

ZONAL MASTER PLAN

**PROVINCIAL DIVISION
PWD BHATWARI
UTTARKASHI (UTTARAKHAND)**

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1. Work sanctioned but not constructed for 7 villages.

Sl.No	Name of village	Sanctioned length	Code	Population	Sanctioned cost	Extra cost required for cartage of material
1	Bagori	2.00 km	00060800	573	25.20 lac	36.86 lac
2	Hinna	3.00 km	00066600	721	17.55 lac	25.67 lac
3	Jaspur	3.00 km	00061200	247	37.80 lac	55.29 lac
4	Kankradi	1.50 km	00069300	443	18.90 lac	27.65 lac
5	Nirakot	8.00 km			100.80 lac	147.44 lac
6	Purali	3.00 km	00061000	220	37.80 lac	55.29 lac
7	Silyan	8.00 km			100.80 lac	147.44 lac
	Total	28.50 km			338.85 lac	495.64 lac

2. Work required to be sanctioned for connectivity of 5 villages.

S. No	Name of village	Proposed length from nearest motor road	Approximate cost in lac.	Extra cost required for cartage of material In lac	Code	Population	Proposed road for connectivity
1	Dansra	6.00 km	312.00	456.36	00065500	174	Extension of Sangamchatti Gajoli road.
2	Didsari	5.00 km	260.00	380.30	00063700	322	Extension of Maneri Jamak motor road.
3	Pilang	22.00 km	1144.00	1673.33	00065100	102	Extension of Malla Silla motor road.
4	Jodaw	22.00 km	1144.00	1673.33	00065000	267	Extension of Malla Silla motor road.
5	kanath	5.00 km	260.00	380.30	00063500	100	Construction of motor road from Maneri.
	Total	60.00 km	3120.00	4563.62			

Note:- All works shall be done as per Forest Conservation Act and Eco-sensitive Zone Gazette Notification.

As per Guide line of Eco-Sensitive Zone Gazette Notification following provisions in new roads, re-construction of road and other repair/maintenance works are included in proposed Zonal Master Plan.

Clause No.16- Development and protection of hill slopes:

(i) The Zonal Master Plan shall indicate the areas on hill slopes where development shall not be permitted.	There is restriction that the area having slope more than 20 degree no construction is allowed. Such area are only available where road alignment passes through cultivated land. In other areas the cross slope varies from 20 to 60 degree. So amendment regarding cross slopes are required. Areas having cross slope up to 70 degree be permitted in this regard to connect unconnected villages.
(ii) No development shall be under taken areas having a steep slope or areas which fall in fault or hazard zones or areas falling on spring lines and first order streams or slopes with a high degree of erosion as identified by the State Government on the basis of available scientific evidence.	Finalizing the alignment area having steep slope and prone to slide and on spring lines, first order streams are avoided. In unavoidable circumstances necessary protection work will be provided. Geological survey are being carried out to rule out such areas.
(iii) No development on existing steep hill slopes or slopes with a high degree of erosion shall be permitted.	Presently best alignment is being chosen to avoid areas having steep cross slopes or have a tendency of erosion.
(v) The places in the Eco-Sensitive Zone where cutting of hill causes ecological damage and slope instability adjacent areas, such cutting shall be undertaken with appropriate measures to avoid such damages.	All possible measures are being taken up to avoid ecological damages or slope instability i.e. construction of breast wall, retaining wall in Geo Grid.

Clause No.19- Hill roads:- following guidelines shall be framed for the construction and maintenance of hill roads and incorporated in the Zonal Master plan namely:-

(i) For construction of any road including untamed in the Eco-Sensitive Zone of more than 5 km length (including the extension or widening of existing roads).	There are several villages which are yet to be connected through motor road. These villages are situated more than 5 km from motor road. So length of road should be increased. It is worth mentioning that Dodital and Dayara are tourist spots in this area. Every year large numbers of tourist visit the places. If road is connected then the living standard of villagers shall be improved. About 45 km length of road required to connect these places.
(ii) Provision shall be made for treatment of hill slope and cost of such protection measures should be included in the cost estimate of the proposed road.	Generally alignment of new road is selected in such a way to avoid areas having steep slope or having tendency of land slide. In unavoidable circumstances R/wall and Breast wall are constructed using Geo Grid or Plum concrete blocks.

