

TRANSMISSION CORPORATION OF ANDHRA PRADESH LIMITED

VIDYUT SOUDHA :: VIJAYAWADA

APTRANSCO – Standard Schedule of Rates for Labour items for adoption in construction, RMI and O&M works pertaining to 400kV Transmission lines and substations for the year 2023-24 -Communicated – Reg.

T.O.O. No. Chief Engineer (Transmission) Ms.No. 3208
Read the following: -

Dt. 19.03.2024.

Ref :- 1. T.O.O .(CE-Transmission) M.S. No.2531, dated 04.08.2022.
2. T.O.O.CE (Transmission) MS.No.2817, Dt.10.05.2023.
3. T.O.O.CE (Transmission) MS.No.2921, DT.17.08.2023.

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APTRANSCO is periodically communicating Standard Schedule of rates for Labour items for construction and O&M works pertaining to 400kV, 220kV & 132kV Transmission lines and substations for adoption in preparation of estimates. Accordingly, the SSR communicated earlier in the above reference (1) is revised for Labour item rates and communicated herewith.

ORDER

Standard Schedule of Rates for Labour items for construction, RMI and O&M works pertaining to 400kV Transmission lines and substations for the year 2023-24 approved by Transmission Corporation of Andhra Pradesh is communicated herewith for adoption in preparation of estimates.

The standard scheduled of Rates for the year 2023-24 will come into force from the date of issue of this T.O.O and shall be valid till further orders. The SSR 2023-24 (Labour) is available in the APTRANSCO website.

This order is issued in concurrence with the Chairman and the Managing Director/APTRANSCO vide **Computer No: 2320505 File No: ENE51-TRM0MISC/5/2024-EE1**

(BY ORDER AND IN THE NAME OF TRANSMISSION CORPORATION OF ANDHRA PRADESH LIMITED)

A.K.V. Bhaskar
Director (Grid, Transmission & Management)

TRANSMISSION CORPORATION OF ANDHRA PRADESH LIMITED



**STANDARD SCHEDULE OF RATES OF LABOUR ITEM RATES FOR 400kV
TRANSMISSION LINES AND SUBSTATIONS**

FOR THE YEAR 2023-24

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PREAMBLE

1. The rates for the item of works (Line & Substations) involved under special conditions in the SSR-2022-23 are also continued in SSR-2023-24 vide Annexure-A and same is applicable for 400 KV SSR 2023-24.

ANNEXURE-A		
TRANSMISSION LINE WORKS		
Sl. No.	Description of work	% Over the basic labour rates
1.	River Crossing with JC type towers	100% extra
2.	2 Circuit Stringing with 1 Circuit live.	75% extra
3.	<u>Works under shutdown:</u> This is applicable under the following conditions only. i. Pre-programmed for interruption of line. ii. Pre-arranged replacement / rectification of line materials.	50% extra
4.	Dismantling works	75% of Normal Rate.
5.	Emergency Works such as break down works. This will not be applicable for pre- arranged shutdown works.	100% extra
6.	Stringing of railway crossings	100% extra
7.	National and State High way crossings	25% extra
8.	Tree cutting & Jungle Clearance in Tr. Line works as the works are in scattered areas.	100% extra
9.	DC Works under shutdown	100% extra
SUBSTATIONS AND OTHER WORKS:		
Sl. No.	Description of work	% Over the Basic labour rates
	<u>Works under shutdown (including DC works)</u> This is applicable under the following conditions only. i. Pre-programmed for interruption of equipment. ii. Pre-Programmed replacement of bus in Substation. iii. Pre-arranged replacement / rectification of equipment.	50% extra

2.	Dismantling works	75% of Normal Rate.
3.	<u>Emergency Works such as break down works.</u> <u>This will not be applicable for pre- arranged shutdown works.</u>	100% extra
4.	Idle trip (No load) rate of the low- bedded trailer for movement of Power Transformers.	50% of basic labour rate of loaded trip. Shortest distance from / to the place of availability of low bedded Trailer shall be considered.

Note: - However if more than one special condition such as emergency, shutdown, 2nd circuit stringing with 1st circuit live and breakdown etc., are applicable for a particular work item / situation, only one condition with maximum extra rate out of applicable special conditions can be allowed. Applying more than one special condition for any item is not allowed.

2. For EHT (400kV, 220kV & 132kV) Transmission line works: Uniform Area Allowance including Scattered area Mobilization efforts is provided as follows:

- a. 20% extra provision on labour component of the basic rates of APTRANSCO towards Uniform Area Allowance including scattered area Mobilization efforts in general areas.
- b. 35% extra provision on labour component of the basic rates of APTRANSCO towards Uniform Area Allowance including scattered area Mobilization efforts in difficult area/Scheduled terrain. The concerned SE/TLC has to certify that entire line passes through difficult area / Scheduled terrain duly furnishing the justification.

Note:- If 35% extra towards Uniform Area Allowance including Scattered area Mobilization efforts in difficult area/ Scheduled Terrain is applicable for a work, then the 20% extra towards Uniform Area Allowance including Scattered area Mobilization efforts in general areas is not applicable.

- c. 10% extra to the material of earth flat (material) is allowed towards wastage, cleats and overlap etc., while preparing the estimate as the billing for this item is on Running Meters basis after laying of earth mat.
- d. For stringing of conductor for small modification works, if the length of the line is less than 0.5 KM, 0.5KM is considered and if the length of the line is greater than 0.5 KM and less than 1 KM, 1KM is considered, in the preparation of estimate.
- e. For survey of small length of lines, if the length of line is less than 1KM, then 1KM is

considered for survey of small length of lines in the preparation of estimate.

- f. The rates for tree cutting and jungle clearance may be followed as per Common SoR of Government of Andhra Pradesh.

3. Area Allowance:

- a. (i). 40% extra over the basic rates on labour component of works is allowed in Greater Visakhapatnam Municipal Corporation and Vijayawada Municipal Corporation(Up to a belt of 12kms.from Municipal Corporation Limits).
- (ii). 40% extra over the rates on labour component of works for Amaravati capital region city area (217sq.km) as declared by the Govt. Vide G.O.Ms.No:141, MA&UD(M2) Dept.,dt:09.06.2015(This is introduced as per the Govt instructions issued in Govt.Memo.No.668755/ Reforms/2017Dt:14.07.2017.
- (iii). For works at Tirumala Hills in Chittoor District, 40% extra over the basic rates of labour component is allowed.
- b. 25% extra over the basic rates on labour component of works is allowed in other Municipal Corporations.
- c. 20% extra over the basic rates on Labour component of works is allowed in district headquarters and other municipalities.

