

## **Schedules**

## **SCHEDULE - A**

*(See Clauses 2.1 and 8.1)*

### **SITE OF THE PROJECT**

#### **1. The Site**

- 1.1 The site of “**ADDITIONAL WORK FOR CONSTRUCTION OF LANDSLIDE PROTECTION GALLERY, SLOPE PROTECTION WORKS INCLUDING CATTLE FENCE, RESTORATION OF IRRIGATION CHANNEL, RIVER PROTECTION WORK, ACCESS PATH, RESTORATION OF DRINKING WATER SUPPLY LINE AT BARETI, UTTARKASHI (EX. KM 100.300 TO KM 101.060 OF SECTION OF NH-34) IN THE STATE OF UTTARAKHAND**”. The project shall include existing status of land, building structures; slope protection, road works & other works as described in Annexure-I of schedule-A.
- 1.2 The dates of handing over Right of Way to the Contractor are specified in the Annex-II of this Schedule A.
- 1.3 An inventory of the Site including the land, buildings, structures, road works, trees and any other immovable property on, or attached to, the Site shall be prepared jointly by the Authority Representative and the Contractor, and such inventory shall form part of the memorandum referred to in Clause 8.2.1 of this Agreement.
- 1.4 The alignment plans of the Project works are specified in Annex-III. In the case of sections where no modification in the existing alignment of the Project works is contemplated, the alignment plan has not been provided. Alignment plans have only been given for sections where the existing alignment is proposed to be upgraded. The contractor, however, improve/upgrade the Road Profile including sections of other works as indicated in Annexure-III based on site/design requirement.
- 1.5 The status of the environment clearances obtained or awaited is given in Annex - IV.

**Annexure - I**  
**(Schedule-A)**

**Site**

Note: Through suitable drawings and description in words, the land, buildings, structures and road works comprising the Site shall be specified briefly but precisely in this Annex-I. All the chainages/location referred to in Annex-I to Schedule A shall be existing chainages.

**1. Site**

The site of construction of “**ADDITIONAL WORK FOR CONSTRUCTION OF LANDSLIDE PROTECTION GALLERY, SLOPE PROTECTION WORKS INCLUDING CATTLE FENCE, RESTORATION OF IRRIGATION CHANNEL, RIVER PROTECTION WORK, ACCESS PATH, RESTORATION OF DRINKING WATER SUPPLY LINE AT BARETI, UTTARKASHI (EX. KM 100.300 TO KM 101.060 OF SECTION OF NH-34) IN THE STATE OF UTTARAKHAND**”.

**2. Land**

The Site of the Project comprises the land (sum total of land already in possession and land to be possessed) as described below:

**3. Carriageway**

The present carriageway of the Project works is of two Lane carriageway flexible pavement having carriageway width 7 m.

**4. Major Bridges - NIL**

**5. Road over-bridges (ROB)/ Road under-bridges (RUB): - NIL**

**6. Grade separators- NIL**

**7. Minor Bridges- NIL**

**8. Railway level crossings- NIL**

**9. Underpasses (Vehicular, Non-Vehicular)**

**10.Culverts**

The Site has the following culverts:

| Sl. No. | Existing/Design<br>Chainage | Quantity | Span/Opening<br>(m) | Type of Culvert |
|---------|-----------------------------|----------|---------------------|-----------------|
| 1.      | Ch. 100+680                 | 1        | Single cell culvert | Box Culvert     |

**11. Bus bays/Bus Shelters- NIL**

12. Truck Lay byes- NIL

13. Road side drains

The details of the roadside drains are as follows:

| S.No. | Existing Chainage (km) |         | Side      |
|-------|------------------------|---------|-----------|
|       | From                   | To      |           |
| 1     | 100+415                | 100+725 | Hill side |

14. Major junctions :NIL

15. Minor junctions : NIL

16. Bypasses: NIL

17. Other Structures : Following are the details of existing causeways:

| S. No | Existing Chainage (km) | Structure Type | Openings / Spans X Length | Width (m) |
|-------|------------------------|----------------|---------------------------|-----------|
| NIL   |                        |                |                           |           |

**Annex - II**  
**(Schedule-A)**

**Dates for providing Right of Way**

The dates on which the Authority shall provide Right of Way to the Contractor on different stretches of the Site are stated below:

| S.<br>No. | Design Chainage (Km)                     |    | Design<br>Length (Km) | Width (In<br>Meter) | Dates of<br>Providing<br>ROW |
|-----------|------------------------------------------|----|-----------------------|---------------------|------------------------------|
|           | From                                     | To |                       |                     |                              |
| 1         | 2                                        | 3  | 4                     | 5                   | 6                            |
|           | <b>Part Right of Way</b>                 |    |                       |                     |                              |
|           | On Appointed Date 100 % ROW is available |    |                       |                     |                              |

### **Annex - III**

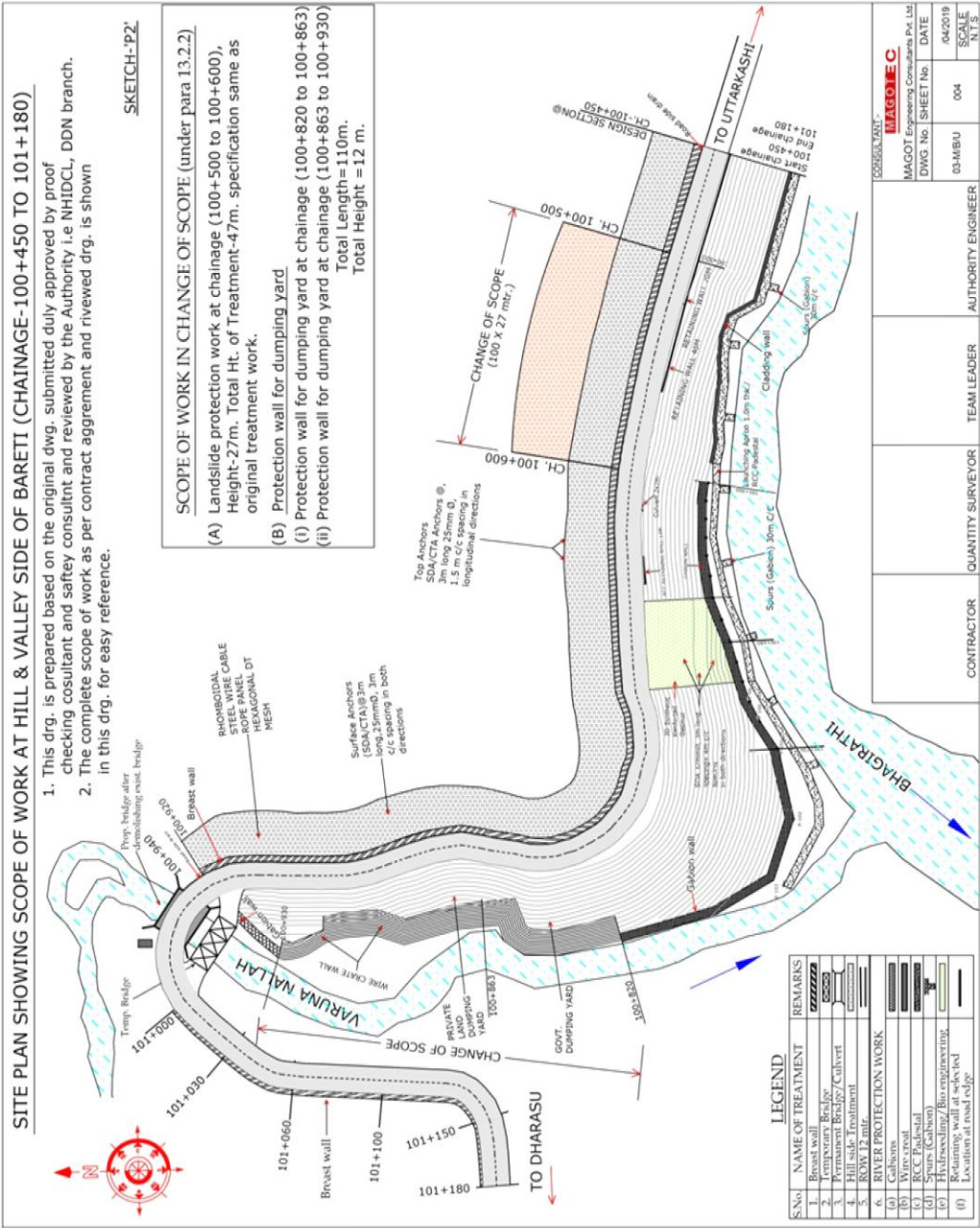
*(Schedule-A)*

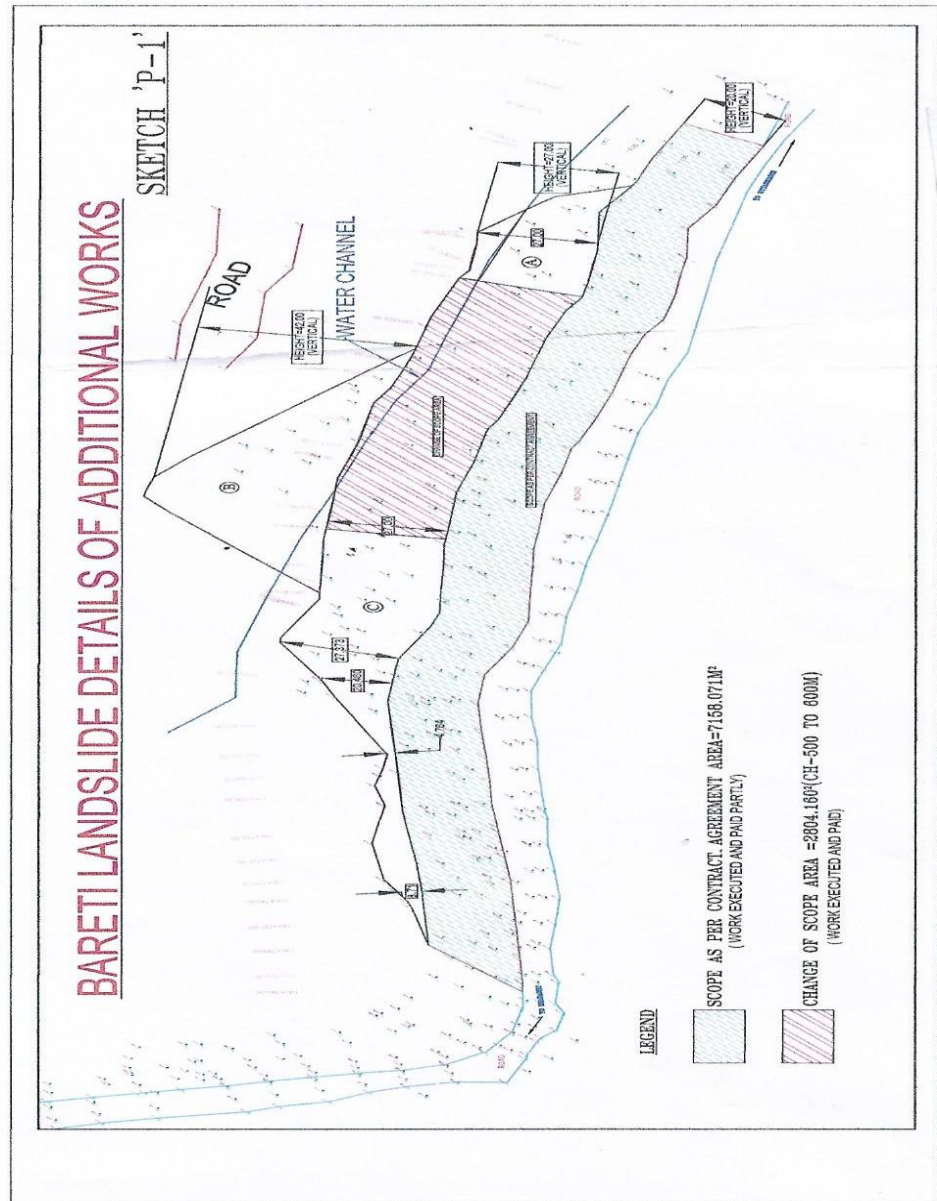
#### **Alignment Plans**

The existing alignment of the Project works shall be modified in the following sections as per the alignment plan indicated below:

- (i) The alignment of the Project works is enclosed in alignment plan. Finished road level indicated in the alignment plan shall be followed by the contractor as minimum FRL. In any case, the finished road level of the Project works shall not be less than those indicated in the alignment plan. The contractor shall, however, improve/upgrade the Road profile as indicated in Annex-III based on site/design requirement.
- (ii) The detail plans of each type of additional work is as given below. The same are enclosed as Appendix mentioned below:-
  - (a.i.) Alignment plan including details of previous work as well as change of scope for Barethi Landslide.
  - (a.ii.) Typical section elevation of landslide at Barethi with details of area of slides.

EXISTING SECTIONAL ELEVATION OF LANDSLIDE WORK







**Annex - IV**  
*(Schedule-A)*

**Environment Clearances**

Not Applicable for this section.

**Annex-V**  
(Schedule-A)  
(Google Map of Project Site)



## SCHEDULE - B

*(See Clause 2.1)*

### Development of the Project works

#### 1 Development of the Project works

Development of the Project works shall include design and construction of the all works included in the Project works as described in this Schedule-B and in Schedule-C.

- 2 The project shall include **Landslide protection** (i) Protection work at Zone A,B,C & D (ii) Construction of Landslide Protection Gallery of 310 meter Long from Ch. 100+415 to 100+725 (iii) Restoration of Irrigation Channel using PPR pipes 250 mm  $\Phi$  x 2 Nos. (iv) River side Protection Work using Tetra pods (v) Cattle/Security Fence (1.2 m height) with RCC Post 1.8 m height @ 3 m c/c for 400 meter length (vi) Construction of Access path of width 1.5 m to 2.0 m and of (RR Masonry/PCC type) to Villages (Ramp/steps) at Ch. 101+070 (vii) Restoration of breached Water Supply Pipes using PPR pipes of 90 mm  $\Phi$ , in the state of Uttrakhand on EPC mode “ as described in Annexure-I of this schedule-B in Schedule-C.

#### 3 Specifications and Standards

All the Project works shall be designed and constructed in conformity with the Specifications and Standards specified in Annex-I of Schedule-D.

