# Schedules

**Construction of two lane with paved shoulder of Kohima-Bypass Road connecting NH-39 (New NH-02), NH-150(New NH-02), NH-61(New NH-29) and NH-39 (New NH-02) from Design Km 0.00 to design Km 10.500 [Design Length – 10.500 Km] in the state of Nagaland Under SARDP-NE on EPC Mode (Package I)"**

SCHEDULE - A

*(See Clauses 2.1 and 8.1)*

**SITE OF THE PROJECT**

1 The Site

(i) Site of the Project Highway shall include the land, buildings, structures and road works as described in Annex-I of this Schedule-A.

(ii) The dates of handing over the Right of Way to the Contractor are specified in Annex-II of this Schedule-A.

(iii) 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 (i) of this Agreement.

(iv) The alignment plans of the Project Highway are specified in Annex-III. In the case of sections where no modification in the existing alignment of the Project Highway 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 proposed profile of the Project Highways shall be followed by the contractor with minimum FRL as indicated in the alignment plan. The Contractor, shall however, improve/upgrade the Road Profile as indicated in Annex-III based on site/design requirement.

(v) The status of the environment clearances obtained or awaited is given in Annex-IV.

**Annex – 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/locations referred to in Annex-I of Schedule-A shall be existing chainages.]

## 1. Site

The project lies in the Northeastern part of India. Kohima is capital of the state of Nagaland. The Kohima district shares its border with Dimapur District in the West, Phek District in the East, Manipur State and Peren District in the South and Wokha District in the North.

The project road starts from the Km 173.00 of existing NH-39(New NH-02), (which is under widening and improvement for four lane configuration from Dimapur to Kohima) and terminates at Km. 192.500 of NH-39(New NH-02). The project road is divided into four packages:

Package I: From Km. 0+000 to Km. 10+500

Package II: From Km. 10+500 to Km. 21+000

Package III: From Km. 21+000 to Km. 32+000

Package IV: From Km. 32+000 to Km. 43+454

The details of Package I is describe below:

## 2. Land

The Site of the Project Highway comprises the land described below:

| S. No. | From | To | Right of Way (m) |
|---|---|---|---|
| 1 | 0+000 | 1+420 | 30 |
| 2 | 1+474 | 3+000 | 30 |
| 3 | 3+000 | 3+200 | 45 |
| 4 | 3+354 | 3+400 | 30 |
| 5 | 3+359 | 3+800 | 30 |
| 6 | 4+046 | 4+100 | 30 |
| 7 | 4+172 | 4+200 | 30 |
| 8 | 4+285 | 4+300 | 30 |
| 9 | 4+539 | 4+800 | 30 |
| 10 | 4+862 | 4+950 | 45 |
| 11 | 5+027 | 5+100 | 45 |
| 12 | 5+260 | 5+400 | 30 |
| 13 | 5+536 | 5+900 | 30 |
| 14 | 5+949 | 6+000 | 30 |
| 15 | 6+049 | 6+400 | 30 |
| 16 | 6+400 | 7+000 | 45 |

| | | | |
|---|---|---|---|
| 17 | 7+000 | 7+400 | 30 |
| 18 | 7+400 | 7+600 | 45 |
| 19 | 7+600 | 7+700 | 30 |
| 20 | 7+720 | 8+000 | 30 |
| 21 | 8+000 | 8+200 | 45 |
| 22 | 8+200 | 8+400 | 30 |
| 23 | 8+400 | 9+200 | 45 |
| 24 | 9+200 | 9+300 | 30 |
| 25 | 9+454 | 9+650 | 30 |
| 26 | 9+673 | 10+100 | 45 |
| 27 | 10+185 | 10+200 | 45 |
| 28 | 10+249 | 10+300 | 30 |
| 29 | 10+343 | 10+500 | 30 |

## 3. Carriageway

The alignment of project highway is Greenfield alignment; hence, details of existing carriage way is not applicable.
**2.200 km subgrade in between km 0+000 to km 3+000 has already been constructed*

## 4. Major Bridges

The Site includes the following Major Bridges:

| Sr. No. | Existing Chainage (km) | Type of Structure | | | No. of Spans with span length (m) C/C of pier | Carriage way Width (m) | Remarks |
|---|---|---|---|---|---|---|---|
| | | Foundation | Sub-structure | Super structure | | | |
| Nil | | | | | | | |

## 5 Road over-bridges (ROB)/ Road under-bridges (RUB)

The Site includes the following ROB (road over railway line)/RUB (road under railway line):

| Sr. No. | Chainage (km) | Type of Structure | | No. of Spans with Span length (m) | Width (m) | ROB/ RUB |
|---|---|---|---|---|---|---|
| | | Foundation | Super Structure | | | |
| Nil | | | | | | |

## 6 Grade separators

The Site includes the following grade separators:

| Sr. No. | Chainage (km) | Type of Structure | | No. of Spans with Span length (m) | Width (m) |
|---|---|---|---|---|---|
| | | Foundation | Super Structure | | |
| Nil | | | | | |

## 7 Minor bridges

The project road includes the following minor bridges:

| Sl. No. | Existing Chainage (km) | Type of Structure | | No. of Spans with span length (m) | O/O of edge Width (m) |
|---|---|---|---|---|---|
| | | Foundation | Superstructure | | |
| Nil | | | | | |

**8 Railway level crossings**

The Site includes the following railway level crossings:

| Sr. No. | Chainage (km) | Remarks |
|---|---|---|
| Nil | | |

**9 Underpasses (vehicular, Non-vehicular)**

The Site includes the following underpasses:

| Sr. No. | Chainage (km) | Type of Structure | No. of Spans with Span length (m) | Width (m) |
|---|---|---|---|---|
| Nil | | | | |

**10 Culverts:**

The Site has the following culverts: -

| S. No. | Existing Chainage (km) | Existing Detail | | |
|---|---|---|---|---|
| | | Type of culvert | Span/Opening with span length (m) | Width (m) |
| 1 | 0+280 | Box Culvert | 1 X 2.0 m | 12m |
| 2 | 0+539 | Box Culvert | 1 X 2.0 m | 12m |
| 3 | 0+605 | Box Culvert | 1 X 2.0 m | 12m |
| 4 | 0+642 | Box Culvert | 1 X 2.0 m | 12m |
| 5 | 0+961 | Box Culvert | 1 X 2.0 m | 12m |
| 6 | 0+967 | Box Culvert | 1 X 2.0 m | 12m |
| 7 | 1+044 | Box Culvert | 1 X 2.0 m | 12m |
| 8 | 1+050 | Box Culvert | 1 X 2.0 m | 12m |
| 9 | 1+072 | Box Culvert | 1 X 2.0 m | 12m |
| 10 | 1+151 | Box Culvert | 1 X 2.0 m | 12m |
| 11 | 1+181 | Box Culvert | 1 X 2.0 m | 12m |

**11 Bus Stop**

The details of bus stop on the stretch are as follows:

| Sl. No. | Existing Chainage (Km) | Sides |
|---|---|---|
| Nil | | |

## 12 Truck Lay byes

The details of truck lay byes are as follows:

| Sr. No. | Chainage (Km) | Length (m) | LHS | RHS |
|---|---|---|---|---|
| Nil | | | | |

## 13 Road side drains

The details of the roadside drains are as follows:

| Sr. No. | Existing Chainage | | Length (m) | Type |
|---|---|---|---|---|
| | From km | To km | | Masonry/cc (Pucca) |
| Nil | | | | |

## 14 Major junctions

The detail of major junction is as follows:

| Sr. No. | Chainage | Type | In between | Remarks Category of X-Road |
|---|---|---|---|---|
| Nil | | | | |

## 15 Minor junctions

The details of the minor junctions are as follows:-

| S. No. | Existing Chainage (m) | Type of Junction | |
|---|---|---|---|
| | | T-Junction | X-Road |
| Nil | | | |

## 16 Bypass

The details of the bypasses are as follows:

| Sr. No. | Name of Bypass (Town) | Existing Chainage (Km) | | Length (Km) | Carriageway | |
|---|---|---|---|---|---|---|
| | | From | To | | Width (m) | Type |
| **Nil** | | | | | | |

## 17 Other Structures

No other structures are there.

## 18 Breast Wall (Gabion Wall)

506m of breast wall has already been constructed

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:

| Sl. No | Design Chainage | | Length (Km) | Proposed ROW Width (m) | Date of Providing proposed ROW |
|---|---|---|---|---|---|
| | From | To | | | |
| i) 90% of ROW (full width) | 0.00 | 10.500 | 10.500 | Varying ROW from minimum 30 m to maximum 45 m at different locations as per cross section in DPR | At Appointment Date |
| ii) Balance Right of way (width) | 0.00 | 10.500 | 10.500 | Varying ROW from minimum 30m to maximum 45 m at different locations as per cross section in DPR | Within 150 days after the Appointed Date |

Annex - III
*(Schedule-A)*

## Alignment Plans

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

i) The alignment of the Project Highway 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 highway 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) Traffic Signage plan of the Project Highway showing numbers & location of traffic signs is enclosed. The contractor shall, however, improve/upgrade upon the traffic signage plan as indicated in Annex-III based on site/design requirement as per IRC: SP: 99 & IRC: 67 and other IRC codes or manuals, if applicable

Annex - IV
*(Schedule-A)*

## Environment Clearances

As per notification of MOEF F.O. 2559(E) dated 22/08/2013, the project will not attract Environmental Clearance

SCHEDULE - B

*(See Clause 2.1)*

**Development of the Project Highway**

**1 Development of the Project Highway**

Development of the Project Stretch from Km. 0+000 to Km. 10+500 of Kohima Bypass includes design and construction of the Project Highway as described in this Schedule-B and in Schedule-C.

**2 Rehabilitation and Augmentation**

NA.

**3 Specifications and Standards**

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

Annex - I
*(Schedule-B)*

**Description of Two Lane with Paved Shoulder**

*[Note: Description of the Project Highway shall be given by the Authority in detail together with explanatory drawings (where necessary) to explain the Authority's requirements precisely in order to avoid subsequent changes in the Scope of the Project. The particulars that must be specified in this Schedule-B are listed below as per the requirements of the Manual of Specifications and Standards for Two Laning with paved shoulder of Highways (IRC: SP: 73-2018), referred to as the Manual. If any standards, specifications or details are not given in the Manual, the minimum design/construction requirements shall be specified in this Schedule. In addition to these particulars, all other essential project specific details, as required, should be provided in order to define the Scope of the Project clearly and precisely.]*

## 1 CONSTRUCTION OF THE HIGHWAY

### i) WIDTH OF CARRIAGEWAY

a) Two Lanning with paved shoulder shall be undertaken. The paved carriageway including paved shoulders shall be in accordance with the typical cross sections drawings provided in para 14 of Annexure-I Schedule-B

**Note:** The length of road in built-up section is tentative, and it may vary as per site condition. In case of increase of length, no positive change of scope will be payable.

b) Except as otherwise provided in this Agreement, the width of the paved carriageway and cross-sectional features shall conform to paragraph 1(i) above.

## 2. GEOMETRIC DESIGN AND GENERAL FEATURES

### i) General

Geometric design and general features of the Project Highway shall be in accordance with Section 2 of the IRC: SP: 73-2018

### ii) Design speed

The design speed shall be as per IRC 73: 2018.

### iii) Improvement of the existing road geometrics

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. | Stretch (from Km to Km) | Type of deficiency | Remarks |
|---|---|---|---|
| NIL | | | |

**iv) Right of Way**

Details of the Right of Way have been given in Annex II of Schedule A.

**v) Type of shoulders**

a) Type of shoulders have been given in TCS mentioned in para 14, Annexure I of Schedule B.

b) Design and specifications of the paved shoulders and granular material shall be conforming to the requirements specified in paragraph 5.10 of the IRC: SP: 73-2018.

**vi) Lateral and vertical clearances at underpasses**

a) Lateral and vertical clearances at underpasses and provision of guardrails/crash barriers shall be as per para 2.10 of the IRC: SP: 73-2018

b) Lateral clearance: The width of the opening at the Vehicular under Passes (VUP) shall be as follows:

| Sr. No. | Location (Design Chainage) Km | Span / Opening (m) | Vertical Clearances (m) |
|---|---|---|---|
| 1 | 10+005 | Opening = 12m<br>Length = 40m | 5.50 |

**vii) Lateral and vertical clearances at overpasses**

a) Lateral and vertical clearances at overpasses shall be as per para 2.11 of the Manual, however no overpass has been proposed.

b) Lateral clearances: The width of the opening at the overpasses shall be as follows:

| Sr. No. | Location (Chainage) (From Km to Km) | Span / Opening (m) | Remarks |
|---|---|---|---|
| Nil | | | |

**viii) Service roads/Slip road**

Service roads/Slip Road shall be constructed at the locations and for the lengths indicated below [Refer to paragraph 2.12 of IRC: SP: 73-2018]:

**(a) Details of service road**

| Sr. No. | Location of service road (From Km to Km) | Right hand side (RHS) /Left hand side (LHS)/or both sides | Length (Km) of service road |
|---|---|---|---|
| Nil | | | |

**(b) Details of Slip Road**

| Sr. No. | Existing Chainage | | Design Chainage | | Right Hand side (RHS) or Left-Hand side (LHS) or Both side | Length (m) of Slip Road | Remarks |
|---|---|---|---|---|---|---|---|
| | From | To | From | To | | | |
| Nil | | | | | | | |

**ix) Grade separated structures**

a) Grade separated structures shall be provided as per paragraph 2.13 of the IRC: SP: 73-2018. The requisite particulars are given below:

| Sr. No. | Location of structure (Existing) | Location of structure (Design) | Length (m) | Number and length of Spans(m) | Approach Gradient | Remarks, if any |
|---|---|---|---|---|---|---|
| NIL | | | | | | |

b) In the case of grade separated structures, the type of structure and the level of the Project Highway and the cross roads shall be as follows:

| Sr. No. | Location (Design Chainage) | Location (Design Chainage) | Type of Structure Length | Cross road at | | |
|---|---|---|---|---|---|---|
| | | | | Existing level | Raised Level | Lowered Level |
| NIL | | | | | | |

**x) Cattle and pedestrian underpass /overpass**

Cattle and pedestrian underpass/overpass shall be constructed as follows: (as per IRC SP: 73:2018)

| Sr. No. | Location (Chainage) (From Km to Km) | Type of Crossing |
|---|---|---|
| **NIL** | | |

**xi) Typical cross-sections of the Project Highway**

Indicative typical cross section of the Project highway has been provided as per para 14 of Annexure-I (Schedule B).

| Sr. No. | Details | TCS | Length (m) |
|---|---|---|---|
| 1. | Open country-Mountainous Terrain, Without Retaining wall on New Alignment | TCS-I | 350 |
| 2. | Open country-Mountainous Terrain, With Retaining wall on New Alignment | TCS-II | 9300 |
| 3. | Built-up section-Mountainous Terrain | TCS-III | 0 |
| 4. | Open country-Mountainous Terrain, Without Retaining wall on Existing Road | TCS-IV | 0 |
| 5. | Open country-Mountainous Terrain, With Retaining wall on Existing Road | TCS-V | 0 |
| 6. | Open country-Mountainous Terrain, Box cutting With both side breast wall on new alignment | TCS-VI | 850 |
| | Total Length | | 10500 |

## 3 INTERSECTIONS AND GRADE SEPARATORS

All intersections shall be as per Section3 of the Manual. Existing intersections which are deficient shall be improved to the prescribed standards.

