

GOVERNMENT OF INDIA
MINISTRY OF ROAD TRANSPORT & HIGHWAYS
TRANSPORT BHAWAN

No. RW/12014/41/2015/ORS/P-5

New Delhi: January, 2016

TECHNICAL NOTE
(Job no. 057-ORS-2015-16-373)

1.	Name of work	:	Widening existing Intermediate/Double lane to 2 lane with 1.5 m wide paved shoulder from km 0/0 to 45/750 (Bolangir – Sonepur Section) of NH 57 in the State of Odisha on EPC mode	
2.	State & Division	:	Odisha/ NH Division. Bolangir	
3.	NH No.	:	NH-57	
4.	Estimated cost	:	As proposed by State PWD (Rs. In lakhs)	As modified/allowed in the RW (Rs. In lakhs)
			15901.87	15729.74
5.	Length (km.)	:	50.625	45.51
6.	Rate per km (Rs. in lakh)	:	314.11	345.63
7.	Reference	:	CE (NH) Odisha vide letter no. WB-1C-BLGR-EPC-01/15/9214, dated 03/10/2015	

COMMENTS

1. **Scope of work:** Widening existing Intermediate/Double lane to 2 lane with 1.5 m wide paved shoulder from km 0/000 to 45/750 (Bolangir – Sonepur Section) of NH-57.

2. **Provisions allowed:**

2.1 The stretch passes through Sonepur town have been deleted from the scope of the present proposal. Accordingly the present stretch has been limited from km 0/000-45/750. It is requested to submit separate bypass proposal for Sonepur town.

2.2 **Widening & strengthening & realignment.**

Sl No	Stretch		Existing crust (in mm)	For widening		Strengthening	
	As propose by PWD	As modified in Ministry		As propose by PWD	As modified in Ministry	As proposed by PWD	As modified in Ministry
1	In 10.400 km DL stretch (1.000-4.815, 13.815- 19.380 & 20.130- 21.150) (TCS:I)	In 10.400 km DL stretch (1.000-4.815, 13.815- 19.380 & 20.130- 21.150) (TCS:I)	Bituminous: 100 WMM: 150 GSB: 150 GSB (up to slope): 150 Total: 550	PQC:190 DLC: 100 WMM:150 GSB: 300 Total:740	PQC:280 DLC: 150 WMM:100 GSB: 300 Total:830	PQC: 190	PQC: 280

Quap

2	In 13.780 km IL stretch (4.815- 13.815, 21.150- 23.900, 24.350- 24.810, 25.050- 26.100 & 31.370- 31.890)- (TCS:II)	In 2.030 km (24.350- 24.810, 25.050- 26.100 & 31.370- 31.890) (TCS:II)	Bituminous: 75 WBM: 225 <u>GSB: 150</u> Total: 450	New construction	New construction	PQC : 280 DLC: 100 <u>GSB: 150</u> Total:530	PQC: 280 DLC: 150 <u>GSB: 300</u> Total:730
3	In 3.425 km IL stretch (26.100- 26.840, 27.035- 29.720) (TCS:III)	In 15.175 km IL (4.815- 13.815, 21.150- 23.900, 26.100- 26.840, 27.035- 29.720) stretch (TCS:III)	Bituminous: 75 WBM: 225 <u>GSB: 150</u> Total: 450	PQC: 280 DLC: 100 WMM: 200 <u>GSB: 150</u> Total: 730	PQC: 280 DLC: 150 WMM: 100 <u>GSB: 300</u> Total: 830	PQC: 280	PQC: 280
4	In 4.670 km DL stretch (29.720- 31.370, 31.890- 34.900) (TCS:IV)	In 4.660 km DL stretch (29.720- 31.370, 31.890- 34.900) (TCS:IV)	Bituminous: 115 WBM: 250 <u>GSB: 300</u> Total: 665	PQC: 190 DLC: 100 WMM: 265 <u>GSB: 300</u> Total: 855	PQC: 280 DLC: 150 WMM: 100 <u>GSB: 300</u> Total: 830	PQC: 190	PQC: 280
5	In 14.475 km DL stretch (34.900- 48.100, 49.350- 50.625) (TCS:V)	In 10.850 km DL stretch (34.900- 45.750) (TCS:V)	Bituminous: 150 WBM: 250 <u>GSB: 330</u> Total: 730	PQC: 190 DLC: 100 WMM: 300 <u>GSB: 300</u> Total: 890	PQC: 280 DLC: 150 WMM: 250 <u>GSB: 300</u> Total: 980	PQC: 190	PQC: 280
6	In 3.645 km DL stretch with PS (0.000-1.000, 19.380- 20.130, 23.900- 24.350, 26.840- 27.035, 48.100- 49.350) (TCS:VI)	In 2.395 km DL stretch (0.000-1.000, 19.380- 20.130, 23.900- 24.350, 26.840- 27.035) (TCS:VI)	Bituminous: 100 WMM: 150 GSB: 150 <u>GSB(Up to slope): 150</u> Total: 550	No Widening		PQC: 190	PQC: 280

Relave

2.3 Culverts:

2.3.1 Reconstruction:

Sl.	Existing	Proposed	Nos.
1	Hume Pipe	RCC slab	4
2	Stone masonry	RCC Box	1
3	Hume Pipe	RCC Box	1
4	RCC Slab	RCC slab	2
5	Stone masonry	RCC slab	1
Total			9

2.3.2 Widening: Widening of 1 no. existing narrow RCC culvert and 3 nos. of single row Hume pipe culverts and 2 nos. double row Hume pipe culverts .

