TRANSMISSION CORPORATION OF ANDHRA PRADESH LIMITED

VIDYUT SOUDHA :: VIJAYAWADA

APTRANSCO – Standard Schedule of Rates for Labour items for adoption in construction and O&M works pertaining to 400 KV,220kV & 132kV Transmission lines and substations for the year 2022-23 -Communicated – Reg.

T.O.O. No. Chief Engineer (Transmission) Ms. No. 2531 dt. 04.08.2022

Read the following: -

Ref :-T.O.O .(CE-Transmission) M.S. No.2220, dated 29.07.2021

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APTRANSCO is periodically communicating Standard Schedule of rates for labour items for construction and O&M works pertaining to 400 KV, 220kV & 132kV Transmission lines and substation for adoption in preparation of estimates. Accordingly, the SSR communicated earlier in the above reference is revised duly enchancing to the extent of inflation in labour charges as delcared by Government of India for the year 2020 (April) to 2022 (March) and communicated herewith.

ORDER

Standard Schedule of Rates for labour items for construction and O&M works pertaining to 400kV, 220kV & 132kV Transmission lines and substations for the year 2022-23 approved by Transmission Corportation of Andhra Pradesh is communicated herewith for adoption in preparation of estimates.

The standard scheduled of Rates for the year 2022-23 will come into force from the date of issue of this T.O.O. The SSR 2022-23 (Labour) will be available in the APTRANSCO website.

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

Sd/
(AKV Bhaskar)
Director(Grid,Transmission & Management)

To
All
The Chief Engineers
The FA&CCA/VS/APTRANSCO
The Superinteding Engineers.
The SAOs.
The Executive Engineers.

PS to Chairman and Managing Director/APTransco/VS/ Vijayawada.
PS to Joint Managing Director/ APTransco/VS/Vijayawada
PS to Joint Managing Director/Vigilance & Security)/APTransco/VS/Vijayawada.
PS to Director/Grid & Transmission) Management / APTransco/VS/Vijayawada
PS to Director/Finance/APTransco/VS/Vijayawada

TRANSMISSION CORPORATION OF ANDHRA PRADESH LIMITED

STANDARD SCHEDULE OF RATES FOR LABOUR ITEMS OF 400 KV, 220KV & 132 KV TRANSMISSION LINES AND SUBSTATIONS FOR CONSTRUCTION AND O&M WORKS OF TRANSMISSION SYSTEM FOR THE YEAR 2022-23

INDEX
LABOUR RATES

PREAMBLE

1. The rates for the item of works (Line & Substations) involved under special conditions in the SSR-2020-21 are also continued in SSR-2022-23 vide Annexure-A.

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 the basic rates of APTRANSCO towards Uniform Area Allowance including Scattered area Mobilization efforts in general areas.

b. 35% extra provision on 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 rate 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. <u>Area Allowance:</u>

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.

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, Yeeraguntla,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 not be applicable for O&M & RMI works of lines.

The area allowances are applicable for Civil ,Electrical &Telecom works (labour), where the value of work is more than Rs.20.00 lakhs(electrical ,telecom & civil).

4. 13. 615% on basic labour rates towards COP (Contractors Overheads and Profit) including labour importation is applicable only for turnkey projects (new Substations, Lines, 33KV features and Bay Extension works) with a value more than 1 crore and not applicable to O&M works and other than turnkey works. 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 letter No.CE(Tr)/SE(Tr)/EE(Tr)/DEE-3/F.CTO-04/2021-ERC/D.No.129/21 dt:13.09.2021 and Lr.No.CE(Tr)/SE(Tr)/EE(Tr)/DEE-2/F.ERC 400KV-Oil Filtration/D.No.75/21,dt.31-03-2021 on rate contract basis for erection, dismantling, transportation and oil filtration of power transformers through private agency are valid up to 31.03.2023.

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 2022-23.

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).

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).

10. 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.

11. The SSR rates for the year 2022-23 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 SSR2020-21.

(a). The consumer price index variation of SSR2021-22 w.r.t. SSR 2020-21 is evaluated as +4.429%.

(b). The consumer price index variation of SSR2022-23 w.r.t. SSR 2021-22 is evaluated as +4.9126%.

i.e. The consumer price index variation of SSR2022-23 w.r.t. SSR 2020-21 is +9.5591%.

12. 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.

13. The S.S.R will come into force with immediate effect until further orders.

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.	2nd Circuit Stringing with 1st Circuit live.	75% extra
3.	Works under shutdown: 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**
1.	Works under shutdown: 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.	Emergency Works such as break down works. This will not be applicable for pre-arranged shutdown works.	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.

ANNEXURE – I
SSR RATES FOR ERECTION OF 400KV TRANSMISSION LINES

Sl. No.	Item No.	Description of Item	Unit	SSR Rate for 2022-23 (in Rs)
C4L1	**1(a)**	Preliminary Survey with GPS survey, theodilite & total station, marking route on topo sheets represents actual field conditions.	kM	4,792
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	24,895
C4L 3	**2(a)**	Excavation of trail pit (1mt x 1 mt x 3.5mt).	No.	2,474
	2(b)	Excavation of Trial Pit by Auguring & Boring of holes of 300mm Dia x 3.5 RM.	No.	2,757
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	5,670
C4L 5	**4**	Setting with stub for all types of towers withstub setting template which includes erection of stubs, fixing of jacks for supporting template, alignment and leveling excluding cost of excavation and concrete (excluding transportationcharges).	Set	20,201
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 transportationcharges).	MT	10,842
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 anti climbing devices etc and tack welding of all bolts & nuts (upto bottom cross arm level).	MT	16,263

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 anti climbing devices etc and tack welding of all bolts & nuts (upto bottom cross arm level) etc.	MT	19,298
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 anti climbing devices etc and tack welding of all bolts & nuts (upto bottom cross arm level).	MT	27,086
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	2,87,682
	6(b)	Double Circuit Stringing	KM	4,31,523
	6(c)	Multi Circuit Stringing (4 circuits)	KM	6,47,284
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	4,31,523
	7(b)	Double Circuit Stringing	KM	6,47,286
	7(c)	Multi Circuit Stringing (4 circuits)	KM	9,70,929
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	10,77,967
	8(b)	Multi Circuit Stringing(4 circuits)	KM	16,16,951
C4L 14	**9(a)**	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).	KM	20,275
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	13,517

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	50,650
C4L 17	**9(d)**	Stringing of two (2) nos. OPG Wire, including laying jointing, tensioning etc., with necessary accessories. (excluding transportation charges).	KM	99,820
C4L 18	**9(e)**	Stringing of one (1) no. OPG Wire, including laying jointing, tensioning etc., with necessary accessories. (excluding transportation charges).	KM	66,546
	10	Earthing of transmission towers:		
C4L 19	**10(a)**	Providing of Pipe type earthing including of cost of BH coke & salt but excluding cost of earthing set	Each	5,555
C4L 20	**10(b)**	Counter poise earthing sets excluding cost of all materials (4sides of tower)	Each location	4,657
C4L 21	**10(c)**	Counter poise earthing sets using Bentonite and salt (4 sides of tower)	Each location	6,986

ANNEXURE - II				
ERECTION OF 220kV & 132 kV TRANSMISSION LINES				
Sl. No.	**Item No.**	**Description of Item**	**Unit**	**SSR Rate for 2022-23 (in Rs)**
CL 1	1	Check Survey, peg marking the tower positions on ground, conforming to the approved Profile and tower schedules using GPS, Total stations, Digital theodolites etc. "the rate is also applicable for re-check survey if any done due to ROW problems"	kM	5,670
CL 2	2	Conducting reconnoitery and preliminary survey along bee line with three alternative routes and furnishing report for selecting the best proposal for approval, including cost & conveyance of all materials, hire charges of equipment, tools and plant, preparation of drawings and reports, labour charges, complete for finished item of work as per the directions of Engineer-in-charge at site*.(With Theodolite / With GPS equipment (As per Clause 4.9 of survey) /With total station equipment).*	RKM	5,150
	3	Conducting detailed survey by taking the levels along the route to a corridor of 15 mtrs. width on either side of alignment, at every 20 mtrs. interval and wherever there is a steep increase/decrease in ground profile duly indicating the chainage between angle points, river crossings, railway crossing and major highway crossings and plotting the profiles and preparation of vicinity maps to the standard scales. The survey includes clearing of bushes, branches of tree, crops and shrubs wherever encountered for detailed survey for viewing, for fixing anchor towers and also taking levels etc. required for conducting detailed surveys.		
		This work can be done with Theodolite or with GPS equipment (As per clause no.4.9 of survey) or with total station equipment. This work involves the following items.		
CL3	i)	Tower schedules as per tower spotting requirements plotted on reproducible tracing of profile original with one extra copy shall be given . *Towers Schedules should be submitted with GPS Co- ordinates. Identification of wind zones, collection of Hydraulic data of rivers / drains from competent authority.*	RKM	17,681
CL4	ii)	Taking earth resistivity at an interval of 1 Km by electrical resisitivity method (4 point method) or by ERM method.	Loc	1,287
CL5	iii)	Preparing of PTCC questionnaire, topo sheets extracts with marking of the proposed line. Soil resistivity report, tower sketch, station single line diagram etc. (30 copies/sets)	Job	12,586

CL6	3 iv)	Enumeration and numbering of trees, & marking on tree with white letters on yellow paint measuring girth and height of the trees and plotting in the profile. The trees enumerated shall be shown in profile on either side of centre line clearly, *up to required corridor* for 132kV Line -27 Metres & 220kV Line -35 Meters) indicating name of tree, girth & height. Separate tree schedule should be submitted along with the profile for arriving tree compensation amount.	Each	25
CL7	3 (v)	Preparation of ground profiles for Railway crossing, River crossing and EHV power line crossing separately wherever required.	Each crossing	3,832
		The above rates shall include cost and conveyance of all materials hire charges of equipment tools & plant, preparation of profile drawing, painting of trees, labour charges, preparation of report etc., complete for finished item of work as per instructions of Engineer-in-charge.		
CL8	4	Excavation of trial pits of standard dimensions of 1 mtr X 1 mtr. width upto 3 mtrs. depth at 1 KM interval or wherever there is abnormal change in topography and taking observation of soil strata for classification of foundation and position of existing ground water table/depth of water in the existing open wells if any and back filling the trial pits after vetting by Departmental officials.	Each	2,121
	5	Setting of stubs with stub-setting template : Erection of stubs, stub template, fixing of jacks for supporting template, allignment and levelling for exact location of stubs of stubsetting template, dismantling of template after completion of initial curing of C.C., movement of template from one location to other location (A minimum lead of 1 KM is adopted).		
CL9	(a)	132 KV P, R & S-Type Towers	Loc.	10,120
CL10	(b)	220 KV A, B, C & D-Type Towers	Loc.	14,747
CL11	(c)	132 KV Multi circuit Towers	Loc.	12,650
CL12	(d)	220 KV Multi circuit Towers	Loc.	18,431
CL13	(e)	132kV Narrow based Multi Circuit Towers.	Single pit	11,631
CL14	(f)	220kV Narrow based Multi Circuit Towers.	Single pit	16,970
CL15	(g)	Pole/structure for termination of 220/132kV cables	Loc.	11,384
CL16	(h)	220 /132 kV Narrow based tower	Loc.	16,589
CL17	6(a)	Erection of tower structures, including all types of extensions except JC type towers (stub template erection and dismantling are not to be included) (including 3 mtr., 6 mtr. , 9 mtr., & 12 mtr.extensions)	MT	6,699

CL18	6(b)	Erection of all types of narrow based towers / multi circuit tower structures / narrow based multi circuit towers structures, including all types of extensions except JC type towers (stub template erection and dismantling are not to be included) (including 3 mtr., 6 mtr. , 9 mtr., & 12 mtr. extensions)	MT	9,385
CL19	6(c)	Erection of all types of 'JC' Type tower structures, including all types of extensions (stub template erection and dismantling are not to be included) (including '0' based, Extended and Truncated)	MT	12,065
CL20	6(d)	Erection of pole/structure for 220/132 kV cable termination	MT	8,042
	7	STRINGING OF POWER CONDUCTOR: Hoisting of tension insulators and Suspension insulators, paving out the conductor, rough sagging,Jointing, tensioning, clipping and fixing of preformed Armour rods and vibration dampers. measuring ground clearances wherever ecessary.Which excludes the works involved in the crossing of LT, 11kV & 33kV power lines viz dismantling and restringing of conductor		
CL21	(i)	3 Nos. Zebra conductors	RKM	57,132
CL22	(ii)	6 Nos. Zebra conductors	RKM	85,695
CL23	(iii)	2 Nos. Panther conductors	RKM	30,463
CL24	(iv)	3 Nos. Panther conductors	RKM	45,700
CL25	(v)	6 Nos. Panther conductors	RKM	72,364
CL26	(vi)	12 Nos. Panther conductors for Multi circuit	RKM	1,44,728
CL27	(vii)	2 Nos. Moose conductors	RKM	48,242
CL28	(viii)	3 Nos. Moose conductors	RKM	72,364
CL29	(ix)	6 Nos. Moose conductors	RKM	1,14,253
CL30	(x)	Twin bundled Moose for DC	RKM	2,28,506
CL31	(xi)	12 Nos. Moose conductors for Multi circuit	RKM	2,28,506
CL32	(xii)	3 Nos. Bear conductors	RKM	57,132
CL33	(xiii)	6 Nos. Bear conductors	RKM	85,695
CL34	(xiv)	3 Nos. Dog conductors	RKM	34,274
CL35	(xv)	6 Nos. Dog conductors	RKM	54,271
		STRINGING OF HTLS POWER CONDUCTOR using tension - puller machine: Hoisting of tension insulators and Suspension insulators, paving out the conductor, rough sagging,Jointing, tensioning, clipping and fixing of preformed Armour rods and vibration dampers. measuring ground clearances wherever necessary.Which excludes the works involved in the crossing of LT, 11kV & 33kV power lines viz dismantling and restringing of conductor.		
CL36	(i)	3 Nos Moose Conductors	RKM	2,68,070
CL37	(ii)	6 Nos Moose Conductors	RKM	4,02,105
CL38	(iii)	3 Nos Zebra Conductors	RKM	2,53,177
CL39	(iv)	6 Nos Zebra Conductors	RKM	3,79,766

CL40	(v)	3 Nos Panther Conductors	RKM	2,38,284
CL41	(vi)	6 Nos Panther Conductors	RKM	3,57,427
CL42	8	Stringing of Earthwire: FIxing hardware, paving out earth wire, jointing, tensioning, stringing and clamping of 7/3.15 mm high tensile galvanised steel wire.	RKM	9,144
CL43	9	Earthing of towers including cost of Excavation, Back-filling, including cost of 25 mm dia 2.5 mm thick, class 'C' G.I. pipe of 3.00 Mtrs length with 50X6 mm G.I. Flat 4.05 Mtrs long, *BH Coke* , Salt etc., and measuring tower footing resistance.	Nos.	5,814
CL44	10	Slant Earthing of towers including cost of Excavation, Back-filling, including cost of 25 mm dia 2.5 mm thick, class 'C' G.I. pipe of 3.00 Mtrs length, with 50x6mm G.I. Flat of 4.05 Meters, BH Coke, Salt etc., and measuring tower footing resistance.	Nos.	5,814
CL45	11	Earthing of towers including cost of Excavation, Back-filling, including cost of 25 mm dia 2.5 mm thick, class 'C' G.I. pipe of 3.00 Mtrs length,*BH Coke* , Salt etc., and measuring tower footing resistance. (Without GI Flat) for counter poise earthing.	Nos.	4,733
CL46	12	Counterpoise earthing including clamping devices and terminal lugs, but excluding cost of steel wire.	Rmts	52
CL47	13	Half round welding of G.I.bolts and nuts of towers in the section between ground level & upto bottom X-arm level including all bolts connecting the bracings at the bottom X-arm level and painting the welded portion with one coat of zinc rich paint.	Each	24
CL48	14	Half round welding of G.I.bolts and nuts of towers in the section between ground level & upto bottom X-arm level including all bolts connecting the bracings at the bottom X-arm level and painting the welded portion with one coat of zinc rich paint- For JC type towers	Each	36
CL49	15	Laying of 33 kV 400 sq.mm XLPE cable	Rmts	389
CL50	16	Termination of 400 sq.mm XLPE cable	Each	7,068
CL51	17	Dismantling & re stringing of 33 kV conductor (all types of conductors) for crossing of 33 kV line during stringing of EHT lines.	Per conductor	3,693
CL52	18	Dismantling & re stringing of 11 kV conductor (all types of conductors) for crossing of 11 kV line during stringing of EHT lines	Per conductor	2,021
CL53	19	Dismantling & re stringing of LT conductor/cables for crossing of LT line (all types) during stringing of EHT lines	Per conductor	1,272

ANNEXURE – III				
ERECTION OF 400kV SUBSTATIONS				
Sl.No.	**Item. No.**	**Description of Item**	**Unit**	**SSR Rate for 2022-23 (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	28,26,892
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	48,266
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	24,480
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	72
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	311
	4(b)	Connection of equipment to bus and other equipments with Quad Moose conductor where ever necessary.	Each	1,142

	5	Laying of earth mat including excavation & backfilling, welding, connecting to all equipment, structures, Junction boxes, and connecting lightning shield to earth mat 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	186
	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	164
C4S 8	6.2	M.S./ G.S. Flat 50 x 8 mm (Above ground)	RM	69
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	2,611
	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	63
C4S 11	7.2	14 to 19 core	RM	72
C4S 12	7.3	27 core	RM	84
	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	109
C4S 14	7.4(b)	Above 50 sq.mm to 300 sq.mm	RM	139
C4S 15	7.4(c)	Above 300 sq.mm to 700 sq.mm	RM	176
	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 finisheditem of work.		

