



**GOVERNMENT OF INDIA  
MINISTRY OF SHIPPING, ROAD TRANSPORT & HIGHWAYS  
DEPARTMENT OF ROAD TRANSPORT & HIGHWAYS**

**Transport Bhawan,  
1, Parliament Street,  
New Delhi - 110001**

**No.12013/32/2008/Ar.P/SARDP/NH 10**

**Dated the 26<sup>th</sup> March, 2008**

**The Commissioner & Secretary,  
PWD,  
Government of Arunachal Pradesh,  
Itanagar-791 111**

**Subject:- Two laning of NH 153 from km 24/0 to 40/0 under SARDP-NE**

**Sir,**

Chief Engineer(EZ), PWD, Itanagar, Arunachal Pradesh vide letter No.CEAP(EZ)/WTC-10/MOST-NH/2007-08/3925-27 dated 8<sup>th</sup> January, 2008 and No.CEAP(EZ)/WTC-10/MOST-NH/2007-Camp-New Delhi/01 dated 18<sup>th</sup> January, 2008 has submitted estimate amounting to Rs 37.54 crore for the above-mentioned work. Further, an estimate amounting to Rs 29.8 lakhs has also been submitted on 25.2.2008 for shifting of HT/LT Power Lines from right of way of NH 153 from km 24/0 to 40/0.

2. All the above-mentioned estimates have been examined in the Ministry and modified to a single estimate of Rs 43.80 crore, providing for richer specifications, the details of which is given in the enclosed technical note.

3. It is requested that the State PWD may invite tenders for the work in question as per the procedure prescribed by the Ministry for SARDP-NE works. As per the prescribed procedure, Standard Bidding Document as applicable for SARDP-NE works would be followed and the tenders will be received under two cover system: Technical; and (ii) Financial. The technical evaluation will be carried out by a Committee under the Chairmanship of Chief Engineer (P 10) of this Department. Financial covers of only those Contractors, who qualify in technical evaluation will be opened. The estimate based on lowest evaluated rates will be submitted to the Ministry for sanction. State Government will award the work to the Contractor at whose rates the estimate has been approved by the Ministry without any delay in processing the matter further in the State Government. The supervision of works will be done by Arunachal Pradesh PWD as per the extant procedure. In case, certain external assistance is required to augment the capacity of Arunachal Pradesh PWD to supervise works of this magnitude, the cost of the same will be met out of the agency charges of 9%. Such details, if any, will be finalised

in consultation with the Ministry. In order to ensure wider participation from the Contractors, the tenders may be received simultaneously by Arunachal Pradesh PWD at Itanagar and by the Ministry at New Delhi. The Contractor would be free to submit the tender anywhere. This may be stipulated in the notice inviting tender. A Tender Box will be kept in Room No.325, Transport Bhavan, Parliament Street, New Delhi.

4. 'In principle' approval to the estimate in question for Rs 43.80 crore is hereby communicated with the request that the State PWD may take further action as mentioned above.

**Yours faithfully,**

A handwritten signature in black ink, appearing to read 'Ravinder', with the name '(Ravinder)' printed in a smaller font directly below it.

**Executive Engineer  
For Director General (RD)**

**Encl: As above**

**Government of India**  
**Ministry of Shipping, Road Transport and Highways**  
**Department of Road Transport and Highways**

**TECHNICAL NOTE**

**No. NH-12013/32/2008/Ar. P/SARDP/NH-10      New Delhi the 26<sup>th</sup> March, 2008**

1.	Name of works	2-lanning of NH 153 from km 24.0 to 40.0 in the state of Arunachal Pradesh under SARDP-NE Phase 'A' <b>(Job No. SARDP-NE/NH/NH 153/Ar. P/PWD/2007-08-)</b>	
2.	State	Arunachal Pradesh	
3.	NH	153	
4.	Estimated cost (Rs. In lakh)	As furnished by the State PWD 3753.94	As approved by by Ministry 4380.00
5.	Length (km)	16.00	16.00
6.	Rate/Km (Rs. Lakh)	234.62	273.75
7.	Reference	Letter No. CEAP(EZ)/WTC-10/MoST-NH/2007-08/3925-27 dated 8.1.2008, CEAP(EZ)/WTC-10/MoST-NH/2007-08/Camp-New Delhi/01 dated 18.1.2008 & CEAP(EZ)/WTC-10/MoST-NH/2007-08/ dated 25.02.2008.	

