



HIMACHAL PRADESH POWER CORPORATION LTD.
(A State Government Undertaking)
Shongtong-Karchham Hydro Electric Project, Reckong-Peo, Kinnaur-172107 HP
Phone: 01786-222962, Fax: 01786-223174, Email- skhep.hppcl@gmail.com

HPCL/GM-SKHPP/AFL/2020 2766-67 Dated: 24/07/2020

To,

The Divisional Forest Officer,
Kinnaur Forest Division,
At Reckong-Peo.

Sub: Diversion of 07.3722 ha of Additional Forest land in favour of Himachal Pradesh Power Corporation Ltd. for construction of Shongtong Karchham HEP, 450 (MW).

Ref: DFO, Kinnaur office letter no. 8210 dated 13.03.2020.

Sir,

In reference to the subject cited above, point wise reply/ clarification to the observations raised vide CF, Rampur letter 7601 endorsed vide above referred letter is as under:

- (i) Date and place have been mentioned in all the check lists placed in the proposal folders.
- (ii) Name of the area proposed for diversion is mentioned in the Checklist 7. The form-II of the proposal is filled by the DFO Kinnaur who has mentioned the legal status of the land in column V of form II and UPF. Checklist No 4 & 10 have been revised giving full justification, complete detail of the area to be diverted, number of trees involved in the proposal and revised checklist is attached in the proposal folder in page no. 126 to 128.
- (iv) Location map of already diverted land and additional proposed land is marked in Topo sheet with layout, complete detail, extent of land diverted and to be diverted with distinct colors placed in the proposal folders in page no. 129.
- (v) Land proposed for diversion in Kh no. 561/1, 568&569 1.4470 ha is additional land and the dumping area no. 3 stands already diverted. The Hon'ble, High Court in GWP no 1667/2013 has not banned diversion of additional proposed land adjacent to already diverted land i.e., dumping site-3. Diversion of additional forest land is a separate issue and dumping in the



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- dumping site-3 is another issue. The GohP & HPPCL have already taken care of NoC from the Army.
- (vi) The working area and job facilities have been shown in separate sheet, copy of the same is attached with proposal folder in page no. 130 to 131.
- (vii) The land measuring 0.7980 ha is diverted only for underground portion of SFT. Now the land measuring 0.1573 ha in Kh. no. 1/1, 0.3586 ha in Kh no. 838/1, 0.0200 ha, and 0.3436 ha, in Khasra no. 840/1 is to be diverted for outlet portion of SFT and approach. Already diverted land measuring 0.7980 ha, is not to be surrendered being used for Project Construction.
- (viii) Cremation area falls in the same Kh. No. but the SFT portal is away from it and does not interfere with the cremation point. Further the SFT out fall is on the vertical cliff and the cremation area is on a horizontal bed. Copy of clarification report is enclosed.
- (ix) Land measuring 0.5636 ha in Kh no. 854/823/1 is meant for the purpose of Diversion Tunnel outlet and its working area in between PWD road and vertical Cliff, where as earlier diverted forest land measuring 0.1917 ha is for underground activities of intake tunnel and Diversion Tunnel. The present proposal of diversion is for surface activities. It is clarified that the land already diverted, is national area, which is being used for the underground activities.
- (x) The land measuring 0.1360 ha, fall in Kh. no. 810/2, is an approach to the reservoir & desilting area which is to be de-silted in each lean season to avoid damage to the coffer dam, diversion tunnel and also to keep the reservoir volume intact. Lifting of RBM for de-silting of reservoir area is permissible under the Govt. of HP notification dated 06.04.2018 and has been permitted by the Industry Department, GohP vide letter dated 5.11.19 (Copy Enclosed) in page no. 175.
- (xi) The Check list No. 11 has been revised and enclosed in the proposal folder incorporating detail of land area & trees involved with justification for acceptance.
- (xii) The District Level FRC is the Authority to issue the certificate of settlement of rights on the recommendation of Sub Divisional level FRAC based on



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Village Level FRA Committee and copy of requisite certificate issued by the District level FRC is already attached with the case.

(xiii) Species wise and Girth wise enumeration list is enclosed with the case as prepared by the Forest officer / officials in page no. 132.

(xiv) The checklist nos. are marked as per MOEF&CC Checklist and placed in the proposal folder.

(xv) Dumping Management Plan for the land proposed for dumping is attached with the proposal folder in page no. 133 to 141.

(xvi) The BRO is not using any dumping site already diverted to HPPCL land except that in some portion, the slide material falling on NH-5 might have dozed off towards valley side.

(xvii) Land has not been surrendered by HPPCL to the HP Forest Department, since construction works of the Project are still in progress. For the forest land already diverted measuring 63.5015 Ha, a sum of Rs.1, 61, 71008/- stands deposited.

(xviii) Necessary correction in the revenue papers checklist no 7 & 10 has been done. Joint inspection report in page no. 133 to 134 & DFO site inspection report in page no. 45 of proposal folder.

Beside above observations, on revenue records papers have got been attended to from the Revenue Authority as below:-

- (1) खसरा नं० 838/1 का खसरा 00-02-00 बनवा है, जो कि बन्दोबस्ती खसरा नं० है। परन्तु चैक लिस्ट 7 में उक्त खसरा नं० 838/1 तलीमा काटा गया है। जो कि 0.35.86 है जिसे तलीमा में दर्शाया गया है, जो खसरा नं० 838 का उपविभाजित खसरा नं० है।
- (2) खसरा नं० 1/1 खसरा नं० 1 का उपविभाजित टुकड़ा है जिसका खसरा नं० 0-15-73 है जो गैर मुसकिन दर्जिया है जबकि खसरा नं० 1/1 बन्दोबस्ती खसरा नं० है जिसका



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रखा 0-02-00 है जो गैर मुमकिन शमशान घाट है। मौके की खानबीन राजस्व विभाग द्वारा किया गया है, रिपोर्ट की प्रतिलिपी संलग्न है।

(3) खसरा नं० 1/1 का जो तलीमा काट गया है उसकी चौड़ाई तलीमा में दुरुस्त कर दर्शाया गया है, एवं दरिया की बाहर वाली रेखा को भी दर्शाया गया है।

(4) मुहल पोवारी के खसरा नं० 810/1 रक्बा तादादी 0-42-61 को पुरानी एक सी केस के तहत शीगर्टींग करव्छम जल विद्युत परियोजना हेतु हस्तान्तरित किया गया है। परन्तु अब अनुपूरक तलीमा खसरा नं० 810/2 को संशोधित कर लिया जाना प्रस्तावित है। अतः नई फाईल में बैंक लिस्ट 7 में 810/2 का रक्बा जो भू स्थानांतरण के लिए अनुमोदित है वह 0-13-60 है 0 ही लिया गया है न कि 1-54-66।

(5) खसरा नं० 3/2 मुहल युसारिह में ही आता है जो कि लिपिकिय ग्रुट से बांधा लिखा गया था जिसे दुरुस्त किया गया है। खसरा नं० 3/2 की किस्म बराहगाह दखान लिखा गया है।

(6) पुरानी फाईल के मुताबिक जो रक्बा परियोजना के भूमिगत कार्य के लिए स्थानांतरित किया गया था उस भूमिगत भूमि का खसरा नं० लेना संभव नहीं था। इस अतिरिक्त भूमि स्थानांतरण में भूमिगत कार्य के लिए किसी भी प्रकार की भूमि नहीं ली गई है। भूमि का विवरण बैंक लिस्ट नं० 7 में दर्शाया गया है।

Submitted for further recommendation please.

Thanking you

DA: As above.

Yours faithfully

Sr. Manager (R&R),
Shongtong-Karcham HEP,
HPPCL, Reckong-Peo,
Distt. Kinnaur (HP).

CC: 1. The CES & RR Specialist, HPPCL, Himfed Building, BCS, New Shimla-09.

Distt. Kinnaur H.P., 172107
H.P. Kangra-Deo,
Sho. Kangra-Deo, H.P.,
St. Kangra (R&R)

Divisional Forest Officer
Kinnaur Forest Division
R/Deo

In view of the presence of more than 52m thickness of overburden in the valley. Presence of dense habitation in the vicinity of area proposed is in Pvt. Land with apple orchards which are the main source of income of the habitants.

Left bank alternative with dam with just near the confluence of Tangling Khad with Satiy River. At this site there is a well defined vertical rock on the left bank but no rock exposures on the left bank of the river, but the exposures are at higher elevations. To know the depth of rock one drill hole was drilled which showed a overburden of 50 meters, hence this site has to be abandoned.

Alternative-I:

Accordingly, the alternatives are described as follows:-

The team comprising of Divisional Forest Officer, Kinnaur Forest Division, Sub-Division Kalpa and the Authorized Signatory of HPPCL, have jointly inspected the proposed site for development/ construction of Shongtong - Karchham Hydro Electric Project (450MW) and examined three alternatives with a view to avoid/minimize the use of forest land and the trees to be felled:-

ALTERNATIVES CONSIDERED AVOIDING / MINIMISING THE USE OF FOREST LAND FOR THE CONSTRUCTION OF SHONGTONG-KARCHHAM HYDRO ELECTRIC PROJECT (450MW).

Check list Serial No-11

Certificate

SKHEP (450MW)

HPCL

Flash floods overlooking the site on the left abutment every year, and occurrence of large debris fan just downstream of SFT portal on the left flank which could interfere with the alignment of HRT and other appurtenant structure, the site has to be abandoned and the possibility of locating a dam upstream was explored.

Alternative-II:

: - Through this is the ideal site from engineering point of view, the same has to be abandoned due to administrative problem. The site is near defense installation and the authorities were not allowing and type of activities at the proposed site since it come within the 500m from Army ammunition Depot.

More over Presence of dense habitation in the vicinity of area proposed. Proposed SFT falls in Pvt. Land with apple dense and fully grown Apple orchards which are the main source of income of the habitants.

Alternative-III:

Present proposal of additional forest land to be diverted is best suitable and sync with the already diverted forest land for intakes Sedimentation Chamber, HRT and power house located on the left bank of the river. left bank was found more suitable as the components of the project intercept less forest land and it also provide good geological conditions to construct the various components of the project, as compare to the right bank and no other suitable area was available, where use of forest land could be avoided/ minimized. In the present proposal, due to change in capacity / Capacity enhancement from 402 Mw to 450 MW and restriction imposed by the Army authorities for the construction, re-

Divisional Forest Officer
Kinnaird Forest Division
R/Secy

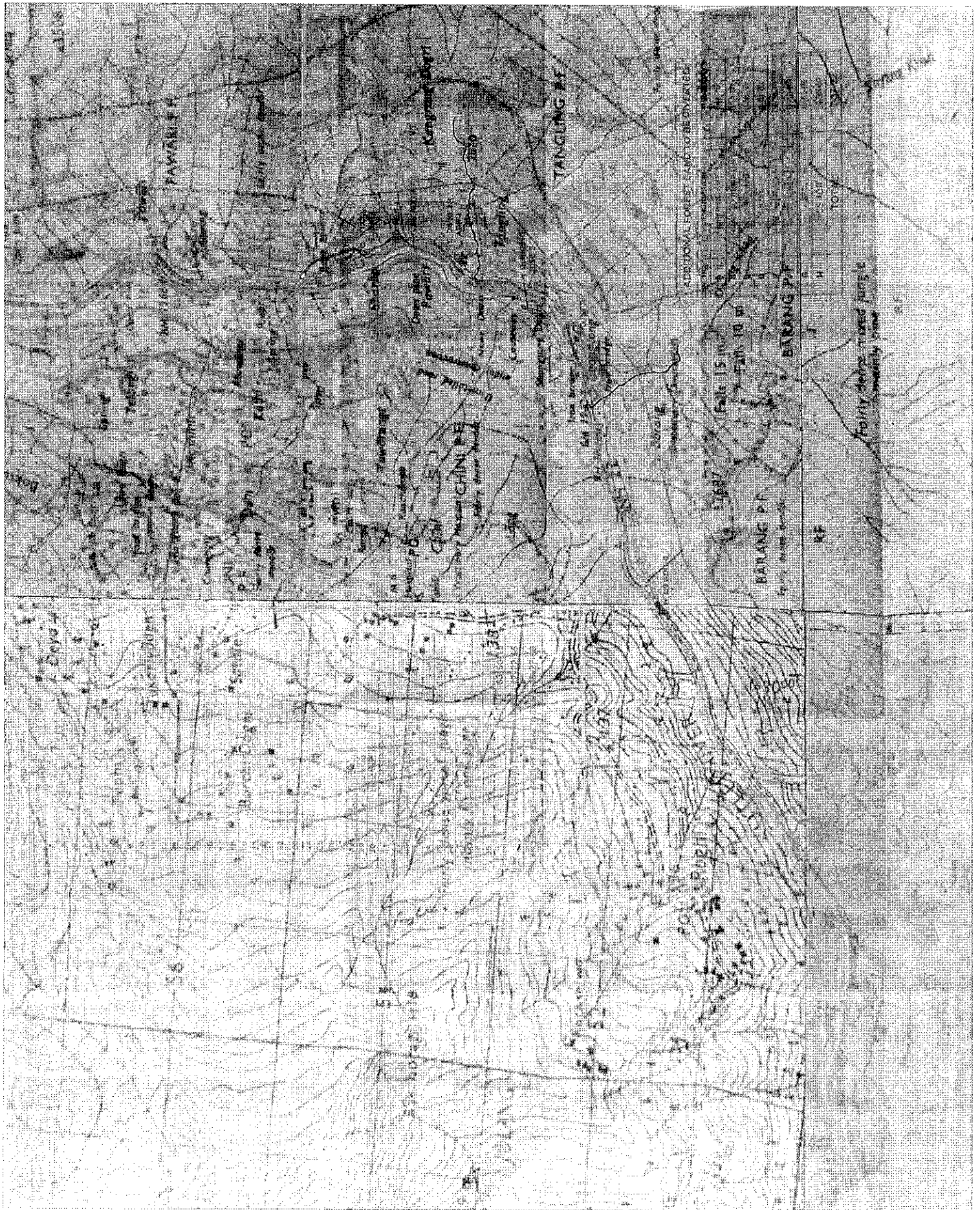
Sr. Manager (R&R)
Shree R. Archana HEP
Dist. Engineer (R&R), 1990

alignment of some components were made due to which this necessity of add. Forest land was arise to undertake the construction works for the successful completion of project for the interest of State as well as nation . Keeping in view the minimum requirement of add. forest land and presence of minimum vegetation in the Proposed addl. Forest land & area required is also low and is mostly rocky/barren. While there is small destruction of green vegetation, therefore this location is suitable for the construction of components of t project

St. Manager (B&R)
 Sr. Manager, Kanchan HEP,
 Kanchan HEP, B. P. O.,
 District, B. P. O., 172107

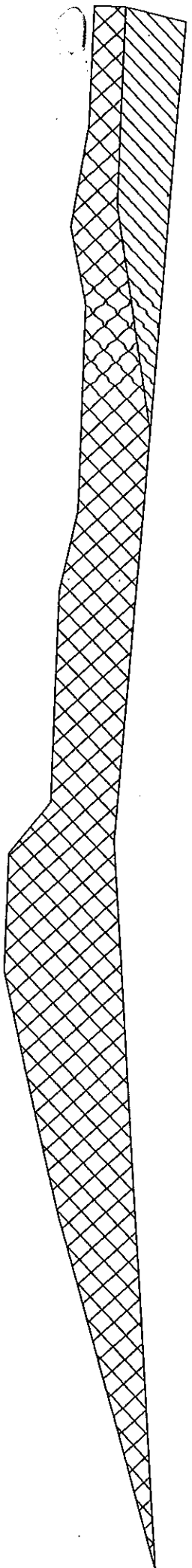
Divisional Forest Officer
 Kanchan Forest Division
 B. P. O.

By
 M. M. M.



