

## **Expression of Interest (EoI) for Consultancy Services**

Consultancy Services for detailed feasibility study of roads in snow covered/colds of Himachal Pradesh for keeping them traffic worthy and clear of snow throughout the year by using the best global engineering practices and latest technology.

# **REQUEST FOR EXPRESSIONS OF INTEREST (CONSULTANCY SERVICES FOR DETAILED FEASIBILITY STUDY OF ROADS IN SNOW COVERED/COLD REGION IN HP)**

**HIMACHAL PRADESH  
PUBLIC WORKS DEPARTMENT  
(INDIA)**

**Assignment Title:** Consultancy Services for detailed feasibility study of roads in snow covered/cold region for keeping them traffic worthy and clear of snow throughout the year by using the best global engineering practices and latest technology.

The geographical terrain in Himachal Pradesh ranges from plain to steep mountainous regions with elevations ranging from 350 meters to 7000 meters above MSL. Some districts like Shimla, Lahoul & Spiti, Kinnour and Chamba experience heavy snow fall during winter and remain cut off from the state for months together as all major highways located in these regions are severely damaged and blocked by heavy snow fall, glaciers and avalanches etc. The Public Works Department uses the conventional approach of deploying chain dozers/JCBs' and limited manpower to maintain these roads with no latest global maintenance technological interventions put in place. As a result, people in this part of the world have to face immense hardships during winter as supply of civic commodities and medical help becomes extremely difficult. The Government of Himachal Pradesh has decided to procure the above titled consultancy services for implementation of latest global road maintenance technologies to keep its highways located in the snow covered/cold region traffic worthy and clear of snow throughout the year.

The consulting services ("the Services") include:-

- (i) The detailed study of existing road infrastructure in such regions, its deficiencies, weather patterns etc. including all other related studies required to design a safe, resilient and sustainable road infrastructure to meet future requirements of this area for at least next three decades.
- (ii) To develop, design and implement on pilot basis the best global engineering interventions including modern IT tools for such regions in Himachal Pradesh to keep the major highways open for vehicular traffic and clear of snow throughout the year.

- (iii) Prepare and submit all relevant reports of studies conducted to make the designed mechanism cost effective and sustainable.
- (iv) These services are expected to be delivered over a 18 months period.

**The detailed Request for Expression of Interest for the proposed assignment alongwith scope of work shall be made available on the following websites w.e.f. January 18, 2019:-**

**<http://hppwd.gov.in/>**

Consultants may associate with other firms to enhance their qualifications, but should indicate clearly whether the association is in the form of a joint venture and/or a sub-consultancy. In the case of a joint venture, all the partners in the joint venture shall be jointly and severally liable for the entire contract, if selected.

Further information can be obtained at the address below during office hours *i.e. 1000 to 1700 hours Indian Standard Time (IST) on working day.*

Expressions of interest must be delivered in a written form to the address below (in person, or by post)by **February 26, 2019 at 1500 hours (IST).**

*Superintending Engineer*  
*4<sup>th</sup> Circle, HPPWD,*  
*Shimla-171003.(H.P)*  
Tel:+91-177-2653455  
Fax: +91-177-2805097  
E-mail: [hp-shi3@nic.in](mailto:hp-shi3@nic.in)

