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Ropeways and Rapid Transport System Development Corporation HP Ltd.
प्रदूषण मुक्त यातायात के लिए हिमाचल की पहल

ADDENDUM

Subject: - **Development, Operations and Maintenance of Passenger Ropeway from Narkanda to Hatu Peak, Distt. Shimla on Design, Build, Finance, Operate and Transfer (DBFOT) Mode.**

In continuation to this office tender notice No. RTDC/Shimla Parwanoo/2023/3664-65 dated 01-02-2025, an addendum to include Vol- 3 schedules as part of tender documents is hereby issued for the development of subject cited ropeway. The bidders are requested to download the Vol-3 schedules and ensure that their submissions comply with the requirement outlined therein.

MUNISH SAHANI Digitally signed by MUNISH SAHANI Date: 2025.02.15 17:26:36 +05'30'

(Er. Munish Sahni)
Deputy General Manager
Ropeway & Rapid Transport System
Development Corporation, H.P. Ltd.
US, Club, Shimla-1

No. RTDC/Shimla Parwanoo/2023/**3902** Dated: **15** /02/2025

Copy forwarded to: -

1. The Director RTDC, for information please.

MUNISH SAHANI Digitally signed by MUNISH SAHANI Date: 2025.02.15 17:27:12 +05'30'

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RTDC
(A Government of Himachal Pradesh Undertaking)
Ropeways and Rapid Transport System Development Corporation HP Ltd.
प्रदूषण मुक्त यातायात के लिए हिमाचल की पहल

Ropeways and Rapid Transport System Development Corporation

Development, Operations and Maintenance of Passenger Ropeway from Narkanda to Hatu Peak, Distt. Shimla on Design, Build, Finance, Operate and Transfer (DBFOT) Mode

SCHEDULES
VOLUME-3

February 2025

RTDC
Ropeways and Rapid Transport System Development Corporation HP Ltd.

ROPEWAYS AND RAPID TRANSPORT SYSTEM DEVELOPMENT CORPORATION H.P. Ltd. (RTDC)

U.S. Club, Shimla, Himachal Pradesh

SCHEDULE- A

SITE OF THE PROJECT

1. The Site

1.1 Site of the Ropeway is the allingment along with aerial distances between the proposed stations described in Annex-I of this Schedule-A.

1.2 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 Concessionaire, and such inventory shall form part of the memorandum referred to in Clause 10.3 of the Agreement.

1.3 The authority with it's due diligence has proposed following alignment plan

Name of Station	Coordinates	Aerial Distance
Narkanda	31°15'01.80"N 77°28'07.90"E	3.10 K.M
Hatu Peak (Shimla)	31°14'36.60"N 77°30'01.50"E	

UTM coordinates of the Ropeway alignment along with aerial distances between the proposed stations is shown in Annex -I of Schedule A. However, concessionaire is allowed to have the flexibility to change the tower location longitudinally as well laterally along with the alignment keeping the both terminal station location intact at Narkanda and Hatu Peak at Shimla as shown in plan with respect to it's UTM coordinates.

Annex – I

(Schedule-A)

Site for the Project Ropeway

2. Site for the Project Ropeway

The Ropeway shall be operated between Narkanda and Hatu peak at shimla. The Ropeway alignment along with aerial distances between the proposed stations are described in the subsequent paragraphs.

3. Description of the Ropeway Project

3.1 The authority with it's due diligence as proposed following alignment plan

FROM	TO	COORDINATES	Area detail	AERIAL DISTANCE
Narkanda	**Hatu Peak (Shimla)**	**Narkanda** – 31°15'01.80"N 77°28'07.90"E	2 hectares	3.10 km
Hatu Peak (Shimla)	**Narkanda**	**Hatu Peak (Shimla)**- 31°14'36.60"N 77°30'01.50"E	1 hectare	

NOTE: Land for tower shall be allocated/diverted after the concessionaire freezes the design and alignment of the ropeway.

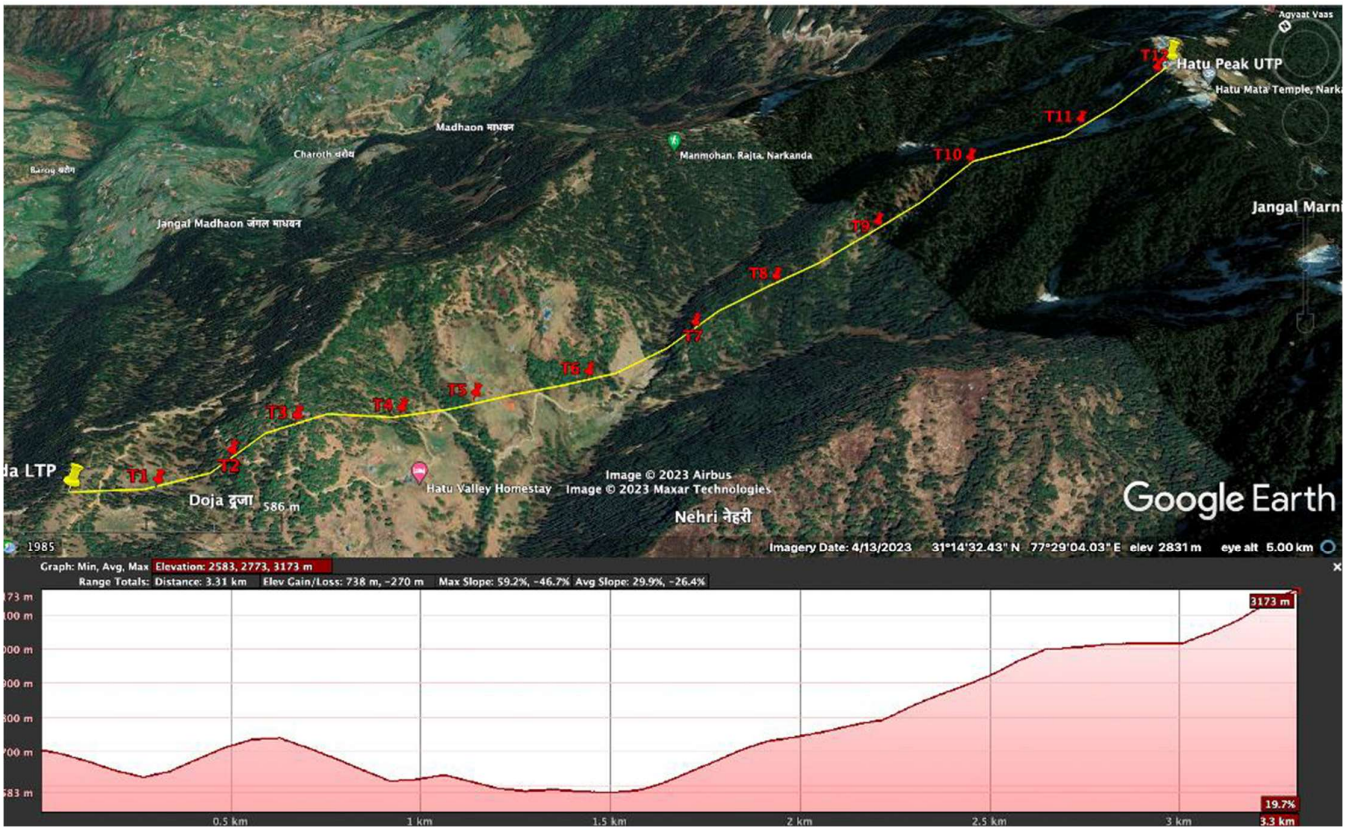
UTM coordinates with respective zone of the Ropeway alignment Ropeway alignment along with aerial distances between the proposed stations etc. is shown Annex -I of Schedule A. However concessionaire is allowed to have the flexibility to change the tower location longitudinally as well laterally along with the alignment keeping the station location as shown above with respect to it's UTM coordinates.

The intermediate station as proposed either can be considered by concessionaire or concessionaire may explore the options at their end. However, the location of ITPs have to be kept intact as per the proposed locations at Narkanda and Hatu Peak at Shimla with boarding & de- boarding facilities

The coordinate system is in UTM, and Shimla Zone is falling 43n

4. Alignment Plan

a) The alignment of ropeway project is shown below:



b) The coordinates of proposed centerline of ropeway are shown in the table below. The details of alignment as proposed below for reference only.

Name of Station	Coordinates	Aerial Distance
Narkanda	31°15'01.80"N 77°28'07.90"E	3.10 K.M
Hatu Peak (Shimla)	31°14'36.60"N 77°30'01.50"E	

5. Seismic Zone

The Project site is in Seismic Zone V.

6. Details Of Existing Utilities

In case of case any unidentified utilities, are encountered, the same will be facilitated by the authority and shall be shifted by the concessionaire. The cost of utility shifting shall be borne by the concessionaire.

**Right of Use - sufficiently covering the corridor width covering the required rope gauge, outer edges of the gondola cabins including*

permissible swing and setback as per codal requirement and accommodating the further cushion for working space of material ropeway.

Note:

Utility shifting is the obligation of Concessionaire. Shifting of the same shall be undertaken by the concessionaire as per the approved plan by concerned state/central department.

SCHEDULE-B

(See Clause 2.1) DEVELOPMENT OF THE ROPEWAY PROJECT

1. Development of the Ropeway

Ropeway Project shall include the Development, Operation and Maintenance of Passenger Ropeway from Narkanda to Hatu Peak, Distt. Shimla on Design, Build, Finance, Operate and Transfer (DBFOT) Mode in the State of Himachal Pradesh as described in this Schedule-B and in Schedule-C.

2. Project Ropeway (Minimum 1000 PPHPD)

Project ropeway shall include construction of ropeway with 3S (Tri-Cable detachable gondola technology)/MDG or ATW or equivalent or better technology of 3.10 KM length as described in Annexure-I of Schedule B and Annexure-I of Schedule C.

The Ropeway Project shall be Designed and Constructed by the Concessionaire in conformity with the Specifications and Standards specified in Schedule-D.

3. Development of allied infrastructures

The allied infrastructures shall be as follows:

a. Boarding and Deboarding
b. Gondola Parking Area
c. Ticket Counters
d. Parking Areas for passenger and freight
e. Waiting Areas
f. Lifts
g. Staircase
h. Toilet Facilities
i. Drinking Water Facility
j. Restaurants
k. Shopping Areas/Kiosks
l. Kids Play Area

m. DG Backup
n. Cloak Rooms
a. Lodging and Accommodation
b. Commercial Areas and freight storage areas
c. Administration
d. Medical Facility
e. Security
f. Basic infrastructural facilities like sewage system, drinking water, medical facilities, electricity, telecommunication etc.
g. Hotel Facilities (other than on forest land).
h. Beautification of station premises.

The Concessionaire may develop parking, eco tourism, restaurants or other commercial facilities on the designated government land, provided that such land is available, unencumbered, and free from any existing legal, contractual, or third-party claims. This right shall be subject to compliance with all applicable laws, regulations, and approvals from the relevant authorities, and shall not create any proprietary rights or interests beyond the terms stipulated in the concession agreement.

Annex-I (Schedule-B)
DESCRIPTION OF PROJECT

1. Project Details

1.1 Alignment:

Total length of the Ropeway Narkanda to Hatu Peak, Distt. Shimla project is 3.10 Km. The alignment is proposed into 1 sections as per the details given below.

Sr.no.	Station Between	Technology
Sec -I	Narkanda to Hatu Peak	3S (Tri-Cable detachable gondola technology) /MDG/ATW

Note:-

- The alignment and station location has been suggested considering the best possible scenario. However, authority provides the flexibility to the bidder to propose/modify the alignment. The boarding and deboarding stations have to be kept as proposed by the authority.
- The concessionaire can shift the alignment/towers based on their design adhering all statutory safety norms as per the applicable codal requirement. The cost of such land acquisition and clearances shall be borne by the authority.
- Once the no objection on the submitted alignment is given by the Authority, no subsequent change in alignment will be permitted. However, in unavoidable circumstances where the changes in alignment in inevitable, the concessionaire has to acquire the additional land and obtain all the clearances at his own cost.
- The concessionaire shall submit the final location of alignment with outer boundaries of respective station within 2 months from the signing of agreement for no objection from Authority.
- Capacity as proposed by the authority is minimum 1000 PPHPD.

Concessionaire can design the height of the tower as per the requirement ensuring minimum required vertical distance between height of the building/trees and bottom of the Gondola. For clarification, the distance between bottom of gondola and top of the tree line shall be kept in accordance with applicable code.

2. Ropeway Stations

Total 2 stations are proposed on the Ropeway alignment at locations as mentioned below:

Name of Station	Coordinates	Aerial Distance	Area Detail
Narkanda	31°15'01.80"N 77°28'07.90"E	3.10 K.M	2 hectares
Hatu Peak (Shimla)	31°14'36.60"N 77°30'01.50"E		1 hectare

Note: Land for tower shall be allocated/diverted after the concessionaire freezes the design and alignment of the ropeway.

The proposed stations footprint along with plot area is provided as under:-

Station Number	Name of Station	Minimum Parking required (ECS) (in nos.)	Other Facilities
S1	**Narkanda**	1000	Boarding/ De-boarding area, passenger lift, waiting area, car parking, ticket office along with Gandola parking.
S2	**Hatu Peak (Shimla)**	NIL	Boarding/ De-boarding area, Eco-tourism activities.

1	The suggested minimum ECS for parking and other facilities as indicated above shall be developed by the Concessionaire and provisioned accordingly in the final layout prepared by it.
2	The Concessionaire may develop alternative plans within the land provided by Authority, which will be examined by the Independent Engineer and approved by Authority.

A Proper connectivity of min 2.5m wide from proposed ropeway station wherever required is to be provided for the safe and easy access for the passengers in case of extreme urgency during vertical rescue operation and for routine maintenance purpose. Refer IRC : SP:63 and manual of specifications & standard.

2.1 Station Details

Total 2 stations are proposed on the Ropeway alignment as mentioned below. The coordinate system is UTM (Universal Transverse Mercator) and Shimla zone is 43n.

FROM	TO	COORDINATES	AERIAL DISTANCE
1 – **Narkanda**	2- **Hatu Peak (Shimla)**	**Narkanda** – 31°15'01.80"N 77°28'07.90"E	3.10 km
2- **Hatu Peak (Shimla)**	1- **Narkanda**	**Hatu Peak (Shimla)**- 31°14'36.60"N 77°30'01.50"E	

The project facilities in the station shall be provided in conformity with Schedule C following the standards and specifications as given in Schedule D.

Note : The concessionaire is free to optimize the station layout maintaining the required level of services.

2.2 Tower Details

Necessary protection for towers such as shotcrete, welded wire mesh, soil nail, drainage hole, geotextile, protection from avalanche or may suitable protection necessary must be provided.

In addition to the protection at tower location, a proper protection for toe at riverbed and slope need to be done to ensure full safety of the slope. All the items for protection for towers and other slope are part of the scope of concessionaire.

Safety of passengers is of prime importance; hence Concessionaire shall ensure that entire ropeway alignment including stations and towers are safe against land slide, avalanche, rock falling, high wind speed, earthquake, torrential rains, lighting etc. Suitable protection measures shall be adopted to safeguard the passengers and ropeway system.

2.3 Connecting Path to Towers

A Proper connectivity of min 2.5m wide from proposed towers wherever required is to be provided for the safe and easy access for the passengers in case of extreme urgency for rescue operation. In case of change of the location of the tower/station, proper path is to be constructed with the same specifications and requirements and will be submitted along with the final design.

3. Capacity Augmentation

i. Initial Capacity Requirement: The Concessionaire shall ensure a minimum operational capacity of 1,000 Passengers Per Hour Per Direction (PPHPD) during the first year of operations.

ii. Capacity Augmentation: The Concessionaire may enhance the system capacity up to 3,000 PPHPD in accordance with demand projections, technical feasibility, and regulatory approvals.

The specified capacity figures are indicative, and the Concessionaire shall undertake its own independent assessment to determine the required capacity expansion. Any augmentation shall be subject to compliance with applicable laws, approvals from

relevant authorities, and adherence to the terms of the Concession Agreement.

4. Technical features of Ropeway Project:

i. Capacity of the Ropeway System: The Ropeway system shall be designed at the threshold capacity of min. 1000 PPHPD.

ii. Technology for the Ropeway system: The Ropeway system is to be designed on Tri Cable Detachable Gondola (3S) technology or MDG or ATW. No change in the technology part is recommended, however, better technology may be adopted in consultation with independent engineer/authority.

iii. No. of Gondolas on the Ropeway system:

a) As per concession agreement the Concessionaire has to ensure the deployment of gondolas along with hangers and grips/carriage at the COD (commercial operation date) catering to minimum 1000 PPHPD.

iv. Travelling Speed: The ropeway system shall be designed for the maximum speed of 8.0 m/s. During Emergency, the Operation speed of the Ropeway system will be 1.0 m/s (max). Travel speed in the station shall be up-to 0.30 m/s at the boarding area. The concessionaire is free to do the detailed engineering of the system as per the technical requirement conforming to relevant specification, however the PPHPD requirement (i.e., minimum 1000 PPHPD) as proposed by the Authority cannot be altered. It will be responsibility of the concessionaire to ensure required PPHPD and available number of

Gondolas

v. Vertical Clearance from the existing object/ground/building profile: The minimum vertical clearance between from bottom of the cabin from GL is proposed to be maintained proposed as per applicable code. At stretch of ascending/descending near the ropeway station the minimum vertical clearance is proposed as per applicable code

5. Technical Parameters of Ropeway System

5.1 The following technical parameters shall be adhered to:

Sr. No	Description	Details
1	System	Tri-Cable Detachable Gondola System (3S lift)/MDG/ATW
2	Total Section	1 Nos
3	Minimum Capacity	1000 PPHPD
4	Maximum designed Line speed	8.0 m / sec
5	Length	3.10 km
6	Alignment	As per Contour Plan & Longitudinal section
7	Proposed Cabin capacity	As per Design
8	Number of Towers	As per Design
9	Compressor	At least one in each station of requisite capacity

Sr. No	Description	Details
10	Type of cabin	Cabin with ventilation and roof insulation and automatic door operation
11	Rope diameter	As per design by Concessionaire
14	Stand by D.G. set	The capacity of the DG set(s) to be provided should be sufficiently capable to cater the system operation at its designed speed and entire building operating load (except for HVAC) in case of failure of regular power supply
15	Availability of Power supply Stations	415V+10%, 50+3% Cycles, 3 Phase
16	Humidity	68 % (Average)
17	Rainfall	Avg rainfall 999.64mm
18	Earthquake zone as per IS code	Zone V
19	Max. Wind speed reported	As per relevant data
20	Operating hours	12 hours per day
21	Operating modes	1. Single Operation with regular 3 phase supply 2. During power failure with DG set capable of operating the ropeway at maximum design speed 3. With integrated recovery system at 1.5 m/s
22	Recovery System/Rescue System	Integrated rescue system / Recovery concept

Note:

i) The values for ropeway length and ground levels are approximate and may vary during the detailed design.

ii) All components of the ropeway system & other equipment shall be designed for trouble free operation as required in actual climatic conditions prevalent at site.

iii) Concessionaire will identify and arrange area/location for rope splicing and storage of material along the alignment as per his construction methodology.

iv) The above parameters are based on the design by the authority, subjected to change as per the design of the concessionaire. However, following to be noted while designing: -

- **a)** Passengers in the gondola to be seated
- **b)** Concessionaire to maintain the level of service for minimum 1000 PPHPD
- **c)** Cabin should be with ventilation, roof insulation and automatic opening and closing door

v) The Data provided by the authority (Hard as well as soft copies) is best to the availability. However, bidders to get his own assessment before bidding for the project.

6. Change Of Scope

The actual areas shall have to be determined by the Concessionaire in accordance

with the Specifications and Standards. Any increase in the areas specified in this Schedule B shall not constitute the Change of Scope.

Appendix 1

Annexure-I

Schedule B

L-Section

(Not in use)

Appendix 2
Annexure-I

Schedule B

STATION DETAILS

Name of Station	Coordinates	Aerial Distance	Area Detail
Narkanda	31°15‘01.80“N 77°28’07.90“E	3.10 K.M	2 hectares
Hatu Peak (Shimla)	31°14’36.60“N 77°30‘01.50“E		1 hectare

Appendix 2

Annexure-I

Schedule B

STATION DETAILS

Layout of Stations

(For Reference Purpose Only)
(not in use)

Appendix 3

Annexure-I

Schedule B

STATION DETAILS

Typical Tower Foundation Plan

(For Reference Purpose Only)

deleted

Annexure II

(Schedule B)

CAPACITY AUGMENTATION

1. Initial Capacity Requirement: The Concessionaire shall ensure a minimum operational capacity of 1,000 Passengers Per Hour Per Direction (PPHPD) during the first year of operations.

2. Capacity Augmentation: The Concessionaire may enhance the system capacity up to 3,000 PPHPD in accordance with demand projections, technical feasibility, and regulatory approvals.

The specified capacity figures are indicative, and the Concessionaire shall undertake its own independent assessment to determine the required capacity expansion. Any augmentation shall be subject to compliance with applicable laws, approvals from relevant authorities, and adherence to the terms of the Concession Agreement.

SCHEDULE – C

(See Clause 2.1)

PROJECT FACILITIES

1. Project Facilities

The Concessionaire shall construct the Project Facilities in accordance with the provisions of this RFP and subsequent Agreement. Such project facilities shall be conformed to (but not limited to) latest NBC, Ropeway Manuals, Railway Manual and relevant standards/ codes wherever applicable. The detailed list is also appended in Schedule -D.

2. Project facilities for Narkanda to Hatu Peak, Distt. Shimla Ropeway project

Project Facilities forming part of the Ropeway project and to be completed on or before the Project Completion Date have been described in Annex-I of this Schedule-C.

Annex - I

(Schedule-C)

Project Facilities for Ropeway Project

Project Facilities

The Concessionaire shall construct the Project Facilities in Station premises as described in this Annex-I to form part of the Ropeway Project. Such project facilities shall include (but not limited to) as per latest NBC Standards, Ropeway Manuals, Railway Manual and relevant standards/codes wherever applicable:

(1) Ticketing

a. Ticket counters/booths
b. Ticket vending machines
c. QR Code
d. NCMC- National Common Mobility Card
e. Digi yatra or latest technology
f. Automatic ticket entry gates (standard and extra wide for wheelchair)

(2) Passenger facility

a. Stairways
b. Escalators
c. Elevators
d. Wheelchair ramps
e. Toilets (Male, Female and Differently abled)
f. Waiting Halls for passengers
g. Spaces for retail zone, refreshment facilities and tourism information desk
h. Cloak room
i. First-aid room

(3) Public information and address systems at Stations

a. Public address systems
b. Public information systems
c. Public access telephones / emergency telephones
d. Booth for safety staff

(4) Landscaping and Beautification

a. Plantation of trees, bushes and plants

(5) Staff facilities

a. Staff room including facilities for having meals
b. Staff toilets
c. First aid for staff

(6) Parking facilities

a. All stations must provide minimum parking facilities as specified above and based on site availability.

(7) All other facilities as indicated below:

Description of Project Facilities

Sr. No.	Facility	Description
1	**Ticketing**	
a	Ticket counters / booths as required	Ticket counters shall be provided at each station where boarding and deboarding takes place. ticket counters booth shall be equipped at minimum with: • Adequate numbers of queuing lane and exit lane • Front desk with glass divider between staff and passengers • Ergonomically chairs for staff • Microphone and loudspeaker for exchange between staff and passenger, Power supply for IT system, light, microphone, loudspeaker etc. • IT system including o Centralized server unit including back-up system o PC unit connected to centralized server, o ticketing software, o ticket printing machine / ticket printer. A group of ticket counter booths (i.e. one group is e.g. ticket counter booths at one station as shown in layout drawings) shall be equipped with: • High Speed Internet connection • Storage space / and shelves (paper, blank tickets) • A4 paper size printer plus scanner (one per group of ticket booth)

b	Ticket vending machines	At each station for boarding and deboarding, self-service ticket vending machines shall be located which are connected to the centralized server and vending software / IT. Minimum functions available at self-service ticket vending machines shall be: • Buying of single ride and return tickets for single persons, multiple persons / group • Printing of tickets purchased in advance (e.g. online), identified through code (numeric code) • Payment via debit and credit cards, e-wallet, digital payment method and similar Operation via touch screen. • Scanning of pre-purchase code
c	Automatic ticket entry gates	At each station for boarding and deboarding, automatic entry gates shall be located which are connected to the centralized server and vending software / IT. Minimum functions of automatic entry gates shall be: • Ticket scanning function for (e.g.) QR code recognizing tickets printed at booths, ticket vending machines as well as pre-purchased tickets displayed on mobile phone • Turnstiles • Display showing status of turnstiles o Entrance accepted = turnstile open: Green Arrow o Entrance not yet accepted = turnstile closed: Red Cross • Connection to display of station manager on duty for identification of problems, ticket category One automatic gate per station shall be extra wide for wheel chair, extra-large luggage and baby-trolley access
2	**Passenger Facilities**	
a	Stairways	At each location, stairways shall be provided. Generally, staircases shall be as per detailed specification but having the following minimum functions. • Handrail on each side • Central handrail serving as divider for boarding and de-boarding passengers • Anti-slip flooring • Width sufficient for full hourly capacity plus 10% reserve • Rest-podium every 12 steps

b	Escalators	As per detailed specifications
c	Elevators	As per detailed specifications
d	Wheelchair ramps	At all locations with steps / stairs and elevator available, wheel chair ramps shall be provided. • Maximum gradient of 6% (in case of not-sufficient space, this maximum gradient can be increased subject to a detailed evaluation and justification respectively if additional support facilities are provided). • Every maximum 6m ramp length, a rest podium of minimum 1.50m length is to be provided • Ramp width shall be minimum 1.50m Handrails are to be provided on both sides of the ramp
e	Waiting Halls and Passenger Rest Areas	Waiting halls and rest areas shall be provided at stations. Minimum facilities but not limited to for all the station shall be: • Provisions for seating • General and emergency lighting • Dust-bins • Mobile re-charge points and power sockets • Public Wifi • Water dispenser • General and emergency signage • Clock • Public address system • Safety system (fire alarm, extinguishers) • Ventilators
f	Toilets (Female, Male and Differently abled)	Minimum equipment for toilets / washrooms shall be: • Closed cabins with flushing toilet plus flushing hose • Pissoirs (male) • Washing basins • Mirrors • Hand drying facilities • Storage for cleaning equipment • Baby facilities • Power sockets For Differently abled separate special closed cabins shall be provided equipped in addition with: • Extra space suitable for wheelchairs and caring person • Handrail • Emergency communication system

g	Spaces for ATM	Spaces for ATM is to be provided. All spaces are to be equipped with • Internet connection / connection as required by ATM system providers Power sockets
h	Spaces for retail zone, refreshment facilities and tourism information desk, if provided	All areas for retail and refreshment zone shall be at minimum equipped with: • Power supply • Water supply • Connection to sewage system • Internet access points • One queuing lane and one exit lane • Front desk with glass divider between staff and passengers • Ergonomically chairs for staff • Microphone and loudspeaker for exchange between staff and passenger • Power supply for IT system, light, microphone, loudspeaker etc. • IT system including o Centralized server unit including back-up system o PC unit connected to centralized server • High Speed Internet connection • Storage space / and shelves (paper, blank tickets) • A4 paper size printer plus scanner At stations as per approved by the authority for boarding and deboarding, temporary baggage storage facilities shall be provided. Minimum facilities - but not limited too shall be:
i	Cloak room	• One queuing lane and one exit lane • Front desk with glass divider between staff and passengers • Ergonomically chairs for staff • Microphone and loudspeaker for exchange between staff and passenger • Power supply for IT system, light, microphone, loudspeaker etc. • IT system including o Centralized server unit including back-up system o PC unit connected to centralized server o ticketing software, o ticket printing machine / ticket printer,

j	First aid room	Medical aid booths shall be provided at each station. An Ambulance will also be provided at desired station for emergency purpose
3	**Public information and address**	
a	Public address systems	A public address system is to be provided in each station and along the ropeway line
b	Public information systems	An information address system is to be provided in each station consisting of guidance signs, emergency rout signs, general information signs etc.
c	Public access telephones / emergency telephones	At each passenger waiting and address area / hall and elevators emergency address system for passengers shall be available which immediate connection to a safety control center.
d	Booth for safety staff	For station safety and security staff, booths shall be provided at each passenger and staff entrance.
4	**Landscaping & Beautification**	
a	Plantation of trees, bushes and plants	Landscaping and beautification with trees, bushes and plants shall be done as per layouts.
5	**Staff Facilities**	
a	Rest room including facilities for having meals	At each station rest areas for staff shall be provided. Minimum facilities -but not limited too -shall be: • Provisions for seating along with tables • General and emergency lighting • Dust-bins • Power sockets • Water dispenser • General and emergency signage • Clock • Public address system • Safety system (fire alarm, extinguishers) • Ventilators

b	Staff toilets	Minimum equipment for toilets / washrooms shall be: • Closed cabins with flushing toilet plus flushing hose • Pissoirs (male) • Washing basins • Mirrors • Hand drying facilities • Cabin for cleaning equipment
c	Medical aid for staff	Medical aid facility shall be provided at each station
6	GRIHA/IGBC compliant facility at all stations	All provisions to be made to make each station GRIHA/IGBC compliant including solar generation, wastewater treatment, sewage disposal treatment and re-use, ground water recharge systems, rain water harvesting system and inclusion of making each station Net-Zero in all respects shall be made.
7	Architectural detailing	Each station is designed to represent a unique character and flavour to highlight the local material, it's culture and heritage. All provisions to be made to ensure detailing of materials, joinery and details in order to and strictly adhere to the drawing concepts given by the architects and no deviations shall be permitted in the designs.
8	Station & tower Construction	The stations and all towers (Foundations, structures etc) have to be designed to take the load of the Ropeway System. Necessary safety and protective measures of the entire ropeway system as and when required shall be the priority at all times.
9	Make In India	Certain components are proposed under Make in India scheme such as the Steel for the Towers, steel Cladding at the Stations, station building with steel, DG sets, Diesel engine, electrical installation, earthing all civil work etc.

Equipment Details

Equipment	Unit	Narkanda	Hatu Peak
Baggage Scanners	Nos.	01	01
Walk Through Metal Detector Body Scanner	Nos.	02	02
Hand Held Metal detector	Nos.	02	01
Automatic ticket vending machine	Nos.	01	01

Equipment	Unit	Narkanda	Hatu Peak
CCTV (on each floor)	Nos.	05	05
Access control Gate (entry + Exit)	Nos.	02	02
Display Screen	Nos.	02	01
Announcement Speakers	Nos.	02	02
Minimum No. of PCs	Nos.	02	02
Parking – ECS (minimum)	Nos.	1000	NIL

The concessionaire is required to install the systems to cater to the expected passenger load and the defined KPI's in the Concession agreement. The minimum equipment's to be installed by Concessionaire for the operation at each Ropeway Station (2 Stations) shall be as above. For avoidance of doubt, Concessionaire shall design the facility as per the flow of passengers and install the adequate number of equipment's/lifts/escalators/amenities considering the ultimate capacity of the ropeway. The list provided below is indicative, exact number of equipment shall be finalized based on the final design.

In addition, the manning for handling all these equipment's for checking of the passengers and their luggage and for security of the entire station buildings and entire ropeway project shall be ensured by the concessionaire at its own cost. For clarity, Concessionaire shall deploy entire manpower for operation and maintenance of stations and entire ropeway system except the ticket collection staff.

Mechanical, Electrical and Plumbing (MEP)

S. No	Item Name	Total Quantity
	Major E&M head	
1	Station level 5 MVA S/S infrastructure / RMU	As per design
2	Station level 3.15 MVA S/S infrastructure / RMU	As per design
3	Station level 2.5 MVA CSS / RMU	As per design
4	Station level 1.5 MVA CSS / RMU	As per design
5	Station level 0.75 MVA CSS / RMU	As per design
6	DG 200 kVA	As per design
7	DG 375 kVA	As per design
8	DG 750 kVA	As per design
9	Lift small	As per design
10	Lift big	As per design
11	Escalator	As per design
12	Lightning protection	As per design
13	Earthing	As per design
14	Light	As per design

S. No	Item Name	Total Quantity
15	Small power	As per design
16	Wiring	As per design
17	Ups	As per design
18	Air conditioning	As per design
19	AFC & Baggage scanner	As per design
20	External lighting	As per design
21	Plumbing fixtures	As per design
22	Fire fighting system	As per design
23	Aviation lights	As per design
24	Signages	As per design
25	FA,CCTV & Network	As per design
26	Statuary Approvals	As per design

Solar Electricity:

Concessionaire is required to install entire rooftop area of each station (except the roof top area utilised for installation of necessary equipment's/machines) with solar panel and utilise the solar electricity for station operation.

Factory Acceptance Tests (FAT):

Factory Acceptance Tests shall be performed on equipments and plants in compliance with the Conditions of Contract, the Technical Specifications, the applicable Standards and Regulations and the Contractor's Quality Assurance Plan.

The Contractor shall submit detailed FAT programmes, procedure and schedules subjected to approval by or Authority's Engineer.

The following FAT shall be witnessed by the Authority or Authority's Engineer.

i. Drive Machinery

ii. Carriers

iii. Bull wheels, Cabins, sheaves

iv. Drive assembly (Main and emergency)

v. Braking system (hydraulic)

vi. DG sets

vii. Other mechanical and electronic devices

Note: Towers shall be supplied with FAT test results. Contractor shall get them approved from Authority or Engineer after mobilizing to site prior to erection.

The Contractor shall make all necessary arrangements for upto two

representatives of Authority or Engineer to participate in the FAT.

It is estimated that each FAT in average will take 7days + travel days.

The Contractor has to arrange International round-trip flight tickets, local transportation, accommodations and food at the place of the FAT and per diem allowances to two representatives during the FAT. The Contractor has to confirm with the Authority about rates of per diem during FAT.

The Contractor shall also make arrangements for Operation and Maintenance Training of upto two engineers of the Authority for a minimum period of two weeks on ropeway operation.

The Contractor shall make available all relevant Standards and regulations at least 15 days prior to visit.

SCHEDULE – D

SPECIFICATIONS AND STANDARDS

1. Construction

The Contractor shall comply with the Specifications and Standards set forth in Annex-II of this Schedule-D for construction of the Ropeway Project.

2. Design Standards

The Project Ropeway including Project Facilities shall conform to design requirements set out in the following documents mentioned in this schedule.

Annex-I

SCHEDULE – D

TECHNICAL SPECIFICATIONS

1. General Principle:

1.1. The design, installation and operation & maintenance of the ropeway project shall be in accordance with relevant BIS Codes for civil works to be read in conjunction with CEN Codes for electromechanical works. In case BIS standard is silent in any aspect of the project, CEN code should be followed. In case there is any conflict between the two standards, the CEN code shall prevail.

1.2. Further in addition the necessary provisions as given in Himachal Pradesh ropeway Act 1968 (with latest amendments) along with National Building Codes Regulations (latest amendments) shall also be followed.

1.3. All Materials, works and construction operations shall conform to the Specifications and Standards Specifications. Where the specification for a work is not given, Good Industry Practice shall be adopted to the satisfaction of the Authority's Engineer.

1.4. An indicative list of Indian and International Laws, Codes, Standards, and Specifications is given below for reference. Actual application of the following codes and standards will be defined in the respective sections of the manual.

2. Design and Its Specifications.

2.1. The technical specification as defined in the following paragraphs are indicative but not limited to the following and the Concessionaire shall carry out all the necessary design items of work for the successful completion and commissioning of the ropeway project;

i. Survey for route alignment,
ii. Preparation of longitudinal section and plan
iii. Preparation of profile drawings
iv. Requisite soil geo technical investigation as per relevant BIS codes at proposed tower location and end terminals to determine parameters for designing the foundations against super imposed loads and to obviate existence of any important geological faults across the alignment. The report of such investigations shall be submitted to the Independent Engineer for approval of locations and safe bearing capacities. (Soil investigation should be in the form of bore holes and at least three bores at each terminal and one at each tower locations should be done). A geotechnical investigation report is enclosed in bid documents for reference of bidder.
v. Detailed designs and drawings for system, stations, foundation, Tower structures, buildings including architectural drawings along with specifications for materials etc. and their approval from Independent Engineer.

vi. The concessionaire will design the station in 3D model by BIM modeling (Building information modeling) for all the stations and Towers in collaboration with different specialized engineers such as architects, structural, etc to understand the different parameters such as the actual height of the proposed ropeway buildings/towers, boundary of proposed stations/towers, distance from nearby utilities/buildings/ different structures. The construction of towers and stations will also be managed by the BIM model.

vii. All protection measures like retaining wall, pitching etc. (as may be required and approved by Independent Engineer) including supply and construction.

viii. Any special precautionary measures required, for concreting in inclement weather, like use of super plasticizer, special shuttering, heating of water, coarse and fine aggregate and insulation.

ix. Final location of towers & stations by actual lay out on the ground. Details of station and tower locations are as considered in Annexure 1of Schedule B.

x. Manufacturing, supply, transportation and erection of towers and structures etc.

xi. A 3rd Party inspection report of the supplied material must be ensure by the concessionaire.

xii. Works for completion of tower erection, station buildings and other structures of passenger ropeway system.

xiii. Accessibility for maintenance of all structures shall be provided at stations and line trestles and other related structures.

xiv. Fabrication, supply of all plants, materials, equipment, safeties, integrated rescue arrangement and vertical rescue system in accordance with the specifications mentioned in Schedule D.

xv. Execution of all Civil Engineering works i. e terminal and intermediate stations, trestles foundation etc. including its slope protection work.

xvi. Installation and erection of all plants and equipment for the system.

xvii. Supply of standby DG sets of requisite capacity as approved by Independent Engineer commensurate with the location and its altitude with suitable change over arrangement from grid.

xviii. Provide internal and external electrification of ropeway terminals including supply & fixtures and lamps, ventilation, public address system shall comply with the specifications in schedule D. The State Authority will provide power to the main panel room at terminal and intermediate stations.

xix. Utility connection of the station buildings to be done in co-ordination with local civil body at the cost of the Concessionaire with all labor and materials.

xx. Provide independent mode of communication for operation, between stations as described in schedule D.

xxi. Provide fire extinguishers as per local regulations in the station buildings as described in Schedule D.

xxii. Control system consisting of drive including PLC controls and electrical control panel for ropeway system as per the specifications in schedule D. Variable Voltage Variable Frequency controlled AC drives suitable for regenerative braking may also be offered. Details are elobarated at Schedule -D

xxiii. Provide completion report and supply 5 copies of Operation and Maintenance Manuals along with one complete set of reproducible completion drawings in English only.

xxiv. Testing, commissioning, safety certification and handing over of the complete ropeway project.

xxv. Operation and maintenance of the complete ropeway systems for concession period from COD that include all men, materials and cost of power consumed and fuel for the backup generator(s).

xxvi. Guaranteed performance of the system for twelve months from the date of COMMISSIONING.

xxvii. Technical Training (as per items, given below) to the Authority personnel (3 persons) during running of the system for minimum 15 days to the satisfaction of Authority

xxviii. Supply of Tools & Tackles and Spare parts to be maintained during the concession period as per the list attached (Appendix B).

xxix. The authority shall arrange the uninterrupted power supply arrangements upto the step-down transformer point at each station location at the cost authority. Further voltage stepping down & connection to the individual station transformer and upto the panel shall be done by the concessionaire.

