

0.2 Investigations and Evaluations

Feasibility Study was carried out and the report evaluates technical viability of alignment options and recommending the best alternate. The above evaluation has been based on various surveys and investigations carried out during the course of the study and these include traffic, topography. Maximum effort has been made to minimise the length of the road keeping the geometrical parameters as required.

0.3 Project Development Description:

0.3.1. General

The project road starts from Toong (0.00 km) and ends on Tamze (84.425 km). The road lies completely in the district of North Sikkim, Sikkim. The length of the road is 84.425 km. The road passes through no settlements. The project stretch has no existing road throughout the stretch only foot tracks are found at few locations.

The locations of Toong and Tamze lies in the borders of China and India, in the North Sikkim district and under sub division of Chungtang. The locations are at an altitude of 1325.0 - 4571.0 m and is steep in terrain. The project road commences from Toong ($27^{\circ}32'57.46''N$, $88^{\circ}38'41.35''E$) and ends at PT 4865 ($27^{\circ}27'30.66''N$, $88^{\circ}46'15.01''E$). The project road totally comes in the North Sikkim District. The locations are snow cladded for most part of the year. The locations of the origin and destination is as shown below:



Figure 2: Proposed Project Road

[Signature]
Asstt. Conservator of Forest
North Territorial Division
Forest, Environment & W/L Mgmt. Deptt.
Govt. of Sikkim
North Sikkim, Mangan

[Signature]
ASHISH GIRUNG
RANGE OFFICER (T)
Mangan Territorial Range
FE & WMD, N. Sikkim

[Signature]
Executive Engineer
BRPD-I CPWD, Chungthang
North Sikkim

[Signature]
Supendra Subba
BLOCK OFFICER
Naga (T) Block
North Sikkim, FEWMD

0.3.2. Need for the road:

The awarded project stretch has no economic lining within the project corridor but has tracks of ITBP Army Troops. As of now the ITBP relies on sport-utility vehicle, also known as SUV, and foot patrolling to scale mountainous tracks of the 3488 km-long India-China border that runs along Jammu and Kashmir, Himachal Pradesh, Uttarakhand, Sikkim and Arunachal Pradesh. This urges the necessity of roads for proper communication to the border area for regular patrolling.

0.3.3 Traffic Volume

The traffic on the project corridor is nil. After the development of the project road it is expected to provide a very good communication for the army vehicles to pass on the project stretch. The design consideration is based on taking into the light utility vehicles, fast track vehicles, medium truck, high mobility truck, artillery tractors, armoured vehicle and all-terrain transport vehicles. The project road has been designed with expected 5 msa traffic.

0.3.4 Traffic Projected

5% traffic growth rate has been considered for the project stretch. It is expected that the development of the road will benefit in their mobility during the patrolling and to reach their camps.

0.3.5. Proposed Development plan

- The commencement point and ending point as per ITBP is Toong (27°32'45"N, 88°38'51"E), Partem (27°30'12"N, 88°42'57"E), PT 4865 (27°27'31"N, 88°46'15"E). After trying all alternatives alignments the best alignment of length 84.425 km has been recommended.
- The development scheme is as follows:

Table 1: DEVELOPMENT SCHEME

Sl. No	Design Chainage		Length	Typical Cross-section
	From	To		
1	0.000	84.425	84.425	Single Carriageway (3.75 m), with 1.25 m earthen shoulder on both sides, provision of drain on hill side and required protection works on both hill side and valley side.

- The pavement crust designed for widening with 5 msa and 10% CBR is as follows

Prakash K. S. I.
Executive Engineer
DDPD-I CPWD, Chungthang
Sikkim

Table 2: DETAIL OF PAVEMENT DEVELOPMENT

Chainage	Design traffic (MSA)	CBR of subgrade (%)	Viscosity grade of bitumen	Proposed pavement thickness
0/00-84/425 km	5 msa	10 %	VG 10, PMB	480 mm

- The project corridor starts from the North Sikkim Highway road connecting Mangan on right and Chungthang on left with an intersection.
- The project road is in high altitude Himalayan Ranges for which the terrain is totally hilly and steep type. The new construction of roads in these sections require safety measures as well as heavy slope protection works. Efficient and enough protection as well as safety measures are provided in the project stretch.
- The development proposal for the bridge and culverts are as follows:

Table 3: ABSTRACT OF PROPOSAL FOR CROSS-DRAINAGE STRUCTURE

Sl. No	Type	Nos.
1	RCC Box	394
2	Minor Bridge	10

0.4. Project cost

The project cost on above items has been worked out based on development proposal of the project corridor. Total Cost of the Project is estimated to be Rs. 1498.89 Crores.

Parkash
 Executive Engineer
 BRPD-I CPWD, Chungthang
 North Sikkim