



HP POWER TRANSMISSION CORPORATION LIMITED

(A State Government Undertaking)

BAROWALIAS HOUSE, KHALINI, SHIMLA - 171002

Ph:- 0177-2626784, (Telefax: 0177 - 2620227)

Reference: HPPTCL / DGMC / L & T - ERECTION / 2013 ~~LS69-08~~ DATED: 8/03/13

From,

Dy. GENERAL MANAGER (CONTRACTS),
BAROWALIAS HOUSE, KHALINI,
SHIMLA - 171002

To,

M/S LARSEN & TOUBRO LIMITED,
ENGINEERING CONSTRUCTION & CONTRACTS DIVISION,
MOUNT POONAMALLEE ROAD, MANAPAKKAM,
P. B. No. 979, CHENNAI - 600089

FAX No.: 044 - 22493317; 044 - 22526345

Subject: LETTER OF AWARD (LOA) No.: HPPTCL / DGMC / L & T - ERECTION / 2010 - 5099 - 5104 DATED 23.12.2010 (SECOND CONTRACT) FOR CIVIL WORKS AND ERECTION OF EQUIPMENTS / MATERIALS FOR CONSTRUCTION OF 220 / 33 kV GIS SUBSTATION AT PHOJAL (EARLIER PALCHAN) - AMENDMENT THEREON

Reference: This has reference to the following: -

- ✓ 1) This office Letter of Award No.: HPPTCL / DGMC / L & T - Erection / 2010 - 5099- 5104 dated 23.12.2010
- 2) This office letter No.: HPPTCL / Palchan S / Str. / 2011 - 12 - 6113 dated 03.12.2011
- 3) Minutes of Meeting held on 06.01.2012 in Shimla
- 4) Your Letter No.: L&T / PT&D / SSBU / KULLU / HPPTCL / 220 kV SWYD / 2403 dated 21st April, 2012
- 5) Your Letter No.: L&T / PT&D / SSBU / KULLU / HPPTCL / 220 kV SWYD / 2404 dated 24th April, 2012
- 6) Your Letter No.: L&T / PT&D / SSBU / KULLU / HPPTCL / 220 kV SWYD / 2405 dated 10th May, 2012
- 7) Your Letter No.: L&T / PT&D / SSBU / KULLU / HPPTCL / 220 kV SWYD / 2406 dated 18th May, 2012
- 8) Your Letter No.: L&T / PT&D / SSBU / KULLU / HPPTCL / 220 kV SWYD / 2409 dated 11th June, 2012

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Dy. General Manager (Contracts)
H.P. Power Transmission Corpn. Ltd.
Barowalia House, Khalini, Shimla-2

- 9) This Office letter No.: HPPTCL / DGM& Head (T) / Phozal Sub Station - 12 - 516 - 17 dated 21.07.2012
- 10) Your Letter No.: L&T / PT&D / SSB / KULLU / HPPTCL / 220 kV SWYD / 2410 dated 30th July, 2012
- 11) Your Letter No.: L&T / PT&D / SSB / KULLU / HPPTCL / 220 kV SWYD / 2411 dated 1st August, 2012
- 12) Your Letter No.: L&T / PT&D / SSB / KULLU / HPPTCL / 220 kV SWYD / 2412 dated 6th August, 2012
- 13) This Office letter No.: HPPTCL / DGM& Head (T) / Phozal Sub Station - 12 - 573 - 74 dated 07.08.2012
- 14) This Office letter No.: HPPTCL / DGM& Head (T) / Phozal Sub Station - 12 - 834 - 35 dated 28.09.2012
- 15) This Office letter No.: HPPTCL / DGM& Head (T) / Phozal Sub Station - 12 - 884 - 85 dated 03.10.2012
- 16) Your Letter No.: LTCD / DLRO / HPTCL / PHOZAL / 002 dated 5th October, 2012

Sir,

I have been directed to issue Amendment to this office Letter of Award (LOA) No.: HPPTCL / DGMC / L & T - Erection / 2010 - 5099 - 5104 dated 23.12.2010 for Civil Works and Erection of Equipments / Materials (also referred to as 'Second Contract') required for Construction of 220 / 33 kV GIS Sub Station at Phozal (earlier Pakhan) in Kullu District of Himachal Pradesh amounting to Rs. 7,93,12,180 (Rupees Seven Crores Ninety Three Lakhs Twelve Thousand One Hundred Eighty) only.

The Scope of Work under this Contract shall also include all such Items, Equipment, and Materials, which are not specifically mentioned in the Bill of Material attached with this Amendment (Annexure - ECW1, Annexure - ECW2 and Annexure - MC) but are necessary for successful completion of the Scope of Work under the Contract.

This 'Second Contract' includes performance of all other activities including Inland Transportation, Insurance, Delivery on F. O. R. Destination Site(s) basis, Loading, Unloading, Handling, Storage (including watch and ward), Erection including associated Civil Works, Testing and Commissioning of all Equipment and Materials, including the Equipment and Material supplied under the 'First Contract', including Civil Works, training etc for complete execution of Construction of 220 / 33 kV GIS Sub Station at Phozal in Kullu on Single Source Responsibility basis.

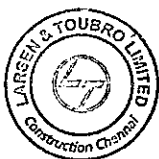
Major terms and conditions of this amendment are as under:-

1. The detailed Civil Works and Erection of Equipment / Material along with their tentative Quantities and Unit Rates under the subject LOA are given in Annexure - ECW1, Annexure - ECW2 and Annexure - MC to this Letter of Award.
2. Payments shall be released for the Quantities as finalised during detailed engineering and approved Bill of Material / actually measured by HPPTCL's Engineer at Site, based on per Unit Rates as per Award.

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 Dy. General Manager (Contracts)
 H.P. Power Transmission Corpn. Ltd.
 Barowalia House, Khalini, Shimla-2

3. Size of 33 kV XLPE Cable viz. 630 sq. mm. / 1000 sq. mm. shall be finalised during detailed engineering and payment of the same along with suitable Termination shall be released on the Unit Rates specified in this Award.
4. It is expressly understood by you that any breach under the contract for supplies (First Contract) awarded, shall automatically be deemed as breach of this Contract and any such breach or occurrence giving us a right to terminate the 'First Contract' and / or recover damages under that Contract shall give us right to terminate this Contract and / or recover damages under this Contract as well. However, such breach or occurrence in the 'First Contract' shall not automatically relieve you of any of your obligations under this Contract. It is expressly understood and agreed by you that the Equipment / Materials supplied under this 'First Contract', when erected, tested, and commissioned shall give satisfactory performance in accordance with the Bidding Document.
5. It will be your responsibility to take delivery, unload, and store the Equipment / Materials to be supplied by you under 'First Contract' and execute an Indemnity Bond. You shall execute Indemnity Bond in favour of HPPTCL against loss, damage and any risks involved for the full value of the Equipment / Materials. This Indemnity Bond shall be furnished before commencement of the Supplies at Site and shall be valid till the testing and commissioning and handing over of the complete Construction of 220 kV GIS Phojal Sub Station.
6. The Maintenance of the Sub Station for the first year shall be carried out by your Firm for which Annual Charges amounting to Rs. 1,19,74,232.00 (Rupees One Crore Nineteen Lakhs Seventy Four Thousand Two Hundred Thirty Two) only shall be paid at the end of the Maintenance Period.
7. **CONTRACT PRICE:**
- 7.1 The Contract Price for the complete Scope of Work under this Amended LOA is as per the following break up: -

Sr. No.	PRICE COMPONENT	VALUE in Rupees
1	Erection of Material / Items (As per Annexure - ECW1)	2,44,22,485
2	Civil Works (As per Annexure - ECW2)	4,29,15,463
3	Annual Charges for Maintenance of Sub Station for the first year	1,19,74,232
	TOTAL CONTRACT PRICE	7,93,12,180

Rupees Seven Crores Ninety Three Lakhs Twelve Thousands One Hundred Eighty only

- 7.2 Further breakup of the Contract Price for the purpose of payment is given at Annexure - ECW1, Annexure - ECW2 and Annexure - MC of this LOA.

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[Handwritten Signature]
 Dy. General Manager (Contracts)
 H.P. Power Transmission Corpn. Ltd.
 Barowalia House, Khalini, Shimla-2

7.3 Notwithstanding the breakup of the Contract Price, the Contract shall at all times be construed as a 'Single Source Responsibility Contract' and any breach in any part of the Contract shall be treated as breach of the entire Contract.

7.4 The Price of Items indicated at Annexure – ECW1, Annexure - ECW2 and Annexure – MC for, which quantities are assessed by you and are on lump sum basis, shall remain constant irrespective of any increase or decrease in quantities of any Items, addition of any new item or deletion of any existing item for completion of Scope of Work as per Technical Specification unless there is any change of Scope of Work by the Purchaser / Owner.

In case, the actual requirement of quantity of such Items is more than the quantities identified in the LOA / Contract Agreement / approved BOQ / Billing break up or some additional Items are required for the successful completion of the Scope of Work as per the Technical Specification, such additional Items / quantities shall be supplied by you without any additional cost to HPPTCL. Further, in case actual requirement of quantities for successful completion of Scope of Work is less than the quantities identified in the LOA / Contract Agreement / approved BOQ / Billing break up or some existing Items are not required, the lump sum price for these Items / Civil Works shall remain unchanged and no deduction shall be made from the lump sum price due to such reduction of quantities.

In case quantities of these Items supplied at Site are in excess of that required for successful completion of Scope of Work as detailed in the Bidding Documents, such additional quantities shall be your property and you shall be allowed to take back the same from the Site for which no deduction from lump sum price shall be made. It shall, however, be your responsibility to pay all statutory taxes, duties, and levies to the concerned authorities for such surplus material, which would otherwise have been lawfully payable. You shall submit an indemnity bond to keep HPPTCL harmless from any such liability, before release of such material to you by HPPTCL.

8. TAXES AND DUTIES:

8.1 The Contract Price is inclusive of all Taxes and Duties such as Excise Duty, Sales Tax / VAT, Service Tax for all Materials required for Civil Works and Erection of Equipment / Materials under the Contract and no claim on this behalf will be entertained by HPPTCL. Further any such Taxes and Duties as aforesaid payable including statutory variation thereon will be to your account and no claim on this behalf will be entertained by HPPTCL.

8.2 The above Contract Price is inclusive of Service Tax and Surcharge / Cess etc on it as applicable and HPPTCL shall not entertain any claim whatsoever in this regard.

8.3 The above Contract price is inclusive of Sales Tax on Works Contract, Turnover Tax or any other similar taxes under the Sales Tax Act. HPPTCL shall not entertain any claim whatsoever for sales tax on Works Contract on the above Contract Price during the execution of the Contract.

8.4 HPPTCL shall be entitled to deduct Income Tax, Surcharge on Income Tax and other Corporate Taxes / other Taxes at source in accordance with the provisions of the Income Tax / other Laws as applicable from time to time. TDS so deducted shall be deposited with the relevant tax Authority and necessary TDS Certificate shall be issued to you by HPPTCL.

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By. General Manager (Contracts)
H.P. Power Transmission Corpn. Ltd.
Barowalia House, Khalini, Shimla-2

9. **PRICE ADJUSTMENT:**

Rates for Civil Works are VARIABLE as per IEEMA Circular with Base Date as 1st September 2011 i.e. after stipulated completion period as per Original Award.

10. **TIME SCHEDULE OF CONTRACT:**

- 10.1 The basic consideration and the essence of the Contract is strict adherence to the Time Schedule of the Contract. You shall so organise your resources and perform your work as to complete successful testing and commissioning of the GIS Palchan Sub Station covered under the subject Contract within 14 (fourteen) months from the date of issue of this Amendment and the same shall be applicable for all contractual purposes.
- 10.2 You shall develop and furnish a detailed Schedule in the form of a Bar Chart indicating relating to allied Civil Works and Erection of all the Equipment and Materials covered under this Contract within 15 days of this Letter of Award.
- 10.3 For the purpose of levy of Liquidated Damages for delay, the time for completion of work of construction, testing and successful commissioning of 220 / 33 kV GIS Sub Station at Phojal shall be reckoned as 14 months from the date of this Amendment.

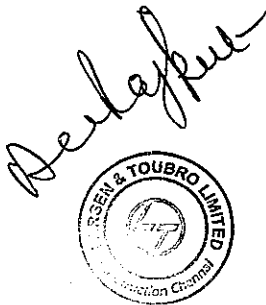
11. **LIQUIDATED DAMAGES (LD) FOR DELAY:**

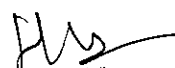
- 11.1 If you fail to successfully complete the Commissioning of the Sub Station within the Time Schedule stipulated (14 months) under the Contract, you shall pay to HPPTCL as Liquidated Damages and not as a penalty, a sum of one half of one percent (0.5 %) of the Contract Price for each calendar week or part thereof of delay.
- 11.2 The Total Amount of Liquidated Damages for delay under the Contract shall be subject to a Maximum of 10 % of the Contract Price.

12. **SIGNING OF CONTRACT:**

You shall execute a Contract Agreement at the office HPPTCL, on the Terms and Conditions envisaged in the Tender Documents and this detailed Letter of Award, within 30 (Thirty) calendar days of the receipt of Notification of this Amendment. It is a legitimate obligation of you to execute and to stamp the Contract, in accordance with the Indian Stamp Act and to supply Six Copies of Contract Drawings, Technical Particulars as finally approved by HPPTCL and other Literature and Instruction Books regarding Handling, Use and Maintenance of Equipment / Material. The cost of all these and such other Items have been included in the Prices and you will not be entitled to any extra payment on these accounts. However, non - execution of the Contract Agreement by you shall not absolve you of the responsibility of the faithful execution of the Contract.

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Dy. General Manager (Contracts)
H.P. Power Transmission Corpn. Ltd.
Barowalia House, Khalini, Shimla-2

13. It is understood and agreed by both the parties to the contract that no claim, whatsoever, shall be raised by either of the parties on account of the period already lapsed under the contract.
14. All other Terms and Conditions shall be as per Original Letter of Award No.: HPPTCL / DGMCL / L & T - Supply / 2010 - 5099 - 5104 dated 23.12.2010 (SECOND CONTRACT) and Tender Document No. DGMCL/PALCHAN SUBSTATION/02/2009

Please acknowledge receipt of the Letter of Award and take necessary action to commence the work immediately.

Enclosure:

Annexure - ECW1, ECW2 & MC

Yours faithfully,


Dy. General Manager (Contracts)

Reference: HPPTCL / DGMCL / L & T - ERECTION / 2013 -

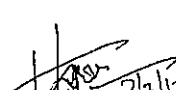
DATED:

Copy for information and necessary action to:-

1. P. S. to Director (Planning & Contracts), HPPTCL, Barowalia House, Khalini, Shimla - 171002.
2. P. S. to Director (Projects), HPPTCL, Barowalia House, Khalini, Shimla - 171002.
3. General Manager (Projects), HPPTCL, Barowalia House, Khalini, Shimla - 171002.
4. DGM & Head Transmission, HPPTCL, Anu, Hamirpur.
5. DGM(Finance), HPPTCL, Sangla House, Khalini, Shimla - 171002.
6. Sr. Manager, HPPTCL, Sarabai, Bhunter, District Kullu - 175125 (H. P.)

Enclosures:

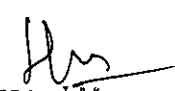
Annexure - ECW1, ECW2 & MC


Dy. General Manager (Contracts)

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Dy. General Manager (Contracts)
H.P. Power Transmission Corpn. Ltd.
Barowalia House, Khalini, Shimla-2

ANNEXURE - ECH-1

NAME OF WORK : CONSTRUCTION OF 33 / 220 KV SUB STATION AT PHOZAL IN KULLU DISTRICT

ERECTION PORTION

Sr. No.	DESCRIPTION OF MATERIAL	UNIT	QTY	UNIT PRICE	TOTAL PRICE
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A POWER TRANSFORMER

1	26.66 / 33.33 MVA, 33 / 220 KV Single Phase Transformer including Bushing, Accessories and First Filling of Oil	Nos.	4		4,82,759
2	Oil Storage Tank	No.	1		
3	Oil Sampling Bottle	Nos.	4		
4	Micro Gas Analyzer / On-line DGA / PPM Meter	Nos.	1		
5	260 KVA, 33 / 0.433 KV Three Phase Transformer including Bushing, Accessories and First Filling of Oil	Nos.	1	1,35,040	1,35,040

SUB TOTAL - A

6,17,799

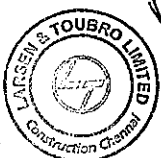
B 245 KV GIS EQUIPMENT

1	245 KV, 1680 A, 50 kA SF ₆ Gas Insulated Transformer Bay Module each comprising of SF ₆ Gas Insulated Circuit Breaker, Current Transformers, Two Bus Bar Disconnectors with Grounding Switch, with Surge Arresters (198 KV), SF ₆ Gas Monitoring System for complete Bay, LCC, Three 1 - Phase SF ₆ Ducts and SF ₆ / Oil Bushing to connect to 33 / 220 KV, 26.66 / 33.33 MVA Transformers and Accessories with GIS etc to complete Transformer Bay Module	Nos.	1	5,17,959	5,17,959
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2	245 KV, 2000 A, 50 kA SF ₆ Gas Insulated Feeder Bay Module each comprising of SF ₆ Gas Insulated Circuit Breaker, Current Transformers, Two Bus Bar Disconnectors with Grounding Switch, Line	Nos.	2	5,17,959	10,35,918
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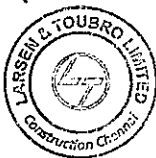
DSM/Contracts

ECH-1



011

General Manager (Contracts)
 T.P. Power Transmission Corpn. Ltd.
 Barowalia House, Khalini, Shimla-2



Sr. No.	DESCRIPTION OF MATERIAL	UNIT	QTY	UNIT PRICE	TOTAL PRICE
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Disconnector with Safety Grounding Switch, High Speed Fault Making Grounding Switch, SF₆ Gas Monitoring System for complete Bay, LCC, GIS Duct and Air / SF₆ Bushing Termination Enclosure and Accessories with GIS etc to complete Feeder Bay Module

3 245 KV, 4000 A, 50 kA, 3 Single Phase (Isolated) Units SF₆ Gas Insulated, Metal Enclosed Bus Bars each Unit, enclosed in Bus Enclosures running along the Length of the Switchgear to interconnect each of the Circuit Breaker Bay Modules Each Bus Bar Set shall be complete with Voltage Transformers complete with Safety Grounding Switch Nos. 2 4,57,323 9,14,646

4 245 KV, 4000 A, 50 kA SF₆ Gas Insulated Bus Coupler Bay Module comprising of SF₆ Gas Insulated Circuit Breaker, Current Transformers, Two Disconnectors with Safety Grounding Switches, SF₆ Gas Monitoring System for complete Bay, LCC etc Nos. 1 5,17,959 5,17,959

5 245 KV, CVT with Junction Box Nos. 6 8,662 51,972

6 198 KV Lightning Arrester with Counter and Leakage Meter Nos. 7 5,197 36,379

SUB TOTAL - B 30,74,833

C 36 KV, 2000 A, 40 kA for 3 sec., SF₆ Gas Insulated, Metal Enclosed BUS BARS each Unit, enclosed in Bus Enclosures running along the Length of the Switchgear to interconnect each of the Circuit Breaker Bay Module. Each Bus Bar Set shall be complete with Voltage Transformer complete with Safety Grounding Switch

1 36 KV, 1600 A SF₆ Gas Insulated Feeder Bay Module each comprising of SF₆ Gas Insulated Circuit Breaker, Current Transformers, Two Bus Bar Disconnectors with Grounding Switch, Line Disconnector Nos. 6 51,974 3,11,844

with Safety Grounding Switch, High Speed Fault Making Grounding Switch, SF₆ Gas Monitoring System for complete Bay, LCC, Enclosure and Accessories with GIS etc to complete Feeder Bay Module

DGM (Contracts)

EDW1-2

012

By. General Manager (Contracts)
H.P. Power Transmission Corpn. Ltd.
Barowalia House, Khalini, Shimla-2

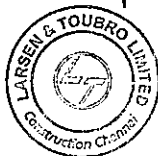
Sr. No.	DESCRIPTION OF MATERIAL	UNIT	QTY	UNIT PRICE	TOTAL PRICE
2	35 KV, 2000 A SF ₆ Gas Insulated Bus Coupler Bay comprising of SF ₆ Gas Insulated Circuit Breaker Current Transformers, Two numbers of Bus Bar Disconnectors with Earthing Switch, SF ₆ Gas Monitoring System for complete Bus Coupler Panel	Nos.	1	51,974	51,974
3	35 KV, 1600 A SF ₆ Gas Insulated Power Transformer Panel each comprising of SF ₆ Gas Insulated Circuit Breaker, Current Transformers, Two numbers of Bus Bar Disconnectors with Earthing Switch, Surge Arrester (30 KV), SF ₆ Gas Monitoring System for complete Power Transformer Panel	Nos.	1	51,974	51,974
4	35 KV, 630 A SF ₆ Gas Insulated 250 KVA, L. T. Transformer Panel each comprising of SF ₆ Gas Insulated Circuit Breaker, Current Transformers, Two numbers of Bus Bar Disconnectors with Earthing Disconnect Switch, Surge arrester (30 KV), SF ₆ Gas Monitoring System for complete LT Transformer Panel	Nos.	1	51,974	51,974
SUB TOTAL - C				4,67,786	
D	SUBSTATION AUTOMATION SYSTEM complete including Hardware and Software complete Sub Station Automation System including Hardware and Software for the Sub Station and Remote Control Station alongwith Associated Equipments as per Technical Specification	Ld (9 Bays)	1	1,55,921	1,55,921
BAY CONTROL UNITS					
1	220 KV Bays	Nos.	3		
2	33 KV Bays	Nos.	6		
SUB TOTAL - D				1,55,921	
E1	220 KV CONTROL AND RELAY PANEL				
1	Circuit Breaker Control Panel				
a)	With Auto Reclose	Nos.	2	17,324	34,648
b)	With Out Auto Reclose	Nos.	3	17,324	51,972
2	Line Protection Panel (Main I + Main II)	Nos.	2	17,324	34,648
DGM (Contracts)					
EOMT - 3					

INCLUDED ABOVE



Deviya

HS
 Dy. General Manager (Contracts)
 H.P. Power Transmission Corp. Ltd.
 Barowalia House, Khalini, Shimla-2



Sr. No.	DESCRIPTION OF MATERIAL	UNIT	QTY	UNIT PRICE	TOTAL PRICE
3	220 KV (Double Bus Bar Protection)	Set	1	17,324	17,324
4	Transformer Protection Panel - H. V. Side including one number for Spare Single Phase Transformer	Nos	2	17,324	34,648
	SUB TOTAL - E1				1,73,240

E2	33 KV CONTROL AND RELAY PANEL				
1	Circuit Breaker Control Panel	Nos.	6	17,324	1,03,944
	a) With Auto Reclose	Nos.	4	17,324	69,296
	b) With Out Auto Reclose	Nos.	6		
2	Line Protection Panel	Nos.	2		
3	Transformer Protection Panel - L. V. Side including one number for Spare Single Phase Transformer	Nos.	2		
	SUB TOTAL - E2				1,73,240

F	PLCC FOR 220 KV LINE FEEDER				
1	2000 A, 0.5 mH / 1.0 mH, 50 kA Line Traps	Nos.	4	13,859	55,436
2	Coupling Device (Phase to Phase)	Nos	4	10,395	41,580
3	HF Cable	LS	2	8,662	17,324
4	Carrier Equipment (for Speech + Protection and for Speech + Data)	Nos	6	10,395	62,370
5	Protection Coupler	Nos	4	10,395	41,580
6	Print Testing Kit	Set	1	10,395	10,395
7	EPBAX (24 / 8) with Telephone Sets	Set	1	10,395	10,395
	SUB TOTAL - F				2,39,080

F.1	FOTE Equipment	Set	1	48,41,813	48,41,813
	SUB TOTAL - F1				48,41,813

G	AIR CONDITIONER AND VENTILATION SYSTEM				
1	Split AC (Capacity - 2T)	Nos	10	17,324	1,73,240
2	Ventilation System for 220 KV & 33 KV GIS Hall	LS	1	23,72,488	23,72,488
	SUB TOTAL - G				25,45,728

ECWT - 4

[Signature]
DGM(Contracts)

[Signature]
Dy. General Manager (Contracts)
H.P. Power Transmission Corpn. Ltd.
Barowalia House, Khelini, Shimla-2

Sr. No.	DESCRIPTION OF MATERIAL	UNIT	QTY	UNIT PRICE	TOTAL PRICE
H LT SWITCHBOARD					
1	415 V Main Switchboard	Nos	1	1,47,259	1,47,259
2	415 V A.C Distribution Board	Nos	1	1,03,947	1,03,947
3	220 V DCD8	Nos	2	86,623	1,73,246
4	48 V, DC DB	Nos	2	86,623	1,73,246
	SUB TOTAL - H				5,97,598
I BATTERIES					
1	220 V, 400 AH	Set	2	86,623	1,73,246
2	48 V, 400 AH	Set	2	51,794	1,03,588
	SUB TOTAL - I				2,76,834
J BATTERY CHARGER SYSTEM					
1	220 V	Set	2	17,324	34,648
2	48 V	Set	2	17,324	34,648
	SUB TOTAL - J				69,296
K DG SET ALONGWITH CONTROL PANEL (100 KVA, 440 V for 220 KV Sub Station)					
	SUB TOTAL - K				86,623
L FIRE PREVENTION AND EXTINGUISHING SYSTEM					
1	Nitrogen Injection Fire Prevention & Extinguishing System for Transformer	Set	4	3,14,718	12,58,872
2	Fire Protection for GIS cum Control Room Building, etc. (Portable type the Extinguishers System)	Lot	1	5,12,322	5,12,322
	SUB TOTAL - L				17,71,194
M ILLUMINATION SYSTEM					

DGM(Contracts)

ECMT-5



By. General Manager (Contracts)
H.P. Power Transmission Corp. Ltd.
Barowalla House, Khalini, Shimla-2



See copy

Sr. No.	DESCRIPTION OF MATERIAL	UNIT	QTY	UNIT PRICE	TOTAL PRICE
1.0	MLDB	Nos.	1	38,870	38,870
2.0	ELDB	Nos.	1	28,504	28,504
3.0	GIS cum Control Room Building Illumination with CFL / Metal Halide Lamps a 2 x 36 Watts Fluorescent Lamp in Industrial Reflector type Fixtures suitable for surface / pendant CGL Cat Ref. IBA1424EB	Nos.	37	1,940	68,080
	b 230 V, 5 / 15 A, Indoor Receptacle 3 Pin Type - R1	Nos.	20	648	12,960
	c 15 A, 1 - Ph, 3 Pin Industrial Type Switch Socket Outlet	Nos.	4	778	3,112
	d 32 A, SPN MCB in 2 mm thick Sheet Steel Enclosure with 3 Pin Socket for A.C (indoor)	Nos.	3	1,555	4,665
	e 32 A, SPN MCB in 2 mm thick Sheet Steel Enclosure with 3 Pin Socket for A.C (outdoor)	Nos.	3	2,073	6,219
	f 450 mm Exhaust Fan	Nos.	2	1,684	3,368
	g 450 mm Acid Proof Exhaust Fan (for Battery Room)	Nos.	1	4,146	4,146
	h 1400 mm Ceiling Fans with Electronic Regulator	Nos.	6	1,684	10,104
	i Point Wiring	Nos.	72	1,425	1,02,600
	j Indoor Lighting Panel (ACP - 1 type) as per Technical Specification	Nos.	2	41,461	82,922
	k DC Lighting Panel (DCP type) as per Technical Specification	Nos.	1	41,461	41,461
4.0	220 / 33 KV GIS Building Illumination				
	a 1 x 250 W - Industrial Metal Halide Luminaire CGL Cat ref. No. FAD 1314	Nos.	14	2,073	29,022
	b 1 x 60 W GLS Bulk Head Light Fixture of CGL type 1BH 1110 BC or equivalent	Nos.	8	648	5,184
	c 230 V, 5 / 15 A, Indoor Receptacle 3 Pin type - R1	Nos.	9	648	5,832
	d 32 A, SPN MCB in 2 mm thick Sheet Steel Enclosure with 3 Pin Socket for A.C (indoor)	Nos.	4	1,555	6,220
	e 32 A, SPN MCB in 2 mm thick Sheet Steel Enclosure with 3 Pin Socket (outdoor)	Nos.	4	2,073	8,292
	f 1 x 11 W Portable Battery operated (3 hrs. Backup) CFL Emergency Lamp (MS BPL make)	Nos.	4	2,202	8,808
	g Point Wiring	Nos.	43	1,425	61,275
	h Indoor Lighting Panel (ACP-1 type) as per Technical Specification	Nos.	2	41,461	82,922
	i DC Lighting Panel (DCP type) as per Technical Specification	Nos.	2	41,461	82,922
	j 32 A, TPN MCB in 2 mm thick Sheet Steel Enclosure with 3 Pin Socket (indoor)	Nos.	2	1,684	3,368

ESWH-6

DGM(Contracts)

HWS
Dy. General Manager (Contracts)
H.P. Power Transmission Corpn. Ltd.
Barowalia House, Khalini, Shimla-2

Sr. No.	DESCRIPTION OF MATERIAL	UNIT	QTY	UNIT PRICE	TOTAL PRICE
5.0	Switchyard Lighting				
a	Flood Light Luminaire with 2 x 400 W HPSV / 1+ Lamp - Bajaj cel. BLUE22 CA - R0	Nos.	4	5,163	20,732
b	Lighting JB with 5 nos of Terminal Blocks	Nos.	4	914	3,656
c	250 A Oil Filtration Socket	Nos.	1	6,459	6,459
6.0	Street Lighting (Solar lighting system)				
a	120 W Solar Lighting System for Street Lighting with 9 m height Pole, Inbuilt in long life maintenance free Batteries (Capacity is 12 V, 120 Ah)	Nos.	8	11,660	93,280
7.0	Transformer Area Lighting as per specification				
1 x 70 W, HPSV 240 V, AC Industrial Wall Glass Fixture for pendant mounting with Control Gear Box (BLDVI - 70SV) Lighting JB	Nos.	2	2,073	4,146	
	Nos.	2	914	1,828	
	SUB TOTAL - M				8,30,957
N	Power Cables and Copper Conductor Armoured Control Cables alongwith Lugs, Glands and Straight Joints				
	XLPE POWER CABLE				
1 C X 630 sq.mm.	km	0.75	6,11,931	4,58,948	
Terminations for the above	Nos.	12	1,469	17,628	
1 C X 630 sq.mm.	Nos.	36	2,040	73,440	
3.5 C X 300 sq.mm.					
PVC POWER CABLE (Other than those available in the Contract)					
4 C X 6 sq.mm.	km	0.33	1,10,147	36,349	
2 C X 6 sq.mm.	km	3.15	74,246	2,33,875	
1 C X 150 sq.mm.	km	0.6	2,04,787	1,22,872	
Terminations for the above					
3.5 C X 90 sq.mm.	Nos.	24	1,526	36,624	
3.5 C X 70 sq.mm.	Nos.	24	1,069	25,656	
3.5 C X 35 sq.mm.	Nos.	63	709	44,657	



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PM
 Dy. General Manager (Contracts)
 H.P. Power Transmission Corpn. Ltd.
 Barowalia House, Khalini, Shimla-2



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Sr. No.	DESCRIPTION OF MATERIAL	UNIT	QTY	UNIT PRICE	TOTAL PRICE
	4C X 16 sq. mm.	Nos.	21	384	8,064
	4C X 6 sq. mm.	Nos.	81	310	25,110
	2C X 6 sq. mm.	Nos.	354	318	1,12,572
	1C X 150 sq. mm.	Nos.	60	587	35,220
	HR - FRLS CONTROL CABLE				
	5C X 2.5 sq. mm	km	3	88,749	2,69,247
	27C X 2.5 sq. mm.	km	0.75	2,44,771	1,83,578
	4P 0.75	km	0.3	88,749	26,925
	Terminations for the above				
	2C X 2.5 sq. mm.	Nos.	84	310	26,040
	4C X 2.5 sq. mm.	Nos.	249	384	95,616
	5C X 2.5 sq. mm.	Nos.	516	481	2,48,196
	7C X 2.5 sq. mm.	Nos.	429	548	2,35,092
	10C X 2.5 sq. mm.	Nos.	555	587	3,25,785
	12C X 2.5 sq. mm.	Nos.	93	645	59,985
	14C X 2.5 sq. mm.	Nos.	60	791	47,460
	16C X 2.5 sq. mm.	Nos.	78	881	68,718
	19C X 2.5 sq. mm.	Nos.	78	1,118	87,204
	27C X 2.5 sq. mm.	Nos.	48	1,399	67,152
	4P 0.75	Nos.	3	402	1,206
	2C X 4 sq. mm.	Nos.	81	603	48,843
	4C X 4 sq. mm.	Nos.	63	481	30,303
	7C X 4 sq. mm.	Nos.	54	880	47,520
	SUB TOTAL - N				30,99,835

ECM-1

Hm
DGM(Contracts)

0 33 HV XLPE POWER CABLE AND ACCESSORIES
1 XLPE POWER CABLE

Hm
By. General Manager (Contracts)
H.P. Power Transmission Corpn. Ltd.
Barowalia House, Khalini, Shimla-2

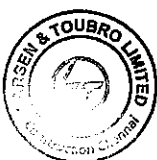
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Sr. No.	DESCRIPTION OF MATERIAL	UNIT	QTY	UNIT PRICE	TOTAL PRICE
2	3.5 C x 300 sq. mm.	km	0.75	1,03,236	77,427
	PVC POWER CABLE				
	3.5 C x 80 sq. mm.	km	0.3	79,849	23,955
	3.5 C x 70 sq. mm.	km	0.75	79,849	59,887
	3.5 C x 35 sq. mm.	km	0.3	56,459	16,938
3	4 C x 16 sq. mm.	km	0.75	56,459	42,344
	4 C x 4 sq. mm.	km	1.5	33,072	49,608
	HR FRLS CONTROL CABLE				
	2 C X 2.5 sq. mm.	km	1.5	31,512	47,268
	4 C X 2.5 sq. mm.	km	3	31,512	94,536
4	7 C X 2.5 sq. mm.	km	1.5	35,151	52,727
	10 C X 2.5 sq. mm.	km	1.125	40,608	45,684
	12 C X 2.5 sq. mm.	km	0.75	40,608	30,456
	16 C X 2.5 sq. mm.	km	0.75	47,971	35,978
	19 C X 2.5 sq. mm.	km	0.3	49,703	14,911
	2 C X 4 sq. mm.	km	1.5	34,632	51,948
	4 C X 4 sq. mm.	km	1.5	40,867	61,301
	7 C X 4 sq. mm.	km	1.5	60,617	90,926
	36 KV XLPE CABLE				
	a) 33 KV XLPE Cable for connecting Transformer to 33 KV GIS of size 1 x 630 sq. mm.	km	1	1,80,130	1,80,130
P	(Three Cables with one Spare Cable in each Circuit)				
	b) 33 KV Indoor Termination Suitable for above Cable	Nos	4	3,514	14,056
	c) 33 KV Outdoor Termination Suitable for above Cable	Nos	4	3,514	14,056
SUB TOTAL - 0					10,04,134

GROUNDING / EARTHING SYSTEM

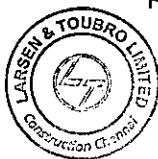
DGM(Contracts)

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Hus
 Dy. General Manager (Contracts)
 H.P. Power Transmission Corp. Ltd.
 Barowalia House, Khalini, Shimla-2



Sr. No.	DESCRIPTION OF MATERIAL	UNIT	QTY	UNIT PRICE	TOTAL PRICE
a)	40 mm MS Rod for Earthing (*)				
	40 mm MS Rod for Earthing	km	4.797	3,69,511	17,24,574
	75 x 12 G. S. Flat	km	0.364	2,98,577	1,08,882
	50 x 6 G. S. Flat	km	0.091	2,62,017	23,844
	50 x 6 M. S. Flat	km	0.208	2,62,017	54,500
	Cleat type Clamp to suit 75 x 12 G. S. Flat	Nos	79.3	158	12,529
	3 Mtr long, 40 mm dia M. S. Pipe Earth Electrode with Test Link and without Pit	Nos	22.1	2,084	46,056
	3 Mtr. long, 40 mm dia Earth Rod Electrode with untreated Pit	Nos	28.9	1,475	44,103
	3 Mtr. long, 20 mm dia Earth Rod Electrode without Pit	Nos	10.4	829	8,622
	3 Mtr. long, 40 mm dia GI Pipe Earth Electrode	Nos	3.9	931	3,631
	Lightning Protection				
	7/3.66 mm GS Earth Wire	km	0.299	21,351	6,384
	Cleat Clamp on Structure to suit 7/3.66 mm GS Earth Wire	No	59.8	165	9,867
	Pad Clamp on Structure to suit 7/3.66 mm Earth Wire and 75 x 12 GS Flat	No	5.2	797	4,144
	25 x 3 GI Flat	km	0.568	27,420	16,397
	1.5 Mtr. long GI Spike	Nos	10.4	402	4,181
	Test Links	Nos	10.4	165	1,716
	SUB TOTAL - P				20,69,229

Q STEEL STRUCTURES FOR TOWERS, BEAMS AND EQUIPMENT

Tower and Beams
220 KV Tower

CA Type	kgs.	7,650	11.58	88,587
BG1 (WITH DEV) - 16 m	kgs.	3,232	11.58	37,427
Lighting - cum - Lightning Mast	kgs.	4,750	11.58	55,008
Tower - 3T	kgs.	4,599	11.58	53,256
Girder - 3G	kgs.	1,374	11.58	15,911
DGM (Contracts)				ECW-10

33 KV Tower

Huz
Dy. General Manager (Contracts)
H.P. Power Transmission Corpn. Ltd.
Barowalia House, Khalini, Shimla-2

Sr. No.	DESCRIPTION OF MATERIAL	UNIT	QTY	UNIT PRICE	TOTAL PRICE
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Equipment

Standard Structures for 220 kV Equipments

CVT	kg.	990	12.79	12,662
WT	kg.	2,200	12.79	28,138
SA	kg.	942	12.79	12,048
BPI	kg.	960	12.79	12,278
SUB TOTAL - Q				3,15,315

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a.	3.5 T for 220 kV GIS ROOM	Set	1	2,06,215	2,06,215
b.	2.5 T for 33 kV GIS ROOM	Set	1	1,54,621	1,54,621
c.	Moveable ladder of suitable Capacity for 220 kV & 33 kV GIS Room	Nos	2	48,418	96,836
SUB TOTAL - R					4,57,872

S

Insulator Strings / Disc Insulators, Hardware, Conductor, Bus Bar Material, Cable Trays, Clamps, Connectors, Including Equipment Connectors, Pipes for Equipments & Lighting, all Accessories etc

220 kV CLAMPS & CONNECTORS

Terminal Connector on 26.56 / 33.33 MVA Transformer SF ₆ to Oil bushing to suit GIS Bus Duct	Nos.	4	3,047	12,188
Terminal Connector on 198 kV LA to suit 1 or 2 x MOOSE / ZEBRA ACSR	Nos.	6	2,011	12,066
Terminal Connector on 245 kV CVT to suit 1 or 2 x MOOSE / ZEBRA ACSR	Nos.	6	1,536	9,216
Terminal Connector on Wave Trap to suit 1 or 2 x MOOSE / ZEBRA ACSR	Nos.	8	1,359	10,872
Terminal Connector on 220 kV BPI to suit 1 or 2 x MOOSE / ZEBRA ACSR	Nos.	6	1,737	10,422
Tee Connectors to suit 1 or 2 x MOOSE / ZEBRA ACSR on both ways	Nos.	12	1,846	22,152
Suspension Hardware Assembly along with Insulators (220 / 33 kV side)	Lot	2	25,341	50,682

33 kV CLAMPS & CONNECTORS

Terminal Connector on 30 kV Lightning Arrestor, to suit 1 or 2 x MOOSE / WOLF ACSR Conductor	Nos.	18	1,079	19,422
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DGM(Contracts)

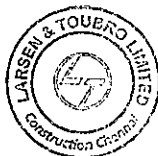
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Dy. General Manager (Contracts)
N.P. Power Transmission Corpn. Ltd.
Barowalia House, Khalini, Shimla-2



Deviyapuri

Sr. No.	DESCRIPTION OF MATERIAL	UNIT	QTY	UNIT PRICE	TOTAL PRICE
	Terminal Connector on 26.66 / 33.33 MVA Transformer LV Bushing to suit 1 x MOOSE	Nos.	4	1,261	5,044
	ACSR Conductor				
	Terminal Connector on Cable Sealing End to suit 1 x MOOSE ACSR Conductor	Nos.	5	905	4,525
	Terminal Connector to suit 1 C x 630 sq. mm. XLPE Cable Sealing End	Nos.	6	1,536	9,216
	BUS BAR MATERIALS				
	MOOSE / ZEBRA / WOLF ACSR Conductor	km	0.1	1,76,709	17,671
	CABLE TRAYS				
	800 mm Wide Perforated Tray	km	0.8	1,03,588	82,870
	300 mm Wide Perforated Tray	km	0.12	73,121	8,775
	150 mm Wide Perforated Tray	km	0.12	42,654	5,118
	Structural Steel for above	MT	3	85,308	2,55,924
	PVC Pipes:				
	50 mm dia	km	0.4	67,027	26,811
	Sump Pumps				
	5 HP	Nos.	1	67,027	67,027
	0.5 HP	Nos.	4	11,577	46,308
	220 KV Bus Post Insulators	Nos.	6	36,562	2,19,372
	SUB TOTAL - S				8,95,681
	TOTAL - 1 = SUB TOTAL A to S				2,37,63,949

NEW ITEMS

- A-1 220 kV Single Phase Breaker Bay Module for Spare Transformer
- A-2 For Additional Bays - 245 KV, 4000 A, 50 kA, 3 Single Phase (Isolated) Units SF₆ Gas Insulated, Metal Enclosed Bus Bars each Unit, enclosed in Bus Enclosures running along the Length of the Switchgear to interconnect each of Circuit Breaker Bay Module. Each Bus Bar Set shall be complete with Voltage Transformer complete with Safety Grounding Switch etc.

[Signature]
DGM(Contracts)

ECWA-12

[Signature]
By, General Manager (Contracts)
L.T.P. Power Transmission Corpn. Ltd.
Barowalla House, Khalini, Shimla-2

Sr. No.	DESCRIPTION OF MATERIAL	UNIT	QTY	UNIT PRICE	TOTAL PRICE
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A-3	1 - Phase SF ₆ Duct to connect to 220 / 33 KV, 26.66 / 33.33 MVA Transformer / Lines with GIS etc (only the Additional quantity over and above 85.5 to be paid).	Mtr.	Unit Rate	15,500	
B-1	33 KV Single Phase Breaker Bay Module for Spare Transformer	Set	1	22,500	22,500
	36 KV OUTDOOR EQUIPMENT				
C-1	30 KV, Single Phase, Surge Arrestors with Surge Counter, Leakage Meter and Junction Box	Nos.	19	2,650	50,350
C-2	36 KV, Line Isolator Switch with Earth Switch	Set	6	16,500	99,000
D	SUBSTATION AUTOMATION SYSTEM	Lst	1	1,21,272	1,21,272
	Complete Sub Station Automation System including Hardware and Software for the Sub Station and Remote Control Station alongwith Associated Equipments	(2-5 days)			
E	For Additional Feeder - 220 KV C & R Panel for Bus Bar Protection Panel		1	5,717	5,717
F	36 KV XLPE CABLE				
I	33 KV XLPE Cable for connecting Transformer to 33 KV GIS of size 1 x 1000 sq.mm Aluminium	Mtr.	Unit Rate	450	
II	33 KV Indoor Termination Suitable for above Cable suitable at GIS conforming to IEC: 60899	Nos	Unit Rate	24,000	
III	33 KV Outdoor Termination Suitable for above Cable	Nos	Unit Rate	11,500	
	TOTAL OF NEW ITEMS				6,58,536

GRAND TOTAL FOR ERECTION EGM = TOTAL (I) + TOTAL OF NEW ITEMS

2,44,22,485

NOTE:

- The above quantities are TENTATIVE which shall be finalised during detailed engineering to complete the Scope of Work and successful commissioning of the Sub Station.
- The Payment shall be made on Unit Rates for the quantities actually measured at Site and as approved Bill of Material.
- Size of 33 KV XLPE Cable alongwith Terminations shall be finalised during detailed engineering and the payment thereof shall be made on the Unit Rates specified above for the same.

