Section VI. Schedule of Supply
Contents

1.0 List of Goods and Related Services.

Item	Description	Unit	Quantity
1	Tracked Excavator - Model - JCB JS-81 (STD) or equivalent	No.	1
2	Tandem Vibratory Roller-Model-VMT 860 or equivalent	No.	1
3	Skid Steer and Compact Track Loaders- Model- JCB-155 or equivalent	No.	1
4	Water Tanker-6000 Litres Capacity	No.	1
5	Fire Fighting Equipment	No.	6
6	Road Sweeping Machine	No.	1
7	Hydraulic Baling Press	No.	2
8	Open Nala Desilting Machine	No.	1

2.0 Delivery and Completion Schedule

The delivery period shall start from the date of detailed supply order after signing of contract agreement.

Item No.	Description of Goods or Related Services	Delivery Schedule (Duration)	Location	Required Arrival Date of Goods and Completion Date for Related Services
1	Supply, transportation, local handling, delivery, installation and trial run at site with all accessories of vehicles and Equipment complete as above.	i). Twelve **(12)** months Staggered and as per approved delivery Schedule. Wherein the successful bidder shall submit detailed delievery schedule for approval.	Shillong	Within 365 **days from the date of work order;**

3.0 Technical Specifications

3.1 Preamble

The North Eastern Region Capital Cities Development Investment Program (NERCCDIP), financed by Asian Development Bank (ADB), includes a phased scheme for developing the basic infrastructure facilities in Shillong of Meghalaya state. The program includes Development of Solid Waste Management including development of landfill site and sold waste collection in the city area and laying of sewerage collection system and waste treatment facility, for Shillong.

To supplement the solid waste collection system, Government of Meghalaya intends to procure different types of vehicles and equipment under the program for which the present bid document is referring to.

3.2 Scope of Work

The scope of work under this contract package includes:

Design, manufacturing, fabrication, assembling, testing at manufacturing works, delivery, installation, trial run, testing, commissioning and satisfactorily handing over to end user including routine and preventive maintenance for a period of 12 months of Vehicles and equipment of following capacity and quantities, including necessary accessories, local handling, inland transportation, insurance and training of personnel etc complete in all respect.

1. Tracked Excavator - Model - JCB JS-81 (STD) or Equivalent
2. Tandem Vibratory Roller-Model-VMT 860 or Equivalent
3. Skid Steer and Compact Track Loaders – Model -JCB 155 or Equivalent
4. Water Tanker-6000 Litres Capacity
5. Fire Fighting Equipment
6. Road Sweeping Machine
7. Hydraulic Baling Press
8. Open Nala Desilting Machine

3.3 Specifications for Vehicles and Equipment.

3.3.1 Codes and Standards

All requirements of the latest Indian Traffic Rules/Acts and any other statutory rules and regulations in force shall be strictly adhered to.

It shall be responsibility of the bidder to procure the vehicle full filling all the requirement of transportation rule and obtain the insurance as required and compulsory.

It shall be the responsibility of the bidder to obtain necessary approval from the concerned inspecting authority and shall furnish necessary documentation for the same.

It shall be the responsibility of its bidder to obtain vehicle registration from the entire concern department to operate the vehicle.

Vehicles and equipment shall be designed and tested to relevant Indian Standard and /or ISO, American, British or equivalent standard and code of practice.

Successful bidder shall submit the technical data and all the other relevant documents for approval of Employer, before procurement.

For all the equipment list of mandatory spare parts shall be provided and shall provide two sets of all the mandatory spare parts.

3.3.2 General Parameters

The intended vehicles and equipment shall be of approved make conforming to the requirements of relevant IS/BS. General requirement are specified in subsequent section.

3.3.3 Track Excavator – Model-JCB JS-81(STD) or Equivalent

- 76-HP Engine, Track length on ground 2200mm.
- Excavator bucket capacity 0.32 cum.
- Undercarriage overall length 2830, Counter weight clearance 767mm
- Tail swing radius 1580mm, overall width of super structure 2220mm.
- Height over cab 2625mm, Track Gauge 1700mm.
- Track 2150mm, width 450mm shoes, Standard boom 5465mm.
- Dozer Blade width (Backfill) 2320mm

The above are the general requirements and the bidder shall give his own design, specifications and other technical details at the time of submission of offer.

