KK Marikana Annadukka—CH Nagar Road Work in Kumbadaje Gram Panchayat

Detailed Project Report (DPR)

SUBMITTED TO KERALA LOCAL GOVERNMENT SERVICE DELIVERY PROJECT (KLGSDP)

Prepared By
Centre for Rural Management (CRM), Kottayam, Kerala

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CONTENT

Chapter 1

INTRODUCTION & PROFILE OF THE GRAM PANCHAYAT

INTRODUCTION

The document contains the detailed project report (DPR) of the ***KK Marikana Annadukka—CH Nagar Road Work in Kumbadaje Gram Panchayat*** which has been prepared for the Kumbadaje Gram Panchayat of Kasargodu District in Kerala with the technical support of Centre for Rural Management, (CRM) Kottayam. The project is finalized by the joint sitting of the Project Management Unit of the Kerala Local Government Service Delivery Project (KLGSDP) and the functionaries of the Kumbadake Gram Panchayat. It is identified based on the socio economic conditions, the index of backwardness and the aspirations of the local citizens of the Panchayat. Participatory rural rapid appraisal tools were administered for the identification and prioritization of the Project.

PROFILE OF KUMBADAJE PANCHAYAT

Kumbadaje Gram Panchayat is in Karadukka Block of Kasargodu District. The total area of the Panchayat is 31.03sq km. The east side of the Panchayat is Karadukka and Beloor Gram Panchayats, west side is Badiyadukka Gram Panchayat, south side is Chenkala and Karadukka Gram Panchayats and north side is Enmakaje and Badiyadukka Gram Panchayats. Majority of the people in the Panchayat are agriculturists and the major crops are arecunut,(47.79%), coconut (16.33%), rubber (16.59%) pepper (3.01%), paddy(6.02%) and plantain(2.3%). In addition to this cashew (3.52%) is also cultivated in the area. Total there are 2327 ha. of land under cultivation .There are ten *padashakaram samithis* for paddy cultivation. Though there are 7 perennial ponds, 12 stream and small

rivulets, and number of public and private tube wells for irrigation, the required water is quite in sufficient for irrigation, particularly for paddy cultivation. There are total 13 wards in the Gram Panchayat. The total number of the households in the Panchayat is 2787. The density of population is 476 persons per sp.km. The total population of the Panchayat is 14772 among which 7370 are males and 7402 are females. The literacy rate of the Panchayat is 76.50 percent. Whereas the male literacy rate is 81 per cent and female literacy rate is 72 per cent. The sex ratio of the Panchayat is 1004. Out of the total population, 10.09 per cent are SC category and 0.26 per cent is ST category. Out of the total households in the Panchayat, 48.83 (1361) per cent belongs to BPL category, as per the recent BPL list. In the Panchayat, there are 24 recognized SC colonies with 255 households. The colonies are spread throughout the Panchayat, except in two wards (ward number iii & v). Among the SC community, some of them are Theyyam artists. There are 153 households under STs and they belong to two categories, *Marathi and Mavilan* .Under *Mavilan* category there are only 4 families.

SECTOR PRIORITY (CONNECTIVITY)

Sector priority was made by the Panchayat with the Support of Centre for Rural Management (CRM), Kottayam. The purpose was to assess the backwardness and to identify sector and essential projects which have the potential for sustainable local economic development and ensuring social justice. The potential projects under sectors were identified through three FGDs conducted in different parts of the GP and followed by transect walk. Discussions/consultations with the senior citizens and social workers in the Panchayat were also arranged to gather expert opinion.

To begin with the sector analysis in very precise, the consulting team (Centre for Rural Management) had a detailed discussion with the President, Vice President and other members of the GP on 31 May 2016. Subsequently, four Focus Group Discussions (FGDs) in different parts of the GP on 9th & 10th June were conducted and followed by transect walk on the same dates. Representatives of the political parties, members from

community based organizations, teachers, *anganwadi* workers as well as members from *kudumbasree* were invited for active participation in the FGDs and to share their views and suggestions in prioritizing the projects. While assessing the socio economic conditions and the index of backwardness of the Panchayat, all the sectors were analyzed in detail. And based on the detailed sector analysis, **Connectivity** was identified as one of the priority sectors.

PROJECT RATIONAL OF THE *KK MARIKANA ANNADUKKA—CH NAGAR ROAD WORK*

Good net work of roads is a prerequisite for not only local economic development but also for ensuring social justice. Cost effective movement of people, goods and service would ensure a momentum in economic development and spatial entitlements. As per the Asset Register of the Panchayat, there are altogether 121.14 km of road net works of which 70 per cent is *katcha* road. Remaining portion is classified as tar road with 18.85 per cent, 7 per cent of gravel road and the remaining under metal road. Roads of cement concrete are totally absent in the area. The road density is much below the State as well as district average. It is not in keeping in view of the number of passengers and volume of traffic. This analysis is based on the terms of unconnected habitations by 'all weather roads' and the connectivity with the outside spatial boundary. The road network is highly inadequate in the Panchayat to work as catalyst for local economic development, service delivery and effective governance. All the *katcha* roads become muddy during rainy seasons. The data on the classification of roads in the Panchayat shows the connectivity deficit and its poor quality. The absence of all weather roads is the major impediment for all round development of the Panchayat. All weather roads have become instrumental in changing the local economic development scenario in many Panchayats in Kerala but in the case of Kumbadaje Gram Panchayat, the case is different. For example, an underdeveloped neighboring Gram Panchayat of Kumbadaje is having more than 400 km of road net work. New road network is considered as an immediate necessity in the area.

Therefore, considerable effort is needed to design new roads. Kumbadaje needs every support and assistance in this direction.

It is a proposal for the construction of a 2 km road with 2 box culverts and a bridge the proposed construction would benefit people from three wards (ward numbers i, iii & x) of the GP. Around 400 families are the potential beneficiaries of the project and majority of them are from SC. The proposed road project has the potential to endow with all weather road connectivity to 4 eligible unconnected habitations in the GP. It is also reported that there is no other alternative road to the people from this area and also the proposed road will connect the bordering areas of the Panchayat. When the proposed road is completed, there is all possibility of operating public transport services to different destinations. Moreover, it is visualized that the proposed road connectivity may be instrumental in addressing the backwardness of the Panchayat.

Chapter 2

PROJECT NAME, LOCATION AND OBJECTIVES

NAME OF THE PROJECT: KK Marikana Annadukka—CH Nagar Road Work in Kumbadaje Gram Panchayat

MAIN OBJECTIVE/UTILITY OF THE PROJECT

(i) To provide all weather road connectivity to 400 households including the citizens from the SCs

(ii) The proposed road project has the potential to endow with all weather road connectivity to 4 eligible unconnected habitations in the GP

(iii) The proposed road will connect the bordering area of the State

(iv) Proposed road connectivity may be instrumental in addressing the backwardness of the Panchayat.

(v) To provide all possibility of operating public transport services to different destinations

SUB OBJECTIVE OF THE PROJECT

(i) The proposed road connectivity would be instrumental in changing the health scenario in general and female health status in the targeted habitations as it reduces the travelling distance to the health institutions

PROJECT LOCATION

Ward Numbers: 1& 10.

Place Name: K K Moola Marekana C H Nagar Road, Kubadaje Gram Panchayat, Kasaragod District

Survey Number: R's no 429|pt, 436/pt ', 439/pt ,506/pt ,404/pt ,403/pt ,516/pt ,516 /pt. Kumbadaje Village.

LAND DETAILS

Ownership particular: The land for the proposed construction is owned by the Gram Panchayat

Boundary of the land: Ward No 1, 10.