DGM(Contracts)

EGM - 13



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AS
Dy. General Manager (Contracts)
L.P. Power Transmission Corp. Ltd.
Barowalia House, Khalini, Shimla-2



ANNEXURE - ECW2

NAME OF WORK : CONSTRUCTION OF 33 / 220 KV SUB STATION AT PHOZAL IN KULLU DISTRICT

CIVIL WORKS PORTION

Sr. No.	DESCRIPTION	UNIT	QTY	UNIT PRICE	TOTAL PRICE
CIVIL WORKS					
1.0	Soil Investigation	LS	1	3,65,605	3,65,605
2.0	Excavation & Filling for Land Development.				
3.0	Retaining Wall (Qty as per Annex.)				
i	Excavation & Backfilling	cum.	126	525	66,150
ii	PCC 1:3:6	cum.	16	4,604	73,664
iii	RCC M20	cum.	11	7,147	78,617
iv	Uncoursed Rubble Masonry	cum.	146	3,013	4,39,898
v	Reinforcement	kg	1120	64,011	71,692
vi	Structural Steel	kg	168	73,923	12,419
4.0	Tower & Equipment Foundation, Transformer Foundation, Fire Wall, Cable Trenches, including all of Crossings & all Metallic Works including Steel Racks for Cables, Cable Supports, MS Angle Edging and RCC Covers with lifting arrangements.				
a)	Tower (Qty as per Annex.)				
i	Excavation & Backfilling	cum.	975.55	525	5,12,164
ii	RCC M20	cum.	182.244	7,147	13,02,498
iii	Reinforcement	kg	21869.346	64,011	13,99,879
iv	PCC 1:4:8	cum.	20.962	4,043	84,749
b)	Equipment Structures (Qty as per Annex.)				
i	Excavation & Backfilling	cum.	212.236	525	1,11,424

ECW2/11

Handwritten signature and stamp: DGM(Contracts)

Handwritten signature and stamp: Dy. General Manager (Contracts)
H.P. Power Transmission Corpn. Ltd.
Barowalia House, Khalini, Shimla-2

Sr. No.	DESCRIPTION	UNIT	QTY	UNIT PRICE	TOTAL PRICE
b	RCC M20	cum.	44.88	7.147	3,19,328
	Reinforcement	kg	2293.23	64.011	1,47,176
	PCC 1:4:8	cum.	7.446	4.043	30,104
c)	Transformer Foundation including Fire Wall (Qty as per Annex.)				
	i	Excavation & Backfilling	cum.	841.5	525
	ii	RCC M20	cum.	280.64	7,147
	iii	Reinforcement	kg	18393.84	64,011
	iv	Structural Steel	kg	7734.284	73,923
	v	PCC 1:4:8	cum.	70.744	4,043
d)	vi	40 mm Metal Filling	cum.	104.256	1,728
	i	Excavation & Backfilling	cum.	1253.172	525
	ii	RCC M20	cum.	270.126	7,147
	iii	Reinforcement	kg	19994.925	64,011
	iv	Structural Steel	kg	23301.348	73,923
v	v	PCC 1:4:8	cum.	52.641	4,043
	vi	Chequered Plate 6 mm Thk.	sq.m.	767.964	3,990
	vii	PCC 1:2:4	cum.	9.495	5,183
	viii	300 dia PVC Pipe	RM	11.189	650
			RM	150	2,540
			sq.m.	4170	259
5.0	Buried Cable Trench for Auxiliary Power Arrangement				
6.0	Site Surfacing and Ant Weed Treatment				
7.0 Cement Concrete Roads including all types of Crossings.					
a)	5.00 metres wide Road cum Rail Track*	RM	41	35,532	14,56,816
b)	3.5 metres wide	RM	81	8,890	7,20,038

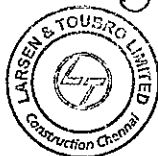
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Pls
Dy. General Manager (Contracts)
M.P. Power Transmission Corpn. Ltd.
Barowalia House, Khalini, Shimla-2



Sr. No.	DESCRIPTION	UNIT	QTY	UNIT PRICE	TOTAL PRICE
8.0	Storm Water Drainage including Culverts	RM	265	2,487	6,59,042
9.0	Security Fencing along with Gates and Security Room.	RM	182	5,803	10,19,790
10.0	Control Room Building cum 220 KV GIS Room along with Battery Room, PLCC Room, SCADA Room Offices and Stores.				
a) - I	220 KV GIS Room	sq.m.	193.155	29,330	56,65,236
a) - II	Control Room Building along with Battery Room, PLCC Room, SCADA Room, Offices, and Stores				
	Ground Floor	sq.m.	206.9	23,454	48,54,702
	First Floor	sq.m.	206.9	17,598	36,41,026
b)	33 KV GIS Building.	sq.m.	63.963	37,952	24,27,524
11.0	DG Set Outdoor Silent type.	LS	1	1,31,234	1,31,234
12.0	Store Shed	sq.m.	150	16,125	24,18,728
13.0	Transformer Oil Drainage System	LS	1	Included above	

GRAND TOTAL FOR ERECTION ECW2

4,29,15,463

NOTE:

- 1 The above quantities are TENTATIVE which shall be finalised during detailed engineering to complete the Scope of Work and successful commissioning of the Sub Station.
- 2 The Payment shall be made on Unit Rates for the quantities actually measured at Site and as approved Bill of Material.
- 3 Size of 33 KV XLPE Cable alongwith Terminations shall be finalised during detailed engineering and the payment thereof shall be made on the Unit Rates specified above for the same.

[Signature]
DGM(Contracts)

DGM(Contracts)

EDW/13

[Signature]
Dy. General Manager (Contracts)
H.P. Power Transmission Corpn. Ltd.
Barowalia House, Khalini, Shimla-2

ANNEXURE - MC

ANNUAL MAINTENANCE CHARGES

Sl. No.	DESCRIPTION	UNIT	QTY.	TOTAL CHARGES (Rs.)
1	2	3	4	5
1	Annual Maintenance charges of Sub-Station for the First Year	LS		1,19,74,232

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By: General Manager (Contracts)
H.P. Power Transmission Corpn. Ltd.
Barowalia House, Khalini, Shimla-2



HP POWER TRANSMISSION CORPORATION LIMITED

(A State Government Undertaking)

BAROWALIAS HOUSE, KHALINI, SHIMLA - 171002

Ph:- 0177-2626784, (Telefax: 0177 - 2620227)

Reference: HPPTCL / DGMC / L & T - SUPPLY / 2013-6855-66 DATED: 8/03/2013

From,

Dy. GENERAL MANAGER (CONTRACTS),
BAROWALIAS HOUSE, KHALINI,
SHIMLA - 171002

To,

M/S LARSEN & TOUBRO LIMITED,
ENGINEERING CONSTRUCTION & CONTRACTS DIVISION,
MOUNT POONAMALLEE ROAD, MANAPAKKAM,
P. B. No. 979, CHENNAI - 600089

FAX No.: 044 - 22493317; 044 - 22526345

Subject: LETTER OF AWARD (LOA) No.: HPPTCL / DGMC / L & T - SUPPLY / 2010 - 5107 - 12 DATED 23.12.2010 (FIRST CONTRACT) FOR SUPPLY OF EQUIPMENT / MATERIALS FOR CONSTRUCTION OF 220 / 33 KV GIS SUBSTATION AT PHOJAL (EARLIER PALCHAN) - AMENDMENT THEREON

Reference: This has reference to the following: -

- 1) This office Letter of Award No.: HPPTCL / DGMC / L & T - Supply / 2010 - 5107 - 12 dated 23.12.2010
- 2) This office letter No.: HPPTCL / Palchan S / Stn. / 2011 - 12 - 6113 dated 03.12.2011
- 3) Minutes of Meeting held on 06.01.2012 in Shimla
- 4) Your Letter No.: L&T / PT&D / SSBU / KULLU / HPPTCL / 220 KV SWYD / 2403 dated 21st April, 2012
- 5) Your Letter No.: L&T / PT&D / SSBU / KULLU / HPPTCL / 220 KV SWYD / 2404 dated 24th April, 2012
- 6) Your Letter No.: L&T / PT&D / SSBU / KULLU / HPPTCL / 220 KV SWYD / 2405 dated 10th May, 2012
- 7) Your Letter No.: L&T / PT&D / SSBU / KULLU / HPPTCL / 220 KV SWYD / 2406 dated 18th May, 2012
- 8) Your Letter No.: L&T / PT&D / SSBU / KULLU / HPPTCL / 220 KV SWYD / 2409 dated 11th June, 2012
- 9) This Office letter No.: HPPTCL / DGM& Head (T) / Phozal Sub Station - 12 - 516 - 17 dated 21.07.2012



Page 1 of 6

Dy. General Manager (Contracts)
H.P. Power Transmission Corpn. Ltd.
Barowalia House, Khalini, Shimla-2

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- 10) Your Letter No.: L&T / PT&D / SSB / KULLU / HPPTCL / 220 kV SWYD / 2410 dated 30th July, 2012
- 11) Your Letter No.: L&T / PT&D / SSB / KULLU / HPPTCL / 220 kV SWYD / 2411 dated 1st August, 2012
- 12) Your Letter No.: L&T / PT&D / SSB / KULLU / HPPTCL / 220 kV SWYD / 2412 dated 6th August, 2012
- 13) This Office letter No.: HPPTCL / DGM& Head (T) / Phozal Sub Station – 12 – 573 – 74 dated 07.08.2012
- 14) This Office letter No.: HPPTCL / DGM& Head (T) / Phozal Sub Station – 12 – 834 – 35 dated 28.09.2012
- 15) This Office letter No.: HPPTCL / DGM& Head (T) / Phozal Sub Station – 12 – 884 – 85 dated 03.10.2012
- 16) Your Letter No.: LTCD / DLRO / HPTCL / PHOZAL / 002 dated 5th October, 2012

Sir,

I have been directed to issue Amendment to this office Letter of Award (LOA) No.: HPPTCL / DGMC / L & T – Supply / 2010 – 5107 – 12 dated 23.12.2010 for Supply of Equipment / Material (also referred to as 'First Contract') required for Construction of 220 / 33 kV GIS Sub Station at Phozal (earlier Palchan) in Kullu District of Himachal Pradesh for Amount of Rs. 31,27,27,954 (Rupees Thirty One Crores Twenty Seven Lakhs Twenty Seven Thousand Nine Hundred Fifty Four) only.

The Scope of Work under this Contract shall also include all such Items, Equipment, and Materials, which are not specifically mentioned in the Bill of Material, attached with this Amendment (Annexure – SE and MS) but are necessary for successful completion of the Scope of Work under the Contract.

Major terms and conditions of this amendment are as under:-

1. The detailed List of Equipment and Material along with their Tentative Quantities to be supplied and Unit Rates are given in Annexure – SE and Annexure – MS to this Letter of Award.
2. Payments shall be released for the Quantities as finalised during detailed engineering and approved Bill of Material / actually measured by HPPTCL's Engineer at Site, based on per Unit Rates as per Award.
3. Size of 33 kV XLPE Cable viz. 630 sq. mm. / 1000 sq. mm. shall be finalised during detailed engineering and payment of the same along with suitable Termination shall be released on the Unit Rates specified in this Award.
4. It is expressly understood by you that any breach under the contract for Civil works and Services (Second Contract) awarded, shall automatically be deemed as breach of this Contract and any such breach or occurrence giving us a right to terminate the 'Second Contract' and / or recover damages under that Contract shall give us right to terminate this Contract and / or recover damages under this Contract as well. However, such breach or occurrence in the 'Second Contract' shall not automatically relieve you of any of your obligations under this Contract. It is expressly understood and agreed by you that the Equipment / Materials supplied under this 'First Contract', when erected, tested and

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Dy. General Manager (Contracts)
H.P. Power Transmission Corpn. Ltd.
Barowalia House, Khalini, Shimla-2

006

commissioned under the 'Second Contract' shall give satisfactory performance in accordance with the Bidding Document.

5. CONTRACT PRICE:

- 5.1 The Contract Price for the complete Scope of Work under this amended LOA is as per the following break up: -

Sr. No.	PRICE COMPONENT	VALUE in Rupees
1	Supply of Equipment / Material as per Annexure – SE	29,78,99,188
2	Supply of Mandatory Spares as per Annexure - MS	1,48,28,766
3	TOTAL CONTRACT PRICE	31,27,27,954

Rupees Thirty One Crores Twenty Seven Lakhs Twenty Seven Thousand Nine Hundred Fifty Four only

- 5.2 Further breakup of the Contract Price for the purpose of payment is given at Annexure – SE and Annexure – MS of this amended LOA.
- 5.3 Notwithstanding the breakup of the Contract Price, the Contract shall at all times be construed as a 'Single Source Responsibility Contract' and any breach in any part of the Contract shall be treated as breach of the entire Contract.
- 5.4 The Ex – Works Price of Items indicated at Annexure – SE for which quantities are assessed by you and are on lump sum basis, shall remain constant irrespective of any increase or decrease in quantities of any Items for completion of Scope of Work as per Technical Specification unless there is any change of Scope of Work by the Purchaser / Owner.

In case, the actual requirement of quantity of such Items is more than the quantities identified in the LOA / Contract Agreement / approved BOQ / Billing break up or some additional Items are required for the successful completion of the Scope of Work as per the Technical Specification, such additional Items / quantities shall be supplied by you without any additional cost to HPPTCL. Further, in case actual requirement of quantities for successful completion of Scope of Work is less than the quantities identified in the LOA / Contract Agreement / approved BOQ / Billing break up or some existing Items are not required, the lump sum price for these Items shall remain unchanged and no deduction shall be made from the lump sum price due to such reduction of quantities.

In case quantities of these Items supplied at Site are in excess of that required for successful completion of Scope of Work as detailed in the Bidding Documents, such additional quantities shall be your property and you shall be allowed to take back the same from the Site for which no deduction from lump sum price shall be made. It shall, however, be your responsibility to pay all statutory taxes, duties, and levies to the concerned authorities for such surplus material, which would otherwise have been lawfully payable.



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By. General Manager (Contracts)
HP Power Transmission Corpn., Ltd.
Barowalia House, Khalini, Shimla-2

You shall submit an indemnity bond to keep HPPTCL harmless from any such liability, before release of such material to you by HPPTCL.

- 5.5 No Payment for 220 kV Bus Duct for the length upto 85.5 metres shall be made by the Employer, however the Payments of 220 kV Bus Duct @ Rs. 1,36,153 per metre for the quantity in excess of 85.5 metres shall be made to the Contractor.

6. TAXES AND DUTIES:

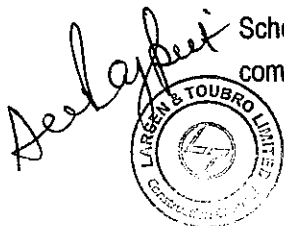
- 6.1 The Contract Price is inclusive of all Taxes and Duties such as Excise Duty, Sales Tax / VAT etc for all Equipment and Materials to be supplied under the Contract. Further any such Taxes and Duties as aforesaid payable including statutory variation thereon will be to your account and no claim on this behalf will be entertained by HPPTCL.
- 6.2 Entry Tax, Octroi as applicable for destination Site on all Items of Supply, which shall be dispatched directly from Sub Vendors Works to HPPTCL's Site (*Sale - in - transit*) shall be reimbursed to you, subject to furnishing of documentary proof for payment made, at the applicable rate at the time of dispatch. This shall be applicable for the Delivery within the stipulated delivery period and in case of delayed delivery of the Material, the payment shall be made on the Rates prevailing at during the stipulated delivery or actual, whichever are lower.
- 6.3 The above Contract Price is inclusive of Service Tax and Surcharge / Cess etc on it and HPPTCL shall not entertain any claim whatsoever in this regard.
- 6.4 HPPTCL shall issue requisite Sales Tax Declaration Forms on receipt of your request for such Items identified in Price Schedule and dispatched directly to HPPTCL's Site from your Vendors' / Sub Vendors' Works (*Sales - in transit*).
- 6.5 HPPTCL shall be entitled to deduct Income Tax, Surcharge on Income Tax and other Corporate Taxes / other Taxes at source in accordance with the provisions of the Income Tax / other Laws as applicable from time to time. TDS so deducted shall be deposited with the relevant tax Authority and necessary TDS Certificate shall be issued to you by HPPTCL.

7. PRICE ADJUSTMENT:

All Price Components under this Letter of Award shall be FIRM during the entire execution of the Contract and no price variation whatsoever shall be applicable.

8. TIME SCHEDULE OF CONTRACT:

- 8.1 The basic consideration and the essence of the Contract is strict adherence to the Time Schedule of the Contract. You shall so organise your resources and perform your work as to complete successful testing and commissioning of the GIS Phojal Sub Station covered



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Dy. General Manager (Contracts)
H.P. Power Transmission Corpn. Ltd.
Barowalia House, Khalini, Shimla-2

under the subject Contract within **14 (fourteen) months** from the date of issue of this Amendment and the same shall be applicable for all contractual purposes.

- 8.2 The contractor shall develop and furnish a detailed Schedule in the form of a Bar Chart indicating to Engineering, Procurement, Manufacturing and Ex - Works delivery for all the Equipment and Materials covered under this Contract within 15 days of this Amendment.
- 8.3 For the purpose of levy of Liquidated Damages for delay, the time for completion of work of construction, testing and successful commissioning of 220 / 33 kV GIS Sub Station at Phojal shall be reckoned as 14 months from the date of this amended LOA.

9. LIQUIDATED DAMAGES (LD) FOR DELAY:

- 9.1 If you fail to successfully complete the Commissioning of the Sub Station within the Time Schedule stipulated (14 months) under the Contract, you shall pay to HPPTCL as Liquidated Damages and not as a penalty, a sum of one half of one percent (0.5 %) of the Contract Price for each calendar week or part thereof of delay.
- 9.2 Equipment and Materials shall be deemed to have been delivered only when all its Components, Parts, and Spares are also delivered. If certain Components, Parts, or Spares are not delivered in time, the Equipment and Materials will be considered as delayed until such time the same are also delivered.
- 9.3 The Total Amount of Liquidated Damages for delay under the Contract shall be subject to a Maximum of **10 %** of the Contract Price.

10. SIGNING OF CONTRACT:

You shall execute a Contract Agreement at the office of HPPTCL, on the Terms and Conditions envisaged in the Tender Documents and this detailed Letter of Award, **within 30 (Thirty) calendar days of the receipt of Notification of this amended LOA**. It is a legitimate obligation of you to execute and to stamp the Contract, in accordance with the Indian Stamp Act and to supply Six Copies of Contract Drawings, Technical Particulars as finally approved by HPPTCL and other Literature and Instruction Books regarding Handling, Use and Maintenance of Equipment / Material. The cost of all these and such other Items have been included in the Prices and you will not be entitled to any extra payment on these accounts. However, non - execution of the Contract Agreement by you shall not absolve you of the responsibility of the faithful execution of the Contract.

11. It is understood and agreed by both the parties to the contract that no claim, whatsoever, shall be raised by either of the parties on account of the period already lapsed under the contract.



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Dy. General Manager (Contracts)
H.P. Power Transmission Corpn. Ltd.
Barowalia House, Khalini, Shimla-2

12. All other Terms and Conditions shall be as per Original Letter of Award No.: HPPTCL / DGMC / L & T – Supply / 2010 – 5107 – 12 dated 23.12.2010 (FIRST CONTRACT) and Tender Document No. DGMC / PALCHAN SUBSTATION / 02 / 2009.

Please acknowledge receipt of the Letter of Award and take necessary action to commence the work immediately.

Enclosure:

Annexure – SE

Annexure – MS

Yours faithfully,

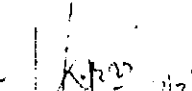

Dy. General Manager (Contracts)

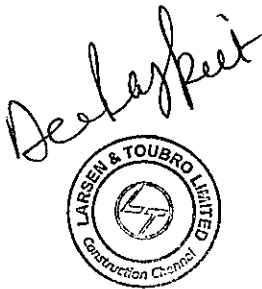
Reference: HPPTCL / DGMC / L & T - SUPPLY / 2013 -

DATED:

Copy for information and necessary action to: -

1. P. S. to Director (Planning & Contracts), HPPTCL, Barowalias House, Khalini, Shimla – 171002.
2. P. S. to Director (Projects), HPPTCL, Barowalias House, Khalini, Shimla – 171002.
3. General Manager (Projects), HPPTCL, Barowalias House, Khalini, Shimla – 171002.
4. DGM & Head Transmission, HPPTCL, Anu, Hamirpur.
5. DGM(Finance), HPPTCL, Sangla House, Khalini, Shimla – 171002.
6. Sr. Manager, HPPTCL, Sarabai, Bhunter, District Kullu – 175125 (H. P.)


Dy. General Manager (Contracts)




Dy. General Manager (Contracts)
H.P. Power Transmission Corpn. Ltd.
Barowalia House, Khalini, Shimla-2

ANNEXURE - SE

NAME OF WORK : CONSTRUCTION OF 220 / 33 KV SUB STATION AT PHOZAL IN DISTRICT KULLU

SUPPLY PORTION

Sr. No.	DESCRIPTION OF MATERIAL	UNIT	QTY	UNIT PRICE	TOTAL PRICE
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A POWER TRANSFORMER

1	26.66 / 33.33 MVA, 33 / 220 kV Single Phase Transformer including Bushing, Accessories and First Filling of Oil	Nos.			
2	Oil Storage Tank	Nos.			
3	Oil Sampling Bottle	Nos.			
4	Micro Gas Analyzer / On - Line DGA / PPM Meier	Nos.			
5	250 kVA, 33 / 0.433 kV Three Phase Transformer including Bushing, Accessories and First Filling of Oil	Nos.	1	3,77,674	3,77,674

To be Supplied by HPPTCL

SUB TOTAL - A

3,77,674

B 245 KV GIS EQUIPMENT

1	245 kV, 1600 A, 50 kA SF ₆ Gas Insulated Transformer Bay Module each comprising of SF ₆ Gas Insulated Circuit Breaker, Current Transformers, Two Bus Bar Disconnectors with Grounding Switch Surge Arresters (198 kV), SF ₆ Gas Monitoring System for complete Bay LCC, Three 1 - Phase SF ₆ Ducts and SF ₆ / Oil Bushing to connect to 33 / 220 kV, 26.66 / 33.33 MVA Transformers and Accessories with GIS etc to complete Transformer Bay Module	Nos.	1	4,20,67,623	4,20,67,623
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2	245 kV, 2000 A, 50 kA SF ₆ Gas Insulated Feeder Bay Module each comprising of SF ₆ Gas Insulated Circuit Breaker, Current Transformers, Two Bus Bar Disconnectors with Grounding Switch, Line Disconnectors with Safety Grounding Switch, High, Speed Fault Making Grounding Switch, SF ₆ Gas Monitoring System for complete Bay, LCC, GIS Duct and Air / SF ₆ Bushing Termination Enclosure and Accessories with GIS etc to complete Feeder Bay Module	Nos.	2	4,02,02,813	8,04,05,626
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DGM(Contracts)



Dy. General Manager (Contracts)
 L.P. Power Transmission Corpn. Ltd.
 Da owalia House, Khalini, Shimla-2

Sr. No.	DESCRIPTION OF MATERIAL	UNIT	QTY	UNIT PRICE	TOTAL PRICE
3	245 kV, 4000 A, 50 kA, 3 Single Phase (Isolated) Units SF ₆ Gas Insulated, Metal Enclosed Bus Bars each Unit, enclosed in Bus Enclosures running along the Length of the Switchgear to interconnect each the Circuit Breaker Bay Modules Each Bus Bar Set shall be complete with Voltage Transformers complete with Safety Grounding Switch	Nos.	2	27,00,000	54,00,000
4	245 kV, 4000 A, 50 kA SF ₆ Gas Insulated Bus Coupler Bay Module comprising of SF ₆ Gas Insulated Circuit Breaker, Current Transformers, Two Disconnectors with Safety Grounding Switches, SF ₆ Gas Monitoring System for complete Bay, LCC etc	Nos.	1	2,41,49,034	2,41,49,034
5	245 kV, CVT with Junction Box	Nos.	6	4,04,954	24,29,724
6	198 kV Lightning Arrester with Counter and Leakage Meter	Nos.	7	78,966	5,52,762
SUB TOTAL - B					15,50,04,789

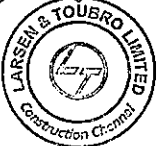
C 36 kV, 2000 A, 40 kA for 3 sec., SF₆ Gas Insulated, Metal Enclosed BUS BARS each Unit enclosed in Bus Enclosures running along the Length of the Switchgear to interconnect each of Circuit Breaker Bay Modules. Each Bus Bar Set shall be complete with Voltage Transformers complete with Safety Grounding Switch

1	36 kV, 1600 A SF ₆ Gas Insulated Feeder Bay Module each comprising of SF ₆ Gas Insulated Circuit Breaker, Current Transformers, Two Bus Bar Disconnectors with Grounding Switch, Line Disconnector with Safety Grounding Switch, High Speed Fault Making Grounding Switch SF ₆ Gas Monitoring System for complete Bay, LCC, Enclosure and Accessories with GIS etc to complete Feeder Bay Module	Nos.	6	36,45,891	2,18,75,346
2	36 kV, 2000 A SF ₆ Gas Insulated Bus Coupler Bay comprising of SF ₆ Gas Insulated Circuit Breaker, Current Transformers, Two numbers of Bus Bar Disconnectors with Earthing Switch, SF ₆ Gas Monitoring System for complete Bus Coupler Panel	Nos.	1	31,15,105	31,15,105
3	36 kV, 1600 A SF ₆ Gas Insulated Power Transformer Panel each comprising of SF ₆ Gas Insulated Circuit Breaker, Current Transformers, Two numbers of Bus Bar Disconnectors with Earthing Switch,	Nos.	1	31,48,162	31,48,162

DGM(Contracts)

SE/2

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Dy. General Manager (Contracts)
Power Transmission Corpn. Ltd.
Barowalia House, Khalini, Shimla-2

Sr. No.	DESCRIPTION OF MATERIAL	UNIT	QTY	UNIT PRICE	TOTAL PRICE
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Surge Arrester (30 kV), SF₆ Gas Monitoring System for complete Power Transformer Panel

4	36 kV, 630 A SF ₆ Gas Insulated 250 kVA, LT Transformer Panel each comprising of SF ₆ Gas Insulated Circuit Breaker, Current Transformers, Two numbers of Bus Bar Disconnectors with Earthing Switch, Surge Arrester (30 kV), SF ₆ Gas Monitoring System for complete LT Transformer Panel	Nos.	1	27,08,043	27,08,043
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SUB TOTAL - C

3,08,46,556

D SUBSTATION AUTOMATION SYSTEM complete including Hardware and Software for 9 Bays and Remote Control Station alongwith Associated Equipments

91,25,551

1	220 kV Bays	Nos.	3	INCLUDED ABOVE
2	33 kV Bays	Nos.	6	

SUB TOTAL - D

91,25,551

E1 220 kV CONTROL AND RELAY PANEL

1 Circuit Breaker Control Panel

a)	With Auto Reclose	Nos.	2	5,26,474	10,52,948
b)	With Out Auto Reclose	Nos.	3	5,01,403	15,04,209

2 Line Protection Panel (Main I + Main II)

Nos.	2	12,53,510	25,07,020
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3 220 kV (Double Bus Bar Protection)

Set	1	24,31,808	24,31,808
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4 Transformer Protection Panel - H. V. Side including one number for Spare Single Phase Transformer

Nos.	2	7,87,204	15,74,408
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SUB TOTAL - E1

90,70,393

E2 33 kV CONTROL AND RELAY PANEL

1 Circuit Breaker Control Panel

a)	With Auto Reclose	Nos.	6	4,76,334	28,58,004
b)	With Out Auto Reclose	Nos.	4	4,76,334	19,05,336

2 Line Protection Panel

Nos.	6
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3 Transformer Protection Panel - L. V. Side including one number for Spare Single Phase Transformer

Nos.	2
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INCLUDED ABOVE

DGM(Contracts)

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Devi Prasad

HS

Dy. General Manager (Contracts)
H.P. Power Transmission Corpn. Ltd.
Barowalia House, Khalini, Shimla-2

Sr. No.	DESCRIPTION OF MATERIAL	UNIT	QTY	UNIT PRICE	TOTAL PRICE
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47,63,340

SUB TOTAL - E2

F	PLCC for 220 KV LINE FEEDER				
1	2000 A, 0.5 mH / 1.0 mH, 50 kA Line Traps	Nos.	4	4,43,136	17,72,544
2	Coupling Device (Phase to Phase)	Nos.	4	74,024	2,96,096
3	HF Cable	Ls	2	12,337	24,674
4	Carrier Equipment (for Speech + Protection and for Speech + Data)	Nos.	6	3,14,727	18,88,362
5	Protection Coupler	Nos.	4	1,34,477	5,37,908
6	Print Testing Kit	Set	1	1,07,007	1,07,007
7	EPBAX (24 / 8) with Telephone Sels	Set	1	2,76,356	2,76,356
	SUB TOTAL - F				49,02,947

F.1	FOTE Equipment	Set	1	96,30,660	96,30,660
	SUB TOTAL - F1				96,30,660

G	AIR CONDITIONER AND VENTILATION SYSTEM				
1	Split AC (Capacity - 2T)	Nos.	10	30,213	3,02,130
2	Ventilation System for 220 KV & 33 KV GIS Hall	LS	1	20,56,591	20,56,591
	SUB TOTAL - G				23,58,721

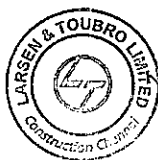
H	LT SWITCHBOARD				
1	415 V Main Switchboard	Nos.	1	31,47,275	31,47,275
2	415 V A C Distribution Board	Nos.	1	14,49,200	14,49,200
3	220 V DCDB	Nos.	2	5,64,356	11,28,712
4	48 V, DC DB	Nos.	2	3,59,973	7,19,946
	SUB TOTAL - H				64,45,133

I.	BATTERIES				
1	220 V, 400 AH	Set	2	6,48,087	12,96,174
2	48 V, 400 AH	Set	2	1,41,401	2,82,802

DGM(Contracts)

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Dy. General Manager (Contracts)
P.P. Power Transmission Corpn. Ltd.
Barowalia House, Khalini, Shimla-2

Sr. No.	DESCRIPTION OF MATERIAL	UNIT	QTY	UNIT PRICE	TOTAL PRICE
SUB TOTAL - J					
J	BATTERY CHARGER SYSTEM				
1	220 V	Set	2	4,87,198	9,74,396
2	48 V	Set	2	3,62,566	7,25,132
	SUB TOTAL - J				16,99,528
SUB TOTAL - K					
K	DG SET ALONGWITH CONTROL PANEL (100 KVA, 440 V for 220 kv Sub Station)		1	18,88,365	18,88,365
	SUB TOTAL - K				18,88,365
SUB TOTAL - L					
L	FIRE PREVENTION AND EXTINGUISHING SYSTEM				
1	Nitrogen Injection Fire Prevention & Extinguishing System for Transformer	Set	4	6,23,161	24,92,644
2	Fire Protection for GIS cum Control Room Building, etc. (Portable type the Extinguishers)	Lot	1	6,89,574	6,89,574
	SUB TOTAL - L				31,82,218
SUB TOTAL - M					
M	ILLUMINATION SYSTEM				
1.0	MLDB	Nos.	1	15,55,720	15,55,720
2.0	ELDB	Nos.	1	7,28,643	7,28,643
3.0	GIS cum Control Room Building Illumination with CFL / Metal Halide Lamps	Nos.	37	1,782	65,934
	a 2 x 36 Watts Fluorescent Lamp in Industrial Reflector type Fixtures suitable for surface / pendant mounting CGL Cat Ref. IBA1424EB				
	b 230 V, 5 / 15 A, Indoor Receptacle 3 Pin type - R1	Nos.	20	477	9,540
	c 15 A, 1 - Ph, 3 Pin Industrial Type Switch Socket Outlet	Nos.	4	2,146	8,584
	d 32 A, SPN MCB in 2 mm thick Steel Enclosure with 3 Pin Socket for A.C (indoor)	Nos.	3	1,348	4,044
	e 32 A, SPN MCB in 2 mm thick Steel Enclosure with 3 Pin Socket for A.C (outdoor)	Nos.	3	2,695	8,088
	f 450 mm Exhaust Fan	Nos.	2	2,385	4,770
	g 450 mm Acid Proof Exhaust Fan (for Battery Room)	Nos.	1	9,539	9,539
	h 1400 mm Ceiling Fans with Electronic Regulator	Nos.	6	2,981	17,886
	i Point Wiring	Nos.	72	708	50,982
	j Indoor Lighting Panel (ACP - 1 type) as per Technical Specification	Nos.	2	32,199	64,397



Devi Prasad

Dy. General Manager (Contracts)
P.P. Power Transmission Corpn. Ltd.
Barowalia House, Khalini, Shimla-2

Sr. No.	DESCRIPTION OF MATERIAL	UNIT	QTY	UNIT PRICE	TOTAL PRICE
	k DC Lighting Panel (DCP type) as per Technical Specification	Nos.	1	46,509	46,509
4.0	220 / 133 kV GIS Building Illumination				
	a 1 x 250 W - Industrial Metal Halide Luminaire CGL. Cat ref. No. FAD 1314	Nos.	14	1,864	26,099
	b 1 x 60 W GLS Bulk Head Light Fixture of CGL type 1BH 1110 BC or equivalent	Nos.	8	226	1,811
	c 230 V, 5 / 15 A, Indoor Receptacle 3 Pin type - R1	Nos.	9	477	4,297
	d 32 A, SPN MCB in 2 mm thick Sheet Steel Enclosure with 3 Pin Socket for A.C (indoor)	Nos.	4	1,014	4,054
	e 32 A SPN MCB in 2 mm thick Sheet Steel Enclosure with 3 Pin Socket (outdoor)	Nos.	4	2,027	8,109
	f 1 x 11 W Portable Battery operated (3 hrs. Backup) CFL Emergency Lamp (M/S BPL make)	Nos.	4	3,578	14,311
	g Point Wiring	Nos.	43	566	24,358
	h Indoor Lighting Panel (ACP-1 type) as per Technical Specification	Nos.	2	32,199	64,397
	i DC Lighting Panel (DCP type) as per Technical Specification	Nos.	2	46,509	93,018
	j 32 A, TPN MCB in 2 mm thick Sheet Steel Enclosure with 3 Pin Socket (indoor)	Nos.	2	2,027	4,054
5.0	Switchyard Lightning				
	a Flood Light Luminaire with 2 x 400 W HPSV / T+ Lamp - Bajaj cat. BJEF22 CA - R0	Nos.	4	7,909	31,635
	b Lighting JB with 5 no's of Terminal Blocks	Nos.	4	775	3,099
	c 250 A Oil Filtration Socket	Nos.	1	2,981	2,981
6.0	Street Lighting (Solar lighting system)				
	a 120 W Solar Lighting System for Street Lighting with 9 m height Pole, Inbuilt in long life maintenance free Batteries (Capacity is 12 V, 120 AH)	Nos.	8	1,19,254	9,54,031
7.0	Transformer Area Lighting as per specification				
	1 x 70 W, HPSV 240 V, AC Industrial Wall Glass Fixture for pendant mounting with Control Gear Box G(BJDWI - 70SV)	Nos.	2	1,370	2,740
	Lighting JB	Nos.	2	775	1,550
	SUB TOTAL - M				38,15,180
N	Power Cables and Copper Conductor Armoured Control Cables alongwith Lugs, Glands and Straight Joints				
	XLPE POWER CABLE				
	1 C X 630 sq.mm.	km	0.75	10,78,001	8,08,501
	Terminations for the above				



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By, General Manager (Contracts)
NTP Power Transmission Corp. Ltd
Barowalia House, Khalini, Shimla-2

DGM(Contracts)

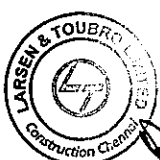
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SE/6

Sr. No.	DESCRIPTION OF MATERIAL	UNIT	QTY	UNIT PRICE	TOTAL PRICE
	1 C X 630 sq.mm.	Nos.	12	2,103	25,236
	3.5 C X 300 sq.mm.	Nos.	36	3,114	1,12,104
	PVC POWER CABLE (Other than those available in the Contract)				
	4 C X 6 sq.mm.	km	0.33	96,369	31,802
	2 C X 6 sq.mm.	km	3.15	76,801	2,41,293
	1 C X 150 sq.mm.	km	0.6	3,01,864	1,81,118
	Terminations for the above				
	3.5 C X 90 sq.mm.	Nos.	24	1,584	38,016
	3.5 C X 70 sq.mm.	Nos.	24	1,107	26,568
	3.5 C X 35 sq.mm.	Nos.	63	642	40,446
	4C X 16 sq.mm.	Nos.	21	560	11,750
	4 C X 6 sq.mm.	Nos.	81	395	31,955
	2 C X 6 sq.mm.	Nos.	354	269	95,049
	1 C X 150 sq.mm.	Nos.	60	653	39,150
	HR - FRLS CONTROL CABLE				
	5 C X 2.5 sq.mm	km	3	1,05,698	3,17,094
	27 C X 2.5 sq.mm.	km	0.75	9,98,720	7,49,040
	4P,0.75	km	0.3	1,38,087	41,426
	Terminations for the above				
	2 C X 2.5 sq.mm.	Nos.	84	295	24,819
	4 C X 2.5 sq.mm.	Nos.	249	423	1,05,437
	5 C X 2.5 sq.mm.	Nos.	516	455	2,34,801
	7 C X 2.5 sq.mm.	Nos.	429	479	2,05,379
	10 C X 2.5 sq.mm.	Nos.	555	542	3,00,777
	12 C X 2.5 sq.mm.	Nos.	93	668	62,156
	14 C X 2.5 sq.mm.	Nos.	60	724	43,418
	16 C X 2.5 sq.mm.	Nos.	78	757	59,032
	19 C X 2.5 sq.mm.	Nos.	78	779	60,757
	27 C X 2.5 sq.mm.	Nos.	48	946	45,428
	4P,0.75	Nos.	3	333	1,000

DGM(Contracts)

017



[Signature]
 Dy. General Manager (Contracts)
 H.P. Power Transmission Corpn. Ltd.
 Barowalia House, Khalini, Shimla-2

Sr. No.	DESCRIPTION OF MATERIAL	UNIT	QTY	UNIT PRICE	TOTAL PRICE
---------	-------------------------	------	-----	------------	-------------

	2 C X 4 sq. mm.	Nos.	81	479	38,778
	4 C X 4 sq. mm.	Nos.	63	720	45,390
	7 C X 4 sq. mm.	Nos.	54	943	50,936

SUB TOTAL - N

40,68,635

0 33KV XLPE POWER CABLE AND ACCESSORIES

1 XLPE POWER CABLE

3.5 C x 300 sq. mm.

km	0.75	6,20,643	4,65,482
----	------	----------	----------

2 PVC POWER CABLE

3.5 C x 90 sq. mm.

km	0.3	3,06,494	91,948
----	-----	----------	--------

3.5 C x 70 sq. mm.

km	0.75	2,48,634	1,86,476
----	------	----------	----------

3.5 C x 35 sq. mm.

km	0.3	1,43,643	43,093
----	-----	----------	--------

4 C x 16 sq. mm.

km	0.75	99,202	74,402
----	------	--------	--------

4 C x 4 sq. mm.

km	1.5	49,098	73,647
----	-----	--------	--------

3 HR FRLS CONTROL CABLE

2 C X 2.5 sq. mm.

km	1.5	45,913	68,870
----	-----	--------	--------

4 C X 2.5 sq. mm.

km	3	78,317	2,34,951
----	---	--------	----------

7 C X 2.5 sq. mm.

km	1.5	1,30,260	1,95,390
----	-----	----------	----------

10 C X 2.5 sq. mm.

km	1.125	1,82,480	2,05,290
----	-------	----------	----------

12 C X 2.5 sq. mm.

km	0.75	2,16,847	1,62,635
----	------	----------	----------

16 C X 2.5 sq. mm.

km	0.75	2,86,187	2,14,640
----	------	----------	----------

19 C X 2.5 sq. mm.

km	0.3	3,36,506	1,00,952
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2 C X 4 sq. mm.

km	1.5	61,862	92,793
----	-----	--------	--------

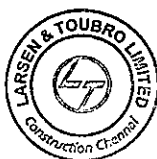
4 C X 4 sq. mm.

km	1.5	1,13,214	1,69,821
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7 C X 4 sq. mm.

km	1.5	2,01,841	3,02,762
----	-----	----------	----------

4 36 KV XLPE CABLE



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HS
Dy. General Manager (Contracts)
H.P. Power Transmission Corpn. Ltd.
Baiowalia House, Khalini, Shimla-2

DGM(Contracts)

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Dy. General Manager (Contracts)
H.P. Power Transmission Corpn. Ltd.
Barowalia House, Khalini, Shimla-2



SE/19

Sr. No.	DESCRIPTION OF MATERIAL	UNIT	QTY	UNIT PRICE	TOTAL PRICE
---------	-------------------------	------	-----	------------	-------------

a)	33 kV XLPE Cable for connecting Transformer to 33 kV GIS of size 1 x 630 sq.mm. (Three Cables with one Spare Cable in each Circuit)	km	1	9,13,822	9,13,822
b)	33 kV Indoor Termination Suitable for above Cable	Nos	4	4,909	19,636
c)	33 kV Outdoor Termination Suitable for above Cable	Nos	4	3,096	12,384

SUB TOTAL - O 36,28,993

P GROUNDING / EARTHING SYSTEM

a)	40 mm MS Rod for Earthing (*)	km	4.797	4,95,112	23,75,053
	40 mm MS Rod for Earthing	km	0.364	4,30,707	1,56,777
	75 x 12 G. S. Flat	km	0.091	1,43,569	13,065
	50 x 6 G. S. Flat	km	0.208	1,09,565	22,790
	50 x 6 M. S. Flat	Nos	79.3	192	15,257
	Cleat type Clamp to suit 75 x 12 G. S. Flat	Nos	22.1	2,406	53,179
	3 Mtr. long, 40 mm dia M. S. Pipe Earth Electrode with Test Link and without Pit	Nos	29.9	1,925	57,566
	3 Mtr. long, 20 mm dia Earth Rod Electrode without Pit	Nos	10.4	2,406	25,026
	3 Mtr. long, 40 mm dia GI Pipe Earth Electrode	Nos	3.9	2,413	9,410

Lightning Protection

	7 / 3.66 mm GS Earth Wire	km	0.299	45,000	13,455
	Cleat Clamp on Structure to suit 7 / 3.66 mm GS Earth Wire	No	59.8	193	11,565
	Pad Clamp on Structure to suit 7 / 3.66 mm Earth Wire and 75 x 12 GS Flat	No	5.2	1,845	9,592
	25 x 3 GI Flat	km	0.598	35,893	21,464
	1.5 Mtr. long GI Spike	Nos	10.4	723	7,514
	Test Links	Nos	10.4	241	2,501

SUB TOTAL - P 27,94,215

Q STEEL STRUCTURES FOR TOWERS, BEAMS AND EQUIPMENT

Tower and Beams
220 kV Tower

CA Type	kgs.	7,650	89.95	6,88,079
---------	------	-------	-------	----------

DGM(Contracts)

610

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Sr. No.	DESCRIPTION OF MATERIAL	UNIT	QTY	UNIT PRICE	TOTAL PRICE
---------	-------------------------	------	-----	------------	-------------

33 kV Tower

BG1 (WITH DEV) - 16 m
Lighting - cum - Lightning Mast

2,90,702
4,27,261

89.95
89.95

3,232
4,750

kgs.
kgs.

4,13,657
1,23,584

89.95
89.95

4,599
1,374

kgs.
kgs.

Equipments

Standard Structures for 220 kV Equipments

89,046
1,97,879
84,728
86,347
24,01,284

89.95
89.95
89.95
89.95

990
2,200
942
960

kgs.
kgs.
kgs.
kgs.

SUB TOTAL - Q

R EOT CRANE

- 3.5 T for 220 kV GIS ROOM
- 2.5 T for 33 kV GIS ROOM
- Moveable Ladder of suitable Capacity for 220 kV & 33 kV GIS Room

6,76,024
4,53,777
2,51,784
13,81,585

6,76,024
4,53,777
1,25,892

1
1
2

Set
Set
Nos

SUB TOTAL - R

- Insulator Strings / Disc Insulators, Hardware, Conductor, Bus Bar Material, Cable Trays, Clamps, Connectors, including Equipment Connectors, Pipes for Equipments and Lighting, all Accessories etc

220kV CLAMPS & CONNECTORS

- Terminal Connector on 26.66 / 33.33 MVA Transformer SF₆ to Oil bushing to suit GIS Bus Duct
- Terminal Connector on 198 kV LA to suit 1 or 2 x MOOSE / ZEBRA ACSR
- Terminal Connector on 245 kV CVT to suit 1 or 2 x MOOSE / ZEBRA ACSR
- Terminal Connector on Wave Trap to suit 1 or 2 x MOOSE / ZEBRA ACSR
- Terminal Connector on 220 kV BPI to suit 1 or 2 x MOOSE / ZEBRA ACSR
- Tee Connectors to suit 1 or 2 x MOOSE / ZEBRA ACSR on both ways

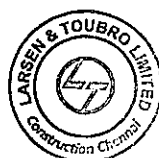
17,832
20,700
17,772
21,672
19,248
40,956

4,458
3,450
2,962
2,709
3,208
3,413

4
6
6
8
6
12

Nos.
Nos.
Nos.
Nos.
Nos.
Nos.