**PROPOSED AREA FOR SILT FLUSHING TUNNEL, PORTAL, WORKING AREA AND
APPROACH ROAD (KHASRA NO. $1 \frac{838}{1}$ & $1 \frac{840}{1}$) MEASURING 0-85-95 HECTARE**

BIFURCATION OF AREA		
SR. NO.	DETAIL OF AREA	AREA IN Ha.
1	SILT FLUSHING OUTLET	00-15-73
2	APPROACH ROAD TO PORTAL AND WORKING AREA	00-70-22
	TOTAL	00-85-95

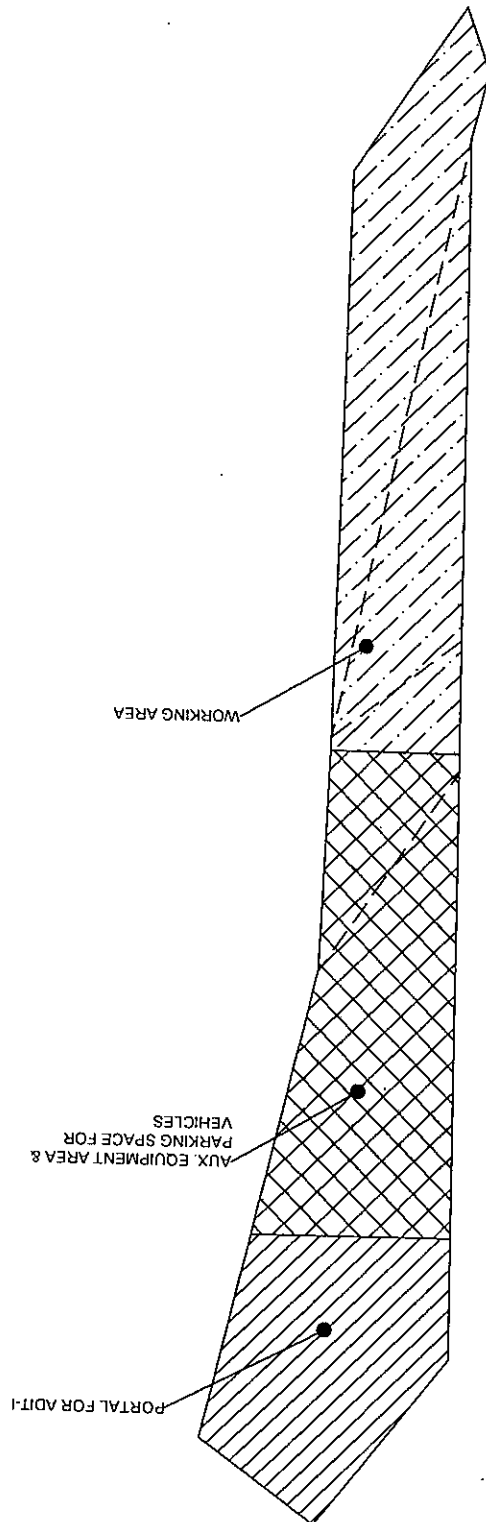


S. L. L...
Divisional Forest Officer
 Kinnaird
 R/Po

(Signature)
Sr. Manager (R&D)
 Shongtong-Itchikang IMP,
 H.P.O., Diphong-Poo,
 Dist. Imphal H.P., 172107

PROPOSED AREA FOR ADIT-I (KHASRA NO. ¹/₂₁) MEASURING 0-58-83 HECTARE

BIFURCATION OF AREA		
Sr. No.	DETAIL OF AREA	AREA IN Ha.
1	PORTAL FOR ADIT-I	00-14-31
2	AUX. EQUIPMENT AREA & PARKING SPACE FOR VEHICLES	00-20-91
3	WORKING AREA	00-23-61
	TOTAL	00-58-83



Divisional Forest Officer
Kinnairt Forest Division
R/Secy

St. Manager (R&P)
Shong-tong-Kachham HPR.
HPR, Hekong-Do,
Distt. Khamti H.P., 17.

Sr. No.	Name of Forest compartment	Species names (Local)	Botanical Name	Girth in C.M. (गोलाई)										Total
				0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	More than 90	
1	UF Powari	Neoza	Pinus Geradiana	8	2	9	2	-	-	-	-	1	-	22
		MOHRU	Quercus sp.	10	-	1	2	-	-	-	-	-	-	13
2	UF Tangling	Neoza	Pinus Geradiana	4	1	6	9	1	-	2	-	-	-	23
		Thum	Fraxinus sp.	1	-	-	1	2	-	-	-	-	-	4
3	Up Mohal Rang	Neoza	Pinus Geradiana	2	-	-	-	-	-	-	-	-	3	5
		Khidok	Celtis Australis	-	1	-	-	-	-	-	-	-	-	1
		Kunish	Alnus Nitida	20	5	1	3	-	1	-	-	-	-	30
		Thum	Fraxinus sp. Pinus Geradiana	9	-	-	-	-	-	-	-	-	-	9
		Alunthus	Ailanthus Excelse	5	-	-	-	-	-	-	-	-	-	5
	Total													112

9/5/11

Divisional Forest Officer
Kaimaur Forest Division
R/Deo

Sr. Manager (M.D.)
Shongtong Kaimaur H.P.,
H.P. Kaimaur, Kaimaur-Deo,
Dist. Kaimaur H.P., 172107

Shongtong Karcham HEP, 450 MW



Muck Management Plan for Additional Land Measuring 7.3722h Ha.

Prepared By:- E&RR Cell of STKHHP, HPPCL,

STKHHP, HPPCL

Divisional Forest Officer
Kamant Forest Division
R/Peo

Sr. Manager (R&R)
Shongtong-Karcham HEP,
HPPCL, Jakang-Deo,
Dist. Kamant H.P., 172107

Component-wise Details Planning for Muck Disposal

No.	Location	Area (ha)	Capacity (Cum)	Distance			Qty. of muck debris to be dumped from	Actual capacity (Cum)	Addl. Capacity
				From Barrage &	From Adit II	From Adit-III			
1	Sudarang Near Shongtong Bridge	1-44-70	83423.12	2 km	5.00 km	9.00 km	chambers & flushing conduits	50,053.8	33369.3
2	Kalpa Usaring Near Adit II	0-29-60	45271.25	0.50 km	1.50 km	5.50 km	River diversion works, Barrage intake, sedimentation	32,595.3	12675.9
3	Tangling Near PWD road to Shongtong on	1-10-05	18500	1.50 km	1.00 km	5.00 km	Upper half of HRT & Diversion barrage	13320	5180
4	Tangling Near PWD road to Shongtong on Left bank of River	2-38-13		5.00 km	2.00 km	3.00 km	Lower half of HRT & Diversion barrage		
	Total	5-22-25	1,47,194.3					95,965.1	51,225.2

STKHEP, HPPCL

C/S
Divisional Forest Officer
Reserve Forest Division
R.P.O.

Sr. Manager (R&R)
Shri. K. S. Choudhary IAS,
HPPCL, Kargi, P.O.,
Dist. Mahesar P.P., 172107

The total area earmarked for muck disposal is in Additional land is 5.2225 ha.

period and avoid contamination of any land or water resource due to muck disposal.

will be planted adopting suitable bio-technological measures. The basic aim and objectives of the

- Protect these areas from soil erosion
- Develop these areas by afforestation
- Utilize the maximum quantity of muck for development of infrastructure of the project
- Develop these areas in harmony with the landscape of the project area.

- Land acquisition for muck dumping sites
- Civil works (construction of retaining walls, boulder crate walls etc.)
- Dumping of muck
- Levelling of the area, terracing and implementation of various engineering e.g., boulder, crate wall, masonry wall, catch water drain.

6-3

James G. Thompson

1/20/50
 1/20/50
 1/20/50

Sr. Manager (R.M.)
Shongtang-Hatchell H.P.
H.P., Jackson, Mo.,
Dist. Manager H.P., 172167

For stabilization of muck dumping areas following measures of engineering and biological measures have been proposed

- Spreading of soil
- Application of fertilizers to facilitate vegetation growth over disposal sites.

Engineering Measures

- Wire crate wall
- ii) Boulder crate wall
- iii) R.C.C
- iv) Catch water Drain

Biological Measures

- Plantation of suitable tree species and soil binding species
- Plantation of ornamental plants
- Barbed wire fencing

Muck generally lacks nutrients and therefore, are difficult to re-vegetate. However, if no attempts to vegetate the slopes are made, the muck could slide lower down during rain and may eventually wash off the check dams also. Since, top soils are not available in large quantities in Himalayas; it may not be possible to apply a thin layer of soil over the muck. Bio-fertiliser technique developed by National Environmental Engineering Research Institute (NEERI) can be adopted in the proposed project. NHEP has successfully used this technique in Uri hydroelectric project. Similar approach can be utilized in the proposed project as well. In this process, the unused excavated material is piled and stacked with proper slopes at the designated muck disposal sites. The slopes are broken up by creating benches across them. This is done to provide stability to the slopes and also to provide ample space for planting of trees that would further help in holding and consolidating biotechnological approach. The traditional methods of afforestation of these areas would be supplemented with the use of fungus, i.e. Vesicular Arbuscular Mycorrhizae (VAM) and nitrogen fixing bacteria that form partnership with plant roots. These grow on plant roots and

STKHEP, HPPCL

6-4

6/11/07

Regional Forest Officer
Regional Forest Division
B/11/07

St. Manager (R&R)
Shri. J. S. Choudhary, HEP,
Distt. Engineer HEP, 17/11/07

provide water and nutrition especially phosphorus to plants at faster rate. The seeding of plants would be inoculated with VAM and nitrogen fixing bacteria before planting. It has been found that plants inoculated with bio-fertilizers grow at faster rate especially in the medium where the soil/rock is devoid of nutrients.

The afforestation with suitable plant species shall be done. About 1000-1200 trees/ha shall be planted. Major species recommended for plantation are listed in Table-1

TABLE-1

Species recommended for plantation over muck disposal site

Botanical Name	Local Name
Trees	
<i>Populus ciliata</i>	Popular
<i>Pinus roxburghii</i>	Chir
<i>Cedrus deodara</i>	Deodar
<i>Salix acutifolia</i>	Bhains
Shrubs	
<i>Artemisia nilgaurica</i>	Kunja
<i>Berberis aristata</i>	Kingor
<i>Berberis lyceum</i>	Kingor
<i>Rosa Moschata</i>	

STKHEP, HPPCL

6-5
Left Forest Division
Left Forest Division
2/Pro

Dr. Manoj (R&D)
SHORE ROAD, TOLDAM HEB,
HI
Dist. TOLDAM HEB, 172107

TABLE-1.0
Break-up of cost for stabilization of muck disposal sites

S. No.	Items	Cost (Rs. Lacks)
1.	Environmental Protections Construction of retaining structure (check dams / wire create) along river banks @ Rs. 5667.06/crate & 2744) Numbers of crates	155.50
2.	PCC cladding @ Rs. 4076.80/m ³ for 1291.3 m ³	52.64
3.	Preparation of muck disposal site@ Rs. 5.00 Lakh/ha for 5.225 ha	26.11
4.	Provision of 15 cm soil layer over an area 5.2225 ha @ Rs. 4.0 Lakhs /ha	20.89
5.		19.58
		33.45
	Total	274.72

TABLE-1.1

Cost of Afforestation over much disposal sites

S. No.	Particular	Area (ha)	Unit Rate (Rs/ha)	Amount (Rs.)
1.	Cost of afforestation including Cost of material	5.2225	39000	24,67,800.14
2.	2 nd year Maintenance (Refer Table-1.3)	5.2225	5490	92,148.75
3.	3 rd year Maintenance (Refer Table-1.4)	5.2225	4370	34,047.00
5.	4 th to 7 th year Maintenance (Refer Table-1.4)	5.2225		1,36,188.00
	Total			27,30,183.89
6.0	Contingencies (5% of Total Cost)			1,36,509.19
	Total			28,66,693.09
7.0	Departmental Charges @ 17.5%			4,77,782.18
	Grand Total			33,44,475.07

STKHEP, HPPCL

9-9
JH

St. Manager (G-43)
Shon...
Dist. Manager...
172107

TABLE-1.2
Plantation

S. No.	Activity	No.	Unit Rate (Rs.)	Total Cost (Rs.)
A	Planting			
1.	Digging of pits 45x45x45 cms	3000 Nos.	20	60,000.00
2.	Filling of pits 45x45x45 cms	3000 Nos.	5.66	16,980.00
3.	Planting of polythene bags plants	3000	4.55	13,650.00
4.	Construction of Inspection Path	600/mt	22.91/Rmt	13,746.00
5.	Cost of Sign Board carriage and Fixing	4 No.	4000/board	16,000.00
6.	Carriage of polythene bags over a distance of 500 m Up hill	3000	1 per plants / km	3000.00
7.	Cost of P bag Plants	3000 Nos	27.5 per plant	82,500.00
Total cost of Plantation				2,05,876.00
B	Survey and demarcation & Fencing			
1	Purchase of RCC/wooden fence post	500 Nos.	447.5 per post	2,23,750.00
2	Carriage of post fence over a distance of 2Km	500.	69.78	34,890.00
3	Preparation of Digging holes 20x30x50	3000	18.77	56,310.00
4	Cost of barbed wire	3.75qtl	7750.2 p/Qtl	29,063.25
5	Fixing of RCC Pole including shuttling	500	1491.70	74,58,50.0
6	Carriage of barbed wire over a distance of 2 Km	3.75Qtl	154.02	577.57
7	Stretching and fixing of barbed wire in 4 stands	6000	10 Rmt	60,000.0
Survey, demarcation & Fencing				11,50,440.57
Rate as per HP Forest CA rate (1100 plants / Pec.) at the wage rate of Rs312/- in HP				
Add Tribal increase				25%
Grand Total:-				16,95,396.03

St. J. Manager (R.D.P.)
Sho. J. Manager (R.D.P.)
Dist. J. Manager (R.D.P.)
R/D/As
District Forest Development
District Forest Officer

Dist. J. Manager (R.D.P.)
Sho. J. Manager (R.D.P.)
Dist. J. Manager (R.D.P.)
173107

Maintenance cost for 2nd year 25% mortality)

TABLE-1.3

S.No.	Activity	No.	Unit Rate (Rs.)	Total Cost (Rs.)
1	Digging of pits 45x45x45 cms	750 Nos.	20	15000.00
2	Filling of pits 45x45x45 cms	750 Nos.	5.66	4,245.00
3	Planting of polythene bags plants	750	4.55	3,412.50
4	Construction of Inspection Path	150/mt	22.91/Rmt	3436.50
5	Carriage of polythene bags over a distance of 500 m Up hill plants over a distance of 2 km up	750	1 per plants / km	750.00
6	Cost of P bag Plants	750 Nos.	27.5 per plant	20,625.00
7	Nursery cost of plants	750 Nos.	20 per plants	20,625.00
8	Repair of fence	1500 RMT.	3.75 per Rmt	5,625.00
Total cost of Plantation				73,719.00
Add Tribal increase 25%				18,429.75
Total				92,148.75

ST. MANAGER (P-97)
 SHRI. MANAGER (P-97)
 DIST. MANAGER (P-97), 172107

ST. MANAGER (P-97)
 SHRI. MANAGER (P-97)
 DIST. MANAGER (P-97), 172107

S.No.	Activity	No.	Unit Rate (Rs.)	Total Cost (Rs.)
1	Digging of pits 45x45x45 cms	300 Nos.	20	6000.00
2	Filling of pits 45x45x45 cms	300 Nos.	5.66	1698.00
3	Planting of polythene bags plants	300	4.55	1365.00
4	Construction of Inspection Path	60/mt	22.91/Rmt	1374.6
5	Carriage of polythene bags over a distance of 500 m Up hill plants over a distance of 2 km up	300	1 per plants / km	300.00
6	Cost of P bag Plants	300 Nos.	27.5 per plant	8,250.00
7	Nursery cost of plants	300 Nos.	20 per plants	18,987.60
8	Repair of fence	600 RMT.	3.75 per Rmt	2,250.0
Total				27,237.6
Add Tribal increase 25%				6809.40
Total				34,047.00
For further 4 years (i.e. 4 th to 7 th Year) of maintenance @ 10% mortality (34047x4)				1,36,188.00

Maintenance cost for 3rd, 4th to 7th year 10% mortality)

TABLE-1.4

ABSTRACT OF COST

Name of work:- Estimate for protection works of additional dumping site adjoining to dumping site 3 upstream of Shongtong bridge right bank.

