



इरकॉन रिन्यूएबल पावर लिमिटेड



IRCON RENEWABLE POWER LIMITED

No. IRPL/SOLAR/TRANSMISSION LINE & BAY EXTENSION/4

Date: 10.10.2022

M/s. VITS Total Power Solutions Private Limited,
1st Floor, Mittal Tower, Opp. 132 kV Power House,
Near Sukhpura Chowk, Hanuman Colony,
Rohtak, Haryana - 124001
support@totalpower.in,
mittal.vikas@totalpower.in

Letter of Acceptance

Dear Sir,

Kind Attn: Sh. Vikas Mittal (Director)

Sub: Supply, Erection, Testing and Commissioning incl. Civil works of 220 kV Double Circuit Transmission Line including Supply of Tower, Conductor, Insulator, Hardware Fitting, Earthwire, Earthwire Accessories, OPGW Accessories, ROW, etc. along with 2 no's 220 kV Bay Extension at PGCIL SS associated with 500 MW Solar Project at Pavagada, Karnataka.

Ref. i) e-NIT No. IRPL/SOLAR/TRANSMISSION LINE & BAY EXTENSION/4,
Date:31/08/2022.

ii) Corrigendum-01 Dated: 12.09.2022

iii) Corrigendum-02 Dated: 15.09.2022

iv) Corrigendum-03 Dated: 16.09.2022

v) Your offer submitted for the subject e-Tender on 21.09.2022 & opened on 22.09.2022 (Technical Bid) and 30.09.2022 (Financial Bid).

1. In reference to e-NIT and your submitted offer referred above, IRCON Renewable Power Limited is pleased to accept your offer for "Supply, Erection, Testing and Commissioning incl. Civil works of 220 kV Double Circuit Transmission Line including Supply of Tower, Conductor, Insulator, Hardware Fitting, Earthwire, Earthwire Accessories, OPGW Accessories, ROW, etc. along with 2 no's 220 kV Bay Extension at PGCIL SS associated with 500 MW Solar Project at Pavagada, Karnataka" on the following Terms & Conditions.

2. Total Cost of Work :

Rs. 16,77,34,091/- (Rupees Sixteen Crore Seventy Seven Lakh Thirty Four Thousand Ninety One only) inclusive of all taxes, duties and GST on "FIRM" price basis in accordance with NIT terms and conditions issued vide Ref. (i.) and Corrigendums vide Ref. (ii)-(iv) above for Supply, Erection, Testing and Commissioning incl. Civil works of 220 kV Double Circuit Transmission Line including Supply of Tower, Conductor, Insulator, Hardware Fitting, Earthwire, Earthwire Accessories, OPGW Accessories, ROW, etc. along with 2 no's 220 kV Bay Extension at PGCIL SS associated with 500 MW Solar Project at Pavagada, Karnataka. Statutory deductions like TDS-Income Tax, TDS-GST or any other Taxes as applicable shall be deducted from the RA Bills. Taxes, Duties & Levies shall be governed in accordance with





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Clause No. 17 of Special Conditions of Contract (SCC). The detailed Bill of Quantities (BOQ) is Enclosed as Annexure-I.

3. In terms of Clause no. 12. of Special Conditions of Contract, the date of issuance of this Letter of acceptance shall be the date of commencement of work.
4. The subject work of Supply, Erection, Testing and Commissioning incl. Civil works of 220 kV Double Circuit Transmission Line including Supply of Tower, Conductor, Insulator, Hardware Fitting, Earthwire, Earthwire Accessories, OPGW Accessories, ROW, etc. along with 2 no's 220 kV Bay Extension at PGCIL SS associated with 500 MW Solar Project at Pavagada, Karnataka shall be completed as per the schedule given below from the date of issue of this LOA in terms of clause no. 14 of the Special Conditions of Contract:

Transmission Line and Bay Extension Schedule		
Sl.No.	Description	Duration (Days)
1	Transmission Line:	
1(i)	Preliminary TL Route Survey	D+28
1(ii)	Design & Detailed Engineering	D+50
1(iii)	Ordering of all equipments	D+80
1(iv)	Delivery of Material	D+180
1(v)	Foundation	D+200
1(vi)	Erection	D+225
1(vii)	Stringing, OPGW, Earthing	D+240
1(viii)	Readiness for charging	D+243
2	Bay Extension readiness for charging	D+243

D= Date of Letter of Acceptance.

5. Payment Terms: To be dealt as per Tender Conditions.
6. The Defect Liability Period shall be 24 Months from the Date of Commissioning in accordance with Clause No. 30 of the Special Conditions of Contract.
7. In terms of Clause 28. of Special Conditions of Contract and Clause 8.0 of the General Conditions of Contract, Performance Security for an amount 3% of Contract value i.e. **Rs. 50,32,100/-** (Rupees Fifty Lakh Thirty Two Thousand One Hundred Only) shall be submitted to the office of Chairman, Ircon Renewable Power Ltd., C-4, District Centre, Saket, New Delhi-17 within 21 days of issuance of this letter.
8. This letter will constitute a legal and binding contract between Ircon Renewable Power Limited (IRPL) and M/s. VITS Total Power Solutions Private Limited till such time the formal contract agreement is signed.
9. You have to enter into and execute the contract agreement within 28 days from the date of issue of this letter of acceptance with Chairman / Ircon Renewable Power Ltd., C-4, District Centre, Saket, New Delhi-17. You are requested to arrange the stamp papers of requisite value





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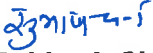
as per the prevailing laws for signing of the agreement in terms of Clause 15. Of the Special Conditions of Contract and Clause No. 12.5 of the General Conditions of Contract.

