

Detailed Project Report for.
Construction of Road Pharkiya Gali- Putakhan Gali
to NHSL with paved shoulders specifications
from Km 0.00 to Km 13.410

Project Beacon/32 BRTF/109RCC

EXECUTIVE SUMMARY

1. The construction of road Pharkiya Gali- Putakhan Gali is being planned with intended to connect the border out post along the LOC in Kupwara district of Jammu & Kashmir, to provide logistic support to the troops deployed on the axis. The road will be located near the International boundary Defence forces will utilize this infrastructure for movement of their men and material.

Initially, the requirement of construction of a fair weather motorable CI-9 specification road connecting Puthakhan Gali with main axis (Pharkiya Gali) in approx length 13.00 Kms was promulgated under 15 year LTPP for GS roads under Priority-II to be completed till 2022 by Army HQ (MO-4) vide IHQ of MOD/MO-4 vide their letter No. A/40071/MO-4 dated 31 Dec 2007 which was further superseded vide of DGMO/MO-4 Dte letter No A/40071/MO-4 dated 19 Jan 2010 under LTPP Priority-II program.

2. Preparation of DPR (departmentally) for construction of road Pharkiyen Gali to Putakhan Gali (detail survey and trace cut including jungle clearance and drawing) from km 0.00 to 13.410 (net length 13.410 km) to NHSL with paved shoulders has been sanctioned vide HQ CE (P) BCN letter No. 750802/AA/CE's Power/55/Estg dated 29 Oct 2018 for Rs 48.91 lacs under Job No. B-327/02 (BCN).

Further, DGMO/MO4 Dte vide letter No. A/40012/MO-4 dated 13 Mar 2016 had reviewed the plan and included the road under LTROWP 2017-18 (Priority-I) at Srl 46.

3. RSTC work has been carried out keeping in mind existing alignment of CI-05 specification but the existing track was found to be steep/risky as well as uneconomical. The stretches found economical for improvement to NHSL specifications are from Km 0.775 to Km 1.200 and Km 3.275 to Km 4.550. The remaining stretch is planned for re-alignment.

4. Accordingly, present DPR is framed for the proposed road alignment of length 13.410 Kms for Rs. 9098.93 lacs covering the road geometrics as per NHSL with paved shoulders specifications as per policy of DGBR received vide HQ DGBR letter No. 21801/PC/DGBR/41/TP (Plg) dated 12 Jan 2017.

Features of the road are given as under:-

(a)	Width of formation	: 7.45 Mtr
(b)	Width of carriageway	: 5.75 mtr
(c)	Gradient (for steep terrain)	: Ruling 5% Limiting 6% Exceptional 7%
(d)	Curve radius	: 33-60 mtr
(e)	Minimum radius for Hair pin bends as per IRC SP 48:1998 (6.10.1(C))	: 14 mtr (Inner) : 15 mtr (Transition)
(f)	Side slope dressing	: 60° for SMB : 75° for SR : 85° for HR : 30 KM/HR : CI-70R : 15 Mtr
(g)	Design speed	
(h)	Culverts of	
(i)	ROW (Right of Way)	
(j)	Crust thickness As per IRC SP-48 (Pg No. 135) 10.22.3.5.1	: 565 mm

1. Preliminary Information

1.1 Name of Work.

Construction/ Improvement of road Pharkiyani Gali- Puthakhan Gali from Cl-5 to NHSL with paved shoulders specifications from km 0.00 to km 13.410 (fmr width 7.45 mtr).

1.2 Authority and Plan Provision

Initially, the requirement of construction of a fair weather motorable Cl-9 specification road connecting Puthakhan Gali with main axis (Pharkiya Gali) approx length 13.00 Kms was promulgated under 15 year LTPP for GS roads under Priority-II to be completed till 2022 by Army HQ (MO-4) vide HQ of MOD/MO-4 letter No A/40071/MO-4 dated 31 Dec 2007 which was further superseded vide DGMO/MO-4 Dte letter No A/40071/MO-4 dated 19 Jan 2010 under LTPP Priority-II program.

Further, DGMO/MO4 Dte vide letter No. A/40012/MO-4 dated 13 Mar 2016 had reviewed the plan and included the road under LTROWP 2017-18 (Priority-I) at Srl 46.

1.3. History, Terrain and Climate.

The construction of Road Pharkiya Gali- Putakhan Gali is intended to connect the border out post along the LOC in Kupwara district of Jammu & Kashmir, to provide logistic support to the troops deployed on the axis. The road will be located near the international boundary and Defence forces will utilize this infrastructure for movement of their men and material.

The proposed alignment is passing through mountainous and steep terrain having side hill slopes varying from 30 to 59 degree. The altitude of the alignment at starting point is 2869.00 mtr and at end point the altitude is 3096.59 mtr and the maximum altitude of the route is 3144.90 The area is susceptible to heavy snow fall and snow accumulation generally varies from 9.00 cm to 378.00 cm. Working period is only 06 months between May to Oct. Out of 13.410 km road length 8.860 km length is passing through soil/ soil mixed with boulders, 2.250 km length is passing through soft rock and rest 2.300 km length passes through hard rock stretch for which blasting operation will be required during formation cutting.

The area experiences extreme climatic conditions during winter and the temperature varies from (-) 15 degree to 22 degree centigrade. Snow fall varies from 09 cm to 378 cm per month during winters and area remains covered under snow for more than Six months in a year. As such, snow clearance during construction period is required. Annual average rain fall in the area is 92 cm. The working season is available for Six months only.

