

## SCHEDULE 1

### 1. JAW CRUSHER

Sl. No.	Description	Specification/ Capacity
1	Jaw Opening Size	12" × 5"
2	Feed size (maximum)	100 mm
3	Jaw setting	5 mm, 8 mm, 10 mm, 12 mm, 15 mm, 20 mm
4	Capacity	0.5 TPH
5	Speed	300 rpm
6	Motor	15 hp, 3φ, 415 V, 50 Hz, 1440 rpm with DOL starter Make: Crompton/ABB/BBL Protection: IP55
7	Pulley size	750 mm × 125 mm (min)
8	Frame	All steel electrically welded construction.
9	Jaw Stock	Fabricated from M.S. ribbed heavy duty, self-aligned roller Bearings, inside renewable steel shell
10	Shaft	Forged and turned provided with self-aligned heavy duty roller bearings on the frame
11	Jaw Side Plate & Toggle Bushes	Casted from the high Mn. Steel as per IS-276
12	Toggle Plate	Made of hardened steel
13	Drive	Direct from motor through V-Belt

**N.B.:** Necessary Foundation Drawing (Civil) to be provided considering delivery of crushed material from the crusher is at an elevation of +1500 mm from GL

## SCHEDULE 2

### 2. ROTARY TROMMEL (FOR CONSTRUCTION & DEMOLITION WASTE)

Sl. No.	Description	Specification/ Capacity
1	Rotary Screen	1 No.
2	Type of Motion	Rotary Motion Type (No central shaft)
3	Material to be screened	Construction and Demolition Waste
4	Capacity	0.5 TPH
5	Screen RPM	75 to 100 rpm
6	Separation	Oversized & Undersized
7	Screen size	Dia.: Ø5 mm & Pitch: 20 mm
8	Screen material	AISI 304 Perforated sheet with 3.0 mm thickness
9	No. of feed points	1 No.
10	Vibratory Feeder (Inlet)	Electro mechanical feeder Foot Mounted Open Coil Spring Assembly 1 No. 0.5 hp, 3 phase, 415 V, 50 Hz with DOL starter
11	Feeding Point (Elevation)	0.8 m
12	Delivery Point (Elevation)	0.5 m
13	Bottom hoppers	2 Nos.
14	Dimension of Trommel	Dia. 700 mm × 4000 mm
15	Inclination	3 degree
16	Roller	Self-aligned type provides (IS 2069 Grade-A)
17	Roller Size	Ø250×100 mm width (IS 2060 Grade-A)
18	Bearing	Roller Bearing; Make: SKF/NTN
19	Motor	5 hp, 3φ, 415 V, 50 Hz, 1440 rpm with DOL Starter Make: Crompton/ABB/BBL Protection: IP55
20	Gear Box	30:1; Helical; PBL/ELECON/EQUIVALENT
21	Drive	Spur Gear drive
22	Structure	Fabricated from ISMC (100×50×5(t)) ISA (50×50×6 mm(t)), wheel, Vibration isolation pads on support structure, Gasket at mating bolting faces to eliminate noise & vibration.
23	Chute	Fabricated from AISI 304 Sheet with 2.5 mm thick inlet & outlet chute

### SCHEDULE 3

#### 3. BRICK PRESS

Sl. No.	Description	Specification/Capacity
1	Brick size	225 mm × 112.5 mm × 75 mm
2	Production rate	50–60 bricks/h
3	Vibrator motor	2 hp, 3Φ, 50 Hz, 1440 rpm with DOL Starter Make: Crompton/ABB/BBL Protection: IP55
4	Bricks per stroke	2 Nos.
5	Maximum pressure	70 – 80 tons
6	Mould area	Double feeder box with double size moulds
7	Die	2 Nos. with male and female
8	Hydraulic power pack	5 hp, 3Φ motor, 50 Hz, 1440 rpm with DOL Starter Make: Crompton/ABB/BBL Protection: IP55
9	Hydraulic oil	Servo system 68; Initial Fill: 210 L (1 drum)
10	Hydraulic tank	100 L
11	Hydraulic valve	3 Nos.
12	Hydraulic cylinder	3 Nos.
13	Plywood Plate	50 Nos.; Dimension: 400 mm × 300 mm × 20 mm (Waterproof)

