

## Schedules

## **SCHEDULE- A**

(See Clauses 2.1 and 8.1)

### **SITE OF THE PROJECT**

#### **1 The Site**

- 1.1 Site of the Project Shall include the land, Buildings, Structures and road works as described in Annex-1 of the Schedule-A
  - 1.2 The dates of providing the Right of Way to the Contractor are specified in Annex-II of this Schedule-A
  - 1.3 An inventory of the site including the land, buildings, Structures and road works, Tree 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 Clause8.2.1 of this Agreement.
  - 1.4 The alignment plans of the project are specified in Annex-III. In the case of section where no Modification in the alignment of the project 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 modified.
  - 1.5 The Status of the environment clearances obtained or awaited is given in Annex-IV.
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## SCHEDULE- A

(See Clauses 2.1 and 8.1)

### SITE OF THE PROJECT

#### 1. The Site

- The Project road starts from design km 36.000, (Rangamati) to design km 72.000 (Pati Chhari).

The Design length of project road is 36.000 km. Project Highway shall include the land, buildings, structures and road works as described in Annex-I of this Schedule-A.

|                  | Existing NH-208<br>km | Design<br>Chainage (km) | Remarks                 |
|------------------|-----------------------|-------------------------|-------------------------|
| Start of Project | 183.800               | 36.000                  | start with re-alignment |
| End of Project   | 226.150               | 72.000                  | end with re-alignment   |

- (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, 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/ location referred to in Annex-I to Schedule-A shall be existing chainages.]

**1. Site**

- The Project road starts from design km 36.000, (Rangamati) to design km 72.000 (Pati Chhari).

The design length of project road is 36.000 km.

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

**2. Land**

The Site of the Project highway comprises the land as described below –

| SL. No. | Chainage (km) |        | Right of way (m) | Remarks |
|---------|---------------|--------|------------------|---------|
|         | From          | To     |                  |         |
| 1       | 36+000        | 42+760 | 45               |         |
| 2       | 42+760        | 51+040 | 30               |         |
| 3       | 51+040        | 51+630 | 45               |         |
| 4       | 51+630        | 51+840 | 30               |         |
| 5       | 51+840        | 52+640 | 45               |         |
| 6       | 52+640        | 53+240 | 45               |         |
| 7       | 53+240        | 54+000 | 45               |         |
| 8       | 54+000        | 56+920 | 45               |         |
| 9       | 56+920        | 57+640 | 30               |         |
| 10      | 57+640        | 57+820 | 45               |         |
| 11      | 57+820        | 59+940 | 45               |         |
| 12      | 59+940        | 60+135 | 30               |         |
| 13      | 60+135        | 60+720 | 30               |         |
| 14      | 60+720        | 61+040 | 40               |         |
| 15      | 61+040        | 61+880 | 30               |         |
| 16      | 61+880        | 62+120 | 40               |         |
| 17      | 62+120        | 62+735 | 30               |         |
| 18      | 62+735        | 63+135 | 30               |         |

| SL. No. | Chainage (km) |        | Right of way (m) | Remarks |
|---------|---------------|--------|------------------|---------|
|         | From          | To     |                  |         |
| 19      | 63+135        | 66+480 | 45               |         |
| 20      | 66+480        | 67+235 | 30               |         |
| 21      | 67+235        | 67+735 | 30               |         |
| 22      | 67+735        | 68+320 | 30               |         |
| 23      | 68+320        | 68+600 | 40               |         |
| 24      | 68+600        | 72+000 | 30               |         |

### 3. Carriageway

The existing carriageway of the Project highway is as described below –

| Sl. No. | Existing Chainage (km) |        | Carriage way width (m) | Remarks |
|---------|------------------------|--------|------------------------|---------|
|         | From                   | To     |                        |         |
| 1       | 42.000                 | 42.500 | 3.5 - 4.0              |         |
| 2       | 42.500                 | 58.000 | 5.5                    |         |
| 3       | 58.000                 | 85.600 | 3.5 – 4.0              |         |

The type of the existing pavement is flexible.

#### 4. Major Bridges

The Site includes the following Major Bridge

| Sl. No. | Survey Chainage (km) | Type of Structure |               |                 | No. of Spans with span length (m) | Width (m) |
|---------|----------------------|-------------------|---------------|-----------------|-----------------------------------|-----------|
|         |                      | Foundation        | Sub-Structure | Super structure |                                   |           |
| 1       | 49+450               | CONCRETE BRIDGE   |               |                 | 23.5+23.2+24+24.2 = 94.9          | 7.5       |
| 2       | 64+000               | CONCRETE BRIDGE   |               |                 | 22.4+22.9+24 = 69.3               | 7.5       |

**5 Roadover-Bridge (ROB)/ Road under-Bridge(RUB)**

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

| Sl. 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:

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

## 7 *Minor Bridge*

The Site includes the following minor Bridge:

| Sl. No. | Survey Chainage (km) | Type of Structure  |               |                 | No. of Spans with span length (m) | Width (m) |
|---------|----------------------|--------------------|---------------|-----------------|-----------------------------------|-----------|
|         |                      | Foundation         | Sub-Structure | Super structure |                                   |           |
| 1       | 44+300               | CONCRETE STRUCTURE |               |                 | 94                                | 7.5       |
| 2       | 47+700               | CONCRETE BRIDGE    |               |                 | 10                                | 6.3       |
| 3       | 48+850               | CONCRETE BRIDGE    |               |                 | 5.9+5.9 = 11.8                    | 5.1       |
| 4       | 51+520               | STEEL TRUSS BRIDGE |               |                 | 30                                | 3.5       |
| 5       | 60+725               | CONCRETE BRIDGE    |               |                 | 9.7                               | 6.4       |
| 6       | 62+250               | CONCRETE STRUCTURE |               |                 | 36.5                              | 5.5       |
| 7       | 71+120               | CONCRETE BRIDGE    |               |                 | 2.8+2.8 = 5.6                     | 5.3       |
| 8       | 71+800               | CONCRETE BRIDGE    |               |                 | 19.5                              | 5.9       |
| 9       | 74+050               | CONCRETE BRIDGE    |               |                 | 29                                | 5.5       |
| 10      | 77+680               | CONCRETE BRIDGE    |               |                 | 3.0+3.0+3.0 = 9                   | 5.0       |
| 11      | 82+300               | CONCRETE BRIDGE    |               |                 | 3.0+3.0+3.0 = 9                   | 5.0       |
| 12      | 83+150               | CONCRETE BRIDGE    |               |                 | 4.0+4.0+4.0 = 12                  | 5.0       |
| 13      | 84+350               | CONCRETE STRUCTURE |               |                 | 30                                | 7.5       |

## 8 *Railway level crossings*

The Site includes the following railway level crossings:

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

## 9 Underpasses (vehicular, Non-vehicular)

The Site includes the following underpasses:

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

## 10 Culverts :

The Site has the following culverts:

| Sl. No. | Existing Chainage(Km) | Type of Structure (Pipe/Slab /Box /Arch) | Span Arrangement |                        | C'Way Width (m) |
|---------|-----------------------|------------------------------------------|------------------|------------------------|-----------------|
|         |                       |                                          | No               | Vent Width (m) (Clear) |                 |
| 1       | 42+100                | SLAB                                     | 1                | 0.9                    | 3.6             |
| 2       | 42+500                | SLAB                                     | 1                | 0.9                    | 3.6             |
| 3       | 43+250                | SLAB                                     | 1                | 0.8                    | 3.3             |
| 4       | 43+600                | SLAB                                     | 1                | 1.5                    | 3.6             |
| 5       | 43+650                | SLAB                                     | 1                | 0.9                    | 3.6             |
| 6       | 44+070                | PIPE                                     | 2                | 1                      | 3.3             |
| 7       | 44+150                | PIPE                                     | 2                | 1                      | 3.3             |
| 8       | 45+250                | PIPE                                     | 2                | 1                      | 3.4             |
| 9       | 45+770                | PIPE                                     | 2                | 1                      | 3.4             |
| 10      | 45+880                | SLAB                                     | 1                | 0.75                   | 4.1             |
| 11      | 46+050                | SLAB                                     | 1                | 0.75                   | 4.1             |
| 12      | 46+120                | SLAB                                     | 1                | 0.75                   | 4.1             |
| 13      | 46+340                | SLAB                                     | 1                | 0.7/1                  | 3.5             |
| 14      | 46+450                | SLAB                                     | 1                | 0.7/1                  | 3.5             |
| 15      | 46+650                | SLAB                                     | 1                | 0.8                    | 3.5             |
| 16      | 46+830                | SLAB                                     | 1                | 0.8                    | 3.5             |
| 17      | 46+960                | SLAB                                     | 1                | 0.8                    | 3.5             |

| Sl. No. | Existing Chainage(Km) | Type of Structure (Pipe/Slab /Box /Arch) | Span Arrangement |                        | C'Way Width (m) |
|---------|-----------------------|------------------------------------------|------------------|------------------------|-----------------|
|         |                       |                                          | No               | Vent Width (m) (Clear) |                 |
| 18      | 47+500                | PIPE                                     | 2                | 1                      | 7               |
| 19      | 47+650                | PIPE                                     | 2                | 1                      | 7               |
| 20      | 48+000                | SLAB                                     | 1                | 0.9                    | 7.2             |
| 21      | 48+200                | SLAB                                     | 1                | 1.5                    | 5.2             |
| 22      | 48+330                | SLAB                                     | 1                | 1                      | 6.1             |
| 23      | 48+400                | SLAB                                     | 1                | 1                      | 6.1             |
| 24      | 48+750                | SLAB                                     | 1                | 1.5                    | 7               |
| 25      | 49+030                | SLAB                                     | 1                | 1.2                    | 5.6             |
| 26      | 49+100                | SLAB                                     | 1                | 1.2                    | 5.6             |
| 27      | 49+600                | SLAB                                     | 1                | 0.5                    | 6               |
| 28      | 49+830                | SLAB                                     | 1                | 0.5                    | 6               |
| 29      | 49+970                | PIPE                                     | 1                | 1                      | 4.3             |
| 30      | 50+250                | PIPE                                     | 1                | 1                      | 4.3             |
| 31      | 50+500                | SLAB                                     | 1                | 1                      | 5.4             |
| 32      | 51+250                | PIPE                                     | 1                | 1                      | 5               |
| 33      | 52+050                | SLAB                                     | 1                | 0.9                    | 5.1             |
| 34      | 52+200                | PIPE                                     | 1                | 1                      | 4               |
| 35      | 53+200                | SLAB                                     | 1                | 0.8                    | 4.6             |
| 36      | 53+550                | PIPE                                     | 1                | 1                      | 4.5             |
| 37      | 54+330                | SLAB                                     | 1                | 1                      | 5.4             |
| 38      | 55+830                | PIPE                                     | 1                | 1                      | 5               |
| 39      | 56+130                | SLAB                                     | 1                | 0.9                    | 5.1             |
| 40      | 57+430                | PIPE                                     | 1                | 1                      | 4               |
| 41      | 59+130                | SLAB                                     | 1                | 0.8                    | 4.6             |
| 42      | 60+220                | PIPE                                     | 1                | 1                      | 4.5             |

| Sl. No. | Existing Chainage(Km) | Type of Structure (Pipe/Slab /Box /Arch) | Span Arrangement |                        | C'Way Width (m) |
|---------|-----------------------|------------------------------------------|------------------|------------------------|-----------------|
|         |                       |                                          | No               | Vent Width (m) (Clear) |                 |
| 43      | 60+330                | SLAB                                     | 1                | 3                      | 6.1             |
| 44      | 60+530                | PIPE                                     | 1                | 0.6                    | 4.9             |
| 45      | 60+620                | PIPE                                     | 1                | 0.6                    | 5.4             |
| 46      | 61+230                | SLAB                                     | 1                | 1.6                    | 4.6             |
| 47      | 61+460                | SLAB                                     | 1                | 1                      | 4.8             |
| 48      | 61+800                | SLAB                                     | 1                | 0.5                    | 4.6             |
| 49      | 61+900                | PIPE                                     | 1                | 1                      | 3               |
| 50      | 62+900                | SLAB                                     | 1                | 3                      | 6.1             |
| 51      | 63+050                | PIPE                                     | 1                | 0.6                    | 4.9             |
| 52      | 63+250                | PIPE                                     | 1                | 0.6                    | 5.4             |
| 53      | 63+300                | SLAB                                     | 1                | 1.6                    | 4.6             |
| 54      | 63+950                | SLAB                                     | 1                | 1                      | 4.8             |
| 55      | 64+100                | SLAB                                     | 1                | 1                      | 4.4             |
| 56      | 64+200                | SLAB                                     | 1                | 1                      | 4.4             |
| 57      | 64+300                | PIPE                                     | 3                | 1                      | 3               |
| 58      | 64+500                | PIPE                                     | 3                | 1                      | 3               |
| 59      | 65+020                | SLAB                                     | 1                | 1                      | 6.3             |
| 60      | 65+300                | PIPE                                     | 1                | 0.6                    | 4               |
| 61      | 65+330                | SLAB                                     | 1                | 1                      | 6.3             |
| 62      | 65+840                | SLAB                                     | 1                | 1                      | 6.3             |
| 63      | 65+890                | SLAB                                     | 1                | 1.2                    | 5.4             |
| 64      | 68+600                | SLAB                                     | 1                | 1                      | 4.8             |
| 65      | 68+680                | SLAB                                     | 1                | 0.9                    | 3.7             |
| 66      | 69+250                | SLAB                                     | 2                | 4.9                    | 3.6             |
| 67      | 70+010                | SLAB                                     | 1                | 1.5                    | 3.7             |

| Sl. No. | Existing Chainage(Km) | Type of Structure (Pipe/Slab /Box /Arch) | Span Arrangement |                        | C'Way Width (m) |
|---------|-----------------------|------------------------------------------|------------------|------------------------|-----------------|
|         |                       |                                          | No               | Vent Width (m) (Clear) |                 |
| 68      | 70+220                | SLAB                                     | 1                | 1.7                    | 3.7             |
| 69      | 70+910                | SLAB                                     | 1                | 1                      | 3.8             |
| 70      | 71+470                | BOX                                      | 1                | 1.7                    | 3.9             |
| 71      | 71+960                | SLAB                                     | 2                | 4                      | 3.9             |
| 72      | 72+400                | PIPE                                     | 1                | 1                      | 3.4             |
| 73      | 72+790                | SLAB                                     | 1                | 0.8                    | 3.3             |
| 74      | 73+850                | PIPE                                     | 2                | 1                      | 3.2             |
| 75      | 74+900                | PIPE                                     | 1                | 1                      | 3               |
| 76      | 76+960                | SLAB                                     | 1                | 1                      | 3.8             |
| 77      | 78+850                | BOX                                      | 1                | 1.6                    | 3.1             |
| 78      | 79+000                | BOX                                      | 1                | 1.9                    | 3.4             |
| 79      | 79+250                | BOX                                      | 1                | 2                      | 3.7             |
| 80      | 83+120                | SLAB                                     | 1                |                        | 3.6             |
| 81      | 83+370                | PIPE                                     | 1                | 0.3                    | 3.6             |
| 82      | 83+440                | BOX                                      | 1                | 1.3                    | 3.2             |
| 83      | 83+990                | BOX                                      | 1                | 0.7                    | 3.2             |
| 84      | 84+475                | BOX                                      | 1                | 1.3                    | 3.1             |
| 85      | 84+680                | SLAB                                     | 1                | 1                      | 3.5             |
| 86      | 85+450                | PIPE                                     | 2X2              | 1X0.3                  | 3.3             |

### 11 Bus Bays

The details of bus bays at site are as follows:

| SL.NO | Ex. Chainage | LHS | RHS | Remark |
|-------|--------------|-----|-----|--------|
| 1     | 47+450       | LHS |     |        |
| 2     | 57+500       |     | RHS |        |
| 3     | 58+450       | LHS |     |        |

| SL.NO | Ex. Chainage | LHS | RHS | Remark |
|-------|--------------|-----|-----|--------|
| 4     | 61+000       |     | RHS |        |
| 5     | 61+775       | LHS |     |        |
| 6     | 62+650       | LHS |     |        |
| 7     | 63+025       |     | RHS |        |
| 8     | 63+300       | LHS |     |        |
| 9     | 63+900       | LHS |     |        |
| 10    | 64+700       |     | RHS |        |
| 11    | 66+600       | LHS |     |        |
| 12    | 67+250       |     | RHS |        |
| 13    | 67+950       | LHS |     |        |
| 14    | 69+350       |     | RHS |        |
| 15    | 70+575       | LHS |     |        |
| 16    | 72+350       | LHS |     |        |
| 17    | 74+200       |     | RHS |        |
| 18    | 74+575       |     | RHS |        |
| 19    | 79+425       | LHS |     |        |
| 20    | 80+475       | LHS |     |        |
| 21    | 84+950       | LHS |     |        |

## 12 Truck Lay byes

The details of truck lay byes are as follows:

| Sl. No. | Chainage (Km) | Length (m) | Left Side | Hand | Right Hand Side |
|---------|---------------|------------|-----------|------|-----------------|
| Nil     |               |            |           |      |                 |

## 13 Road side drains

The details of the road side drains are as follows:

| Sl. No. | Location (km) |    | Type       |           |
|---------|---------------|----|------------|-----------|
|         | From          | To | Masonry/cc | Earthen   |
|         |               |    | (Pucca)    | (Kutchha) |
| Nil     |               |    |            |           |

#### 14 Major junctions

The detail of major junction are as follows:

| Sl. No. | Location (Km) |    | At grade | Separated | Category of Cross Road |    |     |        |
|---------|---------------|----|----------|-----------|------------------------|----|-----|--------|
|         | From          | To |          |           | NH                     | SH | MDR | Others |
| Nil     |               |    |          |           |                        |    |     |        |

**(NH: National Highway, SH: State Highway, MDR: Major District Road)**

#### 15 Minor junctions

The details of the minor junctions are as follows:-

| Sl. No. | Design Chainage (Km) | Side | Type of Junction |
|---------|----------------------|------|------------------|
| 1.      | 42+580               | BHS  | Minor Junction   |
| 2.      | 42+650               | LHS  | Minor Junction   |
| 3.      | 42+740               | BHS  | Minor Junction   |
| 4.      | 42+950               | BHS  | Minor Junction   |
| 5.      | 43+860               | BHS  | Minor Junction   |
| 6.      | 44+380               | BHS  | Minor Junction   |
| 7.      | 44+720               | LHS  | Minor Junction   |
| 8.      | 45+000               | RHS  | Minor Junction   |
| 9.      | 45+650               | LHS  | Minor Junction   |
| 10.     | 46+800               | LHS  | Minor Junction   |
| 11.     | 47+000               | BHS  | Minor Junction   |
| 12.     | 47+180               | LHS  | Minor Junction   |
| 13.     | 47+720               | LHS  | Minor Junction   |
| 14.     | 48+200               | RHS  | Minor Junction   |
| 15.     | 49+130               | BHS  | Minor Junction   |
| 16.     | 46+620               | LHS  | Minor Junction   |

| Sl. No. | Design Chainage (Km) | Side | Type of Junction |
|---------|----------------------|------|------------------|
| 17.     | 50+650               | RHS  | Minor Junction   |
| 18.     | 50+750               | BHS  | Minor Junction   |
| 19.     | 51+440               | BHS  | Minor Junction   |
| 20.     | 51+600               | LHS  | Minor Junction   |
| 21.     | 51+750               | RHS  | Minor Junction   |
| 22.     | 51+870               | LHS  | Minor Junction   |
| 23.     | 52+600               | BHS  | Minor Junction   |
| 24.     | 52+740               | LHS  | Minor Junction   |
| 25.     | 53+025               | LHS  | Minor Junction   |
| 26.     | 53+160               | RHS  | Minor Junction   |
| 27.     | 53+230               | LHS  | Minor Junction   |
| 28.     | 53+350               | LHS  | Minor Junction   |
| 29.     | 53+400               | BHS  | Minor Junction   |
| 30.     | 53+635               | BHS  | Minor Junction   |
| 31.     | 53+880               | RHS  | Minor Junction   |
| 32.     | 53+990               | LHS  | Minor Junction   |
| 33.     | 54+100               | LHS  | Minor Junction   |
| 34.     | 54+620               | RHS  | Minor Junction   |
| 35.     | 54+620               | LHS  | Minor Junction   |
| 36.     | 55+500               | BHS  | Minor Junction   |
| 37.     | 55+730               | BHS  | Minor Junction   |
| 38.     | 56+120               | BHS  | Minor Junction   |
| 39.     | 56+435               | BHS  | Minor Junction   |
| 40.     | 56+900               | BHS  | Minor Junction   |
| 41.     | 57+160               | BHS  | Minor Junction   |
| 42.     | 58+050               | LHS  | Minor Junction   |
| 43.     | 58+360               | RHS  | Minor Junction   |
| 44.     | 59+200               | RHS  | Minor Junction   |
| 45.     | 59+400               | LHS  | Minor Junction   |
| 46.     | 59+515               | LHS  | Minor Junction   |
| 47.     | 60+000               | BHS  | Minor Junction   |

| Sl. No. | Design Chainage (Km) | Side | Type of Junction |
|---------|----------------------|------|------------------|
| 48.     | 60+400               | LHS  | Minor Junction   |
| 49.     | 60+940               | LHS  | Minor Junction   |
| 50.     | 61+600               | RHS  | Minor Junction   |
| 51.     | 61+660               | LHS  | Minor Junction   |
| 52.     | 61+800               | RHS  | Minor Junction   |
| 53.     | 62+160               | BHS  | Minor Junction   |
| 54.     | 62+550               | BHS  | Minor Junction   |
| 55.     | 63+110               | LHS  | Minor Junction   |
| 56.     | 63+540               | BHS  | Minor Junction   |
| 57.     | 63+800               | BHS  | Minor Junction   |
| 58.     | 64+100               | BHS  | Minor Junction   |
| 59.     | 65+150               | BHS  | Minor Junction   |
| 60.     | 65+500               | BHS  | Minor Junction   |
| 61.     | 66+350               | BHS  | Minor Junction   |
| 62.     | 66+450               | LHS  | Minor Junction   |
| 63.     | 66+550               | BHS  | Minor Junction   |
| 64.     | 66+900               | LHS  | Minor Junction   |
| 65.     | 67+380               | LHS  | Minor Junction   |
| 66.     | 67+800               | LHS  | Minor Junction   |
| 67.     | 68+350               | BHS  | Minor Junction   |
| 68.     | 69+430               | BHS  | Minor Junction   |
| 69.     | 69+780               | RHS  | Minor Junction   |
| 70.     | 70+400               | LHS  | Minor Junction   |
| 71.     | 71+520               | BHS  | Minor Junction   |

## 16 **Bypasses**

The details of the existing road sections proposed to be bypassed are as follows:

| Sl. No. | Name of Bypass (town) | Chainage (Km) |        | Bypass Length (Km) |
|---------|-----------------------|---------------|--------|--------------------|
|         |                       | From          | To     |                    |
| 1       | Amarpur               | 42.450        | 50.900 | 7.520              |
| 2       | Nutan Bazar           | 61.800        | 64.300 | 1.560              |
| 3       | Jatanbari             | 64.300        | 67.750 | 3.700              |
| 4       | Karbook               | 74.975        | 79.350 | 3.350              |

17      **Other structures - Nil**

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

**Dates for providing Right of Way of  
construction Zone**

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

| Sl. No.                            | From Kmto Km |        | Length(Km) | Proposed Width (m) | Date of providing ROW* |
|------------------------------------|--------------|--------|------------|--------------------|------------------------|
| (1)                                | (2)          |        | (3)        | (4)                | (5)                    |
| (i) Full Right of Way (full Width) |              |        |            |                    |                        |
| 1                                  | 36+000       | 42+760 | 6.76       | 45                 | On Appointed date      |
| 2                                  | 42+760       | 51+040 | 8.28       | 30                 |                        |
| 3                                  | 51+040       | 51+630 | 0.59       | 45                 |                        |
| 4                                  | 51+630       | 51+840 | 0.21       | 30                 |                        |
| 5                                  | 51+840       | 52+640 | 0.8        | 45                 |                        |
| 6                                  | 52+640       | 53+240 | 0.6        | 45                 |                        |
| 7                                  | 53+240       | 54+000 | 0.76       | 45                 |                        |
| 8                                  | 54+000       | 56+920 | 2.92       | 45                 |                        |
| 9                                  | 56+920       | 57+640 | 0.72       | 30                 |                        |
| 10                                 | 57+640       | 57+820 | 0.18       | 45                 |                        |
| 11                                 | 57+820       | 59+940 | 2.12       | 45                 |                        |
| 12                                 | 59+940       | 60+135 | 0.195      | 30                 |                        |
| 13                                 | 60+135       | 60+720 | 0.585      | 30                 |                        |
| 14                                 | 60+720       | 61+040 | 0.32       | 40                 |                        |
| 15                                 | 61+040       | 61+880 | 0.84       | 30                 |                        |
| 16                                 | 61+880       | 62+120 | 0.24       | 40                 |                        |
| 17                                 | 62+120       | 62+735 | 0.615      | 30                 |                        |
| 18                                 | 62+735       | 63+135 | 0.4        | 30                 |                        |
| 19                                 | 63+135       | 66+480 | 3.345      | 45                 |                        |
| 20                                 | 66+480       | 67+235 | 0.755      | 30                 |                        |
| 21                                 | 67+235       | 67+735 | 0.50       | 30                 |                        |
| 22                                 | 67+735       | 68+320 | 0.585      | 30                 |                        |
| 23                                 | 68+320       | 68+600 | 0.28       | 40                 |                        |
| 24                                 | 68+600       | 72+000 | 3.40       | 30                 |                        |

\*The dates specified herein shall in no case

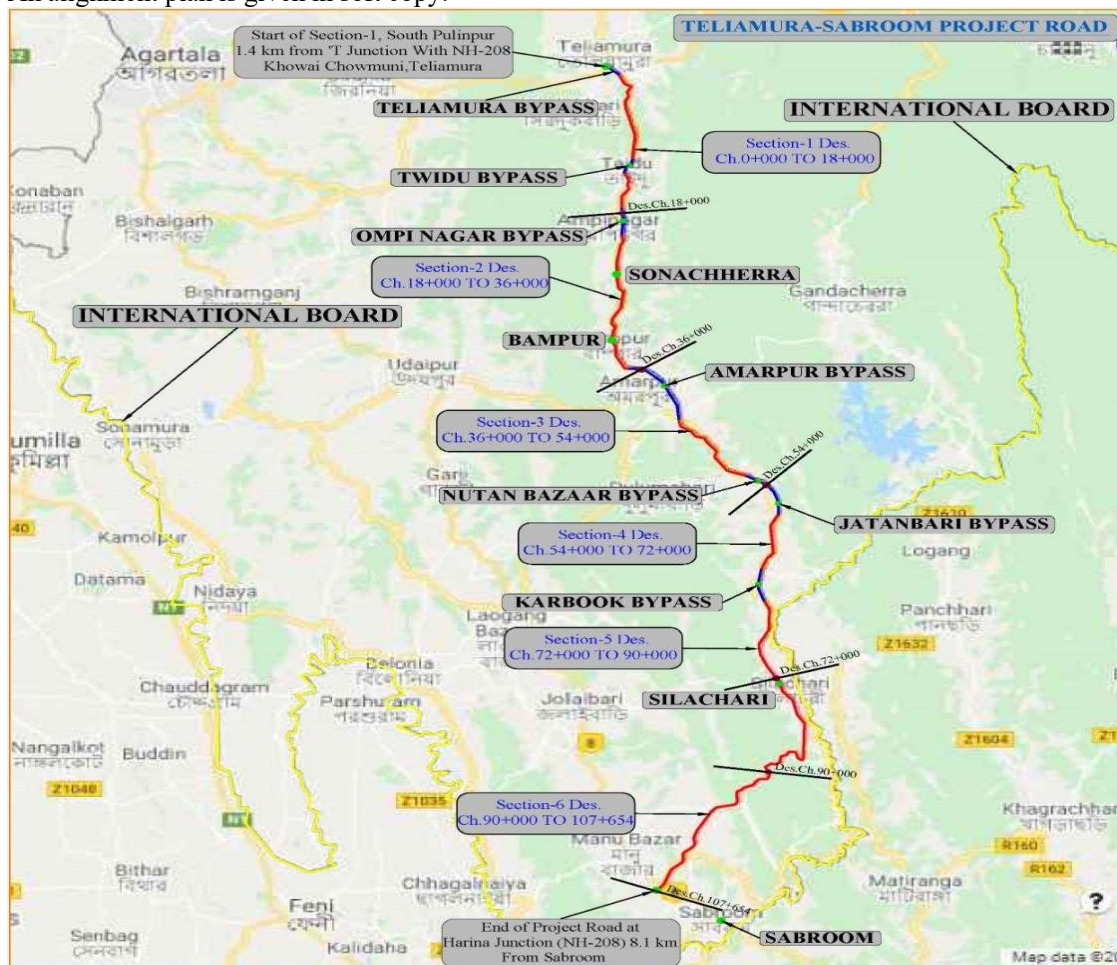
\*The dates specified herein shall in no case be beyond 150 (one hundred and fifty) days after the Appointed Date.