1.4 Necessity.

The construction of Road Pharkiya Gali- Putakhan Gali is intended to connect the border out post along the LOC in Kupwara district of Jammu & Kashmir, to provide logistic support to the troops deployed on the axis. The road will be located near the international boundary and Defence forces will utilize this infrastructure for movement of their men and material. This road axis plays a vital role for deployment of troops and will act as supply line to the strategic border along Pakistan.

1. **Preliminary Information**

1.1 **Name of Work.**

Construction/ improvement of road Pharkiyani Gali- Puthakhan Gali from Cl-5 to NHSL with paved shoulders specifications from km 0.00 to km 13.410 (fmm width 7.45 mtr).

1.2 **Authority and Plan Provision**

Initially, the requirement of construction of a fair weather motorable Cl-9 specification road connecting Puthakhan Gali with main axis (Pharkiya Gali) approx length 13.00 Kms was promulgated under 15 year LTPP for GS roads under Priority-II to be completed till 2022 by Army HQ (MO-4) vide HQ of MOD/MO-4 letter No A/40071/MO-4 dated 31 Dec 2007 which was further superseded vide DGMO/MO-4 Dte letter No A/40071/MO-4 dated 19 Jan 2010 under LTPP Priority-II program.

Further, DGMO/MO4 Dte vide letter No. A/40012/MO-4 dated 13 Mar 2016 had reviewed the plan and included the road under LTROWP 2017-18 (Priority-I) at Srl 46.

1.3. **History, Terrain and Climate.**

The construction of Road Pharkiya Gali- Putakhan Gali is intended to connect the border out post along the LOC in Kupwara district of Jammu & Kashmir, to provide logistic support to the troops deployed on the axis. The road will be located near the international boundary and Defence forces will utilize this infrastructure for movement of their men and material.

The proposed alignment is passing through mountainous and steep terrain having side hill slopes varying from 30 to 59 degree. The altitude of the alignment at starting point is 2869.00 mtr and at end point the altitude is 3096.59 mtr and the maximum altitude of the route is 3144.90 The area is susceptible to heavy snow fall and snow accumulation generally varies from 9.00 cm to 378.00 cm. Working period is only 06 months between May to Oct. Out of 13.410 km road length 8.860 km length is passing through soil/ soil mixed with boulders, 2.250 km length is passing through soft rock and rest 2.300 km length passes through hard rock stretch for which blasting operation will be required during formation cutting.

The area experiences extreme climatic conditions during winter and the temperature varies from (-) 15 degree to 22 degree centigrade. Snow fall varies from 09 cm to 378 cm per month during winters and area remains covered under snow for more than Six months in a year. As such, snow clearance during construction period is required. Annual average rain fall in the area is 92 cm. The working season is available for Six months only.

1.4 **Necessity.**

The construction of Road Pharkiya Gali- Putakhan Gali is intended to connect the border out post along the LOC in Kupwara district of Jammu & Kashmir, to provide logistic support to the troops deployed on the axis. The road will be located near the international boundary and Defence forces will utilize this infrastructure for movement of their men and material. This road axis plays a vital role for deployment of troops and will act as supply line to the strategic border along Pakistan.

1.5 Engineering Survey and Investigation.

Following field surveys and investigations were carried out in form of:-

- (a) Route Selection
- (b) Alignment fixed with Ghat Tracer
- (c) Auto leveling / GPS for taking longitudinal sections.
- (d) Compass survey by whole circle bearing method for plotting the open traverse to draw plan of the road.
- (e) Hill slope measured by using Abney level.
- (f) Trace cutting done by means of manpower

2. Road Features

2.1 Route Selection

Various feasible alternatives have been considered during field survey work and the proposed alignment is the best one after considering, aesthetic, economic and environmental requirements as well as satisfying the engineering factors like economy in earth work, least disturbance to hills slope stability, efficient drainage, balance cut & fill and requirement of protective works.

2.2 Alignment

The whole proposed alignment passes through mountainous and steep terrain rising from an altitude 2869.00 mtr to 3144.90 mtr and then falling down to 3096.59 mtr . There is no village and built- up area along the proposed alignment.

2.3 Environmental Features

The total alignment passes through forest land which contains some trees and same are required to be removed. Similarly, the alignment covered with bushes which have to be cut and removed for enabling setting out of alignment and closing formation cutting. Soil erosion and slope of hill side cutting will be maintained by providing breast walls in hill side and retaining walls in valley side. The provision of breast walls and retaining walls has been considered in this DPR wherever required.

2.4 Cross Sectional Elements.

Road alignment plan, longitudinal profile and drawings showing cross section of formation cutting, layer composition of pavement works, is enclosed in Volume IV (Drawing Folder).

2.5 Pavement Investigation.

Proposed road is a new alignment hence investigation of existing pavement is not applicable.

2.6 Topographic Survey

Department has carried out the topographical survey along with the proposed road section. Major activities carried out are:-

- (a) Alignment fixed with Ghat Tracer
- (b) Auto leveling /GPS for taking L-section
- (c) Compass survey by whole circle bearing method for plotting the open traverse to draw plan of road

- d. Hill slop measured by using Abney level
- e. Trace cutting done by means of man power

3. Road Design and Specifications.

3.1 Geometric Design Standards.

The relevant standards consulted include:

(a)	IRC: 5-1998	:	General features of Design
(b)	IRC: 36-1970	:	Earthen Embankments
(b)	IRC: 73-1980	:	Geometric design standards rural highways
(c)	IRC SP 48:1998	:	Design of Horizontal curves
(d)	IRC: 54-1989	:	Design of Vertical curves
(e)	IRC: 19-2001	:	Survey and preparation of DPR
(f)	IRC SP 48:1998	:	Design of Pavement for High altitude/SBA
(g)	TI No. 18	:	Calculation of scope of Surfacing in Km Eq C1-9
(h)	DGBR TI No.9	:	RSTC of hill roads
(j)	DGBR TI No.13	:	Drainage for roads
(k)	IRC SP 48:1998	:	Pavement

MoRT&H specifications for Roads and Bridges (fourth revision) DGBR Technical Instructions and construction procedure.