| <b>Section-I</b>  |   |
|---|---|
| <b>Instructions for submission of Expression of Interest:</b> |   |
| 1.  | Consultant shall go through the guidelines given below and section II before preparing EoI proposal.  |
| 2.  | Consultant, who meets short listing criteria given in section II, shall prepare EoI as per the guidelines. If the Consultant feels to submit certain information not covered in the guidelines would be in his interest, he may submit such information   |
| 3.  | Accomplished Expression of Interest (Application) must be submitted together with a Letter of Intent not later than <b>15:00 hours (IST) on 26th February, 2019</b> . Documents in support of all qualification information shall be submitted with application. Proposal of E o I with qualification information shall be furnished on/before the due date of submission at the address shown under para 12 here below.  |
| 4.  | The Application shall be basis of drawing up a shortlist of eligible consultants who will be invited to submit proposal for services required.  |
| 5.  | All Applications shall be submitted in English.   |
| 6.  | Power of attorney (on stamp paper duly notarized) of the person submitting the Expression of Interest on behalf of the Applicant shall be attached. Joint Venture (JV) shall not have more than 3 members. One of the members should be a Lead Member.  |
| 7.  | The Consultant (including the individual members of any Joint Venture) shall submit only one Proposal, either in its own name or as part of a Joint Venture member in another Proposal, if a Consultant, including any Joint Venture member, submits or participates in more than one proposal, all such proposals shall be disqualified and rejected.  |
| 8.  | The Application and all related correspondence and documents should be written in the English language. Supporting documents and printed literature furnished by Applicant with the Application may be in any other language provided that they are accompanied with translations in the English language. Supporting materials, which are not translated into English, may not be considered. For the purpose of interpretation and evaluation of the Application, the English language translation shall prevail. |
| 9.  | HPPWD reserves the right to reject any Applications, without assigning any reasons thereof.   |
| 10.   | The Applicant shall provide all the information sought under this REOI Document. HPPWD would evaluate only those applications that are received in the required format and complete in all respects. Incomplete and / or conditional Applications shall be liable to rejection.   |
| 11.   | No claims whatsoever will be entertained if submission is not received by due date and time.  |
| 12.   | The Proposal of EoI must be submitted not later than:<br><b>Date: February 26, 2019.Time: 15:00 hours (IST)</b>   |

|     |  |
|-----|--|
|     | <p>Any submission must be addressed to the following<br/> <i>Superintending Engineer</i><br/> <i>4<sup>th</sup> Circle, HPPWD,</i><br/> <i>Shimla-171003.(H.P)</i><br/> Tel:+91-177-2653455<br/> Fax: +91-177-2805097<br/> E-mail:hp-shi3@nic.in</p> <p><b>Opening of the EoI Proposal,</b><br/> Procedure of opening shall be:- EoIs will be opened by <i>Superintending Engineer ,4<sup>th</sup> Circle HPPWD Shimla-3</i> on below mentioned date and time specified, in presence of members of opening committee and consultants or their authorized representatives who have offered the EoI proposal may choose to remain present. <b>The opening shall take place at Date: February 26,2019 Time: 15:30 hours (IST) in the office of:-</b><br/> <i>Superintending Engineer</i><br/> <i>4<sup>th</sup> Circle, HPPWD,</i><br/> <i>Shimla-171003.(H.P)</i><br/> Tel:+91-177-2653455<br/> Fax: +91-177-2805097</p> |
| 13. | The Consultant shall submit a signed and complete EoI comprising the documents and forms in accordance with EoI documents.   |
| 14. | An authorized representative of the Consultant shall sign the original submission letters in the required format for EoI submission and shall initial all pages. The authorization shall be in the form of a written power of attorney attached to the EoI Proposal.   |
| 15. | The signed EoI shall be marked “ORIGINAL”, and its <b>COPY</b> marked as appropriate. Copies shall be made from the signed original. If there are discrepancies between the original and the copy, the original shall prevail.   |
| 16. | The original and the copy of the EoI submission shall be placed inside a sealed envelope clearly marked “ <b>EoI PROPOSAL</b> ”, to provide “ Consultancy Services for detailed feasibility study of roads in snow covered/cold region in Himachal Pradesh” , reference number, name and address of the Consultant, and with a warning “ <b>DO NOT OPEN UNTIL February 26, 2019 Time: 15:30 hours (IST)</b> ”  |
| 17. | If the envelopes and packages with the EoI are not sealed and marked as required, the Client will assume no responsibility for the misplacement, loss, or premature opening of the EoI.  |
| 18. | <p><b>Any submission must be addressed to the following:</b><br/> <i>Superintending Engineer</i><br/> <i>4<sup>th</sup> Circle, HPPWD,</i><br/> <i>Shimla-171003.(H.P)</i><br/> <u>Tel:+91-177-2653455</u> Fax: +91-177-2805097 E-mail: <a href="mailto:hp-shi3@nic.in">hp-shi3@nic.in</a></p>   |

