3070
21.7.05

OFFICE MEMORANDUM.

Sub: Small Hydro Electric Project in Kolab River near village Tentuliguma of Koraput District namely Saheed Laxman Nayak Small Hydro Electrical Project.

Ref: Application for allotment of Small H.E. Project by M/s Sileru Power Generation Pvt. Ltd..

1. In consideration of application made by M/s Sileru Power Generation Pvt. Ltd., the MOU between Govt. of Orissa and M/s Sileru Power Generation Pvt. Ltd., was signed on 22/8/2003 7th August, 2004. for establishment of Small Hydel Project at Kolab river near village Tentuliguma of Koraput District by the later. In terms of the MOU, the firm deposited Bank Guarantee for Rs. 25,00,000/- (Rupees Six Lakhs) which is valid up to 17.6.2005 consequent to this, the developer had prepared the Detail Project Report (DPR) for the power station. Copies of DPR was forwarded to Deptt. of Water Resources Govt. of Orissa, Engineer in Chief Electricity Grid Corporation of Orissa. Ltd. and Orissa Hydro Power Corporation for Scrutinisation and offering their views. The firm responded to the querries of the above organisations and furnished their clarifications. Finally, the DPR was put up to the State Technical Committee (STC) Constituted as per Govt. Notification No. PPD-II. 31/99 – 11242 dtd. 18.8.99 and no PPD-II-2/01-13537 dtd. 15.11.2003 of Deptt. of Energy, Govt. of Orissa.

2. In exercise of the power vested with the State Technical Committee as per G.O. indicated above, the STC hereby accords Techno-Economic Clearance to the aforesaid scheme at actual cost of execution with an upper limit of Rs. 11902.00 (Eleven Thousands Nine hundred & Two lakhs only) including IDC (Interest During Construction) with the following stipulations.

(I) The completed Cost of the scheme shall not exceed the above cost except on account of:

(a) Interest during construction and financing charges as per actual but not exceeding the amount indicated at Annexure-I unless and otherwise revised by STC.

(b) Changes in rates of Indian Taxes and Duties such as custom duty, excise duty, Sales Tax, Work Tax and additional taxes and duties levied subsequent to issue of the Techno Economic Clearance.

(c) The cost estimate of the civil aspect of the Project indicated at Annexure-I may be taken as tentative and the final cost will be checked after detail design and drawing submitted by the developer.

(d) Auxiliary Consumption shall however not exceeds 0.5%.

CE, PPO, Cuttack

True Copy / photocopy attested.
8/1/19
CE (EC, P, P & M)-cum-CEI
O/o EIC (Elecy) -cum-PCEI,
Odisha

(II) The abstract of the complete project cost as submitted by the developer and approved by STC is enclosed at Annexure-I and the salient features of the project are placed at Annexure-II.

3. This Techno-Economic Clearance is subject to the fulfillment of the following conditions.

(i) The following conditions/ circumstances shall not be a reopener of completed cost/Techno Economic clearance.

(a) Non acquisition of land.

(b) Non finalisation of Power Purchase Agreement (PPA)

(c) Non supply of water by State Water Resources Deptt. etc. at a later date.

(d) Delay in financial closure.

(ii) Stamp duty and registration fee levied on mortgages of assets to lender shall be as per actuals.

(iii) No additional cost will be allowed for additional insurance coverage if insisted upon by lenders.

(iv) Since there is private evacuation of power not relating to GRIDCO system all prevailing rules shall be applicable for such evacuation.

(v)

(a) The developer will supply 12% free power to a state designated utility, in case it supplies power to any agency outside the state. The Tariff for the project should factor in to such supply of 12% free power to the state designated agency.

(b) Fixation of tariff for sale of energy shall be approved by State Govt./ Orissa, Electricity Regulatory Commission from time to time.

(c) The developer should be responsible for design and safety of civil structures during execution as well as operation of Hydro Electric Project. All drawing relating to civil works of the project are to be got approved by the Water Resources Deptt. before commencement of works.

(d) The developer will have to pay water rates as fixed by the Govt. from time to time.

(e) The developer will ensure that there is not any inundation of the adjacent land. Provision for protective embankment, if any, will be the responsibility of the developer at his own cost subject to approval of competent authority of Govt. of Orissa.

