CATCHMENT AREA TREATMENT PLAN
OF
UHL HYDRO ELECTRIC PROJECT
(STAGE III)

JOGINDER NAGAR DISTT. MANDI
(H.P.)

PREFACE

The Catchment Area Treatment Plan for UHL-III Hydro Electric Project has been prepared through the forest field staff of Jogindernagar Forest Division in active collaboration with the UHL Construction Division, HPSEB, Jogindernagar authorities.The document was actively revised,scrutinised and typed in the Environment cell, HPSEB, Shimla. The catchment area, falling in Ner, Jeetpur, Bhangal and Jagatpur Paraganas of Jogindernagar tehsil and Gunehar Paragana of tehsil Baijnath was traversed exhaustively both by the Forest and HPSEB staff and a pragmatic scheme was evolved encompassing afforestation measures, soil and water conservation (inclusive of engineering measures) and forest protection.Subsidiary silvicultural operations was also given primacy as also fire protection. The works suggested would contribute very positively for ushering in a stable healthy environment. Special mention is made of Sh. Ravinder Kumar Sharma , a Deputy Ranger in the office of Divisional Forest Officer Jogindernagar whose contribution to make the project a success was invaluable.

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1.1 GENERAL DESCRIPTION:

Mandi District in Himachal Pradesh is naturally richly endowed and has an enchanting scenic beauty. Where there are picturesque snow clad peaks, there also exist thick natural forests with rivers Beas & Satluj meandering through the area. The tract ties between latitude of 31°-54' North & longitude of 76°-49' & 77°13' east.

The area is surrounded by Distt. Bilaspur & Shimla in the East, Kangra in the West, Kullu & Lahaul & Spiti in the North & Hamirpur Distt. in the South. Where Mandi is a district, Jogindernagar is a sub-divisional headquarters.

Uhl River, located in Jogindernagar, is one of the major tributaries of Beas River and has a picturesque valley.

1.2 PROJECT AREA :

Three large Hydroelectric Projects stand executed/ proposed on Uhl River. Uhl Hydro Stage-I i.e. Shanan Power House, (Jogindernagar), 110 M.W. capacity has been commissioned during 1932. Uhl Hydel Stage-II i.e. Bassi Powerl louse, (Joginder Nagar), 60 M.W. Capacity has also been commissioned in 1970. Uhl Hydel Stage-III, Chulla Power House, 100 M.W. capacity is in its early/initial construction stage and awaits the necessary clearances from the Environmental/Forest wings of the Ministry of Environment and Forests, N.Delhi. Uhl Hydel Project Stage-III envisages the utilization of tail water of Bassi PowerHouse and water from Neri and Rana Khads. It is a down-stream development of the first two stages of the Projects i.e. Shanan (110 MW) and Bassi (60 MW).

The entire catchment of Uhl River is mountainous. Uhl and Lambadug Rivers, which meet near village Barot, are the main source of water for Uhl Projects Stage-I, II & III. Lambadug, which is a tributary of River Uhl, joins the latter at Barot village, in Himachal Pradesh, near longitude 76°-51' E & latitude 32°-2' N. The catchments of both Neri and Rana Khad are mountainous. The

prominent Khuds joining Rana Khad are Bajgar Khad, Sukkar Khad and Gugli Khad.

1.3 NEED FOR TREATMENT OF CATCHMENT :

Multi purpose Hydro Electrical Projects continue to be emphasised in the development planning of the State. Though assured water supply & electric power generation are the twin objectives, the projects planned do bring in their wake problems of environment and degradation, thereby negating many of the benefits, which accrue from commissioning of such projects.

Though the catchment area of Uhl River is about 384 Sq. Kms., it need not be treated as silt free water shall be available from Bassi Power House tailrace. Only the catchment areas of Rana Khad and Neri Khar which is about 98.90 Sq. Kms + 16.00 Sq. Km.= 114.90 Sq. Kms is required to be treated. Soil erosion in the catchment needs to be checked as otherwise the productivity of land would diminish & adverse affects would be there on the local water supplies. Increased aridity, increased incidence of land slides/ slips would pose problems increasing the siltation rate and reducing the reservoir life.

Any degradation in the catchment area would adversely effect the prosperity of the local people. There is need to check indiscriminate grazing in the catchment area which is another important feature responsible for degradation. Land degradation can be seen in the lack of proper vegetal cover. Land degradation reduces life and efficiency of impounded reservoirs. The various types of erosions are: -

(i) Splash erosion (ii) Sheet Erosion (iii) Rill Erosion (iv) Gully Erosion & (v) Channel Erosion.

(i) SPLASH EROSION: When the vegetative cover has been stripped away, the rain drops impact on soil is harsh. This results in topsoil being displaced thereby destroying soil structure.

(ii) SHEET EROSION: Loose soil is detached and transported by flowing water. This again causes lack of vegetal cover.

(iii) RILL, GULLY AND CHANNEL EROSIONS result depending on the velocity of water and lack of vegetation cover and subsequent cause loosening of the soil. Among the major drawbacks of soil erosion are:-

-Loss of production potential and loss of nutrients.

-Reduced infiltration rates and water flowing capacities.

-Increase tillage operations cost.

-Reduced water supply, decrease in the storage capacity and depletion of bio-diversity.

The treatment plan aims to increase the life of the reservoir by maintaining a low level of inflow of sediments into the reservoir. In order to achieve this, the soil would be protected right in the catchment through effective afforestation and various soil conservation measures both vegetative and engineering i.e. gully plugging, check dams etc. The so called developmental activities like construction of paths & roads, buildings etc. do destabilize the geology which results in heavy debris flow with rivers/khads. This requires proper controls and checks. Barot & its neighboring area feature very prominently on the tourist map of the State. Any improvement of the catchment would augment the natural beauty & wild flora and fauna potential of the area.

A comprehensive soil & water conservation strategy is envisaged. This is proposed to be done at a probable cost of Rs. 8,02,37,000 . Inclusive of afforestation, subsidiary silvicultural operations and forest development/protection the total cost would be Rs. 9,80,00,000/-. Provide for contingency(agriculture input, fuel-wood supply etc.) which is tentatively kept at Rs. 20,00,000/-. The total cost of the CAT Plan would thus be Rs. 10 crores flat.

1.4 UHL HYDRO ELECTRIC PROJECT STAGE-III :

1.4.1 GENERAL DESCRIPTION

Himachal Pradesh, blessed with immense hydel power potential and various other advantages, offers an attractive economic package for the entrepreneur. The run of the river type hydroelectric projects provides the best alternative for meeting future energy requirements.

Uhl hydel project stage-III, 100 M.W. capacity, envisages the utilization of the tail water from Bassi PowerHouse, which is being released into Neri Khad, which joins Rana Khad near Machhial Village & subsequently joins River Beas. To utilize the gross head available from Bassi tailrace to River Beas near village Chullah for power generation, during the year 1979-80, HPSEB took up investigations for its development. A detailed project report with proposal envisaged picking up the tail water from Bassi power house and

conveying the same through power channels (open and box sections) and also aqueducts over Laban Khad and Rana Khad and also utilizing the flow of Rana Khad through head race tunnel to the power house located near Chulla. With an initial installed capacity of 70 MW, the project was got techno-economically cleared from CEA Govt. of India during July, 1987 by HPSEB. The H.P Govt. signed a memorandum of understanding with M/s Ballarpur Indust. Ltd. (BILT) on 10/02/1992 for investigation and preparation of DPR of this Uhl Stage-III project. The firm prepared a DPR for 100 MW. Capacity but failed to get the same cleared from CEA. Consequently HP Govt. cancelled the MOU with BILT during 3/99. HP Govt. further decided to prepare a detailed Project report of Uhl Stage-III HEP (100 MW). In the instant proposal, water from Neri Khad and Rana Khad is also proposed to be added to the water picked up from Bassi tail race with a resultant gross head of 307.93 meters, thus resulting in an installed capacity of 100 MW. To meet up the peak load demand, 3.75 hours storage for Rana Khad and Neri Khad water i.e. 1,76,000 cum capacity of storage reservoir has been provided. The power plant is proposed to be operated as a peaking station in tandem with Uhl Stage-I & II except that it can be operated at part generating capacity by Rana & Neri khad's water.

The assessment of sediment load is not required on the discharge site as this a run of the river project proposed with trench weir and with no storage. The question of sedimentation does not arise as the boulders and other coarser sediment would pass over the trench weir while the sediment of size .2 mm and above will settle in the desilting tank from where the same can be flushed out. The silt load is bound to remain within natural limits and would have no adverse consequence on the project.

W A T E R - S H E D M A N A G E M E N T :

Under water shed management four headings are involved:

- Forestry.
- Soil sciences.
- Engineering.
- Agronomy.

Optimal use is involved of soil and water resources within a given geographical area. Changes come about in land-use & vegetative cover. For rainfall what is required as objectives, for an ideal watershed are:-

- Increased infiltration into soil.
- Control of excess runoff.
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Engineering measures are necessitated for erosion control in agricultural land i. e. :-

- Contour cultivation.
- Contour bunding.
- Graded bunding.
- Vegetative waterways.

Contour Cultivation:

Under this cultivation is done across the slope. A multitude of mini barriers are created across the run-off flow which increases the detention storage in situ. The erosive potential of rainfall is thus decreased/reduced as infiltration into the soil increases. The effectiveness of contour planting and tillage in erosion control varies with slope, crop cover and soil. Contour cultivation remains most effective on moderate slopes of 2 to 7%.

Bunds along contours are contour bunds and when constructed with some slope are called graded bunds. Contour bunding is useful for permeable soil and do not suit soil with poor internal drainage. Spacing of bunds should be such as to intercept the erosive velocity. Earthern, masonary and stone weirs are constructed depending on need. Where rainfall is high, graded bunds are favoured.

Grassed waterways are outlets for channel type of terraces to convey the collected or surface water causing safety into natural drainage courses without gully erosion. For erosion control measures, for non-agricultural lands, the following measures are resorted to:-

- Afforestation.
- Gully control.

  Pasture development.

Salient Features:-

LOCATION	
STATE	HIMACHAL PRADESH
DISTRICT	MANDI
RIVER	Uhl river tail water of stage-II, Neri Khad and Rana Khad in Beas basin.
LOCATION	Diversion sites near Bassi Powerhouse (Uhl-Stage-II), Neri Khad (EL.-894.50 m), Rana Khad (EL.-897. 55) & powerhouse near village a Chullah.

HYDROLOGY	
i. River	Uhl.
Catchment area at Barot new intake site.	370 Km^2
Maximum observed average 10 daily discharge at new intake site.	327.66 m^3/ Sec.
Firm discharge for 90% availability.	5.50 m^3/ Sec.
Firm discharge for 50% availability.	15.00 m^3/ Sec.
Availability corresponding to design discharge of 25.91 cumecs.	37.50%
ii) Rana Khad	
Catchment area at Bagla site.	98.90Km^2.
Maximum observed av. 10 daily. Discharge at Bagla.	53.39 m^3/ Sec.
Firm discharge for 90% availability.	2.20 m^3/ Sec.
Firm discharge for 50% availability	4.00 m^3/ Sec.
Availability corresponding to design discharge of 14.30 cumecs.	11.75 %
ii) Neri Khad	
Catchment area at Shanan site.	16 Km^2.
Maximum observed av. 10 daily. Discharge at Shanan.	0.83 m^3/ Sec.
Firm discharge for 90% availability.	0.23 m^3/ Sec.
Firm discharge for 50% availability	0.40 m^3/ Sec.
Availability corresponding to design discharge of 1.10 cumecs.	12.50 %

BASSI POWER HOUSE TO STORAGE RESERVOIR AT BAGLA

1.	**NERI KHAD DIVERSION WORKS**	
	Type	Trench weir.
	Design discharge i/c flushing discharge.	8.40 cumecs.
	Length.	15 m
	Width	1.75 m
	Crate level.	894.50 m
	Design flood discharge.	400 m^3 / sec.
2.	**HEAD REGULATOR**	
	Design discharge.	6.75 cumecs
	Length	11.75 m
	Size	2 mx2.85 m
3.	**DESILTING ARRANGEMENTS**	
	Type	Surface.
	Size	2 Nos. chamber (45mX 12mX 2.82m)
	Transition length	22.50 m each.
	Particle size to be removed.	All particles down to 0.2 mm.
4.	**Bassi power House Tailrace.**	Junction diversion works.
	Type.	Rectangular with gate of hoist arrangement.
	Size.	4.70mX2.50m.
	Bed level	889.16m
	Spillway	Gated baffle type.
	Type	7.00m X 2.50 m.
	Size	889.75 m
	Crest El.	
5.	**Power channel upto reservoir RCC Box.**	
	Type.	Rectangular.
	Size	3.60x5.75 m.
	Length	1250 m
	Discharge carrying capacity	27m^3/sec.
	Bed slope	1.2500
6.	**Laban Khad Aqueduct:**	
	Nature	Depressed aqueduct.
	Type	Circular steel pipe ASTM-A-516 (Grade-II)
	Diameter	1.90 m
	Length	81.0m

1. **RANA KHAD TO RESERVOIR:-**

Diversion Structure:-

Type	Trench weir
Design discharge i/c flushing discharge	22.16 cumecs
Length	27 m
Width	2.25 m
Crest El	897.65 m
Design flood discharge	1300 cumecs

2. **HEAD REGULAR :**

Designs discharge	17.87 cumecs.
Length.	17.50 m
Size.	3.50 m

3. **DESILTING ARRANGEMENT:**

Type	Surface.
Size.	4 Nos.chamber (75mx12mx3.75m (each)
Transition length.	30 m
Particle size to be removed.	All particle down to 0.20 mm.

4. **POWER CHANNEL :**

Type.	Cut and cover rectangular.
Size	2.10m x3.40 m.
Discharge carrying capacity.	14.30 m3/ Sec.
Length	1970 m.
Slope	1:370

5. **DIBNU NALLAH AQUEDUCT :**

Type.	RCC Box..
Size.	2.10 mx3.40 m

6. **STORAGE RESERVOIR At Khudar**

Type	Surface trapezoidal shape.
Live storage capacity.	1,76000 m3
F.R.L.	890.90 M
MDDL.	882.00 M
Peaking duration.	3.75 hour

7. **SPILLWAY:**

Type.	Chute.
Crest length	20 m
Crest El.	890.90 m
Discharge carrying capacity.	15.40 cumecs

8.	RANA KHAD AQUEDUCT:	
	Nature	Depressed aqueduct below scour duct
	Type	RCC duct
	Diameter	4.15 m
	Length	424 m
9.	HEAD RACETUNNEL:	
	Shape	Circular.
	Length.	8275 m
	Diameter	4.15 m
	Designs discharge	41.30 cumecs.
	Bed slope	1.570
10.	ADIT AT OUTLET	
	Shape	D shaped
	Diameter	4.15 m
	Length	120.00 cumecs
11.	INTERMEDIATE ADIT	
	Shape	D. shaped
	Diameter	4.15 m
	Length	970 m
12.	SURGE SHAFT:	
	Type and No.	Restricted orifice one open to sky.
	Diameter.	13 m and 9m (riser)
	Orifice diameter.	1.50 m
	Height	45.00 m and 12 m (riser)
	Top level.	905.00 m
	Bottom level	848.00 m
	Maximum up surge level.	903.50 m
	Minimum down surge level.	850.00 m
13.	PENSTOCK;	
	Type.	Circular steel lined.
		i) ASTM-A-516 grade 60 for 11.50 mm to 35.00 mm thickness.
		ii) ASTM-A-537 class-I for 30 mm to 35mm thickness.
		iii) ASTM-A-517 grade 26 mm

	Diameter.	Main (1 No.) 3.40 m Branches 2 Nos. 2.40 each.
	Length.	Main 1773m, after bifurcation 80 m.
	Discharge carrying capacity.	41.30 cumecs
14.	POWER HOUSE:	
	Type	Surface.
	Size.	36.80 m X 24.70 m.
	Type of turbine.	F. Francis vertical axis.
	Centre line of unit.	576.10 m
	Installed capacity.	100 MW
	Generating units.	2 Nos., 50MW each.
	Gross head	307.93 M
	Design head	282.90 m
	Tail race.	25.30m.
	Length	71 m
	MTWL	EL.580 m
15.	SWITCHYARD:	
	Size and type.	150m X 100 m
	No. of circuits.	One 132kV double circuit line, Chullah powerhouse to Hamirpur single 132 kV circuit line to Bassi powerhouse.
	Voltage.	132 kV.

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C H A P T E R - I I

2. DESCRIPTION OF PROJECT AREA :

2.1 PROJECT LOCATION :

The Powerl louse site is located on the Right Bank of river Beas near village Chullah longitude 76°-43'-45" & latitude 31°-52'-30". The area falls in the catchment of Rana Khad. Diversion works from, Bassi Powerhouse and of Rana Khad & intake works of Project are 7 Kms. from Jogindernagar railway station. Power House site is approachable through Baijnath Kandapattan road & Jogindernagar Ladbharol road via Neri. Baijnath & Jogindernagar are connected through narrow gauge railway line of Northern Railway. The nearest broad gauge Railway station is Pathankot & it is 160 Kms. from Jogindernagar.

2.2 PROJECT AREA.

The total geographical area of the Rana Khad catchment is 98.90 Sq. kms. appx. while 16 Sqr.Kms. approx. is the area of Neri Khad. The priorities of treatment are to be based on different parameters & studies.

2.3 PHYSIOGRAPHY, RELIEF & DRAINAGE :

The area is entirely mountainous. The slopes are steep to precipitous. The significant Khads flowing into Rana Khad are Gugli Khad, Bajgar Khad & Sukkar Khad. All these Khads have origins at elevation from 1250 mt. to 3000 mt. & bed slopes generally range between 1:15 to 1:30.

2.4 GEOLOGY :

Project area falls in Mandi District of Himachal Pradesh covered by topo-sheets No. 53 A/9 and 53/A/13. The rock type encountered around the project site include sandstone, silt-stone, Clay (stones & shales), gneiss and boulder conglomerate. Due to differential weathering, the rock masses show well-marked topographic expression with bold projecting ridges of competent bands alternating with narrow furrows along weaker or incompetent members. High level gravel terraces occur on the banks of Neri Khad and Rana Khad, The Jogindernager thrust which crosses close to the Bassi Power House, is covered in the area between Ner Khad & Rana Khad, by an extensive

deposit of fluvio-glacial debris. No offsetting has been noticed in the fluvial-glacial material indicating that the Jogindernagar thrust may have been seismically inactive atleast since the sub-recent times.

The Palampur Thrust, which forms the faulted junction between the Dharamshala beds and the Shiwalik conglomerate, crosses the proposed penstock alignment. The thrust zone consisting of 40 to 50 m wide sheared crushed rock zone is trending inN-15° W-5.15° E direction and dipping 55° to 65° towards the easterly direction.

SEISMICITY:

This segment of the Himalaya where the project area lies is prone to severe earthquakes. The most severe amongst these has been the Kangra earthquake of 1905. The project site lies in zone V of the Indian seismic Zoning Map. Few earth quacks of magnitude greater than VI have occurred in the area.

CLIMATE:

As per classification based on climate, the year is divided into four seasons as under:

i.	Summer Season	April to June
ii.	Rainy Season	July to September
iii.	Autumn Season	October to November
iv.	Winter Season	December to March

Major portion of the tract enjoys a temperate climate while the lower zone is more sub-tropical. Variation in altitudes does effect the climatic pattern. 70% precipitation occurs during rainy season is 70% while the rest 30% falls during the winter season approximately. Most of the rain is received from southwest monsoon during rainy season. The high peaks experience heavy snowfall from December to March.

LAND USE PATTERN:

The land use pattern in the Rana Khad and Neri Khad catchment area is as under:

i.	Total geographical area	11490 Hec.
ii.	Reserve forest	NIL
iii.	Demarcated Protected forests	3419 Hec.

And other forest land.

v. Total forest area = 6441 ha.

Agriculture/Horticulture	+	Uncultivated
4179 Hec.	+	870

TOTAL PRIVATE LAND = 5049 Hec.

Above figures shows that area under forest cover is 56%.

2.8 **HYDRO-ELECTRIC POTENTIAL:**

Previously Uhl Hydel Project Stage-III (4x 17.5 M.W.) had been techno-economically cleared by the Govt. of India. With the capacity increasing from 70MW to 100 MW, due to availability of more hydrological data, the case is being taken up afresh for sanction.

2.9 **CROPPING PATTERN:**

The traditional Rabi and Kharif crops are cultivated i.e. Wheat during Rabi and Maize, Rice in Kharif season. The yield is as under:

CROP	YIELD PER HECT.
Maize	9 Qtls.
Rice	8 Qtls.
Wheat	9 Qtls.
Pulses	2 Qtls.

The landowners are marginal farmers practicing agriculture.

2.10 **LIVE STOCK:**

According to fresh cattle census during the position of live stock is as under:

CATTLE	SHEEP	GOATS	TOTAL
14766	3568	2963	21297

2.11 POPULATION :

According to fresh census during 12/93 human population in Project area is as under:

MALE & FEMALE – 29,652

The density of population is about 3 persons per hec. This is low due to the rugged & inaccessible terrain of the area having poor communication facilities. However, in contrast, the livestock population is nearly 0.7 times of human population. The project area comprises various villages/hamlets namely Neri, Khuddar, Kanduni, Kaunsal, Darat Bagla, Balh, Banoun, Chalarg, Changar, Bangotar, Raktal, Gulana, Sanhali and Chullah where the population is thin.

2.12 SOCIO-ECONOMIC STRUCTURE :

The population in the catchment area mainly depends on agriculture and animal husbandry such as rearing of sheep, goats. They also work as laborers with various Govt. agencies, even outside the district and State. Hence in the catchment area, at least one member of each family is employed in Govt./Semi-Govt. jobs. About 20% of the total population are below the poverty line while the remaining is quite well to do. There is an acute shortage of employment opportunities in this locality. The project when initiated would be able to fill this gap to a large extent.

C H A P T E R - I I I

3. PRESENT POSITION :

3.1 FOREST & FORESTRY IN THE PROJECT AREA:

Forests play a vital role in the life of the human beings. The important advantages of the forests are as under:

i. Provision of fuel, fodder & timber.

ii. Help maintain ecological balance.

iii. Provide raw material to various Industries and factories.

iv. Reduce soil and water erosion.

v. Increase crop production indirectly.

vi. Help in increasing the life span of the hydroelectric projects.

Based upon Champion and Seth's classification, the main forest type in the catchment area is Group 12 which is the Himalayan Moist Temperate Forest and the prominent sub group is 12/C1 which is the Lower Western Himalayan temperate forests. The grasslands are composed mostly of perennial mesophytic herbs and grasses. The main herbs are Primula, Anemone, Iris, Gentian, Meconopris, Aconite etc. The main grasses are Agropyron longlaristatum, Agropyron semicostatim, Branchypodium, sylvaticum, Bromus asper, Dactylis spp., Danthonia spp.

3.1.1 COMPOSITION AND CONDITION OF THE CROP:

In the project area mainly Ban, Rai, Chil, Rhododendron are found and also very few trees of Horse chestnut in the high ridges. Bushes like Berberis, Principia, Carissa, Rosa, Murraya and various grasses are found as ground cover.

3.1.2 FOREST MANAGEMENT:

Mainly all the waste land and degraded forest area in the catchment area are covered with Chil plantation which are coming up very well. However, there is pressure from people for rights of trees. Indiscriminate grazing does cause extensive damage to the vegetation.

3.1.3 MEDICINAL PLANT :

There are a large variety of Medicinal Plants i.e. Tej Patta, Diascorea, Nakh Nihani, Dhoop, Karoo etc. found growing in the catchment area.

3.2 WILD LIFE :

Animals found are Leopard, Fox, Barking Deer, Choral, Bear, Porcupine, Wild Bear, Leopard Cat, Jackal.

BIRDS :

Chakor, Partridge, Monal, Wild Cock, Koklash.

3.3 AGRICULTURE :

The land holdings are very less. People mainly grow wheat, paddy, maize, arbi, potato and rajmah in the higher altitudes.

3.3.1 LAND HOLDING:

Average land holding is less than 1 acre per family.

3.3.2 SOIL CLASSIFICATION:

Sandy loam is the main soil composition in the area.

3.3.3 LAND CAPABILITY CLASSIFICATION:

According to Soil Survey, the project area comprises of 20 sub-water sheds, which are detailed as under: -

SUB-WATER SHED NO.	INTENSITY OF SOIL EROSION
BP Ia	High
BP Ib	Medium
BP Ic	Medium
BP Id	High
BP Ie	Low
BP If	Low
BP Ig	Low
BP Ih	Medium
BP Ij	Medium
BP Ik	V-Low
BP Im	M
BP 2a	High
BP 2b	Low

BP 2c	Low
BP 2d	V-Low
BP 2e	V-Low
BP 2f	Low
BP 2g	V-Low
BP 2h	V-L
BP 2g	M

About 20% of the land is irrigated land.

CHAPTER - IV

4. PROBLEM ANALYSIS APPROACH AND STRATEGY

4.1 ENVIRONMENTAL PROBLEMS :

The project area forms a part of the Himalayas, which are the youngest, largest & highest mountain ranges in the world. The land is still in search of final form and soil erosion is one of the most serious problems in the areas. The Eco-system is thus most fragile. In this catchment, the main precipitation is in the form of rain during rainy season and in the winter season some snow is also received on the higher reaches. Irregular and unsystematic rainfall causes run-off in the form of floods, resulting in sheet and gully erosion, rill formation, bank erosion, slips and landslides. Hence project area suffers from the following major problems which add to soil erosion.

i. Natural ecological and climatic calamities due to heavy rainfall and land slides.

ii. Damage of prime land due to excessive grazing by increased live stock.

iii. Depletion of forests due to the removal of fuel, fodder and timber.

iv. Erosion hazards due to various developmental activities such as the construction of new roads, paths etc.

4.2 SEDIMENT LOAD:

4.2.1 INTENSITY OF SOIL EROSION :

The average annual run-off is 90% in a dependable year (3.07 X 10 ham) & 50% during a mean year (4.10 X 10 ham).

4.2.2 SEDIMENT CONCENTRATION :

It is high during the rainy season when heavy rainfall takes place.

4.3 SOIL EROSION TYPES :

Following types of soil erosion are prevalent in the catchment area.

4.3.1 SHEET EROSION: Steep to precipitous slopes as also the cultivated as well as forestland, suffer from sheet erosion during rainy season. Pastures suffer from moderate to very high erosion whereas areas covered with dense crop suffer from splash and laminar erosion. This area requires treatment to minimize splash and run-off on sloppy lands.

4.3.2 RILL EROSION: Run-off on account of rainfall collectively creates well-defined channels of enlarged width and depth (not exceeding 30-40 cm). This leads to gully formation.

4.3.3 GULLY EROSION: Many rills join together to form a gully in which water flows with higher speed and turbulence and is responsible for heavy sediment flow to river and streams causing floods.

4.3.4 STREAM AND RIVER BANK EROSION: A large number of nallahs, rivulets and streams in the catchment, carry sediment into the RÁNA KHAD, with frequent cutting of slopes, resulting in widening of the RANA KHAD and its tributaries and heavy soil erosion.

4.3.5 ROAD CONSTRUCTION EROSION: Roads and paths coming up in the catchment area are also causing land slips/slides resulting in silt problem in the RANA KHAD.

4.3.6 LAND SLIDE EROSION: Project area being clayey loam and sandy loam is quite prone to land-slides and land-slips that cause heavy toll in terms of tree growth, valuable fertile soil and also aggravate the silt problem in RANA KHAD and its tributaries.

4.4 LAND USE AND THEIR EROSIONAL BEHAVIOUR:

The water retention and infiltration behavior shows that there is practically a huge over-land water flow, from the Temperate Zone forests. Major soil erosion in the catchment area is due to heavy rainfall and run-off.

4.5 APPROACH AND STRATEGY:

A technologically sound, economically viable and socially acceptable comprehensive conservation strategy is to be evolved to retrieve the fast deteriorating ecology of the region. The main and immediate approach is to provide sediment free water as also its regular supply, which has direct impact on the successful running of a proposed hydroelectric project. For this purpose, a comprehensive plan aimed at the following objectives is to be evolved:

i. Construction of check walls, checks dams, water percolation tanks, farm ponds and crate-wire spurs to check the soil and water erosion effectively.

ii. Afforestation in degraded forest lands to meet the fuel, fodder

iii. Intensive Pasture management/ improvement in the catchment area to fulfil the requirement of the locality. Providing high quality pasturage to meet the needs of the live stock of the area. Checking the soil and water erosion directly, as well as boosting the economy of the area indirectly and ensuring proper hydrological functioning of the hill eco-system.

4.6 AGRICULTURE:

The watershed management and planning, envisages an integrated management of the land, water, plants and animal resources of the watershed. This is to be done on a sustainable basis to achieve optimum production without rendering any adverse and deteriorating impact on the resources and the ecological balance. Aim must be to ensure that the socio-economic condition of the people in the area is improved.

In the hilly portion of the proposed project area, cultivation is mostly practiced on un-terraced steep slopes, where irrigation is a serious problem. There is a limited land holding with the people, in the said area, due to which the land has to face extra pressure. It does not have time to get reclaimed, which in turn leads to soil erosion. Thus to check soil erosion, ensure water conservation and reclamation of the land levelling, terracing, re-modeling and providing of retaining walls/check walls is required. A small provision of contingency in the abstract of cost takes care of this. This would in turn ensure optimum production of agriculture produce.

The catchment area receives the maximum precipitation during the rainy season and less precipitation during winter season. Hence tapping the adjoining nallahs through flow irrigation channels can be beneficial during the lean period. The motivation of the local people to adapt to modern, improved and scientific methods of agriculture and for using modern agricultural implements and to abandon age old and unproductive methods need focussing.

4.7 ANIMAL HUSBANDRY:

The catchment area is thickly populated. The livelihood of people is dependant on farming and its live stock population is also very high. As per the latest cattle census, the total live stock population in the project area is 21,297. There

become susceptible to disease, which affect their production potential. In addition, the following; are the main problems being faced in the area:

i. People have very poor quality and low milk yielding cattle.

ii. Sheep and goats are of poor quality, which yield less, and poor quality wool.

iii. Due to shortage of fodder, stall-feeding is not possible which adversely affects cattle health, resulting in increasing number of stray animals.

4.8 HORTICULTURE:

Due to the various limitations and constraints observed in the area, horticulture activities are not visible in the catchment area, except for some small tea-gardens & house-hold kitchen activities.

4.8.1 PHYSIOGRAPHY:

The physiography of the hilly portion of the catchment area is tough and the gradient is steep to very steep. Though the plantations have been carried out in most of the area of the catchment, yet these are still in nascent form. Since the soil is sandy loam and sandy clay there are problems of landslides; landslips and soil erosion is very serious. Further extensive afforestation and plantation of fruit trees is to be carried out, after re-modeling and reclaiming the land properly.

4.9 FINANCIAL POSITION:

People of the catchment area are poor and need liberal financial help, directly and indirectly, in the shape of nursery plants. The insecticides, pesticides and fertilizers need to be provided at nominal rates.

4.10 PISCICULTURE:

There is a vast scope for development of fisheries in the reservoir lakes. It can be propagated in farm ponds after training of the local people. This too could be featured in the contingency.

C H A P T E R - V

5. OBJECTIVES, PROBLEMS AND COMPONENTS :

5.1 OBJECTIVES OF THE C.A.T PLAN:

Main objective of the C.A.T. plan is to maintain a regular sustainable supply of water to the Hydroelectric Power Project. Further the eco-system must be restored, improving the socio-economic status of the area and its people. Effective soil and water conservation measures need to be adopted as also afforestation & pasture improvement and modern scientific patterns of agriculture and horticulture. These objectives are categorized as under: -

5.2 PROTECTIVE OBJECTIVES :

i. To restore and maintain the ecological balance with integrated approach to ensure the longevity of the reservoir.

ii. Soil and moisture conservation in the catchment area by adopting proper conservation measures.

5.3 ECONOMIC AND PRODUCTIVE OBJECTIVES:

i. To increase the potential production without depleting the natural resources.

ii. To increase fuel, fodder and timber production in the area to meet with the day to day requirements of the local people thereby reducing the pressure on natural forests.

iii. To provide employment to the local people.

iv. To enrich the area with medicinal plants.

v. To increase the fauna by providing an adequate and desired eco-system and ensure protection against poachers.

5.4 SOCIAL OBJECTIVES:

i. Scientific management of the pastures is required to produce high quality fodder, ensuring good quality and high yield of wool, mutton and milk.

ii. Improvement is required in the breed of domestic animals.

5.5 PROJECT PERIOD AND PHASING:

The project will be executed in a total period of ten years. Following works will be carried out in different years.

1st YEAR (COMMENCEMENT YEAR OF THE CAT PLAN):

During the first year, enrichment planting (57 hectares) would be done as also subsidiary silvicultural operations i.e. climber cutting and removal of weeds. Protection measures like repair of boundary pillars, fire protection measures would also be done. Infra-structural works i.e. construction of forest paths, a forest hut etc. would also be taken up. Check Dams, check and retaining walls, farm ponds, spurs construction under soil conservation measures are of primacy to ensure that land slides do not occur and gully control is there.

IInd YEAR :During the second year, enrichment planting(103 hectares) as also first year maintenance of first year planting would be done as also subsidiary silvicultural operations i.e. climber cutting and removal of weeds. Protection measures like repair of boundary pillars, fire protection measures would also be done. Infra-structural works i.e. construction of forest paths, a forest hut etc. would also be taken up. Check Dams, check and retaining walls, gully plugging, farm ponds, spurs construction under soil conservation measures are of primacy to ensure that land slides do not occur and gully control is there.

IIIrd YEAR :During the third year, enrichment planting(105 hectares) would be done and maintenance of 1st year and 2nd year as also subsidiary silvicultural operations i.e. climber cutting and removal of weeds. Protection measures like repair of boundary pillars, fire protection measures would also be done. Infra-structural works i.e. construction of forest paths, a forest hut etc. would also be taken up. Check Dams, check and retaining walls, farm ponds, spurs construction under soil conservation measures are of primacy to ensure that land slides do not occur and gully control is there.

IVth YEAR : During the fourth year, enrichment planting(90 hectares) would be done and maintenance of 1st year/2nd year/3rd year as also subsidiary silvicultural operations i.e. climber cutting and removal of weeds. Protection measures like repair of boundary pillars, fire

construction of forest paths, a forest hut etc. would also be taken up. Check Dams, check and retaining walls, farm ponds, spurs construction under soil conservation measures are of primacy to ensure that land slides do not occur and gully control is there.

V YEAR TO XIIth YEAR :During the fifth year, enrichment planting (65 hectares) would be done and maintenance of 1st year/2nd year/3rd year/4th year while during the VIth and VIIth year, 60 hectares each, would be taken-up for enrichment planting and maintenance of previous years planting as also subsidiary silvicultural operations i.e. climber cutting and removal of weeds. Protection measures like repair of boundary pillars, fire protection measures would also be done. Infra-structural works i.e. construction of forest paths, a forest hut etc. would also be taken up. Check Dams, check and retaining walls, farm ponds, spurs construction under soil conservation measures are of primacy to ensure that land slides do not occur and gully control is there.

From 2009 till 2013 the stress would only be on maintenance and protection.

5.6 PROJECT PROPOSAL AND COMPONENTS:

The catchment area spreads from "GHOGHAR DHAR" and "SIKANDAR DHAR" to barrage axis. The proposal for afforestation and soil conservation, component-wise has been provided in Chapter-VI.

CHAPTER - VI

6. FORESTRY,SOIL AND WATER CONSERVATION:

61. STATEMENT OF THE AREAS TO BE PLANED IN THE CATCHMENT AND EXPENDITURE THEREOF:

Details of the area where afforestation /pasture developed is to be carried out is as under :

AFFORESTATION :

1.Sukar 1st	= 25 Hect.	16. Suhi	= 20 Hect.
2.Bhala Rinda	= 3 "	17. Bagra dhar 1st	= 10 "
3.Magru dhar	= 8 "	18. Bagra dhar 2nd	= 50 "
4.Ahju 1st	= 3"	19. Bagra dhar 3rd	= 10 "
5.OD 11 Marhola	= 50 "	20. Mihara dhar	= 40 "
6.ND 12 Marhola 1st	= 20 "	21. Dugha gahar 1st	= 40 "
7.ND 13 Marhola 2nd	= 35"	22. Dugha gahar 2nd	= 40 "
8.ND 14 Marhola 3rd	= 5 "	23. Karanpur dhar 1st	= 5"
9.Tramat	= 5 "	24. Galu	= 2 "
10.Bhadyara	= 2 "	25. Trimunda	= 15 "
11.Khalchi nal	= 5 "	26. Awaiyer	= 10 "
12.Khaprotu 1st	= 10 "	27.Siyuri C. III	= 25 "
13.Harabagh 1st	= 2 "	28. Banad	= 5"
14.Digli 1st	= 50 "	29. Reunti dhar	= 25"
15.Digli 2nd	= 10 "	30. Gugli Khad	= 10"

TOTAL 540 Hect.

The detailed costs are attached as Annexure-A,B,C and the maps are in Annexure D.The abstract of cost (Anexure A) is as under.

SR. NO.	ITEMS OF WORK	EXPENDITURE(Rs.)
01.	Plantation (Afforestation)	1,14,55,800
02.	Subsidiary Silvicultural Opearations	16,51,290
03.	Consolidation & Demarcation	30,502
04.	Forest Protection	1,55,000
05.	Construction of roads	19,70,000
06.	Construction of buildings	25,00,000
07.	Soil Conservation works	8,02,37,000
	Total	Rs. 9,79,99,592/-
08.	Contingency(Agriculture improvement support,Fishery propogation,fuel-wood supply and other JFPM activation)	20,00,000/-
	Grand Total :	Rs. 9,99,99,592/-
	OR Say -	Rs. 10 crores flat

6.2 EXPENDITURE FOR OTHER MEASURES IN THE CATCHMENT AREA :

The detailed estimates of engineering structures to be provided at various places in the catchment area are enclosed as Annexure-C.

6.3 SOIL CONSERVATION MEASURES :

It is proposed to adopt various soil conservation measures to prevent soil erosion in nallahs, riverbanks, and landslide areas. This is briefed as under: -

6.3.1 STABILIZATION OF LAND SLIDE/SLIPS :

This type of the area in the catchment requires the following type of control measures depending on the site. .

i. Construction of dry masonry/cement mortar check walls, checks dams, Retaining walls, spurs , farm ponds and silt detention dams.

ii. Afforestation.

6.3.2 TREATMENT OF FLOOD PRONE NALLAHS.

Nallahs are required to be treated by stabilization of the banks by providing spurs and constructing check dams, check walls, retaining walls and brush wood check dams to check and regulate the flow of water.

6.3.3. RIVER/NALLAH STABLIZATION :

To control the bank erosion of Mandokhar Nalla, Dul Khad, Bagra Khad, Bajgar Khad, Nihru Nalla various bank erosion measures at prone points are required.

6.3.4 ROAD STABLIZATION:

At present there are the Ahju Basahi and Zimzima, Dul-Banad-Chauntra roads which are under construction as well as the widening of Pathankot-Chakki-Mandi Road (N.H.20) which is in progress in the catchment area. Construction of retaining walls, breast walls and other engineering structures along the roads under construction are required to be taken-up/constructed by the P.W.D. authorities to check soil and water erosion as well as to ensure longevity of the reservoir.

