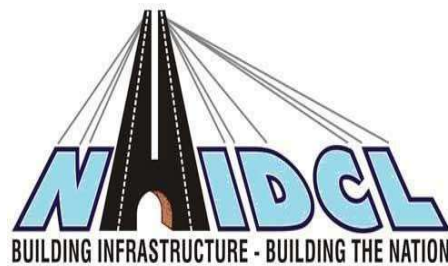


Technical Schedules

FOR

Rectification of Black Spots /Accident Prone locations on Batote-Khellani Road stretch by Installation of Metallic Crash Barrier, Road Signages, raising of outer earthen shoulders etc., along with Clearance of landslide & Snow on NH-244 in the UT of Jammu & Kashmir in F.Y 2024-25 on EPC Mode.



NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD.

(NHIDCL)

Sep 2024

TABLE OF CONTENTS	
SCHEDULES	
Schedule-A	
Site of the Project	
1. The Site	6
Annex – I	
Site	
Nil.....	
Annex – II	
Dates for providing Right of Way of Construction Zone	
Annex - III.....	
Alignment Plans	
Annex – IV	
Environment Clearances	
Schedule - B.....	
Development of the Project Highway	
1. Development of the Project Highway	
2. Rehabilitation and augmentation.....	
3. Specifications and Standards	
	Annex – I
Description of the Project	
Schedule - C	
Project Facilities	
1. Project Facilities	
2. Description of Project Facilities.....	
Schedule - D.....	
Specifications and Standards	

1.	Construction
2.	Design Standards

Annex – I.....

Specifications and Standards for Construction

ATTACHMENT-DI.....

TECHNICAL SPECIFICATIONS FOR ROAD & BRIDGE.....

Schedule - E

Maintenance Requirements

1.	Maintenance Requirements.....
2.	Repair/rectification of Defects and deficiencies.....
3.	Other Defects and deficiencies
4.	Extension of time limit
5.	Emergency repairs/restoration
6.	Daily inspection by the Contractor
7.	Pre-monsoon inspection / post-monsoon inspection
8.	Repairs on account of natural calamities

Annex -I

Repair/rectification of Defects and deficiencies.....

Table -1: Maintenance Criteria for Pavements

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

Schedule - F

Applicable Permits.....

1.	Applicable Permits
----	--------------------------

Schedule – G

Annex-I

Form of Bank Guarantee.....

Form for Guarantee for Advance Payment.....

Schedule - H

Contract Price Weightages

Schedule - I

Drawings	
1. Drawings	
2. Additional Drawings	
Annex – I.....	
List of Drawings	
Schedule - J	
Project Completion Schedule.....	
1. Project Completion Schedule	
2. Project Milestone-I.....	
3. Project Milestone-II	
4. Project Milestone-III	
5. Scheduled Completion Date	
6. Extension of time	
Schedule - K.....	
Tests on Completion	
1. Schedule for Tests.....	
2. Tests	
3. Agency for conducting Tests	
4. Completion Certificate	
Schedule - L	
Completion Certificate	
Schedule - M	
Payment Reduction for Non-Compliance.....	
1. Payment reduction for non-compliance with the Maintenance Requirements.....	
2. Percentage reductions in lump sum payments on monthly basis	
Schedule - N.....	
Selection of Authority's Engineer	
1. Selection of Authority's Engineer	
2. Terms of Reference.....	
3. Appointment of Government entity as Authority's Engineer	

Terms of Reference for Authority’s Engineer	
Schedule - O	
Forms of Payment Statements	2
1. Stage Payment Statement for Works.....	
2. Monthly Maintenance Payment Statement	
3. Contractor’s claim for Damages	
	Schedule - P
	Insurance
1. Insurance during Construction Period.....	
2. Insurance for Contractor's Defects Liability	
3. Insurance against injury to persons and damage to property	
4. Insurance to be in joint names	Schedule-Q
Tests on Completion of Maintenance Period	
1. Riding Quality test	
2. Visual and physical test.....	
Schedule-R	
Taking Over Certificate	

SCHEDULES

Schedule-A

(See Clauses 2.1 and 8.1)

Site of the Project

1. The Site

- (i) Site of the project highway shall include land, buildings, structures and road works as described in **Annex-I** of this Schedule-A.
- (ii) The dates of handing over the Right of Way to the Contractor are specified in **Annex-II** of this Schedule-A.
- (iii) An inventory of the Site including the land, buildings, structures, road works, trees and any other immovable property on, or attached to, the Site shall be prepared jointly by the Authority Representative and the Contractor, and such inventory shall form part of the memorandum referred to in Clause 8.2 (i) of this Agreement.
- (iv) The alignment plans of the Project Highway are specified in **Annex-III**.
- (v) The status of the environment clearances obtained or awaited is given in **Annex-IV**.

Annex – I
(Schedule-A)
Site

1. Site

The site of the project highway comprises section of existing National Highway-244 commencing from km 0+000 (Batote) to km 45+000 (Khellani) of length 45 km i.e., Batote- Khellani-Kishtwar-Chattroo-Khanabal section in the Union Territory of Jammu & Kashmir. The land, carriageway and structures comprising the Site are described below.

2. Land

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

Sr. No.	Design Chainage (km)		Formation Width (m)	Remarks
	From	To		
1	0	45	10-12	

3. Carriageway

The existing carriage way of the Project Highway is two lane. The type of the existing pavement is flexible.

4. Major Bridges- Nil

5. Minor Bridges- 05 Nos. The details are as under :

Sl.No.	Chainage	Length (m)	Span	Type of structure
1	4+200	15	1x15	Truss
2	18+500	15	1x15	Plate Girder
3	25+100	60	1x60	PSC Box girder with single cell
4	28+450	25	1x25	T-Beam & Slab
5	33+700	50	1x50	T-Beam & Slab

6. Road over-bridges (ROB)/ Road under-bridges (RUB) - Nil

7. Grade separators- Nil

8. Railway level crossings- Nil

9. Underpasses (vehicular, non-vehicular)- Nil

10. Others

Rectification of Black Spots /Accident Prone locations on Batote-Khellani Road stretch by Installation of Metallic Crash Barrier, Road Signages, raising of outer earthen shoulders etc., along with Clearance of landslide & Snow on NH-244 in the UT of Jammu & Kashmir in F.Y 2024-25 on EPC Mode

Nil

Annex – II

(As per Clause 8.3 (i))

(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 (Km)	To (Km)	Length (Km)	Width (m)	Date of providing Right of Way*
1.	0+000	45+000	45	10-12	On appointed date

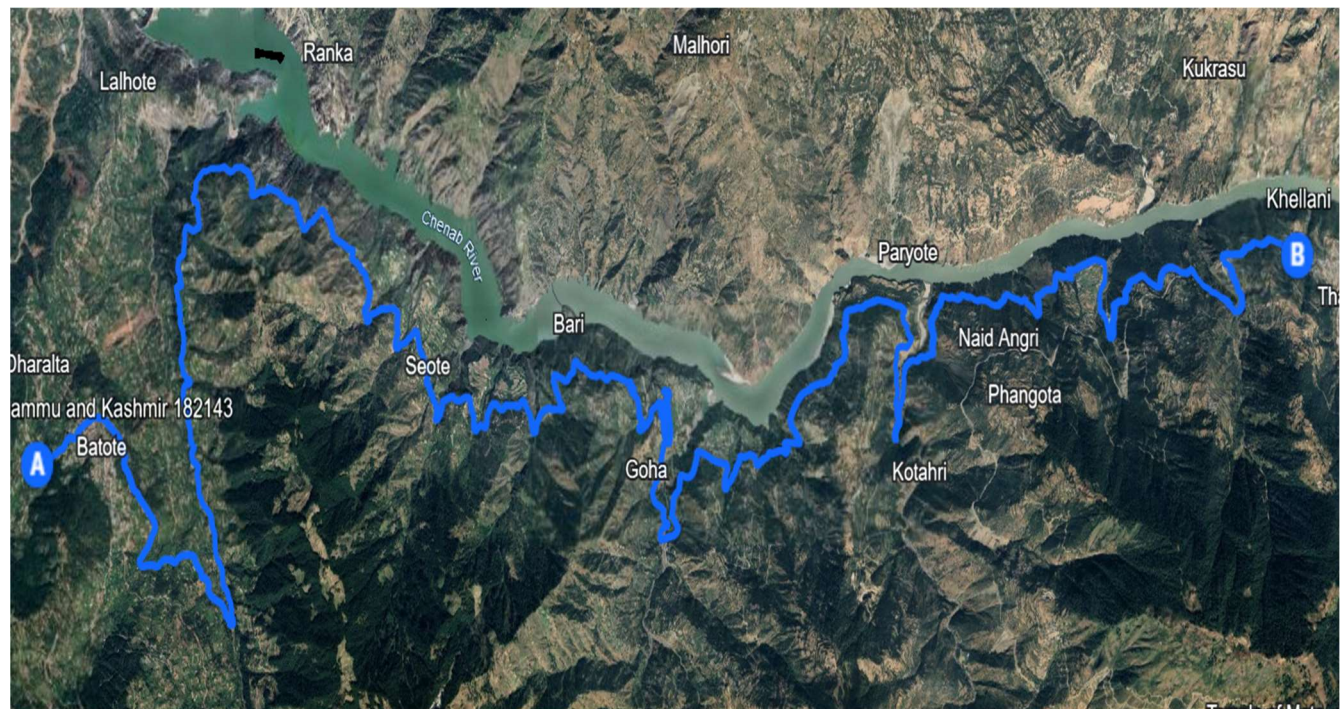
Annex - III

(Schedule-A)

Alignment Plans

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

- (i) Road Safety Furniture plan of the Project Highway showing numbers & lengths is enclosed. The contractor shall, however, improve/upgrade upon the Road Safety Furniture plan as indicated in Annex-III based on site/design requirement as per the relevant specifications/IRC Codes/Manual.



Annex – IV

(Schedule-A)

Environment Clearances

As per EIA notification 2006 and its amendment S.O.2559 (E) Dt 22nd August 2013, S.O 996(E) Dt 10th April 2015, S.O 382(E) Dt 3rd February 2015 Environmental Clearance Exempted from the purview of the Environmental Impact Assessment.

[To be published in the Gazette of India, Extraordinary, Part II, Section 3, Sub-section(ii)]

**MINISTRY OF ENVIRONMENT AND FORESTS
NOTIFICATION**

New Delhi, the 22nd August, 2013

S.O. 2559 (E).- Whereas by notification of the Government of India in the Ministry of Environment and Forests vide number S.O.1533(E), dated the 14th September, 2006 issued under sub-section (1) and clause (v) of sub-section (2) of section (3) of the Environment (Protection) Act, 1986 read with clause (d) of sub-rule (3) of rule 5 of the Environment (Protection) Rules, 1986, the Central Government directed that on and from the date of its publication, the required construction of new projects or activities or the expansion or modernization of existing projects or activities listed in the Schedule to the said notification entailing the capacity addition with change in process or technology and or product mix shall be undertaken in any part of India only after prior environmental clearance from the Central Government or as the case may be, by the State level Environment Impact Assessment Authority, duly constituted by the Central Government under sub-section (3) of section 3 of the said Act, in accordance with the procedure specified therein;

And whereas the Government of India in the Ministry of Environment and Forests had constituted a High Level Committee under the Chairmanship of Member (Environment and Forests and Science and Technology), Planning Commission, vide OM No.21-270/2008-IA.III dated the 11th December, 2012 to review the provisions of Environmental Impact Assessment Notification, 2006 relating to granting Environmental Clearances for Roads, Buildings and Special Economic Zone projects and provisions under the OM dated the 7th February, 2012 issued by the Ministry of Environment and Forests regarding guidelines for High Rise Buildings;

And whereas one of the terms of reference (ToR) of the Committee was to review the requirement of Environmental Clearance for highway expansion projects upto the right of way of 60 meters and length of 200 kms under Environmental Impact Assessment notification;

And whereas the Committee has submitted its report to the Ministry and on this ToR, the Committee has recommended exempting highway expansion projects from the requirement of scoping and that Environmental Impact Assessment or Environment Management Plan for highway expansion projects may be prepared on the basis of model ToRs to be posted on Ministry's website and in respect of requirement of environmental clearance, the Committee has recommended that expansion of National Highway projects up to 100 kms involving additional right of way or land acquisition upto 40 mts on existing alignments and 60 mts on re-alignments or by-passes may be exempted from the preview of the notification;