3.2 Road Design

The proposed road traverses through virgin hill. Following road geometrics as per IRC specification is considered. The following IRC geometric design standards have been adopted for this road.

(a)	Width of formation	:	7.45 Mtr
(b)	Width of carriageway	:	5.75 mtr
(c)	Gradient (for steep terrain)	:	Ruling 5% Limiting 6% Exceptional 7%
(d)	Curve radius	:	33-60 mtr
(e)	Minimum radius for Hair pin bends as per IRC SP 48:1998 (6.10.1(C))	:	14 mtr (Inner) 15 mtr (Transition)
(f)	Side slope dressing	:	60° for SMB 75° for SR 85° for HR
(g)	Design speed	:	30 KM/HR
(h)	Culverts	:	C1-70R
(I)	ROW (Right to Way)	:	15 Mtr
(j)	Crust thickness As per IRC SP-48 (Pg No. 135) 10.22.3.5.1	:	565 mm
(k)	Stopping sight distance	:	20 m for 20 km/hr speed 25 m for 25 km/hr speed 40 m for 20 km/hr speed 50 m for 25 km/hr speed
(l)	Intermediate sight distance	:	1.20 m for Driver's eye 0.15 m height of object.
(m)	Criteria for measuring sight and (Safe stopping sight Distance) As per IRC SP-48 (Pg No. 44) 6.9.4	:	

(n) Criteria for measuring sight and
(Intermediate sight Distance)
As per IRC SP-48 (Pg No. 44) 6.9.4

: 1.20 m for Driver's eye
1.20 m height of object.

3.3 **Pavement Design**

Pavement considered as per IRC SP-48 (Pg No. 135) Para 10.22.3.5.1 alternate specification comprises for heavy snow accumulation, avalanche prone area and for movement of heavy mechanical equipments.

The following composition of pavements layers have been provisioned in this DPR as per IRC SP-48 (Pg No. 135) Para 10.22.3.5

S/No	Particulars	Thickness of Layer	Remarks
1	NFSSB	150 mm	First layer
2	NFSSB	150 mm	Second layer
3	CSB	75 mm	First layer
4	CSB	75 mm	Second layer
5	DBM	75 mm	Single layer
6	BC	40 mm	Single layer

3.4 **Specifications for surfacing works**

NFSSB 15 cm thick (consolidated) :- NFSSB 15 cm thick (consolidated) with stone aggregate as per table 400-2 of MORT&H specifications for road and bridge works, including supply of material, spreading in layers, watering and consolidation all complete.

Crushed stone aggregate (CSB) 75 mm: - Providing crushed stone aggregate (CSB) 75 mm, depositing on a prepared surface by hauling vehicles, spreading and mixing with a motor grader, watering and compacting with a vibratory roller to clause 410 of MoSRT&H specifications to form a layer of sub-base/base.

DBM 75 mm Thick :- Providing and laying 75 mm thick DBM layer, pre-coated stone aggregate physical requirements/grading/mix composition as per Table - 500-8/9/10 respectively of MORT&H specifications for road and bridge works with 4.25% asphalt 80/100 penetration grade as per MoSRT&H data book and rolled to the required specification.

AC 40mm Thick: -Providing and laying 40 mm thick AC on bituminous macadam layer with pre-coated stone chips grading confirming to Table: 500-23 and mix satisfying the requirement of table 500-24 of MORT&H specifications, mixed with 5% binder asphalt 80/100 penetration grade by weight of total mix and 2% cement by weight of mix (for filler) all as specified as per MoRT&H data book.

3.5 **Typical Cross Section.**

Cross section of layer composition of pavement work is enclosed at Appx "AG" in DPR.

3.6 **Shoulder Treatment.**

Earthen shoulders are proposed in this DPR.

3.7 **Design Speed.**

Design speed 30 km/hr is considered for geometric design of the road, accordingly curvature and super elevation is provided for safe operation of the vehicles.

5. Materials, Labour and Plants.

5.1 Prospecting of Borrow Area of Soil with Soil Properties for Embankment as well as Subgrade and Lead Involved:

Not applicable.

5.2 Quarries for Aggregates, Its Characteristics and Lead Involved.

The stones required for Pmt works (Masonry and back filling) are available within the initial lead, sand and chips required for the permanent work will be procured through supply contract.

5.3 Sources of Material, Water and Arrangement for Transportation etc.

The stones required for Pmt works (Masonry and back filling) are available within the initial lead. Necessary provision for royalty charges for Stones required for Pmt works has been made in this DPR based on the Govt. notification. Water is available in nearby Nallahs. However, Materials required for Surfing works (NFSSB & CSB) and Metal, Chips & Sand required for Pmt works is planned to procure through supply Contract.

5.4 Labour Availability and Amenities.

The local labours are available for construction. However trained/skilled local labours are not available. Imported labours would be required for completion of task as per work load.

5.5 Bitumen.

Bitumen of grade 80/100 (VG-10) is obtained by the department directly from IOC / Bharat Petroleum.

5.6 Cement.

Cement of all varieties and compressive strengths confirming to IS specifications is available through DGS&D registered suppliers.