Annex - I  
(Schedule-B)

Description of [Two-Lanning]<sub>s</sub>

*[Note: The project works shall follow the existing alignment unless otherwise specified by an Authority and shown in the various plan/sections as specified in the Annexure-III of schedule-A. Geometric deficiencies, if any, in the existing horizontal and vertical profiles shall be corrected as per the prescribed standards for mountains and steep terrain to the extent land is available.]*

**Description of project:**

**1. Slide mitigation measure:**

i. Protection work area:-

- (a) Border road organization under the aegis of MoRTH identified 39 perpetual landslides in year 2014 on Badrinath and Gangotri axis. Out of these 39 perpetual slides 6 are located on NH-34 in Dharasu- Gangotri section. **Barethi landslide is one of the perpetual landslide areas out of 6 landslides in Dharasu- Gangotri section.**
- (b) The work for Barethi landslide i.e. the location of instant proposal was awarded to M/s Bharat construction (India) Pvt. Ltd. for 760 m stretch from km 100+300 to 100+060.
- (c) The work included in this contract based on the holistic and comprehensive solution which includes landslide protection gallery for hill side stabilization of extensively damaged hill side slope protection work, restoration of irrigation channel & drinking water pipe line, river bank protection work, cattle fencing & Access path to villagers. All the above work, including Fixing of Crash Barrier/painting and road safety/Painting/sign marking in addition to road work. Due to hilly terrain provision of slope protection work considered in accordance with the IRC SP: 116-2018, IRC SP: 23-2014 and IRC. SP: 48:1998 Hill Road manual over the hilly slopes and IS 456:2000 for RCC structure and IS 800:2008 for steel structure.

ii. Landslide protection Gallery ch. 100+415 to 100+725 (310 mtr long) for details and section of landslide protection Gallery refer schedule 'B' clause 13.

iii. **Restoration of Irrigation Channel:** - Ch. 100+500 to 100+760 at height as shown in typical section attached at refer schedule 'B' clause 13.

iv. **River side protection work**

- i. The River protection work (Tetra pod) based on the quantity (appx 475 cum) and as approved by Authority Engineer during construction. Refer schedule 'B' clause 13.
- v. **Cattle/Security fence (1.2 m height) with RCC post 1.8 mtr height @3 m c/c for 400 mtr length** refer schedule 'B' clause 13
- vi. Construction of Access path (1.5m to 2 m width of RR masonry/PCC) Villages (Ramp/steps) at Ch. 101+070 refer schedule 'B' clause 13
- vii. Restoration of drinking Water Supply Pipes at crest of landslide using PPR pipes 90 mm  $\Phi$  including civil work involved refer schedule 'B' clause 13.
- viii. **Muck Dumping and its stabilization**  
Dumping sites to be identified leased/purchased by the contractor in the consultation with the local administration including forest etc. Transportation of muck at suitable locations .The dumping sites to be stabilized as provisions including of Gabion wall, bio-engineering, retaining wall etc as per requirement of site as per NGT order No \_\_\_\_\_ dated 24.08.2019.(Brief given at Schedule 'B' clause 13)

**Rehabilitation of existing pavement to develop it to 2L + PS**

**Road Safety, Furniture road fixing of Crash Barrier.**

**ix. Mechanical Bio engineering on valley side and hill side works**

- i. Providing and laying of turf reinforcement mat (TRM 450) consist of a dense web of crimped, interlocking, multi-lobed polypropylene fibres positioned between 2 bi axial oriented nets and mechanically bound together by parallel stitching with polypropylene thread for erosion control on the slope surface, as per detailed technical specifications and as directed by engineer in-charge.
- ii. Supply and spraying of Biotic Soil Media (BSM) which is a combination of recycled thermally refined bark and wood fibers with a proprietary blend of bio polymers, biochar, Seaweed extract, humic acid, endomycorrhizae and other beneficial constituents. All component of the biotic soil media blends hall be of naturally derived and renewable, and engineered to optimize moisture retention, growth and establishment of vegetation, BSM is applied hydraulically over soil substrate to add organic matter so as to enrich soil nutrients prior to application of high performance flexible as per detailed technical specification and as directed by engineer in-charge.

## **2 GEOMETRIC DESIGN AND GENERAL FEATURES**

### **2.1 General**

Geometric design and general features of the Project works shall be in accordance with Section 2 of the Manual.

### **2.2 Design speed**

The design speed as per IRC: SP: 73-2015 for hilly/steep terrain shall be adopted.

## 2.3 Improvement of the existing road geometrics

[Refer to paragraph 2.1(vi) of the IRC Manual and provide details]

- 2.3.1 In the following sections, where improvement of the existing road geometrics to the prescribed standards is not possible, the existing road geometrics shall be improved to the extent possible within the given right of way and proper road signs and safety measures shall be provided:

| Sr.no | Existing Chainage |         | Design Chainage |         | Length (km) |
|-------|-------------------|---------|-----------------|---------|-------------|
|       | From              | To      | From            | To      |             |
| 1     | 100+415           | 100+725 | 100+415         | 100+725 | 0.310       |

- 2.3.2 The following sections/zones where the landslide protection work to be executed

| Zone | Existing Chainage |         | Design Chainage |         | Length (km) |
|------|-------------------|---------|-----------------|---------|-------------|
|      | From              | To      | From            | To      |             |
| A    | 100+460           | 100+500 | 100+460         | 100+500 | 0.040       |
| B    | 100+540           | 100+640 | 100+540         | 100+640 | 0.100       |
| C    | 100+670           | 100+760 | 100+670         | 100+760 | 0.090       |
| D    | 101+00            | 101+180 | 101+00          | 101+180 | 0.180       |

## 2.4 Right of Way

Details of the Right of Way are given in Annex II of Schedule-A.

## 2.5 Type of shoulders

- (a) In built-up sections, footpaths/fully paved shoulders shall be provided as specified

## 3.0 Instrumentation for Monitoring

- 3.1 Following monitoring instruments shall be provided at Landslide protection work: -

| Zones | Type of Instrument |              |
|-------|--------------------|--------------|
|       | Piezometer         | Inclinometer |
| A     | 1                  | 1            |
| B     | 2                  | 1            |
| C     | 1                  | 1            |
| D     | 1                  | 1            |
| Total | 5                  | 4            |

## 4.0 Cleaning & maintenance

Cleaning, maintenance, pointing of waterways of the culverts, catch water pit & hill side abutments & restoration/strengthening of the exposed valley side abutment & valley side head wall of the culvert & Construction of Water Chute in 5 steps of 1 m each at the outlet. The chute shall be divergent at slope of 1:1/4 as per drawing.

## **5.0 ROADSIDE FURNITURE**

5.1 Roadside furniture shall be provided in accordance with the provisions of Section 9 and 12 of the Manual and as well given in Schedule-C.

### **5.2 *Overhead traffic signs: location and size***

Overhead traffic signs are provided as per site requirement according to paragraph 9.2.5 of the Manual and as given in Schedule-C.

5.3 Minimum 5 boards is to be placed on site two for warning boards depicting history and precaution in the slide zone other boards as per IRC. Delineators should also be placed on site.

## **6.0 SPECIAL REQUIREMENTS FOR HILL ROADS**

In accordance with the section 13 of the manual (IRC: SP 73:2015 & IRC: SP 48:1998) and recommended practices for the treatment of embankment and road side slopes erosion control (First Revision), IRC: 56-2011 and relevant IRC.

**Note :** The contractor shall be responsible for accurate assessment and design of the actual requirement as per site situation and prepare design for slope protection and stabilization as per specification and standards stipulated in Schedule-D and submit the same to the Authority's Engineer/Authority for review through the Proof/Safety Consultant only through IIT/CBRI/CSIR and implement it accordingly thereafter.

Therefore contractor shall make thorough investigation at site and assess the requirement of slope protection and slide prone zone and other safety features at his own before submission of bid. However, mechanical bio-engineering is essentially to be done for uniform vegetation all over the treated area.

7.0 The land for muck dumping to be leased/procured by the contractor and generated muck to be deposited in the leased/purchased ground. The muck dumping ground to be stabilized as per NGT orders and shall be covered with bio-engineering.

## **8.0 Alignment of project works**

The alignment plans of all proposed works are attached with Schedule-A, Annexure-III (ai) and (aii).

## **9.0 CHANGE OF SCOPE**

The length of Structures and other works specified here in above shall be treated as an approximate assessment. The actual lengths as required on the basis of detailed investigations shall be determined by the Contractor in accordance with the Specifications and Standards. Any variations in the lengths specified in this Schedule-B shall not constitute a Change of Scope, save and except any variations in the length arising out of a Change of Scope expressly undertaken in accordance with the provisions of Article 13.

## **10.0 TRAFFIC CONTROL DEVICES AND ROAD SAFETY WORK.**

10.1 Traffic control devices and road safety works shall be provided in accordance with Section 9 of the IRC: SP:73-2015.

10.2 Specifications of the reflective sheeting shall be as per the manual of specifications (IRC: SP:73-2015).

11 **SPECIAL REQUIREMENTS FOR HILL ROAD**

In accordance with section 13 of the manual (from IRC SP 73: 2015), IRC: SP 48: 1998 and recommended practices for the treatment of Embankment and Roadside slopes Erosion control (first Revision) IRC: 56: 2011 and relevant IRC codes.

Landslide protection work as specified as per Para 2.3.2 shall be provided.

However, the Contractor shall be responsible for accurate assessment of the actual requirement as per site situation & prepare designs for slope protection & Stabilization as per the specification and standards stipulated in Schedule 'D and submit the same to Authority Engineer for review through the proof consultant and implement it accordingly hereafter.

Any increase in quantity over and above the tentative quantity as mentioned in above tables or through change in specifications will not be considered for payment as change of scope. Therefore, Contractor shall make through investigation of the site and assess the requirement of slope protection and slide prone zones and other safety features on his own before submission of bid.

12. Shifting of utilities: - NIL

13. The following plans with typical cross sections in respect of works to be executed are enclosed for guidelines.

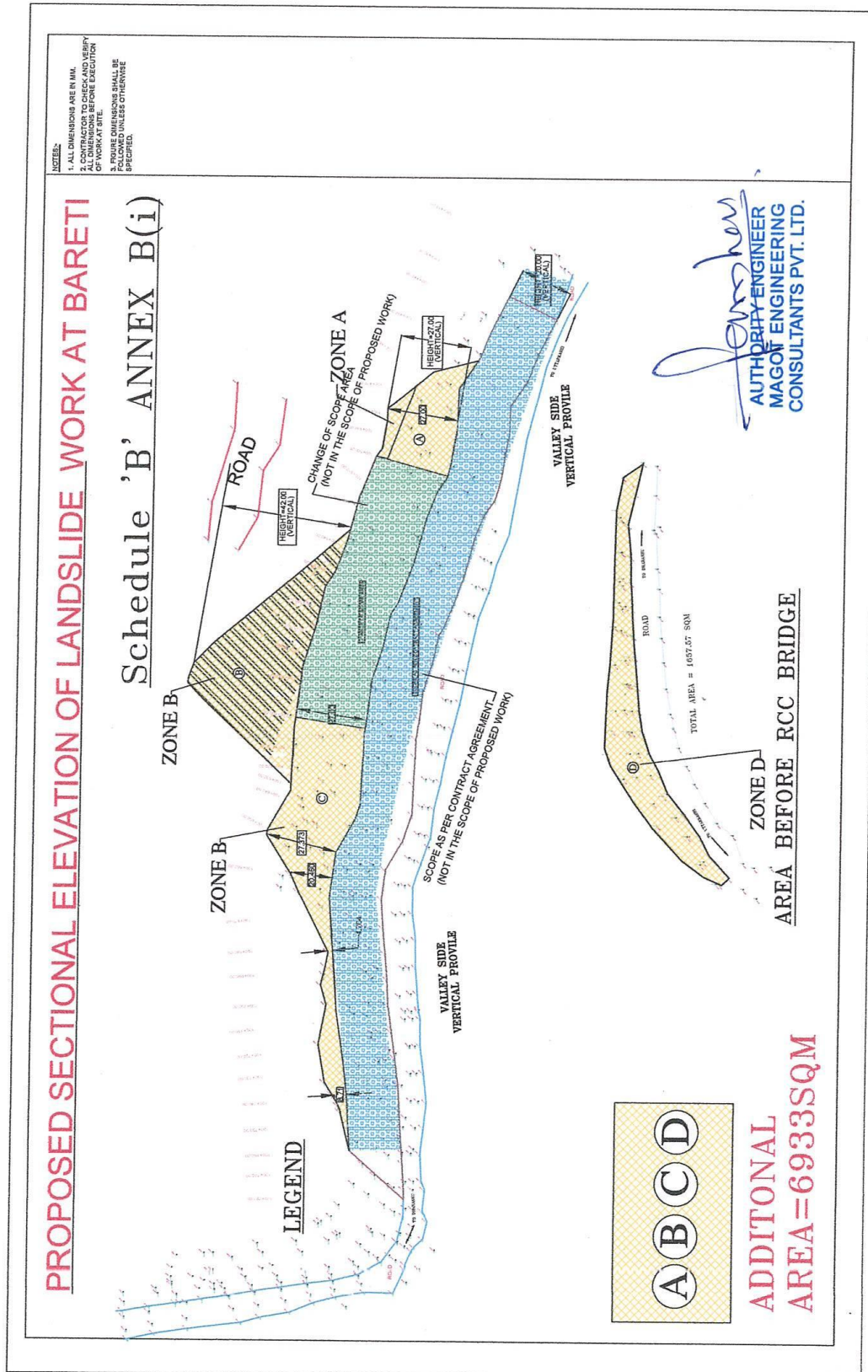
| S.N. | Description of work/drawing                                                                 | Schedule No.               |
|------|---------------------------------------------------------------------------------------------|----------------------------|
| 1    | Proposed sectional elevation of landslide protection work at Bareti                         | Schedule-B Annex-B(i)      |
| 2    | Side plan for proposed Landslide protection gallery: Bareti                                 | Schedule-B Annex-B(ii)     |
| 3    | Typical cross section of landslide protection work at Bareti applicable for Zone-A, C and D | Schedule-B Annex-B(iii)    |
| 4    | Typical cross section of landslide protection work at Bareti applicable for Zone-B          | Schedule-B Annex-B(iv)     |
| 4    | Details of sump/chamber and Isometric view of PPR pipe fixing                               | Schedule-B Annex-B(v)      |
| 5    | Bareti landslide -Details of landslide protection gallery                                   | Schedule-B Annex-B(vi)     |
| 6    | Plan of landslide protection gallery                                                        | Schedule-B Annex-B(vi) (a) |
| 7    | Section of landslide protection gallery                                                     | Schedule-B Annex-B(vi) (b) |
| 8    | Bareti landslide-details of Ramp/steps and details of length of security fencing            | Schedule-B Annex-B(vii)    |
| 9    | Bareti landslide-fixing details of PPR pipe at Irrigation channel                           | Schedule-B Annex-B(viii)   |





## (Schedule B-1)

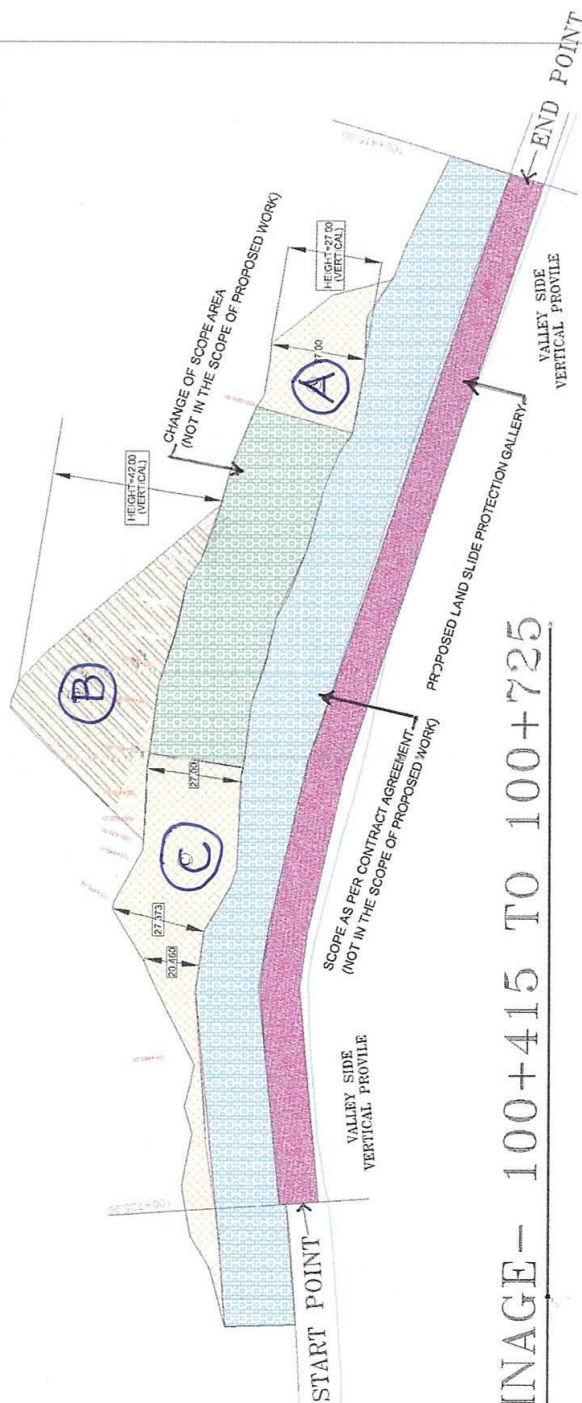
1. The shifting of utilities and felling of trees shall be carried out by the Contractor. The cost of the same shall be borne by the Authority. The details of utilities are as follows:



**NOTE S:**

1. ALL DIMENSIONS ARE IN MM.
2. CONTRACTOR TO CHECK AND VERIFY ALL DIMENSIONS BEFORE EXECUTION OF WORK AT SITE.
3. FINISH DIMENSIONS SHALL BE FOLLOWED UNLESS OTHERWISE SPECIFIED.