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 the works as described in Annex-I of this Schedule-B and 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 the Project

Rectification of Black Spots /Accident Prone locations on Batote-Khellani Road stretch by Installation of Metallic Crash Barrier, Road Signages, raising of outer earthen shoulders etc., along with Clearance of landslide & Snow on NH-244 in the UT of Jammu & Kashmir in F.Y 2024-25 on EPC Mode

1. **Widening of Existing Highway- Nil**
2. **Geometric Design and General Features – NIL.**
3. **Road side drainage : Hill side drain clearance from Km 0.000 to Km 45.000.**
4. **Bridges : (a)** Inspection, auditing and rectification of the 05 Nos of Bridges along the project road as per the following details :

Sl. No.	Chainage	Length (m)	Span	Type of structure	Distress Condition	Scope of work
1	4+200	15	1x15	Truss	(a) Side Bracing damaged. (b) Painting for entire bridge to be done. (c) With rectification like change of bridge bearing, expansion joint in accordance with the inspection & audit report.	a) Inspection of Bridges with Mobile Bridge Inspection Unit, auditing & rectification based on technical remedial measures; b) Construction of damaged parapets; c) Installation of steel railings over steel bridges;
2	18+500	15	1x15	Plate Girder	do	d) Surface course correction by laying of flexible wearing coat of desired thickness for making the surface traffic worthy; e) Painting of parapets of bridges using anti-corrosion paints, f) Painting of entire bridges. g) Replacement of damaged deck slab panels & side bracings;
3	25+100	60	1x60	PSC Box girder with single cell	(a) RCC Crash Barrier repair & replacement. (b) Replacement of Approach Expansion joint. (c) Replacement of damaged deck slab panels. (d) With rectification like change of bridge bearing, expansion joint in accordance with the inspection & audit report.	h) Replacement of damaged expansion joint – 08 Nos and bridge bearings as per the following details: i. Bearings for steel bridges – 28 Nos. (Bearing shall be as per the existing Bridge type and requirement if any) ii. Bearings for RCC & Other Bridges – 20 Nos (Bearing shall be as per the existing Bridge type and requirement if any)
4	28+450	25	1x25	T-Beam & Slab	(a) RCC Crash Barrier repair & replacement. (b) Replacement of Approach Expansion joint. (c) With rectification like change of bridge bearing, expansion joint in accordance with the inspection & audit report.	
5	33+700	50	1x50	T-Beam & Slab	a) RCC Crash Barrier needs repair. b) Shear crack in retaining wall. c) Deck slab damaged in 01 panel.	

					<p>d) Laying of wearing course to be done.</p> <p>e) With rectification like change of bridge bearing, expansion joint in accordance with the inspection & audit report.</p>	<p>i) Replacement/construction of damaged crash barrier, wing wall/retaining wall;</p> <p>j) Replacement of wearing course at Km 4+200, Km 18+500, Km, Km 25+100, Km 28+450, Km 33+700.</p> <p>k) Other requisite measures in accordance with the Inspection & Audit.</p>
--	--	--	--	--	--	---

Note : The replacement/installation/construction of various works as tabulated above shall be carried out in line with the existing structure type.

(b) White washing of parapets from Km 0.00 to Km 45.00.

5. Traffic Control Devices and Road Safety Works

- (i) Traffic control devices and road safety works shall be provided in accordance with the section 9 of the manual referred to in Schedule D.
- (ii) Specifications of the reflective sheeting as per IRC :67 (latest addition) & MoRTH Specification is to be provided.

5.1 Crash Barrier

- (a) Thrie Beam Metal crash barrier shall be provided along the project highway as per section 9 of the manual. It shall be provided at Culvert/ bridge approaches on both sides and at location of embankment with height greater than or equal to 3m.
- (b) Providing and erecting a "Thrie" metal beam crash barrier comprising of 3 mm thick corrugated sheet metal beam rail, 85 cm above road/ground level, fixed on ISMC series channel vertical post, 150 x 75 x 5 mm spaced 2 m centre to Centre, 2 m high with 1.15 m below ground level, all steel parts and fitments to be galvanized by hot dip process, all fittings to conform to IS:1367 and IS:1364, metal beam rail to be fixed on the vertical post with a space of channel section 150 x 75 x 5 mm, 546 mm long complete as per clause 811 of MoRTH specification & IRC SP 073, IRC 067, IRC 119-2015 and other guidelines published by MoRTH for installation of MCB .
- (c) Providing and erecting a "Modified Thrie" metal beam crash barrier comprising of 3 mm thick corrugated sheet metal beam rail, 933 mm above road/ground level, fixed on ISMC I section series channel vertical post, 150 x 100 x 4.3 mm spaced 2 m centre to centre, 2.133 m high with 1.20 m below ground level, all steel parts and fitments to be galvanized by hot dip process, all fittings to conform to IS:1367 and IS:1364, metal beam rail to be fixed on the vertical post with a spacer of channel I section 350x127x5.9mm, 546 mm long complete as per clause 811 of MoRTH specification & IRC SP 073, IRC 067, IRC 119-2015 and other guidelines published by MoRTH for installation of Thrie Beam Modified Crash Barrier.
- (d) Extraction and Installation of already installed W Beam Metallic Crash Barrier that have been buried underground/damaged/placed at sharp curves, to be re-installed as per site requirements including costs of nuts & bolts complete in all respects as per clause 811 of MoRTH specification & IRC SP 073, IRC 067, IRC 119-2015 and other guidelines published by MoRTH.
- (e) Tightening of posts with W-Beam of already installed metallic crash barrier by nuts and bolts from Km 0.00 to Km 45.00 as & when required as per the site conditions.
- (f) The installation of Thrie Beam and Modified Thrie Beam Metallic Crash Barrier are as under :

Particulars	Length (in m)	Remarks
Thrie Beam	12752	<i>The length is tentative and any change in length shall not constitute Change of scope/variation and locations shall be as per site requirements and should be installed as per the direction of Engineer in charge.</i>
Modified Thrie Beam (Indicative drawing is attached)	10000	
Extraction and Installation of already installed W Beam Metallic Crash Barrier that have been buried underground/damaged/placed at sharp curves, to be re-installed including costs of nuts & bolts	7000	

5.2 Road Signage

- (i) The following signage (Chevron Sign Board, Providing and fixing of retro- reflectorized cautionary, mandatory and informatory sign as per IRC :67 made of high intensity grade sheeting vide clause 801.3, 2mm thick aluminum sheeting, 3mm/4mm thick Aluminum composite material sheet depending on the size of the sign fixed over back support frame of min. 25x25x3mm Angle mounted on a mild steel circular pipe 65 NB ,3.2 mm thickness firmly fixed to the ground by means of properly designed foundation as per approved drawing) and 3 M retroreflective Tape on posts of MCB shall be used on the project to be installed as per site requirement which is minimum. Further if any shall be in accordance with the section 9 of the manual referred to in Schedule D.

The minimum quantity of Traffic signages and are tabulated here:

From Km 0+000 to Km 45.000 of Length 45 Km			
Sl. No.	Traffic Signages and other appurtenances	unit	Quantity
1	Chevron Sign Boards Dimension 60 cm X 50 cm (Rectangular) 04 nos. at both Approach of curves	Nos.	800
2	Providing and Fixing / Installation of Retroreflective Tape (3 M) on posts MCB mentioned at para-5.1.(f) of Schedule-B Dimension = 2 inch on posts of metal beam section	rmt	3413.10
3	Installation & Erection of full Overhead Gantry Sign Board Complete in all respects at Km 9 th .	No.	01

(ii) Roadside Furniture

Roadside furniture shall be provided in accordance with the provision of relevant Manual for **Main Road**.

Supplying and installation of Object Hazard (road way indicators, hazard markers, object markers), 300mmX900mm, buried or pressed into the ground and conforming to IRC-67, 79 and the drawings complete in all respects.

Object Hazard/Hazard Marker= 110 Nos. (Min. in accordance to latest IRC 79, MoRTH specification, IRC 67)

6. Special Requirement for Hill Road

This shall be provided accordance with section 13 of the Manual.

The valley side shoulder which has reduced drastically due to impact of heavy rains and subsequent landslides, weathering, erosion etc., is to be corrected by raising of shoulders with R/wall & Plum Concrete that will also help in installation of crash barrier where shoulder width is less as per drawing provided & standard specification.

Retaining wall/Toe wall shall be constructed with minimum length is 1300 m (valley side) with 1.2m to 2.4m height as per site condition of stone masonry in cement mortar or any other better material acceptable to the Authority/ Authority Engineer. Contractors need to access the same and bid accordingly.

Retaining Wall: Left Hand Side				Remarks
Design Chainage in (km)		Length in (m)	Height Adopted in m	
From	To			
0.000	45.000	500	2.4	To be provided as per

				site requirements and drawings approved by Authority
0.000	45.000	800	1.2	To be provided as per site requirements and drawing approved by Authority

Note : (i) Moreover, raising of outer earthen shoulder shall be carried out as per the site conditions in addition to the provision mentioned at para-6 above and as per the instruction of AE.

(ii) No Change of scope shall be applicable for the variation in length/height of Retaining wall as per site requirements and the cost shall be borne by the Contractor.

7. SAFETY AND TRAFFIC MANAGEMENT DURING CONSTRUCTION: -

Landslide Clearance & Snow Clearance is to be carried out as per site requirement to keep road open in all weather conditions as per the directions of Engineer in charge.

7.1 Landslide Clearance.

7.2 Snow Clearance.

8. Change of Scope

The length of Structures and bridges 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**.

Rectification of Black Spots /Accident Prone locations on Batote-Khellani Road stretch by Installation of Metallic Crash Barrier, Road Signages, raising of outer earthen shoulders etc., along with Clearance of landslide & Snow on NH-244 in the UT of Jammu & Kashmir in F.Y 2024-25 on EPC Mode

Schedule B-1

Deleted.

Schedule - C

(See Clause 2.1)

Project Facilities

1. Project Facilities

Nil

2. Description of Project Facilities

Nil

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:

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-Laning of Highways IRC: SP:73-2018, Hill Road Manual (IRC:SP: 48-1998)Guidelines referred to as the Manual, and MORTH Specifications for Road and Bridge Works. Where the specification for a work is not given, Good Industry Practice shall be adopted to the satisfaction of the Authority's Engineer.

2. Deviations from the Specifications and Standards

- (i) The terms “Concessionaire”, “Independent Engineer” and “Concession Agreement” used in the Manual shall be deemed to be substituted by the terms “Contractor”, “Authority's Engineer” and “Agreement” respectively.
- (ii) Notwithstanding anything to the contrary contained in Paragraph 1 above, the following Specifications and Standards shall apply to the Project Highway, and for purposes of this Agreement, the aforesaid Specifications and Standards shall be deemed to be amended to the extent set forth below:

Sr. No.	Item	Clause referred in Manual	Provision as per Manual
1	Gradient	2.9.7.2	Mountainous & steep terrain (ruling gradient shall be 5.0 % and limiting shall be 7.0%)
2	Typical Cross section	2.16	
3	Typical Cross Section	2.6.1, 2.7 and 2.16	
4	Radii of Horizontal Curves	2.9.4	Mountainous & steep terrain, desirable min. radii and absolute min. shall be 150 m and 75 m, respectively.