5.7 Reinforcement Steel.

Reinforcement steel conforming to IS specifications is to be procured through DGS&D registered suppliers

5.8 Equipments.

The following equipment's are proposed to be utilized for the project: -

- (a) Dozer D-80 and D-50
- (b) Tracked excavator
- (c) Air compressor
- (d) Wagon drill
- (e) Jack hammer with accessories
- (f) JCB
- (g) Concrete Mixer
- (h) Stone Crusher
- (j) Hot Mix Plant 30/45 TPH

- (k) Paver Finisher
- (l) Three wheeled roller 8/12 Tonne
- (m) Vibratory roller
- (n) Tipper/Dumper/Load Carriers

6 Rates

The DPR has been priced based on DGBR SSR 2016 for Project Beacon, Zone 'I' & 'J' all CPLs and altitude between 2700 m-3300 m

(a) Extra Transportation Charges

The stones required for Pmt works (Masonry and back filling) are available within the initial lead. Materials required for other Pmt & Surfacing works (Non Bituminous layers) is provisioned to procure through supply contract. Hence, no extra TPT charges have been provisioned in this DPR.

(b) Road Lift Charges

Provision of road lift charges has been made as per BRDB letter No. F63 (21)/BRDB/90/P-II dated 22 Apr 1993.

(c) Royalty and Monopoly Charges.

Royalty charges for stones required for Pmt works has been made in this DPR based on the rates specified by Govt. of J& K, Geology and Mining Department.

(d) Escalation Charges.

Price escalation charges at the rate of 12.52% on SSR 2016 are considered for all work.

(e) Credit for Retrieved Stones.

One third quantity of stones against formation cutting in hard rock is considered to be retrieved and accordingly credits for same have been made against permanent works in this DPR.

(f) Credit for GP Trades Man

Credit on account of GP tradesmen as per SSR 2016 has been considered in this DPR.

(g) Quality Control Charges.

Provision of quality control charges @ 1.00% of the estimated cost of work has been made as per BRDB letter No. BRDB/04/53/2004/BEA/21801/PC/DGBR/TPC dated 21 Jul 2004.

(h) Labour Cess.

Provision for Labour cess @ 1.00 % of estimated cost of project has been catered for in this DPR as per Dte GBR letter No. 18324/Payment of cess /DGBR/52/T&C dated 05 May 2011.

(i) Physical Contingency Charges.

Provision for physical contingency charges @ 5 % of estimated cost of work has been catered for in this DPR as per BRDE letter No P.62(Gen)/Project/CCO/GOI dated 08 Apr 1993.

7 Construction Planning.

7.1 Working Season and Planning for Execution.

The area is susceptible to heavy snow fall and snow accumulation generally varies from 9.00 cm to 378.00 cm. Working period is only 06 months between May to Oct. The works included in this DPR are planned for over all completion by the year 2022.

7.2 Schedule of Completing the Work.

The work is planned for completion in three years i.e. Mar 2023 is PDC.

7.3 Construction Methods and Mode of Execution.

The proposed alignment is passing through mountainous and steep terrain having side hill slopes varying from 30 to 59 degrees. The total alignment passes through forest which contains some trees. Similarly, the alignment is covered with bushes which have to be cut and removed for enabling setting out of alignment and closing formation cutting. The construction works may be carried out from both ends as well as middle of the stretch. To open the attack points dedicated timely effort is required to open and sustain the work site.

The construction method would include proper equipment, plant and machinery for achieving quality and efficiency: these are dealt in project implementation plan and requirement of machinery.

The Pmt work and Surfacing work (Non Bituminous layers only) will be executed departmentally with materials procure through supply contract, where as bituminous layers i.e. DBM & AC will be executed through execution Contract from Km 0 to 13.410.

8. Miscellaneous.

8.1 Rest House, Temporary Quarters, Wayside Amenities, Truck Park Etc (Road Side Accommodation).

Camp/ Dett for GREP personnel is available at Pharkiya Gali location (5.200 km distance from starting point of work). Additional camp at km 3.500 is also planned to establish for accommodating troops for smooth execution of work hence, roadside accommodation is required for carrying out construction activities in this sector and provision for same has been made in this DPR.

8.2 Roadside Plantation, Turfing, Landscaping Etc.

The total alignment passes through forest land with some trees and covered with bushes, Soil erosion and slope of hill side cutting will be maintained by providing breast walls

in hill side and retaining walls in valley side. The provision of breast walls and retaining walls has been considered in this DPR wherever required.

8.3 Guard Rails, Informatory Sign Boards, Traffic Control Devices.

Location wise road furniture required for this stretch is enclosed in DPR. Metal crash barriers have been provisioned on valley side of horizontal curves and Zigs. 4200.00 mtr length of crash barriers, 78 Nos road Sig board/posts, 533 Nos Cat eyes and 300 Nos of delineators have been provisioned in this DPR.

8.4 Diversion, Land Road and Traffic Arrangement during Work

The entire alignment passes through forest land. Hence, land is required to be transferred from Forest Department. Therefore provision of cost for land acquisition and Forest clearance has been made in this DPR.

8.5 Profile Corrective work

No profile correction work is required as the road is new construction.

9. Economic Appraisal.

9.1 Rough Cost of Work.

The cost of the Project works out to Rs. 7103.41 lacs, for details of cost please refer Part I (Cost Estimate) of this DPR.