Note: Works within a belt of 12Km from the Municipal limits shall be taken into account for the purpose of allowing the extra percentages.

d. Agency Areas:

1.25% extra is allowed for the works located inside the Agency area.

2.25% extra is allowed for the works located in the border of Agency area i.e., works located within a belt of 16Km from the boundary of Agency area.

e. Industrial Area

20% over basic rates on labour component of works allowed for works situated within 10Kms belt of industrial area of Ibrahimpatnam, Vuyyuru, Jaggaiahpeta in Krishna District, Macherla, Gurajala, Challapalli in Guntur District, Garividi in Vijayanagaram District, Renigunta in Chittoor District, Yerraguntla, Mangampet in Kadapa district, Hindupur, Tadipatri, Anantapur, Guntakal, Rayalcheruvu, Yadiki of Anantapur District, Adoni,Dhone,Cement Nagar, Nandyal, Kurnool, Yemmiganur, Bethamcherla of Kurnool District and Anakapally of Visakhapatnam District.

Note: If more than one area allowances (such as those) for Municipal Corporations, Municipalities, Agency area, Industrial areas are applicable for a particular situation, only the maximum out of the allowable percentage is to be allowed.

- f. The Area allowance/Uniform Area Allowance including scattered area Mobilization efforts charges are not applicable on Fabrication charges and Galvanization Charges.
- g. The area allowance shall be applicable for O&M and RMI works in substations also on par with construction works.
- h. The Uniform Area Allowance including scattered area Mobilization efforts shall be applicable for O&M & RMI works of lines also on par with construction works.

The area allowances are applicable for Civil, Electrical & Telecom works (labour), Capital, O&M and RMI works irrespective to their value of works.

- 4. 13.615% on basic labour rates towards COP (Contractors Overheads and Profit) including labour importation is applicable for turnkey projects, O&M and RMI works without any conditions. The following components of COP relevant/pertaining to APTRANSCO are considered.
 - a. Site accommodation.
 - b. Setting up of plants and machinery.
 - c. Formation of access road.
 - d. Water supply for construction.
 - e. Electricity for construction.
 - f. General Site arrangement
 - g. Office furniture equipment and communication
 - h. Technical agents for site supervisions.
 - i. Documentation and as built drawings.
 - j. Mobilization/de-mobilization of resources.
 - k. Labour camps with minimum amenities and transportation to work sites.
 - l. Light vehicle for site supervision including field and laboratory testing.
 - m. Laboratory equipment and quality control including field and laboratory testing.
 - n. Watch & Ward.
 - o. Expenditure on safeguarding environment
 - p. Financing Expenditure
 - q. Work Insurance/Compensation

5. Tree Cutting and Clearing of Jungle

Please refer to the prevailing Common SoR of Board of Chief Engineers for engineering departments of GOAP.

6. The (lead) Conveyance Charges for Transportation of Equipment/ Materials.

Please refer to the prevailing SoR of Board of Chief Engineers for engineering departments of GOAP.

7. Erection of Power Transformers and Oil filtration Works

The rates communicated by CE/Transmission vide reference given below

- i. Lr.No. CE (Tr) / SE (Tr) / EE(Tr) / DEE-1 / F.CTO-04/2021-ERC / D.No.129/21, dt:13.09.2021 on rate contract basis for erection, dismantling, transportation and oil filtration of 220kV and 132kV class Power Transformers through private agency are valid up to 23.08.2023 and same is followed in continuation circular issued.
- ii. Lr.No. CE (Tr) / SE (Tr) / EE (Tr) / DEE-1/ F.CTO-05/2022 - RRC/D.No. 45/23, dt:27.03.2023 for fixing up for repair and overhauling works of 220 KV and 132 KV Class power Transformer valid upto 26.03.2025.
- iii. Lr.No. CE(Tr) / SE(Tr) / EE(Tr) / DEE-1 / F.ERC 400KV-Oil Filtration / D.No.34/21, dt.09-03-2023 on rate contract basis for erection, dismantling, transportation and oil filtration of 400kV class Power Transformers through private agency are valid up to 31.03.2025.

Area Allowances, Special provisions and any other allowances are not applicable on the rates of rate contract. The rates mentioned under the rate contract include all taxes & duties, allowances and all extra provisions including Transport etc.

The erection, testing & commissioning of 220kV and 132kV Voltage Level Power Transformers where erection, testing and commissioning is not in the scope of supplier same shall be arrived as per above rate contract for preparation of estimates.

In the case of the works of Handling, Erection and Filtration of power Transformers will be carried out by the department, in such cases, area allowances, special provisions other than shutdown charges, taxes and duties are not applicable.

Note:

- (i) Shutdown charges are applicable only for the works carried out during shutdown period. The same has to be certified by the concerned Superintending Engineer.
- (ii) Whenever double boom crane is utilized for PTR works of 80 MVA & above capacity, 50% extra over the existing crane charges are applicable. However, the same has to be certified by concerned Superintending Engineer.

8. Civil Engineering Works in APTRANSCO:

For Civil work items of APTRANSCO, the prevailing common SoR of Board of Chief Engineers for engineering departments of GOAP shall be followed in toto.

The area allowances & Contractors Profit and overheads (COP) shall be followed as per

APTRANSCO SSR 2023-24.

The Area allowances indicated at **Para 3** is also applicable for Civil Works and a provision is made for 13.615% towards Contractors Profit and overheads. The provisions made in T.O.O.CE (Civil) Ms No.148, dated.21.10.2009 are also applicable for civil works except the Uniform area allowance & scattered area allowance. The Uniform Area Allowance including scattered area Mobilization efforts charges indicated at **Para 2** is also applicable for Civil Works (Transmission Line).

With regard to Civil works pertaining to River Crossing Transmission Line Towers the following special allowances may be adopted with reference to **TOO (CE-Construction) Rt. No. 731, Dt.14.08.2018.**

A) The Cost data for **BORED PILES & SUPERSTRUCTURE CONCRETE (PILE CAPS, COLUMNS & TIE BEAMS)** of River Crossing Transmission Line Towers worked-out as per Revised Standard Data part-II (Roads & Bridges) of Govt. of Andhra Pradesh for 750mm, 1000mm and 1200mm dia and that of Central Public works Department (CPWD) of Government of India for Bored Piles of 600mm and 1500mm dia with Uniform Area Allowance including Scattered Area Mobilization efforts of **20%** on

Labour component of basic rates **PLUS Special Scattered Area Allowance of 50%**

(towards formation of approaches, roads, bunds, transportation of men and material to work spot and other special works as may be necessary for finished item of work as directed by Engineer-in-charge) on basic rates for works on **DOWNSTREAM SIDE** of the Barrages etc. where there is no water or reasonably low water.