ATTACHMENT-DI

TECHNICAL SPECIFICATIONS FOR ROAD & BRIDGE

Table of Contents

1.1 Site Information General

1.1.4 Seismic Zone

2 GENERAL REQUIREMENTS

2.1 Part-I: General Technical Specifications

2.2 Part-II: Supplementary Technical Specifications

2.3 PART-III Specifications for Miscellaneous Works

CLAUSE 102 DEFINITIONS

CLAUSE 106 CONSTRUCTION EQUIPMENT

CLAUSE 108 SITE INFORMATION

CLAUSE 109 SETTING OUT

CLAUSE 111 PRECAUTIONS FOR SAFEGUARDING THE ENVIRONMENT

Sub-Clause 111.1 General

Sub-Clause 111.2 Borrow Pits for Embankment Construction

Sub-Clause 111.3 Quarry Operations

Sub-Clause 111.5 Pollution from Hot-Mix Plant and Batching Plants

Sub-Clause 111.8.2 Air Quality

Sub-Clause 111.8.3 Water Sources and Water Quality

Sub-Clause 111.20 Control and Disposal of Wastes

Sub-Clause 111.14 Equipment and Vehicles used for the Works

Sub-Clause 111.15 Noise Control

Sub-Clause 111.16 Vibration Control

Sub-Clause 111.17 Measurement

CLAUSE 112 ARRANGEMENT FOR TRAFFIC DURING CONSTRUCTION

Sub-Clause 112.6 Measurement for Payment and Rates

CLAUSE 114 SCOPE OF RATES FOR DIFFERENT ITEMS OF WORK

CLAUSE 115 METHODOLOGY AND SEQUENCE OF WORK

Sub-Clause 115.1 Submission of Method Statement

Sub-Clause 115.2 Approval of Proprietary Product/Process/System

CLAUSE 120 FIELD LABORATORY

Sub-Clause 120.3 Ownership

Sub-Clause 120.4 Maintenance

Sub-Clause 120.5 Rate

SECTION 200 Site Clearance

CLAUSE 201 CLEARING AND GRUBBING

CLAUSE 202 DISMANTLING CULVERTS, BRIDGES AND OTHER STRUCTURES/ PAVEMENTS

SECTION 300 Earthwork, Erosion Control and Drainage

CLAUSE 301 EXCAVATION FOR ROADWAY AND DRAINS

CLAUSE 304 EXCAVATION FOR STRUCTURES

CLAUSE 305 EMBANKMENT CONSTRUCTION

Sub-Clause 305.2.2.2 Borrow Materials

Sub-Clause 305.2.2.4 Compaction Requirements

Sub-Clause 305.3 Construction Operations

Sub-Clause 305.8 Measurement for Payment

CLAUSE 306 SOIL EROSION AND SEDIMENTATION CONTROL

SECTION 400 Sub-Bases, Bases (Non-Bituminous) and Shoulders

CLAUSE 401 GRANULAR SUB -BASE

Sub-Clause 401.2.2 Physical Requirements

CLAUSE 406 WET MIX MACADAM SUB -BASE/BASE

Sub-Clause 406.4 Opening to Traffic

SECTION 500 Base and Surface Courses (Bituminous)

Sub-Clause 501.2 Materials

Sub clause 501.2.1 Binder

Binder of VG-30/VG-10 grade shall be used or if available viscosity grade of bitumen shall be used in accordance with IS: 73

CLAUSE 505 DENSE BITUMINOUS MACADAM

CLAUSE 507 BITUMINOUS CONCRETE

Binder of CRMB-60 grade shall be used.

SECTION 800 Traffic Signs, Markings and Other Road Appurtenances

CLAUSE 803 ROAD MARKINGS

CLAUSE 806 ROAD DELINATORS

TECHNICAL SPECIFICATIONS

- 1** The Technical Specifications contained herein shall be read in conjunction with the other Bidding Documents as specified in Volume-IX.

1.1 Site Information General

- 1.1.1** The information given hereunder and provided elsewhere in these documents is given in good faith by the Employer, but the Contractor shall satisfy himself regarding all aspects of site conditions and no claim will be entertained on the plea that the information supplied by the Employer is erroneous or insufficient.

The area in which the works are located is in hilly/mountainous terrain, the project road starts from 33°07'23.6"N 75°19'05.0"E and ends at 33°07'59.7"N 75°30'59.2"E in the state of Jammu & Kashmir.

1.1.2 Climatic Conditions

- 1.1.2.1** The temperature in this region is as under:

- i)** During summer months, the average maximum temperature recorded is 30°C
- ii)** During winter months, the minimum average temperature is -2°C.
- iii)** The location receives about 920 mm of average annual rainfall, with March being the wettest month.

1.1.3 Seismic Zone

The stretch lies in Seismic Zone-IV as defined in Fig. 18 of IRC: 6-2017.

2 GENERAL REQUIREMENTS

The Technical Specifications in accordance with which the entire work described hereinafter shall be constructed and completed by the Contractor shall comprise of the following:

2.1 Part-I: General Technical Specifications

The General Technical Specifications shall be the "SPECIFICATIONS FOR ROAD AND BRIDGE WORKS" (Fifth Revision, April 2013), issued by the Ministry of Road Transport and Highways, Government of India and published by the Indian Roads Congress, henceforth called MORT&H Specifications and deemed to be bound into this document.

2.2 Part-II: Supplementary Technical Specifications

The Supplementary Technical Specifications shall comprise of various Amendments/Modifications/ Additions to the "SPECIFICATIONS FOR ROAD AND BRIDGE WORKS" referred to in Part-I above and Additional Specifications for item of works which are not covered in Part-I.

- 2.3** A clause or a part thereof in "SPECIFICATIONS FOR ROAD AND BRIDGE WORKS (Fifth Revision April 2013"), referred in Part-I above, where Amended/Modified/Added upon, and incorporated in Part-II, referred to above, such Amendment/Modification/ Addition supersedes the relevant Clause or part of the Clause.

- 2.3.1** The Additional Specifications shall comprise of specifications for item of works which not covered in Part-I.

- 2.3.2** When an Amended/Modified/Added Clause supersedes a Clause or part thereof in the said Specifications, then any reference to the superseded Clause shall be deemed to refer to the Amended/Modified/Added Clause or part thereof.

- 2.3.3** In so far as Amended/Modified/Added Clause may come in conflict or be inconsistent with any of the provisions of the said MORT&H Specifications under reference; the

Amended/Modified/Added Clause shall always prevail.

2.3.4 The following Clauses in the "SPECIFICATIONS FOR ROAD AND BRIDGE WORKS (Fifth Revision April 2013"), have been Amended/Modified/Added upon

Sr. No.	Section No.	Section Title	Clause No.
1.	100	General	102,106,108,109, 111,112,114,115 and 121
2.	200	Site Clearance	201 and 202
3.	300	Earthwork, Erosion Control and Drainage	301,304,305 and 306
4.	400	Sub-base, Bases (Non-Bituminous) and Shoulders	401and 406
4.	500	Bases and Surface Courses (Bituminous)	501,505 and 507
5.	800	Traffic signs, Markings and other Road Appurtenances	803,806 and 811 as well as IRC :119-2015
6.	2100	Open Foundations	2104

2.4 PART-III Specifications for Miscellaneous Works

Technical Specifications for Miscellaneous works shall be the latest "Specifications volume I to VI, 1996 for Civil Works and General Specifications for Electrical Works PART I – INTERNAL, PART – II, EXTERNAL for electric work 1994 as published by the Central Public Works Department (CPWD), Government of India" and deemed to be bound into this document.

2.5 The latest edition till 60 days before the final date of submission of the bid of all specifications / standard shall be applicable.

SCOPE OF WORKS

Road Works

Site clearance; setting-out and layout; widening of existing carriageway and strengthening including camber corrections; construction of new road/ parallel service road; bituminous pavements remodeling/construction of junctions, intersections, bus bays, lay bays; supplying and placing of drainage channels, flumes, guard posts, guard rails and other related items; construction/extension of cross drainage works, bridges, approaches and other related works; road markings, road signs and kilometer/ hectometre stones; protective works for roads/ bridges; all aspects of quality assurance of various components of works; rectification of the defects in the completed works during the Defect Liability Period; submission of "As built" drawings and any other related documents; and other items of work as may be required to be carried out for completing the works in accordance with the drawings and provisions of the Contractor insure safety.

Other Items

Execution of any other items of work for the construction and completion of the Works in accordance with the provisions of the Contract including all incidental items as well as preparation and submittal of reports, plans as may be required.

During the period of the Contract the right of way and all existing roads shall be kept open for traffic and maintained in a safe and usable condition. Residents along and adjacent to the works are always to be provided with safe and convenient access to their properties. Traffic control and traffic diversions shall be used as necessary to protect the works and maintenance will be carried out as directed by the Engineer and provided in the Contract.

Any other items as required to fulfil all contractual obligations as per the Bid Documents.

PART II

SUPPLEMENTARY TECHNICAL SPECIFICATION

AMENDMENTS/MODIFICATIONS/ADDITIONS TO EXISTING CLAUSES OF GENERAL TECHNICAL SPECIFICATIONS

SECTION 100 General

CLAUSE 102

DEFINITIONS

The following abbreviations shall be added in this Clause: "MORT&H" :
Ministry of Road Transport & Highways

(Previously known as 'MOST', Ministry of Surface Transport)

"NHAI" : National Highways Authority of India

CLAUSE 106

CONSTRUCTION EQUIPMENT

Add the following sub para (g) and (h) after sub para (f)

- Adequate standby equipment including spare parts shall be available.
- All measuring devices and gauges shall be in good working condition. Measuring devices that can affect product quality shall be calibrated prior to use and at prescribed intervals against certified equipment. Calibration procedures shall be established, maintained and documented and corrective actions taken when results are unsatisfactory. Accuracy and fitness of measuring devices shall be ensured by proper maintenance.

CLAUSE 108

SITE INFORMATION

Sub-Clause 108.4

This clause shall be as follows:

"Identification of quarry sites and borrow areas shall be the responsibility of the Contractor. Materials procured from quarry sites and borrow areas identified by Contractor and to be used in Works must comply with the requirements of quality as stipulated in the Technical Specification for particular items of work."

CLAUSE 109

SETTING OUT

Sub-Clause 109.8

Delete the 2nd and 3rd sentences in Clause 109.8 and substitute the following:
"Setting out of the road alignment and measurement of angles shall be done by using Total Station."

CLAUSE 111

PRECAUTIONS FOR SAFEGUARDING THE ENVIRONMENT

Sub-Clause 111.1

General

Delete the text of Clause 111.1 in its entirety and substitute the following:

"The Contractor shall take all necessary measures and precautions and otherwise ensure that the execution of the Works and all associated operations on site or off-site are carried out in conformity with statutory and regulatory requirements including those prescribed elsewhere in this document.

The Contractor shall take all measures and precautions to avoid any nuisance or disturbance arising for the execution of the Works. This shall wherever possible be achieved by suppression of the nuisance at source rather than abatement of the nuisance once generated. All vehicles deployed for material haulage shall be spillage proof.

Haul roads shall be inspected at least once daily to clear any accidental

	<p>spillage. In the event of any spoil, debris, wastes or any deleterious substance from the Site being deposited on any adjacent land, the Contractor shall immediately remove all such material at no cost to the Contract and restore the affected area to its original state to the satisfaction of the Engineer.”</p>
Sub-Clause 111.2	<p>Borrow Pits for Embankment Construction</p> <p>Delete the text of Clause 111.2 and substitute the following:</p> <p>“Prior approval shall be sought from the concerned State Authorities, and the Contractor shall comply with all local environmental regulations. For all borrow areas, the actual extent of area/zones to be excavated shall be demarcated with the signboards and the operational areas shall be access controlled.</p> <p>In the case of borrow from tank beds, a regrade/improvement of the inlet channels (at least up to 100m stretch) shall be undertaken in consultation with the concerned state government departments (the Minor Irrigation department of the State PWD) and local bodies. The Contractor shall ensure that excavation of tank beds is uniform over the entire area and that the finished profile of the bed is smooth.</p> <p>In the case of borrow from the dry highlands, all borrow areas shall be reinstated by the formation gentle side slopes, re-vegetated and connected to the nearest drainage channel to avoid the formation of pools during/after the rainy seasons.</p> <p>Plant and machinery used in the borrow areas shall conform to State noise emission regulations. All operation areas shall be water sprinkled to contain dust levels to the National Ambient Air Quality Standards.”</p>
Sub-Clause 111.3	<p>Quarry Operations</p> <p>Delete the text of Clause 111.3 and substitute the following:</p> <p>“Aggregates shall be sourced only from quarry sites that comply with the local/state environmental and other applicable regulations. Occupational safety procedures/practices for the work force in all quarries shall be in accordance with applicable laws. Quarry and crushing units shall have adequate dust suppression measures, such as sprinklers, in work areas and along all approach roads to the quarry sites. These shall preferable be located on the upwind side.”</p>
Sub-Clause 111.5	<p>Pollution from Hot-Mix Plant and Batching Plants</p> <p>Delete the 1st sentence of Clause 111.5 and substitute the following:</p> <p>“Bituminous hot mix plant and concrete batching plants shall be located at least one(1)km away from the sensitive receptors(schools, hospitals, etc.)and atleast 500m from urban settlements, unless otherwise required by the statutory requirements.”</p>
Sub-Clause 111.8.1	<p>Environmental Protection:</p> <p>Add the following sentences in the first paragraph of Sub Clause 111.8.1:</p> <p>Water tankers with suitable sprinkling system shall be deployed along the haulage roads and in the work sites. Water shall be sprinkled regularly all along the routes to suppress airborne dusts from truck/dumper movements particularly on unpaved roads. Actual frequency will be agreed with the Engineer to suit site conditions.”</p>
Sub-Clause 111.8.2	<p>Air Quality</p>

The Contractor shall device and implement methods of working to minimize dust, gaseous and other air-borne emissions and carry out the Works in such a manner as to minimize adverse impacts on the air quality. Construction camps shall have facilities for LPG fuel. The use of firewood shall not be permitted.

