

**LADAKH AUTONOMOUS HILL DEVELOPMENT COUNCIL, KARGIL,**  
**OFFICE OF THE PROJECT DIRECTOR / CHIEF EXECUTIVE OFFICER,**  
**KREDA, LAHDC-KARGIL**

**Tender documents in reference to NIT No.01 of 2010**

For and on behalf of the Governor of Jammu & Kashmir State, sealed tenders affixed with Rs.5/- revenue stamps are invited for survey, investigation and preparation of Detailed Project Report (based on detailed measurement & Design) for the below named Mini Hydel Projects, of Suru MHP Cluster in Kargil district from Registered agencies/ Associations on the basis of the below mentioned minimum qualification criteria.

**List of works with approx. potential capacity for Suru MHP Cluster:**

S.No	Location of Hydro Electric Projects	Type of Scheme	Approx: capacity	Time of completion
1)	Tambis/Kanoor	Mini Hydel Scheme	200 KW	Within 3 months from date of issuing of allotment order
2)	Umbulung(Revision)	Mini Hydel Scheme	2000 KW	Within next one month of Sr. No. 1
3)	Sangrah MHP	Mini Hydel Scheme	750 KW	Within next one month of Sr. No. 2
4)	Chilong MHP (Revision)	Mini Hydel Scheme	400 KW	Within next one month of Sr. No. 3
5)	Khandi MHP	Mini Hydel Scheme	2000 KW	

Tenderer for survey, investigation and preparation of detail project reports for the above works shall be required to be completed within the stipulated time period. The tender should reach the office of Project Director/CEO, KREDA, LAHDA-Kargil on or before as mentioned in the NIT.

**1. Qualifications for the tenderer**

- 1.1 Registration card.
- 1.2 List of Engineers including Civil, Electrical and Mechanical Engineers and proof of enrolment with the firm/tenderer with their experiences.
- 1.3 List of one or more approved projects for which DPR's were prepared by the tenderer.
- 1.4 Experience certificate in the field of Micro, Mini and small Hydro electric projects for survey/investigation and preparation of DPR.
- 1.5 List of Surveyors with their experiences.
- 1.6 List of surveying equipments (including digital total station, automatic level and DGPS) which are to be used for the survey work
- 1.7 CDR for Rs one lakh twenty five five thousand (As earnest money) pledged to the Project Director, KREDA, LAHDC-Kargil, Kargil.
- 1.8 Proof of annual financial turn over of Rs 30.00 Lakh or more for last three years.
- 1.9 Proof and clearance certificate of:
  - i) PAN No, ii) TIN No & iii) VAT/Service Tax
- 1.10 Audit balance sheet for previous three years.
- 1.11 Latest Bank Solvency up to June, 2010.
- 1.12 All the above certificates/document shall be submitted by the firm duly signed with seal and should be duly attested from a gazetted officer.

## **2. Scope of Works:**

- 2.1 Survey and investigation for Mini Hydel Projects: Demand for powers
  - i) Present status of lighting, heating and cooking, etc.
  - ii) Demand and supply profile, which includes lighting, heating, cooking, small-scale industries/cottage industries and lifting of water for irrigations purposes.
- 2.2 Geological survey: A detailed geological report of the alignment should be obtained from a geologist and appended with the project report.
- 2.3 Hydrological studies including collection of Hydrological data for last three years and analysis thereof.
- 2.4 Discharged data of the Nallah at headwork sites should immediately be collected on once in 10 day basis at 5PM/6PM *i.e* 10<sup>th</sup>, 20<sup>th</sup>, 30<sup>th</sup>/End of month, after allotment of the work.

## **3. Detailed Measurements and surveying at site:**

- 3.1 Details of contour Map for component of works shown below.
  - 3.1.1 Contour plan with 1 metre. Contour interval for:
    - i) Head works area. (scale 1:100 and 1:500)
    - ii) Desilting tank (scale 1:100)
    - iii) Canal alignment for a strip of 20 metre x Length of the canal (scale 1:100)
    - iv) Forebay area (scale 1:100)
    - v) Penstock alignment for a strip of 20 metre x length of the penstock (scale 1:100)
    - vi) Power house and tail race channel (1:50 and 1:100)
  - 3.1.2 X- Section and L- Section: for the below mentioned components of works
    - i) Head work area at an interval of 5 metres, across and along the flow (scale 1:100)
    - ii) Desilting tank/Basin area at an interval of 5 metres, across and along the flow and three no L-section (scale 1:100)
    - iii) X-Section along the canal alignment at an interval of 15 metres and at change points. (Scale 1:100)
    - iv) L- Section of existing irrigation channel. (If any)
    - v) 3 No X – section and 3 No L–section at proposed forebay tank site.
    - vi) Penstock: 1 No L–section along penstock alignment from forebay to powerhouse and x-section at an interval of 10 metres/ change point, showing details of rock and Shingle-Boulder strata.(scale 1:100)
    - vii) Power house: 3 No L-section along the central line of units, up stream edge/down stream edge and 6 No X –sections. (Scale 1:50 and 1:100)
    - viii) Tail race Channel: One No L -section and X -section at an interval of 15 metres and at change point.
    - ix) TBM – at each component of works (Headwork to Power House) is required to be fixed.
    - x) Location of Head Works, forebay and Power House in reference to Latitude and Longitude by using GPS-equipment

## **4. Volumes of Project Report and Tender Documents:**

- 4.1 Volume- I General Report
- 4.2 Volume –II Basic Design calculation
- 4.3 Volume –III Specification Drawings
- 4.4 Volume –IV Tender documents with bill of quantities for Civil works

- 4.5 Volume –V Tender documents with bill of quantities for Electric and Mechanical works.
- 4.6 Volume –VI Tender documents with bill of quantities for Penstock pipe
- 4.7 Volume- VII General and special condition of contract
- 4.8 Volume –VIII Detailed technical specifications for Civil works including penstock pipes
- 4.9 Volume –IX Detailed technical specifications for Electrical and -Mechanical works
- 4.10 Volume – X Details of survey work i.e. Section, L-Section and Contour Plan etc.

**5. Documents for Execution of Works: Vol XI and Vol XII.**

- 5.1 The following documents are required for execution of works.
- i) Construction drawings for each component of work i.e. Headwork to Power House and Tail race with all the details of Specification for PCC, RCC and dimensions details (mm) – Vol XI.
  - ii) Detailed design calculation with reference to each component of work i.e. Headwork to Power Hose and Tail race channel. Vol XII
  - iii) All Design calculation and specification should be as per standard Manual/Code of CEA, CBI&P, BSI/BS Codes

**6. Details of Volumes -I (Para 4.1): General Report.**

- 6.1 Details of Volume –I, General report should contain **chapters** on the below mentioned subjects.
- i) Introduction
  - ii) Salient features (for detailed, see- S.No 7).
  - iii) Project site location (map of India, State and map of project location site)
  - iv) Survey and investigation
  - v) Hydrology (for detailed, see- S.No 8).
  - vi) Geology
  - vii) Power demand and generation studies
  - viii) Technical report on each component of works, Headwork, Approach Channel, Desilting Tank, Canal, Forebay Tank, Spillway structure to Power House, Tailrace channel. (See – S. No 9)
  - ix) Basic design of main civil works, Headwork to Power House Tailrace channel. (for details refer Vol- II )
  - x) Electrical and Mechanical works (e.g. Penstock, BFV, Turbine, etc.)
  - xi) Operation and maintenance cost and schedule,
  - xii) Project cost estimate (See S. No 10),
  - xiii) Unit cost analysis,
  - xiv) Schedule of rates, specifications and analysis of rates,
  - xv) Construction materials to be supplied by the department and executing agencies, including steel for gates and penstock pipes,
  - xvi) Construction equipment and machineries for Civil works,
  - xvii) Construction equipment and machineries for Electro-Mechanical works,
  - xviii) Man Power requirements,
  - xix) Environmental aspect (related to flora fauna and agricultural system of the area) and Environment Impact Assessment.
  - xix) Socio – Economic condition, etc.,
  - xx) Construction schedule,
  - xxi) Bar chart/Pert chart /CPM,

- xxii) Reference to standards and manuals BSI (ISI), ASTM/BS and code of Standards.
- xxiii) Summary description and recommendation.
- xxiv) Preconstruction works and infrastructure backup like, approach road, residential quarters, stores, temporary huts and labour sheds.

6.2 Details of Volume –II and III, Basic design calculation and specification/NIT, drawings for the following components of works. The drawing should include minimum of one layout plan (scale 1:50) One L- section of the structure and one X-section.

- i) Diversion works/Dam/trench weir or simple weir with silt excluder,
- ii) Head regulator including trash rack gate and controlling gates.
- iii) Approach channel upto desilting tank/basin
- iv) Desilting tank/basin including silt excluder system
- v) Escape/overflow structure
- vi) Power canal/Water conductor and covering with soil
- vii) Forebay tank with silt excluder
- viii) Spillway and escape structure at bed level of channel.
- ix) Penstock pipe, bifurcation/Trifurcation, intake trash rack gate, gate/sluice valve downstream of forebay, air vent pipe, anchor blocks and silt excluder for the forebay tank, covering of Penstock Pipe with insulation/impervious soil.
- x) Power House building,
- xi) Tail race channel,
- xii) Single Line Diagram (Power Generation/Distribution).

<b>7.</b>	<b><u>Details of Para 6.1, Chapter ii:</u></b>	<b>Salient Feature</b>	<b>(General Report – Vol I)</b>
	<b>7.1 Location:</b>		
	i) State		=
	ii) District		=
	iii) Block		=
	iv) Village		=
	v) Geographical co-ordinates of Power House		
	Latitude		=
	Longitude		=
	<b>7.2 Catchments:</b>		
	i) Tributary		=
	ii) Sub-Tributary		=
	<b>7.3 Hydrology:</b>		
	i) Catchments area of the stream/Nallah		=
	ii) Catchments area of the Diversion site or at Headwork site		=
	iii) Precipitation		
	Maximum Rainfall		=
	Minimum Rainfall		=
	Average Rainfall		=
	Snowfall		=
	iv) Dependable Yield		
	<u>Percent Discharged (cumec)</u>		
	50%		=
	75%		
	90%		=
	95%		=
	v) Climate Data		=

Temperature C <sup>0</sup>	=
Humidity (%)	=
Wind (Km/hr)	=
vi) Floods	
<u>Historical</u>	
Max. Discharge estimated (cumec)	=
Date of occurrence	=
<u>Observed</u>	
Max. Water level	
Max. Discharge estimated (cumec)	=
Date of occurrence	=
Maximum Probable flood (cumec)	
Frequency    50 year	=
100 year	=
Design Flood (cumec)	=
Water level	
Silt load data of the Nallah.	=
Gross head	=
Effective/Net head	=

**7.4 (a) Diversion structure (Headworks):**

i) Type of structure	
Simple weir	=
Trench weir	=
Concrete	=
Any other type	=
ii) Length of:	
Overflow section	
iii) Maximum discharge capacity (cumec)	
iv) Number, size and type of gates	
v) Elevation of weir top	=
vi) Elevation of weir Foundation	=
vii) Bed slope of Trench weir	=

**(b) Head Regulator**

i) Size of Gate	=
ii) Number of Gates	=
iii) Sill Level	=
iv) Deepest Foundation Level	=
v) Top Level of Structure	=
vi) Maximum discharge capacity (cumec)	=
vii) Gate Lifting System	=
viii) F.S.L. d/s of Gate	=

**7.5 Approach Channel:**

i) Length (M)	=
ii) Size/Section of Channel	=
iii) Bed Slope	=
iv) Manning's Roughness Coefficient	=
v) F.S. Depth	=
vi) Maximum Velocity at full discharge (m/sec)	=
vii) Velocity at one/two/three/ unit discharge m/sec.	=
viii) Maximum size of silt/gravel carrying capacity	=