| <b>Guidelines for Preparation of Expression of Interest</b> |   |
|---|---|
|   | Following information shall be submitted using given formats and where no formats are specified, free format can be used.   |
| 1.  | Complete name of firm, date of establishment and type of organization whether individual, proprietorship, partnership, private limited company, public limited company etc. ( <b>Annexure I</b> ).  |
| 2.  | Exact and complete corporate/registered/home office address, business address, telephone numbers, fax numbers, E-mail and cable address. For consultant of foreign registry, indicate if there is any branch office(s) established in India with details in aforesaid manner. Information is to be furnished by sole applicant or members of JV individually ( <b>Annexure I</b> ). |
| 3.  | If present firm is the successor to or outgrowth of one or more predecessor firms, fresh name(s) of former entity (ties) and year(s) of their original establishment with details in aforesaid manner. Information is to be furnished by sole applicant or members of JV individually ( <b>Annexure I</b> ).  |
| 4.  | Present a brief narrative description of the firms. Information is to be furnished by sole applicant or members of JV individually ( <b>Annexure I</b> ).   |
| 5.  | List of not more than two (2) principals who may be contacted by this Office.<br>Listed principals must be empowered to speak for him or for the firm on policy and contractual matters. Information is to be furnished by sole applicant or members of JV individually. ( <b>Annexure I</b> )  |
| 6.  | Under this item, indicate financial figures from consultancy business for past 5 (five) financial years. ( <b>Annexure II</b> )   |
| 7.  | Organizational strength of consultant and its constituents in case of a JV shall be given. ( <b>Annexure III</b> )  |
| 8.  | Consultant shall have experience of at least 5 years in the business of preparing detailed feasibility report/Detailed Project Report for roads in snow covered area/cold region for keeping them traffic worthy and clear of snow throughout the year. ( <b>Annexure IV</b> )  |
| 9.  | As many references from employers as the consultant (for each member in case of JV) may choose shall be submitted.  |
| 10.   | An undertaking for supply of true information shall be given as per <b>Annexure V</b> .   |

## **Section - II**

### **Short Listing Criteria**

#### **A. Annual Turn Over**

- (i) Annual turnover of any one of the last five financial years i.e. from 2013 - 2014 to 2017-2018 updated to the current financial year shall be more than Rs. 20 crores. In case of JV, the lead member shall have more than Rs.15 crores of annual turnover (updated) of any one of the last five financial years. This threshold for each other member of JV shall be more than Rs. 5 crores.
- (ii) For arriving at updated value, turnover of any financial year shall be multiplied by the enhancement/updating factor corresponding to that year given in the **Annexure-II**.

#### **B. Experience**

- 1. Consultant must have as prime consultant successful experience as follows:
  - (a) Experience in preparation of detailed feasibility study/detailed project reports of snow covered/cold region roads infrastructure and implementation of the best global engineering practices to keep such road infrastructure clear of snow and traffic worthy throughout the year and also snow and ice control programme.
  - (b) Experience in externally aided projects shall be given preference.

#### **C. Organisational structure & permanent Staffing**

- (a) At least 3 years in the business of preparing detailed feasibility/detailed project reports for roads in snow covered/cold region for keeping them traffic worthy and clear of snow throughout the year.
- (b) At least 3 no. of permanent Key-Saff.
- (c) The Project Management Team is to have qualifications such as graduation in Civil Engineering, Post graduate in environment Engineering, Graduation in Mechanical Engineering. The Project Management team must have demonstrated abilities in the design, coordination and implementation of a large scale snow and ice control/removal program and/or equivalent experience, including but not limited to determining resource requirements, operational guidelines, anti-icing strategies and salt or any other such chemical compound practices.