Schedule 'B' ANNEX B(i)



CHAINAGE- 100+415 TO 100+725

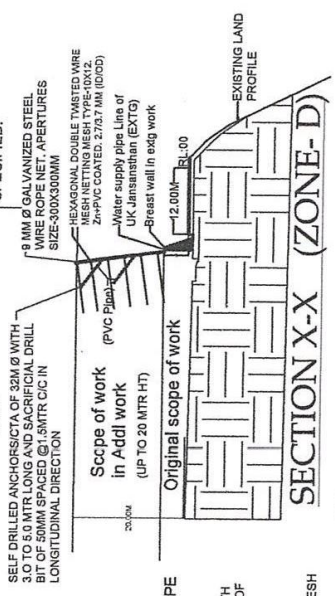
TOTAL LENGTH OF LAND SLIDE  
PROTECTION GALLERY = 310 MTR

*For more*  
**AUTHORITY ENGINEER  
MAGOT ENGINEERING  
CONSULTANTS PVT. LTD.**

**Schedule 'B' ANNEX B(iii)**  
**TYPICAL CROSS SECTION OF LAND SLIDE PROTECTION WORK**  
**AT BARETI APPLICABLE FOR ZONE A, C & D**

- NOTES:-**
1. ALL DIMENSIONS ARE IN MM.
  2. CONTRACTOR TO CHECK AND VERIFY ALL DIMENSIONS BEFORE EXECUTION OF WORK AT SITE.
  3. FIGURE DIMENSIONS SHALL BE FOLLOWED UNLESS OTHERWISE SPECIFIED.

4. CONTRACTOR TO VISIT THE SITE BEFORE QUOTING ANY ELEMENT OF SLOPE TREATMENT BEING SPECIALIZE WORK



**ZONE-A & C**  
 (Proposed Additional work)  
 HT VARRIES

NOT IN SCOPE OF ADDL WORK

Change of Scope work  
 (UP TO 20+27 MTR HT)

Original scope of work  
 (UP TO 20 MTR HT)

| SL NO | ZONE | AREA IN SQM |
|-------|------|-------------|
| 1     | A    | 914.00      |
| 2     | B    | 2192.00     |
| 3     | C    | 2170.00     |
| 4     | D    | 1657.00     |
| TOTAL |      | 6933.00     |

**SECTION X-X (ZONE-A & C)**

*Perseus*

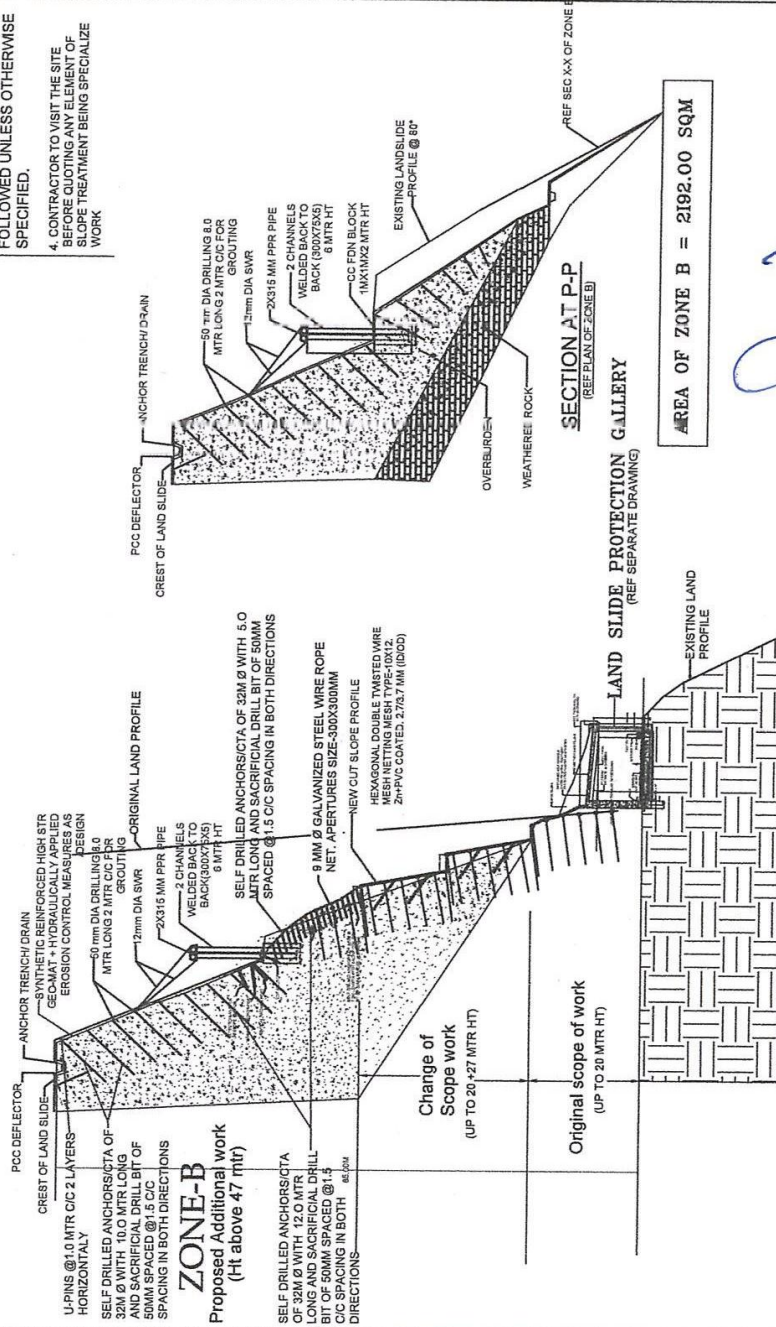
AUTHORITY-ENGINEER  
 MAGOT-ENGINEERING  
 CONSULTANTS PVT. LTD.



**Schedule 'B' ANNEX B(14)**  
**TYPICAL CROSS SECTION OF LAND SLIDE PROTECTION WORK**  
**AT BARETI APPLICABLE FOR ZONE (B)**

**NOTES:-**

1. ALL DIMENSIONS ARE IN MM.
2. CONTRACTOR TO CHECK AND VERIFY ALL DIMENSIONS BEFORE EXECUTION OF WORK AT SITE.
3. FIGURE DIMENSIONS SHALL BE FOLLOWED UNLESS OTHERWISE SPECIFIED.
4. CONTRACTOR TO VISIT THE SITE BEFORE QUOTING ANY ELEMENT OF SLOPE TREATMENT BEING SPECIALIZE WORK

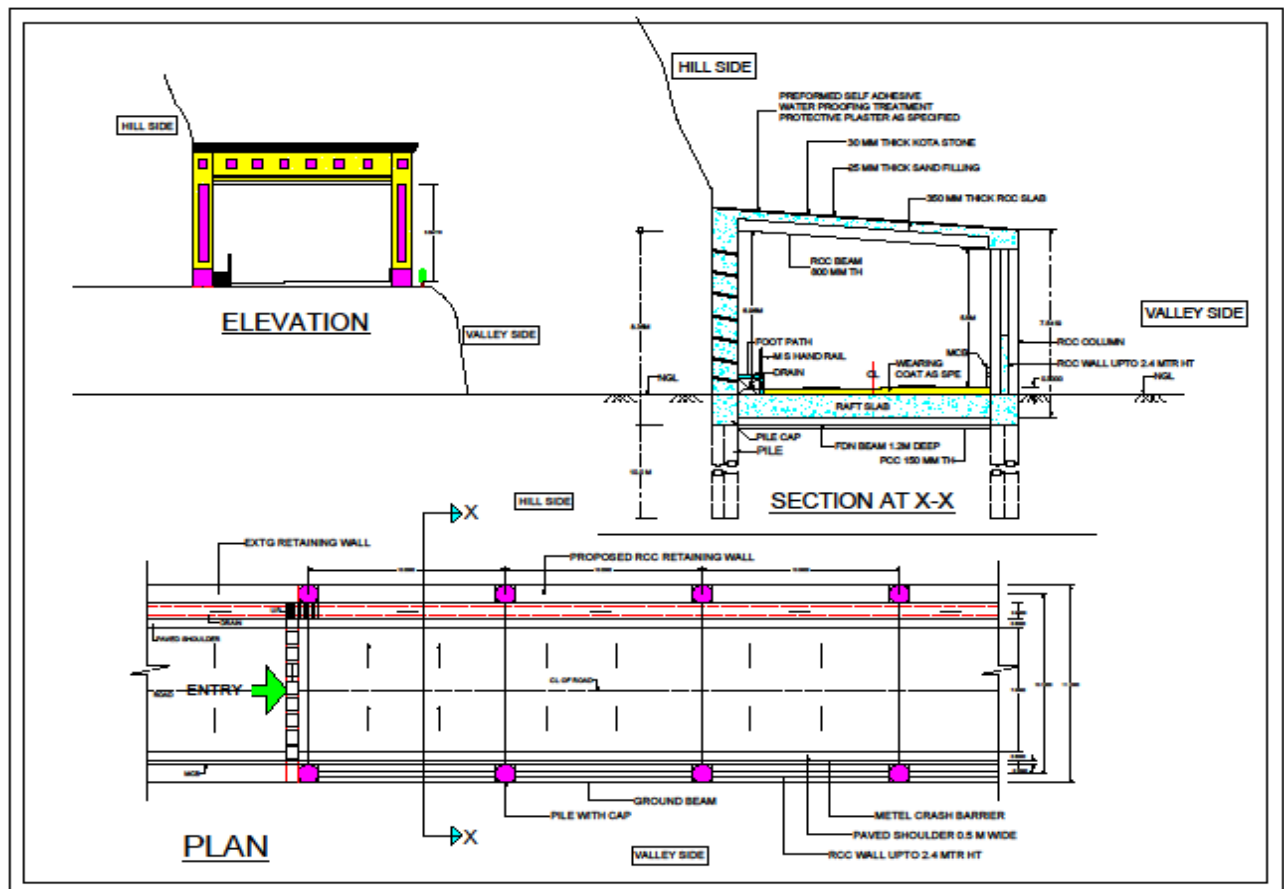


**SECTION X-X (ZONE-B)**

*Signature*  
**AUTHORITY ENGINEER**  
**MAHOT ENGINEERING**  
**CONSULTANTS PVT. LTD.**



## SCHEDULE- 'B' ANNEXURE- B (vii)



NOTE: (GAD) only hill side pile recommended. Omit valley side pile for design purpose.

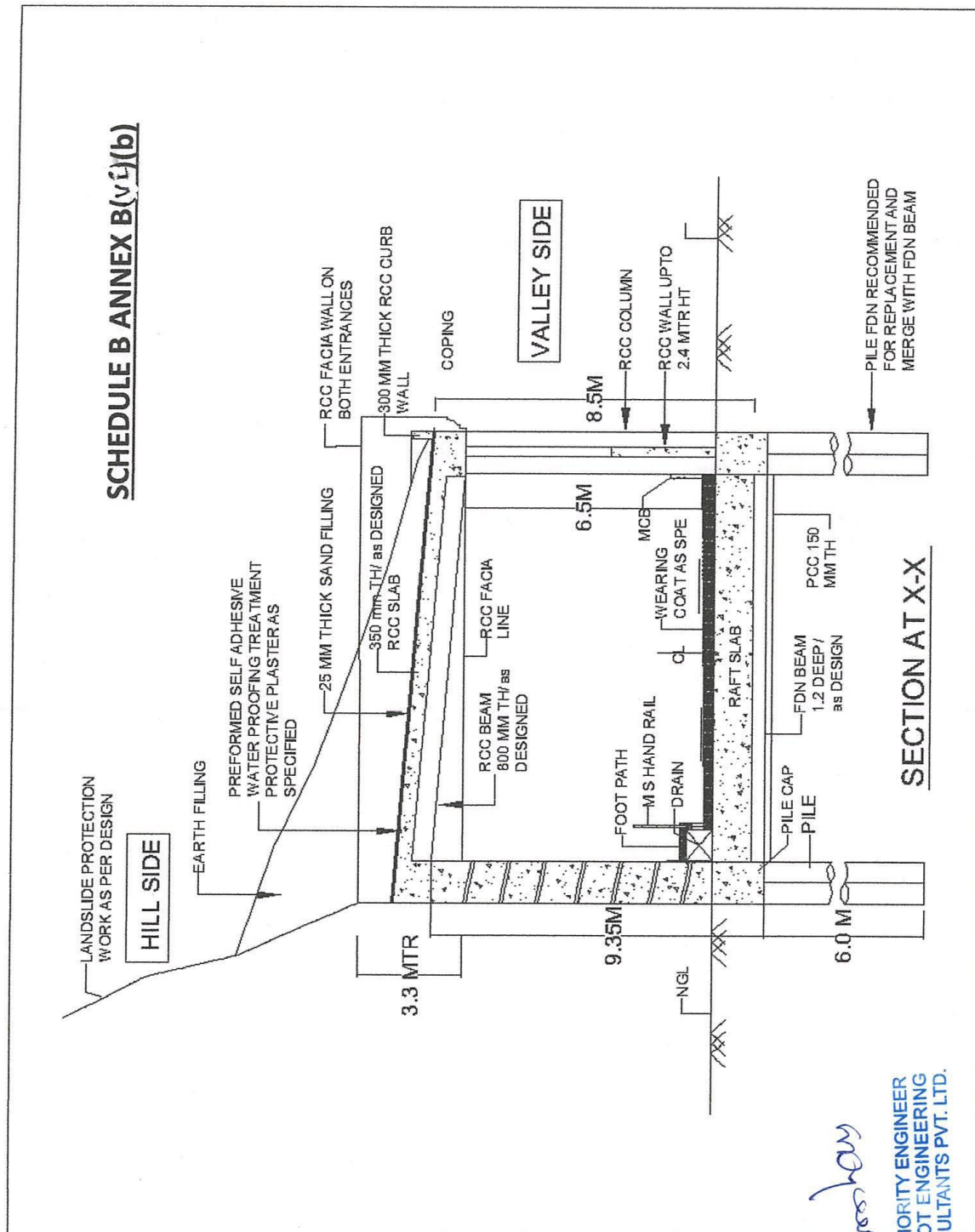
[illegible]

**AUTHORITY ENGINEER  
MAGOT ENGINEERING  
CONSULTANTS PVT. LTD.**

**NOTE: (GAD) only hill side pile recommended. Omit valley side pile for design purpose**



# **SCHEDULE B ANNEX B(v)(b)**



*forshaw*  
 AUTHORITY ENGINEER  
 MAGOT ENGINEERING  
 CONSULTANTS PVT. LTD.