C4S 16	8.1	Size: 300 X 300 mm	RM	302
C4S 17	8.2	Size: 300 X 600 mm	RM	302
C4S 18	8.3	Size: 1500 X 800 mm	RM	807
C4S 19	9	Erection of Galvanised cable trays with 2 mm thick perforated CRCA sheet. Size: 200 and 600mm	RM	72
C4S 20		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 21	10	420 KV SF6 Circuit breaker with support structure & marshalling boxes	Set	29,324
C4S 22	11	420 KV Single phase current transformers with secondary terminal box	Each	8,358
C4S 23	12	390 KV Lightning Arrestors	Each	8,062
C4S 24	13	420kV Single phase Capacitive Voltage transformers with secondary terminal box (with/without carrier coupling device)	Each	8,358
C4S 25	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	16,979
C4S 26	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	20,375
C4S 27	14.3	220 KV Isolators, 3 pole Horizontal Double break/staggered with Double earth switches including solid core insulators, MOMs/BOMs etc.,	Set	11,360
C4S 28	15	400 KV Bus post insulators	Set	8,062
C4S 29	16(a)	Erection of Marshalling kiosk	Each	1,138
C4S 30	(b)	Erection of Marshalling boxes	Each	553

C4S 31	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	12,464
C4S 32	17.2	Galvanization 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 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.	MT	7,297

ANNEXURE - IV				
ERECTION OF 220kV, 132 kV & 33kV SUBSTATIONS				
Sl. No.	**Item No.**	**Description of Item**	**Unit**	**SSR Rate for 2022-23 (in Rs)**
CS1	1	Hoisting of Insulators and hardware, stretching the conductor and stringing of ***220 kV bus*** comprising of three phases with ***Quadraple Moose*** conductor to a tension of **900kgs for single moose conductor**.(***The maximum length or up to a length of bus section of*** **40m**)	Bus Section	30,459
CS2	2	Hoisting of Insulators and hardware, stretching the conductor and stringing of ***220 kV bus*** comprising of three phases with ***single Zebra/Moose*** conductor to a tension of **900kgs**.(The maximum length or up to a length of bus section of **40m**)	Bus Section	7,616
CS3	3	Hoisting of Insulators and hardware, stretching the conductor and stringing of ***220 kV bus*** comprising of three phases with ***Twin Zebra/Moose*** conductor to a tension of **1800kgs** including fixing of spacer clamps(The maximum length or up to a length of bus section of **40m**).	Bus Section	15,235
CS4	4	Hoisting of Insulators and hardware, stretching the conductor and stringing of ***132 kV bus*** comprising of three phases with ***Single Zebra/Moose*** conductor to a tension of **900kgs**.(The maximum length or up to a length of bus section of **45m**).	Bus Section	7,616
CS5	5	Hoisting of Insulators and hardware, stretching the conductor and stringing of ***132 kV bus*** comprising of three phases with ***Twin Zebra/Moose*** conductor to a tension of **1800kgs** including fixing of spacer clamps.(The maximum length or up to a length of bus section of **45m**).	Bus Section	15,235
CS6	6	Hoisting of Insulators and hardware, stretching the conductor and stringing of **33 kV bus** comprising of three phases with ***Single Zebra/Moose*** conductor to a tension of **450kgs**.(The maximum length or up to a length of bus section of **20m**).	Bus Section	5,714

CS7	7	Hoisting of Insulators and hardware, stretching the conductor and stringing of ***33 kV bus*** comprising of three phases with ***Twin Zebra/Moose*** conductor to a tension of **900kgs** including fixing of spacer clamps.(The maximum length or up to a length of bus section of **20m**).	Bus Section	9,525
CS8	8	Hoisting of Insulators and hardware, stretching the conductor and stringing of ***132 kV bus*** comprising of ***two phases*** with ***Single Zebra/Moose*** conductor to a tension of **900kgs**.(The maximum length or up to a length of bus section of **45m**).	Bus Section	5,075
CS9	9	Fixing of spacers for Twin Moose conductor	Each	150
CS10	10	Fixing of spacers for Quadruple Moose Conductor	Each	208
CS11	11	Fixing of Hardware, stretching the ground wire and stringing of earth wire to a tension of 450kgs from pinacle to pinacle**.**	Each	1,138
CS12	12	Fixing of Hardware, stretching the ground wire and stringing of earth wire to a tension of 450kgs from pinacle to ground.	RM	77
CS13	13	Connection of equipment to bus and or another equipment with ***single zebra/Moose/Panther*** conductor including measuring, cutting,clamping and hoisting of suspension insulator assembly to support the conductor wherever necessary.	Each	399
CS14	14	Connection of equipment to bus and or another equipment with ***Twin zebra/Moose/Panther*** conductor including measuring, cutting,clamping and hoisting of suspension insulator assembly to support the conductor wherever necessary.	Each	618
CS15	15	Connection of equipment to bus and or another equipment with **Quad** ***zebra/Moose/Panther*** conductor including measuring, cutting,clamping and hoisting of suspension insulator assembly to support the conductor wherever necessary.	Each	1,238
	16	Laying of earth mat including excavation of trenches, welding, connecting to equipment and connecting lightning shield to earth mat and earthing of fence posts, drilling and connecting earth rods including connecting cast iron pipes as per Drg. No.SET(P)/149/82 with the following sizes of MS Flats /GIFlats.**(for 220kV & 132kV) including fabrication.**		
CS16	16 a	100x16mm MS Flat / GI Flat.	RM	118
CS17	16 b	50x 8mm MS Flat / GI Flat.	RM	92
CS18	16 c	75x 8mm MS Flat / GI Flat.	RM	106

CS19	16 d	For laying of earth flat in hard rock in substation / bays extension, an additonal amount to the basic labour rate of SSR will be allowed as there is no provision in the rate of laying of earth flat for remvoal of hard rocks.	RM	80
CS20	17	Excavation of earth pit, putting cast iron pipe with flange on one end (as per ISS7181/86) of nominal dia 125mm and 2.75 meters long in side the pit including supply and fixing RCC collars 0.75 meter dia (OD), 50mm thick and 0.60meters long in side the pit, backfill the pit in the 25mm size granules of BHcoke for full depth of the pit with alternate layers of BH coke and salt of 300mm thick around the earth pipe of 150mm on all the sides of the pipe including cost and conveyance of BH coke, salt, clamps, C.I.Pipes and RCC collars, labour charges for all operational and incidental items of work etc., complete.	Each	16,981
CS21	18	Laying of control cables of all sizes (from 2 core. 2.5 / 4.0sqmm to 12 core, 2.5/4.0sqmm , both copper and alluminium in cable trenches including cost of suitable metalic cable glands with rubber lining. **Note:** This includes running of cables in control room where cables are run on cable racks in cable duct.	RM	13
	19	Laying of power cables.		
CS22	19 a	upto 50 sqmm	RM	18
CS23	19 b	above 50 sqmm	RM	24
	20	Cable terminations to the switchgear, Marshalling boxes / Panel terminal blocks/control & relay panels, LTAC panel including providng suitable ferrules and lugs as per specification (including cost of ferrules and lugs) **(for 220kV & 132kV)**.		
CS24	20 i	2.5 sqmm Copper with copper lugs each core at both ends.	Nos.	40
CS25	20 ii	4.0 sqmm Aluminium with Aluminium lugs each core at both ends.	Nos.	43
CS26	20 iii	Up to 50 sqmm Power Cable with lugs each core at both ends.	Nos.	94
CS27	20 iv	Above 50 sqmm Power Cable with lugs each core at both ends.	Nos.	171
CS28	21	Instalation of lighting fixtures on switch yard structures including cabling and connections, labour charges etc., including 40mm dia G.I bent pipe of 0.75m length with suitable clamps for fixing to structures in complete shape (excluding cost of lighting fixtures)	Each	1,525

	22	Erection of the 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).		
CS29	22.1	220 kV Circuit breakers with support structure & marshalling boxes including grouting of foundation bolts and wiring of cables from Ploe to Pole including terminations.	Each	26,661
CS30	22.2	132 kV Circuit breakers with support structure & marshalling boxes including Ploe to Pole cable wiring and terminations.	Each	19,048
CS31	22.3	33 kV Circuit breakers including Ploe to Pole cable wiring and terminations.	Each	7,676
CS32	22.4	2-pole 220 kV Circuit Breaker with support structure & marshalling boxes incl. grouting of foundation bolts & wiring of cables & terminations.	Each	22,661
CS33	22.5	2-pole 132 kV Circuit Breaker with support structure & marshalling boxes incl. grouting of foundation bolts & wiring of cables & terminations.	Each	16,190
CS34	22.6	220 kV Current Tranformers.	Each	6,478
CS35	22.7	132 kV Current Tranformers.	Each	4,189
CS36	22.8	33 kV Current Tranformers.	Each	1,294
CS37	22.9	220 kV Potential Transfomers.	Each	6,478
CS38	22.10	132 kV Potential transformers.	Each	4,189
CS39	22.11	33 kV Potential transformers.	Each	1,294
CS40	22.12	220 kV Lightning Arrestors.	Each	4,189
CS41	22.13	132 kV Lightning Arrestors.	Each	1,978
CS42	22.14	33 kV Lightning Arrestors.	Each	773
CS43	22.15	220 kV Capacitve Voltage Transformers.	Each	6,096
CS44	22.16	132 kV Capacitve Voltage Transformers.	Each	4,189
CS45	22.17	220 kV Isolators with earth swtich including solid core insulators erection, alignment in full shape for smooth operation by Electrical and manually.	Each	10,285
CS46	22.18	132 kV Isolators with earth swtich including solid core insulators erection, alignment in full shape for smooth operation by manually.	Each	7,616
CS47	22.19	220 kV Isolators without earth swtich including solid core insulators erection, alignment in full shape for smooth operation by Electrical and manually.	Each	9,525
CS48	22.20	132 kV Isolators without earth swtich including solid core insulators erection, alignment in full shape for smooth operation by manually.	Each	6,852

CS49	22.21	2-pole, 220 kV Isolators without earth swtich including solid core insulators erection, alignment in full shape for smooth operation by Electrical and manually.	Each	8,096
CS50	22.22	2-pole, 132 kV Isolators without earth swtich including solid core insulators erection, alignment in full shape for smooth operation by Electrical and manually.	Each	5,825
CS51	22.23	33 kV Isolators including solid core insulators erection, alignment in full shape for smooth operation.	Each	2,475
CS52	22.24	220 kV Bus Post Type Insulators.	Each	539
CS53	22.25	132 kV Bus Post Type Insulators.	Each	407
CS54	22.26	33 kV Solid Core Insulators	Each	273
CS55	23	33 kV /400 V Station Transformer including all necessary connections on HV & LV side including cost of lugs (But excluding cost of transformer and HG fuse set)	Each	8,604
CS56	24	Erection of Control / Relay panels, LTAC panels, announciation, **PTDB** panels etc.,in the control room duly mounting them on channels and grouting them with foundation bolts excluding cost of channels & foundation bolts **(for 220kV & 132kV), including** man power support to MRT wing for commissioning.	Each	3,384
CS57	25	Erection of 220 V, 200 Ah/ 80 Ah Lead Acid battery in complete shape fit for charging.	Set	13,261
CS58	26	Erection of 220 V, 200 Ah/ 80 Ah maintenance free battery in complete shape fit for charging .	Set	4,286
CS59	27	Erection of 220 V, 200 Ah / 80Ah battery charger.	Set	4,407
CS60	28	Erection of Capacitor Bank including series reactor of 7.5 MVAR Capacity	Each	6,830
CS61	29	Erection of Marshalling kiosk	Each	1,138
CS62	30	Erection of Marshalling boxes	Each	553
CS63	31	Erection of Lighting pillar box in switchyard on foundation laid (Excluding pillar box). **(for 220kV & 132kV)**	Each	1,524
CS64	32	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 site.	MT	12,464

CS65	33	Galvanization 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 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.	MT	7,297
	34	Setting of stubs with stub setting template for sub-station structure:Erection of stub template, fixing of jacks for supporting the template, alignment and leveling of exact location of stubs of stubsetting template, dismantling of template after completion ofinitial curing of CC		
CS66	34.1	220kV Towers	Set	4,918
CS67	34.2	132kV Towers	Set	3,531
CS68	34.3	33kV Towers & CPL's	Set	882
CS69	34.4	220kV Isolator	Set	3,689
CS70	34.5	132kV Isolator	Set	2,648
CS71	34.6	220 kV Breaker	Set	3,190
CS72	34.7	132 kV Breaker	Set	2,392
CS73	34.8	33 kV Breaker	Set	1,595
CS74	35	Erection of the main and auxiliary structures etc., using bolts and nuts.	MT	3,810
CS75	36	Fixing of 90lb rail poles over the transformer plinths.	RM	758
CS76	37	Fixing of 105lb rail poles over the transformer plinths.	RM	886
CS77	38	Erection of 33kV HG Fuse set	Each	920
CS78	39	Erection of 33kV PT Distribution Box	Each	554
CS79	40	Laying and Terminations of 11kV, XLPE 1000 Sqmm Cable	RM	194
CS80	41	Erection of 11kV VCB outdoor type Kisok (within built Breaker, CTs, PTs, Surge Arrestors & Relays).	Each	3,935
		Marking as per approved layout with the help of surveyor		
CS81	42	220 kV sub-station	Each	47,842
CS82	43	132 kV sub-station	Each	31,894
CS83	44	Bay / Bays in one sub-station	Each	15,947
	45	Auto-CADD drawing with 12 copies indicate complete land with dimensions, plan of SS with equipments, location of control room, equipments, roads, duct routes, earth mat of 100X16mm & 50X 8mm flat earth pits,yard lighting fixtures etc.,		
CS84	i	132kV SS layout drawing	Job	8,102
CS85	ii	220kV SS layout drawing	Job	9,941

CS86	46	Writing of letters in control room panels of lettering on panels marshalling boxes.	Line	115
CS87	47	Supply and installation of Key - Board of size 1.5'x2' of Eco Wood Board with Glass covering with lock and key arrangments for providing all the keys of equipment and SS.	Each	6,374

Note:
i. Bore earthing in estimations as per field conditions will be considered on case to case basis as supplemental items.
ii. 25% excess over CS64 is allowed for JC tower fabrication charges.