<b>SCHEDULE 4</b>
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**4. CONCRETE MIXER**

Sl. No.	Description	Specification/Capacity
1	Type	Concrete 7/5 Mixture Machine
2	Speed	20-25 rpm
3	Capacity	200 L (Unmixed) 150 L (Mixed)
4	Power	5 hp, 3 $\Phi$ motor, 50 Hz, 1440 rpm with DOL Starter Make: Crompton/ABB/BBL Protection IP55
5	Loading	Manual

## SCHEDULE 5

### 5. BIOGAS PLANT AND BIOMASS GRINDER CUM STIRRER

#### 5.01 BIOGAS PLANT

**Feed Stock:** Organic fraction from Municipal Solid Waste

**Type:** Floating Dome Type

**Capacity:** 20 m<sup>3</sup>/day

**Quantity:** 1 No.

1. Digester Chamber: 1 No.

- MOC: Brick Wall with Plastering
- Thickness: 300 mm (min.)
- Diameter of digester tank: 4.1 m (ID)
- Height of digester tank: 3 m (min.)
- Gap between dome & brick wall: 50 mm
- Painting: Weather Coat

2. Feeding Chamber: 1 No.

- MOC: Brick Wall with Plastering
- Thickness: 300 mm (min.)
- Height/Depth: 1 m (min)
- Diameter 2 m (min)
- Painting: Weather Coat

3. Floating Dome: 1 No.

- MOC: Mild Steel
- Thickness of sheet: 3 mm (min.)
- Painting: Anti-Corrosion (Outer and Inner Surface)
- Height/Depth: 1.25 m (min)
- Diameter 4 m (min)
- Height of conical portion: 0.75 m
- Gas outlet: Dia. 3/4" with Ball Valve (SS)
- Pressure gauge (0-500 WC)

4. Central Column: 1 No.

- Height: 5.5 m from base
- Diameter: 200 mm (OD)
- Thickness: 6 mm
- MOC: Mild Steel
- Painting: Anti Corrosion

5. Slurry Tank: 3 Nos.

- Tank Dimension: 2 m × 1.5 m × 1 m
- Thickness of wall: 300 mm

- MOC: Brick Wall with Plastering
- Painting: Weather Coat

6. Biogas Burner: 4 Nos. (Flowrate: 100 Lpm)

Refer to Figure-1 for more details

## 5.02 BIOMASS GRINDER CUM STIRRER

**Feed Stock:** Organic fraction from Municipal Solid Waste

**Capacity:** 100-150 kg/h

**Quantity:** 1 No.

**Overall Dimension:**

Base Area: Dia. 1500 mm

Sheet Thickness: 6 mm

**Grinder Drum:** Top Dia.: 600 mm

Bottom Dia.: 500 mm

Height: 600 mm

Shape: Conical

Thickness of sheet: 3 mm

MOC: AISI 304

**Shaft:**

Dia.: 30 mm

Length: 600 mm

MOC: AISI 304

**Blade:**

No of main blade: 4 Nos.

No of secondary blade: 2 Nos.

Thickness: 8 mm

MOC: AISI 304

Blade Profile as shown in Figure-2

**Outlet:**

Opening: 300 mm × 300 mm

MOC: AISI 304

Mesh Size: 20 mm × 20 mm

**Bearing:**

Roller Bearing (Water sealed)

Make: SKF/NTN

**Motor:**

5 hp, 3Φ, 1440 rpm, 50 Hz with DOL Starter

**Structure:**

MS Angle (50 mm × 50mm × 6mm)

MS Channel (100 mm × 100 mm × 6 mm & 150 mm × 150 mm × 6 mm)

IS2062

**Stirrer:**

MOC: MS (IS 2062)

No. of Blades: 2

Dimension: 300 mm × 50 mm × 6 mm

Gear Box: Ratio 1:50

Make: Standard

Shaft Dimension: 1000 mm  $\times$  30 mm; MOC AISI 304

Motor: 2 hp, 3 $\Phi$ , 1440 rpm, 50 Hz with DOL Starter

<b>SCHEDULE 6</b>
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**6. SLURRY PUMP**