Successful bidder shall submit the technical data and all the other relevant documents for approval of Employer, before procurement / fabrication.

3.3.4 Tandem Vibratory Roller - Model - VMT 860 or Equivalent.

- Equipped with Duel Drum vibration, roof frequencies/ amplitudes
- Front / Rear Drums and open operators platform
- Should be mínimum BS III standards
- 85HP Engine, Duel Drum Drive or Equivalent

- Drum Diameter 1220mm

Engine

- Make : JCB or Equivalent
- Model : Dieselmax (BSIII confirm to CMVR norms) or Equivalent.
- Piston displacement cum (in^3) : 4399(268)
- Performance-DIN6271 KW(hp) : 63(85)
- Operating Speed Min[4] (rpm) : 2200(2200)
- Starting device :Electric Motor
- Air Cleaner : Dry Cartridge plus Safety Cartridge
- Fuel Filter : Cartridge

Propulsion

- Hydrostatic with variable displacement pump and fixed displacement motors with direct drive to both drums-double drum drive.

Exciter Drive

- Electrically controlled hydrostatic direct drive on both drums for double vibration or single vibration front or rear.

Exciter

- Single – shaft circular exciter with over turning weights.

Steering System

Servo-assisted maintenance free centre articulation with oscillation facility.

- Operator Seat : Two adjustable seats can rotate at clock and anti-clock wise.
- Roof : Canopy with structure to protect operator from rain and sunlight.
- Lift Pump : Pump for water refilling of front and rear tank.

Service capacity

- Fuel litres : 240
- Hydraulic Oil litres :85
- Sprinkler water, front/rear litres :535/535

Braking System

- Service Brake : Hydrostatic Propulsion System
- Parking Brake : Hydraulically Released brake on both drums (SAHR).

Electrical system

- Voltage V :12
- Battery Capacity Ah :130
- Alternator (Current carrying capacity) A : Max 95.

Indicator and Gauges

- Fuel, Battery Charging Current Sprinkler System, Parking Break, Hour Meter, Engine Oil Pressure, Water in Fuel, Air Filter Condition, Hydraulic Oil Level and Temperature, Hydraulic Oil Filter Condition, Water Level Indicator, Engine Temperature, Driver Lever Neutral Position and Engine RPM.

Standard Equipment

- Vibration isolated, Spacious, ergonomic and comfortable driver stand with two seats, one central drive level and swivelling steering wheel, sunroof, road lights, works lights, backup alarm and vandalism kit.

Optional Equipment

- ROPS (Standard at CE), Cab with ROPS, FOPS. Edge cutter.

The above are the general requirements and the bidder shall give his own design, specifications and other technical details at the time of submission of offer.

Successful bidder shall submit the technical data and all the other relevant documents for approval of Employer, before procurement/fabrication.

3.3.5 Skid Steer and Compact Track Loaders – Model - JCB 155 or Equivalent.

- 0.40 cum loader Bucket
- Power by 4 cylinder, 4 stroke, diesel engine, indirect injection
- 170 is naturally aspirated - 2.2 litres displacement water cooled
- 50HP engine 35.50 Kw, Gross power @ 2800rpm (SAEJ1995),
- Payload 703 Kg.

Hydraulic Performance

R.O.C	lb(kg):	1550(703)
Tipping Load	lb(kg):	3100(1406)
Loader Lift	lb(kg):	3902(1770)
Bucket Tilt	lb(kg):	4012(1820)

Hydraulic

In addition to the main hydrostatic pump, there is a dedicated loader and attachment supply pump (auxiliary hydraulic circuit standard on all base models), high flow is optional on all models except the 135.