ANNEXURE – V				
ERECTION OF ILLUMINATION, LIGHTING, FIRE FIGHTING,AIRCONDITIONING, D.G Set & 33kV STATION SUPPLY SYSTESM IN 400kV SUBSTATIONS.				
Sl. No.	**Item. No.**	**Description of item**	**Unit**	**SSR Rate for 2022-23 (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	343
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 guage 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	137
	(ii)	25 mm dia - 2 mm thick	RM	120
	(iii)	12 mm dia - 1.5mm thick	RM	81
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	2502
	3(i)	Fixtures for 36W lamps BJLM-236 type, Fixtures for 36W lamps BJSM- 236 type , Fixtures for 36W lmaps BJIV-236 type, Fixtures for energy saving tube light 2x36W or quivalent LED lamps.	Each	684
	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	343
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	7032

	(ii)	Type E1	Each	3757
	(iii)	All types of Lighting Panels	Each	2414
	(iv)	Junction Box with MCB and Terminal Blocks (Bolt Type)	Each	478
	(v)	415V 63A Power Recepticle outdoor	Each	956
	(vi)	5/15 A, 240 V sockets with swtich board	Each	63
	(vii)	Decorative type switch Boards	Each	137
	(viii)	Telephone Junction Boxes	Each	120
	(ix)	Telephone Jacks for Telephones	Each	44
	(x)	Celling Fans with Electronic regulators	Each	243
	(xi)	Flood lighting fixtures for 400W sodium Vapour lamp or Equivalent LED Lamp	Each	448
	(xii)	Street lighting fixtures for 150 W sodium Vapour lamp or Equivalent LED Lamp	Each	448
	(xiii)	Street lighting fixtures for 250 W sodium Vapour lamp or Equivalent LED Lamp	Each	540
	(xiv)	Industrial high bay lightining fixtures for250 W HVSP lamp or Equivalent LED Lamp	Each	540
	(xv)	Lighting fixtures for 125 HP MV lamp post lanterns or Equivalent LED Lamp	Each	336
C4F 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	86665
	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 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.	Each	92064
	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	8219
	4	Air vessels with vent valves etc. as per system requirement.	Each	7131
	5	Sump pumps 10 Cum/ Hr. MWC with motor starter and all accessories	Each	6306
	6	Basket strainer 300 NB	Each	2739
C4F6	**7(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	5480
	7(b)	Panel for 2 nos. Battery chargers & Diesel Engine driven fire water pumps.	Each	5480

	7(c)	Annunciation panel at fire water pump house.	Each	2089
	7(d)	Annunciation panel in Control Room.	Each	2089
C4F 7	**8**	Hydrant and HVWS system Accessories.		
	(a)	Single headed Hydrants	Each	956
	(b)	Landing valves	Each	956
	(c)	Hose cabinets.	Each	1044
	(d)	Hoses of 15.0m length with coupling	Each	95
	(e)	Hoses of 7.5m length with coupling	Each	95
	(f)	Branch pipe with Nozzles.	Each	95
C4F8	**9**	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	2739
	a(ii)	300 NB (above ground)	RM	1827
	b(i)	250 NB (below ground)	RM	2240
	b(ii)	250 NB (above ground)	RM	1413
	c(i)	200 NB (below ground)	RM	1739
	c(ii)	200 NB (above ground)	RM	1327
	d(i)	150 NB (below ground)	RM	1371
	d(ii)	150 NB (above ground)	RM	1120
	e(i)	100 NB (below ground)	RM	870
	e(ii)	100 NB (above ground)	RM	707
	f(i)	80 NB (below ground)	RM	663
	f(ii)	80 NB (above ground)	RM	457
	g)	50 NB	RM	443
	h)	25 NB	RM	265
	i)	15 NB	RM	188
C4F 9	**10(a)**	Set of GI Piping beyond deluge valves for transformer including detection piping and pipe supports including all accessories.	per Set	312101
	10(b)	Erection of Hume pipe as per specification.	RM	870
C4F10	**11**	VALVES		
	(a)	300 NB Gate	Each	2739
	(b)	250 NB Gate	Each	2326
	(c)	250 NB Check	Each	2326
	(d)	200 NB Gate	Each	1827
	(e)	150 NB Gate	Each	1739
	(f)	100 NB Gate	Each	1238
	(g)	80 NB Gate	Each	826
	(h)	80 NB Check	Each	826
	(i)	25 NB Gate	Each	302
	(j)	50 NB Gate	Each	663
	(k)	50 NB Check	Each	663
	(l)	15 NB	Each	183
	(m)	Float operated valve 100 NB	Each	1739
C4F11	**12**	INSTRUMENTS		

	(a)	Float operated level gauge	Each	1501
	(b)	Level Switch	Each	1501
	(c)	Pressure Gauge	Each	870
	(d)	Pressure Switch	Each	1827
	(e)	Differential Pressure Gauge	Each	1327
C4F12	**13(a)**	Deluge valve with motor gounge, pr.switch, pr.guage, solenoid valve to drain - size 150 NB	set	8219
	13(b)	Local control panel for Deluge valve	Each	2326
	13(c)	Strainer Y type, 150 NB	Each	1827
	13(d)	Quartzoid bulb detectors	Each	148
	13(e)	HVW spray nozzles	Each	148
C4F13	**14**	Detection & Alarm System		
	(a)	Ionization smoke detector	Each	663
	(b)	Photoelectric smoke detector	Each	663
	(c)	Heat detector	Each	663
	(d)	Response indicator	Each	663
	(e)	Manual call point	Each	663
	(f)	Fire detection & Alarm panel	Each	663
C4F14	**15**	Portable Fire Extinguishers		
	(a)	Dry chemical powdertype Fire extinguishers with all accessories.		
	(i)	10 kgs. Capacity	Each	67
	(ii)	25 kgs. Capacity (trolley mounted)	Each	132
	(iii)	50 kgs. Capacity (trolley mounted)	Each	178
	(iv)	150 kgs. Capacity (trolley mounted)	Each	380
	(b)	CO2 type portable Fire extinguishers		
	(i)	45 kgs. Capacity (trolley mounted)	Each	137
	(ii)	22.5 kgs. Capacity (trolley mounted)	Each	137
	(iii)	9 kgs. Capacity (trolley mounted)	Each	65
	(iv)	2 kgs. Capacity (Portable)	Each	51
	(c)	9 Litres capacity Mechanical foam type fire	Each	69
	(d)	Sand / water Buckets 9 litres capacity	Each	90
C4F15	**16**	**Air Conditioning System**		
	1	Erection, testing and commissioning of Split AC 2 Ton with all suitable accessories	Each	6506
	2	Erection of Air Conditioning AC distribution panel	Each	5480
	3	Providing Under Deck Insulation for the Roof exposed to sunlight with 50 mm thick TF Quality expanded poly styrene including GI washers and wire for fixing.	Sq. ft.	60
	4	Erection of Ventilation fans		
	i)	600 mm Sweep	Each	1457
	ii)	450 mm Sweep	Each	1457
	iii)	300 mm Sweep	Each	1457
C4F16	**17**	Erection, testing and commissioning of 250 KVA DG Set complete including AMF Panel, auxiliaries etc.	Set	97067

C4F17	**18**	Erection, testing and commissioning of 33kV Station Supply System		
	1	33kV/440 V Substation :		
	(a)	33kV/433 V, 630KVA Station supply transformer	Each	8314
	(b)	33 kV Isolator with terminal connectors and support insulators	Set	2475
	(c)	33 kV HG Fuse set	Each	920
	(d)	33 kV Lightning Arrestor	Each	773
	(e)	150 x 75 mm M.S Channels &Struc.	MT	3507
	(f)	HT Trivector Meter Box	Each	1044
	(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 switchyard of 400/220 KV Substation complete as directed by site engineer.	LS	19140
	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	2217
	(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	3551
	(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	6686
	(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	445
	(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	16267
C4F18	**19**	**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	45774

	(ii)	220 KV Feeders/ Bus coupler/ Transfer Bus / 315 MVA Transformer / 50/63/80MVAR/125 MVAR Shunt Reactors Control/Relay/ Protection Panels.	Each	43595
	(iii)	Common equipment panels for 400/220kV	Each	37620
	(iv)	400kV Bus bar Protection	Set	59085
	(v)	220KV Bus bar Protection	Set	76282
C4F19	**19(i)**	Common equipment Panels for 400/220kV.	Each	37620
	19(ii)	All other equipment of SMS and Time synchronizing equipment.	Each	175074
	19(iii)	400KV AC Bay Kiosk	Each	44321
	19(iv)	220KV AC Bay Kiosk	Each	33242
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 infull shape as perspecification.		
	(a)	Installation, Testing and commissioning of Networking Panel, OWS1, OWS2, EWS Remote work station. BCUs, LIUs, Ethernet Switches, Splicing of OFC etc.,	Set	286026
	(b)	Installation, Testing and commissioning of all necessarysoftware's compatible to IEC: 61850 for making the SAS operation infull shape including remote SCADA complete as directed by site engineer.	Set	95343
	(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)	38137
	(ii)	SECOND BAY onwards	Per Bay	19069
	(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	95343
	(ii)	SECOND BAY onwards	Per Bay	47670
		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 Capacity Sealed Maintenance free VRLA Type 1 No Battery Banks along with all other required accessories.	Set	16088
	(b)	40/100A Float - Cum- Boost Charger (1 No.)	Set	9571

	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	130127
	(b)	415V AC Distribution Board (Sub- Boards- I & II) as per the Specification & Drawing.	Each	216883
	(c)	415V AC Lighting Board (Sub- Boards- I & II) & Emergency Lighting Board as per the Specification & Drawing.	Each	54483
	(d)	220V DC Distribution Board (Sub-Boards- I & II) as per the Specification & Drawing.	Each	32864

ANNEXURE -VI					
I		**Loading / Unloading of materials from departmental / Private vehicles in to the stores yard and stacking and vice-versa**			
Sl. No.	**Item No.**	**Description of Item**	**Unit**	**SSR Rate for 2022-23 (in Rs)**	
				Loading	**Un Loading**
ST1	I	Cement	MT	137	160
	2	All other materials			
ST2	(i)	Steel	MT	311	311
ST3	(ii)	Tower parts	MT	311	311
ST4	(iii)	RS Joists and rail poles and MS Sheets pf various sizes.	MT	311	311
	3	Cable / Conductor drums (for loading / un loading)			
ST5	a	Panther ACSR	Each Drum	342	342
ST6	b	Zebra ACSR	Each Drum	478	478
ST7	c	Moose ACSR	Each Drum	478	478
ST8	d	Moose ACSR (Huge Drums of 1.75KM and above)	Each Drum	703	703
ST9	e	Earth wire	Each Drum	205	205
ST10	f	Control cables up to 6 Core	Each Drum	205	205
ST11	g	Control cables above 6 Core	Each Drum	273	273
ST12	h	3 1/2 Core LTAC cable drum (up to 500 meters).	Each Drum	273	273
ST13	i	3 1/2 Core LTAC cable drum (above 500 meters).	Each Drum	342	342
	4	Other materials received in cases.			
ST14	(i)	Case weighing not more than	Each case	180	180
ST15	(ii)	Case weighing from101kgs to 500kgs.	Each case	340	340
ST16	(iii)	Case containg fragile items and weighing more than 501kgs and up to 1MT	Each case	680	543
ST17	(iv)	for LTAC panel	Each	453	453
ST18	v(a)	70KN Normal disc insulator	Each	2	2

ST19	v(b)	120KN Normal disc insulator	Each	2	2
ST20	v(c)	160KN Normal disc insulator	Each	3	3
ST21	vi(a)	70KN Anti-fog disc insulator	Each	2	2
ST22	vi(b)	120KN Anti-fog disc insulator	Each	3	3
ST23	vi(c)	160KN Anti-fog disc insulator	Each	4	4
	(vii)	Loading / Un loading and stacking charges for 70KN /120KN SRC insulators.			
ST24	(a)	132kV	Each string	4	4
ST25	(b)	220kV	Each string	4	4
ST26	(viii)	Loading / Un loading and stacking charges for 120KN /160KN SRC insulators for 400kV .	Each string	5	5
	5	Cases containing Control & Relay Panels			
ST27	(a)	33kV	Each	453	453
ST28	(b)	132kV and 220kV	Each	565	565
	6	Cases containing CTs, PTs, CVTs			
ST29	(i)	11kV to 33kV Rating	Each case	102	102
ST30	(ii)	Above 33kV and up to 132kV	Each case	683	683
ST31	(iii)	220kV Rating	Each case	1019	1019
	7	Cases containing LAs			
ST32	(i)	33kV	Each case	18	18
ST33	(ii)	132kV	Each case	340	340
ST34	(iii)	220kV	Each case	453	453
	8	Loading / Un-Loading of			
ST35	1	33kV Breaker	Each set	836	836
ST36	2	132kV CB	Each set	2716	2716
ST37	3	220kV SF6 CB	Each set	3393	3393
ST38	4	Station Transformer (100KVA)	Each set	521	521
ST39	5	Station Transformer (250KVA)	Each set	624	624
ST40	6	220V 80AH Battery ***(Conventional)*** *(Lead Acid)*	Set	1131	1131
ST41	7	220V 80AH Battery (VRLA) (Maintenance Free)	Set	793	793
ST42	8	220V 200AH Battery ***(Conventional)*** *(Lead Acid)*	Set	1243	1243
ST43	9	220V 400AH Battery	Set	1810	1810

ST44	10	220V Battery Charger with DC distribution Board	Set	680	680
ST45	11	DCDB for battery Charger.	Each	226	226
ST46	12	132kV Hardware single	Set	16	16
ST47	13	132 KV Hardware double	Set	17	17
ST48	14	220 kV Hardware single	Set	22	22
ST49	15	220 KV Hardware double	Set	24	24
ST50	16	220 KV Isolators, without insulators including machanism box	Set	680	680
ST51	17	220kV Solid core insulators	Each	91	91
ST52	18	132 KV Isolators (without soild core insulators)	Each	509	509
ST53	19	132kV Solid core insulators	Each	56	56
ST54	20	33 KV Isolators (without soild core insulators)	Each	226	226
ST55	21	33kV Solid core insulators	Each	6	6
ST56	22	Vibration dampers, mid span compression joints, repair sleeves, clamps & connectors etc	100 Nos	226	226
	23	Capacitor Banks			
ST57	a	5 MVAR	Set	1810	1810
ST58	b	Neutral C.T.	Each	124	124
ST59	24	Scrap items like MS Scrap, GI Scrap, Ferrous Scrap etc,.	Per MT	340	340
ST60	25	Scrap items like Conductor scrap, Earth wire Scrap, etc,.	Per MT	453	453
ST61	26	Bolts & Nuts weighing 50 Kgs bags including springs washers, flat washers.	Each bag	10	10
ST62	27	3 1/2 Core LTAC Cable bits (loose) by measuring and load / unload (up to 500 Meters, limited to Rs.142 per Bit (Maximum)	Mts	1	1
ST63	28	Cable bits (loose) up to 6 Core by measuring and load / un load.(up to 500 Meters, limited to Rs.106 per Bit (Maximum)	Mts	1	1
ST64	29	Cable bits (loose) above 6 Core by measuring and load / un load.(up to 500 Meters, limited to Rs.142 per Bit (Maximum)	Mts	1	1
ST65	30	Copper Scrap	Per MT	271	271

ST66	31	Battery Scrap	Per MT	284	284
ST67	32	Capacitor units Scrap	Each	12	12
ST68	33	33kV Breaker Limb	Each	229	229
ST69	34	132kV Breaker Limb	Each	565	565
ST70	35	220kV Breaker Limb	Each	814	814
ST71	36	Tyres scrap of all sizes	Each	27	14
ST72	37	Empty oi drums	Barrel	5	5
ST73	38	Full oil drums	Barrel	58	58
ST74	39	220V, 200AH Battery (VRLA) (Maintenance free)	Set	870	870
ST75	40	220kV Bushing	Each	352	352
ST76	41	132kV Bushing	Each	176	176
ST77	42	33kV Bushing	Each	44	35
Note:		If loading / Un loading is done with Crane, 1/3 rd Charges are to be paid towards labour charges and remaining amount is towards crane hire charges. Example: Loading charges of 100 kVA Station Transformer is Rs. 521 and in case is loaded by using a crane then labour charges would be Rs.173.67			
II.		**Loading and Un loading and counting at Stores for check measuring and Stock Verificaiton Purpose**			
Sl. No.	**Item No.**	**Description of Item**	**Unit**	**SSR Rate for 2022-23 (in Rs)**	
ST78	43	Tower parts counting on part wise and restocking at stores yard (for stock verification purpose)	Per MT	114	
ST79	44	Labour charges for weighing and restocking of GI Tower Parts or Bolts & Nuts, Washers (for stock verification purpose)	Per MT	453	
ST80	45	Labour charges for loading and unloading of ACSR, AAA Conductor & Earth wire bits for weighiment (for stock verification purpose).	Per MT	453	
ST81	46	Counting and Restocking of Hardware (Iron parts, Al jumper cones, Al Tensition cones, PA rods, Arcing horns, Al grippers etc) (for stock verification purpose).	Each set	7	

