

PMC for 400 MLD SWRO Desalination Plant at Perur, Chennai

Consortium Partners

SMEC International Pty. Ltd. (ACN-065440619/FCRN-F01483)

NJS Engineers India Pvt Ltd, India (CIN - U74210PN2007PTC129798)

Tata Consulting Engineers Limited, India (CIN- U74210MH1999PLC123010)

SMEC (India) Pvt. Ltd. (CIN: U93000DL1997PTC088574)



Ref: SSNT PMC 400 MLD / CMWSSB / 5061185/385

Date: 19th July 2021

To,
The Superintending Engineer (Desalination)
Chennai Metropolitan Water Supply and Sewerage Board,
Urban Administrative Building, 2nd Floor,
No.75, Santhome High Road,
Raja Annamalaipuram,
Chennai 600 028
Tamil Nadu, India



Sub: JICA Assisted "Project for Construction of 400 MLD Capacity Seawater Reverse Osmosis Desalination Plant at Perur and allied works (JICA Loan ID-P267)"
Design Considerations for strengthening, replacing the existing network and providing a new network in the uncovered area of Chennai Core City- Reg.

Ref

1. Our Email on Design Criteria for CP4 components to CMWSSB dated 16.04.2020
2. Your Letter no. CMWSSB/SE(Desal)/400 MLD Plant / PMC/2020, dated 13.01.2020
3. Our Contract Agreement with CMWSSB, dated 09.01.2020

Dear Sir,

This is reference cited no.1, further we are enclosing the Design Considerations to be adopted for strengthening, replacing the existing network and providing a new network in the uncovered area of Chennai Core City.

This is for your kind information and further discussions.

Thanking you assuring our services at all times.

Yours truly,

For Consortium of SMEC International Pty Ltd-TCE Ltd.-NJS Engineers India Pvt. Ltd.-SMEC (India) Pvt. Ltd.


S.Srinivasarao
Project Coordinator



Encl: As above

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Design Considerations for strengthening, replacing the existing network and Providing a new network in the uncovered area of Chennai Core City

1. All PVC/AC/PSC pipes shall be replaced with DI pipes of the required diameter.
2. Elimination of all existing CI Pipes of Dia less than 250mm as direct HSC connections are made on these pipelines and most of these smaller dia pipes might be got encrusted due to their age (minimum of 20 years) and no internal coating and such pipelines will lead to huge head/water loss and inequitable pressure in the proposed system. For 100 mm replacement of CI mains, condition assessment shall be carried out to assess replacement requirement. However, for design purpose, presently we are considering the 100% replacement of CI pipes upto 250mm dia.
3. Elimination of existing DI pipes of dia ranges from 150mm - 250mm due to direct HSC connection on these existing pipelines to avoid water loss in the proposed system.
4. CI pipes greater than 250mm dia shall be proposed for replacement based on condition assessment results.
5. House service connections provision shall be made only on 100mm dia pipeline
6. Hazen Williams' C' - for existing DI Pipes with internal lining – 130, existing CI Pipes -80, All new DI Pipes with internal lining -140
7. As per existing information, most of the storage facilities (nearly 87%) in Chennai are of underground type from which direct gravity supply is not possible to the distribution system. Hence, it recommends using available good underground storage facilities to the possible extent through direct pumping to the distribution network with VFD (variable frequency drive). In case of only gravity supply requirement, huge Overhead storage facilities (nearly 280 MLD additional overhead storage facilities for 30 years requirement with 33% storage requirement for 24 X7 supply) shall be built-up, requiring land and involved huge capital investment. Overhead storage facilities shall be proposed only to the inadequacy of existing underground storage facilities and a new requirement for storage facilities.
8. Though 24X7 supply system eliminates the oversizing of distribution network and storage facilities to a certain extent with less hourly peak flow (around 2.2 to 2.5 times to average hourly flow) compared to min 8hrs intermittent supply (with 3 peak factor generally). However, readopting to intermittent supply will cause a decrease in residual heads at the consumer end. Hence, the maximum peak factor value shall be adopted by considering both populations and type of system (24 X7 or intermittent). In order to provide slight flexibility during the operation, it is suggested to adopt a peak factor of 3 for the distribution system design. This will have very slight effect on cost but provides great flexibility while converting the system from intermittent to continuous 24 X 7 supply.