B) The Cost data for **BORED PILES & SUPERSTRUCTURE CONCRETE (PILE CAPS, COLUMNS & TIE BEAMS)** of River Crossing Transmission Line Towers worked-out as per Revised Standard Data part-II (Roads & Bridges) of Govt. of Andhra Pradesh for 750mm, 1000mm and 1200mm dia and that of Central Public works Department (CPWD) of Government of India for Bored Piles of 600mm and 1500mm dia with Uniform Area Allowance including Scattered Area Mobilization efforts of **20%** on Labour component of basic rates **PLUS Special Scattered Area Allowance of 75%** (towards formation of approaches, roads, bunds, transportation of men and material to work spot and other special works as may be necessary for finished item of work as directed by Engineer-in-charge) on basic rates for works on **UPSTREAM SIDE** of the Barrages and in large ponds, lakes etc. where there is impounded water.

C) The Cost Data for **ALL OTHER ITEMS OF WORK (other than those mentioned in A & B above)** RELATED to River Crossing Transmission Line Tower Foundations Viz. Fabrication & Fixing of Reinforcement Steel, MS Liners, Earth work Excavation,

Cement Concrete for levelling course, Fabrication & Erection of MS/ GI structural steel for Hand Railing, Foundation Bolts, Base Plates etc worked-out as per Revised Standard Data part-II (Roads & Bridges) of Government of Andhra Pradesh with Uniform Area allowance including Scattered Area Mobilization Efforts of be 35% on Labour component of basic rate treating as DIFFICULT AREA without any Special Scattered Area Allowance.

9. Telecom Works in APTRANSCO:

For Telecom work items of APTRANSCO, the Area allowances indicated at **Para 3** is also applicable for Telecom Works and a provision is made for 13.615% towards Contractors Profit and overheads. The Uniform Area Allowance including scattered area Mobilization efforts charges indicated at **Para 2** is also applicable for Telecom Works (Transmission Line).

Para 2(d) is applicable for OPGW Stringing works and all the works included in Annexure-A are applicable for Telecom Works.

The rates for telecom works/Labour and preamble in SSR2023-24 for 220 KV and 132 KV Transmission lines and substation shall be applicable for 400 KV Transmission line and Substation telecom works also.

10. SAS Integration Works in APTRANSCO:

The items (i) Sub-Station Automation System as per 400KV Specification including Software for complete Sub-Station Automation System along with Visual monitoring system.

(ii) Integration and Installation, Testing & Commissioning of ICT/feeder Bay to the existing Substation Automation System (including Hardware and Software) is included and shall be in Material 400 KV Material SSR 2023-24.

- 11.** In respect of Cement and Steel rods the procedure indicated in Common SSR for all Engineering Departments shall be adopted for updating of estimates at the time of finalization of tenders.
- 12.** The SSR rates for the year 2023-24 is arrived with reference to the variation of consumer price index(CPI), issued by Ministry of Labor and employment of Government of India with reference to SSR2022-23.

The consumer price index variation of SSR 2023-24 w.r.t. SSR 2022-23 is evaluated as +5.7937%.i.e from March 2022 to March 2023 (calculation sheet enclosed)

A file is circulated through FA & CCA for scrutiny and arithmetical verification of CPI for arriving SSR 2023-24 rates and same is confirmed by FA & CCA

- 13.** All statutory levies such as GST are based on the prevailing notified rate, shall have to be added in the estimate. As per Memo no: Dir(G,T&M)/APT/CE/Const/SE-400kV /D1AI/D.No.683/20, dt:30.09.2020 labour cess shall be in contractor scope. Hence labour cess shall not be included in the ECV and it is the liability of the Bidder/Contractor only.

400 KV SSR 2023-24 RATES FOR LABOUR ITEMS				
Sl. No.	Item No.	Description of Item	Unit	SSR Rate for 2023-24 (in Rs)
ANNEXURE – I				
SSR RATES FOR ERECTION OF 400KV TRANSMISSION LINES				
C4L1	1(a)	Preliminary Survey with GPS survey, theodolite & total station, marking route on topo sheets represents actual field conditions.	Km	5,070
C4L 2	1(b)	Detailed Survey with GPS, total stations, Digital theodolite etc., along the approved alignments preparation of profiles, tower spotting, tower schedules and soil resistivity.	Km	26,337
	1(C)	Conducting survey with the help of revenue authorities for identification of land owners along the transmission line corridor (46 Mtrs width) for arranging 10% of corridor compensation amount to the land owners falling under transmission line	Acre	2,507
C4L 3	2(a)	Excavation of trail pit (1mt x 1 mt x 3.5mt).	No.	2,617
	2(b)	Excavation of Trial Pit by Auguring & Boring of holes of 300mm Dia x 3.5 RM.	No.	2,917
C4L 4	3	Check Survey, peg marking the tower positions on ground, conforming to the approved Profile and tower schedules using GPS, Total stations, Digital theodolites etc.	Km	5,999
C4L 5	4	Setting with stub for all types of towers with stub setting template which includes erection of stubs, fixing of jacks for supporting template, alignment and leveling excluding cost of excavation and concrete (excluding transportation charges).	Set	21,371
C4L 6	5(a)	Super structure erection of all type of towers including extensions except RC towers including fitting of step bolts, danger plates, number plates, phase plates, circuit plates, bird guards, anti-climbing devices etc., and tack welding of all bolts & nuts (upto bottom cross arm level) (excluding transportation charges).	MT	11,470
C4L 7	5(b)	Erection of all types of Anchor Towers and their extensions (complete), including fitting of step bolts, danger plates, number and phase plates, circuit plates, bird guards, and anticlimbing devices etc and tack welding of all bolts & nuts (upto bottom cross arm level).	MT	17,205