ST82	47	Counting and Restocking of 220kV & 132kV Line accessories like Dampers, MSC Joints, Repair sleeves, PA rods, D- Shackles Links, Earthing sets, Hangers, Counter Poise Earthing Clamps etc (for stock verification purpose)	Each set	2
ST83	48	Counting and restocking of insulators of various capacities (for stock verification purpose).	Each	2
ST84	49	Loading of Assorted tower parts from different places by observing part wise and loading in to lorry at stores.	Per MT	340
ST85	50	For Opening and Repacking of Packing of Panels for check measuring purpose	Each	68
	51	For Opening and Repacking of Packing of Breakers for check measuring purpose		
ST86	(a)	220 kV	Each	226
ST87	(b)	132 kV	Each	160
ST88	(c)	33 kV	Each	68
ST89	52	For Opening and Repacking of Packing of Fragile Materials, and Small Packages like wooden, Cartoon Boxes etc., for check measuring purposes.	Each	34
III		**Crane Hire charges:(for departmental works at the premises)**		
Sl. No.	**Item No.**	**Description of Item**		SS Rate for 2022-23 (in Rs) (4.9% w.r.to SSR21-22)
	53	For 2 to 8 Tonne Capacity crane		
ST90		i.For Ist hour	Hour	3362
ST91		ii.For every hour or part thereof after Ist hour	Hour	1527
	54	For 8 to 20 Tonne Capacity crane		
ST92		i.For Ist hour	Hour	5243
ST93		ii.For every hour or part thereof after Ist hour	Hour	1748
	55	For above 20 Tonne Capacity crane		
ST94		i.For Ist hour	Hour	8085
ST95		ii.For every hour or part thereof after Ist hour	Hour	2842

IV		Sparing of Departmental vehicle to the contractor:		
Sl. No.	**Item No.**	**Description of Item**	**Unit**	**SSR Rate for 2022-23 (in Rs)**
ST96	56	Sparing of Departmental vehicle (Lorry) to the contractor is under emergency only. When departmental lorry is engaged to the Contractor on a particular day an amount per day or part there of should be recovered for a total KM run up to 100KM on that day plus for every additional KM rate, which ever is higher. The run to be worked out taking initial reading at starting point and closing reading after returing the same starting point duly completing the transport	Per day	4406
			Plus additional 1Km	37
ST97	57	Providing Transportation to Officers		8

Note:

1 When the departmental lorry is used for transport of fragile and costly equipment, they have to be insured by the contractor in first place before transport and the same will be claimed in the respective work bill.

2 If the crane is given on hire to other than APTRANSCO works, the rate is a minimum of Rs. 29283.12 (Rs.1220.13-per hr X 24Hrs) + (Fuel cost & lubricants) per day or part thereoff and the time is to be reckoned from the time of leaving department premises till reaching back.

ANNEXURE – VII				
TRANSPORTATION, HANDLING CHARGES INVOLVED DURING ERECTION OF 400KV TRANSMISSION LINES				
Sl. No.	**Item. No.**	**Description of Item**	**Unit**	**SSR Rate for 2022-23 (in Rs)**
1	**2**	**3**	**4**	**7**
C4H1	**1**	Total cost for transportation and handling Charges for Setting of Stub with Stub setting template.	Each Set	1041
C4H2	**2**	Erection of Tower: Total cost for transportation and handling Charges.	Per MT	821
C4H3	**3**	Double Circuit Stringing with Twin Moose: Transportation and handling charges for line materials.	Per KM	22496
C4H4	**4**	Single Circuit Stringing with Twin Moose : Transportation and handling charges for line materials.	Per KM	12007
C4H5	**5**	Double Circuit Stringing with Quadruple Moose: Transportation and handling charges for line materials	Per KM	44991
C4H6	**6**	Single Circuit Stringing with Quadruple Moose: Transportation and handling charges for line materials.	Per KM	24016
C4H7	**7**	OPG wire & earth wire: Transportation and handling charges for OPGW/earthing materials for 1 kM for D/C stringing.	Per KM	684
C4H8	**8**	OPG wire &earth wire: Transportation and handling charges for OPGW/earthing materials for 1 kM for S/C stringing.	Per KM	700

ANNEXURE -VIII			
TRANSPORT OF EQUIPMENTS / MATERIALS			
Sl.No.	**Item No.**	**Description of Item**	**Per Load SSR 2022-23**
		The following are the minimum materials / equipment, for each load. One Load = 9.0 MT	
	1	**CTs, PTs, & CVTs:**	
T.1	1.a	220 kV	2 Nos.
T.2	1.b	132 kV	3 Nos.
T.3	1.c	33 kV	12 Nos.
		NOTE: For transport of 220kV CTs, PTs &CVTs extra provison may be added for each load towards labour for clearing the obstructions like electrically and telephone lines as the equipment are very tall.(In Rupees)	268.00
	2	**SF6 Circuit Breakers:**	
T.4	2.a	220 kV	1/2 sets
T.5	2.b	132 kV	2/3 sets
T.6	2.c	33 kV	2 Nos.
	3	**Isolators with or without Earth switch including post type insulators:**	
T.7	3.a	220 kV	1 set.
T.8	3.b	132 kV	2 Sets
T.9	3.c	33 kV	8 Nos.
	4	**Lighting Arrestors:**	
T.10	4.a	220 kV	6 Nos.
T.11	4.b	132 kV	6 Nos.
T.12	4.c	33 kV	24 Nos.
	5	**Control & Relay panels:**	6 Nos.
	6	**ACSR Conductor and Earth wire drums:**	
T.13	6.a	ACSR moose	3Nos.
T.14	6.b	ACSR Zebra	4Nos.
T.15	6.c	ACSR Panther	6Nos.
T.16	6.d	Earth wire of 2 km per each drum	8Nos.
T.17	6.e	Earth wire of 3 km per each drum	6 Nos.
T.18	6.f	CABLE DRUMS	10Nos.
	7	**Disc Insulators**	
T.19	7.a	70 KN	1000 Nos.

T.20	7.b	120KN	800 Nos.
	8	**Silicon Rubber Insulators**	
T.21	8.a	70 KN	275 Nos.
T.22	8.b	120KN	228 Nos.
	9	**Wave Traps**	
T.23	9.a	220kV	6 Nos.
T.24	9.b	132kV	16 Nos.

ANNEXURE - IX				
RATES FOR HANDLING & ERECTION OF POWER TRANSFORMERS				
Sl. No.	**Item No.**	**Description of Item**	**Unit**	**SSR Rate for 2022-23 (in Rs)**
	1	2	3	6
		A) HANDLING AS JOB WORK BY DEPARTMENT		
	1	**Loading/Unloading of T&P such as wooden sleepers, winch jacks, packing pieces etc., required for handling the power transformers.**		
PT1	a	Up to 31.5 MVA transformers, one load of wooden sleepers and another load of T&P such as chain pulley block and rail poles etc (Maximum two loads)	Load	1494
PT2	b	For above 31.5 MVA and up to 100 MVA transformers, two loads of wooden sleepers and another load of T&P such as chain pulley block, winch and rail poles etc (Maximum three loads)	Load	1494
PT3	c	For the above 100 MVA and up to 160 MVA transformers, three loads of wooden sleepers and another load of T&P such as winch machine and rail poles etc (Maximum Four loads)	Load	1494
	2	**Loading/Unloading of fragile material such as**		
	a)	LV bushing / Neutral bushing for 132 kV transformer		
PT4	(i)	Loading	Each	45
PT5	(ii)	Unloading	Each	36
	b)	132kV Bushings		
PT6	(i)	Loading	Each	176
PT7	(ii)	Unloading	Each	176
	c)	220kV Bushings		
PT8	(i)	Loading	Each	351
PT9	(ii)	Unloading	Each	351
		NOTE :If loading / Un loading is done with Crane, 1/3rd Charges are to be paid towards labour charges and remaining amount is towards crance hire charges.		
PT10	3	Loading/Unloading of accessories of transformer including raidator, pipe line, FCC & RTCC panels, conservator tank, turrets LA set frames and oil barrels 'A' frame and header etc., (For 50MVA and above 50 MVA PTRs without oil barrels)	Load	2472

	4	**Dragging of power transformer main tank duly arranging wooden sleeper platform providing packing pieces, jacking up the transformer, insertion of wooden sleeper, rail poles arrangement of pullies, steel ropes positioning of winch and anchoring of winch.**		
	a	Transformers upto 16 MVA capacity		
PT11		Up to 10 Mtrs.	LS	3935
PT12		Over and above 10 Mtrs.	RM	392
	b	Transformers above 16MVA and upto 31.5 MVA capacity		
PT13		Up to 10 Mtrs.	LS	7186
PT14		Over and above 10 Mtrs.	RM	719
	c	Transformers above 31.5MVA and upto 50 MVA capacity		
PT15		Up to 10 Mtrs.	LS	8386
PT16		Over and above 10 Mtrs.	RM	838
	d	Transformers above 50MVA and upto 100 MVA capacity		
PT17		Up to 10 Mtrs.	LS	10364
PT18		Over and above 10 Mtrs.	RM	1035
	e	Transformers above 100MVA and upto 160 MVA capacity		
PT19		Up to 10 Mtrs.	LS	13333
PT20		Over and above 10 Mtrs.	RM	1334
	5	**Turning the transformer through 90 degrees including making arrangements as above.**		
PT21	a	Transformers upto 16 MVA capacity	Each	3522
PT22	b	Transformers above 16MVA and upto 31.5 MVA capacity	Each	4417
PT23	c	Transformers above 31.5MVA and upto 50 MVA capacity	Each	5494
PT24	d	Transformers above 50MVA and upto 100 MVA capacity	Each	6286
PT25	e	Transformers above 100MVA and upto 160 MVA capacity	Each	7857
	6	**Turning the transformer through 180 degrees including making arrangements as above.**		
PT26	a	Transformers upto 16 MVA capacity	Each	6106
PT27	b	Transformers above 16MVA and upto 31.5 MVA capacity	Each	7342
PT28	c	Transformers above 31.5MVA and upto 50 MVA capacity	Each	8651
PT29	d	Transformers above 50MVA and upto 100 MVA capacity	Each	9613
PT30	e	Transformers above 100MVA and upto 160 MVA capacity	Each	11534
PT31	7(a)	Anchoring of transformer including excavation of trench of 4 x 1x0. 5 mtrs for anchoring and burying 2 Nos. sleepers in it and removing the same after work is completed.	1 Job	1494
PT32	7(b)	Movement of 10 MT winch for anchoring.	1 Job	1352

	8	**Lifting/Lowering the transformer main tank to the required height of one sleeper using jacks and wooden sleepers packing pieces for loading onto /from the truck.**		
PT33	a	Transformers upto 16 MVA capacity	Each	4274
PT34	b	Transformers above 16MVA and upto 31.5 MVA capacity	Each	6587
PT35	c	Transformers above 31.5MVA and upto 50 MVA capacity	Each	8201
PT36	d	Transformers above 50MVA and upto 100 MVA capacity	Each	10933
PT37	e	Transformers above 100MVA and upto 160 MVA capacity	Each	13989
	9	**Pulling the transformer from platform to the truck for loading/ from truck to the platform for unloading**		
PT38	a	Transformers upto 16 MVA capacity	Each	3595
PT39	b	Transformers above 16MVA and upto 31.5 MVA capacity	Each	6286
PT40	c	Transformers above 31.5MVA and upto 50 MVA capacity	Each	6986
PT41	d	Transformers above 50MVA and upto 100 MVA capacity	Each	8736
PT42	e	Transformers above 100MVA and upto 160 MVA capacity	Each	11807
	10	**Fixing of transformer wheels to main tank including alignment of transformer etc.,**		
PT43	a	Transformers upto 16 MVA capacity	Job	1662
PT44	b	Transformers above 16MVA and upto 31.5 MVA capacity	Job	1961
PT45	c	Transformers above 31.5MVA and upto 50 MVA capacity	Job	2856
PT46	d	Transformers above 50MVA and upto 100 MVA capacity	Job	3701
PT47	e	Transformers above 100MVA and upto 160 MVA capacity	Job	5484
PT48	11	Arranging gas cutter equipment at site including operator and helper to remove anchoring of transformer main tank on truck for loading and unloading (including cost of gas)	Job	2724
	12	**Removal of steel rope and turn buckles of transformer main tank on truck.**		
PT49	(a)	Up to 100MVA Capacity	Job	749
PT50	(b)	above 100MVA and up to 160MVA Capacity	Job	1121
	13	Tieing the transformer main tank on to the truck with steel rope and turn buckles		
PT51	(a)	Up to 100MVA Capacity	Job	964
PT52	(b)	above 100MVA and up to 160MVA Capacity	Job	1442
	14	Assisting for lifting of overhead live lines, while transporting of transformers by truck.		
PT53	(a)	Up to 100MVA Capacity	Job	2110
PT54	(b)	above 100MVA and up to 160MVA Capacity	Job	4218

	B)	**ERECTION OF POWER TRANSFORMERS AS JOB WORK BY DEPARTMENT**		
	1	Opening of crates and keep ready for erection of accessories of transformers		
PT55	a	Transformers upto 16 MVA capacity	Job	2349
PT56	b	Transformers above 16MVA and upto 31.5 MVA capacity	Job	2935
PT57	c	Transformers above 31.5MVA and upto 50 MVA capacity	Job	3929
PT58	d	Transformers above 50MVA and upto 100 MVA capacity	Job	4715
PT59	e	Transformers above 100MVA and upto 160 MVA capacity	Job	6286
	2	Shifting, loading dragging of accessories of transformers like radiator, conservator tank, pipe line, fans, headers, DM box, FCC, oil barrels etc., from place of storage to work spot and vice versa of transformers.(For 50MVA and above 50 MVA PTRs without oil barrels)		
PT60	a	Transformers upto 31.5 MVA capacity	Job	3522
PT61	b	Transformers above 31.5MVA and upto 100 MVA capacity	Job	4700
PT62	c	Transformers above 100MVA and upto 160 MVA capacity	Job	6456
PT63	d	Transportation of oil barrels from unloading place to the filter machine in the substation.	Job	3513
	3	Erection of Radiators to the transformers including headers		
PT64	a	Transformers upto 16 MVA capacity	Job	2614
PT65	b	Transformers above 16MVA and upto 31.5 MVA capacity	Job	4188
PT66	c	Transformers above 31.5MVA and upto 50 MVA capacity	Job	5205
PT67	d	Transformers above 50MVA and upto 100 MVA capacity	Job	6380
PT68	e	Transformers above 100MVA and upto 160 MVA capacity	Job	8697
	4	Erection of main conservator tank.		
PT69	a	Transformers upto 16 MVA capacity	Each	2358
PT70	b	Transformers above 16MVA and upto 31.5 MVA capacity	Each	2621
PT71	c	Transformers above 31.5MVA and upto 50 MVA capacity	Each	3845
PT72	d	Transformers above 50MVA and upto 100 MVA capacity	Each	5988
PT73	e	Transformers above 100MVA and upto 160 MVA capacity	Each	7708
PT74	f	Pronal bag testing and commissioning	Each	2593
PT75	g	Hiring of compressor	Each	1817
PT76	h	Dry Nitrogen Cylinder (In case, Dry Nitrogen Cylinder is used for commissioning of Air cell instead of Air compressor), excluding transportation cost.	Each	2846
	5	Erection of transformer bushing		
PT77	a	33 kV Neutral and teritary bushings	Each	514