CHAPTER - VII

7. AGRICULTURE:

The problem being faced in the agriculture sector has been discussed in detail in Chapter-IV. Keeping in view the problem, the following proposals are suggested:-

7.1. **PROPOSED TREATMENT PROGRAMME** : A provision has been made in the total cost of the project under contingency which provides for Rs.20,00,000/- which would be used by the Project authorities in collaboration with the Forest and Agriculture Departments after effective liaison with the people under Joint Forest Participatory programme. Support for improved agriculture practices, provision of high quality seed and other agriculture inputs as also fishery improvement etc. can be done through it.

7.1.1. **SOIL AND WATER CONSERVATION** :

The total cultivated area of the catchment is 3129 hec. Cultivation is mostly practiced on the outwardly sloping terraced land. Effective irrigation of the entire cultivated land is not possible under this circumstance. Land levelling and treatment/reclamation of land is required for which the Department of Agriculture should take effective measures.

7.1.2 **LAND LEVELLING AND TERACING** :

In view of the latest instruction from Govt. of India, neither the Hydel Project can afford levelling and terracing for making culturable land of general public productive nor funds are available due to the poor economic condition of the country.

7.1.3. **TREATMENT OF CULTURABLE WASTE LAND:**

There is 2964 hec. of reclaimable wasteland in the catchment proposed. The farmers are mostly marginal farmers and their average holding is less then one hect. per family. Although more land is required for agriculture, it is not possible for

electric power generation project to meet the expenditure on such reclamation.

7.1.4 TREATMENT OF EXISTING KUHLS :

In order to made available water for irrigation of agriculture fields existing kuhls need to be repaired by the I & PH Department. The project authorities will draw attention of the I & PH department to this aspect.

CHAPTER- VIII

FUELWOOD DEPOTS FOR PROJECT LABOUR AND EMPLOYEES OF UHL STAGE-III, HYDRO-ELECTRIC PROJECT :

It is estimated that the skilled and semi-skilled and unskilled labor will be deployed to complete the project within the estimated period. Majority of the labor force will be imported from the outside of the project area. It is proposed to provide fuel and kerosene from depots by the project authorities, so that labor may not indulge in illicit felling and removal of fuel-wood and timber from the adjoining Govt. forests. Fuel-wood depot will be opened by the project authorities and the regular supply will be made through Himachal Pradesh State Forest Corporation. Kerosene oil and cooking gas will be arranged from the concerned agencies.

It is also proposed to provide community canteen facility to the labour. Per capita requirement of fuel-wood per year is estimated as 15 quintals. To meet the requirement of fuel-wood fully, project authorities will do plantations in the colony, along the road-side and along the periphery of the reservoir.

CHAPTER - IX

COST OF VARIOUS PROJECT COMPONENTS :

It has been worked out on the basis of the present cost and norms prevailing in State Forest Department. All the works are proposed to be executed departmentally and no contractor profit and overhead charges have been added. However, there will be 10 to 15% annual increase upto the year of execution of the work, which has not been included in the plan. The detail of expenditure for various components has been shown. Abstract of the cost for the project is shown in the Annexures: A

ANNEXURE-A

GENERAL ABSTRACT

CATCHMENT AREA TREATMENT PLAN OF UHL-HYDROELECTRIC POWER PROJECT-III STAGE FOR THE PERIOD 2002-03 TO 2013-14

ABSTRACT OF COST

S.NO.	NAME OF WORK	J/NAGAR RANGE	UHL (BIR) RANGE	TOTAL
		(Rs)	(Rs)	(Rs)
1	Afforestation	11,455,800	0	11,455,800
2	S.S.O	1,651,290	0	1,651,290
3	Consolidation & Demarcation	30,502	0	30,502
4	Forest Protection	155,000	0	155,000
5	Construction of Roads	1,970,000	0	1,970,000
6	construction of buildings	2,500,000	0	2,500,000
7	Soil conservation works	72,411,000	7,826,000	80,237,000
8	Contingency(Agriculture improvement support, Fishery propogation,fuel-wood supply and other JFPM activation)			2,000,000
	GRAND TOTAL	**90,173,592**	**7,826,000**	**99,999,592**
	OR SAY:	90,174,000	7,826,000	**Rs.10 Croros flat**

NOTE: (i) The cost of compensatory plantation/afforestation has not been included in these estimates. A separate scheme/proposal is to be submitted on prescribed proforma in lieu of transfer of forest land for non-forestry purposes.

(ii) The cost of CAT Plan is based on current price index and labour rates which is likely to be changed due to enhancement of labour rates and cost of material.

Sheet-2

YEARWISE BREAK UP OF EXPENDITURE OF CATCHMENT AREA TREATMENT PLAN OF UHL-HYDROELECTRIC POWER PROJECT-III STAGE FOR THE PERIOD 2002-03 TO 2013-14

ABSTRACT OF COST

S.NO	YEAR	JNAGAR RANGE	UHL (BIR) RANGE	TOTAL
		(Rs)	(Rs)	(Rs)
1	2002-03	13,351,676	1,192,000	14,543,676
2	2003-04	21,060,034	1,290,000	22,350,034
3	2004-05	17,090,875	1,259,600	18,350,475
4	2005-06	9,693,053	1,275,000	10,968,053
5	2006-07	10,930,052	774,000	11,704,052
6	2007-08	9,595,200	1,413,200	10,968,400
7	2008-09	6,619,000	622,200	7,241,800
8	2009-10	711,100	0	711,100
9	2010-11	511,850	0	511,850
10	2011-12	286,550	0	286,550
11	2012-13	202,000	0	202,800
12	2013-14	160,800	0	160,800
	GRAND TOTAL	90,173,592	7,826,000	97,999,592
	OR SAY:	90,174,000	7,826,000	98,000,000

(Rupees Nine cores eighty lacs only)

ABSTRACT OF WORKS (FORESTRY AND SOIL CONSERVATION) UNDER CATCHMENT AREA TREATMENT PLAN OF UHL HYDROELCTRIC PROJECT STAGE-III IN RESPECT OF JOGINDERNAGAR RANGE OF JOGINDERNAGAR FOREST DIVISION AND UHL (FSR) RANGE OF PALAMPUR FOREST DIVISION

YEAR	NAME OF WORK	QTY	UNIT	RATE (Rs)	AMOUNT (Rs)
	JOGINDERNAGAR RANGE				
2002-03 to 2013-14	(a) Afforestation	540	Hac	8,100	4,374,000
	(a)(i)Enrichment planting (new)				
	(a)(ii)Maintenance				
	1st year	540	Hac	1,850	999,000
	2nd year	540	Hac	1,200	648,000
	3rd year	540	Hac	650	351,000
	4th year	540	Hac	550	297,000
	5th year	540	Hac	550	297,000
	(a)(iii)Raising of nursery plants	764,000	Nos	3/-each	2,292,000
	(a)(iv)Chowkidar for watch and ward of plantations for a year	111	Nos	1650 * per month	2,197,800
	Total (a)				11,455,800
	(b) S.S.O.				
	(b)(i)Climber cutting	873	Hac	1,100	960,300
	(b)(ii)Removal of Parthinium	244	Hac	1,800	439,200
	(b)(iii)Removal of Lantana	70	Hac	3,597	251,790
	Total (b)				1,651,290
	(c)Consolidation and Demarcation				
	Repair of Boundary pillars	498	No.	61	30,502
	Total (c)				30,502
	(d)Forest Protection				
	Preparation of fire lines	15.50	Km	10,000	155,000
	Total (d)				155,000
	(e)Construction of Roads				
	(e)(i) Constt.of Bridal Paths	91	Km	20,000	1,820,000
	(e)(ii)Constt.of Mule road	5	Km	30,000	150,000
	Total (e)				1,970,000
	Total (a to e)				15,262,592
	(f) Construction of buildings	8	No		2,500,000
	Total (f)				2,500,000
	(g)Soil conservation works				
	1.Check dams in cement mortar				
	2.00 mtrs	16	No.	28,000	448,000
	2.50"	27	No.	33,800	912,600
	3.00"	16	No.	44,900	718,400
	4.50"	11	No.	67,000	737,000
	5.00"	22	No.	72,000	1,584,000
	6.00"	5	No.	86,000	430,000
	10.00"	16	No.	124,000	1,984,000
	15.00"	7	No.	168,000	1,176,000
	20.00"	1	No.	229,000	229,000
	30.00"	1	No.	333,000	333,000
	Total				8,552,000
	2.Check dams in wire crates				
	2.75 mtrs	63	No.	59,000	3,717,000
	5.00"	93	No.	68,800	6,398,400
	6.25"	28	No.	86,000	2,408,000
	7.50"	40	No.	103,700	4,148,000
	8.75"	-	No.	113,000	-
	10.00"	36	No.	133,000	4,788,000
	12.50"	8	No.	159,000	1,272,000
	15.00"	8	No.	183,000	1,464,000
	Total				24,195,400
	3.Gully plugging/Check walls(dry)				
	1.50 mtrs	230	No.	2,200	506,000
	2.00"	201	No.	3,000	603,000
	2.50"	223	No.	4,100	914,300
	Total				2,023,300

	4.Retaining Walls in Cement Mortar.				
	5.00 "	1	No.	29,500	29,500
	6.00"	2	No.	36,000	72,000
	8.00 "	2	No.	48,000	96,000
	10.00 "	11	No.	60,000	660,000
	12.00 "	3	No.	72,000	216,000
	15.00"	9	No.	90,000	810,000
	30.00"	3	No.	181,000	543,000
	Total				2,426,500
	5.Retaining Walls in wire crates.				
	2.50 Mtr.	20	No.	20,000	400,000
	3.75"	18	No.	30,000	540,000
	5.00 "	93	No.	40,000	3,720,000
	6.25 "	50	No.	50,000	2,500,000
	7.50 "	18	No.	60,000	1,080,000
	10.00 "	127	No.	80,000	10,160,000
	12.50"	39	No.	100,000	3,900,000
	15.00 "	60	No.	120,000	7,200,000
	Total				29,500,000
	6.Retaining Walls in dry masonary.				
	15.00 Mtr.	44	No.	7,600	334,400
	5.00	1	No.	12,700	12,700
	7.50 "	21	No.	15,800	331,800
	10.00 "	27	No.	20,500	553,500
	12.00 "	2	No.	24,000	48,000
	15.00"	24	No.	32,000	768,000
	Total				2,048,400
	7.Spurs in wire crates				
	2.50 Mtrs	6	No.	6,800	40,800
	3.75"	1	No.	10,000	10,000
	5.00 "	38	No.	13,000	494,000
	7.50"	34	No.	20,000	680,000
	10.00"	42	No.	26,500	1,113,000
	12.50"	4	No.	33,400	133,600
	15.00"	5	No.	40,000	200,000
	Total				2,671,400
	8.Const. of farm ponds.				
	20x10x2 Mtrs	19	No.	26,000	494,000
	Total				494,000
	9.Purchase of tools/plants.	-	-	-	500,000
	Total				500,000
	Total (a to g)Soil Conservation				72,411,000
	Total (g)(1) to (g)(9) Works				90,173,592
2	UHL (BIR RANGE)				
	(a) to (f)	NIL			
	(g) Soil Conservation Works				
	1.Check dams in wire crates.				
	3.75 Mtr.	8	No.	59,000	472,000
	5.00 "	10	No.	68,800	688,000
	6.25 "	25	No.	86,000	2,150,000
	7.50 "	20	No.	103,700	2,074,000
	8.75 "	7	No.	113,000	791,000
	10.00 "	7	No.	133,000	931,000
	Total				7,106,000
	7.Retaining Wall in wire crates				
	15.00 mtrs	6	No.	120,000	720,000
	Total				720,000
	Total (g)Soil conservation works.	0			7,826,000
	TOTAL JOGINDERNAGAR+ UHL BIR RANGE	0			90,173,592
				OR SAY	90,000,000

YEARWISE PROGRAMME OF WORKS(FORESTORY AND SOIL CONSERVATION)
CATCHMENT AREA TREATMENT PLAN OF UHL HYDROELCTRIC PROJECT
STAGE-III IN RESPECT OF JOGINDERNAGAR RANGE OF JOGINDERNAGAR
FOREST DIVISION AND UHL (DIR) RANGE OF PALAMPUR FOREST DIVISION

YEAR	NAME OF WORK	QTY	UNIT	RATE(Rs)	AMOUNT(Rs)
	JOGINDERNAGAR RANGE				
2002-03	(a) Afforestation				
	(a)(i) Enrichment planting (new)	57	Hec	81,000	461,700
	(a)(ii)Maintenance				
	1st year	57	Hec	1,850	
	2nd year	57	Hec	1,200	
	3rd year	57	Hec	650	
	4th year	57	Hec	550	
	5th year	57	Hec	550	
	(a)(iii)Raising of nursery plants	40,000	Nos	3/-EACH	120,000
	(a)(iv)Mazdoor for watch and ward of plantations for a year.	6	Nos	1650/-* PER MONTH	59,400
	Total (a):				641,100
	(b) S.S.O.				
	(b)(i)Climber cutting	95	Hec	1,100	104,500
	(b)(ii)Removal of Pathogens	48	Hec	1,800	86,400
	(b)(iii)Removal of Lantana	11	Hec	3,597	39,567
	Total (b):				230,467
	(c)Consolidation and Demarcation				
	Repair of Boundary pillars	41	Nos	61	2,511
	Total (c)				2,511
	(d)Forest Protection				
	Preparation of fire lines	3.50	Km	10,000	35,000
	Total (d)				35,000
	(e)Construction of Roads				
	(e)(i) Cutting of Bridled Paths	5	Km	20,000	100,000
	(e)(ii)Cutting of Mule road	0	Km	30,000	0
	Total (e)				100,000
	Total (a+b+c+d+e)				1,009,078
	(f)Construction of buildings	3	Nos		1,000,000
	Total (f)				1,000,000
	(g)Soil conservation works				
	1.Check dams in cement mortar				
	2.00 mts		No.	28,000	
	2.50 "		No.	33,800	
	3.00 "		No.	44,900	
	4.50 "		No.	67,000	
	5.00 "		No.	72,000	
	6.00 "		No.	86,000	
	10.00"	2	No.	124,000	248,000
	15.00 "		No.	168,000	
	20.00 "		No.	229,000	
	10.00 "		No.	333,000	
	Total(g)(1)				248,000
	2.Check dams in wire crates				
	3.75 mts	14	No.	59,000	826,000
	5.00 "	15	No.	68,800	1,032,000
	6.25"	13	No.	86,000	1,118,000
	7.50"	6	No.	103,700	622,200
	8.75"		No.	113,000	
	10.00"	7	No.	133,000	931,000
	12.50"		No.	159,000	
	15.00 "	2	No.	183,000	366,000
	Total(g)(2)				4,895,200

4.Gully plugging/Check walls(dry)				
1.50 mtrs		No.	2,200	
2.00 "	48	No.	3,000	144,000
2.50"	17	No.	4,100	69,700
Total(q)(3)				213,700
4.Retaining Walls in Cement Mortar.				
5.00 "	0	No.	29,500	0
6.00"	2	No.	36,000	72,000
8.00 "	0	No.	48,000	0
10.00 "	0	No.	60,000	0
12.00 "	0	No.	72,000	0
15.00"	0	No.	90,000	0
30.00"	0	No.	181,000	0
Total(q)(4)				72,000
5.Retaining Walls in wire crates.				
2.50 Mtr.	0	No.	20,000	
3.75"	12	No.	30,000	360,000
5.00 "	5	No.	40,000	200,000
6.25 "	12	No.	50,000	600,000
7.50 "	2	No.	60,000	120,000
10.00 "	11	No.	80,000	880,000
12.50"	4	No.	100,000	400,000
15.00 "	11	No.	120,000	1,320,000
Total(q)(5)				3,880,000
6.Retaining Walls in dry masonary.				
3.00 Mtr.	11	No.	7,600	83,600
6.00"	0	No.	12,700	
7.50 "	0	No.	15,800	
10.00 "	15	No.	20,500	307,500
12.00 "	0	No.	24,000	
15.00"	5	No.	32,000	160,000
Total(q)(6)				551,100
7.Spues in wire crates				
2.50 Mtrs	0	No.	6,800	0
3.75"	0	No.	10,000	0
5.00 "	3	No.	13,000	39,000
7.50"	8	No.	20,000	160,000
10.00"	16	No.	26,500	424,000
12.50"	4	No.	33,400	133,600
15.00"	5	No.	40,000	200,000
Total(q)(7)				956,600
8.Const. of farm ponds.				
20x10x2 Mtrs	1	No.	26,000	26,000
Total(q)(8)				26,000
9.Purchase of tools/plants.	L.S.	-	-	500,000
Total				500,000
Total (a to g)Soil Conservation	0			11,342,600
Total (a to g) Works				13,351,678
UHL (DIR RANGE)				
(a) to (f)	NIL			
(g) Soil Conservation Works				
1.Check dams in wire crates.				
3.75 Mtr.	8	No.	59,000	472,000
5.00 "	0	No.	68,800	
6.25 "	0	No.	86,000	
7.50 "	0	No.	103,700	
8.75 "	0	No.	113,000	
10.00 "	0	No.	133,000	
Total(q)(1)				472,000
7.Retaining Wall in wire crates				
15.00 mtrs	6	No.	120,000	720,000
				720,000
Total (g)Soil conservation works	0			1,192,000
TOTAL JOGIJDERIMGAR+ UHL DIR RANGE				14,543,678
Grand Total:				14,543,678

4.Retaining Walls in Cement Mortar.				
5.00 "	0	No.	29,500	0
6.00"	2	No.	36,000	72,000
8.00 "	0	No.	48,000	0
10.00 "	0	No.	60,000	0
12.00 "	0	No.	72,000	0
15.00"	0	No.	90,000	0
30.00"	0	No.	181,000	0
Total(c)(4)				72,000
5.Retaining Walls in wire crates.				
2.50 Mtr.	0	No.	20,000	
3.75"	12	No.	30,000	360,000
5.00 "	5	No.	40,000	200,000
6.25 "	12	No.	50,000	600,000
7.50 "	2	No.	60,000	120,000
10.00 "	11	No.	80,000	880,000
12.50"	4	No.	100,000	400,000
15.00 "	11	No.	120,000	1,320,000
Total(c)(5)				3,880,000
6.Retaining Walls in dry masonary.				
5.00 Mtr.	11	No.	7,600	83,600
6.00"	0	No.	12,700	
7.50 "	0	No.	15,000	
10.00 "	15	No.	20,500	307,500
12.00 "	0	No.	24,000	
15.00"	5	No.	32,000	160,000
Total(c)(6)				551,100
7.Spurs in wire crates				
2.50 Mtrs	0	No.	6,800	0
3.75"	0	No.	10,000	0
5.00 "	3	No.	13,000	39,000
7.50"	8	No.	20,000	160,000
10.00"	16	No.	26,500	424,000
12.50"	4	No.	33,400	133,600
15.00"	5	No.	40,000	200,000
Total(c)(7)				956,600
8.Const. of farm ponds.				
@ Rs/ Mtr.	1	No.	26,000	26,000
Total(c)(8)				26,000
9.Purchase of tools/plants.	L.S.	-	-	500,000
Total				500,000
Total (a to g)Soil Conservation	0			11,342,600
Total (a to g) Works				13,351,678
UNIL (BIR RANGE)				
(a) to (f)	NIL			
(g) Soil Conservation Works				
1.Check dams in wire crates.				
3.75 Mtr.	8	No.	59,000	472,000
5.00 "	0	No.	68,800	
6.25 "	0	No.	86,000	
7.50 "	0	No.	103,700	
8.75 "	0	No.	113,000	
10.00 "	0	No.	131,000	
Total(g)(1)				472,000
2.Retaining Wall in wire Crates				
[illegible]	6	No.	120,000	720,000
				720,000
Total (g)Soil conservation works	0			1,192,000
[illegible]NAGAR+				14,543,678
UNIL BIR RANGE				
Grand Total				14,543,678

YEARWISE PROGRAMME OF WORKS(FORESTORY AND SOIL CONSERVATION) CATCHMENT AREA TREATMENT PLAN OF UHL HYDROELCTRIC PROJECT STAGE-III IN RESPECT OF JOGINDERNAGAR RANGE OF JOGINDERNAGAR FOREST DIVISION AND UHL (BIR) RANGE OF PALAMPUR FOREST DIVISION

YEAR	FORM OF WORK	QTY	UNIT	RATE (Rs)	AMOUNT (Rs)
	JOGINDERNAGAR RANGE				
2003-04	(a) Afforestation				
	(a)(i)Enrichment planting (new)	103	Hec	81,000	834,300
	(a)(ii)Maintenance				
	1st year	57	Hec	1,050	109,450
	2nd year		Hec	1,200	
	3rd year		Hec	650	
	4th year		Hec	550	
	5th year		Hec	550	
	(a)(iii)Raising of nursery plants	90,000	Nos	3/-EACH	270,000
	(a)(iv)Watchers for watch and ward of plantations for a year.	6	Nos	1950/- PER MONTH	116,800
	Total (a)				1,328,550
	(b) S.S.O.				
	(b)(i)Cleaner cutting	155	Hec	1,100	170,500
	(b)(ii)Removal of Parthenium	60	Hec	1,800	108,000
	(b)(iii)Removal of Lantana	22	Hec	3,597	79,134
	Total (b)				357,634
	(c)Consolidation and Demarcation				
	Repair of Boundary pillars	200	No	61	12,250
	Total (c)				12,250
	(d)Forest Protection				
	Preparation of fire lines	7.00	Km	10,000	70,000
	Total (d)				70,000
	(e)Construction of Roads				
	(e)(i) Cc/m of Bituminous Paths	20	Km	20,000	400,000
	(e)(ii)Concrete/ Metalled road	2.5	Km	30,000	75,000
	Total (e)				475,000
	Total (a+b+c+d+e)				2,243,434
	(f)Construction of buildings	5	No		1,000,000
	Total (f)				1,000,000
	(g)Soil conservation works				
	1.Check dams in cement mortar				
	2.00 mts	0	No	28,000	0
	2.50 "	3	No	33,800	101,400
	3.00 "	3	No	44,900	134,700
	4.50 "	2	No	67,000	134,000
	5.00 "	2	No.	72,000	144,000
	6.00 "	0	No	86,000	0
	10.00"	5	No.	124,000	620,000
	15.00 "	3	No.	168,000	504,000
	20.00 "	1	No.	229,000	229,000
	30.00 "		No	333,000	
	Total(g)(i)				1,857,100
	2.Check dams in wire crates				
	1.75 mts	10	No.	50,000	500,000
	5.00 "	26	No.	68,800	1,788,800
	6.25"	3	No.	86,000	258,000
	7.50 "	9	No.	103,700	933,300
	9.75 "	0	No.	113,000	0
	10.00"	14	No.	133,000	1,862,000
	12.50 "	3	No.	159,000	477,000
	15.00 "	5	No.	183,000	915,000
	Total(g)(ii)				6,824,100
	3.Gully plugging/Check walls(dry)				
	1.50 mts	15	No.	2,200	33,000
	2.00 "	30	No.	3,000	90,000
	2.50"	51	No.	4,100	209,100
	Total(g)(c)				332,100

	4.Retaining Walls in Cement Mortar.				
	5.00 "	0	No.	29,500	0
	6.00"	0	No.	36,000	0
	8.00 "	0	No.	48,000	0
	10.00 "	4	No.	60,000	240,000
	12.00 "	2	No.	72,000	144,000
	15.00"	6	No.	90,000	540,000
	30.00"	0	No.	181,000	0
	Total(q)(4)				924,000
	5.Retaining Walls in wire crates.				
	2.50 Mtr.	0	No.	20,000	0
	3.75"	3	No.	30,000	90,000
	5.00 "	15	No.	40,000	600,000
	6.25 "	10	No.	50,000	500,000
	7.50 "	6	No.	60,000	360,000
	10.00 "	29	No.	80,000	2,320,000
	12.50"	14	No.	100,000	1,400,000
	15.00 "	14	No.	120,000	1,680,000
	Total(q)(5)				6,950,000
	6.Retaining Walls in dry masonary.				
	15.00 Mtr.	11	No.	7,600	83,600
	5.00"	0	No.	12,700	0
	7.50 "	4	No.	15,800	63,200
	10.00 "	4	No.	20,500	82,000
	12.00 "	0	No.	24,000	0
	15.00"	5	No.	32,000	160,000
	Total(q)(6)				388,800
	7.Spurs in wire crates				
	2.50 Mtrs	0	No.	6,800	0
	3.75"	1	No.	10,000	10,000
	5.00 "	11	No.	13,000	143,000
	7.50"	7	No.	20,000	140,000
	10.00"	7	No.	20,500	185,500
	12.50"	0	No.	33,400	0
	15.00"	0	No.	40,000	0
	Total(q)(7)				478,500
	8.Const. of farm ponds.				
	20x10x2 Mtrs	2	No.	26,000	52,000
	Total(q)(8)				52,000
	9.Purchase of tools/plants.	-	-	-	0
	Total(q)(9)				0
	Total (a to g)Soil Conservation Works	0			17,816,600 21,060,034
2	UHL (DIR RANGE) (a) to (f) (g) Soil Conservation Works 1.Check dams in wire crates.				
	3.75 Mtr.	0	No.	59,000	0
	5.00 "	0	No.	68,800	0
	6.25 "	15	No.	86,000	1,290,000
	7.50 "	0	No.	103,700	0
	8.75 "	0	No.	113,000	0
	10.00 "	0	No.	133,000	0
	Total(q)(1)				1,290,000
	2.Retaining Wall in wire crates				
	5.00 mtrs	6	No.	120,000	
	Total(q)(2)				0
	Total (q)(1) + (2)	0			1,290,000
	TOTAL JOGINDERNAGAR+ UHL DIR RANGE				22,350,034

YEARWISE PROGRAMME OF WORKS(FORESTORY AND SOIL CONSERVATION) CATCHMENT AREA TREATMENT PLAN OF UHL HYDROELCTRIC PROJECT STAGE-III IN RESPECT OF JOGINDERNAGAR RANGE OF JOGINDERNAGAR FOREST DIVISION AND UHL (BIR) RANGE OF PALAMPUR FOREST DIVISION

YEAR	NAME OF WORK	QTY	UNIT	RATE(Rs)	AMOUNT(Rs)
	JOGINDERNAGAR RANGE				
2004-05	(a) Afforestation				
	(a)(i)Enrichment planting (new)	105	Hec	51,000	850,500
	(a)(ii)Maintenance				
	1st year	103	Hec	1,850	190,550
	2nd year	57	Hec	1,200	68,400
	3rd year		Hec	650	
	4th year		Hec	550	
	5th year		Hec	550	
	(a)(iii)Raising of nursery plants	116,000	Nos	3/-EACH	348,000
	(a)(iv)Mazdoor for watch and weed of plantations for a year.	12	Nos	1650/-* PER MONTH	237,600
	Total (a):				1,695,950
	(b) S.S.O.				
	(b)(i)Climber cutting	140	Hec	1,100	154,000
	(b)(ii)Removal of Pathinium	37	Hec	1,800	66,600
	(b)(iii)Removal of Lantana	17	Hec	3,597	61,149
	Total (b):				281,749
	(c)Consolidation and Demarcation				
	Repair of Boundary pillars	109	No	61	6,676
	Total (c)				6,676
	(d)Forest Protection				
	Preparation of fire lines	5.00	Km	10,000	50,000
	Total (d)				50,000
	(e)Construction of Roads				
	(e)(i) Construction of Bridal Paths	16	Km	20,000	320,000
	(e)(ii)Construction of Mule road	2.5	Km	30,000	75,000
	Total (e)				395,000
	Total (a+b+c+d+e)				2,429,475
	(f)Construction of buildings	2	No		500,000
	Total (f)				500,000
	(g)Soil conservation works				
	1.Check dams in cement mortar				
	2.00 mtrs		No.	28,000	
	2.50 "	6	No.	33,000	169,000
	3.00 "	9	No.	44,900	404,100
	4.50 "	5	No.	67,000	335,000
	5.00 "	4	No.	72,000	288,000
	6.00 "	3	No.	86,000	258,000
	10.00"	3	No.	124,000	372,000
	15.00 "	2	No.	168,000	336,000
	20.00 "		No.	229,000	
	30.00 "		No.	333,000	
	Total(g)(1)				2,162,100
	2.Check dams in wire crates				
	3.75 mtrs	6	No.	59,000	354,000
	5.00 "	18	No.	68,800	1,238,400
	6.25"		No.	86,000	
	7.50 "	8	No.	103,700	829,600
	8.75 "		No.	113,000	
	10.00"	8	No.	133,000	1,064,000
	12.50 "	5	No.	159,000	795,000
	15.00 "	1	No.	183,000	183,000
	Total(g)(2)				4,464,000
	3.Gully plugging/Check walls(dry)				
	1.50 mtrs	34	No.	2,200	74,800
	2.00 "		No.	3,000	
	2.50"	42	No.	4,100	172,200
	Total(g)(3)				247,000

4.Retaining Walls in Cement Mortar.				
5.00 "		No.	29,500	
6.00"		No.	36,000	
8.00 "	1	No.	48,000	48,000
10.00 "		No.	60,000	
12.00 "	1	No.	72,000	72,000
15.00"	1	No.	90,000	90,000
30.00"		No.	181,000	
Total(g)(4)				210,000
5.Retaining Walls in wire crates.				
2.50 Mtr.	11	No.	20,000	220,000
3.75"		No.	30,000	
5.00 "	18	No.	40,000	720,000
6.25 "	5	No.	50,000	250,000
7.50 "	1	No.	60,000	60,000
10.00 "	30	No.	80,000	2,400,000
12.50"	8	No.	100,000	800,000
15.00 "	7	No.	120,000	840,000
Total(g)(5)				5,290,000
6.Retaining Walls in dry masonary.				
15.00 Mtr.	11	No.	7,600	83,600
6.00"	1	No.	12,700	12,700
7.50 "	10	No.	15,800	158,000
10.00 "	8	No.	20,500	164,000
12.00 "	2	No.	24,000	48,000
15.00"	9	No.	32,000	288,000
Total(g)(6)				754,300
7.Spurs in wire crates				
2.50 Mtrs		No.	6,800	
3.75"		No.	10,000	
5.00 "	16	No.	13,000	208,000
7.50"	19	No.	20,000	380,000
10.00"	10	No.	26,500	265,000
12.50"		No.	33,400	
15.00"		No.	40,000	
Total(g)(7)				853,000
8.Const. of farm ponds.				
20x10x2 Mtrs	7	No.	26,000	182,000
Total(g)(8)				182,000
9.Purchase of tools/plants.	-	-	-	0
Total				0
Total (a to g)Soil Conservation	0			14,162,400
Total (a to g) Works				17,090,875
2 UBL (BIR RANGE)				
(a) to (f)				
(g) Soil Conservation Works				
1.Check dams in wire crates.				
3.75 Mtr.		No.	59,000	
5.00 "		No.	68,800	
6.25 "	5	No.	86,000	430,000
7.50 "	8	No.	103,700	829,600
8.75 "		No.	113,000	
10.00"		No.	133,000	
Total(g)(1)				1,259,600
2.Retaining Wall in wire crates				
[illegible]		No.	120,000	
[illegible]	0		120,000	0
Total (g)(1) + (2)	0			1,259,600
TOTAL JOGINDERNAGAR+ UBL BIR RANGE				18,350,475

YEARWISE PROGRAMME OF WORKS(FORESTORY AND SOIL CONSERVATION)
CATCHMENT AREA TREATMENT PLAN OF UHL HYDROELCTRIC PROJECT
STAGE-III IN RESPECT OF JOGINDERNAGAR RANGE OF JOGINDERNAGAR
FOREST DIVISION AND UHL (BIR) RANGE OF PALAMPUR FOREST DIVISION

YEAR	NAME OF WORK	QTY	UNIT	RATE(Rs)	AMOUNT(Rs)
	JOGINDERNAGAR RANGE				
2005-06	(a) Afforestation				
	(a)(i)Enrichment planting (new)	90	Hec	81,000	729,000
	(a)(ii)Maintenance				
	1st year	105	Hec	1,850	194,250
	2nd year	103	Hec	1,200	123,600
	3rd year	57	Hec	650	37,050
	4th year		Hec	550	
	5th year		Hec	550	
	(a)(iii)Raising of nursery plants	121,000	Nos	3/-EACH	363,000
	(a)(iv)Muzdoor for watch and ward of plantations for a year.	12	Nos	1650/-* PER MONTH	237,600
	Total (a):				1,684,500
	(b) S.S.O.				
	ya)(i)Climber cutting	143	Hec	1,100	157,300
	(b)(ii)Removal of Parthinium	35	Hec	1,800	63,000
	(b)(iii)Removal of Lantana	10	Hec	3,597	35,970
	Total (b):	188		6,497	256,270
	(c)Consolidation and Demarcation				
	Repair of Boundary pillars	83	No	61.25	5,083
	Total (c)				5,083
	(d)Forest Protection				
	Preparation of fire lines		Km	10,000	0
	Total (d)				0
	(e)Construction of Roads				
	(e)(i) Cart and Bridle Paths	16	Km	20,000	320,000
	(e)(ii)Cleaning of Main road				
	Total (e)				320,000
	Total (a)to(e)				2,265,853
	(f)Construction of buildings		No		
	Total (f)				0
	(g)Soil conservation works				
	1.Check dams in cement mortar				
	2.00 mtrs		No.	28,000	
	2.50 "		No.	33,800	
	3.00 "		No.	44,900	
	4.50 "	5	No.	67,000	
	5.00 "		No.	72,000	360,000
	6.00 "	5	No.	86,000	
	10.00"	2	No.	124,000	620,000
	15.00 "		No.	168,000	336,000
	20.00 "		No.	229,000	
	30.00 "		No.	333,000	
	Total(g)(1)				1,316,000
	2.Check dams in wire crates				
	3.75 mtrs	8	No.	59,000	472,000
	5.00 "	10	No.	68,800	688,000
	6.25"	8	No.	86,000	688,000
	7.50 "	4	No.	103,700	414,800
	8.75"		No.	113,000	-
	10.00"		No.	133,000	-
	12.50 "		No.	159,000	
	15.00 "		No.	183,000	
	Total(g)(2)				2,262,800
	3.Gully plugging/Check walls(dry)				
	1.50 mtrs		No.	2,200	
	2.00 "	30	No.	3,000	90,000
	2.50"	38	No.	4,100	155,800
	Total(g)(3)				245,800

4 Retaining Walls in Cement Mortar.				
5.00 "	1	No.	29,500	29,500
6.00"		No.	35,000	
8.00 "		No.	48,000	
10.00 "	3	No.	60,000	180,000
12.00 "		No.	72,000	
15.00"	2	No.	90,000	180,000
30.00"		No.	181,000	
Total(q)(4)				389,500
5.Retaining Walls in wire crates.				
2.50 Mtr.		No.	20,000	
3.75"		No.	30,000	
5.00 "	5	No.	40,000	200,000
6.25 "	2	No.	50,000	100,000
7.50 "	4	No.	60,000	240,000
10.00 "	15	No.	80,000	1,200,000
12.50"	5	No.	100,000	500,000
15.00 "	5	No.	120,000	600,000
Total(q)(5)				2,840,000
6.Retaining Walls in dry masonary.				
15.00 Mtr.	11	No.	7,600	83,600
6.00"		No.	12,700	
7.50 "		No.	15,800	
10.00 "		No.	20,500	
12.00 "		No.	24,000	
15.00"		No.	32,000	
Total(q)(6)				83,600
7.Spurs in wire crates				
2.50 Mtrs		No.	6,800	
3.75"		No.	10,000	
5.00 "		No.	13,000	
7.50"		No.	20,000	
10.00"	7	No.	20,500	185,500
12.50"		No.	33,400	
15.00"		No.	40,000	
Total(q)(7)				185,500
8.Const. of farm ponds.				
20x10x2 Mtrs	4	No.	26,000	104,000
Total(q)(3)				104,000
9.Purchase of tools/plants.	-	-	-	0
Total				0
Total (a to q)Soil Conservation	0			7,427,200
Total (a to q) Works				9,693,053
UHL (BIR RANGE)				
(a) to (f)				
(g) Soil Conservation Works				
1.Check dams in wire crates.				
3.75 Mtr.		No.	59,000	
5.00 "	5	No.	68,800	344,000
6.25 "		No.	86,000	
7.50 "		No.	103,700	
8.75 "		No.	113,000	
10.00 "	/	No.	133,000	931,000
Total(q)(1)				1,275,000
2.Retaining Wall in wire crates				
15.00 mtrs		No.	120,000	
Total(q)(2)	0		120,000	0
Total (g)(1) + (2)	0			1,275,000
TOTAL JOGINDERNAGAR+ UHL BIR RANGE				10,968,053

YEARWISE PROGRAMME OF WORKS (FORESTORY AND SOIL CONSERVATION)
FOR CATCHMENT AREA TREATMENT PLAN OF UHL HYDROELCTRIC PROJECT
UNDER BEAT OFFICER OF JOGINDERNAGAR RANGE OF JOGINDERNAGAR
FOREST DIVISION AND UHL (HR) RANGE OF PALAMPUR FOREST DIVISION

YEAR	NAME OF WORK	QTY	UNIT	RATE(Rs)	AMOUNT (Rs)
	JOGINDERNAGAR RANGE				
2006-07	(a) Afforestation				
	(a)(i)Enrichment planting (new)	65	Hec	81,000	526,500
	(a)(ii)Maintenance				
	1st year	50	Hec	1,850	166,500
	2nd year	105	Hec	1,200	126,000
	3rd year	103	Hec	650	66,950
	4th year	57	Hec	550	31,350
	5th year		Hec	550	
	(a)(iii)Raising of nursery plants	205,000	Nos.	3/-EACH	312,000
	(a)(iv)Mazdoor for watch and ward of plantations for a year	12	Nos	1650/- PER MONTH	237,600
	Total (a):				1,466,900
	(b) S.S.O.				
	(b)(i)Climber cutting	135	Hec	1,100	148,500
	(b)(ii)Removal of Parthenium	20	Hec	1,800	36,000
	(b)(iii)Removal of Lantana	10	Hec	3,597	35,970
	Total (b):	165		6,497	220,470
	(c)Consolidation and Demarcation				
	Repair of Boundary pillars	65	No	61.25	3,982
	Total (c)				3,982
	(d)Forest Protection				
	Preparation of fire lines		Km	10,000	0
	Total (d)				0
	(e)Construction of Roads				
	(e)(i) Cons.of S/pathd Paths	13	Km	20,000	260,000
	(e)(ii)Constn.of Mule road			30,000	
	Total (e)				260,000
	Total (a+b+c+d+e)				1,951,352
	(f)Construction of buildings	0	No	0	0
	Total (f)				0
	(g)Soil conservation works				
	1.Check dams in cement mortar				
	2.00 mtrs		No.	28,000	
	2.50 "	4	No.	33,800	135,200
	3.00 "		No.	44,000	
	4.50 "	2	No.	67,000	134,000
	5.00 "	6	No.	72,000	432,000
	6.00 "		No.	86,000	
	10.00"	1	No.	124,000	124,000
	15.00 "		No.	168,000	
	20.00 "		No.	229,000	
	30.00 "		No.	333,000	
	Total(g)(1)				825,200
	2.Check dams in wire crates				
	3.75 mtrs	8	No.	59,000	472,000
	5.00 "	15	No.	68,800	1,032,000
	6.25"	4	No.	86,000	344,000
	7.50 "	9	No.	103,700	933,300
	8.75 "		No.	113,000	
	10.00"	7	No.	133,000	931,000
	12.50 "		No.	159,000	
	15.00 "		No.	183,000	
	Total(g)(2)				3,712,300
	3.Gully plugging/Check walls(dry)				
	1.50 mtrs	60	No.	2,200	132,000
	2.00 "		No.	3,000	
	2.50"	32	No.	4,100	131,200
	Total(g)(3)				263,200