The bidder should assess the ropeway alignment and cost for making their own arrangement for availability of water for construction and power at both the terminals as well as at line. The cost of making temporary approaches to all work location, if any, should be assessed and included by the bidder while submitting the bid.

3. Applicable codes

3.1 Design and Construction of Buildings

Design and construction of station building shall adhere to the following codes.

i. National Building Code (India)
ii. Ancient Monuments Preservation Act (India)
iii. Ancient Monuments and Archaeological Sites and Remains Act, 1958
iv. India Disability Act
v. Earthquake Code (India)
vi. The Energy and Resource Institute (India)
vii. The Indian Electricity Rules, 1956 and The Indian Electricity Act, 2003
viii. Indian Electricity Rule 1956
ix. Inflammable Substances Act 1962
x. Guidelines and Space Standards for Barrier Free Built Environment for Disabled and Elderly Persons, 1998, Centre Public Works Department (CPWD), Ministry of Urban Affairs and Employment, (India)
xi. Indian Standard Hand Book on steel sections Part-I
xii. Indian Railway Manual on Design and Construction of well and pile foundations
xiii. International Building Code (IBC)
xiv. ME – A 17.1, Safety Code for Elevators and Escalators (USA)
xv. ISO 9001 (latest revision), International Standards Organization, Standard for Quality
xvi. Building and other Construction Workers' Welfare Cess Act, 1996 and Central Rules, 1998 (India)
xvii. The Workmen's Compensation Act, 1923 along with Allied Rules (India)
xviii. The Payment of Wages Act, 1936 (India)
xix. The Minimum Wages Act, 1948 and Rules 1950 (India)
xx. Contract Labour Act, 1970 and Rules 1971 (India)
xxi. Child Labour (Prohibitions and Regulations) Act, 1986 and Rules 1950 (India)
xxii. IRC: SP: 55 2001 Guidelines for Safety in Construction Zones xxiii) Notification, Central Ground Water Board, Act January 1997

3.2 Design, Construction and O&M of Ropeway

i. Continuous Movement Bicable /Tricable Ropeways with Detachable Grip — Code of Practice IS 17232: 2019
ii. Acceptance & certification criteria for design and const of all types of ropeways intended for transportation of passenger 17233:2019
iii. Operation and maintenance of all types of ropeways intended for transportation of passenger – code of practice IS 17234:2019
iv. Magnetic rope testing (MRT)-specification IS 17235:2019
v. Prevention and safety against fire in ropeways -code of practice IS 17236:2019
vi. Safety requirements for ropeways installation, design to carry persons – Quality Control IS 17238: 2019
vii. Safety requirement for drives used for installation for passenger transportation IS 17239:2019
viii. Corrosion protection of iron and steel section used in passenger ropeways – code of practice IS 17240:2019
ix. Calculation for design of ropeway installation intended for transportation of passenger- code of practice IS 17405:2020
x. Transportation, storage, installation and tensioning of wire rope for passenger ropeway - code of practice IS 17406:2020
xi. Material Handling Ropeways-Code of Practice, 970

3.3 CEN Standards

i. Ropeway regulation 2016/424 EC
ii. EN 1709: Safety requirements for cableway installations designed to carry persons: Pre- commissioning inspection, maintenance, operational inspection and checks 2019
iii. EN 1907: Safety requirements for cableway installations designed to carry persons – Terminology 2018
iv. EN 1908: Safety requirements for cableway installations designed to carry persons: Tensioning devices 2015
v. EN 1909: Safety requirements for cableway installations designed to carry persons: Recovery and evacuation 2017
vi. EN 12385-8: Steel wire ropes - Safety - Part 8: Stranded hauling and carrying-hauling ropes for cableway installations designed to carry persons 2003
vii. EN 12385-9: Steel wire ropes - Safety - Part 9: Locked coil carrying ropes for cableway installations designed to carry persons 2003
viii. EN 12397: Safety requirements for cableway installations designed to carry persons: Operation 2017.
ix. EN 12408: Safety requirements for cableway installations designed to carry persons: Quality control 2005
x. EN 12927: Safety requirements for cableway installations designed to carry persons: Ropes 2019
xi. EN 12929-1: Safety requirements for cableway installations designed to carry persons: General requirements: Part 1: Requirements for all installations 2015
xii. EN 12929-2: Safety requirements for cableway installations designed to carry persons: General requirements: Part 2: Additional requirements for reversible bicable aerial ropeways without carrier truck brakes 2015
xiii. EN 12930: Safety requirements for cableway installations designed to carry

persons: Calculations 2015.

xiv. EN 13107: Safety requirements for cableway installations designed to carry persons: Civil engineering works 2016

xv. EN 13223: Safety requirements for cableway installations designed to carry persons: Drive systems and other mechanical equipment 2015

xvi. EN 13243: Safety requirements for cableway installations designed to carry persons - Electrical equipment other than for drive systems 2015

xvii. EN 13796-1: Safety requirements for cableway installations designed to carry persons: Carriers: Part 1: Grips, carrier trucks, on-board brakes, cabins, chairs, carriages, maintenance carriers, tow- hangers 2017

xviii. EN 13796-2: Safety requirements for cableway installations designed to carry persons: Carriers:

xix. Part 2: Slipping resistance test for grips 2017

xx. EN 13796-3: Safety requirements for cableway installations designed to carry persons: Carriers:

xxi. Part 3: Fatigue tests 2017

xxii. EN ISO 12944: Paints and varnishes —Corrosion protection of steel structures by protective paint systems

xxiii. EN 17064: Safety requirements for cableway installations designed to carry persons - Prevention and fight against fire 2019

xxiv. EN 1090: Execution of Steel and Aluminum Structures

xxv. EN 1993: Design of Steel Structure

4. Facilities Requirements

The sources of all utilities such as Water Supply, Solid Waste Management generated by work force, Temporary Electrical Supply etc. during construction and operation & maintenance shall be procured/arranged by the Concessionaire. The Concessionaire shall obtain the necessary permissions from the State Authority/ies.

5. Detailed Specification

Detailed Specification for the Ropeway Project is given as under in Appendix A of Annexure I of Schedule D.

Annex-II

SCHEDULE – D TECHNICAL

SPECIFICATIONS

1. Drive, Intermediate and Return

1.1 The complete drive station must consist of the followings:

i. Operating Floor with Boarding, de-boarding facilities
ii. Main drive with AC motors with variable speed and Gear box or with option of Direct Drive
iii. Acceleration and deceleration arrangement
iv. Machinery frame for gearbox and electric motor
v. Drive Bull wheel
vi. Deflection bull wheels
vii. Main electric cabinets with controls
viii. Emergency drive unit by an auxiliary motor, driven by generator, connected to the main bull wheel through a teeth crown
ix. Auxiliary power generator unit
x. Electrical, Service and emergency brake units
xi. Integrated Recovery system for rescue
xii. Parking of cabins
xiii. Mast for station
xiv. Cabin guide
xv. Operators' cabin / panel room which should be designed to provide unimpeded view of operations.
xvi. Office
xvii. Store

1.2 The complete return station must consist of the followings:

i. Operating Floor with Boarding, De-boarding facilities
ii. Return Bull wheel
iii. Placement of Tensioning arrangement equipment etc.: - The tension system can be realized with hydraulic cylinders, counterweigh or fixed anchored system
iv. Operators' cabin / panel room which should be designed to provide unimpeded view of operations.
v. Parking of cabins
vi. Mast for station
vii. Cabin guides

Note: The housing details must adhere to:

i. The roof structural supports shall not be used for integration of load from the system.
ii. RCC foundations and columns
iii. The operation floor will be made of RCC slab finished with polished kota stone, while parking area would be finished with flooring.
iv. Roofing supported on tubular type portal PEB structure with runner and covered

with square fluted steel roof cladding over the drive equipments, station mechanicals, cabin parking lot etc.

v. The clear height of underside of roof truss from operating and parking floor level of the station area will be 7.0 m.

vi. The station machinery, such as, mechanical parts of the driving gear, electrical equipment, ropes and cabins shall not be source of danger to the passengers and ropeways personnel.

vii. Sufficient glazing on sliding type aluminum frame with glass (6 mm thick minimum) on the sides of the floors need to be provided to allow view of the surroundings.

1.3 All stations shall be equipped adequately with sensors to detect any anomaly to the safe and comfort movement cabins

2. Electromechanical arrangements

2.1 Drive arrangement shall comprise but not limited to the followings;

2.1.1 Drive unit

2.1.1.1 Bridge drive adjustable/ Floor mounted

i) The drive is provided by a drive motor via a gearbox onto a vertically arranged shaft, or Direct Drive which leads to the bull wheel. The performance data of the gearbox and drive motor can be found in the data sheet.

ii) A machine frame to hold the gearbox, the main drive motor(s), the necessary flywheel masses and the safety brake.

iii) Provision of bull wheel catcher to be made.

iv) A drive shaft for transmitting power from the gearbox to the sheave with separation options at the sheave. A steel structure at station support level to accommodate the drive bull wheel incl. bearings and safety brakes. One drive bull wheel incl. bearing, including catcher, diameter according to data sheet, with lining.

v) A fully enclosed main reduction gear running in an oil bath with gear heating as well as oil filling

a) The operating temperature of the lubricating oil must not exceed 40°C.

b) The connection for an additional transmission oil filter is included in the offer price.

c) Appropriate equipment for lubricating the gearbox must be provided to enable emergency operation at reduced driving speed even in the event of a power failure.

Or

Bridge drive direct drive

Additional or reduced price for the design of the drive as slow speed drive. In this item, a drive system with a slow-running drive motor without gearing (n= approx. 18-22/min, depending on the drive bull-wheel diameter) is used. This item includes the following items which differ from item of Bridge drive adjustable/ Floor mounted i) to iv).

a) Gearbox omitted

b) Drive frame for a slow-running electric motor without gearbox.

2.1.1.2 Requirements along with Drive arrangements

i. Flywheel mass to achieve a max. inherent deceleration (fully open/empty down) of 0.6 m/s2.
ii. All couplings necessary for power transmission.
iii. All necessary monitoring, e.g., position of sheave, position of coupling.
iv. Emergency drive by means of water-cooled diesel engine, hydrostatic power transmission for stepless control of travel speed up to v = 1.0 m/s in both Driving directions. The emergency drive is located on the drive bridge.
v. Auxiliary power generator to operate the ropeway with deigned speed in case of power supply failure
vi. The power transmission of the emergency drive is hydrostatic via a gear rim directly to the drive bull wheel.
vii. A machine frame to accommodate the emergency drive diesel engine incl. radiator, oil sump, oil tank.
viii. The emergency drive is operated from the command room and alternatively from the drive bridge.
ix. Frame for the emergency drive motor as well as all necessary hydraulic lines, connections, oil cooler, oil fillings, etc., for ready-to-use assembly.
x. Control devices for the emergency drive.
xi. All necessary assembly Towers via gearboxes and motors, ladders, and safety equipment. The subsequent assembly or disassembly of all drive components for maintenance or repair must be possible without the aid of a mobile crane.
xii. Required inserts, anchor bolts incl. subframe and gauges for relocation.
xiii. The drive bridge, including any rope deflectors, must be designed to be movable. In general, the regulations according to applicable codes must be observed.

2.1.1.3 Deceleration and acceleration

This shall include the followings.

i. Coupling and deceleration device incl. the necessary steel construction. The deceleration device is to be driven in the stations directly from the sheave or the haul rope.
ii. Transport facility:
iii. Transport device for transporting the arriving driving equipment, from the uncoupling to the Coupling, with forced detection of the driving equipment to maintain the vehicle distance.
    - Drive of the transport device,
    - Guidance and control equipment for the Carriers.
    - Any drive motors and controls that may be required.
iv. The speed of entry and exit must be below the limits as prescribed in applicable standards. In the interest of comfortable and safe boarding and alighting, station speeds should be minimised.
v. The station speeds as well as the entry and exit areas are to be designed as comfortably as possible.
vi. Coupling and acceleration device with the necessary steel structures. The drive in

the stations should be as direct as possible from the haul rope or sheave.

2.2 Tensioning device

2.2.1 For Haulage Rope

A hydraulic tensioning device is to be provided for the regulation of the constant rope tensioning force. The scope of delivery essentially includes:

a. A mobile frame to hold the return bull-wheel incl. bearing. To safeguard against the overshooting moment of deflection, bull-wheel catcher shall be provided.
b. All equipment of the hydraulic system that is necessary for the proper functioning of the guy wire, such as pump, pressure accumulator, hydraulic cylinder, control, lines, etc. The system must include a device to maintain the system pressure, e.g., load holding valve or double cylinder.
c. Alternatively, a mechanical system with tensioning weight is also possible; a mixed hydraulic/ mechanical system is not permitted.
d. The hauling rope should be electrically insulated. The insulation control should check right operation and exact position of the hauling cable as well track rope. When cable car is stopped, the hauling cable must be shunted to earth.

2.2.2 For Track Rope

All necessary assembly girders, working platforms, ladders and safety equipment. Required inserts, anchor bolts incl. subframes and gauges for relocation to be provided.

In general, the regulations according to relevant standard must be observed as given in schedule "D".

Generally, in the DRIVE terminal track ropes are anchored in individual transition sockets by cones and wedges at one end while the other end is fitted with tension screw and nut to facilitate the hydraulic type tensioning through hydraulic jack and hand pump. Pressure gauge with adopter to be provided in the circuit, to monitor tension.

In the RETURN terminal all the four track ropes wounds by at least three rounds over a wooden lined vertical Bollard for anchoring. After winding on vertical circular "Bollard" all individual track ropes are further to be anchored through rope glands bearing against double-channeled frame grouted.

The track rope should be electrically insulated. The insulation control should check right operation.

2.3 Cabin, Hanger and Grips

2.3.1 Cabin for passengers

This shall comprise but not limited to the of followings;

i) Service life for the cabin shall be a minimum of 30 years. The cabin shall be aesthetically pleasing from exteriors and interiors and shall conform to the highest safety standards internationally.
ii) The structural frame should be made of aluminium. All exposed aluminium elements to be anodised or painted.
iii) The cabin door opening and closing shall be fully automated with smooth closing and opening providing comfort as per best international standards
iv) Suitable devices shall be provided so that when the cabin is in motion, it cannot be opened from inside.
v) Top-hung window on mast side. Installation Additional top-hung window on outside.
vi) Cabin seats should be of stainless-steel seats (similar in metro) with provision of sufficient nos. of Grab Handles.
vii) For desired configuration in seating arrangement, necessary approval shall be taken from Authority.
viii) For special dignitaries, a provision of total of 2 nos. additional VIP cabins shall be procured with imitation leather with back rest.
ix) The Cabins and VIP Cabin shall be got approved by Authority before procurement by the Concessionaire
x) Ropeway cabins, statically designed for four-point suspension
xi) The cabins must have adequate large glass windows on all sides that create a pleasant viewing experience for riders.
xii) The cabin must be designed to comfortably hold the weight of the required person per cabin, LWI (level walk in) with seats for all passengers per cabin. The cabin shall be equipped with sufficient numbers of suspended hooks (similar to metro coaches).
xiii) Design of the cabin for seated passenger transport, internal clear height of min 2.20 m incl. step board for level access from the platform podium ("Level Walk In" design).
xiv) Entire painting inside and outside, hot-dip galvanising of the parts at risk of corrosion. Interior surfaces in a wear-resistant and condensation-absorbing design of the interior fittings in accordance with the applicable fire protection regulations.
xv) Cabin lettering or colouring shall be conveyed by the authority.
xvi) Complete mechanism for automatic opening and closing of the doors (folding or sliding doors)
xvii) The cabins have a pair of doors on one side that slide. Door opening width : ≥1300 ; to facilitate a convenient loading and unloading of the passengers and the goods.
xviii) Door must allow easy entrance and exit of passengers including handicapped.
xix) At least one of the cabins should be equipped with the platform and the hand railings in the top for the purpose of maintenance.
xx) Lighting system for the cabin in the ceiling area for operation in the dark, including wiring and lighting units.
xxi) Cabins travel at approximately 0.25 m/s – 0.30 m/s in station areas when the doors are open to allow comfortable boarding and alighting. The cabin doors typically remain open for approx. 98 seconds. The cabin floor is at the same elevation as the station platform. The gap between the cabin and the platform is carefully adjusted to meet all accessibility standards.
xxii) Door position detectors and locked door detectors.

2.3.2 Cabin for Luggage

i) 4 nos. of luggage cabin shall be provided.
ii) Maximum pay load shall be 1 ton approx..
iii) The structural frame should be made of aluminum. All exposed aluminum elements to be anodized or painted.
iv) Cabins will not be provided with seating arrangement. Instead cabins shall be provided with tracks moving on rails for keeping the Luggage and other bagged materials.
v) Cabin floors may be provided with rail arrangements for movement of racks over it.
vi) The cabins shall have a complete closed cabin with small window glass on one side. Cabins travel at approximately 0.1 m/s – 0.30 m/s in station areas when the doors are open to allow comfortable loading and unloading of luggage.
vii) The cabin doors will be open manually and remain open in boarding and e-boarding area during the loading and unloading of luggage and material. The cabin floor is at the same elevation as the station platform. The gap between the cabin and the platform is carefully adjusted for easy movements of racks at stations.

2.3.3 Hanger, Carriage & Grip

2.3.2.1 The cabin is suspended from the carriage through a hanger made of high strength steel. A provision shall be made in the hanger for dampening the longitudinal swing of the cabin. Hangers of cabin and all other exposed components shall be hot dip galvanized as per relevant standard.

2.3.2.2 The carriage shall be of high stress steel with Al/Zn surface protection and paint code. The details of carriage frame and wheel equipped with the train shall be indicated in the bid. Carriage wheels shall be mounted with rubber linings (similar to semprit liners) and ball bearings to provide a noiseless operation.

2.3.2.3 The grip devices for cabins may only be designed in a system certified according to the relevant applicable standard. The grip-force are to be limited to the max.;

a) The slope of the track must be coordinated.
b) The grip-devices are to be offered in hot-dip galvanized design.

2.3.2.4 Important requirements of Cabin, Carriage and Hanger are desired as:

- For all components constituting the Cabin, Carriage and Hanger the safety factor shall be as per relevant code.
- The hangers shall have sufficient length so that it allows free passing of the cabin on the trestle, station, and line considering the side clearance.

2.4 Communication system

a) Telephone system needs to be provided for communication with each station and line. The system basically consists of wall mounted/Desk mounted sets (2 Nos. for each station), loudspeaker and amplifier. 2 Nos. portable sets will be provided for communication with line.
b) The wireless system (4 Nos. handsets) needs to be provided to communicate while

maintenance / rescue operation on line and for other reasons, when communication through telephone system will not be possible.

c) Multi-channel intercom system will be installed at Lower station for communication between two stations operating and security personnel.

d) Control/communication cables to be laid along with a catenary rope between two terminals.

e) Independent communication cable with catenary cable support to be used to connect the stations and the towers.

f) Cables should be resistant to bad weather conditions and also in accordance with the international regulations.

3 **Saddle:** Track ropes would be supported on saddles at station and line. Saddle should be fitted with replaceable Brass liner. The material specification shall be having appropriate guaranteed Charpy value at -25 degree centigrade as per the relevant Indian standard or equivalent CEN standard.

4 **Mounts and Line Sheave assembly including liner:** Mounts and line sheave shall be provided. The material specification shall be having appropriate guaranteed Charpy value at -25 degree centigrade as per the standard.

5 **Brake**: This shall comprise but not limited to the of followings;

a) Two types of brakes are to be provided: service brake and emergency brake. This shall also be catered with the provision of electrical stop.

b) Service brake and safety brake should be mounted on the high-speed axle and the drive bull wheel separately. Brake hydraulics should be electric drive with hand pump. The safety brake should be able to be controlled manually on the control panel or the other control positions. In the case of using a direct drive, both brakes can be placed on the drive bull wheel. At least the service brakes should acting as regulated brake.

c) Hydraulic or electric service brakes shall be provided with the necessary control and actuating devices, frames, etc. The control of the braking system is intended to ensure the most even deceleration possible, regardless of the load, by combining the braking systems.

The brake system must comply with the relevant standard and be accepted by the supervisory authority. Emergency brakes shall be provided with the necessary control and actuating devices, frames, etc. The control of the braking system is intended to ensure the most even deceleration possible, regardless of the load, by combining the braking systems.

The brakes must be operated even in the condition of failure, regular power supply and DG set or with Emergency drive.

6. Sheave assemblies

a) All sheave assemblies are to be equipped with switch pulleys, rope catchers and rupture rod switches. The suspension on the prop yoke must ensure easy adjustment.

b) Maintenance platforms for the sheave assembly, each uphill and downhill side. The platforms must be adapted to the respective rope inclination, steps made of grating, entire construction in hot dip galvanised.

c) Execution of the stairs and landings according to the regulations for the protection of workers.

d) Fixed pipes for routing the electrical cables are to be provided on the support beams of the roller batteries. The system must be able to be operated at full driving speed in the event of failure of any optional electronic rope position monitoring.

7. Sag carrier

Provision of adequate numbers of sag carrier conforming to steel sustaining at -25 degree centigrade. This shall comprise but not limited to the of followings;

i. Wind warning System

Wind warning devices on any support with transducer for wind direction and-speed, incl. evaluation and display in the drive station.

ii. Limit Switch

This shall facilitate the following safety measures;

a) Electronic rope position monitoring mechanical part

b) The system must detect the exact position of the Haul rope and track rope (in case of lateral movement) selectively detect the leaving of the groove for each sheave assembly or brass liners on track rope and

c) issue it as a warning.
In the event of failure of one or more breaking rods on the line, it shall be possible to operate the system at full driving speed only with the

d) electronic rope position monitoring function. The system shall be designed to handle local lightning strikes without loss of function.

e) Electronic rope position monitoring system on the sheave assemblies (uphill and downhill side) incl. the necessary wiring per prop.

f) A test gauge for functional testing of the system on the support is to be

All safeties must be actuated in the event of failure of regular power supply and when the system runs on DG set or with Emergency drive.

8. Control devices for Ropeway system

8.1. The control devices must comply applicable standard be certified by a notified body. The following data must be processed as a minimum:

i) Main power supply should be designed as 220/415 V 50 Hz AC.

ii) For Main Motor; V= 0-8,0 mt/sec speed AC Motor.

iii) All indications on the display and the error logged control panel should be in

English language.

iv) Error messages of the safety circuits (stop, emergency stop, emergency stop-BB, emergency stop- SB).

v) Main functions of the whole facility, the working positions, wind speed & direction and the safety system should be displayed from a monitor visually.

vi) Initial error display

vii) General operating data such as starting conditions, driving speed, condition of the safety and service brakes,

viii) Wind speed and direction

ix) Data of the run-through protection (all counter values, limit values min./max.,...)

x) all data from the regulatory bodies

xi) Recording of the braking curves (print, save)

xii) Selective rope position monitoring

xiii) Tripping of line in case of snapping of haulage rope

xiv) Operation and visualisation via OPC panel or own PC

- Display of fault messages in plain text, overview images with up-to-date display of operating states, vehicle marking on any vehicle.
- All data necessary for the operation of the system must be displayed in both stations via this visualisation.

xv) Furthermore, the test functions such as for the drive-through protection or the drive are carried out via the touch screen control panel

xvi) Drive station control for controlling and monitoring the main drive incl.

- Programmable logic controller for master control and setpoint preparation
- Programmable logic controller for control and monitoring of the auxiliary drives
- Programmable logic controller for entry, passage and exit monitoring station as well as for distance regulation
- the control cabinet is spatially separated from the low-voltage room in the control room incl. the necessary equipment for driving with unoccupied remote station
- Control Desk with color display (HMI panel minimum 12”)
- It must be possible to set the control to at least 3 freely selectable vehicle distances.
- Brake control
- Brake simulation
- Operating mode fire travel
- Safety system track
- Integration of the emergency drive control into the contouring control system
- Integration of the gripping force test into the web control system
- Integration of the monitoring for the opening and closing of the Carriers into the ropeway control system
- Scope of delivery incl. all required operating switches, Beros, measuring instruments, intermediate terminal boxes, etc..
- Communication system between upper station, cabins and bottom station.
- Power supply of cabins when on station buffer
- Detector, speed generators
- Independent impulse generators for distance control
- Independent impulse generators for speed control
- Haulage rope magnetic control device

xvii) Return station control incl.

- Programmable logic controller for master control and setpoint preparation
- Programmable logic controller for control and monitoring of the auxiliary drives
- Programmable logic controller for entry, passage and exit monitoring station as well as for distance regulation
- the control cabinet is placed in the duty room
- incl. the necessary equipment for driving with unmanned drive station
- Integration of the hydraulic tensioning control into the web control system
- Integration of the monitoring for the opening and closing of the Carriers into the ropeway control system
- Integration of the station control system (station garaging) incl. lifting platform into the ropeway control system
- Control Desk with color display (HMI panel minimum 12")
- Scope of delivery incl. all required operating switches, Beros, measuring instruments, intermediate terminal boxes, etc.
- Control cabinet
- Communication system with drive station
- Tensioning device with over-stroke detectors

xviii) Intermediate station control incl.

- Programmable logic controller for control and monitoring of the auxiliary drives

xix) Programmable logic controller for entry, passage and exit monitoring station as well as for distance regulation

- Any control cabinet must be protected from the weather.
- Scope of delivery incl. all required operating switches, Beros, measuring instruments, intermediate terminal boxes, etc..

8.2. The system speed, the positions of the stations, the positions of the sensors at all stations (drive, return) with the fault log (of each equipment with number of the faults occurred), main power current, voltage, frequency datas and also current, voltage and frequency datas for the auxiliary power supply, motor current, rope speed, wind speed, tensioning system, garage line, the number of the visitors, daily operation report and the report log should be also displayed from the main system monitor.

8.3. All the positions of the rope in which the sensors determine, should be displayed from the monitor and in case of any difficulty or danger on operating system caused by the position of rope, the system should decelerate or even stop the system in case of necessity.

8.4. Safety functions should be protected against the errors and programmable (fail safe) and also suitable for the IEC regulations.

8.5. In a case of fault occur in the system, it should be designed to continue working either on pivotal or auxiliary systems.

8.6. There should be test button or system in order to check malfunction of the lamps and indicators related with the operating and the safety of the whole system.

8.7. There should be remote control panels for the main functions of the system such as service and emergency brake, deceleration, stop, start etc should be

located in the boarding platforms of each drive station.

8.8. Separately from the main monitor, at least the below datas should be seen on the main panel:

- Main voltage & currents
- Control voltage & currents
- Emergency power supply voltage & currents
- Working hour
- Motor voltage & currents
- Brake positions
- Towers and errors
- Tension in rope
- Error and test system of related indicators
- Wind speed and direction
- Return station panel

8.9. Led lamps should be used for lighting.

8.10. Reactive panels should be placed in the required locations.

8.11. Arrangement to arrest the regeneration developed in the system

9. Standby DG at Drive station, return stations and Technical (deflection) stations

9.1. DG set of requisite capacity commensurate with the location and its altitude with suitable change over arrangement from grid. The system performance must be sufficiently dimensioned to ensure the supply of the ropeway system including garage and the power supply of the station buildings.

10. Other Station facilities

The following electrical equipment is to be included in this item, in each case incl. Power supply and wiring:

- Emergency drive control
- Grip force test
- Hydraulic tensioning
- Garaging including manual charging of cabins
- Communication system cabin – station equipment

11. Operator's cabin at station

One operators' cabin each should be provided within the station housing which should be designed to provide unimpeded view of operations.

12. Evacuation facilities

12.1. Integrated recovery

a. In the "Integrated recovery", the return of passengers in the event of a defect or malfunction takes place exclusively by running the ropeway system empty.

b. Empty travel of the ropeway installation can basically be carried out with the main drive, the emergency drive in the drive station and a second, independent emergency drive in the return station.
c. The clearing of the track differs from conventional driving with emergency drive in that in the event of various malfunctions on the track, in the station and of the emergency drive itself, these must first be rectified, or the second emergency drive must be commissioned in the drive and return station as well.
d. The following incident categories must be covered by appropriate organisational and/or technical measures (no claim to completeness):
   - Incidents in the station, e.g., failure of conveying equipment
   - Failure of rope-guiding elements (rope sheaves, station rollers, etc.) Failures of the drive or the reversing device, among others.
   - Failure of individual components of the drive (drive, emergency drive, brakes, etc.) or the entire drive station Failure of the tensioning devices Faults on the line, including earth fault monitoring Rope derailment due to wind throw or similar

12.2. Vertical evacuation equipment

The scope of delivery essentially includes in limited numbers catering the rescue only near to the station but not limited to the followings in:

a. In the event that the integrated recovery concept does not work, an emergency concept with vertical evacuation shall be prepared for evacuation of passengers near to stations. The necessary recovery equipment is to be included in this position. Evacuation equipment having provisions and dimensions similar to that of GAME system in a design can be used for the ropeway and in the required number for autonomous salvage. The required number and specification shall be procured after approval of the Authority. No change of scope is admissible in this regard
b. In the event of an incident on the line, the staff member will reach the individual support points by means of a cable travel device from the top station or on foot from the bottom station along the line.
c. Due to the geometry of alignment, one drive must be provided for each recovery unit. Incl. preparation of the recovery plan.

13. Equipment, tools & spare parts

13.1 Inspection vehicle, maintenance hangers

Inspection vehicle including hanger and grips along with maintenance equipment's and tensioning arrangements complete (2 Nos.) for carrying out inspection work, min. payload approx. 500 kg.

13.2 Tools

Set of complete special tools and equipment for, among other things, maintenance of the tensioning apparatus and the sheave assemblies (replacement of the rubber rings), Grease guns and other special tools, e.g. dynamometer for 2 t to be maintained at site during concession period (refer Appendix B of Schedule B).

13.3 **Spare parts ropeway technology**

Spare parts in this item are the bearing components recommended by the manufacturer to maintain operational readiness (components to cover short-term failures) - refer Appendix B of Schedule B).

14. Maintenance workshop

A suitable size (minimum 100 sq. m) of work area is proposed to be provided at station (as approved by the authority). The concessionaire however to choose to plan the location themselves. All necessary maintenance tools and cranes must be installed and delivered. The floor will be 40mm (minimum) cement concrete Industrial flooring and should be laid over sand filling, PCC. The maintenance area shall be fitted with adequate nos. of standard wooden/ steel doors and windows that will ensure sufficient ventilation, daylights, safety and facilities for material handling.

15. Earthing and other material

15.1 Earthing and lightning protection system for the Towers incl. transition terminals from the foundation, execution in accordance with the applicable regulations in stainless steel.

15.2 Earthing and lightning protection system for the ropeway equipment of the drive and counter station. Earthing and lightning protection for foundations, building structures, roof and hall steel structures is provided by the customer.

16. Remote Control stations

Supply of one remote control unit per station. This enables the shutdown of the system from any point within the starting area. Further functions are to be specified by the bidder.

17. Speech memory 2 languages (English and Hindi language)

Speech memory for playing back 8 ready-made messages in 2 languages via the trackside loudspeakers or via WLAN and intercom system incl. all necessary hardware and software.

18. Electrical Devices

Delivery of the following equipment for installation in the Station areas; the listed Control desks and platform boxes are based on completed projects, any necessary additions and changes are to be included in the position:

18.1. Batteries and Charging equipment

- Batteries and charging equipment Control of valley and mountain station, if necessary, deflection angle station. The 24V/DC supply of the control is done via the station batteries.
- The station batteries are dimensioned so that the system can be

operated with the emergency drive for at least 3.5 hours in the event of a power failure.

- A trickle charger is installed for the battery of the emergency drive motor.

18.2. Station panels

Supply of station panels for drive, tensioning, deflection and intermediate stations. The exact number and scope is to be specified by the bidder in the offer:

- Panels, among others with the following functions - Stop, Emergency Stop, Emergency Stop SB, Start, Ready, Slow, Telephone Socket, Free Lamp, Ready Lamp, Loudspeaker System with Intercom Unit for Station and Line Speakers
- Platform boxes to the extent required, including the following functions - Stop, Emergency Stop, Emergency Stop SB, Start, Departure, Slow, Telephone Socket, Free Lamp, Ready Lamp
- Safety switch
- Telephone sockets
- Earthing rod
- Trackside spotlight
- Rotating beacons, signalling devices and horns in erf. Number
- Modem for remote maintenance

18.3. Station wiring

All cables for the necessary connections within the scope of delivery, in particular

- Between drive and switching device
- Between low-voltage main distribution board and main ropeway distribution board Distance according to planning documents
- Between low-voltage and transformer equipment Distance according to planning documents
- Between converter and drive motor Distance according to plan documents
- Connection to the control and monitoring equipment
- Complete wiring of the scope of delivery in the drive and counter station and the deflection angle station
- Execution of the cabling in the transition to the station building rodent protected.

Electrical cables should be resistant to bad weather conditions and also in accordance with the international regulations.

Electrical cables should be resistant to bad weather conditions and also in accordance with the international regulations.

18.4. Telephone and signaling system consisting essentially of:

i) Telephone system needs to be provided for communication with each station and line. The system basically consists of wall mounted/Desk mounted sets (2 Nos. for each station), loudspeaker and amplifier. 2 Nos. portable sets will be provided for communication with line.

1. The wireless system (4 Nos. handsets) needs to be provided to communicate while maintenance / rescue operation on line and for other reasons, when communication through telephone system will not be possible.

2. Multi-channel intercom system will be installed at Lower station for communication between two stations operating and security personnel.

3. Control/communication cables to be laid along with a catenary rope between two terminals.

4. In addition to the, further to the above the following facilities minimum to be provided;

    - Signalling system Drive station
    - Signal system tensioning station
    - Signal system Deflection angle station, if required
    - Secondary alarm clock to the extent necessary

Line Facility

Supply of the electrical line cabling, design as self-supporting cable system stretched from station to tower to tower to station including suspension cable, cable shoe and bracing:

- Station and tower connection

Connection to station and tower construction, consisting of:

- Surge protection devices for electric distribution line
- Terminal boxes for Towers, Assembly 1.5 m above the top edge of the foundation
- Cable connection from the terminal boxes to the switches of the monitoring devices on the full as well as the empty cable side.
- Fixed pipes along the column shaft as well as the column yoke are provided by the ropeway manufacturer.
- Wind warning devices on any support with transducer for wind direction and speed, incl. evaluation and display in the drive station.
- Heavy rainfall waring device

<u>Control cable or fibre optic cable ropeway</u>

Control cable or fibre optic cable for ropeway control incl. signal transmission for a video surveillance system in the stations.

<u>Line cable</u>

Cable for the sheave assembly monitoring

<u>Electronic rope position monitoring</u>

Electrical

This item group describes the electrotechnical part of the electronic rope position monitoring system:

- Cable for electronic rope position monitoring
- Wiring and installation of the equipment provided by the ropeway manufacturer on the sheave assemblies and Towers.
- Integration into the control system.

ii) **Haul rope compacted**

The includes the followings:

i) Round strand rope,
ii) 6x36 WS
iii) Compacted construction
iv) Galvanized
v) The rope construction must comply with the standards applicable at the time of completion. In case of any eventuality for making the system in operation in a short interval after resolving a technical snag, concessionaire may make an arrangement with OEM to ensure a minimum time response for providing desired services. This may be read along with Table -A Key Performance area Article - 42.
vi) Provision of a specialist fitter from the rope manufacturer to supervise the rope pulling work. Carrying out the rope splicing work.

iii) **Track Rope compacted**

The includes the followings;

i) Full Lock coil Rope type rope
ii) Galvanized (zinc coated)
iii) Rope Core made by Stainless steel

iv) **Civil Structures**

a) Steel construction station

Design of the steel construction to accommodate the required tensioning-devices and Station facilities.

b) Safety net

Delivery of a steel substructure for the safety net incl. net and anchor parts. The design and dimensions of the safety net construction comply with codes.

c) Steel structure connection between sections

Design of the steel structure to accommodate the necessary Station facilities for the connection facilities sections.

i. Connection section I - II, II-III separable
ii. Conveyors to connect section I – II & II-III.
iii. It must be possible to disconnect the sections before the start of operation and during operation in the course of a short interruption of operation. After separation, each of the two sections is to be converted to separate operation.

v) Garaging for Cabins

The location and arrangement of the garaging is given in the drawings. The garaging must work fully automatic with a min. speed of 1 m/s

Requirements of Garage for cabin parking- at station approved by the authority.

The garage is to be dimensioned in such a way that all the stations can accommodate the cabins required to run the system at 1800 PPH with 10% extra cabin. The arrangement is at the level of the ropeway-facility without an inclined conveyor.
Feeding takes place in the direction of travel, emptying takes place in the direction of travel.