PT78	b(I)	132 kV bushings up to 100MVA.	Each	956
PT79	b(ii)	132 kV bushings for above 100MVA and up to 160MVA	Each	1197
PT80	c(I)	220 kV bushings up to 100MVA	Each	1437
PT81	c(ii)	220 kV bushings for above 100MVA and up to 160MVA	Each	1781
PT82	d(I)	220kV 3 Nos. erection of turrets up to 100MVA	Job	2057
PT83	d(ii)	220kV 3 Nos. erection of turrets for above 100MVA and up to 160MVA	Job	2699
PT84	e(I)	132kV 3 Nos. erection of turrets up to 100MVA	Job	965
PT85	e(ii)	132kV 3 Nos. erection of turrets for above 100MVA and up to 160MVA	Job	1415
PT86	6	Erection of air blowers (cooling fans) including frames and control cubical etc., (for each transformer)	Job	3887
PT87	7	Erection of LA frames (HV & LV side)	Each	1220
PT88	8(a)	I).Erection of driving mechanism box, bevel gear of OLTC for below 100MVA..	Each	1220
PT89		ii).Erection of driving mechanism box, bevel gear of OLTC 100MVA and above 100MVA.	Each	2439
PT90	8(b)	ii).Erection of OLTC conservator tank with stand for up to 100MVA.	Each	1576
PT91		ii).Erection of OLTC conservator tank with stand for above 100MVA and upto 160MVA.	Each	2358
	9	Erection of pipe line.		
PT92	a	Transformers upto 31.5 MVA capacity	Each	825
PT93	b	Transformers above 31.5MVA and upto 50 MVA capacity	Each	1233
PT94	c	Transformers above 50MVA and upto 100 MVA capacity	Each	2089
PT95	d	Transformers above 100MVA and upto 160 MVA capacity	Each	2612
PT96	10	I).Erection of Thermometer, pressure Relief valve and vent pipe etc.,	Each	825
PT97		ii)Erection of Thermometer, pressure Relief valve and vent pipe etc.,100MVA and above PTRs.	Each	1233
	11	Erection of detachable OLTC including connecting internal jumper with OLTC tank.		
PT98	a	Transformers upto 31.5 MVA capacity	Each	4052
PT99	b	Transformers above 31.5MVA and upto 100 MVA capacity	Each	6106
PT100	c	Transformers above 100MVA and upto 160 MVA capacity	Each	6807
PT101	12	I).Erection of separate, cooler bay including 'A' frame header pipes and bends of transformers up to 100 PTRs MVA capacity.	Bay	8736

PT102		ii).Erection of separate, cooler bay including 'A' frame header pipes and bends of transformers above 100 MVA and up to 160MVA PTRs capacity.	Bay	9613
	13(I)	Removal of old worn out gaskets and replacement with new gaskets including cutting, pasting of gasket with all accessories including cost of adhesives. Excl. top cover		
PT103	a	Transformers upto 16 MVA capacity	Job	3379
PT104	b	Transformers 31.5MVA and 50 MVA capacity	Job	5251
PT105	c	Transformers 100 MVA and upto 160 MVA capacity	Job	6757
	13(II)	Removal of old worn out gaskets and replacement with new gaskets including cutting, pasting of gasket with all accessories including cost of adhesives. for top cover. The following rates are exclusive of crane hire charges which are payable at actuals.		
PT106	a	Transformers upto 16 MVA capacity	Job	1692
PT107	b	Transformers 31.5MVA and 50 MVA capacity	Job	2066
PT108	c	Transformers 100 MVA and upto 160 MVA capacity	Job	2438
PT109	14	Erection of supporting insulators and earth flat for HV & LV Neutrals / Tertiary.	Job	825
	C	**OIL FILTERATION OF TRANSFORMERS AS JOB WORK BY DEPARTMENT**		
PT110	1	Loading / Unloading of 2KL Oil filter.	Job	2885
PT111	2	Laying of L.T.Cable from AC Supply point to filter connecting Pipes etc, from filter to transformer and back to filter and Vice-versa.	Job	1394
PT112	3	Loading / unloading of full transformer oil barrels.	Barrel	57
PT113	4	Loading / unloading of oil drums.	Barrel	9
	5	Oil topping for transformer through oil filter:		
	5.1	Transformer already filled with oil		
PT114	a	Transformers upto 31.5 MVA capacity	Each	1108
PT115	b	Transformers above 31.5MVA and upto 50 MVA capacity when the transformer is received with transformer oil	Each	2439
PT116	5.2	Transformers above 50MVA upto 160 MVA capacity When the transformer is received empty with Nitrogen	Barrel	36
	6	Assisting labour for filtering of oil for a period of 5 days during filteration of oil		
PT117	a	For a period of 5 days for Transformers upto 31.5 MVA capacity	Each	5268
PT118	b	For a period of 5 days for Transformers above 31.5 MVA and upto 100 MVA capacity	Each	7375

PT119	c	For a period of 5 days for Transformers above 100 MVA and upto 160 MVA capacity	Each	10538
PT120	a	Over and above 5 days for Transformers upto 31.5 MVA capacity	per day	1053
PT121	b	Over and above 5 days forTransformers above 31.5 MVA and upto 100 MVA capacity	per day	1474
PT122	c	Over and above 5 days forTransformers above 100 MVA and upto 160 MVA capacity	per day	2107
PT123	7(I)	Dismantling of control cables of power transformer for arranging, pulling of transformer maintank out of plinth for failed transformer or improvement of transformercapacity.	Job	974
PT124	(ii)	Laying of control cables for the transformers which are received with non completion of wiring on the transformer and complete wiring of the transformer on the tank.F.C.C,D.M box etc., (for old repaired transformers).	Job	2593
PT125	8	Shifting of filter machine in switch yard from existing place to near transformer or to the convenient place manually (where movement of tractor trailer is not possible).	RM	121
	9	Labour charges for arrangement for vaccum filling for the power transformer for prescribed time duration for 50MVA and above PTRs which are received at site with nitrogen gas filled.		
PT126	(a)	Below 100MVA PTRs	Job	3887
PT127	(b)	Above 100MVA PTRs.	Job	7777
PT128	10	Loading / Unloading of 5 KL Storage tanker.	Job	1287
	11	Hire charges for a private tractor for transport of 6 KL of oil filter.		
PT129		Up to 50 KM	LS	6103
PT130		Beyond 50 KM	per KM	118
	12	Providing of oil tanker on daily hire charges		
PT131	a	10 KL capacity	Per day	1914
PT132	b	20 KL capacity	Per day	3509
	13	Transportation of 10 KL & 20 KL oil tanker (including return trip charges), (a) or (b) only applicable		
PT133		Minimum amount upto 50 KM	LS	9569
PT134		More than 50 KM	KM	48
	14	Unloading of oil tanker at site and loading the same after completion of the job		

PT135		10 KL capacity	Job	7574
	15(i)	Complete wiring up of the transformer indicating systems cooler control fans and motor driving mechanism of OLTC panel providing suitable ferrules and lugs.		
PT136	a)	16/31.5 MVA Transformer	LS	22847
PT137	b)	50 MVA Transformer	LS	29705
PT138	c)	100 MVA Transformer	LS	32946
PT139	d)	160 MVA Transformer	LS	32946
	15(ii)	Complete wiring up of the transformer indicating systems cooler control fans and motor driving mechanism of OLTC panel providing suitable ferrules and lugs excluding OLTC panel		
PT140	a)	16/31.5 MVA Transformer	LS	11424
PT141	b)	50 MVA Transformer	LS	14851
PT142	c)	100 MVA Transformer	LS	16471
PT143	d)	160 MVA Transformer	LS	16471
PT144	16	Draining of oil from main tank of the transformer into empty oil drums and stacking them neatly as directed by the APTRANSCO Engineer at site.	KL	557
PT145	17	Unloading of 20 KL oil storage taken at site and loading the same after comletion of the job	Job	8274
	D)	Insurance for fragile material during transportation, erection, dismantling may be paid as per actuals from department side for department works.		

ANNEXURE - X				
Rates for O&M works of EHT Lines				
Sl. No.	**Item No.**	**Description of work**	**Unit**	**SSR Rate for 2022-23 (in Rs)**
	1	2	3	5
OM1	1	(a).Providing of Vibration dampers (for 220 KV & 132 KV lines) (Excluding Material & Transportation cost)	Each	170
OM2		(b). Providing of spacer damper for 400 KV twin Moose lines (Excluding Material & Transportation cost)	Each	232
	2	Painting of towers with two coats of aluminum paint using Aluminum paint 1st grade containing 306 Kg of Aluminum paste for 18 liters of thinner 1st coat is to be applied before erection of towers and 2nd coat after stringing and half round welding including cost of paint, cost of brushes, labour charges etc., complete.		
OM3	a)	First coat of 1st Grade Aluminum Paint duly scratching and cleaning of towers including labour charges, cost of paint, brushes etc.	MT	5424
OM4	b)	Labour charges for painting including scratching and cleaning of towers of 1st coat of Alluminum with out cost of paint & brushes.	MT	1519
OM5	c)	(*) Second coat of 1st Grade Aluminium Paint duly scratching and cleaning of towers including labour charges, cost of pint, brushes, etc.	MT	3174
OM6	d)	(*) Labour charges for painting including scratching and cleaning of towers of 2nd coat of Aluminum with out cost of paint & brushes.	MT	861
		(*) : The requirement of 2nd coat is to be justified by the concerned Divisional Engineer/Executive Engineer before execution of the work.		
	3	Painting of towers with single coat of red oxide paint of 1st Grade, including scratching and cleaning of towers.		
OM7	a)	One coat of 1st Grade Red Oxide Paint including labour charges for scratching and cleaning of towers including cost of paint, brushes etc.	MT	3397
OM8	b)	Labour charges for painting of towers including scratching and cleaning of towers without cost of paint & brushes.	MT	1884
OM9	4	Providing of Arcing Horns for 132 KV line on both tower side and line side i.e. two per string (Excluding Material & Transportation cost)(with lefty & Pullies)	per string	1360

OM10	5	Providing of Arcing Horns for 132 KV line (Excluding Material & Transportation cost)(without lefty & Pullies)	Each	170
OM11	6	Providing of Arcing Horns for 220 KV line on both tower side and line side i.e. two per string (Excluding Material & Transportation cost)(with lefty & Pullies)	per string	1996
OM12	7	Providing of Arcing Horns for 220 KV line (Excluding Material & Transportation cost)(without lefty & Pullies)	Each	170
OM13	8	Providing of Missing angles/ Replacement of rusted angles on the existing towers departmentally (including transporaton charges & Excluding cost of tower parts, bolts & nuts)	Per each	152
OM14	9	Replacement of insulators at Suspension tower of 132 KV line (Excluding Material & Transportation cost)	Per string	1713
OM15	10	Replacement of insulators at Tension tower of 132 KV line (Excluding Material & Transportation cost)	Per string	2898
OM16	11	Replacement of insulators at Suspension tower of 220 KV line (Excluding Material & Transportation cost)	Per string	1884
OM17	12	Replacement of insulators at Tension tower of 220 KV line (Excluding Material & Transportation cost)	Per string	3332
OM18	13	Replacement of 132 KV line single suspension insulator string with double suspension insulator strings (Excluding Material & Transportation cost)	Per string	2568
OM19	14	Replacement of 132 KV line single tension insulator string with double tension insulator strings (Excluding Material & Transportation cost)	Per string	4346
OM20	15	Replacement of 220 KV line single suspension insulator string with double suspension insulator strings (Excluding Material & Transportation cost)	Per string	2727
OM21	16	Replacement of 220 KV line single tension insulator string with double tension insulator strings (Excluding Material & Transportation cost)	Per string	4997
OM22	17	Replacememt of insulators at Suspension tower of 400kV line (Excluding material & Transportation cost)	Per string	2554
OM23	18	Replacememt of insulators at Tension tower of 400kV line (Excluding material & Transportation cost)	Per string	4259
OM24	19	Painting the welded portion of GI bolts and nuts of towers In the section ground level and up to X-arm level including all bolts connecting the bracings at the bottom x-arm level with one coat of zinc rich paint including cost of paing.	Each	6
OM25	20	Fixing of earth bonds for existing transmission line towers	Each	170
	21	Re-Stringing of power conductor on the existing lines (for correction		
OM26	a	3. Nos. Zebra conductors	RKM	42848
OM27	b	6. Nos. Zebra conductors	RKM	64270

OM28	c	2. Nos. Panther conductors	RKM	22847
OM29	d	3. Nos. Panther conductors	RKM	34276
OM30	e	6. Nos. Panther conductors	RKM	54274
OM31	f	2. Nos. Moose conductors	RKM	36180
OM32	g	3. Nos. Moose conductors	RKM	54274
OM33	h	6. Nos. Moose conductors	RKM	85690
OM34	i	3. Nos. Bear conductors	RKM	42848
OM35	j	6. Nos. Bear conductors	RKM	64270
OM36	k	3. Nos. Dog conductors	RKM	25705
OM37	l	6. Nos. Dog conductors	RKM	40703
	22	***Loading / Unloading charges :***		
	a)	For above half drum and up to one drum full drum rate	Basic rate of Full	Basic rate of Full Drum
	b)	For below half drum and for a Piece	Basic rate of Half	Basic rate of Half Drum

ANNEXURE - XI			
LABOUR CHARGES FOR TELECOM MATERIAL			
Sl.No.	**Description**	**Unit**	**SSR Rate for 2022-23 (in Rs)**
1	Erection of PLCC panel in 220KV/132KV SS	Each	8,442
2	Erection of LMU	Each	1,410
3	Erection of Wave Trap		
i	Fixing of wavetrap on pedastal mounting insulator stack in 400KV	Each	7,889
ii	Fixing o f the wave trap on pedastal mounting insulator stack in 200KV	Each	6,393
iii	Fixing of the wave trap on Suspension mounting including jumpering in 132KV	Each	3,811
4	Erection and commissioning of 48V DC/50A, 35A Battery charger in 220KV/132KV SS	Each	2,785
5	Erection and commissioning of 48V DC/100A/150A Battery charger in 400 KV SS	Each	2,785
6	Erection and commissioning of 48V/200AH & 250AH battery sets in 132 & 220 KV SS	Each	5,478
7	Erection and commissioning of 48V/300AH battery sets in 132 & 220 KV SS	Each	6,026
8	Erection and commissioning of 48V/400AH battery set in 400 kV SS	Each	6,574
9	Erection and commissioning of OLTE & MUX (Optical line terminal equipment)	Each	27,765
10	Erection and commissioning of FDP(Fibre Distribution Panel) in 400KV/220KV/132KV SS (12F/24F/48F)	Each	12,150
11	Erection and commissioning of 32/32, 16/16 or 8/8 EPAX400KV/220KV/ 132KV SS	Each	13,043
12	Erection and commissioning of 32/32, 16/16 with 2 E1 cards EPAX in 400KV/220KV/ 132KV SS	Each	17,156
13	Erection of RTU panel in 400KV/220KV/132KV SS	Each	21,452
14	Erection and commissioning of Analog/Digital protection coupler equipment in 400KV/220KV/132KV SS	Each	20,603
15	Laying of optical fibre approach cable in switch yards of 400KV, 220KV & 132KV (Including hardware) along with HDPE Pipe	KM	22,504