	4.Retaining Walls in Cement Mortar.				
	5.00 "		No.	29,500	
	6.00"		No.	36,000	
	8.00 "		No.	48,000	
	10.00 "		No.	60,000	
	12.00 "		No.	72,000	
	15.00"		No.	90,000	
	30.00"	3	No.	181,000	543,000
	Total(g)(4)				543,000
	5.Retaining Walls in wire crates.				
	2.50 Mtr.		No.	20,000	
	3.75"	3	No.	30,000	90,000
	5.00 "	32	No.	40,000	1,280,000
	6.25 "	16	No.	50,000	800,000
	7.50 "	1	No.	60,000	60,000
	10.00 "	9	No.	80,000	720,000
	12.50"	1	No.	100,000	100,000
	15.00 "	4	No.	120,000	480,000
	Total(g)(5)				3,530,000
	6.Retaining Walls in dry masonary.				
	15.00 Mtr.		No.	7,600	
	6.00"		No.	12,700	
	7.50 "		No.	15,800	
	10.00 "		No.	20,500	
	12.00 "		No.	24,000	
	15.00"		No.	32,000	
	Total(g)(6)				0
	7.Spurs in wire crates				
	2.50 Mtrs		No.	6,800	
	3.75"		No.	10,000	
	5.00 "		No.	13,000	
	7.50"		No.	20,000	
	10.00"	2	No.	20,500	53,000
	12.50"		No.	33,400	
	15.00"		No.	40,000	
	Total(g)(7)				53,000
	8.Construction of bund ponds.				
	20x10x2 Mtrs	2	No.	26,000	52,000
	Total(g)(8)				52,000
	9 Purchase of tools/plants.	-	-	-	0
	Total				0
	Total (a to g)Soil Conservation	0			8,978,700
	Total (a to g) Works				10,930,052
2	UHL (BIR RANGE)				
	(a) to (f)				
	(g) Soil Conservation Works				
	1.Check dams in wire crates.				
	3.75 Mtr.		No.	59,000	
	5.00 "	5	No.	68,800	344,000
	6.25 "	5	No.	86,000	430,000
	7.50 "		No.	103,700	
	8.75 "		No.	113,000	
	10.00 "		No.	133,000	
	Total(g)(1)				774,000
	2.Retaining Wall in wire crates				
	15.00 mtrs		No.	120,000	
	Total(g)(2)	0		120,000	0
	Total (g)(1) + (2)	0			774,000
	TOTAL JOGINDERNAGAR+ UHL BIR RANGE				11,704,052

YEARWISE PROGRAMME OF WORKS(FORESTORY AND SOIL CONSERVATION)
CATCHMENT AREA TREATMENT PLAN OF UHL HYDROELCTRIC PROJECT
STAGE-II IN RESPECT OF JOGINDERNAGAR RANGE OF JOGINDERNAGAR
FOREST DIVISION AND UHL (BIR) RANGE OF PALAMPUR FOREST DIVISION

YEAR	NAME OF WORK	QTY	UNIT	RATE(Rs)	AMOUNT(Rs)
	JOGINDERNAGAR RANGE				
2007-08	(a) Afforestation				
	(a)(i)Enrichment planting (new)	60	Hec	81,000	486,000
	(a)(ii)Maintenance				
	1st year	65	Hec	1,850	120,250
	2nd year	90	Hec	1,200	108,000
	3rd year	105	Hec	650	68,250
	4th year	103	Hec	550	56,650
	5th year	57	Hec	550	31,350
	(a)(iii)Raising of nursery plants	98,000	Nos	3/-EACH	294,000
	(a)(iv)Mazdoor for watch and ward of plantations for a year.	12	Nus	1650/-* PER MONTH	237,600
	Total (a):				1,402,100
	(b) S.S.O.				
	(b)(i)Climber cutting.	110	Hec	1,100	121,000
	(b)(ii)Removal of Parthinium	25	Hec	1,800	45,000
	(b)(iii)Removal of Lantana		Hec	3,597	
	Total (b):				166,000
	(c)Consolidation and Demarcation				
	Repair of Boundary pillars		Nn	61.25	
	Total (c)				0
	(d)Forest Protection				
	Preparation of fire lines		Km	10,000	
	Total (d)				0
	(e)Construction of Roads				
	(e)(i) Const. of Bridle Paths	12	Km	20,000	240,000
	(e)(ii)Const. of Mule road		Km	30,000	
	Total (e)				240,000
	Total (a)to(e)				1,008,100
	(f)Construction of buildings		No		
	Total (f)				0
	(g)Soil conservation works				
	1.Check dams in cement mortar				
	2.00 mtrs	16	No.	28,000	448,000
	2.50 "	12	No.	33,800	405,600
	3.00 "	4	No.	44,900	179,600
	4.50 "	2	No.	67,000	134,000
	5.00 "	5	No.	72,000	360,000
	6.00 "	2	No.	86,000	172,000
	10.00"		No.	124,000	
	15.00 "		No.	168,000	
	20.00 "		No.	229,000	
	30.00 "		No.	333,000	
	Total(g)(1)				1,699,200
	2.Check dams in wire crates				
	3.75 mtrs	8	No.	59,000	472,000
	5.00 "	9	No.	68,800	619,200
	6.25"		No.	86,000	
	7.50 "		No.	103,700	
	8.75 "		No.	113,000	
	10.00"		No.	133,000	
	12.50 "		No.	159,000	
	15.00 "		No.	183,000	
	Total(g)(2)				1,091,200
	3.Gully plugging/Check walls(dry)				
	1.50 mtrs	75	No.	2,200	165,000
	2.00 "	15	No.	3,000	45,000
	2.50"	13	No.	4,100	53,300
	Total(g)(3)				263,300

	4.Retaining Walls in Cement Mortar.				
	5.00 "		No.	29,500	
	6.00"		No.	36,000	
	8.00 "	1	No.	48,000	48,000
	10.00 "	4	No.	60,000	240,000
	12.00 "		No.	72,000	
	15.00"		No.	90,000	
	30.00"		No.	181,000	
	Total(g)(4)				288,000
	5.Retaining Walls in wire crates.				
	2.50 Mtr.		No.	20,000	
	3.75"		No.	30,000	
	5.00 "	8	No.	40,000	320,000
	6.25 "	1	No.	50,000	50,000
	7.50 "	3	No.	60,000	180,000
	10.00 "	19	No.	80,000	1,520,000
	12.50"	7	No.	100,000	700,000
	15.00 "	10	No.	120,000	1,200,000
	Total(g)(5)				3,970,000
	6.Retaining Walls in dry masonary.				
	15.00 Mtr.		No.	7,600	
	6.00"		No.	12,700	
	7.50 "	7	No.	15,800	110,600
	10.00 "		No.	20,500	
	12.00 "		No.	24,000	
	15.00"	4	No.	32,000	128,000
	Total(g)(6)				238,600
	7.Spurs in wire crates				
	2.50 Mtrs	6	No.	6,800	40,800
	3.75"		No.	10,000	
	5.00 "	8	No.	13,000	104,000
	7.50"		No.	20,000	
	10.00"		No.	20,500	
	12.50		No.	33,400	
	15.00"		No.	40,000	
	Total(g)(7)				144,800
	8.Const. of farm ponds.				
	20x10x2 Mtrs	2	No.	26,000	52,000
	Total(g)(8)				52,000
	9.Purchase of tools/plants.	-	-	-	0
	Total				0
	Total (a to g)Soil Conservation	0			7,747,100
	Total (a to g) Works				9,555,200
2	UHL (DIR RANGE)				
	(a) to (f)				
	(g) Soil Conservation Works				
	1.Check dams in wire crates.				
	3.75 Mtr.		No.	59,000	
	5.00 "		No.	68,800	
	6.25 "		No.	86,000	
	7.50 "	6	No.	103,700	622,200
	8.75 "	7	No.	113,000	791,000
	10.00 "		No.	133,000	
	Total(g)(1)				1,413,200
	2 Retaining Walls in wire crates				
	15.00 mtrs	0	No.	120,000	0
	Total(g)(2)				0
	Total (g)(1) + (2)				1,413,200
	TOTAL JOGINDERNAGAR+ UHL DIR RANGE				10,968,400

YEARWISE PROGRAMME OF WORKS(FORESTORY AND SOIL CONSERVATION)
CATCHMENT AREA TREATMENT PLAN OF UHL HYDROELCTRIC PROJECT
STAGE-III IN RESPECT OF JOGINDERNAGAR RANGE OF JOGINDERNAGAR
FOREST DIVISION AND UHL (BR) RANGE OF PALAMPUR FOREST DIVISION

YEAR	NAME OF WORK	QTY	UNIT	RATE(Rs)	AMOUNT(Rs)
	JOGINDERNAGAR RANGE				
2008-09	(a) Afforestation				
	(a)(i)Enclosure planting (new)	60	Hec	61,000	486,000
	(a)(ii)Maintenance				
	1st year	60	Hec	1,850	111,000
	2nd year	65	Hec	1,200	78,000
	3rd year	90	Hec	650	58,500
	4th year	205	Hec	550	57,750
	5th year	103	Hec	550	56,650
	(a)(iii)Raising of nursery plants	93,000	Nos	3/-EACH	279,000
	(a)(iv)Mazdoor for watch and ward of plantations for a year.	12	Nos	1650/- PER MONTH	237,600
	Total (a):				1,364,500
	(b) S.S.O.				
	(b)(i)Climber cutting	95	Hec	1,100	104,500
	(b)(ii)Removal of Parthinium	19	Hec	1,800	34,200
	(b)(iii) Removal of Lantana		Hec	3,597	
	Total (b):				138,700
	(c)Consolidation and Demarcation				
	Repair of Boundary pillars		No	61.25	
	Total (c)				0
	(d)Forest Protection				
	Preparation of fire lines		Km	10,000	
	Total (d)				0
	(e)Construction of Roads				
	(e)(i) Cons.of Bridal Paths	9	Km	20,000	180,000
	(e)(ii)Cons.to Jal Male road		Km	30,000	
	Total (e)				180,000
	Total (a) to (e)				1,683,200
	(f)Construction of buildings		No		
	Total (f)				0
	(g)Soil conservation works				
	1.Check dams in cement mortar				
	2.00 mts		No.	28,000	
	2.50 "	3	No.	33,800	101,400
	3.00 "		No.	44,900	
	4.50 "		No.	67,000	
	5.00 "		No.	72,000	
	6.00 "		No.	86,000	
	10.00"		No.	124,000	
	15.00 "		No.	168,000	
	20.00 "		No.	229,000	
	30.00 "	1	No.	333,000	333,000
	Total(g-1)(1)				434,400
	2.Check dams in wire crates				
	3.75 mts	9	No.	59,000	531,000
	5.00 "		No.	68,800	
	6.25"		No.	86,000	
	7.50 "	4	No.	103,700	414,800
	8.75"		No.	113,000	
	10.00"		No.	133,000	
	12.50 "		No.	159,000	
	15.00 "		No.	183,000	
	Total(g-1)(2)				945,800
	3.Gully plugging/Check walls(dry)				
	1.50 mts	46	No.	2,200	101,200
	2.00 "	78	No.	3,000	234,000
	2.50"	30	No.	4,100	123,000
	Total(g-1)(3)				458,200

4.Retaining Walls in Cement Mortar.				
5.00"		No.	29,500	
6.00"		No.	30,000	
8.00"		No.	48,000	
10.00"		No.	60,000	
12.00"		No.	72,000	
15.00"		No.	90,000	
30.00"		No.	181,000	
Total(g)(4)				0
5.Retaining Walls in wire crates.				
2.50 Mtr.	9	No.	20,000	180,000
3.75"		No.	30,000	
5.00"	10	No.	40,000	400,000
6.25"	4	No.	50,000	200,000
7.50"	1	No.	60,000	60,000
10.00"	14	No.	80,000	1,120,000
12.50"		No.	100,000	
15.00"	9	No.	120,000	1,080,000
Total(g)(5)				3,040,000
6.Retaining Walls in dry masonary.				
15.00Mtr.		No.	7,000	
6.00"		No.	12,700	
7.50"		No.	15,800	
10.00"		No.	20,500	
12.00"		No.	24,000	
15.00"	1	No.	32,000	32,000
Total(g)(6)				32,000
7.Spurs in wire crates				
2.50 Mtrs		No.	6,800	
3.75"		No.	10,000	
5.00"		No.	13,000	
7.50"		No.	20,000	
10.00"		No.	20,500	
12.50"		No.	33,400	
15.00"		No.	40,000	
Total(g)(7)				0
8.Const. of farm ponds.				
20x10x2 Mtrs	1	No.	26,000	26,000
Total(g)(8)				26,000
9.Purchase of tools/plants.	-	-	-	0
Total				0
Total (a to g)Soil Conservation	0			4,936,400
Total (a to g) Works				6,619,600
7 UBL (DIR RANGE)				
(a) to (f)				
(g) Soil Conservation Works				
1.Check dams in wire crates.				
3.75 Mtr.		No.	59,000	
5.00"		No.	68,800	
6.25"		No.	86,000	
7.50"	6	No.	103,700	622,200
8.75"		No.	113,000	
10.00"		No.	133,000	
Total(g)(1)				622,200
2.Retaining Wall in wire crates				
15.00 mtrs	0	No.	170,000	0
Total(g)(2)				0
Total (g)(1) + (2)				622,200
TOTAL JOGINDERNAGAR+ UBL DIR RANGE				7,241,800

Sheet-11

YEARWISE PROGRAMME OF WORKS(FORESTORY AND SOIL CONSERVATION)
CATCHMENT AREA TREATMENT PLAN OF UHL HYDROELECTRIC PROJECT -
STAGE III [illegible] OF JOGINDERNAGAR RANGE OF JOGINDERNAGAR
FOREST DIVISION AND UHL (BIR) RANGE OF PALAMPUR FOREST DIVISION

YEAR	ITEM OF WORK	QTY	UNIT	RATE (Rs.)	AMOUNT (Rs.)
	JOGINDERNAGAR RANGE				
2009-10	(a) Afforestation				
	(a)(i)Closed/fenced planting (new)		Hec	81,600	
	(a)(ii)Maintenance				
	1st year	60	Hec	1,850	111,000
	2nd year	60	Hec	1,200	72,000
	3rd year	65	Hec	650	42,250
	4th year	90	Hec	550	49,500
	5th year	105	Hec	550	57,750
	(a)(iii)Raising of nursery plants	47,000	Nos	3/-EACH	141,000
	(a)(iv)Mazdoor for watch and ward of plantations for a year	12	Nos	1650/-* PER MONTH	237,600
	Total (a)				711,100
	(b) S.S.C.				
	(b)(i)Climber cutting		Hec	1,100	
	(b)(ii)Removal of Parthenium		Hec	1,800	
	(b)(iii)Removal of Lantana		Hec	3,507	
	Total (b)				0
	(c)Consolidation and Demarcation				
	Repair of Boundary pillars		No	61.25	
	Total (c)				0
	(d)Forest Protection				
	Preparation of fire lines		Km	10,000	
	Total (d)				0
	(e)Construction of Roads				
	(e)(i) Constn.of Bridle Paths		Km	20,000	
	(e)(ii)Constn.of Mule road		Km	30,000	
	Total (e)				0
	Total (a+b+c+d+e)				711,100
	(f)Construction of buildings		No		
	Total (f)				0
	(g)Soil conservation works				
	1.Check dams in cement mortar				
	2.00 mtrs		No.	28,000	
	2.50 "		No.	33,000	
	3.00 "		No.	44,900	
	4.50 "		No.	67,000	
	5.00 "		No.	72,900	
	6.00 "		No.	86,000	
	10.00 "		No.	124,000	
	15.00 "		No.	168,000	
	20.00 "		No.	220,000	
	30.00 "		No.	333,000	
	Total(g)(1)				0
	2.Check dams in wire crates				
	3.75 mtrs		No.	59,000	
	5.00 "		No.	68,800	
	6.25 "		No.	86,000	
	7.50 "		No.	103,700	
	8.75 "		No.	113,000	
	10.00 "		No.	133,000	
	12.50 "		No.	159,000	
	15.00 "		No.	183,000	
	Total(g)(2)				0
	3.Gully plugging/Check walls(dry)				
	1.50 mtrs		No.	2,200	
	2.00 "		No.	3,000	
	2.50 "		No.	4,100	
	Total(g)(3)				0

4 Retaining Walls in Cement Mortar.				
5.00 "		No.	29,500	
6.00"		No.	36,000	
8.00 "		No.	48,000	
10.00 "		No.	60,000	
12.00 "		No.	72,000	
15.00"		No.	90,000	
30.00"		No.	181,000	
Total(g)(4)				0
5 Retaining Walls in wire crates.				
2.50 Mtr.		No.	20,000	
3.75"		No.	30,000	
5.00 "		No.	40,000	
6.25 "		No	50,000	
7.50 "		No.	60,000	
10.00 "		No.	80,000	
12.50"		No.	100,000	
15.00 "		No.	120,000	
Total(g)(5)			500,000	0
6 Retaining Walls in dry masonary.				
15.00 Mtr.		No.	7,600	
6.00"		No.	12,700	
7.50 "		No.	15,800	
10.00 "		No.	20,500	
12.00 "		No.	24,000	
15.00"		No.	32,000	
Total(g)(6)				0
7 Spurs in wire crates				
2.50 Mtrs		No.	6,800	
3.75"		No.	10,000	
5.00 "		No.	13,000	
7.50"		No.	20,000	
10.00"		No	20,500	
12.50"		No.	33,400	
15.00"		No.	40,000	
Total(g)(7)				0
8 Const. of farm ponds,				
20x20x2 Mtr.		No.	26,800	
Total(g)(8)				0
9 Purchase of tools/plants.	-	-	-	0
Total				0
Total (a to g) Soil Conservation	0			0
Total (a to g) Works				711,100
2 UHL (BIR RANGE)				
(a) to (f)				
(g) Soil Conservation Works				
1 Check dams in wire crates.				
3.75 Mtr.		No.	59,000	
5.00 "		No.	68,800	
6.25 "		No.	86,000	
7.50 "		No.	103,700	
8.75 "		No.	113,000	
10.00 "		No.	133,000	
Total(g)(1)				0
2 Retaining Wall in wire crates				
15.00 mtr.	0	No	120,000	0
Total(g)(2)				0
Total (g)(1) + (2)				0
TOTAL JOGINDERNAGAR+ UHL BIR RANGE				711,100

YEARWISE PROGRAMME OF WORKS(FORESTORY AND SOIL CONSERVATION)
CATCHMENT AREA TREATMENT PLAN OF UHL HYDRCELCTRIC PROJECT
STAGE-II IN RESPECT OF JOGINDERNAGAR RANGE OF JOGINDERNAGAR
FOREST DIVISION AND UHL (DR) RANGE OF PALAMPUR FOREST DIVISION

YEAR	NAME OF WORK	QTY	UNIT	RATE(Rs)	AMOUNT(Rs)
	JOGINDERNAGAR RANGE				
2010-11	(a) Afforestation				
	(a)(i)Enrichment planting (new)		Hec	81,000	
	(a)(ii)Maintenance				
	1st year		Hec	1,850	
	2nd year	60	Hec	1,200	72,000
	3rd year	60	Hec	650	39,000
	4th year	65	Hec	550	35,750
	5th year	90	Hec	550	49,500
	(a)(iii)Cost of nursery plants	26,000	Nos	3/-EACH	78,000
	(a)(iv)Mazdoor for watch and ward of plantations for a year	12	Nos	1650/- PER MONTH	237,600
	Total (a):				511,850
	(b) S.S.O.				
	(b)(i)Chirdua cutting		Hec	1,100	
	(b)(ii)Removal of Parthinium		Hec	1,800	
	(b)(iii)Removal of Lantana		Hec	3,597	
	Total (b):				0
	(c)Consolidation and Demarcation				
	Repair of Boundary pillars		No	61.25	
	Total (c)				0
	(d)Forest Protection				
	Preparation of fire lines		Km	10,000	
	Total (d)				0
	(e)Construction of Roads				
	(e)(i) Cons.of Bridle Paths		Km	20,000	
	(e)(ii)Construction Made road		Km	30,000	
	Total (e)				0
	Total (a)to(e)				511,850
	(f)Construction of buildings		No		
	Total (f)				0
	(g)Soil conservation works				
	1.Check dams in cement mortar				
	2.00 mtrs		No.	28,000	
	2.50 "		No.	33,800	
	3.00 "		No.	44,900	
	4.50 "		No.	67,000	
	5.00 "		No.	72,000	
	6.00 "		No.	86,000	
	10.00"		No.	124,000	
	15.00 "		No.	160,000	
	20.00 "		No.	229,000	
	30.00 "		No.	333,000	
	Total(g)(1)				0
	2.Check dams in wire crates				
	3.75 mtrs		No.	59,000	
	5.00 "		No.	68,800	
	6.25"		No.	86,000	
	7.50 "		No.	103,700	
	8.75 "		No.	113,000	
	10.00"		No.	133,000	
	12.50 "		No.	159,000	
	15.00 "		No.	183,000	
	Total(g)(2)				0
	3.Gully plugging/Check walls(dry)				
	1.50 mtrs		No	2,200	
	2.00 "		No.	3,000	
	2.50"		No	4,100	
	Total(g)(3)				0

	4 Retaining Walls in Cement Mortar.				
	5.00 "		No.	29,500	
	6.00"		No.	36,000	
	8.00 "		No.	48,000	
	10.00 "		No.	60,000	
	12.00 "		No.	72,000	
	15.00"		No.	90,000	
	30.00"		No.	181,000	
	Total(g)(4)				0
	5 Retaining Walls in wire crates.				
	2.50 Mtr.		No.	20,000	
	3.75"		No.	30,000	
	5.00 "		No.	40,000	
	6.25 "		No.	50,000	
	7.50 "		No.	60,000	
	10.00 "		No.	80,000	
	12.50"		No.	100,000	
	15.00 "		No.	120,000	
	Total(g)(5)				0
	6 Retaining Walls in dry masonary.				
	15.00 Mtr.		No.	7,600	
	6.00"		No.	12,700	
	7.50 "		No.	15,800	
	10.00 "		No.	20,500	
	12.00 "		No.	24,000	
	15.00"		No.	32,000	
	Total(g)(6)				0
	7 Spurs in wire crates				
	2.50 Mtrs		No.	6,800	
	3.75"		No.	10,000	
	5.00 "		No.	13,000	
	7.50"		No.	20,000	
	10.00"		No.	26,500	
	12.50"		No.	33,400	
	15.00"		No.	40,000	
	Total(g)(7)				0
	8 Const. of farm ponds.				
	20x10x2 Mtrs		No.	26,000	
	Total(g)(8)				0
	9 Purchase of tools/plants.				0
	Total				0
	Total (a to g) Soil Conservation				0
	Total (a to g) Works				511,850
2	UHL (BIR RANGE)				
	(a) to (f)				
	(g) Soil Conservation Works				
	1.Check dams in wire crates.				
	3.75 Mtr.		No.	59,000	
	5.00 "		No.	68,800	
	6.25 "		No.	86,000	
	7.50 "		No.	103,700	
	8.75 "		No.	113,000	
	10.00 "		No.	133,000	
	Total(g)(1)				0
	2 Retaining Wall in wire crates				
	15.00 mtrs	0	No.	120,000	0
	Total(g)(2)				0
	Total (g)(1) + (2)				0
	TOTAL JOGINDERNAGAR+ UHL BIR RANGE				511,850

YEARWISE PROGRAMME OF WORKS(FORESTORY AND SOIL CONSERVATION) CATCHMENT AREA TREATMENT PLAN OF UHL HYDROELECTRIC PROJECT STAGE-II IN RESPECT OF JOGINDERNAGAR RANGE OF JOGINDERNAGAR FOREST DIVISION AND UHL (BIR) RANGE OF PALAMPUR FOREST DIVISION

YEAR	NAME OF WORK	QTY	UNIT	RATE(Rs)	AMOUNT(R
	JOGINDERNAGAR RANGE				
2011-12	(a) Afforestation				
	(a)(i)Enclosure planting (new)		Hec	81,000	
	(a)(ii)Maintenance				
	1st year		Hec	1,650	
	2nd year		Hec	1,200	
	3rd year	60	Hec	650	39,000
	4th year	60	Hec	550	33,000
	5th year	65	Hec	550	35,750
	(a)(iii)Raising of nursery plants	20,000	Nos	3/-EACH	60,000
	(a)(iv)Mazdoor for watch and ward of plantations for a year.	6	Nos	1650/-" PER MONTH	118,800
	Total (a):				286,550
	(b) S.S.O.				
	(b)(i)Climber cutting		Hec	1,100	
	(b)(ii)Removal of Parthinium		Hec	1,000	
	(b)(iii)Removal of Lantana		Hec	3,597	
	Total (b):				0
	(c)Consolidation and Demarcation				
	Repair of Boundary pillars		No	61.25	
	Total (c)				0
	(d)Forest Protection				
	Preparation of fire lines		Km	10,000	
	Total (d)				0
	(e)Construction of Roads				
	(e)(i) Cons.of Bridle Paths		Km	20,000	
	(e)(ii)Constn.of Mule road		Km	30,000	
	Total (e)				0
	Total (a+b+c+d+e)				286,550
	(f)Construction of buildings		No		
	Total (f)				0
	(g)Soil conservation works				
	1.Check dams in cement mortar				
	2.00 mtrs		No.	28,000	
	2.50 "		No.	33,800	
	3.00 "		No.	44,900	
	4.50 "		No.	67,000	
	5.00 "		No.	72,000	
	6.00 "		No.	86,000	
	10.00"		No.	124,000	
	15.00 "		No.	168,000	
	20.00 "		No.	229,000	
	30.00 "		No.	333,000	
	Total(g)(1)				0
	2.Check dams in wire crates				
	3.75 mtrs		No.	59,000	
	5.00 "		No.	68,800	
	6.25"		No.	86,000	
	7.50 "		No.	103,700	
	8.75 "		No.	113,000	
	10.00"		No.	133,000	
	12.50 "		No.	159,000	
	15.00 "		No.	183,000	
	Total(g)(2)				0
	3.Gully plugging/Check walls(dry)				
	1.50 mtrs		No.	2,200	
	2.00 "		No.	3,000	
	2.50"		No.	4,100	
	Total(g)(3)				0

	4.Retaining Walls in Cement Mortar.				
	5.00 "		No.	29,500	
	6.25"		No.	36,000	
	8.00 "		No.	46,000	
	10.00 "		No.	60,000	
	12.00 "		No.	72,000	
	15.00"		No.	90,000	
	30.00"		No.	181,000	
	Total(g)(4)				0
	5.Retaining Walls in wire crates.				
	2.50 Mtr.		No.	20,000	
	3.75"		No.	30,000	
	5.00 "		No.	40,000	
	6.25 "		No.	50,000	
	7.50 "		No.	60,000	
	10.00 "		No.	80,000	
	12.50"		No.	100,000	
	15.00 "		No.	120,000	
	Total(g)(5)				0
	6.Retaining Walls in dry masonary.				
	15.00 Mtr.		No.	7,000	
	6.00"		No.	12,700	
	7.50 "		No.	15,800	
	10.00 "		No.	20,500	
	12.00 "		No.	24,000	
	15.00"		No.	32,000	
	Total(g)(6)				0
	7.Spurs in wire crates				
	2.50 Mtrs		No.	6,800	
	3.75"		No.	10,000	
	5.00 "		No.	13,000	
	7.50"		No.	20,000	
	10.00"		No.	20,500	
	12.50"		No.	33,400	
	15.00"		No.	40,000	
	Total(g)(7)				0
	8.Const. of farm ponds.				
	20x10x2 Mtrs		No.	26,000	
	Total(g)(8)				0
	9.Purchase of tools/plants.				0
	Total				0
	Total (a to g)Soil Conservation	0			0
	Total (a to g) Works				266,550
2	UHL (BIR RANGE)				
	(a) to (f)				
	(g) Soil Conservation Works				
	1.Check dams in wire crates				
	2.75 Mtr		No.	50,000	
	5.00 "		No.	68,800	
	6.25 "		No.	86,000	
	7.50 "		No.	103,700	
	8.75 "		No.	113,000	
	10.00 "		No.	133,000	
	Total(g)(1)				0
	2.Retaining Wall in wire crates				
	15.00 mtr.	0	No.	120,000	0
	Total(g)(2)				0
	Total (g)(1) + (2)	0			0
	TOTAL JOGINDERNAGAR+ UHL BIR RANGE				266,550

YEARWISE PROGRAMME OF WORKS (FORESTARY AND SOIL CONSERVATION) UNDER CATCHMENT AREA TREATMENT PLAN OF UHL HYDRO ELECTRIC PROJECT STAGE III IN RESPECT OF JOGINDER NAGAR RANGE OF JOGINDER NAGAR FOREST DIVISION AND UHL (III) RANGE OF PALAMPUR FOREST DIVISION

YEAR	NAME OF WORK	QTY	UNIT	RATE (Rs.)	AMOUNT
	JOGINDER NAGAR RANGE				
2012-13	(a) Afforestation				
	(a)(i) Enrichment planting (New)		Hec.	8100	
	(a)(ii) Maintenance				
	1st year		Hec.	1850	
	2nd year		Hec.	1200	
	3rd year		Hec.	650	
	4th year	60	Hec.	550	33,000
	5th year	60	Hec.	550	33,000
	(a)(iii) Raising of nursery plants	6000	Nos.	3	18,000
	(a)(iv) Mazdoors for watch and ward of plantations for a year	6	Nos.	1650 each per month	1,18,800
	Total (a) :				**2,02,800**
	(b) S.S.O.				
	(b)(i) Climber cutting		Hec.	1100	
	(b)(ii) Removal of Parthenium		Hec.	1800	
	(b)(iii) Removal of Lantana		Hec.	3697	
	Total (b) :				**0**
	(c) Consolidation and Demarcation				
	Repair of Boundary pillars		No.	61.25	0
	Total (c) :				**0**
	(d) Forest Protection				
	Preparation of fire lines		Km	10000	
	Total (d) :				**0**
	(e) Contruction of Roads				
	(e)(i) Constn. of B/path/ paths		Km	20000	
	(e)(ii) Constn. of Mule road		Km	30000	
	Total (e) :				**0**
	(f) Construction of buildings		No.		
	Total (f) :				**0**
	Total (a to f)				**2,02,800**
	(g) Soil conservation works				
	1. Check dams in cement mortar				
	2.00 mtrs.		No.	28,000	
	2.50 mtrs.		No.	33,800	
	3.00 mtrs.		No.	44,000	
	4.50 mtrs.		No.	67,000	
	5.00 mtrs.		No.	72,000	
	6.00 mtrs.		No.	86,000	
	10.00 mtrs.		No.	124,000	
	15.00 mtrs		No.	168,000	
	20.00 mtrs.		No.	229,000	
	30.00 mtrs		No.	333,000	
	Total (g)(1) :				**0**
	2. Check dams in wire crates				
	3.75 mtrs.		No.	59,000	
	5.00 mtrs.		No.	68,800	
	6.25 mtrs.		No.	86,000	
	7.50 mtrs.		No.	103,700	
	8.75 mtrs.		No.	113,000	
	10.00 mtrs.		No.	133,000	
	12.50 mtrs.		No.	159,000	
	15.00 mtrs.		No.	183,000	
	Total (g)(2) :				**0**
	3. Gully plugging/Check walls (dry)				
	1.50 mtrs.		No.	2700	
	2.00 mtrs.		No.	3000	
	2.50 mtrs		No.	4100	
	Total (g)(3) :				**0**

4. Retaining walls in Cement Mortar				
5.00 mtrs.	No.	29,500		
6.00 mtrs.	No.	38,000		
8.00 mtrs.	No.	48,000		
10.00 mtrs.	No.	69,000		
12.00 mtrs.	No.	77,000		
15.00 mtrs.	No.	90,000		
30.00 mtrs	No.	181,000		
Total (g)(4) :				0
5. Retaining walls in wire crates				
2.50 mtrs.	No.	20,000		
3.75 mtrs	No	30,000		
5.00 mtrs.	No.	40,000		
6.25 mtrs.	No.	50,000		
7.50 mtrs.	No.	60,000		
10.00 mtrs.	No.	80,000		
12.50 mtrs	No.	100,000		
15.00 mtrs.	No.	120,000		
Total (g)(5) :				0
6. Retaining walls in dry masonry				
5.00 mtrs	No	7,800		
6.00 mtrs.	No.	12,700		
7.50 mtrs	No.	16,800		
10.00 mtrs	No.	20,500		
12.00 mtrs	No.	24,000		
15.00 mtrs	No.	32,000		
Total (g)(6) :				0
7. Spurs in wire crates				
2.50 mtrs.	No.	6,800		
3.75 mtrs.	No.	10,000		
5.00 mtrs	No.	13,000		
7.50 mtrs	No.	20,000		
10.00 mtrs	No	20,500		
12.50 mtrs	No	33,400		
15.00 mtrs	No.	40,000		
Total (g)(7) :				0
8. Const. of Farm Ponds				
20x10x2 Mtrs	No.	20,000		
Total (g)(8)				0
9. Purchase of Tools/ Plants	-	-	-	0
Total (g)(9)	-	-	-	0
Total (g) Soil Conservation	-	-	-	0
Total Joginder Nagar Range				2,02,800
		UHL (BIR) RANGE		
(f) SCP	-	-	-	0
(g) Soil Conservation Works				
1. Check dams in wire crates				
3.75 mtrs.	No.	39,000		
5.00 mtrs.	No.	68,800		
6.25 mtrs.	No.	86,000		
7.50 mtrs.	No.	103,700		
8.75 mtrs.	No.	113,000		
10.00 mtrs.	No.	133,000		
Total (g)(1) :				0
2. Retaining walls in wire crates				
15.00 mtrs	No	1,20,000		
Total (g)(2) :				0
Total (g) Soil Conservation				0
Total UHL (BIR) Range				0
G. Total 2012-13				2,02,800

YEARWISE PROGRAMME OF WORKS(FORESTORY AND SOIL CONSERVATION) CATCHMENT AREA TREATMENT PLAN OF Uhl HYDROELCTRIC PROJECT STAGE-III IN RESPECT OF JOGINDERNAGAR RANGE OF JOGINDERNAGAR FOREST DIVISION AND UHL (BIR) RANGE OF PALAMPUR FOREST DIVISION

YEAR	NAME OF WORK	QTY	UNIT	RATE(Rs)	AMOUNT(RS)
	JOGINDERNAGAR RANGE				
2013-14	**(a) Afforestation**				
	(a)(i)Mechanised planting (new)		Hec	81,000	
	(a)(ii)Maintenance				
	1st year		Hec	1,850	
	2nd year		Hec	1,200	
	3rd year		Hec	650	
	4th year		Hec	550	
	5th year	60	Hec	550	33,000
	(a)(iii)Raising of nursery plants	3,000	Nos	3/-EACH	9,000
	(a)(v)Watcher for watch and ward of plantations for a year.	6	Nos	1650/- PER MONTH	118,800
	Total (a):				160,800
	(b) S.S.O.(Subsidiary Silvi cultural operations)				
	(b)(i)Climber cutting		Hec	1,100	
	(b)(ii)Removal of Lantana		Hec	1,800	
	(b)(iii) Renewal of Lantana		Hec	3,597	
	Total (b):				0
	(c)Consolidation and Demarcation				
	Repair of Boundary pillars		No	81.25	
	Total (c)				0
	(d)Forest Protection				
	Preparation of fire lines		Km	10,000	
	Total (d)				0
	(e)Construction of Roads				
	(e)(i) Const.of B/pathil Paths		Km	20,000	
	(e)(ii)Constn./of Mule road		Km	30,000	
	Total (e)				0
	Total (a+b+c+d+e)				160,800
	(f)Construction of buildings		No		
	Total (f)				0
	(g)Soil conservation works				
	1.Check dams in cement mortar				
	2.00 mtrs		No.	28,000	
	2.50 "		No.	33,800	
	3.00 "		No.	44,900	
	4.50 "		No.	67,000	
	5.00 "		No.	72,000	
	6.00 "		No.	86,000	
	10.00"		No.	124,000	
	15.00 "		No.	168,000	
	20.00 "		No.	229,000	
	30.00 "		No.	333,000	
	Total(g)(1)				0
	2.Check dams in wire crates				
	3.75 mtrs		No.	59,000	
	5.00 "		No.	68,800	
	6.25"		No.	86,000	
	7.50 "		No.	103,700	
	8.75 "		No.	113,000	
	10.00"		No.	133,000	
	12.50 "		No.	159,000	
	15.00 "		No.	181,000	
	Total(g)(2)				0
	3.Gully plugging/Check walls(dry)				
	1.50 mtrs		No.	2,200	
	2.00 "		No.	3,000	
	2.50"		No.	4,100	
	Total(g)(3)	0			0

4.Retaining Walls in Cement Mortar.					
5.00 "		No.	29,500		
6.00"		No.	36,000		
8.00 "		No.	48,000		
10.00 "		No.	60,000		
12.00 "		No.	72,000		
15.00'		No.	90,900		
30.00"		No.	181,000		
Total(g)(4)	0				0
5.Retaining Walls in wire crates.					
2.50 Mtr.		No.	20,200		
3.75"		No.	30,300		
5.00 "		No.	40,400		
6.25 "		No.	50,000		
7.50 "		No.	60,000		
10.00 "		No.	80,400		
12.50"		No.	103,900		
15.00 "		No.	120,900		
Total(g)(5)	0				0
6.Retaining Walls in dry.masonary.					
15.00 Mtr.		No.	7,600		
6.00"		No.	12,700		
7.50 "		No.	15,800		
10.00 "		No.	20,500		
12.00 "		No.	28,000		
15.00"		No.	40,000		
Total(g)(6)	0				0
7.Spurs in wire crates					
2.50 Mtrs		No.	6,800		
3.75"		No.	10,000		
5.00 "		No.	13,000		
7.50"		No.	20,000		
10.00"		No.	26,500		
12.50"		No.	33,400		
15.00"		No	40,000		
Total(g)(7)	0				0
8.Const. of farm ponds.					
20x10x2 Mtrs		No.	26,000		
Total(g)(8)	0				0
9.Purchase of tools/plants.					0
Total(g)(9)					0
Total : (Soil Conservation Works)					
Total (a to g)					160,800

(2)UHL (BIR RANGE)

(a) to (f)			Nil		
(g) Soil Conservation Works					
(g)1.Check dams in wire crates.					
3.75 Mtr.		No.	59,000		
5.00 "		No.	68,800		
6.25 "		No.	86,000		
7.50 "		No.	103,700		
9.75 "		No.	113,000		
10.00 "		No.	133,000		
Total(g)(1)	0				0
2.Retaining Wall in wire crates					
15.00 mtrs	0	No.	120,900		0
Total(g)(2)	0		120,000		0
Total (g)(1) + (2)	0				0
TOTAL JOGINDERNAGAR(+ UHL BIR RANGE					160,800

DETAILED CHARTS OF FORESTRY WORKS TO BE DONE (YEARWISE) IN CATCHMENT AREA OF UHL HYDROELECTRIC PROJECT-III STAGE IN RESPECT OF JOGINDERNAGAR RANGE OF JOGINDERNAGAR FOREST DIVISION AND UHL (BIR) RANGE OF PALAMPUR FOREST DIVISION'

DETAIL OF WORKS WITH AREA : 2002-03
JOGINDERNAGAR RANGE
(A) AFFORESTATION.

