

TECHNICAL CONDITIONS OF CONTRACT (TCC)
Chapter-XI: Schedule of items Quantities and Factor for
deriving Item Rate from the accepted Lumpsum Price

Job: HANDLING AT SITE STORES/STORAGE YARD, TRANSPORTATION TO SITE OF WORK, COMPLETE ERECTION, CHECKING OF CALIBRATION, TESTING, COMMISSIONING AND HANDING OVER OF CONTROL & INSTRUMENTATION WORKS FOR BOILER AND ITS AUXILIARIES, TURBOGENERATOR AND ITS AUXILIARIES, FOR 2X660 MW NTPC MAUDA PROJECT Unit #3 and #4 AT 2X660 MW NTPC MAUDA PROJECT DISTRICT: NAGPUR MAHARASHTRA					
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SL. NO.	DESCRIPTION	UOM	QTY	Terms Of payments	Factor for deriving item rate from accepted Lumpsum price
11.0	Cable tray and Accessories			11.0	
11.0.1	Perforated cable tray and accessories (with or without cover) 50mm	Meter	12000		0.000001616076
11.0.2	Perforated cable tray and accessories (with or without cover) 100mm	Meter	13250		0.000001924521
11.0.3	Perforated cable tray and accessories (with or without cover) 150mm	Meter	10840		0.000002328540
12.0	Cable laying including earthing wires			12.0	
12.0.1	Screened Copper Cable 2P x 0.5 sqmm armoured / unarmoured	Meter	96718		0.000000225903
12.0.2	Screened Copper Cable 4P x 0.5 sqmm armoured / unarmoured	Meter	474476		0.000000269346
12.0.3	Screened Copper Cable 8P x 0.5 sqmm armoured / unarmoured	Meter	199364		0.000000312789
12.0.4	Screened Copper Cable 10P / 12P x 0.5 sqmm armoured / unarmoured	Meter	29568		0.000000386642
12.0.5	Screened Copper Cable 2P x 1.5 sqmm armoured / unarmoured	Meter	4000		0.000000289619
12.0.6	Screened Copper Cable 2P x 1.3 sqmm armoured / unarmoured	Meter	26000		0.000000238936
12.0.7	Screened Copper Cable 5C/7C x 1.5 sqmm armoured / unarmoured	Meter	2000		0.000000330166
12.0.8	Screened Copper Cable 19C x 1.5 sqmm armoured / unarmoured	Meter	12200		0.000000482216
12.0.9	Screened Copper Cable 2C x 2.5 sqmm armoured / unarmoured	Meter	19200		0.000000233506
12.0.10	Screened Copper Cable 3C x 2.5 sqmm armoured / unarmoured	Meter	13600		0.000000244366
12.0.11	Screened Copper Cable 5C x 2.5 sqmm armoured / unarmoured	Meter	6000		0.000000298670
12.0.12	Screened Copper Cable 4Cx 2.5 sqmm armoured/unarmoured	Meter	16000		0.000000293240
12.0.13	Screened Copper Cable 7C x 2.5 sqmm armoured / unarmoured	Meter	25000		0.000000304100
12.0.14	Screened Copper Cable 10C x 2.5 sqmm armoured / unarmoured	Meter	19400		0.000000456151
12.0.15	Screened Copper Cable 16C x 2.5 sqmm armoured / unarmoured	Meter	6000		0.000000492353
12.0.16	Screened Copper Cable 14Cx2.5 sqmm armoured/unarmoured	Meter	1500		0.000000651644
12.0.17	3Cx16 sqmm power cable with Aluminium	Meter	6200		0.000000441670
12.0.18	4Cx3.31 sqmm YY 1100Volts cable	Meter	2044		0.000000543036
12.0.19	18Cx3.31 sqmm YY 1100Volts cable	Meter	1034		0.000000760251
12.0.20	6Cx3.31 sqmm YY 1100Volts cable	Meter	186		0.000000608201
12.0.21	1Cx630 sqmm Al cable, PVC FRLS, 1.1KV	Meter	1000		0.000002497968
12.0.22	1Cx120 sqmm Al cable, PVC FRLS, 1.1KV	Meter	26220		0.000001868045