DGM(Contracts)

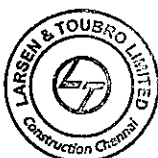


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HS
Dy. General Manager (Contracts)
H.P. Power Transmission Corpn. Ltd.
Baiowalia House, Khalini, Shimla-2

Sr. No.	DESCRIPTION OF MATERIAL	UNIT	QTY	UNIT PRICE	TOTAL PRICE
	Suspension Hardware Assembly along with Insulators (220 / 33 kv side)	Lot	2	55,512	1,11,024
	33 KV CLAMPS & CONNECTORS				
	Terminal Connector on 30 KV Lighting Arrestor, to suit 1 or 2 X MOOSE / WOLF ACSR Conductor	Nos.	18	2,818	50,724
	Terminal Connector on 26.66 / 33.33 MVA Transformer LV Bushing to suit 1 x MOOSE ACSR Conductor	Nos.	4	2,562	10,248
	Terminal Connector on Cable Sealing End to suit 2 x MOOSE ACSR Conductor	Nos.	4	1,552	6,208
	Terminal Connector to suit 1 C x 630 sq. mm. XLPE Cable sealing ends	Nos.	6	2,952	17,712
	BUS BAR MATERIALS				
	MOOSE / ZEBRA / WOLF ACSR Conductor	km	0.1	5,56,568	55,657
	CABLE TRAYS				
	600 mm Wide Perforated Tray	km	0.8	13,82,167	11,05,734
	300 mm Wide Perforated Tray	km	0.12	6,04,898	72,564
	150 mm Wide Perforated Tray	km	0.12	43,193	5,183
	Structural Steel for above	MT	3	65,653	1,96,959
	PVC Pipes:				
	50 mm dia	km	0.4	4,31,927	1,72,771
	Sump Pumps				
	5 HP	Nos.	1	2,48,820	2,48,820
	0.5 HP	Nos.	4	43,194	1,72,776
	220 KV Bus Post Insulators	Nos.	6	38,010	2,28,060
	SUB TOTAL - S				25,92,679
T	TESTING AND MAINTENANCE EQUIPMENT				
1	Meggar 5 KV (Motorized)	Nos.	1	68,786	68,786
2	Meggar 1 KV (Motorized)	Nos.	1	6,995	6,995
3	Digital Multimeter	Nos.	2	9,911	19,822
4	D - Spanner Set (Insulated)	Nos.	2	670	1,340
5	Ring - Spanner Set (Insulated)	Nos.	2	699	1,398
6	Torque Wrench Set	Nos.	2	11,659	23,318

DGM(Contracts)



Deviyaset

By, General Manager (Contracts)
 H.P. Power Transmission Corpn. Ltd.
 Barowalia House, Khalini, Shimla-2

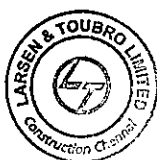
Sr. No.	DESCRIPTION OF MATERIAL	UNIT	QTY	UNIT PRICE	TOTAL PRICE
7	Insulating Gloves	Set	5	1,457	7,285
8	Helmets	Set	5	526	2,630
9	Gas Evacuating and Refilling Device	Set	1	33,34,384	33,34,384
10	Gas Leakage Monitor	Nos.	2	69,952	1,39,904
11	Relay Test Kit	Nos.	1	25,64,911	25,64,911
12	Synchronizing Trolley	Set	1	1,44,774	1,44,774
13	Time Synchronisation Equipment	Lot	1	INCLUDED	
SUB TOTAL - T					63,15,547

TOTAL - 1 = SUB TOTAL A to T

26,78,73,068

NEW ITEMS

A-1	220 kV Single Phase Breaker Bay Module for Spare Transformer	Set	1	1,83,08,548	1,83,08,548
A-2	For Additional Bays - 245 kV, 4000 A, 50 kA, 3 Single Phase (Isolated) Units SF ₆ Gas Insulated, Metal Enclosed Bus Bars each Unit, enclosed in Bus Enclosures running along the Length of the Switchgear to interconnect each of the Circuit Breaker Bay Module complete with Voltage Transformer and Safety Grounding Switch etc	Set	1	8,10,000	8,10,000
A-3	1 - Phase SF ₆ Duct to connect to 220 / 33 kV, 26.66 / 33.33 MVA Transformer / Lines with GIS etc (only the Additional quantity over and above 85.5 to be paid).	Mtr.	Unit Rate	1,36,153	
B-1	33 kV Single Phase Breaker Bay Module for Spare Transformer	Set	1	15,71,576	15,71,576
36 kV OUTDOOR EQUIPMENT					
C-1	30 kV, Single Phase, Surge Arrestors with Surge Counter, Leakage Meter and Junction Box	Nos.	19	16,223	3,08,237
C-2	36 kV, Line Isolator Switch with Earth Switch	Set	6	1,87,917	11,27,502
D	SUB STATION AUTOMATION SYSTEM complete including Hardware and Software for 7 Bays and Remote Control Station alongwith Associated Equipments	Lot	1	70,97,760	70,97,760
E	For Additional Feeder - 220 kV C & R Panel for Bus Bar Protection Panel	Mtr.	1	8,02,497	8,02,497
F	36 kV XLPE CABLE				
I	33 kV XLPE Cable for connecting Transformer to 33 kV GIS of size 1 x 1000 sq.mm Aluminium	Mtr.	Unit Rate	2,905	



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Dy. General Manager (Contracts)
L.P. Power Transmission Corpn. Ltd.
Barowalia House, Khalini, Shimla-2

Sr. No.	DESCRIPTION OF MATERIAL	UNIT	QTY	UNIT PRICE	TOTAL PRICE
---------	-------------------------	------	-----	------------	-------------

- ii 33 kV Indoor Termination Suitable for above Cable suitable at GIS conforming to IEC: 60859
- iii 33 kV Outdoor Termination Suitable for above Cable

Nos Unit Rate
Nos Unit Rate

75,000
8,000
3,00,26,120

GRAND TOTAL FOR SUPPLY = TOTAL 1 + NEW ITEMS

29,78,99,188

NOTE:

- The above quantities are TENTATIVE which shall be finalised during detailed engineering to complete the Scope of Work and successful commissioning of the Sub Station.
- The Payment shall be made on Unit Rates for the quantities actually measured at Site and as per approved Bill of Material.
- Size of 33 kV XLPE Cable alongwith Terminations shall be finalised during detailed engineering and the payment thereof shall be made on the Unit Rates specified above for the same.

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[Signature]
Dy. General Manager (Contracts)
L.T.P. Power Transmission Corpn. Ltd.
Barowalia House, Khalini, Shimla-2

023

DGM(Contracts)

ANNEXURE - MS

QUANTITY AND COST OF MANDATORY SPARES

Sr. No.	DESCRIPTION	UNIT	QTY.	TOTAL F. O. R. COST
1	2	3	4	5

1 MANDATORY SPARES

a) 220 kV GIS Circuit Breaker

(i) 245 kV, 3 Phase Circuit Breaker with Interrupting Chamber complete with all necessary Apparatus (1 no. of each Rating)	No.	1	45,92,127
(ii) Rubber Gasket, 'O' Rings and Seal	Set	1	28,916
(iii) Trip Coil with Resistor	No.	3	28,914
(iv) Closing Coil with Resistor	No.	3	28,914
(v) Molecular Filter	Set	3	86,748
(vi) Density / Pressure Monitoring System	No.	1	48,193
(vii) Relays, Power Contactors, Push Buttons, Timers & MCB etc	Set	1	1,15,664
(viii) Pressure Switches	Set	1	48,193
(ix) Auxiliary Switch Assembly	No.	1	47,229
(x) Operation Counter	No.	1	38,555
(xi) Rupture Disc / Diaphragm	No.	1	1,15,664
(xii) 245 kV, 3 Phase Circuit Breaker Operating Mechanism complete with all necessary connecting Apparatus Each Rating	No.	1	Included in A(i)
(xiii) All type of Coupling for SF6) (1 no. of each type	Set	1	57,832

b) 220 kV Current Transformer

(i) Multi Ratio Single Phase Current Transformers of each Rating (3 Nos. of each Rating)	Set	1	21,29,834
--	-----	---	-----------

c) 220 kV Potential Transformer

(i) Single Phase Potential Transformer complete with all Gaskets and Mounting Hardware	Set	1	10,70,579
--	-----	---	-----------

d) 198 kV Surge Arrestor

(i) Complete Surge Arrestor (for 1 Phase) GIS Type	No.	1	85,102
(ii) Surge Counter / Monitor	No.	1	570

e) 245 kV Isolators & Earth Switch

(i) 245 kV, Single Phase Disconnecting Switch Internal Parts complete with all necessary Gaskets, Mounting Hardware etc.	Set	1	10,75,742
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DGM(Contracts)

By: General Manager (Contracts)
H.P. Power Transmission Corp. Ltd. MS 1
Barowalia House, Khalini, Shimla-2

024

Sr. No.	DESCRIPTION	UNIT	QTY.	TOTAL F. O. R. COST
1	2	3	4	5
	(ii) 245 kV, Single Phase Grounding Switch Internal Parts complete with all necessary Gaskets, Mounting Hardware etc.	Set	1	8,91,576
	(iii) 245 kV, Single Phase High Speed Fault Making Grounding Switch Internal Parts complete with all necessary Gaskets, Mounting Hardware etc.	Set	1	10,75,742
f)	33 kV GIS Circuit Breaker			
	(i) Rubber Gasket 'O' Rings and Seal	Set	1	21,330
	(ii) Trip Coils	No.	3	25,138
	(iii) Closing Coils	No.	3	25,138
	(iv) Molecular Filter	Set	3	9,141
	(v) Density / Pressure Monitoring System	No.	1	22,853
	(vi) Relays, Power Contactors, Push Buttons, Timers & MCB etc.	Set	1	4,57,065
	(vii) Closing Assembly / Valve	No.	1	2,285
	(viii) Pressure Switches	Set	1	2,285
	(ix) Auxiliary Switch Assembly (for CB)	No.	1	29,710
	(x) Rupture Disc / Diaphragm	No.	1	15,997
	(xi) 36 kV, 3 Phase Circuit Breaker Operating Mechanism complete with all necessary connecting Apparatus (each Rating)	No.	1	7,45,015
g)	33 kV Current Transformer			
	(i) Multi Ratio Single Phase Current Transformers of each rating (3 nos. of each rating)	Set	1	2,52,528
h)	33 kV Potential Transformer			
	(i) Single Phase Potential Transformer complete with all Gaskets and Mounting Hardware	Set	1	1,89,682
i)	30 kV Surge Arrestor			
	(i) Complete Surge Arrestor including Base with Surge Counter & Accessories: AIS Type	No.	1	15,700
	(ii) Surge Counter / Monitor	No.	1	8,722
j)	33 kV Isolators & Earth Switch			
	(i) 36 kV, 3 Phase, 1250 Amperes Disconnecting Switch Operating Mechanism complete with all necessary Connecting Apparatus	Set	1	92,175
	(ii) 36 kV, 3 Phase, 1250 Amperes Grounding Switch Operating Mechanism complete with all	Set	1	Part of Three Position Switch



DGM(Contracts)

[Signature]
 Dy. General Manager (Contracts)
 L.P. Power Transmission Corpn. Ltd.
 Barowalia House, Khalini, Shimla-2

Sr. No.	DESCRIPTION	UNIT	QTY.	TOTAL F. O. R. COST
1	2	3	4	5

necessary Connecting Apparatus

k) Battery

220 Volt / 48 Volt Batteries

(i) Spare Battery Cell without Electrolyte	No.	10	2,83,679
(ii) Terminal Connectors with Bolts & Nuts (each type)	No.	10	43,640
(iii) Float Level Indicators (each type)	No.	10	13,627
(iv) Vent Plugs (each type)	No.	10	16,358

l) Battery Charger

220 Volt / 48 Volt Batteries

(i) Set of Control Cards (of each type)	Set	1	69,904
(ii) Set of Relays	Set	1	8,389
(iii) Set of Contactor	Set	1	25,166
(iv) Filter Capacitors	Set	1	8,389
(v) Thyristor / Diode	Set	1	11,185
(vi) Set of Switches	Set	1	22,930
(vii) Set of Wound Resistors	Set	1	4,193
(viii) Potentiometers	Set	1	4,193
(ix) Fuses of Thyristor with Indicators	Set	6	21,807

m) LT Switchgear

(i) Relays (Auxiliary)	Set	1	95,375
(ii) CTs and PTs	Set	1	8,227
(iii) Switches / Push Buttons and Meters	Set	1	27,501
(iv) TPN Switches / MCB	Set	1	93,997
(v) LT Breaker Spares			

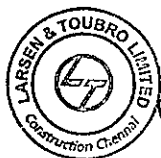
Spring Charging Motor	No.	1	27,504
Auxiliary Contacts Sets	Set	2	2,521
Busbar Seal off Insulators	No.	5	2,292
Arc Chutes	Set	2	7,563
Moving Contacts	Set	1	3,209
Arcing Contacts (Fixed / Moving)	Set	1	3,209
Springs (Closing / Opening)	No.	1	573
Closing Coil	No.	1	1,718
Tripping Coil	No.	1	1,260
Auxiliary Finger Contact	Set	1	1,203
Limit Switches	Set	1	5,156
Jaw Contacts	Set	1	372

(vi) BUSBAR

Busbar Insulators	No.	5	716
Interphase Barrier	No.	2	1,432
Busbar Strip 1 mm (Aluminium)	metres	5	5,371

n) DG Set

(i) Set of Filters 1 set (Lubeoil / Fuel / Air Circuit)	Set	1	6,603
(ii) Solenoid Coil Assembly	No.	1	2,934
(iii) Self Starter Assembly	No.	1	54,930
(iv) Lub - Oil Pressure Safety Control	No.	1	13,882



DGM(Contracts)

026

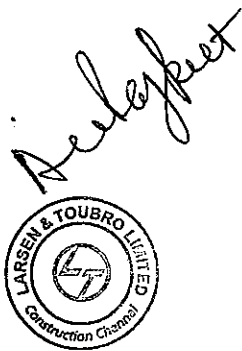
MS 3
Dy. General Manager (Contracts)
N.T. Power Transmission Corpn.
Barowalia House, Khalin, Shimla

Sr. No.	DESCRIPTION	UNIT	QTY.	TOTAL F. O. R. COST
1	2	3	4	5
	(v) High Water Temperature Safety Control	No.	1	2,197
	(vi) Diode	No.	2	1,505
	o) Optic Fibre Cable	metres	500	47,746
	p) 220 kV CVT	No.	1	3,95,452
TOTAL OF MANDATORY SPARES				1,48,28,766

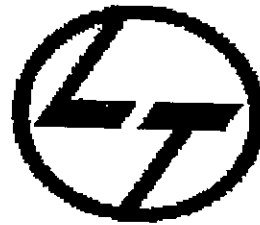
NOTE:

- i) The above Prices are FIRM and NO Price Variations shall be paid.
- ii) Freight & Insurance Charges, Excise Duty, C. S. T. / VAT are included in above Prices.

[Signature]
DGM(Contracts)



[Signature]
Dy. General Manager (Contracts)
H.P. Power Transmission Corpn. Ltd.
Barowalia House, Khalini, Shimla-2



CONTRACT AGREEMENT

FOR

CONSTRUCTION OF 220/33KV GIS SUBSTATION AT PHOJAL

BETWEEN

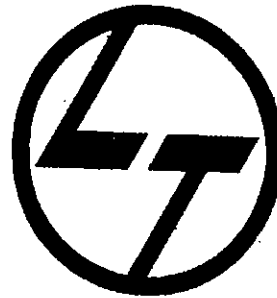
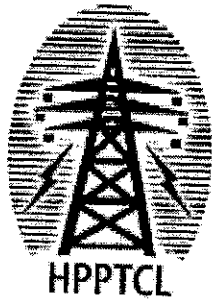
HP POWER TRANSMISSION CORPORATION LIMITED

AND

LARSEN & TOUBRO LIMITED

VOLUME – 1A , 1B, 1C & 2

(BOOK- 1 OF 5, 2 OF 5, 3 OF 5 & 4 OF 5)



CONTRACT AGREEMENT

FOR

CONSTRUCTION OF 220/33KV GIS SUBSTATION AT PHOJAL

BETWEEN

HP POWER TRANSMISSION CORPORATION LIMITED

AND

LARSEN & TOUBRO LIMITED

VOLUME – 1A (BOOK- 1 OF 5)

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Volume – 1A: **Supply contract** **Pages 001 to 150**

(Present Volume)

Section – I Supply Contract Agreement Pages 001 to 003Section – II Notification of Award dated 08-03-2013 Pages 004 to 028

Section – III Notification of Award dated 23-12-2010
and Amendment dated 08-02-2011 **Pages 029 to 150**

Volume – 1B: Erection contract

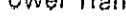
Volume – 1C: CORRESPONDENCE AND CONDITIONS OF CONTRACT

Volume – 2: Proposal Submitted By The Bidder

Volume – 3: Technical Specifications

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Dy. General Manager (Contracts)
N.P. Power Transmission Corpn. Ltd.
Barowalia House, Khalini, Shimla-2



H.P. POWER TRANSMISSION CORPORATION LIMITED

(A State Government Undertaking)

BAROWALIA HOUSE, KHALINI, SHIMLA-2

Ph:-0177-2626784, FAX:-0177-2626284, 2620227

No. HPPTCL/ 33/220 kV Phojal /L&T / /2013 :- 330 - 37

Dated :- 16/4/13

To

✓
M/S LARS&N & TOUBRO LIMITED,
Engineering Construction & Contract Division,
Mount Poonamallee Road Manapakkam,
PB. No. 979, Chennai -6000089.
Fax No. 044-22493317,22526345.

Subject: - Award No. HPPTCL /DGMC/L&T-Supply//2010-5107-12 dated 23.12.2010 and HPPTCL /DGMC/L&T-Erection //2010-5099-5104 dated 23.12.2010 amended Vide Award No. HPPTCL /DGMC/L&T-Supply//2013-6855-61 dated 08.03.2013 and HPPTCL /DGMC/L&T-Erection //2013-6862-68 dated 08.03.2013 and Tender Specification No. DGMC/PALCHAN SUB-STATION/2/2009.- Amendments there of

Reference:- Your letter No.s (1) LTCD/EIC/KRJ/HPPTCL/Phojal-SUPPLY/1403 dated 18.03.2013

(2) LTCD/EIC/KRJ/HPPTCL/Phojal-SUPPLY/1403 dated 18.03.2013.

Dear Sirs,

With reference to above, it is to inform that following amendment in the subject cited Tender specifications / awards are here by made and may be read as :-

Sr. No.	Existing Clause	As Amended
1	Clause No. 3.12.6, Section-3 (GCC) of the Tender Documents / Clause No. 12 (Supply Award)/ Clause No. 8 (Erection Award) of the Original Awards STAGE PENALTY: To ensure that the Contractor starts the Work immediately after signing of the Contract, the following Minimum progress of Work, both in respect of Supply of Equipment against Supply Contract and Physical Progress of Civil and Erection Activities at Site against Erection Contract separately, will have to be achieved by the Contractor in terms of Financial Values:-	Clause No. 3.12.6, Section-3 (GCC) of the Tender Documents / Clause No. 12 (Supply Award)/ Clause No. 8 (Erection Award) of the Original Awards. STAGE PENALTY: To ensure that the Contractor starts the Work immediately after signing of the Contract, the following Minimum progress of Work, both in respect of Supply of Equipment against Supply Contract and Physical Progress of Civil and Erection Activities at Site against Erection Contract separately, will have to be achieved by the Contractor in terms of Financial Values:-

PERIOD STARTING FROM SIGNING THE CONTRACT	FINANCIAL ACHIEVEMENT INCLUDING SUPPLY OF EQUIPMENT
Within 3 (Three) months	10 % of the Contract Value
Within 5 (Five) months	40 % of the Contract Value
Within 6 (Six) months	60 % of the Contract Value

The Contractor shall ensure the Completion of Supply and Erection Activities separately for the above values, failing which the Stage Penalty @ ½ % per week or part thereof for the amount equal to Short Fall in Progress achieved will be levied for the period starting from the Due Date of Achievement of above targets.

The Stage Penalty shall be calculated separately for Supply Contract and the Contract for Erection and Civil Works. The Stage Penalty shall be calculated in number of days of shortfall. The Achievement of Target will be the Date on which the Material Receipt or Erection Activity is completed by the Contractor at Site as indicated on the Bill / Invoice by the Engineer.

However, in any case, the Total Amount of Stage Penalty plus Liquidated Damages leviable for non completion of Sub-Station in time will not exceed 15 % of the Contract Value of the Sub-Station not commissioned in time.

The Stage Penalty levied shall be reviewed on completion of the Work to the extent that where the Work as a Whole is completed within the stipulated

PERIOD STARTING FROM SIGNING THE CONTRACT	FINANCIAL ACHIEVEMENT INCLUDING SUPPLY OF EQUIPMENT
Within 3 (Three) months	10 % of the Contract Value
Within 6 (Six) months	25% of the Contract Value
Within 9 (Nine) months	40 % of the Contract Value
Within 12 (Twelve) months	80 % of the Contract Value

The Contractor shall ensure the Completion of Supply and Erection Activities separately for the above values, failing which the Stage Penalty @ ½ % per week or part thereof for the amount equal to Short Fall in Progress achieved will be levied for the period starting from the Due Date of Achievement of above targets.

The Stage Penalty shall be calculated separately for Supply Contract and the Contract for Erection and Civil Works. The Stage Penalty shall be calculated in number of days of shortfall. The Achievement of Target will be the Date of which the Material Receipt or Erection Activity is completed by the Contractor at Site as indicated on the Bill / Invoice by the Engineer.

However, in any case, the Total Amount of Stage Penalty plus Liquidated Damages leviable for non completion of Sub-Station in time will not exceed 15 % of the Contract Value of the Sub-Station not commissioned in time.

The Stage Penalty levied shall be reviewed on completion of the Work to the extent that where the Work as a Whole is completed within the stipulated

Handwritten signature

Completion Period or the Total Delay in Commissioning of the Sub-Station is less than 2 (Two) Weeks, no Stage Penalty shall be chargeable and the Stage Penalty already charged for the delay in completion of Individual Stage, if any shall be refundable to the Contractor through the Bill payable on completion of the Work. The Stages of the Work will be identified and defined as per Approved PERT Chart. The Phasing of Execution of the Turnkey Project will be formulated in a way that appropriate linkage of expenditure would be made not only with Supply but also with the Physical Activities at Site. The construction of Major civil works including Control room building, GIS building , Out Switchgear Foundations, Cable Trenches etc. will be taken in hand within 2(Two) months form the award of the contract and shall be completed at lease 3 (Three) months before the scheduled completion date. The Contractor shall provide for proper checks and balances to ensure timely completion of Turnkey Contract.	Completion Period or the Total Delay in Commissioning of the Sub-Station is less than 2 (Two) Weeks, no Stage Penalty shall be chargeable and the Stage Penalty already charged for the delay in completion of Individual Stage, if any shall be refundable to the Contractor through the Bill payable on completion of the Work. The Stages of the Work will be identified and defined as per Approved PERT Chart. The Phasing of Execution of the Turnkey Project will be formulated in a way that appropriate linkage of expenditure would be made not only with Supply but also with the Physical Activities at Site. The construction of Major civil works including Control room building, GIS building , Out Switchgear Foundations, Cable Trenches etc. will be taken in hand within 2(Two) months form the award of the contract and shall be completed at lease 3 (Three) months before the scheduled completion date. The Contractor shall provide for proper checks and balances to ensure timely completion of Turnkey Contract.
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Following clarifications are hereby made with reference to your letters under reference:-

Terms of Payment: Clause No. 8 (Supply Contract of the original Award):-

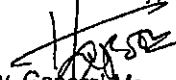
The said Clause already stands amended vide letter No. HPPTCL /L&T-Supply /2010-11-5845-50 dated 08.02.2011 and shall be an integral part of the Contract Agreement.

Mandatory Spares: (Schedule PCPS):-

Acceptable subject to no Extra financial Implication

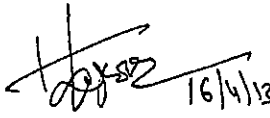
This letter of amendment shall form an integral part of the Contract Agreement .

Yours faithfully,

 16/4/13
Dy. General Manager (Contracts)

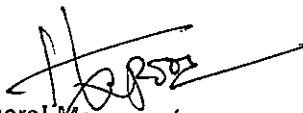
Copy of the above is forwarded to the following for information please.

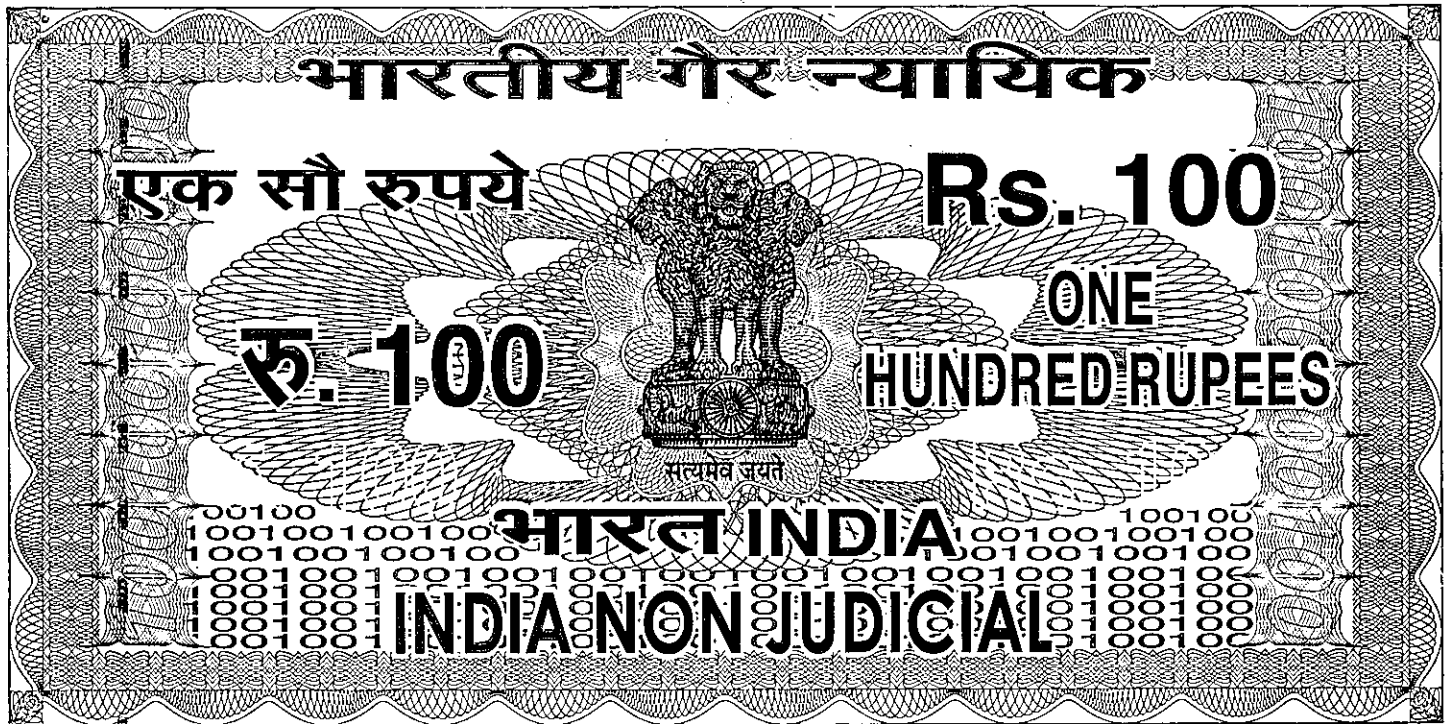
1. P.S to the Director (Planning & Contracts), HPPTCL, Shimla -2.
2. P.S to the Director (Projects), HPPTCL, Shimla -2.
3. The General Manager (Projects), HPPTCL, Shimla-2
4. The DGM & Head Transmission (Design), Anu, Hamirpur.
5. The DGM (Projects), HPPTCL, Shimla -2.
6. The DGM (Finance), HPPTCL Shimla-2
7. Sr. Manager Transmission Division, HPPTCL, Sarabai, Bhunter Distt. Kullu-175125 H.P.


Dy. General Manager (Contracts)

SECTION – I




Dy. General Manager (Contracts)
H.P. Power Transmission Corpn. Ltd.
Barowalia House, Khalini, Shimla-2



हिमाचल प्रदेश HIMACHAL PRADESH

402472

(SUPPLY CONTRACT)

This agreement made on the 16th day of April 2013, between H.P. POWER TRANSMISSION CORPORATION LIMITED, (hereinafter referred to as "the Purchaser or HPPTCL" which expression shall unless repugnant to the context or meaning thereof, include its successors, Administrators & assigns) of the one part and M/S LARSEN & TOUBRO LIMITED-ECC DIVISION, CHENNAI, INDIA (hereinafter called "the Contractor" which expression shall unless repugnant to the context or meaning thereof, include its successors, Administrators & Assigns) of the other part.

WHEREAS the purchaser is desirous that the Contractor should provide certain goods viz Supply of Equipment/Materials against LOA No: HPPTCL/DGMC/L&T-SUPPLY/2010-5099-5104 Dated 23.12.2010 for construction of 220/33KV PALCHAN GIS substation now Amended vide No. HPPTCL/DGMC/L&T-SUPPLY/2013-6855-61, Dated:08/03/2013 for construction of 220/33KV GIS substation at Phoja, Distt.-Kullu and has accepted a Bid by the Contractor for the supply of those goods in the sum of Rs Thirty One Crores Twenty Seven Lacs Twenty Seven Thousand Nine Hundred Fifty Four Only (INR. 31,27,27,954/-) (Hereinafter called "the Contract Price".)

NOW THIS AGREEMENT WITNESSETH AS FOLLOWS:

1. In this Agreement, Words & Expression shall have the same meaning as are respectively assigned to them in the Conditions of Contract referred to.
2. The following documents shall be deemed to Form & be read and construed as part of this Agreement, viz.:



Deelaput

[Signature]
Dy. General Manager (Contracts)
H.P. Power Transmission Corpn. Ltd.
Baiowalia House, Khalini, Shimla-2

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01/04/13

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~~RESTRICTED~~ ~~CONFIDENTIAL~~



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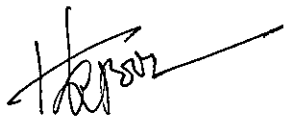
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- a) The Bid Form and the Price Schedule submitted by the Bidder,
 - b) The Technical Specifications;
 - c) General Conditions of Contract;
 - d) Erection Conditions of Contract;
 - e) Special Conditions of Contract;
 - f) The Purchaser's Notification of Award and Amendments thereafter,
 - g) Correspondence/Clarifications.
3. In consideration of the payments to be made by the Purchaser to the Contractor as hereinafter mentioned, the Contractor hereby covenants with the purchaser to provide the Goods to remedy defects therein in conformity in all respects with the provisions of the Contract.
 4. The Purchaser hereby covenants to pay the Contractor in consideration of the provision of the Goods and the remedying of defects therein, the Contract price or such other sum as may become payable under the provisions of the Contract at the times & in the manner prescribed by the Contract.

IN WITNESS whereof the PARTIES hereto have caused this Agreement to be executed in accordance with their respective laws, the day & year first above written.

Signed, sealed & delivered by the said.

(For HPPTCL)

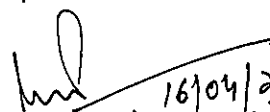


(Harish Kapoor)

DGM (Contracts)

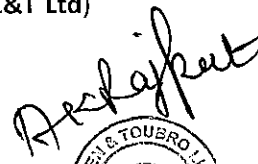
Py. General Manager (Contracts)
H. P. Power Transmission Corpn. Ltd.
Barowalia House, Khalini, Shimla-2

In the presence of :-


16/04/2013
E.R. Amar Singh Shandil
Senior Manager (Contracts)
H.P. Power Transmission Corpn. Ltd.
Barowalia House, Khalini, Shimla-2

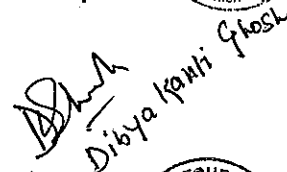
Signed, sealed & delivered by the said.

(For L&T Ltd)



(Amit Kumar Rajput)

Cluster Operation Head (Delhi)



In the presence of



SECTION -II

Deelapet



W

By, General Manager (Contracts)
H.P. Power Transmission Corpn. Ltd.
Barowalia House, Khalini, Shimla-2



HP POWER TRANSMISSION CORPORATION LIMITED

(A State Government Undertaking)

BAROWALIAS HOUSE, KHALINI, SHIMLA - 171002

Ph:- 0177-2626784, (Telefax: 0177 - 2620227)

Reference: HPPTCL / DGMC / L & T - SUPPLY / 2013-6855-66 DATED: 8/03/2013

From,

Dy. GENERAL MANAGER (CONTRACTS),
BAROWALIAS HOUSE, KHALINI,
SHIMLA - 171002

To,

M/S LARSEN & TOUBRO LIMITED,
ENGINEERING CONSTRUCTION & CONTRACTS DIVISION,
MOUNT POONAMALLEE ROAD, MANAPAKKAM,
P. B. No. 979, CHENNAI - 600089

FAX No.: 044 - 22493317; 044 - 22526345

Subject: LETTER OF AWARD (LOA) No.: HPPTCL / DGMC / L & T - SUPPLY / 2010 - 5107 - 12 DATED 23.12.2010 (FIRST CONTRACT) FOR SUPPLY OF EQUIPMENT / MATERIALS FOR CONSTRUCTION OF 220 / 33 KV GIS SUBSTATION AT PHOJAL (EARLIER PALCHAN) - AMENDMENT THEREON

Reference: This has reference to the following: -

- 1) This office Letter of Award No.: HPPTCL / DGMC / L & T - Supply / 2010 - 5107 - 12 dated 23.12.2010
- 2) This office letter No.: HPPTCL / Palchan S / Stn. / 2011 - 12 - 6113 dated 03.12.2011
- 3) Minutes of Meeting held on 06.01.2012 in Shimla
- 4) Your Letter No.: L&T / PT&D / SSBU / KULLU / HPPTCL / 220 KV SWYD / 2403 dated 21st April, 2012
- 5) Your Letter No.: L&T / PT&D / SSBU / KULLU / HPPTCL / 220 KV SWYD / 2404 dated 24th April, 2012
- 6) Your Letter No.: L&T / PT&D / SSBU / KULLU / HPPTCL / 220 KV SWYD / 2405 dated 10th May, 2012
- 7) Your Letter No.: L&T / PT&D / SSBU / KULLU / HPPTCL / 220 KV SWYD / 2406 dated 18th May, 2012
- 8) Your Letter No.: L&T / PT&D / SSBU / KULLU / HPPTCL / 220 KV SWYD / 2409 dated 11th June, 2012
- 9) This Office letter No.: HPPTCL / DGM& Head (T) / Phozal Sub Station - 12 - 516 - 17 dated 21.07.2012



Page 1 of 6

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Dy. General Manager (Contracts)
H.P. Power Transmission Corpn. Ltd.
Barowalia House, Khalini, Shimla-2

- 10) Your Letter No.: L&T / PT&D / SSB / KULLU / HPPTCL / 220 kV SWYD / 2410 dated 30th July, 2012
- 11) Your Letter No.: L&T / PT&D / SSB / KULLU / HPPTCL / 220 kV SWYD / 2411 dated 1st August, 2012
- 12) Your Letter No.: L&T / PT&D / SSB / KULLU / HPPTCL / 220 kV SWYD / 2412 dated 6th August, 2012
- 13) This Office letter No.: HPPTCL / DGM& Head (T) / Phozal Sub Station – 12 – 573 – 74 dated 07.08.2012
- 14) This Office letter No.: HPPTCL / DGM& Head (T) / Phozal Sub Station – 12 – 834 – 35 dated 28.09.2012
- 15) This Office letter No.: HPPTCL / DGM& Head (T) / Phozal Sub Station – 12 – 884 – 85 dated 03.10.2012
- 16) Your Letter No.: LTCD / DLRO / HPTCL / PHOZAL / 002 dated 5th October, 2012

Sir,

I have been directed to issue Amendment to this office Letter of Award (LOA) No.: HPPTCL / DGMC / L & T – Supply / 2010 – 5107 – 12 dated 23.12.2010 for Supply of Equipment / Material (also referred to as 'First Contract') required for Construction of 220 / 33 kV GIS Sub Station at Phozal (earlier Palchan) in Kullu District of Himachal Pradesh for Amount of Rs. 31,27,27,954 (Rupees Thirty One Crores Twenty Seven Lakhs Twenty Seven Thousand Nine Hundred Fifty Four) only.

The Scope of Work under this Contract shall also include all such Items, Equipment, and Materials, which are not specifically mentioned in the Bill of Material, attached with this Amendment (Annexure – SE and MS) but are necessary for successful completion of the Scope of Work under the Contract.

Major terms and conditions of this amendment are as under:-

1. The detailed List of Equipment and Material along with their Tentative Quantities to be supplied and Unit Rates are given in Annexure – SE and Annexure – MS to this Letter of Award.
2. Payments shall be released for the Quantities as finalised during detailed engineering and approved Bill of Material / actually measured by HPPTCL's Engineer at Site, based on per Unit Rates as per Award.
3. Size of 33 kV XLPE Cable viz. 630 sq. mm. / 1000 sq. mm. shall be finalised during detailed engineering and payment of the same along with suitable Termination shall be released on the Unit Rates specified in this Award.
4. It is expressly understood by you that any breach under the contract for Civil works and Services (Second Contract) awarded, shall automatically be deemed as breach of this Contract and any such breach or occurrence giving us a right to terminate the 'Second Contract' and / or recover damages under that Contract shall give us right to terminate this Contract and / or recover damages under this Contract as well. However, such breach or occurrence in the 'Second Contract' shall not automatically relieve you of any of your obligations under this Contract. It is expressly understood and agreed by you that the Equipment / Materials supplied under this 'First Contract', when erected, tested and

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Page 2 of 6

Dy. General Manager (Contracts)
H.P. Power Transmission Corpn. Ltd.
Barowalia House, Khalini, Shimla-2

006

commissioned under the 'Second Contract' shall give satisfactory performance in accordance with the Bidding Document.

5. CONTRACT PRICE:

- 5.1 The Contract Price for the complete Scope of Work under this amended LOA is as per the following break up: -

Sr. No.	PRICE COMPONENT	VALUE in Rupees
1	Supply of Equipment / Material as per Annexure – SE	29,78,99,188
2	Supply of Mandatory Spares as per Annexure - MS	1,48,28,766
3	TOTAL CONTRACT PRICE	31,27,27,954

Rupees Thirty One Crores Twenty Seven Lakhs Twenty Seven Thousand Nine Hundred Fifty Four only

- 5.2 Further breakup of the Contract Price for the purpose of payment is given at Annexure – SE and Annexure – MS of this amended LOA.
- 5.3 Notwithstanding the breakup of the Contract Price, the Contract shall at all times be construed as a 'Single Source Responsibility Contract' and any breach in any part of the Contract shall be treated as breach of the entire Contract.
- 5.4 The Ex – Works Price of Items indicated at Annexure – SE for which quantities are assessed by you and are on lump sum basis, shall remain constant irrespective of any increase or decrease in quantities of any Items for completion of Scope of Work as per Technical Specification unless there is any change of Scope of Work by the Purchaser / Owner.

In case, the actual requirement of quantity of such Items is more than the quantities identified in the LOA / Contract Agreement / approved BOQ / Billing break up or some additional Items are required for the successful completion of the Scope of Work as per the Technical Specification, such additional Items / quantities shall be supplied by you without any additional cost to HPPTCL. Further, in case actual requirement of quantities for successful completion of Scope of Work is less than the quantities identified in the LOA / Contract Agreement / approved BOQ / Billing break up or some existing Items are not required, the lump sum price for these Items shall remain unchanged and no deduction shall be made from the lump sum price due to such reduction of quantities.

In case quantities of these Items supplied at Site are in excess of that required for successful completion of Scope of Work as detailed in the Bidding Documents, such additional quantities shall be your property and you shall be allowed to take back the same from the Site for which no deduction from lump sum price shall be made. It shall, however, be your responsibility to pay all statutory taxes, duties, and levies to the concerned authorities for such surplus material, which would otherwise have been lawfully payable.



Page 3 of 6

By. General Manager (Contracts)
HP Power Transmission Corpn., Ltd.
Barowalia House, Khalini, Shimla-2

You shall submit an indemnity bond to keep HPPTCL harmless from any such liability, before release of such material to you by HPPTCL.

- 5.5 No Payment for 220 kV Bus Duct for the length upto 85.5 metres shall be made by the Employer, however the Payments of 220 kV Bus Duct @ Rs. 1,36,153 per metre for the quantity in excess of 85.5 metres shall be made to the Contractor.

6. TAXES AND DUTIES:

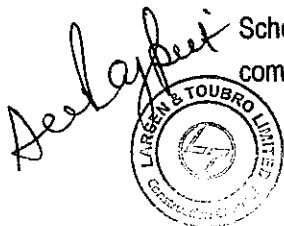
- 6.1 The Contract Price is inclusive of all Taxes and Duties such as Excise Duty, Sales Tax / VAT etc for all Equipment and Materials to be supplied under the Contract. Further any such Taxes and Duties as aforesaid payable including statutory variation thereon will be to your account and no claim on this behalf will be entertained by HPPTCL.
- 6.2 Entry Tax, Octroi as applicable for destination Site on all Items of Supply, which shall be dispatched directly from Sub Vendors Works to HPPTCL's Site (*Sale - in - transit*) shall be reimbursed to you, subject to furnishing of documentary proof for payment made, at the applicable rate at the time of dispatch. This shall be applicable for the Delivery within the stipulated delivery period and in case of delayed delivery of the Material, the payment shall be made on the Rates prevailing at during the stipulated delivery or actual, whichever are lower.
- 6.3 The above Contract Price is inclusive of Service Tax and Surcharge / Cess etc on it and HPPTCL shall not entertain any claim whatsoever in this regard.
- 6.4 HPPTCL shall issue requisite Sales Tax Declaration Forms on receipt of your request for such Items identified in Price Schedule and dispatched directly to HPPTCL's Site from your Vendors' / Sub Vendors' Works (*Sales - in transit*).
- 6.5 HPPTCL shall be entitled to deduct Income Tax, Surcharge on Income Tax and other Corporate Taxes / other Taxes at source in accordance with the provisions of the Income Tax / other Laws as applicable from time to time. TDS so deducted shall be deposited with the relevant tax Authority and necessary TDS Certificate shall be issued to you by HPPTCL.

7. PRICE ADJUSTMENT:

All Price Components under this Letter of Award shall be FIRM during the entire execution of the Contract and no price variation whatsoever shall be applicable.

8. TIME SCHEDULE OF CONTRACT:

- 8.1 The basic consideration and the essence of the Contract is strict adherence to the Time Schedule of the Contract. You shall so organise your resources and perform your work as to complete successful testing and commissioning of the GIS Phojal Sub Station covered



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Dy. General Manager (Contracts)
H.P. Power Transmission Corpn. Ltd.
Barowalia House, Khalini, Shimla-2

under the subject Contract within **14 (fourteen) months** from the date of issue of this Amendment and the same shall be applicable for all contractual purposes.

- 8.2 The contractor shall develop and furnish a detailed Schedule in the form of a Bar Chart indicating to Engineering, Procurement, Manufacturing and Ex - Works delivery for all the Equipment and Materials covered under this Contract within 15 days of this Amendment.
- 8.3 For the purpose of levy of Liquidated Damages for delay, the time for completion of work of construction, testing and successful commissioning of 220 / 33 kV GIS Sub Station at Phojal shall be reckoned as 14 months from the date of this amended LOA.

9. LIQUIDATED DAMAGES (LD) FOR DELAY:

- 9.1 If you fail to successfully complete the Commissioning of the Sub Station within the Time Schedule stipulated (14 months) under the Contract, you shall pay to HPPTCL as Liquidated Damages and not as a penalty, a sum of one half of one percent (0.5 %) of the Contract Price for each calendar week or part thereof of delay.
- 9.2 Equipment and Materials shall be deemed to have been delivered only when all its Components, Parts, and Spares are also delivered. If certain Components, Parts, or Spares are not delivered in time, the Equipment and Materials will be considered as delayed until such time the same are also delivered.
- 9.3 The Total Amount of Liquidated Damages for delay under the Contract shall be subject to a Maximum of **10 %** of the Contract Price.