Sketch plan (Attached)

PHYSICAL INFRASTRUCTURE

The project has the following components

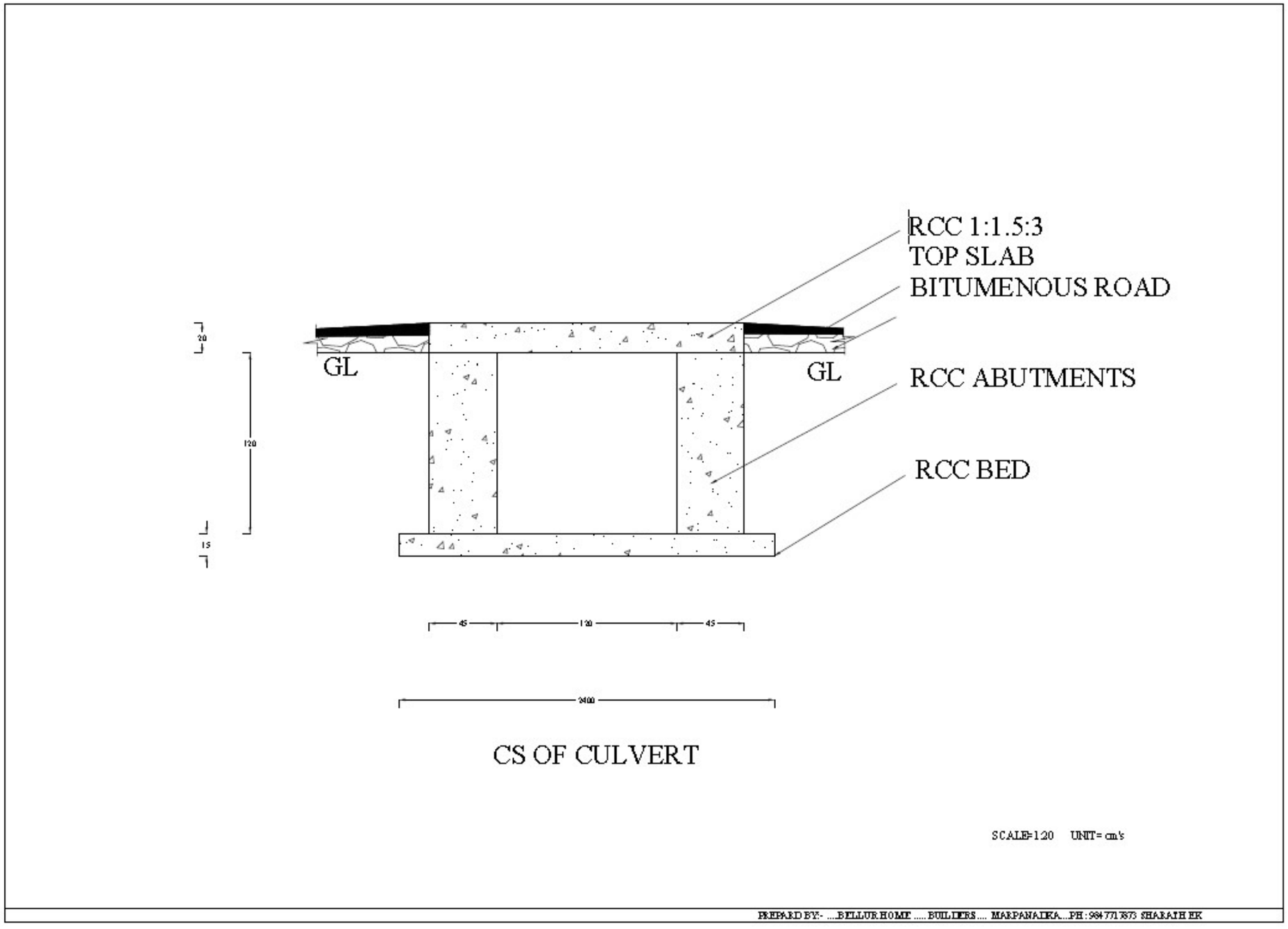
- Road
- Culvert:

PROJECT DESIGNS

Drawing for Road

Drawing for Culvert

PROJECT DESIGNS



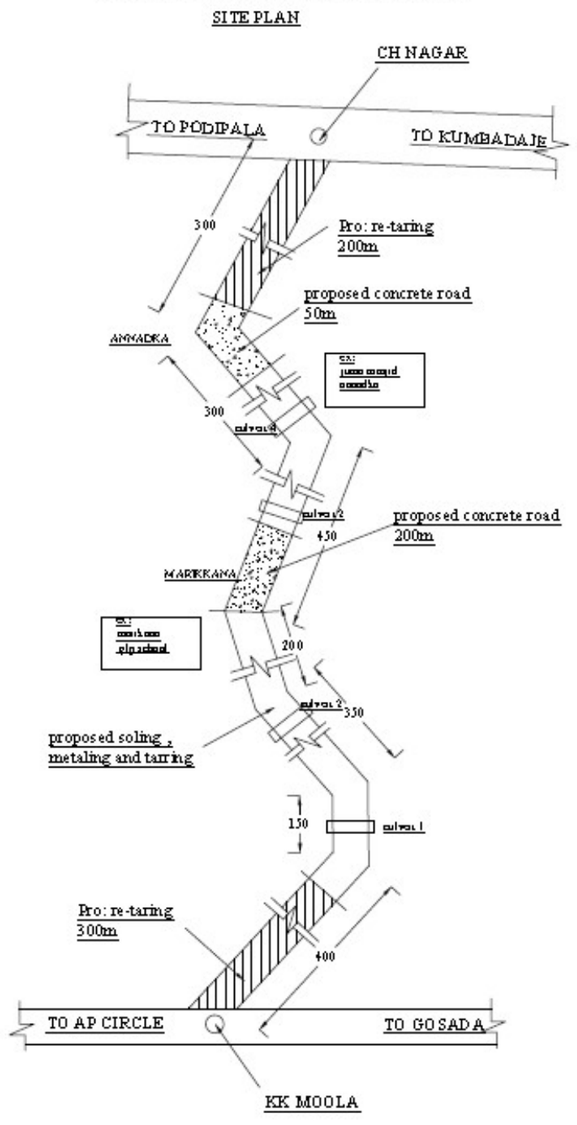
CS OF CULVERT

SCALE=1:20 UNIT= cm's

PREPARED BY:- ....BELLUR HOME .....BUILDERS.... MARPANADKA...PH:9847717873 SHARATH BK

NAME OF WORK: KK MARIKANA- ANNADUKKA - CH NAGAR ROAD WORK
KUMBADAJE GRAMA PANCHAYATH

SITE PLAN



NORTH

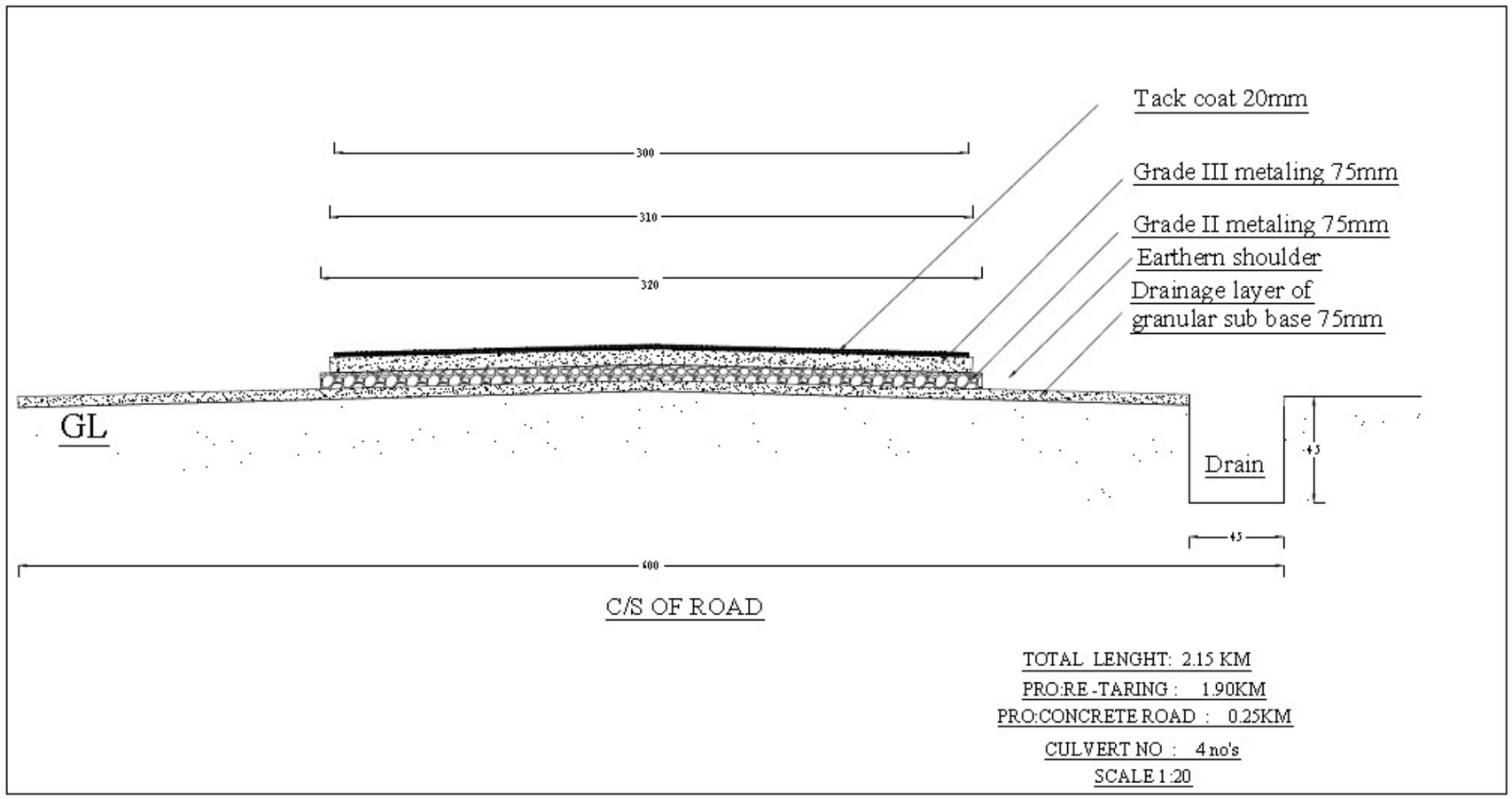
SCALE=1:400

UNIT=C.METRE

VILLAGE=KUMBADAJE

PREPARED BY:- .... BELLUR HOME ..... BUILDERS .... MARPANADKA....PH : 9847717873 SHARATH KK

NAME OF WORK: KK MARIKANA- ANNADUKKA - CH NAGAR ROAD WORK
KUMBADAJE GRAMA PANCHAYATH



C/S OF ROAD

TOTAL LENGHT: 2.15 KM
PRO:RE-TARING : 1.90KM
PRO:CONCRETE ROAD : 0.25KM
CULVERT NO : 4 no's
SCALE 1:20

PREPARED BY:- .... BELLUR HOME .... BUILDERS .... MARPANADKA....PH : 9847717873 SHARATH EK

ENVIRONMENTAL ISSUES (IF ANY) AND PROTECTIVE MEASURES

The construction of the road does not create any environmental issues. Not even a tree is marked to be cut for road construction. Protective measures are suggested, designed and inserted in the plan to arrest the possibilities of occurring land slide and soil erosion in future. Road furniture, wherever necessary, is made built-in in the design. Moreover, the road is designed by considering the landscape.

QUALITY ASSURANCE

'Specifications for Rural Roads 'published by the Indian Road Congress (IRC) is taken seriously for quality assurance. It deals with three systems such as(i) quality management system, (ii) quality control requirements and (iii)suited equipments & test procedures . Attempts will be made to follow checklist protocol which ensures quality control at three stages known as 'stage passing'. The first one is prior to construction. The other two phases are during the construction stage and after the completion of each stage of construction. The concept and operationalization of stage passing will ensure clear accountability too.

Chapter 3

FINANCIAL DETAILS

Details on Cost Estimate

NAME OF WORK: KK MARIKANA ANNADUKKA-CH NAGAR ROAD WORK, KUMBDAJE GRAMA PANCHAYATH						
ABSTRACT FOR THE PROPOSAL						
SL NO		**Description**	**Unit**	**Quantity**	**Rate**	**Amount (in Rs)**
1	2.6.1	Earth work in excavation by mechanical means (Hydraulic excavator) / manual means over areas (exceeding 30cm in depth. 1.5 m in width as well as 10 sqm on plan) including disposal of excavated earth, lead upto 50m and lift upto 1.5m, disposed earth to be levelled and neatly dressed. All kinds of soil	M^3	5523	211.91	1170387.99
2	OD	Dry rubble masonry including cost and conveyance of all materials and all labour charges etc. complete.	M^3	76	3450.87	262265.84
3	4.1.3	Providing and laying in position cement concrete of specified grade excluding the cost of centering and shuttering - All work up to plinth level.1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size).	M^3	8	7444.55	59556.43
4	5.1.2	Providing and laying in position specified grade of reinforced cement concrete, excluding the cost of centering, shuttering, finishing and reinforcement - All work up to plinth level : 1:1.5:3 (1 cement : 1.5 coarse sand : 3 graded stone aggregate 20 mm nominal size)	M^3	56	8484.905	475154.69
5	5.9.1	Centering and shuttering including strutting, propping etc. and removal of form for foundations, footings, bases of columns, etc. for mass concrete	M^2	370	267.55	98992.68
6	OD	Supplying and filling quarry muck with pebblles upto60mm size for filling in slushy potion of road including cost conveyance and all labour charges etc complete	M^3	34.2	1026.85	35118.36
7	OD	Sectioning upto 150mm and forming the surface for old roads including all labour charges etc. complete.	M^2	3640	12.89	46921.25

8	16.3.2	Supplying and stacking at site.63 mm to 45 mm size stone aggregate and stacking on road side in standerd heaps for premeasurement including all cost and conveyance of all materials and all labour charges etc complete.	M^3	414.4	1836.11	760885.47
9	16.3.3	Supplying and stacking at site.53mm to 22.4mm size stone aggregate and stacking on road side in standerd heaps for premeasurement including all cost and conveyance of all materials and all labour charges etc complete.	M^3	388.5	1844.01	716398.90
10	16.3.9	Supplying and stacking Good earth and stacking on road side in standerd heaps for premeasurement including all cost and conveyance of all materials and all labour charges etc complete.	M^3	78.12	437.03	34141.07
11	16.3.7	Supplying and stacking Stone screening 11.2 mm nominal size (Type B). and stacking on road side in standerd heaps for premeasurement including all cost and conveyance of all materials and all labour charges etc complete.	M^3	224.2	2003.4	449152.17
12	16.4	Laying, spreading and compacting stone aggregate of specified sizes to WBM specifications in uniform thickness, hand picking, rolling with 3 wheeled road / vibratory roller 8-10 tonne capacity in stages to proper grade and camber, applying and brooming requisite type of screening / binding material to fill up interstices of coarse aggregate, watering and compacting to the required density.	M^3	883.50	578.8756	511436.59
13	16.30.1	Providing and applying tack coat using hot straight run bitumen of grade VG-10, including heating the bitumen, spraying the bitumen with mechanically operated spray unit fitted on bitumen boiler, cleaning and preparing the existing road surface as per specifications. On W.B.M. @ 0.75 kg/ sqm.	M^2	5700	73.20213	417252.11