Sr. No.	Item code No.	Description of items	qty.	Rate	Unit	Amount	Remarks
1	1131020000	wire crate of G.I wire filled with bouldars with square cut faces against the wire. (wire crates to be measured and paid for separately)	5664.06	2080.00	M ³	11781250.00	Rates are as per BOQ rates of M/s PEL
2	09120200	Providing & laying cement concrete work 1:2:4 (1 cement : 2 Sand: 4 graded stone aggregate 20 mm nominal size) and curing complete (Cladding works)	722.50	4076.80	M ³	2945488.00	
Total=						14726738.00	

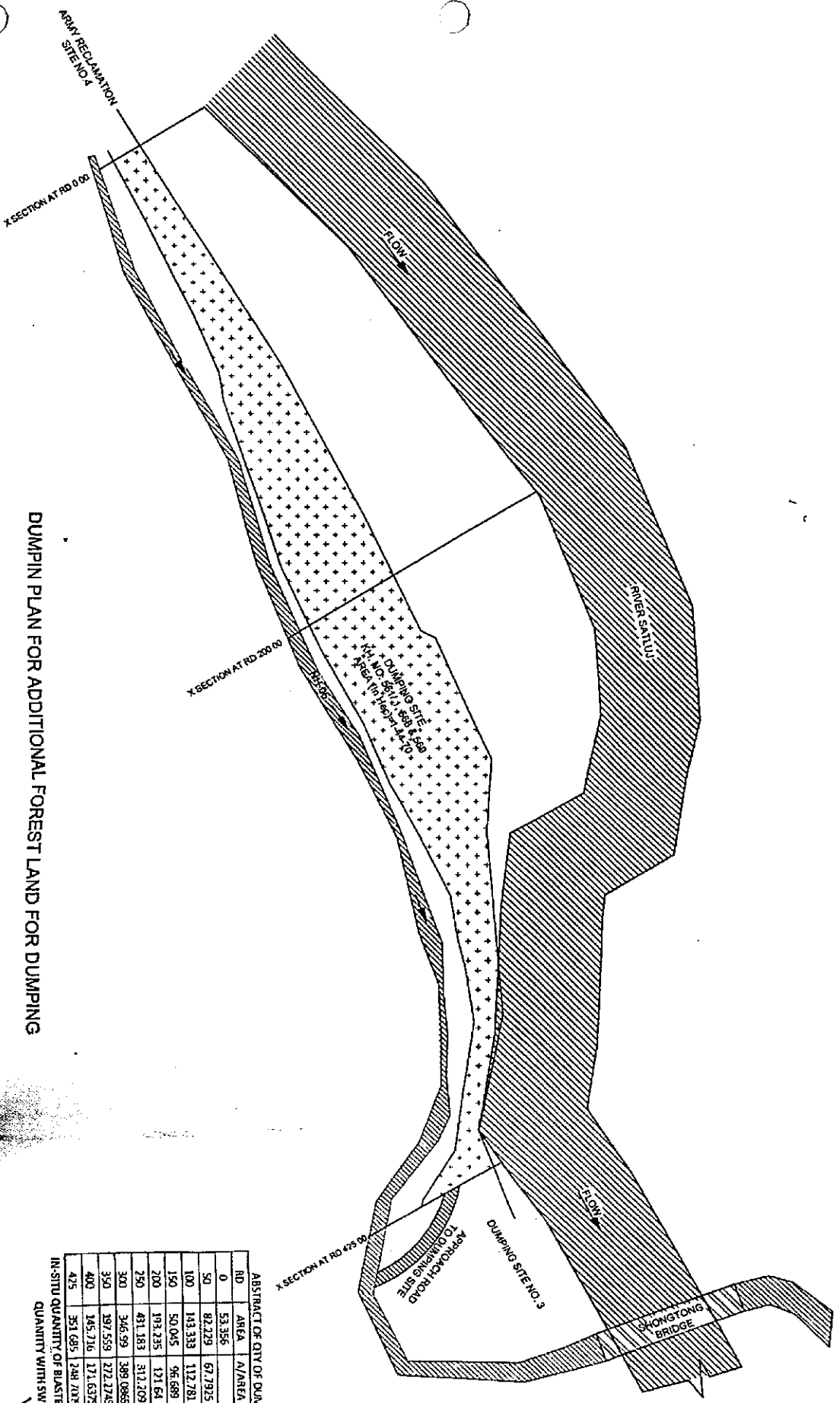
Divisional Forest Officer
 Kinnaur Forest Division
 R/Peo

St. Manager (R/Peo)
 Sd/-
 17210

Sr.	No.	Description of items	No.	L	B	H	Qty
1		Wire crate of G.I wire filled with boulders with square cut faces against the wire.(wire crates to be measured and paid for separately)					
		R.D 0.00 to 50.00mtr					
		5 Rows (50/1.25 = 40x5= 200)	200.00	2.50	1.25	1.25	781.25
		1 Rows (50/2.5 = 20x1 =20)	20.00	2.50	1.25	1.25	78.13
		RD 50.00 to 150 (3 Row) 100/1.25x3 = 240	240.00	2.50	1.25	1.25	937.50
		RD 150.00 to 425 (4 Row) 275/1.25x4 = 880	880.00	2.50	1.25	1.25	3437.50
		1 Row 275 /2.5 = 110	110.00	2.50	1.25	1.25	429.69
		Total					5664.06
2		Providing & laying cement concrete work 1:2:4 (1 cement : 2 Sand: 4 graded stone aggregate 20 mm nominal size) and curing complete :-					
		(R.D 0 00 to 425 00mtr)	1 00	425 00	2 50	0 30	3 18 75
		Bottom					
		Front	3.00	425 00	1.25	0.20	318.75
		Top	2.00	425 00	0.50	0.20	85.00
		Total					722.50

Divisional Forest Officer
Kjinnau Forest Division
R/Peo

HIMACHAL PRADESH POWER CORPORATION LIMITED
SHONG TONG KARCHAM HEP (450MW)



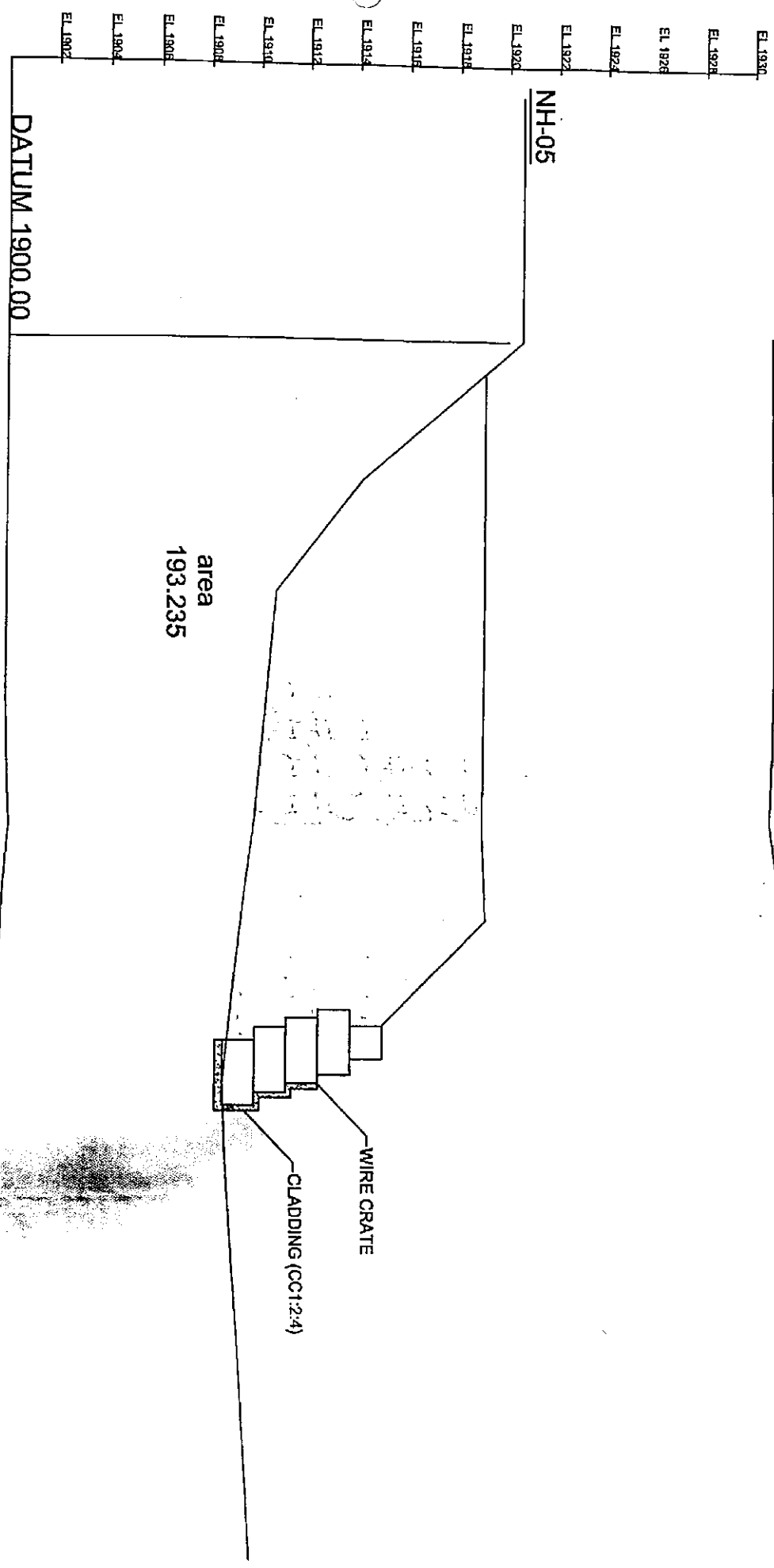
DUMPIN PLAN FOR ADDITIONAL FOREST LAND FOR DUMPING

RD	AREA	N/AREA	DISTANCE	QTY
0	53.356	67.7915	50	3393.625
50	82.229	112.781	50	5639.05
100	143.333	171.64	50	8881.875
150	50.045	96.689	50	4834.45
200	193.235	312.209	50	15610.45
250	481.183	389.085	50	19454.325
300	346.99	272.2745	50	13613.725
350	197.559	121.64	50	6082
400	145.716	121.6375	50	6081.875
425	351.685	248.7075	25	6717.5725

IN-SITU QUANTITY OF BLASTED MATERIAL 83423.0125
 QUANTITY WITH SWELL FACTOR 50653.8 cum

St. Manoj (R&P)
 Divisional Forest Officer
 Kinnaur Forest Division
 P.O. No. 17210

HPCL SHONG TONG KARCHAM HEP (450MW)
ADDL. DUMPING SITE ADJOINING TO DUMPING SITE NO-3

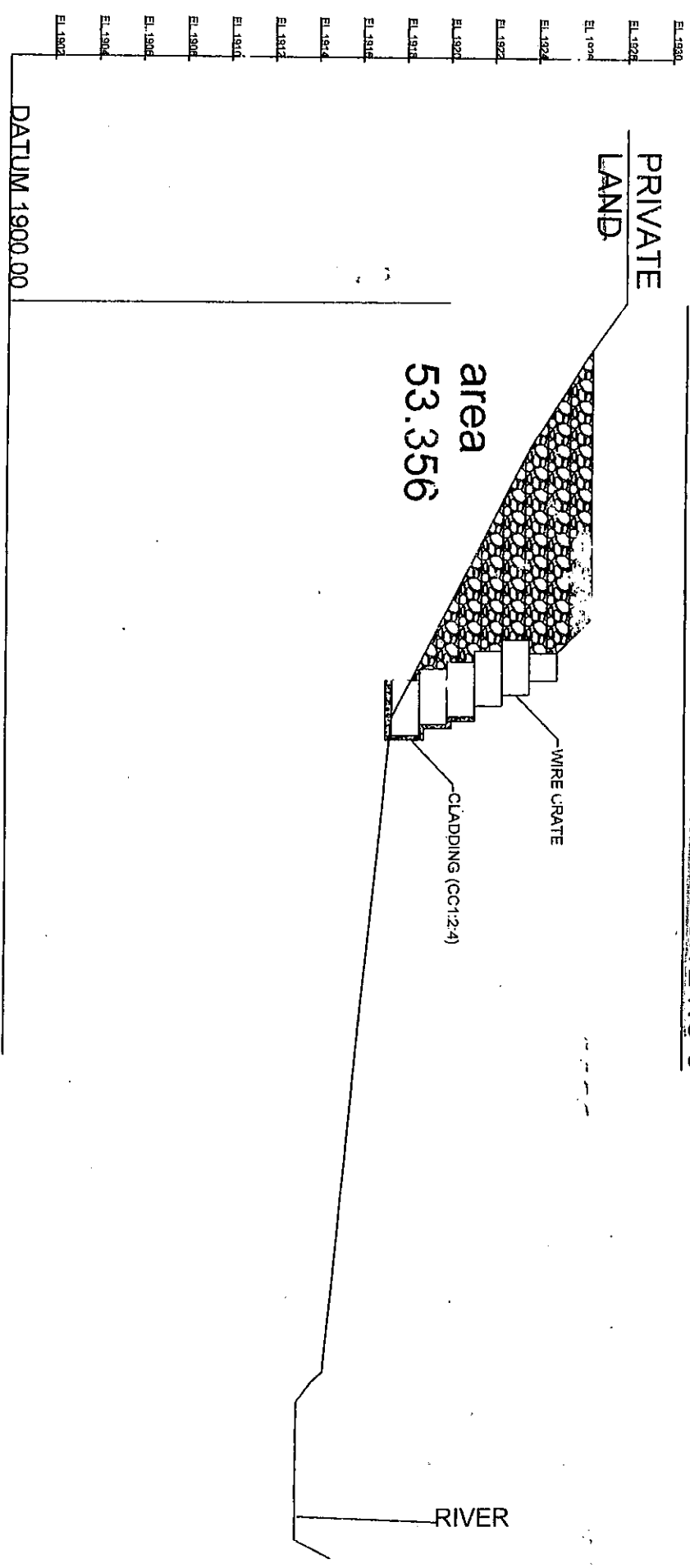


TYPICAL SECTION SHOWING RETAINING STRUCTURES

6/1
 Regional Forest Officer
 Kinnaur Forest Divisional

St. Manager (R & R)
 Shongtong Karcham HEP
 Kinnaur Forest Division
 Dist. Kinnaur H.P., 17210