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12.0.23	1Cx35 sqmm Al cable, PVC FRLS, 1.1KV	Meter	11860		0.000001129516
12.0.24	2Cx10 sqmm Al cable, PVC FRLS, 1.1KV	Meter	5200		0.000000390986
12.0.25	2Cx70 sqmm Al cable, PVC FRLS, 1.1KV	Meter	8760		0.000000760251
12.0.26	Compensating cable 1P/2P x 0.5 sq mm type Tx/Sx/Kx unarmoured/armoured	Meter	49712		0.000000253417
12.0.27	Compensating cable 12P x 0.5 sq mm type Tx/Sx/Kx unarmoured/armoured	Meter	2700		0.000000369265
12.0.28	Compensating cable 16P x 0.5 sq mm type Tx/Sx/Kx unarmoured/armoured	Meter	2700		0.000000369265
12.0.29	Compensating cable 1P/2P x 1.3 sqmm type Tx/Sx/Kx unarmoured/armoured	Meter	3000		0.000000244366
12.0.30	Laying, etc of Optical fibre cables on cable trays, HDPE conduits, etc with minor civil works	Meter	16000		0.000000503938
12.0.31	Laying, etc. of Network UTP Cables in flexible GI pipes(special termination using UTP connectors involved)	Meter	18300		0.000000330166
12.0.32	GI earthing wire	Meter	3400		0.000000228075
12.0.33	GI strip 300x25x2 mm	No	400		0.000000217215
12.0.34	Hoses-1/4", 1/2", 1", SS/Teflon, Braided/unbraided, upto 5M length	Meter	692		0.000003527565
12.0.35	Flexible pipe 1"	Meter	100		0.000001460768
12.0.36	Flexible pipe 2"	Meter	100		0.000001982083
12.0.37	Cable duct 60 x 60 x 1000	Meter	400		0.000001954931
12.0.38	Cable duct 100 x 180 x 1000	Meter	200		0.000002172146
12.0.39	Cable duct 100 x 250 x 1000	Meter	200		0.000002606575
14.0	Junction box/Push Button station			14.0	
14.0.1	FRP Junction box 24 way	No	478		0.000018702174
14.0.2	FRP Junction box 48 way	No	257		0.000018702174
14.0.3	FRP Junction box 72 way	No	86		0.000023263680
14.0.4	FRP Junction box for 4 TT/6RTD	No	166		0.000019418982
14.0.5	FRP Junction box for 8 TT/12RTD	No	80		0.000019418982
14.0.6	2PB or 3PB Pushbutton box	No	8		0.000017972333
14.0.7	Fire protection switch in IP65 box	No	4		0.000033217538
14.0.8	FSSS Local Oil Gun Maintenance Switch Box	No	40		0.000033994080
14.0.9	6 way miniature JB	No	80		0.000010860728
15.0	Conduits/Impulse pipe/tubes			15.0	
15.0.1	Impulse pipe CS ½" SCH 80 (D21.3 x 3.73 mm)	Meter	1850		0.000003553630
15.0.2	Impulse pipe SA106 GRB (D26.7 x 3.91 mm)	Meter	260		0.000004248717
15.0.3	Impulse pipe ASTM A106 GR C 1" NB SCH 80	Meter	640		0.000004968783
15.0.4	Impulse pipe ASTM A335 P22 ¾" NB SCH 80	Meter	2400		0.000003836009
15.0.5	Impulse pipe ASTM A106 GR C ¾" NB SCH 80	Meter	7600		0.000003749123
15.0.6	Impulse pipe ASTM A106 GR C 1/2" NB SCH 80	Meter	3280		0.000003492810
15.0.7	Impulse pipe ASTM A106 GR C 1/2" NB SCH 160	Meter	1300		0.000003705681
15.0.8	Impulse pipe ASTM A335 P22 1/2" NB SCH 160	Meter	1750		0.000004078204

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15.0.9	Impulse pipe ASTM A335 P91 1/2" NB SCH XXS	Meter	300		0.000003922895
15.0.10	Impulse Pipe CS,HTS 16X2.6 S/L A106 GRB	Meter	3080		0.000003768673
15.0.11	CS pipe 2" SCH 40	Meter	50		0.000005546212
15.0.12	CS pipe 60.3 x 3.91 mm	Meter	260		0.000004764240
15.0.13	Impulse pipe AS P22 26.7 x 3.91 mm	Meter	200		0.000004005437