- ix) Whether the Channel is covered or open =
- x) Max. Flood level at the start of App. Channel =
- xi) Max. Flood level at the end of App. Channel =
- xii) Free Board =

**7.6 Desilting Tank/Basin:**

- i) Width (M) =
- ii) Length (M) =
- iii) Depth (M) =
- iv) No. of Bays =
- v) With of each bay =
- vii) F.S.L =
- vii) Type & Shape of bed =
- viii) Silt Excluder type =
- ix) Size of silt excluder =
- x) Operation/Lifting system of silt Excluder =
- xi) Max. size of silt to be removed =
- xii) Average designed velocity of flow at FSD =
- xiii) Designed Settling velocity (Vertical) =
- xiv) Level difference between entrance/Upstream  
and out-let/Downstream =
- xv) Section of Bye-Pass Channel for non-silty seasons =

**7.7 Power Channel/Water Conductor:**

- i) Length =
- ii) Bed Slope =
  - a) RD \_\_\_\_\_ to RD \_\_\_\_\_ =
  - b) RD \_\_\_\_\_ to RD \_\_\_\_\_ =
- iii) Sections =
  - a) RD \_\_\_\_\_ to RD \_\_\_\_\_ =
  - b) RD \_\_\_\_\_ to RD \_\_\_\_\_ =
- iv) Free Board =
- v) Full Supply Depth (FSD) =
- vi) Full Supply Discharge (cumec) =
- vii) Velocity at F.S. discharge m/sec. =
- viii) Manning's Roughness Coefficient, n =
- ix) Type of Lining =
- x) Whether covered or open RD- wise details =
- xi) Depth of Impervious Soil Cover =
- xii) Spacing of Manhole or Inspecting Chamber  
(in case of covered channel) =
  
- xiii) Free Board at Full Supply discharge  
escape through ogee spillway =
  
- xiv) Full Supply Depth  
at 3- Unit discharge =  
     2- Unit discharge =  
     1- Unit discharge =
- xv) Type of Material used for lining =
  - a) Masonry =

- b) PCC/RCC with mix strength =
- c) Reinforcement Mesh details =
- d) Cover thickness (incase of RCC) =
- xvi) Landscape detail after completion =
  - a) Turf/Plantation =
  - b) Width of footpath/Inspection road =
  - c) Protection against rolling boulders and Toe-Protection details =

**7.8 Escape/Outlet/Spillway:**

- i) Location RD-wise =
- ii) Size of Escape Gate =
- iii) Spillway Length =
- iv) Elevation of Spillway =
- v) Depth/Head over Spillway at Full Supply Discharge =
- vi) Afflux details at Full Supply Discharge =
- vii) Length of Chute Channel down stream of Escape/Spillway =
- viii) Energy dissipater/Friction Block details =
- ix) Sill level of Escape Gate =
- x) Maximum discharge capacity of Escape/Spillway =
- xi) Operation details of Gate/Type of lifting system =

**7.9 Forebay:**

- i) Retention Period (Mint.) =
- ii) Size of Forebay (L x W x D) =
- iii) Free Board =
- iv) Depth of dead cushion =
- v) Elevation of Penstock bell mouth Intake bed/sill =
- vi) Elevation of penstock bell mouth top =
- vii) Bed level of Forebay near Intake bell mouth =
- viii) Depth of water cover above bell mouth =
- ix) Minimum Draw Down Level =
- x) Full Supply Level =
- xi) Maximum water level at Full load rejection and during Full Escape through spill way =
- xii) Whether the Forebay is covered or open =
- xiii) Protection measures against rolling boulders from hill site =
- xiv) Type of lining. =
- xv) Type of Insulation or Measure against freezing =
- xvi) Trash Rack details/type =
  - a) Size of Flat bar =
  - b) Spacing/clear gap =
  - c) Measures against Freezing =
  - d) Debris removal system =
  - e) Lifting system for trash rack =
- xvii) Gauge Inside Forebay for reading instantaneous depth/levels =
- xviii) Silt Excluder type =
  - a) Operation details =
  - b) Size of gate/valve =

- xix) Elevation of different bed levels =
- xx) Rung – Ladder for inspection of Forebay bed/ sluice valve/Trash Rack =

#### **7.10 Penstocks:**

- i) Number =
- ii) Diameter (mm) =
- iii) Thickness (mm) =
- iv) Length (M) =  
(Upto bifurcation or Trifurcation)
- v) Maximum Velocity =
  - a) Velocity at 3-unit discharge =
  - b) Velocity at 2-unit discharge =
  - c) Velocity at 1-unit discharge =
- vi) Type of connection =
  - a) Flanged/Bolted
  - b) Welded joints with contraction/Expansion joints =
  - c) Spacing of Flanged/Bolted joints =
- vii) Type of Insulation to protect from Sub-zero temperature =
- viii) Whether the penstock pipe is covered with Impervious soil or uncovered =
  - a) Depth/Thickness of soil cover =
- ix) Type of penstock Intake Gate =
- x) Air Vent Pipe size =
- xi) Bifurcation/or trifurcation =
- xii) Diameter of Bifurcation/trifurcation (mm) =
- xiii) Length of Bifurcation/or trifurcation (m) =
- xiv) Thickness of Bifurcation/or trifurcation (mm) =
- xv) Type of Steel with BSI/BS code Number =
- xvi) Maximum Water Hammer Pressure =
- xvii) Total Pressure, including water hammer, during sudden closure. =
- xviii) Whether Surge tank is required, If required, size and Location of Surge tank, =
- xix) Type of PVC/or other material used for Gaskets between Flanged connections =
- xx) Protection Measures to be adopted against fall of/rolling boulders/slips/other type of External Impact load. =
- xxi) Specification of Paints with BSI/BS Code No. =
- xxii) Minimum design discharge, cumec/sec =

#### **7.11 Power House:**

- i) Type of Power House =
  - Surface or underground =
- ii) Size of Power House, L x B x H (M) =
- iii) Type of roofing =

- vi) Weather beams for E.O.T.  
crane is required or not. =
- v) Elevation of Generator Floor =
- vi) Elevation of deepest foundation =
- vii) Gross Head (m) =
- viii) Net Head (m) =
- ix) Design Head (m) =
- x) Location Details
- Latitude = .....N
- Longitude = .....E

**7.12 Electro-Mechanical Equipments:**

- i) Type of Turbine =
- ii) Horizontal/or Vertical =
- iii) Numbers of Turbine =
- iv) Capacity of each Turbine (KW) =
- v) RPM/Speed of Turbine =
- vi) Permissible speed rise =
- vii) Type of Generator =
  - a) Excitation system =
  - b) Regulation system =
  - c) RPM =
  - d) Capacity (KW) =
- viii) Rating of Generator =
  - KW =
  - Frequency HZ =
  - Voltage / Phase =
  - Power Factor =
- ix) Connection Rotor =
  - ( Delta/Star ) stator =
- x) Over load capacity =

**7.13 POWER**

- i) Installed capacity (KW) =
- ii) Firm Power (KW) =
- iii) Seasonal Maximum Power (KW) =
- iv) Annual Energy (KW hr) =
  - Firm =
  - Seasonal =
  - Total =

**7.14 ESTIMATED COST**

- i) Cost of civil works =
- ii) Cost of Electrical and Mechanical works =
- iii) Cost under other Heads not covered =
- iv) Cost per MW/or KW =
- v) Unit cost (per KWh) =

**7.15 Cost of Generation per Unit:**

- i) At 100% load factor
  - Without Subsidy =
  - With Subsidy =
- ii) At 60% load factor
  - Without Subsidy =
  - With Subsidy =

**8. Details of Para 6.1, Chapter v: Hydrology: (Gen Report vol -I)**

- i) General report on the Nallah
- ii) Catchments Area with maps. =
  - a) Total Catchments area up to proposed Head works site (KM<sup>2</sup>) =
  - b) Snow Covered Area/Glacier Area(KM<sup>2</sup>) =
    - Maximum Area (January – February) =
    - Minimum Area (July- September) =
- iv) Metrological Survey
  - (Data required for more than 3 years)
  - a) Rainfall data =
  - b) Snowfall data =
  - c) Half Monthly/Monthly Average Temperature (°C) =
- v) Gauge- Discharge Curve At Headworks site
  - a) 1/10- daily discharge data i.e 10<sup>th</sup>, 20<sup>th</sup>, 30<sup>th</sup>/Ending of month to be measured immediately after Allotment of works =
  - b) Peak flood discharge =
  - c) Minimum discharge =
  - d) Silt load data of the Nallah =
- vi) High Flood Discharge Data based on
  - a) Catchments Area –Formula. =
  - b) Rainfall/Run off Formula. =
  - c) Flood estimation by using. flood Mark, Area, Bed Slope, velocity =
  - d) Based on flood frequency
    - 50 years Flood =
    - 100 years Flood =
  - e) Flood Discharge adopted for Design of Headwork’s structure =
- vii) Dependable Discharge

<u>% age</u>	<u>Discharge (Cumec)</u>	
50%		=
75%		=
90%		=

viii) Existing use for Irrigation purpose

ix) Availability of water for Power Generation.

<b>Units</b>	<b>Discharge m<sup>3</sup>/s</b>	<b>Availability for No. of months</b>
One – Unit	.....	.....
Two - Unit	.....,	.....
Three –Unit	.....	.....

## **9. Details of Chapter viii: Technical report (Gen Report Vol -I)**

### 9.1 Technical report on each component of work

- i) Diversion works/trench weir or simple weir with silt excluder
- ii) Head regulator including trash rack gate and controlling gates.
- iii) Approach channel upto desilting tank/basin
- iv) Desilting tank/basin including silt excluder system
- v) Escape/overflow structure
- vi) Power canal/Water conductor
- vii) Forebay tank with silt excluder
- viii) Spillway and escape structure at bed level of canal.
- ix) Penstock pipe, bifurcation/Trifurcation, intake trash rack gate, gate/slucice valve downstream of forebay, air vent pipe, anchor blocks and silt excluder for the forebay tank
- x) Power House building
- xi) Tail race channel

## **10. Details of Chapter xii: Project cost estimate (Gen Report Vol-I)S**

### 10.1 Details of project cost estimates, civil works

- i) Diversion works/trench weir or simple weir with silt excluder
- ii) Head regulator including trash rack gate and controlling gates.
- iii) Approach channel upto desilting tank/basin
- iv) Desilting tank/basin including silt excluder system
- v) Escape/overflow structure
- vi) Power canal/Water conductor
- vii) Forebay tank with silt excluder
- viii) Spillway and escape structure at bed level of canal.
- ix) Penstock pipe, bifurcation/Trifurcation, intake trash rack gate, gate/slucice valve downstream of forebay, air vent pipe, anchor blocks and silt excluder for the forebay tank
- x) Power House building
- xi) Tail race channel
- xii) Cost under other heads.

I A --- Preliminary

B --- Land

C --- Works

- (already mentioned under Civil works and Electro-Mech: Works)
- K --- Buildings
  - M --- Plantation
  - P --- Maintenance  
(during construction period)
  - Q --- Special T&P
  - R --- Communication  
(road etc.)
  - T --- Water supply works.
  - U --- Losses on stock and unforeseen.
  - II** Establishment charges (5 to 10 % of **I** – works) i.e. A to U.
  - III** Tools & Plants (1% of Of **I** – works) i.e. A to U
  - IV** Suspense @ (±) 10%
  - V** Indirect charges

#### 10.2 Details of project cost of estimates for electrical works

- i) Turbine
- ii) Generator.
- iii) Governor
- iv) MIV
- v) Control panel
- vi) Auxiliaries
- vii) Outdoor switch yard
- viii) Step up transformer, etc.
- ix) AVR Panels
  - x) DC Battery System
  - xi) Grounding System
  - xii) Fire Protection
  - xiii) Cooling Water System
- xiv) Cost of other works under Electro – Mechanical Components not covered under above mentioned heads.