Pump Flow :18.5 grm (70lpm) at 2800rpm engine speed
Main relief pressure 3335 psi (230bar)
HYD HP low flow (36.0)
HYD HP high flow (51.4)

- Low lever efforts give excellent and easy control of transmission loader and attachment
- Auxiliary hydraulic are actuated via the right hand controller given progressive control of oil flow precise attachment control (left hand controller location on optional 7 way multifunction joysticks.
- Loader arm hydraulic lines under protective steel guard on powerboom.
- Canister Style, full flow, hydraulic oil filter.
- Engine oil for engine and chain case

- Hydraulic oil
- The optional high flow circuit provides 26.4gal/min (100 litres/min) pump flow to the front of the machine for operation of high capacity attachment such as trenches and cold planers.
- Separate hydraulic pump for transmission charges and hydraulic fan

Capacities		: gal (l)
Hydraulic system (including tank)		: 11.1(42)
Fuel tank		: 25.9(98)
Engine coolant		: 4.0(15)
Engine oil		: 2.6(10)
LH chaincase (wheeled machine only)		: 2.0 (7.6)
RH chaincase (Wheeled machine only)		: 2.0(7.6)
ENGINE		
Model		: Perkins 404D-22T or Equivalent
Displacement	in3	:134(2200)
Fuel		: Diesel
Cooling		: Liquid
Aspiration		: Turbo Charged
Gross Power @ 2800rpm		
SAE J1995	HP(kw)	: 59.9(44.7)
Gross Torque@1200rpm		
SAE J1995	b/ft(Nm)	: 139(189)
Starter Motor	hp(kw)	: 2.72(2)
Battery	V/Ah	: 12/101
Alternator	amps	: 85
Emission Certification		: EPA-T4i (EU-St3B)
Engine Oil Service Interval Hours		: 500
Variable Speed Hydraulically Driven fan		: YES.

Transmission

A full servo controlled hydrostatic transmission giving zero to maximum speed, both forward and reverse at full power, independent transmission systems for both left and right side, controlled through servo controls for both precise and easy operation. Transmission power system maintains full engine power availability maximizing loader and attachment control. Creep speed is standard on all machines, for precise control when operating attachments.

Travel speed

Single speed mph (km/h) : 7.5 (12.0)

Two speed mph (km/h)/ mph (km/h) : 5.6(9)/11.5(18.5)

Tires : Standard -10X15.6X10 Standard Track Flotation

Tracks :12.6 in (320mm) traction lug

SEA operating weight : Full operational with quickhitch, standard shovel, full

fuel tank, open canopy+165 lb (75kg) operator.

: 6270lb (2844 kg)

Lighting and Electrics

: 12V, negative ground system

: 1000 cold cranking amps (CA) battery

: 85 amp alternator

: Cab mounted instrument panel with ignition, fuel gauge, hour meter and electronic throttle

Also incorporated into the instrument panel, is a warning light duster which also audible alarms for:

: Low charge pressure

: Engine water temperature

: Hydraulic oil pressure

: Blocked air filter

: Engine oil pressure

: Alternator

Standard Equipment

Isolation mounted canopy, ROPS and FOPS, Full audible and visual warning system. Restraint activated safety system. Loader arm safety strut. Centrifugal dry type engine air filter with safety element. Mechanical quickhitch electronic hand throttle. Two front and one rear work light. Emergency lower valve, Fuel gauge, Hydraulic park brake, standard flow auxiliary hydraulic. Three way joysticks. Rear service access door. Tilting screen guard, Tilting cab, Mechanical suspension seat, Pod storage area, Cup holder, Power socket, Rear view mirror, interior light, Battery isolator, Creep speed.

The above are the general requirements and the bidder shall give his own design, specifications and other technical details at the time of submission of offer.

Successful bidder shall submit the technical data and all the other relevant documents for approval of Employer, before procurement/fabrication.

3.3.6 Water Tanker-6000 litres capacity

Chassis- TATA SFC 709 or equivalent

- ENGINE :TATA 497 Turbo Intercooled (BS III) or Equivalent
- Maximum Engine Output :125 Ps @ 2400 rpm
- Maximum Torque :400 Nm @ 1300-1500 rpm
- Clutch : Single plate dry friction type, 310 mm dia.
- Gear Box :GBS40 Synchromesh, 5F, 1R or Equivalent
- Brakes :Dual circuit full air S-cam brake
- Suspension :Leaf spring at Front and Rear
- Shock Absorbers :Hydraulic double acting telescopic type at front and rear
- Tyres :7.50x16, 16PR (Ply Rating)
- Minimum Turning Circle Dia. (m) :13.5
- Wheel Base (mm) :3800
- Maximum permissible GVW (kgs) :7490

<u>Specifications (for Rear Body) Water Tanker</u>

Capacity : 6000 litres.

Shape : Elliptical

Tank : Will be elliptical in cross section of 5.00mm mildsteel plate and electrically welded throughout. Machine pressed dished ends.