The Contractor shall utilize effective water sprays during delivery, manufacture, processing and handling of materials when dust is likely to be created, and to dampen stored materials during dry and windy weather. Stockpiles of friable materials shall be covered with clean tarpaulins, with applications of sprayed water during dry and windy weather. Stockpiles of materials or debris shall be dampened prior to their movement, except where this is contrary to the Specification.

Any vehicle with an open load-carrying area used for transporting potentially dust-producing material shall have properly fitting side and tail boards. Materials having the potential to produce dust shall not be loaded to a level higher than the side and tail boards and shall be covered with clean tarpaulins in good condition. The tarpaulin shall be properly secured and extend at least 300mm over the edges of the side of the side and tailboards.

The Contractor shall monitor air-quality once weekly in all operational areas under the project and take the necessary steps to comply with the specified requirements. Air quality parameters will include SPM, RPM, SO₂, NO_x, HC and CO. operational areas include work sites, haulage roads, hot mix plants, quarries, crushing plants, stockpiles, borrow sites and spoil disposal sites.

Sub-Clause 111.8.3 Water Sources and Water Quality

The Contractor shall provide independent sources of water supply, such as bore wells, for use in the Works and for associated storage, workshop and work force compounds. Prior approval shall be obtained from the relevant State Authorities and all installations shall follow local regulations. Bore wells installed and used for the project shall be left in good operating condition for the use of NHAI and local communities. The Contractor shall prevent any interference with the supply to or abstraction from and prevent any pollution of water resources (including underground percolating water) as a result of the execution of the Works.

Areas where water is regularly or repetitively used for dust suppression purposes shall be laid to fall to specially constructed settlement tanks to permit sedimentation of particulate matter. After settlement, the water may be re-used for dust suppression and rinsing. The Contractor shall protect all watercourses, waterways, ditches, canals, drains, lakes and the likes from pollution as a result of the execution of the Works.

All water and other liquid waste products arising on the Site shall be collected and disposed of at a location on or off the Site and in a manner that shall not cause either nuisance or pollution.

The Contractor shall at all times ensure that all existing stream courses and drains within, and adjacent to, the Site are kept safe and free from any debris and any materials arising from the Works. The Contractor shall not discharge or deposit any matter arising from the execution of the Works into any water except with the permission of the Engineer and the regulatory authority concerned.

Work force camps shall have septic tank and soak away pits. Operational areas like POL storage areas/hot mix plant areas shall comply with local/state

environmental regulations and safety procedures. Storage and handling areas shall be impervious and surrounded by an impervious lined drain to catch any accidental spills. Storm water shall be stored in lined holding tanks with oil, grease-tapping facility prior to disposal in to nearby watercourses. The trappings and sludge of holding tanks shall be disposed off in accordance with the procedures approved by the local regulatory authority.

Sub-Clause 111.20 Control and Disposal of Wastes

The Contractor shall control the disposal of all forms of waste generated by the construction operations and in all associated activities. No uncontrolled deposition or dumping shall be permitted. Wastes to be so controlled shall include, but shall not be limited to, all forms of fuels and engine oils, all types of bitumen, cement, and surplus aggregates, gravels, bituminous mixtures etc. The Contractor shall make specific provision for the proper disposal of these and any other waste products, conforming to local regulations and acceptable to the Engineer.

Spilling of oil and bituminous products during construction and transport shall be avoided to reduce the chances of contamination of surface as well as ground water.

Degraded materials shall be disposed of in a manner as approved by the Engineer and wastewater shall be disposed into septic tanks and soak pits etc. The Contractor shall make arrangements to clean-up spoil as soon as the work finishes in a stretch. If such sites are located outside the ROW, restoration of the site to a level acceptable to the land owner(s) will be carried out within a time period agreed between landowner(s) and the Contractor. Separators shall be used to separate POL materials from wastewater prior to discharging to the watercourses or as approved by the Engineer in conformance with directives and guidelines.

Disposal of solid waste materials shall be outlined in a plan for which environmental clearances shall be obtained from State environmental regulatory authorities. Potential locations for solid waste disposal are the natural depressions and borrow areas. The areas used for dumping of uncontaminated debris shall be covered with 300mm soil and shall be planted. Contaminated debris shall be dumped in depressions whose bed must be impervious e.g., stone quarry sites or depressions made impervious with 450mm thick impervious floor apron as per MORT&H Technical Specifications. Each successive 1.0m layers shall be covered with 500mm thick soil layer, and the area will be covered with 300mm thick layer and planted.

After Clause 111.12 add the following new Clauses 111.13 to 111.17

Sub-Clause 111.13 Haulage Roads

Existing roads used for hauling shall be strengthened and/ or widened by the Contractor in accordance with the requirements for normal and construction traffic.

Where such roads are not existing, the Contractor shall construct project specific single lane paved roads in settlement areas and gravel roads in open areas conforming to the Ministry of Road Transport and Highways (MORT&H) specifications.

	<p>The alignment of the haulage roads shall be fixed to avoid agricultural land to the extent possible. In unavoidable circumstances, suitable compensation shall be paid to the people whose land will be temporarily acquired for the duration of the operations. The compensation shall cover for loss of income for the duration of temporary acquisition and land restoration. Prior to the construction of the haul roads, topsoil shall be stripped and stockpiled for re-use.</p> <p>Material dumping sites shall be access controlled to prevent the unauthorized entry of the people, grazing cattle and stray animals.</p> <p>Haulage roads shall be reinstated upon completion of hauling for the use of local communities.”</p>
Sub-Clause 111.14	<p>Equipment and Vehicles used for the Works</p> <p>Equipment and vehicles deployed for the construction activities shall not be older than 5 years. Equipment used for road and bridge works shall be based on new technology and shall generate noise and pollutants not exceeding the limits specified by the relevant State Authorities. Vehicles and machineries used for road and bridge works are to be regularly maintained to conform to the National Air Quality Standards. Blasting, if any, will be carried out using small charges.</p>
Sub-Clause 111.15	<p>Noise Control</p> <p>The Contractor shall consider noise as an environmental constrain in the planning and execution of the Works.</p> <p>The Contractor shall take all necessary measures so that the operation of all mechanical equipment and construction processes on and off the site shall not cause any unnecessary or excessive noise, taking in to account applicable environmental requirements. The Contractor shall use all necessary measures and shall maintains all plant and silencing equipment in good conditions so as to minimize the noise emission during construction works.</p> <p>Any member of the work force likely to be exposed to beyond their threshold noise levels shall be provided with protective equipment, such as earplugs, and shall be rotated every four hours.</p> <p>Construction operations shall be limited to daytime hours only, particularly in the settlement areas.</p>
Sub-Clause 111.16	<p>Vibration Control</p> <p>The Contractor shall take measures during construction activities to control the movement of the work force and construction machinery/equipment, and to avoid/ minimize activities, which produce vibrations.</p>
Sub-Clause 111.17	<p>Measurement</p> <p>Monitoring of Air/Water/Noise and Soil quality shall be paid as per numbers of samples tested. For Compliance of all other provisions made in this Clause 111, it shall be deemed to be incidental to the work and no separate measurements shall be made. The Contractor shall be deemed to have made allowance for such compliance with these provisions in the preparations of his prices for items of work included in the Bills of Quantities and full compensation for such compliance shall be deemed to be covered by them.”</p>
CLAUSE 112	<p>ARRANGEMENT FOR TRAFFIC DURING CONSTRUCTION</p>

Sub-Clause 112.4 Traffic Safety and Control

Last line of Para 5 shall be read as under:

“The signs shall be of approved design and of reflector type.” Add the following paragraph at the end of the clause:

“Before commencement of any construction, the Contractor shall prepare and submit details of the arrangements for passing traffic during construction, design of barricades, signs, markings, lights, flags etc. conforming and satisfying the requirements of the “Guidelines on Safety in Road Construction Zones” of IRC: SP 55-2001 and get the same approved by the Engineer.

Sub-Clause 112.6 Measurement for Payment and Rates

- a) The provision of treated shoulder including construction of temporary cross drainage structures, if required, as described in Clause 112.2 including their maintenance, dismantling and clearing debris, where necessary, shall be considered as incidental to the works and shall be Contractor’s responsibility.
- b) The Construction of temporary diversion including temporary cross drainage structures as described in subclause 112.3, shall be measured in linear meter and the unit contract rate shall be inclusive of full compensation for construction (including supply of material, labor, tools, etc.), maintenance as per sub clause 112.5, final dismantling, and disposal.
- c) All Traffic safety and control devices during construction as per sub clause 112.4 including providing, erecting and maintaining barrier, signs, markings, flags, lights and providing flag men etc. is included in item rate.

CLAUSE 114 SCOPE OF RATES FOR DIFFERENT ITEMS OF WORK

Sub-Clause 114.2 Item (ii) of Clause 114.2 shall read as follows:

A detailed resource-based construction programme including resources planning using computerized critical path network method/PERT in a form, which facilitates control of the progress of the works and consequences of any changes in terms of time. The programme shall also include detailed network, activities for the submission and approval of materials, procurement of critical materials and equipment, fabrication of special products/ equipment and their installation and testing and for all activities of the Contractor that are likely to affect the progress of work etc. including updating all such activities on the basis of decisions taken at the periodic site review meetings or as directed by the Engineer. The Contractor shall submit data via electronic media to the Engineer in a form readily compatible with Engineer’s planning system.

The first issue of the detailed construction programme including the detailed description of the system and the procedures shall be submitted to the Engineer for acceptance not later than 28 days after the date of receipt of the letter of acceptance.

The contractor shall submit to the Engineer for approval & consent, the updated & revised programme at every three months interval or as such as directed by the Engineer. The updated & revised programme shall be submitted showing the actual progress achieved (physical & financial) and the effects of the progress achieved on the timing of the remaining work including any change to the sequence of the activities

CLAUSE 115 METHODOLOGY AND SEQUENCE OF WORK

	The Clause shall be substituted as follows:
Sub-Clause115.1	<p>Submission of Method Statement</p> <p>The Contractor shall submit methods statement within 28 days after the date of letter of acceptance. The methods statement shall be submitted in two parts.</p> <p>The General part of the methods statement shall describe the Contractor's proposals regarding preliminary works, common facilities, and items that require consideration at the early stage of the Contract. The General part shall be furnished along with the first issue of the construction programme (refer clause 114.2) and shall include information on:</p> <ul style="list-style-type: none">a) Sources of materials like coarse aggregate and fine aggregate, quantity and quality of materials available in different sources;b) Sources of manufactured materials like cement, steel, bitumen reinforcement, prestressing strands and bearings. Wherever possible the Contractor shall identify at least two sources for each of the items; he shall also submit test certificates of recently manufactured materials for the consideration of the Engineer.c) Locations of site facilities like batching plant, hot mix plant, aggregate processing plant, crushing plant etc.d) Details of facilities/approaches for transportation of men, equipment and materials for construction of pavements, foundations and substructure in riverbed, and plan for free traffic flow and safe drainage.e) Information on procedures to be adopted by the Contractor for prevention and mitigation of negative environmental impact due to construction activities.f) Any other information required by the Engineer subsequent to the scrutiny of method statement <p>The General part of the Q.A. Programme shall accompany the methods statement under sub-clause105.3.</p> <p>The Special part of the methods statement shall be submitted to the Engineer by the Contractor for each important item of work like construction of embankments and subgrade, pavements, pile/well foundations, concreting, prestressing, repair and rehabilitation of existing structures, concrete superstructure, dismantling of structures and pavement and for any other item as directed by the Engineer.</p> <p>These statements shall give information on</p> <ul style="list-style-type: none">i) Details of personnel both for execution and quality control of the work.ii) Equipment deployment with details of number of units, capacity, standby arrangementsiii) Sequence of construction, details of temporary or enabling works like, diversions, cofferdams, formwork including specialized formwork for superstructure, details of borrow areas, method of construction of embankment and subgrade, pavements, piles, wells, concreting procedures, details of proprietary process and products (e.g. details of prestressing systems, proprietary piling systems, bearings, expansion joints etc.) and details of equipment to be deployed. Wherever necessary, technical literature, design calculations and drawings shall be included in the methods statement.