In addition to the sidings including switches, conveyors, supporting structure, etc., the switch(es) from the main line including connecting tracks must also be included in this item.
The scope of delivery essentially includes: Overhead rails to accommodate the Carriers;

The steel structure for suspending the overhead track rails from the uprights or roof girders of the hall structure.
If the station concourse is to be a concrete structure, the required fastening devices such as reputed brand cast-in channels rails must be included.
For the construction of the suspensions, it must be assumed that the concrete ceiling constructed on site has an inclination of up to 3° transverse to the longitudinal axis of the building.
The necessary switches to connect the strands to each other and to connect to the station's roadway.

A conveyor system for transporting Carriers to and from the sidings into the main track. Automatic operation is provided for garaging and filling the track.

. **vi) Towers**

- While designing the compression and hold down, the same is designed according to relevant BIS and CEN code adhering the followings;
- The weight of the compression and hold down and the pressure/ force exerted by the rope.
- The stresses develop due to friction during the motion of moving ropes with fully loaded cabins and catenary rope with control/communication cable.
- The major footprint of the tower base (incl. foundation) should be within the admissible channel of 25m. The trestles and Pressure frames (if any) should be fabricated from steel sections procured from any Indian steel maker like SAIL/TISCO/Jindal etc., duly tested and conforming for the material specification having appropriate guaranteed Charpy value at -25 degree centigrade.
- Wind load Snow Load Friction Load Other force, if any
- Under the most unfavourable conditions of loading and whether in service or not, the trestles shall have a minimum safety factor at least 1.5 times against over-turning displacement.
- The weight of the trestles and Pressure frames and the pressure/ force exerted by the rope.
- Welding procedure including type of electrodes to be used shall be subject to approval of the Engineer. Inspection standards of welding shall be in accordance with applicable BIS and CEN specifications including radiography/ ultrasonic test.
- Zinc plated Galvanized High tensile bolts with spring washers will be used for structures subjected to the dynamic loadings. Galvanized MS bolts with plain washers will be used for structures not subjected to dynamic loadings. Bolts and Nuts shall conform to IS 1364, 3757, 6623, 6649 or EN 1090.
- Accessibility for the maintenance of all structures and equipment should be provided. Maintenance platforms should be provided at stations, trestles, Pressure frames, Hold downs structure etc.
- On all props, the prop yokes are to be equipped with stable, fixed lifting jacks.
- The maximum unit weight must not exceed 4 t.
- Along the column shaft as well as the column yoke, fixed pipes are to be provided for routing the electrical cables (incl. any track lighting). 4 threaded holes are to be provided for fastening the junction box. Access ladders, rest platforms and cross platforms for connecting the sheave assembly platforms must be taken into account.
- Construction of stairways, platforms, anchorage points, fall protection, railings in accordance with the regulations for worker protection.
- For Compression or combination props, include filling openings with lids

vii) Safety Provision

Safety provisions will follow the BIS in conjunction with CEN standard.

a) In the event of main supply power failure, full capacity D.G. sets provided to supply power to run drive motors (main and emergency) for designed system speed.

b) Line safety devices shall be installed on each trestle tower, which immediately stop the ropeway in the unlikely event of rope derailment.

c) Following shall be included for safety in terminals;

i) Detachment of cabins on arrival and attachment before departure.

ii) Suitable warning and tripping arrangement of system in case of failure of either accelerator or decelerator mechanism.

iii) Anti- collision protection and proper spacing of

iv) cabins. Automatic closing of Cabin doors

v) before departure.

vi) Correct closing of Grip and Grip force testing with grip meter installed

d) at each station. Rope positioning detector Adequate numbers of emergency push buttons are provided at all stations to stop the

e) ropeway, if required.

f) Wind speed measurements shall be provided. In case of heavy winds, the operators should be warned by the system.

Adequate protection against lightening, and major protection for LT equipment shall be provided with the system. All towers needs to have provisions lightening arrestor.

An adequate number of safety devices such as service brake, emergency brake, rope derailment detection system, door closing control device, emergency button, normal stoppage button, wind speed detection, lightning protection, guides at entry & exit of the station, and other important electrical protection are provided in ropeway to monitor all critical assemblies for their normal functioning. In case of any technical abnormality, the safety devices will stop the ropeway. The minimum requirements are defined in the, relevant BIS code 5229, 17232, 17234, 17239, 17236 & 17233 and European Norms EN 13223:2015, EN 13243:2015 with latest revisions.

viii Signage

Signage in accordance with regulations for boarding and alighting points, Towers, numbering of Towers and rolling stock in accordance with applicable standards.

The project planning on which the tender is based is based on longitudinal sections and site plans generated from laser scan data. For this reason, a corresponding design reserve was assumed as required.

ix Documentation, Engineering services

All required technical documentation in paper form (4-fold) and in digital form (pdf-format) like

- Documents for the building permit
- Circuit diagrams
- Terminal diagrams
- Device lists
- Cable plans and lists
- Control cabinet layout (dimensional drawings)
- Software for control and monitoring
- 1-pole circuit diagram, laminated for control cabinet Assembly
- Descriptions and operating instructions for all units
- Provision of expert personnel for commissioning, trial operation, internal brake sts, official acceptance

x Station Facilities

Entry and exit facility

Station device cabin entry and exit shall include but not limited to the followings:

i) Supply of the necessary Station facilities for the entry and exit of pedestrians with wheelchairs, prams etc. for entry and exit incl. all mechanical equipment, switching devices and information boards.
ii) Delivery of the outside guide rails for Assembly on a concrete or steel structure. Delivery of the vehicle guide complete on the inside incl. substructure.
iii) Entry and exit take place at the projected max. rope travel speed.
iv) Station device cabin entry and exit
v) Supply of the necessary Station facilities for the entry and exit of pedestrians with wheelchairs, prams etc. for entry and exit incl. all mechanical equipment, switching devices and information boards.
vi) Delivery of the outside guide rails for Assembly on a concrete or steel structure. Delivery of the vehicle guide complete on the inside incl. substructure.
vii) Entry and exit take place at the projected max. rope travel speed.

The steel used in stations must be min S355J2 Grade

Station cladding

Supply and installation of Delivery of completely encapsulated cladding for the rope deflection and Station facilities incl. the required supporting structure.
The service rooms and electrical operating rooms will be erected on site. Supply of cladding incl. soffit. Cladding. Assumption of snow load according to expert opinion.
Design as accessible cladding with soffit. Accessibility for maintenance/maintenance must be ensured; all additional platforms, ascents, descents and bridges required due to the cladding must be included in the item.
The full enclosure must be provided with the necessary glazing to expose all important zones, the area below the Station facilities must also be closed. Only a slot as narrow as possible must be kept free for the passage of the suspension rod in order to prevent the deposition of snow in the conveyor equipment as far as possible. This slot must be closed with brushes.
The colour design of the cladding in RAL colour shades is to be carried out in agreement with the AG.
The necessary adjustment of the design of the steel structure to absorb the wind, snow and snow loads from the cladding is to be included in this item.

Full cladding of deflector station complete
Cladding of the intermediate station over the complete length of the station standard.

Cladding of garage connection

Supply of cladding for the connecting track from the station frame to the station outer wall, including supporting structure and soffit, length dependent on the minimum distance between vehicle and station wall, see enclosed planning documents.

1.1 Utility Infrastructure including Mechanical, Electrical, and Plumbing works comprising, but not limited to, Building Management systems, HVAC, Heat Pump, Elevators, Escalators, Travellators, Internal and External Electrical Installations and Related Infrastructure, Passenger Information System, Fire Detection and Alarm System, Sub-station work, DG sets, Plumbing and Fire Fighting systems, Sewage Treatment Plant, Solar PV systems etc. shall be developed as per Annexure II to Schedule D ("Design Basis Report for Mechanical, Electrical and Plumbing works"). The Concessionaire is required to connect all the external services like water supply, Sewerage, Drainage, Electric Supply, LAN/WAN, Telephone lines etc. to the main lines of the authorities / service providers and this shall be considered as integral part of scope of work.

1.2 In addition to the above, the Concessionaire shall be responsible for executing all the items require for completing the Project in all respect to make it

habitable and functional as per direction of Independent Engineer.

2. Specifications and Standards

i. Review of all the site-specific information provided along with the bid documents carrying out necessary revisions or additions, preparation of all engineering drawings as required for proper execution and completion of the project as envisaged with the approval of the Authority in compliance with applicable local bye-laws, National Building Code and other standards mentioned in Schedule-D.

ii..All the work shall be executed as per Standards and Specifications in Schedule D. All finishes and interiors shall be in accordance with Schedule D. The Concessionaire may adopt equipment's/items with better specifications with approval of Independent Engineer. All the Security equipment's shall be installed by the Concessionaire as per Standards and Specifications in Schedule D and applicable norms.

Appendix B of Schedule D

List of Tools and Tackles and Spare Parts to be maintained during the concession period

Set of complete special tools and, consisting at least of

Lifting tool
- Chassis
- Trolley

Coupling, conveyor
- Tool set conveyor
- Pressure measuring device
- Rope lifter
- Unlocking rod

Assembly tool
- Stencils
- Gauges

Drive system, station:
- Key for pinion adjustment
- Spare screws
- Toolbox station
- Gripping force calibrator

Towers, sheaves:
- Pulley block
- Rope lifter
- Stencils
- Gauges
- Fallbloc
- Toolbox towers, sheaves

Carriage:
- Nut key
- Stencils
- Gauges
- Cable pull release
- Assembly aid

Grip:
- Grip tool
- Grip opening tool
- Hydraulik pump
- Grip extractor tool
- Test bolt

Rope work
- Set Visual rope control
- Chain hoist
- Toolset round sling
- Hanging trolley
- Mounting aid guy rope
- Track rod

The offer shall contain a detailed list of the tools and equipment supplied.

List of spare parts - mechanical

Spare parts package (mechanical), consisting at least of: Drive system:
- Brake shoes
- Spare parts set hydraulic brake system
- Oil filter

Tensioning system:
- Spare parts set hydraulic tensioning system
- Oil filter

Station facility:
- V-belt
- Pneumatic tyres
- Rims
- Bearings tyre conveyor
- Spindle gear
- Spindle motor
- Ball joint head
- Brake clutch
- Carrier Chain conveyor
- Torsion spring

Sheave assembly:
- Fracture rod sheave assembly
- Switch of fracture rod
- Sheave complete
- Flanged pulley of sheave
- Spring washer
- Safety ring

Carrier:
- Spare parts set grip
- Spare parts set hanger
- Spare parts set door automat
- Replacement glass panes
- Replacement seats

Spare parts in this item are the bearing components recommended by the manufacturer to maintain operational readiness (components to cover short-term failures).

The offer must include minimum spare parts proposal consisting at least of;

- VolP built-in display,
- Graphic LCD display with soft backlight, LCD display with soft backlight.
- VolP-lntercom module
- Current Transformer
- Mini Mcr-2-Ui-Ui
- Plug-In Relay
- Solid-State Relay Module
- Managed Switch
- Auxiliary contactor
- Motor starter Reversing starter
- Spare parts set Contactors
- Over Voltage Limiter,
- Contact Module
- Terminal module
- LED module
- Overvoltage limiter
- Regulated power supply
- SPS digital input module
- SPS digital output module
- SPS analogue input module
- SPS analogue output module
- SPS bundle PROFINET
- SPS electronic module
- SPS base unit
- SPS CPU
- Electronic load monitoring
- Potential distributor
- Solid state relay
- Sound control, amplifier
- Fuse link
- BERO-Set

- **Brakes**
  - Brake shoe complete
  - Proximity switch to brake monitoring emergency brake

- **Rope saddles 1 piece for each tower**
  - Brass Liner for Rope saddles

- **Tracing devices and tachometer / Entry monitoring**
  - Gearwheel for pulse generator
  - Gearwheel for Tachometer
  - Limit switch to entry monitoring

- **Carriage**
  - Carriage wheels
  - Rubber Semprit liner or equivalent
  - Proximity switch to revolution counter
  - Limit switch to slack rope release
  - Limit switch to track rope brake Housing

- Limit switch to track rope brake Head

- **Brake hydraulics**
- MOTOR
- Gear Pump of required size
- Filter element
- Pressure Gauges
- Press. Transducers

Track rope brake hydraulics

- Spare DC motor
- Radial piston pump
- Filter element
- Pressure switch SCPSD
- Pressure gauges

- **Electrical equipment Drive**

- Power supply
- Spare Drive

- **PSS / SPS**

- **Prints**

- **Frequency converter**
  - Fuses
  - GLASS FUSES of required ratings
  - DIODE PROTECTION

- **Required numbers of CONTACTORS & ACCESSORIES**

Spare parts in this item are the bearing components recommended by the manufacturer to maintain operational readiness (components to cover short-term failures).

Appendix C
Annex-I

SCHEDULE – D
TECHNICAL SPECIFICATIONS- CIVIL

1. Steel construction station

Design of the steel construction to accommodate the required tensioning-devices and Station facilities.

2. Safety net

Delivery of a steel substructure for the safety net incl. net and anchor parts. The design and dimensions of the safety net construction comply with codes.

3. Garaging for Cabins

The location and arrangement of the garaging is given in the drawings.

4. Garage Station Valley Station

The garage is to be dimensioned in such a way that it can accommodate all the cabins so that total cabins in the ropeway system are accommodated in the valley station. The arrangement is at the level of the ropeway-facility without an inclined conveyor.

Feeding takes place in the direction of travel, emptying takes place in the direction of travel.

In addition to the sidings including switches, conveyors, supporting structure, etc., the switch (es) from the main line including connecting tracks must also be included in this item.

The scope of delivery essentially includes: Overhead rails to accommodate the Carriers;

i) The steel structure for suspending the overhead track rails from the uprights or roof girders of the hall structure.
ii) If the station concourse is to be a concrete structure, the required fastening devices such as HALFEN rails must be included.
iii) For the construction of the suspensions, it must be assumed that the concrete ceiling constructed on site has an inclination of up to 3° transverse to the longitudinal axis of the building.
iv) The necessary switches to connect the strands to each other and to connect to the station's roadway.
v) A conveyor system for transporting Carriers to and from the sidings into the main track. Automatic operation is provided for garaging and filling the track.

5. Towers with Cross Arm, Cat Head, Mounts

Lattice / Tubular construction and made of standard rolled mild steel sections and plates conforming to IS: 2062 Grade C or equivalent confirming to Charpy Value at -20 degree Celsius.

The trestles and Pressure frames (if any) should be fabricated from steel sections procured from any major Indian steel maker duly tested and conforming to IS: 2062 grade C.

In designing trestles and Pressure frames the following loads shall be taken into account:

a. The weight of the trestles and Pressure frames and the pressure/ force exerted by the rope.
b. The stresses develop due to friction during the motion of moving ropes with fully loaded cabins and catenary rope with control/communication cables.
c. Maximum Wind load

Under the most unfavourable conditions of loading and whether in service or not, the trestles shall have a minimum safety factor at least 1.5 times against over-turning displacement.

Welding procedure including type of electrodes to be used shall be subject to approval of the Independent Engineer. Inspection standards of welding shall be in accordance with applicable BIS specifications including radiography/ ultrasonic test.

Zinc plated Galvanized High tensile bolts with spring washers will be used for structures subjected to the dynamic loadings. Galvanized MS bolts with plain washers will be used for structures not subjected to dynamic loadings. Bolts and Nuts shall conform to IS 1364, 3757, 6623, 6649 and EN 1090.

Accessibility for the maintenance of all structures and equipment should be provided. Maintenance platforms should be provided at stations, trestles, Pressure frames, Hold downs structure etc.

On all props, the prop yokes are to be equipped with stable, fixed lifting jacks. The maximum unit weight must not exceed 4 tonne.

6. Surface treatment:

All parts are to be offered in hot-dip galvanized coating.

Along the column shaft as well as the column yoke, fixed pipes are to be provided for routing the electrical cables (incl. any track lighting) 4 threaded holes are to be provided for fastening the junction box.

Access ladders, rest platforms and cross platforms for connecting the sheave assembly platforms must be taken into account.

Construction of stairways, platforms, anchorage points, fall protection, railings in accordance with the regulations for worker protection.

7. Documentation, engineering services

All required technical documentation in paper form (4-fold) and in digital form (pdf-format) like

- Documents for the building permit
- Circuit diagrams
- Terminal diagrams
- Device lists
- Cable plans and lists
- Control cabinet layout (dimensional drawings)
- Software for control and monitoring
- 1-pole circuit diagram, laminated for control cabinet Assembly
- Descriptions and operating instructions for all units
- Provision of expert personnel for commissioning, trial operation, internal brake tests, official acceptance

8. Station facilities

8.1 Entry and exit facility

Station device cabin entry and exit

Supply of the necessary Station facilities for the entry and exit of pedestrians with wheelchairs, prams etc. for entry and exit incl. all mechanical equipment, switching devices and information boards.

Delivery of the outside guide rails for Assembly on a concrete or steel structure. Delivery of the vehicle guide complete on the inside incl. substructure.

Entry and exit take place at the projected max. rope travel speed.

8.2 Station cladding

Delivery of completely encapsulated cladding for the rope deflection and Station facilities incl. the required supporting structure.

The service rooms and electrical operating rooms shall be erected on site. Supply of cladding incl. soffit. Cladding.

Design as accessible cladding with soffit. Accessibility for maintenance/maintenance must be ensured; all additional platforms, ascents, descents and bridges required due to the cladding must be included in the item.

8.3 Cladding of garage connection

Supply of cladding for the connecting track from the station frame to the station outer wall, including supporting structure and soffit, length dependent

on the minimum distance between vehicle and station wall.

8.4 Steel construction for the Station facilities

The scope of delivery essentially includes:

Supply of a steel structure, built up from the station floor or the rear upright in the ropeway axis, with the necessary anchor bolts to accommodate all the Station facilities described above, including all the pulleys required to guide the cable in the station frame and on the entrance truss.

All additional expenses for platforms, crane girders (mounted on the roof construction provided by the customer), loading rails, etc., which are necessary if a station cladding is not provided, are to be included in this item. All Assembly's for on-board equipment such as bonnets or roofs are to be included in this item. Door controls, locks, seat heating etc. must also be provided.

The concessioner must provide minimum number of following project components and consider its provisioning in the final layout prepared in consultation with authority.

Sl. No.	Category	Component	Minimum Number	Minimum Built-up area(m^2) / standard
1	Narkanda	**Toilet**	As per approved design	As per approved design
2	Hatu Peak	**Toilet**	As per approved design	As per approved design
B. Retail of Ropeway Station Building				
1	Kiosks, ATM, Cloak Room Area are to be provided			Refer Architectural Layout (as per design)
C. Services Amenities				

1	Services Amenities	Electrical Room, Generator room, Transformer	As per requirement	As Per 'Schedule' D'
2	Services Amenities	Storeroom	As per requirement	As Per 'Schedule' D'
3	Services Amenities	Fire Room	As per requirement	As Per 'Schedule' D'
4	Services Amenities	Room for additional MEP works	As per requirement	As Per 'Schedule' D'
D. Offices				
1	Maintenance Office	Administrative office of the Concessionaire during the Maintenance	1	As per requirement
2	Independent Engineer Office	Office for the Independent Engineer	1	As per requirement

Utility Infrastructure including Mechanical, Electrical, and Plumbing works comprising, but not limited to, Building Management systems, HVAC, Elevators, Escalators, Travellators, Internal and External Electrical Installations and Related Infrastructure, Passenger Information System, Fire Detection and Alarm System, Sub-station work, DG sets, Plumbing and Fire Fighting systems, Sewage Treatment Plant, Solar PV systems etc. shall be developed as per Annexure II to Schedule D

The Concessionaire is required to connect all the external services like water supply, Sewerage, Drainage, Electric Supply, LAN/WAN, Telephone lines etc. to the main lines of the authorities / service providers and this shall be done through Building Information Modelling (BIM) which is considered as integral part of scope of work.

Rainwater Harvesting – As per Ministry of Environment and Forests Notification, New Delhi dated 14.01.1997 (as amended on 13.01.1998, 05.01.1999 & 6.11.2000), the construction of Rain water, harvesting structure is mandatory in and around Water Crisis area, notified by the Central Ground Water Board.

In addition to the above, the Concessionaire shall be responsible for executing all the items require for completing the Project in all respect to make it habitable and functional as per direction of Independent Engineer.

8.5 Specifications and Standards

i. Review of all the site-specific information provided along with the bid documents carrying out necessary revisions or additions, preparation of all engineering drawings as required for proper execution and completion of the project as envisaged with the approval of the Authority in compliance with applicable local bye-laws, National Building Code and other standards mentioned in Schedule-D.

ii. All the work shall be executed as per Standards and Specifications in Schedule D. All finishes and interiors shall be in accordance with Annexure VI to Schedule D ("Schedule of Finishes"). The Concessionaire may adopt equipment's/items with better specifications with approval of Independent Engineer. All the Security equipment's shall be installed by the Concessionaire as per Standards and Specifications in Schedule D and applicable norms.

9. STATION EQUIPMENTS

To be read along with Annexure I, Schedule C

S.No.	Description	Specifications/Applicable Code
1.	I.P Based Video Surveillance system	The Concessionaire shall provide at Main entrance/exit, Platforms, Waiting Hall, Reservation counter, ticketing counter, Parking area, Other Public area, Offices, Operator room, Repair and Maintenance room, DG Room, Control pannel room and any other places as per requirement and recommended by Independent Engineer. Full HD Fixed Box Type IP Colour Camera with Varifocal Lens and Housing & Mount with operating temperature of -15 degree to 45 degree (Para 5.1 - RDSO/SPN/TC/65/2019 or latest).
2.	Aviation Obstruction Lights	Provision for mounting LED type aviation obstruction lights of reliable design shall be provided on relevant towers with more height as per AAI/DGCA guidelines
3.	Lightning Protection System	Lightning protection shall be Early Streamer Type and shall be mounted at suitable height to cover the entire building in its protection zone. Down conductor shall be of insulated copper conductor cable of 70 Sq. mm. Maintenance free Earthing shall be provided. Lightning Counter shall be considered and installed at suitable height as a part of Lightning Protection (As per IS/IEC 62305)

4.	Lifts	i. **Type of lift:** Machine room less (MRL) with min 15 passenger capacity. ii. Rated Speed & Rated load shall be as per NBC 2016 / CPWD specification and with the approval of Independent Engineer. iii. **Type of operation:** Automatic group supervisory control with / without attendant. iv. **Type of control:** A.C. drive variable voltage variable Frequency with Microprocessor based group control system. v. **Type car doors:** Centre opening stainless steel sliding door in the moon rock finish. vi. Automatic power operated horizontal sliding-centre opening construction & design and stainless- steel body. Interior finish of the lift car shall be as approved by Independent Engineer. The car shall be complete with toe gourd of adequate depth, cabin fan, light fixtures. Car opens in front only. vii. **Landing doors:** Centre opening sliding power operated stainless steel doors (SS304) & shall have a fire resistance of not less than one hour. **viii.** **ype of signal system:** - All signal & operating fixtures shall be provided with stainless steel face plates. - Call registration indication in buttons of operating panel. - Digital car position indicator with up & down direction on all floors separately for each lift. - Backlit call buttons on all floors. Maintenance free re- chargeable battery-operated alarm bell & emergency light. - Fire man's switch at ground floor for each group of passenger lift. - Over load warning with visual indication 'OVER LOADED' and audio beep of overloading. - Voice announcement system having standard features. - Intercom system in each lift for communication between the passengers in the elevator & fire control room & machine room (press & speak type) with rechargeable maintenance free battery backup. - Elevator should be equipped with manual as well as automatic rescue devices (ARD). - Infra-red beam type door safety device shall be provided for full height of door.

		National Building Code 2016 or latest General Specifications for Electrical Works (Part – III Lifts & Escalators)-2003 of CPWD specifications and local bylaws as amended up to date. Research Designs and Standards Organisation, Ministry of Railways Specifications Latest Edition of EN 81, IS 14665, IS 15785, IS 15330 and other standards which are mentioned in the above standards In case of any conflict, stringent requirement shall prevail.
5.	Escalator	The escalator shall be 30-degree incline with step width of 1000 mm. The capacity of the system shall be designed to accommodate the peak hour of the project ropeway and in line with the codal provisions. National Building Code 2016 or latest General Specifications for Electrical Works (Part – III Lifts & Escalators)-2003 of HPPWD/CPWD specifications and local bylaws as amended up to date. Research Designs and Standards Organisation, Ministry of Railways Specifications Latest Edition of EN 115 and IS 4591, NFPA-130 In case of any conflict, stringent requirement shall prevail.
6.	PA System	Box type speaker shall be provided in the entrance lobby, Recessed speakers in the false ceiling areas, Proper zoning are to be done considering the user requirement, critical areas & floor etc. (As per NBC 2016, IS:1881 & 1882 and RDSO Standard)
7.	Fire Fighting System	Fire Protection System including water storage tanks, Sprinkler System, wet-risers, Yard-hydrants and pumps etc. wherever required shall be designed and provided as per NBC 2016 with Amendments, Updated BIS Codes & Fire Bye Laws & CPWD Specification part V 2006. NOC for the scheme from local / Srinagar Municipal fire department shall be obtained by the Concessionaire. Fire detection & alarm system as per NBC 2016 (part-4 – fire & life safety).
8.	Solar	The PV module should have IS14286 qualification certification for solar PV modules (Crystalline silicon terrestrial photovoltaic (PV) modules — design qualification and type approval). The exemption of this certification and other details are described, as per MNRE's Gazette Notification No. S.O. 3449 (E). Dated 13th July, 2018. 18.

		PV Module of same Make/ Model in the same series shall be considered as a single product while making the payment as per MNRE Order No. 283/54/2018-Grid Solar (ii) Dt. 06-Feb- 2020. • IS 14286: Crystalline silicon terrestrial photovoltaic (PV) modules — design qualification and type approval. • IEC 61215 / IEC 61646: c-Si (IEC 61215): Crystalline silicon terrestrial photovoltaic (PV) modules – Design qualification and type approval Thin Film (IEC 61646): Design, Qualification & Type Approval • IEC 61730-1: Photovoltaic Module safety qualification- Part 1: Requirements for construction • IEC 61730-2: Photovoltaic Module safety qualification- Part 2: Requirements for testing • IEC 61701: Salt mist corrosion testing of photovoltaic modules Tech Specs of On-Grid PV Power Plants 5 IEC 62716: Test Sequences useful to determine the resistance of PV Modules to Ammonia (NH3) 17
9.	Waiting Chair	The Stainless-Steel chair in the waiting area shall be minimum 1800mmx 630mmx 800mm
10.	Personnel and baggage screening System	Specification no. (RDSO/SPN/TC/94/2010) & GOVERNMENT OF INDIAMINISTRY OF RAILWAYS (RAILWAYBOARD) No.2016/Sec (Spl)/6/8 NewDelhi, dated:06.03.2019
11.	Electrical Installation Works	The electrical Installation work shall be carried out in accordance with Indian Standard Code of Practice. It shall also be in conformity with the current Indian Electricity rules and regulations and requirements of the Local Electricity Supply Authority and Fire Insurance regulations so far as these become applicable to the installation. Electrical work in general shall be carried out as per following CPWD Specifications. (i) General Specifications for Electrical Works (Part – I) Internal Work - 2013. (ii) General Specifications for Electrical Works Part II External - 1995. (iii) General Specifications for Electrical Works (Part- III-LITS & Escalators) – 2003 (iv) General Specifications for Electrical Works Part IV Sub Station – 2013.

		(v) General Specifications for Electrical Works Part VII D.G. Sets - 2013. (vi) General Specifications for Electrical Works Part VIII Gas Based Fire Extinguishing System - 2013 (vii) Wherever required specifications call for a higher standard of material and workmanship than those mentioned above, the Concessionaire shall follow higher standards with recommendation from Independent Engineer.
12.	Lighting	General lighting of various common areas shall be planned as per NBC-2016 and Guidelines issued by Ministry of Railways. LPD will be as per ECBC 2017.
13.	Earthing	All the non-current carrying metal parts of electrical installation shall be earthed as per IS:3043 Earthing shall be in conformity with the provisions of Rules 32, 61, 62, 67 and 68 of IER 1956
14.	Road Works	All cross section and drawings for approach roads/internal roads shall strictly follow relevant IRC codes & manuals.

Annexure – IV

(Schedule D):

General Guidelines for Construction

1. Design Parameters for Construction:

Taking over of the site on "as is where is" basis and planning, designing, engineering, constructing and developing the Ropeway project and arranging approval of Competent Authorities.

Site clearance and cordoning off the site; providing and deputing of Security.

(a) Construction of Ropeway Station Building as per the approved plans and specifications including Boundary Wall.

(b) Construction of check barriers, installation of necessary equipment

(c) Construction of cycle/ rickshaw/2-wheeler/ car/ auto etc. parking, for Ropeway Stations

(d) Providing and installation of all internal and external services in the Complex viz. internal sanitary and plumbing, internal electrical works; analogous addressable fire detection, fire alarm ad firefighting system, Air Conditioning (HVAC System).

(e) Procure, Transport, receive unload and safe keep all the plants and machinery, equipment, materials and other things required for the construction of the Project Facilities.

(f) Arrangement of all the material requirements for the project and disposal of all the material wastes and debris.

(g) Providing and construction of all Estate Services for development of land namely water supply source and distribution; sewerage collection and disposal; storm water collection and disposal; campus electrification; land safety and horticulture works.

(h) Reporting, accounting and any other works set out in the Agreement. The various elements of works delineated above shall be carried out as per specifications and Good Industry Practices to meet the performance standards.

2. Performance Standards in Construction Phase

a) During construction phase performance standards to be met shall conform to provision of relevant BIS codes, Himachal Pradesh PWD specifications and latest National Building Code (NBC) and are to be approved by Independent Engineer and the Authority, as outlined in the Agreement.

b) Fly ash as per directives of the Central /UT Government to be used wherever applicable according to the applicable codes. Where any of the standards is silent, Good Industry Practice shall be followed in consultation with Independent Engineer and the Authority.

c) The materials, equipment, appliance and machinery to be used and installed shall be tested by taking out samples and testing as per relevant standards including arranging of test certificates from the suppliers and manufactures. Wherever required Load Tests shall be conducted on structural elements. In case of piling work for foundation, vertical load tests and lateral load tests shall be conducted as per l.S.2911 (Part IV) towards initial load and routine tests. All equipment, appliances and machinery shall be tested as per

manufactures recommendation in the presence of Independent Engineer before commissioning thereof. The Concessionaire shall be required to comply with the detailed Technical Specifications, as mentioned in Schedule D of the Concession Agreement.

3. Technical Specifications

3.1 Scope

This specification applies to the Civil, Structural and other works to be executed by the Concessionaire. It is to be read in conjunction with and subject to the general conditions of contract and in conjunction with the drawings, the schedule of rates and such other documents as may from time to time be agreed upon as comprising part of this contract. Where these specifications are not clear relevant B.I.S. codes and HPPWD/CPWD, specifications shall be followed with prior permission of Independent Engineer.

3.2 Clearing

The Concessionaire shall clear the site of all rubbish, remove all grass and low vegetation and remove all bush wood, trees, stumps of trees, and other vegetation only after approval from the Independent Engineer and the Authority as to which bushes and trees shall be saved. All discussed foundations, drains or other obstructions met with during excavation shall be dug out and cleared.

3.3 Site Levels

The Concessionaire shall carry out the survey of the site and shall establish sufficient number of grids and level marks to the satisfaction of the Authority, who shall decide on the basis of this information, the general level of the plot and the plinth.

3.4 Bench – marks

Prior to commencement of construction, the Concessionaire shall in consultation with the Independent Engineer, establish several site datum benches – marks, their number depending on the extent of the site. The bench – marks shall be sited and constructed so as to be undisturbed throughout the period of construction.

3.5 Site investigation

The Concessionaire shall inspect the site and study the findings from the trial pits or bores in order to assess the problems involved in and methods to be adopted for excavation and earthwork. The Concessionaire shall ascertain for himself all information concerning the sub-soil conditions, ground water table periods and intensity of rainfall, flooding of the site and all data concerning excavation and earthwork. Any extra work required on this account will not be additionally paid.

3.6 Setting out the work

The Concessionaire shall set out the works and during the progress of the building shall amend at his own cost any errors arising from inaccurate setting out.

During the execution of the work Concessionaire must cross check his work with the drawings, The Concessionaire shall be responsible for all the errors in this connection and shall have to rectify all defects and/or errors at his own cost, failing which the Independent Engineer reserve the right to get the same rectified at the risk and cost of the Concessionaire.

3.7 Cleaning up and handing over

Upon completion of the work all the areas should be cleaned. All floors, doors, windows, surface, etc. shall be cleaned down in a manner which will render the work acceptable to the Independent Engineer. All rubbish due to any reason, shall be removed daily from the site and an area of up to ten meters on the outer boundaries of the premises will be cleaned by the Concessionaires as a per the contract. Upon completion of the Project, the Concessionaire shall return the following to the Independent Engineer:

Written guarantee and certificates., Maintenance manuals and Keys.

3.8 Samples

The Concessionaire shall submit to the Independent Engineer samples of all materials for approval and no work shall commence before such samples are duly approved. Samples of precast concrete panels, masonry units, building insulation, finished hardware, metal window and door frames, terrazzo flooring, kota stone, marble etc., and every other work requiring samples in the opinion of the Independent Engineer shall be supplied to the Independent Engineer, and these samples will be retained as standards of materials and workmanship. The cost of the samples shall be borne by the Concessionaire.

Throughout this Annexure, types of material may be specified by referring to specific brands in order to establish standard of quality, price and performance and not for the purpose of limiting competition.

A detailed program shall be submitted by the Concessionaire for the material approvals, within four weeks of the Independent Engineer's order to commence the detailed program shall include but not limited to:

a) Date/s of submitting the various material samples.
b) Date/s by which the Independent Engineers approval is required.
c) Date/s of placing orders on the manufactures / suppliers.
d) Date/s of arrival of the approved material/s on to the site.
e) Date/s of the completion of the 'Mock-ups, wherever required, and the Date/s by which the Independent Engineers inspection of such 'Mock-ups' should be completed and the Date/s by which the Independent Engineer should fully approved the said Mock-ups.

3.9 Tests

All materials and methods of tests to be conducted in accordance with Schedule K shall conform to the latest rules, regulation and / or specifications of the Bureau of Indian Standards (BIS) shall be followed. In case no equivalent BIS, HPPWD/CPWD specification shall be followed if available. Independent Engineer will have the option to have any of the

materials tested and if the test results show that the materials do not conform to the specifications, such materials shall be rejected. A reasonable number of representative tests will be deemed to be included in the rates tendered.

3.10 Mode of Measurements

All measurements will be taken in accordance with IS 1200 latest issue unless otherwise specified.

Annexure V

Schedule D

TECHNICAL SPECIFICATIONS FOR CIVIL WORKS

The Civil works shall be done in accordance with HPPWD/ CPWD Specifications –.(latest revision)- Vol. I & Vol. II with correction slips upto the last date of submission of tender document and National Building Code 2016.(latest revision)

Annexure VI

Schedule D

ARCHITECTURAL SPECIFICATIONS

1. All flooring shall be granite stone, flamed and anti-skid, and full body vitrified tiles.
2. All false ceiling shall be in aluminium grid, acoustic ceiling, metal perforated, aluminium baffle as specified.
3. All public areas shall have a dado in 18 mm thick Granite matching to the floor and fitted flush with wall surface.
4. All other exposed surfaces shall be finished in micro textured water repellent paint.
5. All paintable ceiling surfaces shall be finished in acrylic paint as specified.
6. All glazed doors shall be stile door (toughened glass framed in Aluminium section of 35 x 60 mm) with door frame of 45 mm x 45 mm with adequate hardware as specified.
7. All light fixtures shall be in aluminium body and will as specified.
8. All planters and seating areas shall be in granite.
9. Planters shall have indoor plants fully grown with necessary concealed arrangement for watering and dewatering.
10. All lift facades in the lobby shall be furnished in Granite and all exposed surfaces including jambs are to be finished in same material.

The Concessionaire shall prepare shop drawings of all interior finishing items as per the intent of interior look and feel and submit to Independent Engineer for recommendation and approval of the Authority.

Concessionaire will submit three samples of each finishing items to Independent Engineer before executing the work for approval.

FAÇADE SPECIFICATIONS:

Item Description	Item specifics
3.0 BUILDING **FAÇADE / WALL CLADDING / INTERNAL WALLS &** **PARTITIONS**	3.1 GRANITE STONE CLADDING - Providing and fixing 20 - 25 mm thick Honed / Bush Hammered Granite Stone in Dry cladding/ soffits/ jambs and copings etc. in specified sizes, of approved colour and quality on walls of brick / AAC block, columns and wherever specified in Dry cladding using approved stainless steel (grade 304) clamps, anchors bolts, pins, groove making, cutting, drilling, anchoring, grouting with joint sealant, scaffolding, chamfering, etc. LOCATIONS – 1. Selected outer elevation areas 2. Dado works on the Walls upto 1.5-2.1 m height in Station area
	3.2 PRELAMINATED PARTITION WALLS: 12mm thick prelaminated partition boards LOCATIONS – 1. Office cubical partitions
	3.3 UNITIZED GLAZING: 6mm Thick Glass +12 thick Air Gap +6 thick Glass, Double Glazed Unit with approved SHGC, U-Value and VLT with Base Aluminium Rectangular Extruded Framework of Transoms & Mullions designed to withstand the Wind Pressure as per IS Standards. The extruded section shall be finished with PVDF coating. Extruded section shall be of 6063 T6 Alloy or BSH9 conforming to IS-63400. The system shall include EPDM / Neoprene all copings and flashing, fire stop seals, approved silicon sealant of Dow Corning complete for a fool-proof system. The main frame system shall be fixed to the main structural members of the building with necessary brackets, clamps, fastening straps, nuts, bolts, rivets, washers, and other fastening materials. LOCATIONS – External Glass façade wall as/design.