16	Laying of HDPE Pipe in trenches in 400KV, 220KV, 132KVSS.	KM	14,799
17	Laying of 12F/24/48 F OPGW cable on 132 kV, 220KV and 400 KV lines (including Splicing and fixing of hardware accessories)	Km	87,151
18	Stringing of ADSS type optical fibre cable (12F/24F capacity) on 132KV, 220KV line sections in plane areas/ forest areas/ hill areas separately, inclusive of splicing and fixing of hardware		
i	For plane area	KM	41,021
ii	For agency or tribal area	KM	51,276
iii	For Hill areas	KM	57,429
iv	For interior area	KM	57,429
v	For municipal coorporation areas (upto 12 Kms frrom municipality)	KM	51,276
vi	For municipalites (upto 12 Kms from municipality)	KM	49,225
19	Fixing of tension clamp set of OFC on 132KV & 220KV towers	per set	2,811
20	Fixing of suspension clamp set of OFC on 132KV, 220KV towers	per set	2,316
21	Fixing of tension clamp set of OPGW on 400KV lines	per set	3,402
22	Fixing suspension clamp set of OPGW on 400KV lines	per set	2,906
23	Fixing of splice box on 132KV & 220KV towers	Each	4,230
24	Fixing of splice box on 400KV towers	Each	5,288
25	Fixing of vibration dampers on 132KV & 220KV towers	Per set	1,316
26	Fixing of vibration dampers on 400KV towers	Per set	1,676
27	Splicing charges for OFC fibres laid on 132KV, 220KV, 400KV lines in plane Areas/Forest/ Hill Areas/ Municipal limits, separately for each case		
i	For plane area	Each fibre splice	668
ii	for agency or tribal area	Each fibre splice	835
iii	for Hill areas	Each fibre splice	934
iv	for interior area	Each fibre splice	934
v	for municipal corporation areas (upto 12 Kms from municipalities)	Each fibre splice	835
vi	for municipalities (upto 12 Kms from municipalities)	Each fibre	802

		splice	
28	Fixing of ADSS type OFC to the tower members with ties, clamps		
i	for 220kv/132 kv	Each	2,308
ii	for 400kv	Each	2,884
29	Laying of aerial type OFC on 33KV/11KV HT/LT poles	KM	13,590
30	Laying of 6 pair telephone cable in the trenches in 132KV, 220KV & 400KV	KM	10,285
31	Laying of Cat 5E/6 Cables in Offices.	KM	5,274
32	Laying of Cat 5E/6 Cables with Conduit pipes along with accessories in Offices.	KM	15,823
33	Fixing of 6U × 19 inch Rack in Offices for ERP works	Each	440
34	Laying of single pair telephone cable in the trenches in 132KV, 220KV & 400KV	KM	9,494
35	Laying of 25sq mm battery cable in control room in 132kv, 220KV & 400KV	KM	22,416
36	Laying of Co-axial cable from switch yard gantry tower to communication room in the existing trench	KM	21,519
37	Laying of 6 pair telephone cable on overhead poles LT & HT	KM	7,911
38	Laying of single pair telephone cable on overhead poles LT & HT	KM	7,911
39	Laying of RF cables in 132KV, 220KV & 400 KV SS	KM	21,519
40	Digging of 1 X 1 X 1 (Cu.mt) ducts for laying of telephone cable in 132KV, 220KV, 400KV SS	Cu.mt	820
41	Excavation, refilling & closing of ducts of 1 X 1 X 1 (Cu.mt) in 132 KV, 220KV and 400 KV SS premises	Cu.mt	1,639
42	Erection of earth pit as per standards in 132KV, 220KV SS for communication purpose	Each	16,981
43	Erection of earth pit as per standards in 400 KV SS	Each	16,981
44	Erection of VSAT equipment in 132KV, 220KV, 400 KV SS	Each	8,041
45	Dismantling of VSAT equipment of 132KV, 220KV, 400 KV SS	Each	4,020
46	Loading/unloading charges for PLCC equipment in 132KV SS, 220KV/400KV in to vehicle		
i	for single channel PLCC pannel	Each	820
ii	for Twin channel PLCC pannel	Each	820
47	Loading/unloading charges for 48V/35A, 50A, chargers	Each	820
48	Loading/unloading charges for 48V/100A/150A chargers	Each	1,230
49	Loading/unloading charges for OLTE/MUX equipment	Each	1,230

50	Loading/unloading charges for RTU panels	Each	1,230
51	Loading/unloading charges for EPAXs	Each	410
52	Loading/unloading charges for battery sets 48V/150 AH, 200 AH, 250 AH, 300 AH, 400 AH		
i	for 150 AH/200 AH	Each	820
ii	for 250 AH/300AH	Each	820
iii	for 400AH	Each	1,230
53	Loading/unloading charges for LMUs	Each	410
54	Loading/unloading charges for Wavetrap		
i	132KV wave trap	Each	410
ii	220KV Wave Trap & 400 KV	Each	820
55	Dismantling of exisiting PLCC chargers (35A, 50A, 100A)		
i	35/50A	Each	1,949
ii	100A	Each	5,670
56	Dismantling of existing 48V/165AH, 200AH, 250AH,300AH	Each	4,422
57	Dismantling of existing 48V/400 AH battery sets	Each	5,875
58	Dismantling of existing RTU, OLTE/MUX equipment		
i	RTU	Each	10,726
ii	OLTE/MUX	Each	4,221
59	Dismantling of EPAXs	Each	1,744
60	Dismantling of wave traps on 132 KV/220KV SS/400 KV SS separately		
i	50% of Erection of 2000A/1 m H Wave Trap(400 kv)	Each	3,945
ii	50 % of Erection of 1250A/0.5 mH Wave Trap(220 kv)	Each	3,197
iii	50% of Erection of 630A/0.2mH Wave Trap (132 KV)	Each	1,906
61	Dismantling of 12F/24 F ADSS cable from 132KV, 220KV SS lines	Each	20,510
62	Dismantling of 12F/24/48 F OPGW cable from 132KV, 220KV SS, 400KVSS lines	Each	43,576
63	Dismantling and bringing down of splice boxes on 132KV, 220KV towers	Each	2,115
64	Dismantling and bringing down of splice boxes on 400KV towers	Each	2,644
65	Hiring charges of 5 KVA Diesel Generator per day for attending OFC break down works	Each	1,248
66	Hiring charges of 230V AC inverter (2KVA) with battery backup for attending OFC break down works	Each	1,248
67	Hiring charges of 8X8X10(C.u.ft) closed tent shutter for attending splicing works for attending OFC break down works	Each	879
68	Dismantling of VHF 30 ft masts with Gay wires etc.	Each	2,574

69	Dismantling of 10 ft/20 ft trylon masts	Each	2,078
	UGOF cabling works rates		
	Survey & documentation		
70	Survey of route, providing as built drawing, documentation for unarmoured underground optical fibre cable	Km	5,212
	Excavation &Backfilling		
71	All types of soil, road, footpath, including PCC, sand, warning brick/stone, semi-circular RCC split cover etc. for underground fibre optic cable.	Km	2,08,296
72	Warning Tape (including supply and installation).	Km	31,253
73	Laying of PLB HDPE pipe O.D. 40mm	Km	14,799
74	Installation of HDPE pipe by **Trenchless digging**		
(a)	0-10 mtrs	mtr	832
(b)	> 10 and up to 30 mtrs	mtr	938
(c)	More than 30 mtrs	mtr	1,041
75	Laying of GI pipe 100mm (Nominal bore), Including accessories.	mtr	265
76	Laying of RCC hume pipe (NP3), 100mm Diameter (Inside), Including accessories.	mtr	397
77	laying of unarmoured UG OFC 24F/48F (DWSM) with HDPE duct in case of underground works	Km	31,255
78	Installation of Joint box in underground (Including splicing & testing) - 24 Fibers	No.	6,516
79	Erection of RCC Joint Chambers	No.	5,550
80	Installation of PLB HDPE pipe on wall in building premises including routing of OFC through it	mtr	526
81	Reinstatement of excavated area/damages (in road, pavement, footpath etc.)	Sq.mtrs	263
82	Main Distribution frame (100 pairs)	No.	2,606
83	Split type AC Units including Stabilizer	No.	7,136

Annexure-XII (a)				
LAYING OF 132KV UG CABLE (SINGLE CIRCUIT)				
Item No.	**Sl.No.**	**Description of Material/Work**	**UNIT**	**SSR Rate for 2022-23 (in Rs)**
	1	**CABLE ROUTE SURVEY**		
U1S 1	a)	Conducting reconnoitery and preliminary survey along shortest route with best proposed route and furnishing report for selecting the best proposal for approval including cost and conveyance of all materials, hire charges of equipment, tools and plant, preparation of drawings and reports, labour charges, complete for finished item of work as per the directions of Engineer- in-charge at site as per SSR 2013-14. (a) With GPS equipment (As per clause 4.9 of survey) (b) With total station equipment.	Mts.	372
U1S 2	b)	Conducting Detailed Survey of cable route including evaluation of thermal resistivity of the soil along the cable route, excavation of trial pits as per field requirements, preparation of cable route profile, drawings for cable laying, final route alignment, marking lines & grades, and preparing bill of materials/ lengths of the cable for the project incl. preparation of PTCC questionnare and marking of proposed cable route in topo sheet, tower/SS sketch, Single line diagram etc.(30 copies/sets) .(**NOTE**: For survey of small lengths of UG Cable, if the length of UG cable is less than 0.5KM, then 0.5KM is considered for survey of small length of UG cable in the preparation of	Mts.	1,117
	2	**LAYING OF CABLE**		

	2.1	Laying of 132 kv 630 sq. mm. XLPE U/G copper cable (3 Nos. for single Circuit) including road cutting, pulling and laying of cable including excavation in the following soils and back filling, sand filling dewatering, including cost of RCC protective tiles, cost of route markers, warning tapes etc. Across and along CC, BT & earth road, Nala crossings, bridge crossings, providing HDPE (thickness 10 mm)pipes, Bell mouths, end caps after laying cable, labour charges and all incidental items of work for finished item of work. This includes loading, unloading and transportation of all materials to work spot. (flat formation)		
U1S 3	a)	Hard gravel soils, BC soils, red earth, stone and earth mixed with fair size boulders etc	Rmt	9,881
U1S 4	b)	Hard Rock with soils	Rmt	13,575
U1S 5	c)	CC or BT road surface etc.	Rmt	8,807
U1S 6	d)	Hard Rock	Rmt	10,156
U1S 7	e)	CC or BT road with Hard rock	Rmt	18,866
U1S 8	f)	Across the road In HDPE pipes (thickness 10mm) to cross CC or BT road and other service lines including cost of concrete cost of HDPE pipes of 250 mm dia etc. complete	Rmt	12,383
U1S 9	g)	Across the road In HDPE pipes (thickness 10mm) to cross CC or BT road with hard rock and other service lines including cost of concrete cost of HDPE pipes of 250 mm dia etc. complete	Rmt	29,154
U1S 10	h)	Cable laying in built up trenches, cable trays and supports etc. complete including cost of trays and support etc, complete.	Rmt	12,383
U1S 11	i)	Cable laying across the culverts and over bridges etc., complete in PVC pipes of 250 mm dia in complete	Rmt	12,383
U1S 12	j)	Cable laying by clamping on special type tower including earthing cable from termination to Link box including cost of Aluminum clamps	Rmt	11,914
U1S 13	k)	Cable laying while clamping bare on the walls , ceiling and structures including cost of clamps in complete	Rmt	4,468
U1S 14	l)	Cable laying across the railway tracks	Rmt	29,786
U1S 15	m)	Cable laying by clamping on Sub-station structures like CPL etc., including earthing cable from termination to Link box including cost of Aluminum clamps.	Rmt	2,234
	2.2	**Including excavation and excluding backfilling without cable laying**		
U1S 16	a)	Hard Gravel soils, BC Soils, Red Earth, stone & Earth mixed with fair size boulders etc.,	Rmt	12,659
U1S 17	b)	Hard rock with CC or BT Road surfaces etc.	Rmt	4,468

	2.3	**Excluding excavation and including backfilling**		
U1S 18	a)	Hard Gravel soils, BC Soils, Red Earth, stone & Earth mixed with fair size boulders etc.,	Rmt	1,862
U1S 19	b)	Hard rock with CC or BT Road surfaces etc.	Rmt	5,957
U1S 20	**2.4**	Only excavation and back filling of soil without laying of cable	Rmt	2,234
U1S 21	**2.5**	Excavation and backfilling of suitable thermal backfill for maintainings soil thermal resistance value of 120	Cum	5,957
U1S 22	**2.6**	Laying of cable excluding excavation and backfilling	Rmt	596
	2.7	**Laying of cable by Horizontal Directional Drilling (HDD) incl. cost of 250 mm HDPE Pipe**		
U1S 23	a)	Soil/Morrem,soft rock (upto 5000 PSI) per each pipe	Rmt	14,595
U1S 24	b)	Soil/Hard rock (5000 PSI upto 9000 PSI) per each pipe	Rmt	23,828
	3	**LAYING OF CO-AXIAL CABLE**		
U1S 25	a)	300sq.mm. co-axial copper cable conductor PVC insulated 6.6KV grade across the cable.	Rmt	22
U1S 26	b)	300sq.mm.single core copper cable conductor PVC insulated 6.6KV grade across the cable.	Rmt	22
U1S 27	c)	300sq.mm. co-axial copper cable conductor PVC insulated 6.6KV grade on pole mounted termination tower including cost of cleats	Rmt	22
U1S 28	d)	300sq.mm.single core copper cable conductor PVC insulated 6.6KV grade on pole mounted termination tower including cost of cleats.	Rmt	22
	4	For pulling optical fiber cable the following items shall be done while excavation of trenches as per		
U1S 29	a)	Supply of HDPE duct pipe of OD/ID 40/33 mm dia and associated material of standard make as per the specification of the contract/tender and laying jointing, bedding of above HDPE duct pipe in the already excavated XLPE cable trench including sealing the section ends as per the specification of the	RM	149
U1S 30	b)	Supply of RCC joint chambers (1200/760/50 mm) W/L/T with base and top plates as per the specification of the contract/tender and erection of RCC joint chambers for every 1KM in HDPE duct enroot as per the specification of the contract/tender.	Each	10,425
	5	**CABLE JOINTING**		

		Jointing of cable excluding cost of pre-moulded straight through joints, Protection box, 3-phase solid bond link box without SVL / 3-phase cross bond link box with SVL, including excavation of pit for single circuit cable, providing cement concrete base and walls etc. including cost of cement, steel etc., labour charges and all incidental items of work for finished item of work including design of pit providing joint bay identification mark including providing necessary T&P for jointing viz., tarpaullin tent, DG Set, Air Conditioner etc., complete wherever necessary for complete item of work. This includes loading, un- loading and transportation of all materials to work spot		
U1S 31	a)	With excavation of joint bay size (9mX4m) and laying of CC(1:2:4) bed and sand bed and back filling	Nos.	4,46,783
U1S 32	b)	Jointing charges for cross bonding joints/normal joints	Nos.	2,23,392
	6	**TERMINATION CHARGES**		
		Termination of cable excluding cost of out door type cable terminations and single phase link boxes without SVL complete and all incidental item of work finished item of work including providing necessary T&P viz., tarpaullin tent, DG set, air conditioner, scaffolding etc complete wherever necessary for complete item of work.		
U1S 33	a)	132 KV tower mounted type cable end terminations including erection on tower in all respects	Each	5,21,247
U1S 34	b)	132 kV Outdoor type cable end terminations with silicon materials complete in all respect.	Each	4,46,783
U1S 35	c)	132 kV SF6 type cable end terminations complete in all respect.	Each	4,46,783
U1S 36	7a	Providing earthing of joint bays with copper flat of cross section equivalent to the earthing cable and run all around the joint bay, providing earth electrodes of steel rods coated with copper as per standards and treated with suitable earth enhancing compound to get an effective diameter and welding the copper flat to the electrodes by exothermic weldng. The earthing scheme drawing shall be got approved with all eath resistance calculations considerting the fault currents earth leads from link box to earth pit and connecing lug fixtures, fasteners shall be supplied. Length of the earth lead will be as per site condition/ connivance.	Each	37,232

U1S 37	7b	Excavation of earth pit at CTT Tower, putting cast iron pipe with flange on one end (as per ISS7181/86) of nominal dia 125 mm and 2.75 metres long inside the pit including supply and fixing of RCC Collars 0.75 mtr. dia (OD) 50mm thick and 0.60 mtrs. long inside the pit, backfill the pit in the 25mm size granules of BH coke for full depth of the pit with alternate layers of BH Coke and salt of 300mm thick around the earth pipe of 150mm on all the sides of the pipe including cost and conveyance of BH Coke,salt,clamps,CI pipes and RCC collars, labour charges for all operational and incidental items of work etc., complete.(as per SSR	Each	15,861
U1S 38	8a	Provision for RCC (1:2:4) for any unforeseen requirement whenever necessary at culverts, drains, nalas, bridges.(rate to be taken as per CSSR)	Cum	(rate to be taken as per CSSR)
U1S 39	8b	Supplying, fitting and placing of HYSD, TMT bar reinforcement (TISCO/SAIL/VSP) in foundtions, colums , beams slabs wherever necessiated.for the work as per the drawings furnished by the field engineer including cutting , bending, cranking, tying grill in position including cost of binding wire scaffolding etc.(rate to be taken as per CSSR)	MT	(rate to be taken as per CSSR)
	9	**CONNECTION OF LINK BOXES**		
U1S 40	a)	Erection of single phase link boxes, providing suitable supporting arrangements, sheath bonding cable, connecting earth leads, with all lugs, fixtures, clamps, bolts and nuts etc., complete including excavation, providing concrete box with walls of 75mm thick RCC for inserting link boxes, and refilling, etc. including earthing as per the directions of site engineer.	Each	44,678
U1S 41	b)	Erection of 3 phase link boxes making connections with earth leads with lugs, fixtures, fasteners sheath bonding cable etc., including excavation, providing RCC concrete wall box of 75mm thick for inserting link boxes , and refilling, etc. including earthing as per the directions of site engineer.	Each	59,571
U1S 42	10	Erection of Lightning Arrestors on special type tower including cost of hardware, jumpering with suitable conductor between line conductor and the pole mounted terminations including labour charges and insurance for all incidental and operational items of	Each	7,446
U1S 43	11	Road cutting charges and charges for way leaves to be paid for various Government and other agencies	Mts.	8,936