(f) The developer will ensure forest clearance, Environmental clearence, and preparation of R&R action plan/welfare plan for the inhabitants, if encountered, and such plan should be acted upon as per Govt. of Orissa, guidelines costs on the above schemes are the sole responsibility of the developer.

4. Necessary permission from appropriate authority will be obtained by the Developer for safe construction of Power House and allied structures without causing damage to the existing infrastructures, if any.

5. The Project will be completed within maximum period of 24 (Twenty four) months from the date of issuance of order from Govt. of Orissa.

C.E. (PRO. Cum-DESIGN)
Bhubaneswar.

6. Monthly progress report shall be submitted to the EIC (Elecy)-Cum-PCEI Orissa, under intimation to CE (P)-Cum-CEI (Gen), Orissa and Orissa State Government.
7. Any change of scope of work including evacuation of power will be intimated to the EIC (Elecy)-Cum-PCEI, Orissa, under intimation to CE (P)-Cum-CEI (Gen), Orissa, and the same will be taken to the State Technical committee for approval.

8. The following stipulations of the State Technical Committee for the project need to be adhered to
   1) The developer should undertake that if any irrigation Project of Irrigation Department Commes up in future, they will limit the generation to the available Water after Irrigation Project requirement.
   2) The Civil & structural drawings of the Power Project should be submitted to E.I.C. Water Resources for approval before execution of the Project.
   3) The Electrical drawings of the Power Project should be submitted to C.E. (P)-Cum-CEI (Gen) for approval before execution of the project.
   4) The final arrangement of Power evacuation from their Power Station should be submitted to E.I.C. (Elect)-Cum-PCEI, before execution of the Project. If required, requisite clearances from GRIDCO/ OERC are to be obtained for the corridor.
   5) They will abide all rules & regulations of the state framed from time to time without any objections.
   6) O.H.P.C. Ltd., pointed out that suitable measures may be taken at Government level for ensuring availability of site & water, in case Lower Kolab Hydro Electrical Project enlisted in the national programme "Power for all by 2012" comes up in the Kolab River. But it has already been intimated by E.I.C. (Elecy)-Cum-PCEI, Orissa, that the project is shelved in his letter No. 1917 dt 17.5.05 to O.H.P.C. Ltd.

9. The completion cost of the scheme shall be submitted to the State Technical Committee for approval within a period of 3 (three) months from the commencement of operation of the plant.

Member Convenor
State Technical Committee,
C.E. (PRO.)-Cum-C.E. (GEN)
Bhubaneswar.

C.E. (PRO.)-Cum-C.E. (GEN)
Bhubaneswar.

Memo No_____/ Dtd_____

Copy along with enclosures forwarded to M/s Sileru Power Generation Private Ltd. 109 ROYAL COURT 8-2-615/A BANJARA HILLS, HYDERABAD, ANDHRA PRADESH.

Encl: As above

Member Convenor
State Technical Committee.

Memo No_____/ Dtd_____

Copy along with enclosures submitted to Principal Secretary to Govt. Deptt. of Energy, Orissa, Bhubaneswar for information and necessary action.

Encl: As above.

Member Convenor
State Technical Committee.

Memo No 718 (WE) / Dtd 7/07/05

Copy along with enclosures submitted to the EIC (Elecy) –Cum-PCEI, Orissa, Bhubaneswar for information and necessary action.

Encl: As above.

Member Convenor
State Technical Committee.

Memo No_____/ Dtd_____

Copy along with enclosures submitted to the EIC, Water Resources, Orissa, Bhubaneswar for information and necessary action.

Encl: As above.

Member Convenor
State Technical Committee.

Memo No_____/ Dtd_____

Copy along with enclosures submitted to Secretary OERC,Orissa, Bhubaneswar for information and necessary action.

Encl: As above.

Member Convenor
State Technical Committee.

Memo No_____/ Dtd_____

Copy along with enclosures forwarded to the Director Commerce, GRIDCO, Bhubaneswar/Director (Operation) OHPC, Bhubaneswar, for information and necessary action.

Encl: As above.

Member Convenor
State Technical Committee.

