Local Government & Community Development Department

Punjab Cities Program
Improvement and Rehabilitation of P2-Canal Road in MC Muridke

PC-I

EstimatedCostMillionPKR. 242.109

May 2023

Municipal Committee Muridke

JERS CONSULTANCY (PVT) LTD
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Punjab Cities Program

PC-I Form for Improvement of Roads Project in Muridke City

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PC-I FORM
for
Improvement & Rehabilitation of Canal Road Project in Muridke City

Project Serial Number

Sector : ***Local Government & Community Development Department***
Sub Sector: ***Social***

<table>
<tr><td>1. Name of the project</td><td>Punjab Cities Program
Improvement & Rehabilitation of Canal Road Project in Muridke City</td></tr>
<tr><td>2.Location</td><td>The city of Muridke is located at 74°-15’ East and 31°-48' North at Main GT Road (N-5) at a distance of 33 km from Sheikhupura at its north east, 28 km from Lahore at its north and 40 Km from Gujranwala at its south. It is a railway station on Lahore Rawalpindi section and is connected with entire province through rail and road links.
Location map of the city is attached in Annexure-A</td></tr>
<tr><td colspan="2">3. Authorities responsible for</td></tr>
<tr><td>i- Sponsoring</td><td>Government of the Punjab (through World Bank funding)</td></tr>
<tr><td>ii- Execution</td><td>Municipal Committee Muridke</td></tr>
<tr><td>iii- Operation and Maintenance</td><td>Municipal Committee Muridke</td></tr>
<tr><td>iv-Concerned Provincial Department</td><td>Local Government and Community Development Department Punjab</td></tr>
<tr><td>4a.Plan Provision</td><td></td></tr>
<tr><td>i. If the project is included in medium term/five year plan, specify actual allocation</td><td>Punjab Cities Program (PCP) is a World Bank funded Program with a total cost of USD 236.00 million and comprises of below mentioned components.
<table>
<tr><td>Total loan from World Bank</td><td>USD 200.00 million</td></tr>
<tr><td>Component-1 Infrastructure development (PforR)</td><td>USD 180.00 million</td></tr>
<tr><td>Component-2 Technical Assistance</td><td>USD 20.00 million</td></tr>
<tr><td>MCs share (20% of PforR component) equivalent to:</td><td>USD 36.00 million</td></tr>
<tr><td>Total Program cost</td><td>USD 236.00 million</td></tr>
</table></td></tr>
</table>

		Component-1 i-e Infrastructure Development component of Program costing USD 180.00 million is meant for management cost of the Program & Government Departments and is included in the medium term/ five-year plan and has been funded now in ADP 2022-23 - under General Serial No-1769 with allocation of PKR 1329.90 million as foreign component.
ii- If not included in the current plan, what warrants its inclusion and how it is now proposed to be accommodated		Not applicable
iii If the project is proposed to be financed out of block provision indicate.		The Project is being financed by World Bank as Donor along with 20% co-financing from the Program Units and is not proposed to be financed out of block allocation.
4b- Provision in the current year PSDP/ADP		PKR.1329.90 million under ADP 2022-23 General Serial No 1769 for Component-1 of the Program i-e Infrastructure Development as described above.
5. Project objectives and its relationship with sector objectives		**Sector Objectives** The sector objectives include: 1. Provision of efficient and effective municipality services to the masses. 2. Community development through improving basic infrastructure. 3. Clean and green environment for better living standards. 4. Effective use of land through master planning of urban areas. 5. Social uplifting and cohesion through provision of public open spaces and play grounds. 6. Ease in mobility and communication. 7. Cost efficient Solid Waste Management through waste to energy initiatives. 8. Capacity building of Local Governments. 9. Efficient Road network to make areas easily accessible **Objectives of the Project** The Project aims at improvement of infrastructure of municipal services such as roads, cross roads, street lights, parks and parking shed for SWM machinery for improved communication and recreational facilities. Scope of the work for this particular project includes the rehabilitation and improvement of existing roads, chowks and drainage system along with the construction of new drainage system where needed. However, the

		cleaning and de-silting of existing drains and pipes will be arranged by MC Muridke from their own resources, The Project has the following objectives; 1. Improvement of service delivery level of the municipal services in the sector of communication. 2. Better travelling facilities for the commuters. 3. Reduction in road accidents. 4. Saving in travelling and repair cost of the vehicles. 5. Reduction in annual maintenance charges of roads and parks 6. Better lit roads and streets adding to security of people travelling at night. 7. Improvement in environments of the city making them livable. 8. Improvement in local and province economy. 9. Improvement in the economic growth potential of the city. Hence, the objectives of the project are in line with the sector objectives mentioned at Sr. No-1, 2, 3, 5 and 6 above and the project forms integral part of the concerned sector.
6. Description, justification, technical parameters and technology transfer aspects		
i. Present Condition		As per PLGA-12019 Urban Local Governments (ULGs) are basically and wholly responsible for delivery of the municipal services with a service delivery level which should satisfy the consumers and citizen. Unfortunately, the prevalent conditions of the service delivery are not encouraging in the city. The major reason of unsatisfactory service delivery is the lack of proper maintenance of the municipal infrastructure in all sectors causing consumer dissatisfaction at one end and degradation of the infrastructure on the other end apart from very low revenue recovery as the consumers are reluctant to pay because of deteriorated service delivery. The roads infrastructure has been damaged and degraded because of lack of repairs and upgradation due to shortage of money and constrained municipal budgets. If these roads and chowks are not improved at this stage, then this infrastructure will be further damaged / degraded giving financial loss to the public as well as private sectors and the growth potential of the city will be adversely affected. Damaged roads will increase the operational expenditure of the vehicles apart from wasting time and giving rise to public frustration and mental agony. The only way to keep the infrastructure in operational and functional condition for better travelling and recreational facilities to the inhabitants

