

**U.P. STATE CONSTRUCTION AND INFRASTRUCTURE  
DEVELOPMENT CORPORATION LTD.**

(A Govt. of U.P. Enterprises)

(AN ISO 9001:2000 certified Organisation)

Reg. Office : T.C. - 46 V, Vibhuti Khand, Gomti Nagar, Lucknow (U.P.)

**FINANCIAL BID**

FOR

**Bio-waste management Plant  
work at Medical college  
Allahabad**

**(UTTAR PRADESH)**

**(VOLUME-II)**

Name of :.....

Address:.....

.....

.....

.....

**U.P. State Construction and Infrastructure Development  
Corporation Ltd.  
Bill of Quantity**

**Name of Work :- Estimate for Bio Medical Waste Management project at S.R.N.  
Medical College Allahabad.**

S.N.	Particulars	Amount(Rs.Lac)
1.	Cost of work	238.94
	<b>Total</b>	<b>238.94</b>
5.	Less 5 %	(-) 11.94
	<b>Total</b>	<b>226.90</b>

J.E.

A.E.

  
E.E.



Rate offered by bidder (+) %  
Above/below  
In Word  
In Figures

Rs.....Lacs

Net Amount .....  
Rs.....

Signature of bidder

**U.P. State Construction & Infrastructure Development Corporation Ltd.**  
**TC/46-V, Vibhuti Khand, Gomti Nagar, Lucknow.**

**Project :- Bio Medical Waste Management Project**  
**at S.R.N. Medical College, Allahabad**

BASED ON PLINTH AREA RATES OF U.P.P.W.D. FOR THE YEAR 2015  
**('B' CLASS R.C.C. FRAMED STRUCTURE)**

S.NO.	DESCRIPTION OF ITEM	QTY.	UNIT	RATE	AMOUNT
1	COST OF CONSTRUCTION OF: GROUND FLOOR	160.00	SQM.	13600.00	(IN LACS) 21.76
				<b>TOTAL</b>	<b>21.76</b>
2	ADD FOR ANTITERMITE TREATMENT AT G.F. ONLY	160.000	SQM.	250.00	0.40
3	ADD FOR EXTRA Ht. OF BUILDING ABOVE NORMAL Ht. OF 2.90m (3.60-2.90/0.30) x 570	0.000	SQM.	1333.80	0.00
4	ADD FOR INTERNAL WATER SUPPLY	10 % of Rs.		21.76	2.18
5	ADD FOR INTERNAL ELECTRIFICATION	12.5 % of Rs.		21.76	2.72
6	ADD FOR EXTERNAL W/S & SEWERAGE	5 % of Rs.		21.76	1.09
7	ADD FOR INTERNAL SITE DEV. WORKS	5 % of Rs.		21.76	1.09
8	ADD 4% FOR POWER WIRING	4 % OF RS.		21.76	0.87
9	EARTH QUAKE RESISTANT STRUCTURE	0.000	SQM.	1100.00	0.00
10	COST OF BORING & INSTALLATION OF SUBMERSIBLE PUMP WITH TANK				5.00
11	COST OF RAINWATER HARVESTING				5.09
				<b>TOTAL Rs.</b>	<b>40.19</b>

*Sanjay Kumar*

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*R.S.*

A.E. (Elect.)

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Project :- Estimate of Bio Medical Waste Management  
at S.R.N. Medical College, Allahabad.