TABLE : 8.2.0

SHAHEED LAKHAN NAYAK SMALL HYDRO ELECTRIC SCHEME ON KOLAB RIVER

ABSTACT ESTIMATE

Rupees in Lakhs

SL.No	ITEM	Civil Works	E&M Works	TOTAL
	I Works			
	A. Preliminaries	50.00	-	50.00
	B. Land	100.00	-	100.00
	C. Works			
	1 Head Works			
	i Gated Weir and Scouring sluice	1,800.00	-	1,800.00
	ii River diversion Works	75.00		75.00
	2 Water Conductor System			
	i Approach channel	135.00	-	135.00
	ii Headrace tunnel	380.00	-	380.00
	iii Surge shaft	265.00	-	265.00
	iv Steel Penstock & civil Works	200.00	-	200.00
	v Gates &Hoists	975.00	-	975.00
	vi Stabilisation of slopes	32.00	-	32.00
	J Power plant and appurtenant works			
	i Power house	460.00	-	460.00
	ii Tail race pool	115.00	-	115.00
	iii Tail race Channel	65.00	-	65.00
	iv Civil works for switch yard	30.00	-	30.00
	K. Buildings	215.00	-	215.00
	M.Plantation,Environment & Ecology	65.00	-	65.00
	O.Miscellaneous	110.00	-	110.00
	P.Maintenance at 1% of I-(A+B)	49.22	-	49.22
	Q. Special Tools and plants	56.30	-	56.30
	R. Communication	300.00	-	300.00
	S. Power plant E & M Works			
	I Generationg Plant	-	2,650.00	2,650.00
	ii Auxillaries	-	470.00	470.00
	iii Transformer & Out door yard	-	284.00	284.00
	iv Taxes,duties,Freight&Insurance	-	711.90	711.90
	v.Erection Charges	-	210.00	210.00
	Y. Losses on stock@ 1/4% of I - (A+B)	13.32	-	13.32
	Z. Unforeseen Items @ 3 % (subtotal upto Y less B)	161.73	129.78	291.50
	TOTAL FOR I- WORKS	5,652.56	4,455.68	10,108.24
	II Establishment @ 3% of total for I- works less B	166.58	133.67	300.25
	III Tools and Plants @ 1% of total for I-works less B	55.53	44.56	100.08
	IV Suspense	-	-	-
	V Receipts and recoveries (deduct credit- 20% of Q)	(11.26)	-	(11.26)
	VI Indirect charges			
	a. Audit and accounts (LS)	5.00	-	5.00
	b. Abatment of land Revenue @ 5% on cost of B	5.00	-	5.00
	c. Consultancy Charges(LS)	50.00	50.00	100.00
	d. Upfront Fee for Loan(LS)	25.00	23.19	48.19
	TOTAL	5,948.41	4,707.09	10,655.50
	Interest during construction	-	-	1,246.51
	GRAND TOTAL			11,902.01

Rupees One Hundred Nineteen Crores and Two lakhs and One Thousand only

SECTION - 2

SALIENT FEATURES

2.1 LOCATION

Sl. No:	Description	Particulars
1	State	Orissa
2	District	Koraput
3	Taluq	Jeypore
4	Village	Tentuliguma
5	Road	Jeypore to Malkanjgiri - Deviation from Govinda palli to Tentuligama (86 Km)
6	Railway station	Jeypore - 88 Km
	Project site	3 KM from Tentuliguma on Kolab River
7	(a) Latitude. (b)Longitude.	18degrees-45minutes-25 seconds. 82degrees-8minutes-22 seconds.

2.2 POWER SCHEME

Sl. No:	Description	Particulars
1	Type of Project	Runoff the river scheme

2.3 HYDROLOGY

Sl. No:	Description	Particulars
1	Source of water	Kolab River discharge
2	Catchment Area (Sq Km)	2438 Sq. Km.
3	Design Flood (Cumecs)	8200 Cumecs
4	No. of falls	Two falls on the river
5	Maximum Design flow (Cumecs)	99.48
6	Flow availability	12 months from June to May
7	Hydrology studied	31years discharges data from 1971-72 to 2001-02

2.4 POWER DRAFT

Sl. No:	Description	Particulars
1	Rated discharge per unit (cumecs)	43.25
2	Rated Power Draft (cumecs)	86.5
3	Maximum Unit Discharge (Cumecs	49.74
3	Maximum Power Draft (cumecs)	99.48