<table>
<tr><td></td><td>of the city and the surrounding areas, is to improve the roads, chowks and important cross roads.</td></tr>
<tr><td>ii. Description of the subproject-</td><td>The project comprises of improvement of 01 Nos damaged road with total length of 4.52 Km in the city. Detail of these roads has been given in the table below.</td></tr>
<tr><td>iii Detail of civil works, equipment & machinery and other physical facilities</td><td>The detail of roads to be improved, rehabilitated or constructed in the city, is given below:
<table>
<tr><td>A</td><td colspan="3">Improvement and construction of roads</td></tr>
<tr><td>S. N.</td><td>Name of road</td><td>From-To</td><td>Detail of works involved</td></tr>
<tr><td>1</td><td>Canal Road</td><td>West of G.T Road Daokey to Basra Bridge</td><td>• Rehabilitation of Existing Pavement Structure
• Pavement Marking
• Improvement of drainage system
• Street Light</td></tr>
</table></td></tr>
<tr><td>iv Indicate governess issues of the sector relevant to the project and strategy to resolve them</td><td>• District Council MC Muridke is facing acute shortage of staff. The smooth sailing of the Punjab Cities Program can only be assured when the required staff is available with Unit.
• The Repair and maintenance of the municipal services in not up to the mark in the such Unit. Trainings will be imparted by PMDFC to the officers as well as the field staff under the Program but practicing the interventions and method/procedures learnt in these trainings is the actual requirement in which Units are lacking at present. Hence inculcating the mind set for good repair and maintenance is the major requirement for improving the service delivery level.</td></tr>
<tr><td>7- Capital Cost of Project</td><td>The summary of the works included in the project is given below;
<table>
<tr><th>S. No</th><th>Name of road</th><th>Cost
(PKR million)</th></tr>
<tr><td>1</td><td>Canal Road</td><td>155.834</td></tr>
<tr><td>2</td><td>Drainage System</td><td>7.925</td></tr>
<tr><td>3</td><td>Improvement of Street Lights</td><td>50.006</td></tr>
<tr><td>4</td><td>Environment and Social Mitigation Cost</td><td>0.490</td></tr>
<tr><td></td><td>Sub-Total</td><td>214.255</td></tr>
<tr><td></td><td>Contingencies @2%</td><td>4.285</td></tr>
<tr><td></td><td>Punjab Sales Tax @5%</td><td>10.712</td></tr>
<tr><td></td><td>Price Escalation @ 6%</td><td>12.855</td></tr>
<tr><td></td><td>Grand Total</td><td>242.109</td></tr>
<tr><td colspan="3">See Annexure-B for details</td></tr>
</table></td></tr>
</table>

<table>
<tr><td>i- Indicate date of estimation of the project cost</td><td>The project estimates have been framed during the month of Feb, 2023</td></tr>
<tr><td>ii- Basis of determining the estimates be provided.</td><td>The cost estimates have been framed on the basis of bill of quantities actually required at site and unit rates from the Market Rate System (MRS) issued by the Government of Punjab (District Sheikhupura 1st biannual of year 2023).
For items not available in the MRS, the same have been analyzed as per prevailing market rates.</td></tr>
<tr><td>iii- Provide year wise estimation of physical activities</td><td>The physical and financial requirements, year wise are included in the following table:
<table>
<tr><th>S. #</th><th>Name of road</th><th>Year 2022-2023</th></tr>
<tr><td>1</td><td>Canal Road</td><td>100%</td></tr>
</table>
</td></tr>
<tr><td>iv- Phasing of capital cost on the basis of each item of work.</td><td>The phasing of capital cost of the project is included in the following table:
(All figures are in million rupees)
<table>
<tr><th>S. #</th><th>Items of Road</th><th>Total (PKR million)</th><th>Year 2022-2023 (100%)</th></tr>
<tr><td>1</td><td>Canal Road</td><td>155.834</td><td>155.834</td></tr>
<tr><td>2</td><td>Drainage System.</td><td>7.925</td><td>7.925</td></tr>
<tr><td>3</td><td>Improvement of Street Light</td><td>50.006</td><td>50.006</td></tr>
<tr><td>4</td><td>Environment and Social Mitigation Cost</td><td>0.490</td><td>0.490</td></tr>
<tr><td></td><td>Total work outlay</td><td>214.255</td><td>214.255</td></tr>
<tr><td></td><td>PST, contingencies, Escalation</td><td>27.852</td><td>27.852</td></tr>
<tr><td></td><td>Total project cost</td><td>242.109</td><td>242.109</td></tr>
</table>
</td></tr>
<tr><td>8-Annual recurrent cost after completion of the project and source of financing</td><td>The roads and chowks are already being repaired and maintained by the MC Muridke out of its own financial resources. No additional cost will be required after completion of the improvement and upgradation of the roads & chowks and rather the repairs cost will be reduced for the initial years. However, the efficiency of the infrastructure and service delivery level will be improved after completion of the project.</td></tr>
<tr><td>9- Demand & Supply Analysis

i- Existing Capacity of services</td><td>Existing supply level
• Existing geometry of the roads & chowks is not well enough to sustain the smooth traffic flow. Existing pavement structure of the roads & chowks is deteriorated which needs the rehabilitation to bear the traffic loading and better riding quality.
• District Council MC Muridke is unable to render satisfactory service to the entire area of the city because of degraded infrastructure wherein some rehabilitation and improvement are direly needed but</td></tr>
</table>