(iii) The debris shall be subsumed in the road construction and provision shall be made for disposal of unused debris.	Debris from hill cutting are being dumped in safe dumping zone. Dumping zone are provided in such a place which are stable for muck disposal. Additional fund required for this purpose, which is being included in the cost of work.
(iv) All roads shall be provided with road side drains and shall be connected with the natural drainage system.	Road side drain and cross drainage are being provided as per geology of the site.
(v) Alignment shall be selected so as to minimise loss of vegetal cover.	Alignment being selected such away to minimize the loss of vegetation lower.
(vi) Appropriate design standards shall be followed to balance the cut and fill avoiding unnecessary cut.	
(vii) Fault zone and land slide zone location shall be given in the plan.	

3- Activities to be prohibited, regulated or permitted within the Eco-Sensitive Zone:

Mining or Minerals and stone quarrying and crushing: all types of mining (minor and major minerals), stone quarrying and crushing except for the domestic needs of bona fide local residents. The limited mining, stone quarrying and crushing shall be based on site evaluation, provided that such activities are not done on existing steep hill slopes or areas with high degree of erosion, spring lines, ground water recharge areas. The monitoring Committee shall be the authority to grant such special permission.	For maintenance and construction activities, stone, sand and ballast shall be required. Permission for Chugan of these materials is required.
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3A. State Sector

(i) Under State Sector sanctioned First Stage work Permitted

S.No	Name of work	Length in Km	Cost in Lac Rs	Situation of Eco-Sensitive Zone as per Gazette.	Remark
1	2	3	4	5	6
1	Extension of approach motor road to mini stadium Raithal	1.00	12.60	Permitted	Sanctioned vide G.O 5384-1/ 2/10-02 MLA/2010 dt. 13/12/2010 Purpose

S.No	Name of work	Length in Km	Cost in Lac Rs	Situation of Eco-Sensitive Zone as per Gazette.	Remark
1	2	3	4	5	6
	under block Bhatwari in district Uttarkashi.				This road will be beneficial to reach Proposed mini stadium and Natin Helipad
2	Construction of motor road from Jaspur bend to village Purali under block Bhatwari, District Uttarkashi.	3.00	37.80	Permitted	Sanctioned vide G.O 5384-1/ III 2/10-02 MLA/2010 dt. 13/12/2010 Purpose The road will be beneficial to connect village Jaspur and Purali.
3	Construction of motor road from village Pokhri to Gairi from Sainj Jakhhol motor road under block Bhatwari, district Uttarkashi	1Km	12.60	Permitted	Sanctioned vide G.O 5384-1/ III 2/10-02 MLA/2010 dt. 13/12/2010 Purpose The road will be beneficial to connect village Pokhri and Gairi.
4	Construction of Harshil Bagori Motor Road under Hon able C.M's declaration No. 440/2012	2.00	25.20	Permitted	Sanctioned vide G.O 6098/III(2)/15-13 (C.M. decl)/2015 dt. 18/08/2015 Purpose The road will be beneficial to connect village Bagori.
5	Construction of remaining work of Saura Sari M/R in block Bhatwari Uttarkashi under Hon able C.M decl. no 524/2015	2.00	88.82	Permitted	Sanctioned vide G.O 2501/III(2)/15-04 (C.M. decl)/2015 dt. 18/04/2015 Purpose The road will be beneficial to connect village Saura and Sari.
(ii) State sector -- New construction of motor road					
6	Construction of link road from Km 2 of Maneri Jakhhol M/R to village Sainj.	1.50	75.38	Permitted	Sanctioned vide G.O 764/III(2)/08-65 (P.E)/07 dt. 24/03/2008 Purpose The road will be beneficial to connect village Sainj.
7	Damrikaran of Mukhwa Jangla M/R under Hon able C.M's declaration.	3.75	203.65	Permitted	Sanctioned vide G.O 6793/III(2)/14-06 (C.M.decl)/2014 dt. 26/12/2014 Purpose The road will be beneficial to