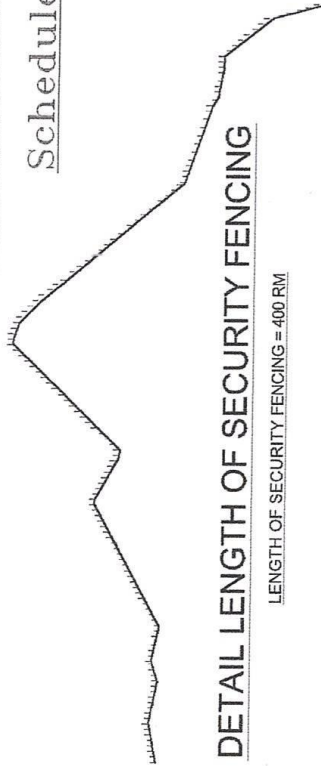
NOTE: (GAD) only hill side pile recommended. Omit valley side pile for design purpose

# BARETI LANDSLIDE - DETAILS OF RAMP/STEPS

Schedule 'B' ANNEX B (vii)

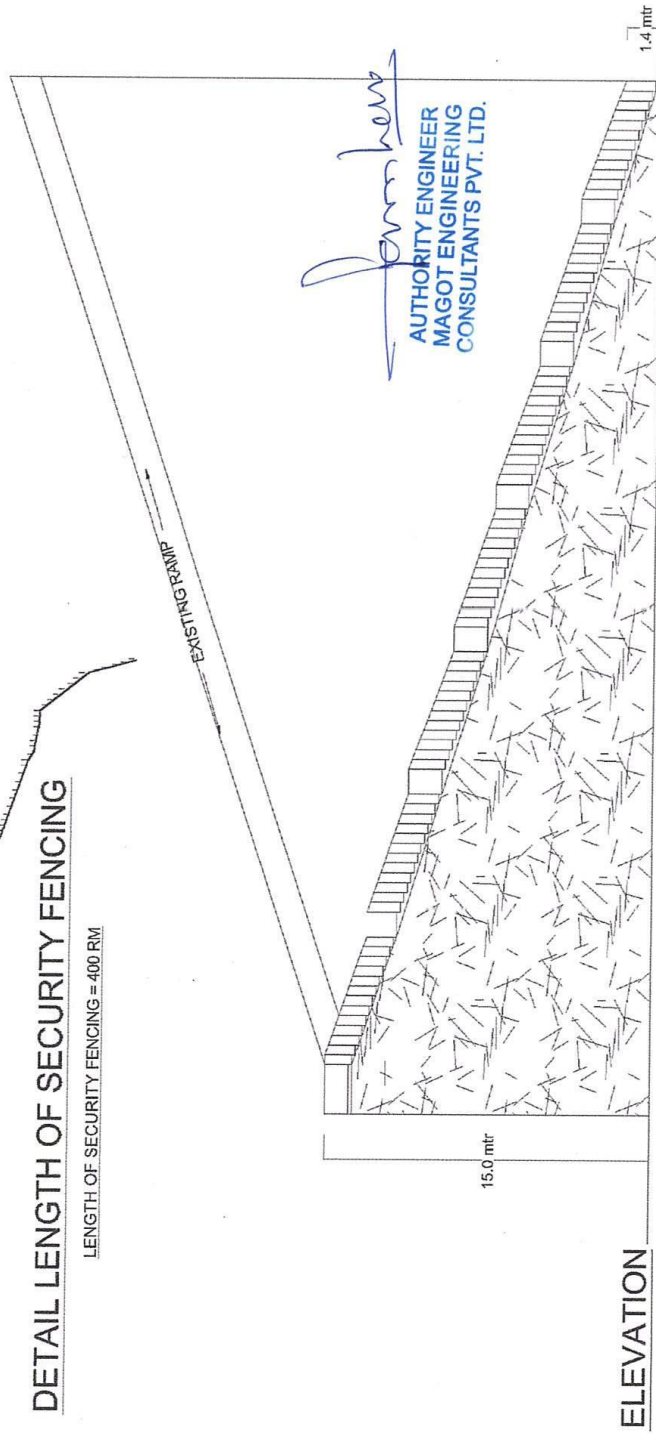
## NOTES:-

1. ALL DIMENSIONS ARE IN MM.
2. CONTRACTOR TO CHECK AND VERIFY ALL DIMENSIONS BEFORE EXECUTION OF WORK AT SITE.
3. FIGURE DIMENSIONS SHALL BE FOLLOWED UNLESS OTHERWISE SPECIFIED.



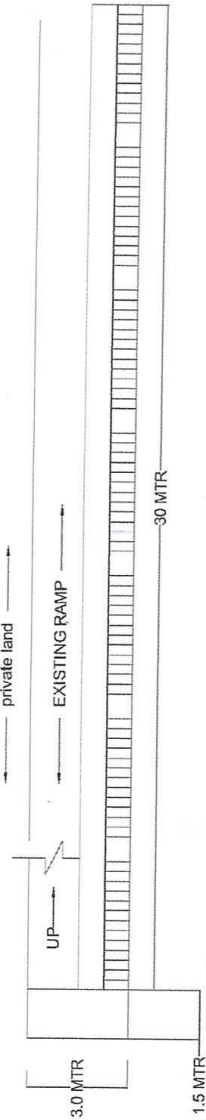
DETAIL LENGTH OF SECURITY FENCING

LENGTH OF SECURITY FENCING = 400 RM



*Author*  
AUTHORITY ENGINEER  
MAGOT ENGINEERING  
CONSULTANTS PVT. LTD.

ELEVATION



PLAN OF STEPS/ RAMP

CHAINAGE: 101+070 TO 101+100

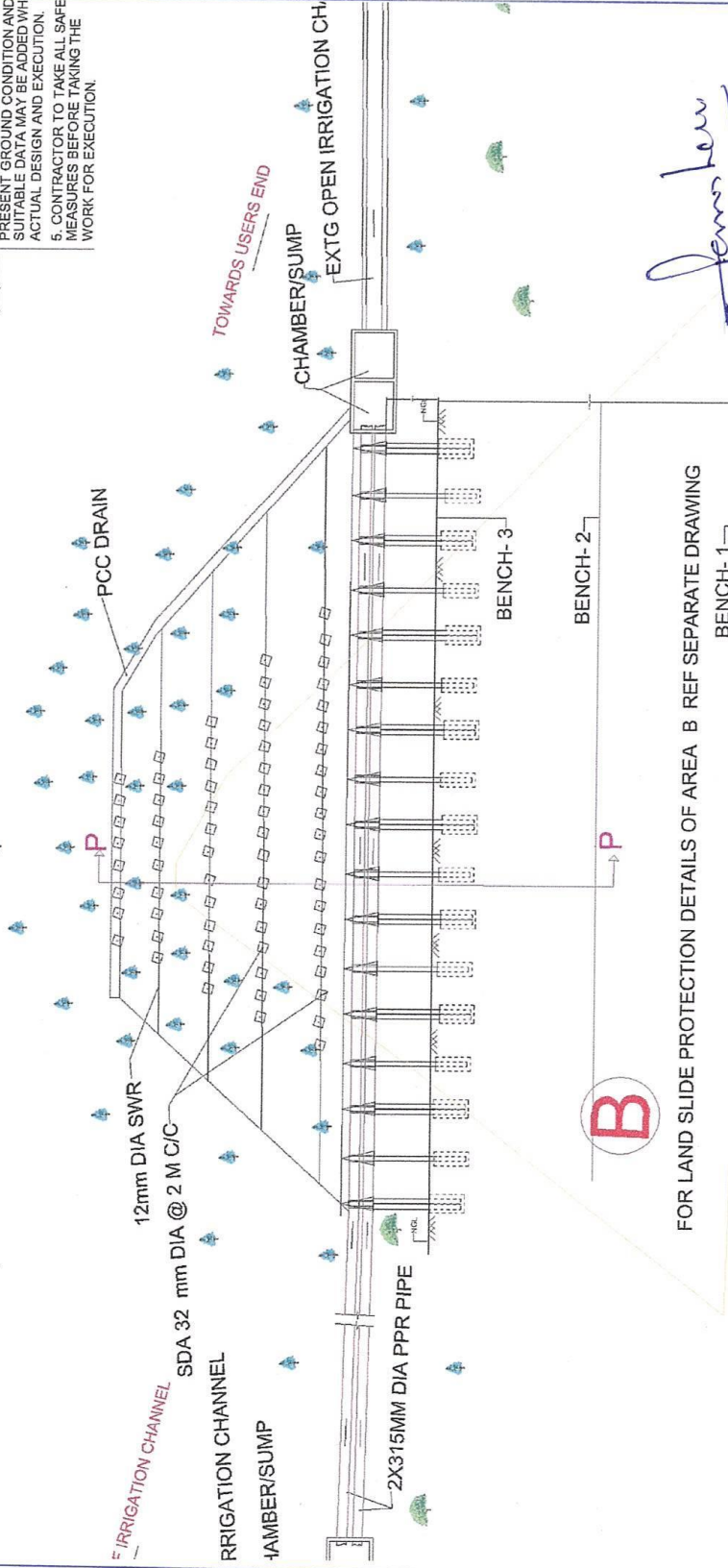
Specification: (1.5m to 2 m width of RR masonry/PCC)

# BARETI LANDSLIDE - FIXING DETAILS OF PPR PIPE AT IRRIGATION CHANNEL

## Schedule 'B' ANNEX B(viii)

### NOTES:-

1. ALL DIMENSIONS ARE IN MM.
2. CONTRACTOR TO CHECK AND VERIFY ALL DIMENSIONS BEFORE EXECUTION OF WORK AT SITE.
3. FIGURE DIMENSIONS SHALL BE FOLLOWED UNLESS OTHERWISE SPECIFIED.
4. THE FIXING DETAILS OF IRRIGATION CHANNEL IS DESIGNED BASED ON PRESENT GROUND CONDITION AND SUITABLE DATA MAY BE ADDED WITH ACTUAL DESIGN AND EXECUTION.
5. CONTRACTOR TO TAKE ALL SAFETY MEASURES BEFORE TAKING THE WORK FOR EXECUTION.



FOR LAND SLIDE PROTECTION DETAILS OF AREA B REF SEPARATE DRAWING  
BENCH- 3  
BENCH- 2  
BENCH- 1

*[Signature]*  
AUTHORITY ENGINEER  
MAGOT ENGINEERING  
CONSULTANTS PVT. LTD.

DETAILS OF FIXING ARRANGEMENT OF PPR PIPE FOR IRRIGATION CHANNEL

AREA OF (B) TO BE PROTECTED = 2192 SQM

## **SCHEDULE - C**

*(See Clause 2.1)*

### **PROJECT FACILITIES**

#### **1. Project Facilities**

The Contractor shall construct the Project Facilities in accordance with the provisions of this Agreement. Such Project Facilities shall include:

- a) Roadside furniture;
- b) Pedestrian facilities;
- c) Utility Duct and road side drain
- d) Metal Beam Crash Barrier
- e) Breast Wall & Retaining Wall as specified
- f) Instrumentation for monitoring landslide protection work
- g) Handrail in landslide protection Gallery

#### **2. Description of Project Facilities**

Each of the Project Facilities is described below:

##### **a) Roadside furniture;**

The roadside furniture shall include the provision of various items as specified in IRC code:-

##### **i. Traffic Signs:**

Traffic signs include roadside signs, overhead signs and kerb-mounted signs along the entire Project Highway as per the manual of specifications.

##### **ii. Pavement Markings:**

Pavement markings shall cover road marking as per the manual of specifications.

##### **iii. LED Traffic Blinkers:**

LED Traffic Blinkers for the entire project highway at the locations as suggested in Manual.

##### **iv. Crash barrier**

As per clause 9.4 of IRC: SP-73 and as per details given in schedule-B

##### **v. Delineators**

Delineators for the entire Project Highway at the locations as suggested in Manual.

##### **vi. Hectometre / Kilometre st Hectometre/ Kilometre Stones for the entire Project Highway at the locations as suggested in Manual.**

##### **vii. Road Studs:**

Road studs (RRPM) is to be provided as per the specifications of IRC:SP:73-2015.

**SCHEDULE - D**  
*(See Clause 2.1)*

**SPECIFICATIONS AND STANDARDS**

**1. Construction**

The Contractor shall comply with the Specifications and Standards set forth in Annex- I of this Schedule-D for construction of the various works under this project.

**2. Design Standards**

Landslide protection Gallery, slide treatment, irrigation channel works and all other works specified under this contract shall confirm to design requirements set out in the following documents.

Special report 23, State of the Art: Design, Construction of Rock fall Mitigation System, Published by IRC Highway Research Board, 2014 and European Technical Approval Guidelines (ETAG)-27 and Manual of Specifications and Standards for Two-Laning of Highways (IRC:SP:73- 2015), referred to herein as the Manual.

## **Annex - I**

### **(Schedule-D)**

## **Specifications and Standards for Construction**

### **1. Specification and Standards**

All Materials, works and construction operations shall conform to the Manual of Specifications and Standards for [Two-Laning of Highways (IRC:SP:73)], referred to as the Manual, and MORTH Specifications for Road and Bridge Works. Where the specification for a work is not given, Good Industry Practice shall be adopted to the satisfaction of the Authority's Engineer.

### **2. Deviations from the Specifications and Standards**

- (i) The terms "Concessionaire", "Independent Engineer" and "Concession Agreement" used in the Manual shall be deemed to be substituted by the terms "Contractor", "Authority's Engineer" and "Agreement" respectively.
- (ii) [Notwithstanding anything to the contrary contained in Paragraph 1 above, the following Specifications and Standards shall apply to the Project Highway, and for purposes of this Agreement, the aforesaid Specifications and Standards shall be deemed to be amended to the extent set forth below:]
- (iii) [Note 1: Deviations from the aforesaid Specifications and Standards shall be listed out here. Such deviations shall be specified only if they are considered essential in view of project-specific requirements.]

### **3. Special report 23, State of the Art: Design, Construction of Rock fall Mitigation System, Published by IRC Highway Research Board, 2014 and European Technical Approval Guidelines (ETAG)-27**

### **4. Specification for Monitoring Instruments shall be in accordance with IS 14395 and IRC 75**

## **SCHEDULE - E**

*(See Clause 2.1 and 14.2)*

### **MAINTENANCE REQUIREMENTS**

#### **1. Maintenance Requirements**

- 1.1. The Contractor shall, at all-time maintain the Project Highway in accordance with the provisions of this Agreement, Applicable Laws and Applicable Permits.
- 1.2. The Contractor shall repair or rectify any Defect or deficiency set forth in Paragraph 2 of this Schedule-E within the time limit specified therein and any failure in this behalf shall constitute non-fulfillment of the Maintenance obligations by the Contractor. Upon occurrence of any breach hereunder, the Authority shall be entitled to effect reduction in monthly lump sum payment as set forth in Clause 14.6 of this Agreement, without prejudice to the rights of the Authority under this Agreement, including Termination thereof.
- 1.3. All Materials, works and construction operations shall conform to the MORTH Specifications for Road and Bridge Works, and the relevant IRC publications. Where the specifications for a work are not given, Good Industry Practice shall be adopted.