10. SIGNING OF CONTRACT:

You shall execute a Contract Agreement at the office of HPPTCL, on the Terms and Conditions envisaged in the Tender Documents and this detailed Letter of Award, **within 30 (Thirty) calendar days of the receipt of Notification of this amended LOA**. It is a legitimate obligation of you to execute and to stamp the Contract, in accordance with the Indian Stamp Act and to supply Six Copies of Contract Drawings, Technical Particulars as finally approved by HPPTCL and other Literature and Instruction Books regarding Handling, Use and Maintenance of Equipment / Material. The cost of all these and such other Items have been included in the Prices and you will not be entitled to any extra payment on these accounts. However, non - execution of the Contract Agreement by you shall not absolve you of the responsibility of the faithful execution of the Contract.

11. It is understood and agreed by both the parties to the contract that no claim, whatsoever, shall be raised by either of the parties on account of the period already lapsed under the contract.



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Page 5 of 6
Dy. General Manager (Contracts)
H.P. Power Transmission Corpn. Ltd.
Barowalia House, Khalini, Shimla-2

12. All other Terms and Conditions shall be as per Original Letter of Award No.: HPPTCL / DGMC / L & T – Supply / 2010 – 5107 – 12 dated 23.12.2010 (FIRST CONTRACT) and Tender Document No. DGMC / PALCHAN SUBSTATION / 02 / 2009.

Please acknowledge receipt of the Letter of Award and take necessary action to commence the work immediately.

Enclosure:

Annexure – SE

Annexure – MS

Yours faithfully,


Dy. General Manager (Contracts)

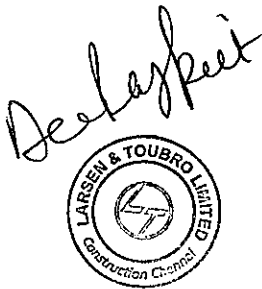
Reference: HPPTCL / DGMC / L & T - SUPPLY / 2013 -

DATED:

Copy for information and necessary action to: -

1. P. S. to Director (Planning & Contracts), HPPTCL, Barowalias House, Khalini, Shimla – 171002.
2. P. S. to Director (Projects), HPPTCL, Barowalias House, Khalini, Shimla – 171002.
3. General Manager (Projects), HPPTCL, Barowalias House, Khalini, Shimla – 171002.
4. DGM & Head Transmission, HPPTCL, Anu, Hamirpur.
5. DGM(Finance), HPPTCL, Sangla House, Khalini, Shimla – 171002.
6. Sr. Manager, HPPTCL, Sarabai, Bhunter, District Kullu – 175125 (H. P.)


Dy. General Manager (Contracts)




Dy. General Manager (Contracts)
H.P. Power Transmission Corpn. Ltd.
Barowalia House, Khalini, Shimla-2

ANNEXURE - SE

NAME OF WORK : CONSTRUCTION OF 220 / 33 KV SUB STATION AT PHOZAL IN DISTRICT KULLU

SUPPLY PORTION

Sr. No.	DESCRIPTION OF MATERIAL	UNIT	QTY	UNIT PRICE	TOTAL PRICE
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A POWER TRANSFORMER

1	26.66 / 33.33 MVA, 33 / 220 kV Single Phase Transformer including Bushing, Accessories and First Filling of Oil	Nos.			
2	Oil Storage Tank	Nos.			
3	Oil Sampling Bottle	Nos.			
4	Micro Gas Analyzer / On - Line DGA / PPM Meier	Nos.			
5	250 kVA, 33 / 0.433 kV Three Phase Transformer including Bushing, Accessories and First Filling of Oil	Nos.	1	3,77,674	3,77,674

To be Supplied by HPPTCL

SUB TOTAL - A

3,77,674

B 245 KV GIS EQUIPMENT

1	245 kV, 1600 A, 50 kA SF ₆ Gas Insulated Transformer Bay Module each comprising of SF ₆ Gas Insulated Circuit Breaker, Current Transformers, Two Bus Bar Disconnectors with Grounding Switch Surge Arresters (198 kV), SF ₆ Gas Monitoring System for complete Bay LCC, Three 1 - Phase SF ₆ Ducts and SF ₆ / Oil Bushing to connect to 33 / 220 kV, 26.66 / 33.33 MVA Transformers and Accessories with GIS etc to complete Transformer Bay Module	Nos.	1	4,20,67,623	4,20,67,623
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2	245 kV, 2000 A, 50 kA SF ₆ Gas Insulated Feeder Bay Module each comprising of SF ₆ Gas Insulated Circuit Breaker, Current Transformers, Two Bus Bar Disconnectors with Grounding Switch, Line Disconnectors with Safety Grounding Switch, High, Speed Fault Making Grounding Switch, SF ₆ Gas Monitoring System for complete Bay, LCC, GIS Duct and Air / SF ₆ Bushing Termination Enclosure and Accessories with GIS etc to complete Feeder Bay Module	Nos.	2	4,02,02,813	8,04,05,626
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DGM(Contracts)



Dy. General Manager (Contracts)
 T.P. Power Transmission Corpn. Ltd.
 Da owalia House, Khalini, Shimla-2

Sr. No.	DESCRIPTION OF MATERIAL	UNIT	QTY	UNIT PRICE	TOTAL PRICE
3	245 kV, 4000 A, 50 kA, 3 Single Phase (Isolated) Units SF ₆ Gas Insulated, Metal Enclosed Bus Bars each Unit, enclosed in Bus Enclosures running along the Length of the Switchgear to interconnect each the Circuit Breaker Bay Modules Each Bus Bar Set shall be complete with Voltage Transformers complete with Safety Grounding Switch	Nos.	2	27,00,000	54,00,000
4	245 kV, 4000 A, 50 kA SF ₆ Gas Insulated Bus Coupler Bay Module comprising of SF ₆ Gas Insulated Circuit Breaker, Current Transformers, Two Disconnectors with Safety Grounding Switches, SF ₆ Gas Monitoring System for complete Bay, LCC etc	Nos.	1	2,41,49,034	2,41,49,034
5	245 kV, CVT with Junction Box	Nos.	6	4,04,954	24,29,724
6	198 kV Lightning Arrester with Counter and Leakage Meter	Nos.	7	78,966	5,52,762
SUB TOTAL - B					15,50,04,789

C 36 kV, 2000 A, 40 kA for 3 sec., SF₆ Gas Insulated, Metal Enclosed BUS BARS each Unit enclosed in Bus Enclosures running along the Length of the Switchgear to interconnect each of Circuit Breaker Bay Modules. Each Bus Bar Set shall be complete with Voltage Transformers complete with Safety Grounding Switch

1	36 kV, 1600 A SF ₆ Gas Insulated Feeder Bay Module each comprising of SF ₆ Gas Insulated Circuit Breaker, Current Transformers, Two Bus Bar Disconnectors with Grounding Switch, Line Disconnector with Safety Grounding Switch, High Speed Fault Making Grounding Switch SF ₆ Gas Monitoring System for complete Bay, LCC, Enclosure and Accessories with GIS etc to complete Feeder Bay Module	Nos.	6	36,45,891	2,18,75,346
2	36 kV, 2000 A SF ₆ Gas Insulated Bus Coupler Bay comprising of SF ₆ Gas Insulated Circuit Breaker, Current Transformers, Two numbers of Bus Bar Disconnectors with Earthing Switch, SF ₆ Gas Monitoring System for complete Bus Coupler Panel	Nos.	1	31,15,105	31,15,105
3	36 kV, 1600 A SF ₆ Gas Insulated Power Transformer Panel each comprising of SF ₆ Gas Insulated Circuit Breaker, Current Transformers, Two numbers of Bus Bar Disconnectors with Earthing Switch,	Nos.	1	31,48,162	31,48,162

DGM(Contracts)

SE/2

Devi Rajput

LARSEN & TOUBRO LIMITED
Construction Channel

012

HS

Dy. General Manager (Contracts)
Power Transmission Corpn. Ltd.
Barowalia House, Khalini, Shimla-2

Sr. No.	DESCRIPTION OF MATERIAL	UNIT	QTY	UNIT PRICE	TOTAL PRICE
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Surge Arrester (30 kV), SF₆ Gas Monitoring System for complete Power Transformer Panel

4	36 kV, 630 A SF ₆ Gas Insulated 250 kVA, LT Transformer Panel each comprising of SF ₆ Gas Insulated Circuit Breaker, Current Transformers, Two numbers of Bus Bar Disconnectors with Earthing Switch, Surge Arrester (30 kV), SF ₆ Gas Monitoring System for complete LT Transformer Panel	Nos.	1	27,08,043	27,08,043
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SUB TOTAL - C

3,08,46,556

D SUBSTATION AUTOMATION SYSTEM complete including Hardware and Software for 9 Bays and Remote Control Station alongwith Associated Equipments

91,25,551

1	220 kV Bays	Nos.	3	INCLUDED ABOVE
2	33 kV Bays	Nos.	6	

SUB TOTAL - D

91,25,551

E1 220 kV CONTROL AND RELAY PANEL

1 Circuit Breaker Control Panel

a)	With Auto Reclose	Nos.	2	5,26,474	10,52,948
b)	With Out Auto Reclose	Nos.	3	5,01,403	15,04,209

2 Line Protection Panel (Main I + Main II)

Nos.	2	12,53,510	25,07,020
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3 220 kV (Double Bus Bar Protection)

Set	1	24,31,808	24,31,808
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4 Transformer Protection Panel - H, V, Side including one number for Spare Single Phase Transformer

Nos.	2	7,87,204	15,74,408
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SUB TOTAL - E1

90,70,393

E2 33 kV CONTROL AND RELAY PANEL

1 Circuit Breaker Control Panel

a)	With Auto Reclose	Nos.	6	4,76,334	28,58,004
b)	With Out Auto Reclose	Nos.	4	4,76,334	19,05,336

2 Line Protection Panel

Nos.	6
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3 Transformer Protection Panel - L, V, Side including one number for Spare Single Phase Transformer

Nos.	2
------	---

INCLUDED ABOVE

DGM(Contracts)

013

SE/3



Devi Prasad

HS

Dy. General Manager (Contracts)
H.P. Power Transmission Corpn. Ltd.
Barowalia House, Khalini, Shimla-2

Sr. No.	DESCRIPTION OF MATERIAL	UNIT	QTY	UNIT PRICE	TOTAL PRICE
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47,63,340

SUB TOTAL - E2

F	PLCC for 220 KV LINE FEEDER				
1	2000 A, 0.5 mH / 1.0 mH, 50 kA Line Traps	Nos.	4	4,43,136	17,72,544
2	Coupling Device (Phase to Phase)	Nos.	4	74,024	2,96,096
3	HF Cable	Ls	2	12,337	24,674
4	Carrier Equipment (for Speech + Protection and for Speech + Data)	Nos.	6	3,14,727	18,88,362
5	Protection Coupler	Nos.	4	1,34,477	5,37,908
6	Print Testing Kit	Set	1	1,07,007	1,07,007
7	EPBAX (24 / 8) with Telephone Sels	Set	1	2,76,356	2,76,356
	SUB TOTAL - F				49,02,947

F.1	FOTE Equipment	Set	1	96,30,660	96,30,660
	SUB TOTAL - F1				96,30,660

G	AIR CONDITIONER AND VENTILATION SYSTEM				
1	Split AC (Capacity - 2T)	Nos.	10	30,213	3,02,130
2	Ventilation System for 220 KV & 33 KV GIS Hall	LS	1	20,56,591	20,56,591
	SUB TOTAL - G				23,58,721

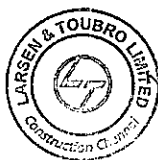
H	LT SWITCHBOARD				
1	415 V Main Switchboard	Nos.	1	31,47,275	31,47,275
2	415 V A C Distribution Board	Nos.	1	14,49,200	14,49,200
3	220 V DCDB	Nos.	2	5,64,356	11,28,712
4	48 V, DC DB	Nos.	2	3,59,973	7,19,946
	SUB TOTAL - H				64,45,133

I.	BATTERIES				
1	220 V, 400 AH	Set	2	6,48,087	12,96,174
2	48 V, 400 AH	Set	2	1,41,401	2,82,802

DGM(Contracts)

014

SE/4



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HM
Dy. General Manager (Contracts)
P.P. Power Transmission Corpn. Ltd.
Barowalia House, Khalini, Shimla-2

Sr. No.	DESCRIPTION OF MATERIAL	UNIT	QTY	UNIT PRICE	TOTAL PRICE
J BATTERY CHARGER SYSTEM					
1	220 V	Set	2	4,87,198	9,74,396
2	48 V	Set	2	3,62,566	7,25,132
SUB TOTAL - J					16,99,528
K DG SET ALONGWITH CONTROL PANEL (100 KVA, 440 V for 220 kv Sub Station)					
			1	18,88,365	18,88,365
SUB TOTAL - K					18,88,365
L FIRE PREVENTION AND EXTINGUISHING SYSTEM					
1	Nitrogen Injection Fire Prevention & Extinguishing System for Transformer	Set	4	6,23,161	24,92,644
2	Fire Protection for GIS cum Control Room Building, etc. (Portable type the Extinguishers)	Lot	1	6,89,574	6,89,574
SUB TOTAL - L					31,82,218
M ILLUMINATION SYSTEM					
1.0	MLDB	Nos.	1	15,55,720	15,55,720
2.0	ELDB	Nos.	1	7,28,643	7,28,643
3.0	GIS cum Control Room Building Illumination with CFL / Metal Halide Lamps a 2 x 36 Watts Fluorescent Lamp in Industrial Reflector type Fixtures suitable for surface / pendent mounting CGL Cat Ref. IBA1424EB	Nos.	37	1,782	65,934
	b 230 V, 5 / 15 A, Indoor Receptacle 3 Pin type - R1	Nos.	20	477	9,540
	c 15 A, 1 - Ph, 3 Pin Industrial Type Switch Socket Outlet	Nos.	4	2,146	8,584
	d 32 A, SPN MCB in 2 mm thick Steel Enclosure with 3 Pin Socket for A.C (indoor)	Nos.	3	1,348	4,044
	e 32 A, SPN MCB in 2 mm thick Steel Enclosure with 3 Pin Socket for A.C (outdoor)	Nos.	3	2,695	8,088
	f 450 mm Exhaust Fan	Nos.	2	2,385	4,770
	g 450 mm Acid Proof Exhaust Fan (for Battery Room)	Nos.	1	9,539	9,539
	h 1400 mm Ceiling Fans with Electronic Regulator	Nos.	6	2,981	17,886
	i Point Wiring	Nos.	72	708	50,982
	j Indoor Lighting Panel (ACP - 1 type) as per Technical Specification	Nos.	2	32,199	64,397

SUB TOTAL - I

15,78,976

SUB TOTAL - K

18,88,365

SUB TOTAL - L

31,82,218



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[Signature]

Dy. General Manager (Contracts)
P.P. Power Transmission Corpn. Ltd.
Barowalia House, Khalini, Shimla-2

DGM(Contracts)

015

SE/5

Sr. No.	DESCRIPTION OF MATERIAL	UNIT	QTY	UNIT PRICE	TOTAL PRICE
	k DC Lighting Panel (DCP type) as per Technical Specification	Nos.	1	46,509	46,509
4.0	220 / 133 kV GIS Building Illumination				
	a 1 x 250 W - Industrial Metal Halide Luminaire CGL. Cat ref. No. FAD 1314	Nos.	14	1,864	26,099
	b 1 x 60 W GLS Bulk Head Light Fixture of CGL type 1BH 1110 BC or equivalent	Nos.	8	226	1,811
	c 230 V, 5 / 15 A, Indoor Receptacle 3 Pin type - R1	Nos.	9	477	4,297
	d 32 A, SPN MCB in 2 mm thick Sheet Steel Enclosure with 3 Pin Socket for A.C (indoor)	Nos.	4	1,014	4,054
	e 32 A SPN MCB in 2 mm thick Sheet Steel Enclosure with 3 Pin Socket (outdoor)	Nos.	4	2,027	8,109
	f 1 x 11 W Portable Battery operated (3 hrs. Backup) CFL Emergency Lamp (M/S BPL make)	Nos.	4	3,578	14,311
	g Point Wiring	Nos.	43	566	24,358
	h Indoor Lighting Panel (ACP-1 type) as per Technical Specification	Nos.	2	32,199	64,397
	i DC Lighting Panel (DCP type) as per Technical Specification	Nos.	2	46,509	93,018
	j 32 A, TPN MCB in 2 mm thick Sheet Steel Enclosure with 3 Pin Socket (indoor)	Nos.	2	2,027	4,054
5.0	Switchyard Lightning				
	a Flood Light Luminaire with 2 x 400 W HPSV / T+ Lamp - Bajaj cat. BJEF22 CA - R0	Nos.	4	7,909	31,635
	b Lighting JB with 5 no's of Terminal Blocks	Nos.	4	775	3,099
	c 250 A Oil Filtration Socket	Nos.	1	2,981	2,981
6.0	Street Lighting (Solar lighting system)				
	a 120 W Solar Lighting System for Street Lighting with 9 m height Pole, Inbuilt in long life maintenance free Batteries (Capacity is 12 V, 120 AH)	Nos.	8	1,19,254	9,54,031
7.0	Transformer Area Lighting as per specification				
	1 x 70 W, HPSV 240 V, AC Industrial Wall Glass Fixture for pendant mounting with Control Gear Box G(BJDWI - 70SV)	Nos.	2	1,370	2,740
	Lighting JB	Nos.	2	775	1,550
	SUB TOTAL - M				38,15,180
N	Power Cables and Copper Conductor Armoured Control Cables alongwith Lugs, Glands and Straight Joints				
	XLPE POWER CABLE				
	1 C X 630 sq.mm.	km	0.75	10,78,001	8,08,501
	Terminations for the above				



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By, General Manager (Contracts)
NTP Power Transmission Corp. Ltd
Barowalia House, Khalini, Shimla-2

DGM(Contracts)

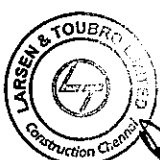
016

SE/6

Sr. No.	DESCRIPTION OF MATERIAL	UNIT	QTY	UNIT PRICE	TOTAL PRICE
	1 C X 630 sq.mm.	Nos.	12	2,103	25,236
	3.5 C X 300 sq.mm.	Nos.	36	3,114	1,12,104
	PVC POWER CABLE (Other than those available in the Contract)				
	4 C X 6 sq.mm.	km	0.33	96,369	31,802
	2 C X 6 sq.mm.	km	3.15	76,801	2,41,293
	1 C X 150 sq.mm.	km	0.6	3,01,864	1,81,118
	Terminations for the above				
	3.5 C X 90 sq.mm.	Nos.	24	1,584	38,016
	3.5 C X 70 sq.mm.	Nos.	24	1,107	26,568
	3.5 C X 35 sq.mm.	Nos.	63	642	40,446
	4C X 16 sq.mm.	Nos.	21	560	11,750
	4 C X 6 sq.mm.	Nos.	81	395	31,955
	2 C X 6 sq.mm.	Nos.	354	269	95,049
	1 C X 150 sq.mm.	Nos.	60	653	39,150
	HR - FRLS CONTROL CABLE				
	5 C X 2.5 sq.mm	km	3	1,05,698	3,17,094
	27 C X 2.5 sq.mm.	km	0.75	9,98,720	7,49,040
	4P,0.75	km	0.3	1,38,087	41,426
	Terminations for the above				
	2 C X 2.5 sq.mm.	Nos.	84	295	24,819
	4 C X 2.5 sq.mm.	Nos.	249	423	1,05,437
	5 C X 2.5 sq.mm.	Nos.	516	455	2,34,801
	7 C X 2.5 sq.mm.	Nos.	429	479	2,05,379
	10 C X 2.5 sq.mm.	Nos.	555	542	3,00,777
	12 C X 2.5 sq.mm.	Nos.	93	668	62,156
	14 C X 2.5 sq.mm.	Nos.	60	724	43,418
	16 C X 2.5 sq.mm.	Nos.	78	757	59,032
	19 C X 2.5 sq.mm.	Nos.	78	779	60,757
	27 C X 2.5 sq.mm.	Nos.	48	946	45,428
	4P,0.75	Nos.	3	333	1,000

DGM(Contracts)

017



[Signature]
 Dy. General Manager (Contracts)
 H.P. Power Transmission Corpn. Ltd.
 Barowalia House, Khalini, Shimla-2

Sr. No.	DESCRIPTION OF MATERIAL	UNIT	QTY	UNIT PRICE	TOTAL PRICE
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	2 C X 4 sq. mm.	Nos.	81	479	38,778
	4 C X 4 sq. mm.	Nos.	63	720	45,390
	7 C X 4 sq. mm.	Nos.	54	943	50,936

SUB TOTAL - N

40,68,635

0 33KV XLPE POWER CABLE AND ACCESSORIES

1 XLPE POWER CABLE

3.5 C x 300 sq. mm.

km	0.75	6,20,643	4,65,482
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2 PVC POWER CABLE

3.5 C x 90 sq. mm.

km	0.3	3,06,494	91,948
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3.5 C x 70 sq. mm.

km	0.75	2,48,634	1,86,476
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3.5 C x 35 sq. mm.

km	0.3	1,43,643	43,093
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4 C x 16 sq. mm.

km	0.75	99,202	74,402
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4 C x 4 sq. mm.

km	1.5	49,098	73,647
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3 HR FRLS CONTROL CABLE

2 C X 2.5 sq. mm.

km	1.5	45,913	68,870
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4 C X 2.5 sq. mm.

km	3	78,317	2,34,951
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7 C X 2.5 sq. mm.

km	1.5	1,30,260	1,95,390
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10 C X 2.5 sq. mm.

km	1.125	1,82,480	2,05,290
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12 C X 2.5 sq. mm.

km	0.75	2,16,847	1,62,635
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16 C X 2.5 sq. mm.

km	0.75	2,86,187	2,14,640
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19 C X 2.5 sq. mm.

km	0.3	3,36,506	1,00,952
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2 C X 4 sq. mm.

km	1.5	61,862	92,793
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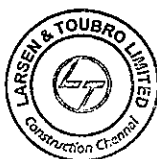
4 C X 4 sq. mm.

km	1.5	1,13,214	1,69,821
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7 C X 4 sq. mm.

km	1.5	2,01,841	3,02,762
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4 36 KV XLPE CABLE



Deviyaput

HS
Dy. General Manager (Contracts)
H.P. Power Transmission Corpn. Ltd.
Baiowalia House, Khalini, Shimla-2

DGM(Contracts)

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SE/8

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Dy. General Manager (Contracts)
H.P. Power Transmission Corpn. Ltd.
Barowalia House, Khalini, Shimla-2



SE/19

DGM(Contracts)

610

010

Sr. No.	DESCRIPTION OF MATERIAL	UNIT	QTY	UNIT PRICE	TOTAL PRICE
a)	33 kV XLPE Cable for connecting Transformer to 33 kV GIS of size 1 x 630 sq.mm. (Three Cables with one Spare Cable in each Circuit)	km	1	9,13,822	9,13,822
b)	33 kV Indoor Termination Suitable for above Cable	Nos	4	4,909	19,636
c)	33 kV Outdoor Termination Suitable for above Cable	Nos	4	3,096	12,384
	SUB TOTAL - O				36,28,993
P	GROUNDING / EARTHING SYSTEM				
a)	40 mm MS Rod for Earthing (*)	km	4.797	4,95,112	23,75,053
	40 mm MS Rod for Earthing	km	0.364	4,30,707	1,56,777
	75 x 12 G. S. Flat	km	0.091	1,43,569	13,065
	50 x 6 G. S. Flat	km	0.208	1,09,565	22,790
	50 x 6 M. S. Flat	Nos	79.3	192	15,257
	Cleat type Clamp to suit 75 x 12 G. S. Flat	Nos	22.1	2,406	53,179
	3 Mtr. long, 40 mm dia M. S. Pipe Earth Electrode with Test Link and without Pit	Nos	29.9	1,925	57,566
	3 Mtr. long, 40 mm dia Earth Rod Electrode without Pit	Nos	10.4	2,406	25,026
	3 Mtr. long, 40 mm dia GI Pipe Earth Electrode	Nos	3.9	2,413	9,410
	Lightning Protection				
	7 / 3.66 mm GS Earth Wire	km	0.289	45,000	13,455
	Cleat Clamp on Structure to suit 7 / 3.66 mm GS Earth Wire	No	59.8	193	11,565
	Pad Clamp on Structure to suit 7 / 3.66 mm Earth Wire and 75 x 12 GS Flat	No	5.2	1,845	9,592
	25 x 3 GI Flat	km	0.598	35,893	21,464
	1.5 Mtr. long GI Spike	Nos	10.4	723	7,514
	Test Links	Nos	10.4	241	2,501
	SUB TOTAL - P				27,94,215
Q	STEEL STRUCTURES FOR TOWERS, BEAMS AND EQUIPMENT				
	Tower and Beams	CA Type	kgs.	7,650	89,95
	220 kV Tower				6,88,079

Sr. No.	DESCRIPTION OF MATERIAL	UNIT	QTY	UNIT PRICE	TOTAL PRICE
---------	-------------------------	------	-----	------------	-------------

33 kV Tower

BG1 (WITH DEV) - 16 m
Lighting - cum - Lightning Mast

2,90,702
4,27,261

89.95
89.95

3,232
4,750

kgs.
kgs.

4,13,657
1,23,584

89.95
89.95

4,599
1,374

kgs.
kgs.

Equipments

Standard Structures for 220 kV Equipments

89,046
1,97,879
84,728
86,347
24,01,284

89.95
89.95
89.95
89.95

990
2,200
942
960

kgs.
kgs.
kgs.
kgs.

SUB TOTAL - Q

R EOT CRANE

- 3.5 T for 220 kV GIS ROOM
- 2.5 T for 33 kV GIS ROOM
- Moveable Ladder of suitable Capacity for 220 kV & 33 kV GIS Room

6,76,024
4,53,777
2,51,784
13,81,585

6,76,024
4,53,777
1,25,892

1
1
2

Set
Set
Nos

SUB TOTAL - R

- Insulator Strings / Disc Insulators, Hardware, Conductor, Bus Bar Material, Cable Trays, Clamps, Connectors, including Equipment Connectors, Pipes for Equipments and Lighting, all Accessories etc

220kV CLAMPS & CONNECTORS

- Terminal Connector on 26.66 / 33.33 MVA Transformer SF₆ to Oil bushing to suit GIS Bus Duct
- Terminal Connector on 198 kV LA to suit 1 or 2 x MOOSE / ZEBRA ACSR
- Terminal Connector on 245 kV CVT to suit 1 or 2 x MOOSE / ZEBRA ACSR
- Terminal Connector on Wave Trap to suit 1 or 2 x MOOSE / ZEBRA ACSR
- Terminal Connector on 220 kV BPI to suit 1 or 2 x MOOSE / ZEBRA ACSR
- Tee Connectors to suit 1 or 2 x MOOSE / ZEBRA ACSR on both ways

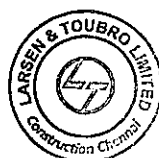
17,832
20,700
17,772
21,672
19,248
40,956

4,458
3,450
2,962
2,709
3,208
3,413

4
6
6
8
6
12

Nos.
Nos.
Nos.
Nos.
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Nos.

DGM(Contracts)

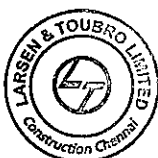


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Dy. General Manager (Contracts)
H.P. Power Transmission Corpn. Ltd.
Baiowalia House, Khalini, Shimla-2

Sr. No.	DESCRIPTION OF MATERIAL	UNIT	QTY	UNIT PRICE	TOTAL PRICE
	Suspension Hardware Assembly along with Insulators (220 / 33 kv side)	Lot	2	55,512	1,11,024
	33 KV CLAMPS & CONNECTORS				
	Terminal Connector on 30 KV Lighting Arrestor, to suit 1 or 2 X MOOSE / WOLF ACSR Conductor	Nos.	18	2,818	50,724
	Terminal Connector on 26.66 / 33.33 MVA Transformer LV Bushing to suit 1 x MOOSE ACSR Conductor	Nos.	4	2,562	10,248
	Terminal Connector on Cable Sealing End to suit 2 x MOOSE ACSR Conductor	Nos.	4	1,552	6,208
	Terminal Connector to suit 1 C x 630 sq. mm. XLPE Cable sealing ends	Nos.	6	2,952	17,712
	BUS BAR MATERIALS				
	MOOSE / ZEBRA / WOLF ACSR Conductor	km	0.1	5,56,568	55,657
	CABLE TRAYS				
	600 mm Wide Perforated Tray	km	0.8	13,82,167	11,05,734
	300 mm Wide Perforated Tray	km	0.12	6,04,898	72,564
	150 mm Wide Perforated Tray	km	0.12	43,193	5,183
	Structural Steel for above	MT	3	65,653	1,96,959
	PVC Pipes:				
	50 mm dia	km	0.4	4,31,927	1,72,771
	Sump Pumps				
	5 HP	Nos.	1	2,48,820	2,48,820
	0.5 HP	Nos.	4	43,194	1,72,776
	220 KV Bus Post Insulators	Nos.	6	38,010	2,28,060
	SUB TOTAL - S				25,92,679
T	TESTING AND MAINTENANCE EQUIPMENT				
1	Meggar 5 KV (Motorized)	Nos.	1	68,786	68,786
2	Meggar 1 KV (Motorized)	Nos.	1	6,995	6,995
3	Digital Multimeter	Nos.	2	9,911	19,822
4	D - Spanner Set (Insulated)	Nos.	2	670	1,340
5	Ring - Spanner Set (Insulated)	Nos.	2	699	1,398
6	Torque Wrench Set	Nos.	2	11,659	23,318

DGM(Contracts)



Deviyaset

By, General Manager (Contracts)
 H.P. Power Transmission Corpn. Ltd.
 Barowalia House, Khalini, Shimla-2

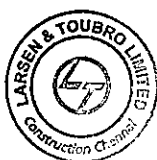
Sr. No.	DESCRIPTION OF MATERIAL	UNIT	QTY	UNIT PRICE	TOTAL PRICE
7	Insulating Gloves	Set	5	1,457	7,285
8	Helmets	Set	5	526	2,630
9	Gas Evacuating and Refilling Device	Set	1	33,34,384	33,34,384
10	Gas Leakage Monitor	Nos.	2	69,952	1,39,904
11	Relay Test Kit	Nos.	1	25,64,911	25,64,911
12	Synchronizing Trolley	Set	1	1,44,774	1,44,774
13	Time Synchronisation Equipment	Lot	1	INCLUDED	
SUB TOTAL - T					63,15,547

TOTAL - 1 = SUB TOTAL A to T

26,78,73,068

NEW ITEMS

A-1	220 kV Single Phase Breaker Bay Module for Spare Transformer	Set	1	1,83,08,548	1,83,08,548
A-2	For Additional Bays - 245 kV, 4000 A, 50 kA, 3 Single Phase (Isolated) Units SF ₆ Gas Insulated, Metal Enclosed Bus Bars each Unit, enclosed in Bus Enclosures running along the Length of the Switchgear to interconnect each of the Circuit Breaker Bay Module complete with Voltage Transformer and Safety Grounding Switch etc	Set	1	8,10,000	8,10,000
A-3	1 - Phase SF ₆ Duct to connect to 220 / 33 kV, 26.66 / 33.33 MVA Transformer / Lines with GIS etc (only the Additional quantity over and above 85.5 to be paid).	Mtr.	Unit Rate	1,36,153	
B-1	33 kV Single Phase Breaker Bay Module for Spare Transformer	Set	1	15,71,576	15,71,576
36 kV OUTDOOR EQUIPMENT					
C-1	30 kV, Single Phase, Surge Arrestors with Surge Counter, Leakage Meter and Junction Box	Nos.	19	16,223	3,08,237
C-2	36 kV, Line Isolator Switch with Earth Switch	Set	6	1,87,917	11,27,502
D	SUB STATION AUTOMATION SYSTEM complete including Hardware and Software for 7 Bays and Remote Control Station alongwith Associated Equipments	Lot	1	70,97,760	70,97,760
E	For Additional Feeder - 220 kV C & R Panel for Bus Bar Protection Panel	Mtr.	1	8,02,497	8,02,497
F	36 kV XLPE CABLE				
I	33 kV XLPE Cable for connecting Transformer to 33 kV GIS of size 1 x 1000 sq.mm Aluminium	Mtr.	Unit Rate	2,905	



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Dy. General Manager (Contracts)
L.P. Power Transmission Corpn. Ltd.
Barowalia House, Khalini, Shimla-2

Sr. No.	DESCRIPTION OF MATERIAL	UNIT	QTY	UNIT PRICE	TOTAL PRICE
---------	-------------------------	------	-----	------------	-------------

- ii 33 kV Indoor Termination Suitable for above Cable suitable at GIS conforming to IEC: 60859
- iii 33 kV Outdoor Termination Suitable for above Cable

Nos Unit Rate
Nos Unit Rate

75,000
8,000
3,00,26,120

GRAND TOTAL FOR SUPPLY = TOTAL 1 + NEW ITEMS

29,78,99,188

NOTE:

- The above quantities are TENTATIVE which shall be finalised during detailed engineering to complete the Scope of Work and successful commissioning of the Sub Station.
- The Payment shall be made on Unit Rates for the quantities actually measured at Site and as per approved Bill of Material.
- Size of 33 kV XLPE Cable alongwith Terminations shall be finalised during detailed engineering and the payment thereof shall be made on the Unit Rates specified above for the same.

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HS
Dy. General Manager (Contracts)
L.P. Power Transmission Corpn. Ltd.
Barowalia House, Khalini, Shimla-2

023

DGM(Contracts)

ANNEXURE - MS

QUANTITY AND COST OF MANDATORY SPARES

Sr. No.	DESCRIPTION	UNIT	QTY.	TOTAL F. O. R. COST
1	2	3	4	5

1 MANDATORY SPARES

a) 220 kV GIS Circuit Breaker

(i) 245 kV, 3 Phase Circuit Breaker with Interrupting Chamber complete with all necessary Apparatus (1 no. of each Rating)	No.	1	45,92,127
(ii) Rubber Gasket, 'O' Rings and Seal	Set	1	28,916
(iii) Trip Coil with Resistor	No.	3	28,914
(iv) Closing Coil with Resistor	No.	3	28,914
(v) Molecular Filter	Set	3	86,748
(vi) Density / Pressure Monitoring System	No.	1	48,193
(vii) Relays, Power Contactors, Push Buttons, Timers & MCB etc	Set	1	1,15,664
(viii) Pressure Switches	Set	1	48,193
(ix) Auxiliary Switch Assembly	No.	1	47,229
(x) Operation Counter	No.	1	38,555
(xi) Rupture Disc / Diaphragm	No.	1	1,15,664
(xii) 245 kV, 3 Phase Circuit Breaker Operating Mechanism complete with all necessary connecting Apparatus Each Rating	No.	1	Included in A(i)
(xiii) All type of Coupling for SF6) (1 no. of each type	Set	1	57,832

b) 220 kV Current Transformer

(i) Multi Ratio Single Phase Current Transformers of each Rating (3 Nos. of each Rating)	Set	1	21,29,834
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c) 220 kV Potential Transformer

(i) Single Phase Potential Transformer complete with all Gaskets and Mounting Hardware	Set	1	10,70,579
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d) 198 kV Surge Arrestor

(i) Complete Surge Arrestor (for 1 Phase) GIS Type	No.	1	85,102
(ii) Surge Counter / Monitor	No.	1	570

e) 245 kV Isolators & Earth Switch

(i) 245 kV, Single Phase Disconnecting Switch Internal Parts complete with all necessary Gaskets, Mounting Hardware etc.	Set	1	10,75,742
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DGM(Contracts)

By: General Manager (Contracts)
H.P. Power Transmission Corp. Ltd. MS 1
Barowalia House, Khalini, Shimla-2
024

Sr. No.	DESCRIPTION	UNIT	QTY.	TOTAL F. O. R. COST
1	2	3	4	5
	(ii) 245 kV, Single Phase Grounding Switch Internal Parts complete with all necessary Gaskets, Mounting Hardware etc.	Set	1	8,91,576
	(iii) 245 kV, Single Phase High Speed Fault Making Grounding Switch Internal Parts complete with all necessary Gaskets, Mounting Hardware etc.	Set	1	10,75,742
f)	33 kV GIS Circuit Breaker			
	(i) Rubber Gasket 'O' Rings and Seal	Set	1	21,330
	(ii) Trip Coils	No.	3	25,138
	(iii) Closing Coils	No.	3	25,138
	(iv) Molecular Filter	Set	3	9,141
	(v) Density / Pressure Monitoring System	No.	1	22,853
	(vi) Relays, Power Contactors, Push Buttons, Timers & MCB etc.	Set	1	4,57,065
	(vii) Closing Assembly / Valve	No.	1	2,285
	(viii) Pressure Switches	Set	1	2,285
	(ix) Auxiliary Switch Assembly (for CB)	No.	1	29,710
	(x) Rupture Disc / Diaphragm	No.	1	15,997
	(xi) 36 kV, 3 Phase Circuit Breaker Operating Mechanism complete with all necessary connecting Apparatus (each Rating)	No.	1	7,45,015
g)	33 kV Current Transformer			
	(i) Multi Ratio Single Phase Current Transformers of each rating (3 nos. of each rating)	Set	1	2,52,528
h)	33 kV Potential Transformer			
	(i) Single Phase Potential Transformer complete with all Gaskets and Mounting Hardware	Set	1	1,89,682
i)	30 kV Surge Arrestor			
	(i) Complete Surge Arrestor including Base with Surge Counter & Accessories: AIS Type	No.	1	15,700
	(ii) Surge Counter / Monitor	No.	1	8,722
j)	33 kV Isolators & Earth Switch			
	(i) 36 kV, 3 Phase, 1250 Amperes Disconnecting Switch Operating Mechanism complete with all necessary Connecting Apparatus	Set	1	92,175
	(ii) 36 kV, 3 Phase, 1250 Amperes Grounding Switch Operating Mechanism complete with all	Set	1	Part of Three Position Switch



DGM(Contracts)

[Signature]
Dy. General Manager (Contracts)
L.P. Power Transmission Corpn. Ltd.
Barowalia House, Khalini, Shimla-2

Sr. No.	DESCRIPTION	UNIT	QTY.	TOTAL F. O. R. COST
1	2	3	4	5

necessary Connecting Apparatus

k) Battery

220 Volt / 48 Volt Batteries

(i) Spare Battery Cell without Electrolyte	No.	10	2,83,679
(ii) Terminal Connectors with Bolts & Nuts (each type)	No.	10	43,640
(iii) Float Level Indicators (each type)	No.	10	13,627
(iv) Vent Plugs (each type)	No.	10	16,358

l) Battery Charger

220 Volt / 48 Volt Batteries

(i) Set of Control Cards (of each type)	Set	1	69,904
(ii) Set of Relays	Set	1	8,389
(iii) Set of Contactor	Set	1	25,166
(iv) Filter Capacitors	Set	1	8,389
(v) Thyristor / Diode	Set	1	11,185
(vi) Set of Switches	Set	1	22,930
(vii) Set of Wound Resistors	Set	1	4,193
(viii) Potentiometers	Set	1	4,193
(ix) Fuses of Thyristor with Indicators	Set	6	21,807

m) LT Switchgear

(i) Relays (Auxiliary)	Set	1	95,375
(ii) CTs and PTs	Set	1	8,227
(iii) Switches / Push Buttons and Meters	Set	1	27,501
(iv) TPN Switches / MCB	Set	1	93,997
(v) LT Breaker Spares			

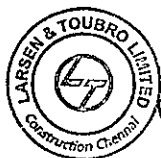
Spring Charging Motor	No.	1	27,504
Auxiliary Contacts Sets	Set	2	2,521
Busbar Seal off Insulators	No.	5	2,292
Arc Chutes	Set	2	7,563
Moving Contacts	Set	1	3,209
Arcing Contacts (Fixed / Moving)	Set	1	3,209
Springs (Closing / Opening)	No.	1	573
Closing Coil	No.	1	1,718
Tripping Coil	No.	1	1,260
Auxiliary Finger Contact	Set	1	1,203
Limit Switches	Set	1	5,156
Jaw Contacts	Set	1	372

(vi) BUSBAR

Busbar Insulators	No.	5	716
Interphase Barrier	No.	2	1,432
Busbar Strip 1 mm (Aluminium)	metres	5	5,371

n) DG Set

(i) Set of Filters 1 set (Lubeoil / Fuel / Air Circuit)	Set	1	6,603
(ii) Solenoid Coil Assembly	No.	1	2,934
(iii) Self Starter Assembly	No.	1	54,930
(iv) Lub - Oil Pressure Safety Control	No.	1	13,882



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DGM(Contracts)

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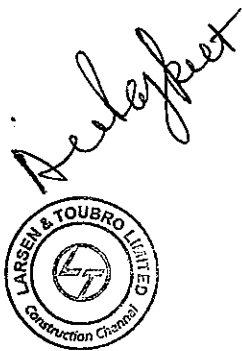
MS 3
Dy. General Manager (Contracts)
N.T. Power Transmission Corpn.
Barowalia House, Khalin, Shimla

Sr. No.	DESCRIPTION	UNIT	QTY.	TOTAL F. O. R. COST
1	2	3	4	5
	(v) High Water Temperature Safety Control	No.	1	2,197
	(vi) Diode	No.	2	1,505
	o) Optic Fibre Cable	metres	500	47,746
	p) 220 kV CVT	No.	1	3,95,452
TOTAL OF MANDATORY SPARES				1,48,28,766

NOTE:

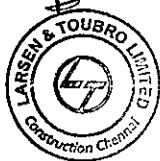
- i) The above Prices are FIRM and NO Price Variations shall be paid.
ii) Freight & Insurance Charges, Excise Duty, C. S. T. / VAT are included in above Prices.

Hls
DGM(Contracts)



Hls
Dy. General Manager (Contracts)
H.P. Power Transmission Corpn. Ltd.
Barowalia House, Khalini, Shimla-2

SECTION -III




Dy. General Manager (Construction)
H.P. Power Transmission, Corp. Ltd.
Barowalia House, Khalini, Shimla-2



HP POWER TRANSMISSION CORPORATION LIMITED
(A State Government Undertaking)
BAROWALIAS HOUSE, KHALINI, SHIMLA - 171002
(Telefax: 0177 - 2626284)

REFERENCE: HPPTCL / DGMC / L & T - SUPPLY / 2010 - 5107-12 DATED: 23-12-10

TO,

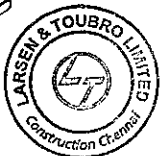
✓ M/S LARSEN & TOUBRO LIMITED,
ENGINEERING CONSTRUCTION & CONTRACTS DIVISION,
MOUNT POONAMALLEE ROAD, MANAPAKKAM,
P. B. No. 979, CHENNAI - 600089
FAX No.: 044 - 22493317; 044 - 22526345

SUBJECT: LETTER OF AWARD (LOA) FOR SUPPLY OF EQUIPMENT / MATERIALS FOR
CONSTRUCTION OF 220 / 33 KV PALCHAN GIS SUBSTATION AGAINST TENDER
DOCUMENT No.: DGMC / PALCHAN SUBSTATION / 2 / 2009 (FIRST CONTRACT)

REFERENCE: This has reference to the following: -

- 1) This office Tender Document No.: DGMC / PALCHAN SUBSTATION / 2 / 2009
- 2) Your Offer No.: LTCD / EI&C / HPPTCL PALCHAN / NJ / BID / 01 dated 18.12.2009 ✓
- 3) Your Price Letter No.: LTCD / EI&C / HPPTCL PALCHAN / NJ / BID / 04 dated 18.12.2009 ✓
- 4) Your Letter No.: LTCD / EIC / HPPTCL / NJ / PALCHAN / 1603 dated 16th March, 2010
- 5) Your Letter No.: LTCD / EIC / HPPTCL / PALCHAN / NJ / BID04 dated 14th April, 2010
- 6) Your Letter No.: LTCD / EIC / HPPTCL / PALCHAN / NJ / BID05 dated 12th July, 2010
- 7) Your Letter No.: LTCD / EIC / HPPTCL / PALCHAN / NJ dated 29th July, 2010
- 8) Your Letter No.: LTCD / EIC / HPPTCL / PALCHAN / NJ / BID06 dated 17th August, 2010
- 9) Your Letter No.: LTCD / EIC / HPPTCL / PALCHAN / NJ / BID07 dated 30th August, 2010 ✓
- 10) Your Letter No.: LTCD / EIC / HPPTCL / PALCHAN / KRJ / 2109 dated 21st September, 2010 ✓
- 11) This Office Letter of Intent (LOI) No.: HPPTCL / DGMC / L & T - SUPPLY / 2010 4414 17 dated: 19.10.2010 ✓
- 12) Your Letter No.: LTCD / EI&C / KRJ / PALCHAN / 01 dated 22nd October, 2010 ✓

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[Signature]
Dy. General Manager (Contracts)
H.P. Power Transmission Corpn. Ltd.
Barowalia House, Khalini, Shimla-2

Sir,

I have been directed to place Letter of Award (LOA) on you for Supply of Equipment / Material (also referred to as 'First Contract') required for Construction of 220 / 33 kV GIS Sub Station at Palchan in Kullu District of Himachal Pradesh amounting to Rs. 21,78,88,606.00 (Rupees Twenty One Crore Seventy Eight Lac Eighty Eight Thousand Six Hundred Six) only. The Scope of Work under this Contract shall also include all such Items, Equipment, and Materials, which are not specifically mentioned in the Bidding Documents and / or the Bid Proposal but are necessary for successful completion of the Scope of Work under the Contract unless otherwise specifically excluded in the Bidding Documents and / or this Letter of Award.