10. You are requested to immediately contact Chairman / Ircon Renewable Power Ltd., C-4, District Centre, Saket, New Delhi-17 for execution of works under this contract.
11. All other terms and conditions shall be as per the Tender Document.
12. This letter is being issued to you in duplicate, one copy of which may please be returned duly stamped and signed as a token of your acceptance at the earliest.

Thanking you,

Yours faithfully

For & on behalf of Ircon Renewable Power Limited


(Dr. Subhash Chand)
Chairman



Encl.- As above.

Copy to: -

(i) PDC Members

LOA No.IRPL/SOLAR/TRANSMISSION LINE & BAY EXTENSION/4

Summary Sheet of BoQ for Supply, Erection, Testing and Commissioning incl. Civil works of 220 kV Double Circuit Transmission Line including Supply of Tower, Conductor, Insulator, Hardware Fitting, Earthwire, Earthwire Accessories, OPGW Accessories, ROW, etc. along with 2 no's 220 kV Bay Extension at PGCIL SS associated with 500 MW Solar Project at Pavagada, Karnataka

Sr. No.	Description	Amount (inclusive of all applicable taxes, Duties & GST) (in Rs.)
1	Schedule of Rates (SOR) for Transmission Line works including supply of conductor, Insulators, OPGW, hardware fittings, accessories for conductor & OPGW for 220 kV D/C Pavagada PSS - PGCIL S/s	6,78,69,672
2	Schedule of Rates (SOR) for Bay Extension Package for Extension of 220kV Bay in Pavagada Pooling Substation (PGCIL)	7,30,83,346
Total Estimated Amount of SOR [A]		14,09,53,018
Percentage Quoted : Above (+) 19.00% of SOR Amount [B]		2,67,81,073
Net Amount of LOA [C] = [A]+[B]		16,77,34,091

Encl: (i) Annexure-I(A): Schedule of Rates (SOR) for Transmission Line works including supply of conductor, Insulators, OPGW, hardware fittings, accessories for conductor & OPGW for 220 kV D/C Pavagada PSS - PGCIL S/s of Rs. 6,78,69,672/-
(ii) Annexure-I(B): Schedule of Rates (SOR) for Bay Extension Package for Extension of 220kV Bay in Pavagada Pooling Substation (PGCIL) of Rs. 7,30,83,346/-



Schedule of Rates (SOR) for Transmission Line works including supply of conductor, Insulators, OPGW, hardware fittings, accessories for conductor & OPGW for 220 kV D/C Pavagada PSS - PGCIL S/s.

A	SUPPLY PART				
S.No	Description	Unit	Qty	Unit Rate	Amount
1	220KV, Hot dip galvanized D/C Towers with Stubs and cleats as per GETCO design. Appx.	MT	152.00	86,940.00	1,32,14,880.0
2	Various sizes of Hot dip galvanised Bolts & Nuts, packwashers and Step Bolts (Vendor to Estimate in MT)	MT	5.00	1,17,760.00	5,88,800.0
3	Supply of AL59 Moose Conductor (61/3.50MM)	Km	31	3,66,160.00	1,13,50,960.0
4	Supply of OPGW CABLE and its accessories like hardwares, Junction boxes. etc (24 Fibres) - appx.	Km	6	2,16,200.00	12,97,200.0
5	Supply of 220kV - 90kN B&S, Composite Insulator - Suspension	Nos	85	4,245.60	3,60,876.0
6	Supply of 220kV - 120kN B&S, Composite Insulator - Tension	Nos	86	4,484.80	3,85,692.8
7	Single Tension String / fitting clamp with Hardware	Nos	79	2,852.00	2,25,308.0
8	Single Suspension String / fitting clamp with Hardware	Nos	49	1,794.40	87,925.6
9	Double Tension String fitting clamp with Hardware	Nos	12	5,152.00	61,824.0
10	Double Suspension String fitting clamp with Hardware	Nos	7	3,464.00	24,248.0
11	Vibration damper for conductor	Nos	206	896.80	1,84,740.8
12	Midspan Joints for conductor	Nos	29	966.40	28,025.6
13	Repair Sleeve for conductor	Nos	14	414.40	5,801.6
14	Supply of 50x6 mm HDG Flat for Earthing	Mtrs	86	211.20	18,163.2
15	Supply of Pipe Type Earthing or Counterpoise type as per site conditons	Sets	21	4,140.00	86,940.0
16	Pre formed armour rod conductor	Lot/KM	1.0	60,000.00	60,000.0
17	220KV Hangers	Lot/KM	1.0	15,360.00	15,360.0
18	Number Plates	Sets	20	207.20	4,144.0
19	Phase Plates (Set of 3 Nos with R, Y & B)	Sets	20	672.00	13,440.0
20	Danger Boards	Sets	20	336.00	6,720.0
21	Circuit Plates (C1)	Sets	20	580.00	11,600.0
22	Anti climbing device: 12 SWG Barbed wire, Clits	Sets	20	8,878.40	1,77,568.0
23	Bird Guards - Saw Tooth type	Sets	46.00	207.20	9,531.2
24	Bird Diverters as per CEA guidelines	Lot/KM	5.00	2,85,200.00	14,26,000.0
25	DC on Multicircuit Tower (MC) near PGCIL S/s entry. Appx. 2kms appx.	KMs	2.00	12,84,160.00	25,68,320.0
	SUBTOTAL A - SUPPLY				3,22,14,068.8
B	SURVEY & SOIL INVESTIGATION				
1	Detailed Survey including profiling & tower spotting	KMs	5.00	16,800.00	84,000.0
2	Check survey, tower center marking, Pit marking	KMs	5.00	9,200.00	46,000.0
3	Detailed soil investigation: All kinds of soils except fissured rock and hard rock	KMs	5.00	36,800.00	1,84,000.0
4	Soil Resistivity measurement	Lot	1.00	92,000.00	92,000.0
	SUBTOTAL B - SURVEY & SOIL INVESTIGATION				4,06,000.0
C	ERECTION PART				
1	Erection of 220kV D/C Towes.	MT	152.00	7,360.00	11,18,720.0
2	Erection of Stubs settings, Assembling of template and Stub & cleat including bolts & nuts, tack welding..etc.	Sets	17	6,900.00	1,17,300.0
3	Erection of Various sizes of Hot dip galvanised Bolts & Nuts, pack washers and Step Bolts (Vendor to Estimate in MT)	MT	5.00	7,360.00	36,800.0
4	Stringing of AL59 Moose Conductor with 6 Conductors on DC Tower includiing erection of insulators, Single /double tesion & suspenstion fittings , hardwares, MSC joints, repair sleeve, preformed armour rod, vibration damper etc.	KMs	5.00	1,44,000.00	7,20,000.0
5	Stringing Of OPGW cable including erection of hardwares, fittings, Junction boxes, ties/clips/cleats, conduits, ducts, supports, fittings,accessories etc.: 24 Fibre	KMs	6.00	55,200.00	3,31,200.0
6	Installation of Pipe Type Earthing or Counterpoise type as per site conditons	Sets	20	3,680.00	73,600.0
7	Fixing of 50x6 mm GI Flat	Mtrs	86	110.40	9,494.4
8	Erection of Number Plates, Phase Plates (Set of 3 Nos Per Tower), Danger Boards	Sets	20	92.00	1,840.0
9	Installation of tower accessories: Phase Plate (Set of three)	Sets	20	80.00	1,600.0
10	Installation of tower accessories: Number Plate	Sets	20	80.00	1,600.0
11	Installation of tower accessories: Circuit Plate (Set of two)	Sets	3	80.00	240.0
12	Installation of tower accessories : Danger Plate	Sets	20	80.00	1,600.0
13	Fixing of Anti climbing device, clamps etc as per standard	Sets	20	2,300.00	46,000.0
14	Fixing of Bird Diverters as per CEA guidelines	Lot/KM	1	2,00,000.00	2,00,000.0
15	Testing and Commissioning	Lot	1	2,30,000.00	2,30,000.0
	SUBTOTAL C - ERECTION TESTING & COMMISSIOINNG				28,89,994.4