There are no intersections with cross roads having bituminous surfacing. The cross roads fall into the category of VRs. The Contractor has to construct the following:

Properly designed intersections shall be provided at the locations and of the types and features given in the tables below:

**i. At-Grade intersections:**

| Sr. No. | Location of Intersection | Type of intersection | Other feature |
|---|---|---|---|
| 1 | 0+000 | Y | At Grade (Start of Project Road) |

**ii. Grade Separated intersection with/without ramps**

| S. NO | Location | Salient features | Minimum length of viaduct to be provided | Road to be carried over/under the structures |
|---|---|---|---|---|
| NIL | | | | |

## 4 ROAD EMBANKMENT AND CUT SECTION

**i)** Widening and improvement of the existing road embankment/cuttings and construction of new road embankment/ cuttings shall conform to the Specifications and Standards given in section 4 of IRC: SP: 73-2018 and the specified cross-sectional details. Deficiencies in the plan and profile of the existing road shall be corrected.

**ii)** Raising of the existing road:

The existing road shall be raised in the following sections:

| Sl. No. | Section (From km to km) | Length | Extent of raising [Top of finished road level] |
|---|---|---|---|
| Nil | | | |

## 5 PAVEMENT DESIGN

5.1 Pavement design shall be carried out in accordance with section 5 of the Manual.

### 5.2 Type of pavement

Flexible pavement shall be adopted for Project Highway. Notwithstanding anything contrary contained in this Agreement or the Manual, the pavement shall be designed as given below.

### 5.3 Design requirements

Notwithstanding anything to the contrary contained in this agreement or the manual, the contractor shall design the pavement of main carriageway for design traffic of 50 MSA with a minimum design period of 20 years. CBR value as obtained at site shall be taken for design if less than 10%. Maximum value of CBR to be taken for design shall not exceed 10%.

Bituminous Grade VG 40 shall be used for DBM & BC.

### 5.4 Reconstruction of stretches/ Realignment/ Bypass of Sections

5.4.1 The following stretches of the existing road shall be reconstructed. These shall be designed as new pavement.

| Sl. No. | Existing Section (km) | | Remarks |
|---|---|---|---|
| | From | To | |
| NIL | | | |

### 5.4.2 Rigid Pavement

No rigid pavement has been considered for the Project Highway.

## 6. ROAD SIDE DRAINAGE

Drainage system including surface and subsurface drains for the Project Highway shall be provided as per Section 6 of the Manual (IRC: SP: 73-2018).
Lined drain of following length shall be provided:

| Sr. No. | Length (except CD structures) | Side of construction |
|---|---|---|
| | (m) | Hill side/Both |
| 1 | 9208 | Hill side |
| 2 | 850 | Both side |

**The length of side drains given above are minimum and it may vary as per site condition. In case of increase of length, no positive change of scope will be payable**.

## 7. DESIGN OF STRUCTURES

i. General

a) All bridges, culverts and structures shall be designed and constructed in accordance with section 7 of IRC: SP: 73-2018 and referred other codes therein and shall conform to the cross- sectional features and other details specified therein

b) Width of the carriageway of new bridges and structures shall be as follows:

| Sr. No. | Bridge (km) | Span of Bridge (m) | Width of carriageway and Cross - Sectional feature |
|---|---|---|---|
| 1 | 1+600 | 3 X 80 | As per section 7.3 (ii) of the manual (i.e 18m) |
| 2 | 3+000 | 1 X 80 | |
| 3 | 3+730 | 2 X 35 | |
| 4 | 5+236 | 5 X 35 | |
| 5 | 5+704 | 7 X 35 | |
| 6 | 7+460 | 3 X 35 | |
| 7 | 8+760 | 7 X 35 | |
| 8 | 9+880 | 2 X 35 | |

c) Following structures shall be provided with footpaths:

| Sr. No. | Bridge (km) | Span of Bridge (m) | Remark |
|---|---|---|---|

| | | | |
|---|---|---|---|
| 1 | 1+600 | 3 X 80 | Footpath on both sides as per section 7 of the manual. |
| 2 | 3+000 | 1 X 80 | |
| 3 | 3+730 | 2 X 35 | |
| 4 | 5+236 | 5 X 35 | |
| 5 | 5+704 | 7 X 35 | |
| 6 | 7+460 | 3 X 35 | |
| 7 | 8+760 | 7 X 35 | |
| 8 | 9+880 | 2 X 35 | |

d) All bridges shall be high-level bridges.

e) The following structures shall be designed to carry utility services specified in table below:

| Sr. No. | Bridge (km) | utility service to be carried out on both side |
|---|---|---|
| 1 | 1+600 | OFC and telephone cables |
| 2 | 3+000 | |
| 3 | 3+730 | |
| 4 | 5+236 | |
| 5 | 5+704 | |
| 6 | 7+460 | |
| 7 | 8+760 | |
| 8 | 9+880 | |

f) Cross-section of the new culverts and bridges at deck level for the Project Highway shall conform to the typical cross-sections at fig. 7.4 & 7.6 respectively of IRC:SP:73-2018

**ii. Culverts**

a) Overall width of all culverts shall be equal to the roadway width of the approaches.

b) Reconstruction of Existing Culverts:

The existing culverts at the following locations shall be reconstructed as new culverts:

| S. No. | Existing chainage (km) | Design Chainage (km) | Proposal Details | | |
|---|---|---|---|---|---|
| | | | Span/Opening (m) | Type of Culvert | Remarks, if any |
| NIL | | | | | |

c) Widening and repairing of existing culverts

| S. No. | Existing chainage (km) | Design Chainage (km) | Proposal Details | | | TCS type |
|---|---|---|---|---|---|---|
| | | | Width (m) | Type of Culvert | Repairs to be carried out | |
| Nil | | | | | | |

d) New culverts shall be constructed as per tentative chainage given in the table below. Final chainage to be decided as per the site condition by the AE.

| Sr. No. | Tentative Design Chainage (Km) | Span/Opening (m) | Type of Culvert |
|---|---|---|---|
| 1 | 2+150 | 1X2 | BOX/ SLAB |
| 2 | 2+300 | 1X2 | BOX/ SLAB |
| 3 | 2+450 | 1X2 | BOX/ SLAB |
| 4 | 2+600 | 1X2 | BOX/ SLAB |
| 5 | 2+800 | 1X2 | BOX/ SLAB |
| 6 | 3+150 | 1X2 | BOX/ SLAB |
| 7 | 3+300 | 1X2 | BOX/ SLAB |
| 8 | 3+450 | 1X2 | BOX/ SLAB |
| 9 | 3+600 | 1X2 | BOX/ SLAB |
| 10 | 3+800 | 1X2 | BOX/ SLAB |
| 11 | 3+950 | 1X2 | BOX/ SLAB |
| 12 | 4+100 | 1X2 | BOX/ SLAB |
| 13 | 4+250 | 1X2 | BOX/ SLAB |
| 14 | 4+400 | 1X2 | BOX/ SLAB |
| 15 | 4+600 | 1X2 | BOX/ SLAB |
| 16 | 4+800 | 1X2 | BOX/ SLAB |
| 17 | 4+950 | 1X2 | BOX/ SLAB |
| 18 | 5+100 | 1X2 | BOX/ SLAB |
| 19 | 5+250 | 1X2 | BOX/ SLAB |
| 20 | 5+400 | 1X2 | BOX/ SLAB |
| 21 | 5+600 | 1X2 | BOX/ SLAB |
| 22 | 5+800 | 1X2 | BOX/ SLAB |
| 23 | 5+950 | 1X2 | BOX/ SLAB |
| 24 | 6+100 | 1X2 | BOX/ SLAB |

| Sr. No. | Tentative Design Chainage (Km) | Span/Opening (m) | Type of Culvert |
|---|---|---|---|
| 25 | 6+450 | 1X2 | BOX/ SLAB |
| 26 | 6+600 | 1X2 | BOX/ SLAB |
| 27 | 6+700 | 1X2 | BOX/ SLAB |
| 28 | 6+950 | 1X2 | BOX/ SLAB |
| 29 | 7+100 | 1X2 | BOX/ SLAB |
| 30 | 7+250 | 1X2 | BOX/ SLAB |
| 31 | 7+400 | 1X2 | BOX/ SLAB |
| 32 | 7+550 | 1X2 | BOX/ SLAB |
| 33 | 7+700 | 1X2 | BOX/ SLAB |
| 34 | 7+950 | 1X2 | BOX/ SLAB |
| 35 | 8+100 | 1X2 | BOX/ SLAB |
| 36 | 8+250 | 1X2 | BOX/ SLAB |
| 37 | 8+400 | 1X2 | BOX/ SLAB |
| 38 | 8+550 | 1X2 | BOX/ SLAB |
| 39 | 8+700 | 1X2 | BOX/ SLAB |
| 40 | 8+850 | 1X2 | BOX/ SLAB |
| 41 | 9+000 | 1X2 | BOX/ SLAB |
| 42 | 9+150 | 1X2 | BOX/ SLAB |
| 43 | 9+300 | 1X2 | BOX/ SLAB |
| 44 | 9+450 | 1X2 | BOX/ SLAB |
| 45 | 9+600 | 1X2 | BOX/ SLAB |
| 46 | 9+800 | 1X2 | BOX/ SLAB |
| 47 | 9+950 | 1X2 | BOX/ SLAB |
| 48 | 10+100 | 1X2 | BOX/ SLAB |
| 49 | 10+250 | 1X2 | BOX/ SLAB |
| 50 | 10+400 | 1X2 | BOX/ SLAB |

**The numbers of culvert above are minimum, to be provided and it may increase as per site condition. In case of increase in numbers of culvert, no positive change of scope will be payable**

e) Repairs/ Replacement of Railing/Parapets, flooring and protection works of the existing culverts shall be undertaken as follows:

| Sr. No. | Location (km) | Type of Repair required |
|---|---|---|
| NIL | | |

f) Floor Protection works of culverts shall be as specified in the relevant IRC codes and Technical Specifications.

**iii. Bridges**

**a) Existing Bridges to be re-constructed / widened**

i. The existing bridges at the following locations shall be re-constructed as new structures

**Major Bridges:**

| Sl. No. | Existing Chainage (Km) | Design Chainage (Km) | Design No. of Spans with span length (m) | Remarks |
|---|---|---|---|---|
| **NIL** | | | | |

**Minor Bridges:**

| Sl. No. | Chainage | | Silent Details of Existing Bridges | Adequacy or otherwise of the existing waterway, vertical clearance | Remarks |
|---|---|---|---|---|---|
| | Existing | Design | | | |
| **Nil** | | | | | |

(ii) The following narrow bridges shall be widened:

| Sr. No. | Location (Km) | Existing Width (m) | Extent of Widening (m) | Cross-section at deck level for widening |
|---|---|---|---|---|
| Nil | | | | |

**b) Additional New Bridges**

New bridges at the following locations on the project highway shall be constructed.

**Major Bridge:**

| Sr. No. | Location (Km) | | Span of Bridge (m) | Remarks |
|---|---|---|---|---|
| | Existing | Design | | |
| 1 | - | 1+600 | 3 X 80 | 2 Lane New Bridge as per section 7 of IRC SP 73:2018 |
| 2 | - | 3+000 | 1 X 80 | |
| 3 | - | 3+730 | 2 X 35 | |
| 4 | - | 5+236 | 5 X 35 | |
| 5 | - | 5+704 | 7 X 35 | |
| 6 | - | 7+460 | 3 X 35 | |
| 7 | - | 8+760 | 7 X 35 | |
| 8 | - | 9+880 | 2 X 35 | |

**Minor Bridge:**

| Sr. No. | Location (Km) | | Total length (m) | Remarks |
|---|---|---|---|---|
| | Existing | Design | | |
| Nil | | | | |

**c) The railings of existing bridges shall be replaced by concrete crash barriers at the following locations:**

| Sr. No. | Location (km) | Remarks |
|---|---|---|
| Nil | | |

**d) Repairs/ replacements of railing/parapets of the existing bridges shall be undertaken as follows:**

| Sl. No. | Existing Chainage (Km) | Design Chainage (Km) | Existing no. of Spans with span length (m) | Remarks |
|---|---|---|---|---|
| Nil | | | | |

**e) Drainage system for bridge decks**

An effective drainage system for bridge decks shall be provided as specified in section 7.20 of IRC: SP: 73-2018.

**f) Structures in marine environment**

NA

**iv. Rail - Road Bridges**

a) Design, construction and detailing of ROB/RUB shall be as specified in section 7 of the Manual.