(A)	(i) NEW PLANTING (ENRICHMENT PLANTATION)		In Hec.
1	DPF	Sukar 1st	5
2	DPF	Bhala Rinda	3
3	DPF	Magrudhar	4
4	DPF	Ajiu 1st	3
5	DPF	OD-11 Mahola	5
6	DPF	Hanabagh 1st	2
7	DPF	Digli 1st	5
8	DPF	Bagra 1st	10
9	DPF	Milaradhar	5
10	DPF	Dughgudhar 1st	10
11	DPF	Gugli Khud	5
		Total:	57
(a)	(ii) MAINTENENACE 1st YEAR		NIL
(a)	(iii) Raising of Nursery 40000 plants @ 3/- each		NIL
(a)	(iv) Watch & ward of plantation area by 6 mazdoors for six	Taranal	
(ii)	S.S.O. (Subsidiary silvicultural operations)		
(b)	(i) Climbers cutting.		
1	DPF	Taranal	5
2	DPF	Sukar 1st	10
3	DPF	Sukar 2nd	5
4	DPF	Bhadyara	5
5	DPF	Magrudhar	5
6	DPF	OD-11 Mahola	20
7	DPF	ND-13 Mahola 2nd	5
8	DPF	Digli 1st	5
9	DPF	Bagra 1st	10
10	DPF	Basad	5
11	DPF	Milara dhar	10
12	DPF	Dughgudhar 1st	10
		TOTAL:	95
(b)	(ii) Removal of Parthinium.		
1	DPF	Taranal	3
2	DPF	Sukar 1st	5
3	DPF	[illegible]	2
4	DPF	Ajiu 1st	5
5	DPF	Chauntra	2
6	DPF	ND-13 Mahola 2nd	10
7	DPF	Khudeli Har	3
8	DPF	Mahola 1st	2
9	DPF	Basad	10
10	DPF	Dhelu 1st	1
11	DPF	Dhelu 2nd	5
		TOTAL:	48
(b)	(iii) Removal of Lantana with uprooting.		
1	DPF	Taranal	2
2	DPF	Bhalarinda	5
3	DPF	Ajiu 1st	2
4	DPF	Chauntra	2
		Total	11
(c)	Demarcation and Consolidation		In Nos.
	(i) Repair of Boundary Pillar.		
1	DPF	Taranal	22
2	DPF	Chauntra	19
		Total (@ 61.25 each)	41
(d)	FOREST PROTECTION		In Kms
(d)	(i) Preparation of Fire Line.		
1	DPF	OD Dhangalar	2.0
2	DPF	Bhadehiral	1.5
		Total	3.5
(e)	Construction of Roads		
(e)	(i) Construction of Bridle path/inspection path.		In Kms
1	DPF	Sukar 2nd (Ashroo to Khalara)	2.0
2	DPF	DPF Milaradhar/Bagra 2nd (Milara to Bagra part)	3.0
		Total	5.0
(f)	CONSTRUCTION OF BUILDINGS		(In Rs)
(f)	(i) Construction of Store at Jogindernagar		200000
(f)	(ii) Construction of Community Conference Hall at Jitlugar		500000
(f)	(iii) Construction of Gang Hut at Chauntra.		300000
		Total	1000000

(g)Soil conservation works--2002-03
JOGINDERNAGAR RANGE

1.Check dams in cement mortar	
2.50 mtr.	----
2.50 "	----
3.00 "	----
4.50 "	----
5.00 "	----
7.00 "	----
10.00"	Mandokhar tributory 2nd-2=2
15.00 "	----
20.00 "	----
30.00 "	----
2.Check dams in wire crates	
2.75 mtr.	Sukhlog Nallah 2, Thalkot Nallah-3, DPF Harabag I Nall-3, DPF Bagra 1st-6=14
5.00 "	Thalkot Nallah-2, Majhera Nalah-2,DPF Bagra 1st-6, Shanan Nallah-5=15
6.25"	Mandokhar tributory 2nd-10, Shanan Nallah-3=13
7.50 "	DPF Bagra 1st-3, Maharana Nallah-3=6
8.75 "	--
10.00"	Maharana Nallah-1, Mandokhar tributory 2nd-6= 7
12.50 "	---
15.00 "	Mandokhar tributory 1st-2= 2
3.Gully plugging/Check walls(dry)	
1.50 mtrs	--
2.00 "	Papnas Nallah-8, Dag Nallah-10, Mandokhar P/Area-10, DPF Banad-10= 40
2.50"	Sukhlog Nallah-3, DPF Harabag Ist Nall-8, Mandokhar P/Area -6=17
4.Retaining Walls in Cement Mortar.	
5.00 "	--
6.00"	Mihara Nallah-2=2
8.00 "	--
10.00 "	--
12.00 "	--
15.00"	--
20.00"	--
5.Retaining Walls in wire crates.	
2.50 Mtr.	--
3.75"	Machkohar Nallah-1, Talkohar Nallah-1, Mandokhar tributory IV-5,Mandokhar tributory V-5= 12
5.00 "	Mandokhar tributory 2nd-5=5
6.25 "	Mandokhar tributory 2nd-7, Mandokhar tributory 3rd-5= 12
7.50 "	Sukar Khad-2 =2
10.00 "	Sukar Khad-2, DPF Digli 2nd-2, Nerkhad-1,Mandokhar tributory 1st-2,Kholi Nallah-4 =1
12.50"	Sukar khad-4=4
15.00 "	Sukar Khad-2, DPF Digli 2nd-2, DPF Harabag 2nd-4,Nerkhad-3= 11
6.Retaining Walls in dry.masonary.	
5.00 Mtr.	Mandokhar tributory 3rd--1=11
6.00"	--
7.50 "	---
10.00 "	Sukar khad-3, Bagra Nallah-12 =15
12.00 "	--
15.00"	Maharana Nallah-5=5
7.Spurs in wire crates	
2.50 Mtrs	-
3.75"	-
5.00 "	Nerkhad-3=3
7.50"	Dhoghar Nallah-4, Nerkhad-4= 8
10.00"	Sukar Khad-12, Nerkhad-4= 16
12.50"	Dhoghar Nallah-1=4
15.00"	Dhoghar Nallah-3, Sukar Khad-2= 5
8.Const. of farm ponds.	
20x10x2 Mtrs	UPF Mupudhar-1=1
9.Purchase of tools/plants.	Rs. 500000 Rs.500000

(2)UHL (BIR RANGE)

(a) to (f)	NIL

(g) Soil Conservation Works

(g)1.Check dams in wire crates.	
3.75 Mtr.	Panjal Dugh Nallah-8=8
5.00 "	--
6.25 "	--
7.50 "	
8.75 "	--
10.00 "	--
2.Retaining Wall in wire crates	
15.00 mtr.	In Nallahs 6=6

DETAIL OF WORKS WITH AREA : 2003-04
JOGINDERNAGAR RANGE
(A) AFFORESTATION.

(A) (i) NEW PLANTING (ENRICHMENT PLANTATION) — In Hec.

1	DPF	Tanrot	5
2	DPF	Sukar 1st	5
3	DPF	Bhadiyara	2
4	DPF	Magrudhar	4
5	DPF	OD-11 Mahola	5
6	DPF	ND-13Mahola 2nd	5
7	DPF	ND-14 Mahola 3rd	5
8	DPF	Khalnli Nal	5
9	DPF	Digli 1st	5
10	DPF	Digli 2nd	10
11	DPF	Bagra 2nd	10
12	DPF	Bagra 3rd	10
13	DPF	Miharadhar	5
14	DPF	Galu	2
15	DPF	Gugali khad	5
16	DPF	Dugha Gahar 1st	10
17	DPF	Trimunda	10
		Total:	103

(a) (ii) MAINTENENACE OF PLANTATIONS--1st YEAR

1	DPF	Sukar 1st	5
2	DPF	Bhalaranda	3
3	DPF	Magrudhar	4
4	DPF	Ahju 1st	3
5	DPF	OD-11 Mahola	5
6	DPF	Harabag 1st	2
7	DPF	Digli 1st	5
8	DPF	Bagra 1st	10
9	DPF	Miharadhar 1st	5
10	DPF	Dugaghar 1st	10
11	DPF	Gugali khad	5
		TOTAL:	57

(a) (iii) RAISING OF NURSERY PLANTS 90000 Nos. @ 3/- each

(a) (iv) WATH & WART OF PLANTATION AREA BY SIX MAZDOORS FOR A YEAR 2 1650/-EACH P/MONTH

(b) S.S.O. (SUBSIDIARY SILVI CULTURAL OPERATIONS)

(b) (i) Climber Cuttings

1	DPF	Sukar 1st	10
2	DPF	Sukar 2nd	5
3	DPF	OD Dhanyatar	5
4	DPF	ND Dhanyatar	2
5	DPF	Bhalaranda	5
6	DPF	Magrudhar	5
7	DPF	OD-II Mahola	30
8	DPF	ND-12 Mahola 1st	10
9	DPF	ND-13 Mahola 2nd	15
10	P/Area	Galli 1st	5
11	DPF	Harabag 2nd	8
12	DPF	Digli 1st	10
13	DPF	Bagra 2nd	10
14	DPF	Miharadhar	10
15	DPF	Dugha Gahar 1st	10
16	DPF	[illegible]	10
17	DPF	Sutadhar plantation	5
		Total:	156

(b) (ii) Removal of Parthinium.

1	DPF	Sukar 1st	5
2	DPF	Sukar 2nd	5
3	DPF	Badhiyara	7
4	DPF	Bhalaranda	5
5	DPF	ND-13 Mahola 2nd	10
6	DPF	Harabagh 2nd	8
7	DPF	Kunampadhar 1st	10
8	DPF	Sutadhar plantation	5
9	DPF	Jund Tikkar	5
		TOTAL:	60

(b)	(iii) Removal of Lantana with uprooting.		
1	DPF	Sukar 1st	5
2	DPF	Kandola Nal	5
3	DPF	Khagrotu 1st	5
4	DPF	Chaunda 2nd	2
5	DPF	Suhidhar plantation	5
		TOTAL	22
(c)	Demarcation and Consolidation		In Nos.
	(i) Repair of Boundary Pillar .		
1	DPF	Sukar 1st	24
2	DPF	Sukar 2nd	14
3	DPF	Badhiyaro	13
4	DPF	Magrudhar	69
5	DPF	Ahju 1st	25
6	DPF	OD-II Marhola	15
7	DPF	ND-12 Marhola 1st	40
		Total	200
(d)	FOREST PROTECTION		In Kms
(d)	(i) Preparation of Fire Line.		
1	DPF	Sukar 1st	5.5
2	DPF	Khagrotu 1st	1.5
		Total	7.0
(e)	(i) Construction of Mule Road/Bridle paths.		
(e)	(i) Construction of Mule Road.		In Kms
1	DPF	Karanpurdhar 1st/2nd.	2.5
		Gali to Galu (Part)	
		Total	2.5
(e)	(ii) Construction of Bridle paths.		
1	DPF	Sukar 1st	
		Nagan to Kaflan	3.00
2		OD-II Marhola/ND-12 Marhola 1st	
	Kangra Boundary Panjal Dugh to Upper Marhola part		4.00
3	DPF	Digli 1st	
		Nagchota to Digli	4.00
4	DPF	Sulsi/ DPF Suhidhar plantation	
		Panjajan dhar to Sulsi (Part)	2.50
5	DPF	Mharadhar	
		Mhara to Pait (Part)	2.00
6	DPF	Mhara/DPF Bagra 2nd	
		Mhara to Bagra (Part)	2.00
7	DPF	Mhara/DPF Bagra 2nd	
		Mhara to Bagretta (Part)	2.00
		Total	20.00
(f)	FOR DIRECTS		(In Rs)
(f)	(i) Construction of Community Conference Hall at Chanta (F.R.H. Chaunda)		500000
(f)	(ii) Construction of Store at Chaunda		200000
(f)	(iii) Construction of Gang Hut at Galu (Bagra Beat)		300000
		Total	1000000

(g)Soil conservation works--2003-04
JOGINDERNAGAR RANGE

1.Check dams in cement mortar	
2.00 mtrs	----
2.50 "	Lallaun Mandir Nallah-3=3
3.00 "	Lallaun Mandir Nallah-3=3
4.50 "	Harabag Ropi Nallah-2=2
5.00 "	Raja Nallah-2=2
6.00 "	-----
10.00"	Digli Nallah-2, Mandokhar Nallah-3=5
15.00 "	Mandokhar Nallah-3=3
20.00 "	Mandokhar Nallah-1=1
30.00 "	-----
2.Check dams in wire crates	
3.75 mtrs	Baidani Nallah-3, Luna Pani Nallah-2, Bagra Nallah-5= 10
5.00 "	Bainera Nallah-3, DPF Sukar 1st-6, Chatter Nallah-5, DPF Digli 2nd-4,Guard Nallah-4, Mujhera Nallah-2, Bagra Nallah-2= 26
6.25"	Baidani Nallah-3=3
7.50 "	Bhagahar Nallah-2, Nalsari Nallah-2, Raja Nallah-1, DPF Digli 2nd-2,Guard Nallah-2= 9
10.00"	Baidani Nallah-1, Bhagahar Nallah-2, Nalsari Nallah-2, Panehi Nallah-1, DPF Sukar 1st-2, Raja Nallah-2, Guard Nallah-4= 14
12.50 "	Baidani Nallah-3= 3
15.00 "	Bhagahar Nallah-1,Nalsari Nallah-1, DPF Sukar 1st-1, Guard Nallah-2=5
3.Gully plugging(Check wall)(dry)	
1.50 mtrs	Baidani Nallah-15= 15
2.00 "	Baidani Nallah-10, Tributories (a) to (f) of Bhagahar Nallah-10, Mandokhar P/ Area-10= 30
2.50"	Bhagahar Nallah-5, Tributories of Bhagahar Nallah-22, Dak Bagra Nallah-14, DPF Bansal -10= 51
4.Retaining Walls in Cement Mortar.	
5.00 "	--
6.00"	--
8.00 "	--
10.00 "	Nagan Mata Mandir Nallah-2, Mandokhar Nallah-2=4
12.00 "	Mandokhar Nallah-2= 2
15.00"	Nalsari Nallah-1,Hase Nallah-1, Mandokhar Nallah-4= 6
20.00"	--
5.Retaining Walls in wire crates.	
2.50 Mtr.	--
3.75"	Mandokhar tributory V-3= 3
5.00 "	Shanan Nallah-3, Chatter Nallah-3, Nerkhad-2, Mandokhar tributory 2nd-3, Mandokhar tributory 3rd-4= 15
6.25 "	Mandokhar tributory V-5, Mandokhar tributory VI 5= 10
7.50 "	Bagra Mata Mandir Nallah-2, DPF Baradang 2nd-2, Bagra Nallah-2=6
10.00 "	Nagan Mata Mandir Nallah-2, Shanan Nallah-4, Sukar Khad-2,Raja Nallah-3, Khoti Nallah-2, Mandokhar Nallah-3,Chatter Nallah-2,DPF Digli 2nd-3,DPF Hara-Bagh 2nd-3, Nehkhad-2, Bagra Nallah-3= 29
12.50"	Sukarkhad-5, Raja Nallah-3, Chatter Nallah-3,Mandokhar Nallah-3= 14
15.00 "	Sukar Khad-2, Panehi Nallah-1, Raja Nallah-2, Chatter Nallah-2,DPF Digli 2nd-2, Khoti Nallah-2= 14
6.Retaining Walls in dry.masonary.	
5.00 Mtr.	Mandokhar tributory 1st-11=11
6.00"	--
7.50 "	Lunapani Nallah-4=4
10.00 "	Baidani Nallah-4=4
12.00 "	--
15.00"	Khoti Nallah-5=5
7.Spurs in wire crates	
2.50 Mtrs	--
3.75"	Nalsari Nallah-1=1
5.00 "	Nerkhad-3=3, Bagra Nallah-8=11
7.50"	Digli Nallah-3, Nerkhad-4=7
10.00"	Nalsari Nallah-1, Digli Nallah-2, Nerkhad-4= 7
12.50"	--
15.00"	--
8.Const. of farm ponds.	
20x10x2 Mtrs	DPF Sukar 1st-1, DPF Sukar 2nd-1= 2
9.Purchase of tools/plants.	
	-

	(2)UHL (BIR RANGE)
(a) to (f)	NIL

(g) Soil Conservation Works

(g)1.Check dams in wire crates.

4.75 Mtr.	Panjol Dugh Nallah-8=8
5.00 "	--
6.25 "	Paechheka Nallah-10, Panjol Dugh Nallah-5=15
7.50 "	--
8.75 "	--
10.00 "	--

2.Retaining Wall in wire crates

15.00 mtrs.	--

NAME OF WORKS WITH AREA : 2004-05
JOGINDERNAGAR RANGE

(A) AFFORESTATION

(A)	(i) NEW PLANTING (ENRICHMENT PLANTATION)		In Hec.
1	DPF	Sukar 1st	5
2	OD-11	Murhola	8
3	ND-13	Murhola 2nd	10
4	DPF	Khaproli 1st	10
5	DPF	Digli 1st	8
6	DPF	Awaiyer	10
7	DPF	Siyuri C-III	5
8	DPF	Bagra 2nd	8
9	DPF	Bansal	5
10	DPF	Mihara	6
11	DPF	Reundikar	5
12	DPF	Dughaghar 1st	10
13	DPF	Sohi	10
14	DPF	Trimanda	5
		Total:	105
(a)	(ii) MAINTENANCE 1st YEAR		
1	DPF	Tarmani	6
2	DPF	Sukar 1st	5
3	DPF	Bhadyara	2
4	DPF	Magrudhar	4
5	DPF	OD-II Murohola	5
6	DPF	ND-13 Murhola 2nd	5
7	DPF	ND-14 Murhola 3rd	5
8	DPF	KhalehiNAL	5
9	DPF	Digli 1st	5
10	DPF	Digli 2nd	10
11	DPF	Bagra 2nd	10
12	DPF	Ragra rd	10
13	DPF	Mihara	5
14	DPF	Gaiu	2
15	DPF	Gugli Khad	5
16	DPF	Dughaghar 1st	10
17	DPF	Trimanda	10
		Total:	103
(a)	(ii)MAINTENANCE 2ND YEAR		
1	DPF	Sukar 1st	5
2	DPF	Ghola Rinda	3
3	DPF	Magrudhar	4
4	DPF	Jagu 1st	3
5	DPF	OD 11 Murhola	5
6	DPF	Gugli Khad	5
7	DPF	Harabagh 1st	2
8	DPF	Digli 1st	5
9	DPF	Bagra 1st	10
10	DPF	Mihara	5
11	DPF	Dughaghar 1st	10
		Total:	57
(a)	(iii)RAISING OF NURSERY 1,16,000 PLANTS @ 3/-EACH		
(a)	(iv)DEPUTED 12 , MAZDOORS FOR WATCH & WARD @ 1650/- PER MONTH		
(b)	S.S.O. (Subsidiary silvicultural operations)		
(b)	(i) Climbers cutting.		
1	DPF	Sukar 1st	10
2	DPF	Ghola Rinda	5
3	DPF	Magrudhar	5
4	DPF	OD II Murohola	30
5	DPF	ND-12 Murohola 1st	10
6	DPF	ND-13 Murohola 2nd	15
7	DPF	Khaproli 2nd	5
8	PrAres	Sari 2nd	5
9	DPF	Digli 1st	10
10	DPF	Dagra 2nd	10
11	DPF	Mihara dhar	10
12	DPF	Dughaghar 1st	10
13	DPF	DPF Sohi	10
14	DPF	DPF Trimanda	5
		TOTAL:	140

(b)	(ii) Removal of Parthinium.		
1	DPF	Mugudhar.	5
2	DPF	Khoksi Nal	10
3	DPF	Digli 2nd	5
4	DPF	Karanpurdhar.	7
5	DPF	Sohidhar Plantation.	5
6	DPF	Jaral Tikkar.	5
		TOTAL:	37
(b)	(iii) Removal of Lantana with uprooting.		
1	DPF	Sukar 2nd	5
2	DPF	Khatiali Har	2
3	DPF	Khaprolu Ist	5
4	DPF	Jingjara	5
		Total	17
(c)	(i) Demarcation and Consolidation		In Nos.
		Repair of Boundary Pillar .	
1	DPF	(1) Dhanyalar	8
2	DPF	(8)13 Mahola 2nd	81
3	DPF	(8)-14 do- 3rd	20
		Total	109
(d)	FOREST PROTECTION		In Kms
(d)	(i) Preparation of Fire Line.		
1	DPF	Sukar 2nd	5
		Total	5
(e)	Construction of Mule Road/Bridle Path.		
(e)	(i) Construction of Mule Road.		
1	DPF	Karanpurdhar 1st/2nd (Tobhali to Galu)(Part)	2.5
		Total	2.5
(e)	(ii)Construction of Bridle Path		
1	DPF	Sukar 1st (Sukar khad to Rihali)	2.5
2	OD-11	Mahola/ND-12 Mahola 1st (Kangra boundary Punjole dugh to upper Mahola (Part))	4.0
3	DPF	Digli 1st/DPF Bardan/Digli to Bardan (Part).	2.5
4	DPF "	Sohi/DPF Sohidhar plantation Panjanjon dhar to Sohi (Part)	2.5
5	DPF	Mihara dhar Mihara to Patt (Part)	2.5
6	DPF	Mihradhar/DPF Bagra 2nd (Mihara to Bagratta (Part)	2.0
		TOTAL:	16.0
(f)	CONSTRUCTION OF BUILDINGS		(In Rs)
(f)	(i) Construction of Gang hut at Chhaprol.		3,00,000
(f)	(ii) Construction of shed at Jhandugh		2,00,000
		TOTAL:	5,00,000

(g)Soil conservation works--2004-05
JOGINDERNAGAR RANGE

1.Check dams in cement mortar

2.30 mtrs	----
2.50 "	Chaunt Nallah-5=5
3.00 "	Chaunt Nallah-2, Harabag Ropi Nallah-7= 9
4.50 "	Chaunt Nallah-2, Harabag Ropi Nallah-3= 5
5.00 "	Bhagar Nallah-2, Sri Nallah-2=4
6.00 "	Harabag Ropi Nallah-3=3
10.00"	Mandokhar Nallah 2, Sri Nallah-1= 3
15.00 "	Mandokhar Nallah 1, Sri Nallah-1= 2
20.00 "	----
30.00 "	----

2.Check dams in wire crates

2.25 mtrs	Chaunt Chandkar Nallah-4, Nichola Marhola Nallah Ind-2= 6
5.00 "	Nichola Marhola Nallah 1st-2, DPF Sukar 1st-4, Raja Nallah-2, Chatter Nallah-2, Digli Nallah-2, Majhanu Nallah-2, Reuni Nallah-4= 18
6.25"	
7.50 "	Lahsa Nallah 2, Nichola Marhola Nallah 1st-2, DPF Sukar 1st-2, Raja Nallah-1, Majhanu Nallah-1= 8
9.75 "	-
10.00"	Lahsa Nallah-2, DPF Sukar 1st-3, Raja Nallah-1, Digli Nallah-2= 8
12.50 "	Nichola Marhola Nallah 1st-5=5
15.00 "	Bagi Nallah-1=1

3.Gully plugging/Check walls(dry)

1.50 mtrs	Nichola Marhola Nallah 2nd-10, DPF Daghapahar 1st-24= 34
2.00 "	-
2.50"	Chaunt Chandkar Nallah-4, Lahsa Nallah-5,Nichola Marhola Nallah 1st-102, Nichala Marhola Nallah 1st-10, Nichola Marhola Nallah-Ind-5, Digli Nallah-18=42

4.Retaining Walls in Cement Mortar.

5.00 "	-
6.00"	-
8.00 "	Bhagar Nallah-1=1
10.00 "	-
12.00 "	Bhagar Nallah-1=1
15.00"	Hagar Nallah-1=1
20.00"	-

5.Retaining Walls in wire crates.

2.50 Mtr	DPF Bagra 1st-11=11
3.75"	-
5.00 "	Raja Nallah-8, Mandokhar Tributory II-2, Mandokhar Tributory III-4,DPF Bagra 1st 4= 18
6.25 "	Mandokhar tributory IIIrd-5==5
7.50 "	DPF Bagra 1st-1=1
10.00 "	Chaunt Nallah-2, Lahsa Nallah-2, Raja Nallah-3, Chatter Nallah-4, Digli Nallah-3, DPF Digli II-4, DPF Harabag II-3, Mandokhar Nallah-5, Bagrakhad-4=30
12.50"	Raja Nallah-2, Chatter Nallah-2, Mandokhar Nallah-4=8
15.00 "	Raja Nallah-2, Chatter Nallah-2, Digli Nallah-1, DPF Digli II-2=7

6.Retaining Walls in dry.masonary.

2.50 Mtr	Mandokhar tributory 3rd--11=11
5.00"	Sri Nallah 1= 1
7.50 "	DPF Bagra 1st-10=10
10.00 "	Bhagar Nallah-6, Sri Nallah-2=8
12.00 "	Bhagar Nallah-2=2
15.00"	Reuni Nallah-6, Bhagar Nallah-1, Sri nallah-2=9

7.Spurs in wire crates

2.50 Mtrs	-
3.75"	-
5.00 "	Guard Nallah-10, Nerkhad-3, Reuni Nallah-3=16
7.50"	Digli Nallah-3, Guard Nallah-12, Nerkhad-4=19
10.00"	Digli Nallah-2, Guard Nallah-8=10
12.50"	-
15.00"	

8.Const. of farm ponds.

20x10x2 Mtrs	DPF OD-II Marhola-1, DPF ND-12 Marhola 1st-1, DPF Sukar 1st-1, DPF Bhadyara 1, DPF Harabag II-1, DPF Siyuri C-III-1, UPF Galu-1= 7

9.Purchase of tools/plants.

(2)UHL (BIR RANGE)

(a) to (f) NIL

(g) Soil Conservation Works

(g)1.Check dams in wire crates.

1.75 Mtr	-
5.00 "	-
6.25 "	Mandokhar Nallah 3=3
7.50 "	Chaunt Nallah-8
9.75 "	-
10.00 "	-

2.Retaining Wall in wire crates

15.00 mtrs	-

DETAIL OF WORKS WITH AREA : 2005-06

JOGINDERNAGAR RANGE

(A) AFFORESTATION.

(A)	(i) NEW PLANTING (ENRICHMENT PLANTATION)		In Hec.
1	DPF	Sukar 1st	5
2	DPF	OD II Marhola	8
3	DPF	ND-13 Marhola 2nd	10
4	DPF	Digli 1st	8
5	DPF	Siyun C-III	5
6	DPF	Bagra 2nd	8
7	DPF	Mihara	6
8	DPF	Karangadhar 1st	5
9	DPF	Kountdhar	5
10	DPF	Dugha Gahar 1st	10
11	DPF	Dugha Gahar 2nd	10
12	DPF	Suhi	10
		Total:	90
(a)	(ii) MAINTENENACE OF PLANTATIONS--1st YEAR		
1	DPF	Sukar 1st	5
2	DPF	OD-II Marhola	8
3	DPF	ND-13 Marhola 2nd	10
4	DPF	Khajeetu 1st	10
5	DPF	Digli 1st	8
6	DPF	Awaiyer 1st	10
7	DPF	Siyun C-III	5
8	DPF	Bagra 2nd	8
9	DPF	Baroal	5
10	DPF	Mihara	6
11	UPF	Reuntidhar	5
12	DPF	Dughaghar 1st	10
13	DPF	Suhi	10
14	DPF	Trimunde	5
		TOTAL:	105
(a)	(ii) MAINTENENACE OF PLANTATIONS--2nd YEAR		
1	DPF	Taramat	5
2	DPF	Sukar 1st	5
3	DPF	Bhadyara	2
4	DPF	Magnidhar	4
5	DPF	OD-II Marhola	5
6	DPF	ND-13 Marhola 2nd	5
7	DPF	ND-14 Marhola 3rd	5
8	DPF	Khairna Nal 1st	5
9	DPF	Digli 1st	5
10	DPF	Digli 2nd	10
11	UPF	Bagra 2nd	10
12	DPF	Bagra 3rd	10
13	DPF	Mihara	5
14	DPF	Galu	2
15	UPF	Gagali Khad	5
16	DPF	Dughaghar 1st	10
17	DPF	Trimunde	10
		TOTAL:	103
(a)	(ii) MAINTENENACE OF PLANTATIONS--3rd YEAR		
1	DPF	Sukar 1st	5
2	DPF	Bhalarinda	3
3	DPF	Magnidhar	4
4	DPF	Ahju 1st	3
5	DPF	OD-II Marhola	5
6	DPF	Gagali Khad	5
7	DPF	Harabag 1st	2
8	DPF	Digli 1st	5
9	DPF	Bagra 1st	10
10	DPF	Mihara	5
11	UPF	Dugaghar 1st	10
		TOTAL:	67
(a)	(iii) RAISING OF NURSERIES 1,21,000 PLANTA @ 3/- each		NIL
(a)	(iv) WATCH & WARD OF PLANTATION AREA BY 12 WORKERS FOR A YEAR @ 1650/-EACH P/MONTH		NIL

(b)	S.S.O. (SUBSIDIARY SILVI CULTURAL OPERATIONS)		
(b)	(i) Climber Cuttings		
1	DPF	Nagnadhar	5
2	DPF	OD II Mahola	30
3	DPF	ND-12 Marhola 1st	5
4	DPF	ND-13 Marhola 2nd	15
5	DPF	Khalchi Har	2
6	DPArea	Nagan Sukar	5
7	DPArea	Nainidhar	8
8	DPF	Digli 1st	10
9	DPF	Bagra 2nd	10
10	DPF	Bagra 3rd	8
11	DPF	Miharadhar	10
12	DPF	Dugha Ghar 1st	10
13	DPF	Dugha Ghar 2nd	10
14	DPF	Suhi	10
15	DPF	Tirmunde	5
		Total:	143
(b)	(ii) Removal of Parthenium.		
1	DPF	Khalchi Har	10
2	DPF	Awaiyar	15
3	DPF	Galu	5
4	DPF	Suhi dhar plantation	5
		TOTAL:	35
(b)	(iii) Removal of Lantana with uprooting.		
1	DPF	Sukar 2nd	5
2	DPF	Jaral Tikkar	5
		TOTAL:	10
(c)	Demarcation and Consolidation		In Nos.
	(i)	Repair of Boundary Pillar .	
1	DPF	Bhatarinda	41
2	DPF	Khalchi Nal	18
3	DPF	Khalchi Har	24
		Total	83
(d)	FOREST PROTECTION		In Kms
(d)	(i) Preparation of Fire Line.		
		NIL	
		Total	0.0
(e)	Construction of Mule Road/Bridle path.		In Kms
1	DPF	Magrudhar	
		Khetara to Namelari	2.0
2	DPF	ND-13 Marhola Bad	
		Upper Marhola to Lower Marhola/Bag (part)	4.0
3	DPF	Digli 1st	
		Digli to Winch Camp	2.50
4	DPF	Digli 1st/DPF Badan	
		Digli to Badan (Part)	2.50
5	DPF	Dugha Gahar 1st	
		Suhi to Adho Ra Ban (Part)	2.00
6	DPF	Bagra 2nd	
		Dawlla to Bagra (Part)	2.00
7	DPF	Miharadhar/ DPF Bagra 2nd	
		Mihara to Bagetta (Part)	1.00
		Total	16.00
(f)	BUILDINGS		(In Rs)
		NIL	0

(g)Soil conservation works--2005-06

JOGINDERNAGAR RANGE

1.Check dams in cement mortar	
2.00 mtrs	--
2.50"	
3.00"	
4.50"	--
5.00"	Athi Nallah-3, Kupper Nallah-2=5
6.00"	----
10.00"	Mandakhar Nallah-4, Athi Nallah-1= 5
15.00"	Mandakhar Nallah 2=2
20.00"	--
30.00"	----
2.Check dams in wire crates	
[illegible]	Heda Ka Nallah 2, Upper Mahola Nallah 1st-2, Upper Mahola Nallah 2nd-2, Saletar Nallah-2=8
5.00"	Khali Nallah-2, DPF Digli 1st-2, DPF Awayer-2, Majhamu Nallah-2, Kupper Nallah 2= 10
6.25"	DPF Digli 1st-5, DPF Awayer-3=8
7.50"	Galu Khad-4=4
8.75"	
10.00"	-
12.50"	-
15.00"	--
3.Gully plugging/Check walls(dry)	
1.50 mtrs	--
2.00"	Heda Ka Nallah-10, DPF Dugha gahar 1st-20=30
2.50"	Upper Mahola Nallah 1st-5, Saletar Nallah-7, Upper Mahola Nallah 2nd-6, DPF Awayer 18= 38
4.Retaining Walls in Cement Mortar.	
4.00"	Galu Khad-1=1
5.00"	--
7.50"	--
10.00"	Kupper Nallah-2, Galu Khad-1= 3
12.00"	--
15.00"	Tikar Nallah-1, Galu Khad-1=2
20.00"	--
5.Retaining Walls in wire crates.	
2.50 Mtr	--
3.75"	
5.00"	DPF Digli 1st-4, Kupper Nallah-1=5
6.25"	Athi nallah 2= 2
7.50"	DPF Sukar 1st-1, Khali Nallah-1, DPF Digli 1st-1, Athi Nallah 1= 14
10.00"	Heda Ka Nallah-3, Upper Mahola Nallah 2nd-1, Saletar Nallah-1, DPF Digli 2nd-2, DPF Sukar 1st-1, DPF Digli 2nd-2, Galu Khad-3, Athi Nallah-2= 15
12.50"	DPF Sukar 1st 2, DPF Digli 2nd-2, Galu Khad-1=5
15.00"	Upper Mahola Nallah 2nd-1, Saletar Nallah-1, Galu khad 2, DPF Sukar 1st-1=5
6.Retaining Walls in dry masonary.	
2.50 Mtr	Mandakhar tributory 1st-1= 11
5.00"	--
7.50"	--
10.00"	--
12.00"	--
15.00"	
7.Spurs in wire crates	
2.50 Mtrs	--
3.75"	--
5.00"	--
7.50"	--
10.00"	Galu Khad-7=7
12.50"	--
15.00"	--
8.Const. of farm ponds.	
25x10x2 Mtrs	DPF CD 2nd Mahola 1, DPF ND 12 Mahola 1st-1, Sukar 1st-1, DPF Digli 1st-1 DPF Karanpadhar 2nd-1= 4
9.Purchase of tools/plants.	

(2)UHL (BIR RANGE)

(a) to (f)	NIL

(g) Soil Conservation Works

(g)1.Check dams in wire crates.	
1.25 Mtr	-
5.00"	[illegible] Nallah 1st 5= 5
6.25"	
7.50"	
8.75"	
[illegible]	[illegible] Nallah 2= 2
2.Retaining Wall in wire crates	
15.00 mtrs	

DETAIL OF WORKS WITH AREA : 2006-07

JOGINDERNAGAR RANGE

(A) AFFORESTATION.

			In Hec.
(A)	(i) NEW PLANTING (ENRICHMENT PLANTATION)		
1	DPF	Sukar 1st	5
2	DPF	OD-II Mahola	8
3	DPF	HD-13 Mahola 2nd	10
4	DPF	Digli 1st	8
5	DPF	Siyuri C-III	5
6	DPF	Bagra 2nd	8
7	DPF	Mihara	6
8	DPF	Bandidhar	5
9	DPF	Dughaghar 2nd	10
		Total New Planting:	65
(a)	(ii) MAINTENANCE OF PLANTATIONS–1st YEAR		
1	DPF	Sukar 1st	5
2	DPF	OD-II Mahola	8
3	DPF	HD-13 Mahola 2nd	10
4	DPF	Digli 1st	8
5	DPF	Siyuri C-III	5
6	DPF	Bagra 2nd	8
7	DPF	Mihara	6
8	DPF	Kwanpandhar 1st	5
9	DPF	Bandidhar	5
10	DPF	Dughaghar 1st	10
11	DPF	Dughaghar 2nd	10
12	DPF	Sahi	10
		TOTAL 1st Year:	90
(a)	(ii) MAINTENANCE OF PLANTATIONS–2nd YEAR		
1	DPF	Sukar 1st	5
2	DPF	OD-II Mahola	8
3	DPF	HD-13 Mahola 2nd	10
4	DPF	Khajuroo 1st	10
5	DPF	Digli 1st	8
6	DPF	Awaiyet	10
7	DPF	Siyuri C-III	5
8	DPF	Bagra 2nd	8
9	DPF	Dansal	5
10	DPF	Mihara	6
11	DPF	Bandidhar	5
12	DPF	Dughaghar 1st	10
13	DPF	Sahi	10
14	DPF	Trimunde	5
		TOTAL 2nd Year:	105
(a)	(ii) MAINTENANCE OF PLANTATIONS–3rd YEAR		
1	DPF	Tanmal	5
2	DPF	Sukar 1st	5
3	DPF	Bhadyara	2
4	DPF	Magardhar	4
5	DPF	OD-II Mahola	5
6	DPF	HD-13 Mahola 2nd	5
7	DPF	HD-14 Mahola 3rd	5
8	DPF	Khalchi Plot 1st	5
9	DPF	Digli 1st	5
10	DPF	Digli 2nd	10
11	DPF	Bagra 2nd	10
12	DPF	Bagra 3rd	10
13	DPF	Mihara	5
14	DPF	Gaki	2
15	DPF	Gugah Khad	5
16	DPF	Dughaghar 1st	10
17	DPF	Trimunde	10
		TOTAL 3rd Year:	103
(a)	(ii) MAINTENANCE OF PLANTATIONS–4th YEAR		
1	DPF	Sukar 1st	5
2	DPF	Dhata Rooka	3
3	DPF	Magardhar	4
4	DPF	Ahju 1st	3
5	DPF	OD-II Mahola	5
6	DPF	Gugah Khad	5
7	DPF	Dandeey 1st	2
8	DPF	Digli 1st	5
9	DPF	Bagra 1st	10
10	DPF	Mihara	5
11	DPF	Dughaghar 1st	10
		TOTAL 3rd Year:	57

(a)	(iii) RAISING OF NURSERIES 1,04,000 PLANTA @ 3/- each		312000
(a)	(iv) WATCH & WARD OF PLANTATION AREA BY 12 MAZDOORS FOR A YEAR @ 1650/-EACH P/MONTH		237000
(b)	S.S.O. (SUBSIDIARY SILVI CULTURAL OPERATIONS)		
(b)	(i) Climber Cuttings		
1	DPF	Magrudhar	5
2	DPF	ND-12 Marhola 1st	30
3	DPF	ND-13 Marhola 2nd	15
4	DPF	Khaprolu 1st	10
5	P/Area	Nagan Sukar	10
6	DPF	Ugli 1st	10
7	DPF	Awaiyer	10
8	DPF	Bagra 2nd	10
9	DPF	Reuntidhar	10
10	DPF	Dugha Ghar 2nd	10
11	DPF	Suhi	10
12	DPF	Trimunde	5
		Total:	135
(b)	(ii) Removal of Parthinium.		
1	DPF	Khaprolu 1st	10
2	DPF	Siyuri C-III	10
		TOTAL:	20
(b)	(iii) Removal of Lantana with uprooting.		
1	DPF	Sukar 2nd	5
2	DPF	Jaral Tikkar	5
		TOTAL:	10
(c)	Demarcation and Consolidation		In Nos.
	(i)	Repair of Boundary Pillar.	
1	DPF	Ladkuin	6
2	DPF	Khaprolu 1st	22
3	DPF	Khaprolu 2nd	37
		Total	65
(d)	FOREST PROTECTION		In Kms
(d)	(i) Preparation of Fire Line.		
		NIL	0.0
		Total	0.0
(e)	Construction of Mule Road/Bridle path.		
(e)	(i)Construction of Mule Road.		In Kms
1		Magrudhar	
		NIL	0.0
(e)	(i)Construction of Bridle Paths		In Kms
1	DPF	ND-13 Marhola IInd	
		Upper Marhola to Lower Marhola/Bag(Part)	4.0
2	DPF	DPF Awaiyer/DPF Badan	
		Awaiyer to Digloo (Part)	3.00
3	DPF	DPF Dughagahar 1st	
		Suhi to Adhe Ra Ban (Part)	2.00
4	DPF	DPF Bagra 2nd	
		Dundhi to Bagra	2.00
5	DPF	DPF Bagra 2nd/DPF Dughagahar-2nd	
		Winchneck to Devidarh (Part)	2.00
		Total	13.00
(f)	BUILDINGS		(In Rs)
		Nil.	0

(g)Soil conservation works--2006-07
JOGINDERNAGAR RANGE

1.Check dams in cement mortar

2.50 mtrs	
3.75"	Maduna Lalah 4=4
4.00"	--
4.50"	Harad Biren Nallah-2=2
5.00"	Majhonu Nallah-2, Tributories of Dul Nallah-4=6
6.00"	----
10.00"	Chailee Nallah-1=1
15.00"	--
20.00"	--
30.00"	----

2.Check dams in wire crates

3.75 mtrs.	Khalohi Nallah-3, Gidar Nallah-3, Ropi Nallah-2=8
5.00"	Upper Tarant School Nal-3, Gidar Nallah-2, Karjunde Nallah-3, Ropi Nallah-3, Pagran Nallah 4=15
6.25"	Tributories of Dul Nallah-4=4
7.50"	Tributories of Dul Nallah-4, Dundhi Nallah-2, M[illegible] Nallah-2, Bedani Nallah-1=9
8.75"	-
10.00"	Khalohi Nallah-1, M[illegible] Nallah 6=7
12.50"	-
[illegible]	

3.Gully plugging/Check walls(dry)

1.50 mtrs.	Khalohi Nallah 30, DPF Sypi C III-30=60
1.80"	
2.50"	Tributories of Khalohi Nallah-12, DPF Mandakhar 15, Saluu Nallah-5=32

4.Retaining Walls in Cement Mortar.