S.No	Description	Unit	Qty	Unit Rate	Amount
D	CIVIL WORK (Shall be as per approved GETCO foundation design)				
1	Excavation in Normal Soil, Soft rock, DFR & SFR type soils etc., including labour and tools, backfilling and surplus earth removal etc.	CU.M	615	368.00	2,26,320.0
2	Excavation in Hard rock (including blasting) etc., complete with an initial lead including labour and tools including backfilling and surplus earth removal etc.,	CU.M	8	920.00	7,360.0
3	Excavation in BC & WBC Soil, complete with an initial lead including labour and tools including backfilling and surplus earth removal etc.,	CU.M	1083	322.40	3,49,159.2
4	Supply & Labour Charge for Laying of Plain Cement Concrete (PCC) 1:4:8 using 20 mm HBG metal for foundation and basement including Cost of all materials,tools, labour for laying concrete etc.	CU.M	8	5,520.00	44,160.0
5	Supply and Laying of Plain Cement Concrete (PCC) 1:2:4 using 20 mm HBG metal (Concrete) for foundation basement including cost of all materials, labour, Shuttering & Form work etc for laying concrete etc.	CU.M	16	6,900.00	1,10,400.0
6	Foundation & Coping of Tower foundations as per standards and requirement including Painting & other materials & services. (M20 Grade concrete)	Cu.m	391	2,000.00	7,82,000.0
7	Supply & Labour Charge for steels required for all RCC works including fabrication and placing reinforcement for all RCC, labour and cutting, bending and placing reinforcement	Kg	9743	84.00	8,18,412.0
8	Supply and filling & Compaction foundation with external morrum soil.	CU.M	975	368.00	3,58,800.0
9	Supply and Laying of Plain Cement Concrete (PCC) 1:3:6 using 20 mm HBG metal (Concrete) for foundation/Rivetment wall and basement including cost of all materials, labour, Shuttering & Form work .etc for laying concrete etc.	CU.M	8	7,360.00	58,880.0
10	Supply and construction of rivetment wall including supply of all materials required for RR masonry with CM 1:6 mix using rough stone pointing with CM 1:3 mix for wall two sides above FGL including top finishing and 50mm wide border with CM 1:3 mix	CU.M	71	5,980.00	4,24,580.0
11	Benching: All kinds of soils	CU.M	71	760.00	53,960.0
	SUBTOTAL D - CIVIL WORKS				32,34,031.2
E	APPROVALS				
1	Approvals (Section 164, Route approval, CEIG, PTCC, Line crossing, Energization Approva) etc.	LS	1.00	22,40,000.00	22,40,000.0
	SUBTOTAL E - APPROVALS				22,40,000.0
F	ROW				
1	ROW	KMs	5.00	22,40,000.00	1,12,00,000.0
	SUBTOTAL F - ROW				1,12,00,000.0
G	Mandatory Recommended Spares as per Tender document	Lot	1.00		5,32,576.80
	SUBTOTAL G - MANDATORY SPARES				5,32,576.80
H	Price for Right to Use GETCO Design for TL	Lot	1.00	48,00,000.00	48,00,000.0
	SUBTOTAL H - Right to Use				48,00,000.0
I	TOTAL BASIC PRICE				5,75,16,671.20
J	GST @18%				1,03,53,000.82
K	TOTAL LANDED PRICE				6,78,69,672.02

Note:

*Quantity mentioned above to vary as per actual line route survey/ site conditions and is indicative only.
Contractor has to make his own estimate and shall be responsible for proper definition and execution of all interfaces with systems, equipment, material and services for proper and correct performance and operation of the EHV Line. In case of any discrepancy/ deviations/ changes in the data considered by Contractor, same shall be mentioned in the technical offer for owners review & approval. Any other item / services not specifically mentioned above but required for satisfactory operation of the transmission line system shall be deemed to be included in the scope of Contractor.