2.4 Reconstruction one minor bridge:

Sl No.	Location (km)	Details	Type of Structure	Type of Foundation	Span (m)	Total Vent way (m)	Total Length (m)	Total Width (m)
1	31.600	Existing	Slab	Open	6x8.5	45	51	7
		Proposed	Girder	Open	3x18	48	54	14.8

- 2.5 Construction of 1.5 m ht. Toe wall: 1350 m.
2.6 Construction of Toll Plaza at km 38/700
2.7 RCC Cover drain in built up area: 2290 m.
2.8 Shifting of Electric pipe line for Rs 179.28 lakh (as per detail estimate).
2.9 Construction of 6 nos. bus bay.

3. Alignment: The State PWD has proposed to widen the existing IL/DL lane to 2 lane with 1.5 m paved shoulder along the existing alignment except in realignment stretch (km. 25/050-26/100). Same has been agreed to.

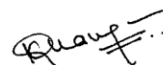
4. ROW: Existing ROW varies from 10.0 to 32.0 m. It is observed that out of total 45.750 kms. 4.90 (from km 27/900-29/400 & 42/200-43/600) kms. comes under reserved forest area. It is reported that action has already been taken for diversion of forest land and DFO, Sonapur has already informed ORSAC for verification of coordinates of forest area to be diverted vide letter no 3046 dated 07.09.2015.

5. Utility shifting: Based on detail estimate from the Executive Engineer, WESCO, Sonapur and Balangir, Odisha an amount of Rs 206.89 lakh has been allowed in the proposal for shifting of utilities.

6. Road Safety Measures: Road safety measures such as signages, Junction improvement, pavement marking, raised pavement markers, crash barrier etc. has been retained as proposed.

7. Wayside amenities: Proposal for construction of 6 nos. bus bay as wayside amenities has been allowed as proposed. However State PWD shall finalize the location of these way side amenities in consultation with RO, Bhubaneswar.

8. **RCC Cover Drain:** The state PWD has proposed construction of 3040 m RCC drain in different built up area. Same has been agreed to as proposed.
9. **Toe wall:** The State PWD has proposed construction of 1.5 m ht. toe wall in aggregate length of 1350 m to protect the road embankment near Suktel river, adjoining to ponds at village Ghatkairata, Sibthula and Randa. Same has been allowed as proposed.
10. **Culverts:** Re-construction of 9 nos. culverts & widening of 6 nos. existing culverts has been allowed as proposed.
11. **Minor Bridge:** Reconstruction of 1 no old narrow weak bridge with RCC T Beam Girder Bridge (3x18 m) in place of existing bridge at km 31/600 is allowed as proposed.
12. **Miscellaneous:** Provision of Toll plaza at km 38/700, Plantation of trees, km stones, hectometer stones, boundary stones etc. has been allowed as proposed.
13. **Land acquisition:** Provision of Rs. 67.78 lakh has been made in the estimate towards cost of land acquisition in km 20/800-21/100, 22/350-23/450, 25/050-26/100 & 31/000-31/900 & land required for Toll Plaza. During site inspection it is observed that improvement can be done without LA in km 20/800-21/100, 22/350-23/450. Hence these stretches have been deleted. Accordingly LA cost is modified to Rs.49.05 lakh. However, CE (NH) is requested to forward the detail estimate of LA to Ministry based on 3G notifications before disbursement of fund for LA. Further, it may be ensured that LA & Utility shifting are completed in time and project do not affect in want of LA & Utility shifting.
14. **Water harvesting structure:** In view of Para-2.1 of Water harvesting structure has been modified to 92 nos. Accordingly provision of Rs. 93.17 lakh has been allowed in the estimate toward construction of water harvesting structure.
15. **Forest land Diversion:** It is observed that out of total 45/750 km length, 4.90 (from km 27/900-29/400 & 43/600-42/200) km length comes under reserved forest area. It is reported that action has already initiated for diversion of forest land. DFO, Sonapur has requested ORSAC for verification of coordinates of forest area to be diverted vide letter no 3046 dtd 07.09.2015 and as per prescribed timeline the diversion of forest will be completed by 31.01.2016. However CE (NH) is requested to ensure that forest land diversion is completed in all respect before commencement of the work.
16. 1 % provision on estimated cost of civil works has been kept for **Greening (Plantation & its Maintenance) of National Highways** has been allowed in accordance to Ministry's Guideline issued vide letter no. RWINH-33044/49/2015/S&R (R), dated 28/8/2015.
17. Maintenance charge has been allowed @ 0.5 % for 1st year, 1.0 % for 2nd Year, 1.5 % for 3rd year & 2.0 % for 4th year in accordance to Ministry's guideline issued vide letter no. RWINH_37010/4/2010/IPIC-EAP(Printing), dated the 14th September, 2015.
18. **Technical specifications:**



18.1 For strengthening of existing carriageway, bituminous layer shall be cleaned properly before laying of overlay (PQC).