### **Annexure-I**

**Expression of Interest Form for Consulting Engineering Firm or Joint Venture (To be filled up by each of the constituent in case of a Joint Venture)**

| Consultant | Date of Establishment | Country | Type of organization |             |             |       |
|------------|-----------------------|---------|----------------------|-------------|-------------|-------|
|            |                       |         | Individual           | Partnership | Corporation | Other |
| Name       |                       |         |                      |             |             |       |
|            |                       |         |                      |             |             |       |

1. Corporate/ registered Office/ Business Address/ Telephone Nos./ Cable Address/ email address of consultant and its branch offices for consultant (including members in case of JV).
2. Consultant's former name and year of establishment (including that of members in case of JV).
3. Narrative description of Consultant firms if any (Use other sheet, if necessary).
4. Name of, not more than two (2) principals who may be contacted with title, telephone number/fax number, E-mail address.



## **Annexure-II**

### **Financial Statement of the last five financial years**

**Rupees in Crore**

| <b>Sr. No.</b> | <b>Particulars</b>                       |                 | <b>2017-18</b> | <b>2016-17</b> | <b>2015-16</b> | <b>2014-15</b> | <b>2013-14</b> |
|----------------|--|-----------------|----------------|----------------|----------------|----------------|----------------|
| 1              | Annual turnover from Consulting business | Lead Member     |                |                |                |                |                |
|                |  | Other member(1) |                |                |                |                |                |
|                |  | Other member(1) |                |                |                |                |                |
| 2              | Net Profit                               | Lead Member     |                |                |                |                |                |
|                |  | Other member(1) |                |                |                |                |                |
|                |  | Other member(1) |                |                |                |                |                |

**Notes:**

- i. Values should be duly certified by statutory body like Chartered Accountant or Independent Auditors who are competent to do so as recognized by the State concerned.
- ii. The amount shall be stated in Indian Rupees (INR).
- iii. For the purpose of short listing, conversion to Indian Rupees shall be based average of the buying and selling rates of Reserve Bank of India as on the EoI Proposal submission date.
- iv. In case the exchange rate for any currency is not available as per the provision of this section, then HPPWD reserves the right to use the rate available from an alternative source at its sole discretion.
- v. Enhancement/Updating Factor:-

| <b>Sr. No.</b> | <b>Year</b> | <b>Enhancement/ Updating factor</b> |
|----------------|-------------|-------------------------------------|
| 1              | 2017-18     | 1.0                                 |
| 2              | 2016-17     | 1.1                                 |
| 3              | 2015-16     | 1.21                                |
| 4              | 2014-15     | 1.2221                              |
| 5              | 2013-14     | 1.34431                             |

**Annexure-III**

**Organizational strength:**

| Name | Total Strength | Engineers and institutional expert on payroll and having over 10 years experience | Engineers and institutional expert continuously on payroll for over 7 years | Engineers and institutional expert working only in road sector related to snow removal from roads | Remarks |
|------|----------------|---|---|---|---------|
|      |                |   |   |   |         |
|      |                |   |   |   |         |
|      |                |   |   |   |         |

Proposed Management Team by the Consultant

| Description of the Key Personnel | Qualification | Experience | Short description of similar projects executed |
|----------------------------------|---------------|------------|--|
|                                  |               |            |  |
|                                  |               |            |  |
|                                  |               |            |  |

## **Annexure-IV**

### **Details of Experience:**

| <b>SR.<br/>NO.</b> | <b>Name of<br/>Project</b> | <b>Completion<br/>Cost</b> | <b>Name of<br/>the Client</b> | <b>Feasibility<br/>Study/DPR</b> | <b>Whether<br/>internal or<br/>externally<br/>aided<br/>project</b> |
|--------------------|----------------------------|----------------------------|-------------------------------|----------------------------------|---|
|                    |                            |                            |                               |                                  |   |
|                    |                            |                            |                               |                                  |   |
|                    |                            |                            |                               |                                  |   |

**Note: only those assignments shall be considered for which consultant has provided services as lead member in case that work is done by a JV.**

Each assignment shall be supported by following details:-

|   |       |
|---|-------|
| Name of Overall assignment:                         | _____ |
| Location of Overall assignment:                     | _____ |
| Owner's Name and Address:                           | _____ |
| Completion (Actual/Estimated vis-à-vis Stipulated): | _____ |
| Description of assignment:                          | _____ |
| Description of Services provided by the firm:       | _____ |

Authorized Signatory  
Name of Client

## **Annexure-V**

### **Undertaking**

I certify that the information in the above Expression of Interest forms is true to the best of my knowledge. I also understand that any misleading or wrong information will disqualify this application straightway.