		MC could not be able to accomplish them because of low revenue recovery and funding constraints. Very few areas are reasonably served but others are deprived of the required level of the service. This is resulting in low credibility of the municipal services and citizen dissatisfaction. Further the infrastructure has not been developed and extended keeping in pace with the growth of population mainly due to migration from rural areas to urban areas. The market prices of the materials and labor have also increased drastically during the last decade which increased the O&M cost of services. This has further degraded the situation and the service delivery level is further deteriorating.
ii- Projected Demand for 10 years		• Traffic is increasing day by day in Muridke city. Projected traffic of 1 project roads for 10 year is 51.27 million. Project roads & chowks of MC Muridke needs to be improved to save the travel time and better riding quality. • The municipal services require radical improvement to enhance the efficiency of the service to increase service delivery to a satisfactory level. For this purpose, the existing infrastructure will have to be improved. • Many shortcomings, problems and bottlenecks have been observed in the existing infrastructure which could not be addressed by MC due to funding constraints and now have been proposed to be addressed by rehabilitation of defective and outlived components of all the municipal services infrastructure.
iii- Capacity of other similar projects being implemented in public/private sector		No other project of this nature is being implemented in public as well as private sector because of funding constrains in the Unit.
iv- Supply and Demand gaps		The nature of supply and demand gap has been explained in the preceding paras which concludes; • Existing condition of the road network is not good enough to bear the traffic load. It's causing excessive delays, increasing travel time, occurring accidents at intersections and vehicles wear and tear due to the poor condition of pavement surface. Increasing traffic load requires the improvement of existing road network. • The existing infrastructure has poor efficiency resulting in unsatisfactory service delivery level. • The O&M cost of the infrastructure services is very high because of low efficiency and high market rates while there in a large gap between the O&M expenditure and the revenue recovery. • Large subsidies are being injected by MC to the keep the services in operation

<table>
<tr><td></td><td></td><td>

Numerous public complaints are the talk of the day.
Unsatisfactory municipal delivery is not encouraging the city to become engines of economic growth and hence the GDP of our city is much lower than the peers in the developing world.

Hence there is a large gap between the supply and demand which is to be bridged by improvement in the infrastructure and its management.
</td></tr>
<tr><td>v-Designed capacity and output of the project</td><td></td><td>
1. Table showing Name of roads, From and to reaches, length, ROW, metaled width and type of pavement of each road and total length is given below:
<table>
<tr><th>Sr. No.</th><th>Road Name</th><th>From and To</th><th>Pavement Type</th><th>ROW</th><th>Carriage way Type</th><th>Metaled Width</th><th>Length (km)</th></tr>
<tr><td>1</td><td>Canal Road</td><td>West of G.T Road Daokey to Basra Bridge</td><td>Asphalt Concrete</td><td>28 ft</td><td>Single</td><td>20 ft</td><td>4.52</td></tr>
</table>
2. Roads are designed for 10-year life.
3. These roads will carry out the 51.27 million traffic cumulatively for 10 years.
4. Improvement of these roads will decrease the travel time of commuters which will ultimately improve the economy of city.
</td></tr>
<tr><td>10. Financial Plan
Sources of financing
<u>Debt</u>
a) Indicate the local and foreign debt Loan</td><td></td><td>
Below given loan for the Punjab Cities Program has been funded by World Bank for 16 PCP cities in Punjab.
<table>
<tr><td>Total loan to Government of Pakistan/Punjab</td><td>USD 200 million</td></tr>
<tr><td>Component-1 for Infrastructure Development</td><td>USD 180 million</td></tr>
<tr><td>Component-2 for Investment Project Financing For capacity building of MCs & three Govt. organization and program management.</td><td>USD 20 million</td></tr>
<tr><td>20% share of Municipalities is equivalent to</td><td>USD 36 million</td></tr>
<tr><td>Total funds available for Infrastructure Development</td><td>USD 216 million</td></tr>
<tr><td colspan="2">This project will be funded under this financing.</td></tr>
</table>
</td></tr>
</table>

<table>
<tr><td>b) Equity</td><td></td><td>A. Loan/grant to MC
The amount of loan converted to grant to Muridke Unit will be PKR 193.687 million. The financing of the project will be as given below:
<table><tr><td>Grant to Unit for the year 2022-2023 (80% of cost of PC-I)</td><td>PKR 193.687 million</td></tr><tr><td>20% Co-finance by MC (20% of the cost of PC-I)</td><td>PKR 48.421 million</td></tr><tr><td>Total available funds</td><td>PKR 242.109 million</td></tr></table>B. Project Cost PKR 242.109 million

*The loan is from World Bank to Government of Pakistan/Punjab which will trickle down to Muridke Unit as grant.</td></tr>
<tr><td>c) Grants</td><td></td><td>No grant is being given by Government of Punjab out of ADP funds. The World Bank loan to Government of Pakistan/Punjab will trickle down as grant to MC from Government of Punjab.</td></tr>
<tr><td>d) Weighted cost of capital</td><td></td><td>Nil</td></tr>
<tr><td colspan="3">11-Project benefits and analysis</td></tr>
<tr><td>i.Financial:
Income to the project with assumption</td><td></td><td>• The project comprises of improvement of roads and cross roads in the city.
• Muridke Unit has no plan to levy user charges /toll tax on the roads as these are internal roads of city and levying of toll tax is not feasible.
• However, it is an infrastructure sector project but the capital cost of the project is not intended to be recovered. The unit will meet the cost of repair and maintenance out of its own resources. The project economic analysis is given as Annexure-C.</td></tr>
<tr><td>ii.Social benefits to the target group</td><td></td><td>The completion of the project will result in:
• Up gradation of the infrastructure.
• Enhanced life of the roads.
• Reduction in travelling time of the commuters.
• Reduction of road accidents.
• Reduction in consumption of POL resulting in saving of the foreign exchange.
• Reduction in the operation and maintenance cost of the vehicles.
• Improvement in the environment of the city;
• Minimized public mental tension and frustration
• Improved local economy
• Improvement of city growth potential</td></tr>
</table>