Assumptions:

- 1.Tower design considered - GETCO approved design.
- 2.Tower types are estimated tentatively as preliminary report is not available.
3. Line length is assumed 5 kms as per feedback land is not yet finalized.
4. Tower Span is assumed as average 320m throughout the line route
5. Tower type, Tower Extensions, Foundation type, Quantity of Towers, Conductor and accessories will vary depending on variation in line length and route survey.
6. Multicircuit tower to be considered near PGCIL S/s entry depending upon route survey as per PGCIL requirement/ approval.



BAY EXTENSION PACKAGE FOR EXTENSION OF 220KV BAY IN PAVAGDA POOLING SUBSTATION (PGCIL)

SCHEDULE OF RATES

Plant and Equipment (including Mandatory Spare Parts) to be supplied, including Type Test Charges (Bidder shall quote prices for the following mentioned items. Prices of all accessories, assemblies, components, parts etc. associated with these items are included in bidder's quoted prices for these items.)

Sl. No	Item Description	Unit	*Qty	Unit Price	Amount
	Part-A : Supply Quantities*				
A.	220kV Equipments				
1.	245kV Circuit Breaker (3-Phase) with support structure				
a.	1600A, 40kA without closing resistor	Set	2	11,26,800.0	22,53,600.0
2.	245kV Current Transformer (1-Phase)				
a.	1600A, 40kA with 120% extended current rating	Nos	6	2,70,000.0	16,20,000.0
b.	1600A, 40kA with 120% extended current rating (2 Core MCT)	Nos	6	2,70,000.0	16,20,000.0
3	245kV Capacitive Voltage Transformer (1-Phase)				
a.	4400pF	Nos	6	3,42,000.0	20,52,000.0
4	245kV Isolator (3-Phase) (Double Break) along with associated Insulators.				
a.	1600A, 40kA Isolator with one E/S	Set	2	4,97,682.0	9,95,364.0
b.	1600A, 40kA Isolator with two E/S	Set	2	5,31,180.0	10,62,360.0
d	1600A, 40kA Tandem Isolator without E/S	Sets	4	4,83,282.0	19,33,128.0
5	216kV Surge Arrester (1-Phase)	Nos	6	62,082.0	3,72,492.0
6	220 kV Bus Post Insulator (excluding BPI for Wave Trap)	Nos	22	23,202.0	5,10,444.0
7	220 kV High Bus Post Insulator (excluding BPI for Wave Trap)	Nos	6	24,642.0	1,47,852.0
8	245kV Electromagnetic Voltage Transformer(2Core Metering EMVT)	Nos	6	2,67,282.0	16,03,692.0
				-	-
B	Control & Relay Panels				
1.	220kV				
1.1	Circuit Breaker Relay Panel				
a.	With Autoreclose	Nos	2	15,03,180.0	30,06,360.0
1.2	Line Protection Panel	Nos	2	15,03,180.0	30,06,360.0
1.2	Augmentation of Bus Bar Protection Scheme	Set	1	32,31,180.0	32,31,180.0
				-	-
C	Other/common Equipments				
a.	Relay test kit	Set	1	1,69,200.0	1,69,200.0
				-	-
D	Substation Automation				
a.	Augmentation of substation automation system as per technical specification for				
i)	220kV Bays	Nos	2	18,00,000.0	36,00,000.0
				-	-
E	PLCC Equipment at PGCIL SS End				
E.1	With the below tentative equipment 1600A, 245kV, 45kA, 0.5mH Line TrapNos4 BPI for aboveNos6 Coupling device (Inter-circuit) Nos1 Carrier Terminal equipment (Analogue type) (S+D) (S+P) Nos2 Protection coupler (Analogue) Nos1 Protection coupler (Digital) Nos1 4 wire telephone instrument (Alongwith associated accessories, wiring etc.)Nos2 Testing & maintenance equipment (print test kit only)Set1 EPAX (24/8) with 24 nos. telephones, cables, accessories etc.Nos1	Lot	1	17,28,000.0	17,28,000.0
				-	-
				-	-
F	Fire Protection System				
1.0	Portable extinguishers				
b	4.5 kg CO ₂ type	Nos	1	6,533.3	6,533.3
				-	-
G	Air Conditioning System				
2.0	Air Conditioning for Switchyard panel room as per technical specification				
a)	For 220 kV	Set	1	2,17,775.6	2,17,775.6
				-	-
H	40mm MS rod for Main Earthmat	LS		19,59,980.7	19,59,980.7