### 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:

An alignment plan is given in soft copy.



- (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.

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

**Environment Clearances**

The following clearances have been obtained:

| Sl. No. | Clearances            | Present Status                                                                                        |
|---------|-----------------------|-------------------------------------------------------------------------------------------------------|
| 1       | Environment clearance | Environment Clearance is not required for Project Highway as per MOEF Notification on 22nd Aug, 2013. |
| 2       | Forest Clearance      | Under Progress                                                                                        |

## Annex - V

(Schedule-A)

### **Electrical Utilities**

**(i) ELECTRICAL UTILITIES**

The site includes the following electrical utilities: -

**(a) Extra High Tension Lines (EHT lines)\***

| Sr. No | Chainage(km) |    | Length along NH (in Km) |       |       |      | ROW Crossings (in km) |       |       |      |
|--------|--------------|----|-------------------------|-------|-------|------|-----------------------|-------|-------|------|
|        | From         | To | 400KV                   | 220KV | 132KV | 66KV | 400KV                 | 220KV | 132KV | 66KV |
|        | Nil          |    |                         |       |       |      |                       |       |       |      |

**(b) High Tension/Low Tension Lines (HT/LT lines)\***

| Sr.No | Chainage (km) |       | Length (in Km) |      |       |    | Crossings (no's) |      |      |    | Transformer |                |
|-------|---------------|-------|----------------|------|-------|----|------------------|------|------|----|-------------|----------------|
|       | From          | To    | 33KV           | 22KV | 11KV  | LT | 33KV             | 22KV | 11KV | LT | No          | Capacity       |
| 1     | 36.00         | 54.00 |                |      |       |    |                  |      | 5    |    | 13          | 100KVA         |
| 2     | 54.00         | 72.00 |                |      | 18.00 |    |                  |      | 2    |    | 8<br>2      | 63KVA<br>25KVA |

**(ii) Public Health Utilities (Water/Sewage pipe lines)\***

(a) The site includes the following public health utilities: -

| Sr. No | Chainage(km) |        | Length along NH (in Km) |              |              |              | ROW Crossings (in km) |              |              |              |
|--------|--------------|--------|-------------------------|--------------|--------------|--------------|-----------------------|--------------|--------------|--------------|
|        | From         | To     | Water Supply line       |              | Sewage line  |              | With pumping          |              | Sewage line  |              |
|        |              |        | With Pumping            | With Gravity | With Pumping | With Gravity | With Pumping          | With Gravity | With Pumping | With Gravity |
| 1      | 36.050       | 53.700 |                         |              |              |              | 0.150KM (Gravity)     |              |              |              |
| 2      | 55.700       | 68.150 | 6.8KM                   |              |              | 0.3 km       |                       |              |              |              |

**Any Other Line: - Nil**

SCHEDULE - B  
(See Clause 2.1)

**Development of the Project Highway**

**1      Development of the Project Highway**

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

**2      Rehabilitation and Augmentation**

**[Rehabilitation and Augmentation]** shall include (Two laning / Four laning and strengthening) of the Project highway as described in Annexure I of this schedule-B & in schedule-C.

**3      Specifications and Standards**

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

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

**Description of two lane with paved shoulder**

The proposal of project road improvement is

- 2 lane with paved shoulder from design km 36+000 (Rangamati) to design km 72.000 (Pati Chhari) of NH-208. The design length of project road is 36.000 km after its geometric improvement.

**1 Widening of the Existing Highway**

- (i) The Project Highway shall follow the proposed alignment as specified by the Authority and shown in the alignment plans specified in Annex III of Schedule-A. Geometric deficiencies, if any, in the existing horizontal and vertical profiles shall be corrected as per the prescribed standards for Plain / Rolling terrain to the extent land is available.

**(ii) Width of Carriageway**

- (a) Two-Laning with paved shoulders shall be undertaken. The paved carriageway shall be 7m (seven) wide with 1.5m/2.5m wide paved shoulder on either side of carriage way in accordance with the typical cross sections drawings in the Manual (refer MoRT&H circular dated 17<sup>th</sup> July 2020).

Provided that in the built-up areas [refer to paragraphs 2.1 (ii) (a) of the Manual and provide necessary details]: the width of the carriageway (Including paved shoulder) shall be as specified in the following table:

| Sl. No | Built-up Stretch (Township) | Location / Design Chainage (km) |        | Paved Width (m) | Typical Cross Section |
|--------|-----------------------------|---------------------------------|--------|-----------------|-----------------------|
|        |                             | From                            | To     |                 |                       |
| 1      | -                           | 52+900                          | 53+100 | 12              | TCS 3                 |
| 2      | -                           | 59+975                          | 60+135 | 12              | TCS 3                 |
| 3      | -                           | 67+200                          | 67+700 | 12              | TCS 3                 |

- (b) Except as otherwise provided in this Agreement, the width of the paved carriageway and cross-sectional features shall confirm to paragraph 1.1 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 two lane manual.

**(ii) Design speed**

The design speed shall be 100kmph (Ruling) /80kmph (minimum) for Plain/Rolling terrain & 60kmph (Ruling) /40kmph (minimum) for Mountainous/steep terrain as per the section 2 of two lane manual IRC - SP: 73:2018.

**(iii) Improvement of the existing road geometrics**

*[Refer to paragraph 2.1 (v) of the manual and provide details]*

*In the following sections where improvement of the existing road geometrics to the prescribed standard is not possible, the existing road geometrics shall be improved to the extent possible within the given ROW and proper road signs and safety measures shall be provided.*

| Sl. No. | HORIZONTAL CURVE |              |        |           | Transiti on length | Speed (Kmph) | Reason for Deviation |
|---------|------------------|--------------|--------|-----------|--------------------|--------------|----------------------|
|         | Start Chainage   | End Chainage | Radius | Direction |                    |              |                      |
| Nil     |                  |              |        |           |                    |              |                      |

*The above deviations are w.r.t. design speed.*

---

**(iv) Right of way**

Details of Right of Way is given below:

| SL. No. | Chainage (km) |        | Right of way (m) | Remarks |
|---------|---------------|--------|------------------|---------|
|         | From          | To     |                  |         |
| 1       | 36+000        | 42+760 | 45               |         |
| 2       | 42+760        | 51+040 | 30               |         |
| 3       | 51+040        | 51+630 | 45               |         |
| 4       | 51+630        | 51+840 | 30               |         |
| 5       | 51+840        | 52+640 | 45               |         |
| 6       | 52+640        | 53+240 | 45               |         |
| 7       | 53+240        | 54+000 | 45               |         |
| 8       | 54+000        | 56+920 | 45               |         |
| 9       | 56+920        | 57+640 | 30               |         |
| 10      | 57+640        | 57+820 | 45               |         |
| 11      | 57+820        | 59+940 | 45               |         |
| 12      | 59+940        | 60+135 | 30               |         |
| 13      | 60+135        | 60+720 | 30               |         |
| 14      | 60+720        | 61+040 | 40               |         |
| 15      | 61+040        | 61+880 | 30               |         |
| 16      | 61+880        | 62+120 | 40               |         |
| 17      | 62+120        | 62+735 | 30               |         |
| 18      | 62+735        | 63+135 | 30               |         |
| 19      | 63+135        | 66+480 | 45               |         |
| 20      | 66+480        | 67+235 | 30               |         |
| 21      | 67+235        | 67+735 | 30               |         |
| 22      | 67+735        | 68+320 | 30               |         |
| 23      | 68+320        | 68+600 | 40               |         |
| 24      | 68+600        | 72+000 | 30               |         |

**(v) Type of shoulders**

- (a) In Built up sections, Footpath/Fully paved shoulders shall be provided in the following stretches:
-

| Sl. No. | Stretch (design km) |        | Fully Paved shoulders/Footpath                   | References to Cross Section |
|---------|---------------------|--------|--------------------------------------------------|-----------------------------|
|         | From                | To     |                                                  |                             |
| 1       | 52+900              | 53+100 | 2.5m paved shoulder & 1.75m wide RCC line drain. | TCS-3                       |
| 2       | 59+975              | 60+135 |                                                  |                             |
| 3       | 67+200              | 67+700 |                                                  |                             |

In open country, [paved shoulders of 1.5m width and 1.0m earthen shoulder shall be provided.

- (b) Design and specifications of paved shoulders and granular material shall conform to the requirements specified in the relevant Manual.

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

- (a) Lateral and vertical clearances at underpasses and provision of guardrails/crash barriers shall be as per the provision of two lane manual / four lane manual.

Lateral clearance: The width of the opening at the underpasses shall be as follows:

| Sl. No. | Location (Chainage)<br>(From km to km) | Span / Opening<br>(m) | Remarks |
|---------|----------------------------------------|-----------------------|---------|
| Nil     |                                        |                       |         |

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

- (a) Lateral and vertical clearances at over passes shall be as per the provision of relevant Manual.

- (b) Lateral clearance: The width of the opening at the over passes shall be as follows:

| Sl. No. | Location (Chainage)<br>(From km to km) | Span / Opening<br>(m) | Remarks |
|---------|----------------------------------------|-----------------------|---------|
| Nil     |                                        |                       |         |

**(viii) Service roads**

Service roads shall be constructed at the locations and for the lengths indicated below:  
[Refer to the provision of relevant Manual and provide details]

| Sl. No. | Location of Service road<br>(from km to km) |    | Right hand side (RHS)/Left<br>hand side (LHS)/ or Both<br>sides | Length (km) of<br>Service road |
|---------|---------------------------------------------|----|-----------------------------------------------------------------|--------------------------------|
|         | From                                        | To |                                                                 |                                |
| Nil     |                                             |    |                                                                 |                                |

**(IX) Grade separated structures**

- (a) *Grade separated structures shall be provided as per provision of the relevant Manual. The requisite particulars are given below:*

[Refer to the provision of relevant Manual and provide details]

| Sl. No. | Location of structure | 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: [Refer to the provision of relevant Manual and specify the type of vehicular underpass/ over pass structure and whether the cross road is to be carried at the existing level, raised or lowered]

| Sl. No. | Location | Type of structure<br>Length (m) | Cross road at  |              |               | Remarks, If any |
|---------|----------|---------------------------------|----------------|--------------|---------------|-----------------|
|         |          |                                 | Existing level | Raised Level | Lowered Level |                 |
| Nil     |          |                                 |                |              |               |                 |

**(X) Cattle and pedestrian underpass /overpass**

Cattle and pedestrian underpass/ overpass shall be constructed as follows:

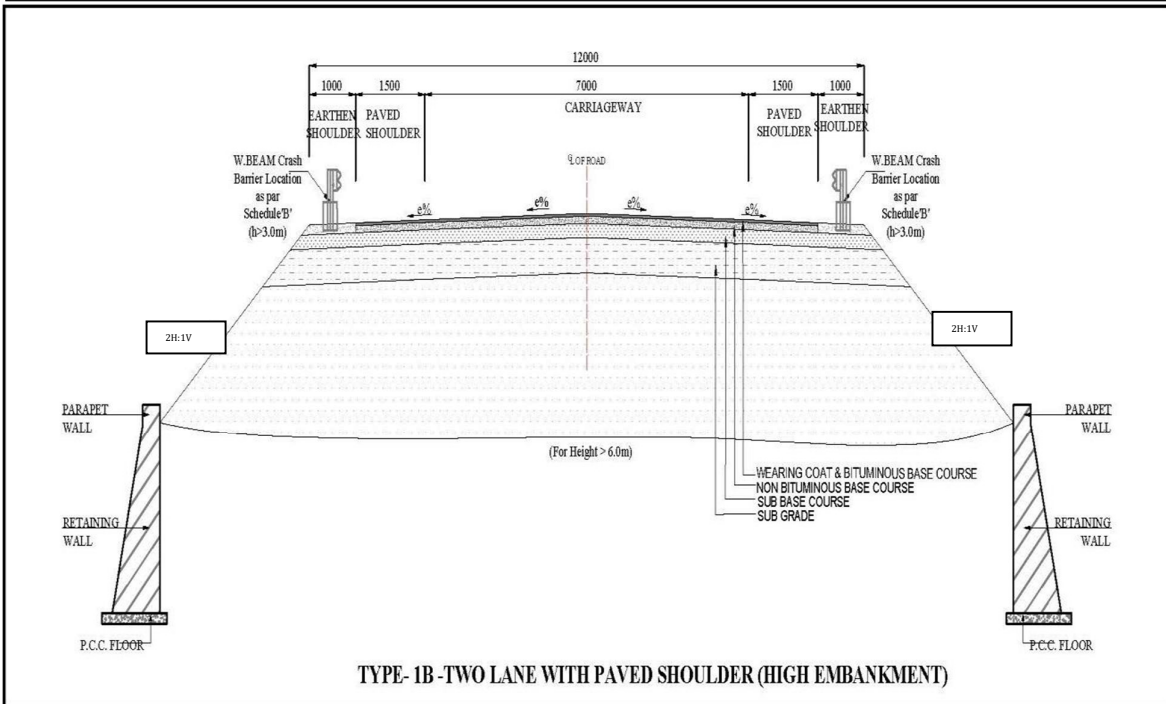
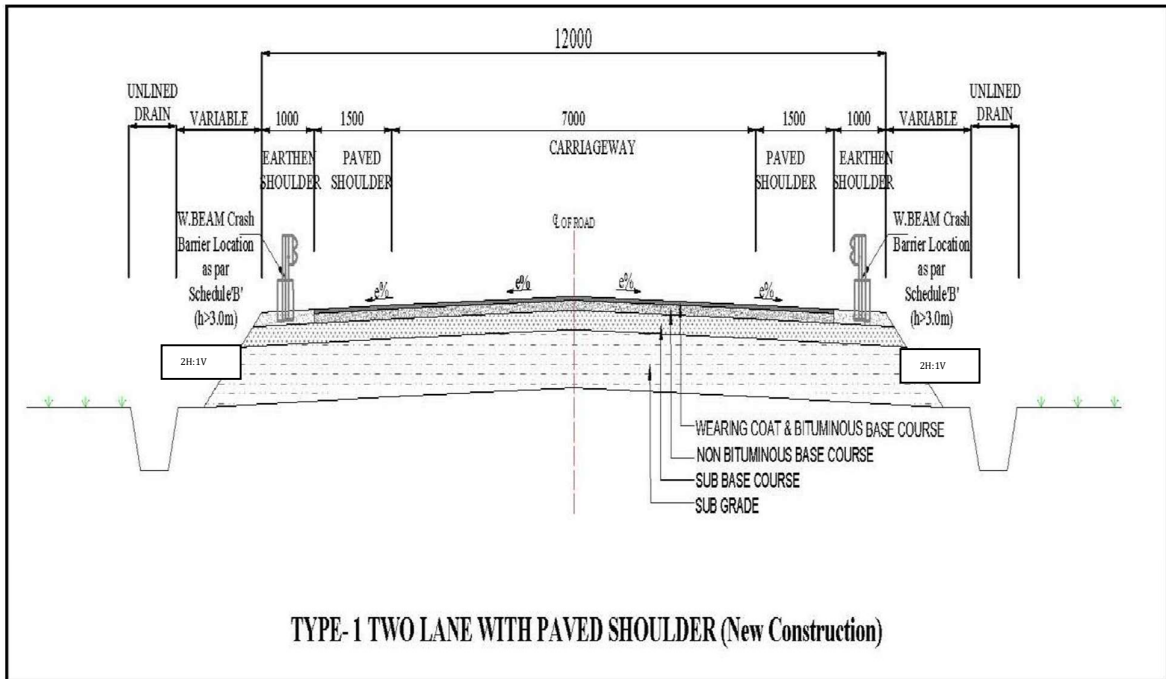
[Refer to the provision of relevant Manual and specify the requirements of Cattle and pedestrian underpass/ overpass]

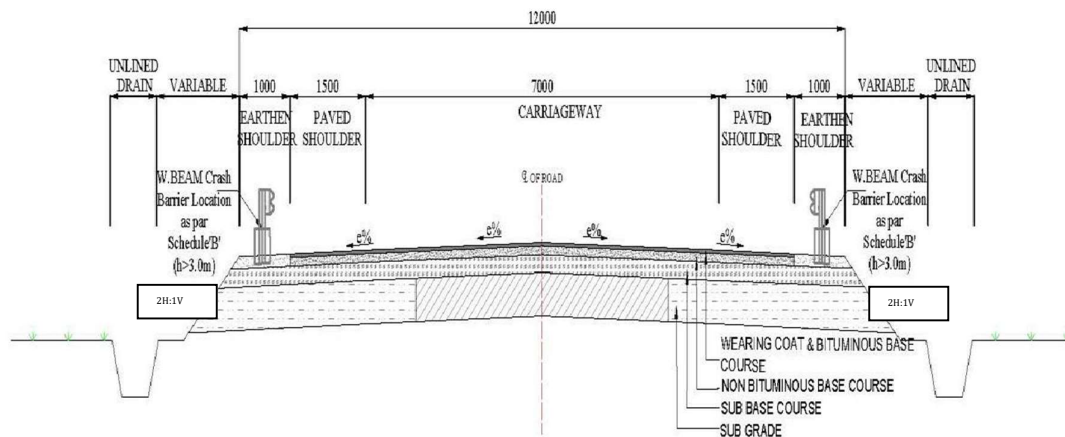
| Sl. No. | Location | Type of Crossing |
|---------|----------|------------------|
| Nil     |          |                  |

**(XI) Typical cross-sections of the Project Highway**

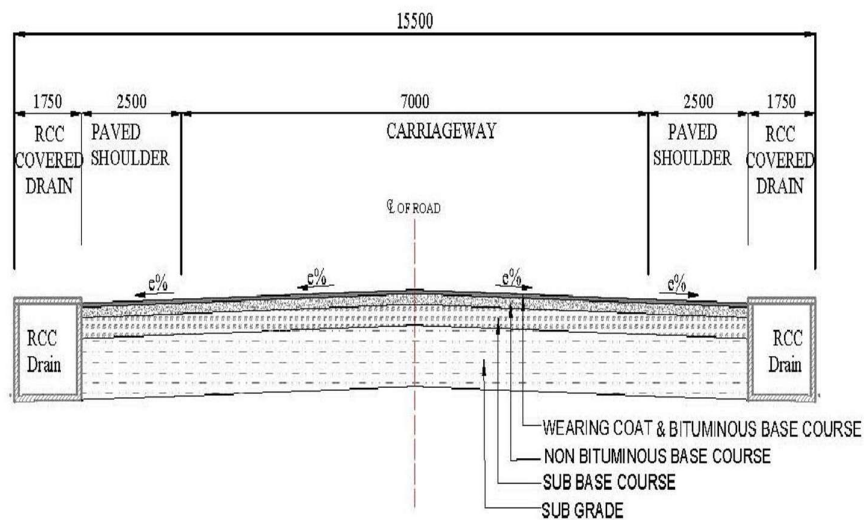
Typical Cross section of Project road is as shown below –

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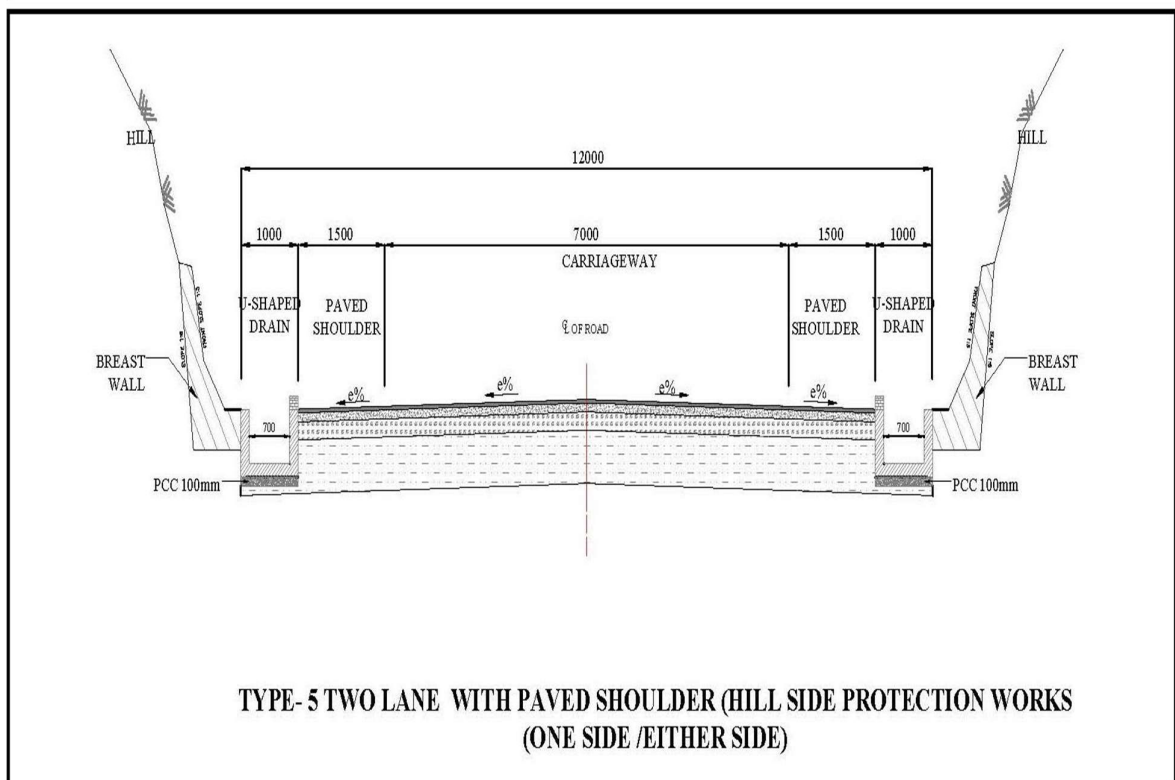
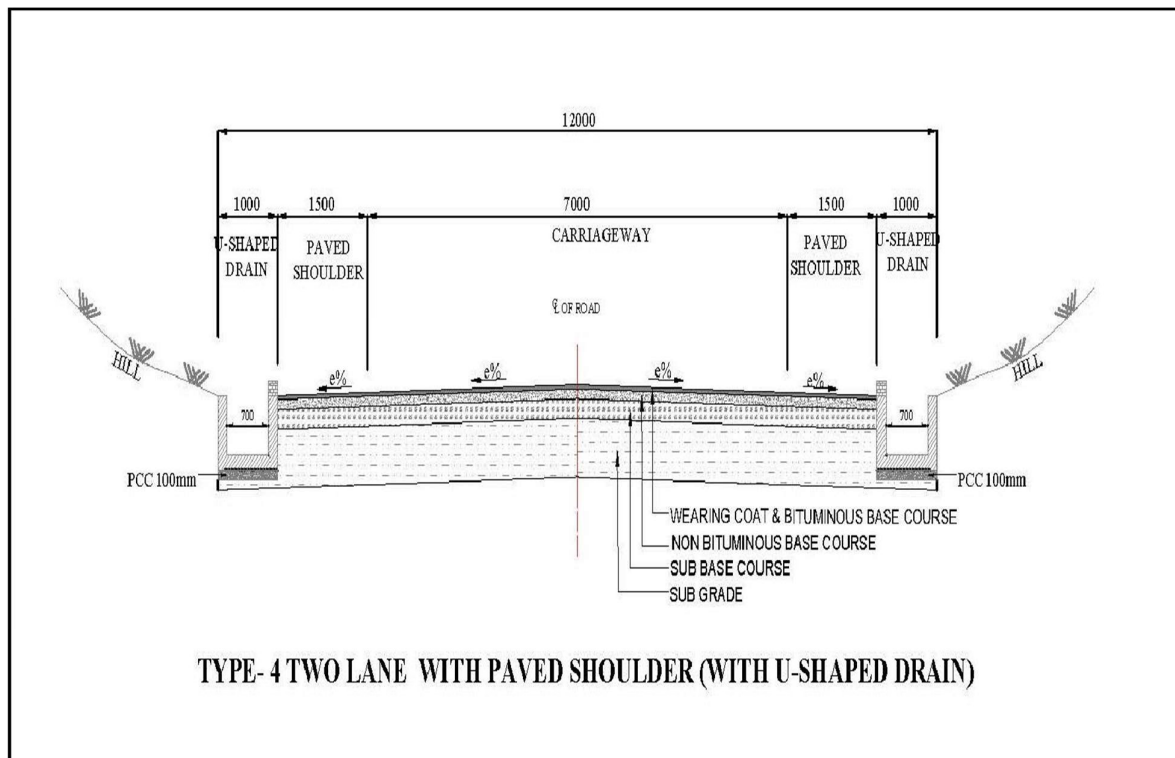




**TYPE- 2 TWO LANE WITH PAVED SHOULDER (PARTIALLY EXISTING / NEW ALIGNMENT)**



**TYPE- 3 TWO LANE WITH PAVED SHOULDER (Built-up Section)**



**Typical Cross section Scheme**

| <b>TCS Type</b> | <b>Description</b>                                                   |
|-----------------|----------------------------------------------------------------------|
| TCS-1           | Two Lane With Paved Shoulder (New Construction) with high embankment |
| TCS-2           | Two Lane With Paved Shoulder                                         |
| TCS-3           | Two lane with paved shoulder (Built-up section)                      |
| TCS-4           | Two Lane With Paved Shoulder (b/s PCC drain)                         |
| TCS-5           | Two Lane With Paved Shoulder in hill B/s Breast wall                 |

| <b>Sl. No</b> | <b>Design Chainage (Km)</b> |           | <b>Bridge Length (m)</b> | <b>Total length (m)</b> | <b>TCS Type</b> |
|---------------|-----------------------------|-----------|--------------------------|-------------------------|-----------------|
|               | <b>From</b>                 | <b>To</b> |                          |                         |                 |
| 1             | 36+000                      | 42+260    | 107                      | 6+153                   | TCS-1           |
| 2             | 42+260                      | 42+620    |                          | 0+360                   | TCS-5           |
| 3             | 42+620                      | 42+740    |                          | 0+120                   | TCS-4           |
| 4             | 42+740                      | 43+460    | 40                       | 0+680                   | TCS-1           |
| 5             | 43+460                      | 43+780    |                          | 0+320                   | TCS-5           |
| 6             | 43+780                      | 44+100    | 25                       | 0+295                   | TCS-1           |
| 7             | 44+100                      | 44+180    |                          | 0+080                   | TCS-5           |
| 8             | 44+180                      | 45+000    |                          | 0+820                   | TCS-1           |
| 9             | 45+000                      | 46+100    | 16                       | 1+084                   | TCS-2           |
| 10            | 46+100                      | 46+600    |                          | 0+500                   | TCS-1           |
| 11            | 46+600                      | 47+020    |                          | 0+420                   | TCS-4           |
| 12            | 47+020                      | 48+280    |                          | 1+260                   | TCS-2           |

| Sl. No | Design Chainage (Km) |        | Bridge Length (m) | Total length (m) | TCS Type |
|--------|----------------------|--------|-------------------|------------------|----------|
|        | From                 | To     |                   |                  |          |
| 13     | 48+280               | 49+240 |                   | 0+960            | TCS-4    |
| 14     | 49+240               | 50+080 |                   | 0+840            | TCS-1    |
| 15     | 50+080               | 50+180 |                   | 0+100            | TCS-5    |
| 16     | 50+180               | 50+560 |                   | 0+380            | TCS-2    |
| 17     | 50+560               | 50+720 |                   | 0+160            | TCS-5    |
| 18     | 50+720               | 51+000 | 10                | 0+270            | TCS-1    |
| 19     | 51+000               | 51+420 |                   | 0+420            | TCS-5    |
| 20     | 51+420               | 52+900 | 25                | 1+455            | TCS-1    |
| 21     | 52+900               | 53+100 |                   | 0+200            | TCS-3    |
| 22     | 53+100               | 53+980 | 75                | 0+805            | TCS-1    |
| 23     | 53+980               | 54+000 |                   | 0+020            | TCS-5    |
| 24     | 54+000               | 54+720 |                   | 0+720            | TCS-5    |
| 25     | 54+720               | 55+120 |                   | 0+400            | TCS-4    |
| 26     | 55+120               | 55+780 |                   | 0+660            | TCS-5    |
| 27     | 55+780               | 56+100 |                   | 0+320            | TCS-4    |
| 28     | 56+100               | 56+220 |                   | 0+120            | TCS-5    |
| 29     | 56+220               | 56+820 |                   | 0+600            | TCS-4    |
| 30     | 56+820               | 57+000 |                   | 0+180            | TCS-5    |
| 31     | 57+000               | 58+500 |                   | 1+500            | TCS-4    |
| 32     | 58+500               | 59+975 | 27                | 1+448            | TCS-2    |
| 33     | 59+975               | 60+135 |                   | 0+160            | TCS-3    |

| Sl. No | Design Chainage (Km) |        | Bridge Length (m) | Total length (m) | TCS Type |
|--------|----------------------|--------|-------------------|------------------|----------|
|        | From                 | To     |                   |                  |          |
| 34     | 60+135               | 60+720 | 30                | 0+555            | TCS-2    |
| 35     | 60+720               | 60+980 |                   | 0+260            | TCS-5    |
| 36     | 60+980               | 61+420 |                   | 0+440            | TCS-4    |
| 37     | 61+420               | 61+800 |                   | 0+380            | TCS-5    |
| 38     | 61+800               | 62+760 | 16                | 0+944            | TCS-1    |
| 39     | 62+760               | 62+920 |                   | 0+160            | TCS-4    |
| 40     | 62+920               | 64+680 | 41                | 1+719            | TCS-1    |
| 41     | 64+680               | 65+380 |                   | 0+700            | TCS-4    |
| 42     | 65+380               | 66+020 |                   | 0+640            | TCS-5    |
| 43     | 66+020               | 66+450 |                   | 0+430            | TCS-4    |
| 44     | 66+450               | 67+200 |                   | 0+750            | TCS-4    |
| 45     | 67+200               | 67+700 |                   | 0+500            | TCS-3    |
| 46     | 67+700               | 72+000 | 32                | 4+268            | TCS-1    |
|        |                      |        |                   |                  |          |
|        | Total Length..       |        | 444               | 35+556           |          |

### 3. Intersection and grade Separators

All inter sections and grade separators shall be as per the provision of relevant Manual. Existing intersections which are deficient shall be improved to the prescribed standards.