	<ul style="list-style-type: none"> iv) Testing and acceptance procedures including documentation. v) Special part of the Q.A. Programme referred in clause 105.3 for the particular item of work shall be submitted along with the methods statement for the concerned activity. vi) Engineer shall examine and approve the methods statement or direct the Contractor to resubmit the statement with required modifications. The modified statement shall be submitted within 14 days of receipt of Engineer's comments. <p>The sole responsibility for the safety and adequacy of the methods adopted by the Contractor shall rest on the Contractor irrespective of any approval given by the Engineer.</p>
Sub-Clause115.2	<p>Approval of Proprietary Product/Process/System</p> <p>Only proprietary products proven by International usage in comparable projects shall be permitted to be used. Fully authenticated details of licensing and collaboration arrangement shall be submitted by the manufacturer, where relevant.</p> <p>Within 90 days of award of work the Contractor shall submit the following information for all proprietary products for approval by the Engineer.</p> <ul style="list-style-type: none"> i) Name of manufacturer and name of product/ process/system. <p>Complete details of the manufacturer of the product/ process/ system shall be furnished. Details of projects where similar product/process/system has been successfully used shall be furnished. Authenticated copies of license/collaboration agreement shall be furnished.</p> <ul style="list-style-type: none"> ii) General features of the product/product process/system. <p>Detailed write up with methods statements shall be furnished for each product/ process/ system. This shall include complete working drawings & installation drawings, technical specifications covering fabrication, materials, system of corrosion protection etc.</p> <ul style="list-style-type: none"> i) Details of product development and development testing. ii) Acceptance test and criteria. <p>Manufacturer shall submit a quality assurance system document. Details of acceptance test and criteria of acceptance shall be furnished in this document.</p> <ul style="list-style-type: none"> i) Installation procedure. ii) Maintenance procedure and schedule. iii) Warranty proposal. <p>The Engineer may instruct any additional tests for the purpose of accepting the product. The charges of these additional tests shall be borne by the Employer only in case the product satisfies the specifications.</p>
CLAUSE 120	FIELD LABORATORY
Sub-Clause 120.2	<p>Description</p> <p>Replace the words "indicated in the drawings" in the first sentence of second paragraph of this Clause with the words "per provisions indicated in this Clause and at a location approved by the Engineer."</p> <p>Replace "electric supply etc." to the second sentence of first paragraph by "including</p>

uninterrupted power supply etc.”

Delete the first sentence of second paragraph “The floor space in the drawing” and substitute the following:

“The floor space required for the field laboratory shall be not less than 200 sq.m.

“The fourth sentence of second paragraphs “The furnishing In Table100-2”shall read as under.

“A good semi furnished office accommodation shall be provided to the Material Engineers of the Supervision Team as per the direction of the Engineer.”

Add the following at the end of this Clause:

“There shall also be provided a concrete paved area, for storing samples adjacent to the laboratory, of about 100 sq.m and another 75 sq.m shall be suitably roofed with open sides giving protection against sun and rain.

Within 14 (fourteen) days of the commencement date, the Contractor shall prepare and submit a layout plan and details of the laboratory building and make/supplier of the equipment to the Engineer for his approval.

The field laboratory to be provided under the Contract shall be handed over to the Engineer in finished and fully equipped condition not later than 2 months after the receipt of Notice to Commence Work, and the field laboratory with all equipment/ instrument shall be to the entire satisfaction of the Engineer. During the 2-month period starting from the Notice to Commence work, the laboratory tests shall be performed in another laboratory proposed by the Contractor and approved by the Engineer.

Laboratory Equipment

General

The items of laboratory equipment shall be provided in the field laboratory depending upon the items to be executed as per Table mentioned below instead of Table 100-2 shown in MORTH:

The following items of laboratory equipment shall be provided in the field laboratory:

The equipment and instruments shall be new and shall be quality certified by Bureau of Indian Standards (BIS).

Sr. No.	Sub No.	Item, Specifications	Nos. required
A: General			
(i)	Balance		
	(a)	7 kg to 10 kg capacity semi -self indicating Electronic Type –Accuracy 1 gm	2
	(b)	500 gm capacity semi-self-indicating Electronic Type – Accuracy 0.01 gm	2
	(c)	Chemical balance 100gm capacity - Accuracy 0.0001gm	1
	(d)	Pan balance 5 kg capacity - Accuracy 0.5 gm	2
	(e)	Platform Scale – 300 kg capacity	1
	(f)	Triple Beam balance-25kg capacity Accuracy 1gm	2
(ii)	Ovens – Electrically operated, thermostatically controlled		
	(a)	From 100°C to 220°C – Sensitivity	2

(iii)	Sieves, as per IS 460-1962		
	(a)	IS Sieves 450 mm internal dia. of sieve sets as per BIS of required sieve sizes complete with lid and pan	2 set
	(b)	IS sieve 200 mm internal dia. (brass frame and steel or brass wire cloth mesh) consisting of sieve sets of required sieve sizes complete with lid and pan	2 set
(iv)	Sieve shaker capable of taking 200 mm and 450 mm dia. Sieves electrically operated with time switch assembly (As per BIS)		1
(v)	200 tones compression testing machine		1
(vi)	Stop watches 1/5 sec. Accuracy		2
(vii)	Glassware comprising of Beakers, Pipettes, dishes, measuring cylinders (100 to 1000 cc capacity) glass rods and funnels, glass thermometers range 0°C to 100°C and metallic thermometers range 300°C		1 Dozen each
(viii)	Hot plates 200 mm dia (1500 watt)		6
(ix)	Enamel trays		
	(a)	600 mm x 450 mm x 50 mm	10
	(b)	450 mm x 300 mm x 40 mm	10
	(c)	300 mm x 250 mm x 40 mm	6
	(d)	Circular plates of 250 mm dia.	6
(x)	Water Testing Kit		1
(xi)	First Aid Box		1
(xii)	Spatula Set of 100 and 200 long		3
(xiii)	Digging Tools (pixels, shovel, fork etc.)		As reqd.
(xiv)	Miscellaneous tools (sledge hammer, lump hammer, wooden pegs etc.)		As reqd.
(xv)	Maximum and Minimum Thermometer		2 Set
(xvi)	Rain Gauge		1 Set
(xvii)	Timer 0-60 minutes with alarm & 1/5 sec accuracy.		3 Sets

B: For Soils and Aggregates			
(i)	Water still, 3 litre/hr with fittings and accessories		1
(ii)	Liquid limit device with Casagrande and ASTM grooving tools as per IS: 2720		1
(iii)	Sampling pipettes fitted with pressure and suction inlets, 10 mlCapacity		2 set
(iv)	Compaction apparatus (Proctor) as per IS: 2720 (Part 8) complete with collar, base plate and hammer		1 set
(v)	Modified AASHTO compaction apparatus as per IS. 2720 (Part 7) 1980 or Heavy Compaction Apparatus as per IS complete with collar, base plate and hammer		1 set
(vi)	Sand pouring cylinder with conical funnel and tap and complete as per IS 2720 (Part 28) 1980 including modified equipment		4
(vii)	Sampling tins with lids 100 mm dia x 75 mm ht½ kg capacity and miscellaneous items like moisture,tins with lid (50 grams) etc.		12
(viii)	Lab CBR testing equipment for conducting CBR testing, load frame with 5 Ton capacity, electrically operated with speed control as per IS: 2720 (Part 16), and consisting of following:		1 set
	(a)	CBR moulds 150-mm dia- 175-mm htcomplete with collar, base plateetc.	24
	(b)	Tripod stands for holding dial gauge holder	24
	(c)	CBR plunger with settlement dial gauge holder	1
	(d)	Surcharge weight 147-mm dia2.5 kg weight with centralhole	48

Rectification of Black Spots /Accident Prone locations on Batote-Khellani Road stretch by Installation of Metallic Crash Barrier, Road Signages, raising of outer earthen shoulders etc., along with Clearance of landslide & Snow on NH-244 in the UT of Jammu & Kashmir in F.Y 2024-25 on EPC Mode

	(e)	Spacer disc 148-mm dia, 47.7-mm ht. With handle	3
	(f)	Perforated plate (Brass)	24
	(g)	Soaking tank for accommodating 24 CBR moulds	
	(h)	Provingrings of 1000kg, 2500kg and 5000kg capacity	1 each
	(i)	Dial gauges, 25 mm travel- 0.01 mm/division	10
	(j)	Aluminium Tis	
		50x30m	36 nos
		55x35m	36 nos
		70x45m	36 nos
		70x50m	36 nos
		80x50m	36 nos
(ix)		Standard Penetration test equipment	1
(x)		Nuclear Moisture Density Meter or equivalent	2
(xi)		Speedy moisture meter complete with chemicals	2
(xii)		Unconfined compression test apparatus	1 set
(xiii)		Aggregate Impact Test Apparatus	1
(xiv)		Aggregate Impact Test Apparatus as per IS 2386 (Part 4) 1963	1
(xv)		Los Angeles abrasion Test Apparatus as per IS 2386 (Part 4) 1963	1
(xvi)		Riffle Box of Slot size of 50mm as per ASTM C-136	1

C: For Bitumen and Bituminous Mixes		
(i)	Constant temperature bath for accommodating bitumen	2
	Test specimen electrically operated and thermostatically controlled, 50-liter capacity temp. range ambient 80o C	
(ii)	Penetrometer automatic type, adjustable weight arrangement and needles as per IS. 1203 – 1978	2
(iii)	Solvent extraction or centrifuge type apparatus complete (AASHTO, T-164) with extraction thimbles with stocks of solvent and filter paper	1
(iv)	Laboratory mixer including required accessories about .02 cum capacity electrically operated fitted with heating jacket	1
(v)	Marshall compaction apparatus automatically operated as per ASTM 1559-62 T and complete with electrically operated loading unit, compaction pedestal heating head assembly, dial micrometre and bracket for flow measurement, load transfer bar, specimen mould 100 mm dia. (4 in) with base plate, collars, specimen extractor, compaction hammer 4.53 kg (10 lb.) x 457 mm (18 in) fall	1 set
(vi)	Distant Reading Digital Thermometer for Measuring Temperatures in Asphaltic Mixes	As required
(vii)	Riffle Box	1
(viii)	Automatic Asphalt Content Gauge [Nuclear are equivalent]	1
(ix)	Thin film Oven test apparatus to the requirement of AASHTO T 179, including accessories	1
(x)	Ring Ball Apparatus as per IS 1205- 1978	1
(xi)	Asphalt Institute Vacuum Viscometer as per IS 1206(part II) – 1978	1
(xii)	BS U- Tube Modified Reverse Floro Viscometer IS 1206(Part III) – 1978	1
(xiii)	Apparatus for Determination of Ductility Test as per IS 1208 – 1978	1

(xiv)	Pen Sky – Martars closed Tester for testing flash and fire point as per IS 1209 – 1978.	1
(xv)	Apparatus for Float Test – IS – 1210 – 1978	1
(xvi)	Apparatus for Determination of water content (Deanand Shark Method) IS – 1211 – 1978	1
(xvii)	Apparatus for Determination of Loss on Heading IS– 1212-1978.	1
(xviii)	Apparatus of Determination of specified Gravity IS- 1202-1978	1
(xix)	Core cutting machine with 100mm dia. Diamond cutting Edge	1
(xx)	Apparatus for Elastic Recovery test for Modified Bitumen	1
(xxi)	Apparatus for Storage Stability test for Modified Bitumen	1
(xxii)	Apparatus for Separation test for modified bitumen	1

