

PROCEEDINGS OF THE CHIEF EXECUTIVE OFFICER
KERALA INFRASTRUCTURE INVESTMENT FUND BOARD,
THIRUVANANTHAPURAM
Present:Dr. K. M. Abraham CFA
ORDER NO : WRD022-23/APR-6/2021/KIIFB Dated:01-03-2021

Sub: KIIFB – Project: TRAN – 19: WRD022-23: Construction of Kanathodu RCB in Pudukkad Panchayath in Thrissur District- Approval and Sanction of funding – Orders Issued.

Read: 1. G. O. (Rt.) No. 548/2020/WRD Dated 25/08/2020

2. G. O. (Rt.) No. 669/2020/WRD Dated 27/10/2020

3. Minutes of the 18th Executive Committee meeting of KIIFB held on 15/02/2021.

Government through reply to Revised Budget Speech 2016-17, an amount of Rs. 12 Crore has been set apart from Special Invest Scheme for the project '**Pudukkad-Kanathodu Regulator Cum Bridge in Thrissur district**', as a project under KIIFB funding. As per Government Order 1st & 2nd read above, Administrative Sanction for the project has been accorded for Rs. 22 crore, entrusting the execution of the work to M/s Kerala Irrigation Infrastructure Development Corporation Ltd (KIIDC) [Special Purpose Vehicle].

The Detailed Project Report in respect of **Construction of Kanathodu RCB across Karumalipuzha at Kundukadavu in Pudukkad Panchayath in Thrissur District** subsequently, submitted by M/s Kerala Irrigation Infrastructure Development Corporation Ltd (KIIDC). was verified for adherence to KIIFB stipulations and appraised for compliance, as per GO(Ms) No.315/16/Fin dated 08.08.2016 and found that the project satisfied the technical and financial parameters insisted upon by KIIFB.

Thus, the 18th Executive Committee that met on 15th February 2021, after considering the proposal and appraisal report, granted approval for the project. Accordingly, sanction is accorded for funding the project: '**TRAN-19: WRD022-23: Construction of Kanathodu RCB across Karumalipuzha at Kundukadavu in Pudukkad Panchayath in Thrissur District**', approved, vide Government Orders read above, to be implemented by M/s KIIDC Ltd [Special Purpose Vehicle]; for an outlay of **Rs.27,37,58,639/- (Rupees Twenty-Seven Crore Thirty-Seven Lakh Fifty-Eight Thousand Six Hundred and Thirty-Nine only)**, with the following stipulations:

1. The tripartite agreement, as per KIIFB stipulations shall be entered, after which Technical Sanction shall be mandatorily issued by the TS authority.
2. The Technical Sanction shall be issued by the competent authority by ensuring the reasonableness of the rates adopted in the estimate by comparing with the rates of equivalent items in PRICE. The detailed estimate shall also be checked against the designs, drawings and network diagrams developed for each project. Documentary evidence of these actions shall be communicated to KIIFB prior to acceptance of tenders.
3. The detailed estimate submitted shall be reviewed by the TS authority considering the

applicability and correctness for the quantities estimated, capacity of elevator, the relevance of Cost Index and adherence of latest PRICE schedule.

4. The Technical sanction by the competent authority is mandatory before schedules are added to the Tripartite agreement.
5. The cost provisions for work alone shall be utilized for execution of work. The savings or anticipated savings from any item of work or part there of shall not be diverted for any other work without prior approval.
7. While entrusting the maintenance activities to the contractor, it shall be ensured that the obligation under defect liability shall be performed without any additional cost. Hence no maintenance expenditure shall be considered under original work.
8. TS Committee shall ensure that all Project Execution Document (as per KIIFB guidelines) shall be prepared and verified prior to according the Technical Sanction.
9. The Detailed Appraisal Report of KIIFB for the project is appended, for reference and it shall be taken into consideration by the TS Committee while according Technical Sanction to the Project. SPV shall review all the comments in section 18 of DAR before issuance of TS.
10. The TS sanctioning authority shall satisfy themselves that the existing regulator and lock is dysfunctional and fit for demolition and necessary documents for demolition of the existing structure shall be obtained from the competent authority prior to according technical sanction.
11. The SPV shall ensure that all the statutory clearances are obtained before award of work.