Sl. No.	Description of Goods	Qty	Rate	Amount
1.	<p><b>BIO MEDICAL WASTE INCINERATOR</b> <b>(AS PER CPCB GUIDELINE AND NORMS)</b> Type and Model : Fixed Hearth Type Design Standard : Design and construction Guidelines issued by CPCB in August 2003 Type of Waste : Mixed Bio Medical Waste containing up to 85% moisture Burning Capacity : 100 Kgs./Hour mixed waste Designed caloric value of mixed waste 2000 Kcal / Kgs. Auxiliary fuel : HSD+2% SAE40/LDO Type of Burner Operation : Automatic Temperature Primary Chamber : 800°C+/-50°C Secondary Chamber : 1050°C</p> <p><b>B. Primary Chamber</b> Type : Cylindrical – Vertical with static solid hearth Material and thickness: MS plate 5 mm thick Volume : 1.79m<sup>3</sup> Refractory Thickness : 115mm Material : Refractory Bricks IS-8 Temperature Resistance: 1400° C Insulation Thickness: 115mm Material: Insulating Bricks IS-2042</p> <p><b>C. Secondary Chamber</b> Type : Cylindrical – Vertical with static solid hearth static Material and thickness: MS plate 5 mm thick Volume : 1.02m<sup>3</sup> Refractory Thickness : 115mm Material : Refractory Bricks IS-8 Temperature Resistance: 1400° C Insulation Thickness: 115mm Material: Insulating Bricks IS-2042</p> <p><b>Primary chamber &amp; secondary chamber should be placed adjacent to each other.</b></p> <p><b>D-Venturi Scrubber</b> Type : High Energy MOC : 316L Pressure Drop : 350mmWC Temperature : 78°C Scrubbing Media : Water with 5% caustic solution</p> <p><b>E-Droplet Separator &amp; Recirculation Tank (Integral)</b></p>	01	8675000.00	8675000.00

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<p>Type : Cyclonic Separator System  Temperature : 78-80°C  MOC : SS Steel Rubber lined  Application : To separate water droplet from flue gas  Recirculation tank in MSRL construction is integral part of the droplet separator.</p> <p><b>F- I.D. Fan</b>  Type : Centrifugal  MOC : SS steel rubber lined  Capacity : 2800M3 / Hour @ 78°C  Head : 450mm WC  Motor : 12.5 HP</p> <p><b>G – RECIRCULATION PUMP (1 WORKING &amp; 1 STANDBY)</b>  Type : Centrifugal  MOC : SS 316 with piping and valves  Capacity : 6.25M3 / Hour  Motor : 0.5 HP</p> <p><b>H – COMBUSTION AIR FAN</b>  Type : Centrifugal  Modulation : Manual damper control 570M3 / Hour @ 60mm wG  Motor : 0.25 HP</p> <p><b>I – BURNER</b>  No of Burners : 1 fully automatic oil fired pressure jet burner each for primary and secondary chamber  Type : Monoblock, Pressure Atomized  Burner Motor : 0.5 HP  Fuel Pump : Suntek  Fuel : High Speed Diesel / LDO</p> <p><b>J – BUCKET ELEVATOR</b>  Bucket Size : Standard – appropriate size as per design requirement  Motor : 1.5 HP Each</p> <p><b>K – DFDV MECHANISM</b>  Gate / Valve : Inner and outer gate Motorized  Motor : 0.5 HP each  The refractory specification sheet to be attached by bidder and mentioned life of refractory .  Incinerator should be painted externally with two coats of Heat Resistant aluminium paint. Panel is painted with synthetic enamel paint.</p> <p><b>L – Required Electrical Supply</b>  Power : AC415V,50C/S, 3ph, 4 wire  Control : AC230V,50C/s, 1pH</p> <p><b>M – Waste Charging : Automatic Bucket elevator and Double Flap Damper Valve mechanism.</b>  The waste charging shall be done through a Bucket elevator and Double flap damper valve mechanism (DFDV) with both outer gate and inner gate motorized depending upon the temperature inside the chamber.</p>			
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Waste bags are placed inside bucket elevator. Depending upon the temperature inside the chambers, the waste is then charged in to the primary chamber at recommended intervals by a push button which opens and closes the second motorized camper. This Auto Loading DFDV mechanism should prevent leakage of hot flue gas and any backfire. It should also ensure no direct exposure of the operator to the hot furnace condition parts coming in contact with waste of DFDV shall be made of stainless steel.