9.2 Item Wise Cost of Work.

The item wise cost of the Project as per cost estimate is as follows:-

S/ No	Item of Works	A/U	Departmental Execution Km 0.00 to Km 13.410	Execution Contract	Total
(a)	Cost of Formation wks	Rs in Lac	1872.53	-	1872.53
(b)	Cost of Permanent works	Rs in Lac	2262.99	-	2262.99
(c)	Cost of Surfacing works	Rs in Lac	1036.33	784.70	1821.03
(d)	Cost of Forest forestation / Land Compensation	Rs in Lac	537.33	-	537.33
	G/Total	Rs in Lac	5709.18	784.70	6493.87

9.3 Scope of Works: DPR

(a)	Compensatory Afforestation		
	(i)	Compensatory Afforestation 12.24 Hectare & LA Compensation	Rs 537.33 lac
(b)	Formation Works		
	S/No	Item of work	Total Scope
	(i)	Cutting down trees up to 75cm	Nil Nos
	(ii)	Cutting down trees above 75cm	Nil Nos
	(iii)	Jungle Cutting	19496.75 10 Sqm
	(iv)	Formation cutting in SMB	272213.29 Cum

	(v)	Formation cutting in SR	90102.64 Cum
	(vi)	Formation cutting in HR	78227.44 Cum
	(vi)	Embankment filling	60.84 Cum
	(vii)	Unlined drain in SR	2311.80 Cum
	(viii)	Unlined drain in HR	2264.00 Cum
	(viii)	Disposal of excavated earth with vehicle	414406.72 Cum
		Formation Eqvt Cl-9	21.393 Km
		Total Cost	1872.53 Lacs
(c)	Surfacing works		
	(i)	Prep of Sub grade in SMB	55103.56 Sqm
	(ii)	Prep of Sub grade in SR	14465.51 Sqm
	(iii)	Prep of Sub grade in HR	14607.63 Sqm
	(iv)	NFSSB 150mm thick	168353.40 Sqm
	(v)	CSB 75 mm thick	160448.50 Sqm
	(vi)	DBM 75mm thick	76271.82 Sqm
	(vii)	AC 40 mm thick	76271.82 Sqm
	(viii)	Prime Coat	76271.82 Sqm
	(ix)	Tack Coat	152543.64 Sqm
		Surfacing Eqvt Cl-9 Surf	38.418 km
		Total Cost	1821.03 lacs
(d)	Permanent Works		
	1	Retaining Walls (In BM)	
	(i)	3.00	1288.00 Mtr
	(ii)	5.00	636.00 Mtr
	2	RCC Culverts	
	(i)	2.00 m span	46 Nos
	(ii)	3.00m span	15 Nos
	3	Toe Walls 1.5 mtr (in CM 1:6)	1416.00 Mtr
	4	B/Walls 2 mtr (IN CM 1:6)	2816.00 Mtr
	5	B/Walls 2.5 mtr (IN BM)	232.00 Mtr
	6	Lined Drains	8624.00 Mtr
	7	Road Furniture	
	(i)	5 th km stone	03 Nos
	(ii)	Ord km stone	11 Nos
	(iii)	Sub Km stone	54 Nos
	(iv)	Road sign posts	78 Nos
(d)		Permanent Works	Rs 2262.99 lacs

10 **Other Information.**

10.1 **Estimating of Quantities.**

The estimating of quantities for all items of work is based on the detailed drawings being submitted as part of Detailed Project Report. The earthwork quantities have been computed through Auto CAD and other quantities under different items of work have been computed using MS Excel worksheet. All the vertical and horizontal curves are designed as per DGBR TI No. 1 guideline.

The computed quantities and cost are presented under following major heads:-

- (a) Forest compensation for CA & NPV

- (b) Formation works
- (c) Permanent works
- (d) Surfacing works

10.2 Land Acquisition and Utilities.

No private land acquisition and shifting of utilities are involved, as the proposed entire road alignment passes through Forest land. Hence, compensation for the same has been catered for in this RDPR. Final approval for forest clearance is to be received.

11 Conclusion.

The existing Cl-5 road connecting 268 Brigade HQ below Rama-III post having a length of 5.100 km with steep gradient and sharp curves and its improvement to NHSL with paved shoulders specifications is not feasible on existing alignment at some locations. As such realignment with ruling gradient has been proposed in most of the stretches and certain stretches of existing Cl-5 road has been utilized wherever feasible. Considering the terrain and climatic conditions, construction of this road to NHSL with paved shoulders specifications is essential and pavement for this road is also provided in terms of clause 10.22 of IRC SP : 48 (1998).


The proposed alignment is the most economic, technically suitable and stable considering the geological features of the area and user requirement. The works proposed in the DPR are the minimum essential as per ground conditions as well as the approved RSTC. Accordingly, the DPR has been framed for Rs. 6493.87 Lacs. The subject DPR may kindly be sanctioned so that the works can be started at the earliest.

Station: C/O 56 APO

Dated : 30 Nov 2019


(Nitin Chandra Joshi)

Lt Col
Officer Commanding

Prepared by
SE Mirza Shabir Baig


**APPROXIMATE ESTIMATE
PART-I**

Name of State : Jammu and Kashmir
 Name of Unit/Project : 109 RCC/32 BKTF
 NAME OF WORKS:- CONSTRUCTION / IMPROVEMENT OF ROAD PHARKRYAN GALL-PUTHAKHAN GALL FROM CL-5 TO NHSL WITH PAVED SHOULDERS
 KM 0.00 TO KM 13.410 (FNN WIDTH 7.45 MTR)