Dr. K. M. Abraham CFA

To

Chief Executive Officer

The Additional Chief Secretary to Government, Water Resources Department
The Managing Director, M/s KIIFB Ltd
The Principal Secretary (Finance)
F&A Division, KIIFB
Inspection Authority (AIW/TIW), KIIFB
Stock File /Office Copy /Nodal Officer (www.kiifb.kerala.gov.in)

Forwarded By Order


Project Coordinator



Defining the Future

DETAILED APPRAISAL REPORT

CONSTRUCTION OF KANATHODU REGULATOR CUM BRIDGE ACROSS KURUMALI PUZHA AT KUNDUKADAVU IN PUDUKKAD PANCHAYATH, THRISSUR DISTRICT

Report No. : AR-2019-TRAN19-WRD022-23

Date : 06 February 2021



1. SALIENT FEATURES

1.1 Project details as per DPR in brief:

- Name of Project : Construction of Kanathodu Regulator Cum Bridge across Kurumali Puzha at Kundukadavu in Pudukkad panchayath, Thrissur District
- Constituency : Puthukkad
- District : Thrissur
- Budget provision : ₹ 12.00 Crore
- Project outlay : ₹ 27.62 Crore
- Report Prepared by : KIIDC
- Implementing agency/ SPV : KIIDC Ltd., for Kerala Irrigation Department
- Administrative Sanction : In principle section as per G. O. (Rt.) No. 943/2018/WRD Dt. 31/12/2018, Sl. No. 2 (₹ 39.70 Cr.)
- Budget Speech Reference : Budget speech 2017-18, Para. 169
- Data reviewed :
 - Detailed Project Report
 - TAR reply received on 06-01-2021

The proposal is for the construction of an RCB across Kurumali Puzha river at Kanathodu in Pudukkad panchayath, Thrissur district. Following are the major details.

Length of regulator	62.00 m
Span configuration	3 X 12.00 m + 2 x 7.40m (clear span)
Carriageway width	4.250m (single lane)
Footpath details	0.875 m wide footpath on both sides
Type of foundation	Bored RCC pile
Foundation strata	Hard rock
Diameter and depth of pile	1200mm dia. pile with an average depth of 9.50m
Clear span of vents	12.00 m
Proposed full storage height	3.50 m
River bank protection works	6m high cantilever retaining wall are proposed for a

	length of 100m D/S and 150m U/S side.
Expected storage capacity	Not mentioned
Expected length of back water	Not mentioned
Drawings provided	<ul style="list-style-type: none"> • General arrangement drawing • Details of pier and abutment • Cross section of river • Location sketch • General arrangement for vertical lift regulators • Details of hoist assembly • Details of hoist bridge • Details of drive unit assembly • Details of drive unit cover • Details of gear box assembly • Details of gear box cover • Details of dial and dial assembly • Details of bottom block • Details of block out • Details of embedded parts • Details of gate assembly • Details of roller assembly • Details of rope drum • Details of Wheel W1, W2 & Pinion P1, P2 & Shafts