## **Scope of Work**

**Consultant will prepare feasibility and detailed project report incorporating winter maintenance operations involving snow and ice control/removal activities consisting of the following:**

Consultant should conduct site inspections to avail themselves of the general conditions that exist for each of the locations.

1. Study will include General information about the State's winter conditions
  - a) Identification of roads (preferably highways as mentioned in the attached list at "Annexure-A") that remain covered with heavy snow in winter leading to disruption of traffic.
  - b) What are the average snowfall and thickness of snow cover in a winter?
  - c) The frequency and periods for which such roads remain closed for vehicular traffic.
  - d) When is it counted to have begun and when to have ended?
  - e) What kind of winter road maintenance policy does the State have, with its existing resources and work methodology?
2. Consultant will identify stretches/areas of heavy snow fall and which requires immediate removal of snow from civic and defense purposes.
3. Consultant will study the scope of service required like labour , traffic control materials, equipment, Salt, sand, fuel, transportation, supplies, supervision, communication requirements, reporting requirements and ice control for designated passes and roads in HP.
4. To study the existing pavement structures and suggest revised design of highways in vulnerable snow covered cold regions along-with detailed design and BOQ as per the best global engineering practices.

5. Consultant will study the ways for full width clearing of all surfaces/ roads, without damaging adjacent landscaping and infrastructure, Non-hard surfaces that require plowing and ice control will be identified if requiring winter service.
6. Consultant will identify all drainage structures (catch basins, swales, drainage ditches etc.) where deposition of snow or ice may cause flooding to infrastructure or private property.
7. Consultant will study the type, number of equipment and different techniques to be used during snowfall in predefined cold region stretches.
8. The Consultant will also study the scope of getting the services of a professional weather forecaster in order to monitor weather conditions (24 hours a day). To develop and implement latest IT application for weather forecast, early warnings, management and monitoring of maintenance activities in such regions will also be a part of the project.
9. Study will include Clearing and haulage of snow
  - What are the action times and quality requirements of snow removal?
  - How many snow dump sites are available?
  - Are sites close by used for storage of snow or is all snow hauled to snow dump sites?
  - How many loads have been hauled per winter?
10. The study will include an evaluation of existing and new snow disposal sites and viable alternatives taking into consideration such factors as:
  - (a) Environmental proximity to water courses, drainage, soil, noise and natural environment;
  - (b) Stakeholder concerns;
  - (c) Capacity, access, overhead restrictions, maneuverability, etc;
  - (d) Availability and securing site;
  - (e) Proximity to the City's downtown core;

- (f) Proximity to residential areas;
- (g) Operating, maintaining, cleaning up, ongoing monitoring of site; and
- (h) Cost benefits analysis of snow disposal systems.

11. Consultant will study the

- a) cost efficiency
- b) Environmental friendliness of techniques used for snow removal.

12. Consultant will provide the planning solutions for improving winter maintenance and keeping road clear throughout the year.

13. The consultant will submit the detailed project report incorporating all the above studies and his clear recommendations, methodology, organization structure, Yearly requirement of funds and resources for implementing the recommendations to keep the designated roads traffic worthy throughout the year.(Clear of Snow)

14. After final approval of the Detailed Project Report by the client, the recommendations/studies conducted by the consultant will be implemented on pilot basis through the consultant for maintenance of any one critical stretch of highways under investigation for keeping the same clear of snow and traffic worthy during the entire season. The client will procure and provide required men and Machinery for this purpose.

