

പതിനാലാം കേരള നിയമസഭ


പതിനെട്ടാം സമ്മേളനം

നക്ഷത്ര ചിഹ്നമിടാത്ത ചോദ്യം നം.427

04-02-2020 ൽ മറുപടിക്ക്

കിഫ്ബി പരിശോധന

ചോദ്യം പ്രൊഫ. ആബിദ് ഇസൈൻ തങ്ങൾ	മറുപടി ശ്രീ. ടി.എം. തോമസ് ഐസക് (ധനകാര്യവും കയറ്റുവകുപ്പു മന്ത്രി)
<p>(എ) കോട്ടക്കൽ നിയോജകമണ്ഡലത്തിലെ കാങ്കക്കടവ്-കറ്റിപ്പറം റെഗുലേറ്റർ-കം-ബ്രിഡ്ജിന്റെ പ്രൊപ്പോസൽ കിഫ്ബിയിൽ ലഭിച്ചിട്ടുണ്ടോ; എങ്കിൽ എന്നാണ് ലഭിച്ചത്; കിഫ്ബി പരിശോധനയിൽ കണ്ടെത്തിയ ന്യൂനതകൾ എന്തെല്ലാമായിരുന്നു;</p>	<p>കോട്ടക്കൽ നിയോജക മണ്ഡലത്തിലെ കാങ്കക്കടവ് - കറ്റിപ്പറം റെഗുലേറ്റർ കം ബ്രിഡ്ജിന്റെ പ്രൊപ്പോസൽ കിഫ്ബിയിൽ 09/07/2018 ൽ ലഭിച്ചിട്ടുണ്ട്. പരിശോധനയിൽ കണ്ടെത്തിയ ന്യൂനതകൾ അനുബന്ധം-1 ആയി ചേർക്കുന്നു .</p>
<p>(ബി) പ്രസ്തുത ന്യൂനതകൾ പരിഹരിച്ച് എസ്.പി.വി. (സ്പെഷ്യൽ പർപ്പസ് വെഹിക്കിൾ) എന്നാണ് കിഫ്ബിക്ക് പ്രൊപ്പോസൽ കൈമാറിയത്; കൈമാറിയ പ്രൊപ്പോസലിൽ വീണ്ടും ന്യൂനതകൾ ഉണ്ടായിരുന്നുവോ; എന്തെല്ലാമായിരുന്നു ന്യൂനതകൾ; വിശദമാക്കാമോ;</p>	<p>ന്യൂനതകൾ സംഗ്രഹിച്ച് പദ്ധതി നിർവ്വഹണ ഏജൻസിയായ KIIDC യെ 23/08/2018 ൽ തന്നെ അറിയിച്ചിട്ടുണ്ട്. ശേഷം 01/11/2019 ൽ ന്യൂനതകൾക്കു മറുപടി കത്ത് അപ്രൈസൽ ഏജൻസിയായ സി.എം.ഡി മുഖേന ലഭിച്ചിട്ടുണ്ട്. ഇതിൽ പരിഹരിക്കാത്ത ന്യൂനതകൾ സൂചിപ്പിച്ച് പദ്ധതി നിർവ്വഹണ ഏജൻസിക്ക് 24/12/2019 കത്ത് നൽകിയിട്ടുണ്ട്. വിശദാംശങ്ങൾ അനുബന്ധം 2 ആയി ചേർക്കുന്നു.</p>
<p>(സി) കിഫ്ബി പരിശോധന പൂർത്തിയാക്കിയെങ്കിൽ ഭരണാനുമതി ലഭ്യമാക്കുവാൻ നടപടി സ്വീകരിക്കുമോ; വിശദമാക്കാമോ?</p>	<p>GO (Rt) No 859/2017/ WRD Dt 17/10/2017 പ്രകാരം In Principle Approval (100 കോടി രൂപക്ക്) ഭരണവകുപ്പ് നൽകി കഴിഞ്ഞിട്ടുണ്ട്. പ്രൊപ്പോസലിലെ ന്യൂനതകൾ പൂർണ്ണമായും പരിഹരിച്ചു കിട്ടുന്ന മുറയ്ക്ക് കിഫ്ബിയുടെ ഫണ്ടിംഗിനു പരിഗണിക്കുന്നതാണ്.</p>