HPCL SHONG TONG KARCHAM HEP (450MW) ADJL.
DUMPING SITE ADJOINING TO DUMPING SITE NO-3

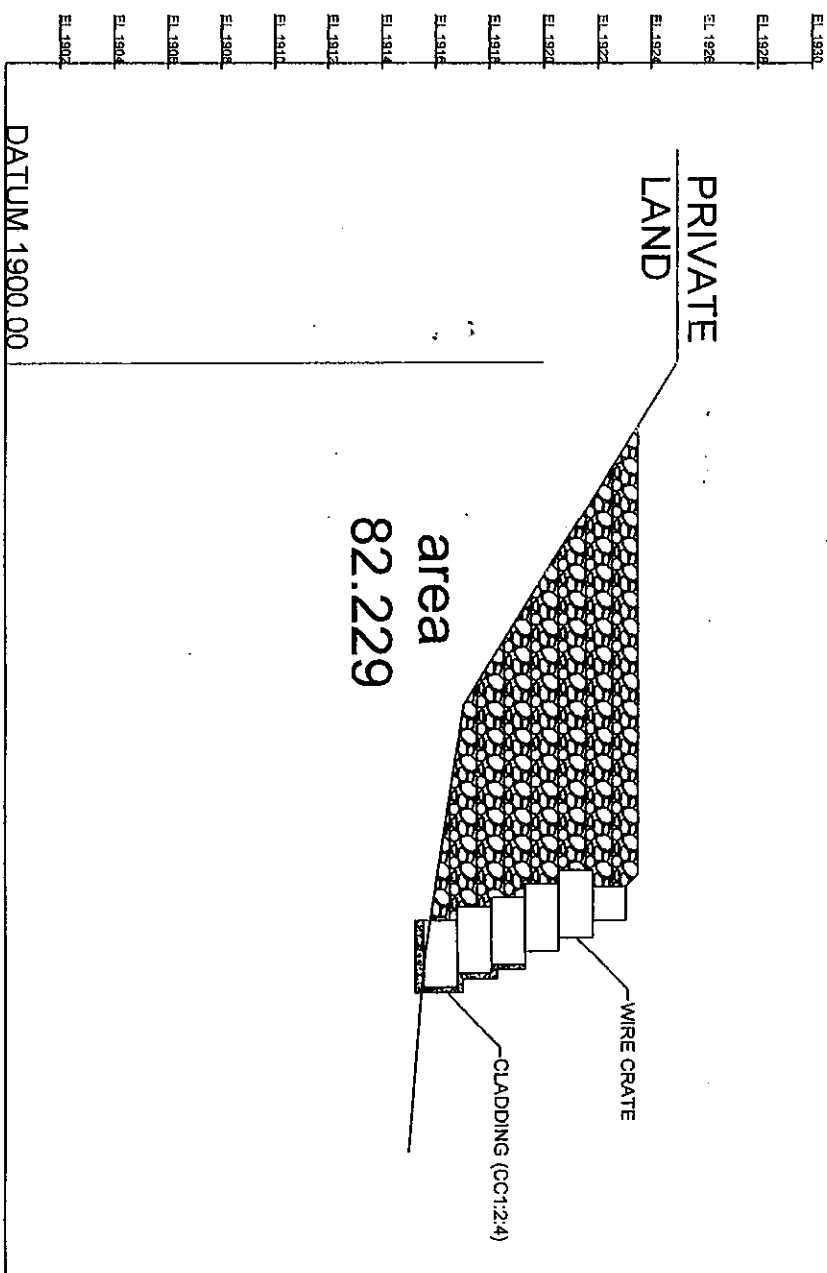


X-SECTION AT RD 0.00

By hand
Divisional Forest Officer
Kinnaur Forest Divisional

Sr. Manager (R&R)
Shong Tong Karcham HEP
Jalakong-Poo,
Distt. Kinnaur H.P., 17210

**HPCL SHONG TONG KARCHAM HEP (450MW) ADDL.
DUMPING SITE ADJOINING TO DUMPING SITE NO-3**

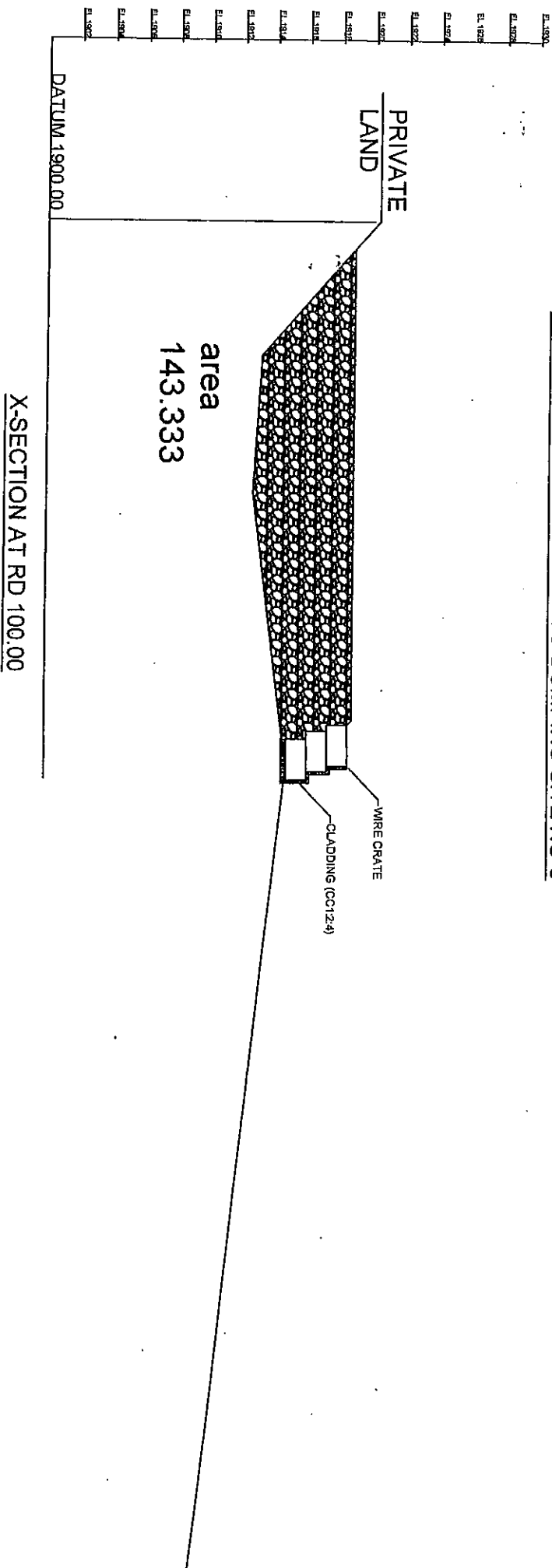


X-SECTION AT RD 50.00

Uy
Divisional Forest Officer
Kinnaur Forest Divisional

Sr. Manager (R&R)
Shong-tong-Karcham HEP,
HP
Distt. Kinnaur H.P., 172107

HPCL SHONG TONG KARCHAM HEP (450MM) ADDL.
DUMPING SITE ADJOINING TO DUMPING SITE NO-3

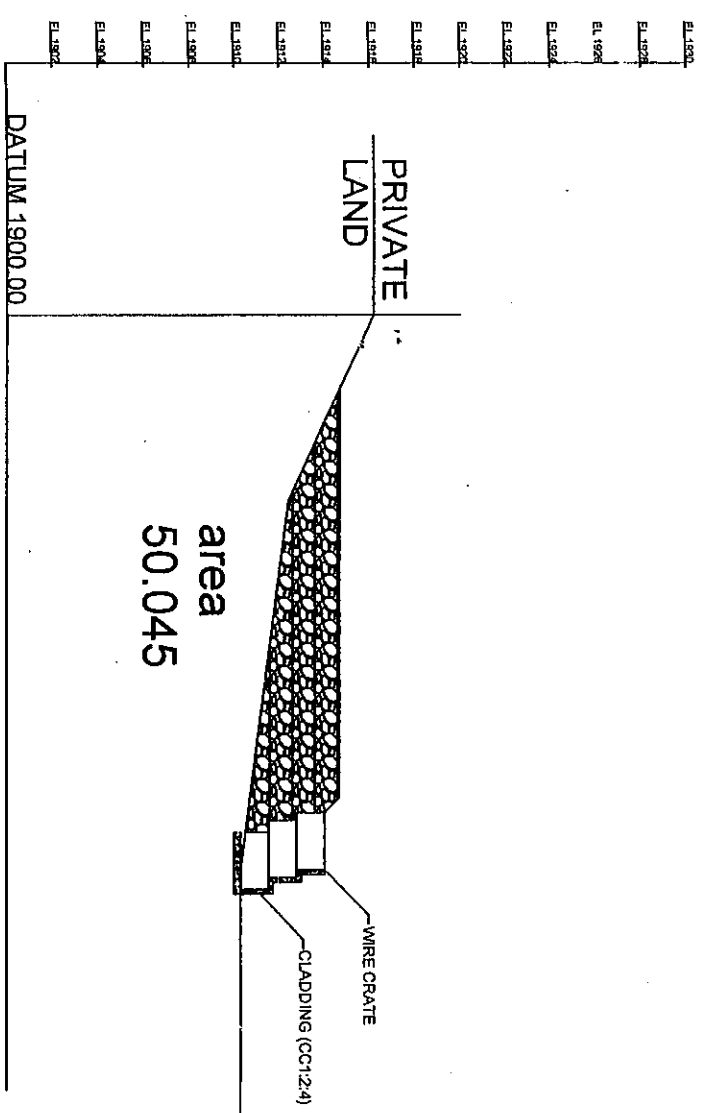


X-SECTION AT RD 100.00

By W. Pao
Divisional Forest Officer
Kinnaur Forest Divisional
R. Pao

[Signature]
Sr. Manager (R&R)
Shongtong-Karcham HE
HP
Distt. Kinnaur H.P., 1721

HPPCL SHONG TONG KARCHAM HEP (450MW) ADDL.
DUMPING SITE ADJOINING TO DUMPING SITE NO-3

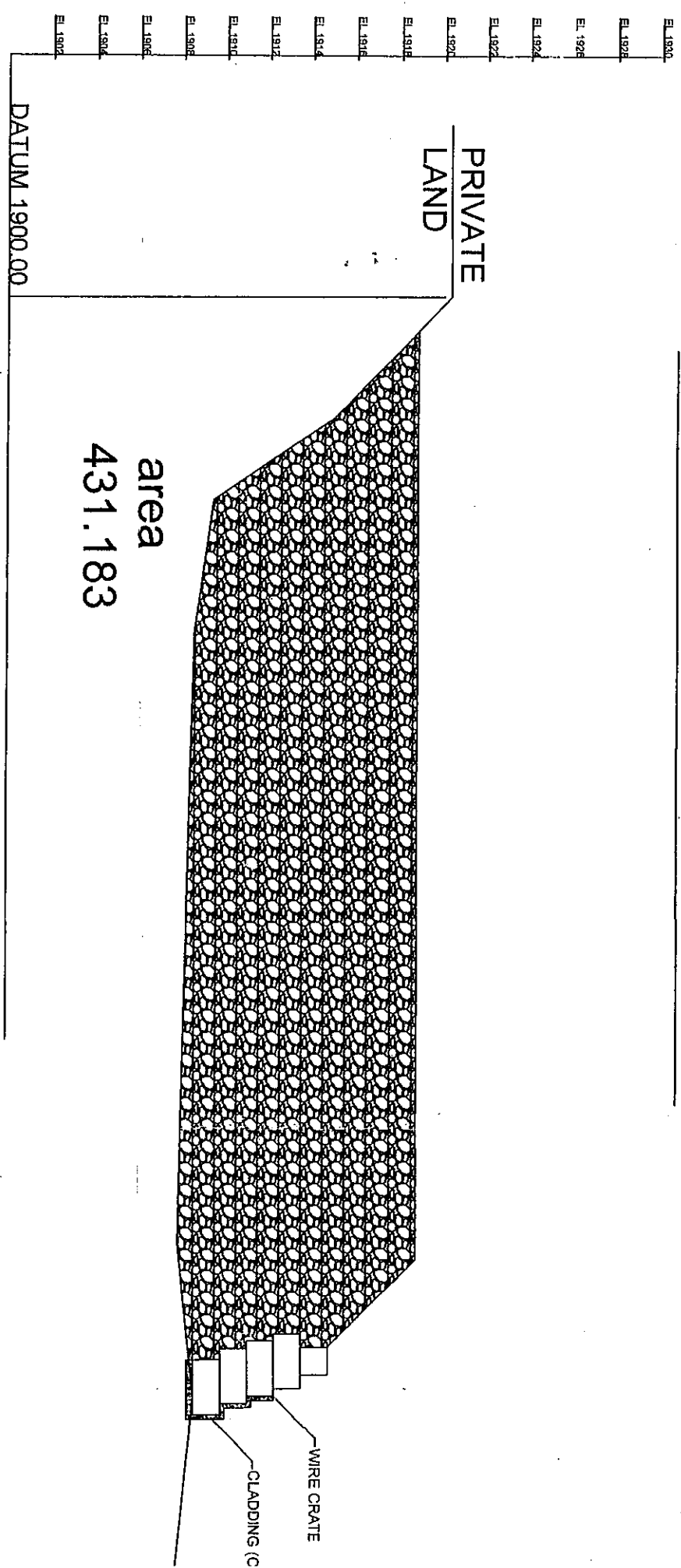


X-SECTION AT RD 150.00

by hand
 Divisional Forest Officer
 Kinnaur Forest Division
 R Pw

[Signature]
 Sr. Manager (R&R)
 Shongtong Karcham HEP,
 H.P. Jaskong-Peo,
 Dist. Kinnaur H.P., 172107

HPCL SHONG TONG KARCHAM HEP (450MW) ADDL.
DUMPING SITE ADJOINING TO DUMPING SITE NO-3

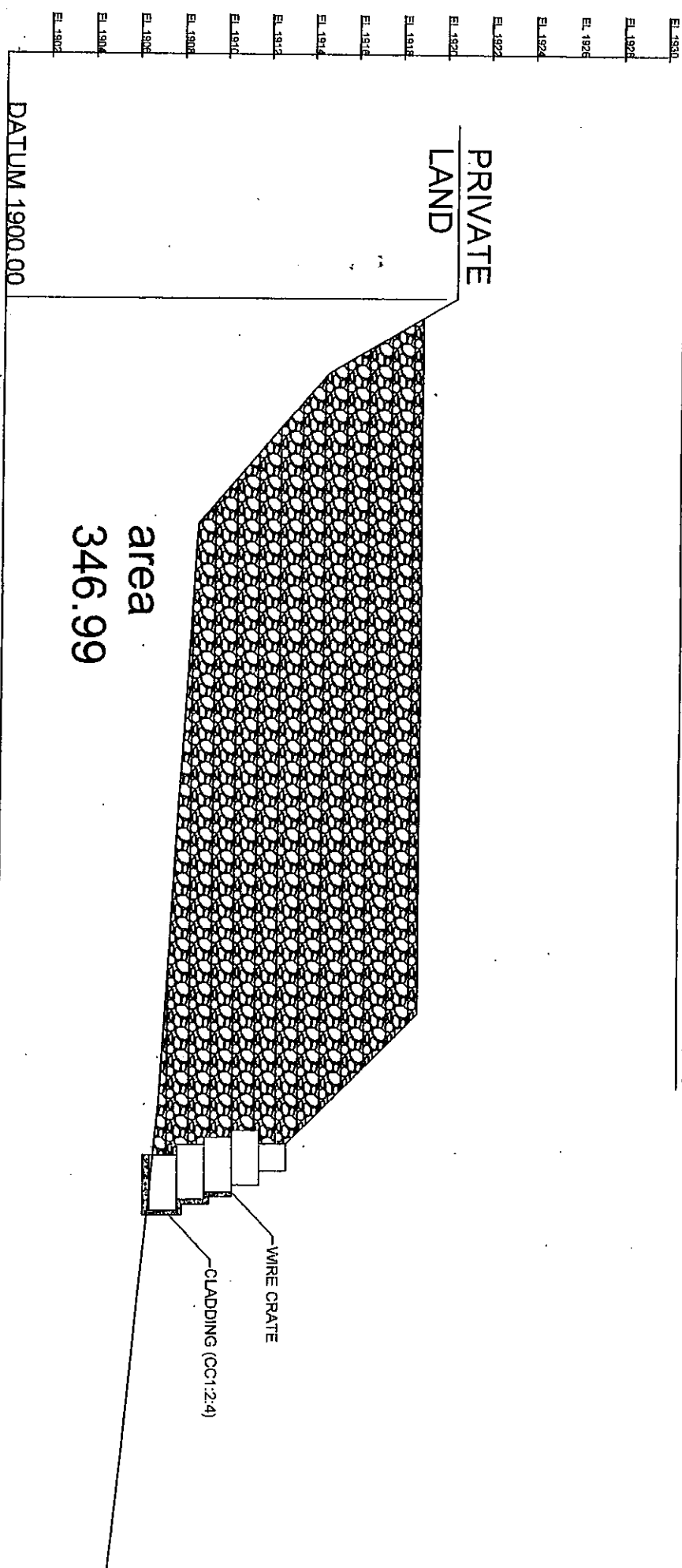


X-SECTION AT RD 250.00

S/S
Divisional Forest Officer
Kinnaur Forest Division
R/Deo

S
St. Manager (R&R)
Shong Tong Karcham HEP
Kinnaur Forest Division
Dist. Nainital H.P., 172