SCOPE OF WORK

INFORMATION REGARDING ANNUAL SNOW FALL DATA ON NATIONAL HIGHWAYS UNDER THE JURISDICTION OF HPPWD

| Sr. No | Name of Circle                  | Name of Road                     | Chainage   | Altitude   | Chain-age break up | Annual Snow Data in last five years(in |      |      |      |      | Average snowfall record(in meters) | Quantity of Snow(in cum) | Period of Closure of Road   | Resources/Machineryes deployed  |
|--------|---------------------------------|----------------------------------|--|--|--------------------|--|------|------|------|------|------------------------------------|--------------------------|---|---|
|        |                                 |                                  |  |  |                    | 2013                                   | 2014 | 2015 | 2016 | 2017 |                                    |                          |   |   |
| 1      | National Highway Circle Shimla  | NH-05<br>(Hindustan Tibet Road)  | 155/000 to 168/000 & 174/000 to 190/000<br>(Dhalli-Kufri-Fagu-Theog)   | 2400 meters above MSL at chainage 155/000 to 2600 meters above MSL at chainage 168/000   | 155/000 to 160/000 | 1.00                                   | 1.20 | 1.10 | 0.82 | 0.80 | 0.98                               | 53900                    | Approximately two days after heavy snowfall specifically in the months of December to February only   | Wheel Dozers, JCBs and tippers private and departmental                   |
|        |                                 |                                  |  |  | 160/000 to 165/000 | 1.20                                   | 1.30 | 1.40 | 0.90 | 0.90 | 1.14                               | 74100                    |   |   |
|        |                                 |                                  |  |  | 165/000 to 168/000 | 1.40                                   | 1.50 | 1.20 | 0.80 | 1.40 | 1.26                               | 41580                    |   |   |
|        |                                 |                                  |  |  | 174/000 to 180/000 | 0.50                                   | 0.60 | 0.80 | 0.70 | 1.20 | 0.76                               | 45600                    |   |   |
|        |                                 |                                  |  |  | 180/000 to 185/000 | 1.20                                   | 1.10 | 1.30 | 0.65 | 1.40 | 1.13                               | 56500                    |   |   |
|        |                                 |                                  |  |  | 185/000 to 190/000 | 1.40                                   | 1.20 | 0.90 | 0.55 | 1.10 | 1.03                               | 51500                    |   |   |
| 2      |                                 | NH-05<br>(Hindustan Tibet Road)  | 190/000 to 208/000 & 208/000 to 216/000<br>(Sanaarghati-Narkanda-Oddi) | 2600 meters above MSL at chainage 190/000 to 2900 meters above MSL at chainage 208/000 and 2700 meters above MSL at 216/000.   | 190/000 to 195/000 | 0.80                                   | 0.90 | 1.00 | 0.55 | 0.80 | 0.81                               | 40500                    | Approximately two days after heavy snowfall specifically in the months of December to February only   | Wheel Dozers, JCBs and tippers private and departmental                   |
|        |                                 |                                  |  |  | 195/000 to 208/000 | 0.90                                   | 0.90 | 1.10 | 0.65 | 0.70 | 0.85                               | 110500                   |   |   |
|        |                                 |                                  |  |  | 208/000 to 210/000 | 1.50                                   | 1.80 | 1.80 | 0.87 | 1.20 | 1.43                               | 28600                    |   |   |
|        |                                 |                                  |  |  | 210/000 to 212/000 | 1.70                                   | 1.90 | 1.90 | 0.99 | 1.10 | 1.52                               | 76000                    |   |   |
|        |                                 |                                  |  |  | 212/000 to 214/000 | 1.80                                   | 2.00 | 1.75 | 1.00 | 1.20 | 1.55                               | 31000                    |   |   |
|        |                                 |                                  |  |  | 214/000 to 216/000 | 1.10                                   | 1.30 | 1.20 | 0.70 | 0.90 | 1.04                               | 20800                    |   |   |