3.00"	--
5.00"	--
8.00"	--
10.00"	--
12.00"	--
15.00"	--
30.00"	Harabag Nallah-3=3

5.Retaining Walls in wire crates.

2.50 Mtr	--
3.75"	Tributories of Dul Nallah-3=3
5.00"	Tributories of Dul Nallah-10, Sharen Nallah-11, Harabag Nallah 8, Bhag Nallah-3=32
6.25"	Tributories of Dul Nallah 16=16
7.50"	Bedani Nallah-1=1
10.00"	Khalohi Nallah-1, Harabag Nallah-6, Bagar Khad-2=9
12.50"	Bagar Khad-1=1
15.00"	Khalohi Nallah 1, Harabag Nallah-2, Bagar Khad-1=4

6.Retaining Walls in dry masonry.

5.00 Mtr	
7.00"	-
7.50"	-
10.00"	
12.00"	-
15.00"	--

7.Spurs in wire crates

2.50 Mtrs	--
3.75"	--
5.00"	--
7.50"	--
10.00"	Bagar Khad-2=2
12.50"	--
15.00"	--

8.Const. of farm ponds.

20x10x2 Mtrs	DPF ND-13 Marhola 2nd-1, DPF Mihara-1=2

9.Purchase of tools/plants.

	--

(2)UHL (BIR RANGE)

(a) to (f)	NIL

(g) Soil Conservation Works

(g)1.Check dams in wire crates.

3.75 Mtr	--
5.00"	Ink Nallah 2nd 5=5
6.25"	Simraj Nallah-5=5
7.50"	-
8.75"	-
10.00"	-

2.Retaining Wall in wire crates

15.00 mtr	

DETAIL OF WORKS WITH AREA : 2007-08

JOGINDERNAGAR RANGE

(A) AFFORESTATION.

(A)	(i) NEW PLANTING (ENRICHMENT PLANTATION)		In Hec.
1	DPF	OD-11 Mahola	8
2	DPF	ND-12 Mahola	10
3	DPF	Digli 1st	8
4	DPF	Siyuri C-III	5
5	DPF	Bagra 2nd	8
6	DPF	Mharadhar	6
7	UPF	Reuntidhar	5
8	DPF	Dughogahar 2nd	10
		Total @ 9050/- per hec. Rs.5,43,000/-	60
(a)	(ii) MAINTENENACE 1st YEAR		NIL
1	DPF	Sukar 1st	5
2	OD 11	Mahola	8
3	ND-13	Mahola-2nd	10
4	DPF	Digli 1st	8
5	DPF	Siyuri C-III	5
6	DPF	Bagra 2nd	8
7	DPF	Mharadhar	6
8	UPF	Reuntidhar	5
9	DPF	Dughogahar 2nd	10
		Total: 1st year:	65
(a)	(ii) MAINTENENACE 2nd YEAR		
1	DPF	Sukar 1st	5
2	DPF	OD-11 Mahola	8
3	DPF	ND-13 Mahola 2nd	10
4	DPF	Digli 1st	8
5	DPF	Siyuri C-III	5
6	DPF	Bagra 2nd	8
7	DPF	Mhara	6
8	DPF	Karanpurchar 1st	5
9	DPF	Reuntidhar	5
10	DPF	Dughoghar 1st	10
11	DPF	Dughoghar 2nd	10
12	DPF	Suhi	10
		TOTAL: 2nd Year	90
(a)	(ii) MAINTENENACE 3rd YEAR		
1	DPF	Sukar 1st	5
2	DPF	OD-11 Mahola	8
3	DPF	ND-13 Mahola 2nd	10
4	DPF	Khajoota 1st	10
5	DPF	Digli 1st	8
6	DPF	Awaiyar	10
7	UPF	Siyuri C-III	5
8	DPF	Bagra 2nd	8
9	DPF	Bansal	5
10	DPF	Mhara	6
11	UPF	Reuntidhar	5
12	DPF	Dughoghar	10
13	UPF	Suhi	10
14	DPF	Tirmaula	5
		TOTAL: 2nd Year	105
(a)	(ii) MAINTENENACE 4th YEAR		
1	DPF	Taramat	5
2	DPF	Sukar 1st	5
3	DPF	Bhadyara	2
4	DPF	Mharadhar	4
5	DPF	OD-11 Mahola	5
6	DPF	ND-13 Mahola 2nd	5
7	DPF	ND-14 Mahola 3rd	5
8	DPF	Khalola Nal 1st	5
9	DPF	Digli 1st	5
10	DPF	Digli 2nd	10
11	UPF	Bagra 2nd	10
12	DPF	Bagra 3rd	10
13	DPF	Mhara	5
14	DPF	Gola	2
15	UPF	Gugdi Khat	5
16	DPF	Dughogahar 1st	10
17	DPF	Tirmaula	10
		TOTAL 4th Year	103

(a)	(ii) MAINTENENACE 6th YEAR		
1	DPF	Sohar 1st	5
2	DPF	Bada Rinda	3
3	DPF	Majudhar	4
4	DPF	Aiju 1st	3
5	DPF	OD-11 Mathola	5
6	DPF	Gugali Khol	5
7	DPF	Harabag 1st	2
8	DPF	Digli 1st	5
9	DPF	Bagra 1st	10
10	DPF	Mihiru	6
11	DPF	Dughagahar 1st	10
		TOTAL: 5th Year	67
(a)	(iii) Raising of Nursery 90000 plants @ 3/- each		204000
(a)	(iv) watch & wat of plantation area by 12 mazdoors		237600
(b)	S.S.O. (Subsidiary silvicultural operations)		
(b)	(i) Climbers cutting.		
1	DPF	Majudhar.	5
2	DPF	OD-11 Mathola	30
3	DPF	HD-13 Mathola 2nd	15
4	DPF	Khajrolu 1st	5
5	DPF	Digli 1st	10
6	DPF	Awaiyer	10
7	DPF	Bagra 2nd	10
8	DPF	Remdidhar	10
9	DPF	Dughagahar 2nd	10
10	DPF	Trimunda	5
		TOTAL:	110
(b)	(ii) Removal of Parthinium.		
1	DPF	Khajrolu 2nd	10
2	P/Area	Nagam Sohar	5
3	DPF	Siyuri C-III	10
		TOTAL:	25
(b)	(iii) Removal of Lantana with uprooting.		
	NIL		
		Total	0
(c)	Demarcation and Consolidation		In Nos.
	(i) Repair of Boundary Pillar.		
	NIL		
		Total (@ 61.25 each)	0
(d)	FOREST PROTECTION		In Kms
(d)	(i) Preparation of Fire Line.		
	NIL		
		Total	0.0
(e)	Construction of Roads/Bridle Paths		
(e)	(ii) Construction of Mule Road.		In Kms
	NIL		
(e)	(ii) Construction of Bridel Path		In Kms
	NIL		
1	DPF	Khajrolu 1st/2nd	
		Bhagahar to Gale (Part)	2.0
2	DPF	Awaiyer/DPF Badan.	
		Awaiyer to Digloo (Part)	3.0
3	DPF	Digli 1st	
		Digli to Winch camp (Part)	1.5
4	DPF	Dughagahar 2nd	
		Phagaru to Dunchi (Part)	2
5	DPF	Bagra 2nd	
		Bagru to Kudi Langha (Part)	1.5
6	DPF	Bagra 2nd/Dughagahar 2nd	
		Winch neck to Devidarh	2.0
		Total	12.0
(f)	CONSTRUCTION OF BUILDINGS		(In Rs)
	NIL		

(g)Soil conservation works--2007-08
JOGINDERNAGAR RANGE

1.Check dams in cement mortar	
2 00 mtrs	Maghu Basahal Nallah-10, Khalehi Har Nallah-2, Namidhar Nallah-2nd-4=16
2 50 "	Maghu Basahal Nallah-2, Khalehi Har Nallah-3, Namidhar Nallah-1st-4, Maharnu Nallah-3=12
3 00 "	Namidhar Nallah 2nd-4=4
4 50 "	Namidhar Nallah 2nd-2=2
5 00 "	Khalehi Har Nallah 2nd-2, Maharnu Nallah-3 =5
6 00 "	Harabag Bhatwari nallah-2
10 00"	--
15 00 "	-----
20 00 "	-----
30 00 "	----
2.Check dams in wire crates	
1 75 mtrs	Maghu Basahal Nallah-3, Gunain Nallah-2, Singhpur Nallah-3=8
5 00 "	Harabag Bhatwari nallah-3, Gunain Nallah-4, Singhpur Nallah-2=8
6 25"	--
7 50 "	--
8 75 "	--
10 00"	--
12 50 "	--
15 00 "	--
3.Gully plugging/Check walls(dry).	
1 50 mtrs	Maghu Basahal Nallah-15, DPF Bagra 2nd-60= 75
2 00 "	Nani dhar Nallah 2nd-5, DPF Bagra 2nd-10 =15
2 50"	Harabagh Bhatwari Nallah-3, DPF Bagra 2nd-10=13
4.Retaining Walls in Cement Mortar.	
5 00 "	--
6 00"	--
9 00 "	Nharu Nallah-1=1
10 00 "	Nharu Nallah-4=4
12 00 "	--
15 00"	--
20 00"	--
5.Retaining Walls in wire crates.	
2 50 Mtr.	--
3 75"	--
5 00 "	Gunain Nallah-5, Sakal Nallah-3=8
6 25 "	Nharu Nallah-1=1
7 50 "	Gunain Nallah 2, Nharu Nallah-1= 3
10 00 "	Khalehi Har DPF-2, Bagar Khad-6, Nharu Nallah-1= 19
12 50"	Bagar Khad-2, Nharu Nallah-5=7
15 00 "	Bagar Khad-2, Nharu Nallah-8=10
6.Retaining Walls in dry.masonary.	
5 00 Mtr.	--
6 00"	--
7 50 "	Sakal Nallah-6, Nharu Nallah-1 =7
10 00 "	--
12 00 "	
15 00"	Nharu Nallah-4=4
7.Spurs in wire crates	
2 50 Mtrs.	Sakal Nallah 5=5
3 75"	--
5 00 "	Singhpur Nallah-8=8
7 50"	--
10 00"	--
12 50"	--
15 00"	--
8.Const. of farm ponds.	
20x10x2 Mtrs.	DPF Khaprotu 2nd-1, DPF Bagra 2nd-1= 2
9.Purchase of tools/plants.	

(2)UHL (BIR RANGE)

(a) to (f)	NIL

(g) Soil Conservation Works

(g)1.Check dams in wire crates.	
3 75 Mtr	--
5 00 "	--
6 25 "	--
7 50 "	Gunain Nallah 6=6
8 75 "	Nawaig Nallah-7=7
10 00 "	--
2.Retaining Wall in wire crates	
15 00 mtrs	--

DETAIL OF WORKS WITH AREA : 2008-09

JOGINDERNAGAR RANGE

(A) AFFORESTATION.

(A)	(i) NEW PLANTING (ENRICHMENT PLANTATION)		In Hec.
1	UPF	OD-11 Mahola	8
2	DPF	ND-12 Mahola 1st	10
3	DPF	Digli 1st	8
4	DPF	Siyuri C-III	5
5	DPF	Bagra 2nd	8
6	DPF	Mihara	6
7	UPF	Reuntidhar	5
8	DPF	Dughaghar 2nd	10
		Total :	60

(a)	(ii) MAINTENENACE 1st YEAR		
1	DPF	OD-11 Mahola	8
2	DPF	ND-12 Mahola 1st	10
3	DPF	Digli 1st	8
4	DPF	Siyuri C-III	5
5	DPF	Bagra 2nd	8
6	DPF	Mihara	6
7	UPF	Reuntidhar	5
8	UPF	Dughaghar 2nd	10
		Total: 1st year:	60

(a)	(ii) MAINTENENACE 2nd YEAR		
1	DPF	Sukar 1st	5
2	DPF	OD-11 Mahola	8
3	DPF	ND-13 Mahola 2nd	10
4	DPF	Digli 1st	8
5	DPF	Siyuri C-III	5
6	UPF	Bagra 2nd	8
7	DPF	Mihara	6
8	UPF	Reuntidhar	5
9	DPF	Dughaghar 2nd	10
		TOTAL: 2nd Year	65

(a)	(ii) MAINTENENACE 3rd YEAR		
1	DPF	Sukar 1st	5
2	DPF	OD-11 Mahola	8
3	DPF	ND-13 Mahola 2nd	10
4	DPF	Digli 1st	8
5	UPF	Siyuri C-III	5
6	DPF	Bagra 2nd	8
7	DPF	Mihara	6
8	DPF	Kharaprodhar 1st	5
9	UPF	Reuntidhar	5
10	DPF	Dughaghar 1st	10
11	UPF	Dughaghar 2nd	10
12	DPF	Suhi	10
		TOTAL: 2nd Year	90

(a)	(ii) MAINTENENACE 4th YEAR		
1	DPF	Sukar 1st	5
2	DPF	OD-11 Mahola	8
3	DPF	ND-13 Mahola 2nd	10
4	DPF	Kharprola 1st	10
5	DPF	Digli 1st	8
6	DPF	Awaiyar	10
7	DPF	Siyuri C-III	5
8	DPF	Bagra 2nd	8
9	UPF	Bamel	5
10	DPF	Mihara	6
11	UPF	Reuntidhar	5
12	DPF	Dughaghar	10
13	DPF	Suhi	10
14	DPF	Trimanda	5
		TOTAL:4th Year	105

(a)	(ii) MAINTENANCE 5th YEAR		
1	DPF	Taranot	5
2	DPF	Galu 1st	5
3	DPF	Bhadyara	2
4	DPF	Magrudhar	4
5	DPF	DD-11 Mahala	5
6	DPF	DD-13 Mahala 2nd	5
7	DPF	DD-14 Mahala 3rd	5
8	DPF	Khatehi Nal 1st	5
9	DPF	Digh 1st	5
10	DPF	Digh 2nd	10
11	DPF	Bagra 2nd	10
12	DPF	Bagra 3rd	10
13	DPF	Mihara	5
14	DPF	Galu	2
15	DPF	Gagal Khad	5
16	DPF	Dughaghar 1st	10
17	DPF	Trimanda	10
		TOTAL: 5th Year	103
(a)	(iii) Raising of Nursery 93000 plants @ 3/- each		279000
(a)	(iv) Watch & ward of plantation area by 12 mazdoors for a year @ 1650/- each per month.		237600
(b)	S.S.O. (Subsidiary silvicultural operations)		
(b)	(i) Climbers cutting.		
1	DPF	Magrudhar	5
2	DPF	DD-11 Mahala	30
3	DPF	DD-14 Mahala 3rd	10
4	DPF	Khatehi Nallah	10
5	DPF	Digh 2nd	15
6	DPF	Ramdhar	10
7	DPF	Dughaghar 2nd	10
8	DPF	Trimanda	5
		TOTAL:	95
(b)	(ii) Removal of Parthinium.		
1	PWaca	Sali 1st	5
2	PWaca	Sali 2nd	5
3	PWaca	Naini Dhar	4
4	DPF	Siyun C-III	5
		TOTAL:	19
(b)	(iii) Removal of Lantana with uprooting.		
		NIL	
		Total	0
(c)	Demarcation and Consolidation		In Nos.
		NIL	
		Total (@ 61.25 each)	0
(d)	FOREST PROTECTION:-		In Kms
		NIL	
		Total	0.0
(e)	Construction of Mule Roads/Bridle Paths		
(e)	(i) Construction of Mule Road.		In Kms
		NIL	
(e)	(ii) Construction of Bridel Path		In Kms
1	DPF	Khagendu 1st/2nd Bhagdhar to Galu (Part)	2.0
2	DPF	DPF Digh 1st Digh to Winch camp (Part)	1.5
3	DPF	DPF Dughaghar 2nd Plegara to Dundhi (Part)	2.0
4	DPF	DPF Bagra 2nd Bagra to Kuli Langha (Part)	1.5
5	DPF	Bagra 2nd/Dughaghar 2nd Winch rock to Dandah	2.0
		Total	9.0
(f)	CONSTRUCTION OF BUILDINGS		(In Rs)
		NIL	

(g)Soil conservation works--2008-09

JOGINDERNAGAR RANGE

1.Check dams in cement mortar	
2.00 mts	–
2.50"	Majhana Nallah 3=3
3.00"	–
4.50"	–
5.00"	–
6.00"	–
10.00"	–
15.00"	----
20.00"	----
30.00"	Gugali Khad-1=1
2.Check dams in wire crates.	
3.75 mts	Khogu Nallah-2, Thalkan Nallah-3, DPF Siyuri C-II-4= 9
5.00"	–
[illegible]	–
7.50"	DPF Siyuri C-II-4 =4
8.75"	–
10.00"	–
12.50"	–
15.00"	–
3.Gully plugging/check walls(dry)	
1.50 mts	DPF Siyuri C-II-28,DPF Bagra 2nd-6, DPF Mihara-12=46
2.00"	Nika Thana Nallah-20,DPF Siyuri C-II-35, DPF Bagra 2nd-8, DPF Mihara Dhar-15= 78
2.50"	DPF Siyuri C-II-15, DPF Bagra 2nd-5, DPF Miharadhar-10= 30
4.Retaining Walls in Cement Mortar.	
5.00"	–
6.00"	–
8.00"	–
10.00"	–
12.00"	–
15.00"	–
20.00"	–
5.Retaining Walls in wire crates.	
2.50 Mt	DPF Siyuri C-II 9= 9
3.75"	–
5.00"	Sukahad Khad-10= 10
6.25"	Guon Nallah 4 =4
7.50"	Dhelu Nallah-1 =1
10.00"	Nika Thana Nallah 3, Sukahad Khad-6, Gugali Khad-3, Dhelu Nallah-2= 14
12.50"	–
15.00"	Nika Thana Nallah 1, Sukahad Khad-8= 9
6.Retaining Walls in dry masonary.	
5.00 Mt	–
6.00"	–
7.50"	–
10.00"	–
12.00"	–
15.00"	Dhelu Nallah-1 =1
7.Spurs in wire crates	
2.50 Mts.	–
3.75"	–
5.00"	–
7.50"	–
10.00"	–
12.50"	–
15.00"	–
8.Const. of farm ponds.	
20x10x2 Mts.	DPF Reunidhar-1 =1
9.Purchase of tool /plants.	

(2)UHL (BIR RANGE)

(a)to (f)	NIL

(g) Soil Conservation Works

(g)1 Check dams in wire crates.	
3.75 Mt	–
5.00"	–
6.25"	–
7.50"	Guon Nallah-6 =6
8.75"	–
10.00"	–
2.Retaining Wall in wire crates	
15.00 mts.	–

NAME OF WORKS WITH AREA : 2009-10

JOGINDERNAGAR RANGE

(A) AFFORESTATION.

(A)	(i) NEW PLANTING (ENRICHMENT PLANTATION)		In Hec.
		Nil	
(a)	(ii) MAINTENANCE 1st YEAR		
1	DPF	VID 11 Mahola	8
2	DPF	MD-12 Mahola 1st	10
3	DPF	Digli 1st	8
4	DPF	Syun C-III	5
5	DPF	Bagra 2nd	8
6	DPF	Mihara	6
7	DPF	Beundhar	5
8	DPF	Dughaghar 2nd	10
		Total: 1st year	60
(a)	(ii) MAINTENANCE 2nd YEAR		
1	DPF	VID 11 Mahola	8
2	DPF	MD-12 Mahola 1st	10
3	DPF	Digli 1st	8
4	DPF	Syun C-III	5
5	DPF	Bagra 2nd	8
6	DPF	Mihara	6
7	DPF	Beundhar	5
8	DPF	Dughaghar 2nd	10
		TOTAL: 2nd Year	60
(a)	(ii) MAINTENANCE 3rd YEAR		
1	DPF	Sukar 1st	5
2	DPF	VID 11 Mahola	8
3	DPF	MD-12 Mahola 2nd	10
4	DPF	Digli 1st	8
5	DPF	Syun C-III	5
6	DPF	Bagra 2nd	8
7	DPF	Mihara	6
8	DPF	Beundhar	5
9	DPF	Dughaghar 2nd	10
		TOTAL: 2nd Year	65
(a)	(ii) MAINTENANCE 4th YEAR		
1	DPF	Sukar 1st	5
2	DPF	VID 11 Mahola	8
3	DPF	MD-12 Mahola 2nd	10
4	DPF	Digli 1st	8
5	DPF	Syun C-III	5
6	DPF	Bagra 2nd	8
7	DPF	Mihara	6
8	DPF	Karanpurdhar 1st	5
9	DPF	Beundhar	5
10	DPF	Dughaghar 1st	10
11	DPF	Dughaghar 2nd	10
12	DPF	Sahi	10
		TOTAL 4th Year	90
(a)	(ii) MAINTENANCE 5th YEAR		
1	DPF	Sukar 1st	5
2	DPF	VID 11 Mahola	8
3	DPF	MD-12 Mahola 2nd	10
4	DPF	Khajoora 1st	10
5	DPF	Digli 1st	8
6	DPF	Andaper	10
7	DPF	Syun C-III	5
8	DPF	Bagra 2nd	8
9	DPF	Panoli	5
10	DPF	Mihara	6
11	DPF	Beundhar	5
12	DPF	Dughaghar	10
13	DPF	Sahi	10
14	DPF	Tamunde	5
		TOTAL: 5th Year	105
(a)	(iii) Raising of Nursery 47000 plants @ 3/- each		
(a)	(iv) Watch & wart of plantation area by 12 mazdoors for a year @ 1650/- each per month.		
(b)	S.S.O. (Subsidiary silvicultural operations)		
		NIL	0
		TOTAL	0
(c)	Demarcation and Consolidation		In Nos.
		NIL	
		Total (@ 61.25 each)	0
(d)	FOREST PROTECTION		In Kms
		NIL	
		Total	00
(e)	Construction of Mule Roads/Bridle Paths		
		Nil	0
(f)	CONSTRUCTION OF BUILDINGS		(In Rs)
		NIL	

2. BIR (UHL) RANGE

NIL

NAME OF WORKS WITH AREA : 2010-11

JOGINDERNAGAR RANGE

(A) AFFORESTATION.

			In Hec.
(A)	(i) NEW PLANTING (ENRICHMENT PLANTATION)		
		NIL	
(a)	(ii) MAINTENENACE 1st YEAR		
		NIL	
		Total: 1st year:	0
(a)	(ii) MAINTENENACE 2nd YEAR		
1	OPF	OD-11 Marhola	8
2	OPF	ND-12 Marhola 1st	10
3	OPF	Digli 1st	8
4	OPF	Siyuni C-III	5
5	OPF	Bagra 2nd	8
6	OPF	Mihara	6
7	UPF	Reuntidhar	5
8	OPF	Dughaghar 2nd	10
		TOTAL: 2nd Year	60
(a)	(ii) MAINTENENACE 3rd YEAR		
1	OPF	Sukar 1st	5
2	OPF	OD-11 Marhola	8
3	OPF	ND-13 Marhola 2nd	10
4	OPF	Digli 1st	8
5	UPF	Siyuni C-III	5
6	OPF	Bagra 2nd	8
7	OPF	Mihara	6
8	UPF	Reuntidhar	5
9	OPF	Dughaghar 2nd	10
		TOTAL: 2nd Year	65
(a)	(ii) MAINTENENACE 4th YEAR		
1	OPF	Sukar 1st	5
2	OPF	OD-11 Marhola	8
3	OPF	ND-13 Marhola 2nd	10
4	OPF	Digli 1st	8
5	UPF	Siyuni C-III	5
6	OPF	Bagra 2nd	8
7	OPF	Mihara	6
8	OPF	Karanpurdhar 1st	5
9	UPF	Reuntidhar	5
10	OPF	Dughaghar 1st	10
11	OPF	Dughaghar 2nd	10
12	OPF	Sahi	10
		TOTAL:4th Year	90
(a)	(iii) Raising of Nursery 26000 plants @ 3/- each		
(a)	(iv) Watch & wart of plantation area by 12 mazdoors for a year @ 1650/- each per month.		
(b)	S.S.O. (Subsidiary silvicultural operations)		
		NIL	0
		TOTAL:	0
(c)	Demarcation and Consolidation		In Nos.
		NIL	
		Total (@ 61.25 each)	0
(d)	Forest Protection		In Kms
		NIL	
		Total	0 0
(e)	Construction of Mule Roads/Bridle Paths		
		NIL	0
(f)	Construction of Buildings		(In Rs)
		NIL	
		G. SOIL CONSERVATION WORKS	
		NIL	

2. UHL (BIR) RANGE)

NIL

NAME OF WORKS WITH AREA : 2011-12

JOGINDERNAGAR RANGE

(A) AFFORESTATION.

(A)	(i) NEW PLANTING (ENRICHMENT PLANTATION)		In Hec.
	NIL		
(a)	(ii) MAINTENENACE 1st YEAR		
	NIL		
		Total: 1st year:	0
(a)	(ii) MAINTENENACE 2nd YEAR		
	NIL		8
		TOTAL: 2nd Year	8
(a)	(ii) MAINTENENACE 3rd YEAR		
1	DPF	OD-11 Marhola	8
2	DPF	ND-13 Marhola 2nd	10
3	DPF	Digli 1st	8
4	DPF	Siyuri C-III	5
5	DPF	Bagra 2nd	8
6	DPF	Mihara	6
7	UPF	Reuntidhar	5
8	DPF	Dugaghar 2nd	10
		TOTAL: 3rd Year	60
(a)	(ii) MAINTENENACE 4th YEAR		
1	DPF	OD-11 Marhola	8
2	DPF	ND-13 Marhola 2nd	10
3	DPF	Digli 1st	8
4	DPF	Siyuri C-III	5
5	DPF	Bagra 2nd	8
6	DPF	Mihara	6
7	UPF	Reuntidhar	5
8	DPF	Dugaghar 2nd	10
		TOTAL: 4th Year	60
(a)	(iii) MAINTENANCE 5th YEAR		
1	DPF	Sukar 1st	5
2	DPF	OD-11 Marhola	8
3	DPF	ND-13 Marhola 2nd	10
4	DPF	Digli 1st	8
5	DPF	Siyuri C-III	5
6	DPF	Bagra 2nd	8
7	DPF	Mihara	6
8	UPF	Reuntidhar	5
9	DPF	Dugaghar 2nd	10
		TOTAL: 5th Year	65
(a)	(iii) Raising of Nursery 2000 plants @ 3/- each		
(a)	(iv) Watch & wart of plantation area by 6 mazdoors for a year @ is50/- each per month.		
(b)	S.S.O. (Subsidiary silvicultural operations)		
	NIL		0
		TOTAL:	0
(c)	Demarcation and Consolidation		In Nos.
	NIL		
		Total (@ 61.25 each)	0
(d)	Forest Protection		In Kms
	NIL		
		Total	0.0
(e)	Construction of Mule Roads/Bridle Paths		
	NIL		0
(f)	Construction of Buildings		(In Rs)
	NIL		
	G. SOIL CONSERVATION WORKS		
	NIL		

2. UHL (BIR) RANGE)

NIL

NAME OF WORKS WITH AREA : 2012-13

JOGINDERNAGAR RANGE

(A) AFFORESTATION.

(A)	(i) NEW PLANTING (ENRICHMENT PLANTATION)		In Hec.
		NIL	
(a)	(ii) MAINTENENACE 1st YEAR		
		NIL	
		Total: 1st year:	0
(a)	(ii) MAINTENENACE 2nd YEAR		
		NIL	0
		TOTAL: 2nd Year	0
(a)	(ii) MAINTENENACE 3rd YEAR		
		NIL	0
		TOTAL: 3rd Year	0
(a)	(ii) MAINTENENACE 4th YEAR		
1	DPF	OD-11 Marhola	8
2	DPF	ND-12 Marhola 1st	10
3	DPF	Digli 1st	8
4	DPF	Siyuri C-III	5
5	DPF	Bagra 2nd	8
6	DPF	Mihara	6
7	UPF	Rountidhar	5
8	DPF	Dugaghar 2nd	10
		TOTAL: 4th Year	60
(a)	(ii) MAINTENENACE 5th YEAR		
1	DPF	OD-11 Marhola	8
2	DPF	ND-13 Marhola 2nd	10
3	DPF	Digli 1st	8
4	DPF	Siyuri C-III	5
5	DPF	Bagra 2nd	8
6	DPF	Mihara	6
7	UPF	Rountidhar	5
8	DPF	Dugaghar 2nd	10
		TOTAL: 4th Year	60
(a)	(iii) MAINTENANCE 6th YEAR		
1	DPF	OD-11 Marhola	8
2	DPF	ND-13 Marhola 2nd	10
3	DPF	Digli 1st	8
4	DPF	Siyuri C-III	5
5	DPF	Bagra 2nd	8
6	DPF	Mihara	6
7	UPF	Rountidhar	5
8	DPF	Dugaghar 2nd	10
		TOTAL: 5th Year	60
(a)	(iii) Raising of Nursery 6000 plants @ 3/- each		
(a)	(iv) Watch & wart of plantation area by 6 mazdoors for a year @ 1650/- each per month.		
(b)	S.S.O. (Subsidiary silvicultural operations)		
	NIL		0
		TOTAL	0
(c)	Demarcation and Consolidation		In Nos.
	NIL		
		Total (@ 61.25 each)	0
(d)	Forest Protection		In Runs
	NIL		-
		Total	0.0
(e)	Construction of Mule Roads/Bridle Paths		
	NIL		0
(f)	Construction of Buildings		(In Rs)
	NIL		
	G. SOIL CONSERVATION WORKS		
	NIL		

2. UHL (BIR) RANGE)

NIL

NAME OF WORKS WITH AREA : 2013-14

JOGINDERNAGAR RANGE

(A) AFFORESTATION.

(A)	(i) NEW PLANTING (ENRICHMENT PLANTATION)		In Hec.
		NIL	
(a)	(ii) MAINTENENACE 1st YEAR		
		NIL	
		Total: 1st year:	0
(a)	(ii) MAINTENENACE 2nd YEAR		
		NIL	0
		TOTAL: 2nd Year	0
(a)	(ii) MAINTENENACE 3rd YEAR		
		NIL	0
		TOTAL: 3rd Year	0
(a)	(ii) MAINTENENACE 4th YEAR		
1		NIL	0
		TOTAL: 4th Year	0
(a)	(ii) MAINTENENACE 5th YEAR		
1	DPF	OD-11 Marhola	8
2	DPF	ND-12 Marhola 1st	10
3	DPF	Digli 1st	8
4	DPF	Siyuri C-III	5
5	DPF	Bagra 2nd	8
6	DPF	Mihara	6
7	DPF	Reuntidhar	5
8	DPF	Dugaghar 2nd	10
		TOTAL: 4th Year	60
(a)	(iii) Raising of Nursery 3000 plants @ 3/- each		9000
(a)	(iv) Watch & wart of plantation area by 6 mazdoors for a year @ 1650/- each per month.		118800
			127800
(b)	S.S.O. (Subsidiary silvicultural operations)		
		NIL	0
		TOTAL:	0
(c)	Demarcation and Consolidation		In Nos.
		NIL	
		Total (@ 61.25 each)	0
(d)	Forest Protection		In Kms
		NIL	
		Total	0.0
(e)	Construction of Mule Roads/Bridle Paths		
		NIL	0
(f)	Construction of Buildings		(In Rs)
		NIL	
		G. SOIL CONSERVATION WORKS	
		NIL	

2. UHL (BIR) RANGE)

NIL

ANNEXURE-C

DETAILED ESTIMATES FOR ENGINEERING DESIGN

Estimate for the construction of check dams in Cement Mortar (Masonary) Length 2.00 Mtrs. Height 2.44 Mtrs.

Sr.No.	Description of item	Detail of measurement or area	Length	Quantity	Unit	Rate(Rs)	Amount (Rs)
1	Excavation in foundation in 1/2 earth 1/2 stone cuttings.						
	a)Main Dam wall	1x2.00x2.10x1/2(0.80+1.36)		3.900	Cumt		
	b)Apron	1x0.50x2.50x0.80		1.000	Cumt		
	c)Wing walls 2 No.	2x0.75x1/2(1.00+0.50)x1.835		2.064	Cumt		
		TOTAL:		**6.964**		74.77	695.00
2	Laying of CC 1:4:8 on foundation:						
	a)Main Dam wall	1x2.00x2.10x0.20		0.840	Cumt		
	b)Apron	1x0.50x2.50x0.20		2.500	Cumt		
	c)Wing walls 2 No.	2x0.75x1.835x0.23		0.630	Cumt		
		TOTAL:		**3.970**		**166.70**	**622.00**
3	R.R.Stone masonary in Cement Mortar-1:4						
	a)Main Dam wall	1x2.00x1/2(1.61+1.05)x2.27		6.497	Cumt		
	b)Apron	1x0.50x2.50x0.60		0.750	Cumt		
	c)Wing walls 2 No.	2x0.75x1/2(1.535+0.765)x3.09		5.442	Cumt		
	d)- triangular portion	2x0.75x1/2(0.75x0.20)	**TOTAL**	**12.684**		**310.75**	**3,942.00**
4	Laying of cement concrete 1:2:4 on top.						
	a) Main dam Wall	1x2.00x1/2 (0.30x0.90)		0.870	Cumt		
		1x2.00x1/2(0.95+1.65)x0.30					
	b)Wing wall 2 Nos.	2x0.75x0.75x0.10		0.112	Cumt		
		TOTAL:		**0.982**		**166.70**	**164.00**
5	Boulder filling behind the main dam	1x0.50x0.60x1.84		0.552	Cumt		
		TOTAL:		**0.552**		**54.90**	**30.00**
		Total (1 to 5)					**5,343.00**
		Add increase @ 7.84% i.e. 419/-					419.00
		Total (Labour cost)					5,762.00

SR.NO.	DESCRIPTION	QUANTITY	CEMENT BAGS	SAND IN M^3	SING LES	CUT STONES	BOULDER
1	C.C 1:4:8 in foundation	399.00 M^3	13.50	1.00	3.73	-	-
2	R.R.Stone masonary in foundation & superstructe of main dam,apron & wing walls.	12.684 M^3	27.27	3.80	-	7.00	7.00
3	Laying C.C.1:2:4 on top of main dam/wing walls.	0.982 M^3	6.36	0.44	0.88	-	-
4	Boulder stone filling behind main dam	0.552 M^3	-	-	-	-	0.60
	TOTAL:		47.15	5.10	4.61	7.00	7.60

	COST OF MATERIAL		ABSTRACT OF COST	
1	Cement 47 bags @ 160/-per bag	7,520	Labour cost	5,762
2	Sand 6.00 cum @ 600/-per cum	3,600	Material cost	22,750
3	Singles 4.60 cum @ 650/-per cum.	2,990	**Total:**	**28,512**
4	Cut stones 7.00 cum @ 800/- pcum	5,600	OR SAY RS.	28,000
5	Boulder stones 7.60 cum.@ 400/- per cum.	3,040		
	Total Material cost (Rs.)	22,750		

Estimate for the construction of check dams in Cement Mortar (Masonary) Length 2.50 Mtrs. Height 2.44 Mtrs.

Description of item.	Detail of measurement or area	Length	Quantity	Unit	Rate(Rs)	Amount (Rs)
Excavation in foundation in 1/2 earth 1/2 stone cuttings.						
a)Main Dam wall	1x2.50x2.10x1/2(0.80+1.36)		4.875	Cumt		
b)Apron	1x1.00x2.50x0.80		2.000	Cumt		
c)Wing walls 2 No.	2x1.00x1/2(1.00+0.50)x1.835		2.752	Cumt		
	TOTAL:		9.627		74.77	570.00
Laying of CC 1:4:8 on foundation:						
a)Main Dam wall	1x2.50x2.10x0.20		1.050	Cumt		
b)Apron	1x1.00x2.50x0.20		0.500	Cumt		
c)Wing walls 2 No.	2x1.00x1.835x0.23		0.840	Cumt		
	TOTAL:		2.390		156.70	374.00
R.R.Stone masonary in Cement Mortar-1:4						
a)Main Dam wall	1x2.50x1/2(1.81+1.05)x2.27		8.185	Cumt		
b)Apron	1x1.00x2.50x0.60		1.500	Cumt		
c)Wing walls 2 No.	2x1.00x1/2(1.535+0.765)x3.09		7.256	Cumt		
d)e-triangular portion	2x1.00x1/2(0.75x0.20)	TOTAL	16.871		310.75	5,243.00
Laying of cement concrete 1:2:4 on top.						
a) Main dam Wall	1x2.50x1/2 (0.30x0.90)		1.080	Cumt		
	1x2.50x1/2(0.95+1.05)x0.30					
b)Wing wall 2 Nos.	2x1.00x0.75x0.10		0.150	Cumt		
	TOTAL:		1.230		156.70	193.00
Boulder filling behind the main dam	1x2.50x0.60x0.84		2.760	Cumt		
	TOTAL:		2.760		54.90	151.00
	Total (1 to 5)					6,531.00
	Add increase @ 7.84%					512.00
	Total (Labour cost)					7,043.00

DESCRIPTION	QUANTITY	CEMENT BAGS	SAND IN M^3	SINGLES IN M^3	CUT STONES IN M^3	BOULDER IN M^3
C.C 1:4:8 in foundation	2.39 M^3	8.12	1.12	2.24	-	-
R.R.Stone masonary in foundation & superstructure of main dam,apron & wing walls.	16.871 M^3	30.27	6.00	-	9.27	9.27
Laying C.C 1:2:4 on top of main dam/wing walls.	1.23 M^3	7.99	0.55	1.10	-	-
Boulder stone filling behind main dam	2.76 M^3	-	-	-	-	3.03
TOTAL:		52.38	6.73	3.34	9.27	12.30

COST OF MATERIAL	
Cement 52 bags @ 160/-per bag	8,320
Sand 6.75cum @ 600/-per cum.	4,050
Singles 3.33 cum @ 650/-per cum.	2,145
Cut stones 9.25 cum @ 800/- pcum	7,400
Boulder stones 12.30 cum @ 400/- per cmut.	4,920
Total Material cost (Rs.)	26,835

ABSTRACT OF COST	
Labour cost	7,043
Material cost	26,835
Total:	33,878
OR SAY RS.	33,800

Estimate for the construction of check dams in Cement Mortar (Masonary) Length 3.00 Mtrs. Height 1.55 Mtrs.