#### 11. **Instruction/terms and conditions:**

- i) The tender should be addressed to The Project Director/Chief Executive Officer, KREDA, LAHDC-Kargil, Kargil. The cover should be duly sealed and superscripted and sent either under registered cover or cast in the tender box kept in the office of the Project Director/CEO, KREDA, LAHDA, Kargil.
- ii) The Tenderer shall ensure timely receipt of tender in the office of the Project Director/Chief Executive Officer, KREDA, LAHDC-Kargil, Kargil. The tender received by hand or by post, after due date of receipt of tenders shall not be entertained even if the tender has been posted/dispatched much before the due date of receipt.
- iii) The tender will be opened on the same day or any convenient date, in presence of the tenderers in the office of the Deputy Commissioner/CEO, LAHDA, Kargil. In case the due date of opening of the tenders falls on a holiday being declared, the tender will be opened on the next working day.
- iv) Telegraphic tenders or the tenders of such tenderers who have not purchased tender documents shall not be entertained. Any request by post or by hand or telegraphically for any modification addition or deletion etc. in the tenders shall not be considered.
- v) The tenders shall be prepared in a formal manner with all quotations written both in figures and words. The tenders shall be typed or written in ink, any

tender written by pencil shall be rejected. There shall be no erasures or overwriting and if corrections are made, the same shall be neatly done and attested. A systematic form of totaling shall be adopted to avoid any ambiguity. The detailed description of the equipment offered shall be given.

- vi) The tenderer/bidder shall inspect and examine the sites of each Mini-Hydel Project and its surroundings and shall satisfy himself before submitting his Tender.
- vii) The tenderer, if they like, can visit the existing/running Power Projects like Iqbal, Marphocho and Haftal HEP for understanding the problems faced, due to extreme climatic conditions.
- viii) The tenderer shall not sublet any portion of the contract without the prior written approval of the accepting authority.
- ix) The tenderer shall submit DPR as per the details given in the document and in addition to this, they can add chapter on other heads, if found necessary.
- x) The total proposed potential of this cluster's may at the time of DPR submission by the successful bidder can vary up to  $\pm 30\%$ , in case of plus 30% the successful bidder will not be paid any extra cost.

## **12. Earnest Money:**

- i) Tender shall be accompanied with the earnest money equal to Rs.1,78,000/- (Rupees one Lakh and seventy eight thousand only) in the form of CDR from a nationalized/schedule bank pledged to the Project Director, KREDA, LAHDC-Kargil, Kargil.
- ii) Tenders not accompanied with the required amount of earnest money will be rejected and their price bid shall not be opened.
- iii) Earnest money deposit shall be released in favour of the unsuccessful tender(s) within two months after the final acceptance of the tender.

## **13. Special Instructions:**

- i) Tenders not submitted on the lines indicated above are liable to be rejected without any correspondence.
- ii) Request for extension of last date of receipts of tenders is likely to be ignored.
- iii) Any form of canvassing by the tenderers to influence the consideration of their tender shall liable to summary rejection.
- iv) All the survey/investigation shall be done in details as per tender documents.
- v) The tenderer is required to submit a statement of facts in details as to their previous experience in performing a similar or comparable work and business & technical organization.
- vi) Force majeure clause shall apply.
- vi) No other conditions except those mentioned above will be acceptable.

## **14. Mode of Payment:**

- i) 1<sup>st</sup> installment up to 30% of the contract amount shall be released after submission of complete project report for Tambis/Kanoor(S.no.1)and Umbulung(S.no.2) Mini Hydel Schemes.
- ii) 2<sup>nd</sup> installment of 30% of the contract amount shall be released after submission of complete project report for Sangrah(S.no.3) and Chillong(S.no.4) Mini-Hydel Schemes.

- iii) 3<sup>rd</sup> installment of 30% of the contract amount shall be released after submission of complete project report for other for remaining project i.e. Khandi Mini Hydel Project.
- iv) Balance 10% shall be released after six months or start of work at site which ever is earlier.

**15. Penalty:**

- i) In case of failure in submission of detailed project reports as per the list of works mentioned above/below and time stipulated against each, a penalty @ of 0.5% of project cost per week up to 15% shall be imposed on the agency.

**16. Evaluation statement of price bids:**

The agencies must quote rates as per the format given below, both in figures and words.

S.No	Name of Project	Capacity	Survey and investigation cost (Rs)	Detail Report preparation cost (Rs)	Project cost	Total Cost (Rs)
1	2	3	4	5		6
1.	Suru MHP Cluster	5350 KW				

Total Rupees .....

The total cost as per column 6 should be inclusive of all taxes, levies, sale tax works contract tax, turnover tax, income tax, insurance cover etc. as applicable from time to time and no extra payment on this account shall be entertained on the quoted rates. All these taxes shall be deducted at source. The rates approved in favour of the successful tenderer would be valid till project is finalized and the contract is completed.

The number of MHP schemes and capacity of each

Registered Agency,  
(Sign & Seal)

**17. Number of project copies required:**

- i) Volume I to X( except volume III) = 12 copies
- ii) Volume III (specification drawings) = 24 copies
- iii) Design calculation and Drawing for Construction/Execution volume XI & XII = 12 copies

**18. Agreement:**

The successful tenderer shall be required to execute an agreement on a valid stamped paper for strict compliance of the terms and conditions of the contract, vis-à-vis the NIT and the supply order within seven days of placement of the order.

**19. Arbitration and Laws:**

19.1 Arbitration: Except where otherwise provided for in the contract, all questions and disputes relating to the meaning of specification, drawings designs and instructions herein mentioned or as to any other questions, claims, matter or things whatsoever in any way arising out relating to the contract or failure to submit DPRs, whether arising during the progress of work or after completion or abandonment thereof shall be referred to for arbitration under the Jammu & Kashmir Arbitration act.

19.2 Laws: This contract shall be governed by the J&K laws for the time being in force. The court of J&K at Kargil only shall have Jurisdiction for any dispute arising out of this.

**20. Procedure for receiving and opening of tenders:**

20.1 At the time of opening of tenders, the prequalification documents, as per Para 1. shall be opened first, before opening the financial bids. These should be submitted in a separate sealed super scribed Envelope Cover No. 1. (Prequalification, Technical and commercial document papers). The envelope should contain criteria as per paragraph 1.1 to 1.12 mentioned above.

**21. Financial Bids:**

21.1 The tenders for bidding shall be submitted on the prescribed form as per Sr.NO.16 of this tender document to be issued by this office, which should be sealed in an another Envelope, Cover-II to be opened after finalization of pre-qualification documents.

21.2 Both the Envelopes i.e. Cover-I and Cover-II should be put together in another Envelope. This Envelope should be addressed to the Project Director/C.E.O., KREDA, LAHDC-Kargil, Forest Environmental Awareness Centre, Baroo Tsog, Kargil, with name of Work, NIT No, date of tendering and address of the Sender with contact No. and should be duly sealed.

**22. All agencies:**

All registered agencies are requested to cast their tenders without pre conditions and to adhere to the all the above prescribed Para's.

**23. Validity of tender:**

The tender should be valid for a period of six months from the date of the opening of the tender.

**24. Cost of tender document:**

This tender document shall be sold at Rs. 1000/- (Rs one thousand only)and shall be available up to the time mentioned at Para 1. (1.1 to 1.13) in the office of the Project Director/CEO, KREDA, LAHDC- Kargil, Forest Environmental Awareness Centre, Baroo Tsog, Kargil (or) it can be downloaded from KREDA web site *i.e.* [kredakargil-jk@nic.in](mailto:kredakargil-jk@nic.in).

If the tender documents are down loaded from the web-site the tenderer should furnish D.D. worth Rs 1000/- (Rs one thousand only) in favour of Project Director/ C.E.O., KREDA, Kargil, along with the technical bit document inside the envelope no. I. If the same is not furnished for the downloaded documents the tenderer bit is liable for rejection.

Project Director/C.E.O.,  
KREDA,LAHDC-Kargil,

**LADAKH AUTONOMOUS HILL DEVELOPMENT COUNCIL, KARGIL,**  
**OFFICE OF THE PROJECT DIRECTOR / CHIEF EXECUTIVE OFFICER,**  
**KREDA, LAHDC-KARGIL**

**Tender documents in reference to NIT No.02 of 2010**

For and on behalf of the Governor of Jammu & Kashmir State, sealed tenders affixed with Rs.5/- revenue stamps are invited for survey, investigation and preparation of Detailed Project Report (based on detailed measurement & Design) for the below named Mini Hydrel Projects, of Drass MHP Cluster in of Kargil district from Registered agencies/ Associations on the basis of the following minimum qualification criteria.

**List of works with approx. potential capacity for Drass MHP Cluster:**

S.No	Location of Hydro Electric Projects	Type of Scheme	Approx: capacity	Time of completion
1)	Matayeen MHP	Mini Hydrel Scheme	1250 KW	Within 3 months from date of issuing of allotment order
2)	Thasgam/Drass MHP	Mini Hydrel Scheme	600 KW	Within next one month of Sr. No. 1
3)	Bairass-II MHP	Mini Hydrel Scheme	1120 KW	Within next one month of Sr. No. 2
	Total		2970 KW	

Tender for survey, investigation and preparation of detail project reports for the above works shall be required to be completed within the stipulated time period. The tender should reach the office of Project Director/CEO, KREDA, LAHDC- Kargil, Forest Environmental Awareness Centre, Baroo Tsog, Kargil, on or before as mentioned in the NIT.

**2. Qualifications for the tenderer**

- 2.1 Registration card.
- 1.2 List of Engineers including Civil, Electrical and Mechanical Engineers and proof of enrolment with the firm/tenderer with their experiences.
- 1.3 List of one or more approved projects for which DPR's were prepared by the tenderer.
- 1.4 Experience certificate in the field of Micro, Mini and small Hydro electric projects for survey/investigation and preparation of DPR.
- 1.5 List of Surveyors with their experiences.
- 1.6 List of surveying equipments (including digital total station, automatic level and DGPS) which are to be used for the survey work
- 1.7 CDR for Rs 99,000/- i.e Rs. Ninety nine thousand only (as earnest money) pledged to the Project Director, KREDA, LAHDC-Kargil, Kargil.
- 1.8 Proof of annual financial turn over of Rs 30.00 Lakh or more for last three years.
- 1.9 Proof and clearance certificate of:
  - i) PAN No, ii) TIN No & iii) VAT/Service Tax
- 1.10 Audit balance sheet for previous three years.
- 1.11 Latest Bank Solvency up to June, 2010.

- 1.12 All the above certificates/document shall be submitted by the firm duly signed with seal and should be duly attested from a gazetted officer.

## **2. Scope of Works:**

- 2.1 Survey and investigation for Mini Hydel Projects: Demand for powers
- i) Present status of lighting, heating and cooking, etc.
  - ii) Demand and supply profile, which includes lighting, heating, cooking, small-scale industries/cottage industries and lifting of water for irrigations purposes.
- 2.2 Geological survey: A detailed geological report of the alignment should be obtained from a geologist and appended with the project report.
- 2.3 Hydrological studies including collection of Hydrological data for last three years and analysis thereof.
- 2.4 Discharged data of the Nallah at headwork sites should immediately be collected on once in 10 day basis at 5PM/6PM *i.e* 10<sup>th</sup>, 20<sup>th</sup>, 30<sup>th</sup>/End of month, after allotment of the work.