15.0.14	Cr-Al Impulse Pipe 21.3 X 3.73	Meter	1000		0.000003772293
15.0.15	GI Pipe (1/2", 1") Heavy grade	Meter	4500		0.000002089604
15.0.16	GI Pipe (1.5 ", 2") Heavy grade	Meter	50		0.000003692648
15.0.17	Seamless CS tube 13.5 x 2.6 mm	Meter	20		0.000003440679
15.0.18	Seamless CS tube 21.3 x 2.3 mm	Meter	740		0.000003592729
15.0.19	Seamless tube GRT91 21.3 x 7.47/2.77 mm	Meter	830		0.000005444845
15.0.20	CS tube DN 80 (88.9 x 4 mm)	Meter	80		0.000005935388
15.0.21	Seamless AS tube 21.3 x 2.77 mm	Meter	400		0.000004014125
15.0.22	SS tube 6 x 1.5 mm	Meter	140		0.000002297044
15.0.23	SS tube 12.7 x 2.1 mm	Meter	4000		0.000003075758
15.0.24	Copper tube 6mm/8mm / 1/4" (Sheathed / bare)	Meter	1320		0.000001520502
15.0.25	Copper tube 3/4-3/8" (Sheathed / bare)	Meter	40		0.000002098293
15.0.26	Copper tube 1/2" to 1" (Sheathed / bare)	Meter	4498		0.000002749936
16.0	Miscellaneous Structural steel including frames for Panels/Racks/Instruments, supports for cable tray/pipes/tubes, Canopies etc			16.0	
16.0.1	Structural steel for fabrication	MT	39		0.000326417020
16.0.2	Aluminium strip (300 x 25 x 2 mm)	No	1050		0.000000369265
16.0.3	Assembly of JB mounting frames (approx. dim.1100 x 424 x 700 mm)	No	4		0.000072071794
16.0.4	Assembly of JB mounting frames (approx. dim. 1100 x 718 x 1700 mm)	No	8		0.000073375081
16.0.5	Assembly of JB mounting frames (approx. 1600 x718/858 x 1700 mm)	No	36		0.000072506223
16.0.6	Assembly of JB mounting frames (approx. 2100 x 718 x 1700 mm)	No	16		0.000075760097
16.0.7	Assembly of JB mounting frames (approx. dim.2100 x 470 x 1700 mm)	No	16		0.000074461154
16.0.8	Assembly of JB mounting frames (approx. 2600 x470 x 1700 mm)	No	20		0.000075760097
17.0	Panels/Cubicles/Racks/Enclosures/Monitors/Computer/Computer peripheral/PLCs/UPS/Batteries			17.0	
17.0.1	Assembly of local gauge board (1400 x 450 x1900 mm)	No	34		0.000139438720

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17.0.2	SIEMENS make DCS Panel (approx. weight 300kg, 1200(L) X 800(B) X 2200(H) mm) - one panel	No	16		0.000282378938
17.0.3	Control Panel (approx. weight 400kg, 1000(L) X 1000(B) X 2500(H) mm) - one panel	No	8		0.000213348148
17.0.4	Control Panel (approx. weight 800kg, 1500(L) X 1000(B) X 2500(H) mm) - suit of two panels	No	17		0.000345805592
17.0.5	Control Panel (approx. weight 1200kg, 2250(L) X 1000(B) X 2500(H) mm) - suit of three panels	No	17		0.000491404517
17.0.6	Control Panel (approx. weight 1600kg, 3000(L) X 1000(B) X 2500(H) mm) - suit of four panels	No	10		0.000572735081
17.0.7	Control Panel (approx. weight 1600kg, 3000(L) X 1000(B) X 2500(H) mm) - suit of five panels	No	12		0.000728016345
17.0.8	Gravimetric Coal feeder control panel(Approx Dim. 1200 x 600 x 2315)	No	18		0.000239639800
17.0.9	Profibus Remote I/o System Panel	No	6		0.000253185300
17.0.10	Control panels for Centrifuges	No	4		0.000148839766
17.0.11	HP dosing system	No	2		0.000218811095
17.0.12	LP Dosing sysetm	Set	4		0.000202748078
17.0.13	NETWORK PANELS (approx. 750 x 800 x 2415 mm)	No	10		0.000206106215