സെക്ഷൻ ഓഫീസർ



അനുബന്ധം - 1

TECHNICAL APPRAISAL REPORT

DETAILED PROJECT REPORT FOR
CONSTRUCTION OF REGULATOR ACROSS BHARATHAPUZHA IN
KUTTIPPURAM PANCHAYATH, MALAPPURAM DISTRICT

Rep No. TAR-2018-TRAN10-KIIDC-WRD022-03



<p>1.</p>	<p>Salient Features</p> <ul style="list-style-type: none">➤ Name of Project: Construction of Regulator Cum Bridge Across Bharathapuzha in Kuttippuram Panchayath, Malappuram District➤ District: Malappuram➤ Project outlay: Rs. 100.00 crore➤ Report Prepared by AE, Irrigation Section, Kuttippuram➤ Implementing agency/ SPV KIIDC Ltd., for Kerala Irrigation Department➤ Data reviewed: Detailed Project Report for construction of Regulator Cum Bridge Across Bharathapuzha in Kuttippuram Panchayath➤ Administrative sanction Go(Rt) No. 859/2017/WRD dated 17.10.2017 <p>The proposal is the construction of a RCB across Bharathapuzha in Kuttippuram Panchayath of Tirur Taluk of Malappuram. Following are the major details:</p> <ul style="list-style-type: none">• The site located 1 km away from Kuttippuram junction and 8 km downstream side of Thootha river and Bharathapuzha confluence. The latitude and longitude of the site is noted as 10.50 N and 76.02 E.• The proposed RCB connects Kuttippuram in Kuttippuram Panchayath of Malappuram district and Kumbidi in Anakkara Panchayath of Palakkad district.• The proposed RCB is having 418m length with 7.5m road way and footpath of 1.50m on both sides. The weir is having 30 nos vents with regulating shutters. The deck slab is supported on two rows of pier.• The proposal involves the construction of:<ul style="list-style-type: none">○ Regulator and bridge structure○ Side protection works of river○ Approach road and Bank Connection• Land acquisition is proposed for approach road.
<p>2.</p>	<p>Requirement/ Demand Analysis</p> <ul style="list-style-type: none">• The scheme is indented for irrigating agricultural lands with paddy, banana, tapioca, areaconut, pepper wine and so many other vegetables. The cultivable area is reported to be 3200 hectares.• The scheme is very helpful to several water supply and irrigation schemes existing in the area, such as Iribiyam and Mankari lift irrigation Schemes by minor irrigation department, KWA water schemes, Kuttippuram- Kankapuzha water supply scheme of Jalandhi• A quantitative analysis of the necessity of the RCB is not furnished.



	<ul style="list-style-type: none">• A detailed justification for the RCB to be furnished in view of the existing/ proposed upstream and downstream RCB by conducting the required hydrological studies.• No estimate regarding the anticipated traffic volume expected to use the RCB is not seen reported.• Due to absence of proper storage system, water obtained during monsoon and from intermittent rain are flowing to the sea. However, no mention about the existing RCB at Chamravattom in the downstream side of the proposed RCB is made.• The people from Kumbidi depend on Kuttipuram and Valanchery town for their education, medical, commercial activities etc.• The bridge proposed could reduce the total travel distance by 7km from Kuttipuram to Kumbidi.• A detailed analysis of the requirement and demand shall be submitted based on the present hydrological parameters, availability of water, extend of cultivation, benefits from the project etc.• No alternative alignments are seen mentioned and hence the same if any may be furnished. Any option for soft interventions may be considered.
3.	<p>Functional Design</p> <p>The functional design of the project is mainly achieved through field study and documentation using existing information and specifications from various standards. Various points about functional design are listed below</p> <ul style="list-style-type: none">• The proposed RCB is having 418m length with 7.5 m road way. The weir having 30 vents of 12 X 2.5m waterways with mechanically operating shutters. The deck slab is supported on trestle piers.• The shutters proposed are of mechanically operated vertical lifting type.• No alignment plan of the RCB has been submitted. Hence, the same showing all details of RCB, approach roads on both sides of the river and other connecting roads shall be furnished.• It is strongly felt that instead of going for such a major project with 5.01 Mm³ storage capacity at a cost of Rs 100 Cr, it may be examined whether same benefit can be attained by taking up check dam/regulator cum foot bridge along the stretch of the river which may mitigate the water shortage for a much larger area.• There are roads on either side of the bank which are linking with Kuttipuram of Malappuram and Kumbidi of Palakkad district.• Traffic studies to be conducted for the justification of the bridge.