D: For Cement, Cement Concrete and Materials			
(i)	Water still		1
(ii)	Vicat needle apparatus for setting time with plungers, as per IS. 269-1967		1
(iii)	Moulds		
	(a)	150 mm x 300 mm ht cylinder with capping component	As required
	(b)	150mmx150 mm x150mm cubical for compressive strength	As required
	(c)	150mmx100 mm x600mm beam for flexural strength	As required
(iv)	Concrete permeability apparatus		1
(v)	High frequency mortar cube vibrator for cement testing		1
(vi)	Concrete mixer power driven, 1 cu ft. capacity		1
(vii)	Variable frequency and amplitude vibrating table size 1 metre x 1 metre, as per the relevant British Standard		1
(viii)	Flakiness & Elongation test apparatus		2each
(ix)	Aggregate impact test apparatus as per IS 2386 (Part 4) 1963		2
(x)	Los Angeles abrasion apparatus as per IS. 2386 (Part 4) 1963		1
(xi)	Flow table as per IS 712-1973		1
(xii)	(a)	Equipment for slump test	2
	(b)	Compaction factor test equipment	1
(xiii)	Equipment for determination of specific gravity for fine and coarse aggregate as per IS 2386 (Part 3) 1963		2
(xiv)	Flexural attachment to compression testing machine		1
(xv)	Core cutting machine with 150 mm dia. Diamond cutting edge		1
(xvi)	Needle vibrator		1
(xvii)	Vibrating hammer as per BS specification		1
(xviii)	Air entrainment meter ASTM C - 231		1
(xix)	0.5 Cft, 1 Cft cylinder for checking bulk density of aggregate with tamping rod		1
(xx)	Soundness testing apparatus for cement		1
(xxi)	Flexural Beam testing machine with accessories		1
(xxii)	Chemicals solutions and consumable		As reqd.
(xxiii)	Chloride Testing kit for chemical analysis of chloride content.		1

(xxiv)	ION Exchange kit for rapid determination of sulphate content.	1
--------	---	---

E: For Control of Profile and Surface Evenness		
(i)	Digital Level complete with all accessories	2 sets
(ii)	Distomat or equivalent	2 Nos.
(iii)	Theodolite – Electronically operated with computerized output attachment	2 sets
(iv)	Total Station with all accessories	2 sets
(v)	Towed Fifth Wheel Bump Indicator	1 set
(vi)	3meter straight edge and measuring wedge	2 sets
	Camber templates 2 lane	
(vii)	String line Arrangement with paver and sensor powers	1
	(a) Crown type cross-section	2 sets
	(b) Straight run cross-section	2 sets
(viii)	Steel tape	
	(a) 5 m long	as reqd
	(b) 10 m long	as reqd
	(c) 20 m long	as reqd
	(d) 30 m long	as reqd
	(e) 50 m long	As reqd
	(e) 50 m long	As reqd
(ix)	Precision Staff	3 Sets

Note: The laboratory set-up must be complete including a set of reference standards, adequately staffed and operational to the satisfaction of the Engineer not later than 2 months from the date of receipt of Notice to commence the works.

Sub-Clause 120.3 Ownership

This Clause shall read as under:

“Land for the laboratory shall be provided by the Contractor.”

Sub-Clause 120.4 Maintenance

This Clause shall read as under:

“The Contractor shall arrange to maintain the field laboratory including sample store yards in a satisfactory manner until the issue of Taking over Certificate for the whole work. Maintenance includes all activities described in Clause 120.4 and maintenance of equipment and running of the same including chemicals and consumables.”

Sub-Clause 120.5 Rate

The construction, supply, installation, maintenance, and operation including all consumables like chemicals & reagents etc., and all other expenses involved in connection thereto for the field laboratory shall be incidental to the work, and shall not be paid for separately.

SECTION 200 Site Clearance

CLAUSE 201 CLEARING AND GRUBBING

Sub-Clause 201.1 Scope

Replace with following Para:

	<p>This work shall consist of cutting, excavating, removing, and disposing of all materials such as trees of girth up to 300 mm, bushes, shrubs, stumps, roots, grass weeds, rubbish etc. and top soil up to 150 mm, which in the opinion of Engineer is unsuitable for incorporation in the work including draining out stagnant water if any from the area of road land, drain, cross drainage structure and other area as specified in the drawing or instructed by Engineer. It shall include necessary excavation by harrow discs or any other suitable equipment, backfilling of the pits by suitable soil, resulting from uprooting of trees & stumps and making the surface in proper grade by suitable equipment and compacted by power roller to required compaction as per Clause 305.3.4. The work also includes handling, salvaging and disposal of cleared material. Clearing and grubbing shall be performed less than one month in advance of earthwork operation and in accordance with requirement of these specifications.</p>
CLAUSE 202	DISMANTLING CULVERTS, BRIDGES AND OTHER STRUCTURES/ PAVEMENTS
Sub-Clause 202.5	<p>Disposal of Materials</p> <p>The first paragraph of the sub clause shall read as below:</p> <p>All materials obtained of dismantling/milling shall be the property of the Contractor for which he shall quote a rate for rebate in BOQ Bill No. 1, and the Contractor shall be free to use this material in work, or he may sell/dispose the material to as desired / deemed fit by him.</p> <p>The existing pavement crust shall be reused as indicated below:</p> <p>Contractor shall be free to use dismantled / milled material, as is where basis is, or by suitably modifying the material, or by crushing the material, or by breaking the material, and screening the same, provided it meets the specifications and is approved by the Engineer.</p>
SECTION 300	Earthwork, Erosion Control and Drainage
CLAUSE 301	EXCAVATION FOR ROADWAY AND DRAINS
Sub-Clause 301.1	<p>Scope</p> <p>Add the following as second paragraph under this clause:</p> <p>“The work shall also include excavation for channel training at culverts/bridges, excavation of existing shoulders and medians for purposes of widening the pavement and excavation of existing embankment for reconstruction to specification.”</p>
CLAUSE 304	EXCAVATION FOR STRUCTURES
Sub-Clause 304.3.2	<p>Excavation</p> <p>At the end of 1st paragraph of Clause 304.3.2 inserts the following additional sentences:</p> <p>“The Contractor shall ensure the stability and structural integrity of adjacent existing foundations and structures and if necessary shall, at his own expense, install temporary or permanent sheet piles, coffer dams, shoring or similar as support or protection to the satisfaction of the Engineer.”</p>
CLAUSE 305	EMBANKMENT CONSTRUCTION
Sub-Clause 305.2	Material and General Requirements
Sub-Clause 305.2.1	Physical Requirements:

Sub-Clause 305.2.1.2 Add the following after second paragraph:

“Soils having medium and high swelling potential shall be defined based on Liquid Limit, Plastic Limit, Shrinkage Limit, Gradation, Free swelling Index, Field dry Density and Field Moisture Content and types of Clay minerals present in the soil and as directed by the Engineer. The location and the extent of these soils with medium to high swelling potential should be defined as directed by the Engineer.”

Sub-Clause 305.2.2.2 Borrow Materials

Para 1 of this Clause shall read as under:

” No borrow area shall be made available by the Employer for this work. The arrangement for the source of supply of the material for embankment and subgrade as well as compliance to the different environmental requirements in respect of excavation and borrow areas as stipulated, from time to time, by the Ministry of Environmental and Forest, Government of India and the local bodies, as applicable, shall be the sole responsibility of the Contractor.”

Sub-Clause 305.2.2.4 Compaction Requirements

In Clause 305.2.2.4 delete Table 300-2 and substitute the following:

Table 300-2
Compaction Requirements of Embankment and Subgrade

Sr. No.	Type of Work/Material	Relative Compaction as %age of maximum laboratory dry density as per IS 2720 (Part 8)
1	Subgrade and earthen shoulders	Not less than 97%
2	Embankment	Not less than 95%
3	Expansive clays	Not allowed
4	Design CBR of Subgrade & Shoulder has been taken 8. The borrow earth used for subgrade material must satisfied the requirement of the design CBR of 8 %	

Para 2 of this Clause given below Table 300-2 shall read as under:

The contractor shall at least 21 working days before commencement of construction of embankment and the subgrade; submit the following to the Engineer for approval:

- (i) The values of maximum dry density and optimum moisture content obtained in accordance with IS: 2720 (Part 8) for each fill material proposed to be used in the construction of embankment and subgrade.
- (ii) The graphs of Density plotted against moisture content from which each of the values in (i) above of maximum dry density and optimum moisture content were determined.
- (iii) The dry density-moisture content-CBR relationships, heavy comp active efforts conforming to the IS 2770 (part 8) for each of the fill material proposed to be used in the subgrade.

The above information shall form the basis for compaction only upon its approval by the Engineer.”

Sub-Clause 305.3 Construction Operations

Sub-Clause 305.3.4 Compacting Ground Supporting Embankment/Subgrade

Para 1 of this clause shall be read as

	<p>"Where necessary the original ground shall be levelled, scarified, mixed with water and then compacted by rolling to facilitate placement of first layer of embankment so as to achieve minimum drydensityasgiveninTable300-2.</p>
Sub-Clause 305.8	<p>Measurement for Payment</p> <p>Substitute Clause 305.8.1 shall be read as</p> <p>"Earth embankment/sub-grade construction shall be measured separately by taking cross sections at intervals after clearing and grubbing and if necessary compaction of original ground before the embankment work starts and after its completion and computing the volumes of earthwork in cubic metres by the method of average and areas."</p>
CLAUSE 306	SOIL EROSION AND SEDIMENTATION CONTROL
Sub-Clause 306.4	<p>Measurements for Payment</p> <p>Substitute Clause 306.4 as follows:</p> <p>"All temporary sedimentation and pollution control works shall be deemed as incidental to the earthwork and other items of work and as such no separate payment shall be made for the same."</p>
SECTION 400	Sub-Bases, Bases (Non-Bituminous) and Shoulders
CLAUSE 401	GRANULAR SUB BASE
Sub-Clause 401.1	<p>Scope</p> <p>Add the following at the end of this Clause:</p> <p>"A site trial shall be performed in accordance with Clause 901.16."</p>
Sub-Clause 401.2.2	<p>Physical Requirements</p> <p>Add at the end of this clause as under:</p> <p>The Contractor shall, at least 21 working days before the commencement of the construction of the sub-base course, submit to the Engineer, the results for approval of the laboratory testing on the physical properties defined above. The construction of the sub-base course shall be taken up only upon the Engineer's approval of the material.</p> <p>Grading-I of table 400-1 shall be adopted at site.</p>
CLAUSE 406	WET MIX MACADAM SUB BASE/BASE
Sub-Clause 406.4	<p>Opening to Traffic</p> <p>The Clause shall be read as follows:</p> <p>No vehicular traffic of any kind shall be allowed on the finished wet mix macadam surface.</p>
SECTION 500	Base and Surface Courses (Bituminous)
Sub-Clause 501.2	Materials
Sub clause 501.2.1	<p>Binder</p> <p>Binder of VG-10 grade shall be used or if available viscosity grade of bitumen shall be used in accordance with IS: 73</p>
Sub-Clause 501.2.2	<p>Delete "Crushed gravel or other hard material" from first Line of Para 1."</p> <p>Para 3 is deleted.</p>

CLAUSE 505	DENSE BITUMINOUS MACADAM
Sub-Clause 505.2.1	<p>Bitumen</p> <p>Binder of VG-10 grade shall be used or if available viscosity grade of bitumen shall be used in accordance with IS: 73.</p>
CLAUSE 507	BITUMINOUS CONCRETE
Sub-Clause 507.2.1	<p>Bitumen</p> <p>Binder of CRMB-60 grade shall be used.</p>
SECTION 800	Traffic Signs, Markings and Other Road Appurtenances
CLAUSE 803	ROAD MARKINGS
Sub-Clause 803.2	<p>Materials</p> <p>This clause shall read as under:</p> <p>“Road markings shall be hot applied thermoplastic compound and the materials shall meet the requirements as specified in Clause 803.4.</p> <p>The road markings shall be laid in one layer with appropriate road marking machine approved by the Engineer. Before the road-marking machine is used on the permanent works, the satisfactory working of the machine shall be demonstrated on a suitable site, which is not part of the permanent works. The rate of application shall be checked and adjusted as necessary before application on a large scale is commenced, and thereafter daily.”</p>
CLAUSE 806	ROAD DELINATORS
Sub-Clause 806.2	<p>This clause shall read as follows:</p> <ol style="list-style-type: none"> Triangular Object Marker shall be 300mm side with four red reflectors, made out of 2mm thick aluminium sheet, face to be fully covered by high intensity grade white retro reflective sheeting of encapsulated lens type as per clause 801. The background/border/symbols shall be made by screen-printing of desired colour as per sign details. The sign plate shall be fixed with 6mm dia. aluminium rivets on MS angle iron frame. The angle iron frame shall be made with angle of size 40mmx40mmx5mm. The sign shall be fixed with nut-bolts & welding on MS pipe 50mm dia (NB-MW) and 500mm high. Rectangular hazard marker 600mm x 300mm made out of 2mm thick aluminium sheet, face to be fully covered by high intensity grade white retro reflective sheeting of encapsulated lens type. The background/ border/ symbols shall be made by screen-printing of desired colour as per sign details. The sign plate shall be fixed with 6mm dia aluminium rivets on MS angle iron frame. The angle iron frame shall be made with angle of size 40mmx40mmx5mm. The sign shall be fixed to 80mm dia (NB-MW) MS pipe. Roadway Indicators shall be 1000mm high made with 100 mm dia. NB medium weight MS pipe. One reflector of high intensity grade retro reflective sheeting with encapsulated lens shall be provided on top of the reflector. The white & red reflector shall be provided alternatively of 40mm width, so that total width of reflector shall be 120mm. A wire mesh cover of 150mm height shall be provided on top. All components of signs & supports shall be thoroughly descaled, cleaned, primed and painted with two coats of epoxy paint. The sign backside shall

	be with grey colour and post shall be white colour/ alternate white & black bands. The post below ground shall be painted with three coats of red lead.
Clause 2100	Open Foundation
Sub-Clause 2104.1	Preparation of Foundation
	Please add the following as a last para-
	Considering the soil SBC as per Geotechnical report, 1 m of depth below the founding level of bridges shall be removed and replaced with granular sand. The cost of the excavation and sand shall be made from respective items.