<table>
<tr><td>iii.Environmental Impact negative/positive</td><td></td><td>Construction/Rehabilitation of roads and their subsequent long-term use lead to many changes in the environment. There will be some negative impacts during rehabilitation of the Roads in the form of noise of the machinery, dismantling of the existing roads, dust pollution, nuisance caused by higher traffic, risked caused by animal intersecting routes or consequences of any crossing water courses etc. Therefore, it is recommended to develop variant solutions in order to choose the one that would be least harmful to the environment, and then to incorporate them in an Environmental and Social Management Framework. However, the impacts will be temporary and there will be no negative impacts after completion of the project, rather, positive impacts, because of improvement in environments of the city, will be observed and present traffic hazards and jams will be eliminated. Hence overall positive impacts will be experienced due to execution and operation of the project. To facilitate the selection of an optimal solution and for the inclusion of Safe Operating Procedures for Construction workers/labors; assessment indicators or an Environmental Screening Checklist has been developed which is attached as Annexure E (A) of this PC-1. The checklist focuses on Environmental Issues and social concerns and ensure that all environmental and social dimensions are adequately considered. E&S Screening & Involuntary resettlement checklists are attached as Annexure E&S Screening & Involuntary resettlement checklists.
Environment and Social Mitigation plan will also be the part of bidding document.</td></tr>
<tr><td>iv.Quantifiable project outputs</td><td></td><td>The quantifiable project out puts have been given above in Sr. No-9 (V). The social benefits to the citizen have been described at Sr. No-11(ii).</td></tr>
<tr><td>v.Unit cost analysis</td><td></td><td>The unit cost analysis is produced below;<table><tr><td>Project capital cost</td><td>PKR 242.109 million</td></tr><tr><td>Population of the city in year 2023</td><td>265,823 persons</td></tr><tr><td>Unit capital cost per capita</td><td>PKR 910.79</td></tr></table>
Unit R&M cost: – The Repair & maintenance cost is already being borne by Muridke Unit and there will be no increase in this cost. Due to improvement of the infrastructure R&M cost will reduce for at least 5 years after completion of the project.</td></tr>
<tr><td>vi.Employment generation (direct and indirect)</td><td></td><td><u>Employment Analysis</u>
Direct Employment
a) Planning and Design of projects
The planning and design of the project has been entrusted to local consultants who have appointed staff and experts in road and related disciplines along with their support staff. The consultants will also appoint their staff for resident supervision of the project to verify and certify the items of works to be executed under this PC-I.</td></tr>
</table>

	b) Execution of the Project ***a) PMDFC*** PMDFC has the project monitoring and supervisory role and the company has enough experts and staff to complete this assignment. PMDFC has already deployed under mentioned staff for these projects: • Civil Engineers • Accounts, administration and audit personnel • Urban planners • GIS experts • Support staff like computer operators, vehicle drivers, office boys and guards. • Procurement experts • Communication experts • Environmental and social experts • Contract management experts ***b) Consultants*** PMDFC has employed consultants for detailed design and resident supervision of the projects who will deploy their staff for execution of the project. ***c) Municipality*** Muridke Unit has regular staff like engineers, sub engineers and other administrative & accounts keeping staff which will be responsible for execution of the project and contract management. No additional staff will be needed for execution of this project ***d) Contractor*** The contractor responsible for execution of the sub project will employ skilled and un-skilled labor on this work. **Indirect Employment** Indirect employment for production of material such as cement, steel, stone metal, bitumen, bricks etc. will be generated.
vii. Impacts of delays on project cost and viability	The impact of delay in project implementation will; • Result in increased project cost due to escalation in cost of material and labor. • Delay the benefits to the target group • Result in further deterioration of the infrastructure and the service delivery level.
12-Implementation Schedule	

a) Indicate starting and completion date of the project		The project is anticipated to commence by April 2023 and to be completed by June 2023 with project implementation period of 3 months.
b) Item wise/year wise schedule in line chart		The Gant chart has been attached at **Annexure-D**
13- Management Structure and manpower requirements		
i. Administrative arrangements for the implementation of the project		**ii. Planning & design of the project** The project has been designed by the consultants employed by PMDFC and will also carry out the resident supervision of the project. **iii. Preparation of cost estimation** The cost estimates have been prepared by the design consultants by actual measurements and requirements at site. The execution of the items of works included in these estimates /PC-I will be certified by these consultants. **iv. Execution of the project** • The project will be executed by District Council MC Muridke and supervised by the Consultants appointed by PMDFC in resident supervision mode. The technical staff & experts in PMDFC will oversee, co-ordinate and collaborate in the project planning, design and implementation through their experts in head office located in Lahore and regional offices. The reporting of progress to LG & CDD & World bank and troubleshooting will also be responsibility of PMDFC. • MO (I&S) of the Unit has been designated as Project Manager /Engineer in Charge of the project. The supervision of the works will also be carried out by these municipal officers along with their support engineering staff. All supervisory staff is available with MC. • The procurement of works and goods will be done by Procurement Committee of Muridke Unit as per PPRA Rules. **v. Verification of quantities included in PC-Is and Resident Supervision of the works by consultants** The works will be supervised by Supervision Consultants in resident supervision mode by assuring the quantity and quality of works. The consultants will verify the items of work and their quantities contained in the PC-Is and cost estimates initially and then the quantities and quality of works included in the contractor claims at the stage of

payments. Payments will be made by the Unit after these contractor claims have been entered in the measurement books by the Project Manager/Engineer in Charge and pre audited as per LG Works Rules.

ii- The manpower requirements by skills during execution and operation of the project and;
The job description, qualification, experience, age and salary of each post

a) PMDFC experts and staff

For rendering assistance in implementation of infrastructure projects in 16 MCs, PMDFC has the experts and staff in the required fields. In order to facilitate the Program Units, three regional offices have been established by PMDFC at Gujranwala, Faisalabad and Multan/Muridke.

b) Resident Supervision Consultants

The project will be supervised by consultants. The tentative staff to be employed/deployed by the consultants for the certification of quantities of works and resident supervision of the project is given below.

