PART-II TECHNICAL SPECIFICATION:

IRRIGATION SYSTEM FOR HORTICULTURE & ARBORI CULTURE ALONG VERTICAL SPINE ROAD IN NON SEZ ZONES AT MAHINDRA WORLD CITY – JAIPUR

Description of work:-.

Mahindra World city have developed a Multiproduct SEZ and Non SEZ Zones at Jaipur. This has a total area of about 3000 acre comprising of Industrial commercial, amenities, Residential & allied services. To irrigate &supply water to such of the area, a water supply distribution network has been laid. The source of water supply is grey water sourced from tertiary treated domestic/industrial waste water. This water is proposed to be used for irrigation in addition to other non-domestic uses in the complex. This grey water is being pumped from centrally located underground storage tank in the complex.

1. Area to be irrigated

Scope of Work: Refer Scope of Works as mentioned in Part-I Bid Document.

Services to be provided: Refer Scope of Works given under Special Condition of Contract.

2. Specific requirement:-

This may be noted that all the road network has already been constructed. The following points and considerations shall be taken in view while planning, design & implementation of irrigation system:

(i) To lay pipelines for supplying Water to sprinkler & dripping, no road crossing & cuttings shall be allowed without approval from MWCJ. The branch pipeline to supply water to dripping & sprinkler shall therefore be limited to each road junction to junction.

(ii) The minimum residual pressure available in grey water distribution networks any that at any time is anticipated to the above 1.5 to 2.0 kg/cm^2. The length & diameter of branch pipe to feed sprinkler & dripper shall therefore be designed keeping in view the above residual pressure at the tapping point.

(iii) Though the distribution network & pumping system have been designed to supply water for 8 hours a day to cater grey water demand of all the users, inclusive of horticulture demand. The irrigation system may however be designed considering availability of grey water in distribution network beyond 8 hrs/day exclusive ly for irrigation to attain a higher residual pressure in the network, the layout plan of the distribution network & details of the pumping set installed in the pump hour are enclosed herewith for information & guidelines of the tenderer.

(iv) Considering availability of residual pressure of 2 kg/cm^2 in the network, Module of branch pipe line for sprinkler/ dripper for road junction distance of 250 m, 500 m &1000 m based on the following criteria are also attached herewith for information of the tenderer.

(a) Flow requirement emitting devices

(i) Pop up Sprinkler – flow 0.7m^3/hr at radius of 2 to 4 m.

(ii) Drip line - flow 0.007m^3/meter

(b) Precipitation rate during summer.

(i) For lawn area - 6.5mm /day

(ii) For shrub area - 4.0 mm/ day

The Tenderer may however indicate their own design criteria for the above & suggest the modular length & diameter of branch line considering the residual pressure as indicated above.

(4) Material Specification:-

The material, appliances & equipment recommended for irrigation system along with the brief specification are described herewith. The tenderees are however at liberty to suggest their alternative material & specification thereof.

(i) **Pipes: -**Pipes shall be -PVC, class 3 (6kg/cm^2) , Socket & spigot joints with elastrometric sealing ring or solvent cement jointing confirm to BIS 4985.

(ii) **Drip Pipes:** This shall be of low densely poly ethylene & installed with dripper as-per the manufacturing specification.

(iii) **Filter: -**Filler to be installed near tapping point shall be off hydro cyclone type with the all requisite accessories to handle required flow on as per the manufacturer design.

(iv) **Control Valve: -**This shall be off ball type or FRP with PVC ball &installed in prefabricated PVC or FRP valve box of suitable size.

(v) **Pop up Sprinkler:-** This shall be PGP make TURO (USA) make in from manufacture of repute. This shall be installed on ½ or 3/4 riser pipe with swing joint of height of 300 to 450 cm. The Sprinkler nozzle shall be of standard type.

(vi) **Serving saddle:-** At the tapping point & fixture location service saddle of required size shall be provided. This shall be of PVC manufacturer.

(vii) **Flush Valve:-** This shall be provided at terminal end of branch line to flush the pipe occasionally. This shall be gate valve type made of PVC.

(viii) **Fittings & accessories:-** All Other fittings& accessories required to install & operate the system satisfactorily as per manufacturer specifications & requirement shall be included & provided by the tenderer along with specification details.

(5) Execution of work:-

(i) The work shall be executed to the specification as per standard practice or manufacturer instruction if indicated any thereof to the entire satisfaction of Engineer in charge.

(ii) Pipe line where laid underground shall be provided a minimum depth of 600 mm below average ground level.

(iii) Drip pipeline in the shrub area shall be provided over ground generally straight except around tree where it shall be U looped.

(iv) Control valve in prefabricated boxes shall be provided at lapping points.

(v) Joints of PVC Pipe with LLDPE drip line shall be executed as per the manufacturer's standard practice.

(vi) Wherever the crossing of road is unavailable, the same shall be carried out by thrust bearing etc to the prior approval of Engineer in charge.

(6) Testing & Commissioning:-

The contractor after execution of the total system shall test the system for required test pressure & check that there is no leakage through joints & fillings. After successful

testing or commissioning of the system the contractor shall operate and maintain the whole system for a period of 24 months. Thereafter he shall handover all manufactures guarantee in original along with performance guarantee for a period of 24 months from the date of handling over of the system after successful operation of the system.

(7) Automation of irrigation system (optional):-

The irrigation system described above based on manual operation, where in this total area of the complex as divided into a number of segments. Water supplied to feed this various segments is controlled manually such a way that optimal residual pressure is maintained as required to maintain proper water distribution to each segments.

Thus objective of the automatic controlled can be achieved by installing PLC System for operation of pumping system &control valve in such a way this each segments can be supplied water in a sequence to optimize the maximum no. of segments irrigated at a line. The tenderer are therefore advised to suggest the automatic control system along with the options/equipments required to be installed over & above the manual operations

NOTE: Contractors shall take approval of all material before commencement of work at site.