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.
- (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.

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

- (a) All damages occurring to the Project Highway on account of a Force Majeure Event or willful 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 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
Road Signs	Shape Position and	Shape and Position as per IRC: 67- 2012. 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. Relocation as per requirement change of signboard	48 hours in case of Mandatory Signs, Cautionary and Informatory Signs (Single and Dual post signs) 15 Days in case	IRC:67-2012
	Retro reflectivity	As per specifications in IRC:67-2012	Bi-Annually	Testing of each Signboard using Retro Reflectivity Measuring Device. In accordance with ASTM D 4956-09.			RC:67-2012

Rectification of Black Spots /Accident Prone locations on Batote-Khellani Road stretch by Installation of Metallic Crash Barrier, Road Signages, raising of outer earthen shoulders etc., along with Clearance of landslide & Snow on NH-244 in the UT of Jammu & Kashmir in F.Y 2024-25 on EPC Mode

Asset Type	Performance Parameter	Level of Service (LOS)	Frequency of Measurement	Testing Method	Recommended Remedial measures	Time limit for Rectification	Specifications and Standards
						of Gantry/Cantilever Sign boards 48 hours in case of Mandatory Signs, Cautionary and Informatory Signs (Single and Dual postsigns) 1 Month in case of Gantry/Cantilever Sign boards	

Table 2: 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	2 (Two) hours
(iii)	Snow requiring clearance	1 (One) hours

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

A. Flexible Pavement

Nature of Defect or deficiency		Time limit for repair/rectification
(a) Granular earth shoulders, side slopes, drains and culverts		
(i)	Damage to or silting of culverts and side drains	7 (seven) days
(ii)	Desilting of drains in urban/semi- urban areas	24 (twenty-four) hours
(iii)	Railing, parapets, crash barriers	7 (seven) days (Restore immediately if causing safety hazard)
(b) Roadside furniture including road sign and pavement marking		
(i)	Painting of km stone, railing, parapets, crash barriers	As and when required/ Once every year
(ii)	Damaged/missing signs road requiring replacement	7 (seven) days

Bridges		
(a) Superstructure		
(i)	Any damage, cracks, spalling/ scaling Temporary measures Permanent measures	within 48 (forty-eight) hours within 15 (fifteen) days or as specified by the Authority's Engineer
(b) Foundations		
(i)	Scouring and/or cavitation	15 (fifteen) days
(c) Piers, abutments, return walls and wingwalls		
(i)	Cracks and damages including settlement and tilting, spalling, scaling	30 (thirty) days
(d) Bearings (metallic) of bridges		
(i)	Deformation, damages, tilting or shifting of bearings	15 (fifteen) days Greasing of metallic bearings once in a year
(e) Joints		
(i)	Malfunctioning of joints	15 (fifteen) days
(f) Other items		
(i)	Deforming of pads in elastomeric bearings	7 (seven) days
(ii)	Gathering of dirt in bearings and joints; or clogging of spouts, weep holes and vent-holes	3 (three) days
(iii)	Damage or deterioration in kerbs, parapets, handrails and crash barriers	3 (three) days (immediately within 24 hours if posing danger to safety)
(iv)	Rain-cuts or erosion of banks of the side slopes of approaches	7 (seven) days
(v)	Damage to wearing coat	15 (fifteen) days
(vi)	Damage or deterioration in approach slabs, pitching, apron, toes, floor or guide bunds	30 (thirty) days
(vii)	Growth of vegetation affecting the structure or obstructing the waterway	15 (fifteen) days
(g) Hill Roads		
(i)	Damage to retaining wall/breast wall	7 (seven) days
(ii)	Landslides requiring clearance	12 (twelve) hours
(iii)	Snow requiring clearance	24 (twenty-four) hours

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

Schedule - F

(See Clause 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) Licence for use of explosives;
 - (d) Permission of the State Government for drawing water from river/reservoir;
 - (e) Licence 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.

Schedule – G

(See Clauses 7.1 and 19.2)

Annex-I

(See Clause 7.1)

Form of Bank Guarantee

[Performance Security/Additional Performance Security]

[Executive Director, National Highways & Infrastructure Development Corporation Limited, Jammu] WHEREAS:

- (A) __[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 **Rectification of Black Spots /Accident Prone locations on Batote-Khellani Road stretch by Installation of Metallic Crash Barrier, Road Signages, raising of outer earthen shoulders etc., along with Clearance of landslide & Snow on NH-244 in the UT of Jammu & Kashmir in F.Y 2024-25 on EPC mode** (the “**EPC**”) basis, subject to and in accordance with the provisions of the Agreement
- (B) The Agreement requires the Contractor to furnish a Performance Security for due and faithful performance of its obligations, under and in accordance with the Agreement, during the {Construction Period/ Defects Liability Period and Maintenance Period}(as defined in the Agreement)in a sum of 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**”) by way of Performance Security.

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

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

under this Guarantee, to vary at any time, the terms and conditions of the Agreement or to extend the time or period for the compliance with, fulfilment and/ or performance of all or any of the obligations of the Contractor contained in the Agreement or to postpone for any time, and from time to time, any of the rights and powers exercisable by the Authority against the Contractor, and either to enforce or forbear from enforcing any of the terms and conditions contained in the Agreement and/or the securities available to the Authority, and the Bank shall not be released from its liability and obligation under these presents by any exercise by the Authority of the liberty with reference to the matters aforesaid or by reason of time being given to the Contractor or any other forbearance, indulgence, act or omission on the part of the Authority or of any other matter or thing whatsoever which under any law relating to sureties and guarantors would but for this provision have the effect of releasing the Bank from its liability and obligation under this Guarantee and the Bank hereby waives all of its rights under any such law.

6. This Guarantee is in addition to and not in substitution of any other guarantee or security now or which may hereafter be held by the Authority in respect of or relating to the Agreement or for the fulfilment, compliance and/or performance of all or any of the obligations of the Contractor under the Agreement.
7. Notwithstanding anything contained hereinbefore, the liability of the Bank under this Guarantee is restricted to the Guarantee Amount and this Guarantee will remain in force for the period specified in paragraph 8 below and unless a demand or claim in writing is made by the Authority on the Bank under this Guarantee all rights of the Authority under this Guarantee shall be forfeited and the Bank shall be relieved from its liabilities hereunder.
8. The Guarantee shall cease to be in force and effect on ****\$. Unless a demand or claim under this Guarantee is made in writing before expiry of the Guarantee, the Bank shall be discharged from its liabilities hereunder.
9. The Bank undertakes not to revoke this Guarantee during its currency, except with the previous express consent of the Authority in writing and declares and warrants that it has the power to issue this Guarantee and the undersigned has full powers to do so on behalf of the Bank.
10. Any notice by way of request, demand or otherwise hereunder may be sent by post addressed to the Bank at its above referred branch, which shall be deemed to have been duly authorised to receive such notice and to effect payment thereof forthwith, and if sent by post it shall be deemed to have been given at the time when it ought to have been delivered in due course of post and in proving such notice, when given by post, it shall be sufficient to prove that the envelope containing the notice was posted and a certificate signed by an officer of the Authority that the envelope was so posted shall be conclusive.
11. This Guarantee shall come into force with immediate effect and shall remain in force and effect for up to the date specified in paragraph 8 above or until it is released earlier by the Authority pursuant to the provisions of the Agreement.

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.

The address, telephone number and other details of the head office of the Bank as well as of issuing branch should be mentioned on the covering letter of issuing branch.

Annex – II

(Schedule - G)

(See Clause 19.2)

Form for Guarantee for Advance Payment

[Executive Director, National Highways & Infrastructure Development Corporation Limited, Jammu] 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**”) for **Rectification of Black Spots /Accident Prone locations on Batote-Khellani Road stretch by Installation of Metallic Crash Barrier, Road Signages, raising of outer earthen shoulders etc., along with Clearance of landslide & Snow on NH-244 in the UT of Jammu & Kashmir in F.Y 2024-25 on EPC mode** (the “**EPC**”) basis, 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 “**AdvancePayment**”) equal to 10% (ten percent) of the Contract Price; and that the Advance Payment shall be made in two instalments 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 instalment to remain effective till the complete and full repayment of the instalment of the Advance Payment as security for compliance with its obligations in accordance with the Agreement. The amount of {first/second} instalment 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:

The Bank hereby unconditionally and irrevocably guarantees the due and faithful repayment on time of the aforesaid instalment of the Advance Payment under and in accordance with the Agreement, and agrees and undertakes to pay to the Authority, 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.

1. 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.
2. 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.
3. 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.

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

4. 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.
5. 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.
6. 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.
7. 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.
8. 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.
9. 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.
10. 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.

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 guarantees should contain the name, designation and code number of the officer(s) signing the guarantee.

\$ 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).

- (ii) The address, telephone number and other details of the head office of the Bank as well as of issuing branch should be mentioned on the covering letter of issuing branch.

Annex – III

(Schedule - G)

(See Clause 7.5.v)

Form for Guarantee for Withdrawal of Retention Money

The Managing Director,
National Highways & Infrastructure Development Corporation Limited
New Delhi

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**”) for the construction of the ***** section of [National Highway No. **] on Engineering, Procurement and Construction (the “**EPC**”) basis, subject to and in accordance with the provisions of the Agreement.
- (B) In accordance with Clause 7.5.3 of the Agreement, the Contractor may withdraw the retention money (hereinafter called the “**Retention Money**”) after furnishing to the Authority a bank guarantee for an amount equal to the proposed withdrawal.
- (C) We, through our branch at (the “**Bank**”) have agreed to furnish this bank guarantee (hereinafter called the “**Guarantee**”) for the amount of Rs. - ----- cr. (Rs----- crore) (the “**Guarantee Amount**”).