S #	Personnel	Nos	Qualification
1	Chief Resident Engineer/Team Leader	01	BSc;/BE in Civil engineering from HEC approved University with minimum 20 years' professional experience and 5 years' experience on similar assignment or MSC; Civil Engineering/Public Health Engineering/Environmental Engineering with Bachelor in Civil Engineering and minimum 15 years, experience, with 5 years on similar assignments on urban planning, designing and construction supervision assignment.
2	Assistant Resident Engineer	01	Bachelor Degree in Civil engineering with minimum 8 years' experience in site supervision and execution for projects of similar nature
3	Site Inspectors	01	DAE in Civil with minimum 10 years' experience in site supervision for projects of similar nature
4	Environmentalist	01	Bachelor Degree in Environmentalist/ Environmental Sciences with minimum 16 years education and 5 years' experience in site supervision and execution for projects of similar nature
5	social Safeguards /Resettlement Specialist	01	Master Degree in Sociology Sciences with minimum 18 years education and 5 years' experience in site supervision and execution for projects of similar nature

		c) Contractor's Technical staff, skilled & non skilled labor The contractors will employ the supervisory technical staff and skilled & non skilled labor for execution of works. The works will be supervised by experienced Engineers and sub engineers and the number of slots for engineers and skilled and non-skilled will depend upon the type and quantity of work and its period of completion. **d) Repair & maintenance of the project** MC has its own regular staff which has been deployed for repair and maintenance of the municipal services infrastructure. However, it has been observed that the existing staff is not adequate to repair and maintain the services in a manner which can give good service delivery. Hence it is proposed to; • Fill up the presently vacant slots • Recruit additional staff as per need of the infrastructure after obtaining the sanctions from the competent authorities.
14-Additional projects /decisions required to optimize the investment being undertaken		**1) Shortage & frequent transfers of Provincially appointed staff** MC is facing shortage in provincially appointed and locally appointed cadres. This will seriously affect the pace of progress of the program and the implementation of the infrastructure projects may be delayed. Provincial Government should fill up the vacant staff immediately for optimizing the investments in MC. **2) Repair & Maintenance (R&M) staff** The R&M staff is also deficient and this is adversely affecting the service delivery level. Number of slots are vacant but MC is not allowed to recruit the persons to fill these slots due to ban on recruitments. Further the sanctioned strength of the field staff is much lesser than the actual requirement because with the increase in population and extension of services, additionally required staff has not been sanctioned by the competent authorities. Both of the above issues need to be addressed for optimal utilization of the investments and giving targeted benefits to the resident population of these cities.

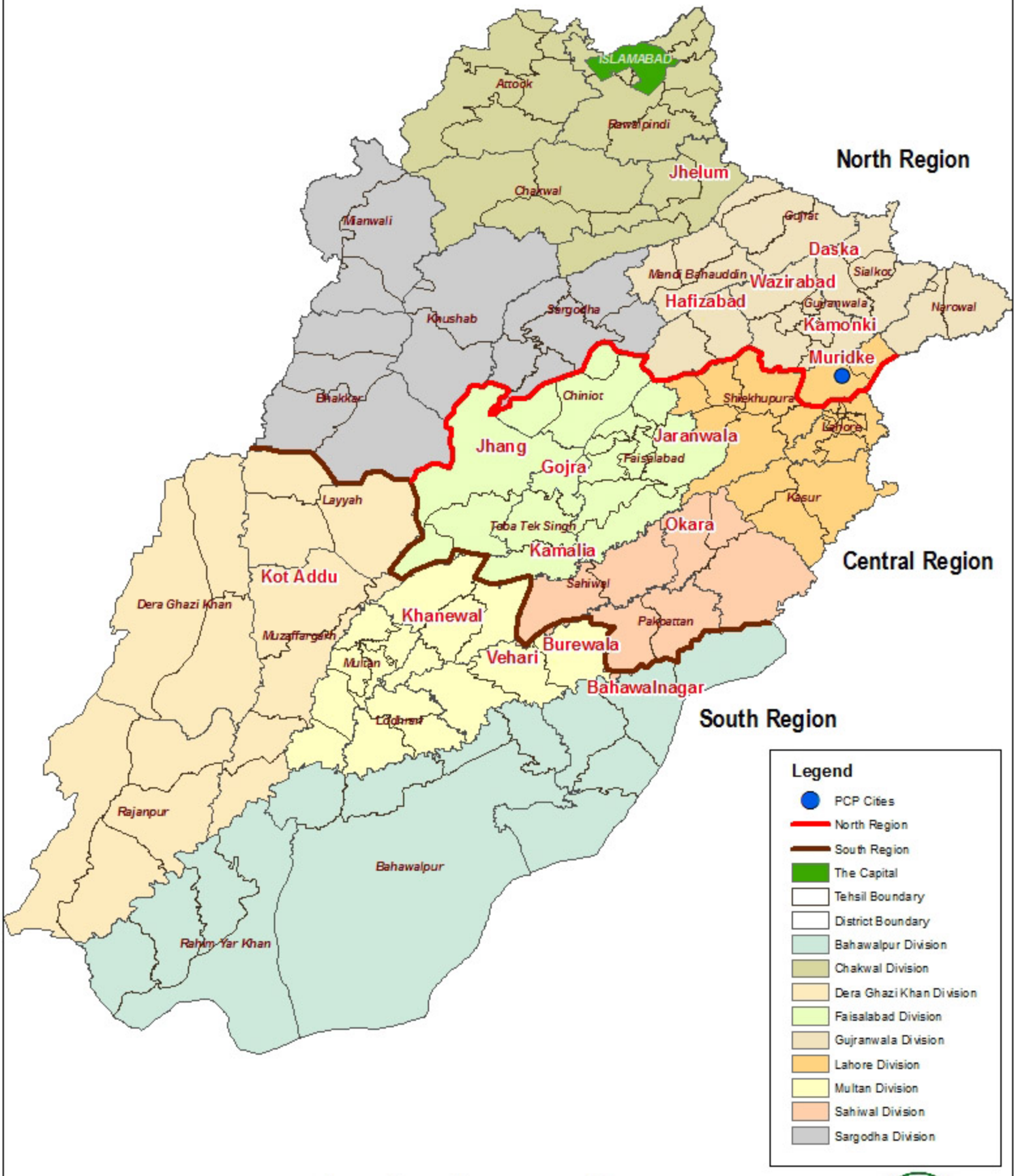
15-Certificate		Certified that the project proposal has been prepared on the basis of guidelines provided by the Planning Commission for the preparation of PC-I for social sectors projects.