HPCL SHONG TONG KARCHAM HEP (450MW) ADDL.
DUMPING SITE ADJOINING TO DUMPING SITE NO-3

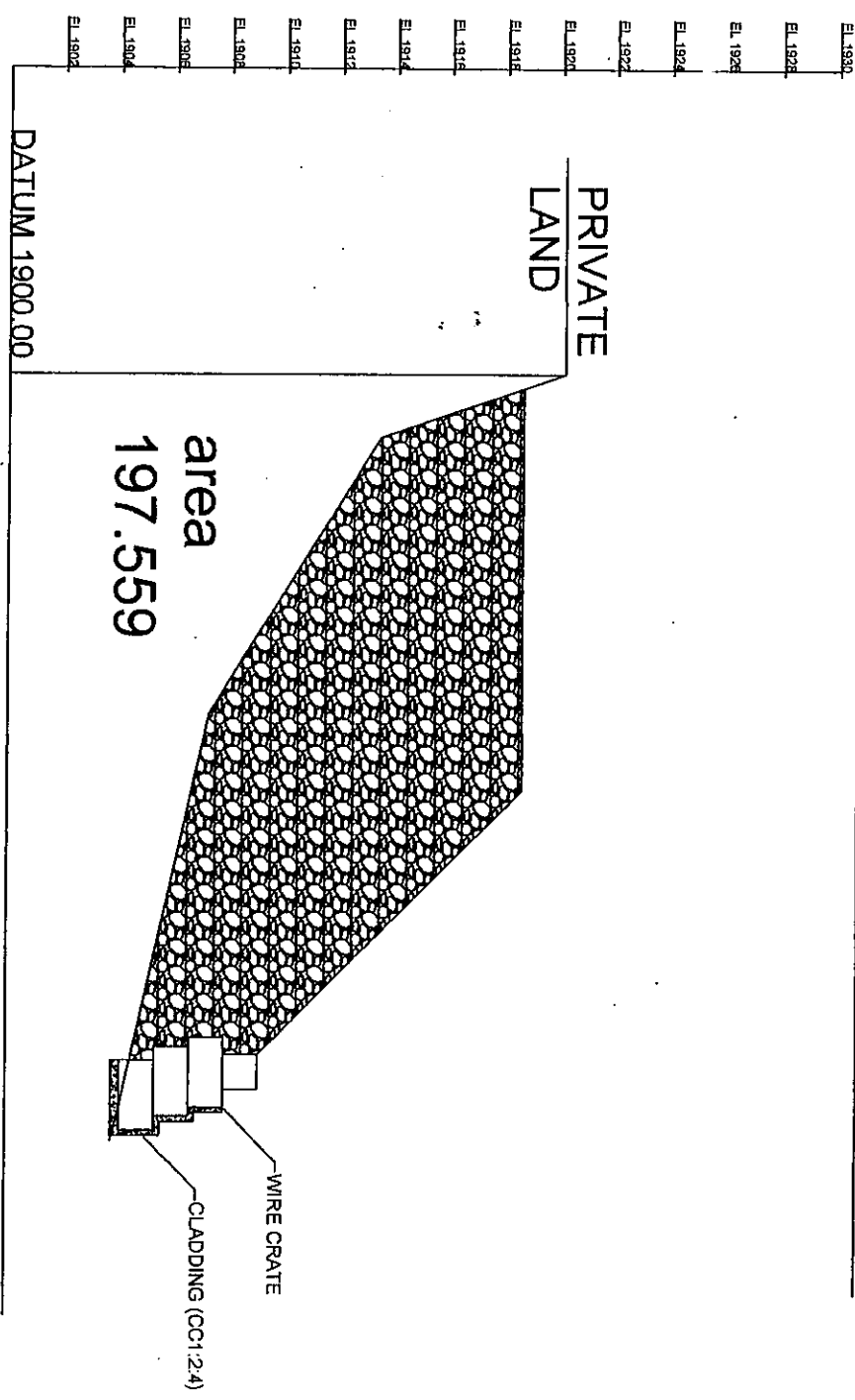


X-SECTION AT RD 300.00

By
Divisional Forest Officer
Kinnairt Forest Divisional

[Signature]
St. Manager (R&R)
Shong Tong Karcham HEP
Kinnairt Forest Divisional
Dist. Kinnairt H.P., 172107

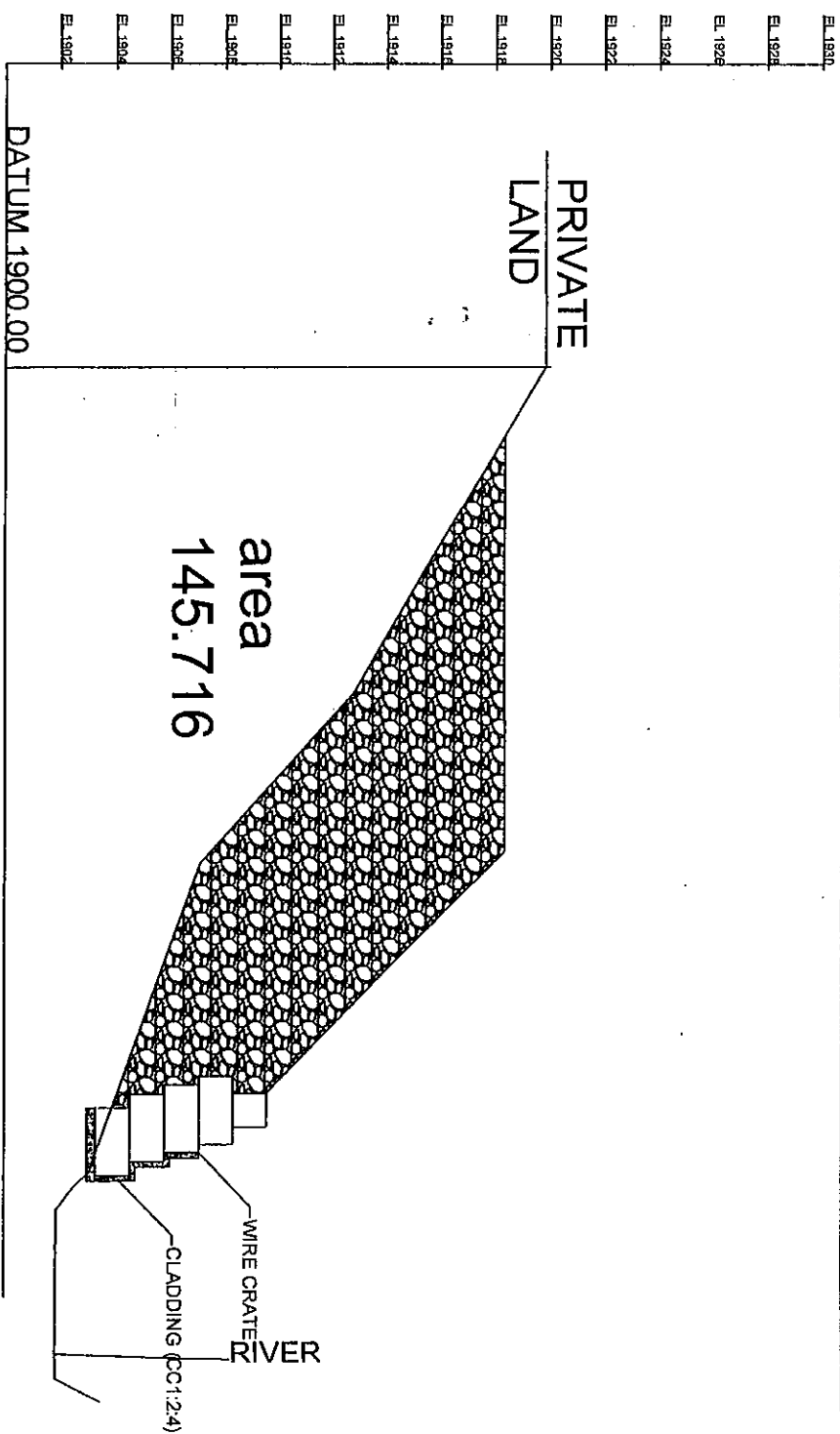
HPCL SHONG TONG KARCHAM HEP (450MW) ADDL.
DUMPING SITE ADJOINING TO DUMPING SITE NO-3



X-SECTION AT RD.350.00

By *Winn*
Divisional Forest Officer
Kinnar Forest Division
R. P. 100

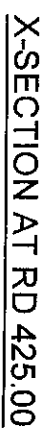
Sr. Manager (R & R)
Shong Tong Karcham HEP
R. P. 100
Dkt. Number H.E.P., 17210



X-SECTION AT RD 400.00

Divisional Forest Officer
Mingun Forest Division
Rangoon

Sr. Lecturer (C-20)
Electrical Engineering
Department of Electrical Engineering
Durham University



243 Wmmd
Divisional Forest Officer
Kinnaird Forest Division
R/Pen

ST. LOUIS
SEP 10 1967
H. H. H.
D. H. H.

ABSTRACT OF COST

Name of work:- Estimate for protection works of additional dumping site at Tangling near Adit-1 (L/bank of River Satluj)

Sr. No.	Item code No.	Description of Items	Qty.	Rate	Unit	Amount	Remarks
1	1131020000	wire crate of G.I wire filled with boulders with square cut faces against the wire (wire crates to be measured and paid for separately)	2343.75	2080.00	M ³	4875000.00	Rates are as per BOQ rates of M/s PEL
2	09120200	Providing & laying cement concrete work 1:2:4 (1 cement : 2 Sand: 4 graded stone aggregate 20 mm nominal size) and curing complete (Cladding works)	288.00	4076.80	M ³	1174118.40	
					Total=	6049118.40	
					Say	6049118.00	

U. W. Bhandari
 Divisional Forest Officer
 Khamaur Forest Division
 R/Peo

[Signature]
 St. Manager (R&R)
 Shorah, Kachikam HEP,
 H.P. Kang-Peo,
 Dist. Jammu H.P., 172107

DETAIL OF QUANTITY

Name of work:-Estimate for protection works of additional dumping site at Tangling near Adit-1 (L/bank of River Satlu)
--

Sr. No.	Description of items	No.	L (m)	B (m)	H (m)	Qty. (Cum)
1	Wire crate of G.I wire filled with boulders with square cut faces against the wire (wire crates to be measured and paid for separately)					
	R.D 0.00 to 60.00mtr					
	1 Row (60/1.25 = 48x1 = 48)	48.00	2.50	1.25	1.25	187.50
	3 Rows (60/2.5 = 24x3 = 72)	72.00	2.50	1.25	1.25	281.25
	R.D 90.00 to 170.00mtr					
	1 Row (80/1.25 = 64x1 = 64)	64.00	2.50	1.25	1.25	250.00
	3 Rows (80/2.5 = 32x3 = 96)	96.00	2.50	1.25	1.25	375.00
	R.D 220.00 to 380.00mtr					
	1 Row (160/1.25 = 128x1 = 128)	128.00	2.50	1.25	1.25	500.00
	3 Rows (160/2.5 = 64x3 = 192)	192.00	2.50	1.25	1.25	750.00
2	Providing & laying cement concrete work 1:2:4 (1 mm nominal size) and curing complete					
	Bottom (R.D 1.00	160.00	2.50	0.30		120.00
	220.00 to 380.00mtr)					
	Front (R.D 220.00 to 380.00mtr)	3.00	160.00	1.25	0.20	120.00
	Top (R.D 220.00 to 380.00mtr)	3.00	160.00	0.50	0.20	48.00
						288.00
					Total	2343.75

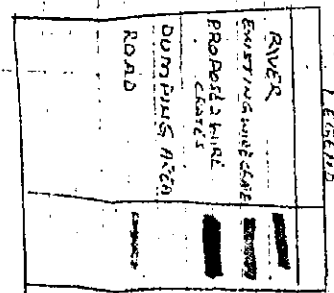
Divisional Forest Officer
Kyanmaw Forest Division
R/Peo

St. Manager (R&R)
Shooting and Archery HEP,
Hong-Kong-Teo,
District Manager H.P., 172107

Name of work:-Estimate for protection works of additional dumping site at Tangling near Adit-1 (L/bank of River Sattu)						
Sr. No.	Description of items	RD (M)	Area (M ²)	Mean area (M ²)	Length (M)	Qty (M ³)
1	Filling of muck in additional dumping site at Tangling near Adit-1 (L/bank of River Sattu)	0.00	90.032	0.00	0.00	0.00
		40.00	62.707	76.37	40.00	3054.78
		60.00	53.160	57.93	20.00	1158.67
		90.00	33.970	0.00	0.00	0.00
		130.00	23.042	28.51	40.00	1140.24
		170.00	9.050	16.05	40.00	641.84
		220.00	16.050	0.00	0.00	0.00
		260.00	98.420	57.24	40.00	2289.40
		300.00	100.279	99.35	40.00	3973.98
		340.00	70.260	85.27	40.00	3410.78
		380.00	71.260	70.76	40.00	2830.40
					Total	18500.09
						13320.06
						Swell factor @ .72 = 18500.09 x .72
						13320.06
						Say
						13320.00

S. Manoj
 Divisional Forest Officer
 Kinnairt Forest Division
 R/Pao

S. Manoj
 Sr. Manager (R&R)
 Shongthong-Hardham HEP,
 HEP, Shongthong-Hardham HEP,
 Dist. Mandalay H.P., 172107



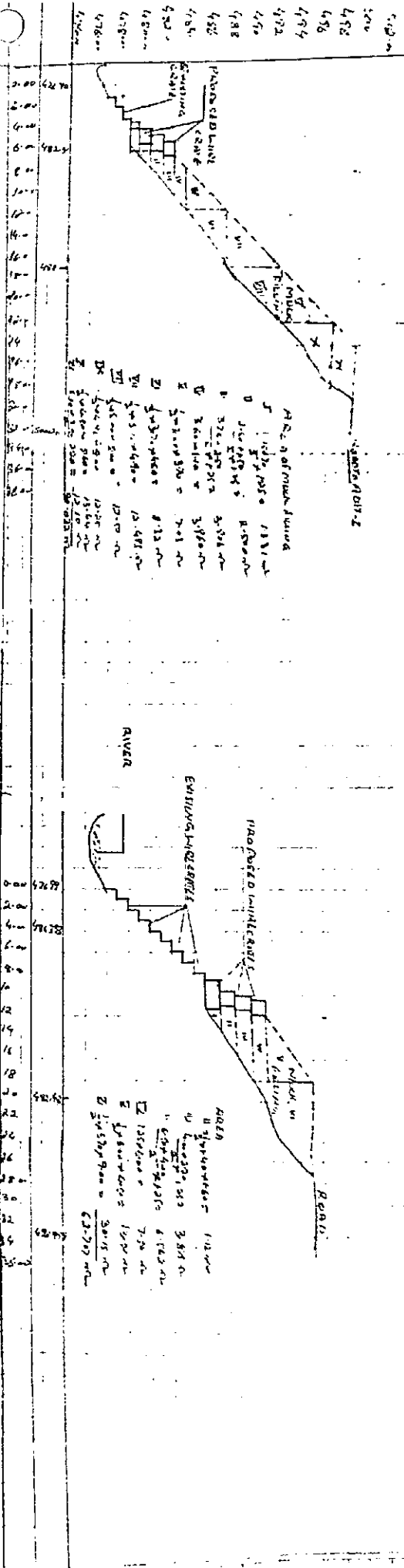
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R/P 20