This 'First Contract' is being awarded on you as per the Bid Proposal submitted and the Terms and Conditions of the Tender Document No.: DGMC / PALCHAN SUBSTATION / 2 / 2009 accepted by you. This Contract is for design, engineering, manufacture, testing at manufacturer's works, transportation, and insurance, delivery on F. O. R. Destination Site(s) basis, handling, storage of all Equipment and Materials including Mandatory Spares and all such Items which are not specifically mentioned but are incidental and necessary for successful completion and commissioning of 220 / 33 kV GIS Sub Station at Palchan in Kullu District of Himachal Pradesh.

1. The detailed List of Equipment and Material alongwith their tentative quantities to be supplied and Unit Rates under the subject LOA are given in Annexure -- 1 and Annexure -- MS to this Letter of Award.
2. The Scope of Work under this Contract shall also include all such Items, Equipment, and Materials, which are not specifically mentioned in the Bidding Documents and / or the Bid Proposal but are necessary for successful completion of the Scope of Work under the Contract, unless otherwise specifically excluded in the Bidding Documents and / or this Letter of Intent.
3. The Work under this LOA shall be performed by you strictly in line with the Bidding Documents except as agreed vide correspondence under reference and as specifically amended / modified in this LOA and mentioned herein below and in Annexure - 1 and Annexure - MS to this LOA.
4. It is expressly understood by you that any breach under the 'Second Contract' shall automatically be deemed as breach of this Contract and any such breach or occurrence giving us a right to terminate the 'Second Contract' and / or recover damages under that Contract shall give us right to terminate this Contract and / or recover damages under this Contract as well. However, such breach or occurrence in the 'Second Contract' shall not automatically relieve you of any of your obligations under this Contract. It is expressly understood and agreed by you that the Equipment / Materials supplied by under this 'First Contract', when erected, tested and commissioned under the 'Second Contract' shall give satisfactory performance in accordance with the Bidding Document.
5. The transfer of title in respect of the Equipment / Materials to be supplied by you, pursuant to terms of this Contract shall pass on to HPPTCL on its actual delivery at site Stores. This transfer of title shall however not relieve you from the liability and responsibility under the Contract including that of (i) all risks and loss or damage to the Equipment and Materials as specified in the Contract and (ii) quality and performance of goods for their compliance with the specification until taking over / final acceptance fulfilment of warranty provisions and latent defect obligations.



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[Signature]
Dy. General Manager (Contracts)
H. P. Power Transmission Corp. Ltd.
Barowalia House, Khalani, Shimla-2

6. **CONTRACT PRICE:**

6.1 The Contract Price for the complete Scope of Work under this LOA is as per the following break up:

Sr. No.	PRICE COMPONENT	VALUE in Rupees
1	Supply of Equipment / Material as per Annexure -- 1	20,30,59,840
2	Supply of Mandatory Spares as per Annexure - MS	1,48,28,766
3	TOTAL CONTRACT PRICE	21,78,88,606

Rupees Twenty One Crore-Seventy Eight Lac Eighty Eight Thousand Six Hundred and Six only

6.2 Further breakup of the Contract Price for the purpose of on account payment is given at Annexure -- 1 and Annexure -- MS of this LOA.

6.3 Notwithstanding the breakup of the Contract Price, the Contract shall at all times be construed as a single source responsibility Contract and any breach in any part of the Contract shall be treated as breach of the entire Contract.

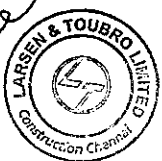
6.4 The Ex Works Price of Items indicated at Annexure -- 1 for, which quantities are assessed by you and are on lump sum basis, shall remain constant irrespective of any increase or decrease in quantities of any Items for completion of Scope of Work as per Technical Specification unless there is any change of Scope of Work by the Purchaser / Owner.

In case, the actual requirement of quantity of such Items is more than the quantities identified in the LOA / Contract Agreement / approved BOQ / Billing break up or some additional Items are required for the successful completion of the Scope of Work as per the Technical Specification, such additional Items / quantities shall be supplied by you without any additional cost to HPPTCL. Further, in case actual requirement of quantities for successful completion of Scope of Work is less than the quantities identified in the LOA / Contract Agreement / approved BOQ / Billing break up or some existing Items are not required, the lump sum price for these Items shall remain unchanged and no deduction shall be made from the lump sum price due to such reduction of quantities.

In case quantities of these Items supplied at Site are in excess of that required for successful completion of Scope of Work as detailed in the Bidding Documents, such additional quantities shall be your property and you shall be allowed to take back the same from the Site for which no deduction from lump sum price shall be made. It shall, however, be your responsibility to pay all statutory taxes, duties, and levies to the concerned authorities for such surplus material, which would otherwise have been lawfully payable. You shall submit an indemnity bond to keep HPPTCL harmless from any such liability, before release of such material to you by HPPTCL.

7. **TAXES AND DUTIES:**

7.1 The Contract Price is inclusive of all taxes and duties such as Excise Duty, Sales Tax / VAT for all Equipment and Materials to be supplied under the Contract and no claim on this behalf will be entertained by HPPTCL. Further any such taxes and duties as aforesaid payable including statutory variation thereon will be to your account and no claim on this behalf will be entertained by HPPTCL.



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[Signature]
Dy. General Manager (Contracts)
H.P. Power Transmission Corpn. Ltd.
Barowalia House, Khalini, Shimla-2

- 7.2 Entry Tax, Octroi as applicable for destination Site on all Items of Supply, which shall be dispatched directly from Sub Vendors Works to HPPTCL's Site (Sale - in - transit) shall be reimbursed to you, subject to furnishing of documentary proof for payment made, at the applicable rate at the time of dispatch, scheduled or actual, whichever is lower in line with the provisions of Bidding Documents.
- 7.3 The above Contract Price is inclusive of Service Tax and Surcharge / Cess etc on it and HPPTCL shall not entertain any claim whatsoever in this regard.
- 7.4 HPPTCL shall issue requisite Sales Tax Declaration Forms on receipt of your request for such Items identified in Price Schedule and dispatched directly to HPPTCL's Site from your Vendors' / Sub Vendors' Works (Sales - in transit).
- 7.5 HPPTCL shall be entitled to deduct Income Tax, Surcharge on Income Tax and other Corporate Taxes / other Taxes at source in accordance with the provisions of the Income Tax / other Laws as applicable from time to time. TDS so deducted shall be deposited with the relevant tax Authority and necessary TDS Certificate shall be issued to you by HPPTCL.

8. TERMS OF PAYMENT:

- (i) Ninety percent (90 %) of the Ex - Works Price and 100 % Freight & Insurance Charges and Taxes shall be paid within 45 days on receipt of the Material in your Stores in full and good condition duly verified by the Engineer or his authorised representative or after completion of Contractual Formalities, i.e. Execution of Legal Contract, Acceptance of Bank Guarantee by the Purchaser, whichever is later. The Payment shall be released by the Engineer or by the Central Payment Cell of the HPPTCL upon submission of the documents specified below:
- Original and 4 copies of the Invoices showing Purchase Order number, Goods Description, Quantity, Unit Price and Total Amount
 - Packing Lists (4 copies).
 - Railway Receipt / Receipted L. R.
 - Manufacturers / Contractors Guarantee Certificate of quality
 - Material Inspection Clearance Certificate for dispatch issued by the Purchaser's representative and the Contractor's Factory Inspection Report, Transit Insurance Certificate and an Indemnity Bond as per Form - IX for full value of the Material valid till the taking over of the said Sub Station by the Purchaser
 - Taxes & Duties shall be paid against Documentary Evidence
 - The Type Test Charges shall be paid on successful completion of the Type Test / Proto Type Test specified and on approval of the Test Results by the HPPTCL.
- (ii) The balance 10 % of the Ex - Works Price of each item as per Price Schedule shall be made within 45 days of the Issuance of Taking Over Certificate by the Purchaser's Engineers
- (iii) However, in case the Payment is delayed beyond 45 days due to one or the other reason, NO INTEREST FOR THE DELAYED PERIOD SHALL BE ADMISSIBLE



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[Signature]
 Dy. General Manager (Contract)
 L.T. Power Transmission Corp. Ltd.
 Bairowalia House, Khalani, Shimla

9. **QUANTITY VARIATION:**

- 9.1 The quantity variation shall be applicable in line with the provision of Clause No.: 2.39 (Purchaser's Right to Vary Quantities at Time of Award), Section - 2, ITB and Clause No.: 3.23 (Variation), Section - 3, GCC of Volume - 1 of the Bidding Documents.
- 9.2 Any variation in the quantity of the Items for which quantities have been assessed and indicated by you and the quantities subsequently arrived at while approving the Bill of Quantities / Billing break up of lump sum / lot / set of quantities as specified in Annexure - 1 of this Letter of Award shall be to your account, unless there is change in the Scope of Work by us.
- 9.3 HPPTCL reserves the right to increase or decrease upto 20 % (Twenty percent) of the Contract Value, the quantity of different Items by way of suitable amendments to the Contract, without any change in Unit Price and / or other terms and conditions during the execution of the Contract. However, the quantities of the individual Item may vary up to any extent without any change in Unit Price or other Conditions.

10. **PRICE ADJUSTMENT:**

All Price Components under this Letter of Award shall be FIRM during the entire execution of the Contract and no price variation whatsoever shall be applicable.

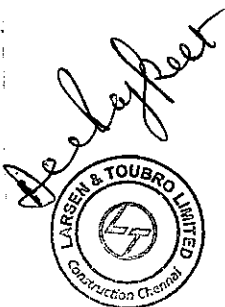
11. **TIME SCHEDULE OF CONTRACT:**

- 11.1 The basic consideration and the essence of the Contract is strict adherence to the Time Schedule of the Contract. You shall so organise your resources and perform your work as to complete successful testing and commissioning of the GIS Palchan Sub Station covered under the subject Contract within 8 (eight) months from the date of issue of this Contract and the same shall be applicable for all contractual purposes.
- 11.2 You shall develop and furnish a detailed Schedule in the form of a Bar Chart indicating relating to Engineering, Procurement, Manufacturing and Ex - Works delivery for all the Equipment and Materials covered under this Contract within 15 days of this Letter of Award.
- 11.3 For the purpose of levy of Liquidated Damages for delay, the time for completion of work of construction, testing and successful commissioning of 220 / 33 kV GIS Sub Station at Palchan shall be reckoned as 8 months from the date of LOA.

12. **STAGE PENALTY:**

To ensure that you start the Work immediately after signing of the Contract, the following Minimum Progress of Work, in respect of Supply of Equipment against Supply Contract will have to be achieved by you in terms of Financial Values:-

PERIOD STARTING FROM SIGNING THE CONTRACT	FINANCIAL ACHIEVEMENT INCLUDING SUPPLY OF EQUIPMENT
Within 3 (Three) months	10 % of the Contract Value
Within 5 (Five) months	40 % of the Contract Value
Within 6 (Six) months	60 % of the Contract Value



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Dy. General Manager (Contracts)
T. P. Power Transmission Corpn. Ltd.
Dowalla House, Khalini, Shimla-2

You shall ensure the completion of Supply for the above values, failing which the Stage Penalty @ $\frac{1}{2}$ % per week or part thereof for the amount equal to shortfall in progress achieved will be levied for the period starting from the due date of achievement of above targets.

The Stage Penalty shall be calculated in number of days of shortfall.

The achievement of target will be the date on which the delivery of equipment and material at Site as indicated on the Bill / Invoice is completed by you.

However, the Total Amount of Stage Penalty plus Liquidated Damages leviable for non - completion of Sub Station in time will not exceed 15 % of the Contract Value of the Sub Station not commissioned in time in any case.

The Stage Penalty levied shall be reviewed on completion of the Work to the extent that where the Work as a whole is completed within the stipulated Completion Period or the Total Delay in Commissioning of the Substation is less than 2 (Two) Weeks, no Stage Penalty shall be chargeable and the Stage Penalty already charged for the delay in completion of Individual Stage, if any shall be refundable to you through the Bill payable on completion of the Work.

13. INCENTIVE:

As the Work is of urgent nature and its timely commissioning is of utmost importance to evacuate the power being generated by various IPPs, advanced commissioning of this 220 kV GIS Palchan Sub Station will be appreciated and an Incentive @ 0.25 % of the Contracted Amount per week counted backward from the Contracted Completion Date shall be paid to you. It is clarified that Part of Week shall not be counted for any incentive.

14. LIQUIDATED DAMAGES (LD) FOR DELAY:

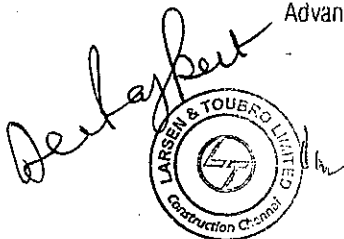
14.1 If you fail to successfully complete the Commissioning of the Sub Station within the Time Schedule stipulated (8 months) under the Contract, you shall pay to HPPTCL as Liquidated Damages and not as a penalty, a sum of one half of one percent (0.5 %) of the Contract Price for each calendar week or part thereof of delay.

14.2 Equipment and Materials shall be deemed to have been delivered only when all its Components, Parts, and Spares are also delivered. If certain Components, Parts, or Spares are not delivered in time, the Equipment and Materials will be considered as delayed until such time the same are also delivered.

14.3 The Total Amount of Liquidated Damages for delay under the Contract shall be subject to a Maximum of 10 % of the Contract Price.

15. MOBILISATION ADVANCE:

On your request, HPPTCL will make Mobilisation Advance to you for the cost of mobilisation in respect of the Works in a lump sum equivalent to 10 % of the amount of Contract Price within 30 days in Indian Rupees as provided in the Contract. The interest @ 12 % per annum shall be charged on the Mobilisation Advance as per standard Terms and Conditions of the HPPTCL. The accrual of interest will start from the date of release of advance. Payment of the Mobilisation Advance will be due under separate certification by HPPTCL after fulfilment of following conditions:



034

Dy. General Manager (Contracts)
H.P. Power Transmission Corpn. Ltd.
Barowalia House, Khallini, Shimla-2

- i) Execution of CONTRACT AGREEMENT,
- ii) Submission of the Performance Security,
- iii) Submission of a Bank Guarantee by a Scheduled / Nationalised Bank of an amount equal to the Advance Loan, such Bank Guarantee shall remain effective until the Advance Loan has been completely repaid by you out of current earnings under the Contract and certified accordingly by the Engineer.

You will use the Mobilisation Advance exclusively for mobilisation expenditures, including the acquisition of Constructional Plant in connection with the Works. Should you misappropriate any portion of the Advance Loan, it shall become due and payable immediately, and no further loan will be made to you thereafter.

16. SIGNING OF CONTRACT:

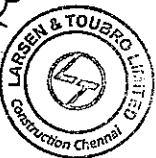
You shall execute a Contract Agreement at the office HPPTCL, on the Terms and Conditions envisaged in the Tender Documents and this detailed Letter of Award, within 30 (Thirty) calendar days of the receipt of Notification of this LOA. It is a legitimate obligation of you to execute and to stamp the Contract, in accordance with the Indian Stamp Act and to supply Six Copies of Contract Drawings, Technical Particulars as finally approved by HPPTCL and other Literature and Instruction Books regarding Handling, Use and Maintenance of Equipment / Material. The cost of all these and such other items have been included in the Prices and you will not be entitled to any extra payment on these accounts. However, non - execution of the Contract Agreement by you shall not absolve you of the responsibility of the faithful execution of the Contract

17. PERFORMANCE SECURITY:

- 17.1 Within 30 (Thirty) days of the receipt of this LOA, you are required to furnish the Contract Performance Security, in the Performance Security Form provided in the Bidding Documents or any other Form acceptable to HPPTCL. The Performance Security amount shall be equal to 10 % of the Total Contract Price, it shall guarantee the faithful performance of the Contract in accordance with the Terms, and Conditions specified in Tender Documents. The Guarantee shall be valid up to 120 days after the end of Warranty Period.
- 17.2 In the event of any change in the Contract Price, the Performance Security shall be adjusted only against specific advice from HPPTCL. The Performance Security shall be paid to HPPTCL on first demand without conditions or proof.

18. GUARANTEE:

You shall Warrant that the Equipment shall be New, Unused and in accordance with the Contract documents and free from defects in Material and Workmanship for a period of 18 months from the date of Taking Over by HPPTCL or 24 months from the date of commissioning, whichever is earlier. Your liability shall be limited to replacement of any defective part in the Equipment, under normal use and arising solely from faulty design, Material and / or Workmanship, provided always that such defective parts are repairable at Site, and are not in the mean time essential in the Commercial use of the Equipment. Such replacement / defective parts shall be returned to you unless otherwise arranged. HPPTCL shall normally carry out no repair or replacement when the Equipment is under your supervision.



Hm
 Dy. General Manager (Contracts)
 H.P. Power Transmission Corpn. Ltd.
 Barowalia House, Khalini, Shimla-2

If during the Period of Guarantee, any of the Materials, is found defective and / or fail in Test or Operation, such Materials shall be repaired or replaced by you free of cost to the HPPTCL irrespective of the reimbursements from the insurance company within reasonable time which shall in no circumstance be more than 15 days or such other reasonable time as the HPPTCL may deem proper to afford, failing which the cost of the failed Material will be deducted from the subsequent Bills / Bank Guarantee.

You shall bear all the expenses incurred in connection with the repair or replacement against such defective goods inclusive of all Freight (both inland overseas), Insurance, Customs, Levies, Forwarding and Clearing and Demurrage and Other Incidental Charges involved in delivering the said goods to HPPTCL specified destination. The decision whether correction of the defects should be by the repair or replacement shall be the sole discretion of HPPTCL.

19. APPLICABLE LAW:

The Contract shall be interpreted in accordance with the Laws of India and shall be subject to the jurisdiction of Shimla Court irrespective of the place of the Works, the place of performance or the place of payments under the Contract.

20. FORCE MAJEURE:

21.1 Force Majeure is herein defined as any cause, which is beyond your and HPPTCL's control as the case may be, which could not be foreseen or with a reasonable amount of diligence could not have foreseen and which substantially affects the Performance of the Contract, such as:

Natural Phenomena, including but not limited to Floods, Drought, Earthquakes and Epidemics, Acts of any Government, Domestic or Foreign, including but not limited to War, Declared or undeclared, Priorities, Guaranties, Embargoes

21.2 Provided either Party shall within 15 days from the occurrence of such a cause notify the other in writing of such cause.

21.3 You shall not be liable for Loss or Damage due to delay in Manufacture and Delivery resulting from any causes beyond your reasonable control including but not limited to compliance with the regulations, orders or instructions of any federal state or municipal, government or agency thereof, acts of god, acts of omission of the purchaser, acts of civil and military authority, fires, strikes, factory shutdowns or altercations, embargoes, war, riots.

21. All other Terms and Conditions shall be as per Tender Document No.: DGMC / PALCHAN SUBSTATION / 02 / 2009.

Please acknowledge receipt of the Letter of Award.

Enclosure: Annexure -- 1

Annexure MS

Schedule PCPS

Data Requirement Sheets A to P

Yours faithfully,

[Signature]
Dy. GENERAL MANAGER (CONTRACTS)

[Signature]
Dy. General Manager (Contracts)
Power Transmission Corp. Ltd.
Barowalia House, Khalini, Shimla-2



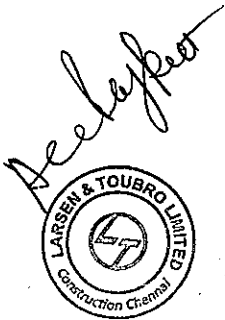
REFERENCE: HPPTCL / DGMC / L & T - SUPPLY / 2010 -

DATED:

Copy for information and necessary action to: -

1. P. S. to Director (Planning & Contracts), HPPTCL, Barowalias House, Khalini, Shimla - 171002.
2. P. A. to Director (Projects), HPPTCL, Barowalias House, Khalini, Shimla - 171002.
3. Dy. General Manager (Projects), HPPTCL, Barowalias House, Khalini, Shimla - 171002.
4. Sr. Manager, HPPTCL, Sarabai, Bhunter, District Kullu - 175125 (H. P.)
5. Sr. Accounts Officer, HPPTCL, Sangla House, Khalini, Shimla - 171002.


Dy. GENERAL MANAGER (CONTRACTS)




Dy. General Manager (Contracts)
H.P. Power Transmission Corpn. Ltd.
Barowalia House, Khalini, Shimla-2

PRICE SCHEDULE SUPPLY
PRICE BREAK UP

Sr. No.	DESCRIPTION	UNIT	QTY.	UNIT						TOTAL F. O. R. COST
				EX - WORKS PRICE	EXCISE DUTY & CESS	SALES TAX / VAT	FREIGHT	INSURANCE	F. O. R. COST	
1	2	3	4	5	6	7	8	9	10	11

A 250 kVA, 33 / 0.433 kV Three Phase Transformer including Bushings, Accessories and First Filling of Oil

Included

5,114

6,480

397,384

397,384

B 245 kV GIS EQUIPMENT

1 245 kV, 1,600 A, 50 kA SF6 Gas Insulated Transformer Bay Module

No.

1

40,737,899

Included

2,840,909

684,263

44,263,071

44,263,071

each comprising of SF6 Gas Insulated Circuit Breaker, Current Transformers, Two Bus Bar Disconnectors with

Grounding Switch, Surge Arrestors (196mm)

SF6 Gas Monitoring System for

complete Bay, LCC, Three 1 - Phase

SF6 Ducts and SF6 / Oil Bushing

to connect to 220 / 33 kV, 25 / 31.5

MVA Transformer and Accessories

with GIS etc to complete Transformer

Bay Module



Deviyest

Dy. General Manager (Contracts)
L.T. Power Transmission Corpn. Ltd.
Barowalia House, Khalini, Shimla-2

038

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2 245 KV, 2000 A, 50 kA SF6 Gas Insulated Feeder Bay Module *each*
 comprising of SF6 Gas Insulated Circuit Breaker, Current Transformers, Two Bus Bar Disconnectors with Grounding Switch, Line Disconnector with Safety Grounding Switch, High Speed Fault Making Grounding Switch SF6 Gas Monitoring System for complete Bay, LCC, GIS Duct and Air / SF6 Bushing Termination Enclosure and Accessories with GIS etc to complete Feeder Bay Module.

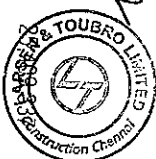
No. 1 38,808,181 Included 2,840,909 651,850 42,300,940 42,300,940

3 245 KV, 4000 A, 50 kA, 3 Single Phase (Isolated) Units-SF6 Gas Insulated, Metal Enclosed BUSBAR, each Unit enclosed in Bus Enclosure running along the length of the Switchgear to interconnect each of Circuit Breaker Bay Module. Each Busbar Set shall be complete with Voltage Transformer complete with Safety Grounding Switch.

No. 2 Included in Items B -1, 2 & 4 2,840,909 2,840,909 5,681,818

4 245 KV, 4000 A, 50 kA SF6 Gas Insulated Bus Coupler Bay Module comprising of SF6 Gas Insulated

No. 1 22,195,614 Included 2,840,909 372,814 25,409,337



HS
 Dy. General Manager (Contracts)
 H.P. Power Transmission Corpn. Ltd.
 Darowalia House, Khalini, Shimla-2

039

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Circuit Breaker, Current Transformers,
Two Disconnectors with Safety
Grounding Switches, SF6 Gas
Monitoring System for complete Bay
LCC etc.



Dee Jy Pest

5	245 KV CVT with Junction Box	No.	3	405,079	Included	14,205	6,804	426,088	1,278,264
6	198 KV Lightning Arrestor with Counter and Leakage Meter	No.	3	81,016	Included	710	1,361	83,087	249,261

C 35 KV, 2000 A, 40 kA for 3 sec SF6 Gas Insulated, Metal Enclosed BUSBARs each Unit enclosed in Bus Enclosures running along the Length of the Switchgear to interconnect each of Circuit Breaker Bay Module. Each Busbar Set shall be complete with Voltage Transformers complete with Safety Grounding Switch

1	36 KV, 1600 A SF6 Gas Insulated Feeder Bay Module each comprising of SF6 Gas Insulated Circuit Breaker, Current Transformers, Two Busbar Disconnectors with Grounding Switch Line Disconnector with Safety Grounding Switch, High Speed Fault	No.	3	3,758,824	Included	14,205	63,136	3,836,165	11,508,495
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[Signature]
Dy. General Manager (Contracts)
P.W. Power Transmission Corpn. Ltd.
Barowalia House, Khalini, Shimla-2

040



SUPPLY - 2

dw

1	2	3	4	5	6	7	8	9	10	11
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Making Grounding Switch, SF6 Gas Monitoring System for complete Bay LCC Enclosure and Accessories with GIS etc to complete Feeder Bay Module.

2	36 kV, 2000 A SF6 Gas Insulated Bus Coupler Bay comprising of SF6 Gas Insulated Circuit Breaker, Current Transformers, Two numbers of Busbar Disconnectors with Earthing Switch, SF6 Gas Monitoring System for complete <u>Bus Coupler Panel</u> <i>live panel.</i>	No.	1	3,209,563	Included	14,205	53,910	3,277,678	3,277,678
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3	36 kV, 1600 A SF6 Gas Insulated ^{800A} Power Transformer Panel comprising of SF6 Gas Insulated Circuit Breaker, Current Transformers, Two numbers of Busbar Disconnectors with Earthing Switch, Surge Arrestor (30 kV), SF6 Gas Monitoring System for complete Power Transformer Panel	No.	1	3,243,770	Included	14,205	54,485	3,312,460	3,312,460
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4	36 kV, 630 A SF6 Gas Insulated ^{2500A} 250 kVA L.T. Transformer Panel comprising of SF6 Gas Insulated Circuit Breaker, Current Transformers, Two numbers of Busbar Disconnectors with Earthing	No.	1	2,788,332	Included	14,205	46,835	2,849,372	2,849,372
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HW
Dy. General Manager (Contracts)
H.P. Power Transmission Corpn. Ltd.
Barowalia House, Khalini, Shimla-2

041

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supplied.

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Switch Surge Arrestor (30 kV) SF6
Gas Monitoring System for complete
L. T. Transformer Panel

D	SUBSTATION AUTOMATION SYSTEM	LOT	1	9,361,825	Included	82,727	157,248	9,601,800	9,601,800
	Complete Sub Station Automation System including Hardware & Software for the Sub Station and Remote Control Station alongwith Associated Equipment as per Technical Specification								

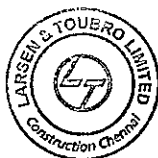
BAY CONTROL UNITS

1	220 KV Bays	Nos.	3
2	33 KV Bays	Nos.	6

Included above in D
Included above in D

E1 220 KV CONTROL AND RELAY PANEL

1	Circuit Breaker Control Panel	Nos.	1	540,105	Included	4,773	9,072	553,950
a)	With Auto Reclose	Nos.	2	514,386	Included	4,545	8,640	1,055,142
b)	With out Auto Reclose	Nos.						
2	Line Protection Panel (Main - I + Main - II)	Nos.	1	1,285,965	Included	11,364	21,600	1,318,929
3	Bus Bar Protection Panel	Set	1	2,494,772	Included	22,045	41,904	2,558,721
4	220 KV (Double Bus Bar Protection) Transformer Protection Panel	Nos.	1	807,586	Included	7,136	13,565	828,287
	H. V. Side							



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By: General Manager (Contracts)
Larsen & Toubro Power Transmission Corp., Ltd.
Barowalia House, Khalini, Shimla-2

042

SUPPLY - 3

1	2	3	4	5	6	7	8	9	10	11
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E2 33 KV CONTROL AND RELAY PANEL

1	Circuit Breaker Control Panel	Nos.	3	488,667	Included	4,318	8,208	501,193	1,503,579
a)	With Auto Reclose	Nos.	3	488,667	Included	4,318	8,208	501,193	1,503,579
b)	With out Auto Reclose	Nos.	3						

2 Line Protection Panel

Nos. 3

Included above in Item E2 - 1

3 Transformer Protection Panel - L. V. Side

Nos. 1

Included above in Item E2 - 1

4 Transformer Protection Panel - Station

Nos. 1

Included above in Item E2 - 1

5 Bus Coupler Protection Panel

Nos. 1

Included above in Item E2 - 1

6 DR Evaluation Unit

Nos. 1

Included above in Item E2 - 1

F PLCC for 220 KV LINE FEEDER

1 2000 A, 0.5 mH / 1.0 mH, 50 kA Line

Nos. 2

452,660

Included

6,000

7,603

466,263

932,526

Traps

2 Coupling Device (Phase to Phase)

Nos. 2

75,615

Included

1,002

1,270

77,887

155,774

3 HF Cable

LS 1

12,602

Included

167

212

12,981

12,981

4 Carrier Equipment (for Speech + Protection and for Speech + Data)

Nos. 3

321,491

Included

4,261

5,400

331,152

993,456

5 Protection Coupler

Nos. 2

137,367

Included

1,821

2,307

141,495

282,990

6 Print Testing Kit

Set 1

109,307

Included

1,449

1,836

112,592

112,592

7 EPBAX (24 / 8) with Telephone Seis

Set 1

282,295

Included

3,742

4,742

290,779

290,779

F.1 FOTE Equipment

Set 1

9,837,632

Included

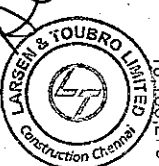
130,398

165,240

10,133,270

10,133,270

By. General Manager (Contracts)
H.P. Power Transmission Corp. Ltd.
Barowalla House, Khalini, Shimla-2



043

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G AIR CONDITIONER AND VENTILATION SYSTEM

		Nos.								
1	Split AC (Capacity - 2T)	10	30,863	Included	409	518	31,790	317,900		
2	Ventilation System for 220 kV & 33 kV GIS Hall	LS	1	2,095,752	Included	30,068	38,102	2,163,922		

H LT SWITCHBOARD

		Nos.								
1	415 V Main Switchboard	1	3,214,913	Included	42,614	54,000	3,311,527	3,311,527		
2	415 V A. C. Distribution Board	1	1,480,345	Included	19,622	24,865	1,524,832	1,524,832		
3	220 V, DCDB	Nos.	2	576,485	Included	7,641	9,683	593,809	1,187,618	
4	48 V, DCDB	Nos.	2	367,709	Included	4,874	6,176	378,759	757,518	

I BATTERIES

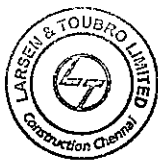
		Set								
1	220 V, 400 AH	2	662,015	Included	8,775	11,120	681,910	1,363,820		
2	48 V, 400 AH	Set	2	144,440	Included	1,915	2,426	148,781	297,562	

J BATTERY CHARGER SYSTEM

		Set								
1	220 V	2	497,668	Included	6,597	8,359	512,624	1,025,248		
2	48 V	Set	2	370,358	Included	4,909	6,221	381,488	762,976	

K DG SET ALONGWITH CONTROL PANEL (100 KVA, 440 V for 220 kV Sub Station)

		Set								
1		1	1,928,948	Included	25,568	32,400	1,986,916	1,986,916		



Delegated

[Signature]
 Dy. General Manager (Contracts)
 Power Transmission Corps. Ltd.
 Barowalia House, Khalini, Shimla-2

044

1	2	3	4	5	6	7	8	9	10	11
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L FIRE PREVENTION AND EXTINGUISHING SYSTEM

1	Nitrogen Injection Fire Prevention & Extinguishing System for Transformer	Set	1	636,553	Included	8,438	10,692	655,683	655,683
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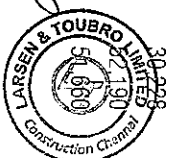
2	Fire Protection for GIS cum Control Room Building etc (Portable type the Extinguishers System)	Lot	1	702,704	Included	10,082	12,776	725,562	725,562
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M	ILLUMINATION SYSTEM	Lot	1	3,897,186	Included	51,657	65,460	4,014,303	4,014,303
1	Control Room / GIS Building	LS	1			Included in Item - M			
2	Switchyard Lighting	LS	1			Included in Item - M			
3	Solar Light System for Street Light	LS	1			Included in Item - M			

N	Power Cables and Copper Conductor Armoured Control Cables alongwith Lugs, Glands and straight Joints.	LS	1	2,770,729	Included	36,726	46,539	2,853,994	2,853,994
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0	33 kV XLPE POWER CABLE AND ACCESSORIES								
1	XLPE POWER CABLE								
	3.5 c X 300 sq. mm	km	0.50	633,981	Included	8,403	10,649	653,033	326,517

2	PVC POWER CABLE								
	3.5 c X 90 sq. mm	km	0.20	313,081	Included	4,150	5,259	322,490	64,498
	3.5 c X 70 sq. mm	km	0.50	253,978	Included	3,366	4,266	261,610	130,805
	3.5 c X 35 sq. mm	km	0.20	146,729	Included	1,945	2,465	151,139	30,228
	4 c X 16 sq. mm	km	0.50	101,334	Included	1,343	1,702	104,379	22,130
	4 c X 4 sq. mm	km	1.00	50,153	Included	665	842	51,660	5,650



Dy. General Manager (Contracts)
 I.P. Power Transmission Corpn. Ltd.
 Barowalia House, Khallini, Shimla-2

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3 HR - FRLS CONTROL CABLE

2 c X 2.5 sq. mm	km	1.00	46,899	Included	622	788	48,309	48,309	48,309
4 c X 2.5 sq. mm	km	2.00	80,000	Included	1,060	1,344	82,404	82,404	164,808
7 c X 2.5 sq. mm	km	1.00	133,059	Included	1,764	2,235	137,058	137,058	137,058
10 c X 2.5 sq. mm	km	0.75	186,401	Included	2,471	3,131	192,003	192,003	144,002
12 c X 2.5 sq. mm	km	0.50	221,507	Included	2,936	3,721	228,164	228,164	114,082
16 c X 2.5 sq. mm	km	0.50	292,338	Included	3,875	4,910	301,123	301,123	150,562
19 c X 2.5 sq. mm	km	0.20	343,738	Included	4,556	5,774	354,068	354,068	70,814
2 c X 4 sq. mm	km	1.00	63,192	Included	838	1,061	65,091	65,091	65,091
4 c X 4 sq. mm	km	1.00	115,647	Included	1,533	1,942	119,122	119,122	119,122
7 c X 4 sq. mm	km	1.00	206,179	Included	2,733	3,463	212,375	212,375	212,375

4 36 KV XLPE CABLE

a) 33 KV XLPE Cable for connecting Transformer to 33 KV GIS of size 1 x 630 sq.mm. (Three Cables with one Spare Cable in each Circuit)

km	1.00	932,917	Included	12,613	15,983	961,513	961,513	961,513
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b) 33 KV Indoor Termination suitable for above Cable

Nos.	3.00	5,015	Included	66	84	5,165	5,165	15,495
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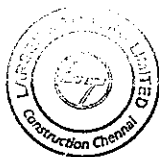
c) 33 KV Outdoor Termination suitable for above Cable

Nos.	3.00	3,163	Included	42	53	3,258	3,258	9,774
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P GROUNDING / EARTHING SYSTEM

a) 40 mm MS Rod for Earthmat

LS	2,149,489	Included	75,977	36,104	2,261,570	2,261,570	2,261,570
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Dy. General Manager (Contracts)
P.T.C. Power Transmission Corpn. Ltd.
Barowalia House, Kharini, Shimla-2

046

SUPPLY - 9

1	2	3	4	5	6	7	8	9	10	11
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b)	GS / MS Flats	LS	1				Included in Item P - a)			
c)	Electrodes	LS	1				Included in Item P - a)			
d)	Lightning Mast / GS Shield Wire	LS	1				Included in Item P - a)			
Q	STEEL STRUCTURES FOR TOWERS, BEAMS AND EQUIPMENT	LS	1	1,545,592	Included	68,289	25,961	1,639,842	1,639,842	
R	EOT CRANE									
a	3.5 T for 220 KV GIS ROOM	Set	1	690,553	Included	9,153	11,599	711,305	711,305	
b	2.5 T for 33 KV GIS ROOM	Set	1	463,529	Included	6,144	7,786	477,459	477,459	
c	Moveable Ladder of suitable Capacity for 220 KV & 33 KV GIS Room	Nos.	2	128,597	Included	1,705	2,160	132,462	264,924	
S	Insulator Strings / Disc Insulators, Hardware, Conductor, Bus Bar Material, Cable Trays, Clamps, Connectors, including Equipment Connectors, Pipes for Equipment & Lighting, all Accessories etc	LS	1	1,296,736	Included	17,188	21,781	1,335,705	1,335,705	
T	TESTING AND MAINTENANCE EQUIPMENT									
1	Megar 5 KV (Motorized)	No	1	70,096	Included	1,006	1,274	72,376	72,376	
2	Megar 1 KV (Motorized)	No	1	7,128	Included	102	130	7,360	7,360	



Dy. General Manager (Contracts)
H.P. Power Transmission Corpn. Ltd.
Barowalia House, Khalini, Shimla-2

047

1	2	3	4	5	6	7	8	9	10	11
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3	Digital Multimeter	Nos.	2	10,099	Included		145	184	10,428	20,856
4	D - Spanner Set (Insulated)	Nos.	2	683	Included		10	12	705	1,410
5	Ring - Spanner Set (Insulated)	Nos.	2	713	Included		10	13	736	1,472
6	Torque Wrench Set	Nos.	2	11,881	Included		170	216	12,267	24,534
7	Insulating Gloves	Set	5	1,485	Included		21	27	1,533	7,665
8	Helmets	Set	5	535	Included		8	10	553	2,765
9	Gas Evacuating and Refilling Device	Set	1	3,397,875	Included		48,750	61,776	3,508,401	3,508,401
10	Gas Leakage Monitor	Nos.	2	71,284	Included		1,023	1,296	73,603	147,206
11	Relay Test Kit	Nos.	1	2,613,750	Included		37,500	47,520	2,698,770	2,698,770
12	Synchronizing Trolley	Set	1	147,886	Included		1,960	2,484	152,330	152,330
13	Time Synchronisation Equipment	Lot	1			Included in Sub Station Automation System				

TOTAL

211,520,667
8,460,827
203,059,840

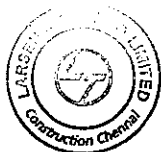
Discount offered @ 4 %

GRAND TOTAL FOR SUPPLY PORTION

NOTE:

- The above Prices are FIRM and NO Price Variations shall be paid.
- Excise Duty, C. S. T. / VAT are included in above Prices.
- Above Quantities are Tentative and may change after detailed Engineering.
- Payment to the Contractor shall be made on actual quantity supplied.

[Signature]
Dy. GENERAL MANAGER



[Signature]

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Dy. General Manager (Contracts)
L. T. Power Transmission Corpn. Ltd.
Bawal House, Khalini, Shimla-2

048

SUPPLY - 1

QUANTITY AND COST OF MANDATORY SPARES

Sr. No.	DESCRIPTION	UNIT	QTY.	TOTAL F. O. R. COST
1	2	3	4	5

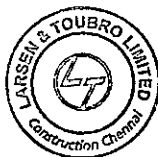
1 MANDATORY SPARES

a) 220 kV GIS Circuit Breaker

(i) 245 kV, 3 Phase Circuit Breaker with Interrupting Chamber complete with all necessary Apparatus (1 no. of each Rating)	No.	1	4,592,127
(ii) Rubber Gasket, 'O' Rings and Seal	Set	1	28,916
(iii) Trip Coil with Resistor	No.	3	28,914
(iv) Closing Coil with Resistor	No.	3	28,914
(v) Molecular Filter	Set	3	86,748
(vi) Density / Pressure Monitoring System	No.	1	48,193
(vii) Relays, Power Contactors, Push Buttons, Timers & MCB etc	Set	1	115,664
(viii) Pressure Switches	Set	1	48,193
(ix) Auxiliary Switch Assembly	No.	1	47,229
(x) Operation Counter	No.	1	38,555
(xi) Rupture Disc / Diaphragm	No.	1	115,664
(xii) 245 kV, 3 Phase Circuit Breaker Operating Mechanism complete with all necessary connecting Apparatus Each Rating	No.	1	Included in A(i)
(xiii) All type of Coupling for SF6) (1 no. of each type	Set	1	57,832

b) 220 kV Current Transformer

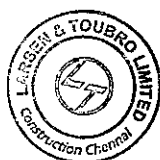
(i) Multi Ratio Single Phase Current Transformers of each Rating (3 Nos. of each Rating)	Set	1	2,129,834
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[Signature]
Dy. General Manager (Contracts)
L.T.P. Power Transmission Corp. Ltd.
Barowalia House, Khalini, Shimla-21

Sr.	DESCRIPTION	UNIT	QTY.	TOTAL
c)	220 kV Potential Transformer			
	(i) Single Phase Potential Transformer complete with all Gaskets and Mounting Hardware	Set	1	1,070,579
d)	198 kV Surge Arrestor			
	(i) Complete Surge Arrestor (for 1 Phase) GIS Type	No.	1	85,102
	(ii) Surge Counter / Monitor	No.	1	570
e)	245 kV Isolators & Earth Switch			
	(i) 245 kV, Single Phase Disconnecting Switch Internal Parts complete with all necessary Gaskets, Mounting Hardware etc.	Set	1	1,075,742
	(ii) 245 kV, Single Phase Grounding Switch Internal Parts complete with all necessary Gaskets, Mounting Hardware etc.	Set	1	891,576
	(iii) 245 kV, Single Phase High Speed Fault Making Grounding Switch Internal Parts complete with all necessary Gaskets, Mounting Hardware etc.	Set	1	1,075,742
f)	33 kV GIS Circuit Breaker			
	(i) Rubber Gasket 'O' Rings and Seal	Set	1	21,330
	(ii) Trip Coils	No.	3	25,138
	(iii) Closing Coils	No.	3	25,138
	(iv) Molecular Filter	Set	3	9,141
	(v) Density / Pressure Monitoring System	No.	1	22,853
	(vi) Relays, Power Contactors, Push Buttons, Timers & MCB etc.	Set	1	457,065
	(vii) Closing Assembly / Valve	No.	1	2,285
	(viii) Pressure Switches	Set	1	2,285
	(ix) Auxiliary Switch Assembly (for CB)	No.	1	29,710
	(x) Rupture Disc / Diaphragm	No.	1	15,997



050

Dy. General Manager (Contracts)
H.P. Power Transmission Corpn. Ltd.
Barowalia House, Khalini, Shimla-2

MS 2

Sr.	DESCRIPTION	UNIT	QTY.	TOTAL
(xi)	36 kV, 3 Phase Circuit Breaker Operating Mechanism complete with all necessary connecting Apparatus (each Rating)	No.	1	745,015
g)	33 kV Current Transformer			
(i)	Multi Ratio Single Phase Current Transformers of each rating (3 nos. of each rating)	Set	1	252,528
h)	33 kV Potential Transformer			
(i)	Single Phase Potential Transformer complete with all Gaskets and Mounting Hardware	Set	1	189,682
i)	30 kV Surge Arrestor			
(i)	Complete Surge Arrestor including Base with Surge Counter & Accessories: AIS Type	No.	1	15,700
(ii)	Surge Counter / Monitor	No.	1	8,722
j)	33 kV Isolators & Earth Switch			
(i)	36 kV, 3 Phase, 1250 Amperes Disconnecting Switch Operating Mechanism complete with all necessary Connecting Apparatus	Set	1	92,175
(ii)	36 kV, 3 Phase, 1250 Amperes Grounding Switch Operating Mechanism complete with all necessary Connecting Apparatus	Set	1	Part of Three Position Switch
k)	Battery			
	220 Volt / 48 Volt Batteries			
(i)	Spare Battery Cell without Electrolyte	No.	10	283,679
(ii)	Terminal Connectors with Bolts & Nuts (each type)	No.	10	43,640
(iii)	Float Level Indicators (each type)	No.	10	13,627
(iv)	Vent Plugs (each type)	No.	10	16,358



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Dy. General Manager (Contracts) MS 3
T.P.S. Power Transmission Corpn. Ltd.
Barowalia House, Khalini, Shimla-2

Sr.	DESCRIPTION	UNIT	QTY.	TOTAL
l)	Battery Charger			
	220 Volt / 48 Volt Batteries			
	(i) Set of Control Cards (of each type)	Set	1	69,904
	(ii) Set of Relays	Set	1	8,389
	(iii) Set of Contactor	Set	1	25,166
	(iv) Filter Capacitors	Set	1	8,389
	(v) Thyristor / Diode	Set	1	11,185
	(vi) Set of Switches	Set	1	22,930
	(vii) Set of Wound Resistors	Set	1	4,193
	(viii) Potentiometers	Set	1	4,193
	(ix) Fuses of Thyristor with Indicators	Set	6	21,807
m)	LT Switchgear			
	(i) Relays (Auxiliary)	Set	1	95,375
	(ii) CTs and PTs	Set	1	8,227
	(iii) Switches / Push Buttons and Meters	Set	1	27,501
	(iv) TPN Switches / MCB	Set	1	93,997
	(v) LT Breaker Spares			
	Spring Charging Motor	No.	1	27,504
	Auxiliary Contacts Sets	Set	2	2,521
	Busbar Seal off Insulators	No.	5	2,292
	Arc Chutes	Set	2	7,563
	Moving Contacts	Set	1	3,209
	Arcing Contacts (Fixed / Moving)	Set	1	3,209
	Springs (Closing / Opening)	No.	1	573
	Closing Coil	No.	1	1,718
	Tripping Coil	No.	1	1,260
	Auxiliary Finger Contact	Set	1	1,203
	Limit Switches	Set	1	5,156
	Jaw Contacts	Set	1	372
	(vi) BUSBAR			
	Busbar Insulators	No.	5	716
	Interphase Barrier	No.	2	1,432
	Busbar Strip 1 mm (Aluminium)	metres	5	5,371
n)	DG Set			
	(i) Set of Filters 1 set (Lubeoil / Fuel / Air Circuit)	Set	1	6,603



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 Dy. General Manager (Contracts)
 H.P. Power Transmission Corpn. Ltd.
 Barowalia House, Khalini, Shimla-2

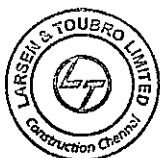
MS 4

Sr.	DESCRIPTION	UNIT	QTY.	TOTAL
(ii)	Solenoid Coil Assembly	No.	1	2,934
(iii)	Self Starter Assembly	No.	1	54,930
(iv)	Lub - Oil Pressure Safety Control	No.	1	13,882
(v)	High Water Temperature Safety Control	No.	1	2,197
(vi)	Diode	No.	2	1,505
o)	Optic Fibre Cable	metres	500	47,746
p)	220 kV CVT	No.	1	395,452
TOTAL OF MANDATORY				14,828,766

NOTE:

- i) The above Prices are FIRM and NO Price Variations shall be paid.
- ii) Freight & Insurance Charges, Excise Duty, C. S. T. / VAT are included in above Prices.