Sl. No.	Item No.	Description of Item	Unit	SSR Rate for 2023-24 (in Rs)
C4L 8	5(c)	Super structures erection of 400kV Multi circuit towers including Auxiliary cross arms (complete), including fitting of step bolts, danger plates numbers and phase plates, circuit plates, birds guards, and anticlimbing devices etc and tack welding of all bolts & nuts (upto bottom cross arm level) etc.	MT	20,416
C4L 9	5(d)	Super structure erection of River crossing towers and their extensions(complete), including all the associated works such as, earthing of all the four legs as per the approved drawing(including the cost of material),fitting of step bolts, danger plates, number and phase plates, circuit plates, bird guards, and anticlimbing devices etc and tack welding of all bolts & nuts (upto bottom cross arm level).	MT	28,655
C4L 10	6	Mounting of Insulators and stringing of double circuit with twin bundled ACSR Moose Power Conductor including laying, jointing, tensioning, sagging clamping and fixing spacers (excluding transportation charges).		
	6(a)	Single circuit Stringing	KM	3,04,349
	6(b)	Double Circuit Stringing	KM	4,56,524
	6(c)	Multi Circuit Stringing (4 circuits)	KM	6,84,786
C4L 11	7	Mounting of Insulators and stringing of double circuit with Quadruple ACSR Moose Power Conductor including laying, jointing, tensioning, sagging clamping and fixing spacers (excluding transportation charges).		
	7(a)	Single circuit Stringing	KM	4,56,524
	7(b)	Double Circuit Stringing	KM	6,84,788
	7(c)	Multi Circuit Stringing (4 circuits)	KM	10,27,182
C4L 12	8	Mounting of Insulators and stringing of double circuit with twin bundled ACSR Moose Power Conductor including laying, jointing, tensioning, sagging clamping and fixing spacers (excluding transportation charges) for River crossing tower.		
C4L 13	8(a)	Double Circuit Stringing	KM	11,40,421
	8(b)	Multi Circuit Stringing(4 circuits)	KM	17,10,632
C4L 14	9(a)	Stringing of two (2) nos. 7/3.66 mm galvanized steel earth wire, including laying jointing,	KM	21,450

		tensioning etc., with necessary accessories upto the pinnacle (excluding transportation charges).		
C4L 15	9(b)	Stringing of one (1) no. 7/3.66 mm galvanized steel earth wire, including laying jointing, tensioning etc., with necessary accessories (excluding transportation charges).	KM	14,300
C4L 16	9(c)	Stringing of two (2) nos. 7/3.66 mm galvanized steel earth wire, including laying jointing, tensioning etc., with necessary accessories upto the pinnacle (excluding transportation charges) for River crossing towers.	KM	53,585
	10	Earthing of transmission towers:		
C4L 17	10(a)	Providing of Pipe type earthing including of cost of BH coke & salt but excluding cost of earthing set	Each	5,877
C4L 18	10(b)	Counter poise earthing sets excluding cost of all materials (4sides of tower)	Each location	4,927
C4L 19	10(c)	Counter poise earthing sets using Bentonite and salt (4 sides of tower)	Each location	7,391
C4L20	11	Cutting and removing of all kind of trees of all girths and all sizes and also clearing of scrub jungle including transportation and disposal at a distance as per APTransco site Engineers instructions along the route of the line for a total corridor of 46mtrs.	Km	As per Common SoR of GoAP in force

ANNEXURE-II				
<u>ERECTION OF 400kV SUBSTATIONS</u>				
Sl. No.	Item No.	Description of Item	Unit	SSR Rate for 2023-24 (in Rs)
C4S1	1	Total cost of receipt from site/stores, storage, handling, erection, testing & commissioning of 400/220kV, 315MVA Transformers 50/ 63/80/125 MVAR Shunt reactor with all accessories and fittings including storage cum erection insurance as per specification. The charges include AC power for oil filter machines and all other supplier supervision charges including oil testing charges in a third party lab for complete erection, testing and commissioning.	Nos	29,90,674
C4S2	2(a)	Hoisting of insulators & hardware, paving conductor and stringing of 400kV main bus for three phases with quadruple moose conductor to a tension of 1000kgs for single moose conductor, bus section length is 54mtrs.	Bus Section	51,062
C4S 3	2(b)	Hoisting of insulators & hardware, paving conductor and stringing of 400kV Jack bus for three phases with twin moose conductor to a tension of 1000kgs for single moose conductor, bus section length is 60mtrs.	Bus Section	25,898
C4S 4	3	Erection of 7/3.66 GSS Earth wire from top of peak tower and LMs to ground and connecting to untreated earth pits including cutting, clamping and fixing of all hardware like Pad type compression clamp, cleat type clamp and T clamp etc.	RM	76
C4S 5	4(a)	Connecting equipment to equipment through 4"/4.5" IPS Al tube including cutting, bending, welding, testing, clamping etc., for each meter including both side connections	Meter	329
	4(b)	Connection of equipment to bus and other equipments with Quad Moose conductor where ever necessary.	Each	1,208
	5	Laying of earth mat including excavation & backfilling, welding, connecting to all equipment, structures, Junction boxes, and connecting lightning shield to earth mat, Periperal earth electrode and earthing of fence posts, drilling and connecting earth rods including connecting to cast iron pipes as		

		per approved drawings with the following sizes:		
C4S 6	5.1	M.S. Rod 40 mm dia.	RM	197
	6	Fabrication and connecting to risers from earth mat to structures, equipment, marshalling boxes, electrical panels, PLCC panels, fencing posts etc.,.		
C4S 7	6.1	M.S./ G.S. Flat 75 x 12 mm	RM	174
C4S 8	6.2	M.S./ G.S. Flat 50 x 8 mm (Above ground)	RM	73
C4S 9	6.3	Un-Treated Earth pits including installation of 40 mm dia rod electrode, disconnecting links, and all required materials and RCC collar/ chambers with bricks, cement mortar 1:4 and completion of related civil works as specified for LMs, LAs, Carrier couplings and CVTs. (Cost of RCC Collar included)	Each	2,762
	7.0	Laying including termination and providing suitable ferrules & lugs etc of armoured control cables of size 2 core, 2.5 sq.mm to 27 core, 2.5 sq.mm including cost of cable glands, lugs, ferrules.		
C4S 10	7.1	2 to 12 core	RM	67
C4S 11	7.2	14 to 19 core	RM	76
C4S 12	7.3	27 core	RM	89
	7.4	Laying including termination and providing suitable ferrules & lugs, jointing kits etc of armoured power cables of the following size including cost of cable glands, lugs, ferrules etc complete.		
C4S 13	7.4(a)	Upto 50 sq.mm	RM	115
C4S 14	7.4(b)	Above 50 sq.mm to 300 sq.mm	RM	147
C4S 15	7.4(c)	Above 300 sq.mm to 700 sq.mm	RM	186
	8	Buried cable trench – Excavation for cable trench providing 100mm thick sand layer before and after laying the cable & providing 4” thick brick cover over sand, refilling, consolidation and leveling of surplus earth including the cost and conveyance of all materials, route markers, labour charges etc., complete for finished item of work.		
C4S 16	8.1	Size: 300 X 300 mm	RM	319
C4S 17	8.2	Size: 300 X 600 mm	RM	319
C4S 18	8.3	Size: 1500 X 800 mm	RM	854
C4S 19	9(a)	Erection of Galvanised cable trays with 2 mm thick perforated CRCA sheet. Size: 200	RM	76