Sl. No	Item Description	Unit	*Qty	Unit Price	Amount
				-	-
I	Illumination System			-	-
	Outdoor Switchyard and Street Lighting			-	-
1.0	Lighting Panel			-	-
i	Lighting Panel (Outdoor) Type ACP-2	Nos	1	1,08,887.8	1,08,887.8
ii	Sub-lighting panel (outdoor) Type SLP	Nos	2	1,08,887.8	2,17,775.6
2.0	Lighting fixtures and Receptacles including junction box, lighting wires& flexible conduit (if required) from junction box to lighting fixture, mounting arrangement and other accessories/materials etc. as required for complete installation and commissioning of lighting fixture.			-	-
i	Lighting Fixture LED LuminaireType FL-1	Nos	15	7,839.9	1,17,598.8
ii	Lighting Fixture LED LuminaireType FL-2	Nos	15	9,146.6	1,37,198.6
				-	-
J	Steel Structures			-	-
1.	Fabrication, galvanising and supply and erection of following steel structures including nuts, bolts, all type of washers, packplates,step bolts and gusset plates required for commissioning of steel structures. Foundation bolts shall be paid separately under separte item.			-	-
a.	Standard 220kV Lattice structures			-	-
i)	CB	Nos	2	2,51,597.9	5,03,195.8
ii)	B1	Nos	4	1,70,149.8	6,80,599.2
2.	Pipe Structure for Equipments			-	-
a.	Standard Structures for 220kV Equipments			-	-
i)	CT (1-Phase)	Nos	12	44,133.1	5,29,596.9
ii)	CVT (1-Phase) / EMVT (1-Phase)	Nos	12	44,133.1	5,29,596.9
iii)	SA (1-Phase)	Nos	6	38,400.0	2,30,400.0
iv)	Isolator (3 ph)	Nos	8	80,719.4	6,45,755.1
v)	BPI (Excluding BPI for Wave Trap)	Nos	16	38,400.0	6,14,400.0
vi)	High BPI (Excluding BPI for Wave Trap)	Nos	6	49,359.7	2,96,158.1
vii)	BPI for Wave Trap	Nos	6	44,133.1	2,64,798.5
				-	-
3.0	Foundation bolts			-	-
a	28mm dia	Nos	472	348.4	1,64,464.2
b	40mm dia/ '56mm dia	Nos	128	1,045.3	1,33,801.3
				-	-
L	Telecommunication Equipments(for both ends)			-	-
				-	-
1.0	Telecom Equipments			-	-
(i)	SDH Equipment (STM-16 MADM upto 3 MSP protected directions) Base Equipment (Common cards, Cross Connect/control cards, optical base cards, power supply cards, power cabling, other hardware and accessories including sub racks, patch cord, DDF etc fully equiped excluding (ii) & (iii) below- Nos2 Wit the following tentative qty. Optical Interface Cards/SFP S16.1 SFP -Nos4 L16. 1 SFP -Nos4 L16.2 SFP -Nos Tributary cards E1 Interface card (Min.16 interfaces per card) -Set4 Ethernet Interface 10/100 Base T with Layer-2 switching (Min 8 Interfaces per card) - Nos4 Gigabit Ethernet (Layer 2) Interface (min. 2 nos.) -Sets2 Equipment Cabinet (2200mmx600mmx600mm) -Nos2 Network Manager System- craft Terminal Hardware -Set1 Software -Set1 VOIP telephone instrument (SIP compliance) with one common switch (min. 8 port) - Nos4	Lot	1	16,80,000.0	16,80,000.0
				-	-
4.0	Approach Cable (24Fibres)			-	-
a	24 Fibre (DWSM)	Kms	1	89,288.0	89,288.0
b	Installation hardware set for above 24 Fibre, Fibre Optic Approach Cable	Set	1	32,666.3	32,666.3
5.0	FODP			-	-



Sl. No	Item Description	Unit	*Qty	Unit Price	Amount
	96 fibre: Indoor Type Rack Mounted with FCPC Coupling & Pigtails(5mtrs)	Nos	2	65,332.7	1,30,665.4
				-	-
	Part-B : Vendor Assessed Quantities			-	-
				-	-
A	Erection Hardware :[Insulator strings, Disc Insulators, Hardware, conductor, Al tube, bus-bar materials, cable trays, Bay MB, clamps, spacers, connectors including equipment connectors, Junction box, earth wire, earthing material risers, auxiliary earthmat(excluding main earth mat) buried cable trenches/pipe equipment & lighting, all accessories etc,Insulating mat, cable sealing arrangement etc.] for the following			-	-
1.	220kV Double Main & Transfer type Layout (as per Tender Drawings)			-	-
i	Line Bay	set	2	14,40,000.0	28,80,000.0
				-	-
B	Illumination System			-	-
i)	Switchyard panel room (1 set = for 1 Switchyard panel room)			-	-
ii)	For 220 kV (6 mtr long)	Set	1	5,87,994.2	5,87,994.2
				-	-
C	POWER & CONTROL CABLES			-	-
1	1.1 kV LV Cables(Refer Annexure)			-	-
i	Power Cable(PVC insulated)	LS	1	5,18,306.0	5,18,306.0
ii	Control Cable (PVC insulated)	LS	1	17,20,427.5	17,20,427.5
				-	-
D	Fire Protection System			-	-
I	Fire detection & Alarm System as per technical specification			-	-
a.	Switchyard Panel room	Set	1	2,83,108.3	2,83,108.3
				-	-
E	Augmentation of Visual Monitoring System as per Technical Specification	Set	1	3,39,730.0	3,39,730.0
				-	-
F	ABT Meter (Main & Check) & Cubical suitable for Outdoor Inatallation	Set	2	4,13,773.7	8,27,547.4
				-	-
	Total Part-A+B for 220kV Pavagada Extension			-	-
				-	-
	Part-C: Mandatory Spares			-	-
				-	-
1.	220kV Circuit Breaker			-	-
i)	Complete Pole of circuit breaker , pole column, interrupter, with driving mechanism and Marshaling Box but without support structure for			-	-
	1600 A, 40 KA (No. of Pole)	Nos	1	6,31,549.3	6,31,549.3
iii)	Rubber gaskets, 'O' rings and seals	Set	1		
iv)	Trip coils with resistor	Nos	2		
v)	Closing coils with resistor	Nos	2		
vi)	Terminal Pads & connectors for each rating	Nos	2		
vii)	Molecular filter	Nos	2		
viii)	Corona rings	Nos	1		
ix)	Relays, Power contactors, switch fuse units, limit switches, push buttons, timers & MCB etc.	Set	1		
x)	Pressure switches of each type	Set	1		
xi)	Auxiliary switch assembly	Set	1		
				-	-
2	220kV Isolator			-	-
i)	One complete pole including support Insulator, motor operating mechanism (MOM) with box but excluding structure			-	-
	1600A, 40 KA, 1 E/S (no. of pole)	Nos	1	3,39,730.0	3,39,730.0
ii)	Copper contact fingers for male & female contacts of each rating	Set	2	-	
iii)	Open/Close contactor assembly, timers, key interlock push button switch & auxilliary switches	Set	1	-	
iv)	Limit Switch	Set	2	-	
v)	Terminal Pads & Connectors of each rating	Nos	3	-	
vi)	Corona shield rings	Nos	3	-	
				-	-
3	220kV Current Transformer			-	-
i)	1600A, 40kA,120 % extended current rating	Nos	1	1,65,509.5	1,65,509.5
4	220kV Capacitive Voltage Transformer			-	-
i)	4400 pF	Nos	1	1,95,998.1	1,95,998.1



