering the relevant points of reports, estimate and drawings.

6. Services and Facilities to be provided by the Govt.:

The department shall provide the facilities like, topographical maps and detailed statistics of the area as available in the department. Further, the Department shall share all available information of the proposed with the consultant. The Department shall also arrange inner-

line passes and paid accommodation for staff of the consultant involved in this consultancy job. The financial proposal of the consultant appointed is deemed to be inclusive of all other incidental charges to the survey, study and preparation of the projects reports.

7. Reports:

The consultants shall furnish to the client the following report and documents. All reports and documents shall be in English.

- | | | | |
|-------|------------------|---|-------------------------------------|
| (i) | Inception report | - | 3 copies |
| (ii) | Draft report | - | 3 copies |
| (iii) | Final report | - | 7 copies (including 1 soft copy CD) |

8. Schedule of Services:

- | | | | |
|------|--------------------------------|---|---|
| i) | Submission of inception report | - | 15 days from the date of start. |
| ii) | Submission of draft report | - | 30 days from the date of approval of inception report |
| iii) | Submission of final report | - | 15 days from the date of approval of draft report.. |

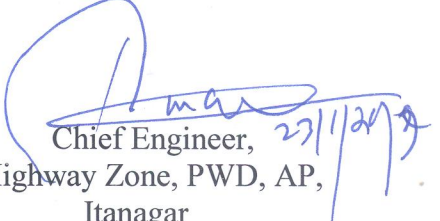
9. Payment Schedule:

Any under prepared, incomplete/inadequate or part submittal shall be deemed as invalid submittal. The adequacy of the submittal shall be determined at the sole discretion of the client/ Chief Engineer (Highway Zone). Client will, generally accord approval within 30 days of submission of reports.

The cost of consultancy services shall be included in the detailed project report (DPR). The Payment to the consultant will be subject to sanction of the competent authority and availability of fund.

11. Responsibility for Accuracy of Project Reports:

The consultants shall be responsible for accuracy of all the data used in project preparation and estimates prepared by him as part of the project. Consultant shall indemnify the client against any inaccuracies in the job /work. For this purpose, the bank guarantee of 5% submitted as performance security shall be released on accord of "in principle approval" of the DPR by the Ministry of Road Transport and Highways, Government of India, New Delhi or one year after submission of the final DPR conforming to latest MoRTH specifications of roads & bridges, whichever is earlier.


 Chief Engineer, 23/1/2019
 Highway Zone, PWD, AP,
 Itanagar