[Refer to the provision of relevant Manual and specify the requirements. Explain where necessary with drawings/sketches/general arrangement]

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

(i) **At-Grade Intersections:**

**00 – Major Junctions &**

**85 – Minor Junctions**

| Sl. No. | Design Chainage (Km) | Side | Type of Junction |
|---------|----------------------|------|------------------|
| 1       | 36+270               | BHS  | Minor Junction   |
| 2       | 37+140               | BHS  | Minor Junction   |
| 3       | 37+740               | BHS  | Minor Junction   |
| 4       | 38+050               | LHS  | Minor Junction   |
| 5       | 38+050               | RHS  | Minor Junction   |
| 6       | 38+725               | LHS  | Minor Junction   |
| 7       | 38+930               | LHS  | Minor Junction   |
| 8       | 39+380               | LHS  | Minor Junction   |
| 9       | 40+070               | LHS  | Minor Junction   |
| 10      | 40+580               | BHS  | Minor Junction   |
| 11      | 40+860               | BHS  | Minor Junction   |
| 12      | 41+010               | BHS  | Minor Junction   |
| 13      | 41+500               | BHS  | Minor Junction   |
| 14      | 41+690               | BHS  | Minor Junction   |
| 15      | 42+580               | BHS  | Minor Junction   |
| 16      | 42+650               | LHS  | Minor Junction   |
| 17      | 42+740               | BHS  | Minor Junction   |
| 18      | 42+950               | BHS  | Minor Junction   |
| 19      | 43+860               | BHS  | Minor Junction   |
| 20      | 44+380               | BHS  | Minor Junction   |
| 21      | 44+720               | LHS  | Minor Junction   |
| 22      | 45+000               | RHS  | Minor Junction   |
| 23      | 45+650               | LHS  | Minor Junction   |
| 24      | 46+800               | LHS  | Minor Junction   |
| 25      | 47+000               | BHS  | Minor Junction   |
| 26      | 47+180               | LHS  | Minor Junction   |
| 27      | 47+720               | LHS  | Minor Junction   |
| 28      | 48+200               | RHS  | Minor Junction   |
| 29      | 49+130               | BHS  | Minor Junction   |
| 30      | 46+620               | LHS  | Minor Junction   |
| 31      | 50+650               | RHS  | Minor Junction   |
| 32      | 50+750               | BHS  | Minor Junction   |
| 33      | 51+440               | BHS  | Minor Junction   |
| 34      | 51+600               | LHS  | Minor Junction   |
| 35      | 51+750               | RHS  | Minor Junction   |
| 36      | 51+870               | LHS  | Minor Junction   |
| 37      | 52+600               | BHS  | Minor Junction   |
| 38      | 52+740               | LHS  | Minor Junction   |
| 39      | 53+025               | LHS  | Minor Junction   |
| 40      | 53+160               | RHS  | Minor Junction   |
| 41      | 53+230               | LHS  | Minor Junction   |
| 42      | 53+350               | LHS  | Minor Junction   |
| 43      | 53+400               | BHS  | Minor Junction   |

| Sl. No. | Design Chainage (Km) | Side | Type of Junction |
|---------|----------------------|------|------------------|
| 44      | 53+635               | BHS  | Minor Junction   |
| 45      | 53+880               | RHS  | Minor Junction   |
| 46      | 53+990               | LHS  | Minor Junction   |
| 47      | 54+100               | LHS  | Minor Junction   |
| 48      | 54+620               | RHS  | Minor Junction   |
| 49      | 54+620               | LHS  | Minor Junction   |
| 50      | 55+500               | BHS  | Minor Junction   |
| 51      | 55+730               | BHS  | Minor Junction   |
| 52      | 56+120               | BHS  | Minor Junction   |
| 53      | 56+435               | BHS  | Minor Junction   |
| 54      | 56+900               | BHS  | Minor Junction   |
| 55      | 57+160               | BHS  | Minor Junction   |
| 56      | 58+050               | LHS  | Minor Junction   |
| 57      | 58+360               | RHS  | Minor Junction   |
| 58      | 59+200               | RHS  | Minor Junction   |
| 59      | 59+400               | LHS  | Minor Junction   |
| 60      | 59+515               | LHS  | Minor Junction   |
| 61      | 60+000               | BHS  | Minor Junction   |
| 62      | 60+400               | LHS  | Minor Junction   |
| 63      | 60+940               | LHS  | Minor Junction   |
| 64      | 61+600               | RHS  | Minor Junction   |
| 65      | 61+660               | LHS  | Minor Junction   |
| 66      | 61+800               | RHS  | Minor Junction   |
| 67      | 62+160               | BHS  | Minor Junction   |
| 68      | 62+550               | BHS  | Minor Junction   |
| 69      | 63+110               | LHS  | Minor Junction   |
| 70      | 63+540               | BHS  | Minor Junction   |
| 71      | 63+800               | BHS  | Minor Junction   |
| 72      | 64+100               | BHS  | Minor Junction   |
| 73      | 65+150               | BHS  | Minor Junction   |
| 74      | 65+500               | BHS  | Minor Junction   |
| 75      | 66+350               | BHS  | Minor Junction   |
| 76      | 66+450               | LHS  | Minor Junction   |
| 77      | 66+550               | BHS  | Minor Junction   |
| 78      | 66+900               | LHS  | Minor Junction   |
| 79      | 67+380               | LHS  | Minor Junction   |
| 80      | 67+800               | LHS  | Minor Junction   |
| 81      | 68+350               | BHS  | Minor Junction   |
| 82      | 69+430               | BHS  | Minor Junction   |
| 83      | 69+780               | RHS  | Minor Junction   |
| 84      | 70+400               | LHS  | Minor Junction   |
| 85      | 71+520               | BHS  | Minor Junction   |

(ii) **Grade separated intersection with/without ramps**

| Sl. No. | Location (km) | 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 the Manual and the specified cross sectional details.

**Turfing on slopes (Filling sections) & Hydroseeding on slopes (Cut sections) shall be provided.**

- (ii) Raising of the existing road [Refer to the provision of relevant Manual and specify sections to be raised]  
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] |
|-----------------------------|-------------------------|--------|------------------------------------------------|
| Refer design plan & profile |                         |        |                                                |

**5 Pavement Design**

- (i) Pavement design shall be carried out in accordance with the provision of relevant Manual.  
Notwithstanding anything to the contrary contained in this Agreement or the Manual, the Contractor shall design the pavement for design CBR of not exceeding 8%.  
Wherever existing soil is to be used as subgrade and found in poor condition, soil stabilization shall be done to achieve minimum design CBR of 8%.
- (ii) Type of pavement  
  
[Refer to the provision of relevant Manual and state specific requirement, if any, of providing cement concrete pavement.]
- (iii) Design requirements
-

[Refer to the provision of relevant Manual and specify design requirements and strategy]

a) Design Period and strategy

Flexible pavement for new pavement or for widening and strengthening of the existing pavement shall be designed for a minimum design period of 15 years. Stage construction shall not be permitted.

b) Design Traffic

Notwithstanding anything to the contrary contained in this Agreement or the Manual, the Contractor shall design the pavement for minimum design traffic of 20 million standard axles.

(iv) Re-construction of stretches

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

| Sl. No. | Stretch (km) |        | Remarks |
|---------|--------------|--------|---------|
|         | From         | To     |         |
| 1       | 48+720       | 48+950 | TCS 4   |
| 2       | 57+980       | 58+420 | TCS 4   |
| 3       | 60+000       | 60+080 | TCS 3   |
| 4       | 60+750       | 60+850 | TCS 5   |
| 5       | 67+250       | 67+700 | TCS 3   |

6 Road Side Drainage

Drainage system including surface and sub surface drains for the Project Highway shall be provided as per the provision of relevant Manual.

| Sl. No. | Design Chainage (km)           |        | Drain Length = (Length – Bridge length) (m) | Side | Remarks |
|---------|--------------------------------|--------|---------------------------------------------|------|---------|
|         | From                           | To     |                                             |      |         |
| A       | RCC Covered Drain (1.75m wide) |        |                                             |      |         |
| 1       | 52+900                         | 53+100 | 400                                         | BHS  | TCS-3   |
| 2       | 59+975                         | 60+135 | 320                                         | BHS  | TCS-3   |
| 3       | 67+200                         | 67+700 | 1000                                        | BHS  | TCS-3   |
|         |                                |        | 1720                                        |      |         |
| B       | PCC Drain                      |        |                                             |      |         |

| Sl. No.  | Design Chainage (km)                     |    | Drain Length =<br>(Length – Bridge length)<br>(m) | Side | Remarks |
|----------|------------------------------------------|----|---------------------------------------------------|------|---------|
|          | From                                     | To |                                                   |      |         |
|          | PCC (U-shaped) drain along hill sections |    | 3860                                              |      | TCS 4&5 |
|          |                                          |    | 8260                                              |      |         |
|          |                                          |    | <b>12120</b>                                      |      |         |
| <b>C</b> | <b>Unlined Surface drain</b>             |    | <b>46952</b>                                      |      |         |

## 7 Design of structures

### (i) General

- (a) All bridges, culverts and structures shall be designed and constructed in accordance with the provision of relevant Manual 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:

[Refer to the provision of relevant Manual and specify the width of carriageway of new bridges and structures of more than 60 (sixty) meter length, if the carriage way width is different from 7.5 (seven point five) meters in the table below.]

**Refer – Two lane manual IRC SP 73 -2018, fig. 7.6 for bridges**

| Sl. No. | Bridge (km) | Width of carriage way (m) and Cross – Sectional feature                                               |
|---------|-------------|-------------------------------------------------------------------------------------------------------|
| 1       | 36+290      | 18m width (13m c'way + 1.5m paved footpath with Crash barrier (b/s) + (crash barrier 2m (4 x 0.5m)) ) |
| 2       | 37+280      | -do-                                                                                                  |
| 3       | 39+705      | -do-                                                                                                  |
| 4       | 40+960      | -do-                                                                                                  |
| 5       | 43+430      | -do-                                                                                                  |
| 6       | 43+900      | -do-                                                                                                  |
| 7       | 46+070      | -do-                                                                                                  |
| 8       | 50+775      | -do-                                                                                                  |
| 9       | 52+100      | -do-                                                                                                  |
| 10      | 53+500      | -do-                                                                                                  |
| 11      | 58+987      | -do-                                                                                                  |
| 12      | 59+970      | -do-                                                                                                  |
| 13      | 60+450      | -do-                                                                                                  |

| Sl. No. | Bridge (km) | Width of carriage way (m) and Cross – Sectional feature |
|---------|-------------|---------------------------------------------------------|
| 14      | 62+625      | -do-                                                    |
| 15      | 63+780      | -do-                                                    |
| 16      | 64+045      | -do-                                                    |
| 17      | 69+895      | -do-                                                    |
| 18      | 70+930      | -do-                                                    |

(c) The following structures shall be provided with footpaths:

[Refer to the provision of relevant Manual and provide details of new Structures with footpath.]

**Refer – Two lane manual IRC SP 73 -2018, fig. 7.6 for bridges**

| Sl. No. | Location (km) | Remarks                                                    |
|---------|---------------|------------------------------------------------------------|
| 1       | 36+290        | Minor Bridge, 1.5m paved footpath (b/s) with crash barrier |
| 2       | 37+280        | -do-                                                       |
| 3       | 39+705        | -do-                                                       |
| 4       | 40+960        | -do-                                                       |
| 5       | 43+430        | -do-                                                       |
| 6       | 43+900        | -do-                                                       |
| 7       | 46+070        | -do-                                                       |
| 8       | 50+775        | -do-                                                       |
| 9       | 52+100        | -do-                                                       |
| 10      | 53+500        | Major Bridge, 1.5m paved footpath (b/s) with crash barrier |
| 11      | 58+987        | Minor Bridge, 1.5m paved footpath (b/s) with crash barrier |
| 12      | 59+970        | -do-                                                       |
| 13      | 60+450        | -do-                                                       |
| 14      | 62+625        | -do-                                                       |
| 15      | 63+780        | -do-                                                       |
| 16      | 64+045        | -do-                                                       |
| 17      | 69+895        | -do-                                                       |
| 18      | 70+930        | -do-                                                       |

(d) All bridges shall be high-level bridges.

[Refer to the provision of relevant Manual and state if there is any exception]

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

| Sl. No. | Location (km) | Utility services to be carried | Remarks      |
|---------|---------------|--------------------------------|--------------|
| 1       | 36+290        |                                | Minor Bridge |
| 2       | 37+280        |                                | Minor Bridge |
| 3       | 39+705        |                                | Minor Bridge |
| 4       | 40+960        |                                | Minor Bridge |
| 5       | 43+430        |                                | Minor Bridge |
| 6       | 43+900        |                                | Minor Bridge |
| 7       | 46+070        |                                | Minor Bridge |
| 8       | 50+775        |                                | Minor Bridge |
| 9       | 52+100        |                                | Minor Bridge |
| 10      | 53+500        |                                | Major Bridge |
| 11      | 58+987        |                                | Minor Bridge |
| 12      | 59+970        |                                | Minor Bridge |
| 13      | 60+450        |                                | Minor Bridge |
| 14      | 62+625        |                                | Minor Bridge |
| 15      | 63+780        |                                | Minor Bridge |
| 16      | 64+045        |                                | Minor Bridge |
| 17      | 69+895        |                                | Minor Bridge |
| 18      | 70+930        |                                | Minor Bridge |

- (f) Cross-section of the new culverts and bridges at deck level for the project highway shall confirm to the typical cross- sections given in the provision of manual.

**(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 re-constructed as new Box

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culverts:

| Sl. No. | Culvert Location (Chainage Km) | Span/Openning (m) | Remarks |
|---------|--------------------------------|-------------------|---------|
| 1       | 45+410                         | 1x2x2             |         |
| 2       | 48+135                         | 1x2x2             |         |
| 3       | 49+590                         | 1x5x4             |         |
| 4       | 51+630                         | 1x2x2             |         |
| 5       | 51+720                         | 1x2x2             |         |
| 6       | 58+250                         | 1x5x4             |         |
| 7       | 59+200                         | 1x2x2             |         |
| 8       | 60+585                         | 1x4x3             |         |

**(c) Widening of existing culverts**

All existing culverts which are not to be reconstructed shall be widened to the road way width of the Project Highway as per the typical cross section given in section 7 of the Manual. Repairs and strengthening of existing structures where required shall be carried out.

| Sl. No. | Culvert location | Type, span, height and width of existing culvert (m) | Repairs to be carried out [specify] |
|---------|------------------|------------------------------------------------------|-------------------------------------|
| Nil     |                  |                                                      |                                     |

**(d) Additional new culverts ( Bo x) shall be constructed as per particulars given in the table below:**

| Sl. No. | Culvert Location (Chainage Km) | Span/Openning (m) |
|---------|--------------------------------|-------------------|
| 1       | 36+240                         | 1x2x2             |
| 2       | 36+540                         | 1x2x3             |
| 3       | 36+890                         | 1x 3x3            |
| 4       | 37+190                         | 1x3x4             |
| 5       | 37+460                         | 1x5x3             |
| 6       | 37+720                         | 1x5x4             |
| 7       | 37+970                         | 1x5x4             |
| 8       | 38+230                         | 1x5x4             |
| 9       | 38+730                         | 1x2x2             |
| 10      | 38+945                         | 1x2x2             |
| 11      | 39+250                         | 1x 3x3            |

| Sl. No. | Culvert Location<br>(Chainage Km) | Span/Openning (m) |
|---------|-----------------------------------|-------------------|
| 12      | 39+550                            | 1x2x3             |
| 13      | 39+940                            | 1x 3x3            |
| 14      | 40+190                            | 1x 3x3            |
| 15      | 40+460                            | 1x 3x3            |
| 16      | 40+890                            | 1x 3x3            |
| 17      | 41+390                            | 1x4x4             |
| 18      | 41+850                            | 1x2x2             |
| 19      | 42+150                            | 1x2x2             |
| 20      | 42+550                            | 1x2x2             |
| 21      | 42+850                            | 1x5x4             |
| 22      | 43+190                            | 1x5x4             |
| 23      | 43+650                            | 1x2x2             |
| 24      | 44+260                            | 1x5x3             |
| 25      | 44+530                            | 1x5x3             |
| 26      | 44+760                            | 1x2x2             |
| 27      | 45+125                            | 1x2x2             |
| 28      | 45+620                            | 1x2x2             |
| 29      | 45+975                            | 1x 3x3            |
| 30      | 46+425                            | 1x 3x3            |
| 31      | 46+675                            | 1x2x2             |
| 32      | 46+950                            | 1x2x2             |
| 33      | 47+210                            | 1x5x4             |
| 34      | 47+530                            | 1x2x2             |
| 35      | 47+840                            | 1x2x2             |
| 36      | 48+530                            | 1x2x2             |
| 37      | 48+880                            | 1x2x2             |
| 38      | 49+230                            | 1x2x2             |
| 39      | 50+060                            | 1x2x3             |
| 40      | 50+540                            | 1x 3x3            |
| 41      | 51+240                            | 1x2x2             |
| 42      | 51+530                            | 1x3x4             |
| 43      | 52+280                            | 1x5x4             |
| 44      | 52+610                            | 1x2x2             |
| 45      | 52+830                            | 1x2x2             |
| 46      | 53+150                            | 1x2x3             |
| 47      | 53+440                            | 1x2x2             |
| 48      | 53+590                            | 1x4x4             |
| 49      | 53+835                            | 1x5x4             |
| 50      | 54+240                            | 1x2x2             |
| 51      | 54+535                            | 1x2x2             |
| 52      | 54+890                            | 1x2x2             |

| Sl. No. | Culvert Location<br>(Chainage Km) | Span/Openning (m) |
|---------|-----------------------------------|-------------------|
| 53      | 55+235                            | 1x2x2             |
| 54      | 55+440                            | 1x5x4             |
| 55      | 55+900                            | 1x2x3             |
| 56      | 56+300                            | 1x5x4             |
| 57      | 56+765                            | 1x5x4             |
| 58      | 57+250                            | 1x2x2             |
| 59      | 57+680                            | 1x5x4             |
| 60      | 58+000                            | 1x2x2             |
| 61      | 58+810                            | 1x2x2             |
| 62      | 59+710                            | 1x4x4             |
| 63      | 60+100                            | 1x2x3             |
| 64      | 60+750                            | 1x2x2             |
| 65      | 61+000                            | 1x2x2             |
| 66      | 61+550                            | 1x4x3             |
| 67      | 61+950                            | 1x2x2             |
| 68      | 62+250                            | 1x5x4             |
| 69      | 63+050                            | 1x5x4             |
| 70      | 63+435                            | 1x5x4             |
| 71      | 64+130                            | 1x5x4             |
| 72      | 64+550                            | 1x2x2             |
| 73      | 64+900                            | 1x2x3             |
| 74      | 65+145                            | 1x4x4             |
| 75      | 65+550                            | 1x2x2             |
| 76      | 65+950                            | 1x2x2             |
| 77      | 66+380                            | 1x5x4             |
| 78      | 66+600                            | 1x2x2             |
| 79      | 66+925                            | 1x2x2             |
| 80      | 67+200                            | 1x2x2             |
| 81      | 67+550                            | 1x2x2             |
| 82      | 67+850                            | 1x2x2             |
| 83      | 68+250                            | 1x2x2             |
| 84      | 68+550                            | 1x2x2             |
| 85      | 68+950                            | 1x2x3             |
| 86      | 69+225                            | 1x4x4             |
| 87      | 69+645                            | 1x3x4             |
| 88      | 70+250                            | 1x 3x3            |
| 89      | 70+550                            | 1x2x2             |
| 90      | 71+300                            | 1x5x4             |
| 91      | 71+550                            | 1x2x2             |
| 92      | 72+000                            | 1x2x2             |

\*\* The following box drain/culvert shall be provided -

|  |                                    |                    |     |                   |
|--|------------------------------------|--------------------|-----|-------------------|
|  | <b>From KM 53+300 to km 53+400</b> | <b>100m length</b> | LHS | 4m wide box drain |
|--|------------------------------------|--------------------|-----|-------------------|

**Note:**

- i. The location of additional culvert may change as per site with approval of Client/Authority Engineer.
- (e) Repairs/ Replacement of Railing/Parapets, flooring and protection works of the existing culverts shall be undertaken as follows:  
[Refer to the provision of relevant Manual and provide details]

| Sl. No. | Location at km | Type of repair required |
|---------|----------------|-------------------------|
| Nil     |                |                         |

- (f) Floor Protection works shall be as specified in the relevant IRC codes and specifications.
- (iii) **Bridges**
  - (a) Existing Bridges to be re-constructed / Widened
    - (i) The existing major/minor bridges at the following locations shall be reconstructed as new structures:  
[Refer to the provision of relevant Manual and provide details]

| Sl. No. | Chainage (km) | Type of Structure |               |                 | No. of Spans with span length (m) | Width (m) |
|---------|---------------|-------------------|---------------|-----------------|-----------------------------------|-----------|
|         |               | Foundation        | Sub-Structure | Super structure |                                   |           |
| 1       | 60+450        | PSC Girder        |               |                 | 1x30                              | 18m       |

**Note:** PCC work shall be done on embankment slope of each bridge (major + minor) approach.

- (ii) The following narrow bridges shall be widened:

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

Attach GAD\*

- (b) **Additional New Bridges**

- (i) **Major Bridges:** - New major bridge at the following locations on the project highway shall be constructed. GADs for the new bridges are attached in the drawings folder:

| Sl. No. | Location (km) | Total length(m) | Remarks    |
|---------|---------------|-----------------|------------|
| 1.      | 53.500        | 75m             | 3 m X 25 m |

- (ii) **Minor Bridges:** - New minor bridges at the following locations on the project highway shall be constructed. GADs for the new bridges are attached in the drawings folder:

| Sl. No. | Location (km) | Total Length (m) | Remarks |
|---------|---------------|------------------|---------|
| 1       | 36+290        | 35               |         |
| 2       | 37+280        | 12               |         |
| 3       | 39+705        | 35               |         |
| 4       | 40+960        | 25               |         |
| 5       | 43+430        | 40               |         |
| 6       | 43+900        | 25               |         |
| 7       | 46+070        | 16               |         |
| 8       | 50+775        | 10               |         |
| 9       | 52+100        | 25               |         |
| 10      | 58+987        | 12               |         |
| 11      | 59+970        | 15               |         |
| 12      | 62+625        | 16               |         |
| 13      | 63+780        | 17               |         |
| 14      | 64+045        | 24               |         |
| 15      | 69+895        | 16               |         |
| 16      | 70+930        | 16               |         |

**Note:** PCC (M-15 grade) work shall be done on embankment slope of each bridge approach on both side.

- (c) **The railings of existing bridges shall be Reconstruction by crash barriers at the following locations:**

[Refer to the provision of relevant Manual and provide details:]

| Sl. No. | Location at km | Remarks |
|---------|----------------|---------|
| Nil     |                |         |

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

[Refer to the provision of relevant Manual and provide details]

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

- (e) **Drainage system for bridge decks**

An effective drainage system for bridge decks shall be provided as specified in paragraph 7.21 of the Manual.

- (f) **Structures in marine environment**

[Refer to the provision of relevant Manual and specify the necessary measures/treatments for protecting structures in marine environment, where applicable]

(iv) ***Rail- Road Bridges***

Design, construction and detailing of ROB/RUB shall be as specified in section 7 of the Manual. (Refer to the provision of relevant Manual and specify modification, if any)

- (a) **Road Over-Bridges**

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

| Sl. No. | Location of Level crossing (km) | Length of RoB (m) except approach length | Type of structure | Remarks |
|---------|---------------------------------|------------------------------------------|-------------------|---------|
| Nil     |                                 |                                          |                   |         |

- (b) **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***

[Refer to the provision of relevant Manual]

The grade separated structures shall be provided at the locations and of the type and

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length specified in paragraphs 2(ix) and 3 of this Annex-I.

**(vi) Repairs and strengthening of bridges and structures**

[Refer to the provision of relevant Manual and provide details]

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 of bridge (km) | Nature and extent of Repairs / strengthening to be carried out |
|---------|-------------------------|----------------------------------------------------------------|
| Nil     |                         |                                                                |

**B. ROB / RUB**

| Sl. No. | Location of ROB/RUB (km) | Nature and Extent of Repairs / Strengthening to be carried out |
|---------|--------------------------|----------------------------------------------------------------|
| Nil     |                          |                                                                |

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

| Sl. No. | Location of Structure (km) | Nature and Extent of Repairs / Strengthening to be carried out |
|---------|----------------------------|----------------------------------------------------------------|
| Nil     |                            |                                                                |

**(vii) List of Major Bridges and Structures**

The following is the list of the Major Bridges and Structures:

| Sl. No. | Location (Design Chainage km) |
|---------|-------------------------------|
| 1.      | 53+500                        |

**8. TRAFFIC CONTROL DEVICES AND ROAD SAFETY WORKS**

- (i) Traffic control devices like **markers, signs and signal devices used to inform, guide and control traffic** and road safety works shall be provided in accordance with the provision of relevant manual adjacent to built-up areas, junctions and as per site
-

- (ii) Specification of the reflective sheeting. [Refer to the provision of relevant manual]

## 9. ROADSIDE FURNITURE

- (i) Roadside furniture like Sign Boards, Over Head Gantry Boards, Cantilevers, Raised Pavement Markers etc shall be provided in accordance with the provisions of Two lane manual IRC: SP: 73-2018.

- (ii) Overhead traffic signs: 5 nos.

| Sl. No. | Location of Overhead sign board |
|---------|---------------------------------|
| 1       | Km 36+300                       |
| 2       | Km 51+600                       |
| 3       | Km 53+400                       |
| 4       | Km 56+900                       |
| 5       | Km 63+100                       |

The above locations may change as per site requirement in consultation with the Authority's Engineer

## 10. Compulsory Afforestation

[Refer to the provision of relevant Manual and specify the number of trees which are required to be planted by the Contractor as compensatory afforestation.]