		and 600mm		
	9(b)	Excavation, Laying and Back filling of different sizes of rigid pvc pipe upto a depth of 350 mm (sizes 200mm, 150 mm & 100mm) with suitable rigid pvc bends of ISI make including supply of all materials etc complete for laying of cables.	RM	333
		Erection of following equipment with Crane/Derrick at site including handling the material/equipment carefully at site including labour charges for all incidental and operational items of work.(excluding cost of transport charges from Dept. stores to the site). Note:- In 400 kV substations only, 25% extra charges for Testing and Commissioning of switchgear equipment where ever applicable).		
C4S 20	10	420 KV SF6 Circuit breaker with support structure & marshalling boxes	Set	31,023
C4S 21	11	420 KV Single phase current transformers with secondary terminal box	Each	8,842
C4S 22	12	390 KV Lightning Arrestors	Each	8,529
C4S 23	13	420kV Single phase Capacitive Voltage transformers with secondary terminal box (with/without carrier coupling device)	Each	8,842
C4S 24	14.1	400 KV Isolators, 3 pole Horizontal centre break/Pantograph with Single earth switch including solid core insulators, interpole cable laying and connections for electrical ganging, fixing of MOMs etc.,	Set	17,963
C4S 25	14.2	400 KV Isolators, 3 pole Horizontal centre break With Double earth switches including solid core insulators, interpole cable laying and connections for electrical ganging, fixing of MOMs etc.,	Set	21,555
C4S 26	14.3	220 KV Isolators, 3 pole Horizontal Double break/staggered with Double earth switches including solid core insulators, MOMs/BOMs etc.,	Set	12,018
C4S 27	15	400 KV Bus post insulators	Set	8,529
C4S 28	16(a)	Erection of Marshalling kiosk	Each	1,204
C4S 29	(b)	Erection of Marshalling boxes	Each	585
C4S 30	17.1	Fabrication of Main and Auxiliary structures, stub setting templates, foundation bolts, 'U' bolts etc.,using raw steel such as M.S.Angles, Plates, Channels, R.S.Joists, M.S.rounds, excluding cost of Mild Steel and transport charges to substation site.	MT	13,186
C4S 31	17.2	Galvanization of Main and Auxiliary structures,	MT	7,720

		stub setting templates, foundation bolts, 'U' bolts etc.,using raw steel such as M.S.Angles, Plates, Channels, R.S.Joists, M.S.rounds, excluding cost of zinc and transport charges to substation site.(Cost of zinc should be followed as per IEEMA rates.).The average quantity of Zinc required for all angles of tower parts is 60 Kgs.		
C4S32	12	Peripheral earth electrode including installation of 40mm dia rod electrode and all required raw materials and providing bentonite powder around electrode as specified for peripheral electrode earthing as per specification.	Nos	302

ANNEXURE-III				
ERECTION OF ILLUMINATION, LIGHTING, FIRE FIGHTING, AIR CONDITIONING, D.G Set & 33kV STATION SUPPLY SYSTEMS IN 400kV SUBSTATIONS.				
Sl. No.	Item No.	Description of Item	Unit	SSR Rate for 2023-24 (in Rs)
C4F1		Erection of indoor and outdoor illumination for 400/220 KV Substation, Control House, Auxiliary Buildings, 33 KV Switch yard, street lighting, erection and commissioning of following items as per the approved design and drawings, including indoor/ outdoor Junction Boxes, Conduits, Lighting wires, lugs, ferules etc for complete finished item of work.		
	1	Fixing Buzzer anchor make or equivalent approved make with ISI mark with necessary bell and switches etc.	Each	363
C4F 2	2	Providing and fixing concealed in roof and walls with PVC Conduit piping of ISI standards with necessary GI wire of of suitable gauge to draw wires at later date including cost of junction Box etc. cost of conveyance of all materials etc complete for finished item of work for Guest House, store building, pump house building & security room as approved and directed by the Engineer- in-charge at site.		
	(i)	32 mm dia - 2mm thick	RM	145
	(ii)	25 mm dia - 2 mm thick	RM	127
	(iii)	12 mm dia - 1.5mm thick	RM	86
C4F 3	3	Modular for Main distribution board with 1 No. 63A, TPMCB for I/C and 2 Nos. 32A SPMCB & 6 Nos. SPMCB with neutral link for O/G complete make Havells or MDS or equivalent.	Each	2,647
	3(i)	Fixtures for 36W lamps BJLM-236 type, Fixtures for 36W lamps BJSM- 236 type, Fixtures for 36W lamps BJIV-236 type, Fixtures for energy saving tube light 2x36W or equivalent LED lamps.	Each	724
	3(ii)	Fixtures for 9W CFL Lamp, Fixtures for GLS DBD-10type, Fixtures for 2x18 W CFL Lamp, Fixtures for 1x36W CFL Lamp or equivalent LED lamps.	Each	363
C4F 4	4	Erection, testing and commissioning of outdoor and street Lighting Fixtures including fixing of conduit, Junction		

		boxes, wiring and terminations complete etc.(excluding cost of concrete)		
	1	Lighting Masts / Poles as per drawing enclosed including concreting in full shape.		
	(i)	Type A1	Each	7,439
	(ii)	Type E1	Each	3,975
	(iii)	All types of Lighting Panels	Each	2,554
	(iv)	Junction Box with MCB and Terminal Blocks (Bolt Type)	Each	506
	(v)	415V 63A Power Recepticle outdoor	Each	1,011
	(vi)	5/15 A, 240 V sockets with swtich board	Each	67
	(vii)	Decorative type switch Boards	Each	145
	(viii)	Telephone Junction Boxes	Each	127
	(ix)	Telephone Jacks for Telephones	Each	47
	(x)	Celling Fans with Electronic regulators	Each	257
	(xi)	Flood lighting fixtures for 400W sodium Vapour lamp or Equivalent LED Lamp	Each	474
	(xii)	Street lighting fixtures for 150 W sodium Vapour lamp or Equivalent LED Lamp	Each	474
	(xiii)	Street lighting fixtures for 250 W sodium Vapour lamp or Equivalent LED Lamp	Each	571
	(xiv)	Industrial high bay lightining fixtures for 250 W HVSP lamp or Equivalent LED Lamp	Each	571
	(xv)	Lighting fixtures for 125 HP MV lamp post lanterns or Equivalent LED Lamp	Each	355
	(Xvi)	Single scoket outlet comprising RJ-45 sockets	Each	37
	(xvii)	Dual scoket outlet comprising RJ-45 sockets	Each	37
C4F 5	5	Erection, testing and commissioning of Fire Fighting, Detection and Alarm System :		
	1	Erection of Horizontal centrifugal Electric Driven Hydrant/HVW Spray pump of capacity 410 Cum/hr, total dynamic head of 88MWC with all accessories & fittings and Electric Induction Motor Squirrel cage type for the above with all accessories & fittings.	Each	91,686
	2	Erection of Horizontal centrifugal Diesel Engine Driven Hydrant/HVW spray pump of capacity 410 Cum/hr and total dynamic head of 88MWC with all accessories and fittings. Diesel Engine, multi cylinder type, four stroke cycle with mechanical airless injection cold starting type for the	Each	97,398