[Specify all the relevant documents]

#### **2. Repair/rectification of Defects and deficiencies**

The obligations of the Contractor in respect of Maintenance Requirements shall include repair and rectification of the Defects and deficiencies specified in Annex-I of this Schedule-E within the time limit set forth therein.

#### **3. Other Defects and deficiencies**

In respect of any Defect or deficiency not specified in Annex-I of this Schedule-E, the Authority's Engineer may, in conformity with Good Industry Practice, specify the permissible limit of deviation or deterioration with reference to the Specifications and Standards, and any deviation or deterioration beyond the permissible limit shall be repaired or rectified by the Contractor within the time limit specified by the Authority's Engineer.



**4. Extension of time limit**

Notwithstanding anything to the contrary specified in this Schedule-E, if the nature and extent of any Defect or deficiency justifies more time for its repair or rectification than the time specified herein, the Contractor shall be entitled to additional time in conformity with Good Industry Practice. Such additional time shall be determined by the Authority's Engineer and conveyed to the Contractor and the Authority with reasons thereof;

**5. Emergency repairs/restoration**

Notwithstanding anything to the contrary contained in this Schedule-E, if any Defect, deficiency or deterioration in the Project Highway poses a hazard to safety or risk of damage to property, the Contractor shall promptly take all reasonable measures for eliminating or minimizing such danger.

**6. Daily inspection by the Contractor**

The Contractor shall, through its engineer, undertake a daily visual inspection of the Project Highway and maintain a record thereof in a register to be kept in such form and manner as the Authority's Engineer may specify. Such record shall be kept in safe custody of the Contractor and shall be open to inspection by the Authority and the Authority's Engineer at any time during office hours.

**7. Pre-monsoon inspection / Post-monsoon inspection**

The Contractor shall carry out a detailed pre-monsoon inspection of all bridges, culverts and drainage system before [1st June] every year in accordance with the guidelines contained in IRC: SP:35. Report of this inspection together with details of proposed maintenance works as required on the basis of this inspection shall be sent to the Authority's Engineer before the [10th June] every year. The Contractor shall complete the required repairs before the onset of the monsoon and send to the Authority's Engineer a compliance report. Post monsoon inspection shall be done by the [30th September] and the inspection report together with details of any damages observed and proposed action to remedy the same shall be sent to the Authority's Engineer.

**8. Repairs on account of natural calamities**

All damages occurring to the Project Highway on account of torrential rains, floods, earthquake or other natural disasters shall be undertaken by the Contractor at its own cost and/or out of the proceeds of insurance.

# Annex - I

(Schedule-E)

## Repair/rectification of Defects and deficiencies

The Contractor shall repair and rectify the Defects and deficiencies specified in this Annex-I of Schedule-E within the time limit set forth in the table below.

| Nature of Defect or Deficiency |                                                                                                                                     | Time Limit for repair/rectification |
|--------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|
| 1                              | Landslide protection work on hill side                                                                                              |                                     |
| (i)                            | SDA & DT Mesh loose deshaping/Torn/Withheld from original position                                                                  | 7 days                              |
| (ii)                           | Civil work i benches & drains/drain pipes & chambers                                                                                | 24 Hour                             |
| 2                              | Landslide protection Gallery                                                                                                        |                                     |
| (i)                            | Over burdun and removal of loose earth from top of Gallery structure                                                                | 02 days                             |
| (ii)                           | Cracks in pavement and joints                                                                                                       | 03 days                             |
| (iii)                          | Visible minor crack in super structure                                                                                              | 05 days                             |
| (iv)                           | Claim/repair of utility duct, drain Metal Crash Barrier & Railing                                                                   | 03 days                             |
| 3.                             | Restoration of Irrigation Channel                                                                                                   |                                     |
| (i)                            | Clearing of chamber and repair of pipe work, clamps, joints and civil works                                                         | 02 days                             |
| (ii)                           | Repair of steel support structure                                                                                                   | 07 days                             |
| 4                              | Repair of drinking water supply pipe line (PPR Pipe)                                                                                | 24 Hrs                              |
| 5                              | River protection work                                                                                                               | 07 days                             |
| 6                              | Cattle fencing, access path to villagers                                                                                            | 02 days                             |
| 7                              | Instrumentation Monitoring, Restoration/functioning of Instrumentation, including submission of digital reading of each Instruments | 05 days                             |

Note:- for Maintenance specification reference is to be made:-

- (i) MoRTH specification 3004:2, 3004:3, 3004:4
- (ii) IRC -82 /2015, IRC -81 /2015 & IRC: SP 80/2008

## **Schedule-F**

(See Clause 3.1.5(a))

### **APPLICABLE PERMITS**

#### **1. Applicable Permits**

The Contractor shall obtain, as required under the Applicable Laws, the following Applicable Permits:

- (a) Permission of the State Government for extraction of boulders from quarry;
- (b) Permission of Village Panchayats and Pollution Control Board for installation of crushers;
- (c) License for use of explosives;
- (d) Permission of the State Government for drawing water from river/reservoir;
- (e) License from inspector of factories or other competent Authority for setting up batching plant;
- (f) Clearance of Pollution Control Board for setting up batching plant;
- (g) Clearance of Village Panchayats and Pollution Control Board for setting up asphalt plant;
- (h) Permission of Village Panchayats and State Government for borrow earth; and
- (i) Any other permits, clearances or approvals required under Applicable Laws.

1.2 Applicable permits, as required, relating to environmental protection and conservation shall have been produced by the Authority in accordance with the provisions of this Agreement

1.3 The Contractor shall get registered with Labour Department as per existing guidelines of Labour law in consultation with the Authority (PMU)

**NOTE:-** Payment towards permits including payment of royalty for use of boulders or quarried materials shall be the responsibility of the Contractor and Challan to be produced during each SPS.

## **Schedule-G**

(See Clause 7.1.1, 7.5.3 and 19.2)

### **FORM OF BANK GUARANTEE**

#### **Annex-I**

(See Clause 7.1.1)

#### **PERFORMANCE SECURITY**

The Managing Director, NHIDCL,  
3<sup>rd</sup> Floor, PTI Building, Sansad Marg,  
New Delhi

#### **WHEREAS:**

- (A) \_\_\_\_\_ [name and address of contractor] (hereinafter called “the Contractor”) and [NHIDCL], (“the Authority”) have entered **“ADDITIONAL WORK FOR CONSTRUCTION OF LANDSLIDE PROTECTION GALLERY, SLOPE PROTECTION WORKS INCLUDING CATTLE FENCE, RESTORATION OF IRRIGATION CHANNEL, RIVER PROTECTION WORK, ACCESS PATH, RESTORATION OF DRINKING WATER SUPPLY LINE AT BARETI, UTTARKASHI (EX. KM 100.300 TO KM 101.060 OF SECTION OF NH-34 IN THE STATE OF UTTARAKHAND .**
- (B) The Agreement requires the Contractor to furnish a Performance Security for due and faithful performance of its obligations, under and in accordance with the Agreement, during the Construction Period and Defects Liability Period and maintenance period (as defined in the Agreement) in a sum of Rs. .... Crore (Rupees .... Crore) (the “Guarantee Amount”).
- (C) We, ..... through our branch at ..... (the “Bank”) have agreed to furnish this bank guarantee (hereinafter called the “Guarantee”) by way of Performance Security.

NOW, THEREFORE, the Bank hereby, unconditionally and irrevocably, guarantees and affirms as follows:

1. The Bank hereby unconditionally and irrevocably guarantees the due and faithful performance of the Contractor's obligations during and under and in accordance with the Agreement, and agrees and undertakes to pay to the Authority, upon its mere first written demand, and without any demur, reservation, recourse, contest or protest, and without any reference to the Contractor, such sum or sums up to an aggregate sum of the guarantee amount as the Authority shall claim, without the Authority being required to prove or to show grounds or reasons for its demand and/or for the sum specified therein.
2. A letter from the Authority, under the hand of an officer not below the rank of [Executive Director, NHIDCL], that the Contractor has committed default in the due and faithful performance of all or any of its obligations under and in accordance with the Agreement shall be conclusive, final and binding on the Bank. The Bank further agrees that the Authority shall be the sole judge as to whether the Contractor is in default in due and faithful performance of its obligations during and under the Agreement and its decision that the Contractor is in default shall be final, and binding on the Bank, notwithstanding any difference between the Authority and the Contractor, or any dispute between them pending before any court, tribunal, arbitrators or any other Authority or body, or by the discharge of the Contractor for any reason whatsoever.
3. In order to give effect to this Guarantee, the Authority shall be entitled to act as if the Bank were the principal debtor and any change in the constitution of the Contractor and/or the Bank, whether by their absorption with any other body or corporation or otherwise, shall not in any way or manner affect the liability or obligation of the Bank under this Guarantee.
4. It shall not be necessary, and the Bank hereby waives any necessity, for the Authority to proceed against the Contractor before presenting to the Bank its demand under this Guarantee.
5. The Authority shall have the liberty, without affecting in any manner the liability of the Bank under this Guarantee, to vary at any time, the terms and conditions of the Agreement or to extend the time or period for the compliance with, fulfillment and/or performance of all or any of the obligations of the Contractor contained in the Agreement or to postpone for any time, and from time to time, any of the rights and powers exercisable by the Authority against the Contractor, and either to enforce or forbear from enforcing any of the terms and conditions contained in the Agreement and/or the securities available to the Authority, and the Bank shall not be released from its liability and obligation under these presents by any exercise by the Authority of the liberty with reference to the matters aforesaid or by reason of time being given to the Contractor or any other forbearance, indulgence, act or omission on the part of the Authority or of any other matter or thing whatsoever which under any law relating to sureties and guarantors would but for this provision have the effect of

releasing the Bank from its liability and obligation under this Guarantee and the Bank hereby waives all of its rights under any such law.

6. This Guarantee is in addition to and not in substitution of any other guarantee or security now or which may hereafter be held by the Authority in respect of or relating to the Agreement or for the fulfillment, compliance and/or performance of all or any of the obligations of the Contractor under the Agreement.
7. Notwithstanding anything contained hereinbefore, the liability of the Bank under this Guarantee is restricted to the Guarantee amount and this Guarantee will remain in force for the period specified in paragraph 8 below and unless a demand or claim in writing is made by the Authority on the Bank under this Guarantee all rights of the Authority under this Guarantee shall be forfeited and the Bank shall be relieved from its liabilities hereunder.
8. The performance security shall cease to be in force and effect upto 90 days after the end of the Defects Liability Period as set forth in Clause 17.1 of EPC agreement.
9. The Bank undertakes not to revoke this Guarantee during its currency, except with the previous express consent of the Authority in writing, and declares and warrants that it has the power to issue this Guarantee and the undersigned has full powers to do so on behalf of the Bank.
10. Any notice by way of request, demand or otherwise hereunder may be sent by post addressed to the Bank at its above referred branch, which shall be deemed to have been duly authorized to receive such notice and to effect payment thereof forthwith, and if sent by post it shall be deemed to have been given at the time when it ought to have been delivered in due course of post and in proving such notice, when given by post, it shall be sufficient to prove that the envelope containing the notice was posted and a certificate signed by an officer of the Authority that the envelope was so posted shall be conclusive.
11. This Guarantee shall come into force with immediate effect and shall remain in force and effect for up to the date specified in para 8 above or until it is released earlier by the Authority pursuant to the provisions of the Agreement.
12. This guarantee shall also be operable at our..... Branch at New Delhi, from whom, confirmation regarding the issue of this guarantee or extension/ renewal thereof shall be made available on demand. In the contingency of this guarantee being invoked and payment there under claimed, the said branch shall accept such invocation letter and make payment of amounts so demanded under the said invocation.



13. Intimation regarding issuance of this Bank Guarantee shall be sent to Authority's Bank through SFMS gateway as per the details below:

14.

| S.No. | Particulars                  | Details                                                                  |
|-------|------------------------------|--------------------------------------------------------------------------|
| 1     | Name of Beneficiary          | National Highways & Infrastructure Development Corporation Limited       |
| 2     | Beneficiary Bank Account No. | 90621010002659                                                           |
| 3     | Beneficiary Bank Branch      | IFSC SYNB0009062                                                         |
| 4     | Beneficiary Bank Branch Name | Transport Bhawan, New Delhi                                              |
| 5     | Beneficiary Bank Address     | Syndicate Bank transport Bhawan, 1st Parliament Street, New Delhi-110001 |

Signed and sealed this ..... day of ..... 20..... at .....

SIGNED, SEALED AND DELIVERED

For and on behalf of the Bank by:

(Signature)

(Name)

(Designation)

(Code

Number)

(Address)

NOTES:

- (i) The bank guarantee should contain the name, designation and code number of the officer(s) signing the guarantee.
- (ii) The address, telephone number and other details of the head office of the Bank as well as of issuing branch should be mentioned on the covering letter of issuing branch.

**Annex-II**  
**(Schedule-G)**  
**(See Clause 19.2)**

**Form for Guarantee for Advance Payment**

The Managing Director,  
NHIDCL,  
3<sup>rd</sup> Floor, PTI Building, Sansad Marg,  
New Delhi

**WHEREAS:**

- (A) [Name and address of contractor] (hereinafter called “**the Contractor**”) has executed an agreement (hereinafter called the “**Agreement**”) with the [NHIDCL], (hereinafter called “**the Authority**”) for the “**ADDITIONAL WORK FOR CONSTRUCTION OF LANDSLIDE PROTECTION GALLERY, SLOPE PROTECTION WORKS INCLUDING CATTLE FENCE, RESTORATION OF IRRIGATION CHANNEL, RIVER PROTECTION WORK, ACCESS PATH, RESTORATION OF DRINKING WATER SUPPLY LINE AT BARETI, UTTARKASHI (EX. KM 100.300 TO KM 101.060 OF SECTION OF NH-34) IN THE STATE OF UTTARAKHAND**” through Engineering, Procurement & Construction (EPC) Basis Contract”, subject to and in accordance with the provisions of the Agreement.
- (B) In accordance with Clause 19.2 of the Agreement, the Authority shall make to the Contractor Advance Payment (hereinafter called “**Advance Payment**”) equal to 10% (ten per cent) of the contract price for mobilization expenses and acquisition of equipment; and that the Advance Payment shall be made in two installments subjects to the Contractor furnishing an irrevocable and unconditional guarantee by a scheduled bank for an amount equal to the amount of each installment to remain effective till the complete and full repayment of the installment of the Advance Payment as security for compliance with its obligations in accordance with the Agreement; and the amount of (first/second) installments of the Advance payments is Rs. \*\*\*\*\* crore) (the “**Guarantee Amount**”).
- (C) In accordance with Clause 19.2 of the Agreement, the Authority shall make to the Contractor Advance Payment (hereinafter called “**Advance Payment**”) equal to 10% (ten per cent) of the contract

price for mobilization expenses and acquisition of equipment; and that the Advance Payment shall be made in two installments subjects to the Contractor furnishing an irrevocable and unconditional guarantee by a scheduled bank for an amount equal to the amount of each installment to remain effective till the complete and full repayment of the installment of the Advance Payment as security for compliance with its obligations in accordance with the Agreement; and the amount of (first/second) installments of the Advance payments is Rs. \*\*\*\*\* crore) (the "Guarantee Amount").