**b) Road Over-Bridges**

Road over-bridges (road over railway line) shall be provided at the following level crossings, as per manual:

| Sl. No. | Location of Level crossing (Design Chainage km) | Length of bridge (m) |
|---|---|---|
| Nil | | |

**c) Road under-Bridges**

Road under-bridges (road under railway line) shall be provided at the following level crossings, as per GAD drawings attached:

| Sl. No. | Location of Level crossings(km) | Number and length of Span (m) |
|---|---|---|
| Nil | | |

**v. Grade separated structures**

The grade separated structures shall be provided at the locations and of the type and length specified in paragraphs 2(ix) and 3 of this Annex-I.

| Sr. No. | Location | | Span Arrangement | Total length (m) | Remarks |
|---|---|---|---|---|---|
| | Existing Chainage (Km) | Design Chainage (Km) | | | |
| Nil | | | | | |

**vi. Repairs and strengthening of bridges and structures**

All the existing bridges and structures to be repaired / strengthened, and the nature and extent of repairs/ strengthening required are given below:

**A. Bridges**

| Sl. No. | Location / Design Chainage (In km)/Span | Side (LHS/RHS) | Nature and Extent of Repairs / Strengthening to be carried out |
|---|---|---|---|
| Nil | | | |

**B. ROB / RUB**

| Sl. No. | Location / Design Chainage (In km) | Side (LHS/RHS) | Nature and Extent of Repairs / Strengthening to be carried out |
|---|---|---|---|
| **Nil** | | | |

**C. Overpass / Underpass and Other structures**

| Sr. No. | Location / Design Chainage (In km) | Side (LHS/RHS) | Nature and Extent of Repairs/ Strengthening to be carried out |
|---|---|---|---|
| Nil | | | |

**vii. List of Major bridges and structures**

The following is the list the list of major bridges and structures

| Sr. No. | Location (In km) |
|---|---|
| 1 | 1+600 (Major Bridge / Viaduct) |

| | |
|---|---|
| 2 | 3+000 (Major Bridge / Viaduct) |
| 3 | 3+730 (Major Bridge / Viaduct) |
| 4 | 5+236 (Major Bridge / Viaduct) |
| 5 | 5+704 (Major Bridge / Viaduct) |
| 6 | 7+460 (Major Bridge / Viaduct) |
| 7 | 8+760 (Major Bridge / Viaduct) |
| 8 | 9+880 (Major Bridge / Viaduct) |

## 8. TRAFFIC CONTROL DEVICES AND ROAD SAFETY WORKS

i. Traffic control devices and road safety works shall be provided in accordance with Section 9 of IRC: SP:73-2018.

(a) Traffic Signs: Traffic signs include roadside signs, overhead signs and curb mounted signs along the entire Project Highway shall be provided conforming to IRC 67 and section 800 of MoRTH specification.

(b) Pavement Marking: Pavement markings shall cover road marking for the entire Project Highway and shall be provided conforming to IRC 35-2015.

(c) Safety Barrier: W-beam crash barrier along the project highway at all locations shall be provided as specified in section 9 of IRC: SP: 73-2018.

ii. Specifications of the reflecting sheeting.

Retro reflective sheeting should be of high intensity grade with encapsulated lens or with micro prismatic retro reflective element in accordance with ASTM Standard D 4956-04 shall be provided conforming to section 800 of MoRTH specification.

## 9. ROADSIDE FURNITURE (SECTION 9 of IRC: SP: 73-2018)

i. Roadside furniture shall be provided in accordance with the provisions of IRC: SP:73-2018.

(a) Road Boundary Stone: For the entire Project Highway.

(b) Pedestrian: The pedestrian facilities shall include the provision of the;

(i) Pedestrian guardrail: Provide pedestrian guardrail at each bus stop location.

(ii) Pedestrian Crossings: Provide pedestrian crossing facilities on Junctions.

ii. Overhead traffic signs: Location and Size

(a) Full width Overhead signs: Full width Overhead signs shall be provided as below:

| Sl. No. | Design Chainage (km) | Remarks |
|---|---|---|
| 1 | 0.050 | |

| Sl. No. | Design Chainage (km) | Remarks |
|---|---|---|
| 2 | 10.500 | |

(b) Cantilever Overhead signs: Overhead signs shall be provided as below:

| Sl. No. | Design Chainage (km) | Remarks |
|---|---|---|
| 1 | 2.500 | |
| 2 | 6.500 | |

(c) Delineators: Delineators for the entire Project Highway at the locations as per section 9.4 of IRC SP 73:2018.

## 10. COMPENSATORY AFFORESTATION

Minimum 1050 nos. trees are required to be planted as compensatory afforestation.

## 11. HAZARDOUS LOCATIONS

Metal Beam crash barrier of minimum length of 2362m (single runner, heavy duty and W-shape) shall be provided at the locations of bridge approaches and high embankments (3.0m and more), at sharp curves on both sides on the project by the Contractor at the locations finalized in consultation with AE. Typical details of metal crash barrier are given in as per manual. Increase in length if any as per site requirement will not constitute change of scope.

## 12. SPECIAL REQUIREMENTS FOR HILL ROADS

Refer to section 13 of IRC: SP: 73-2018.

The following minimum length of protection works have been made for tabulated below:

| Sr. No. | Items | Length (m) |
|---|---|---|
| 1 | Breast wall (Minimum 3 m height) | 4614 |
| 2 | Retaining wall (Minimum 5 m height) | 900 |
| 3 | Hydroseeding and seeding & mulching | 31530 sqm |
| 4 | Other Slope Protection Measures (Soil Nailing) | 8231 m |

**Note- (i)** *The Contractor shall be responsible for accurate assessment of the actual requirement as per site situation & prepare designs for slope protection & stabilization and slide prone zone as per the specifications & standards stipulated in schedule 'D' and submit the same to the AE for review through the proof consultant and implement it accordingly thereafter.*

**(ii) Any increase in quantity over and above the minimum qty.** ***as mentioned in above table or through change in specifications will not be considered as change of scope***.

*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.*

*(iii)* The length of Retaining Wall shown above is minimum, to be constructed at site for proper geometrics and will not be converted to Breast Wall. Any reduction in the total length of Retaining Wall constructed at site shall constitute of negative change of scope.

## 13. CHANGE OF SCOPE

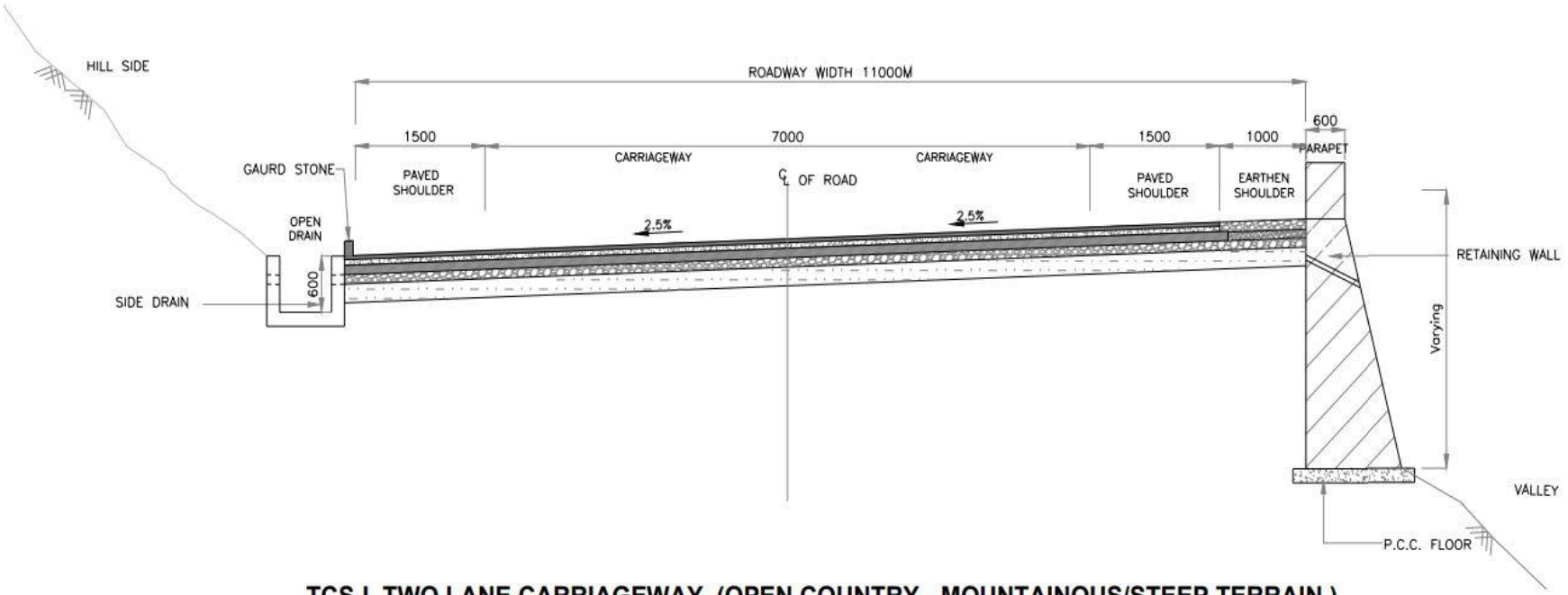
The length of Structures and bridges specified here in above shall be treated as an approximate assessment. The actual lengths as required on the basis of detailed investigations shall be determined by the Contractor in accordance with the Specifications and Standards. Any increase in the lengths specified 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.

The bidder is instructed to visit the project site and assess the actual requirements on ground thoroughly about the scope of works. Any rectification/additional works for items specified in schedule A shall not constitute change of Scope

## 14. INDICATIVE CHAINAGES WITH APPLICABLE TYPICAL CROSS SECTION:

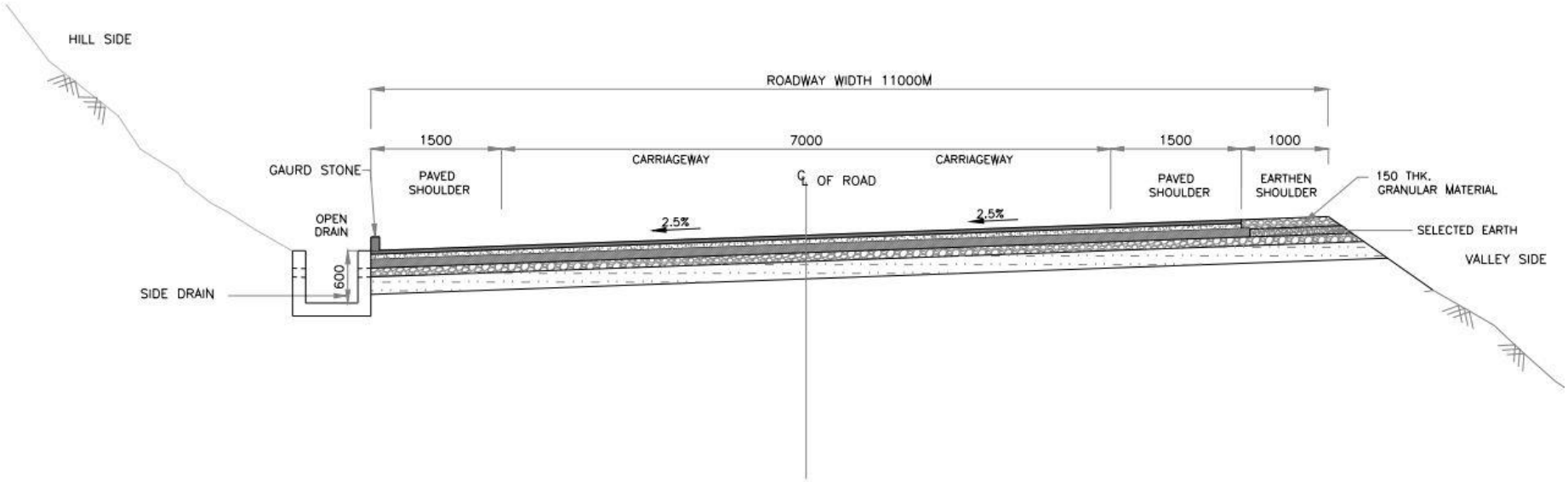
| Sl. No | Design Chainage | | Length | Type of TCS |
|---|---|---|---|---|
| | From | To | | |
| 1 | 0+000 | 0+850 | 850 | TCS-II |
| 2 | 0+850 | 1+050 | 200 | TCS-I |
| 3 | 1+050 | 1+800 | 750 | TCS-II |
| 4 | 1+800 | 1+850 | 50 | TCS-VI |
| 5 | 1+850 | 1+900 | 50 | TCS-II |
| 6 | 1+900 | 1+950 | 50 | TCS-I |
| 7 | 1+950 | 2+150 | 200 | TCS-II |
| 8 | 2+150 | 2+200 | 50 | TCS-VI |
| 9 | 2+200 | 3+550 | 1350 | TCS-II |
| 10 | 3+550 | 3+650 | 100 | TCS-VI |
| 11 | 3+650 | 4+500 | 850 | TCS-II |
| 12 | 4+500 | 4+650 | 150 | TCS-VI |
| 13 | 4+650 | 4+850 | 200 | TCS-II |
| 14 | 4+850 | 5+100 | 250 | TCS-VI |
| 15 | 5+100 | 5+650 | 550 | TCS-II |
| 16 | 5+650 | 5+750 | 100 | TCS-I |
| 17 | 5+750 | 9+900 | 4150 | TCS-II |
| 18 | 9+900 | 10+150 | 250 | TCS-VI |
| 19 | 10+150 | 10+500 | 350 | TCS-II |

