

TECHNICAL CONDITIONS OF CONTRACT (TCC)
T.S. No BHE/PW/PUR/NGNRI-CLE/1618.
Chapter-XII: 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 & ELECTRICAL WORKS FOR TURBO BLOWER AND ITS AUXILIARIES FOR 3 X 3.0 MTPA INTEGRATED STEEL PLANT (NISP) TURBO BLOWER STATION 1-3 (PACKAGE NO. 010A), NMDC LTD. NAGARNAR AT NATIONAL MINERAL DEVELOPMENT CORPORATION (NMDC) NMDC NAGARNAR, DIST. JAGDALPUR, (CHHATISGARH).

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SL. NO.	DESCRIPTION	UOM	QTY	TOP	Factor for deriving item rate from accepted Lumpsum price
	C&I ITEMS				
I2.0	Cable laying including earthing wires			I2	
I2.0.1	Screened Copper Cable 2P x 0.5 sqmm (Intrinsic/Non-intrinsic safe) armoured / unarmoured	Meter	25650		0.000001098209
I2.0.2	Screened Copper Cable 4P x 0.5 sqmm (Intrinsic/Non-intrinsic safe) armoured / unarmoured	Meter	49360		0.000001349167
I2.0.3	Screened Copper Cable 6P x 0.5 sqmm (Intrinsic/non-intrinsic safe) armoured / unarmoured	Meter	18000		0.000001576531
I2.0.4	Screened Copper Cable 8P x 0.5 sqmm (Intrinsic/Non-intrinsic safe) armoured / unarmoured	Meter	11000		0.000001748126
I2.0.5	Screened Copper Cable 4C X 1.0 sqmm (Intrinsic/Non-intrinsic safe) armoured / unarmoured	Meter	1500		0.000001363109
I2.0.6	Screened Copper Cable 1P/2C or 3C x 1.5 sqmm (Intrinsic/Non-intrinsic safe) armoured / unarmoured	Meter	28000		0.000001466066
I2.0.7	Screened Copper Cable 2P/4C x 1.5 sqmm (Intrinsic/Non-intrinsic safe) armoured / unarmoured	Meter	3780		0.000001498240
I2.0.8	Screened Copper Cable 4P x 1.5 sqmm (Intrinsic/Non-intrinsic safe) armoured / unarmoured	Meter	7000		0.000001522907
I2.0.9	Screened Copper Cable 6P x 1.5 sqmm (Intrinsic/Non-intrinsic safe) armoured / unarmoured	Meter	300		0.000001902561
I2.0.10	Copper Cable 1 triad, 0.5/1.5 sqmm (Intrinsic/Non-intrinsic safe) armoured / unarmoured	Meter	600		0.000001466066
I2.0.11	Copper Cable 2-Triad, 0.5/1.5 sqmm (Intrinsic/Non-intrinsic safe) armoured / unarmoured	Meter	250		0.000001689140
I2.0.12	Copper Cable 6 / 8 triad, 0.5/1.5 sqmm (Intrinsic/Non-intrinsic safe) armoured / unarmoured	Meter	250		0.000002260766
I2.0.13	KX Type 1PX16MC96.1, PVC/FRLS, Shielded T/C Extension Cable	Meter	600		0.000001107861
I2.0.14	Laying of Optical Fibre Cables (4C Multi-Mode) on cable trays, conduits etc with minor civil works	Meter	1760		0.000002209288
I2.0.15	Termination & OTDR Testing, etc. of Optical Fibre Cable (Multi-Mode Pigtail shall be supplied by BHEL) including all consumables like Break-out Kits, OFC markers, etc.	No	84		0.000068423571
I2.0.16	Network UTP Cables (special termination using UTP connectors involved)	Meter	4575		0.000001480008
I2.0.17	RG58 Coaxial cable for Master Clock System	Meter	3300		0.000001349167
I2.0.18	Profibus / Profinet / STP Cable	Meter	1000		0.000001349167
I2.0.19	Flexible pipe/GI Conduit pipe 1"	Meter	200		0.000003860891
I2.0.20	Flexible pipe/GI Conduit pipe 2"	Meter	100		0.000005737713
I4.0	Junction box/Push Button station			I4	
I4.0.1	Junction boxes upto 48 way	No	28		0.000088907743
I4.0.2	Junction boxes above 48 way	No	120		0.000109284669
I5.0	Conduits/Impulse pipe/tubes			I5	

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15.0.1	Impulse pipe CS SA106 GR B ½" SCH 80 (D21.3 x 3.73 mm)	Meter	300		0.000018481871