Sl. No	Item Description	Unit	*Qty	Unit Price	Amount
5	216kV Surge Arrester			-	-
i)	Complete LA	Nos	1	37,021.9	37,021.9
ii)	Surge counter/monitor	Nos	5	5,008.8	25,044.2
				-	-
6	Control & Protection			-	-
i	Line Protection panel spares			-	-
a	Main-I Numerical Line Current Differential relay (complete unit)(including remote end)	Nos	1	3,70,218.6	3,70,218.6
b	Main-II Numerical Line Current Differential relay (complete unit)	Nos	1	-	
				-	-
7	Sub-Station Automation system			-	-
i)	Bay Control Unit (IED) of each type	Set	1	5,00,884.0	5,00,884.0
ii)	Ethernet Switch of each type	Set	1	-	
				-	-
8	PLCC, DPC and EPAX (Pavagada S/S)			-	-
1	Set of prints for carrier terminal	Set	1	1,56,798.5	1,56,798.5
2	Set of prints for Analogue protection coupler (of each type)	Set	1	-	
3	Set of prints for EPAX	Set	1	-	
4	Set of print for Digital Protection coupler	Set	1	-	
				-	-
9	PLCC, DPC and EPAX (Remote end PSS)			-	-
1	Set of prints for carrier terminal	Set	1	1,56,798.5	1,56,798.5
2	Set of prints for Analogue protection coupler (of each type)	Set	1	-	
3	Set of prints for EPAX	Set	1	-	
4	Set of print for Digital Protection coupler	Set	1	-	
				-	-
10	Telecommunication Equipments			-	-
A	SDH Equipment (STM-16 MADM upto 5 MSP protected directions)			-	-
(i)	Common cards, Cross-connect/control cards, Optical base card, Power supply cards, power cabling, other hardware & accessories (each).	Nos	1	3,60,000.0	3,60,000.0
(ii)	Optical Interface Cards/SFP			-	
a	S16.1 SFP	Nos	1	-	
b	L16.1 SFP	Nos	1	-	
(iii)	Tributary cards			-	
a	E1 Interface card (Min.16 interfaces per card)	Nos	1	-	
b	Ethernet Interface 10/100 Base T with Layer-2 switching (Min 8 Interfaces per card)	Nos	1	-	
c	Gigabit Ethernet (Layer 2) Interface (min. 2 nos.)	Nos	1	-	
B	VOIP telephone instrument(SIP compliance) with one common switch (min. 8 port)	Nos	1	-	
C	Approach Cable (24Fibres)			-	-
a	24 Fibre (DWSM)	Kms	1	89,288.0	89,288.0
b	Installation hardware set for above 24 Fibre, Fibre Optic Approach Cable	Set	1	32,666.3	32,666.3
D	Pre Connectorized Optical Fiber Patch Cords(10 Mtrs) – Pack of six Patch cords	Set	1	-	-
				-	-
	Total Basic Price for Supply portion			-	4,84,21,788.4
	GST @18%			-	87,15,921.9
	Total Landed Price for Supply			-	5,71,37,710.3

SCHEDULE OF RATES - SERVICES INCLUDING CIVL WORKS

Si No	Item Description	Unit	*Qty		
	Part-A : Quantities*				
A.	220kV Equipments				
1.	245kV Circuit Breaker (3-Phase) with support structure	Set	2	34,025.60	68,051.20
a.	1600A, 40kA without closing resistor			-	-
2.	245kV Current Transformer (1-Phase)	Nos	6	6,825.60	40,953.60
a.	1600A, 40kA with 120% extended current rating	Nos	6	8,800.00	52,800.00
b.	1600A, 40kA with 120% extended current rating (2 Core MCT)			-	-