S.No	Name of work	Length in Km	Cost in Lac Rs	Situation of Eco-Sensitive Zone as per Gazette.	Remark
1	2	3	4	5	6
					connect village Mukhwa and it is very important road from tourism point of view. Ancient Ganga Temple is situated at Mukhwa.
State sector -- Bridle road					
8	Construction of Bhatwari to Kyark bridle road under Hon able C.M's decl. no 481/2015	3.50	11.26	Permitted	Sanctioned vide G.O 2501/III(2)/15-04 (C.M.decl)/2015 dt. 18/04/2015 Purpose The bridle road will be beneficial to connect village Kyark to Bhatwari as an alternate rout.
(iii) State Sector -- Re-construction & Improvement work					
9	Damrikaran of Bonga Bhelura M/R upto village Bhelura.	2.00	78.32	Permitted	Sanctioned vide G.O 1273/III(2)/13-50 (P.E)/2012 dt. 20/02/2013 Purpose The road will be beneficial to provide smooth transport facilities to village Bonga and Bhelura.
10	Damrikaran of Mustik Saur to Kuroli M/R under Hon able C.M's decl. no 445/2012	3.00	118.35	Permitted	Sanctioned vide G.O 766/III(2)/13-48 (P.E)/2012 dt. 01/02/2013 Purpose The road will be beneficial to provide smooth transport facilities to village Kuroli.
11	Damrikaran of Bhatwari-Pahi-Dwari-Gorsali-Jakhhol M/R under Hon able C.M's decl. no 447/2012	9.60	241.27	Permitted	Sanctioned vide G.O 766/III(2)/13-48 (P.E)/2012 dt. 01/02/2013 Purpose The road will be beneficial to provide smooth transport facilities to village Pahi-Dwari-Gorsali-Jakhhol.
12	Protection work of Jamak M/R under Hon able C.M's decl. no	1job	36.00	Permitted	Sanctioned vide G.O 4367/III(2)/15-07 (C.M. decl)/2015 dt. 27/05/2015 Purpose

S.No	Name of work	Length in Km	Cost in Lac Rs	Situation of Eco-Sensitive Zone as per Gazette.	Remark
1	2	3	4	5	6
	539/2015				The work will be beneficial to strengthened the motor road for providing safe traffic.
(iv) State Sector -- Bridge construction (bridle bridge) work					
13	Construction of 34 m span steel girder bridge from saura to Salu Syaba road.	1no+34m	17.00	Permitted	Sanctioned vide G.O 572/III(2)/06-08 (P.E.)/06 dt. 28/03/2006 Use The work will be beneficial to connect village Salu and Syaba.
14	Construction of bridle bridge over Siya gad between village Harshil and Jhala.	1no+105m	165.75	Permitted	Sanctioned vide G.O 121/p.w.d/04-07 dt. 12/02/2004 Purpose The work will be beneficial for village Salu and Syaba.

3B. Works sanctioned against District Sector -- New Construction M/R

S.No	Name of work	Length in Km	Cost in Lac Rs	Situation of Eco-Sensitive Zone as per Gazette.	Remark
1	2	3	4	5	6
1	Construction of M/R from km-04 of Bonga- Bhlura.	0.75	5.00	Permitted	Sanctioned vide G.O 1152/1 C dt. 23/06/2011 Purpose The work will be beneficial for village Bhelura.
2	Improvement of Maneri Jamak M/R	0.60	12.00	Permitted	Sanctioned vide G.O 541/GO dt. 10/12/2012 Purpose The improvement of this road will be beneficial to provide safe traffic on the road.