		above with all accessories and fittings and a set of Batteries and battery chargers and fuel tank having capacity to hold fuel oil for six hours of full load run.		
	3	Erection of Horizontal centrifugal Electric Driven jockey pump of capacity 10.8 Cum/hr and Total dynamic head of 88MWC with all accessories and fittings along with Electric Motor for the above with all accessories and fittings.	Each	8,695
	4	Air vessels with vent valves etc. as per system requirement.	Each	7,544
	5	Sump pumps 10 Cum/ Hr. MWC with motor starter and all accessories	Each	6,671
	6	Basket strainer 300 NB	Each	2,898
C4F6	6(a)	Control panel equipped with all accessories for motor drives of Fire water pumps and 2 Nos. jockey pumps for two sources of supply.	Each	5,797
	6(b)	Panel for 2 nos. Battery chargers & Diesel Engine driven fire water pumps.	Each	5,797
	6(c)	Annunciation panel at fire water pump house.	Each	2,210
	6(d)	Annunciation panel in Control Room.	Each	2,210
C4F 7	7	Hydrant and HVWS system Accessories.		
	(a)	Single headed Hydrants	Each	1,011
	(b)	Landing valves	Each	1,011
	(c)	Hose cabinets.	Each	1,104
	(d)	Hoses of 15.0m length with coupling	Each	101
	(e)	Hoses of 7.5m length with coupling	Each	101
	(f)	Branch pipe with Nozzles.	Each	101
C4F8	8	Mild steel black pipes and Galvanized Mild steel pipes with wrapping & coating for below ground and painting for above ground including cost of wrapping & coating material and paint required & excavation, back filling & all civil works etc., & testing complete.		
	a(i)	300 NB (below ground)	RM	2,898
	a(ii)	300 NB (above ground)	RM	1,933
	b(i)	250 NB (below ground)	RM	2,370
	b(ii)	250 NB (above ground)	RM	1,495
	c(i)	200 NB (below ground)	RM	1,840
	c(ii)	200 NB (above ground)	RM	1,404
	d(i)	150 NB (below ground)	RM	1,450
	d(ii)	150 NB (above ground)	RM	1,185

	e(i)	100 NB (below ground)	RM	920
	e(ii)	100 NB (above ground)	RM	748
	f(i)	80 NB (below ground)	RM	701
	f(ii)	80 NB (above ground)	RM	483
	g)	50 NB	RM	469
	h)	25 NB	RM	280
	i)	15 NB	RM	199
C4F 9	9(a)	Set of GI Piping beyond deluge valves for transformer including detection piping and pipe supports including all accessories.	per Set	3,30,183
	9(b)	Erection of Hume pipe as per specification.	RM	920
C4F10	10	VALVES		
	(a)	300 NB Gate	Each	2,898
	(b)	250 NB Gate	Each	2,461
	(c)	250 NB Check	Each	2,461
	(d)	200 NB Gate	Each	1,933
	(e)	150 NB Gate	Each	1,840
	(f)	100 NB Gate	Each	1,310
	(g)	80 NB Gate	Each	874
	(h)	80 NB Check	Each	874
	(i)	25 NB Gate	Each	319
	(j)	50 NB Gate	Each	701
	(k)	50 NB Check	Each	701
	(l)	15 NB	Each	194
	(m)	Float operated valve 100 NB	Each	1,840
C4F11	11	INSTRUMENTS		
	(a)	Float operated level gauge	Each	1,588
	(b)	Level Switch	Each	1,588
	(c)	Pressure Gauge	Each	920
	(d)	Pressure Switch	Each	1,933
	(e)	Differential Pressure Gauge	Each	1,404
C4F12	12(a)	Deluge valve with motor gounge, pr.switch, pr.guage, solenoid valve to drain - size 150 NB	set	8,695
	(b)	Local control panel for Deluge valve	Each	2,461
	(c)	Strainer Y type, 150 NB	Each	1,933
	(d)	Quartzoid bulb detectors	Each	157
	(e)	HVW spray nozzles	Each	157
C4F13	13	Detection & Alarm System		
	(a)	Ionization smoke detector	Each	701
	(b)	Photoelectric smoke detector	Each	701
	(c)	Heat detector	Each	701
	(d)	Response indicator	Each	701
	(e)	Manual call point	Each	701
	(f)	Fire detection & Alarm panel with siren and top of control room and hooters at every	Each	701

		floor		
C4F14	14	Portable Fire Extinguishers		
	(a)	Dry chemical powder type Fire extinguishers with all accessories.		
	(i)	10 kgs. Capacity	Each	71
	(ii)	25 kgs. Capacity (trolley mounted)	Each	140
	(iii)	50 kgs. Capacity (trolley mounted)	Each	188
	(iv)	150 kgs. Capacity (trolley mounted)	Each	402
	(b)	CO2 type portable Fire extinguishers		
	(i)	45 kgs. Capacity (trolley mounted)	Each	145
	(ii)	22.5 kgs. Capacity (trolley mounted)	Each	145
	(iii)	9 kgs. Capacity (trolley mounted)	Each	69
	(iv)	2 kgs. Capacity (Portable)	Each	54
	(c)	9 Litres capacity Mechanical foam type fire	Each	73
	(d)	Sand / water Buckets 9 litres capacity	Each	95
C4F15	15	Air Conditioning System		
	1	Erection, testing and commissioning of Split AC 2 Ton with all suitable accessories	Each	6,883
	2	Erection of Air Conditioning AC distribution panel	Each	5,797
	3	Providing Under Deck Insulation for the Roof exposed to sunlight with 50 mm thick TF quality expanded poly styrene including Insulation, GI washers and wire for fixing.(GOAP Common SOR 2023-24)	Sqft	76
	4	Erection of Ventilation fans		
	i)	600 mm Sweep	Each	1,541
	ii)	450 mm Sweep	Each	1,541
	iii)	300 mm Sweep	Each	1,541
	iv)	Ventilation unit without cabinet-49300 CMH @ 60 mmwg	Each	56,840
	v)	Ventilation unit without cabinet-49300 CMH @ 60 mmwg	Each	56,840
C4F16	16	Erection, testing and commissioning of 250 KVA DG Set complete including AMF Panel, auxiliaries etc.	Set	1,02,691
C4F17	17	Erection, testing and commissioning of 33kV Station Supply System		
	1	33kV/440 V Substation :		
	(a)	33kV/433 V, 630KVA Station supply transformer	Each	8,796
	(b)	33 kV Isolator with terminal connectors and support insulators	Set	2,618
	(c)	33 kV HG Fuse set	Each	973
	(d)	33 kV Lightning Arrestor	Each	818
	(e)	150 x 75 mm M.S Channels &Struc.	MT	3,710
	(f)	HT Trivector Meter Box	Each	1,104