15.0.2	Impulse pipe AS SA335 GRP22 ½" (D21.3 x 3.73 mm)	Meter	600		0.000021261713
15.0.3	Impulse Pipe SS 21.3 x 4.8 mm (1/2" SCH 160)	Meter	200		0.000023111723
15.0.4	Impulse Pipe SS TP321 21.3 x 3.7 mm (1/2" SCH 80)	Meter	1500		0.000021306757
15.0.5	Impulse Pipe SS A312 TP321 12.7 x 2.1 mm	Meter	645		0.000012258329
15.0.6	Impulse Pipe 1.4435 SS316 12.7 x 1.24 mm	Meter	429		0.000012118908
15.0.7	SS Tube A312 TP321 6 x 1 mm	Meter	375		0.000009357299
15.0.8	2" CS Pipe	Meter	100		0.000017209922
15.0.9	Impulse Pipe CS 60.3 x 3.91 mm	Meter	195		0.000020606434
16.0	Miscellaneous Structural steel including frames for Panels/Racks/Instruments, supports for cable tray/pipes/tubes, Canopies etc			16	
16.0.1	Structural steel for fabrication	MT	28		0.001752522842
16.0.2	Radiographic test of weld joints	No	150		0.000013620366
17.0	Panels/Cubicles/Racks/Enclosures/Monitors/Computer/Computer peripheral/PLCs/UPS/Batteries			17	
17.0.1	Local Gauge Board approx. dimension 1400(W) X 1700(H) X 350(D) mm.	No	6		0.000732925837
17.0.2	Control Panel (approx. weight 400kg, approx. dimension 1000(L) X 1000(B) X 2500(H) mm) - one panel	No	6		0.001000078055
17.0.3	Control Panel (approx. weight 1200kg, approx. dimension 2250(L) X 1000(B) X 2500(H) mm) - suit of three panels	No	3		0.001841537833
17.0.4	Control Panel (approx. weight 1600kg, approx. dimension 3000(L) X 1000(B) X 2500(H) mm) - suit of four panels	No	6		0.002047559274
17.0.5	Network Panels (approx. dimension 750x800x2415 mm, Wt-400kgs per panel), power distribution panel cum links	No	2		0.000990425828
17.0.6	MAN Control Panel (approx. weight 400kg, approx. dimension 800(L) X 800(B) X 2200(H) mm) - one panel	No	1		0.001000078055
17.0.7	MAN Control Panel (approx. weight 800kg, approx. dimension 1600(L) X 800(B) X 2200(H) mm) - suit of two panels	No	3		0.001518617187
17.0.8	Unit Control Panel (Back-Up Vertical Panel) Approx. Dimension 1016 x 1000 x 2355 mm	Set	3		0.001534275245
17.0.9	Local Transmitter Rack for Field Transmitters. Approx. dimension:- 1800mm(H) x 1450mm(W) x 800mm(D) (Approx. weight 300 kg)	No	15		0.000758986852
17.0.10	MetsoDNA Engineering / Operator / Historian / Backup Node / Alarm Node / LVS / Shift I/C / Gateway/OPC / System Documentation, etc. -- PC/Server/Client Station with ASCII Keyboard, Mouse & 24" Colour Monitor.	Set	20		0.000447648880
17.0.11	Printers (80/132 col Dot Matrix, A3 Inkjet, A3 Laserjet, etc)	Set	11		0.000222108488
17.0.12	Computer furniture for all Servers, PCs, Printers	Set	1		0.003418497374

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17.0.13	Plant Control Desk / CRT desk	Set	1		0.001712626967
17.0.14	Laboratory set up	Set	1		0.002681174411
17.0.15	SWAS system for CEP	Set	3		0.001091237985
17.0.16	Vibration monitoring system for Pumps	Set	3		0.002600202944
17.0.17	Vibration monitoring system for Turbine & Turbo Blowers	Set	3		0.003688116273
17.0.18	LVS (Large Video Screen), 67" or 70" inches diagonal size, with 1400x1050 resolution.	Set	1		0.001930445576
18.0	Instruments/Devices including sensors/Cells/Probes etc			18	
18.0.1	Air filter regulators / Lubricators (1/4", 1/2", 1", 0-6KG, 0-10 KG)	No	20		0.000030136400
18.0.2	Solenoid valves (3 way, AC/DC, 1/4", 1/2", 1", NPT/BSP, single/dual coil)	No	18		0.000030565388
18.0.3	Pressure Switch / DP Switch / DP indicating switch	No	16		0.000067672842