- Though the alignment plan showing the RCB are furnished and the map showing the exact location of the same is not provided.
- The details regarding river training/ side protection works and its alignment is not shown in the report and the same shall be furnished.
- Details of discharge at the RCB during the summer seasons especially in extreme drought condition is not mentioned and there is no essential assessment of social as well as environmental impact on the downstream side of the RCB is seen furnished.
- It is noted that one RCB has already been proposed in the upstream side of river Thoothapuzha which is one of the main tributary of Bharathapuzha across which the new proposal is made. It may be evaluated whether the construction of the former would affect the total discharge and the availability of water at the latter during drought season.
- The hydraulic parameters of the river are seen noted in the drawings, however, details of the hydrographic survey enclosing bathymetry of the river, river sediment characteristics and sediment load, natural drainage in the area, etc. are missing.
- Topographic profile of the area is not submitted and hence it may be ensured that the surrounding areas would not get inundated during full reserve capacity. It is mentioned in the report that the bed slope is 1 in 4000 and the reservoir stretch is reported to be 8 km.
- The necessity for the bridge associated with the regulator in terms of traffic density (original destination survey) is not furnished.
- Even though the total storage capacity is estimated to be 5.01Mm³, the exact demand is not mentioned in the report for water supply and irrigation schemes.
- The quantity of water expected to be taken for various uses like the requirement for KWA, irrigation on seasonal basis and also the quantity of water that would flow downstream seasonally may be furnished.
- The ayacut area is of 3200 Ha but in the estimation report it is mentioned as 4200 Ha and the same may be clarified.
- Impact on ecology and life in the downstream region due to water deficiency in both surface and groundwater by the proposed structure especially in the summer seasons shall be assessed and verified.
- The geometry of the approach road shall be decided based on traffic study only.
- As per IS 7720, the following detailed investigations are required like detailed topographical survey, hydrological and meteorological data, sediment studies,



	<p>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. Thus, the entire project proposal seems to lack strong quantitative justification.</p> <ul style="list-style-type: none">• The various RCBs at upstream and downstream have various holding capacities and the relative effect of the same on the health of the river itself has to be studied. The water level at the peak discharge as well as at the lean season shall be examined in a longitudinal section with reference to the bed slope of the river, bank elevations and the water levels.
4.	Engineering Design <p>The main points about preliminary design of this project are listed below</p> <ul style="list-style-type: none">• As no geotechnical investigation report are furnished, a detailed report shall be documented with the exact bore logs and foundation recommendation.• The design drawings submitted are too small to read and hence either a hard copy of readable size or a soft copy shall be furnished.• The deck slab is supported on trestle piers resting on pile foundation with pile size 1.2m. It is shown in the drawing that same diameter piles of 8 numbers are provided under abutments while 6 numbers under piers. Piles of lesser diameter shall be considered for bridge structure since the maximum load per pile under pier is worked out to be only 124.86t which is much on conservative side. If feasible the same lesser sized piles as those under piers may be adopted for abutments also.• The details regarding the substructures and superstructure is not seen furnished in the DPR and the details of pile, pile cap, piers, abutments, superstructure, curtain walls, river training works, etc. are missing.• Though sheet piles are considered as item no 60.65 in Appendix A, no details regarding the same are mentioned in the DPR. Also, as no bore logs are available, the subsoil characteristics of the site cannot be evaluated. Hence the effectiveness of sheet piles in this particular site for preventing the seepage shall be studied and the details to be submitted.• The details regarding the sedimentation and dredging requirements shall be studied and documented.