- Capacity: 250 LPM (min.)
- Head: 20 m (min.)
- Inlet dia.: 40 mm (min.)
- Outlet dia.: 40 mm (min.)
- Motor: 3 hp, 3 $\Phi$ , 50 Hz, 2880 rpm
- Coupling: Flexible coupling
- Shaft: AISI 410
- Body - CI (Cast Iron) IS 210 GR FG 200
- Gland material - CI (Cast Iron) IS 210 GR FG200
- Impeller - CI (Cast Iron) IS 210 GR FG 200
- Base Frame: MS
- Leakage Class: Class VI



<b>SCHEDULE 7</b>
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**7. MS TROLLEY**

Weighing capacity: 100 kg

Trolley Dimension: 0.75 m × 0.6 m × 0.4 m

Mesh Size: 2 mm

Net: Stainless Steel

Wheel: 8" Rubber Wheel

MOC: MS (IS-2062)

Paint: Anti-Corrosion

Structural: MS angle 25×25×3 & MS Flat 25×3 (IS2062)

Base plate: 80 × 80 × 6 (Dimensions in mm)

## SCHEDULE 8

### 8. COMPRESSOR, GAS STORAGE TANK, GAS PIPELINE AND CENTRIFUGAL BLOWER

#### 8.01 COMPRESSOR, GAS STORAGE TANK & GAS PIPELINE

##### Compressor:

- Qty: 1 No.
- Flow Rate: 160 Lpm (7.0 cfm)
- Motor: 3 hp, 3 $\Phi$ , 50 Hz with DOL Starter
- Single stage compressor
- Associated Tank: 160 L
- Operating Pressure: 8 bar
- Maximum Pressure: 12 bar
- Mounting of Pressure Gauge (0-21 kg/cm<sup>2</sup> & Accuracy 1%)
- Pressure Switch: Operating Pressure at 8 bar
- Safety Valve: Spring loaded operated at 8 bar

##### Gas Storage Tank:

- Qty: 1 No.
- Volume: 5 cum (5000 lit) (minimum)
- Dimension: (Dia.: 1.5 m)
- Operating Pressure: 8 bar
- Maximum Pressure: 12 bar
- Minimum Thickness: 6 mm
- Top and bottom spherical cap height: 200 mm
- Support Leg: 500 mm (above GL)
- Mounting of Pressure Gauge (0-16 bar & Accuracy class: 1.6)
- Pressure Relief Valve: at 8 Bar
- Inlet Line: ¾" with Flow Control Valve
- Delivery Line: ¾" with Ball Valve (SS) for flow control
- Bottom Cleaning Line: ¾" with Ball Valve (SS)
- MOC: MS (IS 2062)
- Paint: Anti-Corrosion (Inside & Outside)

##### Gas Pipeline:

- Qty.: 300 m
- MOC: MS Seamless
- Dimension: ¾" (NPS); Schedule 40
- Mounting of Pressure Gauge (0-16 bar & Accuracy class: 1.6): 5 Nos.
- Ball Valve: ¾" (SS) for Flow Control

## **8.02 CENTRIFUGAL AIR BLOWER**

- Motor: 3 hp, 3 $\Phi$ , 415 V, 50 Hz, 2900 RPM
- Direct Coupling/Vee Belt Drive arrangement (Enclosure of the belt)
- Discharge: 1000 m<sup>3</sup>/h
- Static Pressure: 500 mm water column
- Temperature at Blower Inlet: 40°C
- Fan Speed: 2900 RPM
- Balancing: Dynamic as per ISO 1940 G-3
- Suction Duct with protection nets
- Delivery Duct: Dia. 200 mm
- Accessories: Outlet silencer
- Noise Level: <75 dB