**N - Online Deashing cum Raking Mechanism:**

Incinerator to necessarily have a suitable Raking cum De ashing mechanism consisting of raking tools, Motorized door and a refractory lined chute. This is an essential feature of the incinerator for raking and removing ash while the unit is in operation. Bidder to elaborate the mechanism and mention how many incinerators with such mechanism are in operation. Dept may like to see at least one Incinerator having such mechanism in operation. Bids for the system without this feature will be liable for rejection.

**O -** The Incinerator system should have PLC based Control Panel with a printer to record the parameters mentioned in CPCB guidelines

**P -** The system should have flow measurement device (Annubar) on the primary and secondary air ducting.

**Q -** The Incinerator should have Air Pollution control device in the form of a high pressure venturi scrubber system as specified in the CPCB guidelines 2003.

**R -** The burners should be suitable for firing Light Diesel oil (LDO) or High Speed diesel (HSD)

**S -** Bidder to offer a portable stack monitoring devices to measure CO, Co2 & O2 after every half an hour as specified in the said guideline.

**T -** The system should necessarily have an emergency vent cum dilution mechanism

**U -** Overhead HDPE Water tank for scrubber along with water piping between tank and scrubber.

**V -** Interconnecting ducting within the battery limits. Instruments, valves, dampers and fittings within battery limits.

**W -** Oil tank of 1000 Ltr. Capacity along with oil piping , valves and strainers between tank and burner.

**X -** Operating tools and tackles like rake, how, shovel, two teeth scrapper.

**Y -** Causting Dosing system comprising of caustic tank and pump.

**Z -** Rubber lining will be 3mm thick Natural hard rubber hving shore D classification  $65 \pm 3$  Deg.

**CHIMNEY SPECIFICATION**

Self supporting Mild steel rubber lined chimney of

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	<p>300 mm top dia and 30 Mtrs height.  Material of construction: Mild steel plate lined internally with 3mm thick natural hard rubber suitable for duty condition.  The Chimney shell be made in 06 pieces having minimum 6mm thickness. These pieces shall be joined by the flanges. The Chimney shall be lined internally with 3 mm thick natural hard rubber and painted externally with two coats o heat resistant aluminium paint (250°C). The chimney shell be complete with the following accessories.  Cage Ladder  Gas Sampling Platform  Gas Sampling Nozzle  Operating Platform (Top Platform)  Painters Trolleys  Aviation Lamp &amp; Assemply with cable  Lighting Arrester with Jumpers  Rain Cowl  Man Hole  Stack Drain  Base Plate and Foundation Bolts.  Required hardware like gasket, Bolts, etc.  Template for the Foundation  The Chimney shall be connected to the incinerator by an interconnecting mild steel rubber lined duct.</p>			
2.	<p><b>BIO MEDICAL WASTE AUTOCLAVE:</b>  <b>(High Pressure and Vacuum Type)</b>  ISO certified 9001 : 2008  Design As per CPCB Norms  Size : 1000 mm x 1000 x 1500mm  Fully computerized controlled, User friendly Alpha-numerical / Graphical /Digital type display and Display of Cycle status Fault/Error Indication with visual alarms.  The normal working pressure will be 1.2 - 2.1 Kg/cm<sup>2</sup> corresponding to temperature 121-134oC.  Sterilize surgical instruments, textiles and hospital utensils.  The Jacket of the sterilizer will be of the channel type for providing additional strength to the chamber and made of Boiler graded steel/Stainless steel.  The Chamber will be constructed of AISI-316 Stainless steel and jacket will be constructed of boiler quality steel.  The structure of the sterilizer will be made of stainless steel and will be adjustable for uneven floor surfaces.  The Chamber and jacket will be insulated with Chloride free mineral wool which will be covered under rigid, removable steel housings.</p>	01	3200000.00	3200000.00

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The Hinged Doors made of AISI-316 Stainless steel will be with automatic door sealing.