SSR 2016 & Zone "I" & "J"
 SCRLA 1

S/No	ITEMS OF WORKS	COST OF LA/FC (Rs)	FNN WORKS (Rs)	PMT WORKS (Rs)	SURF WORKS (Rs)	TOTAL (Rs)
(A)	Work Assessed					
i	Cost of works	53732690.00	160400169.00	205608271.00	241740997.00	661482127.00
ii	Road Lift Charges		2402951.00	37787296.00	2927784.00	43118031.00
iii	Extra TPT Charges					
iv	Credit to be afforded for deployment of GP skilled eqvt number of Cp Tradesmen		-2619647.00	-7520939.00	-1618960.00	-11765546.00
v	Credit for PNR		-7506854.00	-7825927.00	-4162920.00	-19495701.00
vi	Credit for retrieved Stone from H/R cutting			-23287421.00		-23287421.00
vii	Deduct Cost of Material due to Contract and cost of execution contract (As per SSN)			-36797133.00	-204049094.00	-240846229.00
viii	Conveyance Charges to DDM & AC					
(B)	Escalation Charges	Total (A)	152676619.00	167958145.00	34837807.00	409205261.00
i	Add Escalation Charges @ 12.52% during 2020-2021 (for 3 km Cl 9 Fnn & 10 lacs Pmt works)		3016173.00	125200.00		3141373.00
ii	Add Escalation Charges @ 12.52% during 2021-2022 (for 12.364 km Cl 9 Fnn & 1779.45 lacs Pmt works, 23.92 km Cl 9 surfacing works)		11269259.00	12511896.00	2617017.00	26428172.00
iii	Add Escalation Charges @ 12.52% during 2022-23 (for 5.299 km Cl 9 Fnn & 1198.30 lacs Pmt works, 15.95 km Cl 9 surfacing works)		4829683.00	8361261.00	1744678.00	14935625.00
(C)	Following charges on (A - B)	Total (B)	19115113.00	21028360.00	4361693.00	44505166.00
i	Add @ 1% for Quality Control Charges	53732690.00	171791732.00	188986505.00	39199500.00	453710427.00
ii	Add @ 5% for Physical Contingencies Charges		1717917.00	1889865.00	391995.00	3999777.00
iii	Add @ 2% for Road Side Accn		8589587.00	9449325.00	1959975.00	19998887.00
iv	Add @ 1% for Labour Cross Charges		3435835.00	3779730.00		7215565.00
(D)	Cost of contract	Total (C)	1717917.00	1889865.00	391995.00	3999777.00
i	Cost of execution contract		15461256.00	17008785.00	2743965.00	35214006.00
ii	Cost of Contract Materials					0.00
(E)	Royalty Charges	Total (D)	20045168.00	20045168.00	140159186.00	160204354.00
i	Total (A to E)		53732690.00	187252988.00	226299.00	649387268.00
	Say Rs in Lacs		537.33	1872.53	2262.99	6493.87

APPROXIMATE ESTIMATE
Part-II

Name of State : Jammu and Kashmir
Name of Unit/Project : 109 RCC/32 BKTP
NAME OF WORKS:- CONSTRUCTION/ IMPROVEMENT OF ROAD PHARIYAN GALL-PUTHAKHAN GALL FROM CL. 5 TO NHSL WITH PAVED SHOULDERS
KM 0.00 TO KM 13.410 (FMN WIDTH 7.45 MTR)

NAME OF WORKS:- CONSTRUCTION AND REPAIRS OF ROAD IN THE DISTRICT OF KARNATAKA FROM CL-5 TO ROAD KM 0.00 TO KM 13.410 (FMN WIDTH 7.45 MTR)										
Slr No	SSR 2016 Item No.	Brief Description of Works	A/U	Alt: Between 2700-3000Mtr.			Alt: Between 3000-3300Mtr			Total
				Qty	Rate (RS)	Amount (RS)	Qty	Rate (RS)	Amount (RS)	
(A) Formation works										
1	F-101	Jungle Clearance Rainfall upto 200 cm	10 Sqm	✓ 5532.50	345.89	1913636	13964.25	387.41	5409890	7323526
2	F-401	Rough excavation in soil/soil mixed with small boulders, getting out and disposing all excavated material lead upto 3 m and upto 1.5 m deep (75% machine and 25 % by manual labour)	Cum	✓ 72425.09	166.20	12037050	199788.20	179.91	35943895	47980945
3	F-402	Rough excavation in soft rock requiring blasting upto 50% of quantities and getting out with lead upto 3 mtr and not exceeding 1.50 m deep (75% by machine and 25% by manual labour)	Cum	✓ 29984.86	369.69	11085103	60117.78	400.82	24096409	35181512
4	F-403	Rough excvn in HR	Cum	✓ 18761.82	351.23	6589714	59465.62	376.31	22377507	28967221
5	F-701	Earthwork in embankment by filling with earth free from roots etc. spreading in layers not exceeding 30 cm including watering and finishing to required slope & level not exceeding 1.5 m high above the base in ordinary soil in hill roads where cut & fill method is adopted (11.1FT 0.00 TO 1 500 MTR)	Cum	60.84	64.25	3909	0.00	67.11	0	3909
6	G03	Unlined Drain in SR	Mtr	914.40	484.21	442762	1397.40	542.35	757840	1200642
7	G04	Unlined Drain in HR	Mtr	540.40	344.56	186200	1723.60	381.51	657571	843771
8	F-802	Disposal of excavated earth with vehicle	Cum	114856.99	91.56	10516306	299549.73	94.75	28382337	38898643
TOTAL (FMN WORKS)						42774680			117625489	160400169
Road Lift Charges										2402951
Credit to be afforded for deployment of GP skilled eqpt number of CP Tradesmen										-2619647
Credit for PNR										-7506854
(B) Permanent works										
1	P-101	Excvn in trenches not exceeding 1.2mwidth and 1.5m depth in soil/soil mixed with boulders, incl dressing bottom and excavated materials lead upto 3m and lift upto 1.5m.	Cum	5688.54	446.92	2542322	17997.48	500.59	9009359	11551681
2	P-102	Excvn in trenches not exceeding 1.2mwidth and 1.5m depth in SR incl dressing bottom and excavated materials lead upto 3m and lift upto 1.5m.	Cum	1854.40	1017.88	1887557	2250.07	1135.82	2555675	4443232
3	P-103	Excvn in trenches not exceeding 1.2mwidth and 1.5m depth in HR incl dressing bottom and excavated materials lead upto 3m and lift upto 1.5m.	Cum	1997.88	689.77	1378078	2469.55	763.83	1886316	3264394
4	P-202	Cement concrete (1 cement: 4 sand: 8stone aggregate of size 4cm gradeddownwards) in fdn or else where.	Cum	1365.79	4246.09	5799267	3220.91	4565.58	14705322	20504589
5	P-203	Cement concrete (1 cement: 3 Course sand: 6stone aggregate of size 4cm gradeddownwards) in fdn or elsewhere excluding cost of shuttering/centering.	Cum	855.56	4558.96	3900464	2210.87	4876.75	10781860	14682324
6	P-204	Cement concrete (1 cement: 2 sand: 4stone aggregate of size 4cm gradeddownwards) in fdn or elsewhere excluding cost of shuttering/centering.	Cum	42.94	7388.00	317241	115.52	7961.36	919696	1236937