[Signature]
Dy. GENERAL MANAGER



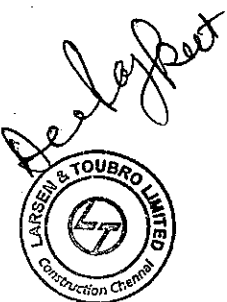
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Dy. General Manager (Contracts)
T.P.C. Power Transmission Corpn. Ltd.
Barowalia House, Khalini, Shimla-2

SCHEDULE PCPS

LIST OF PROTECTION AND CONTROL PANEL SPARES ALONGWITH MAIN EQUIPMENT

Sr. No.	TYPE	QTY	DESCRIPTION
1	DC Module	1	Power Supply Module for Circuit Breaker Protection Relay
2	CPU Module	1	CPU Module for Circuit Breaker Protection Relay
3	DC Module	1	Power Supply Module for Line Protection Relay
4	CPU Module	1	CPU Module for Line Protection Relay
5	DC Module	1	Power Supply Module for Transformer Differential Protection Relay
6	CPU Module	1	CPU Module for Transformer Differential Protection Relay
7	DC Module	1	Power Supply Module for Transformer Backup Protection Relay
8	CPU Module	1	CPU Module for Transformer Backup Protection Relay
9	DC Module	1	Power Supply Module for Bus Bar Protection Relay
10	CPU Module	1	CPU Module for Bus Bar Protection Relay
11	DC Module	1	Power Supply Module for RCS - 9600 Series Protection Device
12	CPU Module	1	CPU Module for RCS - 9600 series Protection Device
13	DC Module	1	Power Supply Module for Bay Control Unit
14	CPU Module	1	CPU Module for Bay Control Unit
15		1	ABB Make Numerical Relay for Transformer Differential Protection Type RET 670
16		1	ABB Make Numerical Relay for Distance Protection Type REL 670
17		1	ABB Make Numerical Relay for O / C & E / F Protection Type REF 615
18		1	ABB Make Numerical Relay for REF Protection Type REF 615
19		1	ABB Make Numerical Relay for Bus Bar Protection Type REB 670
20		1	ABB Make Fuse Failure Relay Type FFR

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of your Offer



Dy. General Manager (Contracts)
H.P. Power Transmission Corpn. Ltd.
Barowalia House, Khalini, Shimla-2

054

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Sr. No.	TYPE	QTY	DESCRIPTION
21	ABB Make Auxiliary Relay Type FFR	1	
22	ABB Make Flag Relay Type RXSF	1	
23	ABB Make D. C. Supply Supervision Relay Type TSR	1	
24	ABB Make High Speed Tripping Relay Type RXMVB4 + RXTMA + TSR + PB MODULE	1	
25	ABB Make Trip Circuit Supervision Relay Type TSR	1	
26	ABB Make Under Voltage Relay Type RXEG	1	
27	Areva Make Power Supply Module for Bus Bar Protection	1	
28	Areva Make Bay Control IED of each Type	1 Set	
29	Areva Make Ethernet Switch of each Type	1 Set	
30	Areva Make longest Optical Cable with end Equipment	1 Set	

Page 172; ABB, CRP & SAS
of your Offer

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 Dy. General Manager (Contracts)
 P.T. Power Transmission Corpn. Ltd.
 Barowalia House, Khalini, Shimla-2

DATA REQUIREMENT SHEETS

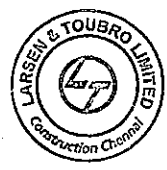



Dy. General Manager (Contracts)
I.P. Power Transmission Corpn. Ltd.
Barowalla House, Khalini, Shimla-2

SHEET – A1

CIRCUIT BREAKER

220 kV



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Dy. General Manager (Contracts)
H.P. Power Transmission Corpn. Ltd.
Barowalia House, Khalini, Shimla-2

HIMACHAL PRADESH POWER TRANSMISSION CORPORATION LIMITED
BAROWALIAS HOUSE, KHALINI, SHIMLA - 171002

AWARD No.: HPPTCL / DGMC / L & T SUPPLY / 2010 -

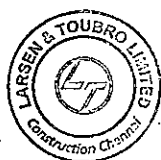
DATED:

NAME CONSTRUCTION OF 33 / 220 kV SUB STATION AT PALCHAN
OF WORK : IN KULLU DISTRICT

DATA REQUIREMENT SHEET - A1

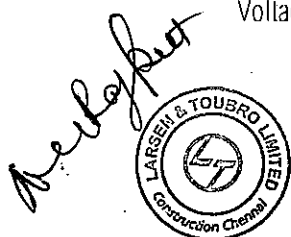
CIRCUIT BREAKER 220 kV

Sr. No.	PARAMETER	UNIT	
1	Make		AREVA T&D INDIA
2	Manufacturer's Type, Designation		B105
3	Applicable Technical Standards		IEC
4	Rated Voltage	kV	245
5	Rated Frequency	Hz	50
6	Number of Poles	No.	3
7	Class (Outdoor / Indoor)		Indoor
8	Rated Normal Current		
	a) at 50 °C Ambient Temperature,	Amperes	4000 (For BB,BC) & 2000 (For Line), 1600 (For Trafo)
	b) at reference Ambient Temperature of 40 °C	Amperes	4000 (For BB,BC) & 2000 (For Line), 1600 (For Trafo)
9	Rated-Short Circuit Breaking Current		
	a) rms Value of A. C. Component	kA rms	50
	b) Percentage D. C. Component	%	45
	c) Asymmetrical Breaking Current (including D. C. Component)	kA rms at	125
	d) Is it possible to increase the Rupturing Capacity at a later date	Yes / No	No
10	Rated Operating Duty Cycle		0 - 0.3s - CO - 3min - CO
11	Rated Short Circuit Making Current	kA (Peak)	125
12	First Pole to Clear Factor		1.3



[Signature]
Dy. General Manager (Contract)
H.P. Power Transmission Corp. - A1 - 1
Barowalia House, Khalini, Shimla - 2

Sr. No.	PARAMETER	UNIT	
13	Rated Transient Recovery Voltage for Terminal Faults		As per IEC
14	Rated Characteristics for Short Line Faults		L90 = 45 kA, L75 = 37.5 kA
15	Maximum Line Charging Current Breaking Capacity and corresponding Over Voltage recorded during Test	kA	As per IEC
a)	on Line Side	kV	
b)	on Supply Side	kV	
16	Maximum Breaking Capacity under Phase Opposition Conditions	kA	10
17	Rated Small Inductive Breaking Current with corresponding Switching Surge Over Voltage	kA - P. U.	I = 108 A, Uc = 475 kV
18	Reactor Loaded Transformer Interrupting Capacity and corresponding Switching Surge Over Voltage	kA - P. U.	< 2.5 P.U
19	Capacity for Interrupting Inrush Current of Transformers and the Corresponding Over Voltage	Amp. - P. U	As per IEC
20	Maximum Cable, Charging Breaking Current and Over Voltages recorded during Test	kA	As per IEC
a)	on Line Side	kV	
b)	on Supply Side	kV	
21	Maximum (Single) Capacitor Bank Breaking Current and corresponding Over Voltages recorded, during Test	kA	As per IEC
a)	on Line Side	kV	
b)	on Supply Side	kV	
22	Data on Re - Striking Voltage Capacity		
a)	Amplitude Factor		As per IEC
b)	Phase Factor		
c)	Natural Frequency		
d)	Rate of Rise of Re - Striking Voltage		
23 a)	Is Current Breaker Re - Strike Free	YES / NO	Yes
b)	Means adopted if any to Check for Voltage Rise		-




 Dy. General Manager (Contracts)
 P.T. Power Transmission Corpn. Ltd.
 Barowalla House, Khalini, Shimla-2

Sr. No.	PARAMETER	UNIT	
24	Rated Duration of Short Circuit	secs.	3
25	Short Time Current Rating for the following Duration		
a)	for one second	kA (rms)	50
b)	for three seconds	kA (rms)	50
26	Maximum Arching Time under any Duty Condition with Limiting Conditions of Voltage and Pressure	ms	At Detailed Engineering Stage
27	Maximum Break Time, ms		
a)	at 100 % Rated Breaking Current	ms	50
b)	at 50 % Rated Breaking Current	ms	50
c)	at 25 % Rated Breaking Current	ms	50
d)	at 10 % Rated Breaking Current	ms	50
e)	at Lowest Fault Current	ms	50
28	Maximum Closing Time	ms	70
29	Total Make Break Time	ms	To be furnished during Detailed Engineering Stage
30	Minimum Re - Closing Time at Rated Interrupting Capacity from the instant of Trip Coil Energisation	ms	
31	Minimum Dead Time for		
a)	Three Phase Re - Closing		
b)	One Phase Re - Closing		
c)	Limits of Adjustment of Dead Time for three Phase Re - Closing		
d)	Limits of Adjustment of Dead Time for one Phase Re - Closing		
32	Pre - Insertion Resistance		NO
a)	Resistance Value	Ohm	
b)	Duration of Insertion	ms	
c)	Thermal Capability	kA	
d)	Duty Cycle for Closing against Terminal Fault		
e)	Duty Cycle for Closing under Phase Opposition		
f)	Duty Cycle for Closing against Trapped Charge Fault		
33	Latching Current	Amperes	To be furnished during Detailed Engineering Stage

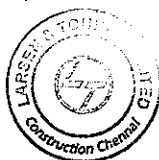


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 Dy. General Manager (Contracts) Larsen - A1 - 3
 H.P. Power Transmission Corp. Ltd.
 Barowalia House, Khalini, Shimla-2

Sr. No.	PARAMETER	UNIT	
34	Number of Breaks in Series per Pole		1
35	Length of Contact Travel	mm	To be furnished during Detailed Engineering Stage
36	Total Length of Break per Pole	mm	
37	Speed of Contact Travel		
	a) At Tripping	mts / sec.	
	b) At Closing	mts / sec.	
38	Type of Device - if any, used to obtain Uniform Voltage Distribution between Breakers (where Number of Breakers are more than one)		NA (One break per pole)
39	Recovery Voltage Distribution between Breaks in Percentage of Rated Voltage for		NA
	a) Single Line to Ground Fault		
	b) Interruption of Short Lines		
	c) Switching Off an Unloaded Transformer		
40	Type of Main Contacts		Tulip
41	Type of Arcing Contacts and / or Arc Control Contacts		Finger Rod
42	Material of		
	a) Main Contacts		Copper
	b) Arcing Contacts		Copper
	c) Whether Contacts are Silver Plated		Yes
	d) Whether Contacts are Silver Plated		To be furnished during Detailed Engineering Stage
	e) Contact Pressure	kg / sq. mm.	
	f) Terminals		
43	Difference in the Instant of Closing Opening of Contacts		
	a) Within a Pole,	ms	<3
	b) Between Poles	ms	<3
44 a)	Corona Inception Voltage	kV rms	NA
b)	Corona Extinction Voltage	kV rms	NA
45	Maximum Temperature Rise for		
	a) Main Contacts over Ambient Temperature of 50 °C		As per IEC

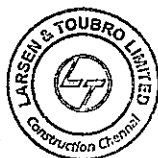


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 Dy. General Manager (Contracts) Larsen - A1 - 4
 Power Transmission Corpn. Ltd.
 Barowalia House, Khalini, Shimla-2

Sr. No.	PARAMETER	UNIT	
	b) Terminal to be connected to the External Conductors, 40 °C		As per IEC
46	Dry One Minute Power Frequency Withstand Test Voltage for complete Circuit Breaker		
	a) Between Line Terminal & Ground Objects (Breaker Closed)	kV rms	460
	b) Between Terminals with Breaker Contacts Open	kV rms	460
47	1.2 / 50 microsecond Wave Impulse Withstand Test Voltage for complete Circuit Breaker		
	a) Between Line Terminal & Ground (Breaker Closed)	kV (Peak)	1050
	b) Across Terminals with Circuit Breaker Contacts Open		1200
	i. One Terminal Lightning Impulse	kV (Peak)	
	ii. Opposite Terminal Power Frequency	kV (Peak)	
48	Dry & Wet 250 / 2500 micro second Voltage		NA
	a) Between Line Terminal & Ground Objects (Breaker Closed)	kV (Peak)	
	b) Between Terminals with Circuit Breaker Contacts Open		
	i. One Terminal Lightning Impulse	kV (Peak)	
	ii. Opposite Terminal Power Frequency	kV (Peak)	
49	Radio Interference Voltage for Circuit Breaker with a Voltage of 266 kV :		NA
	a) 0.5 MHz		
	b) 1.0 MHz		
	c) 1.5 MHz		
	d) 2.0 MHz		
50	CLEARANCES		NA
	a) Between Phase (Live Parts)	mm	
	b) Between Live Parts & Earth	mm	
	c) Live Parts to Ground Level (Section Clearance)	mm	



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 Dy. General Manager (Contracts)
 H.P. Power Transmission Corpn. Ltd.
 Barowalia House, Khalini, Shimla-2
 Larsen - A1 - 5

Sr. No.	PARAMETER	UNIT	
51	Whether the Circuit Breaker is Fixed Trip or Trip Free		Trip Free
52 a)	Normal Voltage of Closing Coil	Volts	220 V DC
b)	Pick Up Range	Volts	85 - 110 %
53 a)	Rated Voltage of Tripping Coil and Range of Pick Up Value	Volts	70 - 110 %
b)	Number of Tripping Coil provided		
54	Normal Power Consumption at Rated Voltage for		
a)	Trip Coil	Watts	400 W per Coil
b)	Closing Coil	Watts	400 W per Coil
55	Number of Auxiliary Contacts per Pole provided for Purchaser's use		
a)	NO		6
b)	NC		5
c)	Adjustable		1 (Wiping Contact)
56	Rated Voltage of Auxiliary Contacts	Volts	220 V DC
57	Current Capacity of Auxiliary Contacts		
a)	Continuous	Amperes	15
b)	Breaking	Amperes	2
58	Whether Auxiliary Contacts Silver Plated	Yes / No	Yes
59 a)	Breaking Capacity at the Rate of 50% of Rated Supply Voltage of Closing / Opening Device		To be furnished during Detailed Engineering Stage
b)	50 % of Rated Pressure of Operating Mechanism		
60	Quantity of SF6 Gas required for each Pole of CB	kgs	
61	Limits of Pressure of SF6 at which Breaker Operates correctly	kg. / sq. cm.	5.5
62	Number of Operations after which SF6 Gas replacement is necessary		To be furnished during Detailed Engineering Stage
a)	At Full Rupturing Capacity		
b)	At 50 % of Rated Rupturing Capacity		
c)	At 10 % of Rated Rupturing Capacity		
d)	At Rated Current		



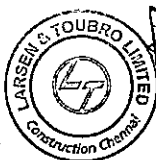
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hms
Dy. General Manager (Contracts)
T.P. Power Transmission Corpn. Ltd.
Barowalia House, Khalini, Shimla-2

Larsen - A1 - 6

Sr. No.	PARAMETER	UNIT	
63	Number of Operations after which Main and Auxiliary Contacts replacement is necessary		To be furnished during Detailed Engineering Stage
a)	At Full Rupturing Capacity		
b)	At 50 % of Rated Rupturing Capacity		
c)	At 10 % of Rated Rupturing Capacity		
d)	At Rated Current		
64	Number of Operations at Rated Current after which Routine Inspection of Breaker is necessary		
65	Number of Operations at Full Rupturing Capacity after which Routine Inspection of Breaker is necessary		
66	Supporting Insulation Column / Units (Data for one Unit and Complete Column to be furnished)	one Unit	NA
a)	Make & Type		
b)	Numbers per Pole		
c)	Descriptive Pamphlet No.		
d)	Weight	kg	
e)	Transport Dimensions	mm	
f)	One Minute Dry Power Frequency Withstand	kV (rms)	
g)	Flash Over Voltage	kV	
h)	Full Wave Impulse Withstand Voltage	kV(Peak)	
i)	Switching Surge Withstand Voltage	kV(Peak)	
j)	Corona Extinction Voltage	kV	
k)	Creepage Distance, Total & Protected	mm	
l)	Permissible Safe Cantilever Strength	kg	
67	Type of Operating Mechanism for		
a)	Closing		Spring
b)	Opening		Spring
68	Rated Pressure and Limits of Pressure of Operating Mechanism	kg / cm. sq	To be furnished during Detailed Engineering Stage
69	Spring Charged Mechanism		
a)	Rating of Motor, Volts, Amperes, H. P.		220 V DC
b)	Time required for Charging the Closing Spring	secs.	7



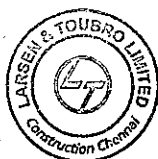
By. General Manager (Contracts)
H.P. Power Transmission Corp. Ltd.
Barowalia House, Khalini, Shimla-2

Larsen - A1 - 7

Sr. No.	PARAMETER	UNIT	
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- c) Number of CO Operations possible after Failure of Auxiliary Supply 0 - CO
- d) Whether Indication for Spring Charged Condition provided in Central Control Cabinet Yes / No Yes
- 70 Overall Dimensions
- a) Height mts 1.705 (Apprx.)
- b) Width mts 1.500 (Apprx.)
- c) Length mts 2.158 (Apprx.)
- 71 Weight of
- a) each Pole kg
- b) complete Breaker kg
- 72 Impact Loading for Foundation Design
- a) Static
- b) Dynamic
- 73 Noise Level db
- a) At Breaker Location
- b) At 8 Metres
- c) At 10 Metres
- d) At 40 Metres
- 74 a) Details of Supporting Structures
- b) State whether Hot Dip Galvanized or Painted
- 75 a) Details of Central Control Cabinet NA
- b) Whether Cabinet is hot Dip Galvanized or Painted
- 76 SF6 Gas Density Monitor whether provided Yes / No Density Switch is provided in each gas compartment.
- 77 a) Seismic Withstand Level As per Specification
- b) Special Arrangements, if any made to take care of Seismic Force
- 78 Portable SF6 Gas Evacuation and Filling System with necessary Gas Valves, Safety Devices, Gas Purity Monitoring Devices Regulators, Vacuum Pump, Pressure Gauges / Switches, Hose Pipes, etc. whether provided ? Yes / No Yes

To be furnished during Detailed Engineering Stage



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HS
Dy. General Manager (Contracts)
N.P. Power Transmission Corpn. Ltd.
Barowalia House, Khalini, Shimla-2

Larsen - A1 - 8

Sr. No.	PARAMETER	UNIT	
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79 If Yes, furnish Details of the same

a) Make

DILO / Equivalent

b) Manufactured in India / Imported

Imported

c) Capacity of Device

Economy Series

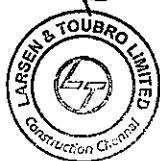


[Signature]
 Dy. General Manager (Contracts)
 H.P. Power Transmission Corpn. Ltd.
 Barowalia House, Khalini, Shimla-2

SHEET – A3

CIRCUIT BREAKER

33 kV




Dy. General Manager (Contracts)
H.P. Power Transmission Corpn. Ltd.
Bawolia House, Khalini, Shimla-2

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HIMACHAL PRADESH POWER TRANSMISSION CORPORATION LIMITED
BAROWALIAS HOUSE, KHALINI, SHIMLA - 171002

AWARD No.: HPPTCL / DGMC / L & T SUPPLY / 2010 -

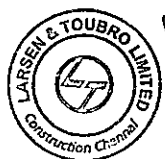
DATED:

NAME CONSTRUCTION OF 33 / 220 kV SUB STATION AT PALCHAN
OF WORK : IN KULLU DISTRICT

DATA REQUIREMENT SHEET - A3

CIRCUIT BREAKER 33 kV

Sr. No.	PARAMETER	UNIT	
1	Make		ABB
2	Manufacturer's Type, Designation		VD4X
3	Applicable Technical Standards		IEC
4	Rated Voltage	kV	33
5	Rated Frequency	Hz	50
6	Number of Poles	No.	3
7	Class (Outdoor / Indoor)		Indoor
8	Rated Normal Current		
	a) at 50 °C Ambient Temperature,	Amperes	1472
	b) at reference Ambient Temperature of 40 °C	Amperes	1600
9	Rated Short Circuit Breaking Current		
	a) rms Value of A. C. Component	kA rms	40
	b) Percentage D. C. Component	%	35
	c) Asymmetrical Breaking Current (including D. C. Component)	kA rms at	43.7
	d) Is it possible to increase the Rupturing Capacity at a later date	Yes / No	NO
10	Rated Operating Duty Cycle		0 - 0.3s - CO - 3min - CO
11	Rated Short Circuit Making Current	kA (Peak)	40
12	First Pole to Clear Factor		1.5
13	Rated Transient Recovery Voltage for Terminal Faults		62
14	Rated Characteristics for Short Line Faults		As per IEC



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H.P. Power Transmission Corpn. Ltd.
Barowalia House, Khalini, Shimla-2
Larsen - A3 - 1

15	Maximum Line Charging Current Breaking Capacity and corresponding Over Voltage recorded during Test	kA	NA
a)	on Line Side	kV	
b)	on Supply Side	kV	
16	Maximum Breaking Capacity under Phase Opposition Conditions	kA	
17	Rated Small Inductive Breaking Current with corresponding Switching Surge Over Voltage	kA - P. U.	As per IEC 62271-110: Inductive Load Switching, Para 6.1 b) : "for Shunt Reactor Switching at Rated Voltage below 52 kV, No Type Testing is required and reference should be made to the Guide [2]".
18	Reactor Loaded Transformer Interrupting Capacity and corresponding Switching Surge Over Voltage	kA - P. U.	
19	Capacity for Interrupting Inrush Current of Transformers and the Corresponding Over Voltage	Amp. - P. U	As per IEC
20	Maximum Cable, Charging Breaking Current and Over Voltages recorded during Test	kA	50
a)	on Line Side	kV	
b)	on Supply Side	kV	
21	Maximum (Single) Capacitor Bank Breaking Current and corresponding Over Voltages recorded, during Test	kA	NA as there is no Capacitor Feeder offered
a)	on Line Side	kV	
b)	on Supply Side	kV	
22	Data on Re - Striking Voltage Capacity		
a)	Amplitude Factor		
b)	Phase Factor		
c)	Natural Frequency		
d)	Rate of Rise of Re - Striking Voltage		
23 a)	Is Current Breaker Re - Strike Free	YES / NO	YES
b)	Means adopted if any to Check for Voltage Rise		NA



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Dy. General Manager (Contracts)
T.P. Power Transmission Corpn. Ltd.
Barowalia House, Khalini, Shimla 2
Larsen - A3 - 2

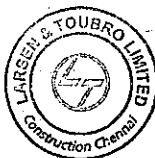
24	Rated Duration of Short Circuit	secs.	3
25	Short Time Current Rating for the following Duration		
a)	for one second	kA (rms)	40
b)	for three seconds	kA (rms)	40
26	Maximum Arching Time under any Duty Condition with Limiting Conditions of Voltage and Pressure	ms	15
27	Maximum Break Time, ms		
a)	at 100 % Rated Breaking Current	ms	≤ 60
b)	at 50 % Rated Breaking Current	ms	
c)	at 25 % Rated Breaking Current	ms	
d)	at 10 % Rated Breaking Current	ms	
e)	at Lowest Fault Current	ms	
28	Maximum Closing Time	ms	60
29	Total Make Break Time	ms	55
30	Minimum Re - Closing Time at Rated Interrupting Capacity from the instant of Trip Coil Energisation	ms	300
31	Minimum Dead Time for		
a)	Three Phase Re - Closing		285
b)	One Phase Re - Closing		
c)	Limits of Adjustment of Dead Time for three Phase Re - Closing		
d)	Limits of Adjustment of Dead Time for one Phase Re - Closing		
32	Pre - Insertion Resistance		NA
a)	Resistance Value	Ohm	
b)	Duration of Insertion	ms	
c)	Thermal Capability	kA	
d)	Duty Cycle for Closing against Terminal Fault		
e)	Duty Cycle for Closing under Phase Opposition		
f)	Duty Cycle for Closing against Trapped Charge Fault		
33	Latching Current	Amperes	
34	Number of Breaks in Series per Pole		1
35	Length of Contact Travel	mm	NA



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Dy. General Manager (Contracts)
H.P. Power Transmission Corp., Ltd.
Barowalia House, Khalini, Shimla-2
Larsen - A3 - 3

36	Total Length of Break per Pole	mm	NA
37	Speed of Contact Travel		
	a) At Tripping	mts / sec.	0.9 - 1.5
	b) At Closing	mts / sec.	1.2 - 2.0
38	Type of Device - if any, used to obtain Uniform Voltage Distribution between Breakers (where Number of Breakers are more than one)		NA
39	Recovery Voltage Distribution between Breaks in Percentage of Rated Voltage for		NA
	a) Single Line to Ground Fault		
	b) Interruption of Short Lines		
	c) Switching Off an Unloaded Transformer		
40	Type of Main Contacts		BUTT
41	Type of Arcing Contacts and / or Arc Control Contacts		NA
42	Material of		
	a) Main Contacts		Copper Chromium
	b) Arcing Contacts		NA
	c) Whether Contacts are Silver Plated		NA
	d) Whether Contacts are Silver Plated		NA
	e) Contact Pressure	kg / sq. mm.	min 2500 N
	f) Terminals		
43	Difference in the Instant of Closing Opening of Contacts		NA
	a) Within a Pole,	ms	
	b) Between Poles	ms	
44 a)	Corona Inception Voltage	kV rms	
b)	Corona Extinction Voltage	kV rms	
45	Maximum Temperature Rise for		
	a) Main Contacts over Ambient Temperature of 50 °C		8%
	b) Terminal to be connected to the External Conductors, 40 °C		NA
46	Dry One Minute Power Frequency Withstand Test Voltage for complete Circuit Breaker		



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 Dy. General Manager (Contracts)
 P.T. Power Transmission Corpn. Ltd.
 Barowalia House, Khalini, Shimla-2

Larsen - A3 - 4

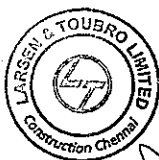
	a) Between Line Terminal & Ground Objects (Breaker Closed)	kV rms	80
	b) Between Terminals with Breaker Contacts Open	kV rms	80
47	1.2 / 50 microsecond Wave Impulse Withstand Test Voltage for complete Circuit Breaker		
	a) Between Line Terminal & Ground (Breaker Closed)	kV (Peak)	170
	b) Across Terminals with Circuit Breaker Contacts Open		170
	i. One Terminal Lightning Impulse	kV (Peak)	
	ii. Opposite Terminal Power Frequency	kV (Peak)	
48	Dry & Wet 250 / 2500 micro second Voltage		NA
	a) Between Line Terminal & Ground Objects (Breaker Closed)	kV (Peak)	
	b) Between Terminals with Circuit Breaker Contacts Open		
	i. One Terminal Lightning Impulse	kV (Peak)	
	ii. Opposite Terminal Power Frequency	kV (Peak)	
49	Radio Interference Voltage for Circuit Breaker with a Voltage of 266 kV :		NA
	a)	0.5 MHz	
	b)	1.0 MHz	
	c)	1.5 MHz	
	d)	2.0 MHz	
50	CLEARANCES		Not required
	a) Between Phase (Live Parts)	mm	
	b) Between Live Parts & Earth	mm	
	c) Live Parts to Ground Level (Section Clearance)	mm	
51	Whether the Circuit Breaker is Fixed Trip or Trip Free		Fixed
52 a)	Normal Voltage of Closing Coil	Volts	220
	b) Pick Up Range	Volts	85 - 110 %
53 a)	Rated Voltage of Tripping Coil and Range of Pick Up Value	Volts	220 85 - 110 %
	b) Number of Tripping Coil provided		



Perfected

[Signature]
Dy. General Manager (Contract.)
H.P. Power Transmission Corpn. Ltd.
Barowalia House, Khalini, Shimla-2
Larsen - A3 - 5

- 54 Normal Power Consumption at Rated Voltage for
- | | | | |
|----|--------------|-------|-----------|
| a) | Trip Coil | Watts | 250 - 310 |
| b) | Closing Coil | Watts | 250 - 311 |
- 55 Number of Auxiliary Contacts per Pole provided for Purchaser's use
- | | | |
|----|------------|-----|
| a) | NO | 3 |
| b) | NC | 4 |
| c) | Adjustable | NIL |
- 56 Rated Voltage of Auxiliary Contacts Volts at 220 V DC ,
Cos Ø 0.7 = 2.5 A
- 57 Current Capacity of Auxiliary Contacts
- | | | |
|----|------------|---------|
| a) | Continuous | Amperes |
| b) | Breaking | Amperes |
- 58 Whether Auxiliary Contacts Silver Plated Yes / No NO
- 59 a) Breaking Capacity at the Rate of 50% of Rated Supply Voltage of Closing / Opening Device
- b) 50 % of Rated Pressure of Operating Mechanism
- 60 Quantity of SF6 Gas required for each Pole of CB kgs 6 kg In CB Compartment
- 61 Limits of Pressure of SF6 at which Breaker Operates correctly kg. / sq. cm. Trouble free operation of Breaker can be done even at Atmospheric Pressure as SF6 is used only for insulation
- 62 Number of Operations after which SF6 Gas replacement is necessary NA as operations takes place inside in Vacuum Interrupter. Gas is only used for insulation
- | | |
|----|-------------------------------------|
| a) | At Full Rupturing Capacity |
| b) | At 50 % of Rated Rupturing Capacity |
| c) | At 10 % of Rated Rupturing Capacity |
| d) | At Rated Current |
- 63 Number of Operations after which Main and Auxiliary Contacts replacement is necessary
- | | |
|----|-------------------------------------|
| a) | At Full Rupturing Capacity |
| b) | At 50 % of Rated Rupturing Capacity |
| c) | At 10 % of Rated Rupturing Capacity |
| d) | At Rated Current |



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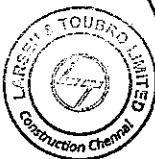
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By. General Manager (Contracts)
I.T.P. Power Transmission Corpn. Ltd.
Barowalia House, Khalini, Shimla
Gen - A3 - 6

64	Number of Operations at Rated Current after which Routine Inspection of Breaker is necessary		10,000
65	Number of Operations at Full Rupturing Capacity after which Routine Inspection of Breaker is necessary		
66	Supporting Insulation Column / Units (Data for one Unit and Complete Column to be furnished)	one Unit	NA
a)	Make & Type		
b)	Numbers per Pole		
c)	Descriptive Pamphlet No.		
d)	Weight	kg	
e)	Transport Dimensions	mm	
f)	One Minute Dry Power Frequency Withstand	kV (rms)	
g)	Flash Over Voltage	kV	
h)	Full Wave Impulse Withstand Voltage	kV(Peak)	
i)	Switching Surge Withstand Voltage	kV(Peak)	
j)	Corona Extinction Voltage	kV	
k)	Creepage Distance, Total & Protected	mm	
l)	Permissible Safe Cantilever Strength	kg	
67	Type of Operating Mechanism for		Spring Charged
a)	Closing		
b)	Opening		
68	Rated Pressure and Limits of Pressure of Operating Mechanism	kg / cm. sq	SF6 Pressure inside Gas Tank : 130 kPA
69	Spring Charged Mechanism		
a)	Rating of Motor, Volts, Amperes, H. P.		110 V, 250 W
b)	Time required for Charging the Closing Spring	secs.	45 ms
c)	Number of CO Operations possible after Failure of Auxiliary Supply		ONE
d)	Whether Indication for Spring Charged Condition provided in Central Control Cabinet	Yes / No	YES
70	Overall Dimensions		
a)	Height	mm	2,270
b)	Width	mm	800
c)	Length	mm	1,900




 Dy. General Manager (Contract)
 H.P. Power Transmission Corp., L. Larsen - A3 - 7
 Barowalia House, Khalini, Shimla-2

- | | | | |
|-------|--|----------|------------------|
| 71 | Weight of | | |
| | a) each Pole | kg | NA |
| | b) complete Breaker | kg | Max 450 |
| 72 | Impact Loading for Foundation Design | | |
| | a) Static | | 700 - 1000 kg |
| | b) Dynamic | | 40% |
| 73 | Noise Level | db | 1,150 |
| | a) At Breaker Location | | 2.0 Metres |
| | b) At 8 Metres | | |
| | c) At 10 Metres | | |
| | d) At 40 Metres | | |
| 74 a) | Details of Supporting Structures | | NA |
| | b) State whether Hot Dip Galvanized or Painted | | |
| 75 a) | Details of Central Control Cabinet | | |
| | b) Whether Cabinet is hot Dip Galvanized or Painted | | |
| 76 | SF6 Gas Density Monitor whether provided | Yes / No | YES |
| 77 a) | Seismic Withstand Level | | Tested for 0.5 g |
| | b) Special Arrangements, if any made to take care of Seismic Force | | No, Not Required |
| 78 | Portable SF6 Gas Evacuation and Filling System with necessary Gas Valves, Safety Devices, Gas Purity Monitoring Devices Regulators, Vacuum Pump, Pressure Gauges / Switches, Hose Pipes, etc. whether provided ? | Yes / No | No, Not Required |
| 79 | If Yes, furnish Details of the same | | NA |
| | a) Make | | |
| | b) Manufactured in India / Imported | | |
| | c) Capacity of Device | | |



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 Dy. General Manager (Contracts)
 T.P.C. Power Transmission Corpn. Ltd.
 Barowalia House, Khalini, Shimla-2

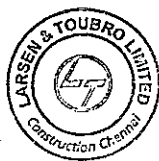
Larsen - A3 - 8

SHEET – B1

ISOLATOR

220 kV

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[Signature]
Dy. General Manager (Contract :)
H.P. Power Transmission Corpn. Ltd.
Barowalia House, Khalini, Shimla-2

HIMACHAL PRADESH POWER TRANSMISSION CORPORATION LIMITED
BAROWALIAS HOUSE, KHALINI, SHIMLA - 171002

AWARD No.: HPPTCL / DGMC / L & T SUPPLY / 2010 -

DATED:

NAME CONSTRUCTION OF 33 / 220 kV SUB STATION AT PALCHAN
OF WORK : IN KULLU DISTRICT

DATA REQUIREMENT SHEET - B1

ISOLATOR 220 kV

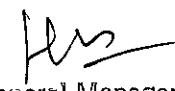
Sr. No.	PARAMETER	UNIT	
1	Manufacturer's Name		AREVA T&D
2	Manufacturer's Equipment Designation /		B105
3	Reference Standard		IEC
4	Type		B105
5	Service (INDOOR / OUTDOOR)		Indoor
6	Poles	No.	Three Pole Gang Operated
7	Rated Frequency	Hz	50
8	Rated Voltage	kV	245
9	Current Capacity		
9.1	Rated Normal Current	Ampere	4000 (For BB,BC) & 2000 (For Line), 1600 (For Trafo)
9.2	Derated due to Ambient Temperature of 50 °C		-
9.3	Rated Short Time Withstand Current for 3 secs.	kArms	50
9.4	Peak Withstand Current	kApeak	125
10	Temperature Rise above 50 °C Ambient		As per IEC
10.1	At Rated Normal Current		
10.2	At Rated Short Time Withstand Current		
11	Current Density at Minimum Cross - Section of Disconnecting Switch Blade		Shall be furnished during Detailed Engineering
12	Maximum Current the Isolator can safely Interrupt		
12.1	Bus / Line Charging Current	Ampere	0.25



Dy. General Manager (Contract)
H.P. Power Transmission Corp., Larsen - B1 - 1
Barowalia House, Khalini, Shimla-2

12.2	Potential Transformer Magnetizing Current	Ampere	At Engineering Stage	
13	CLEARANCES		NA to GIS	
13.1	Live Parts to Ground			
13.2	Phase to Phase			
13.3	Fixed Contact to Blade in Open Position			
14	INSULATION LEVEL			
14.1	Rated Lightning Impulse Withstand Voltage Positive and Negative Polarity			
	a) Across the Isolating Distance	kVpeak	1200	
	b) To Earth & between Poles	kVpeak	1050	
14.2	Rated One Minute Power Frequency Withstand Voltage			
	a) Across the Isolating Distance	kVrms	530	
	b) To Earth & between Poles	kVrms	460	
14.3	Rated Switching Impulse Withstand Voltage		NA	
	a) Across the Isolating Distance			
	b) To Earth			
15	Maximum Radio Interference Voltage for 0.5 MHZ and 2 MHZ all Positions		NA	
16	Operating Mechanism			
16.1	Type		DC Motor	
16.2	Motor Rating			
	a) Output	kW	0.13 (Rated Power)	
	b) Voltage	Volt	220	
16.3	Range of Operating Voltage		85 % - 110 %	
16.4	Control Voltage with Range		85 % - 110 %	
16.5	Torque required to operate the Gang Operated Disconnecting Switch		At Engineering Stage	
17	Rated Mechanical Terminal Load		At Engineering Stage	
18	Main Contacts			
18.1	Type		Rod and Multi	
18.2	Material		Silvered Copper	
18.3	Contact Pressure	kg / sq. cm.	At Engineering Stage	
18.4	Contact Area	sq. mm.	At Engineering Stage	
18.5	Whether Silver Plated ?	YES / NO	Yes	
18.6	Thickness of Silver Plating	mm	At Engineering Stage	




 Dy. General Manager (Contracts)
 H.P. Power Transmission Corpn. Ltd.
 Barowalia House, Khalini, Shimla-2
 Larsen - B1 - 2

19	Auxiliary Contacts			
19.1	Spare Contacts furnished			
a)	Normally Open	No.	4	
b)	Normally Close	No.	4	
19.2	Type (Convertible or Fixed)		NA	
19.3	Contact Rating at		220 V, D. C.	
a)	Make and Continuous	Ampere	15	
b)	Break (Inductive)	Ampere	2	
20	Operating Time of Motor Operated Mechanism			
20.1	Opening	sec.	< 6	
20.2	Closing	sec.	< 6	
21	Rotating Blade Feature at the end of Travel provided (Turn & Twist Type)		NA	
22	Number of Operations that Disconnecting Switch can Withstand without Deterioration of Contacts		At Engineering Stage	
23	Type of Interlocks furnished		Electrical Interlocking	
24	Accessories furnished as specified in Annexure		At Engineering Stage	
25	INSULATORS		Support Insulator of GIS	
25.1	Make		AREVA T&D	
25.2	Type		Support Insulator	
25.3	Reference Standard		IEC	
25.4	Number of Units per Stack		NA	
25.5	Rated Voltage		245	
25.6	One (1) Minute Power Frequency Withstand Voltage :			
a)	Dry	kV	460	
b)	Wet	kV	NA	
25.7	Switching Surge Withstand Voltage		NA	
25.8	Lightning Impulse Withstand Voltage	kVp	1050	
a)	Positive Polarity			
b)	Negative Polarity			
25.9	Creepage Distance in Air	mm	NA	
25.10	Tensile Strength	kg	NA	
25.11	Cantilever Strength (Upright)	kg	NA	
25.12	Compression Strength	kg	NA	

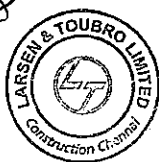


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 Dy. General Manager (Construction)
 H.P. Power Transmission Corp. Ltd.
 Barowalia House, Khalini, Shimla - B1 - 3

25.13	Torsional Strength	kg	NA
25.14	Weight of the Unit	kg	NA
26	Dimension of Disconnecting Switch (L x B x H)	mm	At Engineering Stage
27	Weight of the Disconnecting Switch	kg	At Engineering Stage

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HS

Dy. General Manager (Contracts)
H.P. Power Transmission Corpn. Ltd,
Barowalia House, Khalini, Shimla-2

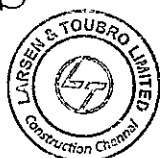
Larsen - B1 - 4

SHEET – B3

ISOLATOR

33 kV

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[Signature]
Dy. General Manager (Contract)
H.P. Power Transmission Corpn. Ltd.
Barowalia House, Khalini, Shimla-2

HP POWER TRANSMISSION CORPORATION LIMITED
BAROWALIAS HOUSE, KHALINI, SHIMLA - 171002

AWARD No.: HPPTCL / DGMC / L & T SUPPLY / 2010 -

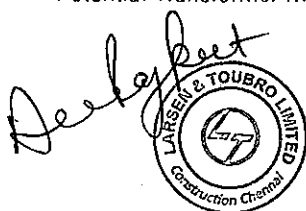
DATED:

NAME CONSTRUCTION OF 33 / 220 kV SUB STATION AT PALCHAN
OF WORK : IN KULLU DISTRICT

DATA REQUIREMENT SHEET - B3

ISOLATOR 33 kV

Sr. No.	PARAMETER	UNIT	
1	Manufacturer's Name		ABB, GERMANY
2	Manufacturer's Equipment Designation /		UX2TE
3	Reference Standard		IEC
4	Type		
5	Service (INDOOR / OUTDOOR)		Indoor
6	Poles	No.	
7	Rated Frequency	Hz	50
8	Rated Voltage	kV	33
9	Current Capacity		
9.1	Rated Normal Current	Ampere	
9.2	Derated due to Ambient Temperature of 50 °C		8 % OF RATED CURRENT
9.3	Rated Short Time Withstand Current for 3 secs.	kArms	40
9.4	Peak Withstand Current	kApeak	100
10	Temperature Rise above 50 °C Ambient		As per IEC
10.1	At Rated Normal Current		
10.2	At Rated Short Time Withstand Current		
11	Current Density at Minimum Cross - Section of Disconnecting Switch Blade		Shall be furnished during Detailed Engineering
12	Maximum Current the Isolator can safely Interrupt		
12.1	Bus / Line Charging Current	Ampere	
12.2	Potential Transformer Magnetizing Current	Ampere	



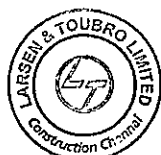
Dy. General Manager (Contracts)
H.P. Power Transmission Corpn. Ltd.
Barowalia House, Khalini, Shimla
Larsen - B3 - 1

Sr. No.	PARAMETER	UNIT	
13	CLEARANCES		NA to GIS
13.1	Live Parts to Ground		
13.2	Phase to Phase		
13.3	Fixed Contact to Blade in Open Position		
14	INSULATION LEVEL		
14.1	Rated Lightning Impulse Withstand Voltage Positive and Negative Polarity		
	a) Across the Isolating Distance	kVpeak	195
	b) To Earth & between Poles	kVpeak	170
14.2	Rated One Minute Power Frequency Withstand Voltage		
	a) Across the Isolating Distance	kVrms	80
	b) To Earth & between Poles	kVrms	70
14.3	Rated Switching Impulse Withstand Voltage		NA
	a) Across the Isolating Distance		
	b) To Earth		
15	Maximum Radio Interference Voltage for 0.5 MHZ and 2 MHZ all Positions		NA
16	Operating Mechanism		
16.1	Type		ROD TYPE
16.2	Motor Rating		
	a) Output	kW	
	b) Voltage	Volt	110
16.3	Range of Operating Voltage		85 % - 110 %
16.4	Control Voltage with Range		85 % - 110 %
16.5	Torque required to operate the Gang Operated Disconnecting Switch		NA
17	Rated Mechanical Terminal Load		NA
18	Main Contacts		
18.1	Type		Rod Type
18.2	Material		Silvered Plated Copper
18.3	Contact Pressure	kg / sq. cm.	NA
18.4	Contact Area	sq. mm.	NA
18.5	Whether Silver Plated ?	YES / NO	NO
18.6	Thickness of Silver Plating	mm	




