



ABSTRACT

Water Resources Department - Parambikulam Aliyar Project Damage to the spillway shutter No. 2 (Centre Shutter) in Parambikulam Reservoir - Fabrication and Installation of a new Spillway Shutter No.2 in the Parambikulam Reservoir at a cost of Rs.7.20 Crore on nomination basis under Section 16(a) of the Tamil Nadu Transparency in Tender Act 1998 - Sanction accorded - Orders issued.

Water Resources (S1) Department

G.O (4D) No. 90

Dated 26.09.2022

சுபகிருது, புரட்டாசி 9

திருவள்ளூர் ஆண்டு 2053

Read:

1. From the Chief Engineer, Water Resources Department, Coimbatore Region, Coimbatore Letter No. HDO/Sr.Do.1/F/95-2/2022, dated 21.09.2022.
2. From the Chief Engineer, Water Resources Department, Operation and Maintenance, Chennai Letter No. AE/Shutters - Parambikulam Dam - Report / 2022, dated 22.09.2022.

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ORDER:

In the letter first read above, the Chief Engineer, Water Resources Department, Coimbatore Region has sent a proposal for erection of a new Spillway Shutter No. 2 in the Parambikulam Reservoir at a cost of Rs.7.20 Crore as detailed below :

- (a). In Parambikulam Aliyar Project, Parambikulam reservoir is situated in Chittur Taluk of Palakkad District. The full reservoir depth is 72 ft and the gross storage capacity of the reservoir is 17820 Mcft. The reservoir level as on 20.09.2022 at 7.00 P.M was 71.60 ft and the storage capacity was 17704 Mcft. (17.704 TMC) Inflow to the reservoir was 2107 c/s and the outflow was 2107 c/s (inclusive of tunnel discharge). Parambikulam Reservoir has 3 spillway shutters and discharge capacity of all three shutters are 62880 c/s. The size of each spillway shutter is 42' x 27'. The total discharge capacity of the spillway shutters is 62880 cusecs.

- (b). Every year Pre monsoon, Monsoon and Post monsoon inspections are carried out by competent authority and before onset of monsoon, regular hydro-mechanical works such as applying lubrication, greasing and filling the oil to the Radicon gear box work are carried out. This year from May 25th to 16th June, abrasive blasting, applying primary coat to Spillway Shutters and painting two coats of epoxy coal tar were done for all the spillway gates and deck bridge. In addition, from 19.7.2022 to 28.7.2022 a hydro-mechanical team had been engaged to attend to the service of gearwheel, chain bracket, grinding in pinion gear, alignment of shafts, fixing the orientation of plummer blocks, testing the shutter vernier, greasing, oiling, applying lubricant to the chain bracket of all three shutters and its components. During the above servicing work, the Executive Engineer, WRD, Workshop and Stores inspected the above work site on 21.07.2022 and 22.07.2022. After the maintenance work was carried out, the shutters operated from 19.07.2022 till 20.09.2022 functioned properly, especially during the flood period, the three shutters were operated and released the flood discharge. On 04.08.2022, the three shutters were operated to maximum height of 140 cm and discharged a maximum of 16800 c/s of flood water.
- (c). As per the Operation and Maintenance Manual, flood duty was assigned to the Assistant Engineers of this Division on rotational basis. The Supporting field staff were also engaged to assist the Assistant Engineer in monitoring, watching the appurtenant structures of the Reservoir and recording the readings. During intense rainfall, every one hour readings were taken and the inflow, outflow and storage details were intimated to higher officials of both States. Similarly the Kerala State JWRB Engineers also monitor the Reservoir readings and watching the inflow and outflow of Parambikulam Reservoir.
- (d). On 21.09.2022 at about 2.00 am, the Spillway Shutter No.2 (Centre Shutter) suddenly got damaged and broke out. Approximately 20,000 c/s of water was flowing out from the reservoir. Immediately emergency alert message was given to the Officials of Kerala and as per instructions given by the Additional Chief Secretary to Government, Water Resources Department, the following team of Engineers reached the Reservoir site on 21.09.2022 at 4.00 pm.
- (i) Er. P Rajendran, B.E.,
Chief Engineer,
Water Resources Department,
Operation and Maintenance.