Sl No	SSR Item No.	Brief Description of Works	A/U	Alt: Between 2700-3000Mtr.			Alt: Between 3000-3300Mtr.			Total
				Qty	Rate (RS)	Amount (RS)	Qty	Rate (RS)	Amount (RS)	
7	P-206	Reinforced Cement Concrete M-20 nearly corresponding to nominal mix: 1 cement: 1.5 sand: 3 stone aggregate of size 2cm gradeddownwards) including rendering but excluding reinforcement and cost of shuttering/centering.	Cum	86.11	7922.62	682217	250.49	8524.08	2135197	2817414
8	P-205	Reinforced Cement concrete (1 cement: 2 sand: 4 stone aggregate of size 4cm gradeddownwards) in fdn or elsewhere excluding cost of shuttering/centering.	Cum	0.00	7390.22	0	0.00	7964.32	0	0
9	P-505	Random or polygonal rubble walling incement mortar (1:6) brought to course 45cm high, well bonded with through/bond stones evenly spaced at 2 Nosper Sqm of wall face (material and Labour)	Cum	4101.84	4572.13	18754146	10755.73	5039.48	54203286	72957432
10	P-501	Walling of rubble stone laid dry, well bonded, faced with selected stones and built with bond or through stone evenly spaced @ 2 nos per sq meter of wall face.	Cum	1706.27	3661.03	6246706	2614.98	4086.81	10686926	16933632
11	P-601	Filling of stone/selected materials inlayers well packed behind retainingwalls, breast walls, abutment/wing wallsof bridges or culverts(labour and material)	Cum	2951.81	1247.79	3683239	6658.53	1387.17	9236513	12919752
12	F-701	Earth work in filling with earth free from roots etc. spreading in layers exceeding 30cm including watering and finishing to required slope & level not exceeding 1.50m high above the base in ordinary soil	Cum	492.17	64.25	31622	1174.59	67.11	78827	110449
13	P-107	Hard core comprising of broken road metal size 5 cm graded downwards spread in layers not exceeding 15 cm including watering ramming finishing to required level and gradient.	Cum	20.19	2244.31	45313	56.09	2468.90	138481	183794
14	P-209	Centering and shuttering including strutting, propping and removal of formwork	10 Sqm	313.29	6330.80	1983402	811.08	6757.01	5480489	7463891
15	P-302	Laying reinforcement including cutting, bending, providing hooks overlaps etc (labour only) bars upto 12mm only	100 kg	104.30	2077.17	216654	310.31	2328.41	722527	939181
16	P-303	Laying reinforcement including cutting, bending, providing hooks overlaps etc (labour only) bars above 12mm only	100 kg	77.69	1379.73	107185	244.59	1546.61	378283	485468
17	P-801	White washing (two Coats) prepared by slaking freshly burnt class C lime conforming to IS 712 1964, the quantity of gum to be used shall be @ 4 Kg/cum of cream.	10sqm	18.45	179.68	3315	50.10	198.86	9963	13278
18	P-807	Weep Hole using PVC pipe	Mtr	16916.00	206.34	3490447	31726.00	211.01	6694503	10184950
19	MP-12	Cost of Steel	Mtr	18.20	53180.00	967813	55.49	53180.00	2950944	3918757
25	G-10	Providing & fixing of 5th km Stone	Nos	1	4436.69	4437	2	4686.35	9373	13810
26	G-08	Providing & fixing of Ordinary km Stone	Nos	3	3223.91	9672	8	3503.22	28026	37608
27	G-09	Providing & fixing of Sub km Stone	Nos	16	837.02	13392	38	895.11	34014	47406
28	G-06	Providing & fixing of warning/mandatory signs of triangular shape 60 cm	Nos	20	3001.65	60033	52	3152.65	163938	223971
29	G-07	Providing & fixing of informatory road signs of rectangular shape 80 cm x 60 cm	Nos	2	3809.05	7618	4	3984.66	15939	23557