## 11. Hazardous Locations

The safety barriers shall also be provided at the following hazardous locations:

| Sl. No. | Stretch (design km) |        | Side      |
|---------|---------------------|--------|-----------|
|         | From                | To     |           |
| 1       | 52+900              | 53+100 | Both Side |
| 2       | 59+975              | 60+135 | Both Side |
| 3       | 67+200              | 67+700 | Both Side |

- a) **Breast Walls** - Breast wall shall be used with minimum length:-

| Chainage From | Chainage To | Side |
|---------------|-------------|------|
| 42300         | 42340       | LHS  |
| 42400         | 42620       | LHS  |
| 43480         | 43500       | LHS  |
| 43580         | 43780       | LHS  |

|       |       |     |
|-------|-------|-----|
| 44100 | 44180 | LHS |
| 49820 | 49860 | LHS |
| 50100 | 50180 | LHS |
| 50580 | 50620 | LHS |
| 50680 | 50720 | LHS |
| 51020 | 51400 | LHS |
| 53980 | 54000 | LHS |
| 54000 | 54280 | LHS |
| 54460 | 54720 | LHS |
| 55180 | 55420 | LHS |
| 55480 | 55580 | LHS |
| 55700 | 55780 | LHS |
| 56100 | 56220 | LHS |
| 56620 | 56640 | LHS |
| 56820 | 57040 | LHS |
| 57180 | 57200 | LHS |
| 60540 | 60560 | LHS |
| 60740 | 60900 | LHS |
| 60940 | 61020 | LHS |
| 61420 | 61500 | LHS |
| 61580 | 61720 | LHS |
| 64740 | 64760 | LHS |
| 64980 | 65040 | LHS |
| 65400 | 65640 | LHS |
| 65740 | 65840 | LHS |
| 65900 | 66020 | LHS |
| 66260 | 66300 | LHS |
| 68420 | 68440 | LHS |
| 70280 | 70300 | LHS |
| 42280 | 42340 | RHS |
| 42400 | 42620 | RHS |
| 43480 | 43540 | RHS |
| 43600 | 43780 | RHS |
| 44120 | 44160 | RHS |
| 49820 | 49880 | RHS |
| 50100 | 50180 | RHS |
| 50580 | 50620 | RHS |

| Chainage From | Chainage To | Side |
|---------------|-------------|------|
| 50680         | 50720       | RHS  |
| 51020         | 51420       | RHS  |
| 53980         | 54000       | RHS  |
| 54000         | 54180       | RHS  |
| 54440         | 54720       | RHS  |
| 54840         | 54860       | RHS  |
| 55180         | 55400       | RHS  |
| 55480         | 55580       | RHS  |
| 55680         | 55780       | RHS  |
| 56100         | 56220       | RHS  |
| 56620         | 56700       | RHS  |
| 56820         | 57000       | RHS  |
| 60760         | 61000       | RHS  |
| 61080         | 61120       | RHS  |
| 61440         | 61500       | RHS  |
| 61600         | 61700       | RHS  |
| 61780         | 61800       | RHS  |
| 64980         | 65040       | RHS  |
| 65420         | 65640       | RHS  |
| 65760         | 65840       | RHS  |
| 65900         | 66020       | RHS  |

Note: The above length of breast wall is minimum & any increase in the length/Qty of Breast wall as per site requirements may not be considered as positive change of scope.

- b) **Retaining wall** – Retaining wall (for embankment protection/ in pond areas / water logged areas shall be used at following locations:-

| Chainage From | Chainage To | Side |
|---------------|-------------|------|
| 47040         | 47240       | LHS  |
| 49400         | 49650       | LHS  |
| 50000         | 50080       | LHS  |
| 50200         | 50420       | LHS  |

| Chainage From | Chainage To | Side |
|---------------|-------------|------|
| 62940         | 63140       | LHS  |
| 66700         | 66740       | LHS  |
| 67050         | 67100       | LHS  |
| 36300         | 36560       | RHS  |
| 39700         | 39720       | RHS  |
| 40620         | 40660       | RHS  |
| 40960         | 40980       | RHS  |
| 41320         | 41400       | RHS  |
| 41440         | 41460       | RHS  |
| 41520         | 41580       | RHS  |
| 43420         | 43440       | RHS  |
| 44240         | 44280       | RHS  |
| 45400         | 45420       | RHS  |
| 45520         | 45580       | RHS  |
| 46060         | 46080       | RHS  |
| 47180         | 47220       | RHS  |
| 47760         | 47780       | RHS  |
| 48120         | 48180       | RHS  |
| 49400         | 49420       | RHS  |
| 49480         | 49500       | RHS  |
| 49560         | 49660       | RHS  |
| 49980         | 50060       | RHS  |
| 50340         | 50460       | RHS  |
| 50520         | 50540       | RHS  |
| 50760         | 50920       | RHS  |
| 51460         | 51540       | RHS  |
| 51880         | 51900       | RHS  |
| 52120         | 52140       | RHS  |
| 53480         | 53520       | RHS  |
| 54960         | 54980       | RHS  |
| 56300         | 56420       | RHS  |
| 56520         | 56540       | RHS  |
| 57640         | 57700       | RHS  |
| 57740         | 57800       | RHS  |
| 58880         | 58900       | RHS  |
| 59700         | 59720       | RHS  |
| 59840         | 59960       | RHS  |
| 60240         | 60480       | RHS  |
| 62940         | 63140       | RHS  |
| 66650         | 66780       | RHS  |
| 67060         | 67130       | RHS  |
| 69480         | 69660       | RHS  |
| 69780         | 69820       | RHS  |
| 70480         | 70500       | RHS  |
| 71460         | 71480       | RHS  |
| 71700         | 71800       | RHS  |

| Chainage From | Chainage To | Side |
|---------------|-------------|------|
| 71840         | 71960       | RHS  |

**Note:** The above length of retaining wall is minimum & any increase in the length/Qty of retaining wall as per site requirements may not be considered as positive change of scope.

## **2. W-Beam Crash Barrier (along High Embankment & Bridge approach)**

- W Beam crash barrier shall be provided in minimum length of 26980m,

| S. No. | Chainage |       | Length | Side | Remarks |
|--------|----------|-------|--------|------|---------|
|        | From     | To    |        |      |         |
| 1      | 36280    | 37640 | 1360   | BHS  |         |
| 2      | 37760    | 38460 | 700    | LHS  |         |
| 3      | 38480    | 38600 | 120    | BHS  |         |
| 4      | 39320    | 39420 | 100    | BHS  |         |
| 5      | 39440    | 41640 | 2200   | BHS  |         |
| 6      | 42000    | 42100 | 100    | BHS  |         |
| 7      | 42820    | 42920 | 100    | BHS  |         |
| 8      | 43160    | 43460 | 300    | BHS  |         |
| 9      | 43900    | 44040 | 140    | LHS  |         |
| 10     | 44220    | 44280 | 60     | BHS  |         |
| 11     | 44500    | 44580 | 80     | BHS  |         |
| 12     | 45300    | 45400 | 100    | RHS  |         |
| 13     | 45420    | 45580 | 160    | BHS  |         |
| 14     | 45720    | 45860 | 140    | BHS  |         |
| 15     | 46220    | 46280 | 60     | RHS  |         |
| 16     | 46840    | 46880 | 40     | BHS  |         |
| 17     | 47060    | 47260 | 200    | BHS  |         |
| 18     | 47680    | 47960 | 280    | BHS  |         |
| 19     | 48100    | 48160 | 60     | BHS  |         |
| 20     | 48180    | 48220 | 40     | RHS  |         |
| 21     | 48580    | 48660 | 80     | BHS  |         |
| 22     | 49060    | 49100 | 40     | RHS  |         |
| 23     | 49400    | 49660 | 260    | BHS  |         |
| 24     | 49940    | 50060 | 120    | BHS  |         |
| 25     | 50220    | 50280 | 60     | LHS  |         |
| 26     | 50300    | 50540 | 240    | BHS  |         |

| S. No. | Chainage |       | Length | Side | Remarks |
|--------|----------|-------|--------|------|---------|
|        | From     | To    |        |      |         |
| 27     | 50760    | 50940 | 180    | BHS  |         |
| 28     | 51440    | 51560 | 120    | BHS  |         |
| 29     | 51860    | 52020 | 160    | BHS  |         |
| 30     | 52100    | 52340 | 240    | BHS  |         |
| 31     | 52360    | 52480 | 120    | LHS  |         |
| 32     | 53460    | 53540 | 80     | BHS  |         |
| 33     | 53720    | 53840 | 120    | BHS  |         |
| 34     | 54920    | 54980 | 60     | BHS  |         |
| 35     | 55820    | 55980 | 160    | BHS  |         |
| 36     | 56280    | 56540 | 260    | BHS  |         |
| 37     | 57640    | 57800 | 160    | BHS  |         |
| 38     | 57820    | 57880 | 60     | LHS  |         |
| 39     | 58840    | 59220 | 380    | BHS  |         |
| 40     | 59660    | 59980 | 320    | BHS  |         |
| 41     | 60140    | 60500 | 360    | BHS  |         |
| 42     | 60620    | 60700 | 80     | LHS  |         |
| 43     | 61880    | 61920 | 40     | BHS  |         |
| 44     | 61980    | 62080 | 100    | BHS  |         |
| 45     | 62200    | 62620 | 420    | BHS  |         |
| 46     | 62980    | 63480 | 500    | BHS  |         |
| 47     | 63580    | 63920 | 340    | BHS  |         |
| 48     | 64020    | 64520 | 500    | BHS  |         |
| 49     | 66660    | 66740 | 80     | RHS  |         |
| 50     | 67060    | 67140 | 80     | BHS  |         |
| 51     | 68000    | 68040 | 40     | BHS  |         |
| 52     | 68140    | 68220 | 80     | BHS  |         |
| 53     | 68920    | 69020 | 100    | LHS  |         |
| 54     | 69040    | 69900 | 860    | BHS  |         |
| 55     | 70180    | 70220 | 40     | BHS  |         |
| 56     | 70320    | 70520 | 200    | BHS  |         |
| 57     | 70580    | 70680 | 100    | RHS  |         |
| 58     | 70700    | 70800 | 100    | BHS  |         |
| 59     | 70920    | 71300 | 380    | BHS  |         |
| 60     | 71380    | 71520 | 140    | RHS  |         |
| 61     | 71700    | 72000 | 300    | BHS  |         |

**Note:** The above length of W beam crash barrier is minimum & any increase in the length of crash barrier as per site requirements may not be considered as positive change of scope.

1. *Near km 62.700, re-alignment of a nala is proposed (pls refer alignment plan) in approx. 120m length, the pitching work should be done with the approval of Authority Engineer.*

## **12. Special Requirement for Hill Roads:**

[Refer to the provision of relevant Manual and provide details where relevant and required.]

## **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 variations in the lengths specified in this Schedule-B shall not constitute a Change of Scope, save and except any variations in the length arising out of a Change of Scope expressly undertaken in accordance with the provisions of Article 13.

## **14. UTILITY SHIFTING**

Shifting of obstructing existing utilities indicated in Schedule A to an appropriate location in accordance with the standards and specification of concerned Utility Owning Department is part of the scope of work of the Contractor/Concessionaire\*. The bidders may visit the site and assess the quantum of shifting of utilities for the projects before submission of their bid. Copy of utility relocation plan is enclosed. The specification of concerned Utility Owning Department shall be applicable and followed.

Notes:

- a) The type/spacing/size/specifications of poles/towers/lines/cables to be used in shifting work shall be as per the guidelines of utility owning department and it is to be agreed solely between the contractor/Concessionaire\* and the utility owning department. No change of scope shall be admissible and no cost shall be paid for using different type/spacing/size/specifications in shifted work in comparison to those in the existing work or for making any overhead crossing to underground as per requirement of utility owning department and/or construction of project highway. The contractor/concessionaire\* shall carry out joint inspection with utility owning department and get the estimates from the utility owning department. The assistance of the Authority is limited to giving forwarding letter on the proposal of contractor/concessionaire\* to utility owning department whenever asked by the contractor/concessionaire\*. The decision/approval of utility owning department shall be on the contractor/concessionaire\*.
-

b) The supervision charges at the rates/charges applicable of the utility owning department shall be paid directly by the Authority to the utility Owing department as and when contractor/concessionaire\*furnishes demand of utility Owing Department along with a copy of estimated cost given by later.

c) The dismantled material/scrap of existing Utility to be shifted/Dismantled shall belong to the contractor/concessionaire\* who would be free to dispose-off the dismantled material as deemed fit by them unless the contractor/concessionaire\* is required to deposit the dismantled material may be availed by the contractor/concessionaire\* as per estimate agreed between them.

d) The utilities shall be handed over after shifting work is completed to utility Owing Department to their entire satisfaction. The maintenance liability shall rest with the Utility Owing Department after Handing over Process is complete as far as utility shifting works are concerned.

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**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) Toll plaza;
- (b) Road side furniture;
- (c) Pedestrian facilities;
- (d) Tree plantation;
- (e) Truck lay-byes;
- (f) Bus stop and bus shelters;
- (h) Rest areas; and
- (i) Others to be specified

**2      *Description of Project Facilities***

Each of the Project Facilities is described below showing:

**(a) Toll Plaza**

Toll plaza shall be designed as per the guidelines of manual and it is provided at following locations:

| S. No. | Toll Plaza Location (Design Chainage in Km) |
|--------|---------------------------------------------|
| Nil    |                                             |

**(b) Road side Furniture**

- i) Traffic Signs and Pavement Markings:  
Traffic signs and pavement markings includes roadside signs, overhead signs, and road marking along the Project Road.

Cautionary, mandatory and informatory signs are provided depending on the situation and function they perform in accordance with the IRC: 67-1997 guidelines for Road Signs. The different types of road signs are proposed to be provided are:

- i. Mandatory /Regulatory
- ii. Cautionary /Warning
- iii. Directional
- iv. Hazard Markers
- v. Informatory

Overhead signboard will be installed as per locations mentioned in schedule 'B'. provision has been made in the estimate for installation of road signs of various types.

Markings:

Longitudinal markings

- : centre lines
- : edge lines
- : Width transition
- : obstructions ahead

Intersections.

- : Stop lines
- : Word "Stop"
- : Pedestrian crossings.
- : Approach to intersection.
- : Direction arrows.
- : Continuity lines
- : Traffic island.

Parking:

- : Bus stop

- ii) Traffic signs and pavement markings shall include road side signs, overhead signs, curve mounted signs and road marking along the project highway. The location for these provisions shall be finalized as per manual.
- iii) Boundary stones -  
Boundary stone shall be fixed on either side of the road land opposite every 200m stone and kilometre stone (as per IRC-25).
- iv) 5th Km stone/ Hectometre / Kilometre stones – Refer Schedule 'B'
- v) Delineators and studs: Studs (100mm\*100mm) with reflective panels of dual prismatic cube capable of providing total reflection of light entering the lens face for lane marking and delineators or night time visibility shall be provided for the locations where extra width is proposed.

**(c) Pedestrian Facilities**

The additional pedestrian facilities in the form of guard rails, footpath, lighting etc shall be provided wherever required as per the provisions of IRC: 103-2012.

**(d) Landscaping and Tree Plantation**

The landscaping and tree plantation shall be provided. The locations for these provisions shall be finalized in consultation with Authority Engineer.

**(e) Truck Lay-byes**

Truck lay byes shall be provided at the following locations.

| Sl. No. | Proposed Chainage (Km) |
|---------|------------------------|
| 1       | 71.100 (LHS)           |

**(f) Bus Bays**

Bus lay byes shall be provided at the following locations.

| Sl. No. | Design Chainage (Km) |        | Remarks |
|---------|----------------------|--------|---------|
|         | LHS                  | RHS    |         |
| 1       | 42.435               | 42.315 |         |
| 2       | 63.275               | 62.855 |         |

**(g) Rest Areas,**

Nil.

**(h) Others**

**1. Highway Lighting**

Shall be provided as per manual at below locations –

| Sl. No | Design Chainage (Km) |        | Length (m) |
|--------|----------------------|--------|------------|
|        | From                 | To     |            |
| 1      | 52+500               | 53+400 | 900        |
| 2      | 54+600               | 54+900 | 300        |

| Sl. No | Design Chainage (Km) |        | Length (m) |
|--------|----------------------|--------|------------|
|        | From                 | To     |            |
| 3      | 67+200               | 67+700 | 500        |

**Note:** The above length is minimum & any increase in the length/Qty as per site requirements may not be considered as positive change of scope.

## 2. Highway Patrol

As per manual

## 3. Ambulances

As per manual

## 4. Cranes

As per manual

## 5. Traffic Aid Post

Traffic aid post shall be provided in consultation with Authority Engineer, the tentative locations for Traffic Aid post is as under –

| Sl. No. | Location for Traffic Aid Post |
|---------|-------------------------------|
| 1       | Near km 51+900                |
| 2       | Near km 63+400                |

## 6. Rainwater Harvesting

As per Ministry of Environment and Forests Notification, New Delhi dated 14/01/1997 (as amended on 13/01/1998, 05/01/1999 & 6/11/2000), the construction of Rain water, harvesting structure is mandatory in and around Water Crisis area, notified by the Central Ground Water Board.

In this section the contractor shall at least provide rain water harvesting system at following location.

| Sl. No. | Location for Rain water harvesting |
|---------|------------------------------------|
| 1       | Near km 38+200                     |
| 2       | Near km 40+800                     |
| 3       | Near km 43+000                     |
| 4       | Near km 45+600                     |
| 5       | Near km 48+100                     |
| 6       | Near km 50+500                     |
| 7       | Near km 53+800                     |
| 8       | Near km 56+800                     |
| 9       | Near km 59+200                     |
| 10      | Near km 61+900                     |
| 11      | Near km 64+500                     |
| 12      | Near km 67+100                     |
| 13      | Near km 69+600                     |

The above locations of Rain water Harvesting is tentative and may change as per site requirement on approval of Client/ Authority Engineer.

**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 conform to design requirements set out in the following documents:

[Manual of Specifications and Standards for Two Lanning of Highways (IRC: SP: 73-2018), referred to herein as the Manual.]

[Note: Specify the relevant manual, specification and standards]

**3      *Design Standards for Utility Shifting***

As regards, the work of utility shifting, the relevant specification, relevant rules, regulations and acts of Utility owning Departments/Agencies shall be applicable.

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

**Specifications and Standards for Construction**

**1 Specifications and Standards**

All Materials, works and construction operations shall conform to the Manual of Specifications and Standards for Two-Lanning of Highways (IRC:SP:73-2018),referred to as the Manual, and MORTH Specifications for Road and Bridge Works. Where the specification for a work is not given, Good Industry Practice shall be adopted to the satisfaction of the Authority's Engineer.

**2 Deviations from the Specifications and Standards**

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

| Clause Referred in Manual | Item                                                | Provision as per Manual | Modified Provision                                                                                                                             | Remarks                                                    |
|---------------------------|-----------------------------------------------------|-------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------|
| 2.2.1                     | Minimum design speed in Plain & Rolling Terrain     | 100kmph/80kmph          | At 1 location listed below, where the horizontal curve radius is not meeting the criteria as per clause 2.9.4 and table 2.5 of IRC:SP:73-2018. | Speed is restricted for Curve having radius listed below - |
| 2.2.1                     | Minimum design speed in Mountainous & Steep Terrain | 60kmph/40kmph           | No deviation                                                                                                                                   |                                                            |

**3. Deficient curve details:**

Horizontal curves which comes under deviation are listed below:

| Curve No. | HORIZONTAL CURVE |              |        |           | Terrain | Transition length | Speed (Kmph) |
|-----------|------------------|--------------|--------|-----------|---------|-------------------|--------------|
|           | Start Chainage   | End Chainage | Radius | Direction |         |                   |              |
| 1         | 44+449.491       | 44+727.446   | 400    | Right     | Plain   | 55                | 80           |
| 2         | 44+901.096       | 45+414.217   | 400    | Left      | Plain   | 55                | 80           |
| 3         | 45+604.454       | 45+998.336   | 400    | Right     | Plain   | 55                | 80           |
| 4         | 47+216.858       | 47+770.354   | 500    | Right     | Plain   | 45                | 80           |
| 5         | 47+942.566       | 48+380.919   | 400    | Left      | Plain   | 55                | 80           |
| 6         | 48+590.722       | 48+632.913   | 400    | Right     | Plain   | 55                | 80           |
| 7         | 51+578.151       | 51+752.661   | 400    | Right     | Plain   | 55                | 80           |
| 8         | 53+178.229       | 53+340.493   | 400    | Right     | Plain   | 55                | 80           |

**4 Deviations in Vertical improvement of Project Road are –**

There is no any vertical curves comes under deviation.

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## **Schedule - E**

*(See Clauses 2.1 and 14.2)*

### **Maintenance Requirements**

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

- (i) The Contractor shall, at all times maintain the Project Highway in accordance with the provisions of this Agreement, Applicable Laws and Applicable Permits.
- (ii) 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.
- (iii) All Materials, works and construction operations shall conform to the MORTH Specifications for Road and Bridge Works, and the relevant IRC publications. Where the specifications for a work are not given, Good Industry Practice shall be adopted.

[Specify all the relevant documents]

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

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

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

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

#### **4. Extension of time limit**

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

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**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 wilful 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.

**Table -1: Maintenance Criteria for Pavements:**

| Asset Type                                                                   | Performance Parameter | Level of Service (LOS) |                                                        | Frequency of Inspection | Tools/Equipment                                         | Standards and References for Inspection and Data Analysis                                                                                                                                                                   | Time limit for Rectification/Repair | Maintenance Specifications  |
|------------------------------------------------------------------------------|-----------------------|------------------------|--------------------------------------------------------|-------------------------|---------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|-----------------------------|
|                                                                              |                       | Desirable              | Acceptable                                             |                         |                                                         |                                                                                                                                                                                                                             |                                     |                             |
| <b>Flexible Pavement</b><br><b>(Pavement of MCW, Service Road, approach)</b> | Potholes              | Nil                    | < 0.1 % of area and subject to limit of 10 mm in depth | Daily                   | Length Measurement Unit like Scale, Tape, odometer etc. | IRC 82: 2015 and Distress Identification Manual for Long Term Pavement Performance Program, FHWA 2003 ( <a href="http://www.tfhrcc.com/pavement/ltp/reports/03031/">http://www.tfhrcc.com/pavement/ltp/reports/03031/</a> ) | 24-48 hours                         | MORT&H Specification 3004.2 |

| Asset Types of Grade structure, approaches of connecting roads, slip roads, lay byes etc. as applicable) | Performance Parameter    | Level of Service (LOS) |                                                          | Frequency of Inspection | Tools/Equipment              | Standards and References for Inspection and Data Analysis | Time limit for Rectification/Repair | Maintenance Specifications  |
|----------------------------------------------------------------------------------------------------------|--------------------------|------------------------|----------------------------------------------------------|-------------------------|------------------------------|-----------------------------------------------------------|-------------------------------------|-----------------------------|
|                                                                                                          |                          | Desirable              | Acceptable                                               |                         |                              |                                                           |                                     |                             |
|                                                                                                          | Cracking                 | Nil                    | < 5 %<br>subject to limit of 0.5 sqm for any 50 m length | Daily                   |                              |                                                           | 7-15 days                           | MORT&H Specification 3004.3 |
|                                                                                                          | Rutting                  | Nil                    | < 5 mm                                                   | Daily                   | Straight Edge                |                                                           | 15 -30 days                         | MORT&H Specification 3004.2 |
|                                                                                                          | Corrugations and Shoving | Nil                    | < 0.1% of area                                           | Daily                   | Length Measurement Unit like |                                                           | 2-7 days                            | IRC:82-2015                 |

| Asset Type | Performance Parameter      | Level of Service (LOS) |                                                                          | Frequency of Inspection | Tools/Equipment            | Standards and References for Inspection and Data Analysis | Time limit for Rectification/Repair | Maintenance Specifications      |
|------------|----------------------------|------------------------|--------------------------------------------------------------------------|-------------------------|----------------------------|-----------------------------------------------------------|-------------------------------------|---------------------------------|
|            |                            | Desirable              | Acceptable                                                               |                         |                            |                                                           |                                     |                                 |
|            | Bleeding                   | Nil                    | < 1 % of area                                                            | Daily                   | Scale, Tape, odometer etc. |                                                           | 3-7 days                            | MORT&H Specification 3004.4     |
|            | Ravelling / Stripping      | Nil                    | < 1 % of area                                                            | Daily                   |                            |                                                           | 7-15 days                           | IRC:82-2015 read with IRC SP 81 |
|            | Edge Deformation/ Breaking | Nil                    | < 1 m for any 100 m section and width < 0.1 m at any location, restricte | Daily                   |                            |                                                           | 7- 15 days                          | IRC:82-2015                     |
|            |                            |                        |                                                                          |                         |                            |                                                           |                                     |                                 |

| Asset Type | Performance Parameter    | Level of Service (LOS) |                           | Frequency of Inspection | Tools/Equipment                                                               | Standards and References for Inspection and Data Analysis                                                                                                                                                                                                                                       | Time limit for Rectification/Repair | Maintenance Specifications |
|------------|--------------------------|------------------------|---------------------------|-------------------------|-------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|----------------------------|
|            |                          | Desirable              | Acceptable                |                         |                                                                               |                                                                                                                                                                                                                                                                                                 |                                     |                            |
|            |                          |                        | up to 30 cm from the edge |                         |                                                                               |                                                                                                                                                                                                                                                                                                 |                                     |                            |
|            |                          |                        |                           |                         |                                                                               |                                                                                                                                                                                                                                                                                                 |                                     |                            |
|            | Roughness BI             | 2000 mm/km             | 2400 mm/km                | Bi-Annually             | Class I Profilometer                                                          | Class I Profilometer : ASTM E950 (98) :2004 –Standard Test Method for measuring Longitudinal Profile of Travelled Surfaces with Accelerometer Established Inertial Profiling Reference ASTM E1656 -94: 2000- Standard Guide for Classification of Automatic Pavement Condition Survey Equipment | 180 days                            | IRC:82-2015                |
|            | Skid Number              | 60SN                   | 50SN                      | Bi-Annually             | SCRIM (Sideway-force Coefficient Routine Investigation Machine or equivalent) |                                                                                                                                                                                                                                                                                                 | 180 days                            | BS: 7941-1: 2006           |
|            | Pavement Condition Index | 3                      | 2.1                       | Bi-Annually             |                                                                               |                                                                                                                                                                                                                                                                                                 | 180 days                            | IRC:82-2015                |

| Asset Type                                                             | Performance Parameter     | Level of Service (LOS)                             |            | Frequency of Inspection | Tools/Equipment              | Standards and References for Inspection and Data Analysis | Time limit for Rectification/Repair | Maintenance Specifications |
|------------------------------------------------------------------------|---------------------------|----------------------------------------------------|------------|-------------------------|------------------------------|-----------------------------------------------------------|-------------------------------------|----------------------------|
|                                                                        |                           | Desirable                                          | Acceptable |                         |                              |                                                           |                                     |                            |
|                                                                        | Other Pavement Distresses |                                                    |            | Bi-Annually             |                              |                                                           | 2-7 days                            | IRC:82-2015                |
|                                                                        | Deflection/Remaining Life |                                                    |            | Annually                | Falling Weight Deflectometer | IRC 115: 2014                                             | 180 days                            | IRC:115-2014               |
| <b>Rigid Pavement (Pavement of MCW, Service Road, Grade structure,</b> | Roughness BI              | 2200m m/km                                         | 2400mm /km | Bi-Annually             | Class I Profilometer         | ASTM E950 (98) :2004 and ASTM E1656 - 94: 2000            | 180 days                            | IRC:SP:83-2008             |
|                                                                        | Skid                      | Skid Resistance no. at different speed of vehicles |            | Bi-Annually             | SCRIM (Sideway-force         | IRC:SP:83-2008                                            | 180 days                            | IRC:SP:83-2008             |

| Asset Type                                                               | Performance Parameter | Level of Service (LOS) |                      | Frequency of Inspection | Tools/Equipment                                          | Standards and References for Inspection and Data Analysis | Time limit for Rectification/Repair | Maintenance Specifications |
|--------------------------------------------------------------------------|-----------------------|------------------------|----------------------|-------------------------|----------------------------------------------------------|-----------------------------------------------------------|-------------------------------------|----------------------------|
|                                                                          |                       | Desirable              | Acceptable           |                         |                                                          |                                                           |                                     |                            |
| approaches of connecting roads, slip roads, lay byes etc. as applicable) |                       | Minimum SN             | Traffic Speed (Km/h) |                         | Coefficient Routine Investigation Machine or equivalent) |                                                           |                                     |                            |
|                                                                          |                       | 36                     | 50                   |                         |                                                          |                                                           |                                     |                            |
|                                                                          |                       | 33                     | 65                   |                         |                                                          |                                                           |                                     |                            |
|                                                                          |                       | 32                     | 80                   |                         |                                                          |                                                           |                                     |                            |
|                                                                          |                       | 31                     | 95                   |                         |                                                          |                                                           |                                     |                            |
|                                                                          |                       | 31                     | 110                  |                         |                                                          |                                                           |                                     |                            |
|                                                                          |                       |                        |                      |                         |                                                          |                                                           |                                     |                            |

| Asset Type           | Performance Parameter      | Level of Service (LOS) |                                                        | Frequency of Inspection | Tools/Equipment                                         | Standards and References for Inspection and Data Analysis | Time limit for Rectification/Repair | Maintenance Specifications |
|----------------------|----------------------------|------------------------|--------------------------------------------------------|-------------------------|---------------------------------------------------------|-----------------------------------------------------------|-------------------------------------|----------------------------|
|                      |                            | Desirable              | Acceptable                                             |                         |                                                         |                                                           |                                     |                            |
| Embankment/<br>Slope | Edge drop at shoulders     | Nil                    | 40mm                                                   | Daily                   | Length Measurement Unit like Scale, Tape, odometer etc. | IRC                                                       | 7-15 days                           | MORT&H Specification 408.4 |
|                      | Slope of camber/cross fall | Nil                    | <2% variation in prescribed slope of camber/cross fall | Daily                   |                                                         |                                                           | 7-15 days                           | MORT&H Specification 408.4 |
|                      | Embankment Slopes          | Nil                    | <15 % variation in prescribe                           | Daily                   |                                                         |                                                           | 7-15 days                           | MORT&H Specification 408.4 |

| Asset Type | Performance Parameter       | Level of Service (LOS) |            | Frequency of Inspection             | Tools/Equipment | Standards and References for Inspection and Data Analysis | Time limit for Rectification/Repair | Maintenance Specifications |
|------------|-----------------------------|------------------------|------------|-------------------------------------|-----------------|-----------------------------------------------------------|-------------------------------------|----------------------------|
|            |                             | Desirable              | Acceptable |                                     |                 |                                                           |                                     |                            |
|            |                             |                        | side slope |                                     |                 |                                                           |                                     |                            |
|            | Embankment Protection       | Nil                    | Nil        | Daily                               | NA              |                                                           | 7-15 days                           | MORT&H Specification       |
|            | Rain Cuts/ Gullies in slope | Nil                    | Nil        | Daily Specially During Rainy Season | NA              |                                                           | 7-15 days                           | MORT&H Specification       |