Prepared by	JERS Consultancy (Pvt) Ltd	Signatures	
Checked by	Municipal Officer (Infrastructure) Municipal Committee Muridke	Signatures	
	Chief Officer Municipal Committee Muridke	Signatures	
	Administrator Municipal Committee Muridke	Signatures	
Vetted by	Senior Program Officer PMDFC	Signatures	

Annexure-A
Location Map

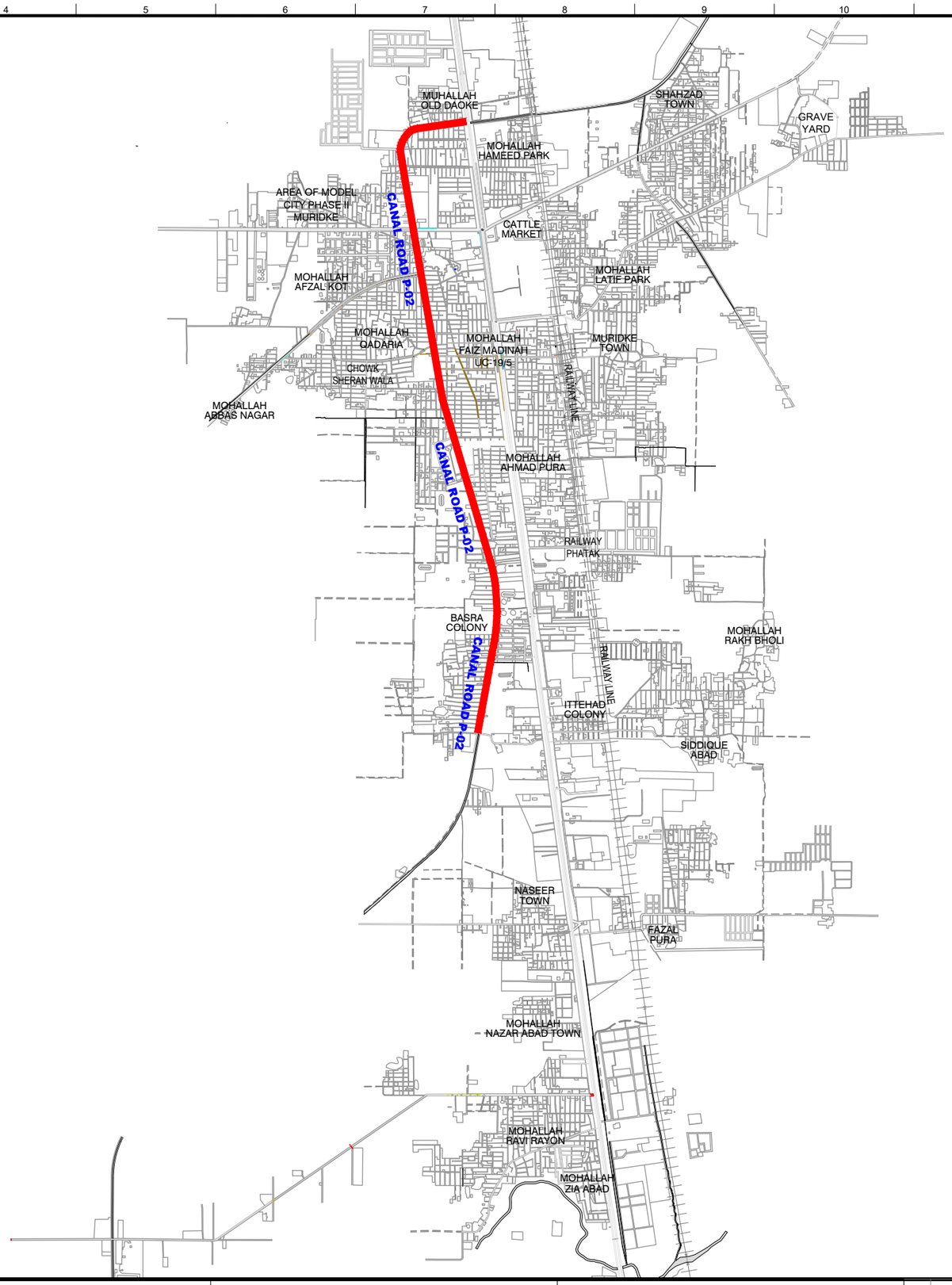
Location Map
(Punjab Cities Program)

ANNEXURE - A



HELP BUILD PMDFC HEALTHY CITIES

Local Government & Community Development Department, Governmnet of The Punjab



LEGEND:

REHABILITATION OF ROADS

2700 1350 0 2700 FEET

GRAPHIC SCALE

CLIENT:

HELP BUILD PMDFC HEALTHY CITIES

PUNJAB MUNICIPAL DEVELOPMENT FUND COMPANY (PMDFC)

CONSULTANTS:

JERS CONSULTANCY (PVT) LTD

24-Civic Center, Quaid-e-Azam Town, Township, Lahore (Pakistan)
Tel: +92 42 35113123, +92 42 35113124
Fax: +92 42 35113125
E-mail: info@jers.com.pk, mail@jers.com.pk
Web: http://www.jers.com.pk

PROJECT:

PUNJAB CITIES PROGRAM (PCP)
DETAILED DESIGN OF INFRASTRUCTURE SUB-PROJECTS AND RESIDENTS SUPERVISION IN 16 CITIES OF PUNJAB.