	<ul style="list-style-type: none"> • The structural and alignment details regarding the side protection works are missing but is included in the estimation report and hence the same shall be furnished. • Ogee shaped piers of 30 Nos having size 4x2m with circular portion of 2m diameter and a circular pier with 1.5m is provided. • Even though M30 mix is proposed for pile in the DPR, M35 is adopted in the drawing and estimation and the same may be clarified. • Preliminary design for RCB and its associated components are not provided. • Detailed drawings of pier, foundation, abutments, drawings of regulator, electrical drawings are attached with the report. • The maximum and minimum water levels, HFL, height of the abutments, etc. shall be marked in the detailed drawing and furnished. • The loading class details of bridge, cross sectional details of the proposed approach road are not seen furnished. • Providing fish ladder for maintaining ecological balance may be considered. • Structural details of side wall for bank connection shall be furnished. • The details of retaining walls, cross drainage works etc. for approach road are not mentioned and the same may be furnished.
<p>5.</p>	<p>O&M Plan</p> <p>The comments regarding O&M strategy is listed below</p> <ul style="list-style-type: none"> • As per the report, after construction, the project will be under the charge of section officer. • A maintenance estimate shall be prepared and sanctioned annually. • Care shall be taken to ensure that flooding does not take place.
<p>6.</p>	<p>Financial estimates & cost projections</p> <p>The comments regarding estimate attached in the report is listed below</p> <ul style="list-style-type: none"> • The detailed estimate is prepared in PRICE software based on DSR 2016 with cost index of 37.25%. • The total cost for regulator cum bridge alone is 61.78 crore. • The estimate is based on some drawings or assumptions which have no technical backing. • The voluminous measurements and estimates furnished are not supported by any technical inputs for civil, mechanical and electrical works. • The average cost of construction of regulator cum bridge is Rs 14.78 lakhs per meter length.



- The quantity considered for bailing out water in item 60.2.5 in Appendix A for the construction of RCB seems to be on much higher side since the minimum water level shown in the attached drawing is very low. Therefore, if the excavation works are carried out during the summer seasons, the quantity of water shall be less thereby reducing the time taken for bailing out considerably. Hence, this item may be rechecked as the total amount for the same is estimated to be 3.93 Cr.
- The quantity considered for bailing out water in item 60.2.3 in Appendix C for the construction of side protection wall, the water to be bailed out seems to be too much since the river bed level of banks are above the water level as per the attached drawing. Therefore, the excavation works if carried out during the summer spell, the quantity of water can be minimized so as to reduce the time taken for bailing out considerably. Hence, this item may be rechecked as the total amount for the same is estimated to be 0.98 Cr.
- In order to reduce the total cost, the excavation shall be done by mechanical means only in all appendices except for some minor quantities, if required which may be taken separately.
- For item 7 in Appendix A, "filling available earth", the rate of the item may be reviewed considering the items of excavation in the estimate.
- For item 8 in Appendix A and B, "the filling with earth brought by contractor" shall be substantiated since large quantity of excavated earth is available at site.
- The length of casing pipes for item 12 in Appendix A shall be reviewed considering the soil parameters since the 10m provided in the estimate report appears to be high.
- The depth of Z type sheet piles provided as item no. 30 Appendix A, in the upstream and downstream side of the structure seems to be on higher side and shall be reviewed.
- For item 5.22.6 in Appendix A, the quantity considered for pile reinforcement is 120kg/m³ but for calculation, 150kg/m³ is taken and the same shall be verified and corrected.
- Lumpsum amount of 1 Cr. (Tools and Plants etc.) for appendix H shall be substantiated with relevant supporting quotes and reference.
- The detailed split up of the unforeseen items considered (2.23 Cr) in the general abstract shall be submitted.
- A lumpsum amount of 59.3 lakhs considered in the mechanical works shall be justified in detail.



7.	<p>Cost Benefit Analysis</p> <ul style="list-style-type: none"> The Cost Benefit ratio is not shown in the report and the data sheet in KIIFB format shall be submitted.
8.	<p>Value Engineering Options</p> <ul style="list-style-type: none"> The design furnished seems to be generally acceptable if it satisfies all functional requirements. If technically feasible, piles with lesser diameter shall be considered for economy. Provisions for preventing underwater seepage shall be clearly explained in the DPR.
9.	<p>Implementation Schedule & WBS</p> <p>The time bound work schedule is an important part of every project because it helps better handling of projects in planning, implementation etc.</p> <ul style="list-style-type: none"> The implementation schedule and WBS are not given in the report and shall be furnished.
10.	<p>Project Management Organization Plan</p> <ul style="list-style-type: none"> The report notes that a project management unit is planned to be formed at KIIDC HQ. The organization structure at various levels, human resource requirements, as well as monitoring arrangements are clearly spelt out in the report.
11.	<p>Contract Management Plan</p> <ul style="list-style-type: none"> A detailed contract management system proposed to be followed by KIIDC is furnished in the DPR. A brief description regarding drafting specifications and requirements, preparation of tender documents, evaluation, awarding, service delivery management, contract administration, assessment of risk, contract closure is documented.
12.	<p>Statutory Clearances</p> <ul style="list-style-type: none"> Though it is reported that statutory clearances from departments like revenue, local self-government etc. are to be obtained before starting the work, the various clearances required before execution are not mentioned in the DPR which shall be furnished.
13.	<p>Environmental Aspects & sustainability</p> <ul style="list-style-type: none"> It is stated in the DPR that the proposed scheme is only a storage structure and a diversion scheme for irrigation purpose in summer and there is no chance for submergence and flood of adjoining land since banks are at a higher elevation.