The door sealing system will be with Silicon gasket with a stainless steel spring fitted into a groove of the sterilizer chamber.

The Safety features as the Sterilizer operation cannot commence until the door is fully closed, the door cannot be opened until the sterilizing cycle is fully completed and the chamber is effectively vented to atmosphere before the opening mechanism is fully released.

All Steam Piping will be made of stainless steel with TIG welding joints.

**The Bio Medical Waste Autoclave will be equipped with:**

Chamber Drain Temperature Sensor for steam processes

Chamber Pressure Sensor

Temperature sensors will be PT 100 type

Pressure sensors will have software based temperature compensation. Accuracy of 1% over the range 0 to 5 bar.

**Alarm System for:**

Failure of Temperature and pressure sensor

Phase time out

Not properly closing of door

Power failure

Low water level

checking of all safety devices continuously

Both the chamber and the jacket will be equipped with Safety Valves. If the pressure exceeds the allowable limit the safety valves will discharge steam.

The Sterilizer will be equipped with liquid-ring Vacuum Pump to create vacuum for total evacuation of the air from the chamber in the shortest time.

**The Sterilizer will be provided with following mountings & fittings:**

Fully Automatic with pre-selected and variable programs

Self sterilizing vacuum drier.

Safety valve spring loaded and vacuum breaker.

Pressure and compound gauge

Screen plug for chamber discharge line.

Chamber discharge line with team trap and swing check valve.

The operation of the sterilizer will be activated by means of solenoid/pneumatic valve

The Sterilizer will be fitted with Control Panels of Stainless steel construction where discharged steam from the autoclave on opening of the door

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cannot impinge on it. The Control Panel contains the control system and associated circuitry. Each circuit will be protected by a miniature circuit breaker. All electrical components in the control panel will be labelled. All wiring will be insulated and labelled to link with the circuit wiring diagrams and will be resistant to conditions of high humidity and heat, eg. PVC and silicon insulated wires.

**The digital display at front panel will show the following parameters:**

- Chamber Pressure
- Chamber temperature
- Cycle no.
- Batch no.
- Time & Date
- Alarm indicator
- Error code
- Low water indicator

Printer that will monitor and record dates, time of day, load, identification no. and operating parameters i.e. temperature, pressure and residence time automatically and continuously throughout the sterilization cycles

The Sterilizer will have built-in Steam Generator fitted below the sterilizer chamber. The Steam Generator pressure vessel will be made of AISI-316 Stainless steel and will be insulated in 50mm Chlorine free mineral wool enclosed in rigid removable steel sheet housing.

A water level Gauge glass for inspection will be provided with Steam Generator. The unit will be fitted with elements made of Stainless steel.