# Typical Cross Section (TCS):



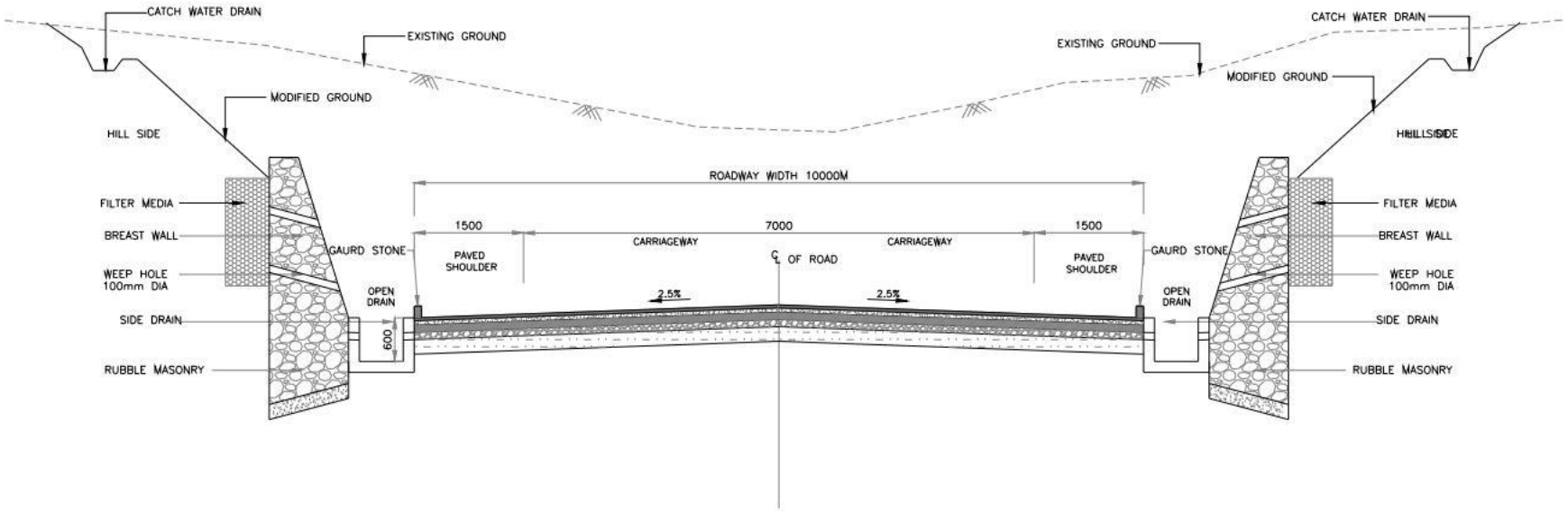

**TCS-I TWO LANE CARRIAGEWAY, (OPEN COUNTRY - MOUNTAINOUS/STEEP TERRAIN ) WITH RETAINING WALL AND PARAPET ON NEW ALIGNMENT**

(Fig. 2.8 As per Two Lane Manual 2018)




**TCS-II TWO LANE CARRIAGEWAY, (OPEN COUNTRY - MOUNTAINOUS/STEEP TERRAIN ) WITHOUT RETAINING WALL ON NEW ALIGNMENT**

(Fig. 2.9 As per Two Lane Manual 2018)




**TCS-VI TWO LANE CARRIAGEWAY, (OPEN COUNTRY - MOUNTAINOUS/STEEP TERRAIN )**
**BOX CUTTING WITH BOTH SIDE BREAST WALL ON NEW ALIGNMENT**

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) Tree plantation

(d) Bus shelters

(e) Passing Places

(f) Truck lay byes and

(g) Others to be specified

## 2 Description of Project Facilities

**Toll Plaza**

NIL

**Bus Shelters**

To ensure orderly movement of the through traffic, bus shelters have been proposed outside the residential area, away from bridges, and high embankments and not too close to the road intersections. The bus stops have been proposed on one side of the road.

Bus shelters 6 Nos shall be provided on the Project Highway at 3 locations as mentioned herein under. Bus shelters shall be constructed as per Manual on both sides of the Project Highway. These bus shelters will also have passenger shelter.

**Details of Bus shelters**

| SN | Chainage (km) | Village | Proposed Chainage (km) | |
|---|---|---|---|---|
| | | | LHS | RHS |
| 1 | 0+100 | Jotsama | 0+50 | 0+150 |
| 2 | 7+700 | - | 7+650 | 7+750 |
| 3 | 10+100 | Merima | 10+050 | 10+150 |

**Pedestrian Facilities**

Pedestrian facilities shall be provided at the locations of urban sections in order to ensure safety of pedestrians while crossing in consultation with AE. This should include (a) minimum Zebra Crossing with flashing Beacon or (b) Zebra Crossing with separate pedestrian phase or (c) any other provision as approved by AE.

**Landscaping**

Landscape treatment of the Project Highway shall be undertaken through planting of trees and ground cover of appropriate varieties and landscaping on surplus land in the ROW. The Construction Contractor should plant at least 1050 nos. of trees of minimum 6 ft. height with tree guard made up of MS sections.

Plantation scheme shall be prepared in consultation with the Forest Department of the Government of Nagaland, and AE.

**Environment**

The Project Highway during design, construction and maintenance during implementation period shall conform to the environmental rules and regulations in force. The Construction Contractor shall be responsible for the same

## 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 Project Highway.

### 2. Design Standards

The Project Highway including Project Facilities shall confirm to design requirements set out in the following documents:

Manual of specification and standards for two laning of Highways with paved shoulder (Second revision) IRC: SP:73-2018, Hill Road manual IRC: SP:48-1998 and Specification of roads and bridges work (fifth revision), MoRTH.

Annex – I

*(Schedule – D)*

Annex – I
*(Schedule – D)*

## Specifications and Standards for Construction

### 1 Specifications and Standards

All materials, works and construction operations shall confirm to the Manual of Specifications and Standards for Two Laning of Highways (IRC: SP: 73 – 2018), referred as the Manual, MORTH Specifications for Road and Bridge Works, and IRC: SP: 48-1998. 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

2.1 The terms 'Concessionaire', 'Independent Engineer' and 'Concession Agreement' used in the Manual (IRC: SP 73- 2018) shall be deemed to be substituted by the terms **'Contractor', 'Authority's Engineer' and 'Agreement'** respectively.

2.2 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, aforesaid Specifications and Standards of following clauses shall be deemed to be amended to the extent set forth below:

| S. No. | Clause | Provision as per Manual (IRC: SP:73-2018) | Modified Provision |
|---|---|---|---|
| 1 | 2.2 | **Design Speed:** Ruling or minimum Design speed shall be followed | Design speed shall be as per IRC SP 73 2018 for project highway excepting hair pin bend locations wherein design speed shall be as per IRC SP 73 2018. The same is mentioned in the Plan &Profile drawings given in **Annexure-III** of **Schedule A.** |
| 2 | 2.7.2 | **Roadway Width:** On horizontal curves with radius up to 300 m width of pavement and roadway shall be increased as per Table 2.4 | On horizontal Curves with radius up to 300 m width of pavement and roadway shall be increased as per Plan & Profile drawings given in Annexure – III of Schedule A |
| 3 | 2.9.4 | **Radius of Horizontal Curves:** | Radius of Horizontal curves shall be as per the alignment plan shown in Plan & Profile drawings given in **Annexure-III** of **Schedule A.** |

SCHEDULE - E

*(See Clauses 2.1 and 14.2)*

## MAINTENANCE REQUIREMENTS

### 1. Maintenance Requirements

1.1 The Contractor shall, at all times 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-fulfilment 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.

### 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: SP35. 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 a Force Majeure Event or default or neglect of the Authority shall be undertaken by the Authority at its own cost. The Authority may instruct the Contractor to undertake the repairs at the rates agreed between the Parties.

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 |
|---|---|---|
| **ROADS** | | |
| **(a)** | **Carriageway and paved shoulders** | |
| (i) | Breach or blockade | Temporary restoration of traffic within 24 hours; permanent restoration within 15 (fifteen) days |
| (ii) | Roughness value exceeding 2,200 mm in a stretch of 1 km (as measured by a calibrated bump integrator) | 120 (one hundred and twenty) days |
| (iii) | Pot holes | 24 hours |
| (iv) | Any cracks in road surface | 15 (fifteen) days |
| (v) | Any depressions, rutting exceeding 10 mm in road surface | 30 (thirty) days |
| (vi) | Bleeding/skidding | 7 (seven) days |
| (vii) | Any other defect/distress on the road | 15 (fifteen) days |
| (viii) | Damage to pavement edges | 15 (fifteen) days |
| (ix) | Removal of debris, dead animals | 6 hours |
| **(b)** | **Granular earth shoulders, side slopes, drains and culverts** | |
| (i) | Variation by more than 1 % in the prescribed slope of camber/cross fall (shall not be less than the camber on the main carriageway) | 7 (seven) days |
| (ii) | Edge drop at shoulders exceeding 40 mm | 7 (seven) days |
| (iii) | Variation by more than 15% in the prescribed side (embankment) slopes | 30 (thirty) days |
| (iv) | Rain cuts/gullies in slope | 7 (seven) days |
| (v) | Damage to or silting of culverts and side drains | 7 (seven) days |
| (vi) | Desilting of drains in urban/semi-urban areas | 24 hours |
| (vii) | Railing, parapets, crash barriers | 7 (seven) days (Restore immediately if causing safety hazard) |
| **(c)** | **Road side furniture including road sign and pavement marking** | |
| (i) | Damage to shape or position, poor visibility or loss of retro-reflectivity | 48 hours |
| (ii) | Painting of km stone, railing, parapets, crash barriers | As and when required/Once every year |

| Nature of Defect or deficiency | | Time limit for repair/rectification |
|---|---|---|
| (iii) | Damaged/missing road signs requiring replacement | 7 (seven) days |
| (iv) | Damage to road mark ups | 7 (seven) days |
| **(d)** | **Road Lighting** | |
| (i) | Any major failure of the system | 24 hours |
| (ii) | Faults and minor failures | 8 hours |
| **(e)** | **Trees and Plantation** | |
| (i) | Obstruction in a minimum head-room of 5 m above carriageway or obstruction in visibility of road signs | 24 hours |
| (ii) | Removal of fallen trees from carriageway | 4 hours |
| (iii) | Deterioration in health of trees and bushes | Timely watering and treatment |
| (iv) | Trees and bushes requiring replacement | 30 (thirty) days |
| (v) | Removal of vegetation affecting sight line and road structures | 15 (fifteen) days |
| **(f)** | **Rest Area** | |
| (i) | Cleaning of toilets | Every 4 hours |
| (ii) | Defects in electrical, water and sanitary installations | 24 hours |
| **(g)** | **Toll Plazas** | |
| **(h)** | **Other Project Facilities and Approach Roads** | |
| (i) | Damage in approach roads, pedestrian facilities, truck lay-byes, bus-bays, bus-shelters, cattle crossings, [Traffic Aid Posts, Medical Aid Posts] and service roads | 15 (fifteen) days |
| (ii) | Damaged vehicles or debris on the road | 4 (four) hours |
| (iii) | Malfunctioning of the mobile crane | 4 (four) hours |
| **Bridges** | | |
| **(a)** | **Superstructure** | |
| (i) | Any damage, cracks, spalling/ scaling<br>Temporary measures<br>Permanent measures | within 48 hours<br>within 15 (fifteen) days or as specified by the Authority's Engineer |
| **(b)** | **Foundations** | |
| (i) | Scouring and/or cavitation | 15 (fifteen) days |
| **(c)** | **Piers, abutments, return walls and wing walls** | |
| (i) | Cracks and damages including settlement and tilting, spalling, scaling | 30 (thirty) days |
| **(d)** | **Bearings (metallic) of bridges** | |
| (i) | Deformation, damages, tilting or shifting of bearings | 15 (fifteen) days<br>Greasing of metallic bearings once in a year |
| **(e)** | **Joints** | |

| Nature of Defect or deficiency | | Time limit for repair/rectification |
|---|---|---|
| (i) | Malfunctioning of joints | 15 (fifteen) days |
| **(f)** | **Other items** | |
| (i) | Deforming of pads in elastomeric bearings | 7 (seven) days |
| (ii) | Gathering of dirt in bearings and joints; or clogging of spouts, weep holes and vent-holes | 3 (three) days |
| (iii) | Damage or deterioration in kerbs, parapets, handrails and crash barriers | 3 (three) days<br>(Immediately within 24 hours if posing danger to safety) |
| (iv) | Rain-cuts or erosion of banks of the side slopes of approaches | 7 (seven) days |
| (v) | Damage to wearing coat | 15 (fifteen) days |
| (vi) | Damage or deterioration in approach slabs, pitching, apron, toes, floor or guide bunds | 30 (thirty) days |
| (vii) | Growth of vegetation affecting the structure or obstructing the waterway | 15 (fifteen) days |
| **(g)** | **Hill Roads** | |
| (i) | Damage to retaining wall/breast wall | 7 (seven) days |
| (ii) | Landslides requiring clearance | 12 (twelve) hours |
| (iii) | Snow requiring clearance | 24 (twenty-four) hours |

[Note: Where necessary, the Authority may modify the time limit for repair/rectification, or add to the nature of Defect or deficiency before issuing the bidding document, with the approval of the competent authority.]

SCHEDULE - F
(See Clause 3.1.7(a))

## APPLICABLE PERMITS

### 1 Applicable Permits

1.1 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 or clearances required under Applicable Laws.

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

1.3 The agency needs to ensure compliance of AIP and FC stated in schedules 'A', Annexure – IV. The necessary certifications need to be obtained from competent local forest department.

1.4 Muck dumping locations in forest area to be freezed in consultation with the forest department, the necessary certifications from local competent forest department is to be submitted.

SCHEDULE - G

(See Clauses 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,
National Highways & Infrastructural Development Corporation Ltd.
PTI Building, 3rd Floor,
4, Parliament Street
New Delhi - 110001

WHEREAS:

_____ [name and address of contractor] (hereinafter called the "**Contractor**")

and Managing Director, NHIDCL, PTI Building, 3rd Floor, 4, Parliament Street, New Delhi-110001(hereinafter called the **"Authority"**) have entered into an agreement (hereinafter called the "Agreement") for the "***Construction of two lane with paved shoulder of Kohima-Bypass Road connecting NH-39 (New NH-02), NH-150(New NH-02), NH-61(New NH-29) and NH-39 (New NH-02) from Design Km 0.00 to design Km 10.500 [Design Length – 10.500 Km] in the state of Nagaland Under SARDP-NE on EPC Mode (Package I)"***

, subject to and in accordance with the provisions of the Agreement

A. 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/ Defects Liability Period and Maintenance Period} (as defined in the Agreement) in a sum of Rs….. cr. (Rupees ……..….. crore) (the "**Guarantee Amount**").