	<ul style="list-style-type: none"> • The report states that as there are sufficient natural drainages through contours, there will not be any chances of water logging in the area. • The applicability of provisions of EIA notification 2006 may be ensured. • A brief description of environmental assessment and environmental management plan shall be enclosed with the report. • Measure to mitigate the adverse impact, if any shall be documented in detail.
14.	<p>Quality Management plan</p> <ul style="list-style-type: none"> • The DPR reports that KIIDC has its own quality manual and assurance inventories, and adhere to provisions of QC manual. • It is reported that a three-tier testing system is followed.
15.	<p>Risk Assessment and Mitigation Measures</p> <ul style="list-style-type: none"> • As per the DPR, since the scheme does not have any negative impact due to land acquisition and environmental aspects, a detailed risk assessment study is not necessary. • Risks involve during planning, construction, implementation etc. shall be identified and documented.
16.	<p>Suggestions & Way Forward</p> <p>After scrutinizing the detailed project report the following suggestions have been made and the details shall be furnished.</p> <ul style="list-style-type: none"> • Requirement and demand analysis shall be elaborate based on the present hydrological parameters, availability of water, extend of cultivation, benefits from the project etc. • The necessity for a bridge in terms of traffic density (original destination survey) shall be furnished. • The details regarding other RCB's in the downstream and upstream side of the proposed location shall be furnished. • The google map showing the exact location of RCB including the approach road shall be furnished. • Traffic studies to be conducted for the justification of the bridge. • It may be evaluated whether construction of RCB in the upstream side at river Thoothapuzha which is one of the major tributary would affect the total discharge and availability of water at the proposed location especially during extreme drought condition.



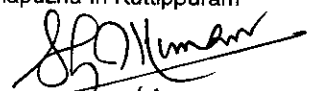
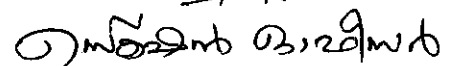
- No mention is made about the possibility of any alternative alignments available in the vicinity and the same shall be furnished. Any option for soft interventions may be considered.
- The geometry of the approach road shall be decided based on traffic study only.
- The hydraulic parameters of the river are seen noted in the drawings, however, details of the hydrographic survey enclosing bathymetry of the river, river sediment characteristics and sediment load, natural drainage in the area, etc. are missing and shall be furnished.
- Topographic profile of the area is not seen furnished and hence it may be ensured that the surrounding areas will not get inundated during full reserve capacity.
- The quantity of water expected to be taken for various uses like the water required for KWA, irrigation on seasonal basis, water that will flow downstream seasonally, etc., in terms of numerical figures shall be furnished.
- Impact on ecology and life in the downstream region resulted by water deficiency in both surface and ground water due to the presence of the proposed structure shall be assessed and verified.
- As per IS 7720, the following detailed investigations are required like detailed topographical survey, 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. Thus, the entire project proposal seems to lack strong quantitative justification which may be verified.
- The various RCBs at upstream and downstream have various holding capacities and the relative effect of the same on the health of the river itself shall be studied. The water level at the peak discharge as well as at the lean season shall be examined by preparing a longitudinal section with reference to the bed slope of the river, bank elevations and the water levels.
- As there is no geotechnical investigation report furnished, a detailed report shall be documented with the exact bore logs and foundation recommendation.
- Hard copies of readable size or a soft copy of the design drawings shall be furnished since the submitted one are too small to read and evaluate.