## SCHEDULE 9

### 9. WASTE PLASTIC PYROLYSIS PLANT

Sl. No.	Name of component	Description of item	Quantity
1	Pyrolysis reactor	Configuration: Horizontal stainless steel (SS304 grade with 8 mm thickness) reactor with tray type feeding mechanism. The outer insulation is jacketed with 80 mm thick ceramic wool and clad with stainless steel sheets for protection Reactor capacity: 50 kg plastic waste Volume: 1.0 m <sup>3</sup> Furnace at the bottom for heating Thermocouple for temperature measurement at reactor door and furnace Thermocouple for temperature measurement with in the heating zone. Automatic Pressure Release Valve Arrangement for Nitrogen / CO <sub>2</sub> Purging for safety purpose Full door opening for feeding material using tray feeder With Mixing Geared Motor 3 hp 415V AC	1 no.
2	Heating system	Dual fired with two independent burners. One pyrolysis oil/LDO burner and one hydrocarbon gas burner. Pyrolysis oil/LDO burner will be provided with pumping unit comprising of a minimum of 2 hp gear pump along with filter and a 25 L oil tank with intermediate piping	1 set
3	Condenser assembly	Shell and tube type heat exchanger with nozzles for vapor line and water from cooling tower (Inlet /Outlet) Oil receivers mounted on stand connected for oil collection All fabrication in MS and seamless tube of Sch. 40	1 set
4	Oil Water Separator	Capacity: 50 L (min) MOC: MS 5 mm Thickness. IS2062 Safety device to prevent flashback into the reactor	1 no.
5	Hydrocarbon gas collection tank	Buffer tank to safeguard pressure build up with pressure relief valve and diversion to use the gas in reactor heating or flaring system Capacity: 100 L (min) MOC: MS 5 mm Thickness. IS2062	1 no.
6	Oil Receiver tank	Capacity: 100 L (min) MOC: MS 5 mm Thickness. IS2062	1 no.
7	Cooling Tower	Capacity 25 TR	1 no.

		Recirculation type Fibre-reinforced plastic body 0.5 hp Water Pump for Cooling Tower of Crompton/Kirloskar Make 0.5 hp, 3Φ Circulation fan	
8	Chimney	ERW C Class Heavy duty pipe with bottom cone with diameter 150 mm, height 5 m and thickness 5 mm with canopy	1 no.
9	Control Panel	Manually operated with push button for burners, pumps, cooling tower fan, water pumps, flare unit ignition and digital meters for temperature and pressure monitoring.	1 no.
10	Plastic Shredder	Capacity: 50 kg/h Input material: Polyethylene bags, pet bottles, tetra pack etc. Motor: 5 hp, 3Φ with DOL starter switch Shredding size: 10 mm × 10 mm Blade: 2 set (additional)	1 no.
11	Flaring system for burning exhaust gases	Burner system with blower	1 no.
12	Oil filtration system	Filtration rating: 5 microns in 3 stages Capacity: 5 Lpm	1 no.
13	Diesel (Initial fill)		200 L

<b>SCHEDULE 10</b>
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**10. ROLLER CONVEYOR**

**a) INCLINED ROLLER CONVEYOR WITH DELIVERY CHUTE: 1 No.**

Length → 10 m

Belt width → 500 mm

Type of belt → Canvas/Rubber coated

Thickness of belt → 4 ply

Start of conveyor → 300 mm from Ground level

Delivery of conveyor → 6500 mm from Ground level

Angle of Inclination → 35-40°

Sideguard → 250 mm (AISI304)

Spacing of rack → 400 mm (AISI304)

Height of rack → 250 mm (AISI304)

Motor → 3 hp, 3 phase and 1:50 Gear Box

Structural Frame → ISMC (100 mm × 50 mm × 6 mm) MOC MS-IS2062

ISMA (100 mm × 50 mm × 6 mm) MOC MS-IS2062

**b) INCLINED ROLLER CONVEYOR WITH DELIVERY CHUTE: 2 Nos.**

Length → 7.0 m

Belt width → 500 mm

Type of belt → Canvas/Rubber coated

Thickness of belt → 4 ply

Start of conveyor → 300 mm from Ground level

Delivery of conveyor → 4500 mm from Ground level

Height of conveyor → 300 mm from Ground level

Angle of Inclination → 35-40°

Spacing of rack → 400 mm (AISI304)

Height of rack → 250 mm (AISI304)