**COMMENTS**

**1. Scope of work**

- (i) 2 laning from km 24.0 to 40.0 (16 km) along with provision of hard crust in 1.6/1.9 wide shoulders on either side of carriageway.
- (ii) Construction of 2 minor bridges;
- (iii) Extension of 56 slab culverts to full formation width;
- (iv) Construction of two new HP culverts of double row each;
- (v) Construction of Retaining Wall/Breast Wall/Toe wall;
- (vi) Centre line marking, edge line marking & road safety items, etc.
- (vii) Provision of land acquisition & shifting of HT/LT power lines.

**2. Alignment**

The existing intermediate lane in 4.60 km from km 24.0 to 28.600 and single lane in 11.40 km is reported to be passing through hilly terrain. The minor realignments have been proposed from km 38.400 to 38.600 and from km 39.700 to 39.990 to avoid sharp U-turn and for re-location of a bridge, respectively. The ruling design speed of 40 kmph has been adopted throughout the stretch except at km 24.400 (Jairampur town) where 30 kmph

minimum design speed has been adopted. The proposed gradient has been kept within allowable gradient as per IRC:73, 1980, it is also reported that proposed road does not involve forest clearance.

### 3. **Right-of-Way**

Arunachal Pradesh PWD has stated that ROW of 18 km is available, which is sufficient for widening purpose, except from km. 34.800 to 35.200 & from km 35.600 to 38.650 (3.450 Km) due to interception of tea gardens. A provision of Rs. 40 lakhs has been made in the estimate for acquiring additional land in 3,45 km.

### 4. **Formation**

- 4.1 The proposed formation width from km 24.0 to km 40.0 is 12 m, as per NH standard.
- 4.2 Eccentric widening of road formation towards hill side is proposed.
- 4.3 In order to achieve heavy compaction of each, the mandatory use of vibratory roller shall be specified in the bid documents. It may be ensured by PWD that the earthwork in embankment is carried out strictly as per clause 305 of Ministry's requirements as per table 300-1 & 300-2 of above mentioned specification shall be met with fully.
- 4.4 The earth to be used for filling has been proposed to be utilized from cutting of the hill.

### 5. **Pavement thickness and composition in carriageway**

Existing crust of 375 mm has been reported by PWD throughout the length. The widening of carriageway from 3.75/5.5 to 7 m has been proposed with the following crust composition:

Items	Proposed by PWD	Allowed by Ministry
GSB	250mm	250mm
WMM	125mm	125mm

- 5.2 200 mm in 2 layers has been allowed in the estimate over 7m width achieved in above manner, as strengthening course. Proper camber of 2.5% slope shall be achieved in first 100 mm layer of WMM, which shall be provided after scrapping existing PC & SC layer.
- 5.3 The GSB and WMM layers shall be properly compacted using vibrating rollers of appropriate specifications. This will be incorporated in the contract as an essential requirement.
- 5.4 Over WMM, 60 mm DBM & 40 mm BC has been allowed, instead of 75 m BM & 25 mm SDBC due to high rainfall area.
- 5.5 The tack and prime coats shall be provided with bitumen emulsion, complying with the requirements of clause No. 503 and 502 of Ministry's specifications for road & bridge work, 4<sup>th</sup> revision, respectively. Further, the prime coat over WMM shall be provided @1 km/sqm keeping in view the high rainfall region.

- 5.6 Extra provision of 5% has been allowed in the estimate to enable extra width on curves.

## 6. **Shoulders**

- 6.1 The shoulders of 1.9 m width on valley side and 1.6 m on hill side has been provided with the following crust:-

Item	As proposed by PWD	As modified in Ministry
GSB	150 mm	-
WMM	100 mm	-
GSBC (Locally available material)	-	510 mm
WBM Gr. II	-	75 mm
WBM Gr. III	-	75 mm
Surface dressing	Proposed	Allowed as proposed

The earthen shoulder width of 30 cm has been left on hill side so that the layers of crust in shoulders is not exposed to earthen drains.

## 7. **Culverts**

- 7.1 PWD has proposed extension of 56 slab culverts (40 having 2 m span, 14 having 3 m span & 2 having 6m span) from 10 m to 12 m. This provision has been allowed.
- 7.2 Provision of 2 new HP culverts having 2 row of 1000 mm int. dia has been proposed to provide diversion at km 38.200 m to avoid U-turn & another at km 37.230 to avoid water logging. The same has been allowed. The working drawing of culverts shall be approved by the Chief Engineer, PWD keeping in view the guidelines vide IRC:SP:13, 2004.