| 3      |                                 | NH-705<br>(Theog Hatkoti Road)   | 42/000 to 56/000<br>(Salyana-Kharapathar-Jubbal)                       | 2600 meters above MSL at chainage 42/000 to 2900 meters above MSL at chainage 52/000   | 42/000 to 46/000   | 0.80                                   | 0.90 | 1.00 | 0.55 | 0.80 | 0.81                               | 42120                    | Approximately two days after heavy snowfall specifically in the months of December to February only   | Wheel Dozers, JCBs and tippers private and departmental                   |
|        |                                 |                                  |  |  | 46/000 to 50/000   | 1.80                                   | 2.00 | 1.75 | 1.00 | 1.20 | 1.55                               | 80600                    |   |   |
|        |                                 |                                  |  |  | 50/000 to 52/000   | 1.50                                   | 1.80 | 1.80 | 0.87 | 1.20 | 1.43                               | 37180                    |   |   |
|        |                                 |                                  |  |  | 52/000 to 54/000   | 0.50                                   | 0.60 | 0.80 | 0.70 | 1.20 | 0.76                               | 18240                    |   |   |
|        |                                 |                                  |  |  | 54/000 to 56/000   | 1.40                                   | 1.20 | 0.90 | 0.55 | 1.10 | 1.03                               | 24720                    |   |   |
| 4      |                                 | NH-305<br>(Sainj Luhri Aut road) | 48/0 to 53/0 (Jalori Jot)  |  | 48/0 to 49/0       | 0.45                                   | 0.45 | 0.30 | 0.30 | 0.15 | 0.33                               | 2145                     | Closed for one month after heavy snow & for rest of the period between December to March.Road closed for approximately 2-3 days depending upon intensity of snow fall | Wheel Dozers, JCBs and tippers private and departmental                   |
|        |                                 |                                  |  |  | 49/0 to 50/0       | 0.60                                   | 0.75 | 0.60 | 0.75 | 0.45 | 0.63                               | 4095                     |   |   |
|        |                                 |                                  |  |  | 50/0 to 51/0       | 1.90                                   | 1.05 | 1.05 | 0.90 | 0.60 | 1.10                               | 7150                     |   |   |
|        |                                 |                                  |  |  | 51/0 to 52/0       | 2.05                                   | 2.05 | 2.20 | 2.05 | 1.00 | 1.87                               | 12155                    |   |   |
|        |                                 |                                  |  |  | 52/0 to 53/0       | 2.20                                   | 2.20 | 2.35 | 2.20 | 1.50 | 2.09                               | 13585                    |   |   |
| 5      | National Highway Circle Shahpur | NH-305<br>(Sainj Luhri Aut road) | 53/0 to 63/0   | 3132 meters above MSL at chainage 55/00, 2850 meters above, MSL at chainage 57/0, 2650 meters above at chainage 59/0, 2420 meters above at chainage 61/0,2150 meters above and chainage 63/0 1900 meters | 53/0 to 55/0       | 2.50                                   | 2.00 | 2.30 | 2.40 | 1.50 | 2.14                               | 23540                    | Closed for two months i.e.December & January) after heavy snow fall and rest of the period upto March.Road closed 4-5 days depending upon intensity of snow fall      | Wheel Dozers, JCBs,Skid Steer Loader and tippers private and departmental |
|        |                                 |                                  |  |  | 55/0 to 57/0       | 1.50                                   | 1.75 | 1.60 | 1.80 | 1.20 | 1.57                               | 17270                    |   |   |
|        |                                 |                                  |  |  | 57/0 to 59/0       | 1.40                                   | 1.05 | 1.10 | 1.00 | 0.60 | 1.03                               | 11330                    |   |   |
|        |                                 |                                  |  |  | 59/0 to 61/0       | 1.25                                   | 0.90 | 0.90 | 0.75 | 0.40 | 0.84                               | 9240                     |   |   |
|        |                                 |                                  |  |  | 61/0 to 63/0       | 0.75                                   | 0.70 | 0.55 | 0.60 | 0.25 | 0.57                               | 6270                     |   |   |