DRAWING TITLE:

PROJECT KEY PLAN (P-02) (MURIDKE)

REV.	DATE	DESCRIPTION
-	-	-

DRAWN BY: Adeel	DRAWING NO: TS-01
CHECKED BY: Umer	
APPROVED BY: Sadat Waleed	SCALE: UNIT=FEET 1"=2700'
DATE: January,2023	SHEET: -
	JOB NO: 488-01

Annexure-B

Cost Estimate

PUNJAB CITIES PROGRAM (PCP)
DETAILED DESIGN OF INFRASTRUCTURE SUB-PROJECTS AND RESIDENTS SUPERVISION IN 16 CITIES OF PUNJAB

MC MURIDKE

DETAILED COST ESTIMATE

SUMMARY

Sr. No.	Description	Amount (Rs.)
1	**ROAD WORKS**	
1.1	Canal Road(Asphaltic Road) (4.03 km)	130,668,999
1.20	Rigid Pavement (0.53 km)	25,165,379
	1) Total Amount. Rs.	**155,834,378**
2	**Drainage System**	
2.1	Canal Road	7,925,114
	2) Total Amount. Rs.	**7,925,114**
3	**Improvement of Street Lights**	
3	Canal Road	50,006,484
	3) Total Amount. Rs.	**50,006,484**
4	**ENVIRONMENTAL MITIGATION AND MANAGEMENT COST**	**490,000**
	Total Amount (Rs.) "1+2+3"	**214,255,976**
	Contingencies @ 2%	4,285,120
	PRA Charges @ 5%	10,712,799
	Price Escallation @ 6%	12,855,359
	Total Amount. Rs.	**242,109,253**

ROAD WORKS

PUNJAB CITIES PROGRAM (PCP)
DETAILED DESIGN OF INFRASTRUCTURE SUB-PROJECTS AND RESIDENTS SUPERVISION IN 16 CITIES OF PUNJAB

DETAILED COST ESTIMATE

CANAL ROAD

ROADS NETWORK

Sr. No	1st BI-Annual-2023 (Jan to June) Sheikhpura	Description	Unit	Quantity	Unit Rate (Rs.)	Amount (Rs.)
		ROAD WORK				
		Dismantling				
1	4/46	Dismantling and removing road pavement, etc., including screening and stacking of byproducts upto one chain lead (30 metre).	100Cft	272.82	2,960.50	807,684
2	N.S	Ploughing and Compaction of Existing road surface upto 6" depth i/c dressing, leveling, supplying and spreading of stone screening (Khaka) and compaction to achieve to 100% maximum ASSHO dry density complete in all respects.	100Cft	802.40	5,744.24	4,609,178

PUNJAB CITIES PROGRAM (PCP)
DETAILED DESIGN OF INFRASTRUCTURE SUB-PROJECTS AND RESIDENTS SUPERVISION IN 16 CITIES OF PUNJAB

DETAILED COST ESTIMATE

CANAL ROAD

ROADS NETWORK

Sr. No	1st BI-Annual-2023 (Jan to June) Sheikhpura	Description	Unit	Quantity	Unit Rate (Rs.)	Amount (Rs.)
		Water Bound Macadam				
3	18/4/a + 1/1	Providing and laying base course of crushed stone **(Water Bound Macadam)** of approved quality and grade including, placing, mixing, spreading and compaction of base course material to required depth, camber and grade to achieve 100% maximum modified AASHTO dry density, including carriage of all material to site of work complete in all respect as per specifications and as directed by the engineer incharge. (Crushed stone aggregate from Sargodha querry to site, actual compacted depth shall be considered for payment)	100Cft	529.58	24,855.82	13,163,143
		Prime Coat				
4	18/6	Providing and laying bituminous priming coat, using 10 lbs. kerosene oil and 10 lbs. binder per 100 Sft. or 0.5 Kg kerosene and 0.5 Kg binder per square metre.	100Sft	1,358.00	1,978.85	2,687,278
5	18/7	Providing and laying bituminous tack coat, using 10 lbs. of bitumen per 100 Sft (0.49 Kg of bitumen per sq.m.)	100Sft	1,100.00	1,044.55	1,149,005
		Carpeting				
		AWC				
6	18/10/a + 1/1	Providing and laying plant premixed bituminous carpet, including compaction and finishing to required camber, grade and density. (2 inch thick) (iv) 4.5% Bitumen	Per inch thickness per 100Sft.	2,704.80	15,155.12	40,991,569

PUNJAB CITIES PROGRAM (PCP)
DETAILED DESIGN OF INFRASTRUCTURE SUB-PROJECTS AND RESIDENTS SUPERVISION IN 16 CITIES OF PUNJAB

DETAILED COST ESTIMATE

CANAL ROAD

ROADS NETWORK

Sr. No	1st BI-Annual-2023 (Jan to June) Sheikhpura	Description	Unit	Quantity	Unit Rate (Rs.)	Amount (Rs.)
8	1/1 Rate Analysis	Carriage of 100 Cft. (2.83 cu.m) of all materials like stone aggregate, spawl, kankar lime (unslaked), surkhi, etc. or 150 Cft. (4.25 cu.m) of timber, by truck or by any other means owned by the contractor.	Cft	5,220.39	106.69	556,958
		Paint For Traffic Lanes				
10	13/36	Painting Traffic Lane Marking of specified width (1.5mm thick), with Thermoplastic (TP) Paint including Glass Beads, complete in all respect, as approved and directed by Engineer incharge.				
		ii) 6" wide	Rft	15,825.00	59.20	936,840
		Kerb Stone				
11	6/52	Providing and fixing precast Edge Kerb Stone (4"to 6" thick), of 3500 PSI Compressive Strength, embeded in PCC 1:2:4 over lean concrete 1:4:8 etc complete in all respect.				
		b) With Painting				
		(i) 14" high	P.Rft	1,000.00	535.05	535,050
		Paint for Existing Kerb Stone				
		Painting old surfaces:-				
12	13/4/f	Painting small detached articles, not exceeding one square foot (Sq.m) of painted surface:-				
		i) first coat	100Nos	297.00	1,466.95	435,684
		ii) each subsequent coat	100Nos	297.00	1,189.45	353,267
		Tuff Paver				
13	10/41	Providing and laying Tuff pavers, having 7000 PSI, crushing strength of approved manufacturer, over 2" to 3" sand cushion i/c grouting with sand in joints i/c finishing to require slope. complete in all respect. (50% Grey / 50% Coloured)				
		c) 80-mm thick	Sft	118,672.00	192.35	22,826,559