In addition to the above performance criterion, the contractor shall strictly maintain the rigid pavements as per requirements in the following table

Table -2: **Maintenance Criteria for Rigid Pavements:**

| S.No.    | Type of Distress                                       | Measured Parameter                                                                           | Degree of Severity | Assessment Rating                                    | Repair Action          |                                                     |
|----------|--------------------------------------------------------|----------------------------------------------------------------------------------------------|--------------------|------------------------------------------------------|------------------------|-----------------------------------------------------|
|          |                                                        |                                                                                              |                    |                                                      | For the case $d < D/2$ | For the case $d > D/2$                              |
| CRACKING |                                                        |                                                                                              |                    |                                                      |                        |                                                     |
| 1        | Single Discrete Cracks Not intersecting with any joint | $w$ = width of crack<br>$L$ = length of crack<br>$d$ = depth of crack<br>$D$ = depth of slab | 0                  | Nil, not discernible                                 | No Action              | Not applicable                                      |
|          |                                                        |                                                                                              | 1                  | $w < 0.2$ mm. hair cracks                            |                        |                                                     |
|          |                                                        |                                                                                              | 2                  | $w = 0.2 - 0.5$ mm, discernible from slow-moving car | Seal without delay     | Seal, and stitch if $L > 1$ m.<br><br>Within 7 days |
|          |                                                        |                                                                                              | 3                  | $w = 0.5 - 1.5$ mm, discernible from fast-moving car |                        |                                                     |

| S.No. | Type of Distress                                                                  | Measured Parameter                                                                   | Degree of Severity | Assessment Rating                               | Repair Action                                       |                                                         |
|-------|-----------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|--------------------|-------------------------------------------------|-----------------------------------------------------|---------------------------------------------------------|
|       |                                                                                   |                                                                                      |                    |                                                 | For the case $d < D/2$                              | For the case $d > D/2$                                  |
| 2     | <b>Single Transverse (or Diagonal) Crack intersecting with one or more joints</b> | w = width of crack<br>L = length of crack<br>d = depth of crack<br>D = depth of slab | 4                  | w = 1.5 - 3.0 mm                                | Seal, and stitch if L > 1 m.                        | Staple or Dowel Bar Retrofit, FDR for affected portion. |
|       |                                                                                   |                                                                                      | 5                  | w > 3 mm.                                       | Within 7 days                                       | Within 15days                                           |
|       |                                                                                   |                                                                                      | 0                  | Nil, not discernible                            | No Action                                           |                                                         |
|       |                                                                                   |                                                                                      | 1                  | w < 0.2 mm, hair cracks                         | Route and seal with epoxy.                          | Staple or Dowel Bar Retrofit.                           |
|       |                                                                                   |                                                                                      | 2                  | w = 0.2 - 0.5 mm, discernible from slow vehicle | Within 7 days                                       | Within 15days                                           |
|       |                                                                                   |                                                                                      | 3                  | w = 0.5 - 3.0 mm, discernible from fast vehicle | Route, seal and stitch, if L > 1m.<br>Within 7 days |                                                         |

| S.No. | Type of Distress                                               | Measured Parameter                                                                           | Degree of Severity | Assessment Rating                                                                        | Repair Action                                                |                                                                                                                             |
|-------|----------------------------------------------------------------|----------------------------------------------------------------------------------------------|--------------------|------------------------------------------------------------------------------------------|--------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|
|       |                                                                |                                                                                              |                    |                                                                                          | For the case $d < D/2$                                       | For the case $d > D/2$                                                                                                      |
|       |                                                                |                                                                                              | 4                  | $w = 3.0 - 6.0 \text{ mm}$                                                               | Dowel Bar Retrofit.<br>Within 15 days                        | Full Depth Repair<br>Dismantle and reconstruct affected.<br><br>Portion with norms and specifications<br>See Para 5.5 & 9.2 |
|       |                                                                |                                                                                              | 5                  | $w > 6 \text{ mm}$ , usually associated with spalling, and/or slab rocking under traffic | Not Applicable, as it may be full depth                      | Within 15days                                                                                                               |
|       |                                                                |                                                                                              | 0                  | Nil, not discernible                                                                     | No Action                                                    |                                                                                                                             |
| 3     | Single Longitudinal Crack intersecting with one or more joints | $w$ = width of crack<br>$L$ = length of crack<br>$d$ = depth of crack<br>$D$ = depth of slab | 1                  | $w < 0.5 \text{ mm}$ , discernible from slow moving vehicle                              | Seal with epoxy, if $L > 1 \text{ m}$ .<br><br>Within 7 days | Staple or dowel bar retrofit.<br><br>Within 15days                                                                          |

| S.No. | Type of Distress | Measured Parameter | Degree of Severity | Assessment Rating                                                                | Repair Action                                              |                                                                                                   |
|-------|------------------|--------------------|--------------------|----------------------------------------------------------------------------------|------------------------------------------------------------|---------------------------------------------------------------------------------------------------|
|       |                  |                    |                    |                                                                                  | For the case $d < D/2$                                     | For the case $d > D/2$                                                                            |
|       |                  |                    |                    |                                                                                  |                                                            |                                                                                                   |
|       |                  |                    | 2                  | $w = 0.5 - 3.0$ mm, discernible from fast vehicle                                | Route seal and stitch, if $L > 1$ m.<br><br>Within 15 days | -                                                                                                 |
|       |                  |                    | 3                  | $w = 3.0 - 6.0$ mm                                                               | Staple, if $L > 1$ m.<br><br>Within 15 days                | Partial Depth Repair with stapling.                                                               |
|       |                  |                    | 4                  | $w = 6.0 - 12.0$ mm, usually associated with spalling                            | Not Applicable, as it may be full depth                    | Within 15 days                                                                                    |
|       |                  |                    | 5                  | $w > 12$ mm, usually associated with spalling, and/or slab rocking under traffic |                                                            | Full Depth Repair<br>Dismantle and reconstruct affected portion as per norms and specifications - |

| S.No. | Type of Distress                                     | Measured Parameter | Degree of Severity | Assessment Rating                                  | Repair Action                    |                                                                                           |
|-------|------------------------------------------------------|--------------------|--------------------|----------------------------------------------------|----------------------------------|-------------------------------------------------------------------------------------------|
|       |                                                      |                    |                    |                                                    | For the case $d < D/2$           | For the case $d > D/2$                                                                    |
|       |                                                      |                    |                    |                                                    |                                  | See Para 5.6.4<br>Within 15 days                                                          |
| 4     | Multiple Cracks intersecting with one or more joints | w=width of crack   | 0                  | Nil, not discernible                               | No Action                        | -                                                                                         |
|       |                                                      |                    | 1                  | $w < 0.2$ mm, hair cracks                          | Seal, and stitch if $L > 1$ m.   |                                                                                           |
|       |                                                      |                    | 2                  | $w = 0.2 - 0.5$ mm. discernible from slow vehicle  | Within 15 days                   |                                                                                           |
|       |                                                      |                    | 3                  | $w = 0.5 - 3.0$ mm, discernible from fast vehicle  | Full depth repair within 15 days | Dismantle, Reinstall subbase, Reconstruct whole slab as per specifications within 30 days |
|       |                                                      |                    | 4                  | $w = 3.0 - 6.0$ mm panel broken into 2 or 3 pieces |                                  |                                                                                           |
|       |                                                      |                    | 5                  | $w > 6$ mm and/or panel broken                     |                                  |                                                                                           |

| S.No. | Type of Distress | Measured Parameter                        | Degree of Severity | Assessment Rating                             | Repair Action                                                         |                                                  |
|-------|------------------|-------------------------------------------|--------------------|-----------------------------------------------|-----------------------------------------------------------------------|--------------------------------------------------|
|       |                  |                                           |                    |                                               | For the case $d < D/2$                                                | For the case $d > D/2$                           |
|       |                  |                                           |                    | into more than 4 pieces                       |                                                                       |                                                  |
| 5     | Corner Break     | w = width of crack<br>L = length of crack | 0                  | Nil, not discernible                          | No Action                                                             | -                                                |
|       |                  |                                           | 1                  | w < 0.5 mm; only 1 corner broken              | Seal with low viscosity epoxy to                                      | Seal with epoxy seal with epoxy<br>Within 7 days |
|       |                  |                                           | 2                  | w < 1.5 mm; L < 0.6 m, only one corner broken | secure broken parts<br>Within 7 days                                  |                                                  |
|       |                  |                                           | 3                  | w < 1.5 mm; L < 0.6 m, two corners broken     | Partial Depth (Refer Figure 8.3 of IRC:SP: 83-2008)<br>Within 15 days | Full depth repair                                |
|       |                  |                                           | 4                  | w > 1.5 mm; L > 0.6 m or three corners broken |                                                                       |                                                  |
|       |                  |                                           | 5                  | ree or four corners broken                    |                                                                       | Reinstate sub-base, and reconstruct the          |

| S.No. | Type of Distress                                                                     | Measured Parameter                                  | Degree of Severity | Assessment Rating                                          | Repair Action                           |                                                                                               |
|-------|--------------------------------------------------------------------------------------|-----------------------------------------------------|--------------------|------------------------------------------------------------|-----------------------------------------|-----------------------------------------------------------------------------------------------|
|       |                                                                                      |                                                     |                    |                                                            | For the case $d < D/2$                  | For the case $d > D/2$                                                                        |
|       |                                                                                      |                                                     |                    |                                                            |                                         | slab as per norms and specifications within 30days                                            |
| 6     | <b>Punch out (Applicable to Continuous Reinforced Concrete Pavement (CRCP) only)</b> | w = width of crack<br>L = length(m/m <sup>2</sup> ) | 0                  | Nil, not discernible                                       |                                         | No Action                                                                                     |
|       |                                                                                      |                                                     | 1                  | $w < 0.5 \text{ mm}; L < 3 \text{ m/m}^2$                  | Not Applicable, as it may be full depth | Seal with low viscosity epoxy to secure broken parts.                                         |
|       |                                                                                      |                                                     | 2                  | either $w > 0.5 \text{ mm}$ or $L < 3 \text{ m/m}^2$       |                                         | Within 15days                                                                                 |
|       |                                                                                      |                                                     | 3                  | $w > 1.5 \text{ mm}$ and $L < 3 \text{ m/m}^2$             |                                         |                                                                                               |
|       |                                                                                      |                                                     | 4                  | $w > 3 \text{ mm}$ , $L < 3 \text{ m/m}^2$ and deformation |                                         | Full depth repair - Cut out and replace damaged area taking care not to damage reinforcement. |
|       |                                                                                      |                                                     | 5                  | $w > 3 \text{ mm}$ , $L > 3 \text{ m/m}^2$ and deformation |                                         | Within 30days                                                                                 |

| S.No.           | Type of Distress                  | Measured Parameter                                                                                      | Degree of Severity | Assessment Rating    | Repair Action                                  |                        |
|-----------------|-----------------------------------|---------------------------------------------------------------------------------------------------------|--------------------|----------------------|------------------------------------------------|------------------------|
|                 |                                   |                                                                                                         |                    |                      | For the case $d < D/2$                         | For the case $d > D/2$ |
| Surface Defects |                                   |                                                                                                         |                    |                      |                                                |                        |
| 7               | Ravelling<br>Honeycomb<br>surface | $r$ = area damaged<br>or surface/total<br>types surface of slab (%)<br>$h$ = maximum depth<br>of damage | 0                  | Nil, not discernible | Short Term                                     | Long Term              |
|                 |                                   |                                                                                                         |                    |                      | No action.                                     | Not Applicable         |
|                 |                                   |                                                                                                         | 1                  | $r < 2 \%$           | Local repair of areas<br>damaged               |                        |
|                 |                                   |                                                                                                         | 2                  | $r = 2 - 10 \%$      | and liable to be<br>damaged.<br>Within 15 days |                        |
|                 |                                   |                                                                                                         | 3                  | $r = 10-25\%$        | Bonded Inlay, 2 or 3 slabs<br>if               |                        |
|                 |                                   |                                                                                                         | 4                  | $r = 25 - 50 \%$     | affecting.                                     |                        |

| S.No. | Type of Distress | Measured Parameter                                                                                             | Degree of Severity | Assessment Rating                  | Repair Action                                                      |                        |
|-------|------------------|----------------------------------------------------------------------------------------------------------------|--------------------|------------------------------------|--------------------------------------------------------------------|------------------------|
|       |                  |                                                                                                                |                    |                                    | For the case $d < D/2$                                             | For the case $d > D/2$ |
|       |                  |                                                                                                                |                    |                                    | Within 30 days                                                     |                        |
|       |                  |                                                                                                                | 5                  | $r > 50\%$ and $h > 25 \text{ mm}$ | Reconstruct slabs, 4 or more slabs if affecting.<br>Within 30 days |                        |
| 8     | Scaling          | $r = \frac{\text{damaged surface}}{\text{total surface of slab}} (\%)$<br>$h = \text{maximum depth of damage}$ | 0                  | Nil, not discernible               | Short Term                                                         | Long Term              |
|       |                  |                                                                                                                |                    |                                    | No action.                                                         |                        |
|       |                  |                                                                                                                | 1                  | $r < 2 \%$                         | Local repair of areas damaged                                      | Not Applicable         |
|       |                  |                                                                                                                | 2                  | $r = 2 - 10 \%$                    | and liable to be damaged.<br>Within 7 days                         |                        |

| S.No. | Type of Distress         | Measured Parameter                  | Degree of Severity | Assessment Rating                   | Repair Action                   |                        |
|-------|--------------------------|-------------------------------------|--------------------|-------------------------------------|---------------------------------|------------------------|
|       |                          |                                     |                    |                                     | For the case $d < D/2$          | For the case $d > D/2$ |
|       |                          |                                     | 3                  | $r = 10 - 20\%$                     | Bonded Inlay within 15 days     |                        |
|       |                          |                                     | 4                  | $r = 20 - 30 \%$                    |                                 |                        |
|       |                          |                                     | 5                  | $r > 30 \%$ and $h > 25 \text{ mm}$ | Reconstruct slab within 30 days |                        |
|       |                          |                                     |                    |                                     |                                 |                        |
| 9     | Polished Surface/Glazing | $t$ = texture depth, sand patchtest | 0                  |                                     | No action.                      | Not Applicable         |
|       |                          |                                     | 1                  | $t > 1 \text{ mm}$                  |                                 |                        |
|       |                          |                                     | 2 '                | $t = 1 - 0.6 \text{ mm}$            | Monitor rate of deterioration   |                        |
|       |                          |                                     | 3                  | $t = 0.6 - 0.3 \text{ mm}$          |                                 |                        |
|       |                          |                                     | 4                  | $t = 0.3 - 0.1 \text{ mm}$          |                                 |                        |

| S.No. | Type of Distress                                            | Measured Parameter                                                                         | Degree of Severity | Assessment Rating                                                        | Repair Action                                                                                           |                        |
|-------|-------------------------------------------------------------|--------------------------------------------------------------------------------------------|--------------------|--------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|------------------------|
|       |                                                             |                                                                                            |                    |                                                                          | For the case $d < D/2$                                                                                  | For the case $d > D/2$ |
|       |                                                             |                                                                                            | 5                  | $t < 0.1 \text{ mm}$                                                     | Diamond Grinding if affecting 50% or more slabs in a continuous stretch of minimum 5 km. Within 30 days |                        |
| 10    | <b>Popout (Small Hole)</b><br><b>Pothole Refer Para 8.4</b> | $n = \text{number/m}^2$<br>$d = \text{diameter in mm}$<br>$h = \text{maximum depth in mm}$ | 0                  | $d < 50 \text{ mm}; h < 25 \text{ mm}; n < 1 \text{ per } 5 \text{ m}^2$ | No action.                                                                                              | Not Applicable         |
|       |                                                             |                                                                                            | 1                  | $d=50-100\text{mm}; h<50\text{mm}; n<1 \text{ per } 5 \text{ m}^2$       | Partial depth repair 65 mm deep.                                                                        |                        |
|       |                                                             |                                                                                            | 2                  | $d=50-100\text{mm}; h>50\text{mm}; n<1 \text{ per } 5 \text{ m}^2$       | Within 15 days                                                                                          |                        |

| S.No. | Type of Distress | Measured Parameter | Degree of Severity | Assessment Rating                                                              | Repair Action                                                |                        |
|-------|------------------|--------------------|--------------------|--------------------------------------------------------------------------------|--------------------------------------------------------------|------------------------|
|       |                  |                    |                    |                                                                                | For the case $d < D/2$                                       | For the case $d > D/2$ |
|       |                  |                    | 3                  | $d = 100 - 300 \text{ mm}; h < 100 \text{ mm}; n < 1 \text{ per } 5\text{m}^2$ | Partial depth repair 110mm                                   |                        |
|       |                  |                    | 4                  | $d = 100 - 300 \text{ mm}; h > 100 \text{ mm}; n < 1 \text{ per } 5\text{m}^2$ | i.e.10 mm more than the depth of the hole.<br>Within 30 days |                        |
|       |                  |                    | 5                  | $d > 300 \text{ mm}; h > 100 \text{ mm}; n > 1 \text{ per } 5 \text{ m}^2$     | Full depth repair.<br>Within 30 days                         |                        |

| Joint Defects |                    |                                                        |   |                                                                                                                               |                                                                   |                |
|---------------|--------------------|--------------------------------------------------------|---|-------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------|----------------|
| 11            | Joint Seal Defects | loss or damage L<br>= Length as % total<br>jointlength | 0 | Difficult to discern.                                                                                                         | Short Term                                                        | Long Term      |
|               |                    |                                                        |   |                                                                                                                               | No action.                                                        | Not Applicable |
|               |                    |                                                        | 1 | Discernible, L < 25% but of little immediate consequence with regard to ingress of water or trapping incompressible material. | Clean joint, inspect later.                                       |                |
|               |                    |                                                        | 3 | Notable. L > 25% insufficient protection against ingress of water and trapping incompressible material.                       | Clean and reapply sealant in selected locations.<br>Within 7 days |                |
|               |                    |                                                        | 5 | Severe; w > 3 mm negligible protection against ingress of water                                                               | Clean, widen and reseal the joint.<br>Within 7 days               |                |

|    |                              |                                                                                         |   |                                       |                                                                 |                |
|----|------------------------------|-----------------------------------------------------------------------------------------|---|---------------------------------------|-----------------------------------------------------------------|----------------|
|    |                              |                                                                                         |   | and trapping incompressible material. |                                                                 |                |
| 12 | <b>Spalling of Joints</b>    | w = width on either side of the joint L = length of spalled portion (as % joint length) | 0 | Nil, not discernible                  | No action.                                                      | Not Applicable |
|    |                              |                                                                                         | 1 | w < 10 mm                             | Apply low viscosity epoxy resin/ mortar in cracked portion.     |                |
|    |                              |                                                                                         | 2 | w = 10 - 20 mm, L < 25%               | Within 7 days                                                   |                |
|    |                              |                                                                                         | 3 | w = 20 - 40 mm, L > 25%               | Partial Depth Repair.<br>Within 15 days                         |                |
|    |                              |                                                                                         | 4 | w = 40 - 80 mm, L > 25%               | 30 - 50 mm deep, h = w + 20% of w, within 30 days               |                |
|    |                              |                                                                                         | 5 | w > 80 mm, and L > 25%                | 50 - 100 mm deep repair.<br>H = w + 20% of w.<br>Within 30 days |                |
| 13 | <b>Faulting (orStepping)</b> | f = difference of level                                                                 | 0 | not discernible, < 1 mm               | No action.                                                      | No action.     |

|    |                            |                                                        |   |                          |                                                                       |                                                   |
|----|----------------------------|--------------------------------------------------------|---|--------------------------|-----------------------------------------------------------------------|---------------------------------------------------|
|    | <b>in Cracks or Joints</b> |                                                        | 1 | $f < 3 \text{ mm}$       |                                                                       |                                                   |
|    |                            |                                                        | 2 | $f = 3 - 6 \text{ mm}$   | Determine cause and observe, take action for diamond grinding         | Replace the slab as appropriate.                  |
|    |                            |                                                        | 3 | $f = 6 - 12 \text{ mm}$  | Diamond Grinding                                                      | Within 30days                                     |
|    |                            |                                                        | 4 | $f = 12 - 18 \text{ mm}$ | Raise sunken slab.                                                    | Replace the slab as appropriate.<br>Within 30days |
|    |                            |                                                        | 5 | $f > 18 \text{ mm}$      | Strengthen sub grade and sub-base by grouting and raising sunken slab |                                                   |
| 14 | <b>Blowup or Buckling</b>  | $h = \text{vertical displacement from normal profile}$ | 0 | Nil, not discernible     | <b>Short Term</b>                                                     | <b>Long Term</b>                                  |
|    |                            |                                                        |   |                          | No Action                                                             |                                                   |
|    |                            |                                                        | 1 | $h < 6 \text{ mm}$       |                                                                       |                                                   |
|    |                            |                                                        | 2 | $h = 6 - 12 \text{ mm}$  | Install Signs to Warn Traffic                                         |                                                   |

|    |                              |                                                                  |   |                                      |                                         |                |
|----|------------------------------|------------------------------------------------------------------|---|--------------------------------------|-----------------------------------------|----------------|
|    |                              |                                                                  | 3 | h = 12 - 25 mm                       | within 7 days                           |                |
|    |                              |                                                                  | 4 | h > 25 mm                            | Full Depth Repair.<br>Within 30 days    |                |
|    |                              |                                                                  | 5 | shattered slabs, ie 4 or more pieces | Replace broken slabs.<br>Within 30 days |                |
| 15 | Depression                   | h = negative vertical displacement from normal profile L =length | 0 | Not discernible, h < 5 mm            | No action.                              | Not Applicable |
| 1  | h = 5 - 15 mm                |                                                                  |   |                                      |                                         |                |
| 2  | h = 15-30 mm, Nos<20% joints | Install Signs to Warn Traffic<br>within 7 days                   |   |                                      |                                         |                |
| 3  | h = 30 - 50 mm               |                                                                  |   |                                      |                                         |                |
| 4  | h > 50 mm or >20% joints     | Strengthen subgrade.<br>Reinstate pavement at normal level       |   |                                      |                                         |                |

|    |       |                                                                           |   |                                 |                                                                                         |           |
|----|-------|---------------------------------------------------------------------------|---|---------------------------------|-----------------------------------------------------------------------------------------|-----------|
|    |       |                                                                           | 5 | h > 100 mm                      | if L < 20 m.<br>Within 30 days                                                          |           |
| 16 | Heave | h = positive vertical displacement from normal profile.<br><br>L = length | 0 | Not discernible. h < 5 mm       | Short Term                                                                              | Long Term |
|    |       |                                                                           |   |                                 | No action.                                                                              | scrabble  |
|    |       |                                                                           | 1 | h = 5 - 15 mm                   | Follow up.                                                                              |           |
|    |       |                                                                           | 2 | h = 15 - 30 mm, Nos <20% joints | Install Signs to Warn Traffic<br><br>within 7 days                                      |           |
|    |       |                                                                           | 3 | h = 30 - 50 mm                  |                                                                                         |           |
|    |       |                                                                           | 4 | h > 50 mm or > 20% joints       | Stabilise subgrade. Reinstate pavement at normal level if length < 20 m. Within 30 days |           |
|    |       |                                                                           | 5 | h > 100 mm                      |                                                                                         |           |
| 17 | Bump  | h = vertical                                                              | 0 | h < 4 mm                        | No action                                                                               |           |

|    |                       |                                     |   |                                        |                                                      |                                                    |
|----|-----------------------|-------------------------------------|---|----------------------------------------|------------------------------------------------------|----------------------------------------------------|
|    |                       | displacement from normal profile    | 1 | $h = 4 - 7 \text{ mm}$                 | Grind, in case of new construction within 7 days     | Construction Limit for New Construction.           |
|    |                       |                                     | 3 | $h = 7 - 15 \text{ mm}$                | Grind, in case of ongoing Maintenance within 15 days | Replace in case of new construction. Within 30days |
|    |                       |                                     | 5 | $h > 15 \text{ mm}$                    | Full Depth Repair. Within 30 days                    | Full Depth Repair. Within 30days                   |
| 18 | Lane Shoulder Dropoff | to $f = \text{difference of level}$ | 0 | Nil, not discernible<br>$< 3\text{mm}$ | <b>Short Term</b>                                    | <b>Long Term</b>                                   |
|    |                       |                                     |   |                                        | No action.                                           |                                                    |
|    |                       |                                     | 1 | $f = 3 - 10 \text{ mm}$                | Spot repair of shoulder within 7 days                |                                                    |
|    |                       |                                     | 2 | $f = 10 - 25 \text{ mm}$               |                                                      |                                                    |
|    |                       |                                     | 3 | $f = 25 - 50 \text{ mm}$               | Fill up shoulder                                     |                                                    |

|                 |                |                                                                            |        |                                  |                                                                                                           |                                                                                                          |
|-----------------|----------------|----------------------------------------------------------------------------|--------|----------------------------------|-----------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|
|                 |                |                                                                            | 4      | f = 50 - 75 mm                   | within 7 dayss                                                                                            | For any 100 m stretch<br>Reconstruct shoulder, if affecting 25% or more of stretch.<br><br>Within 30days |
|                 |                |                                                                            | 5      | f > 75 mm                        |                                                                                                           |                                                                                                          |
| <b>Drainage</b> |                |                                                                            |        |                                  |                                                                                                           |                                                                                                          |
| 19              | <b>Pumping</b> | quantity of fines and water expelled through open joints and cracks<br>Nos | 0      | not discernible                  | No Action                                                                                                 |                                                                                                          |
|                 |                |                                                                            | 1 to 2 | slight/ occasional Nos < 10%     | Repair cracks and joints Without delay.                                                                   | Inspect and repair sub-drainage at distressed sections and upstream.                                     |
|                 |                |                                                                            | 3 to 4 | appreciable/ Frequent 10 -25%    | Lift or jack slab within 30 days.                                                                         |                                                                                                          |
|                 |                | Nos/100 m stretch                                                          | 5      | abundant, crack development >25% | Repair distressed pavement sections. Strengthen subgrade and subbase. Replace slab.<br><br>Within 30 days |                                                                                                          |

|    |                |                                            |        |                                                 |                                           |                                                                   |
|----|----------------|--------------------------------------------|--------|-------------------------------------------------|-------------------------------------------|-------------------------------------------------------------------|
| 20 | <b>Ponding</b> | Ponding on slabs due to blockage of drains | 0-2    | No discernible problem                          | No action.                                | Action required to stop water damaging foundation within 30 days. |
|    |                |                                            | 3 to 4 | Blockages observed in drains, but water flowing | Clean drains etc within 7 days, Follow up |                                                                   |
|    |                |                                            | 5      | Ponding, accumulation of water observed         | -do-                                      |                                                                   |