## 8. **Bridges (Ch. 33.425 km, Ch. 39.675)**

- 8.1.1 PWD has proposed to construct single span of 40 m with 8.58 m width without footpath over river Namchik, with open foundation. State PWD, Ar. Pradesh shall provide bridge width of 12 m without footpath as per Ministry's standard plans for highway bridge, as per NH standards. The additional cost implication @ Rs. 56 lakhs including centages has been added in the estimate to this account, on proportional basis. CE (EZ), PWD, satisfy itself about the detailed design of the foundation, sub-structure and super structure of the bridge for 12 m width as per relevant IRC codes and ensure the safety and adequacy of the structure including sub structure and foundation before work is put to tender.
- 8.1.2 This bridge is proposed to be constructed at u/s of existing bailey bridge. The existing bridge is proposed to be used as subway during construction. The same has been allowed.

### 8.2 **Bridge at km 39.675**

PWD has proposed single span of 35 m width proposed width of the bridge as 11.259 m with footpath of 1.5 m either side, over river Namgoi. The foundation has been proposed as well foundation. State PWD, Ar. Pradesh shall provide bridge width of 12m without footpath as per Ministry's standard plans for highway bridges, as per NH standards. The additional cost

implication @ Rs. 19 lakhs including centages has been added in the estimate to this account, on proportionate basis. CE(EZ), PWD, shall satisfy itself about the detailed design of the foundation, sub structure and super structure of the bridge for 12m width as per relevant IRC codes and ensure the safety and adequacy of the structure including sub structure and foundation before work is put to tender.

- 8.2.1 This bridge is proposed to realigned to ease the geometrics. The proposed bridge is provided at u/s side of existing Hemilton bridge (steel bridge of single lane). This steel bridge is proposed to be used as subway during construction. This has been allowed.

## **8.2 Bridge at km 39.675**

PWD has proposed single span of 35 m with proposed width of the bridge as 11.259 m with footpath of 1.5 m either side, over river Namgoi. The foundation has been proposed as well foundation. State PWD, Ar. Pradesh shall provide bridge width of 12m without footpath as per Ministry's standard plans for highway bridges, as per NH standards. The additional cost implication @ Rs. 19 lakhs including centages has been added in the estimate to this account, on proportionate basis. CE(EZ), PWD, shall satisfy itself about the detailed design of the foundation, sub structure and superstructure of the bridge for 12m width as per relevant IRC codes and ensure the safety and adequacy of the structure including substructure and foundation before work is put to tender.

- 8.2.1 This bridge is proposed to be realigned to ease geometrics. The proposed bridge is provided at u/s side of existing Hemilton bridge (steel bridge of single lane). This steel bridge is proposed to be used as subway during construction. This has been allowed.
- 8.2.2 A lumpsum provision of land acquisition of Rs. 5 lakh has been included to ease the geometrics. The same has been allowed.
- 8.2.3 A detailed provision of Rs. 29.80 lakhs has been made for shifting of HT/LT power lines, which has been retained.

## **9. Other provisions**

- 9.1 The provision for entre line & edge line marking as made in the estimate has retained. These marking may be provided as per IRC:35, 1997. The work of road marking with stipulated paint (Thermoplastic) shall be done per Cl. 803 of Ministry's latest specification.
- 9.2 The provision of retaining wall with height varying from 2 to 5 m in an aggregating length of 596 m, Breast wall with 2 m ht in a length of 180 m & toe wall having height of 2 m in a length of 120 m has been allowed as proposed. This shall be provided as per relevant IRC codes.
- 9.3 Provision of boulder apron to protect abutments & approach has been made. While providing stone pitching, it may be ensure that no stone be allowed weighing less that 40 kg as per clause 5.3.5.1 of IRC:89, 1997. The quantities of boulder in wire crated apron key may be reviewed in view of clause 5.3.7.1 of IRC:89-1997.
- 9.4 Provision of longitudinal earthen drain throughout the stretch has been made with average cross section area of 0.4 sqm. The same has been retained.

- 9.5 Provision of parapet wall at the location of retaining wall has been allowed.
- 9.6 For safety of road user, provision of hollow concrete pipe with reflection on both sides, having outer dia of 30 cm & length 75 mm with 45 cm above the road surface, with staggered placement of 5 m on both sides of road (200 number/km) has been added.