Sideguard → 300 mm

Motor → 3 hp, 3 phase and 1:50 Gear Box

Structural Frame → ISMC (100 mm × 50 mm × 6 mm) MOC MS-IS2062

ISMA (100 mm × 50 mm × 6 mm) MOC MS-IS2062

**c) INCLINED ROLLER CONVEYOR WITH DELIVERY CHUTE: 1 No.**

Length → 4 m

Belt width → 500 mm

Type of belt → Canvas/Rubber coated

Thickness of belt → 4 ply

Start of conveyor → 300 mm from Ground level

Delivery of conveyor → 2500 mm from Ground level

Height of conveyor → 300 mm from Ground level

Spacing of rack → 400 mm (AISI304)

Height of rack → 250 mm (AISI304)

Angle of Inclination → 35-40°

Sideguard → 250 mm

Motor → 2 hp, 3 phase and 1:50 Gear Box

Structural Frame → ISMC (100 mm × 50 mm × 6 mm) MOC MS-IS2062

ISMA (100 mm × 50 mm × 6 mm) MOC MS-IS2062

## SCHEDULE 11

### 11. EDDY CURRENT SEPARATOR

Description	Specification
<b>Equipment</b>	Eddy current separator with vibratory feeder
<b>Magnet</b>	High Intensity High Gradient High-Power Rare-Earth Magnet
<b>Magnetic gauss power</b>	12000 Gauss
<b>Feeding Material</b>	Municipal Solid Waste
<b>Material Flow Rate</b>	100 kg/h
<b>Feed temperature (°C)</b>	Max. 50
<b>Output material separation</b>	Nonferrous (aluminium, copper, etc) Ferrous (Iron) Non-metallic (glass, wood, paper etc)
<b>Materials to be separated</b>	Piece having weight of maximum of 50 gm
<b>Power Drive (Eddy Current Drum)</b>	ABB/Havells/Crompton 3.5 kW, 3Φ, 415 V, 50 Hz, 2880 RPM
<b>Belt Drive</b>	ABB/Havells/Crompton 0.75 kW, 3Φ, 415 V, 50 Hz, 1440 RPM with VFD to control the speed
<b>Belt</b>	Canvas Belt; Width – 500 mm & Thickness- 6 mm
<b>Bearing</b>	Heavy duty self-aligning flange bearing (SKF make)
<b>Shaft</b>	EN8
<b>Material of construction</b>	MS IS2062
<b>Enclosure</b>	Totally enclosed Dust proof
<b>Feed system</b>	Electro mechanical feeder Foot Mounted Open Coil Spring Assembly 1 No. 0.5 HP, 3Φ, 415 V, 50 Hz
<b>Discharge hopper</b>	1 No. of Discharge Hopper for Non-metal 1 No. of Discharge Hopper for Metal (Ferrous) 1 No. of Discharge Hopper for Metal (Non-Ferrous)



## SCHEDULE 12

### 12. ROTARY TROMMEL (FOR MUNICIPAL SOLID WASTE)

Sl. No.	Description	Specification/Capacity
1	Rotary Screen	1 No.
2	Type of Motion	Rotary Motion Type (External Driven: No Central Shaft)
3	Material to be screened	Municipal Solid Waste
4	Capacity	0.5 TPH
5	Screen RPM	50 to 600 RPM
6	Separation	Oversized & Undersized
7	Screen size	Dia.: Ø35 mm & Pitch: 50 mm
8	No. of feed points	1 No.
9	Vibratory Feeder (Inlet)	Electro mechanical feeder Foot Mounted Open Coil Spring Assembly 1 No. 0.5 HP, 3 phase, 415 V, 50 Hz
10	Feeding Point (Elevation)	1.5 m
11	Delivery Point	1.0 m
12	Bottom hoppers	2 Nos.
13	Dimension of Trommel	Dia. 600 mm × 4000 mm
14	Screen material	AISI 304 Perforated sheet with 5 mm thick
15	Inclination	3 degree
16	Roller	Self-aligned type provides (IS 2069 Grade-A)
17	Roller Size	Ø250×100 mm width (IS 2060 Grade-A)
18	Bearing	Roller Bearing; Make: SKF/NTN
19	Motor	5 hp, 3 φ, 415V, 50hz, 1440 RPM; Protection: IP55 Make: Crompton/ABB/BBL
20	Gear Box	30:1; Helical; PBL/ELECON/STANDARD
21	Drive	Spur Gear drive
22	Structure	Fabricated from ISMC (100×50×5(t)) ISA (50×50×6 mm(t)), wheel, Vibration isolation pads on support structure, Gasket at mating bolting faces to eliminate noise & vibration.
23	Chute	Fabricated from AISI 304 Sheet with 2.5 mm thick inlet & outlet chute