18.2 Minimum camber of 2.0% for Concrete surfaces and 3.5% for earthen shoulders shall be ensured for proper surface drainage. In no case the earthen shoulders shall be above the edge of the Concrete carriageway.

18.3 The work shall be executed as per Ministry's "Specifications for Road and Bridge works (fifth revision-2013)" and instructions issued by this Ministry from time to time. Deviation in specifications for any work should be got approved from the Ministry before adopting the same.

18.4 Provisions for quality control @ 0.25% have been allowed. The work is to be carried out in accordance with the "Hand Book of Quality Control for construction of Road and Runways(Second Revision)-IRC:SP:11-1988", observing strict quality control instructions contained in Ministry's letter No.NH-III/P/I/83 dated 19-04-1084 and permanent records maintained thereof.

19. **Rates and leads:** The estimate have been re-framed by adopting the rates from N.H. Schedule of Rates 2014 w.e.f. 10/11/2014. Rate of ACC- Portland Pozzolana Cement has been taken from Ministry's Platform for Infrastructure and Materials Providers (INAM-Pro) web site.

20. **Estimated cost:** In the light of comments made above, the estimate has been modified to Rs. 15729.74 lakh including 3 % agency charges.

21. **General Observations:**

21.1 The bids for the work should be invited through e-tendering system as per the instructions issued vide Ministry's circular letter No RW/NH/33044/2/2010-S7R(R), dated 17.06.2011 and letter No. RW/NH/33044/2/2010-S&R(R), dated 17.11.2011.

✓ 21.2 The tenders for the work shall be invited as per guidelines issued by this Ministry vide circular letter No RW/NH – 11024/3/99-US- (D-I) dated 9.3.2000. Since, the sanction cost of the instant work is more than Rs. 50.00 crore, the tender should essentially be based on Ministry's Model Engineering Procurement and Construction (EPC), in accordance with the order contained in the Ministry Circular letter No. RW/NH-37010/4/2010/PIC dated 30.10.2013.

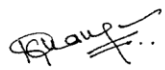
21.3 The time limit for awarding of this work is 6 months from the date of sanction should be strictly followed as per the instructions communicated to all State PWDs vide this Ministry's letter no. RW/NH-15015/29/2001-PL dated 5th July, 2001 and compliance reported to the Ministry. If the work is not awarded within the stipulated time, it may lead to de-sanction of the work unless Ministry's prior approval to extension of the time limit is obtained.

21.4 No work beyond the scope of the sanctioned estimate leading either to increase in the scope of work or change in specifications should be undertaken without obtaining prior written approval of the Ministry. In this connection, Ministry's letter No.RW/NHIII/Coord/32/84 dated 19.5.84 and letter No. RW/NH-33044/10/2002/S&R(R.) dated 09.09.2002 may be referred.

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- 21.5 It would be ensured while accepting the tenders that the overall cost at tender rates including supervision charges does not exceed by more than 5% of the sanctioned cost. In case, the cost of the work exceeds 5% of the sanctioned cost, revised sanction of the Ministry should be obtained. In this connection, Ministry's letter No.NH-11026/2/99-US (D.I) dated 29th October, 2001 may be referred.
- 21.6 The work is to be carried out in accordance with the "Hand Book of Quality Control for construction of Roads and Runways (Second Revision) – IRC SP: 11-1988", observing strict quality control instructions contained in Ministry's letter No. NHIII/P/I/83 dated 19.4.84 and permanent records maintained thereof. The quality control testing should be done through NABL (National Accreditation Board for Testing and calibration Laboratories) accredited laboratories only. CE(NH) State PWD shall ensure strict quality control during actual execution of work and shall ensure that suitable instructions are issued to all Field Officers in this regard.
- 21.7 It must be ensured that the contractor arranges for separate land for storage of road construction material and machinery and these shall not be allowed to be stacked on roadside.
- 21.8 Bitumen used for the work shall be heated in boilers only and not in drums on open fire. Spraying of bitumen wherever necessary should be done only with the mechanical sprayers and premixing of bitumen and stone aggregates should be done only in the proper mechanical mixer/hot mix plant.
- 21.9 CVC guidelines in tendering may be followed.
- 21.10 Video/photo records of the road, before/during & after the execution of work shall be made available in the Ministry/RO Bhubaneswar.
- 22. Phasing of work:** Following cumulative physical and financial targets may be achieved subject to the availability of funds:

Financial Year	Physical (%)	Financial (Rs. in lakh)	
2015-2016	Preliminary	1000.00	Construction
2016-2017	50%	7556.00	
2017-2018	100%	15113.84	
2018-2019		61.59	Maintenance
2019-2020		184.77	
2020-2021		389.54	
2021-2022		615.90	


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