(D) We, ..... through our branch at ..... (the "Bank") have agreed to furnish this bank guarantee (hereinafter called the "Guarantee") for the Guarantee Amount.

NOW, THEREFORE, the Bank hereby, unconditionally and irrevocably, guarantees and affirms as follows:

1. The Bank hereby unconditionally and irrevocably guarantees the due and faithful repayment on time of the aforesaid installment of the Advance Payment under and in accordance with the Agreement, and agrees and undertakes to pay to the Authority upon its mere first written demand, and without any demur, reservation, recourse, contest or protest, and without any reference to the Contractor, such sum or sums up to an aggregate sum of the Guarantee Amount as the Authority shall claim, without the Authority being required to prove or to show grounds or reasons for its demand and/or for the sum specified therein.
2. A letter from the Authority, under the hand of an officer not below the rank of [Executive Director in the National Highways Authority of India], that the Contractor has committed default in the due and faithful performance of all or any of its obligations for the repayment of the installment of the Advance Payment under and in accordance with the Agreement shall be conclusive, final and binding on the Bank. The Bank further agrees that the Authority shall be the sole judge as to whether the Contractor is in default in due and faithful performance of its obligations during and under the Agreement and its decision that the Contractor is in default shall be final and binding on the Bank, notwithstanding any differences between the Authority and the Contractor, or any dispute between them pending before any court, tribunal, arbitrators or any other authority or body, or by the discharge of the Contractor for any reason whatsoever.
3. In order to give effect to this Guarantee, the Authority shall be entitled to act as if the Bank were the principal debtor and any change in the constitution of the Contractor and/or the Bank, whether by their absorption with any other body or corporation or otherwise, shall not in any way or manner affect the liability or obligation of the Bank under this Guarantee.

4. It shall not be necessary, and the Bank hereby waives any necessity, for the Authority to proceed against the Contractor before presenting to the Bank its demand under this Guarantee.
5. The Authority shall have the liberty, without affecting in any manner the liability of the Bank under this Guarantee, to vary at any time, the terms and conditions of the Advance Payment or to extend the time or period of its repayment or to postpone for any time, and from time to time, any of the rights and powers exercisable by the Authority against the Contractor, and either to enforce or forbear from enforcing any of the terms and conditions contained in the Agreement and/or the securities available to the Authority, and the Bank shall not be released from its liability and obligation under these presents by any exercise by the Authority of the liberty with reference to the matters aforesaid or by reason of time being given to the Contractor or any other forbearance, indulgence, act or omission on the part of the Authority or of any other matter or thing whatsoever which under any law relating to sureties and guarantors would but for this provision have the effect of releasing the Bank from its liability and obligation under this Guarantee and the Bank hereby waives all of its rights under any such law.
6. This Guarantee is in addition to and not in substitution of any other guarantee or security now or which may hereafter be held by the Authority in respect of or relating to the Advance Payment.
7. Notwithstanding anything contained hereinbefore, the liability of the Bank under this Guarantee is restricted to the Guarantee amount and this Guarantee will remain in force for the period specified in paragraph 8 below and unless a demand or claim in writing is made by the Authority on the Bank under this Guarantee all rights of the Authority under this Guarantee shall be forfeited and the Bank shall be relieved from its liabilities hereunder.
8. The guarantee shall cease to be in force and effect 90 (ninety) days after the end of the one year from the date of payment of the installment of the Advance Payment, as set forth in Clause 19.2 of the Agreement.
9. The Bank undertakes not to revoke this Guarantee during its currency, except with the previous express consent of the Authority in writing, and declares and warrants that it has the power to issue this Guarantee and the undersigned has full powers to do so on behalf of the Bank.
10. Any notice by way of request, demand or otherwise hereunder may be sent by post addressed to the Bank at its above referred branch, which shall be deemed to have been duly authorized to receive such notice and to effect payment thereof forthwith, and if sent by post it shall be deemed to have been given at the time when it ought to have been delivered in due course of post and in proving such notice, when given by post, it shall be sufficient to prove that the envelope containing the notice was posted and a certificate signed by an officer of the Authority that the envelope was so posted shall be conclusive.

11. This Guarantee shall come into force with immediate effect and shall remain in force and effect for up to the date specified in para 8 above or until it is released earlier by the Authority pursuant to the provisions of the Agreement.
12. Notwithstanding anything contained herein before, our liability under this Bank Guarantee is restricted to Rs. \_\_\_\_\_ (Rs. \_\_\_\_\_ in words) and the guarantee shall remain valid till \_\_\_\_\_. Unless a claim or a demand in writing is served upon us on or before \_\_\_\_\_ all our liability under this Bank Guarantee shall cease.
13. This guarantee shall also be operable at our..... Branch at New Delhi, from whom, confirmation regarding the issue of this guarantee or extension/ renewal thereof shall be made available on demand. In the contingency of this guarantee being invoked and payment there under claimed, the said branch shall accept such invocation letter and make payment of amounts so demanded under the said invocation.

Signed and sealed this ..... day of ..... 20..... at .....

SIGNED, SEALED AND DELIVERED

For and on behalf of the Bank by:

(Signature)

(Name)

(Designation)

(Code Number)

(Address)

- 1 The bank guarantee should contain the name, designation and code number of the officer(s) signing the guarantee.
2. The address, telephone number and other details of the head office of the bank as well as of issuing branch should be mentioned on the covering letter of issuing branch
3. Bank Guarantee has been sent to authority's bank through SFMS gateway as per the details below: -

| S. No | Particulars                  | Details                                                                  |
|-------|------------------------------|--------------------------------------------------------------------------|
| 1     | Name of Beneficiary          | National Highways & Infrastructure Development Corporation Limited       |
| 2     | Beneficiary Bank Account No. | 90621010002659                                                           |
| 3     | Beneficiary Bank Branch      | IFSC SYNB0009062                                                         |
| 4     | Beneficiary Bank Branch Name | Transport Bhawan, New Delhi                                              |
| 5     | Beneficiary Bank Address     | Syndicate Bank transport Bhawan, 1st Parliament Street, New Delhi-110001 |

## Schedule-H

(See Clauses 10.1.4 and 19.3)

### Contract Price Weightages

1.1 The Contract Price for this Agreement is Rs .....

1.2 Proportions of the Contract Price for different stages of Construction of the Project shall be as specified below:

| Item                                                  | Weightage in percentage to the contract price | Stage for payment (Refer Annexure)                                  | Percentage weightage |
|-------------------------------------------------------|-----------------------------------------------|---------------------------------------------------------------------|----------------------|
| 1                                                     | 2                                             | 3                                                                   | 4                    |
| 1. Provision of Protection work                       | 48.09%                                        | (1) Zone-A                                                          | 20%                  |
|                                                       |                                               | (2) Zone B                                                          | 40%                  |
|                                                       |                                               | (3) Zone C                                                          | 20%                  |
|                                                       |                                               | (4) Zone D                                                          | 20%                  |
| 2. Provision of Landslide Protection Gallery          | 47.90%                                        | i. Pile/File FDN                                                    | 30%                  |
|                                                       |                                               | ii. Super Structure including cross beam floor beam less cover slab | 27%                  |
|                                                       |                                               | iii. Cover slab of land slide protection gallery                    | 25%                  |
|                                                       |                                               | iv. Over burden/baac filling                                        | 8%                   |
|                                                       |                                               | v. Rigid pavement 310 Mtr long                                      | 10%                  |
| 3. Provision of Restoration of Irrigation Channel     | 1.32%                                         | i. Bench 'C' Type steel support structure in SAA                    | 60%                  |
|                                                       |                                               | ii. PPR pipe                                                        | 20%                  |
|                                                       |                                               | iii. Chambers and Gratings                                          | 20%                  |
| 4. Provision of River side protection work            | 1.90%                                         |                                                                     | 100%                 |
| 5. Provision of cattle/security fence                 | 0.15%                                         |                                                                     | 100%                 |
| 6. Provision of access path to villages               | 0.52%                                         |                                                                     | 100%                 |
| 7. Provision of Restoration of water supply pipe line | 0.12%                                         |                                                                     | 100%                 |

**Procedure for estimating the value of work and stages for payment.**

| Sl. No. | ITEM            | WEIGHTAGE IN PERCENTAGE TO THE CONTRACT PRICE | ZONE | PERCENTAGE WEIGHTAGE STRETCH WISE | STAGE FOR PAYMENT                                             | PERCENTAGE | PAYMENT PROCEDURE                                                         |
|---------|-----------------|-----------------------------------------------|------|-----------------------------------|---------------------------------------------------------------|------------|---------------------------------------------------------------------------|
| 1       | Protection Work | 48.09%                                        | A    | 20                                | i. Scalling/Removal of loose soil/debris                      | 10%        | Payment shall be made on single stage on completion of 100% work          |
|         |                 |                                               |      |                                   | ii. Fixing of Rock bolts including groutings                  | 45%        | Payment shall be made on completion of 50% work on linear length basis    |
|         |                 |                                               |      |                                   | iii. Fixing of DT/Rhomboidal mesh and Nut/Plate of Rock bolts | 45%        | Payment shall be made in single stage on completion of 100% work          |
|         |                 |                                               | B    | 40                                | i. Scaling/removal of loose soil/debris                       | 10%        | Payment shall be made on single stage on completion of 100% work          |
|         |                 |                                               |      |                                   | ii. Fixing of Rock Bolts, U-Pins & Micro Pilling              | 30%        | Payment shall be made in two stages of 50% each on completion of 50% work |



|  |  |  |   |    |                                                                                                            |     |                                                                     |
|--|--|--|---|----|------------------------------------------------------------------------------------------------------------|-----|---------------------------------------------------------------------|
|  |  |  |   |    | iii. Fixing of synthetic reinforced high strength Geo-mat + hydraulically pressed erosion control measures | 30% | Payment shall be made in single stage of on completion of 100% work |
|  |  |  |   |    | iv. Fixing of DT/Rhomboidal mesh                                                                           | 30% | Payment shall be made in single stage on completion of 100% work.   |
|  |  |  | C | 20 | i. Scalling/Removal of loose soil/debris                                                                   | 10% | Payment shall be made on single stage on completion of 100% work    |
|  |  |  |   |    | ii. Fixing of Rock bolts including grouting                                                                | 45% | Payment shall be made on completion of 50% on linear length basis   |
|  |  |  |   |    | iii. Fixing of DT/Rhomboidal mesh                                                                          | 45% | Payment shall be made in single stage on completion of 100% work    |
|  |  |  | D | 20 | i. Scalling/Removal of loose soil/debris                                                                   | 10% | Payment shall be made on single stage on completion of 100% work    |

|   |                              |        |  |    |                                                                             |     |                                                                                                   |
|---|------------------------------|--------|--|----|-----------------------------------------------------------------------------|-----|---------------------------------------------------------------------------------------------------|
|   |                              |        |  |    | ii. Fixing of Rock bolts                                                    | 45% | Payment shall be made in single stage on completion of 50% on linear length basis                 |
|   |                              |        |  |    | iii. Fixing of DT/Rhomboidal mesh                                           | 45% | Work on linear basis payment shall be made on completion of 100% work                             |
| 2 | Landslide Protection Gallery | 47.90% |  | 30 | i. Pile/Pile foundation                                                     |     | Payment shall be made in 04 stages on completion of 25% of work.                                  |
|   |                              |        |  | 27 | ii. Superstructure including cross beams/floor, Floor beams less cover slab |     | Payment shall be made in 04 stages on completion of 25% of work.                                  |
|   |                              |        |  | 25 | iii. Cover slab of landslide protection gallery                             |     | Payment shall be made in three stages @ 33%, 33% & 34% on completion of 33%, 33% and 34% of work. |
|   |                              |        |  | 8  | iv. Over burden/back filling                                                |     | Payment shall be made in two stages on                                                            |

|    |                            |       |  |    |                                                             |  |                                                                                                     |
|----|----------------------------|-------|--|----|-------------------------------------------------------------|--|-----------------------------------------------------------------------------------------------------|
|    |                            |       |  |    |                                                             |  | completion of 50% work.                                                                             |
|    |                            |       |  | 10 | v.Rigid/Flexible pavement of land slide protection gallery  |  | Payment shall be made in one stage on completion of 100% work.                                      |
| 3. | Irrigation Channel         | 1.32% |  | 60 | i. Top bench , 'C' Type steel support structure in Zone 'B' |  | Payment shall be made in two stages on completion of 50% work.                                      |
|    |                            |       |  | 20 | ii. PPR Pipe fixing                                         |  | Payment shall be made in one stage on completion of 100% work.                                      |
|    |                            |       |  | 20 | iii. Chambers & gratings                                    |  | Payment shall be made in one stage on completion of 100% work.                                      |
| 4. | River side protection work | 1.90% |  | 50 | 1. Casting of tetrapod at river site                        |  | Payment shall be made in one stage on completion of 100% work of casting of tetrapod at river site. |
|    |                            |       |  | 50 | 2. Fixing of Tetrapod at site                               |  | Payment shall be made in one stage on                                                               |

|    |                                           |       |  |     |                                                                  |  |                                                                                                                    |
|----|-------------------------------------------|-------|--|-----|------------------------------------------------------------------|--|--------------------------------------------------------------------------------------------------------------------|
|    |                                           |       |  |     |                                                                  |  | completion of 100% work of fixing of tetrapod at river site.                                                       |
| 5. | Cattle/security fencing                   | 0.15% |  | 50  | i. Casting of vertical RCC fencing post and installation at site |  | Payment shall be made on completion at 100% work of casting of RCC fencing post and fixing at given length at site |
|    |                                           |       |  | 50  | ii. Fixing of fencing at given length at site                    |  | Payment shall be made on completion at 100% work of fixing of fencing at given length at site                      |
| 6. | Access path to villagers                  | 0.52% |  | 100 |                                                                  |  | Payment shall be made on completion of 100% work at site                                                           |
| 7. | Restoration of drinking water supply line | 0.12% |  | 100 |                                                                  |  | Payment shall be made on completion of 100% work at site                                                           |

## 2. Procedure for payment for Maintenance

(a) The cost for maintenance shall be as stated in Clause 14.1.1.

(b) Payment for Maintenance shall be made on Monthly basis in accordance with the provisions of Clause 19.6 & 19.7 of the Contract Agreement.

## **SCHEDULE-I**

(See Clause 10.2)

### **DRAWINGS**

#### **1. Drawings**

In compliance of the obligations set forth in Clause 10.2 of this Agreement, the Contractor shall furnish to the Authority's Engineer, free of cost, all Drawings listed in Annex-I of this Schedule-I.

#### **2. Additional Drawings**

If the Authority's Engineer determines that for discharging its duties and functions under this Agreement, it requires any drawings other than those listed in Annex-I, it may by notice require the Contractor to prepare and furnish such drawings forthwith. Upon receiving a requisition to this effect, the Contractor shall promptly prepare and furnish such drawings to the Authority's Engineer, as if such drawings formed part of Annex-I of this Schedule-I.