17.0.14	Vibration monitoring system for main turbine / generator	Set	2		0.000920446731
17.0.15	Vibration monitoring system for TDBFP	Set	4		0.000482511752
17.0.16	Vibration monitoring system for Generator End Winding	Set	2		0.000293080376
17.0.17	DC motor starter box for scanner fan	No	2		0.000186126819
17.0.18	Burner Tilt Shear Pin Failure Indication Box	No	8		0.000053004699
17.0.19	Air Heater Rotor Stoppage Alarm Box	Set	4		0.000062023448
17.0.20	CCTV System	Set	2		0.002172145678
17.0.21	Steam leak detection (STLD) system, panel (approx. 800(L) x 2315(B) x 800(H) mm)	Set	2		0.000869674998
17.0.22	Acoustic Pyrometer System, Remote cabinet (approx. 1400(L) x 2315(B) x 800(H) mm)	Set	2		0.001390173234
17.0.23	Furnace flame viewing System, remote panel (approx. 800(L) x 2100(B) x 600(H) mm)	Set	1		0.000543036419
17.0.24	AH Main control panel (approx. 1830(L) x 2186(B) x 611(H) mm)	Set	4		0.001390173234
17.0.25	AH LCS sector plate 1&2 drive panel (approx.645(L) x 673(B) x 203(H) mm)	Set	16		0.001086072839
17.0.26	HWL-1, HWL-2, & MEFCV Control valve panel (approx. 600(L) x 600(B) x 250(H) mm)	Set	2		0.000434429136
17.0.27	Carbon in ash analyzer control cabinet (approx. 1400(L) x 2365(B) x 610(H) mm)	Set	4		0.000434429136
17.0.28	Coal Flow Analyzer control cabinet (approx. 1400(L) x 2365(B) x 610(H) mm)	Set	2		0.000760250987

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17.0.29	Coal bunker level monitoring system	Set	2		0.001086072839
17.0.30	Condenser vacuum pump system	Set	2		0.000143318172
17.0.31	Generator Instrumentation cabinet including annunciator (approx. weight 450 Kg, 2200 x 1000 x 800 mm)	No	2		0.000304169904
17.0.32	Positioner cabinets (approx. 380 x 380 x 210 mm) for LPBP CV1, LPBP CV2, Spray water CV	No	4		0.000047991387
17.0.33	Local Instrument racks (LIR)	No	139		0.000124594276
17.0.34	Local Instrument enclosures (LIE)	No	62		0.000171147702
17.0.35	max Engineering / operator / storian / LAN / WAN / Shift in charge / stn in charge / gateway / interface PC / HART etc., PC/Server Station with ASCII Keyboard, Mouse & 21" Colour Monitor, individual UPS	Set	25		0.000079318072
17.0.36	Printers (80/132 col Dot Matrix, A3 Inkjet, A3 Laserjet, A4 size etc)	Set	5		0.000038116812
17.0.37	Computer furniture for all Servers, PCs, Printers	Set	1		0.000638232876
17.0.38	240V UPS Distribution boards	No	10		0.000126592650
17.0.39	Power Distribution Panel	No	4		0.000325821852
17.0.40	Power Distribution boards for ACDB	No	16		0.000130328741
17.0.41	24 V DC Battery Charger for TG Main with each set comprising of 2 chargers & 1 DCDB	Set	4		0.001281218407
17.0.42	24 V DC Batteries for battery charger TG Main (1x100% Ni-Cd + 1 no. cell booster + 1 no. Disch Resist bank for 2 sets of batteries)	Set	4		0.001281218407
17.0.43	24 V DC Battery Charger for SG Main (2x100%) + 1 no. BHMS common for both sets of each unit + DCDB	Set	4		0.001281218407
17.0.44	24 V DC Batteries for battery charger SG Main (1x100% Ni-Cd + 1 no. cell booster + 1 no. Disch Resist bank for 2 sets of batteries)	Set	4		0.001281218407