Sl. No	Item Description	Unit	*Qty	Unit Price	Amount
3	245kV Capacitive Voltage Transformer (1-Phase)	Nos	6	6,825.60	40,953.60
a.	4400pF			-	-
4	245kV Isolator (3-Phase) (Double Break)			-	-
a.	1600A, 40kA Isolator with one E/S	Set	2	26,825.60	53,651.20
b.	1600A, 40kA Isolator with two E/S	Set	2	28,800.00	57,600.00
d	1600A, 40kA Tandem Isolator without E/S	Sets	4	26,825.60	1,07,302.40
5	216kV Surge Arrester (1-Phase)	Nos	6	4,800.00	28,800.00
7	220 kV High Bus Post Insulator (excluding BPI for Wave Trap)	Nos	6	1,625.60	9,753.60
6	220 kV Bus Post Insulator (excluding BPI for Wave Trap)	Nos	22	3,600.00	79,200.00
8	245kV Electromagnetic Voltage Transformer(2Core Metering EMVT)	Nos	6	8,800.00	52,800.00
				-	-
B	Control & Relay Panels			-	-
1.	220kV			-	-
1.1	Circuit Breaker Relay Panel			-	-
a.	With Autoreclose	Nos	2	12,000.00	24,000.00
1.3	Line Protection Panel	Nos	2	12,000.00	24,000.00
1.4	Augmentation of Bus Bar Protection Scheme	Set	1	24,000.00	24,000.00
				-	-
C	Other/common Equipments			-	-
a.	Relay test kit	Set	1	14,930.48	14,930.48
				-	-
D	Substation Automation			-	-
a.	Augmentation of substation automation system as per technical specification for			-	-
i)	220kV Bays	Nos	2	40,000.00	80,000.00
				-	-
E	PLCC			-	-
E.1	At Pavagada Pool S/S			-	-
i	Line Trap			-	-
a	1600A,245kV, 45kA,0.5mH Line Trap	Nos	4	55,623.35	55,623.35
b	BPI for above	Nos	6	-	
ii	Coupling device (Inter-circuit)	Nos	1	-	
iii	Carrier Terminal equipment (Analogue type) (S+D) (S+P)	Nos	2	-	
iv	Protection coupler (Analogue)	Nos	1	-	
v	Protection coupler (Digital)	Nos	1	-	
vi	4 wire telephone instrument (Alongwith associated accessories, wiring etc.)	Nos	2	-	
vii	Testing & maintenance equipment (print test kit only)	Set	1	-	
viii	EPAX (24/8) with 24 nos. telephones, cables, accessories etc.	Nos	1	-	
E.2	At PSS End			-	-
i	Coupling device (Inter-circuit)	Nos	1	55,623.35	55,623.35
ii	Carrier Terminal equipment (Analogue type) (S+D) (S+P)	Nos	2	-	
iii	Protection coupler (Analogue)	Nos	1	-	
iv	Protection coupler (Digital)	Nos	1	-	
v	4 wire telephone instrument (Alongwith associated accessories, wiring etc.)	Nos	2	-	
vi	Testing & maintenance equipment (print test kit only)	Set	1	-	
vii	EPAX (24/8) with 24 nos. telephones, cables, accessories etc.	Nos	1	-	
				-	-
F	Fire Protection System			-	-
1.0	Portable extinguishers			-	-
b	4.5 kg CO ₂ type	Nos	1	146.38	146.38
				-	-
G	Air Conditioning System			-	-
2.0	Air Conditioning for Switchyard panel room as per technical specification			-	-
a)	For 220 kV (6 mtr long)	Set	1	10,539.16	10,539.16
				-	-
H	40mm MS rod for Main Earthmat Laying	LS	1	3,36,667.66	3,36,667.66
				-	-
I	Illumination System			-	-
	Outdoor Switchyard and Street Lighting			-	-
1.0	Lighting Panel			-	-
i	Lighting Panel (Outdoor) Type ACP-2	Nos	1	3,220.30	3,220.30
iii	Sub-lighting panel (outdoor) Type SLP	Nos	2	3,220.30	6,440.60



Sl. No	Item Description	Unit	*Qty	Unit Price	Amount
2.0	Lighting fixtures and Receptacles including junction box, lighting wires& flexible conduit (if required) from junction box to lighting fixture, mounting arrangement and other accessories/materials etc. as required for complete installation and commissioning of lighting fixture.			-	-
i	Lighting Fixture LED LuminaireType FL-1	Nos	15	585.51	8,782.63
ii	Lighting Fixture LED LuminaireType FL-2	Nos	15	585.51	8,782.63
				-	-
J	Steel Structures			-	-
1.	Fabrication, galvanising and supply and erection of following steel structures including nuts, bolts, all type of washers, packplates,step bolts and gusset plates required for commissioning of steel structures. Foundation bolts shall be paid separately under separate item.			-	-
a.	Standard 220kV Lattice structures			-	-
i)	CB	Nos	2	16,101.50	32,202.99
ii)	B1	Nos	4	8,782.63	35,130.54
2.	Pipe Structure for Equipments			-	-
a.	Standard Structures for 220kV Equipments			-	-
i)	CT (1-Phase)	Nos	12	1,317.40	15,808.74
ii)	CVT (1-Phase) / EMVT (1-Phase)	Nos	12	1,317.40	15,808.74
iii)	SA (1-Phase)	Nos	6	1,317.40	7,904.37
iv)	Isolator(3 ph)	Nos	8	2,488.41	19,907.30
v)	BPI (Excluding BPI for Wave Trap)	Nos	16	1,317.40	21,078.32
vi)	High BPI (Excluding BPI for Wave Trap)	Nos	6	1,610.15	9,660.90
vii)	BPI for Wave Trap	Nos	6	1,317.40	7,904.37
				-	-
3.0	Foundation bolts			-	-
a	28mm dia	Nos	472	102.46	48,363.04
b	40mm dia/ '56mm dia	Nos	128	161.01	20,609.92
				-	-
L	Telecommunication Equipments(for both ends)			-	-
				-	-
1.0	Telecom Equipments			-	-
				-	-
A	SDH Equipment (STM-16 MADM upto 3 MSP protected directions)			-	-
(i)	Base Equipment (Common cards, Cross Connect/control cards, optical base cards, power supply cards, power cabling, other hardware and accessories including sub racks, patch cord, DDF etc fully equiped excluding (ii) & (iii) below	Nos	2	20,000.00	20,000.00
				-	
(ii)	Optical Interface Cards/SFP			-	
a	S16.1 SFP	Nos	4	-	
b	L16. 1 SFP	Nos	4	-	
				-	
(iii)	Tributary cards			-	
a	E1 Interface card (Min.16 interfaces per card)	Set	4	-	
b	Ethernet Interface 10/100 Base T with Layer-2 switching (Min 8 Interfaces per card)	Nos	4	-	
c	Gigabit Ethernet (Layer 2) Interface (min. 2 nos.)	Sets	2	-	
B	Equipment Cabinet (2200mmx600mmx600mm)	Nos	2	-	
				-	
2	VOIP telephone instrument(SIP compliance) with one common switch (min. 8 port)	Nos	4	-	-
				-	-
3.0	Approach Cable (24Fibres)			-	-
a	24 Fibre (DWSM)	Kms	1	19,029.04	19,029.04
b	Installation hardware set for above 24 Fibre, Fibre Optic Approach Cable	Set	1	4,391.32	4,391.32
				-	-
	Part-B : Vendor Assessed Quantities			-	-
				-	-