	3.4 SEMI UNITIZED GLAZING- 6mm+12mm+6mm Thick Glass +12mm thick Air Gap +6mm thick Glass, Double Glazed Unit with approved SHGC, U-Value and VLT with Base Aluminium Rectangular Extruded Framework of Transoms & Mullions designed to withstand the Wind Pressure as per IS Standards. The extruded section shall be finished with PVDF coating. Extruded section shall be of 6063 T6 Alloy or BSH9 conforming to IS-63400. The system shall include EPDM / Neoprene all copings and flashing, fire stop seals, approved silicon sealant of Dow Corning complete for a fool- proof system. The main frame system shall be fixed to the main structural members of the building with necessary brackets, clamps, fastening straps, nuts, bolts, rivets, washers, and other fastening materials. LOCATIONS – External Glass façade wall as/design
	3.5 TENSILE FABRIC - Architectural P.V.C. Membrane -: Base frame shall be M.S. tubular frame. P.V.C. membrane available in range of U.V. Stabilized color. YARN: - 2X1100 Dtex PEX HT, Weight sqm. :-750gsm, Tensile strength: - 280/280daN.5cm, ELONGATION:-<- 1%, TEAR STRENGHT 55/50daN, ADHESION: - 12 daN/5cm, FINISH:- PVDF, Formula S fluorinated Varnish wieldable, MAXIMUM OPERATING TEMPERATURE- 30C/70C, Heat welded at joints. The membrane is fixed to M.S. tubular frame (Red Oxide and Spray Paint). Science the joints are heat welded no waterproofing required and hence no maintenance required LOCATIONS – External elevational feature as / design

	3.6 ALUMINUM COMPOSITE PANEL CLADDING - Fabrication and installation of Aluminium composite panel cladding complete with all necessary sub structures, anchors hardware and fittings to provide a total installation, fully in conformity with requirements and intent of the drawings, specifications and instructions of the Independent Engineer. The Aluminium composite panel to be composed of 3 mm thermoplastic core of low-density polyethylene sandwiched between two skins of 0.50 mm thick aluminium alloy sheet as per specification, total thickness of Aluminium composite panel to be 4 mm complete. The provision of aluminium pipe framing of adequate size to be included LOCATIONS – Part external elevation of station building as/design.
	3.7 TERRACOTTA TILE CLADDING - 40mm thick Terracotta Tile cladding on the façade, Double-leaf, back ventilated, extruded through body color terracotta clay tile elements with horizontal shiplap joints Aluminium Support System: Aluminium girt system, carrier tracks with gaskets, and tile clips to support terracotta clay tiles and drain rainwater. Tiles shall be tested according to ASTM C 67 using 24-hour submersion and 5 hours boiling. System designed to accommodate thermal movement and for terracotta clay tile elements to be removed individually, without breakage, notching, glue fixing or disruption to adjacent tiles. the Tile clips must be concealed &Wet sealants will not be permitted. LOCATIONS – Part external elevation of station building as/design
	3.8 GRC JALI / SCREEN - Exterior grade fibre reinforced polymer resin plastic composite smooth finished back side closed screens as per approved pattern, design, with wall thickness between 2- 2.5mm and shade. The fibre reinforced composite screens shall have fibre reinforcements with resin matrix that bonds the fibre. The material shall be casted in fibre moulds with ISO/ UV resistant PNG Polyester resin with UV Stabilized clear gel coats for making it UV resistant nonfading product in exterior conditions. The product shall be made in accordance to ASTM E 84 for fire performance characteristics and shall be classified as Class B material. The periphery or borders of screens shall have marine ply reinforced for adequate fixing with Hilti self-tapping

	screws and in accordance to shop drawings approved by engineer in charge. The product's density shall be 1760 Kg / m3 having approximate weight between 11 -15 Kg / m2 The product shall have a tolerance of temperature variation between -20 degrees Celsius to 65 degrees Celsius. The product will have permissible dimensional tolerance of dimensional (all directions) ± 1/8". 0 -10 ft. (3mm in 3 m) thickness ± 1/8" (3mm) LOCATIONS – Part external elevation of station building as/design
4.0 **FINISHES**	4.1 EXTERNAL TEXTURE PAINT - Exterior Grade Texture Paint Finish as / approved pattern or shade of make SKK / Asian Paints or equivalent. Exterior Grade Texture paint shade to be applied over the base texture for requisite shade as specified. Product warranty shall also be provided along with application of painted surfaces due to natural or self-degradation LOCATIONS – Part external elevation of station building as/design (All stations)
	4.2 EXTERNAL ACRYLIC EMULSION PAINT - Providing and applying two or more coat of Exterior Grade Acrylic Emulsion surface of approved shade and brand on External Surfaces / Ceilings / Wall surface as per approved colour and shade with permissible VOC limit. The job shall include doing sand papering primer coat and putty filling preparation of the surface etc. complete LOCATIONS – Part external elevation of station building as/design (All stations)
	4.3 ALL TYPES OF PAINTS / PRIMER/EPOXY PAINT / PU PAINT / WATERPROOF CEMENT PAINT / SYNTHETIC ENAMEL PAINT / PREMIUM ACRYLIC EMULSION PAINTS/TEXTURED EXTERIOR PAINT /MELAMINE POLISH LOCATIONS – Part external elevation of station building as/design (All stations)
	4.4 FIRE RETARDANT PAINT LOCATIONS – Internal and external walls as / design
	5.1DRY WALL GYPSUM PARTITIONS - Fixing Drywall Gypsum Board partition with base framework of GI Section as required finished with paint finish as per approved shade LOCATIONS – Miscellaneous rooms / shops etc.

	5.2 TOILET CUBICLE PARTITIONS - Toilet Cubicle of approved shade and model by Independent Engineer (of following standard dimension which includes 600mm door size width) made of heat, bacteria, water, chemical, scratch, impact and anti-bacterial resistant 12mm & 18mm thick solid compact laminate panels tested by a test house approved by authority engineer. Finish of the compact laminate should be Suede / *Raw Silk, which includes doors, pilasters & intermediate panels finished with approved texture/shade as per the detail drawings & as per IS 2046 (Indian Standard) and as per fire retardant BS-476/97 standard. This also includes providing and fixing in position necessary hardware made out of Stainless steel (Grade 304) & With MS Supporting systems (1) SS Door Knob, (2) SS Gravity hinges, (3) SS Latch Indicator, (4) MS Top Support, (5) SS Coat Hook, (6) SS U-Channels, (7) SS-Shoe Box Plate, (8) Noise Deafening Tape etc. (9) Screws & wall Plugs. The top supporting system will run above the ceiling to Strengthen & support the system, it will be settled on end wall with MS 'L' angles Mid & End pilasters will be fixed with the top support. All other hardware & screws will of stainless steel in 304 Grade with satin finish LOCATIONS – All Public toilets
	5.3 LAMINATES / LAMINATED PARTICLE BOARD / PLY BOARD / FLUSH DOOR / VENEER / VENEERED PARTICLE BOARD LOCATIONS – As per requirement inside station buildings

6.0 **STEEL WORK /RAILING / METAL WORK**	6.1 SS PIPES – Providing & fixing SS Pipes in external elevation LOCATIONS – Part external elevation of station building as/design 6.2 <u>METAL RAILING</u> - Providing, fabricating and fixing in position staircase railing as per design. Blurters of 40mmx12mm MS flat, 900mm high, fixed on alternate tread with Hilty bolts of 12mm nominal dia bolts embedded in treads with hilti chemical fastner 2 Nos. for each Baluster, 12mm dia MS rods 4 Nos. passing through Balusters, handrail of 60mm dia MS tubes. The hilty bolts and fastner shall be covered with chrome plated cover of regd. Size and approved shape, handrail fabricated finished with steel primer and two coats of steel paint of regd. Colour and shade (to be approved by consultants and SMVDIME) finished complete. Providing and fixing stainless steel (Grade 304) railing made of Hollow tubes, channels, plates etc., including welding, grinding, buffing, polishing and making curvature (wherever required) and fitting the same with necessary stainless steel nuts and bolts complete, i/c fixing the railing with necessary accessories & stainless steel dash fasteners, stainless steel bolts etc., of required size, on the top of the floor or the side of waist slab with suitable arrangement as per approval of Independent Engineer, (for payment purpose only weight of stainless steel members shall be considered excluding fixing accessories such as nuts, bolts, fasteners etc.). LOCATIONS – As per requirement inside & outside station buildings
7.0 **SIGNAGE SYSTEMS**	7.1 <u>BACKLIT SIGNAGE SYSTEMS / GLOW SIGN BOARD</u> - Supply and installation of double sided back-lit Signage including providing & fixing structural steel frame made out of medium duty 25mm square pipe section, red oxide primer with two coat of synthetic enamel painting, providing & fixing 26 gauge powder coted MS Sheet top, bottom & sides, echo solvent printing on 3M Lumina backlit flex, with LED Lights with all fittings but excluding electric cable & conduit provision etc. complete as per drawing and specification. LOCATIONS – As per requirement inside & outside station buildings.

	7.2 EMERGENCY SIGNAGE SYSTEM - Supply and installation of 3mm Red Acrylic letters with side wall PU coated (Red) aluminium channel, Reverse ACP channel for LED fixing Samsung LED chip and water proof power supply on back side. Fire Exit, Emergency, Informatory Signage's to be in LED Ni Cd Battery backup up to min 90 minutes, emergency Exit light. hung on walls and some shall be double sides and hanging from ceiling with SS rods., size as per standard Fire Evacuation Plan Signages to be in 4mm thick Acrylic Base + Photoluminescent sheet / Auto Glow sheet with 2hrs glowing effect+ Content in vinyl printing, signage to be fixing with double sided tape with silicon paste on walls, size as per standard LOCATIONS – As per required inside & outside station buildings
	7.3 CNC CUT METAL SIGNAGE SYSTEM - Design, Composition, Supply & Installation Signages for building facade, signage letters of Stainless Steel 304 graded 18swg laser sheet cut fabricated letters for text: as per requirement & design, with 25mm lipping in 22swg Stainless steel sheet 304, Polyurethane Coating (PU Coated) in color specified, with concealed lighting behind the letters in White LED Modules of Samsung / Philips make in 0.72 watts, with requisite Power supply of Meanwel branded with 2 years warranty, along with Breaker and Legrand / L&T timer, to be mounted on Syntax junction box to be fixed near sign location; Power should be provided near sign locations; all wiring has to be concealed and should not be visible, all fixtures should be in Stainless Steel / aluminium, concealed behind the letters. LOCATIONS – As per required inside & outside station buildings
	8.1 MIRROR/CLEAR /FLOAT GLASS of 6/8mm thickness LOCATIONS – 1. Miscellaneous interior partitions / windows etc 2. Mirror / frosted glass for toilet for privacy
	8.3 MODULAR S.S./GLASS RAILING LOCATIONS – Ornamental railing on external elevation as / per design
	8.2 HIGH PERFORMANCE GLASS LOCATIONS – Ticket sale counter
	8.5 FIRE RATED GLASS LOCATIONS – Miscellaneous interior partitions / windows etc

	8.6 UPVC DOOR WINDOW LOCATIONS – Miscellaneous interior doors & windows etc
	8.7 MODULAR, LOOSE FURNITURE & CHAIRS LOCATIONS – Miscellaneous waiting area & circulation area

INTERIOR FINISHES

Item Description	Item specifics
FLOORING / STONE FLOORING	1.1 GRANITE FLOORING- 20 mm thick pre-polished & flamed (as per architectural proposal) Granite stone slabs in Floors as per approved sample as per Drawing and Pattern with Skirting of 100mm high laid over 20mm (average) mortar plaster in ordinary Portland cement in 1:4 (1 cement: 4 coarse sand) and joints finished with white cement paste mixed with pigment matching the shade of the granite stone cement slurry etc LOCATIONS – 1. AFC Gate entry area 2. Ticket Procurement Area (for demarcating the area) 3. Platform area 4. Miscellaneous circulation area 5. Crowd dispersal area / food court area
	1.2 KOTA STONE FLOORING - 25-35 mm thick Kota stone as per approved sample slabs of uniform colour Green for staircase treads and risers and Floor in single piece laid over 20 mm (average) cement mortar 1:4 rough plaster (1 cement: 4 coarse sand) and jointed with grey cement slurry mixed with pigment to match the shade of the slabs including making nosing/chamfering of edges and fixing anti-skid tape. LOCATIONS – 1. Terrace flooring 2. Foot Over Bridge 3. Staircase
	1.3 VITRIFIED TILE FLOORING – 10mm thick Full Body Vitrified Tile (600mm x 1200mm / 900mm x 900 mm) of approved make and shade in flooring of approved size and pattern as per drawing, laid over 20 mm (average) cement mortar 1:4 (1cement: 4 coarse sand) fixed with adhesive (Water based) of adequate thickness, filling white cement grout with desired pigment in groove to match the tile color. Flooring item to include POP protection to flooring work. Also Skirting over 12mm thick mortar 1:3 (1 cement: 3 coarse sand) including cutting, grouting the joints with white cement and matching pigment curing etc. The Tile

	Surface & Dimensions including physical properties shall follow the quality standards of IS-13630. LOCATIONS – 1. Office area 2. Shops/ Kiosks 3. Ticket sale office
	1.4 <u>TACTILE FLOORING</u> - Precast Tactile Chequered factory-made tiles 50- 60mm thick with graded marble chips of sizes upto 12mm in stairs treads jointed with neat cement slurry mixed with pigment to match the shade of the tiles including rubbing and polishing, rounding of nosing etc. complete on 20mm thick bed of cement mortar 1:4 (1 cement: 4 Coarse sand) LOCATIONS – (For convenience of especially abled people) 1. Platform area 2. All circulation area/ Crowd dispersal area
	1.5 <u>DADO TILES</u> **-** Providing and laying 8mm thick Ceramic tile (600mm x 1200mm) of approved make, size and shade and pattern complete as per drawing, laid over 12 mm (average) cement mortar 1:3 (1cement: 3 coarse sand) fixed with adhesive (Water based) of adequate thickness, spaced with 3mm wide PVC spacer, Filling epoxy grout material in groove in desired colour. The grout shall consist of resin hardener and filler powder base material and filled with as per recommendation of manufacturer's specifications etc. complete. as per manufacturer specifications. Flooring item to include POP protection to flooring work. Also Skirting over 12mm thick mortar 1:3 (1 cement: 3 coarse sand) including cutting, grouting the joints with white cement and matching pigment curing etc to the entire satisfaction of Independent Engineer LOCATIONS – 1. All toilets 2. Pantry area of office 3. Food shops

	1.6 ANTI SKID - 10 mm thick Antiskid tiles approved make, size and shade in flooring and pattern complete as per drawing, laid over 20 mm (average) cement mortar 1:4 (1 cement : 4 coarse sand) or fixed with adhesive (Water based) of adequate thickness, filling white cement grout with desired pigment in groove to match the tile colour. Flooring item to include POP protection to flooring work. Also Skirting over 12mm thick mortar 1:3 (1 cement: 3 coarse sand) including cutting, grouting the joints with white cement and matching pigment curing etc. LOCATIONS – 1. All toilets
	1.7 GRANITE COUNTERS - Pre-polished / Sandblasted 18 mm thick approved quality and shade of granite stone slab in counter, facia and upturn machine cut-edges fixed over average 20 mm thick cement mortar 1:4 (1 cement : 4 coarse sand) as per profile including making holes for Wash basin/sinks mixer fittings and soap dispenser etc. basic rate For site of required shape and the joints filled with white cement mixed with pigment to match the shade of granite slab LOCATIONS – 1. Ticket sale counter 2. Cloak room counter 3. All toilet counter 4. Office pantry counter
PLATFORM ROOFING	2.1 ALUMINUM STANDING SEAM ROOFING SYSTEM – *Supply and fixing of "SELF SUPPORTED" SECRET FIX STANDING ROOFING SYSTEM IN 0.9mm THICK AA 3004/3005 ALUMINIUM ALLOY. The general roof-construction shall comprise from bottom to top: *Top layer – 65/400 Straight/Curved/Tapered profile sheeting manufactured from aluminium self-supported standing seam roof system from aluminium alloy AA 3004/3005 H46 (AlMn1Mg1) as specified in BS EN 1396: 2015 minimum material thickness of 0.9 mm and in finish of PVDF (paint suppliers: ppg/ becker/ akzonobel / valspar) consisting of anti- corrosive primer of 5 microns, topcoat of PVDF in 20 +/-2 microns with the Total coating thickness as 25 Microns. The coil for the top panel shall have 75 microns transparent protective guard film with the roofing manufacture name printed, This Guard film prevents

	scratches during roll forming & handling. * The standing seam sheet panel of approved make shall be fixed on to the purlin using aluminium ST clips. *The head of clips shall be fixed accurately to ensure the roof sheeting to expands and contracts freely during thermal movement. The material properties shall be as follows: - Ultimate tensile strength minimum 200 N/mm2, 0.2% Proof Stress: min 185 N/mm2, - Sheets are to be laid to meet the requirements of the building geometry and fixed on aluminium clips. Clip to be fixed with purlins/Tophats with SS 304 screws only. - Sheets are to be laid to meet the requirements of the building geometry and fixed on Aluminium clips. Clip to be fixed with SS 304 screws only. Accessories: - **A.** Aluminium ST clips – in grade 6061- T6, of suitable height and Aluminium clips with thermal barrier pads to be fixed to the purlins with SS 304 screws only. The fasteners size shall be calculated as per the design. Detailed structural calculations shall be provided by the manufacturer for the Clip Pull out force. Each aluminium clip shall come with a 5mm height black polyamide thermal barrier pad. The rate shall include all accessories & panels. (The erection / fixing /installation shall be done by specialized / authorized agency as per approved list. The installation team shall be fully trained and approved by the manufacturer. The roofing shall be installed only by approved installers recommended by manufacturer. **B.** Aluminium Flashings – Flashings manufactured from aluminium alloy AA 3004/3005 (AlMn1Mg1) as specified in BS EN 1396: 2015 minimum material thickness of 0.9 mm & same finish as of panel. Flashing girth to be up to 500mm. **C.** Gutter Single Skin (If required) - Gutters -supply and fixing of gutters as per detailed drawings consisting and aluminium gutter of 2mm in mill finish thickness, fabricated as per the sizes required. Supply and fixing of single skin 2 mm Aluminium gutter, GRADE AA 1100/AA1200 ALLOY with EPDM Expansion joints for every 6.0 mtr length, Down take spout dia 150 mm at every 10 m gutter length, & other accessories and welding at joints. The Girth of gutter would be maximum 1200 mm. LOCATIONS – Part roofing of station building

	2.2 POLYCARBONATE SUNLIGHT PANELS - Providing & fixing of Flux polycarbonate roof with multilayer standing seam polycarbonate panel system of 25 mm thickness (minimum) including all standard fixing accessories on top of the supporting structure (Paid extra in another item) complete & as per the direction of the engineer in charge. The Panels shall include opaque and translucent combination of louvers integrated in the panel for Angular Daylighting and, for better thermal insulations and diffusion of light especially with combination designed for tropical regions & shading throughout the day for better ambient temperature below the roof. Panels shall be manufactured with vertical standing seam at both sides of the panel. Panels have to be fixed on Purlin with snap on connectors with grip lock double tooth locking mechanism and will be secured on MS structure / purlins (will be paid Separately) with HDSS Fastener and double tooth polycarbonate connector for best stability and having a pull-out load of min. 7000N (7KN) tested as per ISO 6892:1998 and IS 1608: 2005. Panels shall have minimum seven layers with all fixing accessories to ensure best performance for wind uplift, vibration, oil canning and visual appearance. performance Panels cell structure be in truss bridge design or commonly called X structure for better strength and stability. The entire panel system shall be with a width from min.1200 mm. Color: A Combination of Clear/White Louvers or any colour in a single panel and as per approved shade LOCATIONS – 1. Part roofing of station building as/design
	2.3 ALUMINUM COMPOSITE PANEL CLADDING - Fabrication and installation of Aluminium composite panel cladding complete with all necessary sub structures, anchors hardware and fittings to provide a total installation, fully in conformity with requirements and intent of the drawings, specifications and instructions of the Independent Engineer. The Aluminium composite panel to be composed of 3 mm thermoplastic core of low-density polyethylene sandwiched between two skins of 0.50 mm thick aluminium alloy sheet as per specification, total thickness of aluminium composite panel to be 4 mm complete. The provision of aluminium pipe framing of adequate size to be included. LOCATIONS – Part roofing of station building as/design

	2.4 GYPSUM FALSE CEILING BOARDS LOCATIONS – 1. Office ceiling
	2.5 ALUMINIUM PANEL ROOFING LOCATIONS – 1. Interior ceiling of public areas

1. AREA SPECIFIC SPECIFICATIONS

1. All SS (Stainless Steel) used shall be matt brushed steel.
2. All exposed edges of vitrified tiles shall have granite edging of minimum 150 mm width. Special care shall be taken to see that the granite selected for such edging shall coordinate well aesthetically with the colour of the vitrified tiles.
3. Treads and landings shall have visual demarcation of level differences.
4. Natural stone edges shall be bull nosed.
5. Doors shall be laminated solid core flush doors of 40 mm thickness and 2400 mm height.
6. Door jambs shall be in granite.
7. Windows shall be UPVC and shall be three track sliding panels with mesh provision.
8. Structural glazing shall be in spider web fitting. Glass shall be extra clear, non-tinted 12 mm toughened. Structure to be certified by structural engineer for withstanding heavy wind load etc.
9. Decorative light fixtures and fans and chandeliers for core areas.
10. Fans in public areas shall be high volume low RPM fans.
11. AC equipment shall be VRF with provision of out-door locations in non-façade areas.
12. For concourse, entrance foyer and lobby, ticketing counter areas and other heavy circulation areas, flooring shall be in granite or flamed granite with matching Granite dado till height of 2100 mm in all public areas. Dado shall be fixed flushed with wall surface. No projection shall be allowed.
13. For all staircases, all treads shall have bull nosing. Railings to be in matt and brushed stainless.
14. All granite flooring surfaces shall have adequate anti-skid arrangement.
15. Back-office areas like housekeeping, administration and other non-public areas shall have matt vitrified tiles of 600x600 mm.
16. Lifts on all floors and Entrance facades shall be finished in Granite. Inside of lift, surfaces shall be finished as per manufacturers specifications preferably in matt or brushed SS finish.
17. For platform level; boarding and de-boarding areas: Flooring shall be in Kota stone with white and green marble strips or patterns as per design or granite flamed and plain as specified. These shall be finished with adequate anti-skid treatment.
18. Departure hold area flooring to be finished in Granite and flamed Granite pattern as per design.

2. TOILET SPECIFICATIONS:

- Public toilet and public amenities block shall have flooring of 600x600 mm or larger full body vitrified tiles, non-gloss and anti-skid. All dado of such blocks shall have a minimum height of 2400 mm or more. Size of tiles can be 600x 1200 mm
- Internal partitions of EWC cubicles and others shall be in HDF partition system.
- EWC wall hung.
- Wash Basins
- Urinals/ Bidets
- Urinal partition.
- Tap and other fixtures.
- Grab Bar, SS Hand Dryer, SS Paper Towel Dispenser, SS Toilet Paper Dispenser, Battery operated wall mounted Liquid Soap Dispenser.

3. MINIMUM QUALITY ASSURANCE PLAN

The proposed building is a prestigious project and quality of work is of paramount importance. Concessionaire shall have to engage well-experienced skilled labour and deploy modern T&P and other equipment to execute the work. Many items like Structural glazing , Aluminium work ,exposed finish form work, specialized flooring work, state of the Art Construction Joint treatment , specialized water proofing solution like Polysulphide sealant and backer rod fixing in expansion joints, factory made door- window shutters, proper slope maintaining in toilet units, sanitary-water supply installation, textured finishing, water proofing treatment will specially require engagement of skilled workers having experience particularly in execution of such items.
The Concessionaire shall ensure quality construction in a planned and time bound manner. Any sub- standard material / work beyond set out tolerance limit shall be summarily rejected by the Independent Engineer& Concessionaire shall be bound to replace / remove such sub-standard / defective work immediately. If any material, even though approved by Independent Engineer is found defective or not conforming to specifications shall be replaced / removed by the Concessionaire at his own risk & cost.

The Concessionaire shall submit, immediately after the award of work a detailed and complete method statement for the execution, testing and Quality Assurance Plan/procedures for basic materials and such items, to be followed during the execution of the work, for approval of the Independent Engineer. The 'Methods statement' is a statement by which the construction procedures for any activity of construction are formulated and stated in chronological order. The 'Methods statement', should have a description of the item with elaborate procedures in steps to implement the same, the specifications of the materials involved, their testing and acceptance criteria, equipment to be used, Precautions to be taken, steps of measurement, etc.

Concessionaire shall submit minimum "Quality Assurance" plan within 45 days after award of work which shall be consisting of:

i. Lot size, number of required tests and frequency of testing. While deciding these criteria CPWD/HPPWD Specifications & Provisions of BIS Code and Standard Practices may be referred. Volume of work, Practical Difficulties and Site Conditions etc. may also be kept in view. The lot size, number of tests and frequencies of testing can be altered or modified by the Independent Engineer from the prescribed limits.

ii. It should clearly indicate the Machinery and other Tool & Plants required to be deployed at site by the Concessionaire. Entire Machinery and T&P may not be required at the start of work, therefore, a proper time schedule by which each Machinery & T&P is to be brought at site should also be indicated.

iii. Receipt of Material, testing of the same & Maintenance of Register of Tests.

iv. All the registers of tests carried out at Construction Site or in outside laboratories shall be maintained by the Concessionaire. Which may be inspected by Independent Engineer or his/her designee at any point of time.

v. The Concessionaire shall allow access to Third Party Quality Assurance engaged by Independent Engineer to have a control on quality and methodology of execution. At least 25% of Samples of materials including Cement Concrete Cubes shall be taken jointly by Concessionaire and TPQAA / Independent Engineer or his authorized representative. All arrangements for transporting and getting them tested shall be made by the Concessionaire. The Concessionaire shall extend full cooperation to Third Party Quality Assurance Agencies engaged by the department for the Project during their field visits for arranging the necessary quality assurance tests for materials and the construction works.

   All the test in field lab setup at Construction Site shall be carried out by the Quality control team to be engaged by the Concessionaire which can be witnessed by Independent Engineer or his/her designate. A dailyreport of Tests to be conducted on a day shall be submitted to Independent Engineer or his/her designee.

vi. All the entries in the registers will be made by the designated Engineering Staff of the Concessionaire.

vii. Concessionaire shall be responsible for safe custody of all the test registers.

viii. Submission of copy of all test registers, Material at Site Register and hindrance register along with each alternate Running Account Bill and Final Bill shall be mandatory.

ix. All material received at site shall be entered in MAS Register and copy of Supply order, MTC & Bill-invoice shall be maintained in order. The MAS Registers including Cement and Steel Registers shall be maintained by a qualified staff of Concessionaire which may be inspected by Independent Engineer or his/her designee at any time. The daily report of receipt of material shall be sent to Independent Engineer or his/her designee.

x. All the materials to be used in the work, to give the finished work

complete in all respects, shall comply with the requirements of the specifications and shall pass all the tests required as per specifications as applicable or such specifications / standards as directed by the Independent Engineer.

xi. As and when any important item is taken up for execution, the Concessionaire shall submit the specifications and develop a checklist and Pour card. This sample checklist should be got approved from the Independent Engineer and should be used at site. This check list should be shown to the Independent Engineer or his/her designee during inspection. This procedure is to be followed for all hidden items, CC/RCC work, Steel-reinforcement, shuttering, cast-in-situ mosaic flooring, doors & windows, plumbing, including water supply pipe lines, roof treatment, earth filling etc.

xii. The Concessionaire shall render all help and assistance in documenting the total sequence of this project by way of photography, slides, audio-video recording etc. nothing extra shall be payable to the Concessionaire on this account.

xiii. All materials and fittings brought by the Concessionaire to the site for use shall conform to the samples approved by the Independent Engineer which shall be preserved till the completion of the work. Wherever brand / quality of material are not specified in the item of work, the Concessionaire shall submit the samples as per suggested list of brand names given in the tender document / particular specifications for approval of Independent Engineer. For all other items, materials and fittings of ISI Marked shall be used with the approval of Independent Engineer. Wherever ISI Marked material / fittings are not available, the Concessionaire shall submit samples of materials / fittings manufactured by firms of repute conforming to relevant specifications or IS codes and use the same only after getting the approval of Independent Engineer.

xiv. The Concessionaire shall procure and provide all the materials from the manufacturers / suppliers as per the list attached with the tender documents, as per the item description and particular specifications for the work. The equivalent brand for any item shall be permitted to be used in the work, only when the specified make is not available.

This is, however, subject to documentary evidence produced by the contactor for non-availability of the brand specified and also subject to independent verification by the Independent Engineer. In exceptional cases, where such approval is required, the decision of Independent Engineer as regards equivalent make of the material shall be final and binding on the Concessionaire. No claim, whatsoever, of any kind shall be entertained from the Concessionaire on this account. Nothing extra shall be payable on this account. Also, the material shall be procured only after written approval of the Independent Engineer.

xv. All materials whether obtained from stores or otherwise shall be got checked by the Independent Engineer or his authorized supervisory staff on receipt of the same at site before use.

xvi. The tests, as necessary, shall be conducted in the laboratory approved by the Engineer–in-Charge. The samples shall be taken for carrying out all or any of the tests stipulated in the particular specifications and as directed by the Independent Engineer or his authorized representative.

xvii. All the registers of tests carried out at Construction Site or in outside laboratories and all material at site (MAS) registers including cement register shall be maintained by the Concessionaire as per mention in this document shall be issued to the Concessionaire by Independent Engineer. All the entries in the registers will be made by the designated Engineering Staff of the Concessionaire and same should be regularly reviewed by IE. Concessionaire shall be responsible for safe custody of all the registers.

xviii. The Concessionaire shall at his own risk and cost make all arrangements and shall provide all such facilities including material and labour, the Independent Engineer may require for collecting, preparing, forwarding the required number of samples for testing as per the frequency of test stipulated in the contract specifications or as considered necessary by the Independent Engineer, at such time and to such places, as directed by the Independent Engineer. Nothing extra shall be payable for the above.

xix. The Concessionaire or his authorized representative shall associate in collection, preparation, forwarding and testing of such samples. In case he or his authorized representative is not present or does not associate him, the result of such tests and consequences thereon shall be binding on the Concessionaire. The Concessionaire or his authorized representative shall remain in contact with the Independent Engineer or his authorized representative associated for all such operations. No claim of payment or claim of any other kind, whatsoever, shall be entertained from the Concessionaire.

xx. All the testing charges shall be borne by the Concessionaire and nothing extra shall be admissible and entertained by the department.

xxi. All the hidden items such as water supply lines, drainage pipes, electrical conduits, sewers etc. are to be properly tested as per the design conditions before covering.

xxii. Water tanks, taps, sanitary, water supply and drainage pipes, fittings and accessories should conform to CPWD Specifications. The Concessionaire should engage licensed plumbers for the work and get the materials (fixtures/fittings) tested by the Municipal Body/Corporation authorities, wherever required, at his own cost.

Nothing extra shall be paid on this account.

xxiii. The Concessionaire shall give performance test of the entire installation(s) as per the standing specifications before the work is finally accepted and nothing extra whatsoever shall be payable to the Concessionaire for the test.

xxiv. The Concessionaire shall arrange electricity at his own cost for testing of the various electrical installations as directed by Independent Engineer and for the consumption by the Concessionaire for executing the work. Also, all the water required for testing various electrical installations, fire pumps, wet riser / firefighting equipment's, fire sprinklers etc. and also testing water supply, sanitary and drainage lines, water proofing of underground sump, overhead tanks, water proofing treatment etc. shall be arranged by the Concessionaire at his own cost and inclusive in the quoted rate by Concessionaire. Nothing extra shall be payable on this account.

xxv. The Concessionaire shall make available, on request from the

Department, the copies of challan, cash memos, receipts and other certificates, if any, vouchers towards the quantity and quality of various materials procured for the work. The Concessionaire shall also provide information and necessary documentation on the name of the manufacturer, manufacturer's product identification, manufacturer's instructions, warning, date of manufacturing and test certificates (from manufacturers for the product for each consignment delivered at site), shelf life, if any etc., for the department to ensure that the material have been procured from the approved source and is of the approved quality, as directed by the Independent Engineer. Wherever specified, day-to- day account of receipt of such material shall be maintained at site of work.

xxvi. If the Concessionaire does not provide adequate supporting staff or labour or both for carrying out field tests or collecting and forwarding samples to outside laboratory or for maintaining test records, Independent Engineer may carry out field tests or collect and forward sample to outside laboratory or appoint any person to maintain the registers at risk and cost of Concessionaire. The charges so incurred shall be entirely borne by Concessionaire and shall be deducted from Running or final bill of Concessionaire.

xxvii. In case there is any discrepancy in frequency of testing as given in list of mandatory tests and that in individual sub-heads of work as per CPWD Specifications, higher of the two frequencies of testing shall be followed and nothing extra shall be payable on this account.

xxviii. A site laboratory with the minimum equipment as specified in Schedule F of General condition of contract as given in appendix D of sub head 5 of CPWD specifications vol.I 2009 shall be established by the Concessionaire, made functional and maintained within Three month from the award of work without any extra cost to the department. All the relevant and applicable standards and specifications shall be made available of the Concessionaire at his own cost in the field laboratory.

xxix. The Concessionaire shall maintain all the work in good condition till the completion of entire work. The Concessionaire shall be responsible for and shall make good, all damages and repairs, rendered necessary due to fire, rain, traffic, floods or any other causes. The Independent

Engineer shall not be responsible for any claims for injuries to person/workmen or for structural damage to property happening from any neglect, default, want of proper care or misconduct on the part of the Concessionaire or of any other of his representatives, in his employment during the execution of the work. The compensation, if any, shall be paid directly to the Department / authority / persons concerned, by the Concessionaire at his own cost. Nothing extra shall be paid on this account.

Horticulture and Misc - Works:

Scope of Works in this section shall include:

1. Compound Wall and Gates.
2. Internal Roads, Drive ways, Pathways, Parking Area, Drop off Plaza’s and Courtyard

3. Landscaping work at terraces as per drawings,
4. Storm water drain, Saucer drain, Catch basins
5. Seats and FRP Planters
6. Landscape Lighting.
7. Pathways with concrete pavers / stone tiles / 20mm thick IPE wooden Cladding, White River (Stone) Pebbles etc.
8. MS Pergola with Laminate Glass top
9. Pavilions for shaded seating
10. Horticulture work.
11. Solar Tree
12. Chain Link Fence with door for Substation and DG Yard
13. Course Aggregate filling at DG Yard
14. Precast chamber / drain covers designed for fire tender load (on road crossing)
15. IC Chamber Covers recessed type to take landscape floor finish of size and shape as per drawings etc. as per landscape drawings

Specifications for Horticulture works

Horticultural operations shall be started on ground previously levelled and dressed to required formation levels and slopes. In case where unsuitable soil is met with, it shall be either removed or, replaced or it shall be covered over to a thickness decided by the Engineer-in-charge with good earth (fit for plantation). In the course of excavation or trenching during horticultural operations, any walls, foundations, etc. met with shall not be dismantled without pre-measurement and prior to the written permission of the Engineer-in-charge.

All work to be carried out for landscape and horticulture works as mentioned the drawings & Architectural Intent and per the CPWD specifications and as per the instruction of Independent Engineer. Concessionaire need to submit all material samples to Independent Engineer for approvals before installation of the same.

Concessionaire shall follow general civil work under this section i.e. excavation, PCC, backfilling, RCC work, shuttering, reinforcement steel, brick masonry, plastering, CC flooring, stone flooring, stone coping, structural steel work, painting / finishing, kerb stones, precast drain covers with frame, recess chamber covers with frame in FRP, regular chamber or drain cover in FRP, good earth supply and laying, sludge supply, mixing and laying, trees, shrubs, creepers and lawn etc.

Concessionaire shall study all the landscape and architectural drawings and finishing schedule for making his item schedule, No deviation shall be permitted.

Concessionaire shall submit all material samples to Independent Engineer for approvals before execution.

Chamber Cover with frame / Strom water Drain Cover with frame: Concessionaire shall provide regular chamber or drain covers with frame constructed in FRP / GRP of size, shape and pattern as per requirement as mentioned in drgs. Chamber cover shall be thoroughly tested for load bearing and permanent set as per BSEN 124 1994 & AASHTO M306 standards.

Recess Chamber Cover with frame: Concessionaire shall provide recessed chamber covers with frame constructed in FRP / GRP of size and shape as per requirement as mentioned in drgs. Chamber cover shall be thoroughly tested for load bearing and

permanent set as per BSEN 124 1994 & AASHTO M306 standards. Top shall be finished as per landscape design requirement.

Annexure VII

Schedule D

Commissioning and opening of the system for public use

1. Approach and Methodology for inspection, testing and commissioning

1.1 The Concessionaire shall submit Inspection, Testing and Commissioning Plan. The plan shall be prepared in line with the requirements as stipulated in the relevant applicable codes. The Plan shall contain, but not limited to, the following topics:

(i) Methodology for inspection, testing and commissioning;
(ii) All Inspections and Quality Hold Points;
(iii) Description of key personnel in the Testing and Commissioning team;
(iv) Documentation for conducting tests and commissioning procedures.

1.2 The Independent Engineer will then check the plans to see whether, it meets the requirements. The Independent Engineer shall inform the Concessionaire in writing within a reasonable period after receipt of the above information:

(i) that the Concessionaire proposed methods of inspection, testing and commissioning have the consent of the Independent Engineer; or
(ii) in what respects, in the opinion of the Engineer the Concessionaire 's proposed methods etc., fail to comply with the Employer's Requirements and/or the Final Design Document;
(iii) Would be detrimental to the Works and/or to the other works comprising the Project;
(iv) Do not comply with the other requirements of the Contract; or
(v) As to the further documents or information which are required to enable the Engineer to properly assess the proposed methods of inspections, etc.

1.3 In the event that the independent Engineer does not give his consent, the Concessionaire shall take such steps or make such changes in the said methods or supply such further documents or information as may be necessary to meet the Engineer's requirements and to obtain his consent. The Concessionaire shall not change the methods of inspection, testing and commissioning, which have received the Independent Engineer's consent without further review and consent in writing of the Engineer.