## **3. Detailed Measurements and surveying at site:**

- 3.2 Details of contour Map for component of works shown below.
- 3.1.1 Contour plan with 1 metre. Contour interval for:
- i) Head works area(scale 1:100 and 1:500),
  - ii) Desilting tank (scale 1:100),
  - iii) Canal alignment for a strip of 20 metre x Length of the canal (scale 1:100),
  - iv) Forebay area (scale 1:100),
  - v) Penstock alignment for a strip of 20 metre x length of the penstock (scale 1:100),
  - vi) Power house and tail race channel (1:50 and 1:100),
- 3.1.2 X- Section and L- Section: for the below mentioned components of works
- i) Head work area at an interval of 5 metres, across and along the flow (scale 1:100)
  - ii) Desilting tank/Basin area at an interval of 5 metres, across and along the flow and three no L-section (scale 1:100)
  - iii) X-Section along the canal alignment at an interval of 15 metres and at change points. (Scale 1:100)
  - iv) L- Section of existing irrigation channel. (If any)
  - vi) 3 No X – section and 3 No L–section at proposed forebay tank site.
  - vi) Penstock: 1 No L–section along penstock alignment from forebay to powerhouse and x-section at an interval of 10 metres/ change point, showing details of rock and Shingle-Boulder strata.(scale 1:100)
  - vii) Power house: 3 No L-section along the central line of units, up stream edge/down stream edge and 6 No X –sections. (Scale 1:50 and 1:100)
  - viii) Tail race Channel: One No L -section and X -section at an interval of 15 metres and at change point.
  - ix) TBM – at each component of works (Headwork to Power House) is required to be fixed.
  - x) Location of Head Works, forebay and Power House in reference to Latitude and Longitude by using GPS-equipment

## **4. Volumes of Project Report and Tender Documents:**

- 4.1 Volume- I General Report

- 4.2 Volume –II Basic Design calculation
- 4.3 Volume –III Specification Drawings
- 4.4 Volume –IV Tender documents with bill of quantities for Civil works
- 4.5 Volume –V Tender documents with bill of quantities for Electric and Mechanical works.
- 4.6 Volume –VI Tender documents with bill of quantities for Penstock pipe
- 4.7 Volume- VII General and special condition of contract
- 4.8 Volume –VIII Detailed technical specifications for Civil works including penstock pipes
- 4.9 Volume –IX Detailed technical specifications for Electrical and -Mechanical works
- 4.10 Volume – X Details of survey work i.e. Section, L-Section and Contour Plan etc.

## **5. Documents for Execution of Works: Vol XI and Vol XII.**

- 5.1 The following documents are required for execution of works.
- i) Construction drawings for each component of work i.e. Headwork to Power House and Tail race with all the details of Specification for PCC, RCC and dimensions details (mm) – Vol XI.
  - ii) Detailed design calculation with reference to each component of work i.e. Headwork to Power Hose and Tail race channel. Vol XII
  - iii) All Design calculation and specification should be as per standard Manual/Code of CEA, CBI&P, BSI/BS Codes

## **6. Details of Volumes -I (Para 4.1): General Report.**

- 6.1 Details of Volume –I, General report should contain **chapters** on the below mentioned subjects.
- i) Introduction
  - ii) Salient features (for detailed, see- S.No 7).
  - iii) Project site location (map of India, State and map of project location site)
  - iv) Survey and investigation
  - v) Hydrology (for detailed, see- S.No 8).
  - vi) Geology
  - vii) Power demand and generation studies
  - viii) Technical report on each component of works, Headwork, Approach Channel, Desilting Tank, Canal, Forebay Tank, Spillway structure to Power House, Tailrace channel. (See – S. No 9)
  - ix) Basic design of main civil works, Headwork to Power House Tailrace channel. (for details refer Vol- II )
  - x) Electrical and Mechanical works (e.g. Penstock, BFV, Turbine, etc.)
  - xi) Operation and maintenance cost and schedule,
  - xii) Project cost estimate (See S. No 10),
  - xiii) Unit cost analysis,
  - xiv) Schedule of rates, specifications and analysis of rates,
  - xv) Construction materials to be supplied by the department and executing agencies, including steel for gates and penstock pipes,
  - xvi) Construction equipment and machineries for Civil works,
  - xvii) Construction equipment and machineries for Electro-Mechanical works,
  - xviii) Man Power requirements,
  - xix) Environmental aspect (related to flora fauna and agricultural system of the area) and Environment Impact Assessment.

- xix) Socio – Economic condition, etc.,
- xx) Construction schedule,
- xxi) Bar chart/Pert chart /CPM,
- xxii) Reference to standards and manuals BSI (ISI), ASTM/BS and code of Standards.
- xxiii) Summary description and recommendation.
- xxiv) Preconstruction works and infrastructure backup like, approach road, residential quarters, stores, temporary huts and labour sheds.

6.2 Details of Volume –II and III, Basic design calculation and specification/NIT, drawings for the following components of works. The drawing should include minimum of one layout plan (scale 1:50) One L- section of the structure and one X-section.

- i) Diversion works/Dam/trench weir or simple weir with silt excluder,
- ii) Head regulator including trash rack gate and controlling gates.
- iii) Approach channel upto desilting tank/basin
- iv) Desilting tank/basin including silt excluder system
- v) Escape/overflow structure
- vi) Power canal/Water conductor and covering with soil
- vii) Forebay tank with silt excluder
- viii) Spillway and escape structure at bed level of channel.
- ix) Penstock pipe, bifurcation/Trifurcation, intake trash rack gate, gate/sluice valve downstream of forebay, air vent pipe, anchor blocks and silt excluder for the forebay tank, covering of Penstock Pipe with insulation/impervious soil.
- x) Power House building,
- xi) Tail race channel,
- xii) Single Line Diagram (Power Generation/Distribution).

**7. Details of Para 6.1, Chapter ii: Salient Feature (General Report – Vol I)**

**7.1 Location:**

- i) State =
- ii) District =
- iii) Block =
- iv) Village =
- v) Geographical co-ordinates of Power House
  - Latitude =
  - Longitude =

**7.2 Catchments:**

- i) Tributary =
- ii) Sub-Tributary =

**7.3 Hydrology:**

- i) Catchments area of the stream/Nallah =
- ii) Catchments area of the Diversion site or at Headwork site =
- iii) Precipitation
  - Maximum Rainfall =
  - Minimum Rainfall =
  - Average Rainfall =
  - Snowfall =
- iv) Dependable Yield
  - Percent Discharged (cumec)
  - 50% =
  - 75%

90%	=
95%	=
v) Climate Data	=
Temperature C <sup>0</sup>	=
Humidity (%)	=
Wind (Km/hr)	=
vi) Floods	
<u>Historical</u>	
Max. Discharge estimated (cumec)	=
Date of occurrence	=
<u>Observed</u>	
Max. Water level	
Max. Discharge estimated (cumec)	=
Date of occurrence	=
Maximum Probable flood (cumec)	
Frequency    50 year	=
100 year	=
Design Flood (cumec)	=
Water level	
Silt load data of the Nallah.	=
Gross head	=
Effective/Net head	=

**7.4 (a) Diversion structure (Headworks):**

i) Type of structure	
Simple weir	=
Trench weir	=
Concrete	=
Any other type	=
ii) Length of:	
Overflow section	
iii) Maximum discharge capacity (cumec)	
iv) Number, size and type of gates	
v) Elevation of weir top	=
vi) Elevation of weir Foundation	=
vii) Bed slope of Trench weir	=
(b) <u>Head Regulator</u>	
i) Size of Gate	=
ii) Number of Gates	=
iii) Sill Level	=
iv) Deepest Foundation Level	=
v) Top Level of Structure	=
vi) Maximum discharge capacity (cumec)	=
vii) Gate Lifting System	=
viii) F.S.L. d/s of Gate	=

**7.5 Approach Channel:**

i) Length (M)	=
ii) Size/Section of Channel	=
iii) Bed Slope	=

- iv) Manning's Roughness Coefficient =
- v) F.S. Depth =
- vi) Maximum Velocity at full discharge (m/sec) =
- vii) Velocity at one/two/three/ unit discharge m/sec. =
- viii) Maximum size of silt/gravel carrying capacity =
- ix) Whether the Channel is covered or open =
- x) Max. Flood level at the start of App. Channel =
- xi) Max. Flood level at the end of App. Channel =
- xii) Free Board =

**7.6 Desilting Tank/Basin:**

- i) Width (M) =
- ii) Length (M) =
- iii) Depth (M) =
- iv) No. of Bays =
- v) With of each bay =
- vii) F.S.L =
- vii) Type & Shape of bed =
- viii) Silt Excluder type =
- ix) Size of silt excluder =
- x) Operation/Lifting system of silt Excluder =
- xi) Max. size of silt to be removed =
- xii) Average designed velocity of flow at FSD =
- xiii) Designed Settling velocity (Vertical) =
- xiv) Level difference between entrance/Upstream  
and out-let/Downstream =
- xv) Section of Bye-Pass Channel for non-silty seasons =

**7.7 Power Channel/Water Conductor:**

- i) Length =
- ii) Bed Slope =
  - a) RD \_\_\_\_\_ to RD \_\_\_\_\_ =
  - b) RD \_\_\_\_\_ to RD \_\_\_\_\_ =
- iii) Sections =
  - a) RD \_\_\_\_\_ to RD \_\_\_\_\_ =
  - b) RD \_\_\_\_\_ to RD \_\_\_\_\_ =
- iv) Free Board =
- v) Full Supply Depth (FSD) =
- vi) Full Supply Discharge (cumec) =
- vii) Velocity at F.S. discharge m/sec. =
- viii) Manning's Roughness Coefficient, n =
- ix) Type of Lining =
- x) Whether covered or open RD- wise details =
- xi) Depth of Impervious Soil Cover =
- xii) Spacing of Manhole or Inspecting Chamber  
(in case of covered channel) =
- xiii) Free Board at Full Supply discharge  
escape through ogee spillway =
- xiv) Full Supply Depth =
  - at 3- Unit discharge =
  - 2- Unit discharge =

- 1- Unit discharge =
- xv) Type of Material used for lining
  - a) Masonry =
  - b) PCC/RCC with mix strength =
  - c) Reinforcement Mesh details =
  - d) Cover thickness (incase of RCC) =
- xvi) Landscape detail after completion =
  - a) Turf/Plantation =
  - b) Width of footpath/Inspection road =
  - c) Protection against rolling boulders and Toe-Protection details =

**7.8 Escape/Outlet/Spillway:**

- i) Location RD-wise =
- ii) Size of Escape Gate =
- iii) Spillway Length =
- iv) Elevation of Spillway =
- v) Depth/Head over Spillway at Full Supply Discharge =
- vi) Afflux details at Full Supply Discharge =
- vii) Length of Chute Channel down stream of Escape/Spillway =
- viii) Energy dissipater/Friction Block details =
- ix) Sill level of Escape Gate =
- x) Maximum discharge capacity of Escape/Spillway =
- xi) Operation details of Gate/Type of lifting system =

**7.9 Forebay:**

- i) Retention Period (Mint.) =
- ii) Size of Forebay (L x W x D) =
- iii) Free Board =
- iv) Depth of dead cushion =
- v) Elevation of Penstock bell mouth Intake bed/sill =
- vi) Elevation of penstock bell mouth top =
- vii) Bed level of Forebay near Intake bell mouth =
- viii) Depth of water cover above bell mouth =
- ix) Minimum Draw Down Level =
- x) Full Supply Level =
- xi) Maximum water level at Full load rejection and during Full Escape through spill way =
- xii) Whether the Forebay is covered or open =
- xiii) Protection measures against rolling boulders from hill site =
- xiv) Type of lining. =
- xv) Type of Insulation or Measure against freezing =
- xvi) Trash Rack details/type
  - a) Size of Flat bar =
  - b) Spacing/clear gap =
  - c) Measures against Freezing =
  - d) Debris removal system =
  - e) Lifting system for trash rack =
- xvii) Gauge Inside Forebay for reading instantaneous depth/levels =