Sl. No	Item Description	Unit	*Qty	Unit Price	Amount
A	Erection Hardware : [Insulator strings, Disc Insulators, Hardware, conductor, Al tube, bus-bar materials, cable trays, Bay MB, clamps, spacers, connectors including equipment connectors, Junction box, earth wire, earthing material risers, auxiliary earthmat(excluding main earth mat) buried cable trenches/pipe equipment & lighting, all accessories etc,Insulating mat, cable sealing arrangement etc.] for the following			-	-
1.	220kV Double Main & Transfer type Layout (as per Tender Drawings)			-	-
i	Line Bay	set	2	36,000.00	72,000.00
				-	-
B	Illumination System			-	-
i)	Switchyard panel room (1 set = for 1 Switchyard panel room)			-	-
ii)	For 220 kV (6 mtr long)	set	1	26,347.90	26,347.90
C	POWER & CONTROL CABLES			-	-
1	1.1 kV LV Cables(Refer Annexure)			-	-
i	Power Cable(PVC insulated)	LS	1	4,00,000.00	4,00,000.00
ii	Control Cable (PVC insulated)	LS	1	3,60,000.00	3,60,000.00
				-	-
D	Fire Protection System			-	-
i	Fire detection & Alarm System as per technical specification			-	-
a.	Switchyard Panel room	Set	1	4,391.32	4,391.32
				-	-
E	Augmentation of Visual Monitoring System as per Technical Specification	Set	1	14,637.72	14,637.72
				-	-
F	ABT Meter (Main & Check) & Cubical suitable for Outdoor Inatallation	Set	2	11,710.18	23,420.36
				-	-
G	Testing & Commissioning	LS	1	2,86,899.40	2,86,899.40
				-	-
	Total Part-B for (Erection)			-	-
				-	-
	PART-IV			-	-
	CIVIL WORK (As per technical specification)			-	-
				-	-
A	QUANTITIES*			-	-
1.0	Excavation in all types of soil and rock including backfilling disposal etc. as per Specifcation	Cum	1578	920.00	14,51,760.00
2.0	Providing and laying of Plain Cement Concrete (PCC) (1:4:8)	Cum	48	7,600.00	3,64,800.00
3.0	Providing and laying of Plain Cement Concrete (PCC) (1:2:4)	Cum	4	8,116.83	32,467.31
4.0	Providing and laying of Reinforced Cement Concrete M25 Design Mix including pre cast, shuttering, Grouting of pockets & underpinning but excluding steel reinforcement	Cum	242	10,049.41	24,31,956.16
5.0	Providing and laying Plain Cement Concrete 1:5:10 (1 cement : 5 sand : 10 brick aggregate) including cement slurry of mix 1:6 as per technical specification.	Cum	306	6,480.00	19,82,880.00
6.0	Steel Reinforcement of Grade Fe-500 or TMT bars of Equivelent grade	MT	14	73,437.96	10,28,131.50
8.0	Misc. Structural steel including rails, embedments, edge protection angles, gratings etc. but excluding the reinforcement steel and steel for lattice and pipe structures.	MT	11	81,168.28	8,92,851.04
9.0	Stone spreading in switchyard excluding PCC	Sq.m	4000	360.00	14,40,000.00
10.0	Antiweed treatment	Sq.m	4000	96.00	3,84,000.00
12.0	Supplying & laying hume pipe of grade(NP-3) excluding concrete and reinforcement for cable trench crossing and road culvert			-	-
i	250mm dia	RM	15	760.00	11,400.00
ii	300mm dia	RM	15	1,000.00	15,000.00
iii	450mm dia	RM	10	1,320.00	13,200.00
iv	600mm dia	RM	10	1,840.00	18,400.00
14.0	Removal & Respreading of Gravels	Sqm	2000	120.00	2,40,000.00
15.0	All civil works as per drawing and specification but excluding excavation, PCC, RCC and reinforcement (which shall be paid seperately under respective items of BPS)			-	-
i	220kV Switchyard Panel Room (6 M × 4.5 M)	Sqm	27	12,368.50	3,33,949.48
16.0	External finishing as per technical specification for following :			-	-
i	220kV Switchyard Panel Room (6 M × 4.5 M)	Nos	1	1,62,336.55	1,62,336.55



Sl. No	Item Description	Unit	*Qty	Unit Price	Amount
	Total Basic Price for Services incl. Civil Works			-	1,35,13,250.47
	GST @18%			-	24,32,385.09
	Total Landed Price for Services incl. Civil Works			-	1,59,45,635.56
	Total Landed Price for Supply & Services incl. Civil Works			-	7,30,83,345.84

Notes*:

1. Above BPS and enclosed Technical specifications are general in nature, issued for reference purpose only and not for execution.
2. Final BPS, Technical Specifications and layout drawings shall be released by PGCIL on realization of Bay Consultancy Service agreement between PGCIL and Bay Owner.
3. BPS, Bay drawings and Technical specifications released by PGCIL shall only be considered for Execution without any deviations.
4. Any changes in BPS & TS shall be submitted to Owners approval on receipt of the PGCIL approved BPS & TS.