#### **10. Rates & Leads**

- 10.1 The estimate is based on APSR 2007 applicable for Road and Bridge works in Arunachal Pradesh, which is reported to be current. Increase in rate of bitumen from Rs. 28,023/- to Rs. 31,178/- (increase of Rs. 3155 per MT) has been reported. This has resulted into addition of Rs. 43,64,722 over APSR rates of DBM, BC & surface dressing, prime coat & tack coats.
- 10.2 The procurement of stone materials from Bet Camp having average lead of 55 km has been allowed for estimate purpose. However, while calling tender, the source may not be indicated. The contractor shall be responsible to procure the materials conforming to the specifications of the work from all lead and lift and no extra lead shall be payable. This may be ensured while preparing BOQ and bid documents.
- 10.3 APSR provided for 0 km lead charges for stone materials. This has been noted. The conformation for the same may be communicated.

#### **11. Cost of work**

In the light of above comments, the estimated cost works out to Rs. 4380.00 lakh, including 9% agency charges.

#### **12. General observations**

- 12.1 The contractor shall possess or undertake to procure and deploy all machinery required for the work. The list of plant and equipment shall be prepared on the basis of scope of work and enclosed with the bid documents and the same shall be enforced during the execution. It must be ensured that the work is carried out in mechanized manner using appropriate equipment.
- 12.2 Collection of material on the roadside, if any, should be commensurate with the physical progress of work, so as to avoid any hindrance to traffic. It must be ensured that contractor arranges for separate land for storage of road construction material and machinery and these shall not be allowed to be stacked on the roadside.
- 12.3 Bitumen shall be heated in boilers and heating in drums on open fire shall not be permitted in any case. Spraying of bitumen shall be done only with the mechanical sprayers and premixing of bitumen and stone aggregates should be done only in proper mechanical mixer / not mix plant. The manufacture of WMM will be carried out in pug mill.
- 12.4 In conformity to this Ministry's circular N. RW/NHIII/Coord/32/84 dated 19.5.84, no work beyond the scope of sanctioned estimate leading either to increase in the scope of the work or change in specifications should be undertaken without obtaining prior written approval of the Ministry.
- 12.5 Neither the work nor any item of work shall be split into small parts for awarding the work to more than one Contractor, except that specialized items such as road marking and signage could be executed separately. In case any splitting is essential, over and above mentioned above, due to the

specific prevailing conditions, it should be done only after prior approval of this Ministry. In this regard instructions issued in the Ministry's letter No. NHIII/P/75/78 dated 4.8.84 refers.

- 12.6 The work shall be executed as per Ministry's "Specification for Road and Bridge Works (Fourth Revision – 2001" and instructions issued by this Ministry from time to time.
- 12.7 Various measures will be taken to ensure quality of works in accordance with the "Hand Book of Quality Control for construction of Roads & Runways (second Revision) – IRC:SP:11-1988" and the instructions contained in Ministry's letter No. NHIII/P/83 dated 19.4.84. Permanent record of the tests carried out shall be maintained.
- 12.8 The grade of bitumen to be used for the work shall be as per guidelines/instructions issued vide Ministry's circulars No. RW/NH-33044/3/98-(S&R) dated 04.11.99 and RWNH-35074/7/2001-S&R(R) dated 3.4.2001.
- 12.9 During execution of the work, traffic management shall be done in accordance with the guidelines contained in Ministry's letter No. RW/NH-11060/1/1998-D.O.1 dated 7.10.87 and IRC:SP:55-2001 "Guidelines on Safety in Construction Zone".
- 12.10 The display boards giving details of the project shall be provided as per guidelines issued vide Ministry's Letter No. RW/NH-33044/10/2000-S&R(R) dated 12.8.2002.
- 12.11 Central Government machinery if available in the area shall be used for the work as spelt out in this Ministry's Letter No. RW-14(1)/83-RMP dated 7.6.88. In case of non-availability of the Central Government machinery in the area, the work will be allotted to such contractors only who possess the required machinery or produces proof of procuring or hiring the same to the satisfaction of the Chief Engineer.
- 12.12 It may be ensured that the site is free from any encumbrances before taking up the work.

**13. Targets for the work**

The following cumulative physical and financial targets should be achieved depending upon the availability of funds:

Year	Physical phasing (%)	Financial phasing (%)
2007-08	Preliminaries	1.00
2008-09	50	2100.00
2009-10	100	4380.00

  
(Ravinder)

Executive Engineer  
For Director General (Road Development) and Special Secretary