- xviii) Silt Excluder type
  - a) Operation details =
  - b) Size of gate/valve =
- xix) Elevation of different bed levels =
- xx) Rung – Ladder for inspection of Forebay bed/ sluice valve/Trash Rack =

### 7.10 Penstocks:

- i) Number =
- ii) Diameter (mm) =
- iii) Thickness (mm) =
- iv) Length (M) =  
(Upto bifurcation or Trifurcation)
- v) Maximum Velocity
  - a) Velocity at 3-unit discharge =
  - b) Velocity at 2-unit discharge =
  - c) Velocity at 1-unit discharge =
- vi) Type of connection
  - a) Flanged/Bolted
  - b) Welded joints with contraction/Expansion joints =
  - c) Spacing of Flanged/Bolted joints =
- vii) Type of Insulation to protect from Sub-zero temperature =
- viii) Whether the penstock pipe is covered with Impervious soil or uncovered
  - a) Depth/Thickness of soil cover =
- ix) Type of penstock Intake Gate =
- x) Air Vent Pipe size =
- xi) Bifurcation/or trifurcation =
- xii) Diameter of Bifurcation/trifurcation (mm) =
- xiii) Length of Bifurcation/or trifurcation (m) =
- xiv) Thickness of Bifurcation/or trifurcation (mm) =
- xv) Type of Steel with BSI/BS code Number =
- xvi) Maximum Water Hammer Pressure =
- xvii) Total Pressure, including water hammer, during sudden closure. =
- xviii) Whether Surge tank is required, If required, size and Location of Surge tank, =
- xviii) Type of PVC/or other material used for Gaskets between Flanged connections =
- xix) Protection Measures to be adopted against fall of/rolling boulders/slips/other type of External Impact load. =
- xx) Specification of Paints with BSI/BS Code No. =
- xxii) Minimum design discharge, cumec/sec =

### 7.11 Power House:

- i) Type of Power House  
Surface or underground =
- ii) Size of Power House, L x B x H (M) =
- iii) Type of roofing =
- vi) Weather beams for E.O.T.  
crane is required or not. =
- v) Elevation of Generator Floor =
- vi) Elevation of deepest foundation =
- vii) Gross Head (m) =
- viii) Net Head (m) =
- ix) Design Head (m) =
- x) Location Details
  - Latitude = .....N
  - Longitude = .....E

**7.12 Electro-Mechanical Equipments:**

- i) Type of Turbine =
- ii) Horizontal/or Vertical =
- iii) Numbers of Turbine =
- iv) Capacity of each Turbine (KW) =
- v) RPM/Speed of Turbine =
- vi) Permissible speed rise =
- vii) Type of Generator =
  - a) Excitation system =
  - b) Regulation system =
  - c) RPM =
  - d) Capacity (KW) =
- viii) Rating of Generator
  - KW =
  - Frequency HZ =
  - Voltage / Phase =
  - Power Factor =
- ix) Connection Rotor =
  - ( Delta/Star ) stator =
- x) Over load capacity =

**7.13 POWER**

- i) Installed capacity (KW) =
- ii) Firm Power (KW) =
- iii) Seasonal Maximum Power (KW) =
- iv) Annual Energy (KW hr) =
  - Firm =
  - Seasonal =
  - Total =

**7.14 ESTIMATED COST**

- i) Cost of civil works =
- ii) Cost of Electrical and Mechanical works =
- iii) Cost under other Heads not covered =
- iv) Cost per MW/or KW =

v) Unit cost (per KWh) =

### 7.15 Cost of Generation per Unit:

- i) At 100% load factor
  - Without Subsidy =
  - With Subsidy =
- ii) At 60% load factor
  - Without Subsidy =
  - With Subsidy =

### 8. Details of Para 6.1, Chapter v: Hydrology: (Gen Report vol -I)

- i) General report on the Nallah
- ii) Catchments Area with maps. =
  - a) Total Catchments area up to proposed Head works site (KM<sup>2</sup>) =
  - b) Snow Covered Area/Glacier Area(KM<sup>2</sup>) =
    - Maximum Area (January – February) =
    - Minimum Area (July- September) =
- xxv) Metrological Survey (Data required for more than 3 years)
  - a) Rainfall data =
  - b) Snowfall data =
  - c) Half Monthly/Monthly Average Temperature (°C) =
- xxvi) Gauge- Discharge Curve At Headworks site
  - a) 1/10- daily discharge data i.e 10<sup>th</sup>, 20<sup>th</sup>, 30<sup>th</sup>,/Ending of month to be measured immediately after Allotment of works =
  - b) Peak flood discharge =
  - c) Minimum discharge =
  - d) Silt load data of the Nallah =
- xxvii) High Flood Discharge Data based on
  - a) Catchments Area –Formula. =
  - b) Rainfall/Run off Formula. =
  - c) Flood estimation by using. flood Mark, Area, Bed Slope, velocity =
  - d) Based on flood frequency
    - 50 years Flood =
    - 100 years Flood =
  - e) Flood Discharge adopted for Design of Headwork's structure =
- xxviii) Dependable Discharge

%age                      Discharge (Cumec)

50%	=
75%	=
90%	=

xxix) Existing use for Irrigation purpose

xxx) Availability of water for Power Generation.

<b>Units</b>	<b>Discharge m<sup>3</sup>/s</b>	<b>Availability for No. of months</b>
One – Unit	.....	.....
Two - Unit	.....,	.....
Three –Unit	.....	.....

## **9. Details of Chapter viii: Technical report (Gen Report Vol -I)**

### 9.1 Technical report on each component of work

- i) Diversion works/trench weir or simple weir with silt excluder
- ii) Head regulator including trash rack gate and controlling gates.
- iii) Approach channel upto desilting tank/basin
- iv) Desilting tank/basin including silt excluder system
- v) Escape/overflow structure
- vi) Power canal/Water conductor
- vii) Forebay tank with silt excluder
- viii) Spillway and escape structure at bed level of canal.
- ix) Penstock pipe, bifurcation/Trifurcation, intake trash rack gate, gate/slucice valve downstream of forebay, air vent pipe, anchor blocks and silt excluder for the forebay tank
- x) Power House building
- xi) Tail race channel

## **10. Details of Chapter xii: Project cost estimate (Gen Report Vol-I)S**

### 10.1 Details of project cost estimates, civil works

- i) Diversion works/trench weir or simple weir with silt excluder
- ii) Head regulator including trash rack gate and controlling gates.
- iii) Approach channel upto desilting tank/basin
- iv) Desilting tank/basin including silt excluder system
- vii) Escape/overflow structure
- vi) Power canal/Water conductor
- vii) Forebay tank with silt excluder
- viii) Spillway and escape structure at bed level of canal.
- ix) Penstock pipe, bifurcation/Trifurcation, intake trash rack gate, gate/slucice valve downstream of forebay, air vent pipe, anchor blocks and silt excluder for the forebay tank

- x) Power House building
- xi) Tail race channel
- xiii) Cost under other heads.
  - I A --- Preliminary
  - B --- Land
  - C --- Works  
(already mentioned under Civil works and Electro-Mech: Works)
  - K --- Buildings
  - M --- Plantation
  - P --- Maintenance  
(during construction period)
  - Q --- Special T&P
  - R --- Communication  
(road etc.)
  - T --- Water supply works.
  - U --- Losses on stock and unforeseen.
  - II Establishment charges (5 to 10 % of I – works) i.e. A to U.
  - III Tools & Plants (1% of Of I – works) i.e. A to U
  - IV Suspense @ (±) 10%
  - V Indirect charges

### 10.3 Details of project cost of estimates for electrical works

- i) Turbine
- ii) Generator.
- iii) Governor
- iv) MIV
- v) Control panel
- vi) Auxiliaries
- vii) Outdoor switch yard
- viii) Step up transformer, etc.
- ix) AVR Panels
  - x) DC Battery System
  - xi) Grounding System
  - xii) Fire Protection
- xiii) Cooling Water System
- xiv) Cost of other works under Electro – Mechanical Components not covered under above mentioned heads.

### 11. **Instruction/terms and conditions:**

- i) The tender should be addressed to The Project Director/CEO, KREDA, LAHDC-Kargil, Forest Environmental Awareness Centre, Baroo Tsog, Kargil, The cover should be duly sealed and superscripted and sent either under registered cover or cast in the tender box kept in the office of the Project Director/CEO, KREDA, LAHDC- Kargil, Forest Environmental Awareness Centre, Baroo Tsog, Kargil.
- ii) The Tenderer shall ensure timely receipt of tender in the office of the Project Director/CEO, KREDA, LAHDC- Kargil, Forest Environmental Awareness Centre, Baroo Tsog, Kargil. The tender received by hand or by post, after due date of receipt of tenders shall not be entertained even if the tender has been posted/dispatched much before the due date of receipt.
- iii) The tender will be opened on the same day or any convenient date, in presence of the tenderers in the office of the Deputy Commissioner/CEO, LAHDA, Kargil. In case the due date of opening of the tenders falls on a holiday being declared,

- the tender will be opened on the next working day.
- iv) Telegraphic tenders or the tenders of such tenderers who have not purchased tender documents shall not be entertained. Any request by post or by hand or telegraphically for any modification addition or deletion etc. in the tenders shall not be considered.
  - v) The tenders shall be prepared in a formal manner with all quotations written both in figures and words. The tenders shall be typed or written in ink, any tender written by pencil shall be rejected. There shall be no erasures or overwriting and if corrections are made, the same shall be neatly done and attested. A systematic form of totaling shall be adopted to avoid any ambiguity. The detailed description of the equipment offered shall be given.
  - vi) The tenderer/bidder shall inspect and examine the sites of each Mini-Hydel Project and its surroundings and shall satisfy himself before submitting his Tender.
  - vii) The tenderer, if they like, can visit the existing/running Power Projects like Iqbal, Marphocho and Haftal HEP for understanding the problems faced, due to extreme climatic conditions.
  - viii) The tenderer shall not sublet any portion of the contract without the prior written approval of the accepting authority.
  - ix) The tenderer shall submit DPR as per the details given in the document and in addition to this, they can add chapter on other heads, if found necessary.
    - x) The total proposed potential of this cluster's may at the time of DPR submission by the successful bidder can vary up to  $\pm 30\%$ , in case of plus 30 % the successful bidder will not be paid any extra cost.

## **12. Earnest Money:**

- i) Tender shall be accompanied with the earnest money equal to Rs.99,000/- (Rupees ninety nine thousand only) in the form of CDR from a nationalized/schedule bank pledged to the Project Director, KREDA, LAHDC-Kargil, Kargil.
- ii) Tenders not accompanied with the required amount of earnest money will be rejected and their price bid shall not be opened.
- iii) Earnest money deposit shall be released in favour of the unsuccessful tender(s) within two months after the final acceptance of the tender.

## **13. Special Instructions:**

- i) Tenders not submitted on the lines indicated above are liable to be rejected without any correspondence.
- ii) Request for extension of last date of receipts of tenders is likely to be ignored.
- iii) Any form of canvassing by the tenderers to influence the consideration of their tender shall liable to summary rejection.
- iv) All the survey/investigation shall be done in details as per tender documents.
- v) The tenderer is required to submit a statement of facts in details as to their previous experience in performing a similar or comparable work and business & technical organization.
- vi) Force majeure clause shall apply.
- viii) No other conditions except those mentioned above will be acceptable.

**14. Mode of Payment:**

- i) 1<sup>st</sup> installment up to 30% of the contract amount shall be released after submission of complete project report for Matayeen (S.no.1) Mini Hydel Scheme.
- ii) 2<sup>nd</sup> installment of 30% of the contract amount shall be released after submission of complete project report for Thasgam/Drass(S.no.2) Mini-Hydel Schemes.
- iii) 3<sup>rd</sup> installment of 30% of the contract amount shall be released after submission of complete project report for other for remaining projects i.e. Bairass Mini Hydel Project.
- iv) Balance 10% shall be released after six months or start of work at site which ever is earlier.