Electrically heated

3.	<p><b>BIO MEDICAL WASTE MICROWAVE DISINFECTOR:</b></p> <p>Make : Labco  Capacity : 210 Ltr.  ISO certified 9001 : 2008  CE certified  Design As per CPCB Norms</p> <p>Bio Medical Waste Microwave Disinfector Machine is suitable to treat the infectious wastes: moist heat generated by conventional microwaves. The great advantage of microwave technology is that it heats material from the inside out, providing an extraordinarily high level of disinfection. Computer-controlled mechanical and electrical systems ensure the thoroughness and safety of processing.</p>	01	2675000.00	2675000.00
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	<p>An automatic hoist dumps material from the hospital or clinic container into the in-feed hopper at the top of the unit. Before opening, air from this hopper is treated with high-temperature steam, then extracted through high-efficiency HEPA and carbon filters which prevent any potentially harmful airborne emissions from escaping. With computers controlling the entire process, an automatic signal alerts the operator when to feed more waste.</p> <p>Material is fed evenly into a shredder, where even vials, syringes, hypodermic needles, and plastic tubing are thoroughly shredded into small pieces. Shredding ensures that all processed waste receives a uniform application of disinfecting heat. The shredded material is automatically conveyed into the treatment chamber, where each piece is thoroughly moistened with high-temperature steam.</p> <p>The mixture is carried by a screw conveyer beneath a series of conventional microwave generators which uniformly disinfect the waste. Computers maintain proper time and temperature to complete the process. Built-in strip charts record the variables necessary to substantiate disinfection, while continuous digital monitoring ensures that requirements for thorough treatment are exceeded by a wide margin. A lockable access port provides for easy introduction of any state-mandated testing samples.</p> <p>The treated end product is ready for municipal solid waste landfills or waste-to-energy plants. Its volume has been reduced up to 80%.</p>			
<p>4.</p>	<p><b>BIO MEDICAL SHREDDER:</b>                  Make : Labco                  Model No. : LICB-100                  Capacity : 100 Kg                  Hopper Size : 350 x 250 mm                  Maximum rpm : 50                  Capacity of Electric Motor : 7.5 KW, three phase induction motor                  Power : 220-240 Volts. / 440 V</p> <p>The Shredder for Bio-Medical Waste will be of</p>	<p>01</p>	<p>975000.00</p>	<p>975000.00</p>

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	<p>robust design with minimum maintenance required.</p> <p>The Shredder will be properly designed and covered to avoid spillage and dust generation; it will be designed such that it will require minimum manual handling.</p> <p>The hopper and cutting chamber of the shredder will be designed to accommodate the waste bag full of Bio Medical Waste.</p> <p>The Shredder blade will be highly resistant and will be able to shred waste sharps, syringes, scalpels, glass vials, blades, plastics, catheters, broken ampoules, intravenous sets/bottles, blood bags, gloves, bandages etc. It will be able to handle / shred wet waste, especially after microwave / autoclave / hydroclave.</p> <p>The shredder blade will be of non-corrosive and hardened steel.</p> <p>The Shredder will be designed and mounted so as not to generate high noise &amp; vibration.</p> <p>In case of shock-loading (non-shreddable material in the hopper) there will be a mechanism to automatically stop the shredder to avoid any emergency / accident.</p> <p>In case of overload or jamming, the shredder will have mechanism of reverse motion of shaft to avoid any emergency / accident.</p> <p>The Motor will be connected to the shredder shaft through a gear mechanism, to ensure low rpm and safety.</p> <p>The unit will be suitably designed for operator safety, mechanical as well as electrical.</p> <p>The Shredder have low rotational speed (maximum 50 rp-m) this will ensure better gripping and cutting of the bio medical waste.</p> <p>The discharge height (from discharge point to ground level) will be sufficient (minimum 3 feet) to accommodate the containers for collection of shredded material. This would avoid spillage of shredded material.</p> <p>The minimum capacity of the motor attached with the shredder will be 7.5 kw for 100 kg/hr and will be of three phase induction motor. This will ensure efficient cutting of the bio-medical waste as prescribed in the Bio-Medical Waste (Management &amp; Handling) Rules.</p>			
5.	<p><b>BLOOD BAG SHREDDER:</b></p> <p>Make : Labco</p> <p>Model No. : LICB-10</p> <p>Capacity : 10 Kg</p> <p>Maximum rpm : 50</p>	01	590000.00	590000.00