### SCHEDULE 13

#### 13. HOPPER WITH VIBRATORY SCREEN

Sl. No.	Description	Specification/Capacity
1	Rotary Screen	1 No.
2	Type of Motion	Rotary Motion Type (External Driven: No Central Shaft)
3	Material to be screened	Municipal Solid Waste
4	Capacity	0.5 TPH
5	Screen RPM	50 to 600 RPM
6	Separation	Oversized & Undersized
7	Screen size	Dia.: Ø35 mm & Pitch: 50 mm
8	No. of feed points	1 No.
9	Vibratory Feeder (Inlet)	Electro mechanical feeder Foot Mounted Open Coil Spring Assembly 1 No. 0.5 HP, 3 phase, 415 V, 50 Hz
10	Feeding Point (Elevation)	1.5 m
11	Delivery Point	1.0 m
12	Bottom hoppers	2 Nos.
13	Dimension of Trommel	Dia. 600 mm × 4000 mm
14	Screen material	AISI 304 Perforated sheet with 5 mm thick
15	Inclination	3 degree
16	Roller	Self-aligned type provides (IS 2069 Grade-A)
17	Roller Size	Ø250×100 mm width (IS 2060 Grade-A)
18	Bearing	Roller Bearing; Make: SKF/NTN
19	Motor	5 hp, 3 φ, 415V, 50hz, 1440 RPM; Protection: IP55 Make: Crompton/ABB/BBL
20	Gear Box	30:1; Helical; PBL/ELECON/STANDARD
21	Drive	Spur Gear drive
22	Structure	Fabricated from ISMC (100×50×5(t)) ISA (50×50×6 mm(t)), wheel, Vibration isolation pads on support structure, Gasket at mating bolting faces to eliminate noise & vibration.
23	Chute	Fabricated from AISI 304 Sheet with 2.5 mm thick inlet & outlet chute

<b>SCHEDULE 14</b>
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**14. BIOMASS SHREDDER**

Input material: Agro waste (dry leaves, dead branches, paddy straw, dry grass etc.) with maximum dia. 3 inch

Capacity: 100-150 kg/h

Motor: 10 hp, 3 $\Phi$ , 50 Hz with DOL starter

Drum diameter (minimum): 400 mm

Working width (minimum): 500 mm

Shredding size: < 5 mm

Blade: 2 set (extra)

MOC: Mild Steel (IS 2062)

Motor: ABB, Crompton Greeves, Bharat Bijli etc.

<b>SCHEDULE 15</b>
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## **15. BRIQUETTE MACHINE AND BRIQUETTE STOVE**

### **15.01 BRIQUETTE MACHINE**

Input material: Mixture of agro waste with maximum size 5 mm

Binder material: Cow dung/ Paper pulp/Sludge etc.

Production capacity: 100-125 kg/hr

Motor: 5 hp, 3  $\Phi$  with DOL starter with gearbox (Gear Ratio-1:6)

Auger Shaft: Min. Dia. 40mm; MOC: AISI 304

Finished Good Diameter: 50-60 mm ( $\pm$  20%)

Finished Good Shape: Cylindrical

Finished Briquette Length: 100-250 mm (adjustable) with automatic cutting attachment

MOC: Mild Steel (IS 2062)

Motor: ABB, Crompton Greeves, Bharat Bijli etc.

### **15.02 BRIQUETTE STOVE**

Capacity: 10 kg/h

No. of combustion chamber: 2 Nos.