1.4 Notwithstanding the foregoing or that certain of the Concessionaires proposed methods of inspection etc. may be the subject of the consent of the Independent Engineer, the concessionaire shall not be relieved of any liability or obligation under the Contract.

2. Test during Trial run and final commissioning

This shall comprise of the followings;

(i) Complete routine testing of system in accordance with EN 1709 and BIS 17233 (latest revision) in empty, both side, one side loaded condition towards the downhill side as stipulated in the applicable codes and commissioning plan.

(iii) Pre-commissioning Testing and Commissioning of complete system and its sub component not limited to the followings in accordance with EN 1709 (latest revision) and BIS 17233 (latest revision);

a) Satisfactory performance of all safeties as specified during the trial operation of system
b) Satisfactory performance of all brakes.
c) Satisfactory performance of integrated rescue system

(iv) Trial run during the Final commissioning for the minimum hours of operation as stipulated in the relevant EN 1709 (latest revision) and BIS 17233 (latest revision). The periodicity of test run may be enhanced to the satisfaction of Independent Engineer as mutually decided with Testing and commissioning team of concessionaire.

Upon witnessing the successful test and trial run, the Independent Engineer shall document the records of tests and will issue the final commissioning certificate for the project.

3. Public opening of system

Before opening of the Ropeway to the public use, the concessionaire need to approach the Ropeway Inspector or expert committee as nominated by the State Govt. as per the prevailing Himachal Pradesh Ropeways Act (with latest amendment)

Upon witnessing the successful test and trial run, the Ropeway Inspector/ expert committee shall issue the fitness certificate for safe operation of passenger ropeway before opening for the public.

Annex - VI

(Schedule-D)

Specifications and Standards for Ropeway Project

1. ENVIRONMENTAL, HEALTH AND SAFETY

1. The Public Liability Insurance Act, 1991 and Rules 1991 (India)
2. Environment Protection Act, 1986 and Rules 1986 (India)
3. Air (Prevention and Control of Pollution) Act, 1981 (India)
4. Water (Prevention and Control of Pollution) Act, 1974 (India)
5. The Noise Pollution (Regulation and Control) Rules, 2000 (India)
6. Notification on Control of Noise from Diesel Generator (DG) sets, 2002 (India)
7. Energy Conservation Building Code (India), 2007
8. Recycled Plastic Usage Rules, 1998
9. Manufacture, Storage, and Import of Hazardous Chemicals Rules, 1989
10. The Hazardous Waste (Management and Handling) Rules, 1989
11. Batteries (Management and Handling) Rules
12. E-Waste Manual 2005
13. Municipal Solid Waste Management rules 2001
14. Bio Medical Waste rules 2001
15. Water (prevention and Control of Pollution) Cess Act 1977 and rules 1978

2. BUREAU OF INDIAN STANDARDS

1. IS 2062: Weldable structural steel
2. IS 8500: Weldable structural steel (Medium and High strength quantity)
3. IS 269: Ordinary and low heat Portland cement
4. IS 802: Code of practice for use of structural in latticed tower
5. IS 875: Code of practice for structural safety of buildings, loading standards
6. IS 1786: High strength deformed steel bars and wires for concrete reinforcement
7. IS432: Mild steel bars conforming
8. IS 1888: Method of load test on soils
9. IS 2309: Code of practice for protection of buildings and allied structures against lightening
10. IS 1983: (latest revision) National building code of India 1983 with Amendment No. 1 to NNBC of India
11. IS 2064: Code of practice for selection, installation and maintenance of sanitary appliances.
12. IS 2065: Code of practice for water supply in buildings.
13. IS 7205: Safety code for erection structures, steelwork.
14. IS 8989: Safety code for erection of concrete framed structures.
15. IS 1172: Code of basic requirement for water supply drainage and sanitation.
16. IS 9595: Recommendations for Metal Arc Welding of carbon and carbon manganese steels
17. IS 822: Code of procedure of inspection of welds
18. IS 1364: Precision and semi-precision hexagonal bolts, screws, nuts and lock nuts
19. IS 1648: Code of Practice for fire safety of buildings.
20. IS 7861: (Part II) Code of Practice for extreme water concreting
21. IS 383 (1970): Coarse and fine aggregates from natural Sources for concrete
22. IS 432 (1982): Mild steel and medium tensile steel bars and hard-drawn steel wire for concrete reinforcement (Part 1) Mild steel and medium tensile steel bars (Part 2) Hard-drawn steel wire
23. IS 453 (1993): Double-acting spring hinges
24. IS 455 (1989): Portland slag cement

25. IS 456 (latest revision) Code of practice for plain and reinforced concrete
26. IS 457 (1957): Code of practice for general construction of plain and reinforced concrete for dams and other massive structures
27. IS 771 (All Parts)1979 Glazed fire-clay sanitary appliances
28. IS 779 (1994): Water meters
29. IS 800 (1984): Code of practice for general construction in steel
30. IS 818 (1961): Code of Practice for safety and health requirements in electric, gas welding and cutting operations steel
31. IS 1230 (1979): Cast iron rainwater pipes and fittings
32. IS 1237 (1980): Cement concrete flooring tiles
33. IS 1343 (1980): Code of practice for Pre-stressed Concrete
34. IS 1646 (1982): Code of Practice for fire safety in buildings (general) Electrical Installation
35. IS 1892 (1979): Code of practice for sub surface investigations for foundations
36. IS 1893 latest revision Criteria for earthquake resistant design of structures
37. IS 1904 (1986): Design and construction of foundations in Soils General Requirements
38. IS 1905 (1987): Code of practice for Structural use of unreinforced Masonry
39. IS 1948 (1961): Aluminium doors, windows and ventilators
40. IS 2074 (1992): Ready mixed paint, air-drying, red oxide-zinc chrome, priming
41. IS 2090 (1983): High tensile steel bars used in prestressed concrete
42. IS 2119 (1980): Code of practice for construction of brick- cum-concrete composite
43. IS 2386 (all parts): 1963 Methods of test for aggregates for concrete
44. IS 2430 (1969): Methods of sampling of aggregate for concrete
45. IS 2548 (1996): Plastic seats and covers for water closets
46. IS 2556(all parts): 1994/95 Vitreous sanitary appliances
47. IS 2681 (1993): Non-ferrous metal sliding door bolts (aldrops) for use with padlocks
48. IS 2720 Methods of Tests for Soils
49. IS 2751 (1979): Recommended practice for welding of mild steel plain and deformed bars used for reinforced construction
50. IS 2911 (all parts): 1979 Code of practice for design and construction of pile foundations
51. IS 2925 (1984): Specification for Industrial Safety Helmets
52. IS 2950 (1981): Code of practice for design and construction of raft foundations
53. IS 3370 (1965): Code of practice for concrete structures for the storage of liquids
54. IS 3696 (Part 1) 1987 Safety Code for Scaffolds and Ladders - Scaffolds
55. IS 3696 (Part 2):1991 Code of Safety for Scaffolds and Ladders - Ladders
56. IS 3764 (1992): Excavation Work - Code of Safety
57. IS 3812 (1981): Fly Ash for use as pozzolanans and admixture
58. IS 3955 (1967): Code of practice for design and construction of well foundations
59. IS 4082 (1996): Recommendations on stacking and storage
60. IS 4130 (1991): Demolition of Buildings – Code of Safety
61. IS 4326 (1993): Earthquake resistant design and construction of buildings – code of practice
62. IS 4912 (1978): Safety Requirements for floor and wall openings, railings and toe boards (first revision)
63. IS 4925 (1968): Concrete batching and mixing plant
64. IS 4926 (1976): Ready mixed concrete
65. IS 5121 (1969): Safety Code for Piling and Other Deep Foundations
66. IS 6403 (1981): Code of practice for determination of bearing capacity of shallow foundations
67. IS 6994 (1973): Specification for Industrial Safety Gloves
68. IS 7205 (1974): Safety code for erection of structural steel work

69. IS 7293 (1974): Safety code for working with construction machinery
70. IS 7861 (1975): Code of practice for extreme weather concreting (Part 1) For Hot Weather concreting (Part 2) For Cold Weather concreting
71. IS 7969 (1975): Safety code for handling and storage of building materials
72. IS 8989 (1978): Safety Code for Erection of Concrete Framed Structures
73. IS 9556 (1980): Code of practice for design and construction of diaphragm walls
74. IS 9595 (1996): Recommendations for metal arc welding of carbon and carbon manganese steels
75. IS 9762 (1994): Polyethylene floats (spherical) for float valves
76. IS 10262 (1982): Recommended guidelines for concrete mix Design
77. IS 10379 (1982): Code of practice for field control of moisture and compaction of soils for embankment and subgrade
78. IS 10500 (1991): Drinking Water
79. IS 11972 (1987): Code of Practice for safety precautions to be taken when entering a sewerage system
80. IS 12349 (1988): Fire Protection – Safety Signs
81. IS 13415 (1992): Code of safety for protective barriers in and around buildings
82. IS 13416 (all parts):1992 Recommendations for preventive measures against hazards in the workplace, Part 1, Falling material hazards protection
83. IS 13430 (1992): Safety During Additional Construction and Alteration to Existing Buildings - Code of Practice
84. IS 13583 (1993): Code of Practice for training of Crane Drivers Part

3. CENTRAL PUBLIC WORKS DEPARTMENT FOR CIVIL AND ELECTRICAL WORKS

1. Maintenance Manual - 2000, 2003, 2007, 2012, 2019
2. Manual on Accessible Built Environment - 2019
3. Rain Water Harvesting & Conservation Manual - 2019
4. Green Rating Manual - 2019 2021
5. Quality Assurance Manual for Construction of Concrete Structures - (Bridges & Flyovers)
6. Manual on Planning & Design of Reinforced Concrete Multistoried Buildings Vol-I and Vol-II
7. Schedule of Rates, Analysis of Rates and Specifications (Horticulture & Landscaping)-2016, 2018, 2020
8. CPWD Works Manual - 2014, 2019
9. Amendments in CPWD Work Manual – View
10. Standard Operating Procedures (SOPs) 2019
11. Amendments in Standard Operating Procedures (SOPs) View
12. CPWD Establishment Manual Volume - I 1992, 2013
13. Vigilance Manual – 2012
14. WC Establishment Manual - 2013
15. Civil Specifications Volume I - 2009, 2019
16. Civil Specifications Volume II - 2009, 2019
17. General Specifications for Heating, Ventilation & Air-Conditioning (HVAC) - 2004, 2017, 2017 (Amendments)
18. Standard operating procedure (WORKS)

4. CPWD GENERAL SPECIFICATIONS FOR ELECTRICAL WORKS

1. Part-I Internal - 2005, 2013, 2013 (Amendments)
2. Part-III-Lift & Escalators - 2003
3. Part-IV Sub Station – 2013

4. Part V Wet Riser & Sprinkler Systems – 2020
5. Part VI Fire Detection and Alarm System – 2018
6. Part VII D.G. Sets - 2013
7. Part VIII Gas Based Fire Extinguishing System 2013 English, 2013 हिन्दी
8. Supplement for Specialized E & M Works - 2013, 2014

Schedules

SCHEDULE - E

(See Clause 4.1.3)

APPLICABLE PERMITS

1 Applicable Permits

1.1 The Concessionaire shall obtain, as required under Applicable Laws, the following Applicable Permits, including but not limited to, on or before the Appointed Date.

S. No.	Description of Approval Required
1	Consent to Establish and Consent to Operate under the Air (Prevention and Control of Pollution) Act, 1981 and Water (Prevention and Control of Pollution) Act, 1974 from State Pollution Control Board (State)
2	Compliance under the Building and Other Construction Workers (Regulation of Employment and Conditions of Service) Act, 1996.
3	Clearance of fire safety standards and protection apparatus and system under the Factories Act, 1948, and standards mandated by the local fire department, if applicable from Chief Inspector of Factories or any other designated authority appointed.
4	License for usage and storage of fuel oil storage tank, pressurized vessels, explosive and inflammable liquids, gases and chemicals under (a) Explosives Act, 1884 read with Explosives Rules, 2008 and Gas Cylinder Rules, 2004; and (b) Petroleum Act, 1934 read with Petroleum Rules, 2002, if applicable from Chief Controller of Explosives, GoI, if applicable.
5	Approval under the Electricity Act 2003 for electrical installations and works form Chief Electrical Inspector.
6	Certificate of Registration from the labour department issued under the Inter- State Migrant Workmen (Regulations of Employment and Conditions of Services) Act, 1979 in relation to employment of migrant workmen.
7	Registration under Section 7 of Contract Labour (Regulation and Abolition) Act, 1970.
8	Registration under Employees Provident Fund and Miscellaneous Provisions Act, 1952.
9	Authorization for management and handling of hazardous waste under Hazardous Waste (Management, Handling & Transboundary Movement) Rules, 2016.
10	NOC for height clearance from directorate of air traffic management, Airport Authority of India / DGCA when project lies within 20Kms radius of air strips/funnel
11	NOCs from Chief Electrical Inspector (CEI) for electrical substation
12	Permission of the State Government for extraction of boulders from quarries for and in respect of at least 20% (twenty per cent) of the total length of the Project
13	Permission of the State Government for drawing water from river/reservoir;
14	Permission of Village Panchayat and the Pollution Control Board for installation of crushers / batch mixing plant
15	NOC for DG set installation
16	Permission under Shop and Establishment Act from MCD / Village Panchayat
17	NoC from IPH, State Electricity Board Department, Evacuation approval from State Transmission Utility (STU), Connectivity to the substation of STU
18	Permission for helicopter operation
19	Building Plan / layout approval by MCD / Panchayat / Chief Town planner
20	Compliance under Maternity Benefit Act, 1961 through State Employment Office

21	Registration under Employee State Insurance Act, 1948 by State Employment Office
22	FSSAI license for restaurant
23	Any other permits or clearances or registration required under Applicable Laws
24	NOC from Chief Ropeway Inspector/licencing Authority for Commercial Operation of Ropeway
25	NOC from relevant Panchayat is whose territory limit the project is located if Applicable (Property Tax)
27	FSSAI license for Restaurant from Department of Food & Supply
28	Clearance regarding confirmation to norms of Director General Mine Safety

1.2 Unless otherwise specified in this Agreement, Applicable Permits, as required, relating to environmental clearances, forest clearances, wildlife clearance, right of way, and other clearances under the terms of this Agreement shall be procured by the Concessionaire and the Authority shall extend its unconditional support.

SCHEDULE - F
(See Clause 9.1)

PERFORMANCE SECURITY

The Deputy General Manager,
Ropeways and Rapid Transport System,
Development Corporation (RTDC),
US Club Shimla – 171001 (HP)

WHEREAS:

(A) …….. (the "**Concessionaire**") and the Director, Ropeways and Rapid Transport System, Development Corporation (RTDC), (the "**Authority**") have entered into a Concession Agreement dated……. (the "**Agreement**") whereby the Authority has agreed to the Concessionaire undertaking Development, Operation and Maintenance of Ropeway from **Narkanda to Hatu Peak** in the State of Himachal Pradesh on DBFOT mode (hereinafter referred to as the "Project") on design, build, finance, operate and transfer (the "DBFOT") basis, subject to and in accordance with the provisions of the Agreement.

(B) The Agreement requires the Concessionaire to furnish a Performance Security to the Authority in a sum of Rs. ***** cr. (Rupees ***** crore) (the "**Guarantee Amount**") as security for due and faithful performance of its obligations, under and in accordance with the Agreement, during the Development Period and Construction Period (as defined in the Agreement) and being valid and enforceable up to:

a) 01 (one) year after the Appointed Date under the Agreement; or

b) the expected date, as per the construction schedule, by which an amount equivalent to at least 30 (thirty) % of the Total Project Cost is expended by the Concessionaire (as verified by the Independent Engineer appointed under the Agreement) **whichever is later** i.e. up to ....."**Guarantee Period**").

(C) We, ……..through our Branch at..... (the "**Bank**") have agreed to furnish this Bank 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 Concessionaire's obligations during the Guarantee 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 Concessionaire, 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 a duly authorized officer of Authority that the Concessionaire 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 Concessionaire is in default in due and faithful performance of its obligations during the Guarantee Period under the Agreement and its decision that the Concessionaire is in default shall be final, and binding on the Bank,

notwithstanding any differences between the Authority and the Concessionaire, or any dispute between them pending before any court, tribunal, arbitrators or any other authority or body, or by the discharge of the Concessionaire 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 Concessionaire 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 Concessionaire 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 ***a***nd/ or performance of all or any of the obligations of the Concessionaire 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 Concessionaire, 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 Concessionaire 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 Concessionaire 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 until i.e. "……." and unless a demand or claim in writing is made by the Authority on the Bank under this Guarantee on or before the expiry of the Guarantee Period, all rights of the Authority under this Guarantee shall be forfeited and the Bank shall be relieved 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 hand delivered or 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 deliv***e***red 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 for a period up to……

11. This guarantee shall also be operatable at our _____branch at Shimla, 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.

12. The guarantor/bank hereby confirms that it is on the SFMS (Structural Finance Messaging System) platform and shall invariably send an advice of this Bank Guarantee to the designated bank of RTDC. Details of which are given as under:

S. No.	Particulars	Details
1.	Name of Beneficiary	Ropeways & Rapid Transport System Development Corporation HP Limited
2.	Name of Bank	ICICI, The Mall Shimla
4.	Account No.	635301009485
5.	IFSC Code	ICIC0006353

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

SIGNED, SEALED AND DELIVERED

For and on behalf

of the BANK by:

(Signature)

(Name)

(Designation)

(Code Number)

(Address)

NOTES:

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

(ii) The address, telephone number and other details of the Head Office of the Bank as well as of issuing Branch should be mentioned on the covering letter of issuing Branch.

Annexure I of Schedule F

(See Clauses 9.1)

FORM OF SURETY BOND

[Performance Security/Additional Performance Security]

The Deputy General Manager,
Ropeways and Rapid Transport System,
Development Corporation (RTDC),
US Club Shimla – 171001 (HP)
WHEREAS:

(A) …….(the "**Concessionaire**") and the Deputy General Manager, Ropeways and Rapid Transport System, Development Corporation (RTDC), (the "**Authority**") have entered into a concession agreement dated……. (the "**Agreement**") whereby the Authority has agreed to the Concessionaire undertaking Development, Operation and Maintenance of Ropeway from **Narkanda to Hatu Peak** in the State of Himachal Pradesh on DBFOT mode, subject to and in accordance with the provision of the agreement

(B) The agreement requires the Concessionaire to furnish a performance security to the Authority in a sum of Rs *** Crore (Rupees *** Crore) (the "Surety Bond Amount") as security for due and faithful performance of its obligations, under and in accordance with the Agreement, during the Construction Period (as defined in the Agreement)

(C) We, _____through our branch at (the "Surety Insurer") have agreed to furnish this Surety Bond by way of Performance security.

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

1. The Surety Insurer hereby unconditionally and irrevocably guarantees the due and faithful performance of the Concessionaire's obligations during the Construction 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 Concessionaire, such sum or sums up to an aggregate sum of the Surety Bond 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 Deputy General Manager in the Ropeways and Rapid Transport System Development Corporation, that the Concessionaire 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 Surety Insurer. The Surety Insurer further agrees that the Authority shall be the sole judge as to whether the Concessionaire is in default in due and faithful performance of its obligations during the Construction Period under the Agreement and its decision that the Concessionaire is in default shall be final, and binding on the Surety Insurer, notwithstanding any differences between the Authority and the Concessionaire, 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 Surety Bond, the Authority shall be entitled to act as if the Surety Insurer were the principal debtor and any change in the constitution of the Concessionaire and/or the Surety Insurer, 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 Surety Insurer under this Surety Bond.

4. It shall not be necessary, and the Surety Insurer hereby waives any necessity. for the Authority to proceed against the Concessionaire before presenting to the Surety Insurer its demand under this Surety Bond.

5. The Authority shall have the liberty, without affecting in any manner the liability of the Surety Insurer under this Surety Bond, to vary at any time, the terms and conditions of the Agreement or to extend the time or period for the compliance with, fulfillment and/ or performance of all or any of the obligations of the Concessionaire 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 Concessionaire, 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 Surety Insurer 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 Concessionaire 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 Surety Insurer from its liability and obligation under this Surety Bond and the Surety Insurer hereby waives all of its rights under any such law.

6. This Surety Bond is in addition to and not in substitution of any other Surety Bond or security now or which may hereafter be held by the Authority in respect of or relating to the Agreement or for the fulfillment, compliance and/or performance of all or any of the obligations of the Concessionaire under the Agreement.

7. Notwithstanding anything contained hereinbefore, the liability of the Surety Insurer under this Surety Bond is restricted to the Surety Bond Amount and this Surety Bond will remain in force until the earlier of the 1st (first) anniversary of the Appointed Date or compliance of the conditions specified in paragraph 8 below and unless a demand or claim in writing is made by the Authority on the Surety Insurer under this Surety Bond, no later than 6 (six) months from the date of expiry of this Surety Bond, all rights of the Authority under this Surety Bond shall be forfeited and the Surety Insurer shall be relieved from its liabilities hereunder.

8. The Performance Security shall cease to be in force and effect when the Concessionaire shall have expended on Project construction an aggregate sum not less than 30% (thirty per cent) of the Bid Project cost which is deemed to be Rs. ** cr. (Rupees *** crore) for the purposes of this Surety Bond, and provided the Concessionaire is not in breach of this Agreement. Upon request made by the Concessionaire for release of the Performance Security alongwith the particulars required hereunder, duly certified by a statutory auditor of the Concessionaire, the Authority, shall release the Performance Security forthwith.

9. The Surety Insurer undertakes not to revoke this Surety Bond 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 Surety Bond and the undersigned has full powers to do so on behalf of the Surety Insurer.

10. Any notice by way of request, demand or otherwise hereunder may be sent by post addressed to the Surety Insurer 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 Surety Bond shall come into force with immediate effect and shall remain in force and effect for a period of one year and six months or until it is released earlier by the Authority pursuant to the provisions of the Agreement.

12. This Surety Bond shall also be operatable at our Branch at Shimla, from whom, confirmation regarding the issue of this bond or extension/renewal thereof shall be made available on demand in the contingency of this bond been invoked and payment thereunder claimed, the said branch shall accept such invocation on letter and make payment of amounts so demanded under the said invocation.

13. This Surety Bond is subject to the Uniform Rules for Demand Guarantees (URDG) 2010 Revision, ICC Publication No. 758, except that the supporting statement under Article 15(a) is hereby excluded.

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

SIGNED, SEALED AND DELIVERED

For and on behalf of the surety insurer by:

(Signature)

(Name)

(Address)

(Designation)

(Code Number)

SCHEDULE - G

(See Clause 12.1)

PROJECT COMPLETION SCHEDULE[1]

1 Project Completion Schedule

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

2 Project Milestone-I

2.1 Project Milestone-I shall occur on the date falling on the 275th (Two Hundred and Seventy Fiftieth) day from the Appointed Date (the "Project Milestone-I").

2.2 Prior to the occurrence of Project Milestone-I, the Concessionaire shall have expended not less than 20% (twenty per cent) of the total capital cost set forth in the Financial Package.

2.3 Prior to the occurrence of Project Milestone –I, the Concessionaire shall have commenced construction of the Project and achieved 20% Physical Progress.

3 Project Milestone-II

3.1 Project Milestone-II shall occur on the date falling on the 545th (Five Hundred and Forty-Fifth) day from the Appointed Date (the "Project Milestone-II").

3.2 Prior to the occurrence of Project Milestone-II, the Concessionaire shall have expended not less than 50% (fifty per cent) of the total capital cost set forth in the Financial Package. Provided, however, that at least 70% (seventy percent) of the expenditure referred to hereinabove shall have been incurred on physical works which shall not include advances of any kind to any person or expenditure of any kind on plant and machinery.

3.3 Prior to the occurrence of Project Milestone –II, the Concessionaire shall have commenced construction of the Project and achieved 50% Physical Progress.

3.4 Deleted.

4 Project Milestone-III

4.1 Project Milestone-III shall occur on the date falling on the 820th (Eight Hundred and Twentieth) day from the Appointed Date (the "Project Milestone-III").

4.2 Prior to the occurrence of Project Milestone-III, the Concessionaire shall have commenced construction of all Project Facilities and expended not less than 80% (eighty per cent) of the total capital cost set forth in the Financial Package.

4.3 Prior to the occurrence of Project Milestone –III, the Concessionaire shall have commenced construction of the Project and achieved 80% Physical Progress.

4.4 Deleted.

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[1] Project Completion Schedule defined for a Construction Period of [3 (three)] years. Article shall be updated depending on the Construction Period defined in Clause 3.1

5 Scheduled Completion Date

5.1 The Scheduled Completion Date shall be the 1095th (One Thousand and Ninety Fifth) day from the Appointed Date.

5.2 On or before the Scheduled Completion Date, the Concessionaire shall have completed the entire Project in accordance with this Agreement.

6 Extension of period

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 – H

(See Clause 12.2)

DRAWINGS

1 Drawings

In compliance of the obligations set forth in Clause 12.2 of this Agreement, the Concessionaire shall furnish to the Independent Engineer, free of cost, all Drawings listed in Annex-I of this Schedule-H.

2 **Additional drawings**

If the Independent 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 Concessionaire to prepare and furnish such drawings forthwith. Upon receiving a requisition to this effect, the Concessionaire shall promptly prepare and furnish such drawings to the Independent Engineer, as if such drawings formed part of Annex-I of this Schedule-H.

Annex - I (Schedule-H)

List of Drawings

Note: The Authority shall describe in this Annex-I, all the Drawings that the Concessionaire is required to furnish under Clause 12.2.

All drawings required for construction of improvement proposal mentioned in Schedule B & C (Viz. Plan & profile, cross sections, detailed structural drawings, cable systems, Stations etc.)**.**

Schedule - I

(See Clause 14.1.2)

TESTS

1 **Schedule for Tests**

1.1 The Concessionaire shall, no later than 30 (thirty) days prior to the likely completion of the Project, notify the Independent Engineer and the Authority of its intent to subject the Project to Tests, and no later than 7 (seven) days prior to the actual date of Tests, furnish to the Independent Engineer and the Authority detailed inventory and particulars of all works and equipment forming part of the Project.

1.2 The Concessionaire shall notify the Independent Engineer of its readiness to subject the Project to Tests at any time after 7 (seven) days from the date of such notice, and upon receipt of such notice, the Independent Engineer shall, in consultation with the Concessionaire, 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 Independent Engineer shall thereupon conduct the Tests itself or cause any of the Tests to be conducted in accordance with Article 14 and this Schedule-I.

2 **Tests**

The Independent Engineer shall conduct, or cause to be conducted, the Tests in accordance with Applicable Law, Good Industry Practice and Specifications and Standards.

2.1 **Visual and physical Test:** The Independent Engineer shall conduct a visual and physical check of the Project to determine that all works and equipment forming part thereof conform to the provisions of this Agreement.

2.2 **Tests:** The Independent Engineer will determine the Tests, in accordance with Good Industry Practice and applicable standards, for determining the compliance of the Project with Standards and Specifications as per Schedule D

2.3 Various quality control tests would be undertaken for the Project as per the standards prescribed by Bureau of Indian Standards (BIS). Where no testing methods are specified by the said standards, details of the tests to be carried out and specifications to be achieved for the respective Project Facilities/Construction Works or part thereof shall be agreed upon with the Independent Engineer prior to construction;

2.4 **Environmental audit:** The Independent Engineer shall carry out a check to determine conformity of the Project with the environmental requirements set forth in Applicable Laws and Applicable Permits.

3 **Agency for conducting Tests**

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

4 **Completion/Provisional Certificate**

Upon successful completion of Tests, the Independent Engineer shall issue the Completion Certificate or the Provisional Certificate, as the case may be, in accordance with the provisions of Article 14.

5 **Tests during construction**

Without prejudice to the provisions of this Schedule-I, tests during construction shall be conducted in accordance with the provisions of Clause 13.3.1.

6 **Preliminary Commissioning Checks**

6.1 The Concessionaire shall ensure that all equipment are thoroughly cleaned, lubricated and checked for serviceability immediately before setting to Works. The Concessionaire shall pay attention to the removal of building debris from the pipe work systems.

6.2 The Concessionaire shall pay special attention to the need to thoroughly flush out all pipe work systems to ensure that all foreign matters are removed.

6.3 The Concessionaire shall inspect and check all automatic controls and safety devices for serviceability before the working fluid or electricity is applied to the system.

7 **Commissioning**

7.1 When the various installations have been completed and the preliminary commissioning checks carried out, the Concessionaire shall set to work, regulate and calibrate all systems in the entire installation. Special attention shall be paid to the following items:

7.2 That all switches and controls etc. are regulated and capable of proper operation and in the case of isolation valves that they are capable of tight shut off.

7.3 That all instruments are correctly calibrated and read accurately.

7.4 That all services are tested in accordance with the details in the relevant clauses of the Development

7.5 The Concessionaire first complete all works pertains to the ropeway satisfactorily as per the Scope of the Work and start trial running [empty + loaded condition] of the system after carrying out all adjustments/settings of the plant, equipment etc., as required.

7.6 Before commissioning the system, following activities needs to be done:

i. Commissioning the ropeway system with full load (Dummy load) successful testing and trial runs of the complete ropeway system meeting the design parameters for 50 hours for installation with detachable carriers at least 5 hours of which shall be at the maximum permissible operating load for line equipment in continuous operation upto the satisfaction of the Independent Engineer.

ii. During this operation following items needs to be covered

- All safeties as specified
- All brakes
- Operation of Integrated rescue engine even on all up condition
- Vertical rescue system

7.7 The operating test for 50 hours operation in full load condition having successful testing and trial runs shall be conducted by the Committee nominated by the Authority in the presence of Independent Engineer.

7.8 Upon successful test and trial run and upon recommendation of IE the committee will issue commissioning certificate for the project.

7.9 Before opening of the Ropeway to the Public, which is to be considered as commercial operation date (COD), the Concessionaire need to approach the Ropeway Inspector getting certification of opening of ropeways to the Public as per prevailing "Himachal Aerial Ropeway Act 1968 along with all the amendments till date"

8 Final Acceptance Tests

8.1 Following commissioning of all installations, the Concessionaire shall carry out final acceptance tests in accordance with a programme to be submitted to the Independent Engineer for Notice of No Objection.

8.2 Should the results of the acceptance tests show that plant, systems and/or equipment fail to perform to the efficiencies or other performance figures as given in the Development Agreement Specification, the Concessionaire shall adjust, modify and if necessary, replace the equipment without any additional cost implications to the Employer in order that the required performance be obtained

8.3 Where acceptance tests are required by the relevant authorities having jurisdiction, these tests shall be carried out by the Concessionaire, the proposal for which shall be submitted to the Independent Engineer for Notice of No Objection.

9 Integrated Testing and Commissioning (ITC)

9.1 Before the commencement of integrated tests, the Concessionaire shall complete his own local tests. The Concessionaire shall submit test specifications for integrated tests to the Independent Engineer for Notice of No Objection, prior to the commencement of the tests

9.2 The Concessionaire shall coordinate with the civil works and Standard Work Charts in preparing an integrated system test plan to test all the points/installations. All testing tools and manpower required for the tests, which will be witnessed by the Independent Engineer shall be provided by the respective Concessionaire

10 Field/Site Laboratory

10.1 All the materials to be used in the work and tested in the laboratory shall comply with the Independent Engineer or such recognized specifications as acceptable to Independent Engineer. The testing machines shall be recalibrated periodically as per Concessionaire's Quality Plan and applicable regulatory Standards. The calibration shall be from an authorized laboratory and approved by Independent Engineer.

10.2 The Concessionaire or his authorized representative shall assist in the collection, preparation, forwarding and testing of such samples. The cost of such samples and tests shall be borne by the Concessionaire. The Concessionaire shall give not less than seven (7) days' notice for all tests in order that the Independent Engineer may attend and witness testing at the external laboratory. Two (2) copies of all test certificates shall be supplied by the Concessionaire to the Independent Engineer for approval immediately after the completion of the tests. Test certificates must be supplied to the Independent Engineer before the materials or components are used in the works, unless the Independent Engineer directs otherwise.

11 Frequency of Testing

11.1 All materials shall be tested as per the requirements specified in the Concessionaire's Quality Plan. All test reports shall be documented in hard copy as well as softcopy.

12 **Unsuitable Materials**

12.1 If at any stage of execution of work, Independent Engineer finds that the particular material is not suitable to be used in any component of the work, the Independent Engineer may order retesting of the material from any approved laboratory at the cost of the Concessionaire. The rejected material either after the initial test or after re-testing, as the case, shall be immediately removed from the Site by the Concessionaire at his own cost. In case of default on the part of the Concessionaire in removing rejected materials and any work executed with such unaccepted materials, the Independent Engineer shall be at liberty to have them removed and/or dismantled by other means at the risk and cost of the Concessionaire

13 Time Limit for Filing of Reports for Inspections And/or Tests

13.1 The Concessionaire shall ensure that a signed copy of report of each in-situ and each off- site inspection / test is filed in his Records Office within 3 (three) working days and within seven (7) working days of the date of completion of the test process respectively.

Annexure-I Lists of Tests

S. No.	Project Facilities	Tests
1	Site clearances	• Visual observations • Physical verification of dimensions • Random drilling to check cross sections
2	Civil Work / Buildings (Including Internal services) Ropeway Station building, Fobs, platforms, roofing structure with its Amenities.	• Strength test shall be conducted in accordance with IS: 516 on random sampling. Each test shall be conducted on six specimens, three of which shall be tested at 7 days and remaining three at 28 days. Additional samples shall be prepared, if required, as per direction of Independent Engineer for testing samples cured by accelerated method as described in IS: 9103 • Ultrasonic Pulse Velocity Method of Test for RCC • Nondestructive tests if found necessary by visual observations • Verification of dimensions • Verification of finishing schedule • General compliance to codes and standards • Checking for leakages / seepages if any. • Stress Test on structure where ever required by Independent Engineer
3	Signages (External Signages, Internal Signages, Neon Signages, Key Map Signages)	• Visual inspections
4	Additional Green Building Features (Solar panels, Solar Lighting, envelope performance)	Physical performance tests

S. No.	Project Facilities	Tests
5	Special Items of Work (RO Water Plant, Rainwater Harvesting, Provision for pumps including water tank, CCTV & Security system, Electrical substation/ Transformer, Trenches/ Ducts for UG cables/ Pipe line, DG Set, Entertainment - Satellite TV & WIFI, Shading Device, Outdoor Furniture, Digital Display Wall System, Solar Power Panel, Provision for Hoarding Board, Provision for High Mast Lamp)	Physical performance tests
6	Structural Glazing:	i) Structural Performance Deflection and deformation by static air pressure test (1.5 times designing wind pressure without any failure) as per ASTME-330-10 testing method for a range up to 50mm (ii) Seismic Movement Test (up to 30mm) as per AAMA 501.4-09 testing method for Qualitative test. Tests to be conducted on site Onsite Test for Water Leakage for a pressure range 50kpa to 240 kpa (35psi) up to 2000ml

Schedule - J

(See Clause 14.2 & 14.3)

COMPLETION CERTIFICATE

1 I/We,….....(Name of the Independent Engineer), acting as Independent Engineer, under and in accordance with the Concession Agreement dated..... (the "Agreement"), for "Development, Operation and Maintenance of Ropeway from **Narkanda to Hatu Peak**in the State of Himachal Pradesh on DBFOT mode" (hereinafter referred to as the "Project") on design, build, finance, operate and transfer (the "DBFOT") basis, through… ..... (Name of Concessionaire), hereby certify that the Tests specified in Article 14 and Schedule-I of the Agreement have been successfully undertaken to determine compliance of the Project with the provisions of the Agreement, and I/We am/are satisfied that the Project can be safely and reliably placed in commercial service of the Users thereof.

2 It is certified that, in terms of the aforesaid Agreement, all works forming part of the Project have been completed, and the Project is hereby declared fit for entry into commercial operation on this the day of 20xx xx xx

SIGNED, SEALED AND DELIVERED

For and on behalf of

INDEPENDENT ENGINEER by:

(Signature)

(Name)

(Designation)

(Address)

PROVISIONAL CERTIFICATE

1 I/We,….....(Name of the Independent Engineer), acting as Independent Engineer, under and in accordance with the Concession Agreement Dated… .....(the "Agreement"), for "Development, Operation and Maintenance of Ropeway from **Narkanda to Hatu Peak** in the State of Himachal Pradesh on DBFOT mode" (hereinafter referred to as the "Project") on design, build, finance, operate and transfer (the "DBFOT") basis through… .....(Name of Concessionaire), hereby certify that the Tests specified in Article 14 and Schedule-I of the Agreement have been undertaken for the Project/ Ropeway Section.....of the Project to determine compliance thereof with the provisions of the Agreement.

2 Construction Works forming part of the Project/ Ropeway Section of the Project that were found to be incomplete and/or deficient have been specified in the Punch List appended hereto, and the Concessionaire has agreed and accepted that it shall complete and/or rectify all such works in the time and manner set forth in the Agreement. Some of the incomplete works have been delayed as a result of reasons attributable to the Authority or due to Force Majeure and the Provisional Certificate cannot be withheld on this account. Though the remaining incomplete works have been delayed as a result of reasons attributable to the Concessionaire, I/We am/are satisfied that having regard to the nature and extent of such incomplete works, it would not be prudent to withhold commercial operation of the Project/ Ropeway Section..... of the Project, pending completion thereof.

3 In view of the foregoing, I/We am/are satisfied that the Project / Ropeway Section of the Project can be safely and reliably placed in commercial service of the Users thereof as per Article 14 and Article 15 of the Agreement, the Project/ Ropeway Section of the Project is hereby provisionally declared fit for entry into commercial operation on this the …… day of 20

ACCEPTED, SIGNED, SEALED	**SIGHNED, SEALED AND**
AND DELIVERED	**DELIVERED**
FOR AND ON BEHALF OF	FOR AND ON BEHALF OF
CONCESSIONAIRE by:	**INDEPENDENT ENGINEER by:**
(Signature)	(Signature)
(Name and Designation)	(Name and Signature)
(Address)	(Address)

Schedule - K

(See Clause 17.2)

MAINTENANCE REQUIREMENTS

1 Maintenance Requirements

To be detailed on a project-to-project basis as per standards and specifications mentioned in Schedule D

2 Extension of time limit

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

3 Emergency repairs/restoration

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

4 Daily Inspection by the Concessionaire

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

5 Divestment Requirements

All defects and deficiencies specified in this Schedule-K shall be repaired and rectified by the Concessionaire so that the Project conforms to the Maintenance Requirements on the Transfer Date.