**Annex-I**  
(Schedule-I)

**List of Drawings**

Alignment Plan and longitudinal Section are enclosed in digital form in CD marked as Annex-I

[Note: The Authority shall describe in this Annex-I, all the Drawings that the Contractor is required to furnish under Clause 10.2.]

## **SCHEDULE-J**

(See Clause 10.3.2)

### **PROJECT COMPLETION SCHEDULE**

#### **1. Project Completion Schedule**

During Construction period, the Contractor shall comply with the requirements set forth in this Schedule J for each of the Project Milestones and the Scheduled Completion Date. Within 15 (fifteen) days of the date of each Project Milestone, the Contractor shall notify the Authority of such compliance along with necessary particulars thereof.

#### **2. Project Milestone-I**

Project Milestone-I shall occur on the date falling on the **150th (One Hundred Fifty days)** from the Appointed Date (the “Project Milestone-I”).

Prior to the occurrence of Project Milestone-I, the Contractor shall have commenced construction of the Project Highway and submitted to the Authority duly and validly prepared Stage Payment Statements completion schedule in reference to Schedule-H Items, Stages and Sub-stages payment statements for an amount not less than **30% (Thirty per cent)** of the Contract Price.

On completion of Project Milestone I, the contractor ought to have the complete the following activities:-

| S. NO. | Construction Activity                       | %   |
|--------|---------------------------------------------|-----|
| 1.     | Restoration of Irrigation canal             | 100 |
| 2.     | Repair of water supply line                 | 100 |
| 3.     | Cattle fencing                              | 100 |
| 4.     | Slope stabilization of zone A,B and C       | 100 |
| 5.     | River side protection work using tetra pods | 100 |

#### **3. Project Milestone-II**

(i) Project Milestone-II shall occur on the date falling on the 240th (Two hundred & Forty days) from the Appointment Date (the “Project Milestone-II”).

(ii) Prior to the occurrence of Project Milestone-II, the Contractor shall have commenced construction of the Project Highway and submitted to the Authority duly and validly prepared Stage Payment Statements completion schedule in reference to Schedule-H Items, Stages and Sub-stages payment statements for an amount not less than 60% of the Contract Price

(iii) On completion of Project Milestone II, the contractor ought to have the complete the following activities:-

| S. NO. | Construction Activity                        | %   |
|--------|----------------------------------------------|-----|
| 1.     | Slope stabilization of zone D                | 100 |
| 2.     | Completion of pile foundation up to pile cap | 100 |
| 3.     | Completion of pedestal path                  | 100 |

#### 4. Project Milestone-III

Project Milestone-III shall occur on the date falling on the 365th (Three Hundred sixty five days) day from the Appointed Date (the “Project Milestone-III).

Prior to the occurrence of Project Milestone-III, the Contractor shall have continued with construction of the Project Highway and submitted to the Authority duly and validly prepared payment Statements for an amount not less than 100% (hundred per cent) of the Contract Price.

On completion of Project Milestone III, the contractor ought to have the complete the following activities:-

| S.NO | Construction Activity                               | %   |
|------|-----------------------------------------------------|-----|
| 1.   | Completion of the super structure                   | 100 |
| 2.   | Completion of the back filling                      | 100 |
| 3.   | Completion of the pavement including road furniture | 100 |

#### 5. Schedule Completion Date

(a) The Schedule Completion Date shall occur on the 365th (Three hundred Sixty Five) day from the Appointed Date.

(b) On or before the Scheduled Completion Date, the Contractor shall have completed construction in accordance with this Agreement.

#### 6. Extension of time

Upon extension of any or all of the aforesaid Project Milestones or the Scheduled Completion Date, as the case may be, under and in accordance with the provisions of this Agreement, the Project Completion Schedule shall be deemed to have been amended accordingly.



## **SCHEDULE-K**

(See Clause 12.1.2)

### **Tests on Completion**

#### **1. Schedule for Tests**

- (i) The Contractor shall, no later than 30 (thirty) days prior to the likely completion of construction, notify the Authority's Engineer and the Authority of its intent to subject the Project Highway to Tests, and no later than 10 (ten) days prior to the actual date of Tests, furnish to the Authority's Engineer and the Authority detailed inventory and particulars of all works and equipment forming part of Works.
- (ii) The Contractor shall notify the Authority's Engineer of its readiness to subject the Project Highway to Tests at any time after 10 (ten) days from the date of such notice, and upon receipt of such notice, the Authority's Engineer shall, in consultation with the Contractor, determine the date and time for each Test and notify the same to the Authority who may designate its representative to witness the Tests. The Authority's Engineer shall thereupon conduct the Tests itself or cause any of the Tests to be conducted in accordance with Article 12 and this Schedule K.

#### **2 Tests**

- (i) Visual and physical test: The Authority's Engineer shall conduct a visual and physical check of construction to determine that all works and equipment forming part thereof conform to the provisions of this Agreement. The physical tests shall include: all the tests specified in IRC code, manual and MORTH specifications for the road and Bridge works, 5th revision, 2013.
- (ii) Riding quality test: Riding quality of each lane of the carriageway shall be checked with the help of a Network Survey Vehicle (NSV) fitted with latest equipments and the maximum permissible roughness for purposes of this Test shall be [2,000 (two thousand)] mm for each kilometer.
- (iii) Tests for bridges: All major and minor bridges shall be subjected to the rebound hammer and ultrasonic pulse velocity tests, to be conducted in accordance with the procedure described in Special Report No. 17: 1996 of the IRC Highway Research Board on Nondestructive Testing Techniques, at two spots in every span, to be chosen at random by the Authority's Engineer. Bridges with a span of 15 (fifteen) meters or more shall also be subjected to load testing.
- (iv) Other tests: The Authority's Engineer may require the Contractor to carry out or cause to be carried additional tests, in accordance with Good

Industry Practice, for determining the compliance of the Project Highway with Specifications and Standards, except tests as specified in clause 5, but shall include measuring the reflectivity of road markings and road signs; and measuring the illumination level (lux) of lighting using requisite testing equipment.

- (v) Environmental audit: The Authority's Engineer shall carry out a check to determine conformity of the Project Highway with the environmental requirements set forth in Applicable Laws and Applicable Permits.
- (vi) Safety Audit: The Authority's Engineer shall carry out or cause to be carried out, a safety audit to determine conformity of the Project Highway with the safety requirements and Good Industry Practice.

### **3 Agency for conducting Tests**

All Tests set forth in this Schedule-K shall be conducted by the Authority's Engineer or such other agency or person as it may specify in consultation with the Authority.

### **4. Completion Certificate**

Upon successful completion of Tests, the Authority's Engineer shall issue the Completion Certificate in accordance with the provisions of Article 12.

## SCHEDULE-L

(See Clause 12.2 and 12.4)

### COMPLETION CERTIFICATE

1. I, ..... (Name of the Authority's Engineer), acting as Authority's Engineer, under and in accordance with the Agreement dated ..... (the "Agreement"), for construction of the **"ADDITIONAL WORK FOR CONSTRUCTION OF LANDSLIDE PROTECTION GALLERY, SLOPE PROTECTION WORKS INCLUDING CATTLE FENCE, RESTORATION OF IRRIGATION CHANNEL, RIVER PROTECTION WORK, ACCESS PATH, RESTORATION OF DRINKING WATER SUPPLY LINE AT BARETI, UTTARKASHI (EX. KM 100.300 TO KM 101.060 OF SECTION OF NH-34) IN THE STATE OF UTTARAKHAND"** through Engineering, Procurement & Construction (EPC) Basis Contract through ..... (Name of Contractor), hereby certify that the Tests in accordance with Article 12 of the Agreement have been successfully undertaken to determine compliance of the Project Highway with the provisions of the Agreement, and I am satisfied that the Project Highway can be safely and reliably placed in service of the Users thereof.
2. It is certified that, in terms of the aforesaid Agreement, all works forming part of Project Highway have been completed, and the Project Highway is hereby declared fit for entry into operation on this the .....day of 20 ....  
Scheduled Completed Date for which was the ..... day of .....20....

SIGNED, SEALED AND DELIVERED

For and on behalf of Authority's Engineer by:

(Signature)

(Name)

(Designation)

(Address)

## **SCHEDULE-M**

(See Clauses 14.6., 15.2 and 19.7)

### **PAYMENT REDUCTION FOR NON-COMPLIANCE**

#### **1. Payment reduction for non-compliance with the Maintenance Requirements**

1.1 Monthly lump sum payments for maintenance shall be reduced in the case of non-compliance with the Maintenance Requirements set forth in Schedule-E.

1.2 Any deduction made on account of non-compliance with the maintenance Requirements shall not be paid even after compliance subsequently. The deduction shall continue to be made every month until compliance is done.

1.3 The Authority's Engineer shall calculate the amount of payment reduction on the basis of weightage in percentage assigned to non-conforming items as given in Paragraph 2.

#### **2 Percentage reductions in lump sum payments**

1 The following percentages shall govern the payment reduction:

| Nature of Defect or Deficiency |                                                                       | Percentage |
|--------------------------------|-----------------------------------------------------------------------|------------|
| <b>1</b>                       | Landslide protection work on hill side                                |            |
| (i)                            | SDA & DT Mesh loose deshaping/Torn/Withheld from original position    | 20%        |
| (ii)                           | Civil work including benches & drains/drain pipes & chambers          | 20%        |
| <b>2</b>                       | Landslide protection Gallery                                          |            |
| (i)                            | Over burdun and removal of loose earth from top of Gallery structure  | 40%        |
| (ii)                           | Cracks in pavement and joints                                         | 15%        |
| (iii)                          | Visible minor crack in super structure                                | 5%         |
| (iv)                           | Claim/repair of utility duct, drain Metal Crash Barrier & handRailing | 20%        |
| <b>3.</b>                      | Restoration of Irrigation Channel                                     |            |

|      |                                                                                                                                     |     |
|------|-------------------------------------------------------------------------------------------------------------------------------------|-----|
| (i)  | Clearing of chamber and repair of pipe work clamps joints and civil works                                                           | 45% |
| (ii) | Repair of steel support structure                                                                                                   | 25% |
| 4    | Repair of drinking water supply pipe line (PPR Pipe)                                                                                | 35% |
| 5    | River protection work                                                                                                               | 10% |
| 6    | Cattle fencing, access path to villagers                                                                                            | 15% |
| 7    | Instrumentation Monitoring, Restoration/functioning of Instrumentation, including submission of digital reading of each Instruments | 35% |

(ii) The amount to be deducted from monthly lump-sum payment for non- compliance of particular item shall be calculated as under:

$$R = \frac{P}{100} \times (M1 \text{ or } M2) \times \frac{L1}{L}$$

Where,

P= Percentage of particular item/Defect/deficiency for deduction

M1= Monthly lump-sum payment in accordance para 1.2 above of this Schedule M2= Monthly lump-sum payment in accordance para 1.2 above of this Schedule

L1= Non-complying length L = Total length of

the road, L = Total length of the road,

R = Reduction (the amount to be deducted for noncompliance for a particular item/Defect/deficiency

## **SCHEDULE-N**

(See Clause 18.1.1)

### **SELECTION OF AUTHORITY'S ENGINEER**

#### **1 Selection of Authority's Engineer**

1.1 The provisions of the Model Request for Proposal for Selection of Technical Consultants, issued by the Ministry of Finance in May 2009, or any substitute thereof shall apply for selection of an experienced firm to discharge the functions and duties of an Authority's Engineer.

1.2 In the event of termination of the Technical Consultants appointed in accordance with the provisions of Paragraph 1.1, the Authority shall appoint another firm of Technical Consultants forthwith and may engage a government-owned entity in accordance with the provisions of Paragraph 3 of this Schedule-N.

#### **2 Terms of Reference**

The Terms of Reference for the Authority's Engineer (the "TOR") shall substantially conform with Annex 1 to this Schedule N.

#### **3 Appointment of Government entity as Authority's Engineer**

Notwithstanding anything to the contrary contained in this Schedule, the Authority may in its discretion appoint a government-owned entity as the Authority's Engineer; provided that such entity shall be a body corporate having as one of its primary functions the provision of consulting, advisory and supervisory services for engineering projects; provided further that a government-owned entity which is owned or controlled by the Authority shall not be eligible for appointment as Authority's Engineer.

Annex - I  
(Schedule - N)

**TERMS OF REFERENCE FOR AUTHORITY'S ENGINEER**

**1. Scope**

(i) These Terms of Reference (the “TOR”) for the Authority’s Engineer are being specified pursuant to the EPC Agreement dated ..... (the “**Agreement**”), which has been entered into between the Ministry of Road Transport and Highways (the “**Authority**”) and ..... (the “**Contractor**”) “**ADDITIONAL WORK FOR CONSTRUCTION OF LANDSLIDE PROTECTION GALLERY, SLOPE PROTECTION WORKS INCLUDING CATTLE FENCE, RESTORATION OF IRRIGATION CHANNEL, RIVER PROTECTION WORK, ACCESS PATH, RESTORATION OF DRINKING WATER SUPPLY LINE AT BARETI, UTTARKASHI (EX. KM 100.300 TO KM 101.060 OF SECTION OF NH-34) IN THE STATE OF UTTARAKHAND**” through Engineering, Procurement & Construction (EPC) Contract, and a copy of which is annexed hereto and marked as Annex-A to form part of this TOR.

(ii) The TOR shall apply to construction and maintenance of the Project Highway.

**2. Definitions and interpretation**

2.1 The words and expressions beginning with or in capital letters and not defined herein but defined in the Agreement shall have, unless repugnant to the context, the meaning respectively assigned to them in the Agreement.

2.2 References to Articles, Clauses and Schedules in this TOR shall, except where the context otherwise requires, be deemed to be references to the Articles, Clauses and Schedules of the Agreement, and references to Paragraphs shall be deemed to be references to Paragraphs of this TOR.

2.3 The rules of interpretation stated in Clauses 1.2, 1.3 and 1.4 of the Agreement shall apply, *mutatis mutandis*, to this TOR.

### **3. General**

3.1 The Authority's Engineer shall discharge its duties in a fair, impartial and efficient manner, consistent with the highest standards of professional integrity and Good Industry Practice.

3.2 The Authority's Engineer shall perform the duties and exercise the authority in accordance with the provisions of this Agreement, but subject to obtaining prior written approval of the Authority before determining:

- (a) Any Time extension;
- (b) Any additional cost to be paid by the Authority to the Contractor;
- (c) The Termination Payment; or
- (d) issuance of Completion Certificate or
- (e) Any other matter which is not specified in (a), (b) or (c) above and which creates an obligation or liability on either Party for a sum exceeding Rs. 5,000,000 (Rs. fifty lakh).

3.3 The Authority's Engineer shall submit regular periodic reports, at least once every month, to the Authority in respect of its duties and functions under this Agreement. Such reports shall be submitted by the Authority's Engineer within 10 (ten) days of the beginning of every month.

3.4 The Authority's Engineer shall inform the Contractor of any delegation of its duties and responsibilities to its suitably qualified and experienced personnel; provided, however, that it shall not delegate the authority to refer any matter for the Authority's prior approval in accordance with the provisions of Clause 18.2.