14	16.32.1	2 cm premix carpet surfacing with 1.8 cum and 0.90 cum of stone chippings of 13.2 mm size and 11.2 mm size respectively, per 100 sqm and 52 kg and 56 kg of hot bitumen per cum of stone chippings of 13.2 mm and 11.2 mm size respectively including a tack coat with hot straight run bitumen, including consolidation with road roller of 6 to 9 tonne capacity etc. complete (tack coat to be paid for separately).With paving Asphalt grade VG - 10 heated and then mixed with solvent at the rate of 70 grams per kg of asphalt	M^2	5700	235.95	1344910.30
15	16.41	Providing and laying seal coat over prepared surface of road with bitumen heated in bitumen boiler fitted with the spray set spraying using 98 kg of bitumen of grade VG - 10 and blinding surface with 0.90 cum of stone aggregate of 6.7 mm size (Passing 11.2 mm sieve and retained on 2.36 mm sieve) per 100 sqm of road surface including rolling and finishing with power road roller all complete.	M^2	5700	136.67	778999.99
16	16.42	Cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 40 mm nominal size) in pavements, laid to required slope and camber in panels as required including consolidation finishing and tamping complete.	M^3	54	7422.968	400840.26
17	5.22.6	Steel reinforcement for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete upto plinth level.	Kg	6720	92.75	623249.02
		TOTAL				8185663.13
		CONTIGENCIES				**414,336.88**
		GRAND TOTAL				8600000.00
RUPEES EIGHTY SIX LAKHS ONLY						

NAME OF WORK: KK MARIKANA ANNADUKKA-CH NAGAR ROAD WORK, KUMBDAJE GRAMA PANCHAYATH							
Detailed Estimate							
1	Earth work in excavation by mechanical means (Hydraulic excavator) / manual meansover areas (exceeding 30 cm in depth, 1.5 m in width as well as 10 sqm on plan) including disposal of excavated earth, lead up to 50 m and lift up to 1.5 m, disposedearth to be levelled and neatly dressed. All kinds of soil.						
	DSR 2.6.1						
	cutting for road					**5000**	
	drainage						
	chain length	**1**	**500.00**	**0.40**	**0.40**	**80.00**	
	chain length	**1**	**300.00**	**0.45**	**0.40**	**54.00**	
	chain length	**1**	**250.00**	**0.45**	**0.50**	**56.25**	
	chain length	**1**	**1100.00**	**0.45**	**0.50**	**247.50**	
	box culvert						
	chain length	**4**	**7.00**	**2.50**	**1.40**	**98.00**	
	foundation cutting						
	chain length	**2**	**50.00**	**0.70**	**0.30**	**21.00**	
						5556.75	**M3**
		5556.75	**M3**	**211.91**	**/1M3**		**1,177,540.01**
2	Dry rubble masonry with hard stone in superstructure plinth level and upto floor five level including cost of all materials, labour etc :						
	foundation for side wall						
	chain length	**2**	**50.00**	**0.70**	**0.30**	**21.00**	
	Super structure	**2**	**50.00**	**0.50**	**1.00**	**55.00**	
						76.00	**M3**
		76.00	**m3**	**3450.87**	**/1m3**		**262,265.84**
3	Providing and laying in position cement concrete of specified grade excluding the cost of centering and shuttering - All work up to plinth level.1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size).						
	DSR 4.1.3						
	Top Belt						
	side wall	**2**	**50.00**	**0.20**	**0.40**	**8.00**	
						8.00	**M3**
		8.00	**M3**	**7444.55**	**/M3**		**59,556.43**
4	Providing and laying in position specified grade of reinforced cement concrete, excluding the cost of centering, shuttering, finishing and reinforcement - All work up to plinth level : 1:1.5:3 (1 cement : 1.5 coarse sand : 3 graded stone aggregate 20 mm nominal size)						
	DSR 5.1.2						

	culvert						
	foundation	**4**	**7**	**2.5**	**0.2**	**14**	
	abutments	**8**	**7**	**0.45**	**1.2**	**30.24**	
	top slab	**4**	**7**	**2.1**	**0.2**	**11.76**	
						56	**M3**
		56.00	**M3**	**8484.905**	**/M3**		**475,154.69**
5	Centering and shuttering including strutting, propping etc. and removal of form for foundations, footings, bases of columns, etc. for mass concrete						
	DSR 5.9.1						
	Top Belt	**2**	**50.00**	**0.20**		**20.00**	
	culvert						
	foundation	**16**	**7**		**0.2**	**22.4**	
	abutments	**32**	**7**		**1.2**	**268.8**	
	top slab	**4**	**7**		**2.1**	**58.8**	
						370.00	**M2**
		370.00	**m2**	**267.55**	**/M2**		**98,992.68**
6	Supplying and filling quarry muck with pebblles upto60mm size for filling in slushy potion of road including cost conveyance and all labour charges etc complete						
	wheel track	**1**	**30.0**	**1.20**	**0.20**	**7.20**	
		2	**20.0**	**0.90**	**0.20**	**7.20**	
	Rising road way	**2**	**20.0**	**3.30**	**0.15**	**19.80**	
						34.20	**M3**
		34.20	**m3**	**1026.85**	**/m3**		**35,118.36**
7	Sectioning upto 150mm and forming the surface for old roads including all labour charges etc. complete.						
	chain length	**1**	**1200.0**	**3.20**		**3840.00**	
						3840.00	
	Deduct						
		1	**30.0**	**1.20**	**36.00**		
		2	**20.0**	**0.90**	**36.00**		
		2	**20.0**	**3.20**	**128.00**		
				(-)	**200.00**	**3640.00**	**M2**

		3640.00	**M2**	**12.89**	**/1M2**		**46,921.25**
8	Supplying and stacking at site.63 mm to 45 mm size stone aggregate and stacking on road side in standerd heaps for premeasurement including all cost and conveyance of all materials and all labour charges etc complete.						
	DSR 16.3.2						
		1	**1400.0**	**3.20**	**0.10**	**448.00**	
		Deduct 7.5% voids				**33.60**	
						414.40	**M3**
		414.40	**M3**	**1836.11**	**/1m3**		**760,885.47**
9	Supplying and stacking at site.53mm to 22.4mm size stone aggregate and stacking on road side in standerd heaps for premeasurement including all cost and conveyance of all materials and all labour charges etc complete.						
	DSR 16.3.3						
		1	**1400.0**	**3.00**	**0.10**	**420.00**	
		Deduct 7.5% voids				**31.50**	
						388.50	**M3**
		388.50	**M3**	**1844.01**	**/1m3**		**716,398.90**
10	Supplying and stacking Good earth and stacking on road side in standerd heaps for premeasurement including all cost and conveyance of all materials and all labour charges etc complete.						
	DSR 16.3.9						
		1	**1400.0**	**3.20**	**0.009**	**40.32**	
		1	**1400.0**	**3.00**	**0.009**	**37.80**	
						78.12	**M3**
		78.12	**m3**	**437.03**	**/1m3**		**34,141.07**
11	Supplying and stacking Stone screening 11.2 mm nominal size (Type B). and stacking on road side in standerd heaps for premeasurement including all cost and conveyance of all materials and all labour charges etc complete.						
	DSR 16.3.7						
	G1	**1**	**1900.0**	**3.20**	**0.02**	**121.60**	
	G2	**1**	**1900.0**	**3.00**	**0.018**	**102.60**	
						224.20	**M3**
		224.20	**m3**	**2003.35**	**/1m3**		**449,152.17**

