



ABSTRACT

Schemes – State Schemes – Announcement by the Hon'ble Minister for Municipal Administration, Rural Development – Installation of 100 Reverse Osmosis Plants in the Coastal areas and other required areas – Orders issued - Guidelines with technical specifications – Issued.

RURAL DEVELOPMENT AND PANCHAYAT RAJ (SGS-III) DEPARTMENT

G.O.(Ms) No.01

Dated: 06.01.2017

Read :

1. G.O.(Ms) No.13, Rural Development and Panchayat Raj (SGS-III) Department, dated 29.01.2016.
2. Director of Rural Development and Panchayat Raj, Letter No.67627/2015/PRI-3-2, dated 17.02.2016 and 25.08.2016.

ORDER :

In the Government order first read above, orders have been issued for installation of 100 Reverse Osmosis Plants in the coastal areas and other required areas. In this order, it has been stated that the guidelines for selection of Villages / habitations will be issued separately.

2. In the letter second read above, the Director of Rural Development and Panchayat Raj has sent the Draft guidelines along with Technical specification for selection of villages / habitations and installation of 100 Reverse Osmosis Plants in the Coastal areas and other required areas. Further, he has stated that, in the Government Order first read above, six Reverse Osmosis Plants has been allotted to Tirunelveli District and the administrative sanction has also been accorded for the project of "Providing Combined Water Supply to Koodankulam and 12 other Villages with river Thamirabarani as source" at an estimate cost of Rs. 68.10 crore under KKNPP-NDP. The project covers 62 Habitations of Radhapuram Block and 38 Habitations of Valliyur Block. All the coastal Villages in the district have been covered in this project and water supply has sufficient to these habitations on completion of the project. Hence, the Director of Rural Development and Panchayat Raj has requested the Government to exempt the Tirunelveli District from this scheme and reallocate the 6 Reverse Osmosis Plants to Dharmapuri District which has already been allotted to Tirunelveli District and also to approve the draft guidelines with technical specification for selection of Villages / habitations for installing Reverse Osmosis plants.

(p.t.o)

3. The Government after careful examination, has accepted the proposal of the Director of Rural Development and Panchayat Raj in principle and approved the guidelines with technical specification for selection of Villages / habitations for installing Reverse Osmosis Plants in the Coastal areas and other required areas and also to re-allocate the 6 Reverse Osmosis Plants to Dharmapuri District instead of Tirunelveli District which has already been allotted to that District in the order first read above.

4. The detailed guidelines and Technical specification for the implementation of the scheme are annexed this order.

5. This order issues with the concurrence of Finance Department, vide its U.O.No.69051/ Finance (RD)/2016, dated 05.01.2017.

(BY ORDER OF THE GOVERNOR)

HANS RAJ VERMA,
PRINCIPAL SECRETARY TO GOVERNMENT.

To
The Director of Rural Development and Panchayat Raj,
Chennai-15.

Copy to:

The Senior Personal Assistant to the Hon'ble Minister for Municipal Administration,
Rural Development and Implementation of Special Programme, Chennai-9.
Finance (RD/FC-IV) Department, Chennai-9.
SF/SC

//FORWARDED BY ORDER//

S. Vijayan
SECTION OFFICER.



Annexure - I

(G.O.(Ms) No.01, RD&PR (SGS-III) Dept., dated 06.01.2017) Guidelines for installation of 100 Reverse Osmosis Plants in the coastal areas and other required areas

1. Introduction:

Hon'ble Minister for Municipal Administration, Rural Development and Panchayat Raj, Law, Courts and Prisons had announced in the floor of the Legislative Assembly that 100 Reverse Osmosis plants will be installed in the coastal Districts and other required areas at a cost of Rs. 7.00 crore.

As per section 110 of the Tamil Nadu Panchayats Act, 1994, one of the basic and statutory duties of Village Panchayats is the provision of drinking water supply in rural areas. Though Hand pumps and Power pumps are used as major sources of water supply by Village Panchayats, there are still some areas where water quality is of concern. In order to mitigate water quality issues, local bodies are using Reverse Osmosis plants as reliable systems. During the past four years, many Reverse Osmosis plants have been installed by Panchayats to supply potable water to the rural areas in Tamil Nadu.

2. Advantages of Reverse Osmosis Plants:

- i) Reverse osmosis (RO) technology remove larger particles from drinking water
- ii) RO Plants reduces salty/brackish nature of water and make it potable.
- iii) Some of the diseases which are caused due to high mineral content in drinking water can be avoided.
- iv) Improve access to quality drinking water

3. Allocation for the year 2015-16:

During the year 2015-16, 100 Reverse Osmosis plants will be installed at the approximate estimate cost of Rs.7.00 crore.

4. Allotment to Village Panchayats:

The District Collector should identify the Village Panchayats and habitations based on the need and criteria given in para 6 . The District Collector must ensure that the installation of Reverse Osmosis plants is essential.

