

Schedule A

**Quantity & Description of components required for augmentation of Mechanised laundry
of Jabalpur depot, WCR**

S.No.	Description of store	Qty/Set	Technical Details
1	Industrial washer cum extractor capacity : Minimum 120 Kgs	02 Nos.	Annexure-I
2	Tumbler Dryer Capacity Minimum 60 Kgs	01 Nos.	Annexure-II
3	Flat work Ironer (Calendaring machine) Capacity 800x3000 mm double roll.	01 Nos.	Annexure-III
4	Steam boiler: capacity minimum 800 to 850 kg of steam/hr	01 Nos.	Annexure-IV

Annexure-I

Technical specification of Industrial washer-cum-extractor.

Railway Requirement	Firm's offer compliance along with model No.
<ul style="list-style-type: none"> a) Capacity: Minimum 120 kg dry weight per charge. b) "G"-Force at final extract: 300 G (Minimum). c) Machine should be soft mounted. d) Washing cycle: Desirable 45-minutes but not more than 55- minutes. e) Full cabinet, inner & outer drums and all other parts coming in contact with water and chemical/detergents should be made of stainless steel (SS) 304 grades or superior. f) Auto dosing facility: Auto & Manual facilities should be available with minimum 5- external closing pockets. g) Machines should be equipped with a separate overdrive panel with buttons for manual operation in case of PLC failure. h) The average filling ratio of washer is 1:10 i.e. 10 litres of drum volume is required for 01 Kg of dry linen. i) The machine should be equipped with two inlet facilities – <ul style="list-style-type: none"> 1. Hot water supply arrangement. 2. Normal water supply arrangement. j) The machine should be equipped with Viton seals. k) All valves should be pneumatically controlled. l) The machine should be steam operated and have steam supply inlet. m) Automatic mechanism to maintain set temperature by mixing hot and normal water supplies. n) Programmable microprocessor controller with standard and custom based programming facility (Minimum 06 Programming each). 	

Annexure-II

Technical specification of Tumbler drier .

Railway Requirement	Firm's offer compliance along with model No.
<ol style="list-style-type: none">1) Capacity: Minimum 60 kg dry weight per charge.2) Inner & outer cylinder & body: made of SS 304 grade or superior.3) Drive motor: 1.1 KW (minimum) or compatible, three phase4) Blower motor : 1.1 KW (minimum) or compatible, three phase5) Operation : Steam operated6) Cycle: Minimum 60 Kg per cycle in maximum one hour.7) Programmable microprocessor controller (Minimum 06 Standard and custom Programming each).8) Pneumatic valve for steam inlet.9) Noise level: less than 85 db10) Double direction rotation – forward & reverse11) The average filling ratio of washer is 1:20 i.e. 20 litres of drum volume is required for 01 Kg of water extracted linen.12) Machine should be soft mounted.	

Annexure-III

Technical Specification of Chest heated Flat work ironer (Calendaring Machine)

Railway Requirement	Firm's offer compliance along with model No.
<p>1) Output per minute (fully dried and ironed) : 25 metres per minute minimum.</p> <p>2) No. of Rollers: - Chest Heated Double Roller.</p> <p>3) Roller length:- Minimum 3000 mm.</p> <p>4) Roller Diameter:- 800 mm (tolerance $\pm 5\%$ of 800 mm max).</p> <p>5) Evaporation rate: - Minimum (200 to 250 Kg/hr).</p> <p>6) Rollers : Rolled and fabricated in Boiler quality steel plates, precision machined with drilled perforations.</p> <p>7) Ironing chest- Fabricated in boiler quality steel plates duly annealed with stepless machining and grinding. Ground smooth and polished in the direction of flow of linen and finished to roughness of not more than 10 microns.</p> <p>8) Drive : Single Motor with Gear Box and Variable Frequency Drive for variable roller & feed conveyor speeds.</p> <p>9) Drive Motor : 9-11 KW (12-15 HP approx. or compatible) 415V, 3 Phase AC</p> <p>10) Blower Motor : 02 Nos.- 1.5 KW (2 HP approx. or compatible), 415V, 3 Phase AC</p> <p>11) Suction Blower : Direct mounted centrifugal blower, driven by heavy duty 02 HP (approx.) motor. Air flow 80 cubic meter per minute approx.</p> <p>12) Conveyor Belts : Compatible, thickness of 2mm (approx.) & width of 50mm (approx.) with S.S. comb hooks.</p> <p>13) Controls : Digital control. Auto digital temperature control, Rocker switch for forward-reverse chest rotation, Emergency stop. Auto cut off for false feeding & finger safety.</p> <p>14) Vibration/noise level: Less than 70db.</p> <p>15) Air Supply : Compressor of compatible capacity.</p> <p>16) All other accessories as required (including feeding and receiving table) operation of the machine.</p>	