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	The blood bag shredder will be designed to shredding the blood bag and treat the chemical as per cpcb norms. The shredder will be designed to meet the specific needs in processing various types of plastic and rubber medical waste that are generated in the hospital.			
6.	<b>EFFLUENT TREATMENT PLANT:</b> <b>Make : Labco</b> <b>Capacity : 20 KLD</b> <b>3.0. TREATMENT SCHEME</b> The treatment process of STP will consist of four stages. <b>Stage 1: Primary Treatment</b> Bar Screen, Oil & Grease Trap, Collection cum Equalization tank with Aeration System (aeration grid & Air Diffuser and pipeline). <b>Stage 2: Secondary treatment</b> Coagulation and Flocculation unit with Chemical Dosing System & Settling Chamber (Clarifier). <b>Stage 2: Third treatment</b> Aeration Tank complete with aeration grid & Air Diffuser, pipeline and Biological Treatment media, bacteria and Settling Chamber (Clarifier). <b>Stage 3: Tertiary treatment</b> Chlorine Contact Tank, dosing System, Pressure Sand Filter, Activated Carbon Filter. <b>Stage 4: Sludge Treatment</b> Sludge Drying Beds	01	2865000.00	2865000.00
7.	<b>SYRING &amp; NEEDLE DESTROYER:</b> <b>Make - Labco</b> <b>Feature:</b> Body made of M.S. with powder coating. Destroys all sizes of needles. Hardened and ground stainless steel blade cuts syring easily No chance of using needles and syringes Small compact and table top design. Heavy duty tray can store up to 500 needles	50	2500.00	125000.00
8.	<b>JET PRESSURE CLEANER:</b> <b>Make - Labco</b> Electric pressure washer equipment systems are designed with the wide range of PSI and flow rate. They can be used for light, medium and heavy-duty jobs. They are quite and easy to use. Simply attach a water hose, add a detergent and plug it into the electrical outlet. The only limitation is that they can be used	01	158000.00	158000.00

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	<p>where electric power source is available. Nevertheless, since they don't have a gasoline tank you can use them and store them indoors without worrying about the fire hazard. The advantage over other types is that they are very economical to operate and are traditionally less expensive. In our selection you will find from smallest to largest, cold or hot water units.</p> <p><b>Pressure washer electric</b> models are suitable for areas where there is a constant need for cleaning dirty surfaces with necessity for their non-movement positioning. These pressure washer electric units may differ in size 28"x20"x13" and power (1500 PSI. Heavy duty equipment contains a convenient quick change soap tip that can vary in angle allowing you to choose the amount of soap necessary for completing the job. The engines are totally enclosed and can have as much as 3 HP. The STAT models have a four bolt mounting plate underneath the motor and are designed to be mounted on a shelf for permanent installation.</p>			
9.	<p><b>ELECTRONIC BALANCE:</b> The unit will be complete with inbuilt batter, Auto Charging facility, Automatic Voltage Regulator, Sturdy mechanism with overload protection. Specification: Capacity - 60 kg Accuracy - 10 Gm. Plate Form - St. Steel Display - 2 No. Digital Size - 450mm x 450mm</p>	01	35000.00	35000.00
10.	<p><b>WASTE HANDLING RIKSAW: (Tilting Type)</b> The Waste Handling Tilting Type Riksaw will be fully covered with top loading in both side window and unloading door in bac side made of Mild Steel Sheet painted with aqua green paint. A symbol of hazardous as per Central Pollution Control Board will be print in every site of Riksaw. Inner side of waste handling Riksaw will be fully water proof by chemically coated. The Riksaw will be air tight and three wheel drive type.</p>	02	65000.00	130000.00
11.	<p><b>WASTE BIN: (Waste Material Handling)</b></p>	100	3300.00	330000.00

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	Paddle lifting type waste material collection Bin will be made of 1st grade PP in Three colour ( Red, Blue & Yellow). A symbol of hazardous as per Central Pollution Control Board will be print in every bin.  Waste Bin Volume will be: 30 Ltr. (Set of Red, Blue & Yellow) 50 Ltr. (Set of Red, Blue & Yellow) 100 Ltr. (Set of Red, Blue & Yellow)			
12.	WHEEL BARROW:	06	19500.00	117000.00
<b>Total Project Cost</b>				<b>19875000=00</b>

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J.E. (Elect.)

*BBJ*  
A.E. (Elect.)  
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Rates are as per Marking  
& PWD  
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