X-SECTION AT RD. 6000

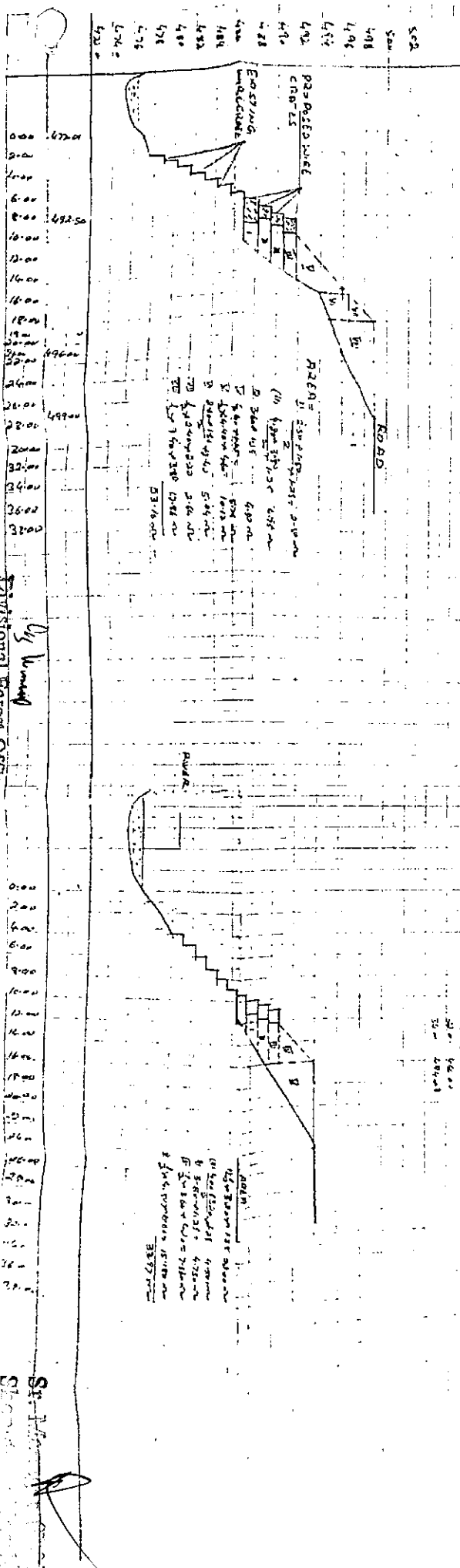
X-SECTION AT RD. 6000

SCALE 1:200



X-SECTION AT RD. 6000

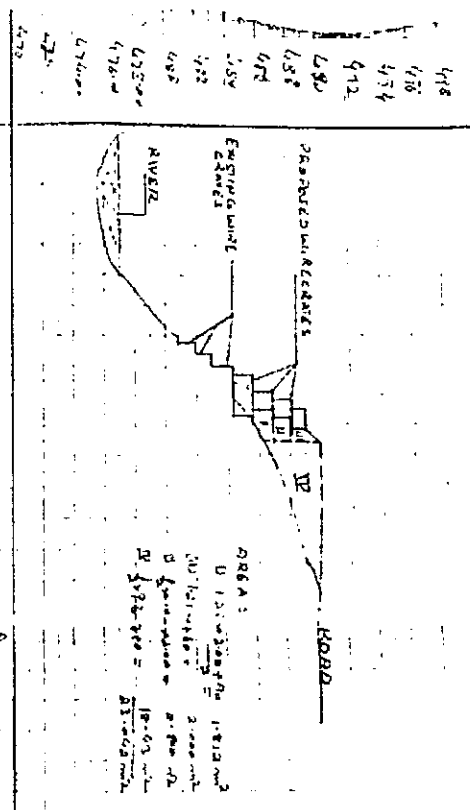
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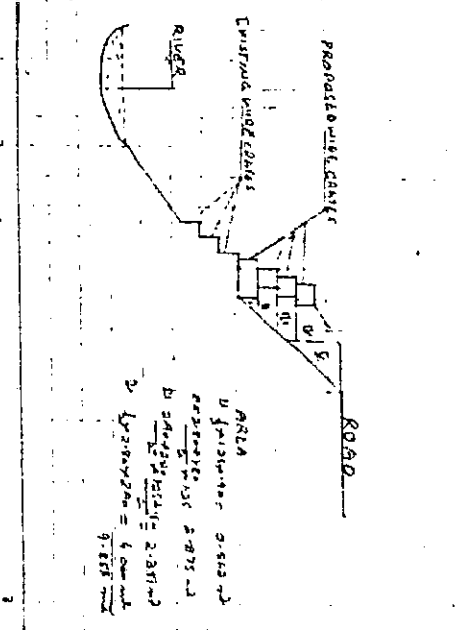
By hand
Divisional Forest Officer
Kinnaird Forest Division

Sr. Insp.
Divisional Forest Officer
Kinnaird Forest Division
7210

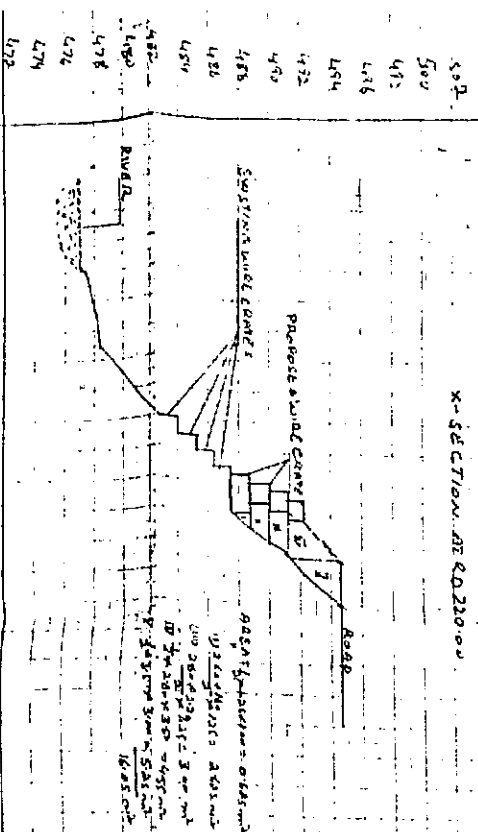
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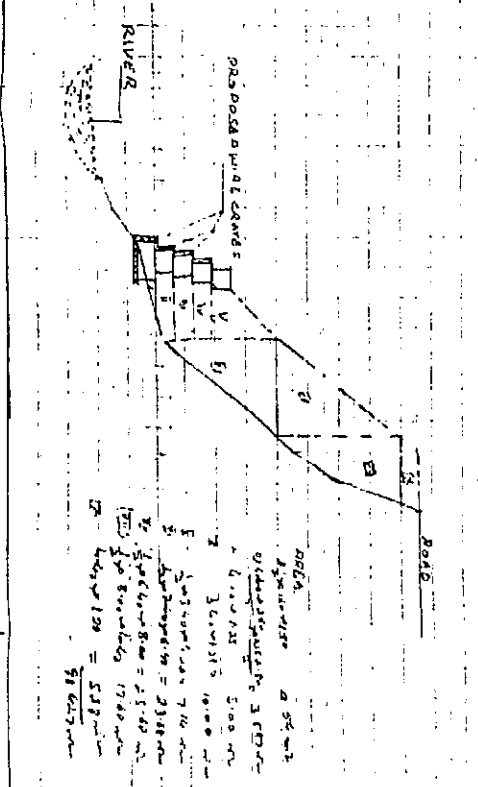
X-SECTION AT RD 170.00



X-SECTION AT RD 220.00



X-SECTION AT RD 260.00



Divisional Forest Officer
Kinnaird Forest Divisional

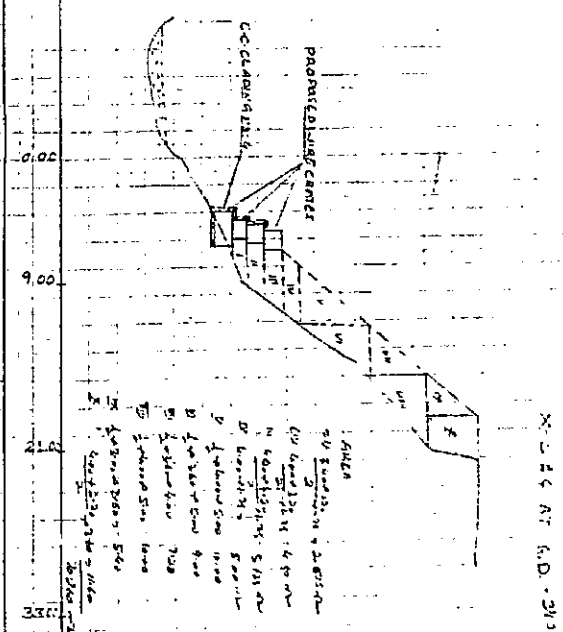
R/P/O

St. J. ...

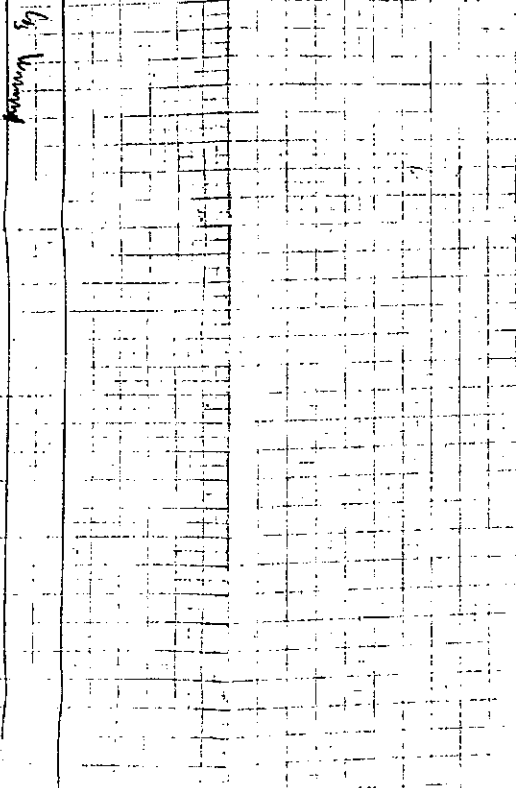
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172107



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Divisional Forest Officer
Kinnaur Forest Division

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ABSTRACT OF COST

Name of work:- Estimate for protection works of additional dumping site near Adit-2.

Sr. No.	Item code No.	Description of items	Qty.	Rate	Unit	Amount	Remarks
1	1131020000	wire crate of G.I wire filled with boulders with square cut faces against the wire. (wire crates to be measured and paid for separately)	2683.59	2080.00	M ³	5581873.44	Rates are as per BOQ rates of M/s PEL
2	09120200	Providing & laying cement concrete work 1:2:4 (1 cement : 2 Sand: 4 graded stone aggregate 20 mm nominal size) and curing complete (Cladding works)	280.80	4076.80	M ³	1144765.44	
Total=						6726638.88	

Sy. M. M. M.
 Divisional Forest Officer
 Kinnaur Forest Divisional
 D/Pao

Sy. M. M. M.
 Sr. Manager (R&R)
 Shongtong-Karchham HEP,
 HP Kang-Pao,
 Dist. Kinnaur H.P., 172107

DETAIL OF QUANTITY

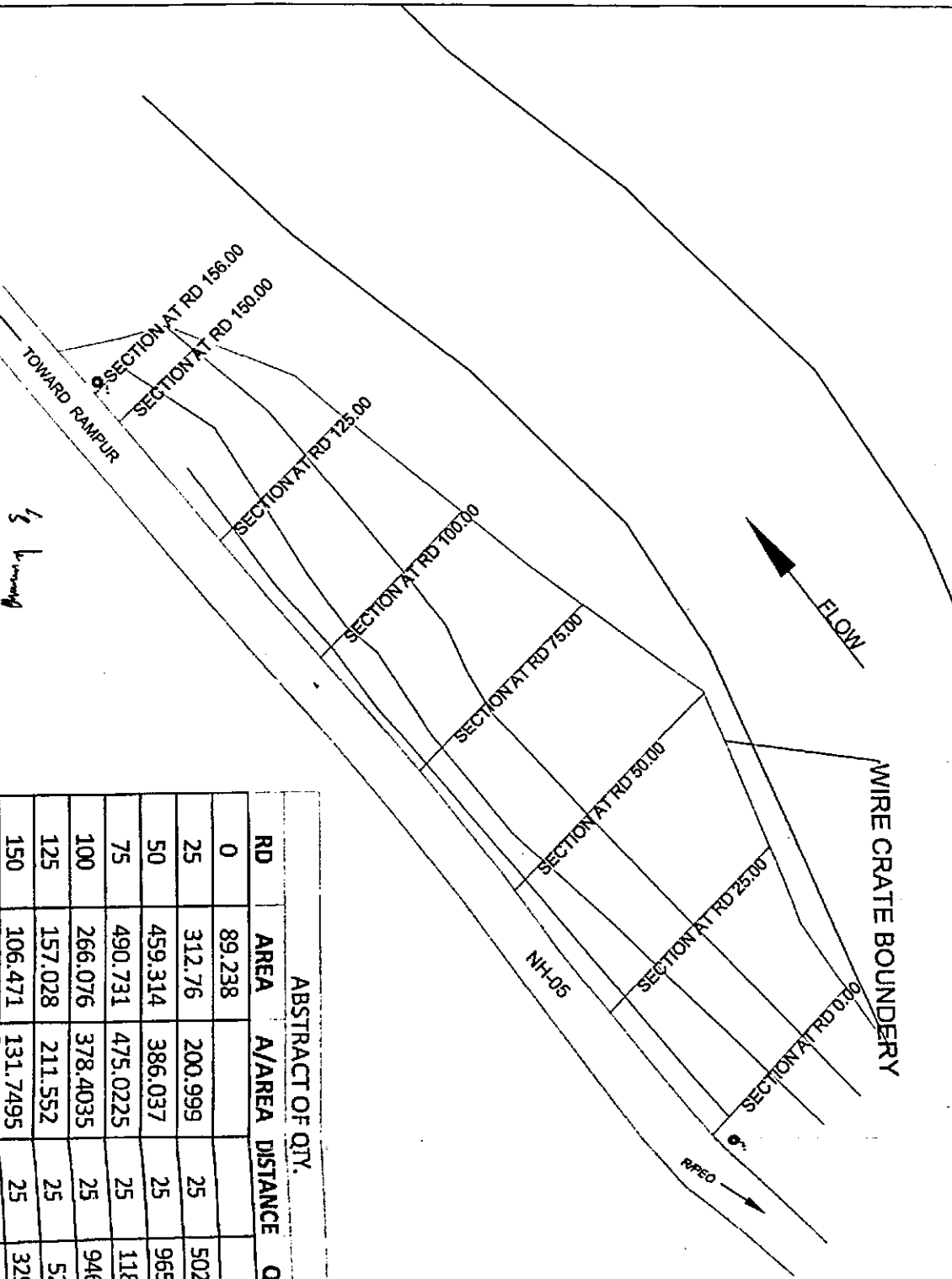
Name of work:-Estimate for protection works of additional dumping site near Adit-2.