2.5 HEAD

Sl. No:	Description	Particulars
1	Maximum net head (m)	36.77
2	Rated head (m)	34
3	Minimum net head (m)	28.16

2.6 POWER & ENERGY POTENTIAL

Sl. No:	Description	Particulars
1	Rated Unit capacity kW	12500
2	Station installed capacity kW	25000
3	Overload capacity (%)	15
4	Mean gross Energy MU	129
5	Maximum gross Energy MU	194.92
6	Minimum gross Energy MU	88.32
7	90% Dependable Gross Energy MU	94.79
8	Design Energy MU	90.05
9	Saleable Energy MU	89.15

2.7 **WEIR:**

Sl. No.	Type	Gated
1	Shape of Crest	Ogee
2	Front Slope	Vertical
3	Rear Slope	0.8:1
4	Length (M)	123
5	Crest level (ELM)	329.33
6	Normal Pond Level (ELM)	339.00
7	Maximum Flood Level (ELM)	340
8	Height of Weir (M)	8.33
9	Deepest River Bed Level (ELM)	320.684
10	Minimum Draw down level (ELM)	332.06
11	Energy Dispassion Arrangement	Flip Bucket
12	Type of Construction	R.C.Concrete
13	Radius of Flip Bucket (m)	8
14	End Sill Level (m)	324.072
15	Type and number of Gates	Radial-7Nos
16	Size (Width m x Height m)	15X9.67
17	Hoist Platform Level (ELM)	344.00
18	Number of Stop log Gates and Size	1No of 15m X 9.67m
19	Stop log Gate Plat form (ELM)	342.00

2.8 **SCOURING SLUICE:**

Sl. No.	Description	Particulars
1	Design Discharge (Cumecs)	400
2	No. of Vents	2
3	Size of Vent (Width x Height) (m)	4.5 x 6

4	Sill Level (ELM)	318
5	Top of Hoist plat form (ELM)	342
6	Energy Dissipation Arrangement (ELM)	RCC Apron at 318
7	Number of Gates (Nos.) Stop-log Motor Operated services gates	 1 2

2.9 APPROACH CHANNEL AND TRASH RACKS:

Sl. No.	Type	Gated
1	Length (m)	20
2	Bed width (m)	30
3	Side Slopes	0.25:1
4	Bed Level (ELM)	318
5	Full Supply Depth (m)	21
6	Lining	Concrete side walls
7	Weir at the Mouth of Approach Channel	
A	Type	Sloping
B	Crest Level (ELM)	320
C	Rear Slope (ELM)	4:1
8	Trash Rack	
A	Trash Rack Type	Semicircular Vertical Tower Type
B	Trashrack radius	8m
C	Number of Bays (nos.)	6
D	No. of Vertical Tires	6

2.10 HEAD RACE TUNNEL:

Sl. No:	Description	Particulars
1	Shape	Circular
2	Diameter	6000
3	Type of lining	Concrete
4	Invert Level of HRT (ELM)	319
5	Center Line of HRT (ELM)	322
6	Bed fall	1:200
7	Minimum Draw down Level	332.06
8	Value of n	0.018
9	Design Discharge (Cumecs)	100
10	Length (m)	185

2.11 GATE CONTROL STRUCTURE:

Sl. No.	Type	Common Header
1	No. of Vent (Nos.)	1
2	Size (m)	6 x 6
3	Type of Gate	Vertical Lift Gate
4	Stop-log Gate (Nos.) Service Gate (Nos.)	1 1
5	Hoist Plat form (ELM)	344
6	Type of Hoist	Electrical Operated

2.12 PENSTOCK:

Sl. No.	Type	Individual unit Headers
1	Unit Penstock Diameter (mm)	3900
2	Thickness (mm)	18
3	Shape	Circular
4	Length (M)	30
5	Material	Boiler quality steel (IS -2002)
6	Discharge (cumecs)	50
7	Velocity (m/s)	3.54
8	Type of Construction	open
9	Bed fall	Inclined at 30degrees to Horizontal
10	Anchor Block	RCC
11	Design Pressure	Rated Head + water hammer head