	(g)	Hoisting of Insulators & Hardware, stringing / formation of the 33 kV Bus comprising of 3 phases with DOG Conductor and all equipment to equipment, equipment to bus interconnections, jumpering, fixing of clamps & connectors etc. required for the entire 33kV/440 V station supply witchyard of 400/220 KV Substation complete as directed by site engineer.	LS	20,249
	2	33 kV Line :		
	(a)	Erection of pole in position, aligning and setting to work, fixing of cross arms and top clamps, earthing of supports, fixing of danger boards, back filling with earth and stones properly ramming including transport of materials from road side to location excluding concreting and including excavation.	Set	2,345
	(b)	Assembly and erection of D.P.Structure as per specification which includes fixing of top channels and cross bracings, transport of all materials from road side to the location, earthing, back filling with earth ramming etc excluding concreting and including excavation.	Set	3,757
	(c)	Mass concreting of supports erected with CC (1:4:6) using 40 mm, HBG metal including the cost of metal, sand, cement and curing etc.	Cum	7,073
	(d)	Assembly and erection of stay set including fixing of guy insulators, clamps etc., on the pole and fixing stay wire and binding securely on either side as per standards, transport of material from road side to location and back filling with earth ramming etc excluding concreting and including excavation.	Set	471
	(e)	Paving out conductor, providing temporary stays, tensioning, sagging correctly, fixing strain points, transferring to pin points binding, fixing of Insulators, guys and jumpering etc., including transport of material from road side to location. (3phases)	km	17,209
C4F18	18	Erection of Control and Relay Panels		
		Receipt from site stores, Transport to control room, handling, Erection, Testing and commissioning of all Control, Relay, Protection and other Panels/ Equipment,		

		with complete accessories, equipment etc., as specified.		
	(i)	400 KV Feeders/ Tie/ 315 MVA Transformer Control/ Relay/ Protection Panels.	Each	48,426
	(ii)	220 KV Feeders/ Bus coupler/ Transfer Bus / 315 MVA Transformer / 50/63/80MVAR/125 MVAR Shunt Reactors Control/Relay/ Protection Panels.	Each	46,121
	(iii)	Common equipment panels for 400/220kV	Each	39,800
	(iv)	400kV Bus bar Protection	Set	62,508
	(v)	220KV Bus bar Protection	Set	80,702
C4F19	19(i)	Common equipment Panels for 400/220kV.	Each	39,800
	19(ii)	All other equipment of SMS and Time synchronizing equipment.	Each	1,85,217
	19(iii)	400KV AC Bay Kiosk	Each	46,889
	19(iv)	220KV AC Bay Kiosk	Each	35,168
C4F20	20	Complete Substation Automation system for 400/220KV Substation including hard ware and software for remote control station along with associated equipments and kiosks in full shape as per specification.		
	(a)	Installation, Testing and commissioning of Networking Panel, OWS1, OWS2, EWS Remote work station. BCUs, LIUs, Ethernet Switches, Splicing of OFC etc.,	Set	3,02,597
	(b)	Installation, Testing and commissioning of all necessary software's compatible to IEC: 61850 for making the SAS operation in full shape including remote SCADA complete as directed by site engineer.	Set	1,00,867
	(c)	Extension works of Installation, Testing and commissioning of BCU, LIU, Ethernet Switch, Splicing of OFC to the existing SAS System.		
	(I)	FIRST BAY	Per bay (if it is First Bay)	40,347
	(ii)	SECOND BAY onwards	Per Bay	20,174
	(d)	Extension works of Installation, Testing and commissioning of all necessary software's compatible to IEC: 61850, adding new SLD for the new bay in the existing substation and configuring all necessary signals and data base for making the SAS operation in full shape including Remote SCADA as directed		

		by site engineer.		
	(I)	FIRST BAY	Per bay (if it is First Bay)	1,00,867
	(ii)	SECOND BAY onwards	Per Bay	50,432
		220 V DC Battery & Battery Chargers and AC, DC Distribution Boards		
	1	Receipt from site stores, Transport to control room, handling Erection, Testing and commissioning of Battery & Battery chargers with complete accessories, equipment etc.,as specified.		
	(a)	220V, 400AH/800AH Capacity Sealed Maintenance free VRLA Type 1 No Battery Banks along with all other required accessories.	Set	17,020
	(b)	40/100A Float - Cum- Boost Charger (1 No.)	Set	10,126
	2	Receipt from site stores, Transport to control room, handling, Erection, Testing and commissioning of A.C.& D.C.Distribution Boards with complete accessories, equipment etc., as specified.		
	(a)	415V AC Main Board (Sub-Boards- I & II) as per the Specification & Drawing.	Each	1,37,666
	(b)	415V AC Distribution Board (Sub- Boards- I & II) as per the Specification & Drawing.	Each	2,29,449
	(c)	415V AC Lighting Board (Sub- Boards- I & II) & Emergency Lighting Board as per the Specification & Drawing.	Each	57,640
	(d)	220V DC Distribution Board (Sub-Boards- I & II) as per the Specification & Drawing.	Each	34,768
	(e)	Outdoor AC Distribution Board with 2 Nos Incomings, 3 Phase, 440 V, 300 Amps, with Cu Bar and 300 Amps Fuse units & Neutral link complete and outgoing 2 Nos , 3P, 125 A, MCBs including all accessories.	Each	2,802
	(f)	Distribution board with 1No, 63A TP MCB for I/C and 15 Nos 16A SP MCB with terminal block arrangement complete make Havells or Schiender MDS or equivalent.	Each	2,802
	(g)	AC Distribution Boards Mains for usage in AC Kiosks for supply (indoor wall inserted/mounted) with SP 16A MCBs - 3 Nos., 6A SP MCBs-2Nos., 2A SP MCBs 3 Nos.	Each	536