Annexure-Iv
Technical specification of Steam Boiler

Railway Requirement	Firm's offer compliance along with model No.
1.Parameters	
<ul style="list-style-type: none"> a) NAME OF EQUIPEMENT b) FUEL TO BE FIRED c) TYPE OF BOILER d) EVAPORATION CAPACITY e) SATURATED TEMPERATURE f) WORKING PRESSURE g) HYDRO TEST PRESSURE h) ELECTRIC LOADING i) HEATING SURFACE j) THERMAL EFFICIENCY k) THICKNESS OF SHELL /FURNACETUBE SHEET l) MATERIAL (Shell & Tube plate) m) TUBE SIZE (ERW) 	<ul style="list-style-type: none"> a) Steam Boiler b) Briquettes c) Horizontal fire tube type 3 Pass Internal Furnace. d) 800 to 850 Kg/hr or above e) 185 Deg. C f) 10.50 Kg/cm² or above g) 15.75 Kg/cm² or above h) 5.25 KW (approx.) i) 25 Sq. Metres (approx.) j) 80 ± 2.5% k) 10mm /12mm/16 mm l) SA-516 Gr.70 or equivalent m) 63.5mm OD x 10 SWG
<p>The boiler is of fire tube type consisting of boiler shell, tube, sheets, smoke tubes made out of Boiler quality plates SA-516 Gr. 70. Or its equivalent & Boiler quality tubes BS 3059/68 Grade material or its equivalent. The hydraulic testing would be carried out strictly as per the required code of constructions. A blow down connection would be provided at the bottom of the shell for periodically blowing down sludge or any accumulation of dissolved solids during the operation of boiler. Large sized manhole and hand holes are also provided for the cleaning purpose.</p>	
2. MOUNTINGS & FITTINGS: will have to be provided as per requirement of the site.	
3. COMPATIBLE ACCESSORIES :	
<ul style="list-style-type: none"> a) Two Feed Water Pumps, b) Furnace, c) Induced Draft Fan , d) Automatic water level controller, e) Dust collector constructed from mild steel plate having 3.15 mm or higher thickness. f) MS Chimney suitable as per State Pollution Control norms, g) Feed water storage tank of minimum 4000 litres, h) Water softening plant with flow rate of 1000 Kg/hr (minimum), water quality total hardness should be less than 5 PPM. i) Suitable Control Panel j) Suitable structure and platform k) Refractory: The front-rear doors and inlet outlet ducts are suitably lined with high thermal resistance refractory material conforming to prevailing IS. l) Insulation: The boiler would be insulated on all the exposed hot surfaces with necessary thickness of mineral wool/glass wool. The insulation would be cladded with suitable G.I. sheet. All steam pipe lines to be with proper insulation. 	
4. INSTRUMENTS, CONTROLS & SAFETY DEVICES	

Feed pump, ON / OFF Low level alarm water level controller.	1 Set.	
High Low Steam pressure cut off switch	1 Set.	
Audio-visual alarm	1 Set.	
Spring loaded safety valve	2 Set.	
Fusible Plug	1 Set.	
5. TERMINAL POINTS:		
FUEL	Inlet of Furnace.	
FUEL GAS	Boiler Outlet	
FEED WATER	Suction of the feed pumps	
STEAM	Outlet of the safety valves and vent valves	
ELECTRICAL	Terminal of the boiler Control panel	
INSTRUMENTATION	Inlet of control panel.	
<p>The boiler should be confirming to latest IS specifications for the boilers and should have been approved by boiler authorities. The manufacturer of boilers should have certified the maintenance and serviceability of these boilers for next five years.</p> <p>5.1 Supply of solid fuel (briquettes) :</p> <ul style="list-style-type: none"> • For the successful commissioning and running of these boilers, Contractor has to supply eco friendly solid fuel briquettes (minimum 20 tons) only for first time. • The briquettes should come in packed condition and should not be transportation in loose. • One digital weighing machine of reputed brand (Capacity 200 kg) to supplied with boiler. • Two MS sheet (1.6 mm) trolley with tyred wheels. (Capacity 100 kg of briquettes) <p>5.2 Boiler should be covered under warranty for minimum two years. Thereafter the supplier/OEM should be ready to undertake the AMC.</p>		