B. 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 the {Construction Period/ Defects Liability Period and Maintenance Period} 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 [General Manager in the National Highways & Infrastructural Development Corporation Ltd], 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 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 Agreement or to extend the time or period for the compliance with, fulfilment 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 fulfilment, 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 Guarantee shall cease to be in force and effect on ****[$]. Unless a demand or claim under this Guarantee is made in writing before expiry of the Guarantee, the Bank shall be discharged from its liabilities hereunder.

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 authorised 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 paragraph 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 thereunder claimed, the said branch shall accept such invocation letter and make payment of amounts so demanded under the said invocation.

13. Bank Guarantee has been sent to authority's bank through SFMS gateway as per the details below: -

| Sr. No. | Particulars | Details |
|---|---|---|
| 1 | Name of Beneficiary | MD-NHIDCL |
| 2 | Beneficiary Bank Account No | 90621010002610 |
| 3 | Beneficiary Bank Branch Name and Address | Canara Bank (erstwhile Syndicate Bank), Transport Bhawan, 1st Parliament Street, New Delhi-110001 |
| **4** | **Beneficiary Bank Branch IFSC** | **CNRB0019062** |
| **5.** | **Email ID:** | cb19062@canarabank.com |

[$]Insert date being 2 (two) years from the date of issuance of this Guarantee (in accordance with Clause 7.2 of the Agreement).

Construction of two lane with paved shoulder of Kohima-Bypass Road connecting NH-39 (New NH-02), NH-150(New NH-02), NH-61(New NH-29) and NH-39 (New NH-02) from Design Km 0.00 to design Km 10.500 [Design Length – 10.500 Km] in the state of Nagaland Under SARDP-NE on EPC Mode (Package I)"

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 7.5.3)

**Form for Guarantee for Withdrawal of Retention Money**

The Managing Director,
National Highways & Infrastructural Development Corporation Ltd.
PTI Building, 3rd Floor,
4, Parliament Street
New Delhi - 110001

WHEREAS:

(A) [name and address of contractor] (hereinafter called the "**Contractor**") has executed an agreement (hereinafter called the "Agreement") with the and The Managing Director , NHIDCL, PTI Building, New Delhi (hereinafter called the **"Authority"**) have entered into an agreement (hereinafter called the "Agreement") for the ***Construction of two lane with paved shoulder of Kohima-Bypass Road connecting NH-39 (New NH-02), NH-150(New NH-02), NH-61(New NH-29) and NH-39 (New NH-02) from Design Km 0.00 to design Km 10.500 [Design Length – 10.500 Km] in the state of Nagaland Under SARDP-NE on EPC Mode (Package I)"***, subject to and in accordance with the provisions of the Agreement.

(B) In accordance with Clause 7.5.3 of the Agreement, the Contractor may withdraw the retention money (hereinafter called the "**Retention Money**") after furnishing to the Authority a bank guarantee for an amount equal to the proposed withdrawal.

(C) We, ……. through our branch at ……. (the "**Bank**") have agreed to furnish this bank guarantee (hereinafter called the "**Guarantee**") for the amount of Rs. --------- cr. (Rs. ---------crore) (the "**Guarantee Amount**").

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

1. The Bank hereby unconditionally and irrevocably 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 General Manager in the National Highways & Infrastructural Development Corporation Ltd, that the Contractor has committed default in the due and faithful performance of all or any of its obligations for 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 Retention Money and 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 Retention Money.

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 date of the Completion Certificate specified in Clause 12.4 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 up to the date specified in paragraph 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 thereunder claimed, the said branch shall accept such invocation letter and make payment of amounts so demanded under the said invocation.

13. Bank Guarantee has been sent to authority's bank through SFMS gateway as per the details below: -

| Sr. No. | Particulars | Details |
|---|---|---|
| 1 | Name of Beneficiary | MD-NHIDCL |
| 2 | Beneficiary Bank Account No | 90621010002610 |
| 3 | Beneficiary Bank Branch Name and Address | Canara Bank (erstwhile Syndicate Bank), Transport Bhawan, 1st Parliament Street, New Delhi-110001 |
| **4** | **Beneficiary Bank Branch IFSC** | **CNRB0019062** |
| **5.** | **Email ID:** | cb19062@canarabank.com |

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 – III
(Schedule - G)
(See Clause 19.2)

## Form for Guarantee for Advance Payment

The Managing Director,
National Highways & Infrastructural Development Corporation Ltd.
PTI Building, 3rd Floor,
4, Parliament Street
New Delhi - 110001

WHEREAS:

(A) [name and address of contractor] (hereinafter called the "Contractor") has executed an agreement (hereinafter called the "Agreement") with the Managing Director, Head Office New Delhi (hereinafter called the "Authority") have entered into an agreement (hereinafter called the "Agreement") for the ***Construction of two lane with paved shoulder of Kohima-Bypass Road connecting NH-39 (New NH-02), NH-150(New NH-02), NH-61(New NH-29) and NH-39 (New NH-02) from Design Km 0.00 to design Km 10.500 [Design Length – 10.500 Km] in the state of Nagaland Under SARDP-NE on EPC Mode (Package I)"***

, 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 an interest free advance payment (herein after called "**Advance Payment**") equal to 10% (ten per cent) of the Contract Price; and that the Advance Payment shall be made in three installments subject to the Contractor furnishing an irrevocable and unconditional guarantee by a scheduled bank for an amount equivalent to 110% (one hundred and ten percent) of such 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. The amount of {first/second/third} installment of the Advance Payment is Rs. ------ cr. (Rupees ------ crore) and the amount of this Guarantee is Rs. ------- cr. (Rupees ------ crore) (the **"Guarantee Amount")**[$]**.**

(C) 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 instalment of the Advance Payment under and in accordance with the Agreement, and agrees and undertakes to pay to the Authority,

[$]The Guarantee Amount should be equivalent to 110% of the value of the applicable instalment.

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 [General Manager in the National Highways & Infrastructural Development Corporation Ltd], that the Contractor has committed default in the due and faithful performance of all or any of its obligations for the repayment of the instalment 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 on ****.[$] Unless a demand or claim under this Guarantee is made in writing on or before the aforesaid date, the Bank shall be discharged from its liabilities hereunder.

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 authorised 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 up to the date specified in paragraph 8 above or until it is released earlier by the Authority pursuant to the provisions of the Agreement.

---

[$] Insert a date being 90 (ninety) days after the end of one year from the date of payment of the Advance payment to the Contractor (in accordance with Clause 19.2 of the Agreement).

12. This guarantee shall also be operatable 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 thereunder claimed, the said branch shall accept such invocation letter and make payment of amounts so demanded under the said invocation.

13. Bank Guarantee has been sent to authority's bank through SFMS gateway as per the details below: -

| Sr. No. | Particulars | Details |
|---|---|---|
| 1 | Name of Beneficiary | MD-NHIDCL |
| 2 | Beneficiary Bank Account No | 90621010002610 |
| 3 | Beneficiary Bank Branch Name and Address | Canara Bank (erstwhile Syndicate Bank), Transport Bhawan, 1st Parliament Street, New Delhi-110001 |
| **4** | **Beneficiary Bank Branch IFSC** | **CNRB0019062** |
| **5.** | **Email ID:** | cb19062@canarabank.com |

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.

## Schedule-H
## Kohima Bypass Package I

*(See Clauses10.1 (iv) and 19.3)*

## Contract Price Weightages

1. The Contract Price for this Agreement is Rs. _____ Crore rupees.

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

| Item | Weightage in % of CP | Stage for Payment | Percentage weightage |
|---|---|---|---|
| 1 | 2 | 3 | 4 |
| Road Works including Culverts, widening and repair of culverts | 30.18 | **A- Widening and strengthening of existing road** | |
| | | (1) Earthwork up to top of the sub- grade including excavation in soil, soft rock and hard rock, removal of unserviceable soil etc. | - |
| | | (2) Sub-base Course | - |
| | | (3) Non bituminous Base course | - |
| | | (4) Bituminous Base course | - |
| | | (5) Wearing Coat | - |
| | | (6) Widening and repair of culverts | - |
| | | **B.1- Reconstruction/New 2-Lane Realignment / Bypass (Flexible Pavement)** | - |
| | | (1) Earthwork up to top of the sub- grade including excavation in soil, soft rock and hard rock, removal of unserviceable soil etc. | 38.86 |
| | | (2) Sub-base Course | 12.48 |
| | | (3) Non bituminous Base course | 15.09 |
| | | (4) Bituminous Base course | 16.03 |
| | | (5) Wearing Coat | 7.48 |
| | | **B.2- Reconstruction/New 2-Lane Realignment / Bypass (Rigid Pavement)** | - |
| | | (1) Earthwork up to top of the sub- grade | - |
| | | (2) Sub-base Course | - |
| | | (3) Dry Lean Concrete (DLC) Course | - |

| | | | |
|---|---|---|---|
| | | (4) Pavement Quality Control (PQC) Course | - |
| | | **C.1- Reconstruction/ New Service Road/ Slip Road (Flexible Pavement)** | - |
| | | (1) Earthwork up to top of the sub- grade | - |
| | | (2) Sub-base Course | - |
| | | (3) Non bituminous Base course | - |
| | | (4) Bituminous Base course | - |
| | | (5) Wearing Coat | - |
| | | **C.2- Reconstruction/New Service road (Rigid Pavement)** | - |
| | | (1) Earthwork up to top of the sub- grade | - |
| | | (2) Sub-base Course | - |
| | | (3) Dry Lean Concrete (DLC) Course | - |
| | | (4) Pavement Quality Control (PQC) Course | - |
| | | **D- Reconstruction & New Culverts on existing road, realignments, bypasses** | |
| | | (1) Hume Pipe Culverts (length < 6m) | - |
| | | (2) Box Culverts (length <6m) | 10.06 |
| **Minor bridge/ Underpasses/ Overpasses** | 1.30 | **A.1- Widening and repairs of Minor Bridges (length > 6m & < 60m)** | |
| | | **A.2- New Minor bridges (length >6 m and < 60 m)** | |
| | | (1) Foundation: On completion of the foundation work including foundations for wing and return walls | - |
| | | (2) Sub-structure: On completion of abutments, piers upto the abutment / pier cap | - |
| | | (3) Super-structure: On completion of the super-structure in all respects including wearing coat, bearings, expansion joints, hand rails, crash barriers, road signs & markings, tests on completion etc complete in all respect. | - |

| | | | |
|---|---|---|---|
| | | (4) Approaches: On completion of approaches including Retaining walls, stone pitching, protection works complete in all respect, and fit for use | - |
| | | (5) Guide Bunds and River Training Works: On completion of Guide Bunds and river training works complete in all respects | - |
| | | **B.1- Widening and repairs of underpasses/overpasses** | - |
| | | **B.2- New Underpasses/Overpasses** | |
| | | (1) Foundation: On completion of the foundation work including foundations for wing and return walls | 14.79 |
| | | (2) Sub-structure: On completion of abutments, piers upto the abutment/ pier cap | 22.18 |
| | | (3) Super-structure: On completion of the super-structure in all respects including wearing coat, bearings, expansion joints, hand rails, crash barriers, road signs & markings, tests on completion in all respect. | 59.06 |
| | | (4) Approaches : On completion of approaches including Retaining walls / Reinforced earth walls, stone pitching, protection works complete in all respect and fit for use | 3.97 |
| **Major bridge(length>60 m) works and ROB/RUB/ elevated sections/flyovers including viaducts, if any** | 50.12 | **A.1- Widening and repairs of Major Bridges** | |
| | | (1) Foundation | |
| | | (2) Sub-structure | - |
| | | (3) Super-structure (including bearings) | - |
| | | (4) Wearing Coat including expansion joints | - |
| | | (5) Miscellaneous Items like hand rails, crash barrier, road markings etc. | - |
| | | (6) Wing walls/return walls upto top | - |

| | | | |
|---|---|---|---|
| | | (7) Guide bunds, River Training works etc. | - |
| | | (8) Approaches (including Retaining walls, stone pitching and protection works) | - |
| | | **A.2- New Major Bridges** | - |
| | | (1) Foundation: Foundation for abutment , piers | 17.21 |
| | | (2) Sub-structure: Sub structure for abutment, piers upto abutment / pier cap level | 21.37 |
| | | (3) Super-structure: including girder, deck slab, bearings (excluding wearing coat and expansion joints) | |
| | | a) Super structure: casting of girder / fabrication of girders (steel) | 19.91 |
| | | b) Super structure: casting of segments | 0.00 |
| | | c) Super structure: erection of girders, deck slab and bearings | 29.87 |
| | | (4) Other Ancillary work: wearing coat, expansion joints, hand rails, crash barriers, tests on completion etc complete in all respect | 5.70 |
| | | (5) Miscellaneous works including Approaches: stone pitching, protection work excluding retaining wall / reinforced earth walls etc | 1.77 |
| | | (6) Wing walls/return walls upto full height | 2.40 |
| | | (7) Guide bunds, River Training works etc. | 0.00 |
| | | (8) Retaining walls / Reinforced earth walls etc | |
| | | a) Panel Casting | 0.00 |
| | | b) Erection of panel / construction of retaining wall | 1.77 |
| | | **B.1- Widening and repairs of**<br>**(a) ROB**<br>**(b) RUB** | |
| | | (1) Foundations | |
| | | (2) Sub-Structure | - |
| | | (3) Super-Structure (Including bearings) | - |