Sr. No.	Description of items	No.	L(m)	B(m)	H(m)	Qty (cum)
1	Wire crate of G.I wire filled with boulders with square cut faces against the wire.(wire crates to be measured and paid for separately)					
	R.D 0.00 to 156.00mtr					
	5 Rows (156/1.25 = 125x5= 625)	625.00	2.50	1.25	1.25	2441.41
	1 Rows (156/2.5 = 62)	62.00	2.50	1.25	1.25	242.19
	Total					2683.59
2	Providing & laying cement concrete work 1:2:4 (1 cement : 2 Sand: 4 graded stone aggregate 20 mm nominal size) and curing complete : -					
	(R.D 0.00 to 156.00mtr)	1.00	156.00	2.50	0.30	117.00
	Bottom					
	Front	3.00	156.00	1.25	0.20	117.00
	Top	3.00	156.00	0.50	0.20	46.80
	Total					280.80

Sr. Manager (R&R)
Shonkong-Karcham HEP,
HP, Keng-Peo,
Distt. Khammouang H.P., 172107

Divisional Forest Officer
Khammouang Forest Division
R/Pao

HPCL SHONGTONG KARCHAM HEP (450 MW) ADDL. DUMPING SITE NEAR ADIT-2



ABSTRACT OF QTY.

RD	AREA	A/AREA	DISTANCE	QTY.
0	89.238			
25	312.76	200.999	25	5024.975
50	459.314	386.037	25	9650.925
75	490.731	475.0225	25	11875.56
100	266.076	378.4035	25	9460.088
125	157.028	211.552	25	5288.8
150	106.471	131.7495	25	3293.738
156	119.25	112.8605	6	677.163

TOTAL

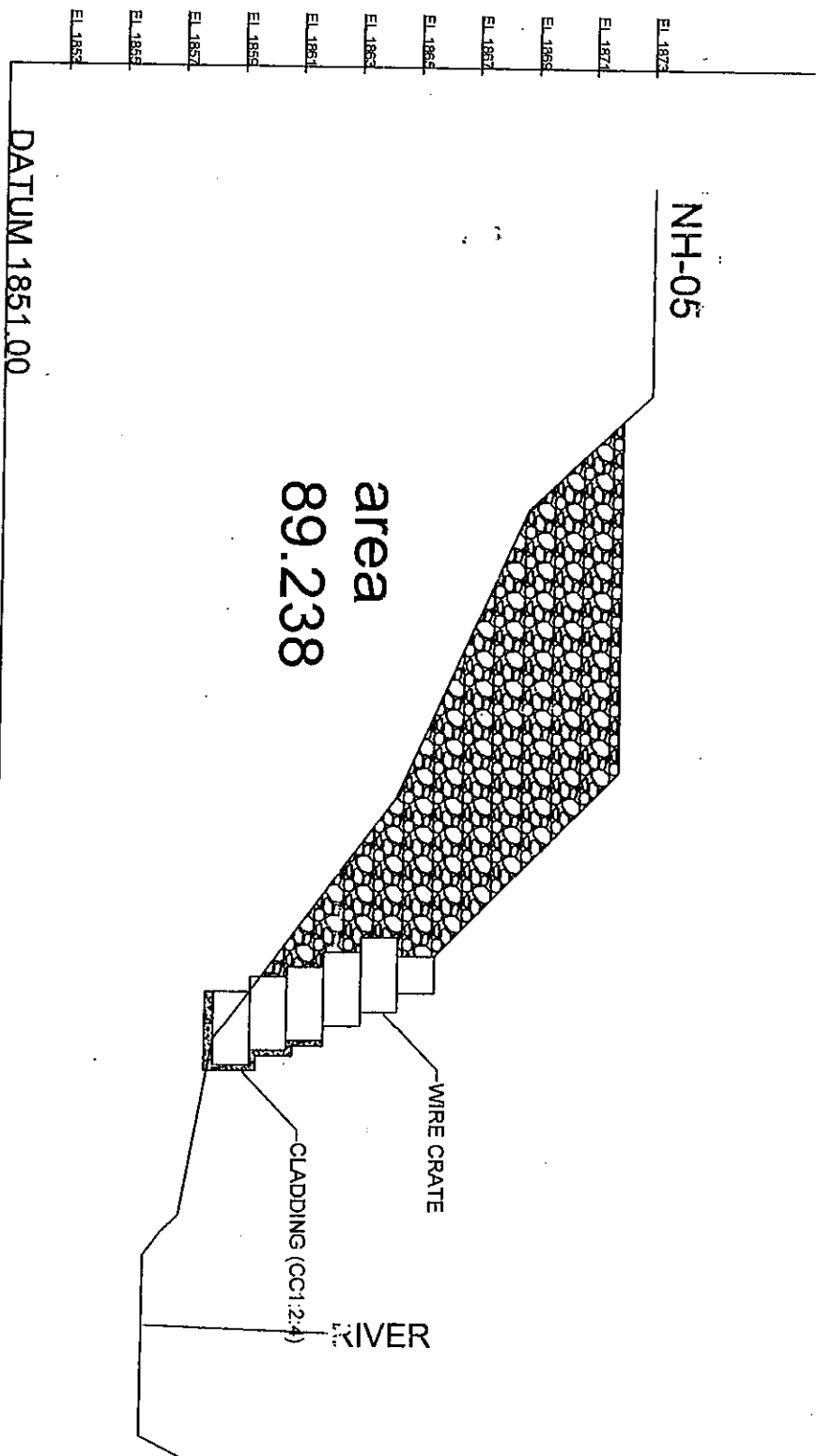
45271.25

CONSIDERING SWELL FACTOR @ 7% =

32595.3

St. Manager (R&R)
Shongtong-Karcham H
Distt. Kinnaur H.P., 172

HPCL SHONG TONG KARCHAM HEP (450MW) ADDL.
DUMPING SITE NEAR ADIT-2



X-SECTION AT RD 0.00

Sy. Kung

Divisional Forest Officer

Kinnaur Forest Division

R/Po

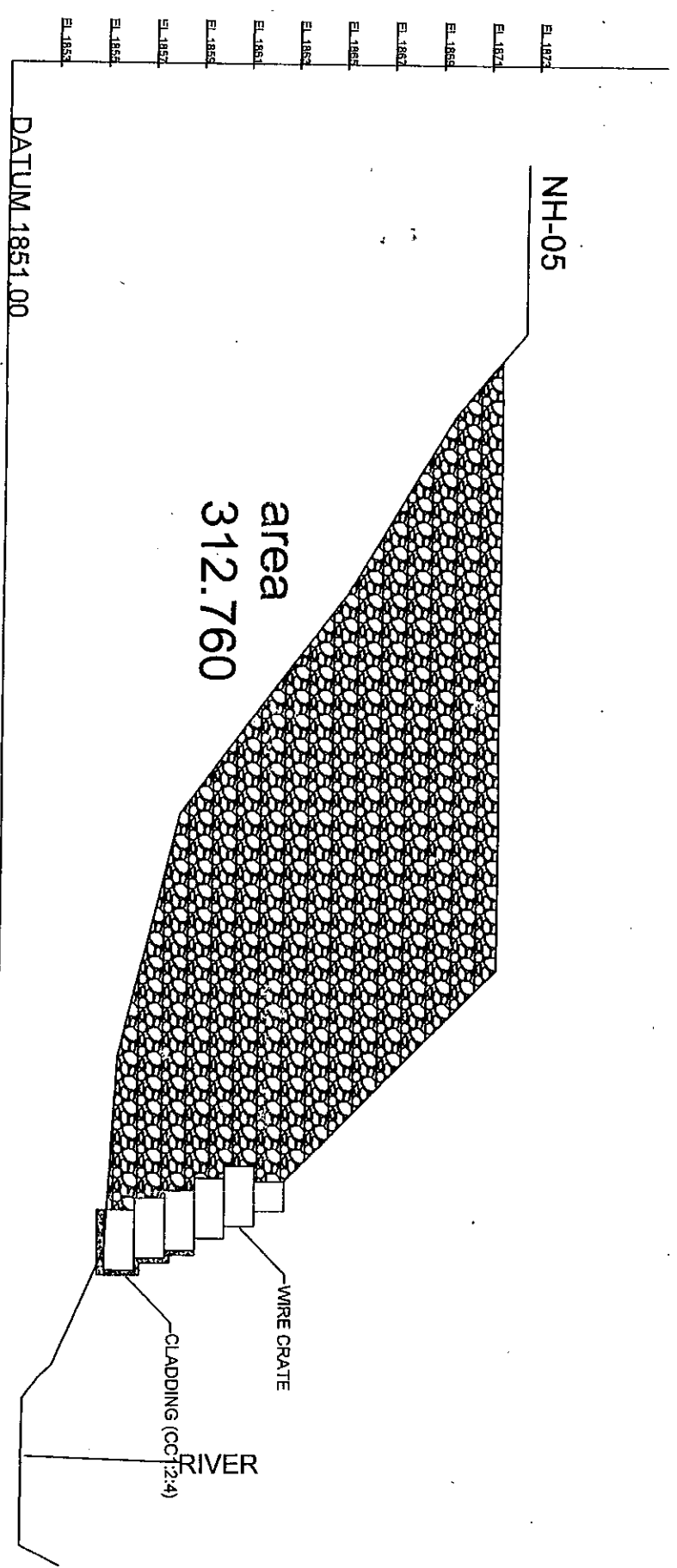
Sr. Manager (R&R)

Shongtong Karcham HEP,

HP, Sikkim, India

Distt. Kinnaur H.P., 172107

HPCL SHONG TONG KARCHAM HEP (450MW) ADDL.
DUMPING SITE NEAR ADIT-2

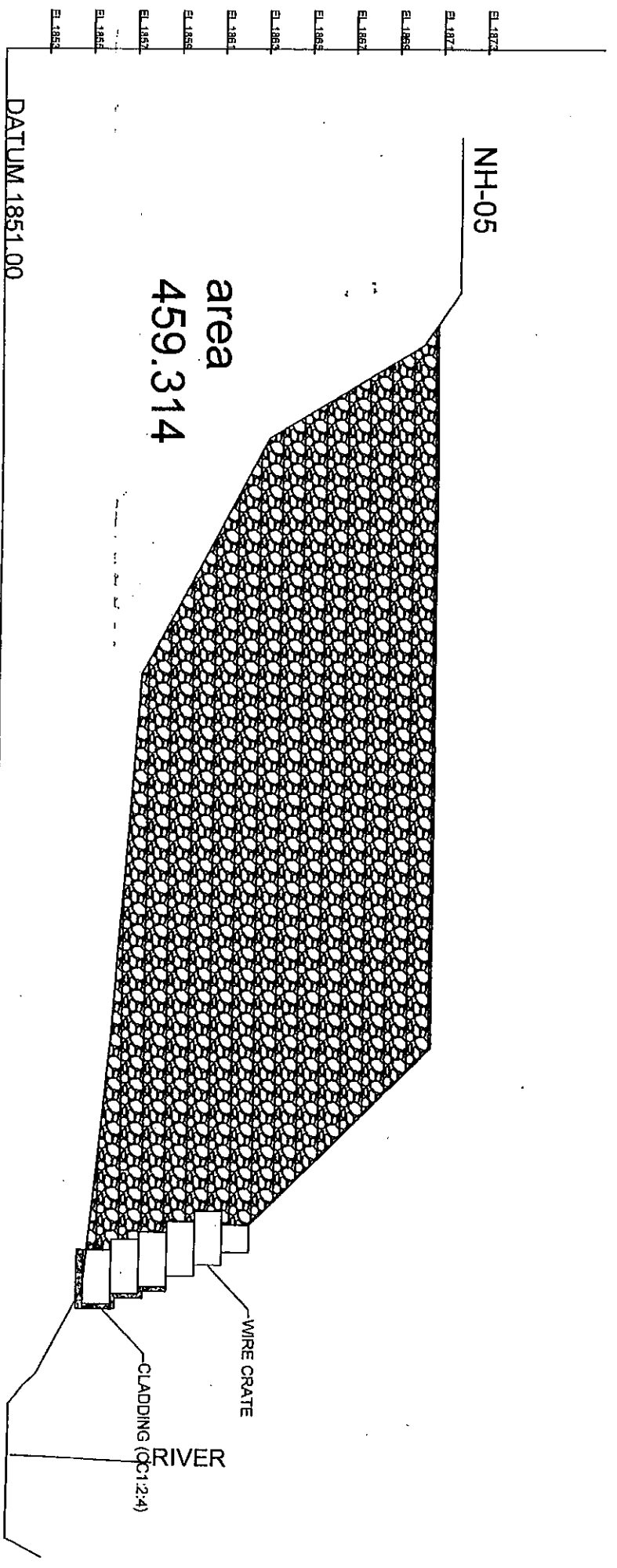


X-SECTION AT RD 25.00

Sy. B. B. B.
Divisional Forest Officer
Kinnaur Forest Division
R/Peo

S. Manoj (R. P. R.)
Shong Tong Karcham HEP,
HPCL, Kinnaur, R/Peo,
Distt. Kinnaur H.P., 172107

HPCL SHONG TONG KARCHAM HEP (450MW) ADDL.
DUMPING SITE NEAR ADIT-2

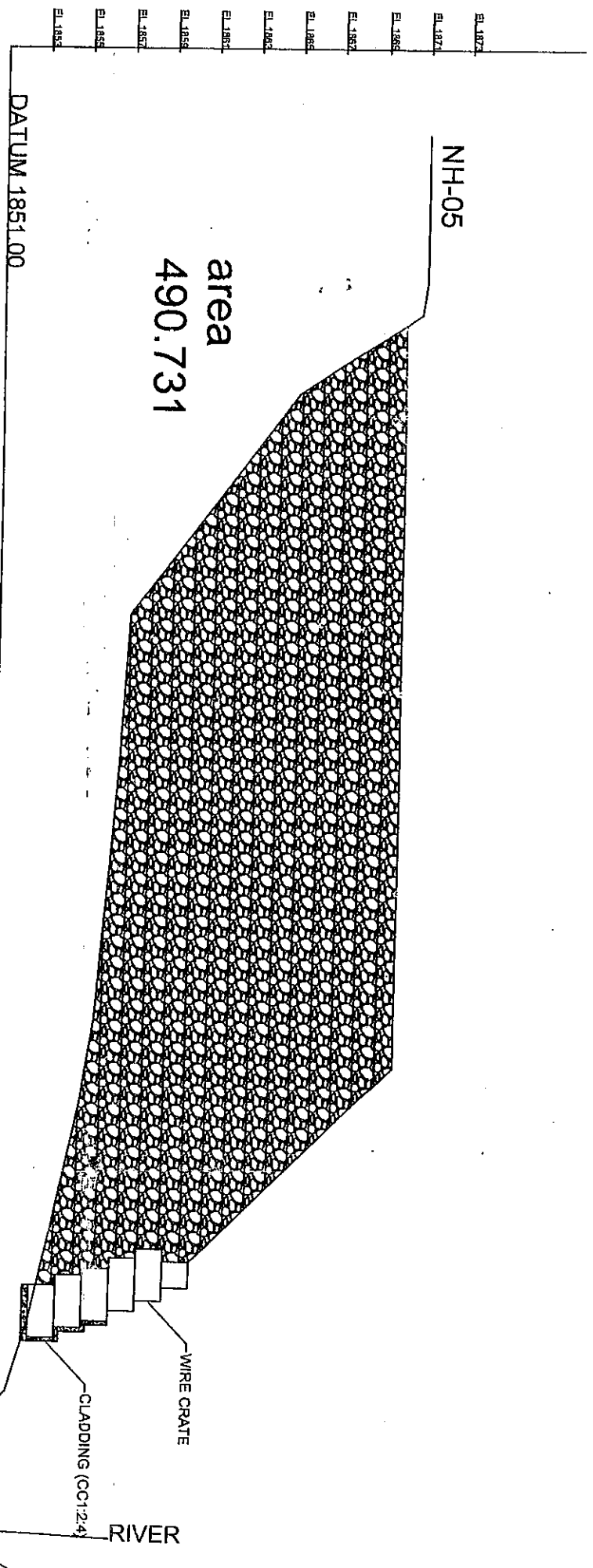


X-SECTION AT RD 50.00

by *[Signature]*
 Divisional Forest Officer
 Kinnaur Forest Divisional
 R/Pro

[Signature]
 Sr. Engineer (K&R)
 Shri. S. K. Karcham HEP,
 H. P. K. P. O.,
 Dist. Jammu & Kashmir, 172107