Dimensions : 3560 mm x 1770 mm x 1220 mm (Approximately)

Baffles	: Adequate transverse baffles will be fitted
Material	: 5 mm thick mild steel plate.
Manhole	: One 530 mm diameter manhole with aquick release hinged screw type clamped lid and situated at the highest point of the tank. Rubber seal in the form of a rubber ring which is to be secured to manhole flange.
Outlet	: 75mm outlet at the lowest end of tank.
Overflow & Air Inlet	: At the highest end of the tank for access to the manhole.
Ladder	: A tubular ladder will be fitted to the tank for access to the manhole.
Valve Arrangement	: Fill tank from reservoir.
	: Empty tank with direct outlet.
	: Pump and fill other tanks.
	: Bypass water through pump to tank.
Hose Bracket	: Hose brackets for one 6 meter armoured suction hose that will besupplied with the tank and a 75mm foot valve fitted to suction hose.
Cradle Mounting	: The tank will be mounted on a continuous sub frame with rubbermounted cradle mountings to petrol tanker regulations for heavy duty off road conditions.
Longitudinal Mounting	: The tank will be mounted on two longitudinal runners and the whole unit 'U' bolted to the chassis with balata belting between the chassis and the runners. The tank will have 75mm fall to the rear for easy and complete discharge.
Interior of Tank	: Will be cleaned with dioxidine, then painted with two coats of anti-corrosive bitumenastic paint.
Exterior of Tank	: Will be thoroughly ground and sanded in preparation for

painting, followed by zinc chromate primer and finished off with two coats of synthetic enamel.

Mudguards : Mudguards will be fitted over the rear wheels of the chassis.

Pressure Relief Valve : As an extra.

Pumping Arrangement : 8.00 HP pump set shall be provided at rear end of the tanker for filling the water.

The above are the general requirements and the bidder shall give his own design, specifications and other technical details at the time of submission of offer.

Successful bidder shall submit the technical data and all the other relevant documents for approval of Employer, before procurement/fabrication.

Note- One such water tanker is available at SMB office (vehicle no. ML05F 4768) for guidance. The bidders are requested to inspect the same before quoting.

3.3.7 Fire Extinguisher

- Type- CO2 Type, Trolley Mounted
- Capacity- 22.5 kgs.

General-conforming to IS2878 made from seamless cylinder conforming to IS 7285 dully approved by chief controller of Explosive, Nagpur, fitted with ISI marked controlled valve conforming to IS 3224, high pressure 5 mtr. Long discharge hose and horn complete with initial gas charged mounted on trolley wheels.

Other Details

IS specification No : 2878

Capacity : 22.5 kgs

Testing Pressure : 335 Kgf/cm2

Working Pressure : 140 Kgf/cm2

Approximate Jet Range : 2.5 to 3.0 m

Minimum % of discharge : 97

Temperature Range (0 C)	:0- 55 degrees
Empty Weight in kgs. (approx.)	: 42-46.5
Full weight in kgs. (approx.)	: 64.5-69
Valve	: Brass Forged IS 3224
Body Material	: ISI Mark (ISI: 7285)

The above are the general requirements and the bidder shall give his own design, specifications and other technical details at the time of submission of offer.

Successful bidder shall submit the technical data and all the other relevant documents for approval of Employer, before procurement/fabrication.

3.3.8 Road Sweeping Machine.

- Type-self propelled, Diesel Engine Operated Model TPS VACSWEEP 3D (or equivalent) suitable for sweeping of Municipal Small Roads, parking and paved areas.
- The machine shall be a self propelled unit and shall be provided with an Auxiliary Diesel Engine. The hydrostatic drive system shall give the vehicle a travel speed of 20 Km/hr.
- The machine shall be compact and suitable for small, narrow and steep hilly area roads.
- The machine shall have a container capacity of 800 litres. And sweeping width of 2000mm
- The machine shall have easy movement in restricted spaces.