Sl.	Description of item	Detail of measurement or area	Length	Quantity	Unit	Rate(Rs)	Amount (Rs)
	Excavation in foundation in 1/2 earth 1/2 stone cuttings.						
	a)Main Dam wall	1x3.00x1/2(2.10x0.80+1.30)		5.850	Cumt		
	b)Apron	1x1.50x2.50x0.80		3.000	Cumt		
	c)Wing walls 2 No.,	2x1.50x1.835x1/2(1.00+0.50)		4.125	Cumt		
		TOTAL:		12.970		74.77	970.00
	Laying of CC 1:4:8 on foundation:						
	a)Main Dam wall	1x3.00x2.10x0.20		1.260	Cumt		
	b)Apron	1x1.50x2.50x0.20		0.750	Cumt		
	c)Wing walls 2 No.	2x1.50x1.835x0.23		1.260	Cumt		
		TOTAL:		3.270		156.70	512.00
	R.R.Stone masonary in Cement Mortar-1:4						
	a)Main Dam wall	1x3.00x1/2(1.81+1.05)x2.27		9.738	Cumt		
	b)Apron	1x150x2.50x0.60		2.250	Cumt		
	c)Wing walls 2 No.	2x1.50x1/2(1.535+0.765)x3.09		10.884	Cumt		
	d) triangular portion	2x1.50x1/2(0.75x0.20)	TOTAL	22.072		310.76	7,107.00
	Laying of cement concrete 1:2:4 on top.						
	a)Main dam Wall	1x3.00x1/2 (0.30x0.95)		1.305	Cumt		
		1x3.00x1/2(0.95+1.05)x0.30)					
	b)Wing wall 2 Nos.	2x1.50x0.75x0.10		0.225	Cumt		
		TOTAL:		1.530		156.70	239.00
	Boulder filling behind the main dam	1x1.50x0.60x1.84		1.656	Cumt		
		TOTAL:		1.656		54.90	91.00
		Total (1 to 5)					8,919.00
		Add increase @ 7.84%					699.00
		Total (Labour cost)					9,618.00

SNO	DESCRIPTION	QUANTITY	CEMENT BAGS	SAND IN M^3	SINGLES IN M^3	CUT STONES IN M^3	BOULDER IN M^3
	C.C 1:4:8 in foundation	$3.27 M^3$	11.11	1.54	3.07	-	-
	R.R.Stone masonry in foundation & superstructure of main dam,apron & wing walls.	$22.00 M^3$	49.14	6.85	-	12.57	12.57
	Laying C.C.1:2:4 on top of main dam/wing walls.	$1.53 M^3$	9.94	0.69	1.38	-	-
	Boulder stone filling behind main dam.	$1.656 M^3$	-	-	-	-	1.82
	TOTAL:		70.19	9.08	4.45	12.57	14.39

COST OF MATERIAL		ABSTRACT OF COST	
Cement 70 bags @ 160/-per bag	11,200	Labour cost	9,618
Sand 9.00cum @ 600/-per cum.	5,400	Material cost	35,325
Singles 4.50 cum @ 650/-per cum.	2,925	Total:	44,943
Cut stones 12.50 cum @ 800/- pcum	10,000	OR SAY RS.	44,900
Boulder stones 14.50 cum @ 400/- per Cumt	5,800		
Total Material cost (Rs.)	35,325		

Estimate for the construction of check dams in Cement Mortar (Masonary) Length 4.60 Mtrs. Height 2.44 Mtrs.

S.No.	Description of item.	Detail of measurement or area	Length	Quantity	Unit	Rate (Rs.)	Amount. (Rs)
1	Excavation in foundation in 1/2 earth 1/2 stone cuttings.						
	a)Main Dam wall	1x4.50x2.10x1/2(0.80+1.30)		8.775	Cumt		
	b)Apron	1x3.00x2.50x0.80		6.000	Cumt		
	c)Wing walls 2 No.	2x2.00x1.835x1/2(1.00+0.50)		5.504	Cumt		
			TOTAL:	20.279		74.77	1516.00
2	Laying of CC 1:4:8 on foundation:						
	a)Main Dam wall	1x4.50x2.10x0.20		1.890	Cumt		
	b)Apron	1x3.00x2.50x0.20		1.500	Cumt		
	c)Wing walls 2 No.	2x2.00x1.835x0.23		1.600	Cumt		
			TOTAL:	4.990		156.70	794.00
3	R.R.Stone masonary in Cement Mortar-1:4						
	a)Main Dam wall	1x4.50x1/2(1.81+1.05)x2.27		14.607	Cumt		
	b)Apron	1x3.00x2.50x0.60		4.500	Cumt		
	c)Wing walls 2 No.	2x2.00x1/2(1.535+0.765)x3.09		14.512	Cumt		
	de- triangular portion	2x2.00x1/2(0.75x0.20)	TOTAL	33.619		310.75	10447.00
4	Laying of cement concrete 1:2:4 on top.						
	a) Main dam Wall	1x4.50x1/2(0.3x0.90)		1.950	Cumt		
		1x4.50x1/2(0.95+1.05)x0.30					
	b)Wing wall 2 Nos.	2x2.00x0.75x0.10		0.300	Cumt		
			TOTAL:	1.530		155.70	352.00
5	Boulder filling behind the main dam	1x1.50x0.60x1.84		3.312	Cumt		
			TOTAL:	3.312		54.90	182.00
			Total (1 to 5)				13291.00
			Add increase @ 7.84%				1042.00
			Total (Labour cost)				14333.00

S.NO	DESCRIPTION	QUANTITY	CEMENT BAGS	SAND IN M^3	SINGLES IN M^3	CUT STONES IN M^3	BOULDER IN M^3
1	C.C 1:4:8 in foundation	5.07 M^3	17.23	2.38	4.76	-	-
2	R.R.Stone masonary in foundation & superstructre of main dam,apron & wing walls.	33.619 M^3	72.28	10.08	-	18.49	18.49
3	Laying C.C 1:2:4 on top of main dam/wing walls.	2.25 M^3	14.62	1.01	2.02	-	-
4	Boulder stone filling behind main dam.	3.312 M^3	-	-	-	-	4.64
		TOTAL:	104.13	13.47	6.78	18.49	23.13

	COST OF MATERIAL	AMOUNT IN RS.	ABSTRACT OF COST(In Rs)			
1	Cement 104 bags @ 160/-per bag	16,640	Labour cost	14,333		
2	Sand 13.50cum @ 600/-per cum.	8,100	Material cost	52,727		
3	Singles 6.75 cum.@ 650/-per cum.	4,387	Total:	67,060		
4	Cut stones 18.50 cum @ 800/- pcum	14,800	OR SAY RS.	67,000		
5	Boulder stone:22.00 cum.@ 400/- per cumt.	8,800				
	Total Material cost (Rs.)	52,727				

Estimate for the construction of check dams in Cement Mortar (Masonary) Length 6.00 Mtrs. Height 2.44Mtrs.

Description of item	Detail of measurement or area	Length	Quantity	Unit	Rate (Rs.)	Amount (Rs)
Excavation in foundation in 1/2 earth 1/2 stone cuttings.						
a)Main Dam wall	1x5.00x1.2(2.10x0.80)+1.36		9.760	Cumt		
b)Apron	1x3.50x2.50x0.80		7.000	Cumt		
c)Wing walls- 2 Nos.	2x2.00x1.835x1/2(1.00+0.50)		5.504	Cumt		
		TOTAL:	22.254		74.77	1664.00
Laying of CC 1:4:8 on foundation:						
a)Main Dam wall	1x5.00x2.10x0.20		0.420	Cumt		
b)Apron	1x3.50x2.50x0.20		0.500	Cumt		
c)Wing walls 2 Nos.	2x2.00x1.835x0.23		0.420	Cumt		
		TOTAL:	1.340		156.70	860.00
R.R.Store masonary in Cement Mortar-1:4						
a)Main Dam wall	1x5.00x1/2(1.81+1.05)x2.27		16.230	Cumt		
b)Apron	1x3.50x2.50x0.60		5.250	Cumt		
c)Wing walls 2 Nos.	2x2.00x1/2(1.535+0.765)x3.09		14.517	Cumt		
d) triangular portion	2x2.00x1/2(0.75x0.20)	TOTAL	36.992		310.75	11185.00
Laying of cement concrete 1:2:4 on top						
a)Main dam Wall	1x5.00x1/2(0.3x0.90)		2.175	Cumt		
	1x5.00x1/2(0.95+1.05)x0.30					
b)Wing wall 2 Nos.	2x2.00x0.75x0.10		0.300	Cumt		
		TOTAL:	2.475		156.70	388.00
Boulder filling behind the main dam	1x3.50x0.60x1.84		3.864	Cumt		
		TOTAL:	3.864		54.90	212.00
		Total (1 to 5)				14309.00
		Add increase @ 7.84%				1122.00
		Total (Labour cost)				15431.00

DESCRIPTION	QUANTITY	CEMENT BAGS	SAND IN M^3	SINGLES IN M^3	CUT STONES IN M^3	BOULDER IN M^3
C.C 1:4:8 in foundation	5.49 M^3	18.66	2.58	5.16	-	-
R.R.Store masonary in foundation & superstructe of main dam,apron & wing walls	35.992 M^3	77.30	10.00	-	19.79	19.79
Laying C.C.1:2:4 on top of main dam wing walls.	2.475 M^3	16.08	1.11	2.22	-	-
Boulder stone filling behind main Dam	3.864 M^3	-	-	-	-	4.25
	TOTAL:	112.12	14.49	7.38	19.79	24.04

COST OF MATERIAL	AMOUNT IN RS.
Cement 112 bags @ 160/-per bag	17,920
Sand 14.49cum @ 600/-per cum.	8,700
Singles 7.50 cum @ 650/-per cum.	4,810
Cut stones 20.00 cum @ 800/- pcum	16,000
Boulder stones 24.00 cum @ 400/- per cum.	9,600
Total Material cost (Rs.)	57,030

ABSTRACT OF COST (In Rs)		
Labour cost	15,431	
Material cost	57,030	
Total:	72,461	
OR SAY RS.	72,000	

Estimate for the construction of check dams in Cement Mortar (Masonary) Length 6.00 Mtrs. Height 2.44 Mtrs.

Description of item	Detail of measurement or area	Length	Quantity	Unit	Rate (Rs.)	Amount (Rs)
Excavation in foundation in 1/2 earth 1/2 stone cuttings.						
(i)Main Dam wall	1x6.00x1/2(2.10x0.80+1.36)		11.700	Cumt		
(ii)Apron	1x4.50x2.50x0.80		9.000	Cumt		
(iii)Wing walls 2 Nos.	2x2.00x1.835x1/2(1.00+0.50)		5.504	Cumt		
		TOTAL:	26.204		74.77	1959.00
Laying of CC 1:4:8 on foundation:						
(i)Main Dam wall	1x6.00x2.10x0.20		2.520	Cumt		
(ii)Apron	1x4.50x2.50x0.20		4.250	Cumt		
(iii)Wing walls 2 Nos.	2x2.00x1.835x0.23		1.680	Cumt		
		TOTAL:	8.450		156.70	1324.00
R.R.Stone masonary in Cement Mortar-1:4						
(i)Main Dam wall	1x6.00x1/2(1.81+1.05)x2.27		19.476	Cumt		
(ii)Apron	1x4.50x2.50x0.20		6.750	Cumt		
(iii)Wing walls 2 Nos.	2x2.00x1/2(1.535+0.765)x3.09		14.512	Cumt		
Deduct for triangular portion	2x2.00x1/2(0.75x0.20)	TOTAL	40.738		310.75	12659.00
Laying of cement concrete 1:2:4 on top.						
(i)Main Dam Wall	1x6.00x1/2(0.3x0.90)		2.160	Cumt		
	1x6.00x1/2(0.95+1.05)x0.30					
(ii)Wing wall 2 Nos.	2x2.00x0.75x0.10		0.300	Cumt		
		TOTAL:	1.530		156.70	456.00
Boulder filling behind the main dam	1x4.50x0.60x1.84		4.968	Cumt		
		TOTAL:	4.968		54.90	273.00
		Total (1 to 6)				16671.00
		Add increase @ 7.84%				1307.00
		Total (Labour cost)				17978.00

DESCRIPTION	QUANTITY	CEMENT BAGS	SAND IN M^3	SING LES IN M^3	CUT STONES IN M^3	BOULDER IN M^3
C.C 1:4:8 in foundation	8.45 M^3	28.73	3.97	7.94	-	-
R.R.Stone masonary in foundation & superstructure of main dam,apron & wing walls	40.738 M^3	87.58	12.22	-	22.40	22.40
Laying C.C.1:2:4 on top of main dam,wing walls.	2.91 M^3	18.91	1.30	2.61	-	-
Boulder stone filling behind main Dam	4.96 M^3	-	-	-	-	5.45
	TOTAL:	135.22	17.49	10.55	22.40	27.85

COST OF MATERIAL	AMOUNT IN RS.
Cement 135 bags @ 160/-per bag	21,600
Sand 17.49 cum @ 600/-per cum.	10,500
Sing les 10.55 cum @ 650/- per cum.	6,825
Cut stone 22.40 cum @ 800/- pcum	18,000
Boulder stones 28.00 cum @ 400/- per cum	11,200
Total Material cost (Rs.)	68,125

ABSTRACT OF COST(In Rs)

Labour cost	17,978
Material cost	68,125
Total:	86,103
OR SAY RS.	86,000

Sheet.0/

Estimate for the construction of check dams in Cement Mortar (Masonary) Length10Mtrs. Height 2.50 Mtrs.

Sl.No.	Description of item	Detail of measurement or scan	Length	Quantity	Unit	Rate (Rs.)	Amount (Rs)
1	Excavation in foundation in 1/2 earth 1/2 stone cuttings.						
	a)Main Dam wall	1x10.00x2.10x1/2(0.60+1.36)		19.500	Cumt		
	b)Apron	1x8.50x2.50x0.80		17.000	Cumt		
	c)Wing walls 2 No.	2x2.00x1/2(1.835x1.00+0.50)		5.504	Cumt		
			TOTAL:	42.004		74.77	3140.00
2	Laying of CC 1:4:8 in foundation:						
	a)Main Dam wall	1x10.00x2.10x0.20		4.200	Cumt		
	b)Apron	1x8.50x2.50x0.20		4.250	Cumt		
	c)Wing walls 2 No.	2x2.00x1.835x0.23		1.680	Cumt		
			TOTAL:	10.130		156.70	1587.00
3	R.R.Stone masonary in Cement Mortar-1:4						
	a)Main Dam wall	1x10.00x1/2(1.81+1.05)x2.27		32.460	Cumt		
	b)Apron	1x8.50x2.50x0.60		12.750	Cumt		
	c)Wing walls 2 No.	2x2.00x1/2(1.535+0.765)x3.09		14.512	Cumt		
		2x2.00x1/2(0.75x0.20)	TOTAL	59.722		310.75	18558.00
4	Laying of cement concrete 1:2:4 on top.						
	a)Main dam Wall	1x10.00x1/2(0.30x0.90)		4.350	Cumt		
		1x10.00x1/2(0.95+1.05)x0.30					
	b)Wing wall 2 Nos.	2x2.00x0.75x0.10		0.300	Cumt		
			TOTAL:	4.650		156.70	729.00
5	Boulder filling behind the main dam	1x8.50x0.60x1.84		9.384	Cumt		
			TOTAL:	9.384		54.90	515.00
			Total (1 to 5)				24529.00
			Add increase @ 7.84%				1923.00
			Total (Labour cost)				26452.00

Sl.NO.	DESCRIPTION	QUANTITY	CEMENT BAGS	SAND IN M^3	SING LES IN M^3	CUT STONES IN M^3	BOULDER IN M^3
1	C.C 1:4:8 in foundation	10.13 M^3	34.44	4.76	9.52	-	-
2	R.R.Stone masonary in foundation & superstructure of main dam,apron & wing walls.	59.72 M^3	128.40	17.91	-	32.84	32.84
3	Laying C.C.1:2:4 on top of main dam wing walls.	4.65 M^3	30.22	2.09	4.18	-	-
4	Boulder stone filling behind main dam.	9.384 M^3	-	-	-	-	10.32
		TOTAL:	193.06	24.76	13.70	32.84	43.16

	COST OF MATERIAL	AMOUNT IN RS.	ABSTRACT OF COST(In Rs)		
1	Cement 193 bags @ 160/-per bag	30,880	Labour cost	26,452	
2	Sand 24.76cum @ 600/-per cum.	14,850	Material cost	98,267	
3	Singles 13.75 cum @ 650/-per cum.	8,937	Total:	124,719	
4	Cut stones 33.00 cum @ 800/- pcum	26,400	OR SAY RS.	124,000	
5	Boulder stones 43.00 cum @ 400/- per cum	17,200			
	Total Material cost (Rs.)	98,267			

Estimate for the construction of check dams in Cement Mortar (Masonary) Length 15.00 Mtrs. Height 2.44 Mtrs.

Sr.No.	Description of item.	Detail of measurement or area	Length	Quantity	Unit	Rate (Rs.)	Amount (Rs.)
1	Excavation in foundation in 1/2 earth 1/2 stone cuttings.						
	a)Main Dam wall	15.00x1/2(2.10+0.80+1.30)		29.250	Cumt		
	b)Apron	13.50x2.50x0.80		27.000	Cumt		
	c)Wing walls 2 No.	2x2.00x1.835x1/2(1.00+0.50)		5.504	Cumt		
			TOTAL:	61.754		74.77	4617.(
2	Laying of CC 1:4:8 on foundation:						
	a)Main Dam wall	1x15.00x2.00x0.20		6.300	Cumt		
	b)Apron	1x13.50x2.50x0.20		6.750	Cumt		
	c)Wing walls 2 No.	2x2.00x1.835x1/2(1.00+0.50)		1.680	Cumt		
			TOTAL:	14.730		158.70	2338.(
3	R.R.Stone masonary in Cement Mortar-1:4						
	a)Main Dam wall	1x15.00x1/2(1.81+1.05)x2.27		48.690	Cumt		
	b)Apron	1x13.50x2.50x0.60		20.250	Cumt		
	c)Wing walls 2 No.	2x2.00x1/2(1.535+0.765)x3.09		14.512	Cumt		
	-do- triangular portion	2x2.00x1/2(0.75x0.20)	TOTAL	83.452		310.75	26243.0
4	Laying of cement concrete 1:2:4 on top.						
	a) Main dam Wall	1x15.00x1/2(0.30x0.90)		2.025	Cumt		
		1x15.00x1/2(0.95+1.05)x0.30		6.525			
	b)Wing wall 2 Nos.	2x4.00x0.75x0.10		0.300	Cumt		
			TOTAL:	8.850		156.70	1387.0
5	Boulder filling behind the main dam	1x13.50x0.60x1.84		14.904	Cumt		
			TOTAL:	14.904		54.90	818.0
			Total (1 to 5)				35373.0
			Add increase @ 7.84%				2773.0
			Total (Labour cost)				38146.0

SR.NO.	DESCRIPTION	QUANTITY	CEMENT BAGS	SAND IN M^3	SINGLES IN M^3	CUT STONES IN M^3	BOULDER IN M^3
1	C.C 1:4:8 in foundation	14.73 M^3	50.08	6.92	13.84	-	-
2	R.R.Stone masonary in foundation & superstructe of main dam,apron & wing walls.	84.45 M^3	181.56	25.33	-	46.44	46.44
3	Laying C.C.1:2:4 on top of main dam/wing walls.	2.025 M^3	13.16	0.91	1.82	-	-
4	Boulder stone filling behind main dam.	14.904 M^3	-	-	-	-	16.39
		TOTAL:	244.80	33.16	15.66	46.44	62.83

COST OF MATERIAL	AMOUNT IN RS.	ABSTRACT OF COST(in Rs)	
1 Cement 244 bags @ 160/-per bag	39,040	Labour cost	38,146
2 Sand 33.00 cum @ 600/-per cum.	19,800	Material cost	130,840
3 Singles 16.00 cum.@ 650/-per cum.	10,400	Total:	168,986
4 Cut stones 46.50 cum @ 800/-per cum	37,200	OR SAY RS.	169,000
5 Boulder stone 61.00 cum.@ 400/-per cum	24,400		
Total Material cost (Rs.)	130,840		

Estimate for the construction of check dams in Cement Mortar (Masonary) Length 20.00 Mtrs. Height 2.44 Mtrs.

S.No.	Description of item.	Detail of measurement or area	Length	Quantity	Unit	Rate (Rs.)	Amount (Rs)
1	Excavation in foundation in 1/2 earth 1/2 stone cuttings.						
	a)Main Dam wall	1x20.00x1/2(2.10x0.80+1.36)		39.000	Cumt		
	b)Apron	1x18.50x2.50x0.80		37.000	Cumt		
	c)Wing walls 2 No.	2x2.00x1.835x1/2(1.00+0.50)		5.504	Cumt		
			TOTAL:	81.504		74.77	6094.00
2	Laying of CC 1:4:8 on foundation:						
	a)Main Dam wall	1x20.00x2.00x0.20		8.400	Cumt		
	b)Apron	1x18.50x2.50x0.20		9.250	Cumt		
	c)Wing walls 2 No.	2x2.00x1.835x0.23		1.680	Cumt		
			TOTAL:	19.330		156.70	3029.00
3	R.R.Store masonary in Cement Mortar-1:4						
	a)Main Dam wall	1x20.00x1/2(1.81+1.05)x2.27		64.920	Cumt		
	b)Apron	1x18.50x2.50x0.60		27.750	Cumt		
	c)Wing walls 2 No.	2x2.00x1/2(1.535_0.765)x3.09		14.508	Cumt		
	the triangular portion	2x2.00x1/2(0.75x0.20)	TOTAL	107.178		310.75	33306.00
4	Laying of cement concrete 1:2:4 on top.						
	a) Main dam Wall	1x15.00x1/2(0.30x0.90)		8.700	Cumt		
		1x15.00x1/2(0.95+1.05)x0.30					
	b)Wing wall 2 Nos.	2x2.00x0.75x0.10		0.300	Cumt		
			TOTAL:	9.000		156.70	1410.00
5	Boulder filling behind the main dam	1x18.50x0.60x1.84		20.424	Cumt		
			TOTAL:	20.424		54.90	1121.00
			Total (1 to 6)				45160.00
			Add increase @ 7.84%				3541.00
			Total (Labour cost)				48701.00

S.NO.	DESCRIPTION	QUANTITY	CEMENT BAGS	SAND IN M³	SINGLES IN M³	CUT STONES IN M³	BOULDER IN M³
1	C.C 1:4:8 in foundation	19.33 M³	65.72	9.08	18.16	-	-
2	R.R.Stone masonary in foundation & superstructre of main dam,apron & wing walls.	92.67 M³	199.24	27.80	-	50.96	50.96
		14.50 M³	31.19	4.35		7.97	7.97
3	Layer C.C 1:2:4 on top of main dam/wing walls.	9.00 M³	58.00	4.05	9.10	-	-
4	Boulder stone filling behind main dam.	20.424 M³	-	-	-	-	22.46
		TOTAL:	354.15	45.28	27.26	58.93	81.39

	COST OF MATERIAL	AMOUNT IN RS.	ABSTRACT OF COST(in Rs)			
1	Cement 355 bags @ 160/-per bag	56,800	Labour cost	48,701		
2	Sand 45.00 cum.@ 600/-per cum.	27,000	Material cost	180,950		
3	Singles 27.00 cum.@ 650/-per cum.	17,550	Total:	229,651		
4	Cut stones 59.00 cum @ 800/- pcum	47,200	OR SAY RS.	229,000		
5	Boulder stones 81.00 cum.@ 400/- per cum.	32,400				
	Total Material cost (Rs.)	180,950				

Estimate for the construction of check dams in Cement Mortar (Masonary) Length 30.00 Mtrs. Height 2.44 Mtrs.

Sr No.	Description of item	Detail of measurement or area	Length	Quantity	Unit	Rate (Rs.)	Amount (Rs)
1	Excavation in foundation in 1/2 earth 1/2 stone cuttings.						
	a)Main Dam wall	1x30.00x2.10x1/2(0.80+1.36)		58.500	Cumt		
	b)Apron	1x28.50x2.50x0.80		57.000	Cumt		
	c)Wing walls 2 No.	2x2.00x1.835x1/2(1.00+0.50)		5.504	Cumt		
			TOTAL:	121.004		74.77	9047.00
2	Laying of CC 1:4:8 on foundation:						
	a)Main Dam wall	1x30.00x2.10x0.20		12.600	Cumt		
	b)Apron	1x28.50x2.50x0.20		14.850	Cumt		
	c)Wing walls 2 No.	2x2.00x1.835x0.23		1.680	Cumt		
			TOTAL:	29.130		156.70	4471.00
3	R.R.Stone masonary in Cement Mortar 1:4						
	a)Main Dam wall	1x30.00x1/2(1.81+1.05)x2.27		97.380	Cumt		
	b)Apron	1x28.50x2.50x0.60		42.750	Cumt		
	c)Wing walls 2 No.	2x2.00x1/2(1.535_0.785)x3.09		14.512	Cumt		
	de- triangular portion	2x2.00x1/2(0.75x0.20)	TOTAL	154.642		310.75	48055.00
4	Laying of cement concrete 1:2:4 on top.						
	a) Main dam Wall	1x30.00x1/2(0.30x0.90)		13.050	Cumt		
		1x30.00x1/2(0.95+1.05)x0.30					
	b)Wing wall 2 Nos.	2x2.00x0.75x0.10		0.300	Cumt		
			TOTAL:	13.350		156.70	2092.00
5	Boulder filling behind the main dam	1x28.50x0.60x1.84		31.464	Cumt		
			TOTAL:	31.464		54.90	1727.00
			Total (1 to 5)				65392.00
			Add increase @ 7.84%				5127.00
			Total (Labour cost)				70519.00

SR.NO	DESCRIPTION	QUANTITY	CEMENT BAGS	SAND IN M^3	SINGLES IN M^3	CUT STONES IN M^3	BOULDER IN M^3
1	C.C 1:4:8 in foundation	28.53 M^3	92.00	13.41	26.82	-	-
2	R.R.Stone masonary in foundation & superstructe of main dam apron & wing walls.	154.642 M^3	332.48	46.39	-	85.05	85.05
3	Laying C.C.1:2:4 on top of main dam/wing walls.	13.35 M^3	66.78	6.00	12.01	-	-
4	Boulder stone filling behind main dam.	31.464 M^3	-	-	-	-	34.61
		TOTAL:	511.26	65.80	38.83	85.05	119.66

	COST OF MATERIAL	AMOUNT IN RS.	ABSTRACT OF COST(In Rs)				
1	Cement 516 bags @ 160/-per bag	82,560	Labour cost	70,519			
2	Sand 66.00 cum @ 600/-per cum.	39,600	Material cost	263,110			
3	Singles 38.00 cum @ 650/-per cum.	25,350	Total:	333,629			
4	Cut stones 85.00 cum @ 800/- poum	68,000	OR SAY RS.	333,000			
5	Boulder stones 119.00 cum.@ 400/- per cum.	47,600					
	Total Material cost (Rs.)	263,110					

Estimate for the construction of check dams in Wire Crates, Length 3.75 Mtrs.

Sr.No.	Description of item.	Detail of measurement or area		Quantity	Unit	Rate (Rs.)	Amount (Rs)
1	Excavation in foundation in 1/4 earth 1/2 stone cuttings.						6
	a)Main Dam wall	1x3.75x3.75x1.00		14.060	Cumt		
	b)Apron	1x1.25x1.25x1.25		1.953	Cumt		
	c)Wing walls 2 No.	2x2.50x1.25x1.00		6.250	Cumt		
			TOTAL:	22.263		74.77	1665.00
2	Boulder filling in the wire crates.						
	a)Main Dam wall						
	1st Step	(3x2)x1.25x125x125		17.571	Cumt		
	2nd Step	(2x3)x1.25x125x125		11.718	Cumt		
	b)Side walls above main dam 2 Nos.	(2x3)x1.25x125x125		11.718	Cumt		
	c)Wing walls 2 No.	(2x2x3)x1.25x125x125		23.436	Cumt		
	d)Apron.	(1x1)x1.25x125x125		1.953	Cumt		
			TOTAL:	66.402		124.60	8267.00
3	Laying Cement concrete 1:2:4 on top						
	a)Main Dam wall	1x1.25x3.10x0.15		0.581	Cumt		
	b)Apron	1x1.25x1.25x0.15		0.234	Cumt		
			TOTAL:	0.815		156.70	127.00
4	Boulder sonte filling behind main dam	1x1.25x0.60x1.40		1.050	Cumt		
			TOTAL:	1.050		54.90	58.00
		Total (1 to 5)	Total (1 to 4)				10117.00
	Add increase @ 7.84%						793.00
	Total (Labour cost)						10910.00

SR.NO.	DESCRIPTION	QUANTITY	CEMENT BAGS	SAND IN M³	SING LES IN M³	BOULDER STONES IN M³	INTER-CHAIN LINK
1	Boulder stone filling in wire creates	66.402 M³	-	-	-	73.04	-
2	Laying C.C.1:2:4	0.815 M³	5.29	0.366	0.73	-	-
3	Boulder stone filling behind main dam wall	1.05 M³	-	-	-	1.15	309.00
4	Interlink chain						

COST OFMTERIAL

1	Cement 5 Bags @ 100/-per bag	500	Labour cost	10,910
2	Boulder Stones 74.00 cum @ 400/-per cum.	29,600	Material cost	48,394
3	Sand 0.36 cum @ 600/-per cum.	216	Total:	59,304
4	Single:0.73 cum @ 650 P/cum	474	OR SAY RS.	59,000
5	Interlink chain 309.00 Sqmt. @ 56/-Per Sqmt	17,304		
	Total Material cost (Rs.)	48,394		

Estimate for the construction of check dams in [illegible] Length 5.00 Mtrs.

S.No.	Description of Item	Detail of measurement on area	Length	Quantity	Unit	Rate (Rs.)	Amount (Rs)
1	Excavation in foundation in 1/2 earth 1/2 stone cuttings.						
	a)Main Dam wall	15.00x3.75x1.00		18.750	Cumt		
	b)Apron	1x2.50x1.25x1.25		3.900	Cumt		
	c)Wing walls 2 No.	2x2.50x1.25X1.00		6.250	Cumt		
			TOTAL:	28.900		74.77	2160.00
	Boulder filling in the wire crates.						
	a)Main Dam wall						
	1st Step	(3X4)X1.25X1.25X1.25		23.430	Cumt		
	2nd Step	(2X4)X1.25X1.25X1.25		15.620	Cumt		
	b)Side walls above main dam 2 Nos.	(2X2)X1.25X1.25X1.25		7.810	Cumt		
	c)Wing walls 2 No.	(2x2x3)x1.25x1.25x1.25		23.430	Cumt		
	D) Apron	(1x2)x1.25x1.25x1.25		3.900	Cumt		
			TOTAL:	74.190		124.50	9237.00
3	Laying Cement concrete 1:2:4 on top						
	a)Main Dam wall	1x2.50x2.50x0.15		0.930	Cumt		
	b)Apron	1x2.50x1.25x0.15		0.460	Cumt		
			TOTAL	1.390		156.70	218.00
4	Boulder stone filling behind main dam.	1x2.50x0.00x1.40		2.100	Cumt		
			TOTAL	2.100		156.70	115.00
			Total (1 to 5)				11730.00
			Add increase @ 7.84%				920.00
			Total (Labour cost)				12650.00

S.NO.	DESCRIPTION	QUANTITY	CEMENT BAGS	SAND IN M³	SINGLES IN M³	BOULDER STONES IN M³	INTER-CHAIN LINK
1	Boulder stone filling in wire crates	74.19 M³	-	-	-	81.61	-
2	Laying C.C.1:2:4	1.39 M³	9.03	0.625	1.25	-	-
3	Boulder stone filling behind main dam wall	2.10 M³	-	-	-	2.31	-
4	Interlink chain	-	-	-	-	-	356.25
	Total:		9.03	0.625	1.25	83.92	356.25

COST OF MATERIAL

1	Cement 9 Bags @ 160/-per bag	1,440	Labour cost	12,650			
2	Boulder Stones 84.00 cum.@ 400/-per cum.	33,600	Material cost	56,177			
3	Sand 0.625 cum @ 600/-per cum.	375	Total:	68,827			
4	Singles 1.250 cum @ 650 P/cum	812	OR SAY RS.	68,800			
5	Interlink chain 356.25 Sqmt. @ 56/-Per Sqmt	19,950					
	Total Material cost (Rs.)	56,177					

Estimate for the construction of check dams in Wire Crates, Length 6.25 Mtrs.

S.No.	Description of item	Detail of measurement or wgt		Quantity	Unit	Rate (Rs.)	Amount (Rs.)
1	Excavation in foundation in 1/2 earth 1/2 stone cuttings.						
	a)Main Dam wall	1x6.25x3.75x1.00		23.430	Cumt		
	b)Apron	1x3.75x1.25x1.25		5.850	Cumt		
	c)Wing walls 2 No.	2x3.75x1.25x1.00		9.370	Cumt		
			TOTAL:	38.650		74.77	2890.00
2	Boulder filling in the wire crates.						
	a)Main Dam wall						
	1st Step	(3x5)x1.25x125x125		29.200	Cumt		
	2nd Step	(2x5)x1.25x125x125		19.530	Cumt		
	b)Side walls above main dam 2 Nos.	(2x2)x1.25x125x125		7.810	Cumt		
	c)Wing walls 2 No.	(2x3x3)x1.25x125x125		35.150	Cumt		
	d)Apron.	(1x3)x1.25x125x125		5.850	Cumt		
			TOTAL:	97.630		124.50	12155.00
3	Laying Cement concrete 1:2:4 on top						
	a)Main Dam wall	1x3.75x2.50x0.15		1.400	Cumt		
	b)Apron	1x3.75x1.25x0.15		0.700	Cumt		
			TOTAL:	2.100		156.70	329.00
4	Boulder sonte filling behind main dam	1x3.75x0.60x1.40		3.150	Cumt		
			TOTAL:	3.150		54.90	175.00
		Total (1 to 5)	Total (1 to 4)				15649.00
	Add increase @ 7.84%						1219.00
	Total (Labour cost)						16868.00

Sl.No.	DESCRIPTION	QUANTITY	CEMENT BAGS	SAND IN M³	SINGLES IN M³	BOULDER STONES IN M³	INTER-CHAIN LINK
1	Boulder stone filling in wire creates	91.78 M³	-	-	-	100.34	-
2	Laying C.C.1:2:4	2.10 M³	13.65	245.000	1.89	-	-
3	Boulder stone filling behind main dam wall	3.15 M³	-	-	-	3.46	440.63
4	Interlink chain.	-					
		Total:	13.65	245.00	1.89	103.80	440.63

COST OF MATERIAL

1	Cement 13 Bags @ 100/-per bag	2,080	Labour cost	16,788	
2	Boulder Stones 104.00 cum.@ 400/-per cum.	41,600	Material cost	70,155	
3	Sand 1.00 cum.@ 600/-per cum.	600	Total:	86,923	
4	Singles 1.90 cum @ 650 P/cum	1,235	OR SAY RS.	86,000	
5	Interlink chain 440.00 Sqmt. @ 56/-Per Sqmt	24,640			
	Total Material cost (Rs.)	70,155			

Estimate for the construction of check dams in Wire Crates, Length 7.50 Mtrs.

S.No	Description of item	Detail of measurement or data		Quantity	Unit	Rate (Rs.)	Amount (Rs)
1	Excavation in foundation in 1/2 earth 1/2 stone cuttings.						
	a)Main Dam wall	1x7.50x3.75x1.00		28.120	Cumt		
	b)Apron	1x5.00x1.25x1.25		7.810	Cumt		
	c)Wing walls 2 No.	2x3.75x1.25x1.00		9.370	Cumt		
			TOTAL:	45.300		74.77	3387.00
2	Boulder filling in the wire crates.						
	a)Main Dam wall						
	1st Step	(3x6)x1.25x125x125		35.150	Cumt		
	2nd Step	(2x6)x1.25x125x125		23.430	Cumt		
	b)Side walls above main dam 2 Nos.	(2x2)x1.25x125x125		7.810	Cumt		
	c)Wing walls 2 No.	(2x3)x1.25x125x125		35.150	Cumt		
	d)Apron.	(1x4)x1.25x125x125		7.810	Cumt		
			TOTAL:	109.350		124.50	13614.00
3	Laying Cement concrete 1:2:4 on top						
	a)Main Dam wall	1x5.00x2.50x0.15		1.870	Cumt		
	b)Apron	1x5.00x1.25x0.15		0.930	Cumt		
			TOTAL:	2.100		156.70	439.00
4	Boulder stone filling behind main dam	1x5.00x0.80x1.40		4.200	Cumt		
			TOTAL:	4.200		54.90	230.00
		Total (1 to 5)	Total (1 to 4)				17670.00
	Add increase @ 7.84%						1385.00
	Total (Labour cost)						19055.00

S.No	DESCRIPTION	QUANTITY IN M³	CEMENT BAGS	SAND IN M³	SINGLES IN M³	BOULDER STONES IN M³	INTER-CHAIN LINK
1	Boulder stone filling in wire crates	109.35	-	-	-	12.03	-
2	Laying C.C.1:2:4	2.8	1.82	1.260	2.52	-	-
3	Boulder stone filling behind main dam wall	4.2	-	-	-	4.12	525.00
4	Interlink chain.	-					
		Total:	1.82	1.26	2.52	16.15	525.00

COST OF MATERIAL

1	Cement 18 Bags @ 160/-per bag	2,880	Labour cost	19,055			
2	Boulder Stones 125.00 cum.@ 400/-per cum.	50,000	Material cost	84,655			
3	Sand 1.25 cum @ 600/-per cum.	750	Total:	103,710			
4	Singles 2.50 cum @ 650 P/cum	1,625	OR SAY RS.	103,700			
5	Interlink chain 525.00 Sqmt. @ 56/-Per Sqmt	29,400					
	Total Material cost (Rs.)	84,655					

Estimate for the construction of check dams in wire crates, Length 8.75 Mtrs.