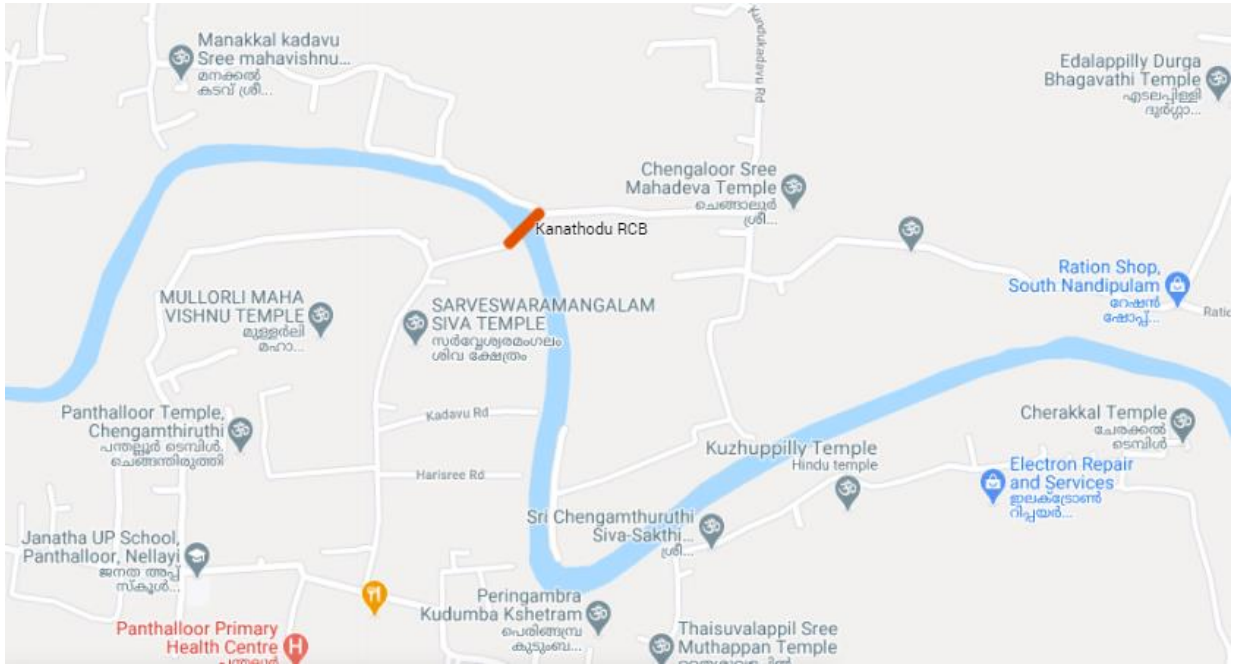


Figure 1: Proposed location of the regulator cum bridge

2. REQUIREMENT / DEMAND ANALYSIS

- 2.1 The proposed RCB is stated to be located at about 10 Kms upstream of Manjamkuzhy regulator and 3.18 Km downstream of Attappilly regulator.
- 2.2 The proposed regulator helps to hold more water that can be stored and utilized for second crops in Kole lands.
- 2.3 The agricultural area will be benefitted in Puthukkad, Parappookkara and Mattathoor panchayaths. 30 Ha of wet land and 70 Ha of dry land could be irrigated in Parappookkara Panchayath.
- 2.4 It is stated in the DPR that the native farmers and inhabitants make a temporary bund every year to store and use water for agriculture in the foreseeing summer due to the scarcity of fresh water in this area.
- 2.5 On completion of this project, efficient operation of the same would ensure the availability of potable water for the inhabitants living on the outskirts of Pudukkad Panchayath, Parapookkara Panchayath, Mattathoor Panchayath and also for irrigation purposes.



3. FUNCTIONAL DESIGN

- 3.1 The proposed RCB is stated to be located at about 10 Kms upstream of Manjamkuzhy regulator and 3.18 Km downstream of Attappilly regulator.
- 3.2 The proposed RCB has an arrangement of 3 numbers of 12.00 m clear span and 2 spans of 7.40m clear span constituting a total length of 60m.
- 3.3 Provision for the construction of the operator cum generator room is included in the DPR.
- 3.4 Approach road of 150m are considered on both left and right side of RCB as per the estimate.

4. ENGINEERING DESIGN

- 4.1 The proposal consists of a regulator with 5 vents of clear span of 12.00 m and 7.40m constituting a total length of 62.00m. The height of the proposed regulator is 3.5 m.
- 4.2 Counterfort abutments are provided on both banks as end supports.
- 4.3 Grooved piers are provided for shutters over which a platform is provided for operating the same.
- 4.4 The RCC piles are socketed on hard rock with an average depth of 9.50m as per general drawing.
- 4.5 It is proposed to protect the banks with cantilever retaining wall for a length of 150m on U/S and 100m on D/S side.

5. O & M PLAN

- 5.1 After construction, the project will be under the charge of section officer.

6. FINANCIAL ESTIMATES & COST PROJECTIONS

- 6.1 The detailed estimate is prepared in PRICE software based on DSR 2016 with cost index of 31.06 %.
- 6.2 The summary of cost sought for funding and the recommended cost is provided below:



Sl. No.	Description	Estimated Cost (₹)	Recommended Cost (₹)	Remarks
1	Providing ring bund & Dewatering	57,47,520	57,47,520	
2	Construction of Regulator cum Bridge	11,58,64,131	11,58,64,131	
3	Approach road and road slab	1,05,70,995	1,05,70,995	
4	River protection works	7,33,30,673	7,33,30,673	
5	Operator cum generator room	11,98,131	11,98,131	
11	Mechanical Works F1-Cost of Supplying and stacking materials for embedded parts	39,88,008	39,88,008	
12	Supply of materials, fabrication, painting and erection of 12x3H 3 Nos, 7.4x3H 2 Nos of MS shutter	88,76,140	88,76,140	
13	Supplying and fixing of rubber seals	2,65,790	2,65,790	
14	Supplying and fixing of roller assembly	7,81,469	7,81,469	
15	Supply of materials, fabrication, painting and erection of hoisting bridge, covers and frames of driving units & rope drum for shutter	76,30,187	76,30,187	
16	Supplying, stacking, erecting and trial run of rope drum hoisting Unit	55,04,671	55,04,671	
17	Land acquisition	50,00,000	50,00,000	
18	Electrical Works	50,00,000	50,00,000	
19	Topographical survey	15,00,000	-	Shall be excluded
20	Shifting utilities	13,50,000	13,50,000	
21	GST @ 12%	2,95,92,926	2,86,50,926	GST for LA and utility shifting are excluded.
22	Lumpsum roundoff	9,360	-	Lumpsum amount shall be excluded
	Total	27,62,10,000	27,37,58,639	