Sr.No.	Item	Description
1	Application	Cleaning of Municipal and Industrial Plant roads, Parking areas and other paved areas.
2	Type	Ride on
3	Engine	
3.1	Power	70H.P.
3.2	Number of Cylinders	4
3.3	Engine cooling	Water cooled
3.4	Battery	12V, 100 Ah
4	Frame	

Sr.No.	Item	Description
4.1	Material of Construction	High tensile steel
5	Sweeping System	One main brush with two side brushes
5.1	Main Broom	Diameter 400mm, Length 1270mm, Quantity 1 No.
5.2	Side Brushes	Diameter 600mm, Quantity 2 Nos.
5.3	Cleaning width Main Broom and Two Side Brushes	2000mm, with main Broom and Two side Brushes
5.4	Operation of Brushes	Through individual Hydraulic motors using power from Hydraulic pump. All the Brush operations are controlled from the Driver's Cabin.
5.5	Sweeping Speed	0-10 km/Hr.
6	Drive System	
6.1	Drive of Sweeping machine	Hydraulic Motor
6.2	Tipping	Hydraulic
7	Hopper	
7.1	Volume	800 Ltrs.
7.2	Dumping Height	1650mm
7.3	Tipping Operation	Hydraulic Actuated Discharged door locking/unlocking, door lifting/ lowering and tipping
8	Suction System	
8.1	Fan Centrifugal	Centrifugal Blower
9	Dust Control System	The air borne dust in the dust hopper is sucked through a blower and is filtered through the bag filter system and clean air is exhausted in to the atmosphere.
9.1	Filter Type	Imported Pleated Fabric filter.
9.2	Filter Cleaning	Reverse compressed air jet purging
10	Indicators in Panel	
10.1	Engine Oil Pressure	Provided
10.2	Engine Cooling Liquid Temperature	Provided
10.3	Fuel Gauge	Provided
10.4	Operating Hour meter	Provided
11	Painting	Automotive paint
12	Cabin	An All weather Driver's Cabin with Excellent Operator visibility. Air conditioning available as an optional cost

Sr.No.	Item	Description
13	Steering	Rear Wheel Steered hydraulically
14	Braking System	
14.1	Main Brakes	Front Wheel:- Hydraulic actuated Braking Shoe on Brake Drum Rear Wheel: - Hydrostatic Braking.
14.2	Parking Brakes	Provided
15	Overall Dimensions	
15.1	Length	3100mm
15.2	Width	2000mm
15.3	Weight	3600 kg
16	Salient Features	
		(1) Machine capable to undertake dry sweeping without necessity to spray water as pleated fabric bag filters (meeting PM -10 norms) are provided with continuous cleaning arrangement in machine. (2) Machine Powered with an Indian diesel engine, and incorporating latest international –electro hydraulic system,. (3) Mechanical sweeping by Brushes (4) Rugged machine, Specially designed for high ambient temperature and heavy dust loads prevalent in India.

The above are the general requirements and the bidder shall give his own design, specifications and other technical details at the time of submission of offer.

Successful bidder shall submit the technical data and all the other relevant documents for approval of Employer, before procurement/fabrication.

3.3.9 Hydraulic Baling Press

Parameters	Dimensional Units	Dimensions/Values
Bale Size	l x w x h	3’ x 1.75’ x 1.5’
Bale Weight	Kg	40 - 50
Production Capacity***	bales / hour	5 - 8
Main Press Cylinders Tonnage	Tons	35
Cylinder – Main	mm	150Ø x 90Ø x 1400 – 1 no
Pressure	bar	199

Bale Removal Door – Close & Open		Manual – cam operated
Electric Motor	HP	5
Oil tank	l	150

The above are the general requirements and the bidder shall give his own design, specifications and other technical details at the time of submission of offer.

Successful bidder shall submit the technical data and all the other relevant documents for approval of Employer, before procurement/fabrication.

3.3.10 Open Nala Desilting Machine.

The open nala desilting machine has the following main components:

a) Trailer Chasis Tipper Body

b) Hydraulically/operated de-silting equipment,

c) Controls, and

d) Hydraulic Power Transmission system and Drive

Construction Details

Construction:	Fully electrically welded, M.S Fabricated, with heat treated alloy steel pins.
Bucket Volume	30Kg/0.03 cum
Maximum outreach	3.3 mtrs
Maximum operating depth below ground level	Upto 1.5mtrs
Slewing Angle	100 º
Stabilizer Units	1 no hydraulically operated, on one side, at tow bar and a suitable counter/ weight on side opposite to that of the hydraulic stabilizer.