(p.t.o)

5. District Level Committee:

District Collector is the authority for implementation of the scheme at District level. There will be a Committee at the District level for selection of Village Panchayats / habitations for installation of Reverse Osmosis plants.

The District level Committee consists of:

- | | | | |
|------|---|---|------------------|
| i) | District Collector | : | Chairperson |
| ii) | Project Director, District Rural Development Agency | : | Member Secretary |
| iii) | Executive Engineer (RD) | | Member |
| iv) | Assistant Director (Panchayats) | : | Member |

6. Selection of locations / areas for installation of Reverse Osmosis plants:

- i) Priority should be given to Coastal villages and the Village Panchayats which have TDS (Total Dissolved Solids) of water in the range of 2000 to 2500 mg/litre.
- ii) The available quality of drinking water is not up to the IS 10500-2012 standards **(as per Annexure-Table 1)**
- iii) The source should have sufficient raw water to supply to the RO Plant
- iv) Habitations affected by water quality problem should be given priority.
- v) Habitations where the density of population is high should be given priority for installation of Reverse Osmosis plants.
- vi) At least 30% allocation is to be given to SC/ST habitations.

7. Specification:

Technical specification for the installation of Reverse Osmosis plant is enclosed separately in the Annexure – II. The technical details comprise type of Reverse Osmosis plants, their capacity, type of treatment required, and the solution of membranes depending on the quantity and quality of the feed water, population served etc.,

Selection of the type of Reverse Osmosis plant with respect to the site conditions shall be made on case-to-case basis by the District level committee.

8. Tender Procedure:

Tender will be called at District level for the allocation made to the District. Even though, the operation and maintenance of Reverse Osmosis plants are done by the Village Panchayats, they are not capable to call for tender for installation of Reverse Osmosis plants. Hence, considering the size of procurement and the technicality involved, it is recommended to call for tender at District level. The Project Director, District Rural Development Agency will be the tender inviting authority. The District Collector will be the tender accepting authority. Installation of Reverse Osmosis plants will be done by the Village Panchayats. The Block Development Officer (Village Panchayats) will be responsible for monitoring the installation of Reverse Osmosis plants at Block level.

9. Issue of work order:

After finalization of tender and identification of Agency for installation of Reverse Osmosis plants, work order will be issued by the District Collector and agreement should be executed by the Agency for installation of Reverse Osmosis plants within the time limit and for maintenance of plants upto certain period as per the tender.

10. Execution of works:

The work should be implemented through Village Panchayats and the Village Panchayats will look after further maintenance.

11. Monitoring:

The District Collector will review the progress of installation of Reverse Osmosis plants at District level. The Project Director, District Rural Development Agency is responsible for monitoring the installation of Reverse Osmosis plants and expenditure at District level. Nodal Officers in the cadre of Assistant Director should be appointed by the District Collector to supervise the works in Village Panchayats.

The Principal Secretary to Government, Rural Development and Panchayat Raj Department is empowered to modify the guidelines issued for this Scheme whenever necessary in consultation with the Director of Rural Development and Panchayat Raj.

**HANS RAJ VERMA,
PRINCIPAL SECRETARY TO GOVERNMENT.**

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S. Vijayan
SECTION OFFICER.

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7/11/15

Annexure -II

(G.O.(Ms) No.01, RD&PR (SGS-III) Dept., dated 06.01.2017)
Technical details for the installation of Reverse Osmosis plant

I. Brief on RO process:

Reverse Osmosis (RO) is a water purification technology that uses a semi-permeable membrane.

- Water quality analysis has to be done before the selection of Reverse Osmosis plant to achieve the IS standard annexed. Based on the analysis, water can be classified in to four categories with respect to Total Dissolved Solids (TDS) content as follows:
 1. Brackish water (500-2500 mg/lit or ppm)
 2. High Brackish water (2500-4000 mg/ lit or ppm)
 3. Low level sea water (4000-7000 mg/lit or ppm)
 4. Medium Level sea water (7000-12000 mg/lit or ppm)

II. Criteria for Selection:

a) The selection of a Village for setting up of a RO plant depends on the following factors:

- The available quality of drinking water is not up to the IS 10500-2012 standards (**as per Annexure-Table 1**)
- Preference should be given to the Village where the Total Dissolved Solids (TDS) is more than 2000mg/litre
- The source of supply of raw water is sufficient to run a RO plant

b) The selection of the capacity of a RO plant in a village should be determined by considering the following parameters:

- Population of the Village
- Estimated daily consumption
- Total Dissolved Solids (TDS) present in the water
- Single phase/ 3 phase electric supply availability
- Efficiency of the plant selected

c) RO systems consist of the following basic components:

- Feed water supply unit • Pretreatment system • High pressure pumping unit
- Membrane element assembly unit • Instrumentation and control system
- Permeate treatment and storage unit • Cleaning unit