HPCL SHONG TONG KARCHAM HEP (450MW) ADDL.
DUMPING SITE NEAR ATITE-2

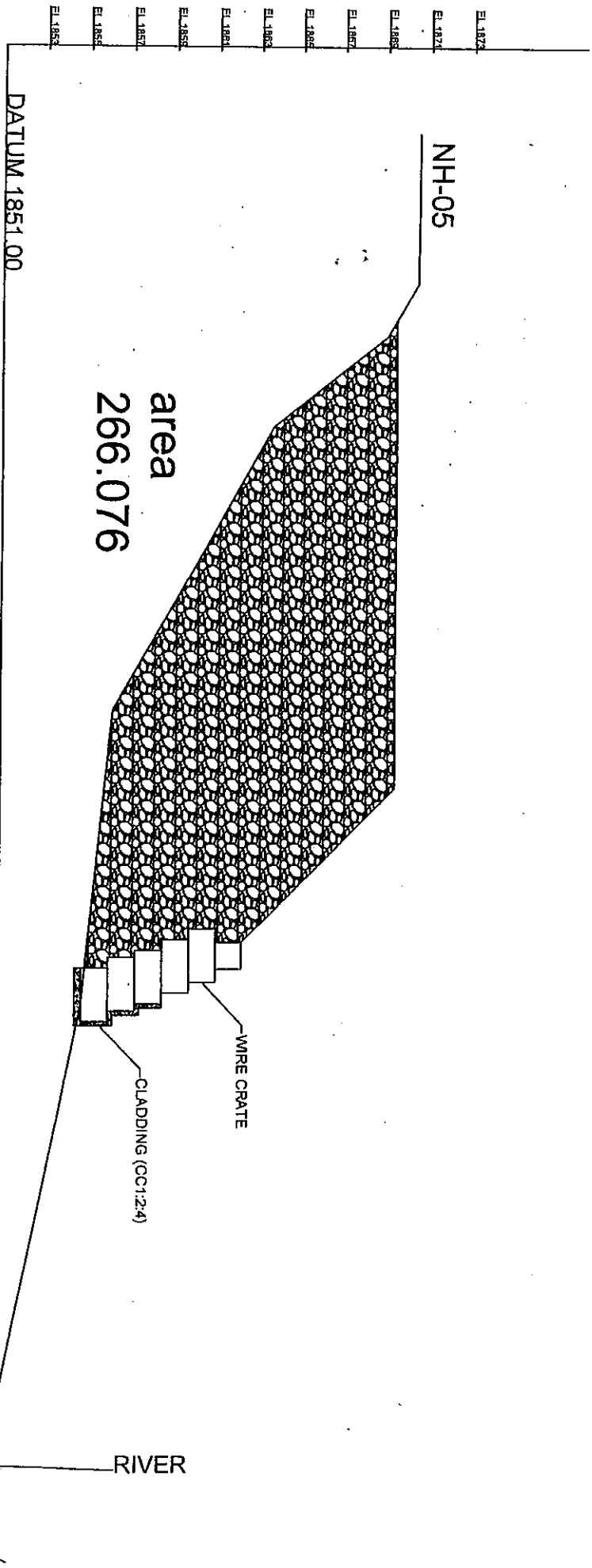


X-SECTION AT RD 75.00

by hand
Divisional Forest Officer,
Kinnaur Forest Divisional
R/Geo

St. Manoj (P. 27)
Shongtong Karcham HEP,
Kinnaur Forest Division,
Distt. Kinnaur H.P., 172107

HPCL SHONG TONG KARCHAM HEP (450MW) ADDL.
DUMPING SITE NEAR ADIT-2

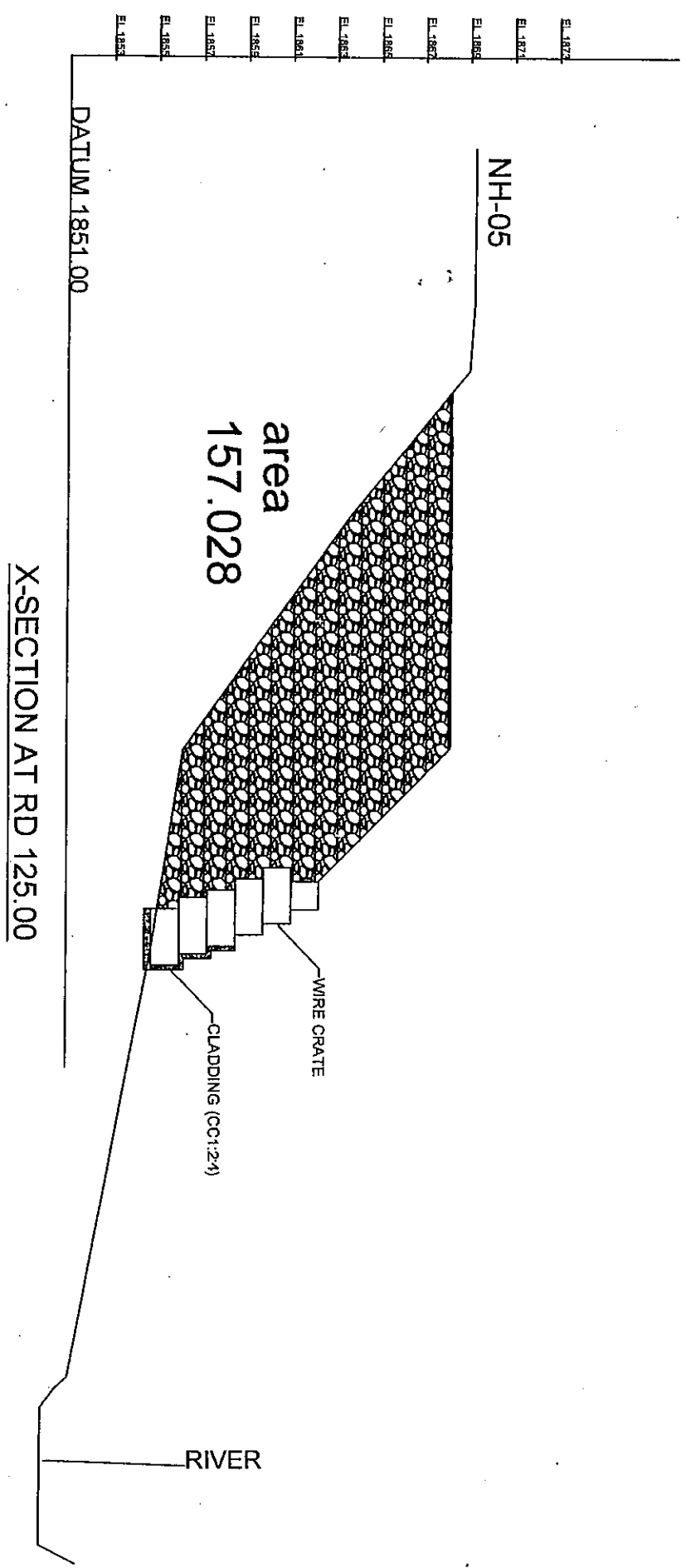


X-SECTION AT RD 100.00

by
Divisional Forest Officer
Kinnaird Forest Division
R/Peo

St. J. Kinnaird (P. 200)
St. J. Kinnaird (P. 200) HEP,
HEP, Kinnaird (P. 200),
Dist. Kinnaird (P. 200), 172107

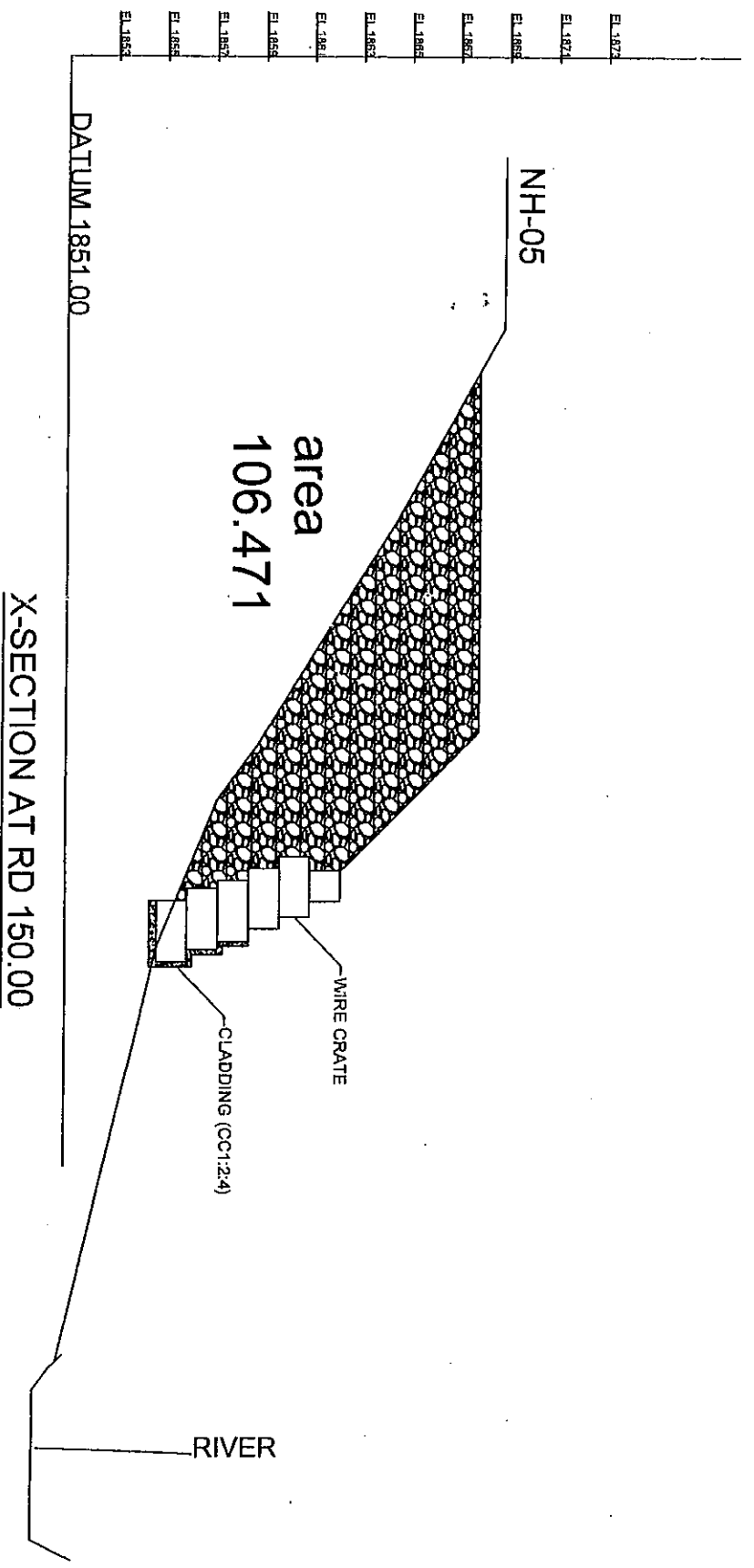
HPCL SHONG TONG KARCHAM HEP (450MW) ADDL.
DUMPING SITE NEAR ADIT-2



by *[Signature]*
Divisional Forest Officer
Kinnaur Forest Divisional
R/Pos

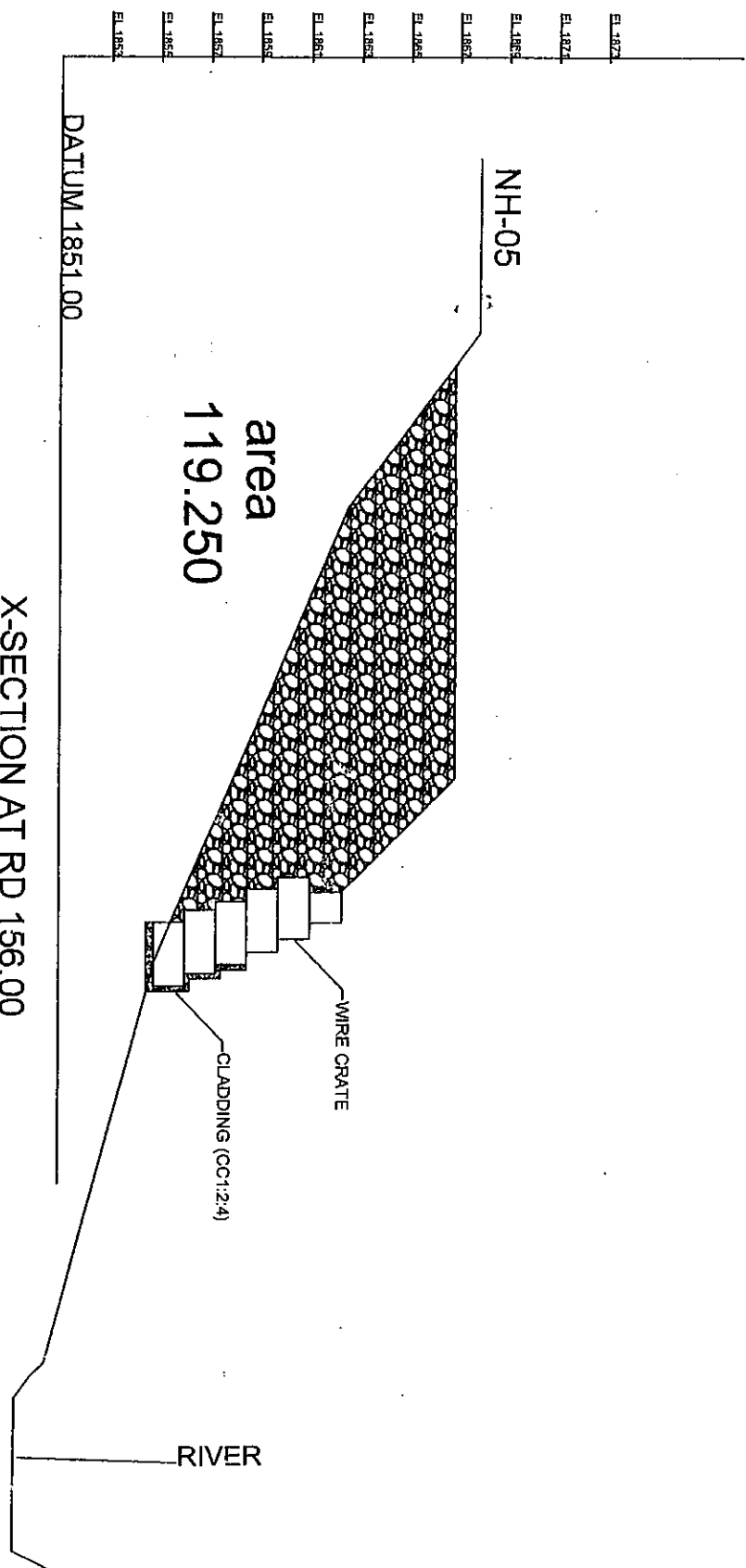
Sub Divisional Officer
Kinnaur Forest Divisional
D.D. No. 172107

HPCL SHONG TONG KARCHAM HEP (450MW) ADDL.
DUMPING SITE NEAR ADIT-2



By
Divisional Forest Officer
Kinnaur Forest Divisional
R/Pao

St 30-10-2007
Kinnaur Forest Divisional
R/Pao
27/2/07



Divisional Forest Officer
Kinnair Forest Division
R. Pad

St. Louis, Mo., Sept. 1907