Total Recommended Cost – ₹ 27,37,58,639



7. COST-BENEFIT ANALYSIS

7.1 It is reported that Cost-Benefit Ratio for the project is 1.845.

8. VALUE ENGINEERING OPTIONS

8.1 The design proposed in the DPR is generally observed to be acceptable.

9. IMPLEMENTATION SCHEDULE & WBS

9.1 The report encloses a bar chart showing the scheduled flow of works. The time for completion is proposed as 1 years 8 months after approval of estimate.

10. PROJECT MANAGEMENT ORGANIZATION PLAN

10.1 The project management unit is planned to be formed at KIIDC HQ.

11. CONTRACT MANAGEMENT PLAN

11.1 A detailed contract management system proposed to be followed by KIIDC is furnished in the DPR.

12. STATUTORY CLEARANCES

12.1 No statutory clearances are reported to be applicable for the project.

13. ENVIRONMENTAL ASPECT & SUSTAINABILITY

13.1 The proposed project is not an enlisted item of EIA Notification 2006 and do not require the Environmental Clearance from the authority.

14. QUALITY MANAGEMENT PLAN

14.1 KIIDC has its own quality manual and assurance inventories and adhere to provisions of QC manual.



14.2 A three-tier testing system is followed.

15. RISK ASSESSMENT AND MITIGATION MEASURES

15.1 As per the DPR, the land acquisition will be required for widening of existing approach road.

16. REMARKS AND INFERENCES

- 16.1 The project has satisfied all the basic requirements for consideration for financial assistance from KIIFB.
- 16.2 The parameters studied with regard to the demand are in favour of the proposed project.
- 16.3 The functional design is matching with the requirement and demand along with the standards.
- 16.4 The preliminary design and details proposed are satisfactory.
- 16.5 The O & M plan proposed is satisfactory.
- 16.6 The estimate for civil works prepared and submitted is meeting basic requirements whereas an effective scrutiny for electrical and utility shifting could be done only after the receipt of its detailed estimate.
- 16.7 The investment criteria like CBR meet the target standards.
- 16.8 The proposed preliminary engineering design seems satisfactory and optimized.
- 16.9 The implementation schedule is provided in the report and period of completion is realistic.
- 16.10 The project management organization plan is furnished in the DPR.
- 16.11 The contract management plan is furnished in the DPR.
- 16.12 No statutory clearances are reported for the project.
- 16.13 It is reported that environmental clearances are not applicable for the project.
- 16.14 Quality management plan detailed in the DPR based on PWD QC Manual seems satisfactory.
- 16.15 The report identifies no potential risks and mitigation measures.

17. RECOMMENDATIONS AND SUGGESTIONS

- 17.1 The project may be considered for funding by KIIFB subject to the execution of tripartite agreement.



- 17.2 Upon recasting of the estimate in section 6.2 above, the amount to be considered for sanction works out to be **₹ 27,37,58,639.**
- 17.3 The detailed estimate submitted shall be reviewed by the TS authority considering the applicability and correctness of items in 6.2 above, the relevance of Cost Index and adherence of latest PRICE schedule.
- 17.4 The Technical sanction by the competent authority is mandatory before schedules are added to the Tripartite agreement.
- 17.5 The cost provisions for work alone shall be utilized for execution of work. The savings or anticipated savings from LA, QC, shifting utilities etc. shall not be reappropriated for meeting expenditure of work proper.
- 17.6 While entrusting the maintenance activities to the contractor, it shall be ensured that the obligation under defect liability shall be performed without any additional cost. Hence no maintenance expenditure is considered under the original work.
- 17.7 The identified revenue streams if any shall be communicated while signing the tripartite agreement.