3C. Works sanctioned against B.A.D.P

1	Construction of 60 m span suspension bridle steel bridge over Saura gad at	1job	215	Permitted	Sanctioned vide G.O 11257/BADP S/2014-15 dt. 10/02/2015
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S.No	Name of work	Length in Km	Cost in Lac Rs	Situation of Eco-Sensitive Zone as per Gazette.	Remark
1	2	3	4	5	6
	km 8 of Malla Belakh bridle road				<p><u>Purpose</u> The work will be beneficial to provide connectivity to village Belakh.</p>
2	Construction of 70 mtr span suspension bridge over Saura gad at Saura Siror bridle road.	1job	323	Permitted	<p>Sanctioned vide G.O 11257/BADP S/2014-15 dt. 10/02/2015</p> <p>Purpose The work will be beneficial for village Saura and Siror.</p>

4. Non Permitted Works

State Sector First Stage Work Non Permitted

S.No	Name of work	Length in Km	Cost in Lac Rs	Situation of Eco-Sensitive Zone as per Gazette.	Remark																								
1	2	3	4	5	6																								
1	Construction of Jaspur Silyan Nirakot M/R from Bhaldiyana Lambgaun Uttarkashi M/R	8.00	100.80	Non Permitted	<p>The actual length of the road is 8 km to connect the destination point. According to Gazette Notification construction of road more than 5km is prohibited. There is also a restriction to construct the road on hill face having cross slope of more then 20 degree. Cross slopes on the alignment are as follows-</p> <table border="1"> <thead> <tr> <th><u>X-Section</u></th> <th><u>Avg X- Slope in degree</u></th> </tr> </thead> <tbody> <tr><td>0/0 to 0/4</td><td>75</td></tr> <tr><td>0/4 to 0/20</td><td>70</td></tr> <tr><td>0/20 to 1/40</td><td>60</td></tr> <tr><td>1/40 to 2/28</td><td>65</td></tr> <tr><td>2/28 to 2/40</td><td>60</td></tr> <tr><td>2/40 to 3/30</td><td>70</td></tr> <tr><td>3/30 to 3/40</td><td>75</td></tr> <tr><td>3/40 to 4/20</td><td>60</td></tr> <tr><td>4/20 to 4/40</td><td>65</td></tr> <tr><td>4/40 to 5/20</td><td>60</td></tr> <tr><td>5/20 to 5/40</td><td>80</td></tr> </tbody> </table> <p><u>Purpose-</u> The work will be beneficial for village Jaspur Silyan Nirakot .</p>	<u>X-Section</u>	<u>Avg X- Slope in degree</u>	0/0 to 0/4	75	0/4 to 0/20	70	0/20 to 1/40	60	1/40 to 2/28	65	2/28 to 2/40	60	2/40 to 3/30	70	3/30 to 3/40	75	3/40 to 4/20	60	4/20 to 4/40	65	4/40 to 5/20	60	5/20 to 5/40	80
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5/20 to 5/40	80																												
2	Construction of Mukhwa Jangla M/R from Harshil Under Hon able CM's declaration no.440/2012	6.25Km	78.75	Non Permitted	<p>The actual length of the road is 6.25km to connect the destination point. According to Gazette Notification construction of road more than 5km is prohibited. There is also a restriction to construct the road on hill face having cross slope of more then 20 degree. Cross slopes on the proposed alignment are as follows-</p> <table border="1"> <thead> <tr> <th><u>X-Section</u></th> <th><u>Avg X- Slope in degree</u></th> </tr> </thead> <tbody> <tr><td>0/0 to 0/4</td><td>75</td></tr> <tr><td>0/4 to 0/20</td><td>70</td></tr> <tr><td>0/20 to 0/40</td><td>65</td></tr> <tr><td>0/40 to 1/40</td><td>60</td></tr> <tr><td>1/40 to 2/28</td><td>65</td></tr> <tr><td>2/28 to 2/40</td><td>60</td></tr> <tr><td>2/40 to 3/30</td><td>70</td></tr> </tbody> </table>	<u>X-Section</u>	<u>Avg X- Slope in degree</u>	0/0 to 0/4	75	0/4 to 0/20	70	0/20 to 0/40	65	0/40 to 1/40	60	1/40 to 2/28	65	2/28 to 2/40	60	2/40 to 3/30	70								
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S.No	Name of work	Length in Km	Cost in Lac Rs	Situation of Eco-Sensitive Zone as per Gazette.	Remark
1	2	3	4	5	6
					3/30 to 3/40 75 3/40 to 4/20 60 4/20 to 4/40 65 4/40 to 5/20 60 5/20 to 5/40 80 5/40 to 6/9 75 Purpose- The work will be beneficial for village Mukhwa.
3	Construction of Maneri-Jakhol-Pala optional M/R Under Honable CM declaration no.532/2015	18Km+1no+80m	191.96	Non Permitted	The actual length of the road is 18km to connect the destination point. According to Gazette Notification construction of road more than 5km is prohibited. There is also a restriction to construct the road on hill face having cross slope of more then 20 degree. Cross slopes on the alignment are as follows- X-Section AvgX- Slope in degree 0/0 to 1/40 75 1/40 to 2/40 70 2/20 to 5/40 65 5/40 to 6/40 60 6/40 to 9/40 65 9/40 to 11/40 60 11/40 to 13/40 70 13/40 to 14/40 75 14/40 to 16/40 60 16/40 to 17/40 65 Use- The work will be beneficial for village Maneri, Aungi, Manjhgaun, Jakhol.
4	Primilary survey work of Dayara M/R from Dodital (first stage) under Hon able CM's declaration no. 489/2015.	50Km	44.50	Non Permitted	The propose length of the road is 50 km to connect the destination point. According to Gazette Notification construction of road more than 5km is prohibited. There is also a restriction to construct the road on hill face having cross slope of more then 20 degree. Survey work is in progress. Use- It will be very usefull road so far as tourism point of view is concerned.
5	Construction of Tiloth-	39.5Km	65.40	Non Permitted	The propose length of the road is 39.50km to connect the destination