<u>ANNEXURE-IV</u>				
TRANSPORTATION, HANDLING CHARGES INVOLVED DURING ERECTION OF 400KV TRANSMISSION LINES				
Sl. No.	Item. No.	Description of Item	Unit	SSR Rate for 2023-24 (in Rs)
1	2	3	4	
C4H1	1	Total cost for transportation and handling Charges for Setting of Stub with Stub setting template.	Each Set	1,101
C4H2	2	Erection of Tower: Total cost for transportation and handling Charges.	Per MT	869
C4H3	3	Double Circuit Stringing with Twin Moose: Transportation and handling charges for line materials.	Per KM	23,799
C4H4	4	Single Circuit Stringing with Twin Moose: Transportation and handling charges for line materials.	Per KM	12,703
C4H5	5	Double Circuit Stringing with Quadruple Moose: Transportation and handling charges for line materials	Per KM	47,598
C4H6	6	Single Circuit Stringing with Quadruple Moose: Transportation and handling charges for line materials.	Per KM	25,407
C4H7	7	OPG wire & earth wire: Transportation and handling charges for OPGW/earthing materials for 1 kM for D/C stringing.	Per KM	724
C4H8	8	OPG wire & earth wire: Transportation and handling charges for OPGW/earthing materials for 1 kM for S/C stringing.	Per KM	741

<u>ANNEXURE-V</u>				
33kV Substation Power Supply Facilities from 315 MVA ICT Tertiary Winding				
Sl. No.	Item. No.	Description of Item	Unit	
		Erection of following equipment with Crane/Derrick at site including handling the material/equipment carefully at site including labour charges for all incidental and operational items of work.		
C4T1	1	52KV /433V, 630KVA Station supply Transformers with all accessories and fitting as per specification.	Nos	10,485
C4T2	2	72.5KV, 800Amps Isolators with terminal connectors including support insulators complete	Nos	3,121
C4T3	3	Erection of CTs, PTs, LAs Structures.	Nos	1,112
C4T4	4	33 KV CTs with Junction box and terminal connectors and all accessories as per the specification.25-15/1-1-1 A ,0.2 Class accuracy for metering core	Nos	1,632
C4T5	5	33KV PTs with Junction box and terminal connectors and all accessories as per the specification.33KV/110V with 0.2 class & 10 VA accuracy for metering core as per specification.	Nos	1,632
C4T6	6	72.5KV VCB with all accessories complete integrated to the substation automation system.	Nos	9,680
C4T7	7	33kV Control & Relay panel with BCU suitable to SAS Control and Relay with Terminal Connectors and all accessories including Ammeter,Voltmeter,MW Meter,0.2 Class accuracy Energy Meter / Multi Function meter, TNC Switch,Indication Bulbs,3 Nos Over Current,1 No Earth Fault Relay (IDMT Non Directional),Neutral Displacement Relay.	Nos	4,268
C4T8	8	72.5kV Bus Post Insulators (solid core insulators)	Nos	344
		Energy Meter Installation and Testing		
C4T9	9	NABL Lab testing charges for 220kV CTs (36+2Nos) & 220kV PTs (36+2Nos)	Nos	45,830

C4T10	10	NABL Lab testing charges for Energy Meters	Nos	38,665
C4T11	11	Supply and fixing of GI HT metering box and construction of brick masonry plinth of suitable size plastering plinth 12mm thick with CM 1:4 and white washing 2 coats with suryacem, fixing of foundation bolts and drilling of 2mm dia holes to terminal cover bolts for sealing of 220kV CTs & PTs etc., complete as per APSPDCL specification.	Nos	48,070
C4T12	12	Supply and fixing of 1'1.5' GI pipe for metering from CT & PTs to metering box including cost of GI pipe, T joints, L joints, cutting, threading, drilling of holes, welding charges etc., as directed by Engineer in charge.	Nos	173
C4T13	13	Multi stand Flexible Copper Cable (Size 2.5sq.mm with Red, Yellow, Blue & Black Colour Cables) of reputed make.	Nos	52
C4T14	14	Multi stand Flexible Copper Cable (Size 4 sq.mm with Red, Yellow, Blue & Black Colour Cables) of reputed make.	Nos	67

ANNEXURE VI				
ERECTION OF GIS EQUIPMENT				
		Receipt from site stores Transport, handling, Erection, Testing and commissioning of all Equipment with complete accessories, as specified.		
		420KV GIS Equipment		
C4G1	1	420kV, SF6 GIS Bus Bars Module	Sets	160,908
C4G2	2	420kV, SF6 GIS Line feeder bay Module	Sets	315,087
C4G3	3	420kV, SF6 GIS ICT bay Module	Sets	315,087
C4G4	4	420kV, SF6 GIS Bus Reactor bay Module	Sets	315,087
C4G5	5	420kV, SF6 GIS Tie bay Module	Sets	315,087
C4G6	6	420kV, 3150A,50kA SF6/Air Bushing for Connecting GIS to AIS along with support structure (Single Phase)	sets	2,056
C4G7	7	420kV, 3150A, 1phase SF6 GIS Bus duct along with support structure	Meters	1,028
		245KV GIS Equipment		
C4G8	8	245kV, SF6 GIS Bus Bars Module	Sets	2,09,610
C4G9	9	245kV, SF6 GIS ICT bay Module	Sets	2,09,610
C4G10	10	245kV, SF6 GIS Line bay Module	Sets	2,09,610
C4G11	11	245kV, SF6 GIS Bus Coupler bay Module	Sets	2,09,610
C4G12	12	245kV, SF6 GIS Bus Section bay Module	Sets	2,09,610
C4G13	13	245kV, 1600A, 40kA SF6/Air/Cable Bushing for Connecting GIS to AIS/Cable along with support structure (Single Phase)	sets	2,056
C4G14	14	245kV, 1600A, 1phase SF6 GIS Bus duct along with support structure	Meters	1,028
		Testing & Maintenance Equipment for GIS		
C4G15	15	SF6 Gas filling & evacuating plant	Set	206
C4G16	16	For 420kV & 245kV GIS		
C4G17	17	Online Partial Discharge Monitoring System for 420kV GIS System as per Technical Specification, GIS	Set	206

C4G18	18	Partial Discharge Monitoring System for 245kV GIS System as per Technical Specification, GIS	Set	206
C4G19	19	132kV Transformer Bay module	Set	38,998
C4G1	20	36kv GIS Feeder Bay Module	Set	26,568

A.K.V. Bhaskar

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