- Under piers, piles of lesser diameter shall be considered since the maximum load per pile is worked out to be only 124.86t.
- Details of the sheet piles which are not seen attached with the report shall be furnished. As no bore logs are available, the subsoil characteristics of the site cannot be understood and hence the effectiveness of the sheet piles at the particular site shall be evaluated and submitted.
- The details regarding the sedimentation and dredging requirements shall be studied and documented.
- The structural and alignment details regarding the side protection works are missing in the DPR though included in the estimation report shall be furnished.
- Even though a concrete grade of M30 is proposed for pile in the DPR, M35 is adopted in the drawing and estimation and the same shall be clarified.
- The loading class of bridge proper, cross sectional details of the proposed approach road etc. shall be furnished.
- Preliminary design for RCB and its associated components are not provided in the DPR shall be furnished.
- Cross sectional details of approach road including retaining wall shall also be furnished.
- The structural and alignment details regarding the side protection works are missing though included in the estimation report shall be submitted.
- Structural details of side wall for bank connection shall be furnished.
- The quantity considered for bailing out water in item 60.2.5 in Appendix A for the construction of RCB and for 60.2.3 in Appendix C for the construction of river protection works seem to be on much higher side since the minimum water level shown in the attached drawing is very low. This shall be verified and corrected.
- For item 5.22.6 in Appendix A, the quantity considered for pile reinforcement is 120kg/m³ but for calculation, 150kg/m³ is taken and the same shall be verified and corrected.
- In order to reduce the total cost, the excavation shall be done by mechanical means only in all appendices except for some minor quantities, if required which may be taken separately.
- For item 7 in Appendix A, "filling available earth", the rate of the item may be reviewed considering the items of excavation in the estimate.
- For item 8 in Appendix A and B, "the filling with earth brought by contractor" shall be substantiated since large quantity of excavated earth is available at site.



- The length of casing pipes for item 12 in Appendix A shall be reviewed considering the soil parameters since the 10m provided in the estimate report appears to be high.
- The depth of Z type sheet piles provided as item no. 30 Appendix A, in the upstream and downstream side of the structure seems to be on higher side and shall be reviewed.
- Lumpsum amount of 1 Cr. (Tools and Plants etc.) for appendix H shall be substantiated with relevant supporting quotes and reference.
- The detailed split up of the unforeseen items considered (2.23 Cr) in the general abstract shall be submitted.
- A lumpsum amount of 59.3 lakhs considered in the mechanical works shall be justified in detail.
- The Cost Benefit ratio is not shown in the report and the data sheet in KIIFB format shall be submitted.
- The implementation schedule and WBS are not given in the report and shall be furnished.
- Details regarding statutory clearances if any, shall be documented.
- The applicability of provisions of EIA notification 2006 shall be ensured.
- A brief description of environmental assessment and environmental management plan shall be enclosed with the report.
- Measure to mitigate the adverse impact if any, shall be documented in detail.
- Risks that may involve during planning, construction, implementation etc. of the RCB shall be identified and documented.

**OBSERVATIONS OF NON-COMPLIANCES****CONSTRUCTION OF REGULATOR CUM BRIDGE ACROSS BHARATHAPUZHA AT KANKAKADAVU IN
KUTTIPPURAM PANCHAYATH, MALAPPURAM DISTRICT**

Sl. No.	Suggestions & Way Forward of TAR	Reply Furnished by KIIDC	Requirements
1	Requirement and demand analysis shall be elaborated based on the present hydrological parameters, availability of water, extent of cultivation, benefits from the project etc.	<p>The main objective of the project is to store water during the rainy season which otherwise would flow to the Sea due to the absence of suitable storage structures. Considering the world scenario of climate change and global warming the project would benefit in reducing the temperature in the locality as well. Apart from this, the immediate benefits are for the purpose of Irrigation and Agriculture and raising general water table of the locality. The reservoir formed helps to recharge the Ground water sources such as Ponds, Wells etc in the nearby vicinity. It is estimated that the impounded water would amount to 6.913 MCum.</p> <p>KWA requirement is 40.293mld</p> <p>It can also be beneficial to the total ayacut area in the vicinity to the tune of 3200 Ha. The extent of land cultivated and details of crop</p>	<p>The rate of dry season flow as 2 m³/s is to be verified since only a narrow stream alone is supplying water to the proposed reservoir after the Koottakadavu Regulator under construction. Also, there is no possibility of water being released from the u/s regulators including that in Thoothappuzha during summer season.</p>