S.No	Name of work	Length in Km	Cost in Lac Rs	Situation of Eco-Sensitive Zone as per Gazette.	Remark
1	2	3	4	5	6
	Mandow-Hurri M/R (first stage) under Hon able CM declaration no. 494/2015.				point but according to Gazette Notification construction of road more than 5km is prohibited. There is also a restriction to construct the road on hill face having cross slope of more than 20 degree Use- This road will be connect various villages on left bank of Ganga river and it may be used asb bypass of NH-34.
6	Construction of Kishan pur M/R via Kankradi from Mustik Saur Kuroli M/R.	1.5 km.	18.90	Non Permitted	Construction of road on hill face having cross slope more then 20 degree is prohibited while the cross slopes on this alignment are as follows- X-Section Avg X- Slope in degree 0/0 to 0/4 75 0/4 to 0/20 70 0/20 to 0/40 65 0/40 to 1/20 60 Use- The road will be beneficial for village Kankradi and Kishanpur.
State sector -- New motor Road Work					
7	Dang to Pokhri M/R.	0.8 km.	11.00	Non Permitted	Construction of road on hill face having cross slope more then 20 degree is prohibited while the cross slopes on this alignment are as follows- <u>X-Section</u> <u>Avg X- Slope in degree</u> 0/0 to 0/5 50 0/5 to 0/8 60 0/8 to 0/15 45 0/15 to 0/25 50 0/25 to 0/28 60 0/28 to 0/32 70 Use- This road will connect village Pokhri and Dang..
8	Construction of M/R from Mustik Saur – Kuroli M/R to village	1Km	28.54	Non Permitted	Construction of road on hill face having cross slope more then 20 degree is prohibited while the cross slopes on this alignment are as follows-

S.No	Name of work	Length in Km	Cost in Lac Rs	Situation of Eco-Sensitive Zone as per Gazette.	Remark
1	2	3	4	5	6
	Kuroli under Hon able CM's declaration no. 526/2015. .				<p>X-Section AvgX- Slope in degree</p> <p>0/0 to 0/9 50</p> <p>0/9 to 0/15 60</p> <p>0/15 to 0/24 45</p> <p>0/24 to 0/28 50</p> <p>0/28 to 0/32 70</p> <p>0/32 to 0/40 75</p> <p>Use- This road will connect village Kuroli.</p>
9	Construction of link road from Heena to village Heena under Hon able CM's declaration no. 526/2015.	3.00	17.55	Non Permitted	<p>Construction of road on hill face having cross slope more then 20 degree is prohibited while the cross slopes on this alignment are as follows-</p> <p>X-Section Avg X- Slope in degree</p> <p>0/0 to 0/4 75</p> <p>0/4 to 0/20 70</p> <p>0/20 to 0/40 65</p> <p>0/40 to 1/40 60</p> <p>1/40 to 2/28 65</p> <p>2/28 to 2/40 60</p> <p>Use- This road will be beneficial for village Heena.</p>