U1S 44	12	Site testing and commissioning (including phase sequence test, megger test, continuity test, HV test etc.)	KM	2,97,856

Annexure-XII b				
LAYING OF 132KV UG CABLE (DOUBLE CIRCUIT)				
Item No.	**Sl. No.**	**Description of Material/Work**	**UNIT**	**SSR Rate for 2022-23 (in Rs)**
	1	**CABLE ROUTE SURVEY**		
U1D 1	a)	Conducting reconnoitery and preliminary survey along shortest route with best proposed route and furnishing report for selecting the best proposal for approval including cost and conveyance of all materials, hire charges of equipment, tools and plant, preparation of drawings and reports, labour charges, complete for finished item of work as per the directions of Engineer-in-charge at site as per SSR 2013-14. (a) With GPS equipment (As per clause 4.9 of survey) (b) With total station equipment.	Mts.	372
U1D 2	b)	Conducting Detailed Survey of cable route including evaluation of thermal resistivity of the soil along the cable route, excavation of trial pits as per field requirements, preparation of cable route profile, drawings for cable laying, final route alignment, marking lines & grades, and preparing bill of materials/ lengths of the cable for the project incl. preparation of PTCC questionnare and marking of proposed cable route in topo sheet, tower/SS sketch, Single line diagram etc.(30 copies/sets). (**NOTE**: For survey of small lengths of UG Cable, if the length is less than 0.5KM, then 0.5KM is considered in preparation of estimate).	Mts.	1,489
	2	**LAYING OF CABLE**		
	2.1	Laying of 132 kv 630 sq. mm. XLPE U/G copper cable (6 Nos. for double Circuit) including road cutting, pulling and laying of cable including excavation in the following soils and back filling, sand filling dewatering, including cost of RCC protective tiles, cost of route markers, warning tapes etc. Across and along CC, BT & earth road, Nala crossings, bridge crossings, providing HDPE (thickness 10 mm)pipes, Bell mouths, end caps after laying cable, labour charges and all incidental items of work for finished item of work. This includes loading, unloading and transportation of all materials to work spot. (flat formation)		
U1D 3	a)	Hard gravel soils, BC soils, red earth, stone and earth mixed with fair size boulders etc	Rmt	17,871

U1D 4	b)	Hard Rock with soils	Rmt	23,828
U1D 5	c)	CC or BT road surface etc.	Rmt	14,893
U1D 6	d)	Hard Rock	Rmt	18,616
U1D 7	e)	CC or BT road with Hard rock	Rmt	35,743
U1D 8	f)	Across the road In HDPE pipes (thickness 10mm) to cross CC or BT road and other service lines including cost of concrete cost of HDPE pipes of 250 mm dia etc. complete	Rmt	22,339
U1D 9	g)	Across the road In HDPE pipes (thickness 10mm) to cross CC or BT road with hard rock and other service lines including cost of concrete cost of HDPE pipes of 250 mm dia etc. complete	Rmt	29,154
U1D 10	h)	Cable laying in built up trenches, cable trays and supports etc. complete including cost of trays and support etc, complete.	Rmt	22,339
U1D 11	i)	Cable laying across the culverts and over bridges etc., complete in PVC pipes of 250 mm dia in complete	Rmt	22,339
U1D 12	j)	Cable laying by clamping on special type tower including earthing cable from termination to Link box including cost of Aluminum clamps	Rmt	23,828
U1D 13	k)	Cable laying while clamping bare on the walls , ceiling and structures including cost of clamps in complete shape	Rmt	8,936
U1D 14	l)	Cable laying across the railway tracks	Rmt	52,125
U1D 15	m)	Cable laying by clamping on Sub-station structures like CPL etc., including earthing cable from termination to Link box including cost of Aluminum clamps.	Rmt	4,468
	2.2	**Including excavation and excluding backfilling without cable laying**		
U1D 16	a)	Hard Gravel soils, BC Soils, Red Earth, stone & Earth mixed with fair size boulders etc.,	Rmt	25,318
U1D 17	b)	Hard rock with CC or BT Road surfaces etc.	Rmt	8,936
	2.3	**Excluding excavation and including backfilling**		
U1D 18	a)	Hard Gravel soils, BC Soils, Red Earth, stone & Earth mixed with fair size boulders etc.,	Rmt	3,723
U1D 19	b)	Hard rock with CC or BT Road surfaces etc.	Rmt	8,936
U1D 20	**2.4**	Only excavation and back filling of soil without laying of cable	Rmt	4,468
U1D 21	**2.5**	Excavation and backfilling of suitable thermal backfill for maintainings soil thermal resistance value of 120 degrees	Cum	11,914
U1D 22	**2.6**	Laying of cable excluding excavation and backfilling	Rmt	1,191
	2.7	**Laying of cable by Horizontal Directional Drilling (HDD) incl. cost of 250 mm HDPE Pipe**		
U1D 23	a)	Soil/Morrem,soft rock (upto 5000 PSI) per each pipe	Rmt	14,595
U1D 24	b)	Soil/Hard rock (5000 PSI upto 9000 PSI) per each pipe	Rmt	23,828

	3	**LAYING OF CO-AXIAL CABLE**		
U1D 25	a)	300sq.mm. co-axial copper cable conductor PVC insulated 6.6KV grade across the cable.	Rmt	37
U1D 26	b)	300sq.mm.single core copper cable conductor PVC insulated 6.6KV grade across the cable.	Rmt	37
U1D 27	c)	300sq.mm. co-axial copper cable conductor PVC insulated 6.6KV grade on pole mounted termination tower including cost of cleats	Rmt	37
U1D 28	d)	300sq.mm.single core copper cable conductor PVC insulated 6.6KV grade on pole mounted termination tower including cost of cleats.	Rmt	37
	4	For pulling optical fiber cable the following items shall be done while excavation of trenches as per specifications		
U1D 29	a)	Supply of HDPE duct pipe of OD/ID 40/33 mm dia and associated material of standard make as per the specification of the contract/tender and laying jointing, bedding of above HDPE duct pipe in the already excavated XLPE cable trench including sealing the section ends as per the specification of the contract/tender.	RM	149
U1D 30	b)	Supply of RCC joint chambers (1200/760/50 mm) W/L/T with base and top plates as per the specification of the contract/tender and erection of RCC joint chambers for every 1KM in HDPE duct enroot as per the specification of the contract/tender.	Each	10,425
	5	**CABLE JOINTING**		
		Jointing of cable excluding cost of pre-moulded straight through joints, Protection box, 3-phase solid bond link box without SVL / 3-phase cross bond link box with SVL, including excavation of pit for double circuit cable, providing cement concrete base and walls etc. including cost of cement, steel etc., labour charges and all incidental items of work for finished item of work including design of pit providing joint bay identification mark including providing necessary T&P for jointing viz., tarpaullin tent, DG Set, Air Conditioner etc., complete wherever necessary for complete item of work. This includes loading, un-loading and transportation of all materials to work spot as per drawing and preparation of joint bay.		
U1D 31	a)	With excavation of joint bay size (9mX4m) and laying of CC(1:2:4) bed and sand bed and back filling	Nos.	6,70,175
U1D 32	b)	Jointing charges for cross bonding joints/normal joints	Nos.	2,23,392
	6	**TERMINATION CHARGES**		

		Termination of cable excluding cost of out door type cable terminations and single phase link boxes without SVL complete and all incidental item of work finished item of work including providing necessary T&P viz., tarpaullin tent, DG set, air conditioner, scaffolding etc complete wherever necessary for complete item of work.		
U1D 33	a)	132 KV tower mounted type cable end terminations including erection on tower in all respects	Each	5,21,247
U1D 34	b)	132 kV Outdoor type cable end terminations with silicon materials complete in all respect.	Each	4,46,783
U1D 35	c)	132 kV SF6 type cable end terminations complete in all respect.	Each	4,46,783
U1D 36	7 a	Providing earthing of joint bays with copper flat of cross section equivalent to the earthing cable and run all around the joint bay, providing earth electrodes of steel rods coated with copper as per standards and treated with suitable earth enhancing compound to get an effective diameter and welding the copper flat to the electrodes by exothermic weldng. The earthing scheme drawing shall be got approved with all eath resistance calculations considerting the fault currents earth leads from link box to earth pit and connecing lug fixtures, fasteners shall be supplied. Length of the earth lead will be as per site condition/ connivance.	Each	59,571
U1D 37	7b	Excavation of earth pit at CTT Tower, putting cast iron pipe with flange on one end (as per ISS7181/86) of nominal dia 125 mm and 2.75 metres long inside the pit including supply and fixing of RCC Collars 0.75 mtr. dia (OD) 50mm thick and 0.60 mtrs. long inside the pit, backfill the pit in the 25mm size granules of BH coke for full depth of the pit with alternate layers of BH Coke and salt of 300mm thick around the earth pipe of 150mm on all the sides of the pipe including cost and conveyance of BH Coke,salt,clamps,CI pipes and RCC collars, labour charges for all operational and incidental items of work etc., complete.	Each	15,861
U1D 38	8a	Provision for RCC (1:2:4) for any unforeseen requirement whenever necessary at culverts, drains, nalas, bridges.(rate to be taken as per CSSR)	Cum	(rate to be taken as per CSSR)
U1D 39	8b	Supplying, fitting and placing of HYSD, TMT bar reinforcement (TISCO/SAIL/VSP) in foundtions, colums , beams slabs wherever necessiated.for the work as per the drawings furnished by the field engineer including cutting , bending, cranking, tying grill in position including cost of binding wire scaffolding etc.(rate to be taken as per CSSR)	MT	(rate to be taken as per CSSR)

	9	**CONNECTION OF LINK BOXES**		
U1D 40	a)	Erection of single phase link boxes, providing suitable supporting arrangements, sheath bonding cable, connecting earth leads, with all lugs, fixtures, clamps, bolts and nuts etc., complete including excavation, providing concrete box with walls of 75mm thick RCC for inserting link boxes, and refilling, etc. including earthing as per the directions of site engineer.	Each	44,678
U1D 41	b)	Erection of 3 phase link boxes making connections with earth leads with lugs, fixtures, fasteners sheath bonding cable etc., including excavation, providing RCC concrete wall box of 75mm thick for inserting link boxes , and refilling, etc. including earthing as per the directions of site engineer.	Each	59,571
U1D 42	10	Erection of Lightning Arrestors on special type tower including cost of hardware, jumpering with suitable conductor between line conductor and the pole mounted terminations including labour charges and insurance for all incidental and operational items of work.	Each	7,446
U1D 43	11	Road cutting charges and charges for way leaves to be paid for various Government and other agencies	Mts.	14,893
U1D 44	12	Site testing and commissioning (including phase sequence test, megger test, continuity test, HV test etc.)	KM	4,46,783

Annexure-XII c				
LAYING OF 220 KV UG CABLE (SINGLE CIRCUIT)				
Item No.	**Sl. No.**	**Description of Material/Work**	**UNIT**	**SSR Rate for 2022-23 (in Rs)**
	1	**CABLE ROUTE SURVEY**		
U2S 1	a)	Conducting reconnoitery and preliminary survey along shortest route with best proposed route and furnishing report for selecting the best proposal for approval including cost and conveyance of all materials, hire charges of equipment, tools and plant, preparation of drawings and reports, labour charges, complete for finished item of work as per the directions of Engineer-in-charge at site as per SSR 2013-14. (a) With GPS equipment (As per clause 4.9 of survey) (b) With total station equipment.	Mts.	372
U2S 2	b)	Conducting Detailed Survey of cable route including evaluation of thermal resistivity of the soil along the cable route, excavation of trial pits as per field requirements, preparation of cable route profile, drawings for cable laying, final route alignment, marking lines & grades, and preparing bill of materials/ lengths of the cable for the project incl. preparation of PTCC questionnare and marking of proposed cable route in topo sheet, tower/SS sketch, Single line diagram etc.(30 copies/sets) .(**NOTE**: For survey of small lengths of UG Cable, if the length of UG cable is less than 0.5KM, then 0.5KM is considered for survey of small length of UG cable in the preparation of estimate)	Mts.	1,117
	2	**LAYING OF CABLE**		
	2.1	Laying of 220 kv 1000 sq. mm. XLPE U/G copper cable (3 Nos. for Single Circuit) including road cutting, pulling and laying of cable including excavation in the following soils and back filling, sand filling dewatering, including cost of RCC protective tiles, cost of route markers, warning tapes etc. Across and along CC, BT & earth road, Nala crossings, bridge crossings, providing HDPE (thickness 10 mm)pipes, Bell mouths, end caps after laying cable, labour charges and all incidental items of work for finished item of work. This includes loading, unloading and transportation of all materials to work spot. (flat formation)		
U2S 3	a)	Hard gravel soils, BC soils, red earth, stone and earth mixed with fair size boulders etc	Rmt	11,858
U2S 4	b)	Hard Rock with soils	Rmt	16,290
U2S 5	c)	CC or BT road surface etc.	Rmt	10,568

U2S 6	d)	Hard Rock	Rmt	12,187
U2S 7	e)	CC or BT road with Hard rock	Rmt	22,639
U2S 8	f)	Across the road In HDPE pipes (thickness 10mm) to cross CC or BT road and other service lines including cost of concrete cost of HDPE pipes of 250 mm dia etc. complete	Rmt	14,860
U2S 9	g)	Cable laying in built up trenches, cable trays and supports etc. complete including cost of trays and support etc, complete.	Rmt	14,860
U2S 10	h)	Cable laying across the culverts and over bridges etc., complete in PVC pipes of 250 mm dia in complete	Rmt	14,860
U2S 11	i)	Cable laying by clamping on special type tower including earthing cable from termination to Link box including cost of aluminum clamps	Rmt	13,403
U2S 12	j)	Cable laying by clamping on Sub-station structures like CPL etc., including earthing cable from termination to Link box including cost of aluminum clamps.	Rmt	2,979
U2S 13	k)	Cable laying while clamping bare on the walls , ceiling and structures including cost of clamps in complete shape	Rmt	5,957
U2S 14	l)	Cable laying across the railway tracks	Rmt	37,232
	2.2	**Including excavation and excluding backfilling without cable laying**		
U2S 15	a)	Hard rock with CC or BT Road surfaces etc.	Rmt	12,659
U2S 16	b)	Hard Gravel soils, BC Soils, Red Earth, stone & Earth mixed with fair size boulders etc.,	Rmt	4,468
	2.3	**Excluding excavation and including backfilling**		
U2S 17	a)	Hard Gravel soils, BC Soils, Red Earth, stone & Earth mixed with fair size boulders etc.,	Rmt	1,862
U2S 18	b)	Hard rock with CC or BT Road surfaces etc.	Rmt	7,446
U2S 19	**2.4**	Only excavation and back filling of soil without laying of cable	Rmt	2,234
U2S 20	**2.5**	Excavation and backfilling of suitable thermal backfill for maintainings soil thermal resistance value of 120 degrees	Cum	5,957
U2S 21	**2.6**	Laying of cable excluding excavation and backfilling	Rmt	745
	2.7	**Laying of cable by Horizontal Directional Drilling (HDD) incl. cost of 250 mm HDPE Pipe**		
U2S 22	a)	Soil/Morrem,soft rock (upto 5000 PSI) per pipe	Rmt	14,595
U2S 23	b)	Soil/Hard rock (5000 PSI upto 9000 PSI) per pipe	Rmt	23,828
	3	**LAYING OF CO-AXIAL CABLE**		
U2S 24	a)	240sq.mm. co-axial copper cable conductor PVC insulated 6.6KV grade across the cable.	Rmt	22
U2S 25	b)	240sq.mm.single core copper cable conductor PVC insulated 6.6KV grade across the cable.	Rmt	22