		<p>pattern in the Ayacut are Paddy 1000 Ha, Banana- 500Ha, Coconut/ Areacunut-1400 Ha, Vegetables 300 Ha</p> <p>Storage & Demand has been worked out and attached as Appendix-A</p>	
2	<p>The necessity for a bridge in terms of traffic density (original destination survey) shall be furnished.</p>	<p>The Roads Subdivision Shornur has conducted a traffic study in the year 2017 September in the Kuttippuram- Kumbidi route; the copy of the same is furnished herewith. It is estimated there is an average plying of 15000 PCU/day in both the directions. Literally speaking, anything above 5000- 10000 PCU/ day an alternate proposal can be made, with which the proposal of Bridge can be substantiated.</p> <p>Considering the population on both the banks of the river and the existing connecting road network only at Kuttippuram, and the vehicular volume in the State an alternative bridge can be justified. Supporting documents attached</p> <p>Traffic Survey Details are attached as Appendix -B</p>	<p>Appendix B contains only a traffic projection which doesn't give a real picture of the actual existing traffic as there is no hourly classified traffic data furnished. Therefore, the above data and the anticipated divertible traffic through the proposed bridge shall be submitted.</p>
3	<p>The geometry of the approach road shall be decided based on traffic study only.</p>	<p>The geometry of the approach road will be finalized based on the traffic study.</p>	<p>The width of carriageway and other RoW components of both the bridge and approaches shall conform to latest KIIFB manual "Guidelines for planning and design of road/ highway projects funded by KIIFB,</p>



			(version 2, 20 November 2018)" based on the expected traffic volume.
4	Under piers, piles of lesser diameter shall be considered since the maximum load per pile is worked out to be only 124.86t.	The detailed design was made available by the IDRB wing considering all these parameters, attached as appendix G	The structural design of the RCB shall follow the latest code of IRC: 112- 2012 which is based on limit state philosophy. The design of piles also shall conform to code IS 2911 with latest amendments.
5	The structural and alignment details regarding the side protection works are missing in the DPR though included in the estimation report shall be furnished.	Furnished in Appendix-G	The grade of mix adopted for the footing of protection walls for approach road on end portions may be enhanced to 1:3:6.
6	Even though a concrete grade of M30 is proposed for pile in the DPR, M35 is adopted in the drawing and estimation and the same shall be clarified.	As per the IDRB design Piles are proposed in M35 concrete mix and M35 mix is taken for the Estimate purpose also. But in the Estimate Report this was mistakenly taken as M30	The error shall be corrected.
7	The loading class of bridge proper, cross sectional details of the proposed approach road etc. shall be furnished.	The details are attached as Appendix G	Not seen furnished in the said appendix G
8	Preliminary design for RCB and its associated components are not provided in the DPR shall be furnished.	Detailed design was carried out by the IDRB after taking into account all these aspects, details attached as Appendix G	Footpath facility shall be provided for the bridge as it has a length of more than 400 m considering pedestrian safety. The revised drawing shall be submitted with corresponding corrections in the estimate.
9	Cross sectional details of approach road including retaining wall shall also be furnished.	The same are attached as Appendix H	The provision of footpath shall be made for the approaches also to achieve continuity. The revised drawing shall be submitted with corresponding corrections in the estimate.



10	The quantity considered for bailing out water in item 60.2.5 in Appendix A for the construction of RCB and for 60.2.3 in Appendix C for the construction of river protection works seem to be on much higher side since the minimum water level shown in the attached drawing is very low. This shall be verified and corrected.	Only adequate provisions for the smooth execution even during thrift rainy season are taken.	The construction of side protection works shall be planned during the dry seasons to avoid massive water bailing as the river Bharathappuzha at this stretch remains dry during a long spell of time in every year. Therefore, a realistic quantity of bailing out shall be worked out based on the above fact.
11	For item 5.22.6 in Appendix A, the quantity considered for pile reinforcement is 120kg/m ³ but for calculation, 150kg/m ³ is taken and the same shall be verified and corrected.	Corrected. Reinforcement is taken at 150kgs/Cum	The corrected estimate shall be furnished.
12	In order to reduce the total cost, the excavation shall be done by mechanical means only in all appendices except for some minor quantities, if required which may be taken separately.	Noted and shall be considered at the time of obtaining Technical Sanctions	The same shall be corrected and the modified estimate shall be furnished prior to submission to sanction by KIIFB.
13	For item 7 in Appendix A, "filling available earth", the rate of the item may be reviewed considering the items of excavation in the estimate.	Noted and shall be considered at the time of obtaining Technical Sanctions	The same shall be corrected and the modified estimate shall be furnished prior to submission to sanction by KIIFB.
14	For item 8 in Appendix A and B, "the filling with earth brought by contractor" shall be substantiated since large quantity of excavated earth is available at site.	Noted and shall be considered at the time of obtaining Technical Sanctions	The same shall be corrected and the modified estimate shall be furnished prior to submission to sanction by KIIFB.
15	The length of casing pipes for item 12 in Appendix A shall be reviewed considering the	Provision has been made as per soil strata particulars at site	In most of the bore holes considered it is observed that the topsoil is having moderately high N-values and hence the provision of



