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Hydraulic and structural design of navigational lock

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Navigation lock is a structure in the waterway provided to create a safe navigation passage between two water pools which are not at the same level. Farakka navigational lock is required as the barrage constructed across river Ganga at Farakka creates significant difference in water level up-stream and down-stream. The main components of navigation lock comprises of approach channels, lock Pit, filling/emptying arrangement. Design of lock depends on lockage time, water level variations, lock capacity requirements, design vessel size. Filling/emptying system has been designed to work under gravity flow without any pumping requirements. In Farakka lock maximum filling/emptying time for the lock has been considered as 8.0 minutes (for the worst condition) for computing the size of the inlet/outlet openings. Two openings of size 4.0 m (Width) X 2.0 m (Height) one on each have been proposed. Walls of lock pit are designed as reinforced concrete counterforts. The base slab for lock has been designed as a raft with tension piles so that the system is stable under worst conditions.

Biography

Amit Dhanuka has completed his MTech in the year 2007 from Janardhan Nagar Rai, Deemed University, Udaipur (Rajasthan) and BTech in the year 2004 from Thapar Institute of Engineering and Technology Patiala, Punjab (India). He has worked as Deputy General Manager with Howe Projects Engineering Pvt. Ltd., a premier Civil Engineering Consultancy Organisation. In past, he has worked with SNC Lavalin and SMEC. He has been involved in Tender Engineering of Farakka Navigational Lock under "Capacity Augmentation of Navigational Infrastructure of National Waterway-1", an Inland Waterway Authority of India (IWAI) project.

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