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

1. The Bank hereby unconditionally and irrevocably undertakes to pay to the Authority, upon its mere first written demand, and without any demur, reservation, recourse, contest or protest, and without any reference to the Contractor, such sum or sums up to an aggregate sum of the Guarantee Amount as the Authority shall claim, without the Authority being required to prove or to show grounds or reasons for its demand and/or for the sum specified therein.
2. A letter from the Authority, under the hand of an officer not below the rank of General Manager in the National Highways & Infrastructure Development Corporation Limited (NHIDCL) , that the Contractor has committed default in the due and faithful performance of all or any of its obligations for under and in accordance with the Agreement shall be conclusive, final and binding on the Bank. The Bank further agrees that the Authority shall be the sole judge as to whether the Contractor is in default in due and faithful performance of its obligations during and under the Agreement and its decision that the Contractor is in

- default shall be final, and binding on the Bank, notwithstanding any differences between the Authority and the Contractor, or any dispute between them pending before any court, tribunal, arbitrators or any other authority or body, or by the discharge of the Contractor for any reason whatsoever.
3. In order to give effect to this Guarantee, the Authority shall be entitled to act as if the Bank were the principal debtor and any change in the constitution of the Contractor and/or the Bank, whether by their absorption with any other body or corporation or otherwise, shall not in any way or manner affect the liability or obligation of the Bank under this Guarantee.
 4. It shall not be necessary, and the Bank hereby waives any necessity, for the Authority to proceed against the Contractor before presenting to the Bank its demand under this Guarantee.
 5. The Authority shall have the liberty, without affecting in any manner the liability of the Bank under this Guarantee, to vary at any time, the terms and conditions of the Retention Money and any of the rights and powers exercisable by the Authority against the Contractor, and either to enforce or forbear from enforcing any of the terms and conditions contained in the Agreement and/or the securities available to the Authority, and the Bank shall not be released from its liability and obligation under these presents by any exercise by the Authority of the liberty with reference to the matters aforesaid or by reason of time being given to the Contractor or any other forbearance, indulgence, act or omission on the part of the Authority or of any other matter or thing whatsoever which under any law relating to sureties and guarantors would but for this provision have the effect of releasing the Bank from its liability and obligation under this Guarantee and the Bank hereby waives all of its rights under any such law.
 6. This Guarantee is in addition to and not in substitution of any other guarantee or security now or which may hereafter be held by the Authority in respect of or relating to the Retention Money.
 7. Notwithstanding anything contained hereinbefore, the liability of the Bank under this Guarantee is restricted to the Guarantee Amount and this Guarantee will remain in force for the period specified in paragraph 8 below and unless a demand or claim in writing is made by the Authority on the Bank under this Guarantee all rights of the Authority under this Guarantee shall be forfeited and the Bank shall be relieved from its liabilities hereunder.
 8. The Guarantee shall cease to be in force and effect 90 (ninety) days after the date of the Completion Certificate specified in Clause 12.4 of the Agreement.
 9. The Bank undertakes not to revoke this Guarantee during its currency, except with the previous express consent of the Authority in writing, and declares and warrants that it has the power to issue this Guarantee and the undersigned has full powers to do so on behalf of the Bank.

10. Any notice by way of request, demand or otherwise hereunder may be sent by post addressed to the Bank at its above referred branch, which shall be deemed to have been duly authorized to receive such notice and to effect payment thereof forthwith, and if sent by post it shall be deemed to have been given at the time when it ought to have been delivered in due course of post and in proving such notice, when given by post, it shall be sufficient to prove that the envelope containing the notice was posted and a certificate signed by an officer of the Authority that the envelope was so posted shall be conclusive.
11. This Guarantee shall come into force with immediate effect and shall remain in force and effect up to the date specified in paragraph 8 above or until it is released earlier by the Authority pursuant to the provisions of the Agreement.
12. This guarantee shall also be operatable at our Branch at New Delhi, from whom, confirmation regarding the issue of this guarantee or extension / renewal thereof shall be made available on demand. In the contingency of this guarantee being invoked and payment thereunder claimed, the said branch shall accept such invocation letter and make payment of amounts so demanded under the said invocation.
13. 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 NHIDCL, details of which is as under:

Sr. No.	Particulars	Details
1.	Name of Beneficiary	National Highways & Infrastructure Development Corporation Limited
2.	Beneficiary Bank Account No.	76411010002171
3.	Beneficiary Bank Branch Name and Address	Canara Bank, Channi-Himmat Branch. Canara Bank, Channi-Himmat, Jammu, J&K, 180015
4.	Beneficiary Bank Branch IFSC	CNRB0002975

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 See Clauses 10.1 (iv) and 19.3

Schedule - H

See Clause 10.1 (iv) & 19.3

Contract Price Weightages

- 1.1 The Contract Price for this Agreement is **Rs.** _____
- 1.2 Proportions of the Contract Price & Payment Procedure for different stages of Construction of the Project Highway shall be as specified below:

S.No.	Description of Stage For Payment	Percentage Weightage to the Contract Price	Percentage Weightage	Payment Procedure
1	Installation of Metallic Crash Barrier			
1.1	Providing and erecting a "Thrie" beam metal beam crash barrier complete in all respects	72.40%	49.00%	Unit of measurement is linear length. Payment of each stage shall be made on pro rata basis on completion of a stage in length 6% of total length.
1.2	Providing and erecting a "Modified Thrie" metal beam crash barrier complete in all respects		44.00%	
1.3	Extraction and Installation of already installed W Beam Metallic Crash Barrier complete in all respects		5.50%	
1.4	Tightening of posts with W-Beam of already installed metallic crash barrier by nuts and bolts		1.50%	
2	Inspection, auditing & repair of Bridges	10.50%		
2.1	Inspection & auditing of 05 Nos of bridges	2.00%	100.00%	Payment shall be released on the completion of Inspection (with Mobile Bridge Inspection Unit) & auditing of all the 05 Nos of Bridges.
2.2	Replacement of damaged expansion joints	5.50%	32.00%	Unit of measurement is Nos. Payment shall be released on completion of at least 50% of the total scope.
2.3	Replacement of damaged bearings		68.00%	Unit of measurement is in Nos. Payment of each stage shall be made on pro rata basis (i.e. no. of bearing changed/Total no. of bearings in all the existing bridges) on completion of at least 50% of total scope.
2.4	Installation of steel railings; Construction of RCC parapets; Painting using anti-corrosion paints; replacement of damaged deck slab panels; replacement of side bracings of the bridges falling in the reach; Replacement/Construction of damaged crash barrier, wing wall/retaining wall; laying of wearing course/surface course correction; other requisite measures in accordance with the Inspection & Audit report	3.00%	100.00%	Unit of measurement is linear length. Payment of each stage shall be made on pro rata basis on completion of a stage in length 6% of total length/scope.

3	Providing and Fixing / Installation of Retroreflective Tape (3 M) on posts of MCB mentioned at para-5.1.(f) of Schedule-B	0.29%	100.00%	Unit of measurement is linear length. Payment shall be released on the completion of job.
4	Providing and fixing of retro- reflectorised cautionary, mandatory, and informatory sign as per IRC :67 made of high intensity grade sheeting vide clause 801.3 complete in all respects	2.47%	100.00%	Cost of Chevron Sign Board shall be determined on pro rata basis with respect to Nos. of Chevron Sign Board installed i.e. not less than 10% of the Total Scope of Chevron Sign Board.
5	Installation of Hazard Marker/Object Hazard complete in all respects as per site requirement and as per AE Instructions.	0.40%	100.00%	Cost of Object Hazard/Hazard Marker shall be determined on pro rata basis subject to completion of not less than 25% of the Total Scope of Object Hazard.
6	Raising of outer earthen shoulder by construction of Retaining wall and Plum concrete as per site requirement and as per AE Instructions.	6.80%	100.00%	Unit of measurement is linear length. Payment of each stage shall be made on pro rata basis on completion of a stage in length 10% of total length.
7	Clearance of Landslides, Hill side drain clearance & white washing of parapets	5.50%		Payment of each stage shall be made on pro rata basis on completion of a stage work not less than 50% of total scope with respect to defined job & after certification by AE.
7.1	Clearance of Landslide & Hill side drain clearance		96.02%	
7.2	White washing of parapets & like structures such as face of Breast wall etc.		3.98%	
8	Clearance of Snow	1.50%	100.00%	Payment of shall be made once a year i.e. on 31.03.2025 based on the satisfactory certification by the GM (P)/AE.
9	Installation & erection of Over head Gantry at the site specified by the AE.	0.140%	100.00%	Payment shall be released on the completion of job.
GRAND TOTAL OF TABLE NO. (1+2+3+4+5+6+7+8+9)		100.00%		

2. Procedure for payment for Maintenance

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

2.2 Payment for Maintenance shall be made in quarterly instalments 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

1. The Project drawings, as defined in Clause 1.1, Definitions, Article 1, Definitions and Interpretation, Part-I: Preliminary, of the Contract Agreement shall consist:
 - (a) Working Drawings of all the components/elements of the Project as determined by Authority Engineer/Authority, and
 - (b) As-built drawings for the Project components/elements as determined by AE/Authority. As-built drawings shall be duly certified by Authority Engineer.
2. A minimum list of the drawings of the various components/elements of the Project and project facilities required to be submitted by the Contractor is given below:

A. STANDARD DRAWINGS

Detail of Mandatory Regulatory Signs
Detail of Mandatory Regulatory Signs & Compulsory Direction Control and Other Signs
Detail of Informatroy Signs
Detail of Cautionary Signs-TS
Detail of cautionary warning signs
Detail of cautionary warning signs
Details of route marking (chevron marking)
Details of road marking
Details of directional signs
Details Toe drain
Details of pitching, filter material, chute drain and energy dissipation basin-std
Details of double head metal beam crash barrier
Drain retaining wall & Plum concrete
Gabion wall

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 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 90th(Ninety days 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 30% (ten per cent) of the Contract Price.

3. Project Milestone-II

- (i) Project Milestone-I shall occur on the date falling on the 180th(One Hundred and eighty days from the Appointed Date) (the “**Project Milestone-II**”).
- (ii) Prior to the occurrence of Project Milestone-II, the Contractor shall have commenced construction of the Project Highway and submitted to the Authority duly and validly prepared Stage Payment Statements for an amount not less than 70% (ten per cent) of the Contract Price.

4. Scheduled Completion Date

- (i) The Scheduled Completion Date shall occur on the 270th(Three Hundred and Sixty Five) day from the Appointed Date.
- (ii) On or before the Scheduled Completion Date, the Contractor shall have completed construction in accordance with this Agreement.

5. 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

A. Road and Bridge

- (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 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.

B. Other Tests

- (i) 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.

- (ii) 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 of defects pavement	Network Survey Vehicle (NSV)	At least twice a year (As per survey months defined for the state basis rainy season)
2	Roughness of pavement	Network Survey 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.

6. 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 of defects pavement	Network Survey Vehicle (NSV)	At least twice a year (As per survey months defined for the state basis rainy season)
2	Roughness of pavement	Network Survey 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 **Rectification of Black Spots /Accident Prone locations on Batote-Khellani Road stretch by Installation of Metallic Crash Barrier, Road Signages, raising of outer earthen shoulders etc., along with Clearance of landslide & Snow on NH-244 in the UT of Jammu & Kashmir in F.Y 2024-25 on EPC mode** (the "**Project Highway**") on Engineering, Procurement and Construction (EPC) basis through (Name of Contractor), hereby certify that the Tests in accordance with Article 12 of the Agreement have been successfully undertaken to determine compliance of the Project Highway with the provisions of the Agreement, and I am satisfied that the Project Highway can be safely and reliably placed in service of the Users thereof.
- 2 It is certified that, in terms of the aforesaid Agreement, all works forming part of Project Highway have been completed, and the Project Highway is hereby declared fit for entry into operation on this the.....day of 20..., Scheduled Completed

Date for which was the day of20.....

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**

Deleted.

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 in to between the [name and address of the Authority] (the "Authority") and (the "Contractor") Rectification of Black Spots /Accident Prone locations on Batote-Khellani Road stretch by Installation of Metallic Crash Barrier, Road Signages, raising of outer earthen shoulders etc., along with Clearance of landslide & Snow on NH-244 in the UT of Jammu & Kashmir in F.Y 2024-25 on Engineering, Procurement, Construction (EPC) basis, 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

(v) in accordance with the provisions of Clause 18.2.

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 reasoned 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: Rs.

- (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 kilometer.

2. Visual and physical test

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

Schedule-R

(See Clause 14.10)

Taking Over Certificate

I, (Name and designation of the Authority's Representative) under and in accordance with the Agreement dated (the "Agreement"), for Rectification of Black Spots /Accident Prone locations on Batote-Khellani Road stretch by Installation of Metallic Crash Barrier, Road Signages, raising of outer earthen shoulders etc., along with Clearance of landslide & Snow on NH-244 in the UT of Jammu & Kashmir in F.Y 2024-25 on EPC mode (the "Project Highway") on Engineering, Procurement and Construction (EPC) basis through (Name of Contractor), hereby certify that the Tests on completion of Maintenance Period in accordance with Article 14 of the Agreement have been successfully undertaken to determine compliance of the Project Highway with the provisions of the Agreement and I hereby certify that the Authority has taken over the Project highway from the Contractor on this day.....

SIGNED, SEALED AND DELIVERED

(Signature)

(Name and designation of Authority's Representative)

(Address)

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