18.0.4	Float Type Level Switch	No	18		0.000161835687
18.0.5	Electronic Level Switch (with amplifier, etc), Capacitance or conductivity type	No	25		0.000189719901
18.0.6	Pressure / DP / Flow (DP type) / Level/Temperature - Transmitter	No	214		0.000070997498
18.0.7	Speed transmitter	No	18		0.000053194500
18.0.8	Position transmitter	No	12		0.000093412116
18.0.9	Proximity Switch	No	36		0.000053516241
18.0.10	Electronic Level Transmitter (with amplifier, etc), Capacitance or conductivity type / Guided Wave Radar(GWR) transmitter	No	18		0.000225004157
18.0.11	Pressure Gauge / DP gauge/DP Indicator	No	274		0.000055232193
18.0.12	Temperature Gauge (all types)	No	96		0.000059200331
18.0.13	Level Indicator / Level Gauge	No	18		0.000166125567
18.0.14	Thermocouple / RTDs with thermowell (all types) along with converters wherever applicable	No	78		0.000042040815
18.0.15	Temperature Transmitter (all types)	No	18		0.000031959599
18.0.16	Rotameters	no	6		0.000058771343
18.0.17	Air Distribution Pots 1/2" I/L x 1/4" O/L	no	3		0.000091803412
19.0	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			19	
19.0.1	Electrical regulating drives: (Valve, damper, scoop)	No	3		0.000103064344
19.0.2	Pneumatic regulating drives: (Valve, damper)	No	18		0.000077110576
19.0.3	Commissioning of Hydraulic actuators	No	9		0.000145641394
19.0.4	Only healthiness checking of embedded RTD / T/C	No	36		0.000026168262
19.0.5	Limit Switches (checking and adjusting only).	No	12		0.000024666805

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I11.0	Miscellaneous items (items not covered under above heads)			I11	
I11.0.1	Master and Slave Clock System	Set	1		0.003326693963
I11.0.2	Wireless Walkie Talkie System (1 no. Base Station - 255X185X72mm- 2.5 kgs approx., 6no.s hand held Walkie sets, 1no. battery charger common for all hand sets- 3.6 kgs, 1no. Guyrope Mast 10M height and 11 inch dia including its civil foundation at TG Roof)	Set	1		0.005362348823
	ELECTRICAL ITEMS				
SECTION-E1 : CABLE TRAYS AND ACCESSORIES				E1	
E1.1	Perforated cable tray and accessories (with or without cover) 50mm	Meter	2625		0.000005974729
E1.2	Perforated cable tray and accessories (with or without cover) 100mm	Meter	100		0.000006906705
E1.3	Perforated cable tray and accessories (with or without cover) 150mm	Meter	750		0.000008943325
E1.4	Perforated cable tray and accessories (with or without cover) 300mm	Meter	1213		0.000011941951
E1.5	Perforated cable tray and accessories (with or without cover) 600mm	Meter	230		0.000014240254
E1.6	Ladder type 600(W) x 120 (H) mm	Meter	408		0.000010095158
E1.7	Ladder type 300(W) x 120 (H) mm	Meter	420		0.000007507288
E1.8	Ladder type 150(W) x 120 (H) mm	Meter	100		0.000006247136
SECTION-E2A : LT POWER CABLES (XLPE Armoured/ Un-armoured)				E2A	
E2A.1	3.5C X 240 sqmm Armoured Al conductor FRLS/FRLS	Meter	2500		0.000007231664
E2A.2	3.5C X 120 sqmm Armoured Al conductor FRLS/FRLS	Meter	1500		0.000004260922
E2A.3	4C X 240 sqmm AL XLPE/FRLS PVC Armoured Cable	Meter	500		0.000008221553
E2A.4	4C X 70 sqmm AL XLPE/FRLS PVC Armoured Cable	Meter	1500		0.000003271033
E2A.5	4C X 50 sqmm AL XLPE/FRLS PVC Armoured Cable	Meter	1200		0.000002578217
E2A.6	4C X 25 sqmm AL XLPE/FRLS PVC Armoured Cable	Meter	1600		0.000002017316