12	Laying, spreading and compacting stone aggregate of specified sizes to WBM specifications in uniform thickness, hand picking, rolling with 3 wheeled road / vibratory roller 8-10 tonne capacity in stages to proper grade and camber, applying and brooming requisite type of screening / binding material to fill up interstices of coarse aggregate, watering and compacting to the required density.						
	DSR 16.4						
	G1	**1**	**1900.0**	**3.20**	**0.075**	**456.00**	
	G2	**1**	**1900.0**	**3.00**	**0.075**	**427.50**	
						883.50	**M3**
		883.50	**m3**	**578.88**	**/1m3**		**511,436.59**
13	Providing and applying tack coat using hot straight run bitumen of grade VG-10, including heating the bitumen, spraying the bitumen with mechanically operated spray unit fitted on bitumen boiler, cleaning and preparing the existing road surface as per specifications. On W.B.M. @ 0.75 kg/ sqm.						
.	**DSR 16.30.1**						
	chain length						
		1	**1900.0**	**3.00**		**5700.00**	
						5700.00	**M3**
		5700.00	**m2**	**73.20**	**/1m2**		**417,252.11**
14	2 cm premix carpet surfacing with 1.8 cum and 0.90 cum of stone chippings of 13.2 mm size and 11.2 mm size respectively, per 100 sqm and 52 kg and 56 kg of hot bitumen per cum of stone chippings of 13.2 mm and 11.2 mm size respectively including a tack coat with hot straight run bitumen, including consolidation with road roller of 6 to 9 tonne capacity etc. complete (tack coat to be paid for separately).With paving Asphalt grade VG - 10 heated and then mixed with solvent at the rate of 70 grams per kg of asphalt						
	DSR 16.32.1						
	chain length						
		1	**1900.0**	**3.00**		**5700.00**	
						5700.00	
		5700.00	**m2**	**235.95**	**/1m2**		**1,344,910.30**
15	Providing and laying seal coat over prepared surface of road with bitumen heated in bitumen boiler fitted with the spray set spraying using 98 kg of bitumen of grade VG - 10 and blinding surface with 0.90 cum of stone aggregate of 6.7 mm size (Passing 11.2 mm sieve and retained on 2.36 mm sieve) per 100 sqm of road surface including rolling and finishing with power road roller all complete.						
	DSR 16.41						
	chain length						
		1	**1900.0**	**3.00**		**5700.00**	
						5700.00	**m2**

		5700.00	**m2**	**136.67**	**/1m2**		**778,999.99**
16	Cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 40 mm nominal size) in pavements, laid to required slope and camber in panels as required including consolidation finishing and tamping complete.						
	DSR 16.42						
		1	**250**	**3**	**0.18**	**135**	**M3**
		135.00	**M3**	**7422.968**	**/M3**		**1,002,100.66**
17	Steel reinforcement for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete upto plinth level.						
	DSR 5.22.6						
		56.00	**m3**	**120.00**	**kg /1m3**	**6720**	**kg**
		6720.00	**kg**	**92.75**	**/1kg**		**623,249.02**
	TOTAL						**8,794,075.54**
	CONTIGENCIES						**405,924.46**
	GRAND TOTAL						**9,200,000.00**
RUPEES NINGHTY TWO LAKHS ONLY							

Chapter 3

FINANCIAL DETAILS

Component wise details for each activity

Materials: Subgrade soil is an integral part of the road pavement structure as it provides support to the pavement as its foundation. This would possess sufficient stability under adverse climatic and loading conditions. Aggregate form the major portion of the pavement structure and they are the most voluminous ingredients used in pavement construction. Since it is proposed to be a work by a recognized contractor, the material (cement, soil, bitumen etc) will be supplied by the contractor as per the specification in the tender notification. The cost of the materials is included in the estimate. The cost of materials would comply with the present schedule of rates. And it is included in the special provisions and may be made to assure the quality of all the material used.

Labor: The labour charge is included in the estimate. Since it is proposed to be a work by a recognized contractor, the labor will be employed by the contractor as per the specification in the tender notification. Special provisions may be made to assure the quality of workmanship. The cost of labour would comply with the present schedule of rates.

Transport: The transporting charge is included in the estimate. While transporting the materials, all necessary care will be taken to avoid casualty

Environmental compliance: All environmental laws, regulations, standards and other requirements (site permit, fire clearance certificate and pollution certificate) will be obtained. Environmental concerns and compliance activities are increasingly being integrated and aligned to some extent in order to avoid conflicts, wasteful overlaps and gaps. All precautions would be taken for safeguarding the environment during the course of construction.

Cost shifting of utilities: Separate costing is worked to electric supply including electric post shifting and initialization of separate electric transformer. Same is the case with water supply

Consultancy: No major consultancy is envisaged.
Stationary compliance cost: Detailed costing included
Procurement: Procurement charge is envisaged
Soil testing: Provision is included
Contingency: Contingency charges are included
Financing Source: Fund from Kerala Local Government Service Delivery Project (KLGSDP)

Chapter 4

INSTITUTIONAL FRAMEWORK

ROLE OF DIFFERENT OFFICIALS:

Panchayat Committee: The project has to be approved by the Panchayat Committee

Assistant Executive Engineer and Overseer from the LSGD Engineering Wing: Once the Panchayat approves the project it will be vetted by the Assistant Executive Engineer from the LSGD Engineering Wing and will be countersigned by the Executive Engineer at the Block Level.

Panchayat Committee: Panchayat Committee officially submits the project to the District Planning Committee (DPC) for approval.

Procurement / Tender: After the approval of the DPC, the Panchayat has to tender the work as per the procurement /tender rule

Implementation: The project will be implemented by the LSGD Engineering Wing of the Gram Panchayat.

Monitoring: The Project will be monitored by the Panchayat Committee.

Beyond Panchayat: No activity is visualized beyond the Panchayat.

Chapter 5

PROJECT MANAGEMENT

PRE CONSTRUCTION PHASE

The overall planning, coordination, and control of the project from inception to completion aimed at satisfying the requirements of the Panchayat are listed in the project management phase in order to produce a functionally and financially viable project. Design -bid -build method of construction road and associated structure would be entirely planned and designed before being built which helped in the formation of a solid plan and associated specifications that formed the construction documents. The Panchayat would then tender the bids (or tenders) and award the project to a successful bidder/contractor, who would then undertake proposed road developed right from the scratch. The bidder would supply materials, labour and transportation. Pre-construction services grew out of construction cost estimating to encompass the other activities in planning a project.

The intent is to work with the Panchayat to help deliver a model project that meets the objectives of the proposed project. In addition to estimating, the pre construction team participates in design decisions, evaluations, value engineering, value analysis, scheduling, constructability reviews, and more. Design costs and permitting are included. Many items under pre-construction services are included in the project construction services. This is also accomplished in the project cost. The constructing firm then delivers the project as per the proposed tender agreement. The Panchayat and the constructing firm share any cost savings realized during construction. Before implementation a wide range of issues needs to be considered. The availability of finance for construction is important. As in case of the proposed project, it is assured from the KLGSDP. Other activities are (i) establishment of a monitoring and performance evaluation system (ii) alternate provision for transportation during the construction period (iii) role of the public participation (iv) technical assistance requirements for construction, supervision and for the management and operations staff.· Preparation of

tender/bid documents; and· choice of an appropriate type of construction contract is another landmark .

PHASING OF DEVELOPMENT

Setting targets for the entire construction work of the proposed project is the important step under the pre construction phase. The programme has incorporated practical time-frames for the construction contract lengths and the periods required for the pre-contract stages. Sufficient time is allowed for examination of detailed design, the preparation of tender documents, tendering and tender analysis, recommendations and acceptance; and the contractor's mobilization. Other matters requiring careful consideration are also included into the separate construction contracts and scheduling of equipment procurement. In order to accelerate implementation some activities are designed in such a way that it can be initiated before the real start of a project. The pre-qualification, selection of design, supervision of consultants, the preparation of tender documents are included in the initial actions .

CONTRACT ADMINISTRATION SYSTEM

It is better a responsible person, who belongs to the LSGD Engineering Wing from the Panchayat (Assistant Executive Engineer in this case), would normally be appointed to oversee the works. Apart from day-to-day supervision of the project, it is his / her responsibilities to cover the preparation of the tender (or "bid") documents, including working details, tender drawings, specifications and bills of quantities, an overall cost plan and procurement schedules for obtaining equipment.