2.13 SURGE SHAFT:

Sl. No.	Description	Particulars
1	Type	Restricted orifice
2	Diameter	22 m ID
3	Bed level (ELM)	317.50
4	Top level (ELM)	
5	Down Surge level (ELM)	327
6	Normal level	338.50
7	Upsurge level	342
8	Type of construction	RCC steining circular shape

2.14 GATES & HOISTS:

Sl. No.	Description	Intake gate for power house	Surge shaft gates for power house	Draft tube gate
1	Type	Vertical lift	Vertical lift	Vertical lift
2	Vent size (m)	6x6	3.9x3.9	4.x3.5
3	Quantity	1 set	2 sets	4 sets
4	Type of hoist	Electrical	Electrical	Electrical
5	Horse power of motor (HP)	25	15	20
6	Stop - logs	6x6	3.9x3.9	N.A

2.15 POWER HOUSE

Sl. No.	Description	Particulars
1	Type of Power house	Surface type
2	Length of power house (m)	22
3	Width of power house (m)	32
4	Generator floor level (ELM)	310.50
5	Center line of Unit (ELM)	304
6	Unloading Service bay level (ELM)	314.50
7	Control room level (ELM)	310.80
8	Minimum tail water level (ELM)	300.50
9	Normal tail water level (ELM)	302.17
10	Distance between CL of units (m)	12
11	Draft tube width X height (m)	4x3.50
12	Maximum Flood Level(MFL)	310
13	Lowest level of draft tube	297

2. 18 BUTTERFLY VALVE:

Sl. No.	Description	Particulars
1	Nominal Diameter (mm)	3900
2	Type of construction	Fabricated
3	Type of closer	Dead weight
4	Type of Hoist	Hydraulic Operated

2.19 TURBINE

Sl. No.	Description	Particulars
1	Type of turbine	Vertical full Kaplan
2	Number of Units	2
3	Runner diameter (mm)	2850
4	Rated unit capacity (KW)	12500
5	Maximum capacity (KW)	14375

2.20. GENERATOR

Sl. No.	Description	Particulars
1	Type	Synchronous
2	Rated Capacity (KW)	12500
3	Maximum Capacity (KW)	14375
3	Power factor	0.80
4	Voltage (KV)	11 KV +/ - 10%
5	Frequency (HZ)	50 + / - 6%
6	Speed (RPM)	250

2.21 POWER HOUSE CRANE

Sl. No.	Description	Particulars
1	Type	EOT crane
2	Capacity (Tonne)	40/10
3	Class of duty	Class II
4	Type of girder	Double Girder
5	Type of hoist	Electrical
6	Number of cranes	2

2.22 SWITCH YARD

Sl. No.	Description	Particulars
1	Generator Transformer	
A	capacity (KVA)	20000
B	Voltage (KV)	11/36
C	Number of Generator Transformers	2
2	Unit Auxiliary Transformers	
A	Capacity KVA	500
B	Voltage Ratio (KV)	11 /0.415
C	Number of Unit Auxiliary Transformers	2
3	Station Auxiliary Transformers	
A	Capacity KVA	1000
B	Voltage Ratio (K.V.)	33/0.415
C	Number of Station Auxiliary Transformers	1

2. 23 POWER EVACUATION:

Sl. No.	Description	Particulars
1	Type of Transmission Line (KV)	33
2	Length (KM)	3
3	Structure	Tubular pole
4	Conductor	Panther
5	Number of Circuits	Double
6	Terminating at	33/132KV SS of Meenakshi power at Tentuliguma

2.24 ESTIMATED COST

Sl. No.	Description	Particulars
1	Civil Works (Rs. lakhs)	5948.41
2	E & M Works (Rs. lakhs)	4707.09
3	Total Project cost (Rs. lakhs)	10655.50
4	I D C (Rs. lakhs)	1246.51
5	Total Project Cost with IDC (Rs. lakhs)	11902.01
6	Average Cost of Generation for 10 years Rs./kWh	2.48
7	Average Tariff for 10 years Rs. /kWh	2.48
8	Average Tariff for power evacuation for 10 years Rs. /kWh	0.13

Photocopy attested.

08/1/19

CE (EC, P, P & M)-cum-CEI
O/o EIC (Elecy) -cum-PCEI,
Odisha