**Table -3: Maintenance Criteria for Safety Related Items and Other Furniture Items:**

| Asset Type       | Performance Parameter               | Level of Service (LOS)                                                                           |                                     |                                  | Frequency of Measurement | Testing Method                                                   | Recommended Remedial measures                                                                                                                                      | Time limit for Rectification                                  | Specifications and Standards |
|------------------|-------------------------------------|--------------------------------------------------------------------------------------------------|-------------------------------------|----------------------------------|--------------------------|------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------|------------------------------|
| Highway          | Availability of Safe Sight Distance | As per IRC SP :73-2018, a minimum of safe stopping sight distance shall be available throughout. |                                     |                                  | Monthly                  | Manual Measurements with Odometer along with video/ image backup | Removal of obstruction within 24 hours, in case of sight line affected by temporary objects such as trees, temporary encroachments.                                |                                                               | IRC SP :73-2018              |
|                  |                                     | Design Speed, km ph                                                                              | Desirable Minimum Sight Distance(m) | Safe Stopping Sight Distance (m) |                          |                                                                  | In case of permanent structure or design deficiency:                                                                                                               |                                                               |                              |
|                  |                                     |                                                                                                  |                                     |                                  |                          |                                                                  | Removal of obstruction/improvement of deficiency at theearliest                                                                                                    |                                                               |                              |
|                  |                                     | 100                                                                                              | 360                                 | 180                              |                          |                                                                  | Speed Restriction boards and suitable traffic calming measures such as transverse bar marking, blinkers, etc. shall be applied during the period of rectification. |                                                               |                              |
|                  |                                     | 80                                                                                               | 240                                 | 120                              |                          |                                                                  |                                                                                                                                                                    |                                                               |                              |
|                  |                                     |                                                                                                  |                                     |                                  |                          |                                                                  |                                                                                                                                                                    |                                                               |                              |
| Pavement Marking | Wear                                | <70% of marking remaining                                                                        |                                     |                                  | Bi-Annually              | Visual Assessment as per Annexure-F of IRC:35-2015               | Re - painting                                                                                                                                                      | Cat-1 Defect – within 24 hours<br>Cat-2 Defect within 2months | IRC:35-2015                  |

| Asset Type | Performance Parameter | Level of Service (LOS)                                                                                                              | Frequency of Measurement                                                               | Testing Method                   | Recommended Remedial measures | Time limit for Rectification                                     | Specifications and Standards |
|------------|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|----------------------------------|-------------------------------|------------------------------------------------------------------|------------------------------|
|            | Day time Visibility   | During expected life Service Time<br>Cement Road -<br>130mcd/m <sup>2</sup> /lux<br>Bituminous Road -<br>100mcd/m <sup>2</sup> /lux | Monthly                                                                                | As per Annexure-D of IRC:35-2015 | Re - painting                 | Cat-1 Defect – within 24 hours<br>Cat-2 Defect – within 2 months | IRC:35-2015                  |
|            | Night Time Visibility | <u>Initial and Minimum Performance for Dry Retro reflectivity during night time:</u>                                                |                                                                                        | As per Annexure-E of IRC:35-2015 | Re - painting                 | Cat-1 Defect – within 24 hours<br>Cat-2 Defect – within 2 months | IRC:35-2015                  |
|            |                       | Design Speed                                                                                                                        | (RL) Retro Reflectivity (mcd/m <sup>2</sup> /lux)                                      |                                  |                               |                                                                  |                              |
|            |                       |                                                                                                                                     | Initial (7 days) Minimum Threshold level (TL) & warranty period required up to 2 years |                                  |                               |                                                                  |                              |
|            |                       | Up to 65                                                                                                                            | 200                                                                                    |                                  |                               |                                                                  |                              |
|            |                       | 65 - 100                                                                                                                            | 250                                                                                    |                                  |                               |                                                                  |                              |
|            |                       | Above 100                                                                                                                           | 350                                                                                    |                                  |                               |                                                                  |                              |
|            |                       | <u>Initial and Minimum Performance for Night Visibility under wet condition(Retro reflectivity):</u>                                |                                                                                        |                                  |                               |                                                                  |                              |

| Asset Type | Performance Parameter | Level of Service (LOS)                                                                                                                                                                                                                                                                                             | Frequency of Measurement | Testing Method                   | Recommended Remedial measures                                                           | Time limit for Rectification                                                                                                                               | Specifications and Standards |
|------------|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|----------------------------------|-----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|
|            |                       | Initial 7 days Retro reflectivity: 100 mcd/m <sup>2</sup> /lux<br>Minimum Threshold Level: 50 mcd/m <sup>2</sup> /lux                                                                                                                                                                                              |                          |                                  |                                                                                         |                                                                                                                                                            |                              |
|            | Skid Resistance       | Initial and Minimum performance for SkidResistance:<br>Initial (7days): 55BPN<br>Min. Threshold: 44BPN<br>*Note: shall be considered under urban/city traffic condition encompassing the locations like pedestrian crossings, bus bay, bus stop, cycle track intersection delineation, transverse bar markings etc | Bi-Annually              | As per Annexure-G of IRC:35-2015 |                                                                                         | Within 24 hours                                                                                                                                            | IRC:35-2015                  |
| Road Signs | Shape and Position    | Shape and Position as per IRC:67-2012.<br>Signboard should be clearly visible for the design speed of the section.                                                                                                                                                                                                 | Daily                    | Visual with video/image backup   | Improvement of shape, in case if shape is damaged.<br><br>Relocation as per requirement | 48 hours in case of Mandatory Signs, Cautionary and Informatory Signs (Single and Dual post signs)<br><br>15 Days in case of Gantry/Cantilever Sign boards | IRC:67-2012                  |
|            | Retro reflectivity    | As per specifications in IRC:67-2012                                                                                                                                                                                                                                                                               | Bi-Annually              | Testing of each                  | change of sign board                                                                    | 48 hours in case of Mandatory                                                                                                                              | IRC:67-2012                  |

| Asset Type                  | Performance Parameter                    | Level of Service (LOS)                                                                                             | Frequency of Measurement | Testing Method                                                                          | Recommended Remedial measures | Time limit for Rectification                                                                                                | Specifications and Standards  |
|-----------------------------|------------------------------------------|--------------------------------------------------------------------------------------------------------------------|--------------------------|-----------------------------------------------------------------------------------------|-------------------------------|-----------------------------------------------------------------------------------------------------------------------------|-------------------------------|
|                             |                                          |                                                                                                                    |                          | signboard using Retro Reflectivity Measuring Device. In accordance with ASTM D 4956-09. |                               | Signs, Cautionary and Informatory Signs (Single and Dual postsigns)<br><br>1 Month in case of Gantry/Cantilever Sign boards |                               |
| <b>Kerb</b>                 | Kerb Height                              | As per IRC 86:1983 depending upon type of Kerb                                                                     | Bi-Annually              | Use of distance measuring tape                                                          | Raising Kerb Height           | Within 1 Month                                                                                                              | RC 86:1983                    |
|                             | Kerb Painting                            | <u>Functionality:</u> Functioning of Kerb painting as intended                                                     | Daily                    | Visual with video/image backup                                                          | Kerb Repainting               | Within 7-days                                                                                                               | RC 35:2015                    |
| <b>Other Road Furniture</b> | Reflective Pavement Markers (Road Studs) | Numbers and Functionality as per specifications in IRC:SP:73-2018 and IRC:35-2015, unless specified in Schedule-B. | Daily                    | Counting                                                                                | New Installation              | Within 2 months                                                                                                             | IRC SP :73-2018,IRC:35-2015   |
|                             | Pedestrian Guardrail                     | <u>Functionality:</u> Functioning of guardrail asintended                                                          | Daily                    | Visual with video/image backup                                                          | Rectification                 | Within 15 days                                                                                                              | IRC SP :73-2018               |
|                             | Traffic Safety Barriers                  | <u>Functionality:</u> Functioning of Safety Barriers as intended                                                   | Daily                    | Visual with video/image backup                                                          | Rectification                 | Within 7 days                                                                                                               | IRC SP :73-2018, IRC:119-2015 |
|                             | End Treatment of                         | <u>Functionality:</u> Functioning of End Treatment as intended                                                     | Daily                    | Visual with video/image                                                                 | Rectification                 | Within 7 days                                                                                                               | IRC SP :73-2018,              |

| Asset Type              | Performance Parameter       | Level of Service (LOS)                                                       | Frequency of Measurement | Testing Method                                         | Recommended Remedial measures  | Time limit for Rectification | Specifications and Standards  |
|-------------------------|-----------------------------|------------------------------------------------------------------------------|--------------------------|--------------------------------------------------------|--------------------------------|------------------------------|-------------------------------|
|                         | Traffic Safety Barriers     |                                                                              |                          | backup                                                 |                                |                              | IRC:119-2015                  |
|                         | Attenuators                 | <u>Functionality:</u> Functioning of Attenuators as intended                 | Daily                    | Visual with video/image backup                         | Rectification                  | Within 7 days                | IRC:SP-73: 2018, IRC:119-2015 |
|                         | Guard Posts and Delineators | <u>Functionality:</u> Functioning of Guard Posts and Delineators as intended | Daily                    | Visual with video/image backup                         | Rectification                  | Within 15 days               | IRC: 79 - 1981                |
|                         | Overhead Sign Structure     | Overhead sign structure shall be structurally adequate                       | Daily                    | Visual with video/image backup                         | Rectification                  | Within 15 days               | IRC:67-2012                   |
|                         | Traffic Blinkers            | <u>Functionality:</u> Functioning of Traffic Blinkers as intended            | Daily                    | Visual with video/image backup                         | Rectification                  | Within 7 days                | IRC SP :73-2018               |
| Highway Lighting System | Highway Lights              | Illumination: Minimum 40 Lux illumination on the road surface                | Daily                    | The illumination level shall be measured with luxmeter | Improvement in Lighting System | 24 hours                     | IRC SP :73-2018               |
|                         |                             | No major failure in the lighting system                                      | Daily                    | -                                                      | Rectification of failure       | 24 hours                     | IRC SP :73-2018               |
|                         |                             | No minor failure in the lighting system                                      | Monthly                  | -                                                      | Rectification of failure       | 8 hours                      | IRC SP :73-2018               |
|                         | Toll Plaza Canopy Lights    | Minimum 40 Lux illumination on the road surface                              | Daily                    | The illumination level shall be measured with luxmeter | Improvement in Lighting System | 24 hours                     | IRC SP :73-2018               |
|                         |                             | No major/minor failure in the lighting system                                | Daily                    | -                                                      | Rectification of failure       | 8 hours                      | IRC SP :73-2018               |

| Asset Type                                       | Performance Parameter                                                                                    | Level of Service (LOS)                                                                                                  | Frequency of Measurement | Testing Method                 | Recommended Remedial measures                                      | Time limit for Rectification | Specifications and Standards |
|--------------------------------------------------|----------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------|--------------------------|--------------------------------|--------------------------------------------------------------------|------------------------------|------------------------------|
| Trees and Plantation including median plantation | Obstruction in a minimum head-room of 5.5 m above carriageway or obstruction in visibility of road signs | No obstruction due to trees                                                                                             | Monthly                  | Visual with video/image backup | Removal of trees                                                   | Immediate                    | IRC SP :73-2018              |
|                                                  | Deterioration in health of trees and bushes                                                              | Health of plantation shall be as per requirement of specifications & instructions issued by Authority from time to time | Daily                    | Visual with video/image backup | Timely watering and treatment. Or Replacement of Trees and Bushes. | Within 90 days               | IRC SP :73-2018              |
|                                                  | Vegetation affecting sight line and road structures                                                      | Sight line shall be free from obstruction by vegetation                                                                 | Daily                    | Visual with video/image backup | Removal of Trees                                                   | Immediate                    | IRC:SP 73-2018               |
| Rest Areas                                       | Cleaning of toilets                                                                                      | -                                                                                                                       | Daily                    | -                              | -                                                                  | Every 4 hours                |                              |
|                                                  | Defects in electrical, water and sanitary installations                                                  | -                                                                                                                       | Daily                    | -                              | Rectification                                                      | 24 hours                     |                              |

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| Asset Type                                         | Performance Parameter                                                                                                                                                           | Level of Service (LOS) | Frequency of Measurement | Testing Method | Recommended Remedial measures | Time limit for Rectification | Specifications and Standards |
|----------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|--------------------------|----------------|-------------------------------|------------------------------|------------------------------|
| <b>Other Project Facilities and Approach roads</b> | Damage or deterioration in Approach Roads, pedestrian facilities, truck lay-bys, bus-bays, bus-shelters, cattle crossings, Traffic Aid Posts, Medical Aid Posts and other works |                        | Daily                    | -              | Rectification                 | 15 days                      | IRC:SP 73-2018               |

| Asset Type             | Performance Parameter                    | Level of Service (LOS)                                     | Frequency of Measurement                          | Testing Method                                                                                                 | Recommended Remedial measures                                                                                                                                                | Time limit for Rectification                                                  | Specifications and Standards                        |
|------------------------|------------------------------------------|------------------------------------------------------------|---------------------------------------------------|----------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------|-----------------------------------------------------|
| Pipe/box/slab culverts | Free waterway/ unobstructed flow section | 85% of culvert normal flow area to available.              | 2 times in a year (before and after rainy season) | Inspection by Bridge Engineer as per IRC SP: 35-1990 and recording of depth of silting and area of vegetation. | Cleaning silt up soils and debris in culvert barrel after rainy season, removal of bushes and vegetation, U/s of barrel, under barrel and D/s of barrel before rainy season. | 15 days before onset of monsoon and within 30 days after end of rainy season. | IRC 5-2015, IRC SP:40-1993 and IRC SP:13-2004       |
|                        | Leak-proof expansion joints if any       | No leakage through expansion joints                        | Bi-Annually                                       | Physical inspection of expansion joints as per IRC SP: 35-1990 if any, for leakage strains on walls at joints. | Fixing with sealant suitably                                                                                                                                                 | 30 days or before onset of rains whichever comes earlier                      | IRC SP:40-1993 and IRC SP:69-2011                   |
|                        | Structurally sound                       | Spalling of concrete not more than 0.25 sqm                | Bi-Annually                                       | Detailed inspection of all components of culvert as per IRC SP:35-1990 and recording the defects               | Repairs to spalling, cracking, delamination, rusting shall be followed as per IRC:SP:40-1993.                                                                                | 15 days                                                                       | IRC SP 40-1993 and MORTH Specifications clause 2800 |
|                        |                                          | Delamination of concrete not more than 0.25 sq.m.          |                                                   |                                                                                                                |                                                                                                                                                                              |                                                                               |                                                     |
|                        |                                          | Cracks wider than 0.3 mm not more than 1m aggregate length |                                                   |                                                                                                                |                                                                                                                                                                              |                                                                               |                                                     |

|                                                          |                                                         |                                                                                                                                |                                                   |                                                                         |                                                                                                                                           |                                                                                                |                                                   |
|----------------------------------------------------------|---------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------|-------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|---------------------------------------------------|
|                                                          | Protection works in good condition                      | Damaged of rough stone apron or bank revetment not more than 3 sqm, damage to solid apron (concrete apron) not more than 1 sqm | 2 times in a year (before and after rainy season) | Condition survey as per IRC SP:35-1990                                  | Repairs to damaged aprons and pitching                                                                                                    | 30 days after defect observation or 2 weeks before onset of rainy season whichever is earlier. | IRC: SP 40-1993 and IRC:SP:13-2004.               |
| <b>Bridges including ROBs Flyover etc. as applicable</b> | Riding quality or user comfort                          | No pothole in wearing coat on bridge deck                                                                                      | Daily                                             | Visual inspection as per IRC SP:35-1990                                 | Repairs to BC or wearing coat                                                                                                             | 15 days                                                                                        | MORT&H Specification 2811                         |
| <b>Bridge -Super Structure</b>                           | Bumps                                                   | No bump at expansion joint                                                                                                     | Daily                                             | Visual inspection as per IRC SP:35-1990                                 | Repairs to BC on either side of expansion joints, profile correction course on approach slab in case of settlement to approach embankment | 15 days                                                                                        | MORT&H Specification 3004.2 & 2811.               |
|                                                          | User safety (condition of crash barrier and guard rail) | No damaged or missing stretch of crash barrier or pedestrian hand railing                                                      | Daily                                             | Visual inspection and detailed condition survey as per IRC SP: 35-1990. | Repairs and replacement of safety barriers as the case may be                                                                             | 3days                                                                                          | IRC: 5-1998, IRC SP: 73-2018 and IRC SP: 40-1993. |

|                                       |                               |                                       |                                                                                      |                                                                                                                                                                                                                    |          |                                               |
|---------------------------------------|-------------------------------|---------------------------------------|--------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|-----------------------------------------------|
| Rusted reinforcement                  | Not more than 0.25 sq.m       | Bi-Annually                           | Detailed condition survey as per IRC SP: 35-1990 using Mobile Bridge Inspection Unit | All the corroded reinforcement shall need to be thoroughly cleaned from rusting and applied with anti-corrosive coating before carrying out the repairs to affected concrete portion with epoxy mortar / concrete. | 15 days  | IRC SP: 40-1993 and MORTH Specification 1600. |
| Spalling of concrete                  | Not more than 0.50 sq.m       |                                       |                                                                                      |                                                                                                                                                                                                                    |          |                                               |
| Delamination                          | Not more than 0.50 sq.m       |                                       |                                                                                      |                                                                                                                                                                                                                    |          |                                               |
| Cracks wider than 0.30 mm             | Not more than 1m total length | Bi-Annually                           | Detailed condition survey as per IRC SP: 35-1990 using Mobile Bridge Inspection Unit | Grouting with epoxy mortar, investigating causes for cracks development and carry out necessary rehabilitation.                                                                                                    | 48 Hours | IRC SP: 40-1993 and MORTH Specification 2800. |
| Rainwater seepage through deck slab   | Leakage - nil                 | Quarterly                             | Detailed condition survey as per IRC SP: 35-1990 using Mobile Bridge Inspection Unit | Grouting of deck slab at leakage areas, waterproofing, repairs to drainage spouts                                                                                                                                  | 1 months | MORTH specifications 2600 & 2700.             |
| Deflection due to permanent loads and | Within design limits.         | Once in every 10 years for spans more | Load test method                                                                     | Carry out major rehabilitation works on bridge to retain original design loads capacity                                                                                                                            | 6 months | IRC SP: 51-1999.                              |

|  |                                                |                                                                                                                                                                                      |                                                                                               |                                                                                     |                                             |          |                                                |
|--|------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------|----------|------------------------------------------------|
|  | live loads                                     |                                                                                                                                                                                      | than 40 m                                                                                     |                                                                                     |                                             |          |                                                |
|  | Vibrations in bridge deck due to moving trucks | Frequency of vibrations shall not be more than 5 Hz                                                                                                                                  | Once in every 5 years for spans more than 30m and every 10 years for spans between 15 to 30 m | Laser displacement sensors or laser vibro-meters                                    | Strengthening of super structure            | 4 months | AASHTO LRFD specifications                     |
|  | Leakage in Expansion joints                    | No damage to elastomeric sealant compound in strip seal expansion joint, no leakage of rain water through expansion joint in case of buried and asphalt plug and copper strip joint. | Bi-Annually                                                                                   | Detailed condition survey as per IRC SP:35-1990 using Mobile Bridge Inspection Unit | Replace of seal in expansion joint          | 15 days  | MORTH specifications 2600 and IRC SP: 40-1993. |
|  | Debris and dust in strip seal                  | No dust or debris in expansion joint                                                                                                                                                 | Monthly                                                                                       | Detailed condition survey as per IRC SP:35-1990 using                               | Cleaning of expansion joint gaps thoroughly | 3 days   | MORTH specifications 2600 and                  |

|                            |                                          |                                                                                                                                 |             |                                                                                      |                                                                                                                                                                                                                                                   |         |                                               |
|----------------------------|------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|-------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|-----------------------------------------------|
|                            | expansion joint                          | gap.                                                                                                                            |             | Mobile Bridge Inspection Unit                                                        |                                                                                                                                                                                                                                                   |         | IRC SP: 40-1993.                              |
|                            | Drainage spouts                          | No down take pipe missing/broken below soffit of the deck slab. No silt, debris, clogging of drainage spout collection chamber. | Monthly     | Detailed condition survey as per IRC SP: 35-1990 using Mobile Bridge Inspection Unit | Cleaning of drainage spouts thoroughly. Replacement of missing/broken down take pipes with a minimum pipe extension of 500mm below soffit of slab. Providing sealant around the drainages pout if any leakages observed.                          | 3 days  | MORTH specification 2700.                     |
| <b>Bridge-substructure</b> | Cracks/spalling of concrete/rusted steel | No cracks, spalling of concrete and rusted steel                                                                                | Bi-Annually | Detailed condition survey as per IRC SP: 35-1990 using Mobile Bridge Inspection Unit | All the corroded reinforcement shall need to be thoroughly cleaned from rusting and applied with anti-corrosive coating before carrying out repairs to substructure by grouting/guniting and micro concreting depending on type of defect noticed | 30 days | IRC SP: 40-1993 and MORTH specification 2800. |

|                           |                                    |                                                                                                                                                                 |                                                   |                                                                                                                                                                                         |                                                                                                                                                                              |                                       |                                                        |
|---------------------------|------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|--------------------------------------------------------|
|                           | Bearings                           | Delamination of bearing reinforcement not more than 5%, cracking or tearing of rubber not more than 2 locations per side, no rupture of reinforcement or rubber | Bi-Annually                                       | Detailed condition survey as per IRC SP: 35-1990 using Mobile Bridge Inspection Unit                                                                                                    | In case of failure of even one bearing on any pier/abutment, all the bearings on that pier/abutment shall be replaced, in order to get uniform load transfer on to bearings. | 3 months                              | MORTH specification 2810 and IRC SP: 40-199.           |
| <b>Bridge Foundations</b> | Scouring around foundations        | Scouring shall not be lower than maximum scour level for the bridge                                                                                             | Bi-Annually                                       | Condition survey and visual inspection as per IRC SP:35-1990 using Mobile Bridge Inspection Unit. In case of doubt, use Underwater camera for inspection of deep wells in major Rivers. | Suitable protection works around pier/abutment                                                                                                                               | 1 month                               | IRC SP: 40-1993, IRC 83-2014, MORTH specification 2500 |
|                           | Protection works in good condition | Damaged of rough stone apron or bank revetment not more than 3                                                                                                  | 2 times in a year (before and after rainy season) | Condition survey as per IRC SP:35-1990                                                                                                                                                  | Repairs to damaged aprons and pitching.                                                                                                                                      | 30 days after defect observation or 2 | IRC: SP 40-1993 and IRC:SP:13-2004.                    |

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|                                                                                                                                                                                                                                 |  |                                                                   |  |  |  |                                                          |  |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|-------------------------------------------------------------------|--|--|--|----------------------------------------------------------|--|
|                                                                                                                                                                                                                                 |  | sq.m, damage to solid apron (concrete apron) not more than 1 sq.m |  |  |  | weeks before onset of rainy season whichever is earlier. |  |
| <b>Note:</b> Any Structure during the entire contract period which is found that does not complies with all requirements of this Table will be prepared, rehabilitated or even reconstructed under the scope of the contractor. |  |                                                                   |  |  |  |                                                          |  |

**Table 4: Maintenance Criteria for Structures and Culverts:**

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**Table 5: Maintenance Criteria for Hill Roads**

In addition to above, for hill roads the following provisions for maintenance is also to done.

| 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: For all tables 1 to 5 above, latest BIS & IRC standards (even those not indicated herewith) along with MoRTH specifications shall be binding for all maintenance activities.**

## A. Flexible Pavement

| Nature of Defect or deficiency                                          |                                                                                                                                     | Time limit for repair/<br>rectification                       |
|-------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------|
| <b>(b) Granular earth shoulders ,side slopes, drains and culverts</b>   |                                                                                                                                     |                                                               |
| (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 (twenty four) hours                                        |
| (vii)                                                                   | Railing, parapets, crash barriers                                                                                                   | 7 (seven) days (Restore immediately if causing safety hazard) |
| <b>(c) Road side furniture including road sign and pavement marking</b> |                                                                                                                                     |                                                               |
| (i)                                                                     | Damage to shape or position, poor visibility or loss of retro- reflectivity                                                         | 48 (forty eight) hours                                        |
| (ii)                                                                    | Painting of km stone, railing, parapets, crash barriers                                                                             | As and when required/ Once every year                         |
| (iii)                                                                   | Damaged/missing signs road requiring replacement                                                                                    | 7 (seven) days                                                |
| (iv)                                                                    | Damage to road mark ups                                                                                                             | 7 (seven) days                                                |
| <b>(d) Road lighting</b>                                                |                                                                                                                                     |                                                               |
| (i)                                                                     | Any major failure of the system                                                                                                     | 24 (twenty four) hours                                        |
| (ii)                                                                    | Faults and minor failures                                                                                                           | 8 (eight) hours                                               |
| <b>(e) Trees and plantation</b>                                         |                                                                                                                                     |                                                               |

| Nature of Defect or deficiency |                                                                                                                                                                      | Time limit for repair/<br>rectification                                                               |
|--------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|
| (i)                            | Obstruction in a minimum head- room of 5 m above carriageway or obstruction in visibility of road signs                                                              | 24 (twenty four)hours                                                                                 |
| (ii)                           | Removal of fallen trees from carriageway                                                                                                                             | 4 (four) 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                                                                                     |
| <b>(f) Rest area</b>           |                                                                                                                                                                      |                                                                                                       |
| (i)                            | Cleaning of toilets                                                                                                                                                  | Every 4 (four) hours                                                                                  |
| (ii)                           | Defects in electrical, water and sanitary installations                                                                                                              | 24 (twenty four) hours                                                                                |
| <b>(g) [Toll Plaza]</b>        |                                                                                                                                                                      |                                                                                                       |
| <b>(h)</b>                     | <b>Other Project Facilities and Approach roads</b>                                                                                                                   |                                                                                                       |
| (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                                                                                        |
| <b>Bridges</b>                 |                                                                                                                                                                      |                                                                                                       |
| <b>(a) Superstructure</b>      |                                                                                                                                                                      |                                                                                                       |
| (i)                            | Any damage, cracks, spalling/ scaling<br>Temporary measures<br>Permanent measures                                                                                    | within 48 (forty eight) hours<br>within 15 (fifteen) days or as specified by the Authority's Engineer |
| <b>(b) Foundations</b>         |                                                                                                                                                                      |                                                                                                       |

| Nature of Defect or deficiency                           |                                                                                            | Time limit for repair/<br>rectification                                 |
|----------------------------------------------------------|--------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|
| (i)                                                      | Scouring and/or cavitation                                                                 | 15 (fifteen) days                                                       |
| <b>(c) Piers, abutments, return walls and wing walls</b> |                                                                                            |                                                                         |
| (i)                                                      | Cracks and damages including settlement and tilting, spalling, scaling                     | 30 (thirty) days                                                        |
| <b>(d) Bearings (metallic) of bridges</b>                |                                                                                            |                                                                         |
| (i)                                                      | Deformation, damages, tilting or shifting of bearings                                      | 15 (fifteen) days Greasing of metallic bearings once in a year          |
| <b>(e) Joints</b>                                        |                                                                                            |                                                                         |
| (i)                                                      | Malfunctioning of joints                                                                   | 15 (fifteen) days                                                       |
| <b>(f) Other items</b>                                   |                                                                                            |                                                                         |
| (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 (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                                                       |
| <b>(g) Hill Roads</b>                                    |                                                                                            |                                                                         |
| (i)                                                      | Damage to retaining wall/breast wall                                                       | 7 (seven) days                                                          |
| (ii)                                                     | Landslides requiring clearance                                                             | 12 (twelve) hours                                                       |

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| Nature of Defect or deficiency |                          | Time limit for repair/<br>rectification |
|--------------------------------|--------------------------|-----------------------------------------|
| (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.]

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## **Schedule - F**

*(See Clause 4.1 (vii)(a))*

### **Applicable Permits**

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

- (i) 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.
- (ii) 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.

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## Schedule – G

*(See Clauses 7.1 and 19.2)*

### Annex-I

*(See Clause 7.1)*

#### Form of Bank Guarantee

#### **[Performance Security/Additional Performance Security]**

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

#### WHEREAS:

\_\_\_\_\_ [name and address of contractor] (hereinafter called the “**Contractor**”) and [name and address of the authority], (hereinafter called the “**Authority**”) have entered into an agreement (hereinafter called the “**Agreement**”) for the **Improvement and Widening to two lane with paved shoulder of road from design Km 36.000 (Rangamati) to design Km 72.000 (Pati Chhari) (Total length 36.000 Km) on Teliamura to Harina section of NH 208 (Package –III) in the state of Tripura on EPC mode under JICA ODA Loan Phase-6**

- (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

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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 Infrastructure Development Corporation Limited], 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, fulfillment and/ or performance of all or any of the obligations of the Contractor contained in the Agreement or to postpone for any time, and from time to time, any of the rights and powers exercisable by the Authority against the Contractor, and either to enforce or forbear from enforcing any of the terms and conditions contained in the Agreement and/or the securities available to the Authority, and the Bank shall not be released from its liability and obligation under these presents by any exercise by the Authority of the liberty with reference to the matters aforesaid or by reason of time being given to the Contractor or any other forbearance, indulgence, act or omission on the part of the Authority or of any other matter or thing whatsoever which under any law relating to sureties and guarantors would but for this provision have the effect of releasing the Bank from its liability and obligation under this Guarantee and the Bank hereby waives all of its rights under any such law.
6. This Guarantee is in addition to and not in substitution of any other guarantee or security now or which may hereafter be held by the Authority in respect of or relating to the Agreement or for the fulfillment, compliance and/or performance of all or any of the obligations of the Contractor under the Agreement.
7. Notwithstanding anything contained hereinbefore, the liability of the Bank under this Guarantee is restricted to the Guarantee Amount and this Guarantee will

remain in force for the period specified in paragraph 8 below and unless  
ademand 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 Contract.
- 12 This Guarantee is subject to the Uniform Rules for Demand Guarantees (URDG) 2010 Revision, ICC Publication No. 758, except that the supporting statement under Article 15(a) is hereby excluded.
- 13 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 there under claimed, the said branch shall accept such invocation letter and make payment of amounts so demanded under the said invocation.
- 14 The guarantor/bank hereby confirms that it is on the SFMS (Structural Finance Messaging System) platform & shall invariably send an advice of this Bank Guarantee to the designated bank of [MoRT&H/NHAI/NHIDCL/State PWD/BRO], details of which is as under:

| S.No. | Particulars                  | Details                                                                                                |
|-------|------------------------------|--------------------------------------------------------------------------------------------------------|
| 1     | Name of Beneficiary          | National Highways & Infrastructure Development Corporation Limited                                     |
| 2     | Beneficiary Bank Account No. | 90621010002659                                                                                         |
| 3     | Beneficiary Bank Branch      | CNRB0019062                                                                                            |
| 4     | Beneficiary Bank Branch Name | Transport Bhawan, New Delhi                                                                            |
| 5     | Beneficiary Bank Address     | Canara Bank (erstwhile Syndicate Bank)<br>transport Bhawan, 1st Parliament<br>Street, New Delhi-110001 |

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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.