17.0.45	24 V DC Battery Charger with integral DCDB for FOPH	Set	2		0.001281218407
17.0.46	24 V DC Batteries for battery charger FOPH (1x100% Ni-Cd + 1 no. cell booster + 1 no. Disch Resist bank for 2 sets of batteries)	Set	2		0.001281218407
17.0.47	24 V DC Battery Charger for CPU system alongwith DCDB and batteries	Set	2		0.001086072839
17.0.48	1 KVA mini UPS with batteries	No	5		0.000021721457
17.0.49	Condenser online tube cleaning system	Set	2		0.001538617669
17.0.50	Debris Filter	Set	2		0.000615455756
17.0.51	Boiler maintenance system notebook PC	Set	1		0.000043442914

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17.0.52	Offline remaining life assesment of SH & RH components	Set	2		0.000043442914
17.0.53	Grounding Brush Monitor	No	2		0.000097442455
18.0	Instruments/Devices including sensors/Cells/Probes etc			18.0	
18.0.1	Latching relay 24V, 5A	No	4		0.000004005437
18.0.2	Moisture Sensor probe and dew point monitor	Set	2		0.000062822797
18.0.3	Conductivity cells and switch	No	2		0.000042568625
18.0.4	Furnace Temperature probe including local panel/box and all accessories	No	4		0.000083393017
18.0.5	Air filter regulators / Lubricators (1/4", 1/2", 1", 0-6KG, 0-10 KG)	No	64		0.000005691022
18.0.6	Speed Regulators / Air lock valves in oil gun corner rack	No	8		0.000007902266
18.0.7	Solenoid valves (3 way, AC/DC, 1/4", 1/2", 1", NPT/BSP, single/dual coil)	No	538		0.000004904705
18.0.8	Pneumatic Pressure controller with accessories	No	2		0.000024992708
18.0.9	Heavy Duty Limit Switch	No	64		0.000006347010
18.0.10	Speed switch / Speed detector	No	6		0.000011529749
18.0.11	Pressure Switch / DP Switch / DP indicating switch	No	85		0.000014509933
18.0.12	Temperature Switch / Thermostat	No	84		0.000014727148
18.0.13	Float type Level Switch	No	32		0.000031100782
18.0.14	Electronic Level Switch (with amplifier, etc), Capacitance or conductivity type	No	46		0.000050107056
18.0.15	Vacuum switch	No	2		0.000012103196
18.0.16	Flow switch (Mechanical / Electronic)	No	4		0.000016703800
18.0.17	Pressure / DP / Flow (DP type) / Level -Transmitter	No	583		0.000015869696
18.0.18	Level Transmitter (displacer type)	No	26		0.000052142357
18.0.19	Flow Transmitter (Pulse / mass flow / target type) including flanges	No	38		0.000029927823
18.0.20	Speed transmitter	No	18		0.000013132793
18.0.21	Position Transmitters	No	84		0.000016660357
18.0.22	Temperature Transmitter	No	1759		0.000008688583
18.0.23	Electronic Level Transmitter (with amplifier, etc), Capacitance or conductivity type / Guided Wave Radar(GWR) transmitter	No	34		0.000048139093
18.0.24	Pressure Gauge / DP gauge/DP Indicator	No	1135		0.000010791220
18.0.25	Temperature Gauge (all types)	No	852		0.000012711397
18.0.26	Level Indicator / Level Gauge	No	50		0.000034519739
18.0.27	Flow indicator / Flow Gauge / Flow meter/Acoustic flow meter (coal)	No	152		0.000036665819
18.0.28	Thermocouple / RTDs with thermowell (all types) along with converters wherever applicable	No	2010		0.000009618261