U2S 26	c)	240sq.mm. co-axial copper cable conductor PVC insulated 6.6KV grade on pole mounted termination tower including cost of cleats	Rmt	22
U2S 27	d)	240sq.mm.single core copper cable conductor PVC insulated 6.6KV grade on pole mounted termination tower including cost of cleats.	Rmt	22
	4	For pulling optical fiber cable the following items shall be done while excavation of trenches as per specifications		
U2S 28	a)	Supply of HDPE duct pipe of OD/ID 40/33 mm dia and associated material of standard make as per the specification of the contract/tender and laying jointing, bedding of above HDPE duct pipe in the already excavated XLPE cable trench including sealing the section ends as per the specification of the contract/tender (Per Pipe).	RM	149
U2S 29	b)	Supply of RCC joint chambers (1200/760/50 mm) W/L/T with base and top plates as per the specification of the contract/tender and erection of RCC joint chambers for every 1KM in HDPE duct enroot as per the specification of the contract/tender.	Each	10,425
	5	**CABLE JOINTING**		
		Jointing of cable excluding cost of pre-moulded straight through joints, Protection box, 3-phase solid bond link box without SVL / 3-phase cross bond link box with SVL, including excavation of pit for single circuit cable, providing cement concrete base and walls etc. including cost of cement, steel etc., labour charges and all incidental items of work for finished item of work including design of pit providing joint bay identification mark including providing necessary T&P for jointing viz., tarpaullin tent, DG Set, Air Conditioner etc., complete wherever necessary for complete item of work. This includes loading, un-loading and transportation of all materials to work spot as per drawing and preparation of joint bay.		
U2S 30	a)	With excavation of joint bay size (13mX4m) and laying of CC(1:2:4) bed and sand bed and back filling	Each	5,21,247
U2S 31	b)	Jointing charges for cross bonding joints for each phase	Each	3,72,319
	6	**TERMINATION CHARGES**		
		Termination of cable excluding cost of out door type cable terminations and single phase link boxes without SVL complete and all incidental item of work finished item of work including providing necessary T&P viz., tarpaullin tent, DG set, air conditioner, scaffolding etc complete wherever necessary for complete item of work.		
U2S 32	a)	220 KV tower mounted type cable end terminations including erection on tower in all respects per phase including scaffolding charges.	Each	6,25,497

U2S 33	b)	220 kV Outdoor type cable end terminations with silicon materials complete in all respect.	Each	5,21,247
U2S 34	c)	220 kV SF6 type cable end terminations complete in all respect.	Each	5,21,247
U2S 35	7 a	Providing earthing of joint bays with copper flat of cross section equivalent to the earthing cable and run all around the joint bay, providing earth electrodes of steel rods coated with copper as per standards and treated with suitable earth enhancing compound to get an effective diameter and welding the copper flat to the electrodes by exothermic weldng. The earthing scheme drawing shall be got approved with all eath resistance calculations considerting the fault currents earth leads from link box to earth pit and connecing lug fixtures, fasteners shall be supplied. Length of the earth lead will be as per site condition/ connivance.	Each	37,232
U2S 36	7b	Excavation of earth pit at CTT Tower, putting cast iron pipe with flange on one end (as per ISS7181/86) of nominal dia 125 mm and 2.75 metres long inside the pit including supply and fixing of RCC Collars 0.75 mtr. dia (OD) 50mm thick and 0.60 mtrs. long inside the pit, backfill the pit in the 25mm size granules of BH coke for full depth of the pit with alternate layers of BH Coke and salt of 300mm thick around the earth pipe of 150mm on all the sides of the pipe including cost and conveyance of BH Coke,salt,clamps,CI pipes and RCC collars, labour charges for all operational and incidental items of work etc., complete	Each	15,861
U2S 37	8 a	Provision for RCC (1:2:4) for any unforeseen requirement whenever necessary at culverts, drains, nalas, bridges. (rate to be taken as per CSSR)	Cum	(rate to be taken as per CSSR)
U2S 38	8b	Supplying, fitting and placing of HYSD, TMT bar reinforcement (TISCO/SAIL/VSP) in foundtions, colums , beams slabs wherever necessiated.for the work as per the drawings furnished by the field engineer including cutting , bending, cranking, tying grill in position including cost of binding wire scaffolding etc.(rate to be taken as per CSSR)	MT	(rate to be taken as per CSSR)
	9	**CONNECTION OF LINK BOXES**		
U2S 39	a)	Erection of single phase link boxes, providing suitable supporting arrangements, sheath bonding cable, connecting earth leads, with all lugs, fixtures, clamps, bolts and nuts etc., complete including excavation, providing concrete box with walls of 75mm thick RCC for inserting link boxes, and refilling, etc. including earthing as per the directions of site engineer including connecting to the earthing cable from link box to earthpit	Each	44,678

U2S 40	b)	Erection of 3 phase link boxes making connections with earth leads with lugs, fixtures, fasteners sheath bonding cable etc., including excavation, providing RCC concrete wall box of 75mm thick for inserting link boxes , and refilling, etc. including earthing as per the directions of site engineer including connecting to the earthing cable from link box to earthpit.	Each	59,571
U2S 41	10	Erection of Lightning Arrestors on special type tower including cost of hardware, jumpering with suitable conductor between line conductor and the pole mounted terminations including labour charges and insurance for all incidental and operational items of work.	Each	7,446
U2S 42	11	Road cutting charges and charges for way leaves to be paid for various Government and other agencies. The cost is for estimate purpose however, the amount will be reimbursed as per actuals against documentary evidence.	Mts.	8,936
U2S 43	12	Site testing and commissioning (including phase sequence test, megger test, continuity test, HV test etc.)	KM	2,97,856

Annexure-XII d				
LAYING OF 220 KV UG CABLE (DOUBLE CIRCUIT)				
Item No.	**Sl.No.**	**Description of Material/Work**	**Unit**	**SSR Rate for 2022-23 (in Rs)**
	1	**CABLE ROUTE SURVEY**		
U2D 1	a)	Conducting reconnoitery and preliminary survey along shortest route with best proposed route and furnishing report for selecting the best proposal for approval including cost and conveyance of all materials, hire charges of equipment, tools and plant, preparation of drawings and reports, labour charges, complete for finished item of work as per the directions of Engineer-in-charge at site as per SSR 2013-14. (a) With GPS equipment (As per clause 4.9 of survey) (b) With total station equipment.	Mts.	372
U2D 2	b)	Conducting Detailed Survey of cable route including evaluation of thermal resistivity of the soil along the cable route, excavation of trial pits as per field requirements, preparation of cable route profile, drawings for cable laying, final route alignment, marking lines & grades, and preparing bill of materials/ lengths of the cable for the project incl. preparation of PTCC questionnare and marking of proposed cable route in topo sheet, tower/SS sketch, Single line diagram etc.(30 copies/sets) .(**NOTE**: For survey of small lengths of UG Cable, if the length of UG cable is less than 0.5KM, then 0.5KM is considered for survey of small length of UG cable in the preparation of estimate).	Mts.	1,489
	2	**LAYING OF CABLE**		
	2.1	Laying of 220 kv 1000 sq. mm. XLPE U/G copper cable (6 Nos. for double Circuit) including road cutting, pulling and laying of cable including excavation in the following soils and back filling, sand filling dewatering, including cost of RCC protective tiles, cost of route markers, warning tapes etc. Across and along CC, BT & earth road, Nala crossings, bridge crossings, providing HDPE (thickness 10 mm)pipes, Bell mouths, end caps after laying cable, labour charges and all incidental items of work for finished item of work. This includes loading, unloading and transportation of all materials to work spot. (flat formation).		
U2D 3	a)	Hard gravel soils, BC soils, red earth, stone and earth mixed with fair size boulders etc	Rmt	19,763
	b)	Hard Rock with soils	Rmt	27,150

U2D 5	c)	CC or BT road surface etc.	Rmt	17,614
U2D 6	d)	Hard Rock	Rmt	20,312
U2D 7	e)	CC or BT road with Hard rock	Rmt	37,732
U2D 8	f)	Across the road In HDPE pipes (thickness 10mm) to cross CC or BT road and other service lines including cost of concrete cost of HDPE pipes of 250 mm dia etc. Complete.	Rmt	24,767
U2D 9	g)	Cable laying in built up trenches, cable trays and supports etc. complete including cost of trays and support etc, complete.	Rmt	24,767
U2D 10	h)	Cable laying across the culverts and over bridges etc., complete in PVC pipes of 250 mm dia in complete	Rmt	24,767
U2D 11	i)	Cable laying by clamping on special type tower including earthing cable from termination to Link box including cost of aluminum clamps	Rmt	26,807
U2D 12	j)	Cable laying by clamping on Sub-station structures like CPL etc., including earthing cable from termination to Link box including cost of aluminum clamps.	Rmt	5,957
U2D 13	k)	Cable laying while clamping bare on the walls , ceiling and structures including cost of clamps in complete shape.	Rmt	11,914
U2D 14	l)	Cable laying across the railway tracks.	Rmt	59,571
	2.2	**Including excavation and excluding backfilling without cable laying**		
U2D 15	a)	Hard rock with CC or BT Road surfaces etc.	Rmt	25,318
U2D 16	b)	Hard Gravel soils, BC Soils, Red Earth, stone & Earth mixed with fair size boulders etc.,	Rmt	8,936
	2.3	**Excluding excavation and including backfilling**		
U2D 17	a)	Hard Gravel soils, BC Soils, Red Earth, stone & Earth mixed with fair size boulders etc.,	Rmt	3,723
U2D 18	b)	Hard rock with CC or BT Road surfaces etc.	Rmt	10,425
U2D 19	**2.4**	Only excavation and back filling of soil without laying of cable.	Rmt	4,468
U2D 20	**2.5**	Excavation and backfilling of suitable thermal backfill for maintainings soil thermal resistance value of 120 degrees.	Cum	11,914
U2D 21	**2.6**	Laying of cable excluding excavation and backfilling.	Rmt	1,489
	2.7	**Laying of cable by Horizontal Directional Drilling (HDD) incl. cost of 250 mm HDPE Pipe**		
U2D 22	a)	Soil/Morrem,soft rock (upto 5000 PSI) per pipe	Rmt	14,595
U2D 23	b)	Soil/Hard rock (5000 PSI upto 9000 PSI) per pipe	Rmt	23,828
	3	**LAYING OF CO-AXIAL CABLE**		
U2D 24	a)	240sq.mm. co-axial copper cable conductor PVC insulated 6.6KV grade across the cable.	Rmt	37

U2D 25	b)	240sq.mm.single core copper cable conductor PVC insulated 6.6KV grade across the cable.	Rmt	37
U2D 26	c)	240sq.mm. co-axial copper cable conductor PVC insulated 6.6KV grade on pole mounted termination tower including cost of cleats.	Rmt	37
U2D 27	d)	240sq.mm.single core copper cable conductor PVC insulated 6.6KV grade on pole mounted termination tower including cost of cleats.	Rmt	37
	4	**For pulling optical fiber cable the following items shall be done while excavation of trenches as per specifications.**		
U2D 28	a)	Supply of HDPE duct pipe of OD/ID 40/33 mm dia and associated material of standard make as per the specification of the contract/tender and laying jointing, bedding of above HDPE duct pipe in the already excavated XLPE cable trench including sealing the section ends as per the specification of the contract/tender (Per Pipe).	RM	149
U2D 29	b)	Supply of RCC joint chambers (1200/760/50 mm) W/L/T with base and top plates as per the specification of the contract/tender and erection of RCC joint chambers for every 1KM in HDPE duct enroot as per the specification of the contract/tender.	Each	10,425
	5	**CABLE JOINTING**		
		Jointing of cable excluding cost of pre-moulded straight through joints, Protection box, 3-phase solid bond link box without SVL / 3-phase cross bond link box with SVL, including excavation of pit for double circuit cable, providing cement concrete base and walls etc. including cost of cement, steel etc., labour charges and all incidental items of work for finished item of work including design of pit providing joint bay identification mark including providing necessary T&P for jointing viz., tarpaullin tent, DG Set, Air Conditioner etc., complete wherever necessary for complete item of work. This includes loading, un-loading and transportation of all materials to work spot as per drawing and preparation of joint bay.		
U2D 30	a)	With excavation of joint bay size (13mX4m) and laying of CC(1:2:4) bed and sand bed and back filling	Nos.	7,59,532
U2D 31	b)	Jointing charges for cross bonding joints for each phase.	Nos.	3,72,319
	6	**TERMINATION CHARGES**		

		Termination of cable excluding cost of out door type cable terminations and single phase link boxes without SVL complete and all incidental item of work finished item of work including providing necessary T&P viz., tarpaullin tent, DG set, air conditioner, scaffolding etc complete wherever necessary for complete item of work.		
U2D 32	a)	220 KV tower mounted type cable end terminations including erection on tower in all respects per phase including scaffolding charges.	Each	6,25,497
U2D 33	b)	220 kV Outdoor type cable end terminations with silicon materials complete in all respect.	Each	5,21,247
U2D 34	c)	220 kV SF6 type cable end terminations complete in all respect.	Each	5,21,247
U2D 35	7a	Providing earthing of joint bays with copper flat of cross section equivalent to the earthing cable and run all around the joint bay, providing earth electrodes of steel rods coated with copper as per standards and treated with suitable earth enhancing compound to get an effective diameter and welding the copper flat to the electrodes by exothermic weldng. The earthing scheme drawing shall be got approved with all eath resistance calculations considerting the fault currents earth leads from link box to earth pit and connecing lug fixtures, fasteners shall be supplied. Length of the earth lead will be as per site condition/ connivance.	Nos.	59,571
U2D 36	7b	Excavation of earth pit at CTT Tower, putting cast iron pipe with flange on one end (as per ISS7181/86) of nominal dia 125 mm and 2.75 metres long inside the pit including supply and fixing of RCC Collars 0.75 mtr. dia (OD) 50mm thick and 0.60 mtrs. long inside the pit, backfill the pit in the 25mm size granules of BH coke for full depth of the pit with alternate layers of BH Coke and salt of 300mm thick around the earth pipe of 150mm on all the sides of the pipe including cost and conveyance of BH Coke,salt,clamps,CI pipes and RCC collars, labour charges for all operational and incidental items of work etc., complete.(as per SSR 2013-14)	Nos.	15,861
U2D 37	8a	Provision for RCC (1:2:4) for any unforeseen requirement whenever necessary at culverts, drains, nalas, bridges.(rate to be taken as per CSSR)	Cum	(rate to be taken as per CSSR)
U2D 38	8b	Supplying, fitting and placing of HYSD, TMT bar reinforcement (TISCO/SAIL/VSP) in foundtions, colums , beams slabs wherever necessiated.for the work as per the drawings furnished by the field engineer including cutting , bending, cranking, tying grill in position including cost of binding wire scaffolding etc.(rate to be taken as per CSSR)	MT	(rate to be taken as per CSSR)

	9	**CONNECTION OF LINK BOXES**		
U2D 39	a)	Erection of single phase link boxes, providing suitable supporting arrangements, sheath bonding cable, connecting earth leads, with all lugs, fixtures, clamps, bolts and nuts etc., complete including excavation, providing concrete box with walls of 75mm thick RCC for inserting link boxes, and refilling, etc. including earthing as per the directions of site engineer including connecting to the earthing cable from link box to earthpit.	Each	44,678
U2D 40	b)	Erection of 3 phase link boxes making connections with earth leads with lugs, fixtures, fasteners sheath bonding cable etc., including excavation, providing RCC concrete wall box of 75mm thick for inserting link boxes , and refilling, etc. including earthing as per the directions of site engineer including connecting to the earthing cable from link box to earthpit.	Each	59,571
U2D 41	10	Erection of Lightning Arrestors on special type tower including cost of hardware, jumpering with suitable conductor between line conductor and the pole mounted terminations including labour charges and insurance for all incidental and operational items of work.	Nos.	7,446
U2D 42	11	Road cutting charges and charges for way leaves to be paid for various Government and other agencies. The cost is for estimate purpose however, the amount will be reimbursed as per actuals against documentary evidence.	Mts.	14,893
U2D 43	12	Site testing and commissioning (including phase sequence test, megger test, continuity test, HV test etc.)	KM	4,46,783