<sup>\$</sup>Insert date being 2 (two) years from the date of issuance of this Guarantee (in accordance with Clause 7.2 of the Agreement).

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## Annex – II

(Schedule - G)

(See Clause 19.2)

### Form for Guarantee for Advance Payment

To  
The Managing Director,  
National Highway & Highway 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 [name and address of the authority], (hereinafter called the “**Authority**”) **Improvement and Widening to two lane with paved shoulder of road from design Km 36.000 (Rangamati) to design Km 72.000 (Pati Chhari) (Total length 36.000 Km) on Teliamura to Harina section of NH 208 (Package -III) in the state of Tripura on EPC mode under JICA ODA Loan Phase-6** 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 bearing @*Bank Rate + 3%* 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 two 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} 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
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<sup>\$</sup> The Guarantee Amount should be equivalent to 110% of the value of the applicable instalment.

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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 Authority of India], that the Contractor has committed default in the due and faithful performance of all or any of its obligations for the repayment of the 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.

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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.
12. This Guarantee is subject to the Uniform Rules for Demand Guarantees (URDG) 2010 Revision, ICC Publication No. 758, except that the supporting statement under Article 15(a) is hereby excluded.
13. 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 there under claimed, the said branch shall accept such invocation letter and make payment of amounts so demanded under the said invocation.
14. The guarantor/bank hereby confirms that it is on the SFMS (Structural Finance Messaging System) platform & shall invariably send an advice of this Bank Guarantee to the designated bank of [MoRT&H/NHAI/NHIDCL/State PWD/BRO], details of which is as under:

| S.No. | Particulars                  | Details                                                            |
|-------|------------------------------|--------------------------------------------------------------------|
| 1     | Name of Beneficiary          | National Highways & Infrastructure Development Corporation Limited |
| 2     | Beneficiary Bank Account No. | 90621010002659                                                     |
| 3     | Beneficiary Bank Branch      | CNRB0019062                                                        |
| 4     | Beneficiary Bank Branch Name | Transport Bhawan, New Delhi                                        |
| 5     | Beneficiary Bank Address     | Canara Bank (erstwhile Syndicate                                   |

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|  |  |                                                                    |
|--|--|--------------------------------------------------------------------|
|  |  | Bank) transport Bhawan, 1st<br>Parliament Street, New Delhi-110001 |
|--|--|--------------------------------------------------------------------|

Signed and sealed this ..... day of ....., 2023 at .....

SIGNED, SEALED AND DELIVERED

For and on behalf of the

Bank by:(Signature)

(Name)

(Designat

ion)

(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.

\$ 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

## Schedule-H

(See Clauses 10.1(iv) and 19.3)

### Contract Price Weightages

The Contract Price for this Agreement is Rs. \*\*\*\*

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

| ITEM                                                            | WEIGHTAGE IN PERCENTAGE TO THE CONTRACT PRICE | STAGE FOR PAYMENT                                                                                                                 | PERCENTAGE WEIGHTAGE |
|-----------------------------------------------------------------|-----------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|----------------------|
| 1                                                               | 2                                             | 3                                                                                                                                 | 4                    |
| Road works including culverts, widening and repair of culverts. | 47.96%                                        | <b>A-Widening and Strengthening of existing road</b>                                                                              |                      |
|                                                                 |                                               | (1) Earthwork up to top of the sub-grade including excavation in soil, soft rock and hard rock, removal of unserviceable soil etc | 0.23%                |
|                                                                 |                                               | (2) Sub Base courses                                                                                                              | 0.28%                |
|                                                                 |                                               | (3) Non Bituminous Base Course                                                                                                    | 0.00%                |
|                                                                 |                                               | (4) Bituminous Base Course                                                                                                        | 0.30%                |
|                                                                 |                                               | (5) Wearing coat                                                                                                                  | 0.19%                |
|                                                                 |                                               | (6) Widening and repair of culverts                                                                                               | 0.00%                |
|                                                                 |                                               | <b>B 1- Reconstruction / New two lane alignment / bypass (Flexible pavement)</b>                                                  |                      |
|                                                                 |                                               | (1) Earthwork up to top of the sub-grade including excavation in soil, soft rock and hard rock, removal of unserviceable soil etc | 17.69%               |
|                                                                 |                                               | (2) Sub Base Course                                                                                                               | 22.02%               |
|                                                                 |                                               | (3) Non Bituminous Base Course                                                                                                    | 14.07%               |
|                                                                 |                                               | (4) Bituminous Base Course                                                                                                        | 9.38%                |
|                                                                 |                                               | (5) Wearing coat                                                                                                                  | 14.65%               |
|                                                                 |                                               | <b>B 2- Reconstruction / New two lane alignment / bypass (Rigid pavement)</b>                                                     |                      |
|                                                                 |                                               | (1) Earthwork up to top of the sub-grade                                                                                          | 0.00%                |

| ITEM                                      | WEIGHTAGE<br>IN<br>PERCENTAGE<br>TO THE<br>CONTRACT<br>PRICE | STAGE FOR PAYMENT                                                                    | PERCENTAGE<br>WEIGHTAGE |
|-------------------------------------------|--------------------------------------------------------------|--------------------------------------------------------------------------------------|-------------------------|
| 1                                         | 2                                                            | 3                                                                                    | 4                       |
|                                           |                                                              | (2) Sub Base Course                                                                  | 0.00%                   |
|                                           |                                                              | (3) Dry Lean Concrete (DLC) Course                                                   | 0.00%                   |
|                                           |                                                              | (4) Pavement Quality Control (PQC) course                                            | 0.00%                   |
|                                           |                                                              | <b>C 1- Reconstruction / New Service road/ Slip Road (Flexible pavement)</b>         |                         |
|                                           |                                                              | (1) Earthwork up to top of the sub-grade                                             | 0.00%                   |
|                                           |                                                              | (2) Sub Base Course                                                                  | 0.00%                   |
|                                           |                                                              | (3) Non Bituminous Base Course                                                       | 0.00%                   |
|                                           |                                                              | (4) Bituminous Base Course                                                           | 0.00%                   |
|                                           |                                                              | (5) Wearing coat                                                                     | 0.00%                   |
|                                           |                                                              | <b>C 2- Reconstruction / New Service road (Rigid pavement)</b>                       |                         |
|                                           |                                                              | (1) Earthwork up to top of the sub-grade                                             | 0.00%                   |
|                                           |                                                              | (2) Sub Base Course                                                                  | 0.00%                   |
|                                           |                                                              | (3) Dry Lean Concrete (DLC) Course                                                   | 0.00%                   |
|                                           |                                                              | (4) Pavement Quality Control (PQC) course                                            | 0.00%                   |
|                                           |                                                              | <b>D - Reconstruction and New culverts on existing road, Realignments, bypasses:</b> |                         |
|                                           |                                                              | Culverts (Length <6m)                                                                |                         |
|                                           |                                                              | a - Pipe Culverts                                                                    | 0.00%                   |
|                                           |                                                              | b - Box Culverts                                                                     | 21.19%                  |
| Minor Bridges / underpasses / over passes | 18.57%                                                       | <b>A 1- Widening and repairs of Minor Bridges (length &gt;6m and&lt;60m)</b>         |                         |
|                                           |                                                              | Minor Bridges                                                                        | 0.00%                   |
|                                           |                                                              | <b>A 2- New Minor Bridges (length &gt;6m and&lt;60m)</b>                             |                         |

| ITEM | WEIGHTAGE<br>IN<br>PERCENTAGE<br>TO THE<br>CONTRACT<br>PRICE | STAGE FOR PAYMENT                                                                                                                                                                                                            | PERCENTAGE<br>WEIGHTAGE |
|------|--------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|
| 1    | 2                                                            | 3                                                                                                                                                                                                                            | 4                       |
|      |                                                              | (1) Foundation + Sub-structure: on completion of foundation work including foundation for wing and return wall, abutments, piers upto theabutment/pier cap.                                                                  | 30.00%                  |
|      |                                                              | (2) Superstructure : on completion of super-structure in all respects including wearing coat, bearings, expansion joints, hand rails, crash barriers, road sign & markings, testson completion etc. complete in all respect. | 30.00%                  |
|      |                                                              | (3) Approaches: on completion of approaches including Retaining walls, stone pitching, protection works complete in all respect, test on completion in all respects and fit for use.                                         | 30.00%                  |
|      |                                                              | (4) Guide bunds and river training works: on completion of guide bundsand repair training works complete inall respects.                                                                                                     | 10.00%                  |
|      |                                                              | <b>B 1 - Widening and repair of underpasses / overpasses</b>                                                                                                                                                                 |                         |
|      |                                                              | Underpasses / Overpasses                                                                                                                                                                                                     | 0.00%                   |
|      |                                                              | <b>B 2 - New Underpasses / Overpasses</b>                                                                                                                                                                                    |                         |
|      |                                                              | (1) Foundation + Sub-structure: on completion of foundation work including foundation for wing and return wall, abutments, piers upto theabutment/pier cap.                                                                  | 0.00%                   |

| ITEM                                                                                                                                                        | WEIGHTAGE<br>IN<br>PERCENTAGE<br>TO THE<br>CONTRACT<br>PRICE | STAGE FOR PAYMENT                                                                                                                                                                                                                   | PERCENTAGE<br>WEIGHTAGE |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|
| 1                                                                                                                                                           | 2                                                            | 3                                                                                                                                                                                                                                   | 4                       |
|                                                                                                                                                             |                                                              | (2) Superstructure : on completion of super-structure in all respects including wearing coat, bearings, expansion joints, hand rails, crash barriers, road sign & markings, testson completion etc. complete in all respect.        | 0.00%                   |
|                                                                                                                                                             |                                                              | Wearing coat (a) in case of overpass-wearing coat including expansion joints complete in all respects as specified and (b) in case of underpass - rigid pavement including drainage facility complete in all respects as specified. | 0.00%                   |
|                                                                                                                                                             |                                                              | (3) Approaches : On completion of approaches including Retaining walls/ Reinforced earth walls, stone pitching, protection works complete inall respect and fit for use.                                                            | 0.00%                   |
| <b>Major bridge<br/>(length &gt;<br/>60m) works<br/>and RoB /<br/>RUB /<br/>Elevated<br/>sections /<br/>Flyovers<br/>including<br/>viaducts, if<br/>any</b> | <b>2.41%</b>                                                 | <b>A 1 - Widening and repair of major bridges</b>                                                                                                                                                                                   |                         |
|                                                                                                                                                             |                                                              | (1) Foundation                                                                                                                                                                                                                      | 0.00%                   |
|                                                                                                                                                             |                                                              | (2) Sub-structure                                                                                                                                                                                                                   | 0.00%                   |
|                                                                                                                                                             |                                                              | (3) Super-structure (including bearings)                                                                                                                                                                                            | 0.00%                   |
|                                                                                                                                                             |                                                              | (4) Wearing Coat including expansion joints                                                                                                                                                                                         | 0.00%                   |
|                                                                                                                                                             |                                                              | (5) Miscellaneous Items like handrails, crash barrier, road markings etc.                                                                                                                                                           | 0.00%                   |
|                                                                                                                                                             |                                                              | (6) Wing walls/return walls                                                                                                                                                                                                         | 0.00%                   |
|                                                                                                                                                             |                                                              | (7) Guide bunds, River Training works etc.                                                                                                                                                                                          | 0.00%                   |
|                                                                                                                                                             |                                                              | (8) Approaches (including Retainingwalls, stone pitching and protection works)                                                                                                                                                      | 0.00%                   |
|                                                                                                                                                             |                                                              | <b>A 2 - New Major bridges</b>                                                                                                                                                                                                      |                         |

| ITEM | WEIGHTAGE<br>IN<br>PERCENTAGE<br>TO THE<br>CONTRACT<br>PRICE | STAGE FOR PAYMENT                                                                                                                                                                                                                                  | PERCENTAGE<br>WEIGHTAGE |
|------|--------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|
| 1    | 2                                                            | 3                                                                                                                                                                                                                                                  | 4                       |
|      |                                                              | (1) Foundation                                                                                                                                                                                                                                     | 33.00%                  |
|      |                                                              | (2) Sub-structure                                                                                                                                                                                                                                  | 20.00%                  |
|      |                                                              | (3) Super-structure (including bearings)                                                                                                                                                                                                           | 25.00%                  |
|      |                                                              | (4) Wearing Coat including expansion joints                                                                                                                                                                                                        | 3.00%                   |
|      |                                                              | (5) Miscellaneous Items like hand rails, crash barrier, road marking etc.                                                                                                                                                                          | 5.00%                   |
|      |                                                              | (6) Wing walls/return walls upto top                                                                                                                                                                                                               | 6.00%                   |
|      |                                                              | (7) Guide bunds, River Training works etc.                                                                                                                                                                                                         | 3.00%                   |
|      |                                                              | (8) Approaches (including Retaining walls, stone pitching and protection works)                                                                                                                                                                    | 5.00%                   |
|      |                                                              | <b>B 1 - Widening and repair of</b>                                                                                                                                                                                                                |                         |
|      |                                                              | <b>a) RoB</b>                                                                                                                                                                                                                                      |                         |
|      |                                                              | <b>b) RuB</b>                                                                                                                                                                                                                                      |                         |
|      |                                                              | 1) Foundation                                                                                                                                                                                                                                      | 0.00%                   |
|      |                                                              | 2) Sub Structure                                                                                                                                                                                                                                   | 0.00%                   |
|      |                                                              | 3) Super Structure (Including bearings)                                                                                                                                                                                                            | 0.00%                   |
|      |                                                              | 4) Wearing coat (a) in case of <b>RoB</b> - wearing coat including expansion joints complete in all respect as specified and (b) in case of <b>RuB</b> - rigid pavement under RuB including drainage facility complete in all respect as specified | 0.00%                   |
|      |                                                              | 5) miscellaneous items like hand rails, crash barrier, road markings etc                                                                                                                                                                           | 0.00%                   |
|      |                                                              | 6) wing walls / return walls                                                                                                                                                                                                                       | 0.00%                   |
|      |                                                              | 7) Approaches (including Retaining walls, stone pitching and protection works)                                                                                                                                                                     | 0.00%                   |
|      |                                                              | <b>B 2 - New RoB / RuB</b>                                                                                                                                                                                                                         |                         |
|      |                                                              | <b>a) RoB</b>                                                                                                                                                                                                                                      |                         |
|      |                                                              | <b>b) RuB</b>                                                                                                                                                                                                                                      |                         |
|      |                                                              | 1) Foundation                                                                                                                                                                                                                                      | 0.00%                   |

| ITEM | WEIGHTAGE<br>IN<br>PERCENTAGE<br>TO THE<br>CONTRACT<br>PRICE | STAGE FOR PAYMENT                                                                                                                                                                                                                                  | PERCENTAGE<br>WEIGHTAGE |
|------|--------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|
| 1    | 2                                                            | 3                                                                                                                                                                                                                                                  | 4                       |
|      |                                                              | 2) Sub Structure                                                                                                                                                                                                                                   | 0.00%                   |
|      |                                                              | 3) Super Structure (Including bearings)                                                                                                                                                                                                            | 0.00%                   |
|      |                                                              | 4) Wearing coat (a) in case of <b>RoB</b> - wearing coat including expansion joints complete in all respect as specified and (b) in case of <b>RuB</b> - rigid pavement under RuB including drainage facility complete in all respect as specified | 0.00%                   |
|      |                                                              | 5) miscellaneous items like hand rails, crash barrier, road markings etc                                                                                                                                                                           | 0.00%                   |
|      |                                                              | 6) wing walls / return walls                                                                                                                                                                                                                       | 0.00%                   |
|      |                                                              | 7) Approaches (including Retaining walls, stone pitching and protection works)                                                                                                                                                                     | 0.00%                   |
|      |                                                              | <b>C 1 - Widening and repair of Elevated sections / Fly overs / Grade Separators</b>                                                                                                                                                               |                         |
|      |                                                              | 1) Foundation                                                                                                                                                                                                                                      | 0.00%                   |
|      |                                                              | 2) Sub Structure                                                                                                                                                                                                                                   | 0.00%                   |
|      |                                                              | 3) Super Structure (Including bearings)                                                                                                                                                                                                            | 0.00%                   |
|      |                                                              | 4) Wearing coat including expansion joints                                                                                                                                                                                                         | 0.00%                   |
|      |                                                              | 5) miscellaneous items like hand rails, crash barrier, road markings etc                                                                                                                                                                           | 0.00%                   |
|      |                                                              | 6) wing walls / return walls                                                                                                                                                                                                                       | 0.00%                   |
|      |                                                              | 7) Approaches (including Retaining walls, stone pitching and protection works)                                                                                                                                                                     | 0.00%                   |
|      |                                                              | <b>C 2 - New Elevated sections / Fly overs / Grade Separators</b>                                                                                                                                                                                  |                         |
|      |                                                              | 1) Foundation                                                                                                                                                                                                                                      | 0.00%                   |
|      |                                                              | 2) Sub Structure                                                                                                                                                                                                                                   | 0.00%                   |
|      |                                                              | 3) Super Structure (Including                                                                                                                                                                                                                      | 0.00%                   |

| ITEM        | WEIGHTAGE<br>IN<br>PERCENTAGE<br>TO THE<br>CONTRACT<br>PRICE | STAGE FOR PAYMENT                                                              | PERCENTAGE<br>WEIGHTAGE |
|-------------|--------------------------------------------------------------|--------------------------------------------------------------------------------|-------------------------|
| 1           | 2                                                            | 3                                                                              | 4                       |
| Other Works | 28.31%                                                       | bearings)                                                                      |                         |
|             |                                                              | 4) Wearing coat including expansion joints                                     | 0.00%                   |
|             |                                                              | 5) miscellaneous items like hand rails, crash barrier, road markings etc       | 0.00%                   |
|             |                                                              | 6) wing walls / return walls                                                   | 0.00%                   |
|             |                                                              | 7) Approaches (including Retaining walls, stone pitching and protection works) | 0.00%                   |
|             |                                                              | (i) Toll Plaza                                                                 | 0.00%                   |
|             |                                                              | (ii) Road side drains                                                          |                         |
|             |                                                              | Lined Drain (RCC)                                                              | 2.64%                   |
|             |                                                              | Lined Drain (PCC)                                                              | 7.17%                   |
|             |                                                              | Unlined Drain                                                                  | 0.29%                   |
|             |                                                              | (iii) Road Signs, markings, km stones, safety devices, Road furnitures etc     | 1.29%                   |
|             |                                                              | (iv) Project facilities                                                        |                         |
|             |                                                              | (a) Bus Bays                                                                   | 0.66%                   |
|             |                                                              | (b) Truck lay byes                                                             | 0.29%                   |
|             |                                                              | © Rain water harvesting                                                        | 0.29%                   |
|             |                                                              | (d) Others                                                                     |                         |
|             |                                                              | a) Clearing n Grubbing & Dismantling works                                     | 0.37%                   |
|             |                                                              | b) improvement of Junctions                                                    | 5.91%                   |
|             |                                                              | c) Turfing and hydroseeding                                                    | 4.80%                   |
|             |                                                              | d) Traffic Aid Post                                                            | 0.13%                   |
|             |                                                              | e) Lighting works                                                              | 0.28%                   |
|             |                                                              | (v) Road side Plantation                                                       | 0.00%                   |

| ITEM                                                                                                        | WEIGHTAGE<br>IN<br>PERCENTAGE<br>TO THE<br>CONTRACT<br>PRICE | STAGE FOR PAYMENT                                                                                                         | PERCENTAGE<br>WEIGHTAGE |
|-------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------|-------------------------|
| 1                                                                                                           | 2                                                            | 3                                                                                                                         | 4                       |
| Electrical<br>utilites and<br>public<br>Health<br>Utilities<br>(water pipe<br>lines and<br>sewage<br>lines) |                                                              | (vi) Protection works other than approaches to the bridges, elevated sections / flyovers / grade separators and RoBs/RuBs |                         |
|                                                                                                             |                                                              | (a) Crash Barrier                                                                                                         | 9.47%                   |
|                                                                                                             |                                                              | (b) Retaining wall                                                                                                        | 18.82%                  |
|                                                                                                             |                                                              | (c) Breast Wall                                                                                                           | 46.96%                  |
|                                                                                                             |                                                              | (d) Pitching work for diversion of nala                                                                                   | 0.63%                   |
|                                                                                                             |                                                              | (vii) Safety and traffic management during construction                                                                   |                         |
|                                                                                                             | 2.75%                                                        | (i) EHT Lines                                                                                                             | 0.00%                   |
|                                                                                                             |                                                              | (ii) EHT Crossings                                                                                                        | 0.00%                   |
|                                                                                                             |                                                              | (iii) HT/LT line                                                                                                          | 44.05%                  |
|                                                                                                             |                                                              | (iv) HT/LT crossings                                                                                                      | 20.33%                  |
|                                                                                                             |                                                              | (v) Transformer                                                                                                           | 3.39%                   |
|                                                                                                             |                                                              | (vi) Water pipeline                                                                                                       | 29.44%                  |
|                                                                                                             |                                                              | (vii) Water pipeline crossings                                                                                            | 0.60%                   |
|                                                                                                             |                                                              | (viii) Water Pipe line (WRD)                                                                                              | 2.19%                   |

## Procedure of estimating the value of work done

### Road works

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

**Table1.3.1**

| STAGE FOR PAYMENT                                                                                                                 | PERCENTAGE WEIGHTAGE | PAYMENT PROCEDURE                                                                                                                                                                       |
|-----------------------------------------------------------------------------------------------------------------------------------|----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>A-Widening and Strengthening of existing road</b>                                                                              |                      |                                                                                                                                                                                         |
| (1) Earthwork up to top of the sub-grade including excavation in soil, soft rock and hard rock, removal of unserviceable soil etc | 0.23%                | 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 10 (ten) percent of the total length. |
| (2) Sub Base courses                                                                                                              | 0.28%                |                                                                                                                                                                                         |
| (3) Non Bituminous Base Course                                                                                                    | 0.00%                |                                                                                                                                                                                         |
| (4) Bituminous Base Course                                                                                                        | 0.30%                |                                                                                                                                                                                         |
| (5) Wearing coat                                                                                                                  | 0.19%                |                                                                                                                                                                                         |
| (6) Widening and repair of culverts                                                                                               | 0.00%                | Cost of completed culverts shall be determined on pro rata basis with respect to the total no. of culverts. The payment shall be made on the completion of atleast five culverts.       |
| <b>B 1- Reconstruction / New two lane alignment / bypass (Flexible pavement)</b>                                                  |                      |                                                                                                                                                                                         |
| (1) Earthwork up to top of the sub-grade including excavation in soil, soft rock and hard rock, removal of unserviceable soil etc | 17.69%               | Unit of measurement is linear length. Payment of each stage shall be made on pro rata basis on completion of a stage in full length or 5 (five) km. length, whichever is less.          |
| (2) Sub Base Course                                                                                                               | 22.02%               |                                                                                                                                                                                         |
| (3) Non Bituminous Base Course                                                                                                    | 14.07%               |                                                                                                                                                                                         |
| (4) Bituminous Base Course                                                                                                        | 9.38%                |                                                                                                                                                                                         |
| (5) Wearing coat                                                                                                                  | 14.65%               |                                                                                                                                                                                         |
| <b>B 2- Reconstruction / New two lane alignment / bypass (Rigid pavement)</b>                                                     |                      |                                                                                                                                                                                         |
| (1) Earthwork up to top of the sub-grade                                                                                          | 0.00%                | Unit of measurement is linear length. Payment of each stage shall be made on pro rata basis on completion of a stage in full length or 5 (five) km. length, whichever is less.          |
| (2) Earthwork in shoulders                                                                                                        | 0.00%                |                                                                                                                                                                                         |
| (3) Sub Base Course                                                                                                               | 0.00%                |                                                                                                                                                                                         |
| (4) Dry Lean Concrete (DLC) Course                                                                                                | 0.00%                |                                                                                                                                                                                         |
| (5) Pavement Quality Control (PQC) course                                                                                         | 0.00%                |                                                                                                                                                                                         |
| <b>C 1- Reconstruction / New Service road/ Slip Road (Flexible pavement)</b>                                                      |                      |                                                                                                                                                                                         |
| (1) Earthwork up to top of the sub-grade including shoulder                                                                       | 0.00%                | Unit of measurement is linear length. Payment of each stage shall be made on                                                                                                            |

| STAGE FOR PAYMENT                                                                    | PERCENTAGE WEIGHTAGE | PAYMENT PROCEDURE                                                                                                                                                              |
|--------------------------------------------------------------------------------------|----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (2) Sub Base Course                                                                  | 0.00%                | pro rata basis on completion of a stage in full length or 5 (five) km. length, whichever is less.                                                                              |
| (3) Non Bituminous Base Course                                                       | 0.00%                |                                                                                                                                                                                |
| (4) Bituminous Base Course                                                           | 0.00%                |                                                                                                                                                                                |
| (5) Wearing coat                                                                     | 0.00%                |                                                                                                                                                                                |
| <b>C 2- Reconstruction / New Service road (Rigid pavement)</b>                       |                      |                                                                                                                                                                                |
| (1) Earthwork up to top of the sub-grade                                             | 0.00%                | Unit of measurement is linear length. Payment of each stage shall be made on pro rata basis on completion of a stage in full length or 5 (five) km. length, whichever is less. |
| (2) Sub Base Course                                                                  | 0.00%                |                                                                                                                                                                                |
| (3) Dry Lean Concrete (DLC) Course                                                   | 0.00%                |                                                                                                                                                                                |
| (4) Pavement Quality Control (PQC) course                                            | 0.00%                |                                                                                                                                                                                |
| <b>D - Reconstruction and New culverts on existing road, Realignments, bypasses:</b> |                      |                                                                                                                                                                                |
| Culverts (Length <6m)                                                                |                      | Cost of each culverts shall be determined on pro rata basis with respect to the total no. of culverts. The payment shall be made on the completion of atleast five culverts.   |
| a - Pipe Culverts                                                                    | 0.00%                |                                                                                                                                                                                |
| b - Box Culverts                                                                     | 21.19%               |                                                                                                                                                                                |

@ For example, if the total length of bituminous work to be done is 100 km, the cost perkm 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 length in km

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 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.