	soil parameters since the 10m provided in the estimate report appears to be high.		casing pipe shall be reduced to the barest minimum and the item may be corrected.										
16	The depth of Z type sheet piles provided as item no. 30 Appendix A, in the upstream and downstream side of the structure seems to be on higher side and shall be reviewed	This is as per the design by IDRB.	Sheet pile of length 3.00 m on the u/s and 4.50 m d/s only are shown in the drawing and hence the item no. 30 shall be corrected accordingly. The adequacy of the depth of sheet pile may be confirmed with IDRB as the top layers of the riverbed consist mainly of sandy soil.										
17	Lumpsum amount of 1 Cr. (Tools and Plants etc.) for appendix H shall be substantiated with relevant supporting quotes and reference.	Split up details <table border="1" data-bbox="911 603 1304 817"> <tr> <td>Computer</td> <td>100000</td> </tr> <tr> <td>Generator room</td> <td>2500000</td> </tr> <tr> <td>Total Station</td> <td>1000000</td> </tr> <tr> <td>Jeep 1 no</td> <td>1300000</td> </tr> <tr> <td>Video covering</td> <td>100000</td> </tr> </table>	Computer	100000	Generator room	2500000	Total Station	1000000	Jeep 1 no	1300000	Video covering	100000	The items other than generator room listed shall be deleted as the construction cost alone is funded by KIIFB. For the generator room detailed estimate shall be furnished.
Computer	100000												
Generator room	2500000												
Total Station	1000000												
Jeep 1 no	1300000												
Video covering	100000												
18	The detailed split up of the unforeseen items considered (2.23 Cr) in the general abstract shall be submitted	Corrected	The corrected estimate shall be furnished.										
19	A lumpsum amount of 59.3 lakhs considered in the mechanical works shall be justified in detail.	This provision is made for cost escalation and GST	The estimate shall be re-cast with latest cost index and GST components.										
20	The Cost Benefit ratio is not shown in the report and the data sheet in KIIFB format shall be submitted.	Cost -benefit calculations are furnished. Attached in DPR	Cost-Benefit ratio analysis shall be furnished in tabular form as per KIIFB template.										
21	The implementation schedule and WBS are not given in the report and shall be furnished	Furnished in the DPR	The implementation schedule and WBS shall be furnished as the same are not seen in the DPR.										



22	A brief description of environmental assessment and environmental management plan shall be enclosed with the report.	Since the structure is only a storage structure, and water is stored in the river course itself there will not be any chance of severe environmental impact	The fisheries authorities may be consulted to ensure that no threat to the aquatic life in the river due to the construction of the RCB.
23	Measure to mitigate the adverse impact if any, shall be documented in detail.	The same shall be documented	The documents shall be furnished.
24	Risks that may involve during planning, construction, and implementation etc. of the RCB shall be identified and documented.	The same shall be documented	The documents shall be furnished.




Additional Comments

General

1. The incomer cable shall be enhanced to 3.5Cx 95 sq.mm Al cable as per the backup fuse rating, the same shall be corrected accordingly.
2. For the same connected load different backup fuse has been considered in the sub panel the same shall be clarified and corrected accordingly.
3. The centralized capacitor compensation shall be provided instead of individual capacitor compensation, the same shall be clarified and corrected accordingly.
4. The individual ELR provided to the MSB outgoing shall be avoided and the same shall be clarified.
5. The main incomer ELR sensitivity range shall be selected properly and the same shall be incorporated in the schematic drawing.
6. The outgoing fault level considered higher than the incomer fault level, the same shall be corrected properly.
7. The EFR shall be provided in the generator side with proper neutral CT.
8. The generator calculation shall be provided in the DPR.
9. The schematic drawing and GA drawing busbar material shown as Copper and Aluminum respectively, the same shall be clarified and corrected accordingly.

Estimate

10. The estimate shall be re-cast with latest cost index and GST components and incorporating the corrections proposed in the "Observations of Non-Compliance".
11. The electrical estimate rate analysis and supporting documents shall be submitted.
12. The electrical quantity inventory shall be submitted.


S. S. Kumar
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