**15. Penalty:**

- i) In case of failure in submission of detailed project reports as per the list of works mentioned above/below and time stipulated against each, a penalty @ of 0.5% of project cost per week up to 15% shall be imposed on the agency.

**16. Evaluation statement of price bids:**

The agencies must quote rates as per the format given below, both in figures and words.

S.No	Name of Project	Capacity	Survey and investigation cost (Rs)	Detail Report preparation cost (Rs)	Project cost	Total Cost (Rs)
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>		<b>6</b>
1.	Drass MHP Cluster	2970 KW				

Total Rupees .....

The total cost as per column 6 should be inclusive of all taxes, levies, sale tax works contract tax, turnover tax, income tax, insurance cover etc. as applicable from time to time and no extra payment on this account shall be entertained on the quoted rates. All these taxes shall be deducted at source. The rates approved in favour of the successful tenderer would be valid till project is finalized and the contract is completed.

Registered Agency,  
(Sign & Seal)

**17. Number of project copies required:**

- i) Volume I to X( except volume III) = 12 copies
- ii) Volume III (specification drawings) = 24 copies
- iii) Design calculation and Drawing for Construction/Execution volume XI & XII = 12 copies

**18. Agreement:**

The successful tenderer shall be required to execute an agreement on a valid stamped paper for strict compliance of the terms and conditions of the contract, vis-à-vis the NIT and the supply order within seven days of placement of the order.

**19. Arbitration and Laws:**

19.1 Arbitration: Except where otherwise provided for in the contract, all questions and disputes relating to the meaning of specification, drawings designs and instructions herein mentioned or as to any other questions, claims, matter or things whatsoever in any way arising out relating to the contract or failure to submit DPRs, whether arising during the progress of work or after completion or abandonment thereof shall be referred to for arbitration under the Jammu & Kashmir Arbitration act.

19.2 Laws: This contract shall be governed by the J&K laws for the time being in force. The court of J&K at Kargil only shall have Jurisdiction for any dispute arising out of this.

**20. Procedure for receiving and opening of tenders:**

20.1 At the time of opening of tenders, the prequalification documents, as per Para 1. shall be opened first, before opening the financial bids. These should be submitted in a separate sealed super scribed Envelope Cover No. 1. (Prequalification, Technical and commercial document papers). The envelope should contain criteria as per paragraph 1.1 to 1.12 mentioned above.

**21. Financial Bids:**

21.1 The tenders for bidding shall be submitted on the prescribed form as per Sr.NO.16 of this tender document to be issued by this office, which should be sealed in an another Envelope, Cover-II to be opened after finalization of pre-qualification documents.

21.2 Both the Envelopes i.e. Cover-I and Cover-II should be put together in another Envelope. This Envelope should be addressed to the Deputy Commissioner/CEO, LAHDC-Kargil, Kargil with name of Work, NIT No, date of tendering and address of the Sender with contact No. and should be duly sealed.

**22. All agencies:**

All registered agencies are requested to cast their tenders without pre conditions and to adhere to the all the above prescribed Para's.

**23. Validity of tender:**

The tender should be valid for a period of six months from the date of the opening of the tender.

**24. Cost of tender document:**

This tender document shall be sold at Rs. 1000/- (Rs one thousand only) and shall be available up to the time mentioned at Para 1. (1.1 to 1.13) in the office of the Project Director/CEO, KREDA, LAHDC- Kargil, Forest Environmental Awareness Centre, Baroo Tsog, Kargil (or) it can be downloaded from KREDA web site *i.e.* [kredakargil-jk@nic.in](mailto:kredakargil-jk@nic.in).

If the tender documents are down loaded from the web-site the tenderer should furnish D.D. worth Rs 1000/- (Rs one thousand only) in favour of Project Director/ C.E.O., KREDA, Kargil, along with the technical bit document inside the envelope no. I. If the same is not furnished for the downloaded documents the tenderer bit is liable for rejection.

Project Director/C.E.O.,  
KREDA,LAHDC-Kargil,Kargil.

**LADAKH AUTONOMOUS HILL DEVELOPMENT COUNCIL, KARGIL,**  
**OFFICE OF THE PROJECT DIRECTOR / CHIEF EXECUTIVE OFFICER,**  
**KREDA, LAHDC-KARGIL**

**Tender documents in reference to NIT No.03 of 2010**

For and on behalf of the Governor of Jammu & Kashmir State, sealed tenders affixed with Rs.5/- revenue stamps are invited for survey, investigation and preparation of Detailed Project Report (based on detailed measurement & Design) for the below named Mini Hydrel Projects, of Zanskar MHP Cluster in Kargil district from Registered agencies/ Associations on the basis of the below mentioned minimum qualification criteria.

**List of works with approx. potential capacity for Zanskar MHP Cluster:**

<b>S.No</b>	<b>Location of Hydro Electric Projects</b>	<b>Type of Scheme</b>	<b>Approx: capacity</b>	<b>Time of completion</b>
1)	Ating MHP 3400 KW	Mini Hydrel Scheme	3400 KW	Within 4 months from date of issuing of allotment order
2)	Raru MHP 2000 KW	Mini Hydrel Scheme	2000 KW	Within next four month of Sr. No. 1

Tender for survey, investigation and preparation of detail project reports for the above works shall be required to be completed within the stipulated time period. The tender should reach the office of The Project Director/CEO, KREDA, LAHDC- Kargil, Forest Environmental Awareness Centre, Baroo Tsog, Kargil, on or before as mentioned in the NIT.

**3. Qualifications for the tenderer**

- 3.1 Registration card.
- 1.2 List of Engineers including Civil, Electrical and Mechanical Engineers and proof of enrolment with the firm/tenderer with their experiences.
- 1.3 List of one or more approved projects for which DPR's were prepared by the tenderer.
- 1.4 Experience certificate in the field of Micro, Mini and small Hydro electric projects for survey/investigation and preparation of DPR.
- 1.5 List of Surveyors with their experiences.
- 1.6 List of surveying equipments (including digital total station, automatic level and DGPS) which are to be used for the survey work
- 1.7 CDR for Rs 1,80,000/- Rs one lakh eighty thousand (as earnest money) pledged to the Project Director, KREDA, LAHDC-Kargil, Kargil.
- 1.8 Proof of annual financial turn over of Rs 30.00 Lakh or more for last three years.
- 1.9 Proof and clearance certificate of:
  - i) PAN No, ii) TIN No & iii) VAT/Service Tax
- 1.10 Audit balance sheet for previous three years.
- 1.11 Latest Bank Solvency up to June, 2010.
- 1.12 All the above certificates/document shall be submitted by the firm duly signed with seal and should be duly attested from a gazetted officer.

**2. Scope of Works:**

- 2.1 Survey and investigation for Mini Hydel Projects: Demand for powers
  - i) Present status of lighting, heating and cooking, etc.
  - ii) Demand and supply profile, which includes lighting, heating, cooking, small-scale industries/cottage industries and lifting of water for irrigations purposes.
- 2.2 Geological survey: A detailed geological report of the alignment should be obtained from a geologist and appended with the project report.
- 2.3 Hydrological studies including collection of Hydrological data for last three years and analysis thereof.
- 2.4 Discharged data of the Nallah at headwork sites should immediately be collected on once in 10 day basis at 5PM/6PM *i.e* 10<sup>th</sup>, 20<sup>th</sup>, 30<sup>th</sup>/End of month, after allotment of the work.

### 3. **Detailed Measurements and surveying at site:**

7.12 Details of contour Map for component of works shown below.

3.1.1 Contour plan with 1 metre. Contour interval for:

- i) Head works area. (scale 1:100 and 1:500)
- ii) Desilting tank (scale 1:100)
- iii) Canal alignment for a strip of 20 metre x Length of the canal (scale 1:100)
- iv) Forebay area (scale 1:100)
- v) Penstock alignment for a strip of 20 metre x length of the penstock (scale 1:100)
- vi) Power house and tail race channel (1:50 and 1:100)

3.1.2 X- Section and L- Section: for the below mentioned components of works

- i) Head work area at an interval of 5 metres, across and along the flow (scale 1:100)
- ii) Desilting tank/Basin area at an interval of 5 metres, across and along the flow and three no L-section (scale 1:100)
- iii) X-Section along the canal alignment at an interval of 15 metres and at change points. (Scale 1:100)
- iv) L- Section of existing irrigation channel. (If any)
- vii) 3 No X – section and 3 No L–section at proposed forebay tank site.
- vi) Penstock: 1 No L–section along penstock alignment from forebay to powerhouse and x-section at an interval of 10 metres/ change point, showing details of rock and Shingle-Boulder strata.(scale 1:100)
- vii) Power house: 3 No L-section along the central line of units, up stream edge/down stream edge and 6 No X –sections. (Scale 1:50 and 1:100)
- viii) Tail race Channel: One No L -section and X -section at an interval of 15 metres and at change point.
- ix) TBM – at each component of works (Headwork to Power House) is required to be fixed.
- x) Location of Head Works, forebay and Power House in reference to Latitude and Longitude by using GPS-equipment

### 4. **Volumes of Project Report and Tender Documents:**

- |     |             |   |
|-----|-------------|---|
| 4.1 | Volume- I   | General Report  |
| 4.2 | Volume –II  | Basic Design calculation  |
| 4.3 | Volume –III | Specification Drawings  |
| 4.4 | Volume –IV  | Tender documents with bill of quantities for Civil works                    |
| 4.5 | Volume –V   | Tender documents with bill of quantities for Electric and Mechanical works. |

- 4.6 Volume –VI Tender documents with bill of quantities for Penstock pipe
- 4.7 Volume- VII General and special condition of contract
- 4.8 Volume –VIII Detailed technical specifications for Civil works including penstock pipes
- 4.9 Volume –IX Detailed technical specifications for Electrical and -Mechanical works
- 4.10 Volume – X Details of survey work i.e. Section, L-Section and Contour Plan etc.

### **5.) Documents for Execution of Works: Vol XI and Vol XII.**

- 5.1) The following documents are required for execution of works.
  - i) Construction drawings for each component of work i.e. Headwork to Power House and Tail race with all the details of Specification for PCC, RCC and dimensions details (mm) – Vol XI.
  - ii) Detailed design calculation with reference to each component of work i.e. Headwork to Power Hose and Tail race channel. Vol XII
  - iii) All Design calculation and specification should be as per standard Manual/Code of CEA, CBI&P, BSI/BS Codes

### **6. Details of Volumes -I (Para 4.1): General Report.**

- 6.1 Details of Volume –I, General report should contain **chapters** on the below mentioned subjects.
  - i) Introduction
  - ii) Salient features (for detailed, see- S.No 7).
  - iii) Project site location (map of India, State and map of project location site)
  - iv) Survey and investigation
  - v) Hydrology (for detailed, see- S.No 8).
  - vi) Geology
  - vii) Power demand and generation studies
  - viii) Technical report on each component of works, Headwork, Approach Channel, Desilting Tank, Canal, Forebay Tank, Spillway structure to Power House, Tailrace channel. (See – S. No 9)
  - ix) Basic design of main civil works, Headwork to Power House Tailrace channel. (for details refer Vol- II )
  - x) Electrical and Mechanical works (e.g. Penstock, BFV, Turbine, etc.)
  - xi) Operation and maintenance cost and schedule,
  - xii) Project cost estimate (See S. No 10),
  - xiii) Unit cost analysis,
  - xiv) Schedule of rates, specifications and analysis of rates,
  - xv) Construction materials to be supplied by the department and executing agencies, including steel for gates and penstock pipes,
  - xvi) Construction equipment and machineries for Civil works,
  - xvii) Construction equipment and machineries for Electro-Mechanical works,
  - xviii) Man Power requirements,
  - xix) Environmental aspect (related to flora fauna and agricultural system of the area) and Environment Impact Assessment.
  - xix) Socio – Economic condition, etc.,
  - xx) Construction schedule,
  - xxi) Bar chart/Pert chart /CPM,
  - xxii) Reference to standards and manuals BSI (ISI), ASTM/BS and code of Standards.