6 Display of Schedule - K

The Concessionaire shall display daily and monthly maintenance copy of this Schedule –K at every station along with the complaint register.

SCHEDULE - L

(See Clause 18.1.1)

SAFETY REQUIREMENTS

1 Guiding principles

1.1 Safety Requirements aim at reduction in injuries, loss of life and damage to property resulting from accidents on or about the Project, irrespective of the person(s) at fault.

1.2 Users of the Project include staff of the Concessionaire and its contractors working on the Project, public users of the Project once Project achieves COD, other vulnerable users who do not use the Project directly but may be indirectly impacted by the development and operationalization of the Project, all staff at the Site and premises.

1.3 Safety Requirements apply to all phases of construction, operation and maintenance with emphasis on identification of factors associated with accidents, consideration of the same, and implementation of appropriate remedial measures.

1.4 Safety Requirements include measures associated with safe movement, safety management, safety equipment, fire safety, enforcement and emergency response

1.5 The Project shall be especially designed, operated and serviced in such a way so as to:

(a) eliminate and reduce risks by means of design and construction features;

(b) implement necessary measures to protect against risks that cannot be completely eliminated; and

(c) lay down precautions to be taken to avoid any risks.

2 Obligations of the Concessionaire

The Concessionaire shall abide by the following insofar as they relate to safety of the Users:

(a) Applicable Laws and Applicable Permits;

(b) Manual for Safety;

(c) Relevant Standards/Guidelines relating to safety, ropeway geometries, lighting, signage and other control devices;

(d) relevant standards/Guidelines addressing highest human safety parameters;

(e) Provisions of this Agreement; and

(f) Good Industry Practice.

3 Appointment of Safety Consultant

For carrying out safety audit of the Project under and in accordance with this Schedule-L, the Authority shall appoint from time to time, one or more qualified firms or organizations as its consultants (the "Safety Consultant"). The Safety Consultant shall employ a team comprising, without limitation, one ropeway safety expert and one systems expert to undertake safety audit of the Project.

4 Safety measures during Development Period

4.1 No later than 90 (ninety) days from the date of this Agreement, the Authority shall appoint a Safety Consultant for carrying out safety audit at the design stage of the Project. The Safety Consultant shall collect data on all fatal crashes and other accidents which occurred on the Project in the preceding two years by obtaining copies of the relevant First Information Reports (FIRs) from the police stations having jurisdiction. The information contained in such FIRs shall be summarized in the form prescribed by the Authority for this purpose and the data shall be analyzed for the type of victims killed or injured, impacting vehicles, location of accidents and other relevant factors.

4.2 The Concessionaire shall provide to the Safety Consultant, in four copies, along with a soft copy, the relevant drawings containing the design details that have a bearing on safety of Users (the "Safety Drawings"). Such design details shall include ropeway alignments; horizontal and vertical forces, layouts of ropeway profile, foundation drawings, inertia forces, bending moments in global coordinates, tower loads, sheave loads, effects of forces caused by winds, snow, ice or any other external factors, Station forces and design, people movement and safety procedures at Stations along with other incidental or consequential information. The Safety Consultant shall review the design details and forward 3 (three) copies, along with a soft copy, of the Safety Drawings with its recommendations, if any, to the Independent Engineer who shall record its comments, if any, and forward one copy each to the Authority and the Concessionaire.

4.3 The accident data and the design details shall be compiled, analyzed and used by the Safety Consultant for evolving a package of recommendations consisting of safety related measures for the Project. The safety audit shall be completed in a period of three months and a report thereof (the "Safety Report") shall be submitted to the Authority, in 5 (five) copies. One copy each of the Safety Report shall be forwarded by the Authority to the Concessionaire and the Independent Engineer forthwith.

4.4 The Concessionaire shall endeavor to incorporate the recommendations of the Safety Report in the design of the Project, as may reasonably be required in accordance with Applicable Laws, Applicable Permits, Manuals and Guidelines of the Authority, Specifications and Standards, and Good Industry Practice. If the Concessionaire does not agree with any or all of such recommendations, it shall state the reasons thereof and convey them to the Authority forthwith. In the event that any or all of the works and services recommended in the Safety Report fall beyond the scope of Schedule-B, Schedule-C or Schedule-D, the Concessionaire shall make a report thereon and seek the instructions of the Authority for funding such works in accordance with the provisions of Article 18.

4.5 Without prejudice to the provisions of Paragraph 4.4, the Concessionaire and the Independent Engineer shall, within 15 (fifteen) days of receiving the Safety Report, send their respective comments thereon to the Authority, and no later than 15 (fifteen) days of receiving such comments, the Authority shall review the same along with the Safety Report and by notice direct the Concessionaire to carry out any or all of the recommendations contained therein with such modifications as the Authority may specify; provided that any works or services required to be undertaken hereunder shall be governed by the provisions of Article 18.

5 Safety measures during Construction Period

5.1 A Safety Consultant shall be appointed by the Authority, no later than 4 (four) months prior to the expected COD, for carrying out a safety audit of the completed Construction Works.

5.2 The Safety Consultant shall collect and analyze the accident data for the preceding two years in the manner specified in Paragraph 4.1 of this Schedule- L. It shall study the Safety Report for the Development Period and inspect the Project to assess the adequacy of safety measures. The Safety Consultant shall complete the safety audit within a period of 4 (four) months and submit a Safety Report recommending a package of additional ropeway safety measures, if any, that are considered essential for reducing accident hazards on the Project. Such recommendations shall be processed, mutatis mutandis, and acted upon in the manner set forth in Paragraphs 4.3, 4.4 and 4.5 of this Schedule-L.

5.3 The Concessionaire shall make adequate arrangements during the Construction Period for the safety of workers and ropeway Users in accordance with the relevant guidelines for safety in construction zones, and notify the Authority and the Independent Engineer about such arrangements.

5.4 **Layout, speed, distance between vehicles**

5.4.1 The Project shall be designed taking into account the characteristics of the terrain and its surroundings i.e., atmospheric and meteorological conditions.

5.4.2 Sufficient distance shall be maintained laterally and vertically between vehicles, towing devices, tracks, cables, etc., and possible structures and obstacles located in the vicinity either on the ground or in the air, taking account of the vertical, longitudinal and lateral movement of the cables and vehicles or of the towing devices under the most adverse foreseeable operating conditions.

5.4.3 The maximum distance between vehicles and ground shall take account of the nature of the Project, the type of vehicles and the rescue procedures. In the case of open cars, it shall also take account of the risk of fall as well as the psychological aspects associated with the distance between vehicles and ground.

5.4.4 The maximum speed of the vehicles or towing devices, the minimum distance between the two and their acceleration and braking performance shall be decided in a way to ensure the safety of Users and safe operation of the Project.

5.5 **Cables and their supports**

5.5.1 All measures shall be taken in line with the latest technological developments:

(a) to avoid cables or their attachments breaking;

(b) to cover their minimum and maximum stress values;

(c) to ensure that they are safely mounted on their supports and prevent derailment; and

(d) to enable them to be monitored.

5.5.2 Measures to be taken to ensure that cables can be retrieved in case of any cable derailment and that the Project can be shut down without any risks to any persons in the event of such derailment.

5.6 **Mechanical installations**

5.6.1 Drives: The drive system of the Project shall be of a suitable performance and capability, adapted to the various operating systems and modes.

5.6.2. Standby drive: The Project shall have a standby drive with an energy supply which is independent of that of the main drive system.

5.6.3 Braking

5.6.3.1. In an Emergency it shall be possible to shut down the Project and/or the vehicles at any moment, under the most unfavorable conditions in terms of authorized load and pulley adhesion during operation. The stopping distance shall be as short as the security of the Project dictates.

5.6.3.2. Deceleration values shall be within adequate limits fixed in such a way as to ensure both the safety of the Users and the satisfactory functioning of the vehicles, cables and other parts of the Project.

5.6.3.3. In all, Project there shall be 2 (two) or more braking systems, each capable of bringing the ropeway to a halt, and coordinated in such a way that they automatically replace the active system when its efficiency becomes inadequate. The Project's last braking system shall act as close as possible to the traction cable.

5.6.3.4. The Project shall be fitted with an effective clamp and locking mechanism to guard against premature restarts.

5.7 Control devices

The control devices shall be designed and constructed in a way that they are safe and reliable, and able to withstand normal operating stresses and external factors such as humidity, extreme temperatures or electromagnetic interference.

5.8 Communication devices

The Concessionaire to ensure that the operational staff is provided with equipment to communicate with one another and the Users in case of an Emergency

5.9 Vehicles and Towing devices

5.9.1 The fittings of vehicles and towing devices shall be dimensioned and constructed so as not to:

a) damage the cable, or

b) slip, except where slippage does not significantly affect the safety of the vehicle, the towing device or the installation, under the most unfavorable conditions.

5.9.2 Vehicle doors (on cable cars, carriers) shall be designed and constructed in such a way as to make it possible to close and lock them. The vehicle floor and walls shall be designed and constructed so as to withstand pressure and loads exerted by Users and operating staff under any circumstances.

5.9.3 The vehicle shall be fitted with the suitable equipment if, for reasons of operational safety, an operator is required on board.

5.9.4 Vehicles and/or towing devices and, in particular, their suspension mechanisms shall be designed and fitted so as to ensure the safety of personnel servicing them in accordance with appropriate rules and instructions.

5.9.5 In the case of vehicles equipped with disconnectable fittings, all measures shall be taken to bring to a halt, without risk to Users or operating staff, at the moment of departure, any vehicle whose fitting has been incorrectly connected to the cable and, at the moment of arrival, any vehicle whose fitting has not been disconnected, and to prevent the vehicle from falling.

5.9.6 All ropeway installations shall be equipped with an automatic braking device.

5.9.7 Where all risk of derailment of the vehicle cannot be eliminated by other measures, the vehicle shall be fitted with an anti-derailment device which enables the vehicle to be brought to a halt without risk to persons.

5.9.8 Vehicles and/or towing devices shall be designed and fitted out in such a way that under foreseeable operating conditions no passenger or operation personnel can fall out or encounter any other risks i.e., getting stuck in doors, etc.

6 Safety measures during Operation Period

6.1 The Concessionaire shall develop, implement and administer a surveillance and safety program for Users, including correction of safety violations and deficiencies and all other actions necessary to provide a safe environment in accordance with this Agreement.

6.2 The Concessionaire shall establish a Ropeway Safety Management Unit (the "RSMU") to be functional on and after COD, and designate one of its officers to be in-charge of the RSMU. Such officer shall have specialist knowledge and training in ropeway safety and associated systems engineering by having attended a course conducted by a reputed organization on the subject.

6.3 The Concessionaire shall keep a copy of every FIR recorded by the Police with respect to any accident occurring on the Project. In addition, the Concessionaire shall also collect data for all cases of accidents not recorded by the Police but where a vehicle rolled over or had to be towed away. The information so collected shall be summarized in the form prescribed by the Authority for this purpose. The Concessionaire shall also record the exact location of each accident on a road map. The aforesaid data shall be submitted to the Authority at the conclusion of every quarter and to the Safety Consultant as and when appointed.

6.4 The Concessionaire shall submit to the Authority before the 31st (thirty first) May of each year, an annual report (in ten copies, along with a soft copy) containing, without limitation, a detailed listing and analysis of all accidents of the preceding Accounting Year and the measures taken by the Concessionaire pursuant to the provisions of Paragraph 6.1 of this Schedule-L for averting or minimizing such accidents in future.

6.5 Once in every Accounting Year, a safety audit shall be carried out by the Safety Consultant to be appointed by the Authority. It shall review and analyses the annual report and accident data of the preceding year, and undertake an inspection of the Project. The Safety Consultant shall complete the safety audit within a period of 1 (one) month and submit a Safety Report recommending specific improvements, if any, required to be made to the ropeway systems. Such recommendations shall be processed, mutatis mutandis, and acted upon in the manner set forth in Paragraphs 4.3, 4.4 and 4.5 of this Schedule-L.

6.6 The Safety Manual and the corresponding notes shall be drawn up in a vernacular language of a Member State or any language which can be easily understood by Users, as determined by the Member State in the territory of which the Project is constructed and installed.

6.7 The workspace for the construction and operation of the Project shall be designed in such a way so as to prevent trained personnel from any accidents by way of falling. The Safety Consultant shall provide its appointed personnel with adequate protective gear to prevent workplace accidents.

6.8 Safety in the event of immobilization of the ropeway installation: all technical provisions and measures shall be adopted to ensure that passengers and operating personnel can be brought to safety within a set time appropriate to the type of ropeway installation and its surrounding is immobilized and cannot be restarted quickly.

6.9 Operators' stands and workplaces: Movable part which are normally accessible in the Stations shall be designed, constructed and installed in such a way as to preclude any risks or, where such risks exist, be fitted with protective devices so as to prevent any contact with parts of the ropeway installation which may cause accidents. Those devices shall be of a type that cannot easily be removed or rendered inoperative.

7 Costs and expenses

Costs and expenses incurred in connection with the Safety Requirements set forth herein, including the provisions of Paragraph 2 of this Schedule-L, shall be met in accordance with Article 18, and in particular, the remuneration of the Safety Consultant, safety audit, and costs incidental thereto, shall be met by the Concessionaire.

8 Dimensions

The ropeway installation, the subsystems and all its safety components shall be dimensioned, designed and constructed to withstand, with a sufficient degree of safety, all stresses encountered under all foreseeable conditions, including those which occur when not in operation, and taking account in particular of outside influences, dynamic effects and fatigue phenomena, while complying with the acknowledged rules of design, in particular with regard to the choice of materials.

9 Assembly

9.1 The ropeway installation, the subsystems and all the safety components shall be designed and constructed in such a way as to ensure that they can be safely assembled and put into place.

9.2 The safety components shall be designed as to make assembly mistakes impossible either as a result of construction or by means of appropriate markings on the components themselves.

10 Integrity of the Ropeway Installation

10.1 The safety components shall be designed and constructed and be useable in such a way as to ensure that, in every case, their own operational integrity and/or the safety of the ropeway installation is ensured, so that their failure is avoidable and with an acceptable safety margin.

10.2 Safety analysis and Safety Report for Planned Ropeway Installations.

10.2.1 The bidder responsible for the ropeway installation, shall carry out a safety analysis of the planned ropeway installation or have such a safety analysis carried out.

10.2.2 The safety analysis required for each ropeway installation shall:

a. take into account all modes of operation envisaged;
b. follow a recognized or established method;
c. take into account the design parameters and the complexity if the ropeway installation in question;
d. ensure that the design and configuration of the ropeway installation takes account of the local surroundings and the most adverse situations in order to ensure satisfactory safety conditions;
e. cover all safety aspects of the ropeway installation and its external factors in the context of the design, construction and entry into service;
f. make it possible to identify from past experience risks liable to occur during the operation of the ropeway installation.

10.2.3 The safety analysis shall also cover the safety devices and their effects on the ropeway installation and related subsystems that they bring into action so that the safety devices:

a. are capable of reacting to an initial breakdown or failure detected so as to remain either in a state that guarantees safety, in a lower operation mode or in a fail-safe state;
b. are redundant and are monitored; or
c. are such that the probability of their failure can be evaluated, and their effects are of a standard equivalent to that achieved by safety devices that meet the criteria set out in points (a) and (b).

10.2.4 The safety analysis shall be used to draw up the inventory of risks and dangerous situations, to recommend the measure envisaged to deal with such risks and to determine the list of subsystems and safety components to be incorporated into the ropeway installation.

10.2.5 The result of the safety analysis shall be included in a safety report.

10.3 The safeguards shall apply throughout the period between two scheduled inspections of the competent concerned. The time period for the scheduled inspection of the safety components shall be clearly indicated in the instruction manual.

10.4 Safety components which are incorporated as spare parts shall satisfy the essential safety requirements and the conditions relating to the smooth interaction with the other parts of the ropeway installations.

10.5 Measures shall be taken to ensure that the effects of a fire in the ropeway installation do not endanger the safety of persons.

10.6 Special measures shall be taken to protect ropeway installations and persons from the effects of lightning.

11 Safety Devices

11.1 Any defect in the ropeway installation which could result in a failure endangering safety shall, where practicable, be detected, reported and processed by a safety device. The same applies to any normally foreseeable external event which may endanger safety.

11.2 It shall be possible at all times to shut down the ropeway installation manually.

11.3 After the ropeway installation has been shut down by a safety device, it shall not be possible to restart it unless appropriate action has been taken.

12 Maintainability

The ropeway installation shall be designed and constructed for routine or special maintenance and repair operations and procedures to be carried out safely.

13 Equipment for passengers and operating personnel

13.1 The access to embarkation areas and exit and disembarkation areas and the embarkation and disembarkation of passengers and operating personnel shall be organized with regard to the movement and stopping of vehicles in such a way as to ensure the safety of passengers and operating personnel, in particular in areas where there is a risk of falling.

13.2 It must be possible for children and persons with reduced mobility to use the ropeway installation safely if the ropeway installation is designed for the transport of such persons.

Annex - I
(Schedule - L)
Safety Guidelines

1 Safe movement

1.1 In the design, construction and operation of Stations and ropeway system, particular care shall be taken to ensure safety of Users in entry and exit; while waiting, boarding or alighting; and in moving systems in case of any immobilization. This shall include facilities for safe and efficient evacuation in case of Emergency In particular, ropeways shall be designed and tested for safe movement.

2 System integrity

2.1 In the design of power supply, ropeway, circuits and equipment, particular care shall be taken to minimize the likely incidence of failure.

2.2 All noxious gases, noise emissions and vibrations fall within the prescribed limit set by the Member State in whose territory the ropeway system is installed and should be in accordance with Applicable Law.

3 Safety management

3.1 A safety statement shall be prepared by the Concessionaire once every quarter to bring out clearly the system of management of checks and maintenance tolerances for various assets including cable cars, and compliance thereof. The statement shall also bring out the nature and extent of, staff training and awareness in dealing with such checks and tolerances. Two copies, along with a soft copy, of the statement shall be sent to the Independent Engineer within 15 (fifteen) days of the close of every quarter.

4 Safety equipment

4.1 The following equipment shall be provided at every Station:

a. Fire extinguishers and fire alarms at the appropriate locations on the platforms;

b. Two fire extinguishers in the station office;

c. Two stretchers and two standard first aid boxes; and

d. Such other equipment as may be required in conformity with Good Industry Practice.

4.2 Any defect in the ropeway installation which could result in a failure endangering safety shall, where practicable, be detected, reported and processed by a safety device.

4.3 The ropeway installation shall be designed in a way to ensure that it can be shut down manually

5 Emergency

5.1 A set of emergency procedures shall be formulated to deal with different Emergency situations and the operations staff shall be trained to respond appropriately during emergency through periodic simulated exercises as laid down in a manual for management of disasters (the "Disaster Management Manual") to be prepared and published by the Concessionaire prior to COD. The Disaster Management Manual shall form part of the Safety Manual. The Concessionaire shall provide 5 (five) copies each, along with a soft

copy, of the Disaster Management Manual to the Authority and the independent expert no later than 30 (thirty) days prior to COD.

6 Fire safety

6.1 The Concessionaire shall adopt provisions in a combination of the National Fire Protection Association (NFPA) 130 standard & Fire Safety Recommendations for Passenger Ropeway Systems.

6.2 To prevent fire in the passenger areas, the Concessionaire shall use fire resistant materials in the construction thereof and shall avoid use of materials which are to some extent flammable, or which emit smoke and harmful gases when burning.

6.3 Emergency exit should be accessible without any obstructions and the exit doors should be kept locked in the ordinary course. The exit doors shall be easy to open from inside the Station in case of Emergency.

6.4 Escape routes shall be clearly marked by arrows in the correct direction and no cryptic symbols shall be used. In complying with the provisions of this Clause 6.4, the possibility of poor visibility due to smoke shall be duly taken into account. All notices and signages shall be uniform and standardized.

6.5 Provisions regarding fire safety as laid down in this Clause 6 shall form part of the Safety Manual.

7 User safety and information system:

7.1 The Independent Engineer / Safety Consultant shall provide the RSMU with the facilities required for supervising passenger areas and cable cars, and shall provide visual information to Users, both onboard and on the Stations. The Independent Engineer / Safety Consultant shall also provide one way communication to Users at the Stations through a Public Announcement (PA) system. The User call points should be located on all platforms at convenient locations to allow Users to contact the RSMU in emergencies.

7.2 The User information system shall comprise dynamic visual displays and loudspeakers.

SCHEDULE –M

(See clause19.5)

MONTHLY FEE STATEMENT

Project:

Type of Vehicle	**For Corresponding Month of Previous Year**		**For Preceding Month**		**For the Month Reported upon**		
(1)							
A							
B							
Total							

SCHEDULE –N

(See Clause22.1)

WEEKLY TRAFFIC CENSUS

Project: **Week ending:**

Type of Vehicle	No. of Passengers using the Ropeway during		
	Corresponding week/last year	Preceding week	Week of report
(1)	(2)	(3)	(4)
A Fee paying passenger			
A1 Towards Hatu Peak			
A2 Towards Narkanda			
Grand Total (A)			

WEEKLY REPORT FOR WEIGH STATIONS

Project: **Week ending:**

Type of Luggage			**No. of Passengers carrying load/ luggage:**			
(1)						
A						
B						
Total						

Note: Sample size shall not be less than 2000 passenger per week and 200 passenger per day.

Remarks, if any:

SCHEDULE –O

DELETED

SCHEDULE - P

(See Clause 23.1)

SELECTION OF INDEPENDENT ENGINEER

1 Selection of Independent Engineer

1.1 The provisions of the Model Request for Proposals for Selection of Technical Consultants, issued by the Ministry of Finance, GOI vide OM 24(23)/PF-II/ 2008 dated 21 May 2009, or any substitute thereof shall apply for selection of an experienced firm to discharge the functions and duties of an Independent Engineer. Provided, however, that no entity which is owned or controlled by the Authority shall be eligible for appointment as the Independent Engineer hereunder.

1.2 In the event of termination of an Independent Engineer appointed in accordance with the provisions of Paragraph 1.1, the Authority shall appoint another firm of Technical Consultants forthwith or may engage a government-owned entity in accordance with the provisions of Paragraph 5 of this Schedule-P.

1.3 The Concessionaire may, in its discretion, nominate a representative to participate in the process of selection to be undertaken by the Authority under this Schedule-P.

2 Terms of Reference

The Terms of Reference for the Independent Engineer shall substantially conform to Schedule-Q.

3 Fee and expenses

3.1 In determining the nature and quantum of duties and services to be performed by the Independent Engineer during the Development Period and Construction Period, the Authority shall endeavor that payments to the Independent Engineer on account of fee and expenses do not exceed 3% (three per cent) of the Bid Project Cost. Payments not exceeding such 3% (three per cent) shall be borne equally by the Authority and the Concessionaire in accordance with the provisions of this Agreement and any payments in excess thereof shall be borne entirely by the Authority.

3.2 The nature and quantum of duties and services to be performed by the Independent Engineer during the Operation Period shall be determined by the Authority in conformity with the provisions of this Agreement and with due regard for economy in expenditure. All payments made to the Independent Engineer on account of fee and expenses during the Operation Period shall be borne equally by the Authority and the Concessionaire.

4 Selection every [five] years

No later than [5 (five)] years from the date of appointment of Independent Engineer pursuant to the provisions of Paragraph 1 of this Schedule-P, and every [5 (five)] years thereafter, the Authority shall engage another firm in accordance with the criteria set forth in this Schedule-P.

5 Appointment of government entity as Independent Engineer

Notwithstanding anything to the contrary contained in this Schedule, the Authority may in its discretion appoint a government-owned entity as the Independent Engineer; provided that such entity shall be a body corporate having as one of its primary function 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 Independent Engineer.

SCHEDULE - Q

(See Clause 23.2.1)

TERMS OF REFERENCE FOR INDEPENDENT ENGINEER

1 Scope

These Terms of Reference for the Independent Engineer (the "TOR") are being specified pursuant to the Concession Agreement dated (the "Agreement"), which has been entered into between the Authority and the "Concessionaire") for Development, Operation and Maintenance of Ropeway from **Narkanda to Hatu Peak** in the State of Himachal Pradesh on DBFOT mode (hereinafter referred to as the "Project) on design, build, finance, operate and transfer (the "DBFOT") basis, and a copy of which is annexed hereto and marked as Annex-A to form part of this TOR.

2 Definitions and interpretation

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

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

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

3.1 The role and functions of the Independent Engineer shall include the following:

(i) review of the Drawings and Documents as set forth in Paragraph 4;
(ii) review, inspection and monitoring of Construction Works & Capacity Augmentation as set forth in Paragraph 5;
(iii) conducting Tests on completion of construction and issuing Completion/ Provisional Certificate as set forth in Paragraph 5
(iv) review, inspection and monitoring of O&M as set forth in Paragraph 6;
(v) review, inspection and monitoring of Divestment Requirements as set forth in
(vi) Paragraph 7;
(vii) determining, as required under the Agreement, the costs of any works or services and/or their reasonableness;
(viii) determining, as required under the Agreement, the period or any extension thereof, for performing any duty or obligation;
(ix) assisting the Parties in resolution of Disputes as set forth in Paragraph 9; and
(x) undertaking all other duties and functions in accordance with the Agreement
(xi) monitor and track the Key Performance Indicators for the Concessionaire, as detailed in Clause 42.8

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

4 Development Period

4.1 During the Development Period, the Independent Engineer shall undertake a detailed review of the Drawings to be furnished by the Concessionaire along with supporting data, including the geo-technical and hydrological investigations, characteristics of materials from borrow areas and quarry sites, topographical surveys and other engineering surveys. The Independent Engineer shall complete such review and send its comments/ observations to the Authority and the Concessionaire within 15 (fifteen) days of receipt of such Drawings. In particular, such comments shall specify the conformity or otherwise of such Drawings with the Scope of the Project and Specifications and Standards.

4.2 The Independent Engineer shall review any modified Drawings or supporting Documents sent to it by the Concessionaire and furnish its comments within 7 (seven) days of receiving such Drawings or Documents.

4.3 The Independent Engineer shall review the Drawings sent to it by the Safety Consultant in accordance with Schedule-L and furnish its comments thereon to the Authority and the Concessionaire within 7 (seven) days of receiving such Drawings. The Independent Engineer shall also review the Safety Report and furnish its comments thereon to the Authority within 15 (fifteen) days of receiving such report.

4.4 The Independent Engineer shall review the detailed design, construction methodology, quality assurance procedures and the procurement, engineering and construction time schedule sent to it by the Concessionaire and furnish its comments within 15 (fifteen) days of receipt thereof.

4.5 The Independent Engineer shall review the detailed design, manufacturing, installation, testing and commissioning plans for the Project sent to it by the Concessionaire and furnish its comments within 15 (fifteen) days of receipt thereof.

4.6 Upon reference by the Authority, the Independent Engineer shall review and; comment on the EPC Contract or any other contract for construction, operation and maintenance of the Project, and furnish its comments within 7 (seven) days from receipt of such reference from the Authority.

5 Construction Period

5.1 In respect of the Drawings, Documents and Safety Report received by the Independent Engineer for its review and comments during the Construction Period, the provisions of Paragraph 4 shall apply, mutatis mutandis.

5.2 The Independent Engineer shall review the monthly progress report furnished by the Concessionaire and send its comments thereon to the Authority and the Concessionaire within 7 (seven) days of receipt of such report.

5.3 The Independent Engineer shall inspect the Construction Works and the Project once every month, preferably after receipt of the monthly progress report from the Concessionaire, but before the 20th (twentieth) day of each month in any case, and make out a report of such inspection (the "Inspection Report") setting forth an overview of the status, progress, quality and safety of construction, including the work methodology adopted, the materials used and their sources, and conformity of Construction Works with the Scope of the Project and the Specifications and Standards. In a separate section of the Inspection Report, the Independent Engineer shall describe in reasonable detail the lapses, defects or deficiencies observed by it in the construction of the Project. The Inspection Report shall also contain a review of the maintenance of the existing lanes in conformity with the provisions of the

Agreement. The Independent Engineer shall send a copy of its Inspection Report to the Authority and the Concessionaire within 7 (seven) days of the inspection.

5.4 The Independent Engineer may inspect the Project more than once in a month if any lapses, defects or deficiencies require such inspections.

5.5 For determining that the Construction Works conform to Specifications and Standards, the Independent Engineer shall require the Concessionaire to carry out, or cause to be carried out, tests on a sample basis, to be specified by the Independent Engineer in accordance with Good Industry Practice for quality assurance. The Independent Engineer shall issue necessary directions to the Concessionaire for ensuring that the tests are conducted in a fair and efficient manner, and shall monitor and review the results thereof.

5.6 The sample size of the tests, to be specified by the Independent Engineer under Paragraph 5.5, shall comprise 10% (ten per cent) of the quantity or number of tests prescribed for each category or type of tests in the Quality Control Manuals; provided that the Independent Engineer may, for reasons to be recorded in writing, increase the aforesaid sample size by up to 10% (ten per cent) for certain categories or types of tests.

5.7 The timing of tests referred to in Paragraph 5.5, and the criteria for acceptance/ rejection of their results shall be determined by the Independent 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 Concessionaire for its own quality assurance in accordance with Good Industry Practice.

5.8 In the event that the Concessionaire carries out any remedial works for removal or rectification of any defects or deficiencies, the Independent Engineer shall require the Concessionaire to carry out, or cause to be carried out, tests to determine that such remedial works have brought the Construction Works into conformity with the Specifications and Standards, and the provisions of this Paragraph 5 shall apply to such tests.

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

5.10 If at any time during the Construction Period, the Independent Engineer determines that the Concessionaire has not made adequate arrangements for the safety of workers and

Users in the zone of construction or that any work is being carried out in a manner that threatens the safety of the workers and the Users, it shall make a recommendation to the Authority forthwith, identifying the whole or part of the Construction Works that should be suspended for ensuring safety in respect thereof.

5.11 In the event that the Concessionaire carries out any remedial measures to secure the safety of suspended works and Users, it may, by notice in writing, require the Independent Engineer to inspect such works, and within 3 (three) days of receiving such notice, the Independent Engineer shall inspect the suspended works and make a report to the Authority forthwith, recommending whether or not such suspension may be revoked by the Authority.

5.12 If suspension of Construction Works is for reasons not attributable to the Concessionaire, the Independent Engineer shall determine the extension of dates set forth in the Project

Completion Schedule, to which the Concessionaire is reasonably entitled, and shall notify the Authority and the Concessionaire of the same.

5.13 The Independent Engineer shall carry out, or cause to be carried out, all the Tests specified in Schedule-I and issue a Completion Certificate or Provisional Certificate, as the case may be. For carrying out its functions under this Paragraph 5.13 and all matters incidental thereto, the Independent Engineer shall act under and in accordance with the provisions of Article 14 and Schedule-I.

5.14 Upon reference from the Authority, the Independent Engineer shall make a fair and reasonable assessment of the costs of providing information, works and services as set forth in Article 16 and certify the reasonableness of such costs for payment by the Authority to the Concessionaire.

5.15 The Independent Engineer shall aid and advise the Concessionaire in preparing the Maintenance Manual.

5.16 Upon reference from the Authority, the Independent Engineer shall undertake the assessment of cost of project works, as per applicable schedule of rates, for the reduction of Scope of work as provided in Clause 16.6.1 of the Concession Agreement.

6 Operation Period

6.1 In respect of the Drawings, Documents and Safety Report received by the Independent Engineer for its review and comments during the Operation Period, the provisions of Paragraph 4 shall apply, mutatis mutandis.

6.2 The Independent Engineer shall review the annual Maintenance Program furnished by the Concessionaire and send its comments thereon to the Authority and the Concessionaire within 15 (fifteen) days of receipt of the Maintenance Program.

6.3 The Independent Engineer shall review the monthly status report furnished by the Concessionaire and send its comments thereon to the Authority and the Concessionaire within 7 (seven) days of receipt of such report.

6.4 The Independent Engineer shall physically inspect the Project at least once every month, preferably after receipt of the monthly status report from the Concessionaire, but before the 20th (twentieth) day of each month in any case, and make out an O&M Inspection Report setting forth an overview of the status, quality and safety of O&M including its conformity with the Maintenance Requirements and Safety Requirements. In a separate section of the O&M Inspection Report, the Independent Engineer shall describe in reasonable detail the lapses, defects or deficiencies observed by it in O&M of the Project. The Independent Engineer shall send a copy of its O&M Inspection Report to the Authority and the Concessionaire within 7 (seven) days of the inspection.

6.5 The Independent Engineer should monitor the efficiency of the Ropeway System through the IT enabled equipment installed by the Concessionaire in a timely fashion

6.6 The Independent Engineer should monitor the live-feed from the CCTV footage to ensure smooth operations of the Ropeway System during the operational hours on a regular basis

6.7 The Independent Engineer should promptly report any kind of discrepancy concerning the safety of the passengers or any issues observed relating to the operations of the Station including but not limited to issues relating to ticketing revenues, revenues through commercial facilities, etc., to both, the Concessionaire and the Authority

6.8 The Independent Engineer should conduct monthly safety audits of the entire Ropeway System

6.9 The Independent Engineer should conduct a bi-monthly survey for passenger convenience which should include a questionnaire targeted at passenger convenience, comfort, etc.

6.10 The Independent Engineer shall in its O&M Inspection Report specify the tests, if any, that the Concessionaire shall carry out, or cause to be carried out, for the purpose of determining that the Project 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 Concessionaire in this behalf.

6.11 In respect of any defect or deficiency referred to in Paragraph 3 of Schedule- K, the Independent 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.

6.12 The Independent Engineer shall determine if any delay has occurred in completion of repair or remedial works in accordance with the Agreement, and shall also determine the Damages, if any, payable by the Concessionaire to the Authority for such delay.

6.13 The Independent Engineer shall examine the request of the Concessionaire for closure of any last mile connectivity road / highway for undertaking maintenance/repair thereof, keeping in view the need to minimize disruption in traffic and the time required for completing such maintenance/repair in accordance with Good Industry Practice. It shall grant permission with such modifications, as it may deem necessary, within 3 (three) days of receiving a request from the Concessionaire. Upon expiry of the permitted period of closure, the Independent Engineer shall monitor the re-opening of such last mile connectivity infrastructure, and in case of delay, determine the Damages payable by the Concessionaire to the Authority under Clause 17.7.

6.14 The Independent Engineer shall monitor and review the curing of defects and deficiencies by the Concessionaire as set forth in Clause 19.4.

6.15 In the event that the Concessionaire notifies the Independent Engineer of any modifications that it proposes to make to the Project, the Independent Engineer shall review the same and send its comments to the Authority and the Concessionaire within 15 (fifteen) days of receiving the proposal.

6.16 The Independent Engineer shall undertake traffic sampling, as and when required by the Authority, under and in accordance with the provisions of this Agreement.

7 Termination

7.1 At any time, not earlier than 90 (ninety) days prior to Termination but not later than 15 (fifteen) days prior to such Termination, the Independent Engineer shall, in the presence of a representative of the Concessionaire, inspect the Project for determining compliance

by the Concessionaire with the Divestment Requirements set forth in Clause 32.1 and, if required, cause tests to be carried out at the Concessionaire's cost for determining such compliance. If the Independent Engineer determines that the status of the Project is such that its repair and rectification would require a larger amount than the sum set forth in Clause 33.2, it shall recommend retention of the required amount in the Escrow Account and the period of retention thereof.

7.2 The Independent Engineer shall inspect the Project once in every 15 (fifteen) days during a period of 90 (ninety) days after Termination for determining the liability of the Concessionaire under Article 33, in respect of the defects or deficiencies specified therein. If any such defect or deficiency is found by the Independent Engineer, it shall make a report in reasonable detail and send it forthwith to the Authority and the Concessionaire.

8 Determination of costs and time

8.1 The Independent Engineer shall determine the costs, and/or their reasonableness, that are required to be determined by it under the Agreement.

8.2 The Independent Engineer shall determine the period, or any extension thereof, that is required to be determined by it under the Agreement.

9 Assistance in Dispute resolution

9.1 When called upon by either Party in the event of any Dispute, the Independent Engineer shall mediate and assist the Parties in arriving at an amicable settlement.

9.2 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 Independent Engineer shall specify such meaning, scope and nature by issuing a reasoned written statement relying on good industry practice and authentic literature.

10 Other duties and functions

The Independent Engineer shall perform all other duties and functions specified in the Agreement.

11 Miscellaneous

11.1 The Independent Engineer shall notify its programmer of inspection to the Authority and to the Concessionaire, who may, in their discretion, depute their respective representatives to be present during the inspection.

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

11.3 The Independent Engineer shall obtain, and the Concessionaire shall furnish in 2 (two) … Copies thereof, all communications and reports required to be submitted, under this Agreement, by the Concessionaire to the Independent Engineer, whereupon the Independent Engineer shall send 1 (one) of the copies to the Authority along with its comments thereon.

11.4 The Independent 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.

11.5 Upon completion of its assignment hereunder, the Independent Engineer shall duly classify and list all Drawings, Documents, results of tests and other relevant records, and hand them over to the Authority or such other person as the Authority may specify, and obtain written receipt thereof. Two copies of the said documents shall also be furnished in their editable digital format or in such other medium or manner as may be acceptable to the Authority.

11.6 Wherever no period has been specified for delivery of services by the Independent Engineer, the Independent Engineer shall act with the efficiency and urgency necessary for discharging its functions in accordance with Good Industry Practice.