CONTRACT ADMINISTRATION ISSUES

Before initiating construction operations, a number of issues related to construction supervision and monitoring procedures have to be resolved, that is on the responsibility for setting out the works the authority for giving instructions on the site, the scope of any materials-testing programme, the date for completion of the work and the date for occupation. It is better to settle these issues by the Panchayat with the contractor

FINANCIAL MANAGEMENT

The timely administration and financial management of payments to contractors is the responsibility of the Panchayat, who will undertake valuations of the work completed and

then prepare a certificate showing the amount for interim payment. An amount of around 5-10 percent is normally retained from the valuations to cover the making good of defects. On completion of the works the LSGD engineering wing is entitled to prepare a final account, which will form the basis of the final payment, including the release of the retention amount. With a contract based on measured quantities (rather than a fixed price) the final account will adjust the tender sum amount to correspond to the actual works completed.

LOCAL CONTRACTING CAPACITY

To achieve the desired phasing the construction works will need to be broken up or packaged so that they can be handled by the local construction industry. The abilities of local contractors will, therefore, need to be reviewed. We have a system of licensing of contractors. In order to be registered they have to satisfy a range of minimum requirements. These criteria are related to the technical personnel they employ, the construction equipment they possess, their experience in terms of projects completed and their financial assets. Normally, contractors are graded into classes and what needs to be considered is the suitability of particular grades for different sections of the work as per the proposed project.

SELECTION AND PRE-QUALIFICATION OF CONTRACTORS

Generally, bidding should be on a selective tendering basis, taking into account the need for the contractors to have experience in high quality road constructions. The proposed project requires experience in high-quality road construction and therefore a general civil engineering contractor, with relevant good will, experience and professional quality would be appropriate.

CONTRACT CONDITIONS

Conditions must be clear and it should be easily administered contractual arrangements**.** Local conditions of contract are likely to exist and these may be appropriate for proposed types of work. The contract should be on a measure and pay basis, tendered on the basis of bills of quantity, for which the local conditions are ideally suited.

Chapter 6

FINANCIAL VIABILITY AND SUSTAINABILITY

ECONOMIC COST BENEFIT ANALYSIS (CBA):

The analysis undertaken is to comprehend whether the construction of the road is worthwhile in terms of economic rationality. In the exercise many components of the benefits and costs are intuitively obvious and therefore the basic principles are applied for the exercise. When the impact of the project is studied and computed, 'the particular area under construction' has contributed additional weightage. It is a positive amount for the particular project area, the Kumbadaje Panchayat when the backwardness of the area could be interpreted.

We have constructed two hypothetical illustrations by applying 'with and without' comparison and 'before and after' comparison. (i) What the situation would be with the project and what the situation would be without the Project. (ii) What the situation would be before the project and what the situation would be after the project. All the comparisons are positive and justified economic rationality of the project. The measurement of value of human wellbeing expected to be supported by the proposed project is also favorable though there is considerable reservations to the idea of placing money value on human wellbeing. When all this has been considered, the decision making for this project is one for which the discounted value of the benefit exceeds the discounted value of cost. The net benefits are positive, this is equivalent to the benefit cost being greater than one and the internal rate of return being greater the cost of capital.

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SOCIAL COST BENEFIT ANALYSIS

All the societal effects, like, climate change, pollution, environment, safety, travel times, spatial quality, health, well being, entitlement, empowerment, legal aspects, etc had been taken into consideration. We have tried to attach a price to as many effects as possible in order to uniformly weigh the above-mentioned heterogeneous effects. As a result, these

prices reflect the value a society attaches to the caused effects. It has enabled us to form an opinion about the net social welfare effects of the project and set against the 'null alternative hypotheses'. We have identified direct, indirect and external effects of social cost benefit. Direct effects are the costs and benefits that can be directly linked to the users of the project (the local community)

All relevant costs and benefits of the project is identified and monetized as far as possible. The general principle is that the benefits of a project do not always get to the groups bearing the costs. A social cost benefit analysis gives insight in who bears the costs and who derives the benefits. However, the above general principle is not the case with the construction of road development in Kumbadaje Gram Panchayat. Here as per our observation, who bears the costs of the project are those who derive the benefits. Our method of monetizing effects could also influence the outcome of the social cost benefit analysis and the predictions contained major elements of uncertainty. Therefore, we are fully conscious that the result of the social cost benefit analysis was not absolute. Nevertheless, it has acted a good instrument to investigate the strong and weak points of the different aspects of the project.

The following Social benefits and costs were identified

Social Benefits

1. The major effect of the road development is to bring the civic engagements, public institutions, service delivery out puts and market facilities to rural populations. Connectivity in right quality is supposed to serve this purpose.

2. Evading remoteness would result in better education and health improvement. It is visualized that the proposed road connectivity would be instrumental in changing the health scenario in general and female health status in the targeted habitations as it reduces the travelling distance to the health institutions.

3. It is reported that more than 400 households including scheduled caste population would be the immediate beneficiaries of this project. It is also reported that there is no other alternative road for the people from this area and also the proposed road will connect the bordering areas of the State.

Social Costs

No major social cost is identified. Since the road is properly and structurally linked with culverts and bridges the imminent issues remain solved.

Time Saving:

As time saving mechanism, a time scheduled (with set goals and deadlines on realistic terms), is included in the**,** plan and accord, it strictly as possible. Application of protocol checklist for observations on how products and services are used and are recommended as ways to save time. Application of accounting software, project management platform ,delegation, focus on result, incentivize tasks, set reminders, prioritize by importance, prioritize by urgency etc can be used judiciously and in the right context as time saving tips in project management . The project steering committee will be constituted by the Panchayat to avoid gaps in project planning, deficient contract management, and effective monitoring, which is mainly taking the responsibility of time saving in the project.

Cost Saving:

All intense, precise, and detailed cost saving measures will be applied. Mainly, it will be achieved by competitive bidding process. Pre ender documents will be prepared in such a way to select and manage the best providers for the project in terms of service, quality and cost. It looks at how processes and procedures can be made more efficient, increasing productivity. Apply protocol checklist for simple observations on how products and services are used and recommends ways to save money. Correction of billing errors will be made by double checking. Elimination of overcharges and/or unnecessary services is another way to reduce cost .Rate reductions from current providers will be made friendly negotiations. The project steering committee will be constituted to avoid gaps in project planning, deficient contract management, and ineffective monitoring, which is mainly taking the responsibility of cost saving in the project.

Accountability

Accountability is the key element in project management. It outlines the different ways in which project activities are accountable and the mechanisms they use to account to the local communities. Since the process and end result aim to results-based management the proposed project activity should begin by introducing key features of governance and management structures in relation to the principle of accountability. The Panchayat also outlines principles for enhancing 'downward' or social accountability to project and programme beneficiaries. The organizational culture is designed in such ways which lead to accountability in project management and accountability in their dealings with all stakeholders. An accountability manual would be designed to give instructions on how to keep clear, accurate financial records in accordance with international best practice. It also suggested to operational double-entry book keeping and provides guidance on generating key financial statements including income & expenditure accounts and balance sheets for social auditing.

Negative Effects

No negative efforts are listed.

Chapter 7
MONITORING AND EVALUATION

Maintenance, monitoring and evaluation should be considered a part of the overall road asset management system. Asset management may be defined as minimizing the life cycle cost of managing deteriorating road facilities, including construction costs, while maintaining the level of service provided to road users with limited financial and human resources, maintaining the existing road assets in good condition and clearly explaining these activities to the public. On completion of the construction work the Panchayat committee will take over responsibility for looking after the physical infrastructure. The responsibility of monitoring and evaluation would be attached to the Engineer of the LSGD Engineering Wing. The Gram Panchayat is in effect, the manager of a major rural infrastructure system. To do this, the Panchayat will have to consider how the periodic monitoring and maintenance of the road will be undertaken. At the end of an implementation period the road should be fully operational. However, the impact of the project on its beneficiaries is likely to be difficult to measure, particularly in the short term of a project life.