| | | | |
|---|---|---|---|
| | | (4) Wearing Coat (a) in case of ROB-wearing coat including expansion joints complete in all respects as specified and | - |
| | | (b) in case of RUB-rigid pavement under RUB including drainage facility complete in all respects as specified | - |
| | | (5) Miscellaneous Items like hand rails, crash barrier, road markings etc. | - |
| | | (6) Wing walls/Return walls | - |
| | | (7) Approaches (including Retaining walls, stone pitching, protection works etc.) | - |
| | | **B.2- New ROB/RUB** | - |
| | | (1) Foundations: Foundation for abutment, piers | |
| | | (2) Sub-Structure: Sub structure for abutment, piers upto abutment / pier cap level | - |
| | | (3) Super-Structure: including girder, deck slab, bearings( excluding wearing cost and expansion joints) | - |
| | | a) Super structure: casting of girder / fabrication of girders (steel) | |
| | | b) Super structure: casting of segments | |
| | | c) Super structure: erection of girders, deck slab and bearings | |
| | | (4) Other Ancillary work: wearing coat, expansion joints, hand rails, crash barriers, tests on completion etc complete in all respect | - |
| | | (5) Miscellaneous works including Approaches: stone pitching, protection work excluding retaining wall / reinforced earth walls etc | - |
| | | (6) Wing walls/return walls upto full height | - |
| | | (7) Guide bunds, River Training works etc. | - |

| | | | |
|---|---|---|---|
| | | (8) Retaining walls / Reinforced earth walls etc | - |
| | | a) Panel Casting | |
| | | b) Erection of panel / construction of retaining wall | |
| | | **C.1- Widening and repair of Elevated Section / Flyovers / Grade Separators** | - |
| | | (1) Foundations | |
| | | (2) Sub-Structure | - |
| | | (3) Super-Structure (Including bearings) | - |
| | | (4) Wearing Coat including expansion joints | - |
| | | (5) Miscellaneous Items like hand rails, crash barrier, road markings etc. | - |
| | | (6) Wing walls/Return walls | - |
| | | (7) Approaches (including Retaining/ Reinforced earth walls, stone pitching, protection works etc.) | - |
| | | **C.2- New Elevated Section / Flyovers / Grade Separators** | - |
| | | | |
| | | (1) Foundations: Foundation for abutment, piers | |
| | | (2) Sub-Structure: Sub structure for abutment, piers upto abutment / pier cap level | - |
| | | (3) Super-Structure: including girder, deck slab, bearings( excluding wearing cost and expansion joints) | - |
| | | a) Super structure: casting of girder / fabrication of girders (steel) | |
| | | b) Super structure: casting of segments | |
| | | c) Super structure: erection of girders, deck slab and bearings | |
| | | (4) Other Ancillary work: wearing coat, expansion joints, hand rails, crash barriers, tests on completion | - |

| | | | |
|---|---|---|---|
| | | etc complete in all respect | |
| | | (5) Miscellaneous works including Approaches: stone pitching, protection work excluding retaining wall / reinforced earth walls etc | - |
| | | (6) Wing walls/return walls upto full height | - |
| | | (7) Guide bunds, River Training works etc. | - |
| | | (8) Retaining walls / Reinforced earth walls etc | |
| | | a) Panel Casting | |
| | | b) Erection of panel / construction of retaining wall | - |
| **Other Works** | 18.40 | (i) Toll Plaza | - |
| | | (ii) Road side drains | - |
| | | Lined Drain | 3.04 |
| | | Unlined Drain | - |
| | | (iii) Road signs markings, Km stones, safety Devices etc. | 3.42 |
| | | (iv) Project facilities | - |
| | | a) Bus Bays & Bus shelters | 2.63 |
| | | b) Truck lay byes | - |
| | | c) Rest areas | - |
| | | d) Junction | 1.63 |
| | | (v) Road side plantation | 0.49 |
| | | (vi) Protection Works other than approaches to the bridges, elevated sections/ flyover/ grade separators and ROBs/ RUBs | - |
| | | (a) W-Beam Crash Barrier | 2.36 |
| | | (b)Retaining Wall | 22.66 |
| | | (c)Breast Wall | 46.27 |
| | | (d) Seeding and Mulching | 4.15 |
| | | (vii) Other Slope protection technique to be executed by Contractor | 13.35 |
| | | (viii) Safety & Traffic Management during const. | - |

## ***Procedure of estimating the value of work done.***

(i) Roadworks

Procedure for estimating the value of road work done shall be as follows:

**Table 1.3.1**

| **Stage for Payment** | **Percentage weightage** | **Payment Procedure** |
|---|---|---|
| **A- Widening and strengthening of existing road** | | |
| (1) Earthwork up to top of the sub- grade including excavation in soil, soft rock and hard rock, removal of unserviceable soil etc. | - | Unit of measurement is linear length. Payment of each stage shall be made on pro rata basis on completion of a stage in a length of not less than 500m.<br>In case of hill cutting, the payment procedure will be as under:<br>Hill cutting: 40% of weightage of A (1)<br>Preparation of subgrade: 60% of weightage of A (1) |
| (2) Sub-base Course | - | Unit of measurement is linear length. Payment of each stage shall be made on pro rata basis on completion of a stage in a length of not less than 500m. |
| (3) Non bituminous Base course | | |
| (4) Bituminous Base course | | |
| (5) Wearing Coat | | |
| (6) Widening and repair of culverts | - | Cost of completed culverts shall be determined on pro rata basis with respect to the total number of culverts. Payment shall be made on the completion of at least five culverts. |
| **B.1- Reconstruction/New 2-Lane Realignment / Bypass (Flexible Pavement)** | - | |
| (1) Earthwork up to top of the sub- grade including excavation in soil, soft rock and hard rock, removal of unserviceable soil etc. | 38.86 | Unit of measurement is linear length. Payment of each stage shall be made on pro rata basis on completion of a stage in a length of not less than 500m.<br>In case of hill cutting, the payment procedure will be as under:<br>Hill cutting: 40% of weightage of B.1 (1)<br>Preparation of subgrade: 60% of weightage of B.1 (1) |

| **Stage for Payment** | **Percentage weightage** | **Payment Procedure** |
|---|---|---|
| (2) Sub-base Course | 12.48 | Unit of measurement is linear length. Payment of each stage shall be made on pro rata basis on completion of a stage in a length of not less than 500m. |
| (3) Non bituminous Base course | 15.09 | |
| (4) Bituminous Base course | 16.03 | |
| (5) Wearing Coat | 7.48 | |
| **B.2- Reconstruction/New 2-Lane Realignment / Bypass (Rigid Pavement)** | - | |
| (1) Earthwork up to top of the sub- grade | - | Unit of measurement is linear length. Payment of each stage shall be made on pro rata basis on completion of a stage in a length of not less than 500m.<br>In case of hill cutting, the payment procedure will be as under:<br>Hill cutting: 40% of weightage of B.2 (2)<br>Preparation of subgrade: 60% of weightage of B.2 (2) |
| (2) Sub-base Course | | Unit of measurement is linear length. Payment of each stage shall be made on pro rata basis on completion of a stage in a length of not less than 500m. |
| (3) Dry Lean Concrete (DLC) Course | | |
| (4) Pavement Quality Control (PQC) Course | | |
| **C.1- Reconstruction/ New Service Road/ Slip Road (Flexible Pavement)** | - | |
| (1) Earthwork up to top of the sub- grade | - | Unit of measurement is linear length. Payment of each stage shall be made on pro rata basis on completion of a stage in a length of not less than 500m.<br>In case of hill cutting, the payment procedure will be as under:<br>Hill cutting: 40% of weightage of C.1 (1)<br>Preparation of subgrade: 60% of weightage of C.1 (1) |
| (2) Sub-base Course | - | Unit of measurement is linear length. Payment of each stage shall be made on pro rata basis on completion of a stage in a length of not less than 500m. |
| (3) Non bituminous Base course | - | |
| (4) Bituminous Base course | - | |
| (5) Wearing Coat | - | |
| **C.2- Reconstruction/New Service road (Rigid Pavement)** | - | |

| **Stage for Payment** | **Percentage weightage** | **Payment Procedure** |
|---|---|---|
| (1) Earthwork up to top of the sub- grade | - | Unit of measurement is linear length. Payment of each stage shall be made on pro rata basis on completion of a stage in a length of not less than 500m.<br>In case of hill cutting, the payment procedure will be as under:<br>Hill cutting: 40% of weightage of C.2 (2)<br>Preparation of subgrade: 60% of weightage of C.2 (2) |
| (2) Sub-base Course | - | Unit of measurement is linear length. Payment of each stage shall be made on pro rata basis on completion of a stage in a length of not less than 500m. |
| (3) Dry Lean Concrete (DLC) Course | - | |
| (4) Pavement Quality Control (PQC) Course | - | |
| **D- Reconstruction & New Culverts on existing road, realignments, bypasses Culverts (length <6m)** | | |
| (1) Hume Pipe Culverts (length < 6m) | | Cost of each culvert shall be determined on pro rata basis with respect to the total number of culverts. Payment shall be made on the completion of at least 01 (one) culvert |
| (2) Box Culverts (length < 6m) | 10.06 | |

@ For example, if the total length of bituminous work to be done is 100 km, the cost per km of bituminous work shall be determined as follows:

Cost per km = P x weightage for road work x weightage for bituminous work x (1/L)

Where

P = Contract Price

L = Total equivalent 2-Lane length in km as defined above

Similarly, the rates per km for other stages shall be worked out accordingly.

**Note: The length affected due to law and order problems or litigation during execution including the length not handed over to the Contractor under clause 8.3 of this Contract Agreement due to which the Contractor is unable to execute the work, may be deducted from the total project length for payment purposes. The total length calculated here is only for payment purposes and will not affect and referred in other clauses of the Contract Agreement**

(ii) Minor Bridges and Underpasses/Overpasses

Procedure for estimating the value of Minor bridge and Underpasses/Overpasses shall be as stated in table 1.3.2:

**Table 1.3.2**

| **Stage for Payment** | **Percentage weightage** | **Payment Procedure** |
|---|---|---|
| **A.1- Widening and repairs of Minor Bridges (length >60 & <60m)** | 0 | Cost of each minor bridges shall be determined on pro rata basis with respect to the total linear length of the minor bridges. Payment shall be made on completion of widening and repair works of a minor bridge |
| **A.2- New Minor bridges (length >6 m and < 60 m)** | | Cost of each minor bridges shall be determined on pro rata basis with respect to the total linear length of the minor bridges. |
| (1) Foundation: On completion of foundation work including foundation for wing and return walls | 0 | (1) Foundation: Payment against foundation shall be made on pro-rata basis on completion of at least two foundations. In case where load testing is required for foundation, the trigger of first payment shall include load testing also where specified. |
| (2) Sub structure: On completion of abutments, piers upto the abutment / pier cap. | 0 | (2) Sub structure: Payment against sub structure shall be made on pro-rata basis on completion of at least two sub structures upto abutment / pier cap level of each bridge. |
| (3) Super-structure: On completion of the super-structure in all respects including wearing coat, bearings, expansion joints, hand rails, crash barriers, road signs & markings, tests on completion etc complete in all respect. | 0 | (3) Super-structure: Payment shall be made on pro-rata basis on completion of a stage i.e. completion of super structure of at least one span in all respects as specified in the column of "Stage of Payment" in this sub-clause. |
| (4) Approaches: On completion of approaches including Retaining walls, stone pitching, protection works complete in all respect and fit for use | 0 | (4) Approaches: Payment shall be made on pro-rata basis on completion of a stage i.e. completion of approaches in all respect as specified in the column of "Stage of Payment" in this sub-clause. |

| **Stage for Payment** | **Percentage weightage** | **Payment Procedure** |
|---|---|---|
| (5) Guide Bunds and River Training Works: On completion of Guide Bunds and river training works complete in all respects | 0 | (5) Guide Bunds and River Training works: Payment shall be made on pro-rata basis on completion of a stage i.e. completion of Guide Bunds and River training Works in all respects as specified |
| **B.1- Widening and repairs of underpasses / overpasses** | 0 | Cost of each underpass / overpass shall be determined on pro rata basis with respect to the total linear length of the underpasses / overpasses. Payment shall be made on completion of widening & repair works of a underpass / overpass. |
| **B.2- New Underpasses / Overpasses** | | Cost of each underpass / overpass shall be determined on pro rata basis with respect to the total linear length of the underpasses / overpasses. |
| (1) Foundation: On completion of the foundation work including foundations for wing and return walls. | 14.79 | (1) Foundation: Payment against foundation shall be made on pro-rata basis on completion of at least two foundations. In case where load testing is required for foundation, the trigger of first payment shall include load testing also where specified. |
| (2) Sub structure: On completion of abutments, piers upto the abutment / pier cap | 22.18 | (2) Sub structure: Payment against sub structure shall be made on pro-rata basis on completion of at least two substructures upto abutment / pier cap level of each underpass / overpass. |
| (3) Super-structure: On completion of the super-structure in all respects including wearing coat, bearings, expansion joints, hand rails, crash barriers, road signs & markings, tests on completion in all respect. | 59.06 | (3) Super-structure: Payment shall be made on pro-rata basis on completion of a stage i.e. completion of super structure of at least one span in all respects as specified in the column of "Stage of Payment" in this sub-clause. |
| (4) Approaches : On completion of approaches including Retaining walls / Reinforced earth walls, stone pitching, protection works complete in all respect and fit for use | 3.97 | (4) Approaches: Payment shall be made on pro-rata basis on completion of a stage i.e. completion of approaches in all respect as specified in the column of "Stage of Payment" in this sub- clause. |

(iii) Major Bridgeworks, ROB/RUB and Structures

Procedure for estimating the value of Major Bridge works, ROB/RUB and Structures Work shall be as stated in table 1.3.3:

**Table 1.3.3**

| **Stage of Payment** | **Weightage** | **Payment Procedure** |
|---|---|---|
| **A.1- Widening and repairs of Major Bridges** | | |
| (1) Foundation: | 0 | (1) Foundation: Cost of each Major Bridge shall be determined on pro rata basis with respect to the total linear length (m) of the Major Bridge. Payment against foundation shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of foundation of the major Bridge subject to completion of atleast two foundations of the major bridge.<br>In case where load testing is required for foundation, the trigger of first payment shall include load testing also where specified. |
| (2) Sub-structure: | 0 | (2) Sub-structure: Payment against sub-structure shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of sub- structure of major bridge subject to completion of atleast two sub structures of abutment / pier cap level of the major bridge |
| (3) Super-structure (including bearings) | 0 | (3) Super-structure: Payment shall be made on pro-rata basis on completion of a stage i.e. completion of super structure including bearings of atleast one span in all respects as specified. |
| (4) Wearing Coat including expansion joints | 0 | (4) Wearing Coat: Payment shall be made on completion of wearing coat including expansion joints complete in all respects as specified. |
| (5) Miscellaneous Items like hand rails, crash barrier, road markings etc. | 0 | (5) Miscellaneous: Payments shall be made on completion of all miscellaneous works like hand rails, crash barriers, road markings etc. complete in all respects as specified. |
| (6) Wing walls/return walls upto top | 0 | (6) Wing walls/return walls: Payments shall be made on completion of all wing walls/return walls complete in all respects as specified. |

| Stage of Payment | Weightage | Payment Procedure |
|---|---|---|
| (7) Guide bunds, River Training works etc. | 0 | (7) Guide Bunds, River Training works: Payments shall be made on completion of all guide bunds/river training works etc. complete in all respects as specified. |
| (8) Approaches (including Retaining walls, stone pitching and protection works) | 0 | (8) Approaches: Payments shall be made on completion of both approaches including stone pitching and protection works etc complete in all respects as specified |
| **A.2- New Major Bridges** | | Cost of each structure shall be determined on prorata basis in respect to total linear length (m) of all the structures. Payment shall be made on completion of each stage of structures as per weightage given in this table. |
| (1) Foundation: Foundation for abutment, piers | 17.21 | (1) Foundation: Payment against foundation shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of foundation of a bridge as per weightage given in this table, subject to completion of atleast two foundations in all respect. In case load testing is required for foundation, the trigger for first payment shall include load testing also where specified. |
| (2) Sub-structure: Sub-structure for abutment, piers up to abutment / pier cap level | 21.37 | (2) Sub-structure: Payment against sub-structure shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of sub- structure of a bridge as per weightage given in this table, subject to completion of atleast two sub structures upto abutment/pier cap level of a bridge |
| (3) Super-structure: including girder, deck slab, bearings (excluding wearing coat and expansion joints) | | |
| a) Super structure: casting of girder / fabrication of girder (steel) | 19.91 | (a) Super-structure (casting of girder): Unit of measurement is numbers. Payment against casing of girders shall be made on pro-rata basis with respect to total numbers of girders required in the structures on completion of a stage i.e. not less than completion of casting of at least 5 (five) girders of the structure. |
| b) Super structure: casting of segments | 0.00 | (b) Super-structure (casting of segments): Unit of measurement is numbers. Payment against casing of segments shall be made on pro-rata basis with respect to total numbers of segments required in the structures on completion of a stage i.e. not less than completion of casting of at least 10 (ten) segments of the structure. |

| **Stage of Payment** | **Weightage** | **Payment Procedure** |
|---|---|---|
| c) Super structure: erection of girders, deck slab and bearings | 29.87 | (c) Super-structure (erection of girders, deck slab and bearings): Payment shall be made on pro-rata basis on completion of a stage i.e. completion of super structure including bearing of at least one span in all respect as specified |
| (4) Other Ancillary works: wearing coat, expansion joints, hand rails, crash barriers, tests on completion etc. complete in all respect | 5.70 | Payment shall be made on pro rata basis on completion of the stage in all respect as specified for each structure. |
| (5) Miscellaneous works including Approaches: stone pitching, protection works excluding retaining walls / reinforced earth walls etc. | 1.77 | Payments shall be made on pro rata basis on completion of the stage in all respect as specified for each structure. |
| (6) Wing walls/return wall up to full height | 2.40 | Wing / return wall upto full height**:** Payments shall be made on completion of all wing / return walls for a bridge as per weightage given in this table, complete in all respects as specified. |
| (7) Guide bunds, River Training works etc. | 0.00 | Payments shall be made on pro rata basis on completion of the stage in all respect as specified for each structure. |
| (8) Retaining wall / reinforced earth walls etc | | |
| a) Panel Casting | 0.00 | a) Panel casting: Unit of measurement is area in sqm. Payments against casing of panels shall be made on pro rata basis with respect to total area panels required for the structure on completion of a stage i.e. not less than completion of casting of 25% of scope of the RE wall panel of each bridge. |
| b) Erection of panel / construction of retaining wall | 1.77 | b) Erection of panel / Construction of retaining wall: Unit of measurement is area in sqm. Payments shall be made on pro rata basis on completion of stage i.e. completion of erection of panels / construction of retaining wall complete in all respect for atleast 25% of scope of work for each structure. |
| **B.1- Widening and repairs of** | | |
| **(a) ROB**<br>**(b) RUB** | | |

| Stage of Payment | Weightage | Payment Procedure |
|---|---|---|
| (1) Foundation | 0 | (1) Foundation: Cost of each ROB/RUB shall be determined on pro rata basis with respect to the total linear length (m) of the ROB/RUB. Payment against foundation shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of foundation of the ROB/RUB subject to completion of atleast two foundations of the ROB/RUB. In case where load testing is required for foundation, the trigger of first payment shall include load testing also where specified. |
| (2) Sub-structure | 0 | (2) Sub-structure: Payment against sub-structure shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of sub- structure of ROB/RUB subject to completion of atleast two sub structures of abutment/pier cap level of the ROB/RUB |
| (3) Super-structure (including bearing) | 0 | (3) Super-structure: Payment shall be made on pro-rata basis on completion of a stage i.e. completion of super structure including bearings of atleast one span in all respects as specified. |
| (4) Wearing Coat (a) in case of RoB – wearing coat including expansion joints complete in all respect as specified and (b) in case of RUB - rigid pavement under RUB including drainage facility in all respect as specified | 0 | (4) Wearing Coat: Payment shall be made on completion of (a) in case of ROB-wearing coat including expansion joints complete in all respects as specified and (b) in case of RUB - rigid pavement under RUB including drainage facility complete in all respects as specified. |
| (5) Miscellaneous Items like hand rails, crash barrier, road markings etc. | 0 | (5) Miscellaneous: Payments shall be made on completion of all miscellaneous works like hand rails, crash barriers, road markings etc. complete in all respects as specified. |
| (6) Wing walls/return walls | 0 | (6) Wing walls/return walls: Payments shall be made on completion of all wing walls/return walls complete in all respects as specified. |
| (7) Approaches (including Retaining walls, stone pitching and protection works) | 0 | (7) Approaches: Payments shall be made on completion of both approaches including stone pitching and protection works etc complete in all respects as specified |

| Stage of Payment | Weightage | Payment Procedure |
|---|---|---|
| **B.2- New ROB/ RUB** | | Cost of each structure shall be determined on pro rata basis in respect to the total linear length (m) of all the structures. Payment shall be made on completion of each stage of a structure as per weightage given in this table. |
| (1) Foundation: Foundation for abutment / pier | 0.00 | (1) Foundation: Payment against foundation shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of foundation of the ROB/RUB as per weightage given in this table, subject to completion of atleast two foundations in all respect. In case where load testing is required for foundation, the trigger of first payment shall include load testing also where specified |
| (2) Sub-structure: sub structure for abutment, piers upto abutment / pier cap level | 0.00 | (2) Sub-structure: Payment against sub-structure shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of sub- structure of a ROB/RUB as per weightage given in this table, subject to completion of atleast two sub structures of abutment/pier cap level of a ROB/RUB |
| (3) Super-structure including girder, deck slab, bearings (excluding wearing coat and expansion joints) | | |
| a) Super structure: casting of girders / fabrication of girders (steel) | 0.00 | (a) Super-structure (casting of girder): Unit of measurement is numbers. Payment against casing of girders shall be made on pro-rata basis with respect to total numbers of girders required in the structures on completion of a stage i.e. not less than completion of casting of at least 5 (five) girders of the structure. |
| b) Super structure: casting of segments | 0.00 | (b) Super-structure (casting of segments): Unit of measurement is numbers. Payment against casing of segments shall be made on pro-rata basis with respect to total numbers of segments required in the structures on completion of a stage i.e. not less than completion of casting of at least 10 (ten) segments of the structure. |
| c) Super structure: erection of girders, deck slab and bearings | 0.00 | (c) Super-structure (erection of girders, deck slab and bearings): Payment shall be made on pro-rata basis on completion of a stage i.e. completion of super structure including bearing of at least one span in all respect as specified |

| Stage of Payment | Weightage | Payment Procedure |
|---|---|---|
| (4) Other Ancillary works: wearing coat, expansion joints, hand rails, crash barriers, tests on completion etc complete in all respect | 0.00 | Payment shall be made on pro rata basis on completion of the stage in all respect as specified for each structure. |
| (5) Miscellaneous works including Approaches: stone pitching, protection works excluding retaining walls / reinforced earth walls etc. | 0.00 | Payments shall be made on pro rata basis on completion of the stage in all respect as specified for each structure. |
| (6) Wing walls/return wall upto full height | 0.00 | Wing / return wall upto full height**:** Payments shall be made on completion of all wing / return walls for each ROB / RUB as per weightage given in this table, complete in all respects as specified. |
| (7) Retaining wall / reinforced earth walls etc | | |
| a) Panel Casting | 0.00 | a) Panel casting: Unit of measurement is area in sqm. Payments against casing of panels shall be made on pro rata basis with respect to total area panels required for the structure on completion of a stage i.e. not less than completion of casting of 25% of scope of the RE wall panel of each bridge. |
| b) Erection of panel / construction of retaining wall | 0.00 | b) Erection of panel / Construction of retaining wall: Unit of measurement is area in sqm. Payments shall be made on pro rata basis on completion of stage i.e. completion of erection of panels / construction of retaining wall complete in all respect for atleast 25% of scope of work for each ROB/RUB. |
| **C.1- Widening and repairs of Elevated Section / Flyovers / Grade Separators** | | |

| Stage of Payment | Weightage | Payment Procedure |
|---|---|---|
| (1) Foundation | 0 | (1) Foundation: Cost of each structure shall be determined on pro rata basis with respect to the total linear length (m) of the structure. Payment against foundation shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of foundation of the structure subject to completion of atleast two foundations of the structure. In case where load testing is required for foundation, the trigger of first payment shall include load testing also where specified. |
| (2) Sub-structure | 0 | (2) Sub-structure: Payment against sub-structure shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of sub- structure of the structure subject to completion of atleast two sub structures of abutment/pier cap level of the structure. |
| (3) Super-structure (including bearing) | 0 | (3) Super-structure: Payment shall be made on pro-rata basis on completion of a stage i.e. completion of super- structure including bearings of atleast one span in all respects as specified. |
| (4) Wearing Coat including expansion joints | 0 | (4) Wearing Coat: Payment shall be made on completion of wearing coat including expansion joints complete in all respects as specified |
| (5) Miscellaneous Items like hand rails, crash barrier, road markings etc. | 0 | (5) Miscellaneous: Payments shall be made on completion of all miscellaneous works like hand rails, crash barriers, road markings etc. complete in all respects as specified. |
| (6) Wing walls/return walls | 0 | (6) Wing walls/return walls: Payments shall be made on completion of all wing walls/return walls complete in all respects as specified. |
| (7) Approaches (including Retaining walls, stone pitching and protection works) | 0 | (7) Approaches: Payments shall be made on completion of both approaches including stone pitching and protection works etc complete in all respects as specified |
| **C.2- New Elevated Section/ Flyovers/ Grade Separators** | | Cost of each structure shall be determined on pro rata basis in respect to the total linear length (m) of all the structures. Payment shall be made on completion of each stage of a structure as per weightage given in this table. |

| **Stage of Payment** | **Weightage** | **Payment Procedure** |
|---|---|---|
| (1) Foundation: Foundation for abutment / pier | 0.00 | (1) Foundation: Payment against foundation shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of foundation of each structure as per weightage given in this table, subject to completion of atleast two foundations in all respect. In case where load testing is required for foundation, the trigger of first payment shall include load testing also where specified |
| (2) Sub-structure: sub structure for abutment, piers upto abutment / pier cap level | 0.00 | (2) Sub-structure: Payment against sub-structure shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of sub- structure of each structure as per weightage given in this table, subject to completion of atleast two sub structures of abutment/pier cap level of each structure. |
| (3) Super-structure including girder, deck slab, bearings (excluding wearing coat and expansion joints) | | |
| a) Super structure: casting of girders / fabrication of girders (steel) | 0.00 | (a) Super-structure (casting of girder): Unit of measurement is numbers. Payment against casing of girders shall be made on pro-rata basis with respect to total numbers of girders required in the structures on completion of a stage i.e. not less than completion of casting of at least 5 (five) girders of the structure. |
| b) Super structure: casting of segments | 0.00 | (b) Super-structure (casting of segments): Unit of measurement is numbers. Payment against casing of segments shall be made on pro-rata basis with respect to total numbers of segments required in the structures on completion of a stage i.e. not less than completion of casting of at least 10 (ten) segments of the structure. |
| c) Super structure: erection of girders, deck slab and bearings | 0.00 | (c) Super-structure (erection of girders, deck slab and bearings): Payment shall be made on pro-rata basis on completion of a stage i.e. completion of super structure including bearing of at least one span in all respect as specified |

| **Stage of Payment** | **Weightage** | **Payment Procedure** |
|---|---|---|
| (4) Other Ancillary works: wearing coat, expansion joints, hand rails, crash barriers, tests on completion etc complete in all respect | 0.00 | Payment shall be made on pro rata basis on completion of the stage in all respect as specified for each structure. |
| (5) Miscellaneous works including Approaches: stone pitching, protection works excluding retaining walls / reinforced earth walls etc. | 0.00 | Payments shall be made on pro rata basis on completion of the stage in all respect as specified for each structure. |
| (6) Wing walls/return wall upto full height | 0 | (6) Wing / return wall upto full height: Payments shall be made on completion of all wing walls/return walls for each structure as per weightage given in this table, complete in all respects as specified. |
| (7) Retaining wall / reinforced earth walls etc | | |
| a) Panel Casting | 0.00 | a) Panel casting: Unit of measurement is area in sqm. Payments against casing of panels shall be made on pro rata basis with respect to total area panels required for the structure on completion of a stage i.e. not less than completion of casting of 25% of scope of the RE wall panel of each bridge. |
| b) Erection of panel / construction of retaining wall | 0.00 | b) Erection of panel / Construction of retaining wall: Unit of measurement is area in sqm. Payments shall be made on pro rata basis on completion of stage i.e. completion of erection of panels / construction of retaining wall complete in all respect for atleast 25% of scope of work for each ROB/RUB. |

Note: (1) In case of innovative Major Bridge projects like cable suspension/cable stayed/ Extra Dozed and exceptionally long span bridges, the schedule may be modified as per site requirements before bidding with due approval of DG (RD) & SS, MoRT&H.