- xxiii) Summary description and recommendation.
- xxiv) Preconstruction works and infrastructure backup like, approach road, residential quarters, stores, temporary huts and labour sheds.

6.2 Details of Volume –II and III, Basic design calculation and specification/NIT, drawings for the following components of works. The drawing should include minimum of one layout plan (scale 1:50) One L- section of the structure and one X-section.

- i) Diversion works/Dam/trench weir or simple weir with silt excluder,
- ii) Head regulator including trash rack gate and controlling gates.
- iii) Approach channel upto desilting tank/basin
- iv) Desilting tank/basin including silt excluder system
- v) Escape/overflow structure
- vi) Power canal/Water conductor and covering with soil
- vii) Forebay tank with silt excluder
- viii) Spillway and escape structure at bed level of channel.
- ix) Penstock pipe, bifurcation/Trifurcation, intake trash rack gate, gate/slucice valve downstream of forebay, air vent pipe, anchor blocks and silt excluder for the forebay tank, covering of Penstock Pipe with insulation/impervious soil.
- x) Power House building,
- xi) Tail race channel,
- xii) Single Line Diagram (Power Generation/Distribution).

**7. Details of Para 6.1, Chapter ii: Salient Feature (General Report – Vol I)**

**7.1 Location:**

- i) State =
- ii) District =
- iii) Block =
- iv) Village =
- v) Geographical co-ordinates of Power House
  - Latitude =
  - Longitude =

**7.2 Catchments:**

- i) Tributary =
- ii) Sub-Tributary =

**7.3 Hydrology:**

- i) Catchments area of the stream/Nallah =
- ii) Catchments area of the Diversion site or at Headwork site =
- iii) Precipitation
  - Maximum Rainfall =
  - Minimum Rainfall =
  - Average Rainfall =
  - Snowfall =
- iv) Dependable Yield
  - Percent Discharged (cumec)
  - 50% =
  - 75% =
  - 90% =
  - 95% =
- v) Climate Data
  - Temperature C<sup>0</sup> =
  - Humidity (%) =

Wind (Km/hr)	=
vi) Floods	
<u>Historical</u>	
Max. Discharge estimated (cumec)	=
Date of occurrence	=
<u>Observed</u>	
Max. Water level	
Max. Discharge estimated (cumec)	=
Date of occurrence	=
Maximum Probable flood (cumec)	
Frequency    50 year	=
100 year	=
Design Flood (cumec)	=
Water level	
Silt load data of the Nallah.	=
Gross head	=
Effective/Net head	=

**7.4 (a) Diversion structure (Headworks):**

i) Type of structure	
Simple weir	=
Trench weir	=
Concrete	=
Any other type	=
ii) Length of:	
Overflow section	
iii) Maximum discharge capacity (cumec)	
iv) Number, size and type of gates	
v) Elevation of weir top	=
vi) Elevation of weir Foundation	=
vii) Bed slope of Trench weir	=
(b) <u>Head Regulator</u>	
i) Size of Gate	=
ii) Number of Gates	=
iii) Sill Level	=
iv) Deepest Foundation Level	=
v) Top Level of Structure	=
vi) Maximum discharge capacity (cumec)	=
vii) Gate Lifting System	=
viii) F.S.L. d/s of Gate	=

**7.5 Approach Channel:**

i) Length (M)	=
ii) Size/Section of Channel	=
iii) Bed Slope	=
iv) Manning's Roughness Coefficient	=
v) F.S. Depth	=
vi) Maximum Velocity at full discharge (m/sec)	=
vii) Velocity at one/two/three/ unit discharge m/sec.	=
viii) Maximum size of silt/gravel carrying capacity	=

- ix) Whether the Channel is covered or open =
- x) Max. Flood level at the start of App. Channel =
- xi) Max. Flood level at the end of App. Channel =
- xii) Free Board =

**7.6 Desilting Tank/Basin:**

- i) Width (M) =
- ii) Length (M) =
- iii) Depth (M) =
- iv) No. of Bays =
- v) With of each bay =
- vii) F.S.L =
- vii) Type & Shape of bed =
- viii) Silt Excluder type =
- ix) Size of silt excluder =
- x) Operation/Lifting system of silt Excluder =
- xi) Max. size of silt to be removed =
- xii) Average designed velocity of flow at FSD =
- xiii) Designed Settling velocity (Vertical) =
- xiv) Level difference between entrance/Upstream  
and out-let/Downstream =
- xv) Section of Bye-Pass Channel for non-silty seasons =

**7.7 Power Channel/Water Conductor:**

- i) Length =
- ii) Bed Slope =
  - a) RD \_\_\_\_\_ to RD \_\_\_\_\_ =
  - b) RD \_\_\_\_\_ to RD \_\_\_\_\_ =
- iii) Sections =
  - a) RD \_\_\_\_\_ to RD \_\_\_\_\_ =
  - b) RD \_\_\_\_\_ to RD \_\_\_\_\_ =
- iv) Free Board =
- v) Full Supply Depth (FSD) =
- vi) Full Supply Discharge (cumec) =
- vii) Velocity at F.S. discharge m/sec. =
- viii) Manning's Roughness Coefficient, n =
- ix) Type of Lining =
- x) Whether covered or open RD- wise details =
- xi) Depth of Impervious Soil Cover =
- xii) Spacing of Manhole or Inspecting Chamber  
(in case of covered channel) =
  
- xiii) Free Board at Full Supply discharge  
escape through ogee spillway =
  
- xiv) Full Supply Depth  
at 3- Unit discharge =  
2- Unit discharge =  
1- Unit discharge =
- xv) Type of Material used for lining =
  - a) Masonry =
  - b) PCC/RCC with mix strength =

- c) Reinforcement Mesh details =
- d) Cover thickness (incase of RCC) =
- xvi) Landscape detail after completion =
  - a) Turf/Plantation =
  - b) Width of footpath/Inspection road =
  - c) Protection against rolling boulders and Toe-Protection details =

**7.8 Escape/Outlet/Spillway:**

- i) Location RD-wise =
- ii) Size of Escape Gate =
- iii) Spillway Length =
- iv) Elevation of Spillway =
- v) Depth/Head over Spillway at Full Supply Discharge =
- vi) Afflux details at Full Supply Discharge =
- vii) Length of Chute Channel down stream of Escape/Spillway =
- viii) Energy dissipater/Friction Block details =
- ix) Sill level of Escape Gate =
- x) Maximum discharge capacity of Escape/Spillway =
- xi) Operation details of Gate/Type of lifting system =

**7.9 Forebay:**

- i) Retention Period (Mint.) =
- ii) Size of Forebay (L x W x D) =
- iii) Free Board =
- iv) Depth of dead cushion =
- v) Elevation of Penstock bell mouth Intake bed/sill =
- vi) Elevation of penstock bell mouth top =
- vii) Bed level of Forebay near Intake bell mouth =
- viii) Depth of water cover above bell mouth =
- ix) Minimum Draw Down Level =
- x) Full Supply Level =
- xi) Maximum water level at Full load rejection and during Full Escape through spill way =
- xii) Whether the Forebay is covered or open =
- xiii) Protection measures against rolling boulders from hill site =
- xiv) Type of lining. =
- xv) Type of Insulation or Measure against freezing =
- xvi) Trash Rack details/type =
  - a) Size of Flat bar =
  - b) Spacing/clear gap =
  - c) Measures against Freezing =
  - d) Debris removal system =
  - e) Lifting system for trash rack =
- xvii) Gauge Inside Forebay for reading instantaneous depth/levels =
- xviii) Silt Excluder type =
  - a) Operation details =
  - b) Size of gate/valve =
- xix) Elevation of different bed levels =

- xx) Rung – Ladder for inspection of Forebay bed/ sluice valve/Trash Rack =

### 7.10 Penstocks:

- i) Number =
- ii) Diameter (mm) =
- iii) Thickness (mm) =
- iv) Length (M) =  
(Upto bifurcation or Trifurcation)
- v) Maximum Velocity =
  - a) Velocity at 3-unit discharge =
  - b) Velocity at 2-unit discharge =
  - c) Velocity at 1-unit discharge =
- vi) Type of connection =
  - a) Flanged/Bolted
  - b) Welded joints with contraction/Expansion joints =
  - c) Spacing of Flanged/Bolted joints =
- vii) Type of Insulation to protect from Sub-zero temperature =
- viii) Whether the penstock pipe is covered with Impervious soil or uncovered =
  - a) Depth/Thickness of soil cover =
- ix) Type of penstock Intake Gate =
- x) Air Vent Pipe size =
- xi) Bifurcation/or trifurcation =
- xii) Diameter of Bifurcation/trifurcation (mm) =
- xiii) Length of Bifurcation/or trifurcation (m) =
- xiv) Thickness of Bifurcation/or trifurcation (mm) =
- xv) Type of Steel with BSI/BS code Number =
- xvi) Maximum Water Hammer Pressure =
- xvii) Total Pressure, including water hammer, during sudden closure. =
- xix) Whether Surge tank is required, If required, size and Location of Surge tank, =
- xviii) Type of PVC/or other material used for Gaskets between Flanged connections =
- xix) Protection Measures to be adopted against fall of/rolling boulders/slips/other type of External Impact load. =
- xx) Specification of Paints with BSI/BS Code No. =
- xxii) Minimum design discharge, cumec/sec =

### 7.11 Power House:

- i) Type of Power House =
  - Surface or underground =
- ii) Size of Power House, L x B x H (M) =
- iii) Type of roofing =

- vi) Weather beams for E.O.T.  
crane is required or not. =
- v) Elevation of Generator Floor =
- vi) Elevation of deepest foundation =
- vii) Gross Head (m) =
- viii) Net Head (m) =
- ix) Design Head (m) =
- x) Location Details
- Latitude = .....N
- Longitude = .....E

**7.12 Electro-Mechanical Equipments:**

- i) Type of Turbine =
- ii) Horizontal/or Vertical =
- iii) Numbers of Turbine =
- iv) Capacity of each Turbine (KW) =
- v) RPM/Speed of Turbine =
- vi) Permissible speed rise =
- vii) Type of Generator =
  - a) Excitation system =
  - b) Regulation system =
  - c) RPM =
  - d) Capacity (KW) =
- viii) Rating of Generator =
  - KW =
  - Frequency HZ =
  - Voltage / Phase =
  - Power Factor =
- ix) Connection Rotor =
  - ( Delta/Star ) stator =
- x) Over load capacity =

**7.13 POWER**

- i) Installed capacity (KW) =
- ii) Firm Power (KW) =
- iii) Seasonal Maximum Power (KW) =
- iv) Annual Energy (KW hr) =
  - Firm =
  - Seasonal =
  - Total =

**7.14 ESTIMATED COST**

- i) Cost of civil works =
- ii) Cost of Electrical and Mechanical works =
- iii) Cost under other Heads not covered =
- iv) Cost per MW/or KW =
- v) Unit cost (per KWh) =

**7.15 Cost of Generation per Unit:**

- i) At 100% load factor
  - Without Subsidy =
  - With Subsidy =
- ii) At 60% load factor
  - Without Subsidy =
  - With Subsidy =

**8. Details of Para 6.1, Chapter v: Hydrology: (Gen Report vol -I)**

- i) General report on the Nallah
- ii) Catchments Area with maps. =
  - a) Total Catchments area up to proposed Head works site (KM<sup>2</sup>) =
  - b) Snow Covered Area/Glacier Area(KM<sup>2</sup>) =
    - Maximum Area (January – February) =
    - Minimum Area (July- September) =
- iii) Metrological Survey
  - (Data required for more than 3 years)
  - a) Rainfall data =
  - b) Snowfall data =
  - c) Half Monthly/Monthly Average Temperature (°C) =
- iv) Gauge- Discharge Curve At Headworks site
  - a) 1/10- daily discharge data i.e 10<sup>th</sup>, 20<sup>th</sup>, 30<sup>th</sup>/Ending of month to be measured immediately after Allotment of works =
  - b) Peak flood discharge =
  - c) Minimum discharge =
  - d) Silt load data of the Nallah =
- v) High Flood Discharge Data based on
  - a) Catchments Area –Formula. =
  - b) Rainfall/Run off Formula. =
  - c) Flood estimation by using. flood Mark, Area, Bed Slope, velocity =
  - d) Based on flood frequency
    - 50 years Flood =
    - 100 years Flood =
  - e) Flood Discharge adopted for Design of Headwork's structure =
- vi) Dependable Discharge

<u>%age</u>	<u>Discharge (Cumeec)</u>	
50%		=
75%		=

90% =

vii) Existing use for Irrigation purpose

viii) Availability of water for Power Generation.