E2A.7	4C X 16 sqmm AL XLPE/FRLS PVC Armoured Cable	Meter	2000		0.000001646241
E2A.8	4C X 10 sqmm AL XLPE/FRLS PVC Armoured Cable	Meter	500		0.000001621574
E2A.9	4C X 6 sqmm AL XLPE/FRLS PVC Armoured Cable	Meter	22000		0.000001423167
E2A.10	1C X 70 sqmm Cu Un-Armoured XLPE/FRLS PVC Cable	Meter	1500		0.000001886474
SECTION-E2B : LT CONTROL CABLES (Generally PVC Sheath, XLPE Insulated Unarmoured/Armoured, Screened/Unscreened)				E2B	
E2B.1	12C X 2.5 sqmm Cu PVC/FRLS PVC Armoured Cable	Meter	15000		0.000001749198
E2B.2	10C X 2.5 sqmm Cu PVC/FRLS PVC Armoured Cable	Meter	20000		0.000001581893
E2B.3	8C X 2.5 sqmm Cu PVC/FRLS PVC Armoured Cable	Meter	12600		0.000001447834
E2B.4	7C X 2.5 sqmm Cu PVC/FRLS PVC Armoured Cable	Meter	2000		0.000001340587
E2B.5	5C X 2.5 sqmm Cu PVC/FRLS PVC Armoured Cable	Meter	1500		0.000001251572
E2B.6	3C X 2.5 sqmm Cu XLPE/PVC/FRLS PVC Armoured Cable	Meter	26000		0.000001126093
SECTION-E3 : JUCTION BOXES AND PUSH BUTTON				E3	

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E3.1	LCS with Open+Close+Emg Stop+L/R Switch. Approx. Weight 15 kg each.	No	150		0.000062203246
E3.2	LCS with Start+Emg Stop+L/R Switch. Approx. Weight 15 kg each.	No	36		0.000058449602
E3.3	LCS with Start+Emg Stop+L/R Switch+Ammeter. Approx. Weight 15 kg each.	No	15		0.000065420656
SECTION-E5 A : SWITCHGEARS / MCC /PCC				E5A	
E5A.1	220 V DCDB-1 Approx. Dimension (LxDxH):- 6400 x 600 x 2430 mm, Approx. weight 6MT, shall be supplied in four loose shipping sections	Set	1		0.006593973100
E5A.2	220 V DCDB-2 Approx. Dimension (LxDxH):-2400 x 600 x 2430 mm, Approx. weight 1.5MT	Set	1		0.003934998813
E5A.3	415 V Turbo Blower MCC-1, 2 & 3 Approx. Dimension (LxDxH):- 16700 x 1000 x 2430 mm, Approx. Weight 12MT, shall be supplied in six to eight loose shipping sections	Set	3		0.013076194851
E5A.4	415 V ACDB (PDB) Approx. Dimension (LxDxH):- 5400 x 600 x 2430 mm.Weight approx 4MT, shall be supplied in two to three loose shipping sections	Set	1		0.005855684914
E5A.5	240 V UPS DB-1 Approx. Dimension (LxDxH):- 1400 x 600 x 2430 mm. Weight approx 800KG.	Set	1		0.002929129421
E5A.6	240 V UPS DB-2 Approx. Dimension (LxDxH):- 1400 x 600 x 2430 mm. Weight approx 800KG.	Set	1		0.002929129421
SECTION-E6 : EQUIPMENT EARTHING MATERIALS				E6	
E6.1	75 x 10 mm GI Strip/Flat	Meter	650		0.000014203790
E6.2	50 x 6 mm GI Strip/Flat	Meter	2000		0.000006292180
E6.3	25 x 3 mm GI Strip/Flat	Meter	2500		0.000003039379
E6.4	6 SWG GI wire (stranded)	Meter	750		0.000001099282
E6.5	10 SWG GI wire (stranded)	Meter	4500		0.000001502530
E6.6	Welding Receptacle 415V, 3ph, 5 pin 100A (Approx. Dimension 400 x 500 x 300 mm)	No	6		0.000083652642
SECTION-E9 : ONLY TESTING & COMMISSIONING				E9	
E9.1	Testing and commissioning of 415 V LT Motors including dry out.	No	42		0.000197656178
E9.2	Electrically (LT) Operated Valves, Dampers and Gates with Actuators, Limit Switches etc. (Regulating & ON/OFF Type).	No	126		0.000144247183
SECTION-E10 : OTHER ITEMS				E10	
E10.1	Fire Proofing material (Mortar seal) for sealing of wall / floor openings and panel bottom (Suitable for sealing both vertical & horizontal cable penetration). (Approx. Qty of sealing matl. 7500 kg)	Sq.mtr	150		0.000498483947
E10.2	Fire Break Coating for HT/LT Power Cables. (Approx. Qty of sealing material 20000 kg)	Sq.mtr	400		0.000022092877