3.5 The Authority's Engineer shall aid and advise the Authority on any proposal for Change of Scope under Article 13.

3.6 In the event of any disagreement between the Parties regarding the meaning, scope and nature of Good Industry Practice, as set forth in any provision of the Agreement,



#### **4 Construction Period**

4.1.1 During the Construction Period, the Authority's Engineer shall review and approve the Drawings furnished by the Contractor along with supporting data, including the geo-technical and hydrological investigations, characteristics of materials from borrow areas and quarry sites, topographical surveys, and the recommendations of the Safety Consultant in accordance with the provisions of Clause 10.1 (vi). The Authority's Engineer shall complete such review and approval and send its observations to the Authority and the Contractor within 15 (fifteen) days of receipt of such Drawings; provided, however that in case of a Major Bridge or Structure, the aforesaid period of 15 (fifteen) days may be extended upto 30 (thirty) days. In particular, such comments shall specify the conformity or otherwise of such Drawings with the Scope of the Project and Specifications and Standards.

4.2 The Authority's Engineer shall review any revised Drawings sent to it by the Contractor and furnish its comments within 10 (ten) days of receiving such Drawings.

4.3 The Authority's Engineer shall review the Quality Assurance Plan submitted by the Contractor and shall convey its comments to the Contractor within a period of 21 (twenty-one) days stating the modifications, if any, required thereto. AE will sign Request for Inspections (RFI) on daily basis.

4.4 The Authority's Engineer shall complete the review of the methodology proposed to be adopted by the Contractor for executing the Works, and convey its comments to the Contractor within a period of 10 (ten) days from the date of receipt of the proposed methodology from the Contractor.

4.5 The Authority's Engineer shall grant written approval/NOC to the Contractor, where necessary, for interruption and diversion of the flow of traffic in the existing lane(s) of the Project Highway for purposes of maintenance during the Construction Period in accordance with the provisions of Clause 10.4.

- 4.6 The Authority's Engineer shall review the monthly progress report furnished by the Contractor and send its comments thereon to the Authority and the Contractor within 7 (seven) days of receipt of such report.
- 4.7 The Authority's Engineer shall inspect the Construction Works as per daily raised RFI's and the Project Highway and shall submit a monthly Inspection Report bringing out the results of inspections and the remedial action taken by the Contractor in respect of Defects or deficiencies. In particular, the Authority's Engineer shall include in its Inspection Report, the compliance of the recommendations made by the Safety Consultant.
- 4.8 The Authority's Engineer shall conduct the pre-construction review of manufacturer's test reports and standard samples of manufactured Materials, and such other Materials as the Authority's Engineer may require.
- 4.9 For determining that the Works conform to Specifications and Standards, the Authority's Engineer shall require the Contractor to carry out, or cause to be carried out, tests at such time and frequency and in such manner as specified in the Agreement and in accordance with Good Industry Practice for quality assurance. For purposes of this Paragraph 4.9, the tests specified in the IRC Special Publication-11 (Handbook of Quality Control for Construction of Roads and Runways) and the Specifications for Road and Bridge Works issued by MORTH (the "Quality Control Manuals") or any modification/substitution thereof shall be deemed to be tests conforming to Good Industry Practice for quality assurance.
- 4.10 The Authority's Engineer shall test check at least 70 (Seventy) percent of the quantity or number of tests prescribed for each category or type of test for quality control by the Contractor and will sign the test reports on regular basis and submit the report weekly.
- 4.11 The timing of tests referred to in Paragraph 4.9, and the criteria for acceptance/ rejection of their results shall be determined by the

Authority's Engineer in accordance with the Quality Control Manuals. The tests shall be undertaken on a random sample basis and shall be in addition to, and independent of, the tests that may be carried out by the Contractor for its own quality assurance in accordance with Good Industry Practice.

4.12 In the event that results of any tests conducted under Clause 11.10 establish any Defects or deficiencies in the Works, the Authority's Engineer shall require the Contractor to carry out remedial measures.

4.13 The Authority's Engineer may instruct the Contractor to execute any work which is urgently required for the safety of the Project Highway, whether because of an accident, unforeseeable event or otherwise; provided that in case of any work required on account of a Force Majeure Event, the provisions of Clause 21.6 shall apply.

4.14 In the event that the Contractor fails to achieve any of the Project Milestones, the Authority's Engineer shall undertake a review of the progress of construction and identify potential delays, if any. If the Authority's Engineer shall determine that completion of the Project Highway is not feasible within the time specified in the Agreement, it shall require the Contractor to indicate within 15 (fifteen) days the steps proposed to be taken to expedite progress, and the period within which the Project Completion Date shall be achieved. Upon receipt of a report from the Contractor, the Authority's Engineer shall review the same and send its comments to the Authority and the Contractor forthwith.

4.15 The Authority's Engineer shall obtain from the Contractor a copy of all the Contractor's quality control records and documents before the Completion Certificate is issued pursuant to Clause 12.4.

4.16 Authority's Engineer may recommend to the Authority suspension of the whole or part of the Works if the work threatens the safety of the Users

and pedestrians. After the Contractor has carried out remedial measure, the Authority's Engineer shall inspect such remedial measures forthwith and make a report to the Authority recommending whether or not the suspension hereunder may be revoked.

4.17 In the event that the Contractor carries out any remedial measures to secure the safety of suspended works and Users, and requires the Authority's Engineer to inspect such works, the Authority's Engineer shall inspect the suspended works within 3 (three) days of receiving such notice, and make a report to the Authority forthwith, recommending whether or not such suspension may be revoked by the Authority.

4.18 The Authority's Engineer shall carry out, or cause to be carried out, all the Tests specified in Schedule-K and issue a Completion Certificate or Provisional Certificate, as the case may be. For carrying out its functions under this Paragraph

4.18 and all matters incidental thereto, the Authority's Engineer shall act under and in accordance with the provisions of Article 12 and Schedule-K.

## **5. Maintenance Period**

5.1.1 The Authority's Engineer shall aid and advise the Contractor in the preparation of its monthly Maintenance Programme and for this purpose carry out a joint monthly inspection with the Contractor.

5.1.2 The Authority's Engineer shall undertake regular inspections, at least twice every month, to evaluate compliance with the Maintenance Requirements and submit a Maintenance Inspection Report to the Authority and the Contractor.

5.1.3 The Authority's Engineer shall specify the tests, if any, that the Contractor shall carry out, or cause to be carried out, for the purpose of determining that the Project Highway is in conformity with the Maintenance Requirements. It shall monitor and review the results of such tests and the remedial measures, if any, taken by the Contractor in this behalf.

5.1.4 In respect of any defect or deficiency referred to in Paragraph 3 of Schedule- E, the Authority's Engineer shall, in conformity with Good Industry Practice, specify the permissible limit of deviation or deterioration with reference to the Specifications and Standards and shall also specify the time

limit for repair or rectification of any deviation or deterioration beyond the permissible limit.

5.1.5 The Authority's Engineer shall examine the request of the Contractor for closure of any lane(s) of the Project Highway for undertaking maintenance/repair thereof, and shall grant permission with such modifications, as it may deem necessary, within 5 (five) days of receiving a request from the Contractor. Upon expiry of the permitted period of closure, the Authority's Engineer shall monitor the reopening of such lane(s), and in case of delay, determine the Damages payable by the Contractor to the Authority under Clause 14.5.

## **6 Determination of costs and time**

6.1 The Authority's Engineer shall determine the costs, and/or their reasonableness, that are required to be determined by it under the Agreement.

6.2 The Authority's Engineer shall determine the period of Time Extension that is required to be determined by it under the Agreement.

6.3 The Authority's Engineer shall consult each Party in every case of determination in accordance with the provisions of Clause 18.5.

## **7. Payments**

7.1 The Authority's Engineer shall withhold payments for the affected works for which the Contractor fails to revise and resubmit the Drawings to the Authority's Engineer in accordance with the provisions of Clause 10.2.4 (d).

7.2 Authority's Engineer shall -

- (a) within 02 (two) days of receipt of the Stage Payment Statement from the Contractor pursuant to Clause 19.4, determine the amount due to the Contractor and recommend the release of 90 (ninety) percent of the amount so determined as part payment, pending issue of the Interim Payment Certificate; and
- (b) within 03 (three) days of the receipt of the Stage Payment Statement referred to in Clause 19.4, deliver to the Authority and the Contractor an Interim Payment

Certificate certifying the amount due and payable to the Contractor, after adjustments in accordance with the provisions of Clause 19.10.

7.3 The Authority's Engineer shall, within 15 (fifteen) days of receipt of the Monthly Maintenance Statement from the Contractor pursuant to Clause 19.6, verify the Contractor's monthly statement and certify the amount to be paid to the Contractor in accordance with the provisions of the Agreement.

7.4 The Authority's Engineer shall certify final payment within 30 (thirty) days of the receipt of the final payment statement of Maintenance in accordance with the provisions of Clause 19.16.

## **8. Other duties and functions**

The Authority's Engineer shall perform all other duties and functions as specified in the Agreement.

## **9 Miscellaneous**

9.1 A copy of all communications, comments, instructions, Drawings or Documents sent by the Authority's Engineer to the Contractor pursuant to this TOR, and a copy of all the test results with comments of the Authority's Engineer thereon, shall be furnished by the Authority's Engineer to the Authority forthwith.

9.2 The Authority's Engineer shall retain at least one copy each of all Drawings and Documents received by it, including 'as-built' Drawings, and keep them in its safe custody.

9.3 Within 30 (thirty) days of the Project Completion Date, the Authority's Engineer shall obtain a complete set of as-built Drawings, in 2 (two) hard copies and in micro film form or in such other medium as may be acceptable to the Authority, reflecting the Project Highway as actually designed, engineered and constructed, including an as-built survey illustrating the layout of the Project Highway and setback lines, if any, of the buildings and structures forming part of Project Facilities; and shall hand them over to the Authority against receipt thereof.

9.4 The Authority's Engineer, if called upon by the Authority or the Contractor or both, shall mediate and assist the Parties in arriving at an amicable settlement of any Dispute between the Parties.

9.5 The Authority's Engineer shall inform the Authority and the Contractor of any event of Contractor's Default within one week of its occurrence.

## **SCHEDULE - O**

*(See Clauses 19.4.1, 19.6.1, and 19.8.1)*

### **Forms of Payment Statements**

#### **1. Stage Payment Statement for Works**

The Stage Payment Statement for Works shall state:

- (a) The estimated amount for the Works executed in accordance with Clause 19.3.1 subsequent to the last claim;
- (b) Amounts reflecting adjustments in price for the aforesaid claim;
- (c) The estimated amount of each Change of Scope Order executed subsequent to the last claim;
- (d) Amounts reflecting adjustment in price, if any, for (c) above in accordance with the provisions of Clause 13.2.3 (a);
- (e) Total of (a), (b), (c) and (d) above;
- (f) Deductions:
  - (i) Any amount to be deducted in accordance with the provisions of the Agreement except taxes;
  - (ii) Any amount towards deduction of taxes; and
  - (iii) Total of (i) and (ii) above.
- (g) Net claim: (e) - (f) (iii);
- (h) The amounts received by the Contractor upto the last claim:
  - (i) For the Works executed (excluding Change of Scope orders);
  - (ii) For Change of Scope Orders, and
  - (iii) Taxes deducted
- (i) Amount paid by the Contractor against forest/mining royalty.

#### **2. Monthly Maintenance Payment Statement**

The monthly Statement for Maintenance Payment shall state:

- (a) the monthly payment admissible in accordance with the provisions of the agreement;

- (b) the deductions for maintenance work not done;
- (c) net payment for maintenance due, (a) minus (b);
- (d) amounts reflecting adjustments in price under Clause 19.12; and
- (e) amount towards deduction of taxes

**3. Contractor's claim for Damages**

**Note:** The Contractor shall submit its claims in a form acceptable to the Authority.



**Schedule - P**  
**(See Clause 20.1)**  
**INSURANCE**

**1. Insurance during Construction Period**

1.1 The Contractor shall effect and maintain at its own cost, from the Appointed Date till the date of issue of the last Completion Certificate, the following insurances for any loss or damage occurring on account of Non Political Event of Force Majeure, malicious act, accidental damage, explosion, fire and terrorism:

(A) insurance of Works, Plant and Materials and an additional sum of [15 (fifteen)] per cent of such replacement cost to cover any additional costs of and incidental to the rectification of loss or damage including professional fees and the cost of demolishing and removing any part of the Works and of removing debris of whatsoever nature; and

(B) Insurance for the Contractor's equipment and Documents brought onto the Site by the Contractor, for a sum sufficient to provide for their replacement at the Site.

1.2 The insurance under paragraph 1.1 (a) and (b) above shall cover the authority and the Contractor against all loss or damage from whatsoever cause arising under paragraph 1.1 other than risks which are not insurable at commercial terms.

**2 Insurance for Contractor's Defects Liability**

The Contractor shall effect and maintain insurance cover of not less than 15% of the Contract Price for the Works from the date of issue of the Completion Certificate until the end of the Defects Liability Period for any loss or damage for which the Contractor is liable and which arises from a cause occurring prior to the issue of the Completion Certificate. The Contractor shall also maintain other insurances for maximum sums as may be required under the Applicable Laws and in accordance with Good Industry Practice.

**3. Insurance against injury to persons and damage to property**

3.1 The Contractor shall insure against each Party's liability for any loss, damage, death or bodily injury which may occur to any

physical property (except things insured under Paragraph 1 and 2 of this Schedule or to any person (except persons insured under Clause 20.9), which may arise out of the Contractor's performance of this agreement and occurring before the issue of the Performance Certificate. This insurance shall be for a limit per occurrence of not less than the amount stated below with no limit on the number of occurrences.

The insurance cover shall be as per the applicable laws of government and procedure in vogue.

3.2 The insurance shall be extended to cover liability for all loss and damage to the Authority's property arising out of the Contractor's performance of this Agreement excluding:

- (a) the Authority's right to have the construction works executed on, over, under, in or through any land, and to occupy this land for the Works; and
- (b) Damage which is and unavoidable result of the Contractor's obligations to execute the Works.

#### **4. Insurance to be in joint names**

The insurance under paragraphs 1 to 3 above shall be in the joint names of the Contractor and the Authority.

## **Schedule-Q**

*(See Clause 14.10)*

### **Tests on Completion of Maintenance Period**

**1. Riding Quality test:**

Riding quality test: Riding quality of each lane of the carriageway shall be checked with the help of a calibrated bump integrator and the maximum permissible roughness for purposes of this Test shall be [2,200 (two thousand and two hundred only)] mm for each kilometer.

**2. Visual and physical test:**

The Authority's Engineer shall conduct a visual and physical check of construction to determine that all works and equipment forming part thereof conform to the provisions of this Agreement. The physical tests shall include measurement of cracking, rutting, stripping and potholes and shall be as per the requirement of maintenance mentioned in Schedule-E.

## Schedule-R

(See Clause 14.10)

### Taking Over Certificate

I, ..... (Name and designation of the Authority's Representative) under and in accordance with the Agreement dated ..... (the "**Agreement**"), for [construction of the

\*\*\*section (km \*\* to km \*\*) of

\*\*\*\*] (the "**Project Highway**") on Engineering, Procurement and Construction (EPC) basis through .....(Name of Contractor), hereby certify that the Tests on completion of Maintenance Period in accordance with Article 14 of the Agreement have been successfully undertaken to determine compliance of the Project Highway with the provisions of the Agreement and I hereby certify that the Authority has taken over the Project highway from the Contractor on this day.....

SIGNED, SEALED AND DELIVERED

(Signature)

(Name and designation of  
Authority's Representative)

(Address)