Recurrent maintenance is required at intervals during the year depending on the topographic and climatic characteristics of the area as well as the traffic volume. It mainly involves the maintenance of pavement, the filling of potholes etc. The aim is to maintain the structural integrity of the road. The local communities who form a major stakeholder are also responsible for monitoring.

Proforma C

E&S Clearance and Compliance Format for GPs

Village: kumbadaje GP: kumbadaje Taluk: kasaragod District: kasaragod
Title of Proposed Activity:
Proposed date of commencement of work: KK Manikana Annaduka-CH nagar Road work

1. Does any item in the Regulatory list apply to the proposed activity? ☐Yes ☑No
2. If yes, have necessary permissions been obtained? ☐Yes ☐No ☑NA
3. Does any item in Level 1 of Control List apply? ☐Yes ☑No
4. Does any item in Level 2 of Control List apply? ☑Yes ☐No

KUMBADAJE GRAMA PANCHAYAT P.O.Kumbadaje Kasaragod

MITIGATION PLAN

Environmental and Social Risks	Mitigation Measures to be adopted

Additional cost on account of mitigation measures added to overall project cost, if any:
Note: Use Environmental Mitigation Guidelines (Proforma E) in case of Level-1 activities or LESA report (Proforma F) in case of Level-2 activities to fill in the above section. Write N/A if answers to questions 2 and 3 are 'No'

Filed by: Implementing Officer / Working Group Chairman (Signature)

Assistant Engineer L S G D Section
Kumbdaje H Q / Bellur
Bellur Gramapanchayath

APPROVALS

☐ Cleared ☐ Not cleared. Chairperson, Monitoring Committee (Signature & Comments)

Vathiomath Suhara
President
Kumbdaje Grama Panchayat
Ph: 04998 260237

☐ Cleared ☐ Not cleared Block Level Officer in the next higher tier (Signature & Comments)

☐ Cleared ☐ Not cleared Chairperson DPC (Signature & Comments)

COMPLIANCE VERIFICATION

Verified that all mitigation measures proposed have been ☐ implemented / ☐ not implemented as per the mitigation plan mentioned above.

Additional comments, if any:

Signatures: GP Implementing Officer Chairman, Monitoring Committee Block Level Officer

Assistant Engineer L S G D Section
Kumbdaje H Q / Bellur
Bellur Gramapanchayath

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പ്രൊഫോർമ-എഫ്

പാരിസ്ഥിതിക-സാമൂഹിക തിട്ടപ്പെടുത്തലിന്റെ രണ്ടാം ഘട്ട (Level 2) പ്രവർത്തനത്തിനുള്ള ഫോറം

(Limited Environmental and Social Assessment - LESA)

പ്രോജക്ടിന്റെ പേര് മലയാളത്തിൽ ഇംഗ്ലീഷിൽ	K.K. marikana Amadeuka. CH Nager Road work		
പ്രോജക്ട് കോഡ്			
മുനിസിപ്പാലിറ്റി /ഗ്രാമ പഞ്ചായത്ത്	പേര്: Kumbadaje	ജില്ല: Kasaragod	
പ്രോജക്ട് നടക്കുന്ന സ്ഥലം	സ്ഥലപ്പേര്: marikana	വാർഡ് നമ്പർ: I - X	
മുടക്കുമുതലും കാലദൈർഘ്യവും	മുടക്കുമുതൽ 9,20,000രൂപ	കാലദൈർഘ്യം.....മാസങ്ങൾ	

പദ്ധതി വിലയിരുത്തൽ

ലക്ഷ്യങ്ങൾ	ഘടകങ്ങൾ	ആവശ്യമായ സ്രോതസ്സുകൾ	സാങ്കേതിക വിദ്യ
Road connectivity	Metal Easts. bitumen		Construction method of cpwd.

പരിസ്ഥിതിയെ ബാധിക്കുന്ന പദ്ധതി പ്രവർത്തനങ്ങൾ	1. 2. NA	3. 4.
സ്വീകരിച്ചിട്ടുള്ള പരിഹാരമാർഗ്ഗങ്ങൾ	1. 2. NA	3. 4.

പരിസ്ഥിതിയെ ബാധിക്കുന്നത് സംബന്ധിച്ചുള്ള സംക്ഷിപ്ത വിവരം

(ബാധിക്കുന്നതിന് നേർക്ക് ശരി (√) അടയാളമിടുക) NA

	√	ഉദ്ദേശിക്കുന്ന പരിഹാരം	ചെലവ്
1. *വായുവിനെ ബാധിക്കുന്നത്*			
▪ അന്തരീക്ഷത്തിൽ പൊടിപടലം കലരും			
▪ പുകയും ആവിയും കലരും			
▪ വായുപ്രവേഗം കൊണ്ട് മണ്ണ് നഷ്ടപ്പെടും			
2. *വെള്ളത്തിനെ ബാധിക്കുന്നത്*			
▪ ജലാശയങ്ങളിൽ ചെളി വർദ്ധിക്കും			
▪ ജലദൗർലഭ്യമുണ്ടാകും			
▪ മണ്ണോ ഭൂമിയോ ഒലിച്ചുപോകും			
▪ ഭൂഗർഭജലം കുറഞ്ഞുപോകും			
▪ ഉപരിതല ജലാശയങ്ങളിൽ വെള്ളം കുറയും			
▪ ജലാശയത്തിലെ പുനഃസംഭരണശേഷി കുറയും			
▪ ജലാശയങ്ങളിൽ ഖര-ദ്രവമാലിന്യങ്ങൾ അടിയും			
3. *ഭൂമിയെ ബാധിക്കുന്നത്*			
▪ സ്ഥലമൊരുക്കുമ്പോൾ സ്ഥലത്തിന് രൂപമാറ്റം വരികയോ മണ്ണു നഷ്ടപ്പെടുകയോ ചെയ്യും			
▪ നിലവിലുള്ള സേവനങ്ങൾക്ക് തടസ്സം നേരിടും			
▪ സ്വാഭാവിക നീർച്ചാലുകൾ തടസ്സപ്പെടും			
▪ നിലവിലുള്ള ഓടകളും വെള്ളത്തിന്റെ ഒഴുക്കും തടസ്സപ്പെടും			
▪ തുറസ്സായ സ്ഥലങ്ങളിൽ മാലിന്യവും ചപ്പുചവറുകളും നിക്ഷേപിക്കപ്പെടും			
▪ ഖര-ദ്രവ മാലിന്യങ്ങൾ പുറന്തള്ളപ്പെടും			
▪ തുറസ്സായ സ്ഥലം നഷ്ടപ്പെടും			
▪ മേൽ മണ്ണ് നഷ്ടപ്പെടുകയും മണ്ണിന്റെ ഗുണമേന്മ കുറയുകയും ചെയ്യും			
4. *പൊതുജനാരോഗ്യത്തേയും സുരക്ഷിതത്വത്തേയും ബാധിക്കുന്നത്*			
▪ ഗാർഹിക മാലിന്യങ്ങൾ കൂമിഞ്ഞുകൂടും			
▪ ജൈവ-ഔഷധ മാലിന്യങ്ങൾ കൂമിഞ്ഞു കൂടും			
▪ പൊതു ടോയ്‌ലറ്റുകൾ പരിപാലിക്കുന്നതിൽ അപര്യാപ്തതയുണ്ടാകും			
▪ അപകടങ്ങൾക്കും ആപത്തുകൾക്കും സാധ്യതയുണ്ടാകും			
▪ അണുബാധമൂലം അസുഖങ്ങളുണ്ടാകും			