The Complete equipment will be mounted on a Tractor Towed Trailer Chasis which will be capable of being towed by a Tractor having a minimum output rating of 35HP.

a) Trailer Chasis

The un-sprung suspension, trailer chassis will be manufacture from ISMC sections of 100X50mm, and 75X40mm and will be of an electrically welded construction.

The tow bar will be all electrically welded, and fabricated out of two ISMC box sections. An all forged, spring loaded steel tow eye, and a retractable stand will be fitted on the tow bar.

Construction Features 1. Single axle, un-sprung suspension.

	2. Wide will base and a low centre of gravity to ensure optimum dynamic road stability.
	3. Provided with two internally expanding type hand operated parking brakes.
Technical Data	
Length	2440mm (approx.)
Width	1830mm (approx)
Height	450mm
Tyre size	7.50X16X2 nos.
b)Tipper Body	
Configuration	All Steel Welded , Box Type (Open Top)
Panel thickness	
Bottom	3.0 mm
Sides	1.6 mm
Rear	1.6 mm
Tipping Angle	40º Approximate

Hydraulic Operated Desilting Equipment

The basic components are:

- The Boom
- The Dipper stick, and
- The Bucket

The boom, dipper stick and the bucket are of an all electrically welded construction and are fabricated from structural steel plate confirming IS 2062 'A' standards. The bucket comes fitted with hardened teeth to facilitate excavation of dried and harden silt.

The whole configuration articulates over suitably size hardened and ground hinge pins manufactured alloy steel. The structure is mounted on a turret, which allows for its slewing through an angle of approximately of 100º. The complete unit is further fitted on a suitable dimensioned telescopic type lateral side arm of a robust design, and is on the left hand side of the vehicle. The side arm is capable of being extended by 600mm outside the width of the chassis.

Operation of the boom, Dipper stick, Bucket and Turret, independent of one another and are affected hydraulically using a configuration having suitably design double acting cylinders.

Controls

All control liver to engage and disengage the hydraulic power plant as also the hydraulic direction control valves are housed commonly and in a convenient position in the Control Cabin.

Hydraulic Power Transmission System and Drive

A hydraulic pump of adequate capacity to meet the operational requirements of the complete system shall be provided with the equipment.

Drive to the hydraulic pump will be tapped from the tractor PTO which will drive the tow-bar tow bar mounted hydraulic pump through a specially designed articulating type shafting arrangement. Engaging and disengaging of the PTO shall be from the Tractor's Control Cabin.

The hydraulic system will be a combination of high- pressure seamless pipes and flexible hoses, to facilitate easy field replacement/ repairs.

System's Details

Make	Dowty or equivalent
Type	Gear pump
Flow at Rated speed	Minimum 27 LpM
Pressure	150 bar
Return line filter	25 Microns
Suction Filter	125 Microns
Total nos. of cylinders	5 Nos. inclusive of 1 no. Stabilizer cylinder

Painting and Surface Finish

The equipment will be thoroughly sanded and spray –painted with two coats of superior quality, anti-corrosive primer and two coats of enamel metal paint of a reputed make.

The colour shade will be that of the customer's choice.

The above are the general requirements and the bidder shall give his own design, specifications and other technical details at the time of submission of offer.

Successful bidder shall submit the technical data and all the other relevant documents for approval of Employer, before procurement/fabrication.

4.0 Operation and Maintenance Manual

The supplier before commissioning of procured goods under this contract shall submit 6 (six) copies of the operation and maintenance manual of each good supplied under the contract in English language, containing descriptions, illustrations, sketches, drawings, sectional drawings, sectional arrangement view and manufacturers' parts numbers to enable the connections, functions, operation and maintenance of all components of the equipment to be easily followed and for all parts to be easily identified to facilitate ordering of the replacement parts. Exploded views where appropriate shall be used for clarity.

The operation manual shall also include the following:

- Technical data of each good and their performance.
- Instructions for servicing and overhauling.
- Particulars of lubricating oil and grease to be used, also alternative indigenous commercial lubricating oils suitable for use.
- List of tools mounted on wall panels.
- List of spares.
- List of the photographs of the equipment as fabricated by the manufacturer.