 Dy. General Manager (Contracts)
 H.P. Power Transmission Corpn. Ltd.
 Barowalia House, Khalini, Shimla-2
 Larsen - B3 - 2

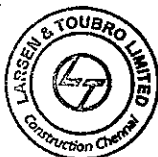
Sr. No.	PARAMETER	UNIT	
19	Auxiliary Contacts		
19.1	Spare Contacts furnished		
a)	Normally Open	No.	5
b)	Normally Close	No.	5
19.2	Type (Convertible or Fixed)		FIXED
19.3	Contact Rating at		220 V, D. C.
a)	Make and Continuous	Ampere	
b)	Break (Inductive)	Ampere	
20	Operating Time of Motor Operated Mechanism		
20.1	Opening	sec.	Approx. 18
20.2	Closing	sec.	Approx. 18
21	Rotating Blade Feature at the end of Travel provided (Turn & Twist Type)		NA
22	Number of Operations that Disconnecting Switch can Withstand without Deterioration of Contacts		5,000
23	Type of Interlocks furnished		Electrical + Mechanical
24	Accessories furnished as specified in Annexure		
25	INSULATORS		NA
25.1	Make		
25.2	Type		
25.3	Reference Standard		
25.4	Number of Units per Stack		
25.5	Rated Voltage		
25.6	One (1) Minute Power Frequency Withstand Voltage :		
a)	Dry	kV	
b)	Wet	kV	
25.7	Switching Surge Withstand Voltage		
25.8	Impulse Withstand Voltage		
a)	Positive Polarity		
b)	Negative Polarity		
25.9	Creepage Distance in Air	mm	NA
25.10	Tensile Strength	kg	



Dy. General Manager (Contract)
 H.P. Power Transmission Corp. Ltd.
 Barowalia House, Khalini, Shimla-2
 Larsen - B3 - 3

Sr. No.	PARAMETER	UNIT	
25.11	Cantilever Strength (Upright)	kg	
25.12	Compression Strength	kg	
25.13	Torsional Strength	kg	
25.14	Weight of the Unit	kg	
26	Dimension of Disconnecting Switch (L x B x H)	mm	It is inside the Gas Tank
27	Weight of the Disconnecting Switch	kg	Max. 200

A. S. Laffut



HS
 Dy. General Manager (Contracts)
 H.P. Power Transmission Corpn. Ltd.
 Barowalia House, Khalini, Shimla-2

Larsen - B3 - 4

SHEET – B4

EARTHING SWITCH

220 kV

See sheet



[Signature]

Dy. General Manager (Contracts)
H.P. Power Transmission Corpn. Ltd.
Barowalia House, Khalini, Shimla-2

086

(40)

HP POWER TRANSMISSION CORPORATION LIMITED
BAROWALIAS HOUSE, KHALINI, SHIMLA - 171002

AWARD No.: HPPTCL / DGMC / L & T SUPPLY / 2010 -

DATED:

NAME OF WORK: CONSTRUCTION OF 33 / 220 KV SUB STATION AT PALCHAN
IN KULLU DISTRICT

DATA REQUIREMENT SHEET - B4

EARTHING SWITCH 220 KV

Sr. No.	PARAMETER	UNIT	
1	Type		AREVA T&D
2	Reference Standard		IEC
3	Service		Indoor
4	Poles		Three Pole Gang Operated
5	RATING		
5.1	Rated Short Circuit Current for 3 sec	kArms	50
5.2	Peak Short Circuit Current	kApeak	125
6	Operating Mechanism		MOTORISED
7	Mounting		HORIZONTAL / VERTICAL
8	Torque required to operate the Gang Operated Earthing Switch.	kg.m	At Engineering Stage
9	AUXILIARY CONTACTS		
9.1	Number of Contacts furnished		
a)	Normally Open	No.	4
b)	Normally Closed	No.	4
9.2	Convertible or Fixed		FIXED
9.3	Contact rating at		220 V, D. C.
a)	Make and Continuous	Ampere	15
b)	Break (Inductive)	Ampere	2
10	Type of Interlock furnished		At Engineering Stage
11	Weight of the Earthing Switch		



HL
Dy. General Manager (Contracts)
H.P. Power Transmission Corpn. Ltd.
Barowalia House, Khalini, Shimla-2
Larsen - B4 - 1

SHEET – B6

EARTHING SWITCH

33 kV

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Hm

Dy. General Manager (Contracts)
H.P. Power Transmission Corpn. Ltd.
Barowalia House, Khalini, Shimla-2

088

HIMACHAL PRADESH POWER TRANSMISSION CORPORATION LIMITED
BAROWALIAS HOUSE, KHALINI, SHIMLA - 171002

AWARD No.: HPPTCL / DGMC / L & T SUPPLY / 2010 -

DATED:

NAME OF WORK: CONSTRUCTION OF 33 / 220 KV SUB STATION AT PALCHAN
IN KULLU DISTRICT

DATA REQUIREMENT SHEET - B6

EARTHING SWITCH 33 kv

Sr. No.	PARAMETER	UNIT	
1	Type		UX2TE (Part of Isolator)
2	Reference Standard		IEC
3	Service		Indoor
4	Poles		Three Pole Gang Operated
5	RATING		
5.1	Rated Short Circuit Current for 3 sec	kArms	40
5.2	Peak Short Circuit Current	kApeak	100
6	Operating Mechanism		Motor Drive with Manual Emergency Operation
7	Mounting		In Bus Bar Compartment
8	Torque required to operate the Gang Operated Earthing Switch	kg.m	
9	AUXILIARY CONTACTS		
9.1	Number of Contacts furnished		
	a) Normally Open	No.	5
	b) Normally Closed	No.	5
9.2	Convertible or Fixed		FIXED
9.3	Contact rating at		220 V, D. C.
	a) Make and Continuous	Ampere	NA
	b) Break (Inductive)	Ampere	NA
10	Type of Interlock furnished		Electrical & Mechanical
11	Weight of the Earthing Switch		NA



Hm
Dy. General Manager (Contracts)
H.P. Power Transmission Corpn. Ltd.
Barowalia House, Khalini, Shimla-2

Larsen - B6 - 1

SHEET – C1

CURRENT TRANSFORMER

220 kV



[Signature]
Dy. General Manager (Construction)
H.P. Power Transmission Corp.
Barowalia House, Khalini, Shimla

HP POWER TRANSMISSION CORPORATION LIMITED
BAROWALIAS HOUSE, KHALINI, SHIMLA - 171002

AWARD No.: HPPTCL / DGMC / L & T SUPPLY / 2010 -

DATED:

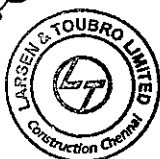
NAME OF WORK : CONSTRUCTION OF 33 / 220 KV SUB STATION AT PALCHAN
IN KULLU DISTRICT

DATA REQUIREMENT SHEET - C1

CURRENT TRANSFORMER 220 KV

Sr. No.	PARAMETER	UNIT	
1	Make		AREVA T & D INDIA LTD.
2	Type		B105
3	Reference Standard		IEC
4	Service		
5	Rated Frequency	Hz	50
6	Rated Voltage Class	kV	245
7	INSULATION LEVEL		
	7.1 1 Minute 50 Hz Withstand Voltage	kVrms	460
	7.2 Lightning Impulse Withstand Voltage	kVpeak	1050
8	SHORT TIME CURRENT		
	8.1 1 second Current	kArms	50
	8.2 Dynamic Current	kApeak	125
9	Insulation Class		At Engineering Stage
10	Maximum Temperature Rise over 50 °C	°C	As per IEC
11	Creepage Distance	mm	NA
12	Approximate Dimension (L x B x H)	mm	At Engineering Stage
13	Approximate Weight	kg	At Engineering Stage

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[Signature]
Dy. General Manager (Contracts)
H.P. Power Transmission Corpn. Ltd.
Barowalia House, Khalini, Shimla-2

Larsen - C1 - 1

243

SHEET — C3

CURRENT TRANSFORMER

33 kV

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[Signature]
Dy. General Manager (Contracts)
H.P. Power Transmission Corpn. Ltd.
Barowalia House, Khalini, Shimla-2

092

HO POWER TRANSMISSION CORPORATION LIMITED
BAROWALIAS HOUSE, KHALINI, SHIMLA - 171002

AWARD No.: HPPTCL / DGMC / L & T SUPPLY / 2010 -

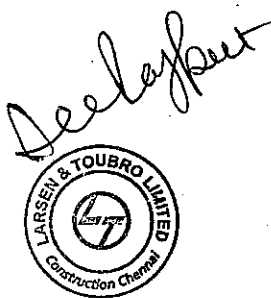
DATED:

NAME OF WORK: CONSTRUCTION OF 33 / 220 KV SUB STATION AT PALCHAN
IN KULLU DISTRICT

DATA REQUIREMENT SHEET - C3

CURRENT TRANSFORMER 33 KV

Sr. No.	PARAMETER	UNIT	
1	Make		RITZ
2	Type		ASG
3	Reference Standard		IEC
4	Service		
5	Rated Frequency	Hz	50
6	Rated Voltage Class	kV	36
7	INSULATION LEVEL		
	7.1 1 Minute 50 Hz Withstand Voltage	kVrms	36
	7.2 Lightning Impulse Withstand Voltage	kVpeak	170
8	SHORT TIME CURRENNT		
	8.1 1 second Current	kArms	40
	8.2 Dynamic Current	kApeak	100
9	Insulation Class		E or Better
10	Maximum Temperature Rise over 50 ° C	° C	NA
11	Creepage Distance	mm	
12	Approximate Dimension (L x B x H)	mm	At Engineering Stage
13	Approximate Weight	kg	Max. 55
14	C-T Ratio		



[Signature]
By, General Manager (Contracts)
H.P. Power Transmission Corpn. Ltd.
Barowalia House, Khalini, Shimla-2
Larsen - C3 - 1

SHEET – D1

CAPACITOR VOLTAGE

TRANSFORMER

220 kV

See layout



[Signature]
Dy. General Manager (Contracts)
H.P. Power Transmission Corpn. Ltd.
Bawalalia House, Khalini, Shimla-2

48

HO POWER TRANSMISSION CORPORATION LIMITED
BAROWALIAS HOUSE, KHALINI, SHIMLA - 171002

AWARD No.: HPPTCL / DGMC / L & T SUPPLY / 2010 -

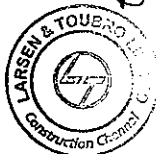
DATED:

NAME CONSTRUCTION OF 33 / 220 KV SUB STATION AT PALCHAN
OF WORK : IN KULLU DISTRICT

DATA REQUIREMENT SHEET - D1

CAPACITOR VOLTAGE TRANSFORMER 220 KV

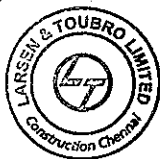
Sr. No.	PARAMETER	UNIT	
1.1	Make		AREVA T & D INDIA LTD
1.2	Type		CCV - 245
1.3	Reference Standard		IEC - 60358 / 60044 - 5
1.4	Nominal / Highest System Voltage	kV	220 / 245
1.5	Number of Secondaries	No.	3
1.6	Rated Frequency	Hz.	50
1.7	Rated Power Factor		0.8
1.8	Class of Winding Insulation		A
1.9	Maximum Winding Temperature over Ambient of 50 °C at 110 % Excitation and Rated Burden		within Limits as per IEC - 60044 - 5
1.10	Rated Capacitance	PF	8800, + 10 %; - 5 % -
1.11	High Frequency Range		- 20 % to + 50 % of 8800 PF
1.12	Rated Output of each Secondary Winding	VA	50
1.13	Accuracy Class		0.2 / 3P / 3P
1.14	Rated Thermal Burden	VA	500
1.15	Rated Voltage Factor		
	a)	Continuous	1.2
	b)	5 seconds	NA
	c)	30 seconds	1.5



[Signature]
Dy. General Manager (Contracts)
H.P. Power Transmission Corpn. Ltd. Larsen - D1 - 1
Barowalia House, Khalini, Shimla-2

Sr. No.	PARAMETER	UNIT	
1.16	Capacitance		
a)	of High Voltage Capacitor	PF	9670, + 10 %; - 5 %
b)	of Intermediate Voltage Capacitor		105540, + 10 %; - 5 %
c)	for Carrier Frequency Coupling		8800, + 10 %; - 5 %
1.17	Natural Frequency of Coupling	kHz	> 500
	Self Tuning Frequency of CVT (Capacitor Part only)	kHz	> 500
1.18	Band Width	kHz	40 - 500
1.19	One Minute Power Frequency Test Voltage of		
a)	Secondary Winding	kVrms	3
b)	H. F. Terminal	kVrms	4
c)	Capacitor (Dry & Wet)	kVrms	460
1.20	1.2 / 50 micro sec Impulse Voltage Withstand	kVpeak	1050
1.21	Corona Extinction Voltage		> 156
1.22	Radio Interference Voltage at		
a)	0.5 MHz	μV	$\leq 2,500$
b)	1.0 MHz	μV	$\leq 2,500$
c)	1.5 MHz	μV	$\leq 2,500$
d)	2.0 MHz	μV	$\leq 2,500$

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HS
 Dy. General Manager (Contracts)
 H.P. Power Transmission Corpn. Ltd.
 Barowalia House, Khalini, Shimla-2

Larsen - D1 - 2

SHEET – E1

LIGHTNING ARRESTOR

220 kV

See Report



[Signature]
Dy. General Manager (Contracts)
H.P. Power Transmission Corpn. Ltd.
Barowalia House, Khalini, Shimla-2

50

HP POWER TRANSMISSION CORPORATION LIMITED
BAROWALIAS HOUSE, KHALINI, SHIMLA - 171002

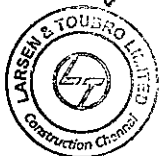
AWARD No.: HPPTCL / DGMC / L & T SUPPLY / 2010 -
DATED:

NAME CONSTRUCTION OF 33 / 220 KV SUB STATION AT PALCHAN
OF WORK: IN KULLU DISTRICT

DATA REQUIREMENT SHEET - E1

LIGHTNING ARRESTOR 220 KV

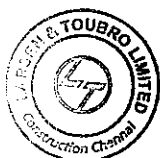
Sr. No.	PARAMETER	UNIT	
1	A		LIGHTNING ARRESTOR
1.1	Make		TOSHIBA
1.2	Type		PSB 216
1.3	Reference Standard		IEC
1.4	Rated Arrestor Voltage	kV	216
1.5	Arrestor Class		4
1.6	Rated Frequency	Hz.	50
1.7	Maximum Continuous Operating Voltage (MCOV)	kV	172
1.8	MCOV including Harmonics / Commutation Overshoots		At Engineering Stage
1.9	Maximum Leakage Current		
	1) At MCOV 2) At 110 % MCOV 3) At 150 % MCOV		
1.10	Reference Voltage of the Arrestor at specified Ambient Temperature of 50 °C	kV	216
1.11	Reference Current at which above Reference Voltage is defined	kA	20



[Signature]
Dy. General Manager (Contracts)
H.P. Power Transmission Corpn. Ltd.
Barowalia House, Khalini, Shimla-2

Larsen - E1 - 1

Sr. No.	PARAMETER	UNIT	
1.12	Temporary Power Frequency Over Voltage (TOV) is defined 1) for 0.06 secs 2) for 0.10 secs 3) for 1.0 secs 4) for 10.0 secs		At Engineering Stage
1.13	Graphs enclosed for TOV Withstand Capability		At Engineering Stage
1.14	Nominal Discharge Current (8 / 20 μ s Wave Shape)	kA	20
1.15	Power Frequency Over Voltage Withstand Capability	kV	460
1.16	Maximum Front of Wave Protective Level at 20 kAp Impulse Current of 0.5 / 1.5 μ s Wave Shape)	kV	568 (Steep Current Impulse at 20 kA, Front Time 1 / 2 μ s)
1.17	Maximum Lightning Impulse Protective Level at 8 / 20 μ s Wave Shape for following Currents 1) 5 kAp 2) 10 kAp 3) 20 kAp	kV kV kV	499 525
1.18	Graphs for Discharge Characteristics		At Engineering Stage
1.19	Maximum Energy as per Long Duration Discharge Class of IEC (cumulative of 3 successive Operation)		At Engineering Stage
1.20	Maximum Energy Dissipation Capability in Single Discharge of complete Arrestor	kJ / kV	9.6 (Min. Discharge Capability)
1.21	Number of Series Units in complete Arrestor		At Engineering Stage
1.22	Number of Parallel Units in complete Arrestor		
1.23	Number of Parallel Columns in complete Arrestor		
1.24	Method of Sealing the complete Arrestor Unit		
1.25	Pressure Relief Device provided		



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[Signature]
 Dy. General Manager (Contracts)
 H.P. Power Transmission Corpn. Ltd.
 Barowalia House, Khalini, Shimla-2
 Larsen - E1 - 2

Sr. No.	PARAMETER	UNIT	
1.26	High Current Pressure Relief Current	kAp	NA
1.27	Prospective Symmetrical Fault Current employed for Pressure Relief Test	kA	NA
1.28	Duration of Flow of Fault Current during Pressure Relief Test	sec	
1.29	Maximum Radio Interference at 50 Hz.		NA
	a) At 1.05 Times MCOV		
	b) At 1.25 Times MCOV		
1.30	Minimum Recommended Spacing between Arrestor Phase to Phase	mm	NA
1.31	Minimum Recommended Spacing of the Arrestor from the Earthed Object	mm	NA
1.32	Surge Counter's Minimum Counting Current at 8 / 20 μ s Wave Shape Current	}	At Engineering Stage
1.33	Degree of Protection for Discharge Counter / Leakage Current Meter		
1.34	Maximum Permissible Distance for Installation of Surge Counter from LA		
1.35	Whether Corona Ring provided		NA
2 B	ARRESTOR HOUSING		
2.1	Impulse Withstand Voltage (1.2 / 50 μ s Wave)	kVpeak	As per IEC
2.2	Switching Impulse Withstand Voltage	kVpeak	NA
2.3	Power Frequency Withstand Voltage		
	1) One Minute Dry	kVpeak	460
	2) One Minute Wet	kVpeak	
2.4	Total Creepage Distance	mm	NA
2.5	Maximum Cantilever Strength of complete Arrestor		NA
2.6	Total Height of Arrestor	mm	At Engineering Stage
2.7	Weight of complete Arrestor	kg	At Engineering Stage



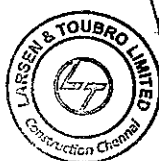
Handwritten signature
 Dy. General Manager (Contracto)
 H.P. Power Transmission Corpn. Ltd.
 Barowalia House, Khalini, Shimla-2

Larsen - E1 - 3

SHEET – E3

LIGHTNING ARRESTOR

33 kV



As per

HS
Dy. General Manager (Contracts)
H.P. Power Transmission Corpn. Ltd.
Barowalia House, Khalini, Shimla-2

HP POWER TRANSMISSION CORPORATION LIMITED
BAROWALIAS HOUSE, KHALINI, SHIMLA - 171002

AWARD No.: HPPTCL / DGMC / L & T SUPPLY / 2010 -

DATED:

NAME CONSTRUCTION OF 33 / 220 KV SUB STATION AT PALCHAN
OF WORK: IN KULLU DISTRICT

DATA REQUIREMENT SHEET - E3

LIGHTNING ARRESTOR 33 KV

Sr. No.	PARAMETER	UNIT	
---------	-----------	------	--

1 A LIGHTNING ARRESTOR

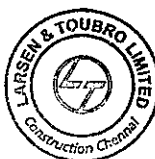
1.1	Make		ABB LIMITED
1.2	Type		POLIM D 26 PI 2
1.3	Reference Standard		IEC
1.4	Rated Arrestor Voltage	kV	32
1.5	Arrestor Class		1
1.6	Rated Frequency	Hz.	50
1.7	Maximum Continuous Operating Voltage (MCOV)	kV	26 at 40 degree Centigrade
1.8	MCOV including Harmonics / Commutation Overshoots		26 at 40 degree Centigrade
1.9	Maximum Leakage Current		NA
	1) At MCOV		
	2) At 110 % MCOV		
	3) At 150 % MCOV		
1.10	Reference Voltage of the Arrestor at specified Ambient Temperature of 50 °C	kV	NA
1.11	Reference Current at which above Reference Voltage is defined	KA	NA
1.12	Temporary Power Frequency Over Voltage (TOV) is defined		At Engineering Stage
	1) for 0.06 secs		



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[Signature]
Dy. General Manager (Construction)
H.P. Power Transmission Corp., Ltd.
Barowalia House, Khalini, Shimla - Larsen - E3 - 1

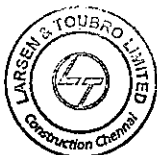
Sr. No.	PARAMETER	UNIT	
	2) for 0.10 secs		
	3) for 1.0 secs		
	4) for 10.0 secs		
1.13	Graphs enclosed for TOV Withstand Capability		At Engineering Stage
1.14	Nominal Discharge Current (8 / 20 μ s Wave Shape)	kA	10
1.15	Power Frequency Over Voltage Withstand Capability	kV	NA
1.16	Maximum Front of Wave Protective Level at 20 kAp Impulse Current of 0.5 / 1.5 μ s Wave Shape)	kV	
1.17	Maximum Lightning Impulse Protective Level at 8 / 20 μ s Wave Shape for following Currents		
	1) 2.5 kAp	kV	80.3
	2) 10 kAp	kV	93
	3) 20 kAp	kV	103.1
1.18	Graphs for Discharge Characteristics		At Engineering Stage
1.19	Maximum Energy as per Long Duration Discharge Class of IEC (cumulative of 3 successive Operation)		CLASS - 1
1.20	Maximum Energy Dissipation Capability in Single Discharge of complete Arrestor	kJ / kV	2.6 for One Current Impulse of 65 kA
1.21	Number of Series Units in complete Arrestor		One
1.22	Number of Parallel Units in complete Arrestor		One
1.23	Number of Parallel Columns in complete Arrestor		One
1.24	Method of Sealing the complete Arrestor Unit		As per ABB Standard
1.25	Pressure Relief Device provided		NA
1.26	High Current Pressure Relief Current	kAp	16 / 0.2 sec
1.27	Prospective Symmetrical Fault Current employed for Pressure Relief Test	kA	NA



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Sr. No.	PARAMETER	UNIT	
1.28	Duration of Flow of Fault Current during Pressure Relief Test	sec	NA
1.29	Maximum Radio Interference at 50 Hz.		NA
	a) At 1.05 Times MCOV		
	b) At 1.25 Times MCOV		
1.30	Minimum Recommended Spacing between Arrestor Phase to Phase	mm	As per IE Rule
1.31	Minimum Recommended Spacing of the Arrestor from the Earthed Object	mm	As per IE Rule
1.32	Surge Counter's Minimum Counting Current at 8 / 20 μ s Wave Shape Current		NA
1.33	Degree of Protection for Discharge Counter / Leakage Current Meter		NA
1.34	Maximum Permissible Distance for Installation of Surge Counter from LA		NA
1.35	Whether Corona Ring provided		NA
2 B	ARRESTOR HOUSING		
2.1	Impulse Withstand Voltage (1.2 / 50 μ s Wave)	kVpeak	NA
2.2	Switching Impulse Withstand Voltage	kVpeak	NA
2.3	Power Frequency Withstand Voltage		
	1) One Minute Dry	kVpeak	NA
	2) One Minute Wet	kVpeak	
2.4	Total Creepage Distance	mm	NA
2.5	Maximum Cantilever Strength of complete Arrestor		NA
2.6	Total Height of Arrestor	mm	633
2.7	Weight of complete Arrestor	kg	6.5



See layout

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Larsen - E3 - 3

SHEET – F1

PLCC EQUIPMENT AND

WAVE TRAP

220 kV

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Dy. General Manager (Contracts)
P.T. Power Transmission Corpn. Ltd.
Barowalia House, Khalini, Shimla-2

HP POWER TRANSMISSION CORPORATION LIMITED
BAROWALIAS HOUSE, KHALINI, SHIMLA - 171002

AWARD No.: HPPTCL / DGMC / L & T SUPPLY / 2010 -

DATED:

NAME OF WORK: CONSTRUCTION OF 33 / 220 KV SUB STATION AT PALCHAN
IN KULLU DISTRICT

DATA REQUIREMENT SHEET - F1

PLCC EQUIPMENT AND WAVE TRAP 220 KV

Sr. No.	PARAMETER	UNIT	
1 A	COUPLING DEVICE		
1.1	Make		ABB LIMITED
1.2	Type, Model		MCD 80
1.3	Suitable Matching Transformer provided		Yes
1.4	Nominal Primary Side Impedance	ohms	180 - 300 for Bundle Conductor 240 - 400 for Single Conductor (Typically Set at 320 ohm)
1.5	Nominal Secondary Side Impedance	ohms	75 /125 Unbalanced
1.6	Rated Current at Carrier Frequency	Amp. rms	1.5
1.7	Rate Voltage at Carrier Frequency		Impulse (1.2 / 50 microsec) Withstand Level between Primary Terminal and Secondary Terminals of Coupling Device = 10 kVpeak
1.8	Range of Capacitance of the Coupling Capacitor to which Line Matching Units are suitable	pF	1,500 to 13,000
1.9	Frequency Response of the Unit		72 - 500 kHz for CC value of 6,600 pF
1.10	Operating Attenuation	mm	< 2 dB (including CC)



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H.P. Power Transmission Corp. Ltd. Larsen - F1 - 1
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Sr. No.	PARAMETER	UNIT	
1.11	Whether Impedance Matching Units have provision for matching either Phase to Phase or Phase to Earth Coupling	YES / NO	YES
1.12	Pass Band Range	kHz	Depends on Carrier Frequency approval Typical Band is 128 - 500 kHz
1.13	Insertion Loss in Pass Band Range		
1)	Coupling Unit	dB	2 dB Max (incl. matching Transformer)
2)	Matching Transformer	dB	1 maximum
1.14	Frequency Range		Depends on Capacitance value of CC
1.15	Maximum Composite Loss	dB	2 dB (inclusive CC)
1.16	Return Loss	dB	Not less than 12 dB
1.17	Test Voltage of Transformer	kVrms	10
1.18	Withstand Voltage between Primary & Secondary Winding or Ground Terminal	kVrms	10
1.19	Discharge Voltage and Protection Device		50 Hz Spark - Over Voltage: 1.3kV
1.20	Details of Mounting of the Units		Coupling Devices housed in Lockable Polyester Box reinforced with Glass Fibre Mats which is mounted on Pedestal for CC
1.21	1 Minute Power Frequency Insulation Level Primary & Secondary Terminal Coupling Device	kVrms	10
1.22	Impulse (1.2 / 50 μ s Wave) Withstand Level & Secondary Terminals of Coupling Device		10 kV peak
1.23	Drainage Coil		
a)	Inductance		0.7 mH $\pm$ 30 % (Depending upon Capacitance value of CC)
b)	Rated Current	Ampere	1.5
c)	Maximum Current	Ampere	$\leq$ 50 for 0.2 sec



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 Barowalia House, Khalini, Shimla-2

Larsen - F1 - 2

Sr. No.	PARAMETER	UNIT	
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1.24 Lightning Arrester

1) on Primary Side of Coupling Device

a) Type		RV 0.66 ABB Make
b) Power Frequency Spark Over Voltage	Vrms	1,300
c) Maximum Permissible Arrester Discharge Current with 8 / 20 micro sec Impulse Discharge	kA	5
d) Maximum Permissible Short Time Current (2.2 micro sec)	kApeak	30

2) on Secondary Side of the Coupling Device

a)		Voltage Arrester is not used in Secondary side, as use of Voltage Arrester in Secondary side of Coupling Device is not recommended
b) Power Frequency Spark Over		NA.

1.25	Ground Switch Rated Voltage	kV	10
------	-----------------------------	----	----

2 B HF COAXIAL CABLE

2.1	Type		HF Co - axial Cable
2.2	Characteristic Impedance to match Carrier Terminal Output Impedance	ohm	75 Unbalanced
2.3	Capacitance	pF / m	53
2.4	Attenuation of Cable at various Carrier Frequencies: -		
a)	At 10 kHz	dB / km	0.8
b)	At 60 kHz	dB / km	1.8
c)	At 300 kHz	dB / km	3.3
d)	At 500 kHz	dB / km	4.7
2.5	Conductor Diameter	mm	5.30
2.6	Dielectric Material		Polythene String & extruded with Polythene Tube
2.7	Shielding		Braid of tinned Copper (Electrolytic Grade) Wire of 0.20 mm diameter with 980 % coverage



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 Barowalia House, Khalini, Shimla-2

Sr. No.	PARAMETER	UNIT	
2.8	Details of Protective Armouring		Single Braid of 0.30 mm G. I. Wire with 70 % coverage
2.9	Test Voltage (Center Core to Shielding)	kVrms	4.5
2.10	Withstand Voltage	kV	4
2.11	Detail of construction of Cable		Center Conductor wrapped with Polythene String & extruded over with Polythene Tube. Radial Thickness: 1.00 mm
2.12	Loop Resistance at 20 ° C	ohm / km	30
2.13	Overall Diameter of the Cable	mm	13.00
2.14	Number & Diameter of Standard Conductor		1 / 1.22 mm $\pm$ 0.03 mm
2.15	Minimum Bending Radius	mm	150.00
3	LINE TRAP - 3150 A / 1.0 mH		
3.1	Type		Air Cooled Epoxy Impregnated
3.2	System Voltage Rating	kV	220
3.3	Continuous Current Rating at Ambient Temperature of 50 ° C	Ampere	3,150
3.4	Whether Tuning Devices provided	YES / NO	YES
3.5	Rated Short Time Current for 1.0 sec	kA	50
3.6	Asymmetrical Peak Value of first half Wave of Rated Short Time Current	kApeak	127.5
3.7	Minimum Guaranteed Resistive Component over Blocking Range	ohm	570
3.8	Continuous Current Rating at Line Trap Temperature of 65 ° C	Ampere	2,750
3.9	Rated Inductance	mH	1.0
3.10	Blocking Range		50 - 90 kHz 90 - 500 kHz
3.11	Type of Tuning		Broad Band
3.12	Variation in 50 Hz Impedance per Degree Centigrade variation in Ambient Temperature		Negligible
3.13	Variation in Resonant Frequency Band per Degree Centigrade variation in Ambient Temperature		Negligible



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I.P. Power Transmission Corpn. Ltd. Larsen - F1 - 4
Barowalia House, Khalini, Shimla-2

Sr. No.	PARAMETER	UNIT	
3.14	Detail of Protection of Capacitors and Coils against Voltage Surges. Type of Protective Device		Lightning Arrestor provided Non Linear Resistor Type Raychem Make HAD 15 NFF
3.15	Basic Insulation Level	kV	70
3.16	Standard Nominal Discharge Current of Protective Device for 8 / 20 microsec Wave Impulse	kA	10
3.17	Rated Voltage of Arrestor (Protective Device)	kVrms	18
3.18	Maximum Residual Discharge Voltage for 8 / 20 microsec Wave		
	a) At 5,000 Amperes	kV	40
	b) At 10,000 Amperes	kV	50
3.19	Class of Insulation of Line Trap under Rated Continuous Current		F
3.20	Temperature Rise in Line Trap under Rated Continuous Current		Within 115 ° C
3.21	Visual Corona Extinction Voltage	Volt	> 580
3.22	Radio Interference Voltage		< 500 Micro Volt at 510 kV
3.23	Type of Incoming & Outgoing Terminals		Aluminium Flat Pad
3.24	Visual Corona Extinction Voltage for Terminal Connector		> 580
3.25	Radio Interference Voltage for Terminal Connector		< 500 Micro Volt at 510 kV
3.26	Temperature Rise in Terminal Connector at 50 ° C Ambient	° C	35
3.27	Type of Mounting		Pedestal
3.28	Ultimate Tensile Strength	N	> Twice the Weight of Line Trap + 5,000 N
3.29	Material of Main Coil		Aluminium
3.30	Material of Terminal Connector		Aluminium Alloy
3.31	Material of Pedestal		Aluminium
3.32	Material of Mounting Hardware		Aluminium, Non Magnetic Stainless Steel & MCI
3.33	Net weight	kg	2,000
3.34	Whether Corona Rings provided	YES / NO	Corona Bells provided
3.35	whether Bird Barrier provided	YES / NO	YES



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M.P. Power Transmission Corp. Ltd.
Barowalia House, Khalini, Shimla-2
Larsen - F1 - 5

Sr. No.	PARAMETER	UNIT	
3.36	Overall Dimension provided		
a)	Diameter	mm	2,218
b)	Height	mm	1,655
3.37	Number of Turns in Line Trap Main Coil		First Winding: 37.5 Second Winding: 30 Third Winding: 26.5 Fourth Winding: 25.5
3.38	Overall Conductor Size		1. WI: 61 Strands each of 3.31 mm Diameter 2. WII - IV: 37 Strands each of 2.43 mm Diameter Four Layer Winding Air Cooled / Epoxy impregnated Fibreglass encapsulated design
3.39	Type of Construction (No. of Coils & whether Open Type or Covered with insulating Material)		



Hm
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H.P. Power Transmission Corpn. Ltd.
Barowalia House, Khalini, Shimla-2

SHEET – H

BATTERY & BATTERY

CHARGER




By, General Manager (Contracts)
H.P. Power Transmission Corpn. Ltd.
Barowalia House, Khalini, Shimla-2

HP POWER TRANSMISSION CORPORATION LIMITED
BAROWALIAS HOUSE, KHALINI, SHIMLA - 171002

AWARD No.: HPPTCL / DGMC / L & T SUPPLY / 2010 -

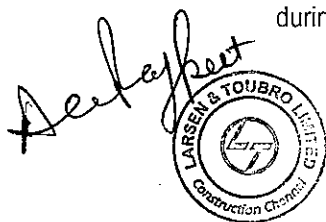
DATED:

NAME CONSTRUCTION OF 33 / 220 KV SUB STATION AT PALCHAN
OF WORK : IN KULLU DISTRICT

DATA REQUIREMENT SHEET - H

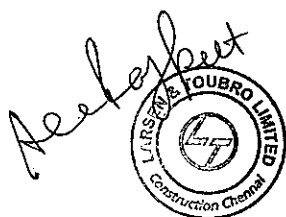
BATTERY & BATTERY CHARGER

Sr. No.	PARAMETER	UNIT	48 V; 400 AH	220 V; 400 AH
A.	BATTERY			
1	GENERAL			
1.1	Make		HBL / Amarraraja / Exide	
1.2	Catalogue Number		As per Manufacturer Standard	
1.3	Type		Tubular Low Maintenance Lead Acid	
1.4	Reference Standard		IS 1651:1991	
2	RATING			
2.1	Rated Voltage	Volt	48	220
2.2	5 hour Rating at 27 °C to 1.1 Volt per Cell	AH	As per Technical Specification	
2.3	1 hour Discharge Rate to 1.1 Volt per Cell	Amp	325 A to 1.75 ECV	225 A to 1.75 ECV
2.4	1 minute Discharge Rate to 1.1 Volt per Cell	Amp	928 A to 1.7 ECV	642 A to 1.7 ECV
3	PERFORMANCE			
3.1	Required Duty Cycle		During Detailed Engineering	
3.2	Is the Battery furnished meets Duty Cycle	Yes / No	Yes	
3.3	Cell Voltage Characteristics during Duty furnished ?	Yes / No	No	



[Signature]
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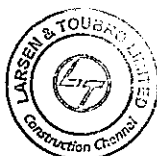
Sr. No.	PARAMETER	UNIT	48 V; 400 AH	220 V; 400 AH
3.4	Minimum Cell Voltage during Duty Cycle	Volt	1.85 / Cell	
3.5	AH Efficiency at 5 hour Discharge Rate	%	> 90 %	
3.6	Expected Life of Battery	hr.	15 years in Float applications at 27 degree Centigrade	
4	BATTERY CHARACTERSTICS			
4.1	Recommended Charging Rate for		Volt / Cell	Ampere
a.	Float Charging		2.15 to 2.20 Volts per Cell at 27 ° C During Detailed Engineering	
b.	Equalizing Charge			
c.	Boost Charging in 10 hrs. Start			
	Finish		40 Amperes till Cell Voltage reaches 2.4 Volt / Cell.	20 Amperes till Cell Voltage reaches 2.60 - 2.75 Volt / Cell.
4.2	Recommend Specific Gravity at 27 °C			
a)	For First Filling		1.18 ± 0.005	
b)	At Full Charge		1.20 ± 0.005	
c)	At end of 5 hour Discharge		1.12 (approx)	
4.3	Short Circuit Current for a Dead - Short across Battery Terminals when:			
a)	Float Charge at Rated Volt / Cell		2.41 kA	1.67 kA
b)	Boost Charge at Rated Volt / Cell		2.92 kA	2.02 kA
4.4	Battery Internal Resistance	ohm		220 V : 0.138
5	CELLS			
5.1	Number of Cells per Battery		24	110
5.2	Type of the Cell		Tubular Lead Acid NDP type	
5.3	Cell Designation as per I.S.		T 400 P	
5.4	Material of the Battery Container		Poly Propylene	
5.5	Overall Dimension of each Cell (L x W x H)	mm	252 ± 10 x 173 ± 10 x 467 ± 10	




 Dy. General Manager (Contracts)
 H.P. Power Transmission Corpn. Ltd.
 Barowalia House, Khalini, Shimla-2

Larsen - H - 2

Sr. No.	PARAMETER	UNIT	48 V; 400 AH	220 V; 400 AH
5.6	Weight of Complete Cell			
a)	Without Electrolyte	kg	18.6 ± 5 %	
b)	With Electrolyte	kg	32 ± 5 %	
5.7	Internal Resistance of Cell	ohm	0.00083	0.0012
6	INTER CELL CONNECTOR			
6.1	Inter Cell Connector furnished ?		Yes	
6.2	Type of Inter Cell Connector		Bolted	
	Bolted / Burned			
6.3	Material of Inter Cell Connector		Lead Plated Copper	
7	PLATES			
7.1	Number of Positive Plates per Cell		During Detailed Engineering	
7.2	Type of Positive Plate		Tubular	
7.3	Type of Negative Plate		Flat Pasted	
8	SEPARATOR			
8.1	Type		Envelope	
8.2	Material		Sintered micro Porous Poly ethylene ribbed separator	
8.3	Thickness	mm	1.25	
9	ELECTROLYTE			
9.1	Amount of Electrolyte for First Filling			
a)	Per Cell	Litre	20.4	10.8
b)	Per Set	Litre	489.6 (approx)	1188 (approx)
9.2	First Filling with 10 % extra furnished ?		Yes	
9.3	Electrolyte conform to		IS: 266	
10	RACKS			
10.1	Number of Racks per Battery		2	4
10.2	Number of Cells per Rack		12	14
10.3	Type of Racks	Rows / Tiers	Single Tier	Double Row Double Tire
10.4	Material of Rack		Wooden rack	



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Sr. No.	PARAMETER	UNIT	48 V; 400 AH	220 V; 400 AH
10.5	Racks provided with			
a)	Numbering Tags for Cells		Cell stickers shall be provided	
b)	Teakwood Clamps for Cables		No	
10.6	Insulator with 5 % extra furnished for			
a)	Cell	Yes / No	YES	
b)	Stand	Yes / No	YES	
10.7	Inter Row, Inter Tier Connectors and End Take - Off furnished ?	Yes / No	YES	
10.8	Connection Hardware with 5 % extra furnished	Yes / No	YES	
11	DIMENSIONS AND WEIGHTS			
11.1	Overall Dimension (L x B x H)	mm	During Detailed Engineering	
11.2	Approximate Weight	kg	During Detailed Engineering	
11.3	Battery Layout Drawing furnished ?		YES	
12	Ventilation requirements			
13	Accessories furnished with each Battery		As per BS: 6133	

B.

1 BATTERY CHARGER

1.1 GENERAL

1.2 Make

1.3 Catalogue Number

1.4 Type

DU: FC: FCBC

DU: FC: FCBC

48 V 60 + 60 A

220 V 60 + 60 A

2

Reference Standard

a) A. C. INPUT VOLTAGE

Volt

415

b) Voltage % Variation

± 10

c) Number of Phase

Hz

3

2.2 Frequency % Variation

± 3

D. C. OUTPUT

a) Voltage

Volt / Cell

2

b) Current

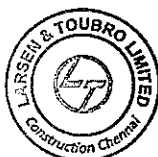
Ampere

60

60

2.3 Type of Cooling

Natural Air Cooling



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H.P. Power Transmission Corpn. Ltd.
Barowalia House, Khalini, Shimla-2

Larsen - H - 4

Sr. No.	PARAMETER	UNIT	48 V; 400 AH	220 V; 400 AH
2.4	Maximum Temperature within Cubicle above 45 °C Ambient			
a)	Rectifier Transformer	°C	95	
b)	SCR	°C	95	
3	PERFORMANCE			
3.1	Regulation for 0-100 % Rated Load with 10 % Input Voltage and 5 % Input Frequency Variation	%	plus or minus 1%	
3.2	Ripple Content in D. C. Output			
a)	With Battery	%	< 1 rms	
b)	Without Battery	%	< 2 rms	
3.3	Guaranteed Efficiency at Rated Load	%	75	
3.4	Power Factor at Rated Load	%	0.8	
4	MISCELLANEOUS			
4.1	CHARGER provided with following			
a)	Automatic Voltage Regulation		Provided	
b)	Current Limiting Circuitry		Provided	
c)	Smoothing Filter Circuit		Provided	
d)	Soft - Start Feature		Provided	
e)	Is Manual Operation Permissible		YES	
4.2	SCR Elements provided with			
a)	Surge Protection		Provided	
b)	Fast acting HRC Fuse		Provided	
5	A. C. SWITCH			
5.1	Make	Ampere	During Detailed Engineering	
5.2	Type / Catalogue Number			
5.3	Reference Standard			
5.4	Rated Current			
6	A. C. FUSE			
6.1	Make	Ampere	During Detailed Engineering	
6.2	Type / Catalogue Number			
6.3	Reference Standard			
6.4	Current Rating			
a)	Continuous	Ampere		
b)	Interrupting	kA		



See layout

[Signature]
 Dy. General Manager (Contracts)
 T.P.C. Power Transmission Corpn. Ltd.
 Dabawalia House, Khalini, Shimla-2
 Larsen - H - 5

Sr. No.	PARAMETER	UNIT	48 V; 400 AH	220 V; 400 AH
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7 A. C. CONTACTOR

7.1	Make		Reputed Make	
7.2	Type / Catalogue Number			
7.3	Reference Standard			
7.4	Rated Current	Ampere	60	85
7.5	Utilization Category		AC3 Duty	
7.6	Thermal Overload with in - built Single Phase Preventor provided ?		YES	

8 RECTIFIER TRANSFORMER

8.1	Make		During Detailed Engineering	
8.2	Type / Catalogue Number			
8.3	Reference Standard			
8.4	Ratings			
	a) kVA			
	b) Voltage			
	c) % Reactance			
8.5	Class of Insulation			
8.6	Method of Cooling			

9 CONTROLLED RECTIFIER (SCR)

9.1	Make		Reputed Make	
9.2	Type / Catalogue Number			
9.3	Reference Standard			
9.4	rms Current Rating	Ampere		
9.5	Surge Current			
	a) One - Cycle	Ampere	81	100
	b) Repetitive Cycle	Ampere	81	100
9.6	Peak Inverse Voltage			
	a) Continuous	Volt	600	
	b) Surge	Volt	600	

10 D. C. FUSE

10.1	Make		Reputed Make	
10.2	Type / Catalogue Number			
10.3	Reference Standard			
10.4	Current Rating			
	a) Continuous	Ampere	80	100
	b) Interrupting	kA	10 kA	

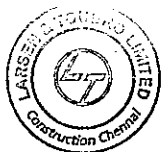


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Barowalia House, Khalini, Shimla-2

Larsen - H - 6

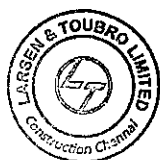
Sr. No.	PARAMETER	UNIT	48 V; 400 AH	220 V; 400 AH	
11	D. C. CONTACTOR				
11.1	Make		Reputed Make		
11.2	Type / Catalogue Number				
11.3	Reference Standard				
11.4	Current rating	Ampere	80	100	
11.5	Utilization category		DC3 Duty		
12	BLOCKING DIODE				
12.1	Make		Reputed Make		
12.2	Type / Catalogue Number				
12.3	Reference Standard				
12.4	Current Rating				
	a)	One Minute	Ampere	80	100
	b)	One Hour	Ampere	80	100
	12.5	Peak Inverse Voltage	Volt	600	
13	INDICATION LIGHTS				
13.1	Make		Reputed Make		
13.2	Type / Catalogue Number		Cluster		
13.3	Reference Standard				
13.4	Wattage	Watt	2		
13.5	Series resistor	Ohm	10 k		
14	METERS				
14.1	Make		Reputed Make		
14.2	Type / Catalogue Number		Analog		
14.3	Reference Standard				
14.4	Size		96 x 96		
14.5	Accuracy		1.5		
15	ALARM FACIA				
15.1	Make		Reputed Make		
15.2	Type / Catalogue Number		Electronic Static Card		
15.3	Reference Standard				
15.4	Number of Window per Facia	No.	12		
16	CHANGE OVER SWITCH				
16.1	Make		Reputed Make		
16.2	Type / Catalogue Number				
16.3	Reference Standard				
16.4	Rating	Ampere			
16.5	Number of Poles				
16.6	Key Interlock furnished ?				