Sl No	SSR 2016 Item No.	Brief Description of Works	A/U	Alt: Between 2700-3000Mtr.			Alt: Between 3000-3300Mtr.			Total
				Qty	Rate (RS)	Amount (RS)	Qty	Rate (RS)	Amount (RS)	
30	P-508	Lined Drain	Mtr	2463.80	1271.50	3132722	6160.20	1419.88	8746745	11879467
32	T-003	Metal beam Crash Barrier (Type-A, "W")	Mtr	1300.00	1761.57	2290041	3500.00	1797.77	6292195	8582236
33	T-002	Providing/Fixing Road Delineators (900 mm)	Nos	79.00	627.56	49577	221.00	630.74	139394	188971
		TOTAL. (PMT WORKS)				57604480			148003791	205608271
		Extra TPT Charges								-
		Road Lift Charges								37787296
		Credit to be afforded for deployment of GP skilled eqvt number of CP Tradesmen								-7526939
		Credit for PNR								-7825927
		Royalty Charges								258481
		Deduct cost of material as per SSR 2016 rates								-23287421
		Cost of Material as per supply contract								-36797135
										20045168

(Nitin Chandra Joshi)
Lt Col
Officer Commanding

**APPROXIMATE ESTIMATE
PART-II**

Name of State : Jammu and Kashmir
Name of Unit/Project : 109 RCC/32 BRTF

NAME OF WORKS:- CONSTRUCTION/ IMPROVEMENT OF ROAD PHARKITAN GALL-PUTHAKHAN GALL FROM CL-5 TO NHSL WITH PAVED SHOULDER SKM 0.00 TO KM 13.410 (MAIN WIDTH 7.45 MTR)

S/N o	SSR Item No	Brief specifications	A/U	Ald Between-2700-3000 mtr			Ald Between-3000-3300 mtr			TOTAL
				Qty	Rate(Rs)	Amount(Rs)	Qty	Rate(Rs)	Amount (Rs)	
A		SURFACING WORKS								
1	S-101	Preparation of sub grade in SMB by excavating upto 20 cm average depth, dressing excavated earth to required camber or super elevation and consolidating with power roller incl disposal of surplus earth within a lead of 30m.	10 Sqm	1,573.32	498.72	784,647.00	3,937.04	536.00	2,110,251.00	2,894,898.00
2	S-102	Preparation of sub grade in SR by excavating up to 20 cm avg depth, filling with small stone metal out of excavated material, dressing to required camber or super elevation and consolidating with power roller incl disposal of surplus material with in a lead of 30 mtr.	10 Sqm	553.20	853.43	472,119.00	893.35	920.78	822,578.00	1,294,697.00
3	S-103	Preparation of sub grade in HR by excavating up to 20 cm avg depth, filling with small stone metal out of excavated material, dressing to required camber or super elevation and consolidating with power roller incl disposal of surplus material with in a lead of 30 mtr.	10 Sqm	343.15	804.32	276,006.00	1,117.61	855.52	956,137.00	1,232,143.00
4	S-917	NFSSB 15 cm thick (consolidated) with stone aggregate as per table 400-2 of MORT&H specifications for road and bridge works, including supply of material, spreading in layers, watering and consolidation all complete.	10 Sqm	4,939.35	4,748.39	23,453,979.00	11,895.99	5,159.72	61,379,957.00	84,833,936.00
5	S-810	Providing crushed stone aggregate (CSB) 75 mm , depositing on a prepared surface by hauling vehicles, spreading and mixing with a motor grader, watering and compacting with a vibratory roller to clause 410 of MORT&H specifications to form a layer of sub-base/base.	10 Sqm	4,707.24	2,664.20	12,541,023.00	11,337.61	2,875.20	32,597,908.00	45,138,931.00
6	S-509	Providing and laying 75 mm thick DBM layer, precoated stone aggregate physical requirements/grading/mix composition as per Table - 500-8/9/10 respectively of MORT&H specifications for road and bridge works with 4.25% asphalt 80/100 penetration grade as per MORT&H data book and rolled to the required specification.	10 Sqm	2,237.56	7,538.48	16,867,809.00	5,389.62	7,696.19	41,479,547.00	58,347,356.00
7	S-513	Providing and laying 40 mm thick AC on bituminous macadam layer with precoated stone chips grading conforming to Table:500-23 and mix satisfying the requirement of table 500-24 of MORT&H specifications, mixed with 5% binder asphalt 80/100 penetration grade by weight of total mix and 2% cement by weight of mix (for filler) all as specified as per MORT&H data book.	10 Sqm	2,237.56	4,842.49	10,835,367.00	5,389.62	4,965.74	26,763,457.00	37,598,824.00
8	S-809	Providing and applying primer coat with bitumen emulsion on prepared surface of granular base.	10 Sqm	2,237.56	754.48	1,688,195.00	5,389.62	790.73	4,261,735.00	5,949,930.00
9	S-814	Providing and applying Track coat with bitumenemulsion using emulsion pressure distributor @ 2.5 kg/10 sqm on prepared bituminous/granular surface cleaned with mechanical broom, all complete as per clause 503 of MORT&H specifications	10 Sqm	4,475.12	167.26	748,509.00	10,779.24	168.25	1,813,607.00	2,562,116.00
10	T004	Providing and fixing of Cat Eye	Nos	144.00	183.41	26,411.00	389.00	185.31	72,086.00	98,497.00
12	P802A	Road marking with thermo plastic paint 2.5 mm thick	10 Sqm	118.50	4,398.69	521,245.00	283.80	4,469.43	1,268,424.00	1,789,669.00
		Road lift charges				68,215,310.00			173,525,667.00	241,740,997.00
		Cost of execution contract							2,927,784.00	78,470,075.00
		Cost of contract materials as per supply contract rates.							61,689,111.00	1,062,478,95.00
		Deduct Cost of Bituminous work as per SSR							-97801199.00	-16,989,60.00
		Deduct Cost of materials as per SSR							-4162920.00	-416,292.00
		Credit to be afforded for deployment of GP skilled eqvt number of GP Tradesmen								
		Credit for PNR								

(Signature)
Lt Col
Officer Commanding