Sr.No.	Description of item.	Detail of measurement or	Length	Quantity	Unit	Rate (Rs.)	Amount (Rs)
1	Excavation in foundation in 1/2 earth 1/2 stone cuttings.						
	a)Main Dam wall	1x3.75x8.75x1.00		32.850	Cumt		
	b)Apron	1x6.25x1.25x1.25		10.540	Cumt		
	c)Wing walls 2 No.	2x3.75x1.25X1.00		9.374	Cumt		
			TOTAL:	52.764		74.77	3945.00
2	Boulder filling in the wire crates.						
	a)Main Dam wall						
	1st Step	(7X3)X1.25X1.25X1.25		41.013	Cumt		
	2nd Step	(7X2)X1.25X1.25.X1.25		27.342	Cumt		
	b)Side walls above main dam 2 Nos.	(2X3)X1.25X1.25.X1.25		11.715	Cumt		
	c)Wing walls 2 No.	(2x3x3)x1.25x1.25x1.25		35.154	Cumt		
	D) Apron.	(1x5.00x1.25x1.25x1.25		9.765	Cumt		
			TOTAL:	124.992		124.50	15561.00
3	Laying Cement concrete 1:2:4 on top						
	a)Main Dam wall	1x6.25x3.10x0.15		2.900	Cumt		
	b)Apron	1x6.25x1.25x0.15		1.171	Cumt		
			TOTAL	4.071		156.70	638.00
4	Boulder stone filling behind main dam.	1x6.25x0.60x1.40		5.250	Cumt		
			TOTAL	5.250		156.70	288.00
	Total (1 to 5)						20432.00
	Add increase @ 7.84%						1601.00
	Total (Labour cost)						22033.00

SR.NO.	DESCRIPTION	QUANTITY	CEMENT BAGS	SAND IN M^3	SINGLES IN M^3	BOULDER STONES IN M^3	INTER-CHAIN LINK
1	Boulder stone filling in wire crates	124.992 M^3	-	-	-	137.49	-
2	Laying C.C.1:2:4	4.071 M^3	26.06	1.830	3.66	-	-
3	Boulder stone filling behind main dam wall	5.25 M^3	-	-	-	5.77	-
4	Interlink chain.	-	-	-	-	-	6.00
	Total:		26.06	1.830	3.66	143.26	6.00

COST OF MATERIAL

1	Cement 26 Bags @ 900/-per bag	4,100	Labour cost	22,033
2	Boulder Stones 1.43 cum @ 400/-per cum.	57,200	Material cost	95,380
3	Sand 1.83 cum @ 600/-per cum.	1,000	Total:	117,413
4	Singles 3.66 cum @ 650 P/cum	2,340	OR SAY RS.	117,000
5	Interlink chain 6.00 Sqmt. @ 50/-Per Sqmt	30,000		
	Total Material cost (Rs.)	95,380		

Estimate for the construction of check dams in wire crates, Length 10.00 Mtrs.

S.No	Description of item.	Detail of measurement or area	Length	Quantity	Unit	Rate (Rs.)	Amount (Rs)
1	Excavation in foundation in 1/2 earth 1/2 stone cuttings.						
	a)Main Dam wall	1x10.00x3.75x1.00		37.500	Cumt		
	b)Apron	1x7.50x1.25x1.25		11.780	Cumt		
	c)Wing walls 2 No.	2x3.75x1.25X1.00		11.710	Cumt		
			TOTAL:	60.990		74.77	4555.00
2	Boulder filling in the wire crates.						
	a)Main Dam wall						
	1st Step	(8X3)X1.25X1.25X1.25		46.872	Cumt		
	2nd Step	(2X8)X1.25X1.25.X1.25		31.124	Cumt		
	b)Side walls above main dam 2 Nos.	(2X3x1)X1.25X1.25.X1.25		11.718	Cumt		
	c)Wing walls 2 No.	(2x3x3)x1.25x1.25x1.25		35.154	Cumt		
	d) Apron.	(1x6.00x1.25x1.25x1.25		11.718	Cumt		
			TOTAL:	136.586		124.50	17020.00
3	Laying Cement concrete 1:2:4 on top						
	a)Main Dam wall	1x7.50x3.10x0.15		3.480	Cumt		
	b)Apron	1x7.50x1.25x0.15		1.400	Cumt		
			TOTAL	4.880		156.70	765.00
4	Boulder stone filling behind main dam.	1x7.50x0.60x1.40		6.300	Cumt		
			TOTAL	6.300		156.70	346.00
	Total (1 to 5)						22686.00
	Add Increase @ 7.84%						1779.00
	Total (Labour cost)						24465.00

SR.NO	DESCRIPTION	QUANTITY IN M³	CEMENT BAGS	SAND IN M³	SINGLES IN M³	BOULDER STONES IN M³	INTER-CHAIN LINK
1	Boulder stone filling in wire crates	136.7	-	-	-	150.37	-
2	Laying C.C.1:2:4	4.88	31.72	2.196	4.392	-	-
3	Boulder stone filling behind main dam wall	6.3	-	-	-	6.93	-
4	Interlink chain.	-	-	-	-	-	656.00
	Total:		31.72	2.196	4.392	157.30	656.00

COST OF MATERIAL

1	Cement 31 Bags @ 160/-per bag	4,960	Labour cost	24,465	
2	Boulder Stones 157.00 cum @ 400/-per cum	62,800	Material cost	108,676	
3	Sand 2.20 cum @ 600/-per cum.	1,320	Total:	133,141	
4	Singles 4.40 cum @ 650 P/cum	2,860	OR SAY RS.	133,000	
5	Interlink chain 656 Sqmt. @ 56/-Per Sqmt	36,736			
	Total Material cost (Rs.)	108,676			

Estimate for the construction of check dams in wire crates, Length 12.50 Mtrs.

S.No	Description of item	Detail of measurement or area	Length	Quantity	Unit	Rate (Rs.)	Amount (Rs)
1	Excavation in foundation in 1/2 earth 1/2 stone cuttings.						
	a)Main Dam wall	1x12.50x3.75x1.00		46.875	Cumt		
	b)Apron	1x10.00x1.25x1.25		15.625	Cumt		
	c)Wing walls 2 No	2x3.75x1.25X1.00		9.375	Cumt		
			TOTAL:	71.875		74.77	6374.0
2	Boulder filling in the wire crates.						
	a)Main Dam wall						
	1st Step	(10X3)X1.25X1.25X1.25		58.900	Cumt		
	2nd Step	(10X2)X1.25X1.25.X1.25		39.060	Cumt		
	b)Side walls above main dam 2 Nos.	(2X3x1)X1.25X1.25.X1.25		11.718	Cumt		
	c)Wing walls 2 No	(2x3x3)x1.25x1.25x1.25		35.154	Cumt		
	d) Apron	(1x8.00x1.25x1.25x1.25		15.624	Cumt		
			TOTAL:	160.456		124.50	19977.0
3	Laying Cement concrete 1:2:4 on top						
	a)Main Dam wall	1x10.00x3.10x0.15		4.650	Cumt		
	b)Apron	1x10.00x1.25x0.15		1.875	Cumt		
			TOTAL	6.525		156.70	1022.0
4	Boulder stone filling behind main dam.	1x10.00x0.60x1.40		8.400	Cumt		
			TOTAL	8.400		54.90	461.0
	Total (1 to 5)						26834.0
	Add increase @ 7.84%						2104.0
	Total (Labour cost)						28938.0

SR.NO.	DESCRIPTION	QUANTITY IN M³	CEMENT BAGS	SAND IN M³	SINGLES IN M³	BOULDER STONES IN M³	INTER-CHAIN LINK
1	Boulder stone filling in wire crates	160.456	-	-	-	176.50	-
2	Laying C.C.1:2:4	6.525	42.41	2.940	5.870	-	-
3	Boulder stone filling behind main dam wall	8.400	-	-	-	9.24	-
4	Interlink chain	-	-	-	-	-	778.00
	Total:		42.41	2.940	5.870	185.74	778.00

COST OF MATERIAL

1	Cement 42 Bags @ 160/-per bag	6,720	Labour cost	28,938
2	Boulder Stones 185.00 cum @ 400/-per cum.	74,400	Material cost	130,323
3	Sand 3 cum.@ 600/-per cum.	1,800	Total:	159,261
4	Singles 5.90 cum @ 650 P/cum	3,835	OR SAY RS.	159,000
5	Interlink chain 778 sqmt. @ 56/-Per Sqmt	43,568		
	Total Material cost (Rs.)	130,323		

Estimate for the construction of check dams in wire crates. Length 15.00 Mts.

Sr No	Description of item	Detail of measurement or sizes	Length	Quantity	Unit	Rate (Rs.)
1	Excavation in foundation in 1/2 earth 1/2 stone cuttings.					
	a)Main Dam wall	1x15.00x3.75x1.00		56.250	Cumt	
	b)Apron	1x12.50x1.25x1.25		19.531	Cumt	
	c)Wing walls 2 No.	2x3.75x1.25X1.00		9.375	Cumt	
			TOTAL:	85.156		74.77
2	Boulder filling in the wire crates.					
	a)Main Dam wall					
	1st Step	(12X3)X1.25X1.25X1.25		70.312	Cumt	
	2nd Step	(12X2)X1.25X1.25X1.25		46.875	Cumt	
	b)Side walls above main dam 2 Nos.	(2X3x1)X1.25X1.25X1.25		11.718	Cumt	
	c)Wing walls 2 No.	(2x3x3)x1.25x1.25x1.25		35.154	Cumt	
	D) Apron.	(1x10.00x1.25x1.25x1.25		19.530	Cumt	
			TOTAL:	183.589		124.50
3	Laying Cement concrete 1:2:4 on top					
	a)Main Dam wall	1x12.50x3.10x0.15		5.812	Cumt	
	b)Apron	1x12.50x1.25x0.15		2.343	Cumt	
			TOTAL	8.155		156.70
4	Boulder stone filling behind main dam.	1x12.50x0.60x1.40		10.500	Cumt	
			TOTAL	10.500		156.70
	Total (1 to 5)					
	Add increase @ 7.31%					
	Total (Labour cost)					

SR NO	DESCRIPTION	QUANTITY IN M³	CEMENT BAGS	SAND IN M³	SINGLES IN M³	BOULDER STONES IN M³
1	Boulder stone filling in wire crates	183.589	-	-	-	201.94
2	Laying C.C.1:2:4	8.155	53.00	3.670	7.340	-
3	Boulder stone filling behind main dam wall	10.5	-	-	-	11.55
4	Interlink chain	-	-	-	-	-
	Total:		53.00	3.670	7.340	213.49

COST OF MATERIAL

1	Cement 53 bags @ 160/- per bag	8,480	Labour cost	33,513		
2	Boulder Stones 213.00 cum @ 400/-per cum	85,200	Material cost	149,989		
3	Sand 3.67 cum @ 600/-per cum.	2,202	Total:	183,502		
4	Singles 7.34 cum @ 650 P/cum	4,771	OR SAY RS.	183,000		
5	Interlink chain 681Sqmt. @ 66/-Per Sqmt	49,336				
	Total Material cost (Rs.)	149,989				

Estimate for the construction of check walls In Dry Mortar Masonary Length 1.50 Mtrs. Height 2.00 Mtrs.

Sr. No	Description of item.	Detail of measurement of area	Length (in M')	Quantity	Rate(Rs) Per cum	Amount.(Rs)
1	Excavation of foundations trenches in 1/2 earth & 1/2 stone cuttings.	1/2(0.40+0.55)x1.10=0.55 Sq.mt	1.50	0.82	74.77	61.00
2	Dry stone random rubble masonary in foundation and plinth/super structures.	1/2(0.75+1.10)x2.00=1.85 Sq.mt 1/2(1.10X0.19) =0.10 Sq.mt	1.50	2.92	87.15	254.00
			Total:			315.00
			Add 7.84% increase			25.00
			Grand Total:			340.00

Consumption of Material

Item of Work	Qty.	Cut stones (in M')	Boulder Stones
Dry rough stone masonary in foundation and super structure	2.92	1.60	1.60
Total:		1.60	1.60
OR SAY		1.60	1.60

COST OF MATERIAL (F.O.R. WORKSITE)

1	Cut Stone 2.15 @ 800/-per Inq	1,720
2	Boulder Stones 2.15 cum @ 400 Cum.	860
	Total Material cost (Rs.)	2,580

ABSTRACT OF COST	
Labour cost	340.00
Material cost	1,920.00
Total:	2,260
OR SAY RS	2,200

Estimate for the construction of check walls in Dry Mortar Masonary Length 2.00 Mtrs. Height 2.00 Mtrs.

S. No.	Description of item.	Detail of measurement or area	Length (In M')	Quantity	Rate(Rs) Per cum	Amount.(Rs)
1	Excavation of foundation trenched in 1/2 earth & 1/2 stone cuttings.	1/2(0.45+0.55)x1.10=0.55 Sq.mt	2.00	1.10	74.77	82.00
2	Dry stone random rubble masonary in foundation and plinth/super structures.	1/2(0.75+1.10)2x2.00=1.85 Sq.mt 1/2(1.10x0.19) =0.10 Sq.mt	2.00	3.90	87.15	340.00
			Total:			422.00
			Add 7.84% increase			33.00
			Grand Total:			455.00

Consumption of Material

Item of Work	Qty.	Cut Stones (In M')	Boulder Stones
Dry rough stone masonary in foundation and super structure	3.90	2.15	2.15
Total:		2.15	2.15
OR SAY		2.15	2.15

COST OF MATERIAL (F.O.R. WORKSITE)

1	Cut Stone 2.15 @ 800/-per bag	1,720	
2	Boulder Stones 2.15 cum @ 400 Cum.	860	
	Total Material cost (Rs.)	2,580	

ABSTRACT OF COST	
Labour cost	455.00
Material cost	2,580.00
Total:	3,035
OR SAY RS.	3,000

Estimate for the construction of check walls in Dry Mortar Masonary Length 2.50 Mtrs. Height 2.00 Mtrs.

S. No.	Description of Item.	Detail of measurement or area	Length (in M')	Quantity	Rate(Rs) Per cum	Amount (Rs)
1	Excavation of foundation/ trenched in 1/2 earth & 1/2 stone cuttings.	1/2(0.45+0.55)2x1.10=0.55 Sq.mt.	2.50	1.37	74.77	102.00
2	Dry stone random rubble masonary in foundation and plinth/super structures.	1/2(0.75+1.10)x2.00=1.85 Sq.mt 1/2(1.1x0.19)2.00 =0.10 Sq.mt	2.50	4.87	87.15	424.00
			Total:			526.00
			Add 7.84% excess			41.00
			Grand Total:			567.00

Consumation of Material

Item of Work	Qty.	Cut stones (in M')	Boulder Stones
Dry rough stone masonary in foundation and super structure	4.87	2.70	2.70
Total:		2.70	2.70

COST OF MATERIAL (F.O.R. WORKSITE)

1	Cut Stone 3 @ 800/-per bag	2,400
2	Boulder Stones 3 cum @ 400 Cum.	1,200
	Total Material cost (Rs.)	3,600

ABSTRACT OF COST

Labour cost	567.00
Material cost	3,600.00
Total:	4,167
OR SAY RS.	4,100

Estimate for the construction of Retaining walls in Cement Mortar 1:6 Length 10.00 Mtrs. Height 3.00 Mtrs.

Description of item	Detail of measurement or area	Length (In M')				Quantity	Rate(Rs) Per cum	Amount (Rs)
[illegible] in foundation [illegible] in [illegible] & 1/2 slope cuttings.	1/2(0.55+0.9[illegible])x1.8[illegible]=1[illegible] Sq.mt	10.00				13.70	74.77	1,024.00
Laying CC 1:4:8 in foundation.	1.835x0.23=0.42 Sq.mt	10.00				4.20	156.70	658.00
Random Rubble stone masonry in C.M. 1:6 — Bottom band	1/2(1.[illegible]+1.435)x0.30=0.45 Sq.mt							
Top Band	1/2(0.775+0.845)x0.30=0.24 Sq.mt	10.00				36.30	310.25	11,262.00
Triangular portion.	1/2x0.75x0.20 =0.08 Sq.mt							
Dry masonry	1/2(0.845+1.455)x2.49=2.86 Sq.mt	10.00						
		Total						12,914.00
		Add increase @ 7.81%						1,014.00
		Total						13,958.00

Consumption of Material

Item of Work	Qty. (In M')	Cement	Sand	Singles	Cut stones (In M³)	Boulder Stones	
1) C.C. 1:4:8 in foundation	4.20	14.280	1.974	3.95	-	-	
2) R.R.S.M.in C.M. 1:6 in foundation and super structure.	36.30	60.620	12.705	-	16.000 20.000	20.000	
Total:	40.50	74.900	14.679	3.95	36.00	20.00	
OR SAY							

COST OF MATERIAL (F.O.R. WORKSITE)

Cement [illegible] bags @ 160/- per bag	12,000
Sand 14.75 cum @ 600 Cum.	8,850
Singles 4.00 cum. @ 650/- per cum.	2,600
Cut stones 20 cum. @ 800/-Per cum.	16,000
Boulder Stones 20 cum @ 400/- per cum	8,000
Total Material cost (Rs.)	47,450

ABSTRACT OF COST

Labour cost		13,958
Material cost.		47,450
Total:		61,408
OR SAY:	SAY	60,000

Estimate for the construction of Retaining walls in Cement Mortar 1:6 Length 6.00 Mtrs. Height 3.00 Mtrs.

S. No.	Description of Item.	Detail of measurement of area	Length (in M')	Quantity	Rate(Rs) Per cmnt	Amount (Rs)
1	Excavation in foundation trenches in ordinary earth & 1/2 shoot cuttings.	1/2(0.95+0.95)x1.835=1.376 Sq.mt	5.00	6.85	74.77	512.00
2	Laying CC 1:4:8 in foundation.	1.835x0.23=0.42 Sq.mt	5.00	2.10	156.70	329.00
3	Random Rubble stone masonry in C.M. 1:6	Bottom band 1/2(1.535+1.435)x0.30=0.45 Sq.mt Top Band 1/2(0.765+0.845)x0.30=0.24 Sq.mt Triangular portion. 1/2x0.75x0.2 = 0.08 Sq.mt	- 5.00	18.15	310.25	5,631.00
4	Dry masonry	1/2(0.845+1.455)x2.49=2.86 Sq.mt	5.00			
		Total				6,472.00
		Add increase @ 7.84%				507.00
		Total				6,979.00

Consumption of Material

	Item of Work	Qty. (in M')	Cement	Sand	Singles	Cut stones (in M')	Boulder Stones	
1)	C.C. 1:4:8 in foundation	2.10	7.14	0.98	1.97	-	-	
2)	R.R.S.M in C.M. 1:6 in foundation and superstructure.	18.15	30.31	5.45	-	10.000	10.000	
	Total:	20.25	37.45	6.43	1.97	10.00	10.00	
	OR SAY		37 BAG	6.50	2.00	10.00	10.00	

COST OF MATERIAL (F.O.R. WORKSITE)

1	Cement 37 bags @ 160/- per bag	5,920
2	Sand 6.50 cum @ 600 Cum.	3,900
3	Singles 2.00 cum. @ 650/- per cum.	1,300
4	Cut stones 10.00 cum. @ 800/-Per cum.	8,000
5	Boulder Stones 10.00 cum @ 400/- per cmnt.	4,000
	Total Material cost (Rs.)	23,120

ABSTRACT OF COST

Labour cost		6,979
Material cost.		23,120
	Total:	30,099
	OR SAY	29,000

Estimate for the construction of Retaining walls in Cement Mortar 1:6 Length 6.00 Mtrs. Height 3.00 Mtrs.

Description of item.	Detail of measurement of item	Length (In M')				Quantity	Rate(Rs) Per cum	Amount (Rs)
[illegible] foundation/ trenches in [illegible] 2 [illegible] & 1/2 [illegible].	1/2(0.55+0.95)x1.835=1.376 Sq mt	6.00				8.22	74.77	615.00
[illegible] CC 1:4:8 in foundation.	1.835x2.23=0.42 Sq mt	6.00				2.52	156.70	395.00
[illegible] Rubble stone masonry in [illegible] 1:6 Bottom band Top Band Triangular portion. [illegible]	1/2(1.535+1.435)x0.30=0.45 Sq mt 1/2(0.765+0.845)x0.30=0.24 Sq mt 1/2x0.75x[illegible] =0.08 Sq mt 1/2(0.845+1.455)x2.49=2.86 Sq mt	6.00 6.00				21.78	310.25	6,757.00
		Total						7,767.00
		Add increase @ 7.84%						608.00
		Total						8,375.00

Consumption of Material

Item of Work	Qty. (In M³)	Cement	Sand	Singles	Cut stones (In M³)	Boulder Stones	
1) C.C. 1:4:8 in foundation	2.52	0.568	1.184	2.37	-	-	
2) R.R.S.M in C.M. 1:6 in foundation and super structure	21.78	36.372	7.623	-	12.000	12.000	
Total:	24.30	44.940	8.807	2.37	12.00	12.00	
OR SAY							

COST OF MATERIAL (F.O.R. WORKSITE)

Cement 45 bags @ 160/- per bag	7,200
Sand 8.00 cum @ 600 Cum	5,200
Singles 2.40 cum. @ 650/- per cum.	1,560
Cut stones 12.00 cum. @ 800/- Per cum.	9,600
Boulder Stones 12.00 cum @ 400/- [illegible]	4,000
Total Material cost (Rs.)	28,600

ABSTRACT OF COST

Labour cost		8,375
Material cost		28,600
Total:		36,975
OR SAY:	SAY	36,000

Estimate for the construction of Retaining walls in Cement Mortar 1:6 Length 8.00 Mtrs. Height 3.00 Mtrs.

Description of item	Detail of measurement or area	Length (In M³)				Quantity	Rate (Rs) Per cum	Amount (Rs)
Excavation in foundation/benched in [illegible] & 1/2 [illegible] cuttings.	1/2(0.55+0.95)x1.835=1.376 Sq.m	8.00				10.96	74.77	819.00
[illegible] CC 1:4:8 in foundation.	1.835x2.23=0.42 Sq.m	8.00				3.36	156.70	526.00
Random Rubble stone masonry in C.M. 1:6 — Basement / Top Band / Triangular portion.	1/2(1.535+1.435)x0.30=0.45 Sq.m 1/2(0.765+0.845)x0.30=0.24 Sq.m 1/2x0.75x0.20 =0.08 Sq.m	8.00				29.04	310.25	9,010.00
Dry masonry	1/2(0.045+1.455)x2.49=2.86 Sq.m	8.00						
		Total						10,355.00
		Add increase @ 7.84%						811.00
		Total						11,166.00

Consumption of Material

Item of Work	Qty. (In M³)	Cement	Sand	Singles	Cut stones (In M³)	Boulder Stones	
1) C.C. 1:4:8 in foundation	3.36	11.420	1.579	3.16	-	-	
2) R.R.S.M. in C.M. 1:6 in foundation and super structure.	29.04	48.400	10.164	-	16.000	16.000	
Total:	32.40	59.910	11.743	3.16	16.00	16.00	
OR SAY							

COST OF MATERIAL (F.O.R. WORKSITE)

Cement 60 bags @ 160/- per bag	9,600
Sand 11.750 cum @ 600 Cum.	7,050
Singles 3.125 cum. @ 650/- per cum.	2,112
Cut stones 16.00 cum. @ 800/- Per cum.	12,800
Boulder Stones 16.00 cum @ 400/- per cum.	6,400
Total Material cost (Rs.)	37,962

ABSTRACT OF COST

Labour cost		11,166
Material cost.		37,962
Total:		49,128
OR SAY:	SAY	49,000

Estimate for the construction of Retaining walls in Cement Mortar 1:6 Length 12.00 Mtrs. Height 3.00 Mtrs.

S. No.	Description of item.	Detail of measurement or area	Length (In M')	Quantity	Rate(Rs) Per cum	Amount (Rs)
1	Excavation in foundation/ trenches in 1/2 earth & 1/2 stone cuttings.	1/2(0.55+0.95)x1.835=13.70 Sq.mt	12.00	16.44	74.77	1,229.00
2	Laying CC 1:4:8 in foundation	[illegible]=0.42 Sq.mt	12.00	5.04	156.70	790.00
3	Random Rubble stone masonry in C.M. 1:6 Bottom band Top Band Triangular portion.	1/2(1.835+1.435)x0.30=0.45 Sq.mt 1/2(0.765+0.845)x0.30=0.24 Sq.mt 1/2x0.75x0.20 =0.08 Sq.mt	12.00	43.56	310.25	13,514.00
4	Dry masonry	1/2(0.845+1.455)x2.49=2.86 Sq.mt	12.00			
			Total			15,533.00
			Add increase @ 7.84%			1,217.00
			Total			16,750.00

Consumption of Material

	Item of Work	Qty. (In M³)	Cement	Sand	Singles	Cut stones (In M³)	Boulder Stones
1)	C.C. 1:4:8 in foundation	5.04	17.136	2.370	4.74	-	-
2)	R.R.S.M in C.M. 1:6 in foundation and super structure.	43.56	72.745	15.240	-	24.000	20.000
	Total:	48.60	89.881	17.610	4.74	24.00	20.00
	OR SAY						

COST OF MATERIAL (F.O.R. WORKSITE)

S. No.	Item	Cost
1	Cement 90 bags @ 160/- per bag	14,400
2	Sand 17.75 cum @ 600 Cum.	10,650
3	Singles 4.75 cum. @ 650/- per cum.	3,087
4	Cut stones 24.00 cum. @ 800/-Per cum.	19,200
5	Boulder Stones 24.00 cum @ 400/- per cum	9,600
	Total Material cost (Rs.)	56,937

ABSTRACT OF COST

Labour cost	16,750
Material cost.	56,937
Total:	73,687
OR SA SAY	72,000

Estimate for the construction of Retaining walls in Cement Mortar 1:6 Length 15.00 Mtrs. Height 3.00 Mtrs.

Sr. No.	Description of item	Detail of measurement or area	Length (in M')				Quantity	Rate(Rs) Per cum	Amount (Rs)
1	Excavation in foundation trenches in 1/2 earth & 1/2 slight cuttings.	1/2(0.55+0.95)x1.835=13.76 Sq.mt	15.00				22.55	74.77	1,536.00
2	Lining CC 1:4:8 in foundation.	1.835x0.23=0.42 Sq.mt	15.00				6.30	156.70	987.00
3	Random Rubble stone masonary in CM 1:6	Bottom band Top Band Triangular portion.	1/2(1.535+1.435)x0.30=0.45 Sq.mt 1/2(0.785+0.845)x0.30=0.24 Sq.mt 1/2x0.75x0.20 =0.08 Sq.mt	15.00			54.45	310.25	16,893.00
4	Dry masonary		1/2(0.845+1.455)x2.49=2.86 Sq.mt	15.00					
				Total					19,416.00
				Add increase @ 7.84%					1,522.00
				Total					20,938.00

Consumption of Material

	Item of Work	Qty. (in M')	Cement	Sand	Singles	Cut stones (in M')	Boulder Stones	
1)	C.C. 1:4:8 in foundation	6.30	21.420	2.900	5.95	-	-	
2)	R.R.S.M.in C.M. 1:6 in foundation and super structure.	54.45	90.930	19.050	-	30.000	30.000	
	Total:	60.75	112.350	22.010	5.95	30.00	30.00	
	OR SAY							

COST OF MATERIAL (F.O.R. WORKSITE)

1	Cement 112 bags @ 160/-per bag	17,920
2	Sand 22 cum @ 600 Cum.	13,200
3	Singles 6 cum @ 650/- per cum.	3,900
4	Cut stones 30 cum @ 800/-Per cum.	24,000
5	Boulder Stones 30 cum @ 400/- per cum.	12,000
	Total Material cost (Rs.)	71,020

ABSTRACT OF COST

Labour cost		20,938
Material cost.		71,020
Total:		91,958
OR SAY:	SAY	90,000

Estimate for the construction of Retaining wall in Cement Mortar 1:6 Length 30.00 Mtrs. Height 3.00 Mtrs.

Description of item	Details of measurement or area	Length (In M³)				Quantity	Rate(Rs) Per cum	Amount (Rs)
1 Excavation in foundation/ trenches in 1/2 earth & 1/2 stone cuttings.	1/2(0.55+0.95)x1.835=13.76 Sq.mt	30.00				41.11	74.77	3,074.00
2 Laying CC 1:4:8 in foundation.	1.835x0.23=0.42 Sq.mt	30.00				12.60	156.70	1,974.00
3 Random Rubble stone masonry in CM 1:6 Broken bond	1/2(1.535+1.435)x0.30=0.45 Sq.mt							
Top Bond	1/2(0.765+0.845)x0.30=0.24 Sq.mt	30.00				108.90	310.25	33,788.00
Triangular portion.	1/2x0.75x0.20 =0.08 Sq.mt							
Dry masonry	1/2(0.845+1.455)x2.49=2.86 Sq.mt	30.00						
		Total						38,834.00
		Add income @ 7.84%						3,044.00
		Total						41,878.00

Consumption of Material

Item of Work	Qty. (In M³)	Cement	Sand	Singles	Cut stones (In M³)	Boulder Stones	
1) C.C. 1:4:8 in foundation	12.60	42.840	5.920	11.84	-	-	
2) R.R.S.M in C.M. 1:6 in foundation and super structure.	108.90	181.860	38.115	-	60.000	60.000	
Total	121.50	224.700	44.035	11.84	60.00	60.00	
OR SAY							

COST OF MATERIAL (F.O.R. WORKSITE)

Cement 225 bags @ 160/- per bag	36,000
Sand 44 cums @ 600 Cum.	26,400
Singles 12 cum. @ 650/- per cum.	7,800
Cut stones 60 cum. @ 800/- Per cum.	48,000
Boulder Stones 60 cum @ 400/- per cum.	24,000
Total Material cost (Rs.)	142,200

ABSTRACT OF COST

Labour cost		41,878
Material cost.		142,200
Total:		184,078
OR SAY:	SAY	184,000

Estimate for the construction of Retaining walls in Wire Crates Length 02.50 Mtrs. Height 3.75 Mtrs.

S. No.	Description of item	Detail of measurement or area	Quantity	Rate (Rs) Per cent	Amount (Rs)
1	Excavation in foundation trenches in 1/2 earth & 1/2 stone cuttings.	2.50x2.50x0.75	4.687	74.77	350.00
2	Boulder/cobble filling dry hand packed tightly in wire crates.	(6x2)x1.25x1.25x1.25	23.437	124.50	2,918.00
		Total			3,268.00
		Add increase @ 7.84%			256.00
		Total			3,524.00

Consumption of Material

	Item of Work	Qty. (In M³)	Boulder Stones (In M³)	Interlink Chain
1)	Filling dry hand packed in wire crates	23.437	25.780	112.500
	Total:	23.44	25.7800	112.500
	OR SAY		26.00	113.00

COST OF MATERIAL (F.O.R. WORKSITE)

S. No.	Item	Amount
1	Boulder Stones 26 cum @ 400/- P.cu	10,400
2	Inter-link chain 113 Sqm. @ 56/-P/Cum	6,328
	Total Material cost (Rs.)	16,728

ABSTRACT OF COST

Labour cost	3,524
Material cost.	16,728
Total:	20,252
OR $ SAY	20,000

Estimate for the construction of Retaining walls in Wire Crates Length 3.75 Mtrs. Height 3.75 Mtrs.

Description of item.	Detail of measurement or area					Quantity	Rate(Rs) Per cum	Amount (Rs)
Excavation in foundation/ trenched in L/ earth & 1/2 stone cutting.	3.75x2.50x0.75					7.031	74.77	525.00
Boulder/Sande filling dry hand packed tightly in wire crates.	(0x3)x1.25x1.25x1.25					35.154	124.50	4,376.00
		Total						4,901.00
		Add increase @ 7.84%						384.00
		Total						5,285.00

Consumption of Material

	Item of Work	Qty. (In M³)	Boulder Stones (In M³)	Interlink Chain				
1)	Filling dry hand packed in wire crates	35.154	38.669	168.750				
	Total:	35.15	38.6600	168.750				
	SAY		39.00	169.00				

COST OF MATERIAL (F.O.R. WORKSITE)

Boulder Stones 39 cmm @ 400/- P/cu	15,600
Inter-link chain 169 Sqm.@ 56/-P/Cum	9,464
Total Material cost (Rs.)	25,064

ABSTRACT OF COST

Labour cost		5,285
Material cost.		25,064
	Total:	30,349
	OR SAY: SAY	30,000

Estimate for the construction of Retaining walls in Wire Crates Length 6.00 Mtrs. Height 3.75 Mtrs.

S. No.	Description of item	Detail of measurement or area					Quantity	Rate(Rs) Per cumt	Amount (Rs)
1	Excavation in foundation trenches in 1/2 earth & 1/2 stone cuttings.	5.00x2.50x0.75					9.375	74.77	701.00
2	Boulder/stone filling dry hand packed tightly in wire crates.	(6x4)x1.25x1.25x1.25					46.872	124.50	5,835.00
			Total						6,536.00
			Add increase @ 7.84%						512.00
			Total						7,048.00

Consumption of Material

	Item of Work	Qty. (In M³)	Boulder Stones (In M³)	Interlink Chain				
1)	Filling dry hand packed in wire crates	46.872	51.560	225.000				
	Total:	46.87	51.5600	225.000				
	OR SAY		52.00	225.00				

COST OF MATERIAL (F.O.R. WORKSITE)

1	Boulder Stones 52 cum @ 400/- P/cu	20,800
2	Inter-link chain 225 Sqm @ 56/-P/Cum	12,600
	Total Material cost (Rs.)	33,400

ABSTRACT OF COST

Labour cost		7,048
Material cost.		33,400
Total:		40,448
OR SAY:	SAY	40,000

Estimate for the construction of Retaining walls in Wire Crates Length 6.25 Mtrs. Height 3.75 Mtrs.

Sr. No.	Description of item.	Detail of measurement or area					Quantity	Rate(Rs) Per cum	Amount (Rs)
1	Excavation in foundation/ headwall in 1/2 earth & 1/2 stone cuttings.	6.25x2.50x0.75					11.720	74.77	876.00
2	Boulder/cable filling dry hand packed tightly in wire crates.	(6x5)x1.25x1.25x1.25					58.590	124.50	7,294.00
			Total						8,170.00
			Add increase @ 7.84%						640.00
			Total						8,810.00

Consumption of Material

Item of Work	Qty. (in M³)	Boulder Stones (in M³)	Interlink Chain
1) Filling dry hand packed in wire crates	58.590	64.450	281.250
Total:	58.59	64.4500	281.250
OR SAY		64.00	281.00

COST OF MATERIAL (F.O.R. WORKSITE)

Sr. No.	Item	Amount
1	Boulder Stones 64 cum @ 400/- P.cum	25,600
2	Inter-link chain 281 Sqm @ 56/-P/Cum	15,736
	Total Material cost (Rs.)	41,336

ABSTRACT OF COST

Labour cost	8,810
Material cost.	41,336
Total:	50,146
OR SAY: SAY	50,000

Estimate for the construction of Retaining walls in Wire Crates Length 3.75 Mtrs. Height 3.75 Mtrs.

Description of item	Detail of measurement or area					Quantity	Rate (Rs) Per unit	Amount (Rs)
Excavation in foundation/ trenches in 1/2 earth & 1/2 stone cuttings.	7.50x2.50x0.75					14.060	74.77	1,051.00
Boulder/Stone filling dry hand packed tightly in wire crates.	6x6x1.25x1.25x1.25					70.310	124.50	8,754.00
		Total						9,805.00
		Add increase @ 7.84%						769.00
		Total						10,574.00

Consumption of Material

Item of Work	Qty. (In M³)	Boulder Stones (In M³)	Interlink Chain				
1) [illegible] filling dry hand packed in wire crates	70.310	77.340	337.500				
Total:	70.31	77.3400	337.500				
OR SAY		77.00	338.00				

COST OF MATERIAL (F.O.R. WORKSITE)

Boulder Stones 77 cum @ 400/- Cum	30,800
Interlink chain 338 Sqm @ 56/-P/Sqm	18,928
Total Material cost (Rs.)	49,728

ABSTRACT OF COST

Labour cost	10,574
Material cost.	49,728
Total:	60,302
OR SAY: SAY	60,000

Estimate for the construction of Retaining walls in Wire Crates Length 10.00 Mtrs. Height 3.75 Mtrs.

S. No	Description of item.	Detail of measurement or area					Quantity	Rate(Rs) Per cum	Amount (Rs)
1	Excavation in foundation/ trenches in soft earth & 1/2 stone cuttings.	10.00x2.50x0.75					18.750	74.77	1,402.00
2	Boulder/stone filling dry hand packed tightly in wire crates.	(6x8)x1.25x1.25x1.25					93.750	124.50	11,672.00
			Total						13,074.00
			Add increase @ 7.84%						1,025.00
			Total						14,099.00

Consumption of Material

	Item of Work	Qty. (In M³)	Boulder Stones (In M³)	Interlink Chain				
1)	Filling dry hand packed in wire crates.	93.750	103.120	450.000				
	Total	93.75	103.1200	450.000				
	OR SAY		103.00	450.00				

COST OF MATERIAL (F.O.R. WORKSITE)

1	Boulder Stones 103 cum @ 400/- P/cum	41,200
2	Inter-link chain 450 Sqm. @ 56/- P/Cum	25,200
	Total Material cost (Rs.)	66,400

ABSTRACT OF COST

Labour cost	14,099
Material cost.	66,400
Total:	80,499
OR SAY: SAY	80,000

Estimate for the construction of Retaining walls in Wire Crates Length 12.00 Mtrs. Height 3.75 Mtrs.

S. No.	Description of item.	Detail of measurement or area	Quantity	Rate(Rs) Per cum	Amount (Rs)
1	Excavation in foundation/ trenches in 1/2 earth & 1/2 stone cuttings.	12.50x2.50x0.75	23.437	74.77	1,752.00
2	Boulder/stone filling dry hand packed tightly in wire crates.	(6x10)x1.25x1.25x1.25	117.180	124.50	14,590.00
		Total			16,347.00
		Add increase @ 7.84%			1,281.00
		Total			17,623.00

Consumption of Material

Item of Work	Qty. (in M^3)	Boulder Stones (in M^3)	Interlink Chain
1) Filling dry hand packed in wire crates	117.180	128.900	563.000
Total:	117.18	128.9000	563.000
OR SAY		129.00	563.00

COST OF MATERIAL (F.O.R. WORKSITE)

S. No.	Item	Amount
1	Boulder Stones 129 cum @ 400/- P/cum	51,600
2	Inter-link chain 563 Sqm.@ 56/-P/Cum	31,528
	Total Material cost (Rs.)	83,128

ABSTRACT OF COST

Labour cost	17,623
Material cost.	83,128
Total:	100,751
OR SAY SAY	100,000

Estimate for the construction of Retaining walls in Wire Crates Length 15.00 Mtrs. Height 3.75 Mtrs.

Sr. No.	Description of Item	Detail of measurement of work					Quantity	Rate(Rs) Per cum	Amount (Rs)
1	Excavation in foundation/ breached in 1/2 earth & 1/2 stone collapse.	15.00x2.50x0.75					28.125	74.77	2,103.00
2	Boulder/stone filling dry hand packed tightly in wire crates.	(3x2x12)x1.25x1.25x1.25					140.620	124.50	17,507.00
			Total						19,610.00
			Add increase @ 7.84%						1,537.00
			Total						21,147.00

Consumption of Material

	Item of Work	Qty. (In M')	Boulder Stones (In M')	Interlink Chain				
1)	Filling dry hand packed in wire crates	140.620	154.680	675.000				
	Total:	140.62	154.6800	675.000				
	OR SAY		155.00	675.00				

COST OF MATERIAL (F.O.R. WORKSITE)

Boulder Stones 155 cum @ 400/- P/cum	62,000
Inter-link chain 675 Sqrs.@ 56/-P/Cum	37,800
Total Material cost (Rs.)	99,800

ABSTRACT OF COST

Labour cost	21,147
Material cost.	99,800
Total:	120,947
OR SAY: SAY	120,000

Estimate for the construction of Retaining walls in Wire Crates Length 5.00 Mtrs. Height 2.00 Mtrs.