18. ANNEXURE & COMMENTS TO SPV / TS COMMITTEE

The following comments shall be reviewed by TS authority:

- 18.1 As per IRC: SP: 19 – 2001, 'Manual for Survey', the traffic count for 24 hours at least for 3 days is to be conducted. Hence a detailed traffic survey data including the expected divertible traffic shall be obtained for evaluating the pavement design.
- 18.2 Also, if through traffic is less as per the survey data, TS committee shall verify the need of regulator cum bridge instead of a regulator alone.
- 18.3 The amount of water expected to be taken for lift irrigation schemes namely Urankulam, Nandhipalam and Panthallurpadam and KWA pumping station shall be examined.
- 18.4 Length of backwater prism of the adjacent RCBs mentioned to exist on upstream and downstream of proposed one shall be verified.
- 18.5 Hydraulic parameters such as Low water level, ordinary flood level and tidal variations shall be verified.



- 18.6 As per IS 7720, the following detailed investigations are required like detailed hydrological and meteorological data, sediment studies, design discharge of major hydraulic structure upstream of the proposed site, surface and subsurface investigation, detailed river morphology and ecological studies, change in river regime due to construction, pond survey, problem and intensity of land slide and erosion near the barrage, etc. However, as per the submitted DPR, most of these survey documents are not seen furnished and the surveys reported to be conducted are not supported with quantitative documents.
- 18.7 The discrepancy in hard rock level in longitudinal section with corresponding level in datum line in general drawing are not rectified. Hence a corrected drawing shall be obtained by TS.
- 18.8 The extent of land to be acquired for approach road and generator room are not yet mentioned or marked in the alignment plan. Hence committee shall verify this before issuing TS.
- 18.9 The veracity of extend of approach road shall be checked by the TS committee since no Longitudinal section showing RCB and approach road is submitted with the DPR or reply obtained.
- 18.10 The amount earmarked for the construction of the watchman shed cum generator room shall be verified with respect to the corresponding drawings which have not yet been obtained from SPV.
- 18.11 The CBR and actual pavement design calculation for the approach road shall be obtained for the evaluation of the pavement layers provided.
- 18.12 Need for storeroom in generator cum watchmen room shall be reviewed.
- 18.13 The grade of concrete M30 for piles in item no. 3 of "Appendix B-Construction of Regulator cum Bridge" shall be corrected as the minimum mix has already been revised to M35 as per CI 709.19 of IRC 78: 2014. Committee shall verify that corresponding changes are made in the design also.
- 18.14 The length of pile under piers and abutments in item no. 3 of "Appendix B-Construction of Regulator cum Bridge" seems to be on higher side on cross checking with corresponding bore hole details.
- 18.15 Provision of HYSD reinforcement for CC solid block on U/S and D/S under item no. 19 of "Appendix B-Construction of Regulator cum Bridge" shall be excluded.



- 18.16 The number of drainage spout for end shorter spans in item no. 25 of "Appendix B- Construction of Regulator cum Bridge" shall be reduced.
- 18.17 Item no. 26 under "Appendix B-Construction of Regulator cum Bridge" for RCC handrailing shall be excluded to avoid duplication.
- 18.18 TS committee shall obtain pavement design of approach road and check the pavement payers under "Appendix C -Approach road" since the thickness of GSB in item no. 2 is much on higher side.
- 18.19 Provision for DBM and BC for approach road are missing in estimate under "Appendix C - Approach road" which shall be included.
- 18.20 The clear span of 7.40m are provided on either end spans and therefore throughout clear span of 12m provided for all 5 vents for deck slab and kerb under item no. 11, 12 & 17 of "Appendix C -Approach road" shall be corrected.
- 18.21 The quantities under item no. 18 of "Appendix C -Approach road" for bearing shall be checked.
- 18.22 Ceramic glazed floor tile shall for toilets in item no. 15 of "Appendix D- Generator cum watchman room" shall be replaced with any anti-slippery floor tiles.
- 18.23 Detailed split-up of electrical works shall be obtained with proper rate analysis and supporting documents.
- 18.24 The details of utility shifting shall be obtained from the concerned departments and the exact amount for each shall be effectively evaluated by TS committee before sanction.
- 18.25 The necessity of following clearances shall be evaluated by TS committee prior to sanction, if applicable.
- ✓ Environmental Clearances
 - ✓ Clearances for shifting of utilities.
 - ✓ NOC and Consents under the Water (Prevention & Control of Pollution) Act
 - ✓ NOC and Consents under the Air (Prevention & Control of Pollution) Act
 - ✓ Noise Pollution (Regulation and Control) Rules 2000.
 - ✓ The Kerala Conservation of Paddy Land and Wetland Act, 2008