5. Cost Analysis

- In Gazette Notification of Eco-Sensitive Zone no commercial mining is allowed. All the construction activities come under commercial activities. Due to restriction on commercial mining such as stone, grit, sand etc. the cost of work will be increased. For this purpose cost analysis is being enclosed as follows.
- The material will be carted beyond the Eco-Sensitive Zone. Hence extra cartage will be paid for carting such type of construction materials like sand grit, stone etc.
- Cost of extra cartage.

1)	20 mm stone ballast	cost of cartage	unit
	Basic Rate	1200.00	
	10% C.P.	120.00	
	4% VAT	48.00	
	add 2% waistage on basic cost	24.00	
	Total A	1392.00	
	Cartage- 45 km by truck at Quarry Dunda		
	(1x72+2x11+2x10+5x9+7x7)	208.00	
	(1x10)x16	160.00	
	Total	368.00	
	10% C.P. on cartage	36.80	
	Total B	404.80	
	Total A+B	1796.80	
	Say	1797.00	Per Cum

2)	Coarse Sand		
	Basic Rate	800.00	
	10% C.P.	80.00	
	4% VAT	32.00	
	add 2% waistage on basic cost	16.00	
	Total A	928.00	
	Cartage- 45 km by truck at Quarry Dunda		
	(1x72+2x11+2x10+5x9+7x7)	208.00	
	(1x10)x16	160.00	
	Total	368.00	
	10% C.P. on cartage	36.80	
	Total B	404.80	
	Total A+B	1332.80	
	Say	1333.00	Per Cum

3)	40 mm gauge stone ballast		
	Basic Rate	1600.00	
	10% C.P.	160.00	
	4% VAT	64.00	
	add 1% waistage on basic cost	16.00	
	Total A	1840.00	
	Cartage- 45 km by truck at Quarry Dunda		
	(1x10)x16	160.00	
	10% C.P. on cartage	16.00	

	Total B	176.00	
	Total A+B	2016.00	
	Say	2016.00	Per Cum

4)	Stone		
	Basic Rate	300.00	
	10% C.P.	30.00	
	4% VAT	12.00	
	add 2% waistage on basic cost	6.00	
	Total A	348.00	
	Cartage- 45 km by truck at Quarry Dunda (1x72+2x11+2x10+5x9+7x7)	208.00	
	(1x10+2x4.50)x16	304.00	
	Total	512.00	
	10% C.P. on cartage	51.20	
	Total B	563.20	
	Total A+B	911.20	
	Say	911.00	Per Cum

5)	20 mm gauge stone grit		
	Basic Rate	3750.00	
	10% C.P.	375.00	
	Total	4125.00	
	Cartage- 45 km by truck at Quarry Dunda (1x72+2x11+2x10+5x9+10x7+10x6.5+20x6+163x5.5)	1310.50	
	10% C.P. on cartage	131.05	
	Total	1441.55	
	cartage per qtl	144.16	
	hence rate at site	4269.16	
	Say	4269.20	per qtl

SN	Item	Unit	Rate as per SOR	Rate after extra cartage of material	Percent of increase of rate
1	2	3	4	5	6
1	R.R. dry	Cum	1985.00	2923.00	47.25%
2	R.R 1:6	Cum	3152.90	5270.90	67.18%
3	WBM G1	Cum	1857.60	2795.60	50.50%
4	WBM G2	Cum	1944.70	2882.70	48.23%
5	WBM G3	Cum	2019.90	2957.90	46.44%
6	Premix Carpet	Sqm	230.40	271.90	18.01%
				Average of %	46.27%

- Total cost of running works = **Rs. 1353.10 lac**
- Add extra cost of cartage is **46.27%**
- Total cost after adding extra cartage of material is = **Rs. 1979.18 lac.**
- Note:- Rates are based on current schedule of rates. Total cost will be increase yearly basis.