See last page

[Signature]
 Dy. General Manager (Contracts)
 T.P. Power Transmission Corporation Ltd. H-7
 Barowalia House, Khalini, Shimla-2

Sr. No.	PARAMETER	UNIT	48 V; 400 AH	220 V; 400 AH
17	D. C. SWITCH			Reputed Make
17.1	Make			During Detailed
17.2	Type / Catalogue Number			
17.3	Reference Standard			
17.4	Rating	Ampere		
17.5	Number of Poles			
17.6	Key Interlock furnished ?			
18	CHARGER PANEL			Reputed Make
18.1	Make			
18.2	Type			
18.3	Reference Standard			
18.4	Enclosure			
	a) Degree of Protection			IP 42
	b) Sheet Steel Thickness	mm		2 mm for Front & Rear, 1.6 mm for all Sides
18.5	Panel provided with			
	a) Internal Lamp with Door - Switch			YES
	b) Space Heater with Thermostat			YES
	c) 5A, 3 Pin Receptacle			YES
18.6	Internal Wiring			
	a) Insulation			PVC
	b) Voltage Grade	Volt		1,100
	c) Minimum Conductor Size			25 x 6
18.7	Power Terminals			
	a) Make			Reputed Make
	b) Size / Catalogue Number			M 10 x 70 L
18.8	Control Terminals			
	a) Make			Reputed Make
	b) Size / Catalogue Number			M 10 x 70 L
	c) 20 % Spare Terminal furnished ?			YES
18.9	Ground Terminal furnished ?			YES
18.10	Overall Dimension (L x B x H)	mm		During Detailed Engineering
18.11	Approximate Weight	kg		
18.12	General Arrangement drawings			
18.13	Accessories as specified furnished			

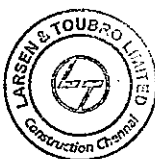


See left page

[Signature]
 Dy. General Manager (Contracts)
 H.P. Power Transmission Corpn. Ltd.
 Darowalia House, Khalini, Shimla - Larsen - H - 8

SHEET – 11

33 kV XLPE CABLE



Deekaypet

[Signature]
Dy. General Manager (Contracts)
H.P. Power Transmission Corpn. Ltd.
Barowalia House, Khalini, Shimla-2

HP POWER TRANSMISSION CORPORATION LIMITED
BAROWALIAS HOUSE, KHALINI, SHIMLA - 171002

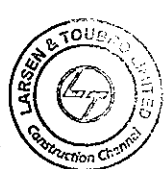
AWARD HPPTCL / DGMC / L & T SUPPLY / 2010 -
DATED:

NAME CONSTRUCTION OF 33 / 220 KV SUB STATION AT PALCHAN
OF WORK IN KULLU DISTRICT

DATA REQUIREMENT SHEET - II

33 KV XLPE CABLE

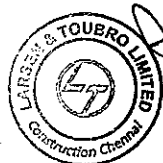
Sr. No.	PARAMETER	UNIT	1C x 185	1C x 240	1C x 630
1	System Voltage	kV	33 kV		
2	Make		KRISHNA / MPCAB		
3	Type of Cable		A2XFaY	A2XWaY	A2XWaY
4	Standard to which Cable is manufactured		IS: 7098		
5	Conductor Material and its Grade		Aluminium Conductor & H2 / H4 Grade IS: 8130		
6	Minimum Number of Wires in each Core	No.	30	30	57
7	Nominal Diameter of Wire (before Stranding)	mm			3.75
8	Number of Cores and Nominal Cross Section	No. x sq. mm.	1C x 185	1C x 240	1C x 630
9	Shape of Conductor		Compacted Circular		
10	Material used for Insulation		XLPE		
11	Nominal Thickness of Insulation	mm	8.8		
12	Specific Insulation resistance of dielectric at 27 °C	ohm - cm	1 x 10 ¹⁴	1 x 10 ¹²	
13	Type and Thickness of Screen				
a)	Conductor Screen		Extruded Layer of Semi Conducting Compound of 0.3 mm		
b)	Insulation Screen				
i)	Non Metallic Part		- do -		
ii)	Metallic Part		Copper Tape of 0.045 mm		
14	Type of Extrusion / Curing Process		Dry Cure Sioplas Process		
15	Minimum Thickness of Inner Sheath	mm	0.5		
16	Material used for Inner Sheath		PVC Type ST - 2 of IS: 5831		
17	Minimum Thickness of Outer Sheath	mm	1.72	1.88	
18	Material used for Outer Sheath		PVC (ST - 2) with FR Property		



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Dy. General Manager (Contracts)
H.P. Power Transmission Corpn. Ltd.
Barowalia House, Khalini, Shimla-2
Larsen - II - 1

Sr. No.	PARAMETER	UNIT	1C x 185	1C x 240	1C x 630
19	Type & Size of Armour Strip		Hard Drawn Aluminium		
20	Approximate Total Cross Sectional Area of armouring	sq. mm	96	188.4	
21	Approximate Overall Diameter of Cable	mm	47	51	64
22	a) Total Length of Cable for each Drum	mts.	500 $\pm$ 5 %		
	b) Non Standard Length		5 % of Ordered Quantity		
			No Length Less than 100 mts.		
23	Approximate Total Weight of each Drum Length of Cable	kg	1,400	1,600	4,920
24	Size (Diameter) of Drum	mm	1,600		
25	Continuous Safe Current Carrying Capacity laid in Ground for				
	a) Ambient Temperature of 40 °C	Ampere	250	285	550
	Thermal Resistivity of Soil 120 °C				
	Depth of Laying 900 mm				
26	Continuous Current rating in Air at 40 °C	Ampere	390	460	840
27	Maximum Permissible Temperature Rise of Conductor for Continuous Capacity Ground / Air	°C	45 / 50		
28	Current Density under Conditions stipulated above (Ground / Air)	Ampere / sq. mm	1.35 / 2.11	1.19 / 1.92	
29	Insulation Resistance of Finished Cable at 20 °C	mega ohm km	367		
30	Conductor Resistance per 1000 metres of finished Cable at 20 °C	ohm / km	0.164	0.125	0.0627
31	Conductor Reactance per 1000 metres of finished Cable at 20 °C	ohm / km	0.147	0.141	0.106
32	Impulse Voltage Withstand Capacity	kV		170	
33	Power Frequency Voltage Withstand Capacity	kV		48	
34	Maximum Allowable Symmetrical Short Circuit Current for duration of one second	kA	17.4	22.6	59.54

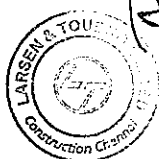


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Dy. General Manager (Contract),
H.P. Power Transmission Corps. Ltd.,
Barowalia House, Khalini, Shimla-2

SHEET – 12

1.1 kV XLPE POWER

CABLE




Dy. General Manager (Contracts)
H.P. Power Transmission Corpn. Ltd.
Barowalia House, Khalini, Shimla-2

HP POWER TRANSMISSION CORPORATION LIMITED
BAROWALIAS HOUSE, KHALINI, SHIMLA - 171002

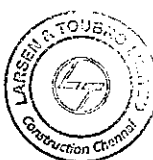
AWARD No.: HPPTCL / DGMC / L & T SUPPLY / 2010 -
DATED:

NAME CONSTRUCTION OF 33 / 220 kV SUB STATION AT PALCHAN
OF WORK : IN KULLU DISTRICT

DATA REQUIREMENT SHEET - I2

1.1 kV XLPE POWER CABLE

Sr. No.	PARAMETER	3.5C x 300	1C x 630	1C x 300
1	Manufacturer Name & Address	M/S Krishna Electrical Industries Ltd., Gwalior		
2	Manufacturer's Type & Designation	A2XWY	A2XWaY	A2XWaY
3	Applicable Standard	IS: 7098, IS: 5831, IS: 8130		
4	Rated Voltage, Volts	Upto and including 1,100		
5	Suitable for Earthed or Unearthed System	Both Systems		
6	Continuous Current Rating when laid in Air in an ambient temperature of 50 ° C and for maximum Conductor temperature of 90 ° C for XLPE	430 Amp	809 Amp	519 Amp
7	Short Circuit Capacity			
	a) Conductor Temperature allowed for Short Circuit in °C	250		
	b) Short Circuit Current for 3 seconds	56.98 kA	34.19 kA	16.28 kA
8	Conductor			
	a) Material	Stranded Aluminium as per IS: 8130		
	b) Grade	H2 / H4		
	c) Nominal Cross Sectional Area, sq. mm Main / Neutral	300 / 150	630	300
	d) Minimum Number of Wires, Nos. Main / Neutral	30 / 15	53	30



As per spec

W
Dy. General Manager (Contracts)
H.P. Power Transmission Corpn. Ltd.
Barowalia House, Khalini, Shimla - 171002

Sr. No.	PARAMETER	3.5C x 300	1C x 630	1C x 300
9	Insulation			
	a) Composition of Insulation	XLPE Compound Type - A as per IS: 5831		
	b) Nominal Thickness of Insulation, mm	1.80 / 1.40	2.80	2.10
	Main / Neutral			
10	Inner Sheath			
	a) Material	PVC Compound Type ST - 2 as per IS: 5831		
	b) Calculated Diameter over the laid up Cores, mm	48.74	NA	NA
	c) Minimum Thickness of Sheath, mm	0.6	NA	NA
11	Armour			
	a) Type & Material of Armour	GI Wire	Aluminium Wire	
	b) Calculated Diameter under Armour	50 mm	36.1 mm	25.4 mm
	c) Nominal Diameter / Dimension of Armouring Wire / Strip, mm	2.50	2.00	3.15
	d) Short Circuit Capacity of Armour, kA	13.99	15.74	16.78
	e) Maximum DC Resistance of Armour at 20 ° C, ohm / km	1.44	0.385	0.484
12	Outer Sheath			
	a) Material	PVC Compound Type ST - 2 having FR Properties as per IS: 5831		
	b) Calculated Diameter under the Outer Sheath, mm	51.6	37.7	27
13	Safe Pulling Force when pulled by Pulling Eye on the Conductor, kg	30 x Total Area of Conductor		
14	Test Voltage			
	a) High Voltage Test, kV	3 for 5 minutes for each connection		
	b) Water Immersion Test, kV	3 (AC) to 6 (AC) for 5 minutes & 1.2 (DC) for 240 hours		
15	Minimum Bending Radius permissible	12 x Outer Diameter of Cable		
16	Standard Drum Length in metres	250 / 500 $\pm$ 5 %		



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 Dy. General Manager (Contract.)
 H.P. Power Transmission Corpn. Ltd.
 Barowalia House, Khalini, Shimla-2

Larsen - 12 - 2

SHEET – 13

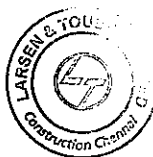
1.1 kV CONTROL

CABLE



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hm
Dy. General Manager (Contracts)
H.P. Power Transmission Corpn. Ltd.
Barowalia House, Khalini, Shimla-2



HP POWER TRANSMISSION CORPORATION LIMITED
BAROWALIAS HOUSE, KHALINI, SHIMLA - 171002

AWARD No.: HPPTCL / DGMC / L & T SUPPLY / 2010 -

DATED:

NAME
CONSTRUCTION OF 33 / 220 KV SUB STATION AT PALCHAN IN KULLU DISTRICT

OF WORK :

DATA REQUIREMENT SHEET - I3

1.1 KV CONTROL CABLE

Sr. No.	PARAMETER	2C x 2.5	3C x 2.5	5C x 2.5	7C x 2.5	10C x 2.5	14C x 2.5	19C x 2.5	27C x 2.5
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M/S KRISHNA ELECTRICAL INDUSTRIES LIMITED, GWALIOR

- 1 Manufacturer Name & Address
- 2 Manufacturer's Type & Designation
- 3 Applicable Standards
- 4 Rated Voltage, Volts
- 5 Suitable for Earthed or Unearthed System
- 6 Continuous Current Rating when laid in Air in an ambient temperature of 50 ° C and for maximum Conductor temperature of 90 ° C for PVC Cable

YWY

IS: 1554, IS: 8130, IS: 5831, IS: 3975

Upto and included 1,100

Both the Systems

27 24 24 17 15 13 12 10

Dy. General Manager (Contracts)
HP Power Transmission Corpn. Ltd.
Barowalia House, Khalini, Shimla-2

Sr. No.	PARAMETER	2C x 2.5	3C x 2.5	5C x 2.5	7C x 2.5	10C x 2.5	14C x 2.5	19C x 2.5	27C x 2.5
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7 Short Circuit Capacity

70

a) Conductor Temperature allowed for

Short Circuit in °C

b) Short Circuit Current for 3 seconds

0.33 kA

0.50 kA

0.83 kA

1.16 kA

1.66 kA

2.32 kA

3.15 kA

4.48 kA

8 Conductor

a) Material

b) Grade

c) Nominal Cross Sectional Area,

d) Minimum Number of Wires, Nos.

e) Minimum Diameter of Wires, mm

Copper conforming to IS: 8130
Plain Annealed High Conductivity

2.5 sq. mm

7

0.67

9 Insulation

a) Composition of Insulation

b) Nominal Thickness of Insulation

10 Inner Sheath

a) Material

b) Calculated Diameter over the laid up

Cores, mm

c) Minimum Thickness of Sheath, mm

11 Armour

a) Type & Material of Armour

b) Calculated Diameter under Armour

c) Nominal Diameter / Dimension of

Armouring Wire / Strip, mm

d) Short Circuit Capacity of Armour, kA

e) Maximum DC Resistance of Armour

at 20 °C, ohm / km

PVC Type ST - 1 as per IS: 5831

PVC Type - A as per IS: 5831

0.9 mm

0.3

Galvanised Steel Round Wire as per IS: 3975



22.1 mm

1.6

4.23

1.83

Deviyaset

[Signature]

Dy. General Manager (Contracts)
H.P. Power Transmission Corpn. Ltd.
Barowalia House, Khalini, Shimla-2

Sr. No.	PARAMETER	2C x 2.5	3C x 2.5	5C x 2.5	7C x 2.5	10C x 2.5	14C x 2.5	19C x 2.5	27C x 2.5
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12 Outer Sheath

a) Material

PVC Type ST - 1 having FR Properties as per IS: 5831

b) Calculated Diameter under the Outer Sheath, mm

10.6 11.2 13.1 14.2 18.2 19.7 21.8 25.9

13 Safe Pulling Force when pulled by Pulling Eye on the Conductor, kg

50 N x Total Area of Conductor

14 Test Voltage

a) High Voltage Test, kV

3 (AC) for 5 minutes for each connection

b) Water Immersion Test, kV

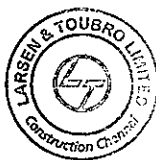
3 to 6 (AC) for 5 minutes and 1.2 (DC) for 240 hours

15 Minimum Bending Radius permissible

12 x Outer Diameter of Cable

16 Standard Drum Length in metres

500 / 1,000 $\pm$ 5 %



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 Dy. General Manager (Contract)
 T.P. Power Transmission Corp., Ltd.
 Barowalia House, Khalini, Shimla-2

SHEET – 14

1.1 kV POWER

CABLE

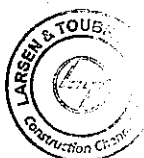


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Dy. General Manager (Contracts)
U.P. Power Transmission Corpn. Ltd.
Barowalia House, Khalini, Shimla-2

HP POWER TRANSMISSION CORPORATION LIMITED
BAROWALIAS HOUSE, KHALINI, SHIMLA - 171002

AWARD No.: HPPTCL / DGMC / L & T SUPPLY / 2010 -
DATED:



NAME OF WORK: CONSTRUCTION OF 33 / 220 KV SUB STATION AT PALCHAN IN KULLU DISTRICT

DATA REQUIREMENT SHEET - I4

1.1 KV PVC POWER CABLE

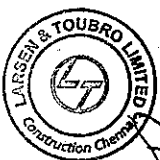
Sr. No.	PARAMETER	3.5C x 70	3.5C x 35	4C x 16	4C x 6	2C x 6	1C x 150	2C x 50
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1	Manufacturer Name & Address	M/S KRISHNA ELECTRICAL INDUSTRIES LIMITED, GWALIOR						
2	Manufacturer's Type & Designation	AYFY	AYFY	AYFY	AYFY	AYFY	AYFaY	AYFY
3	Applicable Standards	IS: 1554, IS: 8130, IS: 5831, IS: 3975						
4	Rated Voltage, Volts	Upto and included 1,100						
5	Suitable for Earthed or Unearthed System	Both the Systems						
6	Continuous Current Rating when laid in Air in an ambient temperature of 50 ° C and for maximum Conductor temperature of 90 ° C for PVC Cable	130	86	51	30	35	275	125

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Dy. General Manager (Contracts)
H.P. Power Transmission Corpn. Ltd.
Barowalia House, Khalini, Shimla-2

Sr. No.	PARAMETER	3.5C x 70	3.5C x 35	4C x 16	4C x 6	2C x 6	1C x 150	2C x 50
7	Short Circuit Capacity							
	a) Conductor Temperature allowed for Short Circuit in °C			160				
	b) Short Circuit Current for 3 seconds.	10.7 kA	5.30 kA	2.80 kA	1.05 kA	0.52 kA	6.5 kA	4.39 kA
8	Conductor							
	a) Material			Stranded Aluminium as per IS: 8130				
	b) Grade			H2/H4				
	c) Nominal Cross Sectional Area,	70 / 35	35 / 16	16	6	6	150	50
	Main / Neutral, sq. mm							
	d) Minimum Number of Wires, Nos.	12 / 6	6 / 6	6	3	3	15	6
	Main / Neutral							
9	Insulation							
	a) Composition of Insulation			PVC Compound Type - A as per IS: 5831				
	b) Nominal Thickness of Insulation	1.4 / 1.2	1.2 / 1.0	1	1	1	2.1	1.4
	Main / Neutral, mm							
10	Inner Sheath							
	a) Material			PVC Compound Type ST - 1 as per IS: 5831				
	b) Calculated Diameter over the laid up Cores, mm	27.6	20.4	15.73	11.6	9.6	NA	21.6
	c) Minimum Thickness of Sheath, mm			0.3			NA	0.3
11	Armour							
	a) Type & Material of Armour		GI Strip		GI Wire		Aluminium Strip	
	b) Calculated Diameter under Armour	28.4 mm	21 mm	16.33 mm	12.2 mm	10.2 mm	18 mm	22.2 mm
	c) Nominal Diameter / Dimension of Armouring Wire / Strip, mm		4.0 x 0.8		1.4			4.0 x 0.8



Dy. General Manager (Contracts)
 H.P. Power Transmission Corpn. Ltd.
 Barowalia House, Khalini, Shimla-2

Sr. No.	PARAMETER	3.5C x 70	3.5C x 35	4C x 16	4C x 6	2C x 6	1C x 150	2C x 50
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d) Short Circuit Capacity of Armour, kA
e) Maximum DC Resistance of Armour
at 20 ° C, ohm / km

12. Outer Sheath

a) Material

PVC Compound Type ST - 1 having FR Properties as per IS: 5831

b) Calculated Diameter under the Outer

Sheath, mm

13. Safe Pulling Force when pulled by

Pulling Eye on the Conductor, kg

14. Test Voltage

a) High Voltage Test, kV

3 (AC) for 5 minutes for each connection

b) Water Immersion Test, kV

3 to 6 (AC) for 5 minutes and 1.2 (DC) for 240 hours

15. Minimum Bending Radius

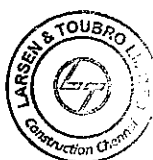
permissible

12 x Outer Diameter of Cable

15 x Outer Diameter

16. Standard Drum Length in metres

500 / 1,000 ± 5 %

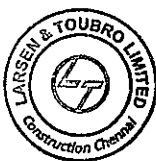


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jm
Dy. General Manager (Contracts)
M.A. Power Transmission Corpn. Ltd.
Barowalia House, Khalini, Shimla-2

SHEET - K

PROTECTION PANEL



See effect

Hm
Dy. General Manager (Contracts)
P.T.C. Power Transmission Corpn. Ltd.
Barowalia House, Khalini, Shimla-2

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HP POWER TRANSMISSION CORPORATION LIMITED
BAROWALIAS HOUSE, KHALINI, SHIMLA - 171002

AWARD No.: HPPTCL / DGMC / L & T SUPPLY / 2010 -

DATED:

NAME OF WORK: CONSTRUCTION OF 33 / 220 KV SUB STATION AT PALCHAN
IN KULLU DISTRICT

DATA REQUIREMENT SHEET - K

PROTECTION PANEL

Sr. No.	PARAMETER	UNIT	
1	GENERAL		
1.1	Make		ABB LIMITED
1.2	Type		VSG
1.3	Reference Standard		IS: 2147
1.4	CONSTRUCTION		Simplex
a)	Degree of Protection		IP31
b)	Sheet Metal Thickness		Front < 3 mm; Back < 2 mm Side < 2 mm
1.5	EQUIPMENT MOUNTING		
a)	All Relays & Switches mounted	YES / NO	YES
1.6	NAME PLATE		
a)	Material		Black Plastic
b)	Thickness	mm	3
c)	Size for		
	Equipment	mm	
	Panels	mm	40 x 200
1.7	INTERNAL ILLUMINATION		
a)	Volt	V	230
b)	Watt	W	10
c)	Door Switch Controlled	YES / NO	YES
1.8	SPACE HEATER		
a)	Volt	V	230
b)	Watt	W	50
c)	Thermostat Controlled	YES / NO	YES



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[Signature]
Dy. General Manager (Contracts)
HP Power Transmission Corp. Ltd.
Barowalia House, Khalini, Shimla-2

Sr. No.	PARAMETER	UNIT	
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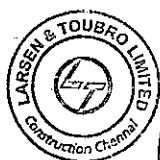
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|------|--|----------|---|
| 1.9 | PLUG SOCKET | | |
| a) | Type | | Universal Socket |
| b) | Rating | | 5 / 15 A; 230 V AC |
| 1.10 | Panel Illumination, Space Heater & Plug Socket Circuits provided with individual Switch Fuse Units | YES / NO | YES |
| 1.11 | A. C. / D. C. SUPPLY | | |
| | Type & Rating of Isolating Fuse Units for | | As per Specification |
| a) | Incoming A. C. Supply | | |
| b) | Incoming D. C. Supply | | |
| 1.12 | INTERNAL WIRING | | |
| a) | Wire Type | | PVC Untinned Copper Wires |
| b) | Voltage Grade | Volt | 1,100 |
| c) | Conductor Material | | Untinned Copper |
| d) | Conductor Size for | | |
| i) | Current Control Circuit | sq. mm | 2.5 |
| ii) | Voltage Circuit | sq. mm | 1.5 |
| e) | Wires identified at both ends with Ferrules | YES / NO | YES |
| 1.13 | TERMINAL BLOCK | | |
| a) | Make | | Connectwell / Elmex |
| b) | Type | | Stud |
| c) | 20 % Spare Terminals furnished | | As per Specification |
| 1.14 | GROUND BUS | | |
| a) | Material | | Copper |
| b) | Size | mm | 25 x 6 |
| 1.15 | PAINTING | | |
| a) | Type of Finish | | As per Specification |
| b) | Colour Shade - Inside / Outside | | Interior: Stove Enamel White
Exterior: Stove Enamel Light Grey |
| 2 | PUSH BUTTON | | |
| 2.1 | Make | | TEKNIC |
| 2.2 | Type | | Flush |
| 2.3 | Contact Rating | A. C. | 240 Volt |
| | | D. C. | 220 Volt |
| 2.4 | Number & Type of Contacts provided per Button | | 2 N. O. + 2 N. C. |



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 Dy. General Manager (Contract)
 P.P. Power Transmission Corp., Ltd.
 Barowalia House, Khalini, Shimla-2 Larsen - K - 2

Sr. No.	PARAMETER	UNIT	
3	LAMPS		
3.1	Make		TEKNIC
3.2	Type		Cluster LED
3.3	Rating		
	a) Volt	D. C.	110 V
	b) Watt	W	2.6
3.4	10 % Extra Lamps furnished	YES / NO	YES
3.5	Size of Lens	mm	22.5
4	RELAYS		
4.1	220 kV SIDE TRANSFORMER RELAY		ABB Limited
	a) Local Breaker Back Up (LBB) Protection		Part of Bus Bar Protection
	b) Directional O / C IDMT		Numerical REF 615
	c) Directional E / F IDMT		Inbuilt in REF 615
	d) Transformer Differential		Numerical Type RET 670
	e) Transformer Over Fluxing		Inbuilt in RET 670
	f) IDMT O / C (Connected to Neutral side CT)		Inbuilt in RET 670
	g) Restricted Earth Fault		Numerical Type REF 615
	h) Auxiliary Relays for Transformer Protection (viz Buchholz, Winding / Oil Temperature Oil Level, Fire Protection relay etc)		ABB Make Type RXSF
4.2	33 kV SIDE TRANSFORMER RELAY		
	a) Local Breaker Back Up (LBB) Protection		
	b) Directional O / C IDMT		Inbuilt in REC 670
	c) Directional E / F IDMT		
	d) Transformer Differential		shall be part of HV Side
	e) Transformer Over Fluxing		Differential Relay
	f) Auxiliary Relays for Transformer Protection (viz Buchholz, Winding / Oil Temperature Oil Level, Fire Protection relay etc)		ABB Make Type RXSF
4.3	220 kV LINE PROTECTION RELAY		
	a) MAIN - I: Protection Scheme (Composite Numerical Distance Relay with Auto Re - Closing & Check Synchronising Facility)		ABB Make Type REL 670



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 Dy. General Manager (Contracts)
 H.P. Power Transmission Corpn. Ltd.
 Barowalia House, Khalini, Shimla
 Larsen - K - 3

Sr. No.	PARAMETER	UNIT	
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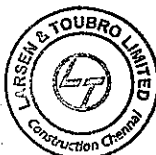
- | | |
|---|--|
| b) MAIN - II: Protection Scheme (Composite Numerical Distance Relay Phase with Phase Comparison and Auto Re - Closing & Check Synchronising Facility) Facility) | Siemens Make Type 7SAS /
Areva Make Type MiCOM |
| c) Numerical Directional Over Current and Earth Fault | ABB Make Type REF 615 |
| d) Over Voltage / Under Voltage Protection | Inbuilt Function of Main - I
& Main - II Protection Relay |
| e) Disturbance Recorder | |
| f) Distance to Fault Locator for Phase to Earth Fault | |
| g) CVT Selecting Relays or Switches | ABB Make Type RXPSU14 |
| h) Auxiliary Relays for Carrier Supervision of Main - I & Main - II Protection Relays | ABB Make Type RXSF |
| i) Carrier Receive Lock Out Relay | ABB Make Type RXMV |
| j) Breaker Failure Protection Relay | As part of Bus Bar Protection |
| k) Trip Circuit Pre and Post Supervision Relays for Trip - I & Trip - II | ABB Make Type TSR |
| l) Flag Relays for Circuit Breaker Trouble Shooting | ABB Make Type RXSF |
| m) Over Frequency / Under Frequency Relay | As part of Main Protection |
| n) dl / dt and dv / dt Relay | Inbuilt in Main Protection |

4.4 33 kV LINE PROTECTION RELAY

- | | |
|--|--|
| a) Numerical Directional Over Current and Earth Fault | Inbuilt Function of BCU
mounted in CB Relay Panel |
| b) Over Voltage / Under Voltage Protection | |
| c) Disturbance Recorder | |
| d) Breaker Failure Protection Relay | |
| e) Trip Circuit Pre and Post Supervision Relays for Trip - I & Trip - II | ABB Make Type TSR |
| f) Flag Relays for Circuit Breaker Trouble Shooting | ABB Make Type RXSF |

4.5 220 kV BUS BAR PROTECTION RELAY

- | | |
|---|------------------------------------|
| a) Bus Bar Differential Protection for Bus - I | ABB Make Numerical
Type REB 670 |
| b) Bus Bar Differential Protection for Bus - II | |



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Dy. General Manager (Contracts)
N.P. Power Transmission Corpn. Ltd.
Barowalia House, Khalin, Shimla-2
Larsen - K - 4

Sr. No.	PARAMETER	UNIT	
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4.6 220 kV BUS COUPLER PROTECTION RELAY

- a) Numerical Directional Over Current and Earth Fault

ABB Make Type REF615

- b) Breaker Failure Protection Relay

As part of Bus Bar Protection

4.7 220 kV TRANSFER CUM COUPLER RELAY PANEL

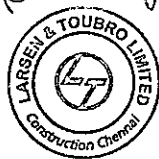
- a) Numerical Directional Over Current and Earth Fault

ABB Make Type REF615

- b) Breaker Failure Protection Relay

As part of Bus Bar Protection

Debabrata



HW

Dy. General Manager (Contract & Estimation)
H.P. Power Transmission Corpn. Ltd.
Barowalia House, Khalini, Shimla-2

SHEET - 0

33 / 0.440 kV, 250 kVA

LT TRANSFORMER



See layout

HS
Dy. General Manager (Contracts)
H.P. Power Transmission Corpn. Ltd.
Barowalia House, Khalini, Shimla-2

HP POWER TRANSMISSION CORPORATION LIMITED
BAROWALIAS HOUSE, KHALINI, SHIMLA - 171002

AWARD No.: HPPTCL / DGMC / L & T SUPPLY / 2010 -

DATED:

NAME : CONSTRUCTION OF 33 / 220 KV SUB STATION AT PALCHAN
OF WORK : IN KULLU DISTRICT

DATA REQUIREMENT SHEET - 0,

33 / 0.440 KV, 250 KVA LT TRANSFORMER

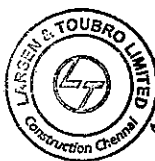
Sr. No.	PARAMETER	UNIT	
1	Name & Address of Manufacturer		
2	Voltage Ratio	Volts	33000 / 433
3	Rating	kVA	250
4	Standards Applicable		IS: 2026; IS: 335
5	Rated Frequency	Hz	50
6	Number of Phases		3
7	Vector Group		Dyn 11
8	Type of Cooling		ONAN
9	Tap Changing Equipment		
	i) Type		Off Circuit
	ii) Number of Steps & Tap Range		4 Steps, 5 Positions
10	Positive Sequence Impedance at 75 °C with with 100% rating at		
	a) Principal Tap		5
	b) Maximum Tap		5.25
	c) Minimum Tap		4.75
11	Temperature Rise over an Ambient of 40 degree Centigrade		
	a) Top Oil Degree Centigrade		35
	b) Windings (by Resistance Measurement Method) degree Centigrade		45



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Dy. General Manager (Construction)
H.P. Power Transmission Corp. Ltd.
Barowalia House, Khalini, Shimla-2

Sr. No.	PARAMETER	UNIT	
12	GUARANTEED LOSSES		
a)	Maximum No Load Loss on Principal Tap at Rated Voltage and Frequency	kW	550
b)	Maximum Load Loss at Rated Current at Principal Tap at 75 degree Centigrade	kW	3,500
13	Withstand Time for Three Phase Short Circuit at Terminals	msec	270
14	INSULATION LEVEL		
	Full Wave Lightning Impulse Withstanding		
i)	HV Winding	kVp	75
ii)	LV Winding	kVp	

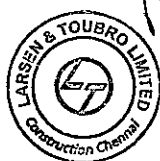


As per spec

H/S
Dy. General Manager (Contracts)
P.T.C. Power Transmission Corpn. Ltd.
Barowalia House, Khalini, Shimla-2

SHEET - P

EOT CRANE



Dee ffect

[Signature]
Dy. General Manager (Contract)
I.P. Power Transmission Corpn. Ltd.
Barowalia House, Khalini, Shimla-2

HP POWER TRANSMISSION CORPORATION LIMITED
BAROWALIAS HOUSE, KHALINI, SHIMLA - 171002

AWARD No.: HPPTCL / DGMC / L & T SUPPLY / 2010 -

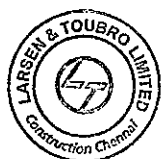
DATED:

NAME CONSTRUCTION OF 33 / 220 KV SUB STATION AT PALCHAN
OF WORK : IN KULLU DISTRICT

DATA REQUIREMENT SHEET - P

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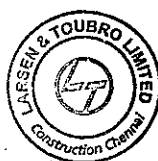
Sr. No.	PARAMETER	
1	Design	Single Girder Electrically Operated Travelling confirming to IS: 807, IS: 3177 & IS: 3938 Class - II, Medium Duty, Indoor, suitable for operation at 415 ± 10 % Volts, 3 Phase, 50 Hz A. C. Supply and Tested to 25 % Overload
2	Type of Crane	Single Girder
3	Capacity	3.5 Tonne
4	Span	11.0 metres
5	Clear Lift	6.0 metres
6	Side Clearance	250 mm
7	Bay Length	22.0 metres
8	L. T. Wheel Load	3.3 Tonne
9	Weight of Crane	3.5 Tonne
10	SPEEDS	
	a) Hoist - Main	3.0 metres / minute
	b) C. T.	10.0 metres / minute
	c) L. T. Wheel Load	20 metres / minute
11	Operation	Electrically operated by means of Pendant Push Button Station
12	Size of Gantry Rail	40 mm sq. bar
13	Bridge Girder	Single Girder RSJ / Plate Box from Steel Section as per IS: 2062



See by spec

[Signature]
Dy. General Manager (Contract)
H.P. Power Transmission Corp. Ltd.
Barowalia House, Khalini, Shimla-2

Sr. No.	PARAMETER	
14	End Carriage	Fabricated from Mild Steel Plates / Channels
15	Hoisting Mechanism	By means of Wire Rope conforming to IS: 3938
15	Cross Travel Mechanism	By means of Motorised Travelling Trolley running along the Lower Flange of the Bridge Girder
16	Long Travel Mechanism	By means of Electric Motors fitted one number each on both end Carriages
17	L. T. WHEELS	
	a) Type	Double Flanged Geared Wheel mounted in fixed Axles on self aligned anti friction type Bearings
	b) Tread Diameter	200 mm
	c) Lubrication	Grease packed with Grease Nipples
18	WIRE ROPE	
	a) Type of Construction	6 x 36 Construction, Hemp Core as per IS: 2266
	b) Rope Diameter	10 mm
	c) Number of Rope Falls	4
	d) Factor of Safety	5
19	Rope Drum Material	M. S. Fabricated / Seamless as per IS: 2062
20	GEAR BOX	
	a) Type & Material of Gear Box	
		Hoist Cast Steel
		C. T. Cast Steel
		L. T. WHEELS Cast Steel
	b) Lubrication	
		Hoist Splash Oil Lubrication with Oil Level Sight Glass Indication, Drain Plug and Inspection Covers etc
	c)	C. T. & L. T. Grease packed Lubrication with necessary Seals and grease Nipples
21	GEAR & PINION	Spur / Helical as per IS: 4460
	a) Material - Gear	SAE: 8620
	b) Pinion	20 Mn Cr 5
22	BEARINGS	
	a) Type	Needle / Ball / Roller Anti Friction Bearings
	b) Lubrication	Grease
23	LIFTING HOOK	
	a) Type	C' Shank
	b) Material	En - 3A as per IS: 1875
24	Buffers Carriage	4 numbers Rubber Type Buffers will be mounted on each end to absorb shock during Normal Operation of L. T. Drive

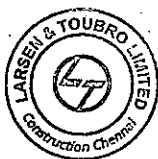


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[Signature]
 Dy. General Manager (Contracts)
 H.V. Power Transmission Corporation Ltd.
 Barowalia House, Khalini, Shimla-2

Sr. No.	PARAMETER	
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- | | | |
|----|------------------------|--|
| 25 | Brake | FAIL TO SAFE Action type electro magnetic disc type
Brake |
| 26 | MOTORS | |
| | a) Type | Totally enclosed Squirrel Cage Induction Motor |
| | b) Rating | |
| | | Hoist 3.0 H. P. |
| | | C. T. 0.5 H. P. |
| | | L. T. 2 x 0.5 H. P. |
| | c) Class of Insulation | F |
| 27 | LIMIT SWITCHES | |
| | a) Type | |
| | | L. T. & C. T. Roller Lever Type |
| | | Hoisting Snap Action Type |
| | b) Quantity | |
| | | C. T. 1 number of Two Way Type |
| | | L. T. 2 numbers of One Way Type |
| | | Hoisting 2 numbers of Snap action Type |
| 28 | Power Supply | 415 Volts $\pm$ 10 %, 50 Hz, 3 Phase A. C. |
| 29 | Control Voltage | 110 Volt |
| 30 | Pendany Push Button | shall consist of Push Buttons having provision for
Emergency OFF, ON, HOISTING, LOWERING, LEFT,
RIGHT, FORWARD, REVERSE |
| 31 | Painting | The Structure shall be painted with 2 coats of Synthetic
Enamel Paint of Golden Yellow Colour with Black Bands
after applying Red Oxide Primer |



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[Signature]
Dy. General Manager (Contracts)
L.P. Power Transmission Corpn. Ltd.
Barowalia House, Khalini, Shimla-2



H.P. Power Transmission Corporation Limited

(A State Govt. Undertaking)

Barowalias House, Khalini, Shimla-171002

(Telefax: 0177-2626284)

No.HPPTCL/L&T-SUPPLY/2010-11-5845-SD

Dated : 8/2/11

To

M/S LARSON & TOUBRO LIMITED,
ENGINEERING CONSTRUCTION & CONTRACT DIVISION,
MOUNT POONAMALLEE ROAD, MANAPAKKAM,
P.B.NO. 979, CHENNAI – 6000089.

FAX NO. 044-22493317, 22526345

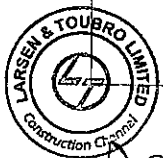
Sub :- Letter of Award (LOA) for supply of Equipment / Material for Construction of 220/33 kV PALCHAN GIS Sub-Station against Tender Document No. DGMC/ PALCHAN SUB-STATION/2/2009 (FIRST CONTRACT).

Sir,

Following amendments in Award No. HPPTCL/L&T-SUPPLY/2010-5107-12 Dated 23.12.2010 are hereby made :-

AMENDMENTS.

Ref./ Clause No.	Existing	Amended
8	Terms of Payment. i) Ninety percent (90%) of the Ex works Price and 100 % Freight & Insurance Charges and Taxes shall be paid within 45 days on receipt of the Material in your Stores in full and good condition duly verified by the Engineer or his authorised representative or after completion of Contractual Formalities i.e. Execution of Legal Contract , Acceptance of Bank Guarantee by the Purchaser whichever is later . The payment shall be released by the Engineer or by the Central Payment Cell of the HPPTCL upon submission of the documents specified below . a) Original and 4 copies of the Invoices showing Purchase Order number,	Terms of Payment. i) Ninety percent (90%) of the Ex works Price and 100 % Freight & Insurance Charges and Taxes shall be paid within 30 days on receipt of the Material in your Stores in full and good condition duly verified by the Engineer or his authorised representative or after completion of Contractual Formalities i.e. Execution of Legal Contract , Acceptance of Bank Guarantee by the Purchaser whichever is later . The payment shall be released by the Engineer or by the Central Payment Cell of the HPPTCL upon submission of the documents specified below : a) Original and 4 copies of the Invoices showing Purchase Order number, Goods Description, Quantity, Unit Price and



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By, General Manager (Contracts)
H.P. Power Transmission Corpn. Ltd.
Barowalia House, Khalini, Shimla-2

	Goods Description, Quantity, Unit Price and Total Amount. b) Packing List (4 copies) c) Railway Receipt/ Receipted L.R d) Manufacturers/ Contractors Guarantee Certificate of quality. e) Material Inspection Clearance Certificate for dispatch issued by the Purchaser's representative and the Contractor's Factory Inspection Report , Transit Insurance Certificate and an Indemnity Bond as per Form-IX for full value of the Material valid till the taking over of the said Sub-Station by the Purchaser. f) Taxes & Duties shall be paid against Documentary Evidence. g) The Type Test Charges shall be paid on successful completion of the Type Test / Proto Type Test specified and on approval of the Test Results by the HPPTCL. ii) The balance 10% of the Ex-Works Price of each item as per Price Schedule shall be made within 45 days of the issuance of Taking over Certificate by the Purchaser's Engineers. iii) However, in case the Payment is delayed beyond 45 days due to one or the other reason. NO INTEREST FOR THE DELAYED PERIOD SHALL BE ADMISSIBLE.	Total Amount. b) Packing List (4 copies) c) Railway Receipt/ Receipted L.R d) Manufacturers/ Contractors Guarantee Certificate of quality. e) Material Inspection Clearance Certificate for dispatch issued by the Purchaser's representative. and the Contractor's Factory Inspection Report , Transit Insurance Certificate and an Indemnity Bond as per Form-IX for full value of the Material valid till the taking over of the said Sub-Station by the Purchaser. f) Taxes & Duties shall be paid against Documentary Evidence. g) The Type Test Charges shall be paid on successful completion of the Type Test / Proto Type Test specified and on approval of the Test Results by the HPPTCL. ii) The balance 10% of the Ex-Works Price of each item as per Price Schedule shall be made within 30 days of the issuance of Taking over Certificate by the Purchaser's Engineers. iii) However, in case the Payment is delayed beyond 30 days due to one or the other reason. NO INTEREST FOR THE DELAYED PERIOD SHALL BE ADMISSIBLE.
11	TIME SCHEDULE OF CONTRACT. 11.1 The basic consideration and the essence of the Contract is strict adherence to the Time Schedule of the Contract. You shall so organise your resources and perform your work as to complete successful testing and commissioning of the GIS Palchan Sub-Station covered under the subject Contract within 8 (eight) months from the date of issue of this Contract and the same shall be applicable for all contractual purposes. 11.2 You shall develop and furnish a detailed Schedule in the form of a Bar Chart indicating relating to Engineering, Procurement, Manufacturing and Ex-works delivery for all the equipment and Materials covered under this Contract within 15 days of the Letter of Award.	TIME SCHEDULE OF CONTRACT. 11.1 The basic consideration and the essence of the Contract is strict adherence to the Time Schedule of the Contract. You shall so organise your resources and perform your work as to complete successful testing and commissioning of the GIS Palchan Sub-Station covered under the subject Contract within 8 (eight) months from the date of receipt of this Contract by the Contractor and the same shall be applicable for all contractual purposes. 11.2 You shall develop and furnish a detailed Schedule in the form of a Bar Chart indicating relating to Engineering, Procurement, Manufacturing and Ex-works delivery for all the equipment and Materials covered under this Contract within 15 days of the receipt of Letter of Award by the Contractor.



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Hw
 Dy. General Manager (Contracts)
 L.T.T. Power Transmission Corpn. Ltd.
 Barowalia House, Khelini, Shimla-2

	11.3 For the purpose of levy of Liquidated Damages for delay, the time for completion of work of construction, testing and successful commissioning of 220/ 33 kV GIS Sub-Station at Palchan shall be reckoned as 8 months from the date of LOA.	11.3 For the purpose of levy of Liquidated Damages for delay, the time for completion of work of construction, testing and successful commissioning of 220/ 33 kV GIS Sub-Station at Palchan shall be reckoned as 8 months from the date^{of} receipt of LOA by the Contractor.
--	---	--

Yours faithfully,

[Signature] 8.2.11

Dy. General Manager (Contracts),

g/c

Copy forwarded to the following for information please :

1. P.S. to Director (P&C), HPPTCL, Shimla-171002.
2. P.A. to Director (Projects), HPPTCL, Shimla-171002.
3. The Dy. General Manager (Projects), HPPTCL, Shimla-171002.
4. The Sr. Manager, HPPTCL, Sarabai Bhunter, Distt. Kullu (HP).
5. Sr. Accounts Officer, HPPTCL, Shimla-2.

[Signature] 8.2.11

Dy. General Manager (Contracts),

g/c



[Signature]
Dy. General Manager (Contracts)
Power Transmission Corpn. Ltd.
Barowalia House, Khalini, Shimla-2