<u>Units</u>	<u>Discharge m<sup>3</sup>/s</u>	<u>Availability for No. of months</u>
One – Unit	.....	.....
Two - Unit	.....,	.....
Three –Unit	.....	.....

## **9. Details of Chapter viii: Technical report (Gen Report Vol -I)**

### 9.1 Technical report on each component of work

- i) Diversion works/trench weir or simple weir with silt excluder
- ii) Head regulator including trash rack gate and controlling gates.
- iii) Approach channel upto desilting tank/basin
- iv) Desilting tank/basin including silt excluder system
- v) Escape/overflow structure
- vi) Power canal/Water conductor
- vii) Forebay tank with silt excluder
- viii) Spillway and escape structure at bed level of cannel.
- ix) Penstock pipe, bifurcation/Trifurcation, intake trash rack gate, gate/sluiice valve downstream of forebay, air vent pipe, anchor blocks and silt excluder for the forebay tank
- x) Power House building
- xi) Tail race channel

## **10. Details of Chapter xii: Project cost estimate (Gen Report Vol-IS)**

### 10.1 Details of project cost estimates, civil works

- i) Diversion works/trench weir or simple weir with silt excluder
- ii) Head regulator including trash rack gate and controlling gates.
- iii) Approach channel upto desilting tank/basin
- iv) Desilting tank/basin including silt excluder system
- ix) Escape/overflow structure
- vi) Power canal/Water conductor
- vii) Forebay tank with silt excluder
- viii) Spillway and escape structure at bed level of cannel.
- ix) Penstock pipe, bifurcation/Trifurcation, intake trash rack gate, gate/sluiice valve downstream of forebay, air vent pipe, anchor blocks and silt excluder for the forebay tank
- x) Power House building
- xi) Tail race channel
- xiv) Cost under other heads.

I A --- Preliminary

B --- Land

- C --- Works  
(already mentioned under Civil works and Electro-Mech: Works)
- K --- Buildings
- M --- Plantation
- P --- Maintenance  
(during construction period)
- Q --- Special T&P
- R --- Communication  
(road etc.)
- T --- Water supply works.
- U --- Losses on stock and unforeseen.
- II** Establishment charges (5 to 10 % of **I** – works) i.e. A to U.
- III** Tools & Plants (1% of Of **I** – works) i.e. A to U
- IV** Suspense @ (±) 10%
- V** Indirect charges

#### 10.4 Details of project cost of estimates for electrical works

- i) Turbine
- ii) Generator.
- iii) Governor
- iv) MIV
- v) Control panel
- vi) Auxiliaries
- vii) Outdoor switch yard
- viii) Step up transformer, etc.
- ix) AVR Panels
  - x) DC Battery System
  - xi) Grounding System
  - xii) Fire Protection
- xiii) Cooling Water System
- xiv) Cost of other works under Electro – Mechanical Components not covered under above mentioned heads.

#### 11. **Instruction/terms and conditions:**

- i) The tender should be addressed to The Project Director/CEO, KREDA, LAHDC-Kargil, Forest Environmental Awareness Centre, Baroo Tsog, Kargil. The cover should be duly sealed and superscripted and sent either under registered cover or cast in the tender box kept in the office of the Project Director/CEO, KREDA, LAHDC- Kargil, Forest Environmental Awareness Centre, Baroo Tsog, Kargil.
- ii) The Tenderer shall ensure timely receipt of tender in the office of the Project Director/CEO, KREDA, LAHDC- Kargil, Forest Environmental Awareness Centre, Baroo Tsog, Kargil. The tender received by hand or by post, after due date of receipt of tenders shall not be entertained even if the tender has been posted/dispatched much before the due date of receipt.
- iii) The tender will be opened on the same day or any convenient date, in presence of the tenderers in the office of the Deputy Commissioner/CEO, LAHDA, Kargil. In case the due date of opening of the tenders falls on a holiday being declared, the tender will be opened on the next working day.
- iv) Telegraphic tenders or the tenders of such tenderers who have not purchased tender documents shall not be entertained. Any request by post or by hand or telegraphically for any modification addition or deletion etc. in the tenders shall not be considered.

- v) The tenders shall be prepared in a formal manner with all quotations written both in figures and words. The tenders shall be typed or written in ink, any tender written by pencil shall be rejected. There shall be no erasures or overwriting and if corrections are made, the same shall be neatly done and attested. A systematic form of totaling shall be adopted to avoid any ambiguity. The detailed description of the equipment offered shall be given.
- vi) The tenderer/bidder shall inspect and examine the sites of each Mini-Hydel Project and its surroundings and shall satisfy himself before submitting his Tender.
- vii) The tenderer, if they like, can visit the existing/running Power Projects like Iqbal, Marphocho and Haftal HEP for understanding the problems faced, due to extreme climatic conditions.
- viii) The tenderer shall not sublet any portion of the contract without the prior written approval of the accepting authority.
- ix) The tenderer shall submit DPR as per the details given in the document and in addition to this, they can add chapter on other heads, if found necessary.
- x) The total proposed potential of this cluster's may at the time of DPR submission by the successful bidder as per the assessment can vary up to  $\pm 30\%$  , in case of plus 30 % the successful bidder will not be paid any extra cost.

## **12. Earnest Money:**

- i) Tender shall be accompanied with the earnest money equal to Rs.1,80,000/- (Rupees one Lakh eighty thousand only) in the form of CDR from a nationalized/schedule bank pledged to the Project Director, KREDA, LAHDC-Kargil, Kargil.
- ii) Tenders not accompanied with the required amount of earnest money will be rejected and their price bid shall not be opened.
- iii) Earnest money deposit shall be released in favour of the unsuccessful tender(s) within two months after the final acceptance of the tender.

## **13. Special Instructions:**

- i) Tenders not submitted on the lines indicated above are liable to be rejected without any correspondence.
- ii) Request for extension of last date of receipts of tenders is likely to be ignored.
- iii) Any form of canvassing by the tenderers to influence the consideration of their tender shall liable to summary rejection.
- iv) All the survey/investigation shall be done in details as per tender documents.
- v) The tenderer is required to submit a statement of facts in details as to their previous experience in performing a similar or comparable work and business & technical organization.
- vi) Force majeure clause shall apply.
- xi) No other conditions except those mentioned above will be acceptable.

## **14. Mode of Payment:**

- i) 1<sup>st</sup> installment up to 45% of the contract amount shall be released after submission of complete project report for Ating (S.no.1) Mini Hydel Scheme.
- ii) 2<sup>nd</sup> installment of 45% of the contract amount shall be released after submission of complete project report for Raru(S.no.2) Mini-Hydel Schemes.

- iv) Balance 10% shall be released after six months or start of work at site which ever is earlier.

**15. Penalty:**

- i) In case of failure in submission of detailed project reports as per the list of works mentioned above/below and time stipulated against each, a penalty @ of 0.5% of project cost per week up to 15% shall be imposed on the agency.

**16. Evaluation statement of price bids:**

The agencies must quote rates as per the format given below, both in figures and words.

S.No	Name of Project	Capacity	Survey and investigation cost (Rs)	Detail Report preparation cost (Rs)	Project cost	Total Cost (Rs)
1	2	3	4	5		6
1.	Zanskar MHP Cluster	5400 KW				

Total Rupees .....

The total cost as per column 6 should be inclusive of all taxes, levies, sale tax works contract tax, turnover tax, income tax, insurance cover etc. as applicable from time to time and no extra payment on this account shall be entertained on the quoted rates. All these taxes shall be deducted at source. The rates approved in favour of the successful tenderer would be valid till project is finalized and the contract is completed.

Registered Agency,  
(Sign & Seal)

**17. Number of project copies required:**

- i) Volume I to X( except volume III) = 12 copies  
 ii) Volume III (specification drawings) = 24 copies  
 iii) Design calculation and Drawing for Construction/Execution volume XI & XII = 12 copies

**18. Agreement:**

The successful tenderer shall be required to execute an agreement on a valid stamped paper for strict compliance of the terms and conditions of the contract, vis-à-vis the NIT and the supply order within seven days of placement of the order.

**19. Arbitration and Laws:**

19.1 Arbitration: Except where otherwise provided for in the contract, all questions and disputes relating to the meaning of specification, drawings designs and instructions herein mentioned or as to any other questions, claims, matter or things whatsoever in any way arising out relating to the contract or failure to submit DPRs, whether arising during the progress of work or after completion or abandonment thereof

shall be referred to for arbitration under the Jammu & Kashmir Arbitration act.

19.2 Laws: This contract shall be governed by the J&K laws for the time being in force. The court of J&K at Kargil only shall have Jurisdiction for any dispute arising out of this.

**20. Procedure for receiving and opening of tenders:**

20.1 At the time of opening of tenders, the prequalification documents, as per Para 1. shall be opened first, before opening the financial bids. These should be submitted in a separate sealed super scribed Envelope Cover No. 1. (Prequalification, Technical and commercial document papers). The envelope should contain criteria as per paragraph 1.1 to 1.12 mentioned above.

**21. Financial Bids:**

21.1 The tenders for bidding shall be submitted on the prescribed form as per Sr.NO.16 of this tender document to be issued by this office, which should be sealed in an another Envelope, Cover-II to be opened after finalization of pre-qualification documents.

21.2 Both the Envelopes i.e. Cover-I and Cover-II should be put together in another Envelope. This Envelope should be addressed to the Deputy Commissioner/CEO, LAHDC-Kargil, Kargil with name of Work, NIT No, date of tendering and address of the Sender with contact No. and should be duly sealed.

**22. All agencies:**

All registered agencies are requested to cast their tenders without pre conditions and to adhere to the all the above prescribed Para's.

**23. Validity of tender:**

The tender should be valid for a period of six months from the date of the opening of the tender.

**24. Cost of tender document:**

This tender document shall be sold at Rs. 1000/- (Rs one thousand only) and shall be available up to the time mentioned at Para 1. (1.1 to 1.13) in the office of the Project Director/CEO, KREDA, LAHDC- Kargil, Forest Environmental Awareness Centre, Baroo Tsog, Kargil (or) it can be downloaded from the website at <http://kargil.gov.in>. The e-mail id of KREDA is [kredakargil-jk@nic.in](mailto:kredakargil-jk@nic.in).

If the tender documents are down loaded from the web-site the tenderer should furnish D.D. worth Rs 1000/- (Rs one thousand only) in favour of Project Director/ C.E.O., KREDA, Kargil, along with the technical bit document inside the envelope no. I. If the same is not furnished for the downloaded documents the tenderer bit is liable for rejection.

Project Director/C.E.O.,  
KREDA,LAHDC-Kargil,Kargil.