SCHEDULE –R

(See Clause 27.1.1)

FEE NOTIFICATION

As per the Relevant State Aereal Ropeway Act and Rules

SCHEDULE -S

(See Clause 31.1.2)

ESCROW AGREEMENT

THIS ESCROW AGREEMENT is entered into on this the day of 20… AMONGST

1 ..... Limited, a company incorporated under the provisions of the Companies Act, 2013 and having its registered office at ……. (hereinafter referred to as the "Concessionaire" which expression shall, unless repugnant to the context or meaning thereof, include its successors, permitted assigns and substitutes);

2 ..... (insert name and particulars of Lenders' Representative) and having its registered office at ..... acting for and on behalf of the Senior Lenders as their duly authorized agent with regard to matters arising out of or in relation to this Agreement (hereinafter referred to as the "Lenders' Representative" which expression shall, unless repugnant to the context or meaning thereof, include its successors and substitutes);

3 ..... (insert name and particulars of the Escrow Bank) and having its registered office at.....(hereinafter referred to as the "Escrow Bank" which expression shall, unless repugnant to the context or meaning thereof, include its successors and substitutes); and

4 The Ropeways and Rapid Transport System, Development Corporation, Government of Himachal Pradesh represented by its Director and having its principal offices at U.S. Club, Shimla (hereinafter referred to as the "Authority" which expression shall, unless repugnant to the context or meaning thereof, include its administrators, successors and assigns).

WHEREAS:

(A) The Authority has entered into a Concession Agreement dated with the Concessionaire (the "Concession Agreement") for the Development, Operation and Maintenance of Ropeway from Narkanda to Hatu Peak in the State of Himachal Pradesh on DBFOT mode (hereinafter referred to as the "Project) on design, build, finance, operate and transfer (the "DBFOT") basis, and a copy of which is annexed hereto and marked as Annex-A to form part of this Agreement.

(B) Senior Lenders have agreed to finance the Project in accordance with the terms and conditions set forth in the Financing Agreements.

(C) The Concession Agreement requires the Concessionaire to establish an Escrow Account, inter alia, on the terms and conditions stated therein.

NOW, THEREFORE, in consideration of the foregoing and the respective covenants and agreements set forth in this Agreement, the receipt and sufficiency of which is hereby acknowledged, and intending to be legally bound hereby, the Parties agree as follows:

1 DEFINITIONS AND INTERPRETATION

1.1 Definitions

In this Agreement, the following words and expressions shall, unless repugnant to the context or meaning thereof, have the meaning hereinafter respectively assigned to them:

"Agreement" means this Escrow Agreement and any amendment thereto made in accordance with the provisions contained herein;

"Concession Agreement" means the Concession Agreement referred to in Recital (A) above and annexed hereto as Annex-A, and shall include all of its Recitals and Schedules and any amendments made thereto in accordance with the provisions contained in this behalf therein;

"Cure Period" means the period specified in this Agreement for curing any breach or default of any provision of this Agreement by the Concessionaire, and shall commence from the date on which a notice is delivered by the Authority or the Lenders' Representative, as the case may be, to the Concessionaire asking the latter to cure the breach or default specified in such notice;

"Escrow Account" means an escrow account established in terms of and under this Agreement, and shall include the Sub-Accounts;

"Escrow Default" shall have the meaning ascribed thereto in Clause 6.1;

"Lenders' Representative" means the person referred to as the Lenders' Representative in the foregoing Recitals;

"Parties" means the parties to this Agreement collectively and "Party" shall mean any of the Parties to this Agreement individually;

"Payment Date" means, in relation to any payment specified in Clause 4.1, the date(s) specified for such payment; and

"Sub-Accounts" means the respective sub-accounts of the Escrow Account, into which the monies specified in Clause 4.1 would be credited every month and paid out if due, and if not due in a month then appropriated proportionately in such month and retained in the respective sub-accounts and paid out therefrom on the Payment Date(s).

1.2 Interpretation

1.2.1 References to Lenders' Representative shall, unless repugnant to the context or meaning thereof, mean references to the Lenders' Representative, acting for and on behalf of Senior Lenders.

1.2.2 The words and expressions beginning with capital letters and defined in this Agreement shall have the meaning ascribed thereto herein, and the words and expressions used in this Agreement and not defined herein but defined in the Concession Agreement shall, unless repugnant to the context, have the meaning ascribed thereto in the Concession Agreement.

1.2.3 References to Clauses are, unless stated otherwise, references to Clauses of this Agreement.

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

2 ESCROW ACCOUNT

2.1 Escrow Bank to act as trustee

2.1.1 The Concessionaire hereby appoints the Escrow Bank to act as trustee for the Authority, the Lenders' Representative and the Concessionaire in connection herewith and authorizes the Escrow Bank to exercise such rights, powers, authorities and discretion as are specifically delegated to the Escrow Bank by the terms hereof together with all such rights,

powers, authorities and discretion as are reasonably incidental hereto, and the Escrow Bank accepts such appointment pursuant to the terms hereof.

2.1.2 The Concessionaire hereby declares that all rights, title and interest in and to the Escrow Account shall be vested in the Escrow Bank and held in trust for the Authority, the Lenders' Representative and the Concessionaire, and applied in accordance with the terms of this Agreement. No person other than the Authority, the Lenders' Representative and the Concessionaire shall have any rights hereunder as the beneficiaries of or as third party beneficiaries under this Agreement.

2.2 **Acceptance of Escrow Bank**

The Escrow Bank hereby agrees to act as such and to accept all payments and other amounts to be delivered to and held by the Escrow Bank pursuant to the provisions of this Agreement. The Escrow Bank shall hold and safeguard the Escrow Account during the term of this Agreement and shall treat the amount in the Escrow Account as monies deposited by the Concessionaire, Senior Lenders or the Authority with the Escrow Bank. In performing its functions and duties under this Agreement, the Escrow Bank shall act in trust for the benefit of, and as agent for, the Authority, the Lenders' Representative and the Concessionaire or their nominees, successors or assigns, in accordance with the provisions of this Agreement.

2.3 **Establishment and operation of Escrow Account**

2.3.1 Within 30 (thirty) days from the date of this Agreement, and in any case prior to the Appointed Date, the Concessionaire shall open and establish the Escrow Account with the (name of Branch) Branch of the Escrow Bank. The Escrow Account shall be denominated in Rupees.

2.3.2 The Escrow Bank shall maintain the Escrow Account in accordance with the terms of this Agreement and its usual practices and applicable regulations, and pay the maximum rate of interest payable to similar customers on the balance in the said account from time to time.

2.3.3 The Escrow Bank and the Concessionaire shall, after consultation with the Lenders' Representative, agree on the detailed mandates, terms and conditions, and operating procedures for the Escrow Account, but in the event of any conflict or inconsistency between this Agreement and such mandates, terms and conditions, or procedures, this Agreement shall prevail.

2.4 Escrow Bank's fee The Escrow Bank shall be entitled to receive its fee and expenses in an amount, and at such times, as may be agreed between the Escrow Bank and the Concessionaire. For the avoidance of doubt, such fee and expenses shall form part of the O&M Expenses and shall be appropriated from the Escrow Account in accordance with Clause 4.1.

2.5 Rights of the Parties Save and except as otherwise provided in the Concession Agreement, the rights of the Authority, the Lenders' Representative and the Concessionaire in the monies held in the Escrow Account are set forth in their entirety in this Agreement and the Authority, the Lenders' Representative and the Concessionaire shall have no other rights against or to the monies in the Escrow Account.

2.6 Substitution of the Concessionaire The Parties hereto acknowledge and agree that upon substitution of the Concessionaire with the Nominated Company, pursuant to the Substitution Agreement, it shall be deemed for the purposes of this Agreement that the Nominated Company is a Party hereto and the Nominated Company shall accordingly be

deemed to have succeeded to the rights and obligations of the Concessionaire under this Agreement on and with effect from the date of substitution of the Concessionaire with the Nominated Company.

3 DEPOSITS INTO ESCROW ACCOUNT

3.1 Deposits by the Concessionaire

3.1.1 The Concessionaire agrees and undertakes that it shall deposit into and/or credit the Escrow Account with:

(a) All monies received in relation to the Project from any source, including the Senior Lenders, lenders of Subordinated Debt and the Authority;

(b) All funds received by the Concessionaire from its shareholders, in any manner or form;

(c) Any revenues; rentals, fees, deposits or capital receipts, as the case may be, from or in respect of the Project; and

(d) All proceeds received pursuant to any insurance claims or compensation amount, if any received.

3.1.2 The Concessionaire may at any time make deposits of its other funds into the Escrow Account, provided that the provisions of this Agreement shall apply to such deposits.

3.2 **Deposits by the Authority**

The Authority agrees and undertakes that, as and when due and payable, it shall deposit into and/or credit the Escrow Account with:

(a) All payments & disbursements and any other monies disbursed by the Authority to the Concessionaire in terms of Agreement;

(b) All revenues collected by the Authority in exercise of its rights under the Concession Agreement (excluding the Fees); and

(c) Termination Payments

Provided that, notwithstanding the provisions of Clause 4.1.1, the Authority shall be entitled to appropriate from the aforesaid amounts, any amounts due and payable to it by the Concessionaire, and the balance remaining shall be deposited into the Escrow Account.

3.3 **Deposits by Senior Lenders**

The Lenders' Representative agrees, confirms and undertakes that the Senior Lenders shall deposit into and/or credit the Escrow Account with all disbursements made by them in relation to or in respect of the Project; provided that notwithstanding anything to the contrary contained in this Agreement, the Senior Lenders shall be entitled to make direct payments to the EPC Contractor under and in accordance with the express provisions contained in this behalf in the Financing Agreements.

3.4 **Interest on deposits**

The Escrow Bank agrees and undertakes that all interest accruing on the balances of the Escrow Account shall be credited to the Escrow Account; provided that the Escrow Bank shall be entitled to appropriate therefrom the fee and expenses due to it from the Concessionaire in relation to the Escrow Account and credit the balance remaining to the Escrow Account.

4 WITHDRAWALS FROM ESCROW ACCOUNT

4.1 **Withdrawals during Concession Period**

4.1.1 At the beginning of every month, or at such shorter intervals as the Lenders' Representative and the Concessionaire may by written instructions determine, the Escrow Bank shall withdraw amounts from the Escrow Account and appropriate them in the following order by depositing such amounts in the relevant Sub-Accounts for making due payments, and if such payments are not due in any month, then retain such monies in such Sub-Accounts and pay out therefrom on the Payment Date(s):

(a) All taxes due and payable by the Concessionaire for and in respect of the Project;

(b) All payments relating to construction of the Project, subject to and in accordance with the conditions, if any, set forth in the Financing Agreements;

(c) O&M Expenses, subject to the ceiling, if any, set forth in the Financing Agreements;

(d) O&M Expenses and other costs and expenses incurred by the Authority in accordance with the provisions of the Concession Agreement, and certified by the Authority as due and payable to it;

(e) Any amounts due and payable to the Authority;

(f) Monthly proportionate provision of Debt Service due in an Accounting Year;

(g) all payments and Damages certified by the Authority as due and payable to it by the Concessionaire pursuant to the Concession Agreement;

(h) Monthly proportionate provision of debt service payments due in an Accounting Year in respect of Subordinated Debt;

(i) any reserve requirements set forth in the Financing Agreements; and

(j) Balance, if any, in accordance with the instructions of the Concessionaire.

4.1.2 No later than 60 (sixty) days prior to the commencement of each Accounting Year, the Concessionaire shall provide to the Escrow Bank, with prior written approval of the Lenders' Representative, details of the amounts likely to be required for each of the payment obligations set forth in this Clause 4.1; provided that such amounts may be subsequently modified, with prior written approval of the Lenders' Representative, if fresh information received during the course of the year makes such modification necessary.

4.2 Withdrawals upon Termination upon Termination of the Concession Agreement, all amounts standing to the credit of the Escrow Account shall, notwithstanding anything in this Agreement, be appropriated and dealt with in the following order:

(a) All taxes due and payable by the Concessionaire for and in respect of the Project;

(b) 90% (ninety per cent) of Debt Due excluding Subordinated Debt;

(c) all payments and Damages certified by the Authority as due and payable to it by the Concessionaire pursuant to the Concession Agreement, including any claims in connection with or arising out of Termination;

(d) Retention and payments arising out of, or in relation to, liability for defects and deficiencies set forth in Article 33 of the Concession Agreement;

(e) Outstanding Debt Service including the balance of Debt Due;

(f) Outstanding Subordinated Debt;

(g) Incurred or accrued O&M Expenses;

(h) Any other payments required to be made under the Concession Agreement; and

(i) Balance, if any, in accordance with the instructions of the Concessionaire: Provided that the disbursements specified in Sub-clause (i) of this Clause 4.2 shall be undertaken only after the Vesting Certificate has been issued by the Authority.

4.3 **Application of insufficient funds:**

Funds in the Escrow Account shall be applied in the serial order of priority set forth in Clauses 4.1 and 4.2, as the case may be. If the funds available are not sufficient to meet all the requirements, the Escrow Bank shall apply such funds in the serial order of priority until exhaustion thereof.

4.4 **Application of insurance proceeds**

Notwithstanding anything in this Agreement, the proceeds from all insurance claims, except life and injury, shall be deposited into and/or credited to the Escrow Account and utilized for any necessary repair, reconstruction, reinstatement, replacement, improvement, delivery or installation of the Project, and the balance remaining, if any, shall be applied in accordance with the provisions contained in this behalf in the Financing Agreements.

4.5 **Withdrawals during Suspension**

Notwithstanding anything to the contrary contained in this Agreement, the Authority may exercise all or any of the rights of the Concessionaire during the period of Suspension under Article 30 of the Concession Agreement. Any instructions given by the Authority to the Escrow Bank during such period shall be complied with as if such instructions were given by the Concessionaire under this Agreement and all actions of the Authority hereunder shall be deemed to have been taken for and on behalf of the Concessionaire.

5 OBLIGATIONS OF THE ESCROW BANK

5.1 **Segregation of funds**

Monies and other property received by the Escrow Bank under this Agreement shall, until used or applied in accordance with this Agreement, be held by the Escrow Bank in trust for the purposes for which they were received, and shall be segregated from other funds and property of the Escrow Bank.

5.2 **Notification of balances**

7(seven) business days prior to each Payment Date (and for this purpose the Escrow Bank shall be entitled to rely on an affirmation by the Concessionaire and/or the Lenders' Representative as to the relevant Payment Dates), the Escrow Bank shall notify the Lenders' Representative of the balances in the Escrow Account and Sub-Accounts as at the close of business on the immediately preceding business day.

5.3 **Communications and notices**

In discharge of its duties and obligations hereunder, the Escrow Bank:

(a) May, in the absence of bad faith or gross negligence on its part, rely as to any matters of fact which tight reasonably be expected to be within the knowledge of the Concessionaire upon a certificate signed by or on behalf of the Concessionaire;

(b) may, in the absence of bad faith or gross negligence on its part, rely upon the authenticity of any communication or document believed by it to be authentic;

(c) shall, within 5 (five) business days after receipt, deliver a copy to the Lenders' Representative of any notice or document received by it in its capacity as the Escrow Bank from the Concessionaire or any other person hereunder or in connection herewith; and

(d) shall, within 5 (five) business days after receipt, deliver a copy to the Concessionaire of any notice or document received by it from the Lenders' Representative in connection herewith.

5.4 **No set off**

The Escrow Bank agrees not to claim or exercise any right of set off, banker's lien or other right or remedy with respect to amounts standing to the credit of the Escrow Account. For the avoidance of doubt, it is hereby acknowledged and agreed by the Escrow Bank that the monies and properties held by the Escrow Bank in the Escrow Account shall not be considered as part of the assets of the Escrow Bank and being trust property, shall in the case of bankruptcy or liquidation of the Escrow Bank, be wholly excluded from the assets of the Escrow Bank in such bankruptcy or liquidation.

5.5 **Regulatory approvals**

The Escrow Bank shall use its best efforts to procure, and thereafter maintain and comply with, all regulatory approvals required for it to establish and operate the Escrow Account. The Escrow Bank represents and warrants that it is not aware of any reason why such regulatory approvals will not ordinarily be granted to the Escrow Bank.

6 ESCROW DEFAULT

6.1 **Escrow Default**

6.1.1 Following events shall constitute an event of default by the Concessionaire (an "Escrow Default") unless such event of default has occurred as a result of Force Majeure or any act or omission of the Authority or the Lenders' Representative:

(a) the Concessionaire commits breach of this Agreement by failing to deposit any receipts into the Escrow Account as provided herein and fails to cure such breach by depositing the same into the Escrow Account within a Cure Period of 5 (five) business days;

(b) the Concessionaire causes the Escrow Bank to transfer funds to any account of the Concessionaire in breach of the terms of this Agreement and fails to cure such breach by depositing the relevant funds into the Escrow Account or any Subaccount in which such transfer should have been made, within a Cure Period of 5 (five) business days; or

(c) the Concessionaire commits or causes any other breach of the provisions of this Agreement and fails to cure the same within a Cure Period of 5 (five) business days.

6.1.2 Upon occurrence of an Escrow Default, the consequences thereof shall be dealt with under and in accordance with the provisions of the Concession Agreement.

7 TERMINATION OF ESCROW AGREEMENT

7.1 Duration of the Escrow Agreement

This Agreement shall remain in full force and effect so long as any sum remains to be advanced or is outstanding from the Concessionaire in respect of the debt, guarantee or financial assistance received by it from the Senior Lenders, or any of its obligations to the Authority remain to be discharged, unless terminated earlier by consent of all the Parties or otherwise in accordance with the provisions of this Agreement.

7.2 Substitution of Escrow Bank

The Concessionaire may, by not less than 45 (forty five) days prior notice to the Escrow Bank, the Authority and the Lenders' Representative, terminate this Agreement and appoint a new Escrow Bank, provided that the new Escrow Bank is acceptable to the Lenders' Representative and arrangements are made satisfactory to the Lenders' Representative for transfer of amounts deposited in the Escrow Account to a new Escrow Account established with the successor Escrow Bank.

The termination of this Agreement shall take effect only upon coming into force of an Escrow Agreement with the substitute Escrow Bank.

7.3 Closure of Escrow Account

The Escrow Bank shall, at the request of the Concessionaire and the Lenders' Representative made on or after the payment by the Concessionaire of all outstanding amounts under the Concession Agreement and the Financing Agreements including the payments specified in Clause 4.2, and upon confirmation of receipt of such payments, close the Escrow Account and Sub- Accounts and pay any amount standing to the credit thereof to the Concessionaire. Upon closure of the Escrow Account hereunder, the Escrow Agreement shall be deemed to be terminated.

8 SUPPLEMENTARY ESCROW AGREEMENT

8.1 Supplementary escrow agreement

The Lenders' Representative and the Concessionaire shall be entitled to enter into a supplementary escrow agreement with the Escrow Bank providing, inter alia, for detailed procedures and documentation for withdrawals from Sub- Accounts pursuant to Clause 4.1.1 and for matters not covered under this Agreement such as the rights and obligations of Senior Lenders and lenders of Subordinated Debt, investment of surplus funds, restrictions on withdrawals by the Concessionaire in the event of breach of this Agreement or upon occurrence of an Escrow Default, procedures relating to operation of the Escrow Account and withdrawal therefrom, reporting requirements and any matters incidental thereto; provided that such supplementary escrow agreement shall not contain any provision which is inconsistent with this Agreement and in the event of any conflict or inconsistency between provisions of this Agreement and such supplementary escrow agreement, the provisions of this Agreement shall prevail.

9 INDEMNITIES

9.1 General indemnity

9.1.1 The Concessionaire will indemnify, defend and hold the Authority, Escrow Bank and the Senior Lenders, acting through the Lenders' Representative, harmless against any and all proceedings, actions and third party claims for any loss, damage, cost and expense arising out of any breach by the Concessionaire of any of its obligations under this Agreement or

on account of failure of the Concessionaire to comply with Applicable Laws and Applicable Permits.

9.1.2 The Authority will indemnify, defend and hold the Concessionaire harmless against any and all proceedings, actions and third party claims for any loss, damage, cost and expense arising out of failure of the Authority to fulfil any of its obligations under this Agreement materially and adversely affecting the performance of the Concessionaire's obligations under the Concession Agreement or this Agreement other than any loss, damage, cost and expense arising out of acts done in discharge of their lawful functions by the Authority, its officers, servants and agents.

9.1.3 The Escrow Bank will indemnify, defend and hold the Concessionaire harmless against any and all proceedings, actions and third party claims for any loss, damage, cost and expense arising out of failure of the Escrow Bank to fulfil its obligations under this Agreement materially and adversely affecting the performance of the Concessionaire's obligations under the Concession Agreement other than any loss, damage, cost and expense, arising out of acts done in discharge of their lawful functions by the Escrow Bank, its officers, servants and agents.

9.2 **Notice and contest of claims**

In the event that any Party hereto receives a claim from a third party in respect of which it is entitled to the benefit of an indemnity under Clause 9.1 or in respect of which it is entitled to reimbursement (the "Indemnified Party"), it shall notify the other Party responsible for indemnifying such claim hereunder (the "Indemnifying Party") within 15 (fifteen) days of receipt of the claim and shall not settle or pay the claim without the prior approval of the Indemnifying Party, which approval shall not be unreasonably withheld or delayed. In the event that the Indemnifying Party wishes to contest or dispute the claim, it may conduct the proceedings in the name of the Indemnified Party and shall bear all costs involved in contesting the same. The Indemnified Party shall provide all cooperation and assistance in contesting any claim and shall sign all such writings and documents as the Indemnifying Party may reasonably require.

10 DISPUTE RESOLUTION

10.1 **Dispute resolution**

10.1.1 Any Dispute which is not resolved amicably by conciliation, as provided in Article 43.2, the parties shall submit such dispute for arbitration by Principal Secretary, Department of Transport, Government of Himachal Pradesh as the Sole Arbitrator. The proceeding shall be conducted as per the Arbitration and Conciliation Act, 1996. The venue of such arbitration shall be Shimla, and the language of arbitration proceedings shall be English.

10.1.2 The Arbitrators shall issue a reasoned award and such award shall be final and binding on the Parties. The place of arbitration shall be the capital of the State and the language of arbitration shall be English.

11. MISCELLANEOUS PROVISIONS

11.1 **Governing law and jurisdiction**

This Agreement shall be construed and interpreted in accordance with and governed by the laws of India, and the courts in the State shall have jurisdiction over all matters arising out of or relating to this Agreement.

11.2 Waiver of sovereign immunity The Authority unconditionally and irrevocably:

(a) agrees that the execution, delivery and performance by it of this Agreement constitute commercial acts done and performed for commercial purpose;

(b) agrees that, should any proceedings be brought against it or its assets, property or revenues in any jurisdiction in relation to this Agreement or any transaction contemplated by this Agreement, no immunity (whether by reason of sovereignty or otherwise) from such proceedings shall be claimed by or on behalf of the Authority with respect to its assets;

(c) waives any right of immunity which it or its assets, property or revenues now has, may acquire in the future or which may be attributed to it in any jurisdiction; and

(d) consents generally in respect of the enforcement of any judgment or award against it in any such proceedings to the giving of any relief or the issue of any process in any jurisdiction in connection with such proceedings (including the making, enforcement or execution against it or in respect of any assets, property or revenues whatsoever irrespective of their use or intended use of any order or judgment that may be made or given in connection therewith).

11.3 Priority of agreements

In the event of any conflict between the Concession Agreement and this Agreement, the provisions contained in the Concession Agreement shall prevail over this Agreement.

11.4 Alteration of terms

All additions, amendments, modifications and variations to this Agreement shall be effectual and binding only if in writing and signed by the duly authorized representatives of the Parties.

11.5 Waiver

11.5.1 Waiver by any Party of a default by another Party in the observance and performance of any provision of or obligations under this Agreement:

(a) Shall not operate or be construed as a waiver of any other or subsequent default hereof or of other provisions of or obligations under this Agreement;

(b) shall not be effective unless it is in writing and executed by a duly authorized representative of the Party; and

(c) shall not affect the validity or enforceability of this Agreement in any manner.

11.5.2 Neither the failure by any Party to insist on any occasion upon the performance of the terms, conditions and provisions of this Agreement or any obligation thereunder nor time or other indulgence granted by any Party to another Party shall be treated or deemed as waiver of such breach or acceptance of any variation or the relinquishment of any such right hereunder.

11.6 No third party beneficiaries This Agreement is solely for the benefit of the Parties and no other person or entity shall have any rights hereunder.

11.7 **Survival**

11.7.1 Termination of this Agreement:

(a) shall not relieve the Parties of any obligations hereunder which expressly or by implication survive termination hereof; and

(b) except as otherwise provided in any provision of this Agreement expressly limiting the liability of either Party, shall not relieve either Party of any obligations or liabilities for loss or damage to the other Party arising out of, or caused by, acts or omissions of such Party prior to the effectiveness of such termination or arising out of such termination.

11.7.2 All obligations surviving the cancellation, expiration or termination of this Agreement shall only survive for a period of 3 (three) years following the date of such termination or expiry of this Agreement.

11.8 **Severability**

If for any reason whatever any provision of this Agreement is or becomes invalid, illegal or unenforceable or is declared by any court of competent jurisdiction or any other instrumentality to be invalid, illegal or unenforceable, the validity, legality or enforceability of the remaining provisions shall not be affected in any manner, and the Parties will negotiate in good faith with a view to agreeing to one or more provisions which may be substituted for such invalid, unenforceable or illegal provisions, as nearly as is practicable to such invalid, illegal or unenforceable provision. Failure to agree upon any such provisions shall not be subject to dispute resolution under Clause 10.1 of this Agreement or otherwise.

11.9 **Successors and assigns**

This Agreement shall be binding on and shall inure to the benefit of the Parties and their respective successors and permitted assigns.

11.10 **Notices**

All notices or other communications to be given or made under this Agreement shall be in writing and shall either be delivered personally or sent by courier or registered post with an additional copy to be sent by facsimile or e-mail. The address for service of each Party, its facsimile number and e-mail are set out under its name on the signing pages hereto. A notice shall be effective upon actual receipt thereof, save that where it is received after 5.30 (five thirty) p.m. on a business day, or on a day that is not a business day, the notice shall be deemed to be received on the first business day following the date of actual receipt. Without prejudice to the foregoing, a Party giving or making a notice or communication by facsimile or e-mail shall promptly deliver a copy thereof personally, or send it by courier or registered post to the addressee of such notice or communication. It is hereby agreed and acknowledged that any Party may by notice change the address to which such notices and communications to it are to be delivered or mailed. Such change shall be effective when all the Parties have notice of it.

11.11 **Language**

All notices, certificates, correspondence and proceedings under or in connection with this Agreement shall be in English.

11.12 **Authorized representatives**

Each of the Parties shall, by notice in writing, designate their respective authorized representatives through whom only all communications shall be made. A Party hereto shall be entitled to remove and/or substitute or make fresh appointment of such authorized representative by similar notice.

11.13 **Original Document**

This Agreement may be executed in four counterparts, each of which when executed and delivered shall constitute an original of this Agreement.

IN WITNESS WHEREOF THE PARTIES HAVE EXECUTED AND DELIVERED THIS AGREEMENT AS OF THE DATE FIRST ABOVE WRITTEN.

THE COMMON SEAL OFCONCESSIONAIRE has been affixed pursuant to the resolution passed by the Board of Directors of the Concessionaire at its meeting held on the day of 20 hereunto affixed in the presence of, Director, who has signed these presents in token thereof and Company Secretary / Authorized Officer who has countersigned the same in token thereof[3]	SIGNED, SEALED AND DELIVERED For and on behalf of SENIOR LENDERS by the Lender's representative:
(Signature)	(Signature)
(Name)	(Name)
(Designation)	(Designation)
(Address)	(Address)
(Fax No.)	(Fax No.)
(E-mail address)	(E-mail address)
SIGNED, SEALED AND DELIVERED	SIGNED, SEALED AND DELIVERED
For and on behalf of	for and on behalf of
THE ESCROW BANK by	THE AUTHORITY by:
(Signature)	(Signature)
(Name)	(Name)
(Designation)	(Designation)
(Address)	(Address)

[3] To be affixed in accordance with the articles of association of the Concessionaire and the resolution passed by its Board of Directors.

(Fax No.)

(E-mail address)

SIGNED, SEALED

In the presence of:

(Fax No.)

(E-mail address)

SCHEDULE - T

(See Clause 33.2.1)

PANEL OF CHARTERED ACCOUNTANTS

1 Panel of Chartered Accountants

Pursuant to the provisions of Clause 33.2.1 of the Agreement, the Authority and the Concessionaire shall prepare a mutually agreed panel of 5 (five) reputable firms of Chartered Accountants having their registered offices in India (the "Panel of Chartered Accountants"). The criteria for preparing such Panel and the procedure to be adopted in this behalf shall be as set forth in this Schedule-T.

2 Invitation for empanelment

2.1 The Authority shall invite offers from all reputed firms of Chartered Accountants who fulfil the following eligibility criteria, namely:

(a) the firm should have conducted statutory audit of the annual accounts of at least one hundred companies registered under the Companies Act, 1956, including any re-enactment or amendment thereof, of which at least ten should have been public sector undertakings;

(b) The firm should have at least 5 (five) practicing Chartered Accountants on its rolls, each with a minimum experience of ten years in the profession;

(c) The firm or any of its partners should not have been disqualified or black-listed by the Comptroller and Auditor General of India or the Authority; and

(d) The firm should have an office in the State or in an adjacent State with at least 2 (two) practicing Chartered Accountants on its rolls in such State.

2.2 Interested firms meeting the eligibility criteria shall be required to submit a statement of their capability including the bio-data of all the practicing Chartered Accountants on its rolls. In particular, each firm shall be required to furnish year-wise information relating to the names of all the companies with an annual turnover exceeding Rs. 25,00,00,000 (Rs. twenty five crore) whose annual accounts were audited by such firm in any of the preceding 5 (five) Accounting Years

3 Evaluation and selection

3.1 The information furnished by each firm shall be scrutinized and evaluated by the Authority and 1 (one) point shall be awarded for each annual audit of the companies specified in Paragraph 2.2 above. (For the avoidance of doubt and by way of illustration, a firm which has conducted audit of the annual accounts of any such company for 5 (five) years shall be awarded 5 (five) points).

3.2 The Authority shall prepare a list of all the eligible firms along with the points scored by each such firm and 5 (five) firms scoring the highest points shall be identified and included in the draft Panel of Chartered Accountants.

4 Consultation with the Concessionaire

The Authority shall convey the aforesaid panel of firms to the Concessionaire for scrutiny and comments, if any. The Concessionaire shall be entitled to scrutinize the relevant records of the Authority to ascertain whether the selection of firms has been undertaken in

accordance with the prescribed procedure and it shall send its comments, if any, to the Authority within 15 (fifteen) days of receiving the aforesaid panel.

5 Mutually agreed panel

5.1 The Authority shall, after considering all relevant factors including the comments, if any, of the Concessionaire, finalize and constitute a panel of 5 (five) firms which shall be deemed to be the mutually agreed Panel of Chartered Accountants.

5.2 After completion of every 5 (five) years from the date of preparing the mutually agreed Panel of Chartered Accountants, or such earlier period as may be agreed between the Authority and the Concessionaire, a new panel shall be prepared in accordance with the provisions of this Schedule-T.

SCHEDULE - U

(See Clause 38.4)

VESTING CERTIFICATE

1 The Deputy General Manager, Ropeways and Rapid Transport System, Development Corporation (the **"Authority"**) refers to the Concession Agreement dated …….. (the **"Agreement"**) entered into between the Authority and ……. (the **"Concessionaire"**) Development, Operation and Maintenance of Ropeway from Narkanda to Hatu Peak in the State of Himachal Pradesh on DBFOT mode (hereinafter referred to as the "Project) on design, build, finance, operate and transfer (the "DBFOT") basis.

2 The Authority hereby acknowledges compliance and fulfilment by the Concessionaire of the Divestment Requirements set forth in Clause 38.1 of the Agreement on the basis that upon issue of this Vesting Certificate, the Authority shall be deemed to have acquired, and all title and interest of the Concessionaire in or about the Project shall be deemed to have vested unto the Authority, free from any encumbrances, charges and liens whatsoever.

3 Notwithstanding anything to the contrary contained hereinabove, it shall be a condition of this Vesting Certificate that nothing contained herein shall be construed or interpreted as waiving the obligation of the Concessionaire to rectify and remedy any defect or deficiency in any of the Divestment Requirements and/or relieving the Concessionaire in any manner of the same.

Signed this…… day of……., 20…….

At……..

AGREED, ACCEPTED AND SIGNED	SIGNED, SEALED AND DELIVERED
For and on behalf of	for and on behalf of
CONCESSIONAIRE by:	AUTHORITY by:
(Signature)	(Signature)
(Name)	(Name)
(Designation)	(Designation)
(Address)	(Address)

In the presence of:

1. 2.

SCHEDULE - V

(See Clause 40.3.1)

SUBSTITUTION AGREEMENT

THIS SUBSTITUTION AGREEMENT is entered into on this the..... day of……..20 ..... **AMONGST**

1 The Ropeways and Rapid Transport System, Development Corporation , represented by its Director and having its principal offices at U.S Club, Shimla (Hereinafter referred to as the "Authority" which expression shall unless repugnant to the context or meaning thereof include its administrators, successors and assigns);

2..... Limited, a company incorporated under the provisions of the Companies Act, 2013 and having its registered office at .....(Hereinafter referred to as the **"Concessionaire"** which expression shall unless repugnant to the context or meaning thereof include its successors and permitted assigns and substitutes);

3..... (insert name and particulars of Lenders' Representative) and having its registered office at ....., acting for and on behalf of the Senior Lenders as their duly authorized agent with regard to matters arising out of or in relation to this Agreement (hereinafter referred to as the "**Lenders' Representative"**, which expression shall unless repugnant to the context or meaning thereof include its successors and substitutes);

WHEREAS:

(A) The Authority has entered into a Concession Agreement dated ..... With the Concessionaire (the **"Concession Agreement"**) for the Development, Operation and Maintenance of Ropeway from Narkanda to Hatu Peak in the State of Himachal Pradesh on DBFOT mode (hereinafter referred to as the "Project) on design, build, finance, operate and transfer (the "DBFOT") basis**,** and a copy of which is annexed hereto and marked as Annex-A to form part of this Agreement.

(B) Senior Lenders have agreed to finance the Project in accordance with the terms and conditions set forth in the Financing Agreements.

(C) Senior Lenders have requested the Authority to enter into this Substitution Agreement for securing their interests through assignment, transfer and substitution of the Concession to a Nominated Company in accordance with the provisions of this Agreement and the Concession Agreement.

(D) In order to enable implementation of the Project including its financing, construction, operation and maintenance, the Authority has agreed and undertaken to transfer and assign the Concession to a Nominated Company in accordance with the terms and conditions set forth in this Agreement and the Concession Agreement.

NOW, THEREFORE, in consideration of the foregoing and the respective covenants and agreements set forth in this Agreement, the receipt and sufficiency of which is hereby acknowledged, and intending to be legally bound hereby, the Parties agree as follows:

1 DEFINITIONS AND INTERPRETATION

1.1 Definitions

In this Substitution Agreement, the following words and expressions shall, unless repugnant to the context or meaning thereof, have the meaning hereinafter respectively assigned to them: **"Agreement"** means this Substitution Agreement and any amendment thereto made in accordance with the provisions contained in this Agreement;

"Financial Default" means occurrence of a material breach of the terms and conditions of the Financing Agreements or a continuous default in Debt Service by the Concessionaire for a minimum period of 3 (three) months;

"Lenders' Representative" means the person referred to as the Lenders' Representative in the foregoing Recitals;

"**Nominated Company"** means a company, incorporated under the provisions of the Companies Act, 1956, including any re-enactment or amendment thereof, selected by the Lenders' Representative, on behalf of Senior Lenders, and proposed to the Authority for assignment/transfer of the Concession as provided in this Agreement;

"Notice of Financial Default" shall have the meaning ascribed thereto in Clause 3.2.1; and

"Parties" means the parties to this Agreement collectively and "Party" shall mean any of the Parties to this Agreement individually.

1.2 Interpretation

1.2.1 References to Lenders' Representative shall, unless repugnant to the context or meaning thereof, mean references to the Lenders' Representative, acting for and on behalf of Senior Lenders.

1.2.2 References to Clauses are, unless stated otherwise, references to Clauses of this Agreement.

1.2.3 The words and expressions beginning with capital letters and defined in this Agreement shall have the meaning ascribed thereto herein, and the words and expressions used in this Agreement and not defined herein but defined in the Concession Agreement shall, unless repugnant to the context, have the meaning ascribed thereto in the Concession Agreement.

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

2 ASSIGNMENT

2.1 Assignment of rights and title

The Concessionaire hereby agrees to assign the rights, title and interest in the Concession to, and in favor of, the Lenders' Representative pursuant to and in accordance with the provisions of this Agreement and the Concession Agreement by way of security in respect of financing by the Senior Lenders under the Financing Agreements.

3 SUBSTITUTION OF THE CONCESSIONAIRE

3.1 Rights of substitution

3.1.1 Pursuant to the rights, title and interest assigned under Clause 2.1, the Lenders' Representative shall be entitled to substitute the Concessionaire by a Nominated Company under and in accordance with the provisions of this Agreement and the Concession Agreement.

3.1.2 The Authority hereby agrees to substitute the Concessionaire by endorsement on the Concession Agreement in favor of the Nominated Company selected by the Lenders' Representative in accordance with this Agreement. For the avoidance of doubt, the Senior Lenders or the Lenders' Representative shall not be entitled to operate and maintain the Project as Concessionaire either individually or collectively.

3.2 Substitution upon occurrence of Financial Default

3.2.1 Upon occurrence of a Financial Default, the Lenders' Representative may issue a notice to the Concessionaire (the "**Notice of Financial Default**") along with particulars thereof, and send a copy to the Authority for its information and record. A Notice of Financial Default under this Clause 3 shall be conclusive evidence of such Financial Default and it shall be final and binding upon the Concessionaire for the purposes of this Agreement.