(2) The Schedule for exclusive tunnel projects may be prepared as per site requirements before bidding with due approval of DG (RD) & SS, MoRT&H.

(iv) Other works.

Procedure for estimating the value of other works done shall be as stated in table 1.3.4:

**Table 1.3.4**

| **Stage for Payment** | **Percentage weightage** | **Payment Procedure** |
|---|---|---|
| (i) Toll Plaza | - | Payment of Toll Plaza shall be made on Pro rata basis as per following completed stages:<br>(i) Rigid pavement upto DLC (LHS) – 12.5%<br>(ii) Rigid pavement upto DLC (RHS) – 12.5%<br>(iii) PQC (LHS) – 25%<br>(iv) PQC (RHS) – 25%<br>(v) Admin Building, Maintenance Building and Misc Works – 10%<br>(vi) Canopy, Toll Booths, Safety Items, Misc Works – 12.5%<br>(vii) Toll Plaza Tunnel – 2.5% |
| (ii) Road side drains | - | Unit of measurement is linear length in km. Payment shall be made on pro rata basis on completion of a stage in a length of not less than 5% (five per cent) of the total length. |
| Lined Drain | 3.04 | |
| Unlined Drain | - | |
| (iii) Road signs markings, Km stones, safety Devices etc. | 3.42 | |
| (iv) Project facilities | - | Payment shall be made on pro rata basis for completed facilities. |
| a) Bus Bays | 2.63 | |
| b) Truck lay byes | - | |
| c) Rest areas | - | |
| d) Junctions | 1.63 | |
| (v) Road side plantation | 0.49 | |
| (vi) Repair of Protection Works other than approaches to the bridges, elevated sections/ flyover/ grade separators and ROBs/ RUBs | - | Unit of measurement is linear length. Payment shall be made on pro rata basis on completion of a stage in a length of not less than 5% (Five per cent) of the total length. |
| (a) W-Beam Crash Barrier | 2.36 | |
| (b)Retaining Wall | 22.66 | |
| (c )Breast Wall | 46.27 | |
| (d) Seeding and Mulching | 4.15 | Unit of measurement is linear length. Payment shall be made on pro rata basis on completion of a stage in a length of not less than 5% (Five percent) of the total length & area of not less than 10% of the total area. |
| (vii) Other Slope protection technique to be executed by | 13.35 | Unit of measurement is linear length. Payment shall be made on |

| | | |
|---|---|---|
| Contractor | | pro rata basis on completion of a stage in a length of not less than 5% (Five per cent) of the total length. |
| (viii) Safety & Traffic Management during const. | - | Payment shall be made on prorate basis every six months. |

Note 1: The weightage for the stages of superstructure for New Major Bridges, New RoB / RUB, New Elevated sections / flyover / grade separators as mentioned in sl no 3 of A2, B2 & C2 of Table 1.3.3 will be as under:

a) Casting of girders – 40%
b) Erection of girders – 60%
c) Casting of segments – 40%
d) Erection of segments – 60%

Note 2: The weightage for the Retaining walls / Reinforced Earth walls for New Major Bridges, New RoB / RUB, New Elevated sections / flyover / grade separators as mentioned in sl no 8 of A2 and sl no 7 of B2 & C2 respectively of Table 1.3.3 will be as under:

a) Casting of Panels – 40%
b) Erection of Panels – 60%

Note 3: The weightage pertaining to the sub stage of Toll Plaza mentioned in sl no (i) of other works as in table 1.3.4 will be as under:

a) Rigid pavement upto DLC (LHS) -12.5%
b) Rigid pavement upto DLC (RHS) – 12.5%
c) PQC (LHS) – 25%
d) PQC (RHS) – 25%
e) Admin Building, Maintenance Building & Misc Works – 10%
f) Canopy, Toll Booth, Safety items & Misc works – 12.5%
g) Toll Plaza Tunnel – 2.5%

2. Procedure for payment for Maintenance during DLP:-

(a) The cost for maintenance shall be as stated in Clause14.1 (v).

(b) Payment for Maintenance shall be made in accordance with the provisions of Article 14 and Article 19.

SCHEDULE - I
(See Clause 10.2.4)

# 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

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

1. A minimum list of the drawings of the various components/elements of the project highway and project facility required to be submitted by the Contractor is given below:
    - (a) Drawing of plan, profile and cross sections
    - (b) Drawings of cross drainage works
    - (c) Drawings of junctions
    - (d) Drawing of typical cross sections
    - (e) Drawings of bus-bay and bus shelters with furniture and drainage system
    - (f) Drawing of a truck parking lay bye with furniture and drainage system
    - (g) Drawings of road furniture items including traffic signage, marking, safety barriers, etc.
    - (h) Drawings of traffic diversions plans and traffic control measures
    - (i) Drawings of road drainage measures
    - (j) Drawings of typical details slope protection measures

## Schedule – J

*(See Clause 10.3 (ii))*

## 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

(i) Project Milestone-I shall occur on the date falling on the **[256th ]** day from the Appointed Date (the "**Project Milestone- I**").

(ii) 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 for an amount not less than 10% (ten per cent) of the Contract Price.

### 3. Project Milestone-II

(i) Project Milestone-II shall occur on the date falling on the **[438th ]** day from the Appointed Date (the "**Project Milestone- II**").

(ii) Prior to the occurrence of Project Milestone-II, the Contractor shall have continued with construction of the Project Highway and submitted to the Authority duly and validly prepared Stage Payment Statements for an amount not less than 35% (thirty five per cent) of the Contract Price **and should have started construction of all bridges**

### 4. Project Milestone-III

(i) Project Milestone-III shall occur on the date falling on the **[620th ]** day from the Appointed Date (the "**Project Milestone- III**").

(ii) 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 Stage Payment Statements for an amount not less than 70% (seventy per cent) of the Contract Price and **should have** started construction of all project facilities.

**5. Scheduled Completion Date**

(i) The Scheduled Completion Date shall occur on the **[730th ]** day from the Appointed Date.

(ii) 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

1.1 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.

1.2 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

2.1 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 (to be decided in consultation with Authority's Engineer as per relevant IRC codes/manual).

2.2 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 2,000 (two thousand) mm for each kilometre.

2.3 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 Non-destructive 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) metres or more shall also be subjected to load testing.

2.4 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.

2.5 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.

2.6 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)

**PROVISIONAL CERTIFICATE**

***1*** I, ……. (Name of the Authority's Engineer), acting as the Authority's Engineer, under and in accordance with the Agreement dated ……. (the "Agreement"), for ***Construction of two lane with paved shoulder of Kohima-Bypass Road connecting NH-39 (New NH-02), NH-150(New NH-02), NH-61(New NH-29) and NH-39 (New NH-02) from Design Km 0.00 to design Km 10.500 [Design Length – 10.500 Km] in the state of Nagaland Under SARDP-NE on EPC Mode (Package I)***

2 (the "Project Highway") on Engineering, Procurement and Construction (EPC) basis through …… (Name of Contractor), hereby certify that the Tests in accordance with Article 12 of the Agreement have been undertaken to determine compliance of the Project Highway with the provisions of the Agreement.

3 Works that are incomplete on account of Time Extension have been specified in the Punch List appended hereto, and the Contractor has agreed and accepted that it shall complete all such works in the time and manner set forth in the Agreement. In addition, certain minor works are incomplete and these are not likely to cause material inconvenience to the Users of the Project Highway or affect their safety. The Contractor has agreed and accepted that as a condition of this Provisional Certificate, it shall complete such minor works within 30 (thirty) days hereof. These minor works have also been specified in the aforesaid Punch List.

***4*** In view of the foregoing, I am satisfied that the Project Road ***of Construction of two lane with paved shoulder of Kohima-Bypass Road connecting NH-39 (New NH-02), NH-150(New NH-02), NH-61(New NH-29) and NH-39 (New NH-02) from Design Km 0.00 to design Km 10.500 [Design Length – 10.500 Km] in the state of Nagaland Under SARDP-NE on EPC Mode (Package I)*** can be safely and reliably placed in

service of the Users thereof, and in terms of the Agreement, the Project Highway is hereby provisionally declared fit for entry into operation on this the …… day of …….. 20…...

| | |
|---|---|
| ACCEPTED, SIGNED, SEALED | SIGNED, SEALED AND |
| AND DELIVERED | DELIVERED |
| For and on behalf of | for and on behalf of |
| CONTRACTOR by: | AUTHORITY's ENGINEER by: |
| (Signature) | (Signature) |

## COMPLETION CERTIFICATE

1 I, ……. (Name of the Authority's Engineer), acting as the Authority's Engineer, under and in accordance with the Agreement dated …… (the "Agreement"), for ***Construction of two lane with paved shoulder of Kohima-Bypass Road connecting NH-39 (New NH-02), NH-150(New NH-02), NH-61(New NH-29) and NH-39 (New NH-02) from Design Km 0.00 to design Km 10.500 [Design Length – 10.500 Km] in the state of Nagaland Under SARDP-NE on EPC Mode (Package I)***

(the "Project Highway") on Engineering, Procurement and Construction (EPC) basis 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…..

SIGNED, SEALED AND DELIVERED

For and on behalf of

The 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 deductions 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**

2.1 The following percentages shall govern the payment reduction:

| **S. No.** | **Item/Defect/Deficiency** | **Percentage** |
|---|---|---|
| **(a)** | **Carriageway/Pavement** | |
| (i) | Potholes, cracks, other surface defects | 15% |
| (ii) | Repairs of Edges, Rutting | 5% |
| **(b)** | **Road, Embankment, Cuttings, Shoulders** | |
| (i) | Edge drop, inadequate crossfall, undulations, settlement, potholes, ponding, obstructions | 10% |
| (ii) | Deficient slopes, raincuts, disturbed pitching, vegetation growth, pruning of trees | 5% |
| **(c)** | **Bridges and Culverts** | |
| (i) | Desilting, cleaning. vegetation growth, damaged pitching, flooring, parapets, wearing course, footpaths, any damage to foundations | 20% |
| **S. No.** | **Item/Defect/Deficiency** | **Percentage** |
| (ii) | Any Defects in superstructures, bearings and sub-structures | 10% |
| (iii) | Painting, repairs/replacement kerbs, railings, parapets, guideposts/crash barriers | 5% |

| | | |
|---|---|---|
| **(d)** | **Roadside Drains** | |
| (i) | Cleaning and repair of drains | 5% |
| **(e)** | **Road Furniture** | |
| (i) | Cleaning, painting, replacement of road signs, delineators, road markings, 200 m/km/5$^{th}$ km stones | 5% |
| **(f)** | **Miscellaneous Items** | |
| (i) | Removal of dead animals, broken down/accidental vehicles, fallen trees, road blockades or malfunctioning of mobile crane | 10% |
| (ii) | Any other Defects in accordance with paragraph 1. | 5% |
| **(g)** | **Defects in Other Project Facilities** | 5% |

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

R=P/IOO x M x L1/L

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

M = Monthly lump-sum payment in accordance with the Bid

L1 = Non-complying length

L = Total length of the road,

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

The total amount of reduction shall be arrived at by summation of reductions for such items/Defects/deficiency or non-compliance.

For any Defect in a part of one kilometer, the non-conforming length shall be taken as one kilometer.

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**

1.1 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 National Highways and Infrastructure Development Corporation Ltd, 3rd Floor, PTI Building, 4, Parliament Street, New Delhi – 110001the "**Authority**") and ..... (the "**Contractor**") ***Construction of two lane with paved shoulder of Kohima-Bypass Road connecting NH-39 (New NH-02), NH-150(New NH-02), NH-61(New NH-29) and NH-39 (New NH-02) from Design Km 0.00 to design Km 10.500 [Design Length – 10.500 Km] in the state of Nagaland Under SARDP-NE on EPC Mode (Package I)***, and a copy of which is annexed hereto and marked as Annex-A to form part of this TOR.

1.2 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) 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, the Authority's Engineer shall specify such meaning, scope and nature by issuing a reasoned written statement relying on good industry practice and authentic literature.

## 4 Construction Period

4.1 During the Construction Period, the Authority's Engineer shall review 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 10.1.6. The Authority's Engineer shall complete such review 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 up to 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.

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 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 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 20 (twenty) percent of the quantity or number of tests prescribed for each category or type of test for quality control by the Contractor.

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 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.

5.2 The Authority's Engineer shall undertake regular inspections, at least once every month, to evaluate compliance with the Maintenance Requirements and submit a Maintenance Inspection

Report to the Authority and the Contractor.

5.3 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.

5.4 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.

5.5 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 10 (ten) 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 15 (fifteen) 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 90 (ninety) 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

## 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 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 any 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 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 its liability for any loss, damage, death or bodily injury, or damage to any property (except things insured under Paragraphs 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. 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 not less than value of the contract price.

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 an 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 kilometre.

**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 two lane with paved shoulder of Kohima-Bypass Road connecting NH-39 (New NH-02), NH-150(New NH-02), NH-61(New NH-29) and NH-39 (New NH-02) from Design Km 0.00 to design Km 10.500 [Design Length – 10.500 Km] in the state of Nagaland Under SARDP-NE on EPC Mode (Package I)"(***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)

Construction of two lane with paved shoulder of Kohima- Bypass Road connecting NH-39(New NH-02), NH- 150 (New NH-02), NH-61 (New NH- 29) and NH- 39 (New NH-02) from design km 0.00 to design Km 10.500 (Design Length- 10.500 Km) in the state of Nagaland under SARDP –NE on EPC Mode (Package I)