5.0 Guarantee

The Supplier shall guarantee all goods supplied under the Contract to be suitable for the application for which it is designed, and against defects due to manufacture or poor workmanship for a period of minimum **12 months** from the date of commissioning. The Supplier shall be responsible to rectify and replace free of cost the whole equipment or parts thereof which may be found defective during this period, and to ensure the proper working of the equipment during the guarantee period in accordance with Clause 28 of General Conditions of Contract and clarification in Special Conditions of Contract.

6.0 Quality assurance system to be followed at manufacturer's works

Successful Bidder shall furnish detailed Quality Assurance Programme and Quality Plan for all materials and accessories to be supplied and installed under the scope of work. The Quality Plans shall include all tasks /checks as per the relevant Standards and the requirements of this specification.

The Supplier shall ensure that the manufacturer must have a proper setup and independent procedure in quality control with adequate equipment, facilities and personnel for this purpose to ensure quality control from procurement of materials and selection of sub-suppliers to incoming inspection, stage inspection and final inspection.

The Supplier shall further ensure that the equipment ordered are subject to check at any time by purchaser's representative or by representative of inspecting authority deputed by the purchaser. Proper written record of quality assurance system must, therefore, be kept by the manufacturer which would be subject to checking.

6.1 Manufacturer's Test Certificate:

Manufacturer's test certificate including Material test certificates should be submitted by the Supplier to the Employer.

7.0 Testing by Third Party Agency

Any agency among the agencies appointed or authorized by the Employer may undertake independent third party inspections and testing during the manufacture or assembly of the equipment as may be applicable. Prior to commencement of the works the Engineer, in consultation with the Employer, shall inform the supplier of the name of the firm(s) who will be authorized to conduct independent Third Party inspections on the employer's behalf. The Contractor shall be wholly responsible to make his own arrangements with the approved third party inspection agencies for carrying out the required tests. The Contractor shall be responsible to obtain permission for and provide all facilities to such agency for carrying out such inspections or testing as may be required. The Third Party Inspection charges of the agency only will be paid by the employer and all the other costs for such independent inspection and testing shall be borne by the contractor.

A quality assurance plan will be developed which provides for inspection and certification by the third party inspection agency at specified times during the manufacture and fabrication of such items. Third party inspection agency's charges will initially be paid by the contractor which shall be reimbursed by the Employer. Bidder shall make necessary arrangements for third party inspections at manufacturers site and cost (other than inspection agency's fees) towards such arrangements shall be borne by the bidder and will not be reimbursed by the employer.

8.0 Rejection

The Employer or Employer's representative reserves the right to reject any good under this contract if the same does not meet the specifications, requirements, subject to tolerances. The

rejected good under this contract shall be replaced by good under this contract complying with the requirements of the specification at the bidder's cost. If the commissioning of the project is likely to be delayed by the rejection good, the Employer's Representative reserves the right to accept the rejected good under this contract until the replacement good under this contract is made available. Transporting the rejected and replacement of good as well as installation and commissioning of both the good shall be at the bidder's cost.

9.0 Trial Run & Maintenance of the Equipment & Training Employer's Personnel

After testing and commissioning of each good supplied under this contract at site, the bidder shall run the equipment for at least 8 hours at full load to demonstrate satisfactory performance to the Engineer in charge prior to taking over by the employer and train the employer's personnel for running independently in the future. The cost towards bidder's engineer and other operating personnel during the said period of trial run, along with cost of fuel, lubrication, tools and spare parts which are required for operation of the equipment during the trial run period, shall be borne by the bidder. In the event that the good supplied under this contract does not satisfactorily achieve the required performance standards during this period, the trial run period shall be extended until such time as the bidder has rectified any deficiencies as may be necessary to satisfy the performance requirements. No additional compensation will be paid to the bidder for such extension.

The contractor has to carry out routine and preventive maintenance as per manufacturer's standards for a period of **12 months** from the date of handing over. However, all consumables (fuel / lube oil etc.) and spare parts including filters will be supplied by the department.

10.0 Approval of Drawing

The supplier will prepare and submit the GA and fabrication drawings of all the goods to be supplied under this contract before commencement of fabrication and procurement. The drawings will be reviewed and commented/ approved by the employer. Supplier will fabricate as per approved drawings.

All the technical data specifications of all the goods to be supplied under this contract shall be submitted by the successful Bidder for approval prior to procurement.