18.0.29	MTM Thermocouple upto 16 M length	No	120		0.000032443168
18.0.30	MTM Thermocouple over 17 M upto 32 M length	No	756		0.000036635409
18.0.31	MTM Thermocouple over 33 M upto 40 M length	No	520		0.000038933539
18.0.32	MTM Thermocouple over 41 M upto 52 M length	No	94		0.000045180630
18.0.33	SADC Cylinders	No	208		0.000065598799
18.0.34	HEA Exciter system	Set	40		0.000058665310
18.0.35	Flame Scanner Head Assembly	No	80		0.000050115745
18.0.36	Hydrogen Purity analyser	Set	4		0.000141949720
18.0.37	O2 (OXYGEN) Analyzer	Set	16		0.000150893530
18.0.38	I/P converters	No	116		0.000010708678

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Job: HANDLING AT SITE STORES/STORAGE YARD, TRANSPORTATION TO SITE OF WORK, COMPLETE ERECTION, CHECKING OF CALIBRATION, TESTING, COMMISSIONING AND HANDING OVER OF CONTROL & INSTRUMENTATION WORKS FOR BOILER AND ITS AUXILIARIES, TURBOGENERATOR AND ITS AUXILIARIES, FOR 2X660 MW NTPC MAUDA PROJECT Unit #3 and #4 AT 2X660 MW NTPC MAUDA PROJECT DISTRICT: NAGPUR MAHARASHTRA					
PART B: Schedule of items & Quantities and Factors to derive Item Rate based on quoted total lumpsum price					
SL. NO.	DESCRIPTION	UOM	QTY	Terms Of payments	Factor for deriving item rate from accepted Lumpsum price
I8.0.39	Rotameters	No	18		0.000012924267
I8.0.40	Reverse Rotation indications	No	2		0.000033828997
I8.0.41	Purge meter	No	36		0.000011874396
I9.0	Commissioning and Testing activities for Equipments erected by other agencies, like control valves, on/off valves, electrical/pneumatic valves, actuators, solenoid valves, valves, limit switches, ERV controllers, power cylinders, Pressure & Temperature Guages/Transmitters,etc			I9.0	
I9.0.1	Coal Feeder local panel/ instruments commissioning	No	18		0.000048799425
I9.0.2	Electrical regulating drives: (Valve, damper, scoop)	No	152		0.000020995960
I9.0.3	Pneumatic regulating drives: (Valve, damper) incl Burner tilt	No	212		0.000018380697
I9.0.4	Commissioning of Hydraulic actuators	No	20		0.000028793963
I9.0.5	Corner nozzle valve/ Trip valves commissioning	No	96		0.000016803719
I9.0.6	Open/Close type pneumatic gates / dampers / valves	No	236		0.000021065469
I9.0.7	ERV Controller (approx. weight 10kg, 400 x 350 x 190 mm)	No	12		0.000030705451
I9.0.8	Pulveriser Lube oil skid	Set	18		0.000173949770
I9.0.9	Fan Lube oil skid	Set	20		0.000147293198
I9.0.10	Primary water skid	Set	2		0.000097420734
I9.0.11	Only healthiness checking of embedded RTD / T/C	No	344		0.000004943804
I9.0.12	Limit Switches (checking and adjusting only).	No	162		0.000004566936
I9.0.13	Extraction NRV/Spray water control valve	No	16		0.000069508662
I9.0.14	Governing System Control Rack (erection is excluded, rate to be quoted only for calibration and commissioning of instruments)	No	2		0.000260657481
I10.0	Power Cylinders			I10.0	
I10.0.1	Mill Discharge Valve power cylinders (set of four)	Set	18		0.000059495070
I11.0	Miscellaneous items (items not covered under above heads)			I11.0	
I11.0.1	GIU (Graphical Interface Unit)	Set	9		0.000434429136