Dimensions: 600 mm (H)  $\times$  300 mm (dia.), Sheet thickness: 3 mm; MOC: MS IS2062

Thickness of ceramic insulation: 75 mm

Air circulating fan: 0.2 kW

Provision for ash cleaning and continuous briquette feeding

Height of chimney: 6 m with 200 mm dia. Pipe of 1.5 mm thickness; MOC: MS IS2062

Trolley with wheel for movement of the stove

## SCHEDULE 16

### 16. ELECTRIC PANEL

#### a) ELECTRICAL PANEL (Figure-3)

Sl. No.	Description	Specification	Qty.
1	Panel Box with internal wiring	Dimension: 750 mm × 1000 mm Thickness of CRC Sheet: 1.6 mm	1 No
2	Incomer	MCCB: 415 V, 63 A, 4 Pole	1 No
3	Bus-bar	Material: Al; Current Rating: 63 A	4 Nos
4	Starter switch	5 hp induction motor (Voltage: 415 V, 3Φ, Current Rating: 5.5-8 A) 3 hp induction motor (Voltage: 415 V, 3Φ, Current Rating: 4-6.3 A) 2 hp induction motor (Voltage: 415 V, 3Φ, Current Rating: 3.2-5 A)	1 No 5 Nos 3 Nos
5	Cables	2.5 sq. mm 3 Core Copper Cable	50 m
6	Metering	Volt Meter (Digital) Ammeter (Digital) with appropriate CT & PT	1 No 1 No 1 No
7	On Off Trip	On Off Trip Push Button for each motor	27 Nos
8	Emergency Off	Emergency Off Push Button	1 No

#### b) ELECTRICAL PANEL (Figure-4)

Sl. No.	Description	Specification	Qty.
1	Panel Box with internal wiring	Dimension: 1200 mm × 1000 mm Thickness of CRC Sheet: 1.6 mm	1 No
2	Incomer	MCCB: 415 V, 125 A, 4 Pole	1 No
3	Bus-bar	Material: Al; Current Rating: 63 A	4 Nos
4	Starter Switch	5 hp induction motor (Voltage: 415 V, 3Φ, Current Rating: 5.5-8 A) 3 hp induction motor (Voltage: 415 V, 3Φ, Current Rating: 4-6.3 A) 2 hp induction motor (Voltage: 415 V, 3Φ, Current Rating: 3.2-5 A)	1 No 11 Nos 4 Nos
5	Cables	2.5 sq. mm 3 Core Copper Cable	300 m
6	Metering	Volt Meter (Digital) Ammeter (Digital) with appropriate CT & PT	1 No 1 No 1 No
7	On Off Trip	On Off Trip Push Button for each motor	48 Nos

8	Emergency Off	Emergency Off Push Button	1 No
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**Place of Delivery:**

CRPF Group Centre, Amrawati, Durgapur, West Bengal 713214

**Scope of Work:**

The supplier shall be required to perform the following services:

- a) Installation & Commissioning, Supervision and Demonstration of the goods;
- b) Providing required jigs and tools for assembly required for the completion of the installation;
- c) Cabling from main panel to the electrical panels;
- d) Onsite training to Scientists/Technical Officers/Staffs is to be provided by Supplier for operation and maintenance of the equipment to the complete satisfaction of the user department;
- e) All safety requirements are to be incorporated.

**Inspection and Acceptance Tests required:**

Trial run and full load test will be conducted for 3 - 5 days to the complete satisfaction of the end user in the presence of Scientists/Technical Officers from CSIR-CMERI.

**Warranty:**

Comprehensive on-site warranty of 1 (One) year must be provided for each individual equipment item to be effective from the date of completion of installation and commissioning and final acceptance of the equipment.

**Performance Guarantee:**

Performance Warranty Bond shall be deposited by the Supplier @10% of the Contract Price in the form of Bank Guarantee for 1 (one) year period from the date of completion & commissioning of the equipment items. If the machines failed to perform as per laid down system specifications or any deviations/compromise has been observed in the system specifications etc the Performance Warranty deposit of the firm shall be forfeited. The Contractor shall submit the Original Warranty documents for each of the equipment items to CSIR-CMERI, Durgapur during the supply of the systems.