Sl. No.	Description of item.	Detail of measurement or area	Length in M'				Quantity M³	Rate(Rs) Per cuml	Amount (Rs)
1	Excavation in foundation of trenches in 1/2 earth & 1/2 stone cuttings.	1/2(0.45+0.55)x1.10+0.55 M²	5.00				2.750	74.77	206.00
2	Dry rought random rubble masonary in foundation and plinth/super structure.	1/2(0.75+1.10)x2.10= 1.85 M² 1/2(1.10x0.19) = 0.10 M²	5.00				9.750	87.15	850.00
			Total						1,056.00
			Add increase @ 7.84%						82.00
			Total						1,138.00

Consumption of Material

	Item of Work	Qty. (In M³)	Cut Stones (In M³)	Boulder Stones (In M³)				
1)	Dry rought masonary in foundation and super structure.	9.750	5.380	5.380				
	Total	9.75	5.3800	5.380				
	OR SAY		5.40	5.40				

COST OF MATERIAL (F.O.R. WORKSITE)

1	Cut Stones 5.40 cum @ 800/- Pcum	4,320
2	Boulder stone 5.40 @ 400/-P/Cum	2,160
	Total Material cost (Say)	6,480

ABSTRACT OF COST

Labour cost		1,138
Material cost.		6,480
	Total:	7,618
	OR SAY: SAY	7,600

Estimate for the construction of Retaining walls in Dry Masonary Length 6.00 Mtrs. Height 2.00 Mtrs.

Sr. No.	Description of Item	Detail of measurement or area	Length in M'				Quantity M'	Rate(Rs) Per cuft
1	Excavation in foundation/ trenches in H/2 earth & H/2 stone cuttings.	H/2(0.45+0.75)x1.3 l=0.78 M²	6.00				4.680	74.77
2	Dry stone random rubble masonary in foundation and plinth/super structure.	H/2(0.75+1.375)x2.56= 2.645 M² H/2(0.20x0.75) = 0.075 M²	6.00				16.320	87.15
			Total					
			Add increase @ 7.84%					
			Total					

Consumption of Material

	Item of Work	Qty. (In M³)	Cut Stones (In M³)	Boulder Stones (In M³)			
1)	Dry rought masonry in foundation and super structure.	16.320	8.980	8.980			
	Total:	16.32	8.9800	8.980			
	OR SAY		9.00	9.00			

COST OF MATERIAL (F.O.R. WORKSITE)

1	Cut Stones 9.00 cum @ 800/- Pcum	7,200
2	Boulder stone 9.00 @ 400/-P/Cum	3,600
	Total Material cost (Rs.)	10,800

ABSTRACT OF COST

Labour cost	1,911
Material cost.	10,800
Total:	12,711
OR SAY:	12,700

Estimate for the construction of Retaining walls in Dry Masonary Length 7.50 Mtrs. Height 2.00 Mtrs.

Sr. No.	Description of item	Detail of measurement or area	Length in M'				Quantity M'	Rate(Rs) Per cum	Amount.(Rs)
1	Excavation in foundation bonded in 1/2 earth & 1/2 stone cuttings.	1/2(0.45+0.75)x1.31=0.78 M'	7.50				5.850	74.77	437.00
2	Dry stone random rubble masonary in foundation and plinth/super structure.	1/2(0.20x0.75)= 0.075 M'	7.50				20.400	87.15	1,778.00
		1/2(0.752x1.315)x2.56=2.645 M'							
			Total						2,215.00
			Add increase @ 7.84%						173.00
			Total						2,388.00

Consumption of Material

	Item of Work	Qty. (in M')	Cut Stones (in M')	Boulder Stones (in M')				
1)	Dry rought masonary in foundation and super structure.	20.400	11.220	11.220				
	Total:	20.40	11.2200	11.220				
	OR SAY		11.25	11.25				

COST OF MATERIAL (F.O.R. WORKSITE)

1	Cut Stones 11.25 cum @ 800/- P/cum	9,000
2	Boulder stone 11.25 @ 400/-P/Cum	4,500
	Total Material cost (Rs.)	13,500

ABSTRACT OF COST

Labour cost	2,388
Material cost.	13,500
Total:	15,888
OR SAY:	15,800

Estimate for the construction of Retaining walls in Dry Masonry Length 10.00 Mtrs. Height 2.50 Mtrs.

S. No.	Description of item.	Detail of measurement or area	Length in M²				Quantity M³	Rate(Rs) Per cum	Amount (Rs)
1	Excavation in foundation/ [illegible] 1/2 [illegible] [illegible] cuttings.	1/2(0.45+0.75)x1.31=0.78 M²	10.00				7.800	74.77	583.00
2	Dry stone random rubble masonry in foundation and plinth/super structure.	1/2(0.45+0.75)X1.315= 2.645 M² 1/2(0.20x0.75) =0.075 M²	10.00				27.200	87.15	2,370.00
			Total						2,953.00
			Add increase @ 7.84%						231.00
			Total						3,184.00

Consumption of Material

Item of Work	Qty. (In M³)	Cut Stones (In M³)	Boulder Stones (In M³)				
1) Dry rough masonry in foundation and super structure.	27.200	15.00	15.00				
Total	27.20	15.00	15.00				
OR SAY		15.00	15.00				

COST OF MATERIAL (F.O.R. WORKSITE)

S. No.	Item	Amount
1	Cut Stones 15 cum @ 800/- P/cum	12,000
2	Boulder stone 15 @ 400/- P/Cum	6,000
	Total Material cost (Rs.)	18,000

ABSTRACT OF COST

Labour cost	3,184
Material cost.	18,000
Total:	21,184
OR SAY:	20,500

Estimate for the construction of Retaining walls in Dry Masonary Length 12.00 Mtrs. Height 2.60 Mtrs.

S. No.	Description of Item	Detail of measurement or area	Length in M'				Quantity M³	Rate(Rs) Per cum	Amount (Rs)
1	Excavation in foundation trenched in 1/2 earth & 1/2 shaw cuttings.	1/2(0.45+0.75)x1.31=0.78 M²	12.00				9.360	74.77	700.00
2	Dry stone Random rubble masonary in foundation and plinth upto super structure.	1/2(0.20x0.75)=0.075 M² 1/2(0.75+1.315)x2.56=2.645 M²	12.00				32.640	87.15	2,844.00
			Total						3,544.00
			Add increase @ 7.84%						278.00
			Total						3,822.00

Consumption of Material

	Item of Work	Qty. (In M³)	Cut Stones (In M³)	Boulder Stones (In M³)				
1)	Dry rought masonary in foundation and super structure.	32.640	18.45	18.45				
	Total	32.64	18.45	18.45				
	OR SAY		18.50	18.50				

COST OF MATERIAL (F.O.R. WORKSITE)

1	Cut Stones 18.5Cum @ 800/- Per cum	12,800
2	Boulder Stone 18.50 @ 400/- Per Cum	7,400
	Total Material cost (Rs.)	20,200

ABSTRACT OF COST

Labour cost	3,822
Material cost.	20,200
Total:	24,022
OR SAY SAY	24,000

Estimate for the construction of Retaining walls in Dry masonary Length 15.00 Mtrs. Height Mtrs.

Sl. No.	Description of item.	Detail of measurement or area	Length in M'				Quantity M'	Rate(Rs) Per cuml	Amount,(Rs)
1	Excavation in foundation/ trenches in H2 earth & H2 stone cuttings.	H2(0.45+0.75)x1.31=0.78 M²	15.00				11.700	74.77	875.00
2	Dry stone random rubble masonary in foundation and plinth/super structure.	H2(0.25x0.75)=0.075 M² H2(0.75+1.315)=2.645 M²	15.00				40.800	87.15	3,556.00
			Total						4,431.00
			Add increase @ 7.84%						347.00
			Total						4,778.00

Consumption of Material

	Item of Work	Qty. (In M')	Cut Stones (In M')	Boulder Stones (In M')				
1)	Dry rough masonary in foundation and super structure.	40.800	22.44	22.44				
	Total:	40.80	22.44	22.44				
	OR SAY		22.50	22.50				

COST OF MATERIAL (F.O.R. WORKSITE)

1	Cut Stones 17.00 cums @ 800/- P/cum	18,000	
2	Boulder stone 75.00 @ 400/-P/Cum	9,000	
	Total Material cost (Rs.)	27,000	

ABSTRACT OF COST

Labour cost		4,778
Material cost.		27,000
	Total:	31,778
	OR SAY:	32,000

Estimate for the construction of SPURS in Wire Crates Length 2.50 Mtrs. Height 2.50 Mtrs.

Sr. No.	Description of item	Detail of measurement or mea			Quantity M³	Rate(Rs) Per cum	Amount (Rs)
1	Excavation in foundation of branched in 1/2 earth & 1/2 stone cuttings.	2.50 x 1.25x0.30			0.937	74.77	70.00
2	Boulderstone filling dry hand packed tightly in the wire crates.	2x2.50 x1.25x1.25			7.810	124.50	972.00
			Total				1,042.00
			Add increase @ 7.84%				82.00
			Total				1,124.00

Consumption of Material

	Item of Work	Qty. (In M³)	Boulder Stones (In M³)	Interlink chain (In M³)				
1)	Filling dry hand packed in wire crates	7.810	8.60	37.50				
	Total:	7.81	8.60	37.50				
	Or SAY		9.00	38.00				

COST OF MATERIAL (F.O.R. WORKSITE)

1	Boulder Stones 9.00 cum @ 400/- P/cum	3,600
2	Interlink chain 56 Sqm. @ 56/--P/Cum	2,128
	Total Material cost (Rs.)	5,728

ABSTRACT OF COST

Labour cost	1,124
Material cost	5,728
Total:	6,852
OR SAY	6,800

Estimate for the construction of SPURS in Wire Crates Length 3.75 Mtrs. Height 2.50 Mtrs.

Sr. No.	Description	Detail of measurement & area			Quantity M^3	Rate(Rs) Per cum	Amount (Rs)
1	Excavation in foundation trenches in 1/2 earth & 1/2 stone cuttings.	3.75x1.25x0.30			1.406	74.77	105.00
2	Boulder stone filling dry hand packed tightly in the wire crates.	2x3.75x1.25x1.25			11.710	124.50	1,458.00
			Total				1,563.00
			Add increase @ 7.84%				123.00
			Total				1,686.00

Consumption of Material

	Item of Work	Qty. (In M^3)	Boulder Stones (In M^3)	Interlink chain (In M^3)				
1)	Filling dry hand packed in wire crates	11.710	12.88	58.25				
	Total:	11.71	12.88	66.25				
	OR SAY		13.00	58.00				

COST OF MATERIAL (F.O.R. WORKSITE)

1	Boulder Stones 13.00 cum @ 400/- Pcum	5,200
2	Interlink chain 55 Sqm. @ 50/-P/Cum	3,136
	Total Material cost (Rs.)	8,336

ABSTRACT OF COST

Labour cost	1,686
Material cost.	8,336
Total:	10,022
OR SAY	10,000

Estimate for the construction of SPURS in Wire Crates Length 6.00 Mtrs. Height 2.60 Mtrs.

Sr. No.	Description of Item.	Detail of measurement or area			Quantity M^3	Rate(Rs) Per cumt	Amount (Rs)
1	Excavation in foundation/ trenched in 1/2 earth & 1/2 stone cuttings.	5.00x1.25x0.30			1.875	74.77	140.00
2	Boulder/stone filling dry hand packed tightly in the wire crates.	2x5.00x1.25x1.25			15.620	124.50	1,944.00
			Total				2,084.00
			Add increase @ 7.84%				163.00
			Total				2,247.00

Consumption of Material

	Item of Work	Qty. (In M^3)	Boulder Stones (In M^3)	Interlink chain (In M^3)				
1)	Filling dry hand packed in wire crates	15.620	17.18	75.00				
	Total:	15.62	17.18	75.00				
	OR SAY		17.00	75.00				

COST OF MATERIAL (F.O.R. WORKSITE)

1	Boulder Stones 17.00 cum @ 400/- Pcum	6,800
2	Interlink chain 75 Sqm. @ 56/-PrCum	4,200
	Total Material cost (Rs.)	11,000

ABSTRACT OF COST

Labour cost	2,247
Material cost.	11,000
Total:	13,247
OR SAY: SAY	13,000

Estimate for the construction of SPURS in Wire Crates Length 7.50 Mtrs. Height 2.50 Mtrs.

Sr. No.	Description of item.	Detail of measurement or area			Quantity M³	Rate(Rs) Per cumt	Amount (Rs)
1	Excavation in foundation trenched in 1/2 earth & 1/2 stone cuttings.	7.50x1.25x0.30			2.810	74.77	210.00
2	Boulder/stone filling dry hand packed tightly in the wire crates.	2x7.50x1.25x1.25			23.430	124.50	2,917.00
			Total				3,127.00
			Add increase @ 7.84%				245.00
			Total				3,372.00

Consumption of Material

	Item of Work	Qty. (in M³)	Boulder Stones (in M³)	Interlink chain (in M³)				
1)	Filling dry hand packed in wire crates	23.430	26.77	112.50				
	Total:	23.43	26.77	112.50				
	OR SAY		26.00	112.00				

COST OF MATERIAL (F.O.R. WORKSITE)

1	Boulder Stones 26.00 cum @ 400/- P/cum	10,400
2	Interlink chain 112 Sqm. @ 56/--P/Cum	6,272
	Total Material cost (Rs.)	16,672

ABSTRACT OF COST

Labour cost	3,372
Material cost.	16,672
Total:	20,044
OR SAY SAY	20,000

Estimate for the construction of SPURS in Wire Crates Length 10.00 Mtrs. Height 2.50 Mtrs.

Description of item	Detail of measurement at site			Quantity M^3	Rate(Rs) Per cum	Amount (Rs)
Excavation in foundation [illegible] in 1/2 earth & 1/2 stone cutting.	10.00x1.50x0.30			3.750	74.77	280.00
[illegible] filling dry hand packed tightly in the wire crates.	2x10.00x1.25x1.25			31.250	124.50	3,890.00
		Total				4,170.00
		Add increase @ 7.84%				327.00
		Total				4,497.00

Consumption of Material

Item of Work	Qty. (In M^3)	Boulder Stones (In M^3)	Interlink chain (In M^2)				
1) Filling dry hand packed in wire crates.	31.250	34.37	150.00				
Total	31.25	34.37	150.00				
OR SAY		34.50	150.00				

COST OF MATERIAL (F.O.R. WORKSITE)

Boulder Stones 34.50 cum @ 400/- P/cum	13,800
Interlink chain 150 Sqm. @ 56/- P/Cum	8,400
Total Material cost (Rs.)	22,200

ABSTRACT OF COST

Labour cost	4,497
Material cost.	22,200
Total:	26,697
OR SA SAY	26,500

Estimate for the construction of SPURS in Wire Crates Length 12.60 Mtrs. Height 2.50 Mtrs.

Description of Item	Detail of measurement or area			Quantity M^3	Rate(Rs) Per cumt	Amount (Rs)
Excavation in foundation trenched in 1/2 earth & 1/2 stone cuttings.	12.50x1.25x0.30			4.690	74.77	350.00
Boulder stone filling dry hand packed neatly in the wire crates.	2x12.50x1.25x1.25			39.060	124.50	4,863.00
		Total				5,213.00
		Add incense @ 7.84%				408.00
		Total				5,621.00

Consumption of Material

	Item of Work	Qty. (In M^3)	Boulder Stones (In M^3)	Interlink chain (In M^3)				
1)	Filling dry hand packed in wire crates	39.060	42.96	188.50				
	Total:	39.06	42.96	188.50				
	OR SAY		43.00	189.00				

COST OF MATERIAL (F.O.R. WORKSITE)

Boulder Stone 42.50 cumt @ 400/- P/cumt	17,200
Interlink chain 189 Sqm. @ 56/-P/Cum	10,584
Total Material cost (Rs.)	27,784

ABSTRACT OF COST

Labour cost		5,621
Material cost		27,784
	Total:	33,405
	OR SAY: SAY	33,400

Estimate for the construction of SPURS in Wire Crates Length 15.00 Mtrs. Height 2.50 Mtrs.

S.No.	Description of item	Detail of measurement or work	Quantity M³	Rate(Rs) Per cum	Amount (Rs)
1	Excavation in foundation/ trenches in 1/2 earth & 1/2 stone cuttings	15.00x1.25x0.30	5.620	74.77	420.00
2	Boulder/stone filling dry hand packed tightly in the wire crates.	2x15.00x1.25x1.25	46.870	174.50	5,835.00
		Total			6,255.00
		Add increase @ 7.84%			490.00
		Total			6,745.00

Consumption of Material

Item of Work	Qty. (In M³)	Boulder Stones (In M³)	Interlink chain (In M²)				
1) Filling dry hand packed in wire crates	46.870	51.55	226.00				
Total	46.87	51.55	226.00				
OR SAY		51.50	226.00				

COST OF MATERIAL (F.O.R. WORKSITE)

S.No.	Item	Amount
1	[illegible] Stones 51.50 cum @ 400/- P/cum	20,600
2	[illegible] chain 226 Sqm @ 56/- P/Cum	12,656
	Total Material cost (Rs.)	33,256

ABSTRACT OF COST

Labour cost	6,745
Material cost.	33,256
Total:	40,001
OR SAY	40,000

Estimate for the construction of Farm Pond size 20x10x2 Mtrs.

Description of item.	Nos.	L.	W	H/D	Quantity M³	Rate(Rs) Per cumt	Amount.(Rs)
Excavation in foundation/ trenches in 1/2 earth & 1/2 stone cuttings.	1	1/2(18+10)	1/2(8+6)	1.00	119.000		
				TOTAL:	119.000	74.77	8,897.00
Filling in 15 Cm. layer Fr. excavation in the plinth work in embankment Fr. ramming/ watering and Consolidating.							
Long side.	2	1/2(25+18)	1/2(1+3.50)	1.00	96.750		
Short Side.	2	1/2(15+8)	1/2(1+3.50)	1.00	51.750		
				TOTAL:	148.500	36.60	1,083.00
Deduction of Item No.11		148.50-119.00= 29.50 Cumt.					
By rough stone pitching Horizontal							
Bottom of Tank	1	16.00	6.00	0.15	14.40		
Short Side.	2	22.00	1.00	0.15	6.60		
				TOTAL:	21.000	86.30	1,812.00
By rough stone pitching vertical surface:							
Long side slope of tank.	1	1/2(16+20)	2.00	0.15	7.56		
				TOTAL:			850.00
				TOTAL:			12,642.00
				Add increase @ 7.84 %			991.00
				Total Labour Cost (In Rs.)			13,633.00

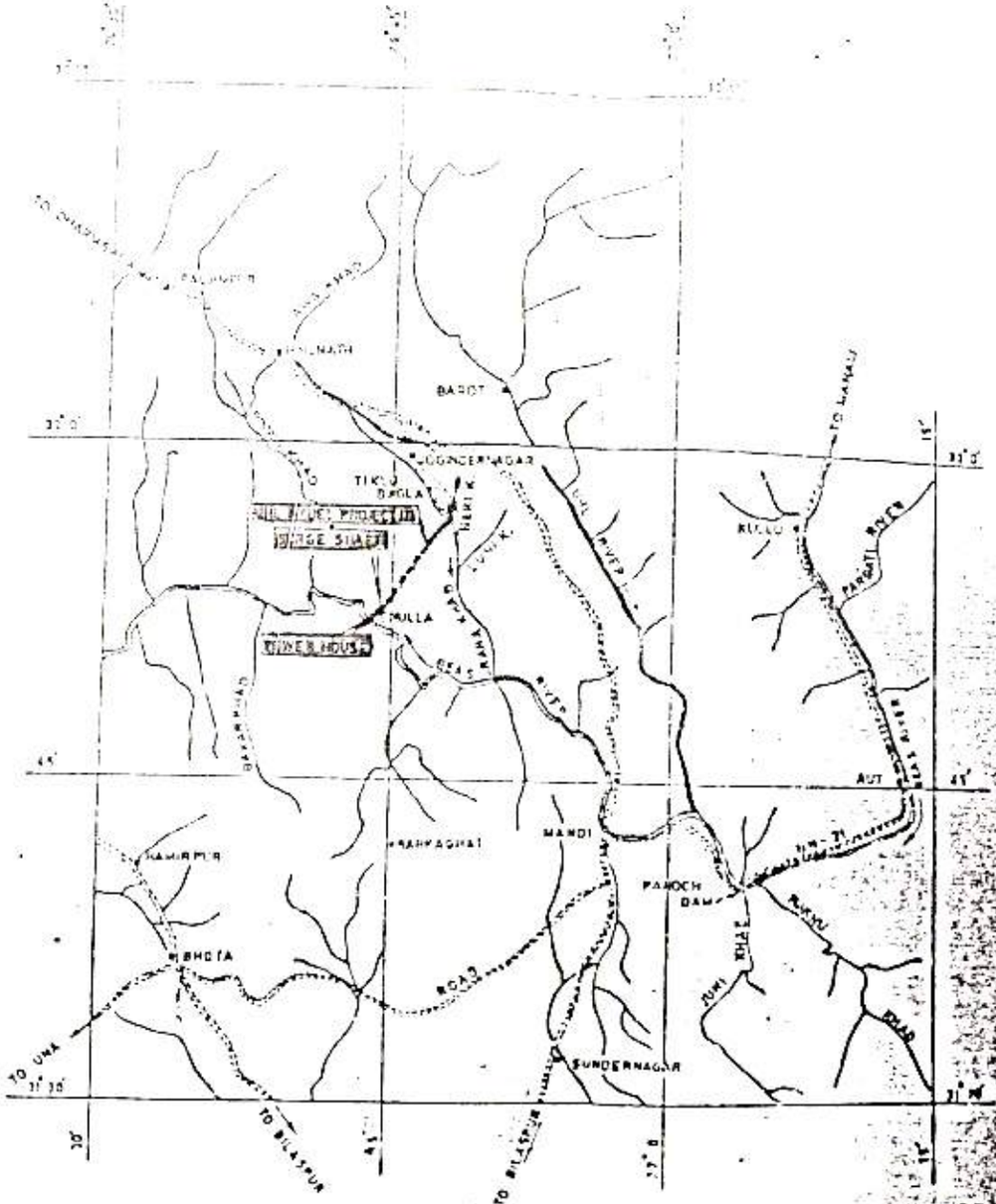
CONSUMPTION OF MATERIAL

	Qty. (In M³)	Boulder stone/Loose stone
By rough stone pitching Horizontal.	21.00	23.10
By rough stone pitching vertical	7.56	8.31
Total:	28.56	31.41
		Say 31.50

COST OF MATERIAL(FOR WORKSIDE)	
Boulder/Loose stone 31.50 Cumt. @ 400/- P/Cumt	12,600.00
Total Material Cost (In Rs.)	12,600.00

ABSTRACT OF COST

Labour cost	13,633
Material cost	12,600.00
Total:	26,233
Say Rs.	26,000.00



VICINITY MAP

INDEX MAP

LEGEND

RIVERS & NALLAH
RAILWAY LINE
ROADS
POWER SITE
TUNNEL ALIGNMENT

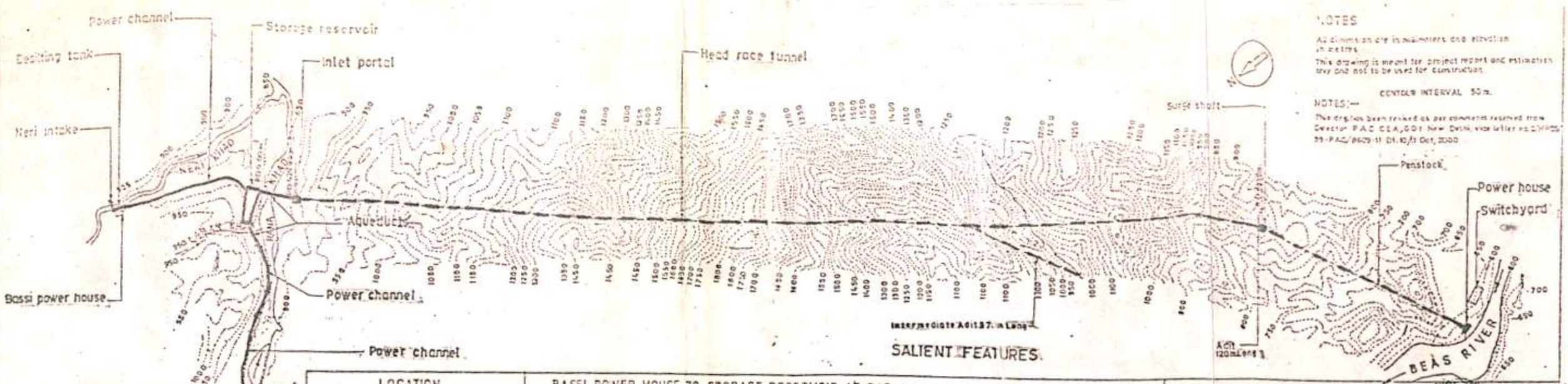
SCALE 0 20 40 60 80 100 KM

HIMACHAL PRADESH STATE ELECTRICITY BOARD
DIRECTOR, PLANNING

UHL HYDEL PROJECT STAGE-III

LOCATION & VICINITY MAP

DESIGN | DRAWN | TRACED | CHECKED | APPROVED



NOTES

All dimensions are in millimeters and elevation in metres.

This drawing is meant for project report and estimation only and not to be used for construction.

CONTOUR INTERVAL 50 m.

NOTES:—

The drg. has been revised as per comments received from Director P.A.C CEA, GOI New Delhi, vide letter no. 2/HP/5/99-PAC/8629-11 Dt. 10/11 Oct, 2000

SALIENT FEATURES

LOCATION

STATE	Himachal pradesh
DISTRICT	Mandi
RIVER	Uhl river, tail water of stage II, neri khad & Rana khad in Beas Basin.
LOCATION	Diversion sites near Bassi Power House (Uhl stage II) on Neri khad (el.894.50m) & Rana khad (el.897.55) & Power house near village Chullah

BASSI POWER HOUSE TO STORAGE RESERVOIR AT BAGLA

1. NERI KHAD DIVERSION WORKS

Type	Trenchweir
Design discharge	8.40 cumecs
i/c flushing discharge	
Length	15 m.
Width	1.75 m.
Crest level	894.50m.
Design flood discharge	400 m³/sec.

2. HEAD REGULATOR

Design discharge	6.75 cumecs
Length	11.75 m.
Size	2m X 2.85 m.

3. DESILTING ARRANGEMENT

Type	surface
Size	2 nos. chamber 45m x 12m x 2.82m
Transition length.	22.50 m. each
Particle size to be removed	All particles down to 0.20mm

4. BASSI POWER HOUSE TAIL RACE JUNCTION

DIVERSION WORKS

Type	Rectangular with gate & hoist arrangement
Size	4.70m x 2.50m
Bed level	889.16 m.

SPILLWAY

Type	Gated baffle type
Size	7.00m x 2.50m.
Crest el.	889.75m.

5. POWER CHANNEL UP TO RESERVOIR

R.C.C Box

Type	Rectangular
Size	3.60 m x 5.75m.
Length	1250 m
Disch. carrying capacity	27m³/sec.
Bed slope	1:2500

6. LABAN KHAD AQUEDUCT

Nature	Depressed aqueduct
Type	Circular steel pipe ASTM-A-516 grade II
Diameter	1.90 m.
Length	81.00 m.

RANA KHAD TO RESERVOIR

1. DIVERSION STRUCTURE

Type	Trench weir
Design discharge i/c flushing discharge	22.16 cumecs
Length	27 m.
Width	2.25
Crest El.	897.65m
Design flood disch.	1300 m³/sec.

2. HEAD REGULATOR

Design discharge	17.87 cumecs
Length	17.50m
Size	3.50 m

3. DESILTING ARRANGEMENT

Type	Surface
Size	4 nos chamber. 75m x 12m x 3.75m (each)
Transition length	30.00 m.
Particle size to be removed	All particle down to 0.20 mm.

4. POWER CHANNEL

Type	Cut & cover rect.
Size	2.50m x 3.40m.
Disch. carrying capacity	14.30 m³/sec
Length	1970 m.
Slope	1:320

5. DIDNU NALLAH AQUEDUCT

Type	R.C.C Box
Size	2.10m. x 3.40m.

6. STORAGE RESERVOIR AT KHUDDAR

Type	Surface trapezoidal shaped
Live storage capacity	175000 m³
F.R.L.	890.90m. M.D.D.L. 882.00 m.
Peaking duration	3.75 hour

SPILLWAY

Type	Chute
Crest length	20 m.
Crest el.	890.90
Disch carrying capacity	1540 cumecs
Width of spill chute	20 m.

RANA KHAD AQUEDUCT

Nature	Depressed aqueduct
Type	Below scour depth R.C.C. DUCT
Diameter	4.15 m.
Length	424 m.

HEAD RACE TUNNEL

Shape	Circular
Length	8275 m.
Diameter	4.15 m.
Design discharge	41.30 cumecs
Bed slope	1: 570

ADIT AT OUTLET

Shape	D-Shaped
Diameter	4.15 m.
Length.	120.00 m.

INTERMEDIATE ADIT

Shape	D-Shaped
Dia	4.15m.
Length	97.0m.

SURGE SHAFT

Type & no	Restricted orifice one open to sky
Diameter	13 m. dia, m3 (Riser)
Orifice diameter	1.50m.
Height	45.00 m. & 12m (Riser)
Top level	905.00 m.
Bottom level	845.00 m.
Maximum up surge level	903.50m.
Minimum down surge level	852.0 m.

PENSTOCK.

Type	Circular steel lined (I) A.S.T.M-A-516 grade 60 for 50mm to 35mm thickness (II) A.S.T.M-A-537 class I for 30 mm to 35 mm thickness (III) A.S.T.M-A-517 grade ... 26mm thickness
Diameter	Main (1) 3.40 m Branches 2nos. 2.40 each
Length.	Main 1 18.50 m. after bifurcation 80 m.
Discharge carrying capacity	41.30 cumecs/

POWER HOUSE

Type	Surface
Size	47m x 28.10m
Type of turbine	PELTON vertical axis
℄ of unit	591.50m
Installed capacity	100 MW
Generating units	2 nos, 50MW each
Gross head	299.40m
Design head	274.50m
Tailrace	4.0x 5.90m
Length	120m
[illegible]	EL.590 m.

SCALE 0 300 600 900 1200m

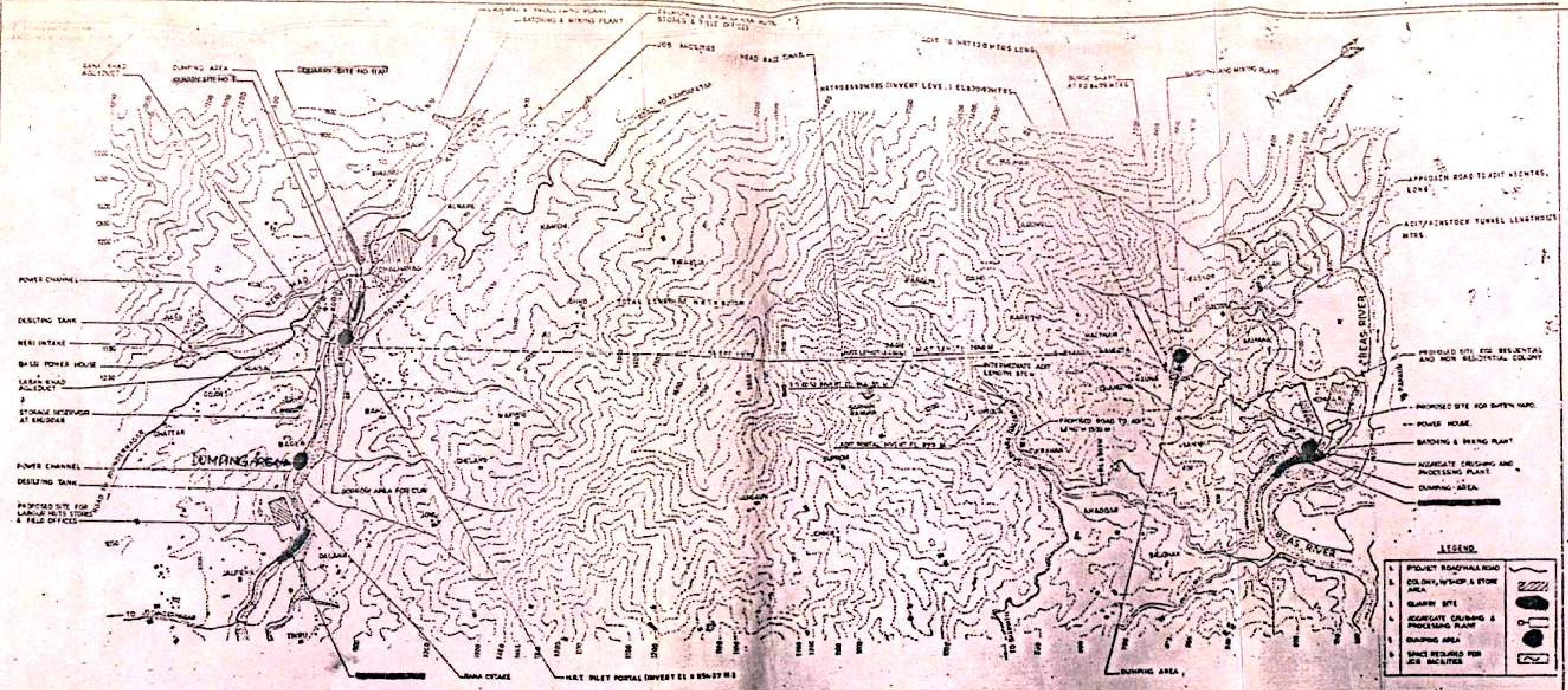
HIMACHAL PRADESH STATE ELECTRICITY BOARD
DIRECTOR, PLANNING

UHL HYDRO ELECTRIC PROJECT STAGE-III

GENERAL LAYOUT PLAN

DSGN.	CHKD.	RECM.
DRWN.	SUBM.	APPD.

SUNDERNAGAR-AUG, 1999 DRG.NO. UHL-[illegible]



LEAD CHART OF ROADS

SR.NO.	FROM	TO	TYPE OF ROAD	DISTANCE IN KMS.
1.	JOGINDERNAGAR	PATHANKOT	N.G. RAILWAY	163.30
2.	-DO-	BAIJNATH	N. HIGHWAY	31.00
3.	-DO-	BASSI	STATE HIGHWAY/ PROJECT ROAD	8.00
4.	-DO-	INLET OF HRT	-DO-	9.75
5.	-DO-	RANA KHAD DIVERSION	-DO-	6.50
6.	-DO-	QUARRY SITE-1	-DO-	9.70
7.	-DO-	-DO- -2	-DO-	9.90
8.	-DO-	-DO- -3	-DO-	8.00
9.	BAIJNATH	LAD BHAROL	DISTT ROAD	29.00
10.	-DO-	KHADOAR	-DO-	30.00
11.	-DO-	CHULLA, B.R.	-DO-	75.00
12.	-DO-	SURGE SHAFT	-DO-/PROJECT ROAD	34.15
13.	-DO-	CHULLA P.H.	-DO-	37.15
14.	-DO-	QUARRY SITE-4	-DO-	37.55

DETAILS OF HAUL/COLONY ROADS

SR. NO.	DESCRIPTION	LENGTH IN KMS.
1.	7/5 MTRS. WIDE ROAD BIFURCATING FROM BAIJNATH—KANDAPATAN ROAD TO SURGE SHAFT AT EL 900 MTRS.	2.30
2.	7/5 MTRS. WIDE ROAD BIFURCATING FROM BAIJNATH—KANDAPATAN ROAD TO POWER HOUSE.	2.15
3.	7/5 MTRS. WIDE ROAD BIFURCATING FROM POWER HOUSE ROAD TO EL. 710 MTRS.	0.40
4.	7/5 MTRS. WIDE ROAD BIFURCATING FROM POWER HOUSE ROAD TO SWITCH YARD, LABOUR HUTS, STORES ETC. NEAR CHULLA.	1.00
5.	7/5 MTRS. WIDE ROAD FROM POWER HOUSE TO B & M PLANT, CRUSHING & PROCESSING PLANT AND DUMPING AREA.	0.40
6.	7/5 MTRS. WIDE ROAD BIFURCATING FROM JOGINDERNAGAR KANDAPATAN ROAD TO INLET PORTAL OF H.R.T.	0.30
7.	7/5 MTRS. WIDE ROAD BIFURCATING FROM JOGINDERNAGAR—KANDA—PATAN ROAD TO MACHINAL QUARRY SITE	0.25
8.	5/3 MTRS. WIDE ROAD BIFURCATING FROM JOGINDERNAGAR—KANDA—PATAN ROAD TO LABOUR HUTS & STORES NEAR CHALHARAN.	0.20
9.	7/5 MTRS. WIDE APPROACH ROAD FROM JOGINDERNAGAR—KANDAPATAN ROAD TO BASSI DIVERSION	0.50
10.	5/3 MTRS. WIDE APPROACH ROAD BIFURCATING FROM JOGINDER—NAGAR-KANDAPATAN ROAD TO RANA KHAD DIVERSION	0.63
11	WIDENING OF EXISTING APPROACH ROAD BIFURCATING FROM JOGINDER-NAGAR-KANDAPATAN ROAD TO RANA KHAD DIVERSION.	4.00
12	7/5 MTRS WIDE ROAD BIFURCATING FROM SURGE SHAFT ROAD TO ADIT-TO HRT AT RD 5840 M EL 1320 MTRS	0.41
13	7/5 MTRS. WIDE ROAD BIFURCATING FROM BAIJNATH KANDAPATAN ROAD TO INLET PORTAL/INTERMEDIATE ADIT TO HRT.	1.80

NOTES:-

1. ALL DIMENSIONS ARE IN MILLIMETRES AND ELEVATIONS/RDs IN METRES UNLESS OTHERWISE SPECIFIED.
2. THIS DRAWING IS MEANT FOR PROJECT REPORT PURPOSE ONLY AND NOT TO BE USED FOR CONSTRUCTION.
3. RESIDENTIAL/NON RESIDENTIAL COLONY FOR CONSTRUCTION OF DIVERSION WORKS, POWER CHANNEL, STORAGE RESERVOIR & HRT FROM INLET PORTAL SIDE IS PROPOSED TO BE CONSTRUCTED NEAR VILLAGE JHAKHAR.
4. THIS DRAWING HAS BEEN REVISED AS PER COMMENTS OF CWC LETTER NO. [illegible] DATED [illegible] OCT. 2003

CONTOUR INTERVAL 5 METRES

SCALE— 0 100 200 400 600 750 900 1000

HIMACHAL PRADESH STATE ELECTRICITY BOARD
DIRECTOR, PLANNING

UHL HYDEL PROJECT STAGE-III

CONSTRUCTION FACILITIES
HAUL ROADS, QUARRY SITES AND COLONIES

DESD.	CHKD.	APPD.
DRWN.	SUBM.	LIMIT.