▪ പകർച്ചവ്യാധികളുണ്ടാകും			
▪ സുരക്ഷാ സംവിധാനങ്ങളുടെ അപര്യാപ്തതയോ ഇല്ലായ്മയോ കൊണ്ട് അപകടമുണ്ടാകും			
▪ അപായകരമായ വാതകങ്ങൾ പുറന്തള്ളപ്പെടും			
5. ജൈവവൈവിധ്യത്തെ ബാധിക്കുന്നത്			
▪ മരങ്ങൾ വെട്ടേണ്ടിവരും			
▪ വംശനാശം നേരിടുന്നതോ തദ്ദേശീയമായതോ ആയ സസ്യ-ജന്തുജാതിക്ക് ഭീഷണിയുണ്ടാകും			
▪ ദേശാടനപ്പക്ഷികളുടെ പാതയ്ക്ക് തടസ്സമുണ്ടാകും			
▪ വന്യമൃഗങ്ങളുടെ സ്വാഭാവിക സഞ്ചാരപാതയ്ക്ക് തടസ്സമുണ്ടാകും			
▪ മറ്റു സസ്യങ്ങളുടെയോ ജന്തുജാതികളുടെയോ അധിനിവേശമുണ്ടാകും			
▪ കീടാണുക്കളുടെയോ കീടനിയന്ത്രണത്തിന്റെയോ ഭീഷണിയുണ്ടാകും			
6. സമൂഹത്തേയും സമുദായങ്ങളേയും ബാധിക്കുന്നത്			
▪ വീടുകൾക്കോ ആശുപത്രികൾക്കോ ഉയർന്ന ശബ്ദം കൊണ്ടുള്ള ശല്യമുണ്ടാകും			
▪ വിഭവ സ്രോതസ്സുകളുടെ ഉപയോഗത്തിന്റെ കാര്യത്തിൽ അഭിപ്രായഭിന്നതയുണ്ടാകും			
▪ തദ്ദേശവാസികളെയോ ദുർബല വിഭാഗങ്ങളെയോ മാറ്റിപാർപ്പിക്കേണ്ടി വരും			
7. മുകളിൽ സൂചിപ്പിച്ചവയിൽ ഉൾപ്പെടാത്ത മറ്റെന്തെങ്കിലും കുഴപ്പമുണ്ടെങ്കിൽ വിശദമാക്കുക			

ഇതര പരിഹാര മാർഗ്ഗങ്ങളെക്കുറിച്ചുള്ള വിശകലനം NA

മറ്റു പരിഹാര മാർഗ്ഗങ്ങൾ എന്തെങ്കിലുമുണ്ടെങ്കിൽ (അത് കൂടുതൽ മെച്ചപ്പെട്ടതാണെങ്കിൽ മാത്രം) വിശദീകരിക്കുക	പാരിസ്ഥിതിക ബന്ധം 1. 2.	വേണ്ട പരിഹാര മാർഗ്ഗങ്ങൾ 1. 2.
നിർദ്ദേശിക്കപ്പെട്ട പരിഹാര/ലഘൂകരണ പദ്ധതി	പരിഹാര/ലഘൂകരണ പദ്ധതി നടപ്പാക്കാൻ എന്തെങ്കിലും ചെലവു വരുമെങ്കിൽ അതിന്റെ വിശദാംശങ്ങൾ	

തയ്യാറാക്കിയത് ഒപ്പ് പേർ പദവി/തിരിച്ചറിയൽ ഉപാധി തീയതി	Assistant Engineer L S G D Section Kumbdaje HQ / Bellur Bellur Gramapanchayath

LESA സംബന്ധിച്ച കുറിപ്പ്

LESA നടപ്പാക്കേണ്ടത് ബന്ധപ്പെട്ട മുനിസിപ്പാലിറ്റി / ഗ്രാമ പഞ്ചായത്ത് എൻജിനീയറോ, ഒരു പരിസ്ഥിതി വിദഗ്ദ്ധനോ, വിദഗ്ദ്ധ ഏജൻസിയോ പ്രൊഫോർമ-എഫിൽ പറഞ്ഞിരിക്കുന്ന മാതൃകയിൽ ആയിരിക്കണം. പരിസ്ഥിതി ശാസ്ത്രം/പരിസ്ഥിതി എഞ്ചിനീയറിംഗ്/സിവിൽ എഞ്ചിനീയറിംഗ്/അതുമായി ബന്ധപ്പെട്ട വിഷയങ്ങൾ പഠിപ്പിക്കുന്ന വ്യക്തിക്കോ ഏജൻസിക്കോ പരിസ്ഥിതി സംബന്ധമായ വ്യക്തമായ കാഴ്ച്ചപ്പാടുള്ളവർക്കോ LESA നടപ്പാക്കാം. പ്രാദേശിക ഗവൺമെന്റുകൾക്ക് അനേഷണ പ്രക്രിയയിലൂടെ ആവരെ കണ്ടെത്തി പട്ടിക തയ്യാറാക്കിക്കൊണ്ട് ഇതിനായി വിനിയോഗിക്കാം. കൺസൾട്ടേഷൻ പ്രതിഫലമായി കുറഞ്ഞത് 1500 രൂപയും, പരമാവധി പദ്ധതിച്ചിലവിന്റെ 0.75% ഉം നൽകാവുന്നതാണ്.

LESA നടപ്പാക്കുന്നതിന് അഭിലഷണീയമായ നിബന്ധനകൾ ഇവയാണ്.

- പദ്ധതി പ്രവർത്തനങ്ങൾ വിലയിരുത്തി പാരിസ്ഥിതികവും സാമൂഹികവുമായ ഗുരുതര പ്രശ്നങ്ങളുണ്ടാക്കുന്ന ഘടകങ്ങൾ കണ്ടെത്തുക
- ഇത്തരം പ്രവർത്തനങ്ങൾ പരിസ്ഥിതി ഘടകങ്ങളായ മണ്ണ്, ഉപരിതലജലം, ഭൂഗർഭജലം, അന്തരീക്ഷ വായു, ശബ്ദതലം, സസ്യ-ജന്തുജാലം എന്നിവയിലും സമൂഹപുരോഗതിയിലും വരുത്തുന്ന ആഘാതങ്ങൾ എന്തെല്ലാമെന്നു കണ്ടെത്തി പരിസ്ഥിതി നാശം കുറയ്ക്കാനുള്ള മാർഗ്ഗങ്ങൾ നിർദ്ദേശിക്കുക
- പദ്ധതിയുമായി ബന്ധപ്പെട്ട് കൂടുതൽ മെച്ചപ്പെട്ട പാരിസ്ഥിതികവും സാമൂഹികവുമായ പ്രശ്നപരിഹാര മാർഗ്ഗങ്ങൾ ഇതര പദ്ധതികളിൽ നിലവിലുണ്ടോ എന്നു പരിശോധിക്കുക
- പദ്ധതിയുടെ പ്രവർത്തനത്തോടനുബന്ധിച്ച് അപകടങ്ങൾക്കുള്ള സാധ്യതകളുണ്ടോ എന്നു കണ്ടെത്തുകയും അതു തടയാനുള്ള മാർഗ്ഗങ്ങൾ നിർദ്ദേശിക്കുകയും ചെയ്യുക
- പദ്ധതിക്ക് പകരമുള്ള വഴികളുണ്ടെങ്കിൽ അതു പരിഗണിക്കുക-പ്രധാനമായും പദ്ധതിയുടെ സ്ഥലവും സാങ്കേതിക വിദ്യയും മാറ്റുന്നതിനെക്കുറിച്ച് ചിന്തിക്കുകയും അത്തരം മാർഗ്ഗങ്ങൾ സ്വീകരിച്ചാലുണ്ടാവുന്ന പ്രശ്നങ്ങളും ഇപ്പോഴുള്ളതും തമ്മിൽ താരതമ്യം ചെയ്യുക
- പദ്ധതി കൊണ്ടുള്ള പാരിസ്ഥിതികവും സാമൂഹികവുമായ പ്രശ്നങ്ങൾ കുറയ്ക്കുന്നതിനും പരിഹാരം നടപ്പാക്കുന്നതിനും എന്തെങ്കിലും ചെലവുണ്ടെങ്കിൽ അതു നിശ്ചയിക്കുക.