- The RO membrane system highly depends on the available feed water. According to the feed water source, pre treatment and feed water salinity, the type of RO membrane element is selected
- **RO Membrane:**
- The membrane materials include polyamide Thin Film Composites (TFC), Cellulose Acetate (CA) and Cellulose Triacetate (CTA) with the membrane material being spiral wound around a tube, or hollow fibres bundled together. The most common is the spiral wound. Hollow fibre membranes have a greater surface area and capacity but are more easily blocked than spiral wound membranes.
- TFC membranes have superior strength and durability as well as higher rejection rates than CA/CTA membranes. They also are more resistant to microbial attack, high pH and high TDS. CA/CTA's have a better ability to tolerate chlorine.
- If the feed water is not chlorinated, a TFC membrane can be used because of its greater resistance to bacterial attack. Most systems however use TFC membranes with a carbon filter support.
- Sulphonated Poly sulphone membranes (SPS) are chlorine tolerant and can withstand higher pH's and are best used where the feed water is soft and high pH or where high Nitrates are of concern.
- The design should suit to the requirements and the selection of the semi-permeable membrane is based on the quality of the water to be treated.
- Selection of the type of Reverse Osmosis plant with respect to site conditions should be made on case to case basis by District Level Committee.

III. Main Components of Reverse Osmosis System:

- a) Dual Media Filter
- b) Activated Carbon Filter
- c) Anti- scalant Dosing System
- d) Reverse Osmosis Membrane
- e) Ultraviolet System

IV. Installation of Reverse Osmosis (RO) Plant:

The following shall be considered by the District level committee:

- i) The system shall be completely assembled, pre-piped, pre-wired and preferably skid mounted.
- ii) The system shall have microprocessor based control panel for ease of operation and inbuilt process logic.
- iii) The system shall have auto start/ stop based on water level in the supply tank.
- iv) System should have automatic backwashing of filters.
- v) The system shall be capable of working 24hrsx365 days by using the semi treated water provided through Borewell or other source of water supply.
- vi) Recovery of water (i.e. component of treated water) shall be in range of 40%-60%. If desired, the waste/ rejected water may be separately stored by using suitable pump. This water may be used for cleaning, gardening or toilet purpose.
- vii) The Auto dispensing unit facility may also be provided for better and convenient usage. Rechargeable prepaid water cards should be provided.
- viii) Maintenance and servicing should be included.

**HANS RAJ VERMA,
PRINCIPAL SECRETARY TO GOVERNMENT.**

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6/11/17

Annexure- II Table 1
**As per Indian Standards-IS: 10500-2012-Drinking water-
Specification (second Revision)**

Sl.No	Characteristics	Requirement (Desirable limit)	Permissible limit in the absence of alternate source
1	Turbidity (NTU scale)	1	5
2	Colour Hazen units	5	15
3	Taste and odour	Agreeable	Agreeable
4	pH value	6.5-8.0	No relaxation
5	Total Dissolved Solids (mg/lit) max	500	2000
6	Total hardness as CaCO ₃ (mg/lit) max	200	600
7	Chlorides as Cl ₂ (mg/l)	250	1000
8	Sulphates as SO ₄ (mg/l) max	200	400**
9	Flourides as F (mg/l) max	1.0	1.5
10	Nitrates as NO ₃ (mg/l) max	45	No relaxation
11	Calcium as Ca (mg/l) max	75	200
12	Iron as Fe (mg/l) max	0.3	No relaxation
13	Zinc as Zn (mg/l) max	5.0	15.0


14	Mineral Oil (mg/l) max	0.5	No relaxation
15	Copper as Cu (mg/l) max	0.05	1.5
16	Residual free Chlorine (mg/l) max	0.2*	1.0
Toxic Materials			
17	Arsenic as As (mg/l) max	0.01	0.05
18	Cadmium as Cd (mg/l) max	0.003	No relaxation
19	Lead as Pb (mg/l) max	0.01	No relaxation
Bacteriological Quality			
20	E.coli or thermotolerant coliform bacteria	Shall not be detectable in any 100 ml sample	No relaxation
21	Total Coliform bacteria	Shall not be detectable in any 100 ml sample	No relaxation

*when protection against viral infection is required, it should be min 0.5 mg/l

**provided Magnesium (as Mg) does not exceed 30 mg/l

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Annexure - III
(G.O.(Ms) No.01, RD&PR (SGS-III) Dept., dated 06.01.2017)
Revised allocation to G.O.(MS) No. 13, Rural Development and
Panchayat Raj (SGS-III) Department, dated: 29.01.2016.

Sl. No.	Name of the District	No. of plants to be installed
1	Kancheepuram	6
2	Tiruvallur	6
3	Cuddalore	7
4	Villupuram	8
5	Tiruvannamalai	8
6	Namakkal	5
7	Dharmapuri	6
8	Thanjavur	7
9	Nagapattinam	7
10	Tiruvarur	5
11	Perambalur	5
12	Ariyalur	5
13	Dindigul	5
14	Pudukottai	7
15	Thoothukudi	8
16	Kanniyakumari	5
	Total	100

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