### 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 of PAYMENT                                                                                                                                                                                                                      | PERCENTAGE WEIGHTAGE | Payment Procedure                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>A 1- Widening and repairs of Minor Bridges (length &gt;6m and &lt;60m)</b>                                                                                                                                                         |                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Minor Bridges                                                                                                                                                                                                                         | 0.00%                | Cost of each minor bridge 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.                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>A 2- New Minor Bridges (length &gt;6m and &lt;60m)</b>                                                                                                                                                                             |                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>(1) Foundation + Sub-structure:</b> on completion of foundation work including foundation for wing and return wall, abutments, piers upto the abutment/pier cap.                                                                   | 30.00%               | <b>(1) Foundation + Sub Structure:</b> Cost of each minor bridge shall be determined on pro rata basis with respect to the total linear length of the minor bridges. Payment against Foundation + Sub Structure shall be made on pro rata basis on completion of a stage ie. not less than 25% of the scope of Foundation + Sub Structure of each bridge subject to completion of atleast two foundations along with sub structure upto abutment/pier cap level of each bridge. In case where load testing is required for foundation, the trigger of first payment shall include load testing also where specified. |
| <b>(2) Superstructure :</b> on completion of 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. | 30.00%               | <b>(2) Super structure:</b> Payment shall be made on pro rata basis on completion of a stage ie. completion of super structure of atleast one span in all respect as specified in the column of " Stage of Payment" in this Sub-clause.                                                                                                                                                                                                                                                                                                                                                                              |
| <b>(3) Approaches:</b> on completion of approaches including Retaining walls, stone pitching, protection works complete in all respect and fit for use.                                                                               | 30.00%               | <b>(3) Approaches:</b> Payment shall be made on pro rata basis on completion of a stage ie. completion of approaches in all respect as specified in the column of " Stage of Payment" in this Sub-clause.                                                                                                                                                                                                                                                                                                                                                                                                            |

| STAGE of PAYMENT                                                                                                                                                                                                                      | PERCENTAGE WEIGHTAGE | Payment Procedure                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>(4) Guide bunds and river training works:</b> on completion of guide bunds and repair training works complete in all respects.                                                                                                     | 10.00%               | <b>(4) Guide bunds and river training works:</b> Payment shall be made on pro rata basis on completion of a stage ie. completion of guide bunds and river training works in all respect as specified.                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>B 1 - Widening and repair of underpasses / overpasses</b>                                                                                                                                                                          |                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Underpasses / Overpasses                                                                                                                                                                                                              | 0.00%                | Cost of each underpass / overpass shall be determined on pro rata basis with respect to the total linear length of the underpass / overpass. Payment shall be made on completion of widening and repair works of a underpass / overpass.                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>B 2 - New Underpasses / Overpasses</b>                                                                                                                                                                                             |                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>(1) Foundation + Sub-structure:</b> on completion of foundation work including foundation for wing and return wall, abutments, piers upto the abutment/pier cap.                                                                   | 0.00%                | <b>(1) Foundation + Sub Structure:</b> Cost of each underpass / overpass shall be determined on pro rata basis with respect to the total linear length of the underpass / overpass. Payment against Foundation + Sub Structure shall be made on pro rata basis on completion of a stage ie. not less than 25% of the scope of Foundation + Sub Structure of each underpass / overpass subject to completion of atleast two foundations along with sub structure upto abutment/pier cap level of each underpass / overpass. In case where load testing is required for foundation, the trigger of first payment shall include load testing also where specified. |
| <b>(2) Superstructure :</b> on completion of 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. | 0.00%                | <b>(2) Super structure:</b> Payment shall be made on pro rata basis on completion of a stage ie. completion of super structure of atleast one span in all respect as specified in the column of " Stage of Payment" in this Sub-clause.                                                                                                                                                                                                                                                                                                                                                                                                                         |

| STAGE of PAYMENT                                                                                                                                        | PERCENTAGE WEIGHTAGE | Payment Procedure                                                                                                                                                                                         |
|---------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>(3) Approaches:</b> on completion of approaches including Retaining walls, stone pitching, protection works complete in all respect and fit for use. | 0.00%                | <b>(3) Approaches:</b> Payment shall be made on pro rata basis on completion of a stage ie. completion of approaches in all respect as specified in the column of " Stage of Payment" in this Sub-clause. |

### Major Bridge works, ROB/RUB and Structures.

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

**Table 1.3.3**

| STAGE of PAYMENT                                  | PERCENTAGE WEIGHTAGE | Payment Procedure                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|---------------------------------------------------|----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>A 1 - Widening and repair of major bridges</b> |                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| (1) Foundation                                    | 0.00%                | <b>(i) Foundation:</b> Cost of each Major Bridge shall be determined on prorata 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. In case where load testing is required for foundation, the trigger of first payment shall include load testing also were specified. |
| (2) Sub-structure                                 | 0.00%                | <b>(ii) Sub-Structure:</b> 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 major bridge subject to completion of atleast two sub structures of abutment / pier cap level of the major bridge..                                                                                                                                                                                                                          |
| (3) Super-structure (including bearings)          | 0.00%                | <b>(iii) Super-structure:</b> 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.                                                                                                                                                                                                                                                                                                                     |

| STAGE of PAYMENT                                                                | PERCENTAGE WEIGHTAGE | Payment Procedure                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|---------------------------------------------------------------------------------|----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (4) Wearing Coat including expansion joints                                     | 0.00%                | <b>(iv)Wearing Coat:</b> 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.      | 0.00%                | <b>(v) Miscellaneous:</b> 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                                            | 0.00%                | <b>(vi) Wing walls/return walls:</b> Payments shall be made on completion of all wing walls/return walls complete in all respects as specified.                                                                                                                                                                                                                                                                                                                                                                           |
| (7) Guide bunds, River Training works etc.                                      | 0.00%                | <b>(vii) Guide Bonds, River Training works:</b> 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) | 0.00%                | <b>(viii) Approaches:</b> Payment shall be made on completion of both approaches including stone pitching, protection works, etc. complete in all respects as specified.                                                                                                                                                                                                                                                                                                                                                  |
| <b>A 2 - New Major bridges</b>                                                  |                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| (1) Foundation                                                                  | 33.00%               | <b>(i)Foundation:</b> Cost of each Major Bridge shall be determined on prorata 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. In case where load testing is required for foundation, the trigger of first payment shall include load testing also were specified. |
| (2) Sub-structure                                                               | 20.00%               | <b>(ii) Sub-Structure:</b> 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 major bridge subject to completion of atleast two sub structures of abutment / pier cap level of the major bridge..                                                                                                                                                                                                                         |
| (3) Super-structure (including bearings)                                        | 25.00%               | <b>(iii) Super-structure:</b> 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.                                                                                                                                                                                                                                                                                                                    |

| STAGE of PAYMENT                                                                | PERCENTAGE WEIGHTAGE | Payment Procedure                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|---------------------------------------------------------------------------------|----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (4) Wearing Coat including expansion joints                                     | 3.00%                | <b>(iv)Wearing Coat:</b> 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.      | 5.00%                | <b>(v) Miscellaneous:</b> 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                                            | 6.00%                | <b>(vi) Wing walls/return walls:</b> Payments shall be made on completion of all wing walls/return walls complete in all respects as specified.                                                                                                                                                                                                                                                                                                                                                                  |
| (7) Guide bunds, River Training works etc.                                      | 3.00%                | <b>(vii) Guide Bonds, River Training works:</b> 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) | 5.00%                | <b>(viii) Approaches:</b> Payment shall be made on completion of both approaches including stone pitching, protection works, etc. complete in all respects as specified.                                                                                                                                                                                                                                                                                                                                         |
| <b>B 1 - Widening and repair of</b>                                             |                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>a) RoB</b>                                                                   |                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>b) RuB</b>                                                                   |                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| 1) Foundation                                                                   | 0.00%                | <b>(i)Foundation:</b> 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 RuB/ROB.<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                                                                | 0.00%                | <b>(ii) Sub-Structure:</b> 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 RoB / RuBsubject to completion of atleast two sub structure of abutments / pier cap level of the RuB/ROB.                                                                                                                                                                                                                          |
| 3) Super Structure (Including bearings)                                         | 0.00%                | <b>(iii) Super-structure:</b> 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.                                                                                                                                                                                                                                                                                                           |

| STAGE of PAYMENT                                                                                                                                                                                                                                   | PERCENTAGE WEIGHTAGE | Payment Procedure                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 4) Wearing coat (a) in case of <b>RoB</b> - wearing coat including expansion joints complete in all respect as specified and (b) in case of <b>RuB</b> - rigid pavement under RuB including drainage facility complete in all respect as specified | 0.00%                | (iv) <b>Wearing Coat:</b> 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                                                                                                                                                                           | 0.00%                | (v) <b>Miscellaneous:</b> 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                                                                                                                                                                                                                       | 0.00%                | (vi) <b>Wing walls/return walls:</b> 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)                                                                                                                                                                     | 0.00%                | (vii) <b>Approaches:</b> Payment shall be made on completion of both approaches including stone pitching, protection works, etc. complete in all respects as specified.                                                                                                                                                                                                                                                                                                                                        |
| <b>B 2 - New RoB / RuB</b>                                                                                                                                                                                                                         |                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 1) Foundation                                                                                                                                                                                                                                      | 0.00%                | (i) <b>Foundation:</b> 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 RuB/ROB. In case where load testing is required for foundation, the trigger of first payment shall include load testing also where specified. |
| 2) Sub Structure                                                                                                                                                                                                                                   | 0.00%                | (ii) <b>Sub-Structure:</b> 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 RoB / RuBsubject to completion of atleast two sub structure of abutments / pier cap level of the RuB/ROB.                                                                                                                                                                                                                        |
| 3) Super Structure (Including bearings)                                                                                                                                                                                                            | 0.00%                | (iii) <b>Super-structure:</b> 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.                                                                                                                                                                                                                                                                                                         |

| STAGE of PAYMENT                                                                                                                                                                                                                                   | PERCENTAGE WEIGHTAGE | Payment Procedure                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 4) Wearing coat (a) in case of <b>RoB</b> - wearing coat including expansion joints complete in all respect as specified and (b) in case of <b>RuB</b> - rigid pavement under RuB including drainage facility complete in all respect as specified | 0.00%                | (iv) <b>Wearing Coat:</b> 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                                                                                                                                                                           | 0.00%                | (v) <b>Miscellaneous:</b> 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                                                                                                                                                                                                                       | 0.00%                | (vi) <b>Wing walls/return walls:</b> 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)                                                                                                                                                                     | 0.00%                | (vii) <b>Approaches:</b> Payment shall be made on completion of both approaches including stone pitching, protection works, etc. complete in all respects as specified.                                                                                                                                                                                                                                                                                                                                          |
| <b>C 1 - Widening and repair of Elevated sections / Fly overs / Grade Separators</b>                                                                                                                                                               |                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| 1) Foundation                                                                                                                                                                                                                                      | 0.00%                | (i) <b>Foundation:</b> Cost of each RoB / RuB 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                                                                                                                                                                                                                                   | 0.00%                | (ii) <b>Sub-Structure:</b> 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 structure of abutments / pier cap level of the structure.                                                                                                                                                                                                                       |
| 3) Super Structure (Including bearings)                                                                                                                                                                                                            | 0.00%                | (iii) <b>Super-structure:</b> 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.                                                                                                                                                                                                                                                                                                           |

| STAGE of PAYMENT                                                               | PERCENTAGE WEIGHTAGE | Payment Procedure                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|--------------------------------------------------------------------------------|----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 4) Wearing coat including expansion joints                                     | 0.00%                | (iv) <b>Wearing Coat:</b> 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       | 0.00%                | (v) <b>Miscellaneous:</b> 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                                                   | 0.00%                | (vi) <b>Wing walls/return walls:</b> 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) | 0.00%                | (vii) <b>Approaches:</b> Payment shall be made on completion of both approaches including stone pitching, protection works, etc. complete in all respects as specified.                                                                                                                                                                                                                                                                                                                                          |
| <b>C 2 - New Elevated sections / Fly overs / Grade Separators</b>              |                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| 1) Foundation                                                                  | 0.00%                | (i) <b>Foundation:</b> Cost of each RoB / RuB 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                                                               | 0.00%                | (ii) <b>Sub-Structure:</b> 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 structure of abutments / pier cap level of the structure.                                                                                                                                                                                                                       |
| 3) Super Structure (Including bearings)                                        | 0.00%                | (iii) <b>Super-structure:</b> 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                                     | 0.00%                | (iv) <b>Wearing Coat:</b> Payment shall be made on completion of wearing coat including expansion joints complete in all respects as specified.                                                                                                                                                                                                                                                                                                                                                                  |

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| STAGE of PAYMENT                                                               | PERCENTAGE WEIGHTAGE | Payment Procedure                                                                                                                                                                    |
|--------------------------------------------------------------------------------|----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 5) miscellaneous items like hand rails, crash barrier, road markings etc       | 0.00%                | (v) <b>Miscellaneous:</b> 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                                                   | 0.00%                | (vi) <b>Wing walls/return walls:</b> 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) | 0.00%                | (vii) <b>Approaches:</b> Payment shall be made on completion of both approaches including stone pitching, protection works, etc. complete in all respects as specified.              |

**Note:(1) In case of innovate 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 Competent Authority.**

**(2) The Schedule for exclusive tunnel projects may be prepared as per site requirements before bidding with due approval of Competent Authority.**

## Other works.

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

**Table1.3.4**

| STAGE FOR PAYMENT                                                                                                                | PERCENTAGE WEIGHTAGE | PAYMENT PROCEDURE                                                                                                                                                                |
|----------------------------------------------------------------------------------------------------------------------------------|----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Other Works</b>                                                                                                               |                      |                                                                                                                                                                                  |
| <b>(i) Toll Plaza</b>                                                                                                            | 0.00%                | Unit of measurement is each completed Toll Plaza. Payment of each Toll Plaza shall be made on pro rata basis with respect to the total of all Toll Plaza.                        |
| <b>(ii) Road side drains</b>                                                                                                     |                      |                                                                                                                                                                                  |
| Lined Drain (RCC)                                                                                                                | 2.64%                | 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 10% (ten percent) of the total length. |
| Lined Drain (PCC)                                                                                                                | 7.17%                |                                                                                                                                                                                  |
| Unlined Drain                                                                                                                    | 0.29%                |                                                                                                                                                                                  |
| <b>(iii) Road Signs, markings, km stones, safety devices, Road furniture's etc</b>                                               | 1.29%                |                                                                                                                                                                                  |
| <b>(iv) Project facilities</b>                                                                                                   |                      |                                                                                                                                                                                  |
| (a) Bus Bays                                                                                                                     | 0.66%                | Payment shall be made on pro rata basis for completed facilities.                                                                                                                |
| (b) Truck lay byes                                                                                                               | 0.29%                |                                                                                                                                                                                  |
| © Rain water harvesting                                                                                                          | 0.29%                |                                                                                                                                                                                  |
| (d) Others                                                                                                                       |                      |                                                                                                                                                                                  |
| a) Clearing n Grubbing & Dismantling works                                                                                       | 0.37%                |                                                                                                                                                                                  |
| b) improvement of Junctions                                                                                                      | 5.91%                |                                                                                                                                                                                  |
| c) Turfing and hydroseeding                                                                                                      | 4.80%                |                                                                                                                                                                                  |
| d) Traffic Aid Post                                                                                                              | 0.13%                |                                                                                                                                                                                  |
| e) Lighting Works                                                                                                                | 0.28%                |                                                                                                                                                                                  |
| <b>(v) Road side Plantation</b>                                                                                                  | 0.00%                | 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 10% (ten percent) of the total length.       |
| <b>(vi) Protection works other than approaches to the bridges, elevated sections / flyovers / grade separators and RoBs/RuBs</b> |                      |                                                                                                                                                                                  |
| (a) Crash Barrier                                                                                                                | 9.47%                |                                                                                                                                                                                  |

| STAGE FOR PAYMENT                                              | PERCENTAGE WEIGHTAGE | PAYMENT PROCEDURE                                                 |
|----------------------------------------------------------------|----------------------|-------------------------------------------------------------------|
| (b) Retaining wall                                             | 18.82%               |                                                                   |
| (c) Breast Wall                                                | 46.96%               |                                                                   |
| (d) Pitching work for diversion of nala                        | 0.63%                | Payment shall be made on pro rata basis for completed facilities. |
| <b>(vii) Safety and traffic management during construction</b> | 0.00%                | Payment shall be made on pro rata basis every six months.         |

### Electrical utilities and public Health Utilities (water pipe lines and sewage lines)

Procedure for estimating the value of utilities shifting done shall be as stated in table 1.3.5.

**Table 1.3.5**

| STAGE FOR PAYMENT                                                                           | PERCENTAGE WEIGHTAGE | PAYMENT PROCEDURE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|---------------------------------------------------------------------------------------------|----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Electrical utilities and public Health Utilities (water pipe lines and sewage lines)</b> |                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>(i) EHT Lines</b>                                                                        | <b>0.00%</b>         | Unit of measurement is as per completed activities. Cost per activity shall be determined on pro-rata basis as per its weightage with reference to total cost of EHT line. Payment shall be made for completed activity. (The average weightage of major activities (Only for payment purpose) in shifting work is (i) Erection of Poles - 20% (ii) Conductor stringing including laying of cable-30%, (iii) DTR erection (if involved)-15% and (iv) Charging of line including dismantling and site clearance -35% (with DTR) and 50% without DTR. |
| <b>(ii) EHT crossings</b>                                                                   | <b>0.00%</b>         | Cost of each crossing shall be determined on pro rata basis with reference to total no. of crossings. Payment shall be made for not less than 25% of the crossings subject to a minimum of 4 crossings                                                                                                                                                                                                                                                                                                                                              |

| STAGE FOR PAYMENT                    | PERCENTAGE WEIGHTAGE | PAYMENT PROCEDURE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|--------------------------------------|----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>(iii) HT/LT Lines</b>             | <b>44.05%</b>        | Unit of measurement is as per completed activities. Cost per activity shall be determined on pro-rata basis as per its weightage with reference to total cost of LT/HT line. Payment shall be made for completed activity. (The average weightage of major activities (Only for payment purpose) in shifting work is (i) Erection of Poles - 20% (ii) Conductor stringing including laying of cable-30%, (iii) DTR erection (if involved)-10% and (iv) Charging of line including dismantling and site clearance -40% (with DTR) and 50% without DTR. |
| <b>(iv) HT/LT Crossings</b>          | <b>20.33%</b>        | Cost of each crossing shall be determined on pro rata basis with reference to total no. of crossings. Payment shall be made for not less than 25% of the crossings subject to a minimum of 10 crossings                                                                                                                                                                                                                                                                                                                                               |
| <b>(v) Transformer</b>               | <b>3.39%</b>         | Cost of each transformer shall be determined on pro rata basis with reference to total no. of transformers. Payment shall be made for completion of each unit shifting.                                                                                                                                                                                                                                                                                                                                                                               |
| <b>(v) Water pipelines</b>           | <b>29.44%</b>        | Unit of measurement is as per completed activities. Cost per activity shall be determined on pro -rata basis as per its weightage with reference to total cost of pipe line. Payment shall be made for completed activity. (The average weightage of major activities (Only for payment purpose) in shifting work is laying pipe - 50%, charging of line including all miscellaneous works and dismantling and site clearance -50%)                                                                                                                   |
| <b>(vi) Water pipeline crossings</b> | <b>0.60%</b>         | Cost of each crossing shall be determined on pro rata basis with reference to total no. of crossings. Payment shall be made for not less than 25% of the crossings subject to a minimum of 8 crossings.                                                                                                                                                                                                                                                                                                                                               |
| <b>(viii) Water Pipeline (WRD)</b>   | <b>2.19%</b>         | Cost of each crossing shall be determined on pro rata basis with reference to total no. of crossings. Payment shall be made for completed activity. (The average weightage of major activities in shifting work is laying pipe - 50%, charging of line including all miscellaneous works and dismantling and site clearance -50%)                                                                                                                                                                                                                     |

## 2. Procedure for payment for Maintenance

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

Payment for Maintenance shall be made in quarterly installments in accordance with the provisions of Clause 19.7.

## **Schedule - I**

*(See Clause 10.2 (iv))*

### **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.]

## **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 **256<sup>th</sup> 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 **438<sup>th</sup> 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 **621<sup>st</sup> 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 730<sup>th</sup> 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 (ii))*

### **Tests on Completion**

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

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

#### **2. Tests**

- (i) Visual and physical test: The Authority's Engineer shall conduct a visual and physical check of construction to determine that all works and equipment forming part thereof conform to the provisions of this Agreement. The physical tests shall include[\*\*\*].
- (ii) Riding quality test: Riding quality of each lane of the carriageway shall be checked with the help of a Network Survey Vehicle (NSV) fitted with latest equipments before start of Project, during the project and after completion of Project and the maximum permissible roughness for purposes of this Test shall be [2,000 (two thousand)] mm for each kilometre.
- (iii) Tests for bridges: All major and minor bridges shall be subjected to the rebound hammer and ultrasonic pulse velocity tests, to be conducted in accordance with the procedure described in Special Report No. 17: 1996 of the IRC Highway Research Board on Nondestructive Testing Techniques, at two spots in every span, to be chosen at random by the Authority's Engineer. Bridges with a span of 15 (fifteen) metres or more shall also be subjected to load testing.
- (iv) Other tests: The Authority's Engineer may require the Contractor to carry out or cause to be carried additional tests, in accordance with Good Industry Practice, for determining the compliance of the Project Highway with Specifications and Standards, except tests as specified in clause 5, but shall include measuring the reflectivity of road markings and road signs; and measuring the illumination level (lux) of lighting using requisite testing equipment.

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

### 3. Agency for conducting Tests

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

### 4. Completion Certificate

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

- 5. The Authority Engineer will carry out tests with following equipment at his own cost in the presence of contractor's representative.

| Sr. No. | Key metrics of Asset        | Equipment to be used               | Frequency of condition survey                                                         |
|---------|-----------------------------|------------------------------------|---------------------------------------------------------------------------------------|
| 1       | Surface defects of pavement | Network Vehicle (NSV)              | At least twice a year (As per survey months defined for the state basis rainy season) |
| 2       | Roughness of pavement       | Network Vehicle (NSV)              | At least twice a year (As per survey months defined for the state basis rainy season) |
| 3       | Strength of pavement        | Falling Weight Deflectometer (FWD) | At least once a year                                                                  |
| 4       | Bridges                     | Mobile Bridge Inspection Unit(MBU) | At least twice a year (As per survey months defined for the state basis rainy season) |
| 5       | Road signs                  | Retro-reflectometer                | At least twice a year (As per survey months defined for the state basis rainy season) |

The first testing with the help of NSV shall be conducted at the time of issue of Completion Certificate.

## Schedule - L

(See Clause 12.2)

### 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 **Improvement and Widening to two lane with paved shoulder of road from design Km 36.000 (Rangamati) to design Km 72.000 (Pati Chhari) (Total length 36.000 Km) on Teliamura to Harina section of NH 208 (Package –III) in the state of Tripura on EPC mode under JICA ODA Loan Phase-6**, through (Name of Contractor), hereby certify that the Tests in accordance with Article 12 of the Agreement have been successfully undertaken to determine compliance of the Project Highway with the provisions of the Agreement, and I am satisfied that the Project Highway can be safely and reliably placed in service of the Users thereof.
- 2 It is certified that, in terms of the aforesaid Agreement, all works forming part of Project Highway have been completed, and the Project Highway is hereby declared fit for entry into operation on this the.....day of..... 20..., Scheduled Completed Date for which was the ..... day of .....20.....

SIGNED, SEALED  
AND DELIVERED

For and on behalf of 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**

- (i) Monthly lump sum payments for maintenance shall be reduced in the case of non-compliance with the Maintenance Requirements set forth in Schedule-E.
- (ii) 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.
- (iii) 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 on monthly basis**

- (i) The following percentages shall govern the payment reduction:

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

| S.No.      | Item/Defect/Deficiency                                                                                                 | Percentage |
|------------|------------------------------------------------------------------------------------------------------------------------|------------|
| (iii)      | Painting, repairs/replacement kerbs, railings, parapets, guideposts/crash barriers                                     | 5%         |
| <b>(d)</b> | <b>Roadside Drains</b>                                                                                                 |            |
| (i)        | Cleaning and repair of drains                                                                                          | 5%         |
| <b>(e)</b> | <b>Road Furniture</b>                                                                                                  |            |
| (i)        | Cleaning, painting, replacement of road signs, delineators, road markings, 200 m/km/5 <sup>th</sup> km stones          | 5%         |
| <b>(f)</b> | <b>Miscellaneous Items</b>                                                                                             |            |
| (i)        | Removal of dead animals, broken down/accident vehicles, fallen trees, road blockades or malfunctioning of mobile crane | 10%        |
| (ii)       | Any other Defects in accordance with paragraph 1.                                                                      | 5%         |
| <b>(g)</b> | <b>Defects in Other Project Facilities</b>                                                                             | 5%         |

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

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

Where,

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

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

Monthly lump-sum payment in accordance para 1.2 above of this Schedule L1= Non-

complying length L = Total length of the road,

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 (i))*

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

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

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

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

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

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

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

Annex – I

(Schedule -N)

**Terms of Reference for Authority's Engineer**

**1. Scope**

- (i) These Terms of Reference (the “**TOR**”) for the Authority’s Engineer are being specified pursuant to the EPC Agreement dated..... (the “**Agreement**”), which has been entered into between the [name and address of the Authority] (the “**Authority**”)and

..... (the “**Contractor**”)# for **Improvement and Widening to two lane with paved shoulder of road from design Km 36.000 (Rangamati) to design Km 72.000 (Pati Chhari) (Total length 36.000 Km) on Teliamura to Harina section of NH 208 (Package –III) in the state of Tripura on EPC mode under JICA ODA Loan Phase-6**, and a copy of which is annexed hereto and marked as Annex-A to form part of this TOR.

# - In case the bid of Authority’s Engineer is invited simultaneously with the bid of EPC project, then the status of bidding of EPC project only to be indicated

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

**2. Definitions and interpretation**

- (i) 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.
- (ii) 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.
- (iii) The rules of interpretation stated in Article 1 of the Agreement shall apply, mutatis mutandis, to this TOR.

**3. General**

- (i) 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.
- (ii) The Authority’s Engineer shall perform the duties and exercise the authority in accordance with the provisions of this Agreement, but subject to obtaining prior written approval of the Authority before determining:
- (a) any Time Extension;
- (b) any additional cost to be paid by the Authority to the Contractor;

- (c) the Termination Payment; or
  - (d) issuance of Completion Certificate or
  - (e) any other matter which is not specified in (a), (b), (c) or (d) above and which creates a financial liability on either Party.
- (iii) 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.
  - (iv) 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.
  - (v) The Authority's Engineer shall aid and advise the Authority on any proposal for Change of Scope under Article 13.
  - (vi) 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 written statement relying on good industry practice and authentic literature.

#### **4. Construction Period**

- (i) During the Construction Period, the Authority's Engineer shall review and approve the Drawings furnished by the Contractor along with supporting data, including the geo-technical and hydrological investigations, characteristics of materials from borrow areas and quarry sites, topographical surveys, and the recommendations of the Safety Consultant in accordance with the provisions of Clause 10.1 (vi). The Authority's Engineer shall complete such review and approval and send its observations to the Authority and the Contractor within 15 (fifteen) days of receipt of such Drawings; provided, however that in case of a Major Bridge or Structure, the aforesaid period of 15 (fifteen) days may be extended upto 30 (thirty) days. In particular, such comments shall specify the conformity or otherwise of such Drawings with the Scope of the Project and Specifications and Standards.
- (ii) The Authority's Engineer shall review and approve any revised Drawings sent to it by the Contractor and furnish its comments within 10 (ten) days of receiving such Drawings.
- (iii) The Authority's Engineer shall review and approve 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.

- (iv) The Authority's Engineer shall complete the review and approve 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.
- (v) 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.
- (vi) 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.
- (vii) 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.
- (viii) 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.
- (ix) 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 (ix), 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.
- (x) The Authority's Engineer shall test check at least 50 (fifty) percent of the quantity or number of tests prescribed for each category or type of test for quality control by the Contractor.
- (xi) The timing of tests referred to in Paragraph 4 (ix), 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.
- (xii) 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.

- (xiii) 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.
- (xiv) 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.
- (xv) 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 12.2.
- (xvi) 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.
- (xvii) 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.
- (xviii) 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, as the case may be. For carrying out its functions under this Paragraph 4 (xviii) 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**

- (i) 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.
- (ii) 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.

- (iii) 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.
- (iv) 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.
- (v) 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**

- (i) The Authority's Engineer shall determine the costs, and/or their reasonableness, that are required to be determined by it under the Agreement.
- (ii) The Authority's Engineer shall determine the period of Time Extension that is required to be determined by it under the Agreement.
- (iii) The Authority's Engineer shall consult each Party in every case of determination in accordance with the provisions of Clause 18.5.

## **7. Payments**

- (i) 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 (iv)(d).
- (ii) 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.

- (iii) 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.
- (iv) 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**

- (i) 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.
- (ii) 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.
- (iii) 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.
- (iv) 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.
- (v) The Authority's Engineers 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 (i), 19.6 (i), and 19.8 (i))*

### **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 (i) 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 (iii)(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**

- (i) 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.
- (ii) The insurance under sub para (a) and (b) of paragraph 1(i) 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 of not less than 15% of the Contract Price for the Works from the date of issue of the Completion Certificate until the end of the Defects Liability Period for any loss or damage for which the Contractor is liable and which arises from a cause occurring prior to the issue of the Completion Certificate. The Contractor shall also maintain other insurances for maximum sums as may be required under the Applicable Laws and in accordance with Good Industry Practice.

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

- (i) 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

- (ii) 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 **Improvement and Widening to two lane with paved shoulder of road from design Km 36.000 (Rangamati) to design Km 72.000 (Pati Chhari) (Total length 36.000 Km) on Teliamura to Harina section of NH 208 (Package –III) in the state of Tripura on EPC mode under JICA ODA Loan Phase-6** 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)

\*\*\*\*\* **End of the Document**\*\*\*\*\*