- (ii) Er. N. Suresh, B.E.,
Superintending Engineer,
Water Resources Department
Workshop and Stores Circle.
 - (iii) Er. S.Gopalakrishnan, B.E.,
Executive Engineer and General Superintendent,
Water Resources Department,
P.W. Workshop and Stores Division.
 - (iv) Er. J.Agilan, M.E.,
Assistant Engineer,
Water Resources Department,
P.W. Workshop and Stores Division.
- (e). Further, instantly the Engineers of both Kerala and Tamil Nadu rushed to the Reservoir site. Kerala Police and Forest officials were also present at the Reservoir site.
- (f). Water level, storage and discharge through the damaged spillway shutter were also sent to Kerala officials for their regulation in the downstream area. Messages were also sent to the low lying habitats through Kerala forest and the police officials. Tribal people living along the river side were shifted to safe place. Due to this timely action, no casualties were reported from the downstream area.
- (g). On Physical observation of the existing condition of the site, it was found that the Left side Chain link arrangement near the shutter portion might have broken out which was connecting the shutter portion and the counter weight. Hence, due to one side load of counter weight, the chain may have pulled from the gear assembly resulting in downward movement of the counter weight. This chain movement is evident from the fact that the chequered plate got an impact from the bottom side of deck bridge. Three nos. of gear teeth have broken, the Plummer block holding the gear wheel assembly got broken up and also the hoist cover got damaged from inside. Based on the above facts, after chain link cut off, the loose chain may have been pulled out by the counter weight. Also, the falling counter weight may have struck the shutter from the back side, due to which the shutter may have displaced from the groove portion. Hence, due to the impact of the counter weight and the force of flowing water, the shutter may have been pushed out of the vent portion. The counter weight also got washed away from the vent portion. However the exact cause of the failure could be assessed only after a thorough

inspection of the displaced shutter by a team of experts in hydro-mechanics. This will be done after the uncontrollable flow through the spillway fully recedes.

- (h). Due to this unexpected and sudden damage to the Shutter No.2, the loss in depth of water would be 27 ft and storage of 5.80 TMC. After release of uncontrollable water through the spillway, balance 12.00 TMC of storage will be available and this storage of water along with the inflow to the reservoir will be diverted to the Thirumurthy Reservoir through the Contour Canal without any break. The ongoing irrigation in PAP System will be maintained without any interruption.
- (i). At present storage available in the PAP group of Reservoirs, anticipated inflow to all reservoirs and requirement of water for irrigation in Tamil Nadu and Kerala States have been calculated and from the hydrology available, water can be supplied to irrigation and drinking water to both the States as per the schedule.

2. The Chief Engineer has stated that to replace the damaged shutter, cost estimate for a new shutter has been prepared and the approximate cost works out to Rs.7.20 crore. Due to emergency and also to save maximum quantity of water, this work should be taken up on nomination basis under Section 16(a) of the Tamil Nadu Transparency in Tender Act 1998. The Chief Engineer has also requested permission to proceed with the work immediately so that maximum water could be utilized for irrigation and drinking and the entire work will be completed before November 15th, 2022 and water will be stored during the forthcoming North East monsoon period.

3. The Government, after detailed examination, have decided to accept the proposal of the Chief Engineer, Water Resources Department, Coimbatore Region in view of the emergency. Accordingly, Administrative and Financial sanction is accorded for taking up the Work of fabrication and installation of a new Shutter in the Parambikulam Reservoir at a cost of Rs.7.20 crore (Rupees Seven crore and twenty lakh only).

4. The Government also accord permission to the Chief Engineer, Water Resources Department, Coimbatore Region to take up the Work on nomination basis under Section 16(a) of the Tamil Nadu Transparency in Tender Act 1998 in view of the emergent situation mentioned in para 1 above.