3.2.2 Upon issue of a Notice of Financial Default hereunder, the Lenders' Representative may, without prejudice to any of its rights or remedies under this Agreement or the Financing Agreements, substitute the Concessionaire by a Nominated Company in accordance with the provisions of this Agreement.

3.2.3 At any time after the Lenders' Representative has issued a Notice of Financial Default, it may by notice require the Authority to suspend all the rights of the Concessionaire and undertake the operation and maintenance of the Project in accordance with the provisions of Article 30 of the Concession Agreement, and upon receipt of such notice, the Authority shall undertake Suspension under and in accordance with the provisions of the Concession Agreement. The aforesaid Suspension shall be revoked upon substitution of the Concessionaire by a Nominated Company, and in the event such substitution is not completed within 180 (one hundred and eighty) days from the date of such Suspension, the Authority may terminate the Concession Agreement forthwith by issuing a Termination Notice in accordance with the provisions of the Concession Agreement; provided that upon written request from the Lenders' Representative and the Concessionaire, the Authority may extend the aforesaid period of 180 (one hundred and eighty) days by a period not exceeding 90 (ninety) days. For the avoidance of doubt, the Authority expressly agrees and undertakes to terminate the Concession Agreement forthwith, upon receipt of a written request from the Lenders' Representative at any time after 240 (two hundred and forty) days from the date of Suspension hereunder.

3.3 Substitution upon occurrence of Concessionaire Default

3.3.1 Upon occurrence of a Concessionaire Default, the Authority shall by a notice inform the Lenders' Representative of its intention to issue a Termination Notice and grant 15 (fifteen) days' time to the Lenders' Representative to make a representation, stating the intention to substitute the Concessionaire by a Nominated Company.

3.3.2 In the event that the Lenders' Representative makes a representation to the Authority within the period of 15 (fifteen) days specified in Clause 3.3.1, stating that it intends to substitute the Concessionaire by a Nominated Company, the Lenders' Representative shall

be entitled to undertake and complete the substitution of the Concessionaire by a Nominated Company in accordance with the provisions of this Agreement within a period of 180 (one hundred and eighty) days from the date of such representation, and the Authority shall either withhold Termination or undertake Suspension for the aforesaid period of 180 (one hundred and eighty) days; provided that upon written request from the Lenders' Representative and the Concessionaire, the Authority shall extend the aforesaid period of 180 (one hundred and eighty) days by a period not exceeding 90 (ninety) days; provided further that the Lenders' Representative may at any time withdraw its representation hereunder and upon such withdrawal, the Authority may terminate this Agreement in accordance with the provisions hereof.

3.4 Procedure for substitution

3.4.1 The Authority and the Concessionaire hereby agree that on or after the date of Notice of Financial Default or the date of representation to the Authority under Clause 3.3.2, as the case may be, the Lenders' Representative may, without prejudice to any of the other rights or remedies of the Senior Lenders, invite, negotiate and procure offers, either by private negotiations or public auction or tenders for the take over and transfer of the Project including the Concession to the Nominated Company upon such Nominated Company's assumption of the liabilities and obligations of the Concessionaire towards the Authority under the Concession Agreement and towards the Senior Lenders under the Financing Agreements.

3.4.2 To be eligible for substitution in place of the Concessionaire, the Nominated Company shall be required to qualify and fulfil the eligibility criteria that were laid down by the Authority for short listing the bidders for award of the Concession vide initial selection process; provided that the Lenders' Representative may represent to the Authority that all or any of such criteria may be waived in the interest of the Project, and if the Authority determines that such waiver shall not have any material adverse effect on the Project, it may waive all or any of such eligibility criteria.

3.4.3 Upon selection of a Nominated Company, the Lenders' Representative shall request the Authority to:

(a) Accede to transfer to the Nominated Company the right to construct, operate and maintain the Project in accordance with the provisions of the Concession Agreement;

(b) Endorse and transfer the Concession to the Nominated Company, on the same terms and conditions, for the residual Concession Period; and

(c) Enter into a Substitution Agreement with the Lenders' Representative and the Nominated Company on the same terms as are contained in this Agreement.

3.4.4 If the Authority has any objection to the transfer of Concession in favor of the Nominated Company in accordance with this Agreement, it shall within 15 (fifteen) days from the date of proposal made by the Lenders' Representative, give a reasoned order after hearing the Lenders' Representative. If no such objection is raised by the Authority, the Nominated Company shall be deemed to have been accepted. The Authority shall thereupon transfer and endorse the Concession within 15 (fifteen) days of its acceptance/deemed acceptance of the Nominated Company; provided that in the event of such objection by the Authority, the Lenders' Representative may propose another Nominated Company whereupon the procedure set forth in this Clause 3.4 shall be followed for substitution of such Nominated Company in place of the Concessionaire.

3.4.5 The transfer of Concession hereunder to a Nominated Company may, notwithstanding anything to the contrary in this Agreement and the Concession Agreement, be undertaken by transfer of no less than 75% (seventy-five per cent) of the equity of the Concessionaire to the Nominated Company, and upon such transfer hereunder, the Concessionaire shall be deemed to be the Nominated Company under and in accordance with the provisions of this Agreement and the Concession Agreement.

3.5 Selection to be binding

The decision of the Lenders' Representative and the Authority in selection of the Nominated Company shall be final and binding on the Concessionaire. The Concessionaire irrevocably agrees and waives any right to challenge the actions of the Lenders' Representative or the Senior Lenders or the Authority taken pursuant to this Agreement including the transfer/assignment of the Concession in favor of the Nominated Company. The Concessionaire agrees and confirms that it shall not have any right to seek revaluation of assets of the Project or the Concessionaire's shares. It is hereby acknowledged by the Parties that the rights of the Lenders' Representative are irrevocable and shall not be contested in any proceedings before any court or Authority and the Concessionaire shall have no right or remedy to prevent, obstruct or restrain the Authority or the Lenders' Representative from effecting or causing the transfer by substitution and endorsement of the Concession as requested by the Lenders' Representative.

4 PROJECT AGREEMENTS

4.1 Substitution of Nominated Company in Project Agreements

The Concessionaire shall ensure and procure that each Project Agreement contains provisions that entitle the Nominated Company to step into such Project Agreement, in its discretion, in place and substitution of the Concessionaire in the event of such Nominated Company's assumption of the liabilities and obligations of the Concessionaire under the Concession Agreement.

5 TERMINATION OF CONCESSION AGREEMENT

5.1 Termination upon occurrence of Financial Default

At any time after issue of a Notice of Financial Default, the Lenders' Representative may by a notice in writing require the Authority to terminate the Concession Agreement forthwith, and upon receipt of such notice, the Authority shall undertake Termination under and in accordance with the provisions of Article 31 of the Concession Agreement.

5.2 Termination when no Nominated Company is selected

In the event that no Nominated Company acceptable to the Authority is selected and recommended by the Lenders' Representative within the period of 180 (one hundred and eighty) days or any extension thereof as set forth in Clause 3.3.2, the Authority may terminate the Concession Agreement forthwith in accordance with the provisions thereof.

5.3 Realization of Debt Due

The Authority and the Concessionaire hereby acknowledge and agree that, without prejudice to their any other right or remedy, the Lenders' Representative is entitled to receive from the Concessionaire, without any further reference to or consent of the Concessionaire, the Debt Due upon Termination of the Concession Agreement. For realization of the Debt Due, the Lenders' Representative shall be entitled to make its claim from the Escrow Account in accordance with the provisions of the Concession Agreement and the Escrow Agreement.

6 DURATION OF THE AGREEMENT

6.1 Duration of the Agreement

This Agreement shall come into force from the date hereof and shall expire at the earliest to occur of the following events:

(a) Termination of the Agreement; or

(b) No sum remains to be advanced and no sum are outstanding to the Senior Lenders, under the Financing Agreements.

7 INDEMNITY

7.1 General indemnity

7.1.1 The Concessionaire will indemnify, defend and hold the Authority and the Lenders' Representative harmless against any and all proceedings, actions and third party claims for any loss, damage, cost and expense of whatever kind and nature arising out of any breach by the Concessionaire of any of its obligations under this Agreement or on account of failure of the Concessionaire to comply with Applicable Laws and Applicable Permits.

7.1.2 The Authority will indemnify, defend and hold the Concessionaire harmless against any and all proceedings, actions and third party claims for any loss, damage, cost and expense arising out of failure of the Authority to fulfil any of its obligations under this Agreement, materially and adversely affecting the performance of the Concessionaire's obligations under the Concession Agreement or this Agreement, other than any loss, damage, cost and expense, arising out of acts done in discharge of their lawful functions by the Authority, its officers, servants and agents.

7.1.3 The Lenders' Representative will indemnify, defend and hold the Concessionaire harmless against any and all proceedings, actions and third party claims for any loss, damage, cost and expense arising out of failure of the Lenders' Representative to fulfil its obligations under this Agreement, materially and adversely affecting the performance of the Concessionaire's obligations under the Concession Agreement, other than any loss, damage, cost and expense, arising out of acts done in discharge of their lawful functions by the Lenders' Representative, its officers, servants and agents.

7.2 Notice and contest of claims

In the event that any Party hereto receives a claim from a third party in respect of which it is entitled to the benefit of an indemnity under Clause 7.1 or in respect of which it is entitled to reimbursement (the "Indemnified Party"), it shall notify the other Party responsible for indemnifying such claim hereunder (the "Indemnifying Party") within 15 (fifteen) days of receipt of the claim and shall not settle or pay the claim without the prior approval of the Indemnifying Party, such approval not to be unreasonably withheld or delayed. In the event that the Indemnifying Party wishes to contest or dispute the claim, it may conduct the proceedings in the name of the Indemnified Party and shall bear all costs involved in contesting the same. The Indemnified Party shall provide all cooperation and assistance in contesting any claim and shall sign all such writings and documents as the Indemnifying Party may reasonably require.

8 DISPUTE RESOLUTION

8.1 Dispute resolution

8.1.1 Any dispute, difference or claim arising out of or in connection with this Agreement which is not resolved amicably shall be decided by reference to arbitration to a Board of Arbitrators comprising one nominee each of the Authority, Concessionaire and the Lenders' Representative. Such arbitration shall be held in accordance with the Rules of Arbitration of the International Centre for Alternative Dispute Resolution, New Delhi (the "Rules") or such other rules as may be mutually agreed by the Parties, and shall be subject to provisions of the Arbitration and Conciliation Act, 1996. Any Dispute which is not resolved amicably by conciliation, as provided in Article 40.2, the parties shall submit such dispute for arbitration by Principal Secretary, Department of Transport, Government of Himachal Pradesh as the Sole Arbitrator. The proceeding shall be conducted as per the Arbitration and Conciliation Act, 1996. The venue of such arbitration shall be Shimla, and the language of arbitration proceedings shall be English.

8.1.2 The Sole Arbitrator shall make a reasoned award (the "Award"). Any Award made in any arbitration held pursuant to this Article 40 shall be final and binding on the Parties as from the date it is made, and the Concessionaire and the Concessioning Authority agree and undertake to carry out such Award without delay.

8.1.3 The Concessionaire and the Authority agree that an Award may be enforced against the Concessionaire and/or the Authority, as the case may be, and their respective assets wherever situated.

8.1.4 This Agreement and the rights and obligations of the Parties shall remain in full force and effect, pending the Award in any arbitration proceedings hereunder.

9 MISCELLANEOUS PROVISIONS

9.1 Governing law and jurisdiction

This Agreement shall be construed and interpreted in accordance with and governed by the laws of India, and the courts in Shimla shall have jurisdiction over all matters arising out of or relating to this Agreement.

9.2 Waiver of sovereign immunity

The Authority unconditionally and irrevocably:

(a) agrees that the execution, delivery and performance by it of this Agreement constitute commercial acts done and performed for commercial purpose;

(b) agrees that, should any proceedings be brought against it or its assets, property or revenues in any jurisdiction in relation to this Agreement or any transaction contemplated by this Agreement, no immunity (whether by reason of sovereignty or otherwise) from such proceedings shall be claimed by or on behalf of the Authority with respect to its assets;

(c) waives any right of immunity which it or its assets, property or revenues now has, may acquire in the future or which may be attributed to it in any jurisdiction; and

(d) consents generally in respect of the enforcement of any judgment or award against it in any such proceedings to the giving of any relief or the issue of any process in any jurisdiction in connection with such proceedings (including the making, enforcement or execution against it or in respect of any assets, property or revenues whatsoever irrespective of their use or intended use of any order or judgment that may be made or given in connection therewith).

9.3 Priority of agreements

In the event of any conflict between the Concession Agreement and this Agreement, the provisions contained in the Concession Agreement shall prevail over this Agreement.

9.4 Alteration of terms

All additions, amendments, modifications and variations to this Agreement shall be effectual and binding only if in writing and signed by the duly authorized representatives of the Parties

9.5 Waiver

9.5.1 Waiver by any Party of a default by another Party in the observance and performance of any provision of or obligations under this Agreement:

(a) Shall not operate or be construed as a waiver of any other or subsequent default hereof or of other provisions of or obligations under this Agreement;

(b) Shall not be effective unless it is in writing and executed by a duly authorized representative of the Party; and

(c) Shall not affect the validity or enforceability of this Agreement in any manner.

9.5.2 Neither the failure by either Party to insist on any occasion upon the performance of the terms, conditions and provisions of this Agreement or any obligation thereunder nor time or other indulgence granted by a Party to another Party shall be treated or deemed as waiver of such breach or acceptance of any variation or the relinquishment of any such right hereunder.

9.6 No third party beneficiaries

This Agreement is solely for the benefit of the Parties and no other person or entity shall have any rights hereunder.

9.7 Survival

9.7.1 **Termination of this Agreement:**

(a) Shall not relieve the Parties of any obligations hereunder which expressly or by implication survive termination hereof; and

(b) except as otherwise provided in any provision of this Agreement expressly limiting the liability of either Party, shall not relieve either Party of any obligations or liabilities for loss or damage to the other Party arising out of or caused by acts or omissions of such Party prior to the effectiveness of such termination or arising out of such termination.

9.7.2 All obligations surviving the cancellation, expiration or termination of this Agreement shall only survive for a period of 3 (three) years following the date of such termination or expiry of this Agreement.

9.8 Severability

If for any reason whatever any provision of this Agreement is or becomes invalid, illegal or unenforceable or is declared by any court of competent jurisdiction or any other instrumentality to be invalid, illegal or unenforceable, the validity, legality or enforceability of the remaining provisions shall not be affected in any manner, and the Parties will negotiate in good faith with a view to agreeing to one or more provisions which may be substituted for such invalid, unenforceable or illegal provisions, as nearly as is practicable to such invalid, illegal or unenforceable provision. Failure to agree upon any such provisions shall not be subject to dispute resolution under Clause 8 of this Agreement or otherwise.

9.9 Successors and assigns

This Agreement shall be binding on and shall inure to the benefit of the Parties and their respective successors and permitted assigns.

9.10 Notices

All notices or other communications to be given or made under this Agreement shall be in writing, shall either be delivered personally or sent by courier or registered post with an additional copy to be sent by facsimile or e-mail. The address for service of each Party, its facsimile number and e-mail address are set out under its name on the signing pages hereto. A notice shall be effective upon actual receipt thereof, save that where it is received after 5.30 (five thirty) p.m. on any day, or on a day that is a public holiday, the notice shall be deemed to be received on the first working day following the date of actual receipt. Without prejudice to the foregoing, a Party giving or making a notice or communication by facsimile or e-mail shall promptly deliver a copy thereof personally, or send it by courier or registered post to the addressee of such notice or communication. It is hereby agreed and acknowledged that any Party may by notice change the address to which such notices and communications to it are to be delivered or mailed. Such change shall be effective when all the Parties have notice of it.

9.11 Language

All notices, certificates, correspondence and proceedings under or in connection with this Agreement shall be in English.

9.12 Authorized representatives

Each of the Parties shall by notice in writing designate their respective authorized representatives through whom only all communications shall be made. A Party hereto shall be entitled to remove and/or substitute or make fresh appointment of such authorized representative by similar notice.

9.13 Original Document

This Agreement may be executed in three counterparts, each of which when executed and delivered shall constitute an original of this Agreement.

IN WITNESS WHEREOF THE PARTIES HAVE EXECUTED AND DELIVERED THIS AGREEMENT AS OF THE DATE FIRST ABOVE WRITTEN

THE COMMON SEAL OF CONCESSIONAIRE has been affixed pursuant to the resolution passed by the Board of Directors of the Concessionaire at its meeting held on the……..day of the …….20……..here unto affixed in to the presence of……the Director, who has signed these presents in token thereof,

……Company Secretary /Authorized Officer who has countersigned the same in token thereof¥.

SIGNED, SEALED AND DELIVERED

For and behalf of THE AUTHORITY by:

(Signature)

(Name)

(Designation)

(Address)

(Fax No.) (e-mail address)

(Signature)

(Name)

(Designation)

(Address)

(Fax No.) (e-mail address)

SIGNED, SEALED AND DELIVERED

For and on behalf of

SENIOR LENDERS by the

Lenders' Representative:

(Signature)

(Name)

(Designation)

(Address)

(Fax No.)

(E-mail address)

In the presence of: 1. 2.

[¥]To be affixed in accordance with the articles of association of the Concessionaire and the resolution passed by its Board of Directors

SCHEDULE W

Not in Use

SCHEDULE X

(See Clause 42.7)

PASSENGER CHARTER

At your service

Our Passenger Charter explains our commitments to you and sets out the targets that these are based upon. It is not legally binding and does not affect your legal rights, which are set under the Applicable Law. Copies of the conditions can be obtained from all staffed Stations or from our customer service center. They can also be viewed online at www.*[please mention the website]*

Contents

1. Introduction

We want to give our passengers excellent service!

This is a bold statement, but its intention is to focus the mind of every employee of the …… Project, on what is important - our passengers. We aim to provide you with:

i Safe, clean, reliable services
ii Clean and safe Stations
iii Reliable, timely and easy to understand information
iv Polite, friendly and helpful staff

Inevitably, there will be times when problems occur, and we are not able to achieve the standards we aim for. Our charter explains what we will do for you when this happens.

2. Our Standards for Ropeway Service Performance

We will continue to work hard at improving our performance to provide you with a consistently reliable service.

2.1 Peak Hour Operation

The Concessionaire will define the peak hours based on the RFP specifications and ridership. Typically, [0600 and 1000] hours inclusive, or between [1700 and 2100] inclusive, Monday to Friday only are peak hours. The aforesaid time definition may be modified from time to time depending on

average daily traffic volumes during these hours. The peak hour operation will be suitably dealt by increasing or decreasing the maximum speed limit of the Ropeway System.

2.2 Reliability

Our target is 99% (Ninety-nine) percent availability of the transport system for all the 7 (seven) days of the week. You can view our performance results for the previous four weeks and 12 (twelve) months on 'Track Record' posters displayed at every Station of the..... Project. The results are also available for inspection on request, at all our Stations and are published in our season ticket (discounted fee) section.

The method of monitoring our performance is independently audited annually. We do not include disruption caused by matters out of the ropeway industry's control, such as trespass, vandalism and terrorism.

3. Information and Planning the Usage of the Ropeway

We will provide you with accurate information about the ropeway services, fees and facilities to help you plan your journey. You can obtain this information in a number of ways.

…… Ropeway Enquiries - telephone ..... (24 hours)

…..... Ropeway Enquiries on the fees applicable for the system

Calls are charged at a local rate and may be monitored.

You can also obtain online information about train times and up-to-the- minute train-running information by visiting www. …….

Customer Service Centre – Tel: ……

In addition to the ropeway enquiries, customer service center also provides information on the ropeway service. The customer service center is open 24 hours a day except on national holidays. Calls are charged at a local rate and may be monitored.

3.1 At Stations

Staff in our ticket offices and travel centers can provide you with information to help you plan your journey. We will display up-to-date timetable posters at all Stations. These will include the locations serviced by the ropeway and connecting transport systems available at each ropeway Station locations to plan your journey ahead.

3.2 Engineering work

Planned engineering work

From time to time, ... Project has to carry out planned engineering and improvement work to maintain the system. This can cause alterations to our services, especially on weekends and public holidays.

The maintenance work on Ropeway Systems is done during shutdown hours which means that system functions at peak performance during the operation hours. However, in case of any specific instances when planned engineering work time extends beyond the shutdown time viz affecting operations during service time, advance information along with notification will be posted on the display system and website.

Information on services will also be available from:

Ropeway Enquiries
Customer Service Centre

Under best effort circumstances, we will try to post information well in advance for you to plan your trips.

3.3 Help and advice during your journey
Our customer service helpline is available during operation hours and equipped to handle all enquiries.

4. Passengers who Require Assistance

We are committed to meeting the travelling needs of our disabled passengers. We recognize that many of our passengers may have special needs which require us to adjust the way we provide our service. The ropeway Station is equipped to handle requirements of all riders and the Ropeway System, cable cars are designed to accommodate wheel chairs, baby prams, prosthetics etc. The design facilitates seamless travel from start to finish.

4.1 Advance information and assistance for disabled passengers
We advise passengers who would like assistance to contact our customer service center in advance.

Telephone (24 hours): ……

Fax: ……

Textphone: ……..

Ropeway Enquiries textphone: …….

4.2 On-Board Information
We are committed to providing information to provide a safe and pleasurable ride in a variety of ways so that it can be accessed by as wide a group of passengers as possible.

Cable cars are equipped with public address systems to provide audible announcements to hearing passengers and equipped with a passenger information system that uses visual displays to enable hearing-impaired passengers to access information.

We recognize that good announcements are essential to visually impaired passengers, so our employees are trained to speak clearly.

4.3 Disability awareness training
All our frontline staff and managers receive training in disability awareness.

Further Information
…… XXX Ropeway Disabled Persons' Protection Policy (DPPP) sets out our full arrangements for passengers with disabilities. It can be supplied in a range of formats (large print, braille and audio), available from our customer service center.

We have also produced a leaflet containing useful information, called 'Our Service for Passengers with Impairments'. It is available at staffed Stations and from our customer service center.

5. Buying a ticket

We will sell you the most appropriate ticket for your journey. To purchase a ticket, visit any of our staffed Stations or telephone our customer service center.

5.1 At Stations
Our ticket office opening hours are displayed at every staffed Station. They are also available from our website or by telephoning our customer service centre.

You can pay by cash or major credit and debit cards.

Many Stations also have self-service ticket machines, which sell a range of tickets to main destinations.

We will try to ensure that you do not need to queue for more than five minutes at busy times and no more than three minutes during less busy times. Details of busy times are displayed at each staffed Station.

At major Stations, our travel centers enable you to buy tickets, get travel information and also purchase other travel services.

Tickets can also be purchased from our authorized travel agents.

5.2 By Telephone
Season tickets can also be purchased over the telephone by calling our customer service center. We accept most major credit and debit cards. Please allow at least five working days for delivery of your tickets.

5.3 Tickets online
You can also buy your season ropeway tickets (Discounted Fee) online.

5.4 Penalty fees
…… Project has a duty to its fee-paying passengers to ensure that no-one travels for free.

To help us achieve this, we operate a penalty fees scheme across our network. If you travel without a valid ticket you may be liable to a penalty fee of [Rs.200 or three times of the single fee (whichever is the greater)].

6. Your journey
Getting a seat

We operate a 'walk-on' service, which means you can board the next arriving cable car provided you have a valid ticket. The seat is guaranteed as the ropeway cable car is designed not to allow more people to board than its capacity. In Aerial Tramway (ATW), Cable Liners (Automated People Movers) are designed to allow sitting and standing passengers.

6.1 Security
We work very closely with the local authorities to improve security at our Stations and car parks.

We aim to reduce levels of crime, trespass and vandalism and we are investing to achieve this. Initiatives include:

- Teams of Travel Safe Officers, trained and co-ordinated by the Police
- Installation of CCTV at Stations
- Lighting at Stations and car parks
- Help points at our Stations
- Security guards at key locations.

More information can be found in the safety and security section of our website.

6.2 Cycles
Deleted

6.3 Smoking
Smoking is not permitted anywhere on the Project.

6.4 Lost Property
Our lost property office at..... is open from 0730 -1900 Monday to Friday. Telephone the office on..... All property found on our services and at our Stations is forwarded to our lost property office.

To make an enquiry, complete our lost property online form.

6.5 Service Disruption
Unfortunately, things do sometimes go wrong, causing disruption that cannot always be foreseen or avoided. Incase emergency maintenance is required, we will host the information on relevant media to ensure that the riders of the ropeway are informed well in advance to avoid any inconvenience.

Other causes of disruption include:

- Emergency engineering work
- Trespass and vandalism
- Security alerts.

Under such circumstances we may have to make changes to our services without giving prior warning to protect your safety and that of our staff. We will always try to minimize disruption, keep you informed and provide or recommend alternative means of travel.

If a problem does occur mid-way in the ropeway journey, we will ensure that you reach the nearest Station with minimum inconvenience.

All our cable cars are fitted with public address systems are equipped to provide all information on real time basis and most of our staff are linked by telephone systems. We aim to let you know what is happening.

7. Claims for delays or cancellations

7.1 Season Tickets Valid for one month or longer 'Void' day refunds
As a holder of a season ticket valid for one month or longer, we may provide you with the appropriate refund for exceptional days when there has been widespread serious, extended disruption. This is known as a 'void' day. In these cases, the period of disruption will be excluded from our performance statistics.

When we have declared a 'void' day we will tell you through 'Track Record' posters displayed at key Stations.

When you renew your season ticket you will be advised by staff at your local ticket office to apply for 'void' day refunds if they have been declared. You will be given a 'void' day refund application form, which you can complete and submit along with your expired season ticket.

7.2 Availability and Reliability discounts for Season Tickets (Discounted Fee)
We have certain performance standards for reliability. If we fail to meet these standards, we will offer you a discount from the cost of your season ticket renewal. Discounts will be paid automatically at the time of renewal.

Delays and cancellations that are caused by incidents beyond the control of the ropeway industry are excluded from our performance results. Incidents that are beyond our control include security alerts, vandalism and trespass. We will display the number of trains affected on posters at key Stations and also on our website.

5% discount
We will offer you a 5% discount if, on average, over the previous 12 months if there is deficient service as per the performance parameters (system availability of 99%) has been more than 10% below the standard or reliability has been more than 5% below the standard.

10% discount
We will offer you a 10% discount if performance parameters for system availability are below these discount threshold levels.

To obtain your discount, you must renew your season ticket within four weeks of the previous ticket's expiry.

Other tickets and weekly seasons
We will treat all claims on their merits and give consideration to any problems you encounter. However, for your guidance, you can expect us to offer the following:

Please send us your travel tickets to support your claim. This will also help to speed up your claim. Completed claims should be sent to our customer service center.

8. Listening to your views

We carry out and analyze passenger survey research to provide information about what you think of different aspects of our service.

We hold regular 'Meet the Manager' events, which enable you to speak directly to managers to put your views to them or ask them questions. Details of Meet the Manager events will be advertised on Station posters, in our passenger magazine e-motion, through our customer service center and also online.

We will listen to your views and communicate through correspondence and by telephone. We have a specially trained customer service center team able to respond to you and we also liaise with passenger representative bodies and user groups that exist to protect your interests.

Making a comment or complaint
We welcome your comments, suggestions, complaints and praise about any aspect of our service. We also welcome comments about our charter. Senior managers monitor the number and type of complaints and comments that you make. They are also responsible for delivering continuous improvement to customer service. Your feedback can therefore help us to achieve this. If you are commenting on a journey, please remember to include your ropeway tickets and any other details, as this will help us to provide you with a swift response.

Further information:
We have a full Customer Comments and Complaints Handling Procedure (CCCHP). copies which can be obtained from our customer service center or from our website www. …….

Contacting our Customer Service Centre
Please visit 'Contact Us' section for details.

Our promised response times
If you write to us, you should hear from us within five working days of us receiving your communication.

However, it may take longer to provide a full reply (e.g. if an investigation is required) and if this happens, we will send you an acknowledgement within five working days and reply within twenty working days.

If a full reply cannot be made within twenty working days, we will contact you again to update you.

If you are unhappy with our reply
We will work hard to deal with your concerns to your satisfaction but if you are unhappy with our response, please let us know.

Alternatively, you can approach the consumer courts or other similar for set up under Applicable Laws.

SCHEDULE Y

Not in Use

Schedule Z
Schedule for outstanding debt[1]

For 20 Years Concession Period,

Quarter end*	Outstanding debt**
1	100.00%
2	100.00%
3	99.22%
4	98.42%
5	97.60%
6	96.76%
7	95.90%
8	95.01%
9	94.10%
10	93.17%
11	92.22%
12	91.24%
13	90.24%
14	89.21%
15	88.16%
16	87.08%
17	85.97%
18	84.84%
19	83.68%
20	82.49%
21	81.27%
22	80.02%
23	78.65%
24	77.25%
25	75.81%
26	74.33%
27	72.82%
28	71.27%
29	69.68%
30	68.05%
31	66.38%
32	64.67%
33	62.92%
34	61.12%
35	59.28%
36	57.39%
37	55.45%
38	53.47%
39	51.44%
40	49.36%

41	47.22%
42	45.03%
43	43.27%
44	41.46%
45	39.61%
46	37.71%
47	35.77%
48	33.78%
49	31.74%
50	29.65%
51	27.50%
52	25.30%
53	23.04%
54	20.73%
55	18.36%
56	15.93%
57	13.44%
58	10.89%
59	8.27%
60	5.59%
61	2.84%
62	0.00%

For 25 Years Concession Period

Quarter end*	Outstanding debt**
1	100.00%
2	100.00%
3	99.37%
4	98.73%
5	98.07%
6	97.40%
7	96.71%
8	96.00%
9	95.27%
10	94.53%
11	93.77%
12	92.99%
13	92.19%
14	91.37%
15	90.53%
16	89.67%
17	88.78%

18	87.87%
19	86.94%
20	85.99%
21	85.01%
22	84.01%
23	83.07%
24	82.11%
25	81.12%
26	80.11%
27	79.07%
28	78.01%
29	76.92%
30	75.80%
31	74.66%
32	73.49%
33	72.29%
34	71.06%
35	69.80%
36	68.50%
37	67.17%
38	65.81%
39	64.42%
40	62.99%
41	61.52%
42	60.02%
43	58.45%
44	56.84%
45	55.19%
46	53.50%
47	51.77%
48	50.00%
49	48.18%
50	46.32%
51	44.41%
52	42.45%
53	40.45%
54	38.40%
55	36.29%
56	34.13%
57	31.92%
58	29.65%
59	27.33%
60	24.95%
61	22.51%

62	20.01%
63	18.56%
64	17.07%
65	15.55%
66	13.99%
67	12.39%
68	10.75%
69	9.07%
70	7.35%
71	5.58%
72	3.77%
73	1.91%
74	0.00%

For 30 Years Concession Period

Quarter end*	Outstanding debt**
1	100.00%
2	100.00%
3	99.53%
4	99.05%
5	98.56%
6	98.05%
7	97.53%
8	97.00%
9	96.46%
10	95.90%
11	95.33%
12	94.74%
13	94.14%
14	93.52%
15	92.89%
16	92.24%
17	91.58%
18	90.90%
19	90.20%
20	89.49%
21	88.76%
22	88.01%
23	87.31%
24	86.59%
25	85.85%
26	85.09%
27	84.31%
28	83.51%
29	82.69%

30	81.85%
31	80.99%
32	80.11%
33	79.21%
34	78.29%
35	77.34%
36	76.37%
37	75.37%
38	74.35%
39	73.30%
40	72.23%
41	71.13%
42	70.00%
43	68.75%
44	67.47%
45	66.15%
46	64.80%
47	63.42%
48	62.00%
49	60.55%
50	59.06%
51	57.53%
52	55.97%
53	54.37%
54	52.73%
55	51.05%
56	49.32%
57	47.55%
58	45.74%
59	43.88%
60	41.97%
61	40.02%
62	38.02%
63	36.53%
64	35.01%
65	33.45%
66	31.85%
67	30.21%
68	28.53%
69	26.80%
70	25.03%
71	23.22%
72	21.36%
73	19.46%

74	17.51%
75	15.51%
76	13.46%
77	11.36%
78	9.21%
79	7.00%
80	4.74%
81	2.42%
82	0.00%

For 35 Years Concession Period

Quarter end*	Outstanding debt**
1	100.00%
2	100.00%
3	99.68%
4	99.35%
5	99.01%
6	98.65%
7	98.28%
8	97.90%
9	97.51%
10	97.10%
11	96.68%
12	96.24%
13	95.79%
14	95.32%
15	94.84%
16	94.34%
17	93.83%
18	93.30%
19	92.75%
20	92.19%
21	91.61%
22	91.01%
23	90.46%
24	89.89%
25	89.30%
26	88.69%
27	88.06%
28	87.41%
29	86.74%
30	86.05%
31	85.34%
32	84.61%

33	83.86%
34	83.09%
35	82.29%
36	81.47%
37	80.62%
38	79.75%
39	78.85%
40	77.93%
41	76.98%
42	76.00%
43	74.90%
44	73.77%
45	72.60%
46	71.40%
47	70.17%
48	68.90%
49	67.60%
50	66.26%
51	64.88%
52	63.47%
53	62.02%
54	60.53%
55	59.00%
56	57.42%
57	55.80%
58	54.14%
59	52.43%
60	50.67%
61	48.87%
62	47.02%
63	45.68%
64	44.31%
65	42.92%
66	41.51%
67	40.08%
68	38.63%
69	37.16%
70	35.67%
71	34.16%
72	32.63%
73	31.08%
74	29.51%
75	27.92%
76	26.31%

77	24.68%
78	23.03%
79	21.36%
80	19.67%
81	17.96%
82	16.23%
83	14.48%
84	12.71%
85	10.92%
86	9.11%
87	7.28%
88	5.43%
89	3.56%
90	1.67%
91	0.00%

For 40 Years Concession Period

Quarter end*	Outstanding debt**
1	100.00%
2	100.00%
3	99.82%
4	99.63%
5	99.43%
6	99.21%
7	98.98%
8	98.74%
9	98.49%
10	98.22%
11	97.94%
12	97.64%
13	97.33%
14	97.00%
15	96.66%
16	96.30%
17	95.93%
18	95.54%
19	95.13%
20	94.71%
21	94.27%
22	93.81%
23	93.40%
24	92.97%
25	92.52%
26	92.05%

27	91.56%
28	91.05%
29	90.52%
30	89.97%
31	89.40%
32	88.81%
33	88.20%
34	87.57%
35	86.91%
36	86.23%
37	85.52%
38	84.79%
39	84.03%
40	83.25%
41	82.44%
42	81.60%
43	80.64%
44	79.65%
45	78.62%
46	77.56%
47	76.47%
48	75.34%
49	74.18%
50	72.98%
51	71.74%
52	70.47%
53	69.16%
54	67.81%
55	66.42%
56	64.98%
57	63.50%
58	61.98%
59	60.41%
60	58.79%
61	57.13%
62	55.42%
63	54.22%
64	52.99%
65	51.74%
66	50.47%
67	49.18%
68	47.87%
69	46.54%
70	45.19%

71	43.82%
72	42.43%
73	41.02%
74	39.59%
75	38.14%
76	36.67%
77	35.18%
78	33.67%
79	32.14%
80	30.59%
81	29.02%
82	27.43%
83	25.82%
84	24.19%
85	22.54%
86	20.87%
87	19.18%
88	17.47%
89	15.74%
90	13.99%
91	12.46%
92	10.91%
93	9.34%
94	7.75%
95	6.14%
96	4.51%
97	2.86%
98	1.19%
99	0.00%

* Quarter end date shall start from the initial date set forth for the Scheduled Completion Date in Schedule G.

** Outstanding debt shall be calculated as under:

(i) Debt shall be calculated by disaggregating Total Project Cost as per this Agreement considering the debt-equity ratio as per disaggregation notified by the Concessionaire within a period of 60 (sixty) days from Project Completion Date. In the event such disaggregation is not notified to the Authority, the debt-equity ratio shall be considered as notified at the time of the Financial Close. This Schedule shall be applicable separately for debt provided by Senior Lenders and Subordinated Debt provided by lenders.

(ii) Principal amount of debt outstanding shall be the product of debt as per para (i) above and percentage of outstanding debt on the quarter end immediately preceding one year prior to the Transfer Date or the Transfer Date, as applicable.

[Footnote 1: The above Schedule is in respect of Concession Period of 20 years and above. It is clarified that the above percentages of repayment are indicative and can be modified in a block of 5 years to ensure that the debt service coverage ratio does not fall below 1.00 in any

year. Further, in case the Concession Period is less than 20 years, this Schedule shall be modified taking into consideration the Construction Period, moratorium period of two quarters and tail period of one year]

Schedule AA

FORMAT FOR INTIMATION FINANCIAL CLOSURE

(To be filled by Concessionaire and submitted at the time of Financial Closure)

1. Details of the Project:

S. No.	Particulars	Details
A.	Project Description	
B.	Type of Project	
C.	Location/ State	
D.	Length of Project (KMs)	
E.	Total Project Cost assessed by NHLML (Rs. In cr.)	
F.	Total Project Cost assessed by Lenders (Rs. In Cr.)	
G.	Concession Period	
H.	Date of Signing of CA	
I.	Likely Appointed Date	
J.	Construction Period	
K.	Financing Structure (Rs. In Cr.) Source of Funding under different heads	
L.	Scheduled Completion Date	

2. Details of Total Project Cost:

S. No.	Particulars	Amount (Rs. Crore)
1.		
2.		

3. Financing Pattern:

S. No.	Particulars	Amount (Rs. Crore)
1.	Equity	
2.	Debt	
3.	Construction Support	
4.	Others (please specify)	

4. Name of the Senior Lenders

S. No.	Name of the Bankers/Fls/NBFCs	Amount (Rs. Crore)
1.		
2.		
3.		

5. Financing details

S. No.	Name of the Bankers/Fls/NBFCs	Details
1.	Rate of Interest during Construction	
2.	Rate of Interest during Operations	
3.	Average DSCR	
4.	Minimum DSCR	
5.	Project IRR	
6.	Equity IRR	

7.		

6. Amortization Schedule:
7. Sanction Letter containing the terms and conditions of the Facility sanctioned by the Senior Lenders