5. The expenditure sanctioned in para 3 above shall be debited into the following head of account.

4702 00 – Capital Outlay on Minor Irrigation –
101 – Surface Water – BD Parambikulam Aliyar Basin- Dam
and Appurtenant Works – 416 Major Works – 01 Major
Works.

(IFHRMS DPC 4702 00 101 BD 416 01)

6. Necessary additional funds of Rs. 7,20,00,000/- will be provided in RE/FMA 2022-23. However, this expenditure shall be brought to the notice of legislature by way of Specific Inclusion in the Supplementary Estimate 2022-23. Pending provision of such funds, the Engineer-in-Chief and Chief Engineer (General), Water Resources Department, Chennai is authorised to incur the expenditure sanctioned in para 3 above. The Engineer-in-Chief and Chief Engineer (General), Water Resources Department, Chennai is directed to include the above item of expenditure while sending the budget proposal for RE/FMA 2022-23 and also send necessary draft Explanatory note for inclusion of the expenditure in the Supplementary Estimate 2022-23 to Finance (PW-II/BG-I) Department at an appropriate time without fail.

7. The Chief Engineer, Water Resources Department, Coimbatore Region is directed to constitute a Team of engineers to take up the following works.

- a. Checking and approval of designs and drawings by competent authority.
- b. Manufacturing of best quality Shutter gate, Chain, Counter-weight and Gear assembly
- c. Quality assurance during fabrication and erection process
- d. Erection at site in completion shape
- e. Testing and trial of shutter operations

8. The Chief Engineer, Water Resources Department, Coimbatore Region is also directed to follow the procedures laid down in Tamil Nadu Transparency in Tenders Act, 1998 for taking up the Work under provision 16(a) of TNTIT Act, 1998.

9. The Chairman, Cauvery Technical Cell and the Chief Engineer, Operation and Maintenance, Water Resources Department are requested to render necessary assistance to the Chief Engineer, Water Resources Department, Coimbatore Region while taking up the above work.

10. It is also directed that the details of works executed must be uploaded in the Tamil Nadu Water Resources information and Management Systems Portal under the control of Chief Engineer, Institute of Water Studies, Hydrology and Quality Control to ensure effective data base in the Water Resources Department.

11. This order issues with the concurrence of the Finance Department vide its U.O. No.44641/PW-II/2022, dated 26.09.2022 and Additional Sanction Ledger No 1335 (One thousand three hundred and thirty five)(IFHRMS ASL No. 2022091335).

(BY ORDER OF THE GOVERNOR)

**SANDEEP SAXENA,
ADDITIONAL CHIEF SECRETARY TO GOVERNMENT.**

To

The Engineer-in-Chief and Chief Engineer (General), Water Resources Department, Chennai-5.

The Chief Engineer, Water Resources Department, Coimbatore Region, Coimbatore -1.

The Chief Engineer, Plan Formulation, Water Resources Department, Chennai-5.

The Chief Engineer, Institute of Water Studies, Hydrology and Quality Control, Water Resources Department, Taramani, Chennai-113.

The Chief Engineer, Water Resources Department, Operation and Maintenance, Chennai-5.

The Chairman, Cauvery Technical Cell cum Inter State Waters Wing, Egmore, Chennai-8.

The District Collector, Coimbatore.

The District Treasury Officer, Coimbatore.

The Pay and Accounts Officer (East), Chennai-8.

The Principal Accountant General (A&E), Chennai-18.

The Principal Accountant General, (Economic and Revenue Sector Audit), Chennai-18.

The Resident Audit Officer, Secretariat, Chennai-9.

Copy to

The Secretary-II to the Hon'ble Chief Minister, Secretariat, Chennai-9.

The Special Personal Assistant to Hon'ble Minister (Water Resources), Secretariat, Chennai-9.

The Finance (P.W.II / B.G.I / B.G.II / W&M-I) Department, Secretariat, Chennai-9.

The Water Resources (OP-II / I.Spl) Department, Secretariat, Chennai-9.
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// Forwarded by Order //

S. Manickam
26/09/2022
Section Officer.