PUNJAB CITIES PROGRAM (PCP)
DETAILED DESIGN OF INFRASTRUCTURE SUB-PROJECTS AND RESIDENTS SUPERVISION IN 16 CITIES OF PUNJAB

DETAILED COST ESTIMATE

CANAL ROAD

ROADS NETWORK

Sr. No	1st BI-Annual-2023 (Jan to June) Sheikhpura	Description	Unit	Quantity	Unit Rate (Rs.)	Amount (Rs.)
		Cat Eyes				
14	18/28	Providing & fixing Cat Eyes of size 4" x 4" x 3/4" duly casted with specified material having plastic strip containing mini retro-reflective glass beads of color white/red/yellow having specifid reflections , quality & shape i/c the cost of self built in 12 mm diax120 mm long steel zinc plated nail,fixing to road with epoxy/ hammering				
		b) Aluminium Alloy				
		(A) Dual-Directional				
		(ii) 43x2=86 Glass beads a side	Each	3,266.00	747.70	2,441,988
15	18/25/a	Providing, fabrication and fixing pole mounted Direction Board / road delineator of any shape and size, with specified Sheet and thickness, supported with G.I Channel, (excluding the cost of vertical post and painting) etc complete in all respect.				
		(a) G.I Sheet 14 SWG				
		CIRCULAR/TRIANGULAR				
		a) 3-4 ft size	P. Sft	120.00	997.20	119,664
16	18/27/b	Providing, fabrication and fixing Vertical Post comprising of medium quality G.I Pipe of specified diameter, including the cost of clamping arrangements, top cover, hold fasts, PCC 1:2:4 footing of specified depth and excavation etc complete in all respect, as approved and directed by the engineer incharge.				
		(b) 3 inch diameter	Rft	220.00	1,538.15	338,393
17	13/42/a	Lettering and printing of signage /direction boards/ road delineators of any colour by machine i/c cost of Digital Lettering, Lamination & pasting etc complete in all respect.				
		a) High Intensity Prismatic (HIP) Tape	P. Sft	120.00	1,203.95	144,474
18	7/30	Supplying and filling sand under floor; or plugging in wells.	100Cft	14.04	2,982.00	41,867

PUNJAB CITIES PROGRAM (PCP)
DETAILED DESIGN OF INFRASTRUCTURE SUB-PROJECTS AND RESIDENTS SUPERVISION IN 16 CITIES OF PUNJAB

DETAILED COST ESTIMATE

CANAL ROAD

ROADS NETWORK

Sr. No	1st BI-Annual-2023 (Jan to June) Sheikhpura	Description	Unit	Quantity	Unit Rate (Rs.)	Amount (Rs.)
		uPVC Pipe				
19	19/47	Providing, fixing, testing and commissioning of µ-PVC (Unplasticized polyvinyl Chloride) Nikasi /waste pipe make of dadex / Popular / Beta/ BBJ plain / socket ended conforming to code EN-1401 of specified SDR (Standard Dimension Ratio) including the cost of specials and Solvents complete in all respect as approved and directed by the Engineer Incharge.				
		Type (SDR 41/SN-4)				
		(vii) 8"(200 mm)	Rft	1,404.00	455.00	638,820
		PROTECTION WALL + MANHOLE RAISING				
		Dismantling for manhole				
20	4/19-c	c) Dismantling cement concrete 1:2:4 plain.	1000Cft	1.30	12,196.80	15,856

PUNJAB CITIES PROGRAM (PCP)
DETAILED DESIGN OF INFRASTRUCTURE SUB-PROJECTS AND RESIDENTS SUPERVISION IN 16 CITIES OF PUNJAB

DETAILED COST ESTIMATE

CANAL ROAD

ROADS NETWORK

Sr. No	1st BI-Annual-2023 (Jan to June) Sheikhpura	Description	Unit	Quantity	Unit Rate (Rs.)	Amount (Rs.)
		Excavation				
21	3/7/i	Earthwork excavation in open cutting upto 5'-0" (1.5 m) depth for storm water channels, drains, sullage drains in open areas, roads, streets, lanes, including under pinning of walls and shoring to protect existing works, shuttering and timbering the trenches, dressed to designed level and dimensions, trimming, removal of surface water fromtrenches, back filling and surplus excavated material disposed of and dressed within 50 ft. (15 m) lead:- i) in ordinary soil.	1000Cft	28.00	9,852.50	275,870
		P.C.C				
22	6/5	Cement concrete plain including placing, compacting, finishing and curing complete (including screening and washing of stone aggregate):				
		(i) Ratio 1: 4: 8	100Cft	35.00	29,723.50	1,040,323
		(f) Ratio 1: 2: 4	100Cft	21.63	38,723.50	837,589
		Brick Work				
23	7/7/i	Pacca brick work other than building upto 10ft. (3 m) Cement, sand mortar:- Ratio 1:3	100Cft	179.13	35,897.90	6,430,391
24	7/10	Extra for pacca brick work in steining of wells or any other circular masonry.	100Cft	1.94	3,028.80	5,876
		RPC Manhole Cover				
25	N.S	Providing and fixing RPC Manhole Cover Manufactured with 100% Reinforced Plastic Composite Material, 650 mm dia with clear opening size 600 mm (24" dia) and RPC manhole frame having dia meter 790 mm (Complete) (Certified under ISO 9001-	Set	40.00	12,012.00	480,480
		Existing Manhole Cover				
26	N.S	Shift to MC Store	Each	40.00	500.00	20,000
		G.I Pipe Railing on bridges				
27	18/14	Providing and fixing G.I. pipe railing, as per standard drawing.	Rft	1,092.00	1,928.35	2,105,758

PUNJAB CITIES PROGRAM (PCP)
DETAILED DESIGN OF INFRASTRUCTURE SUB-PROJECTS AND RESIDENTS SUPERVISION IN 16 CITIES OF PUNJAB

DETAILED COST ESTIMATE

CANAL ROAD

ROADS NETWORK

Sr. No	1st BI-Annual-2023 (Jan to June) Sheikhpura	Description	Unit	Quantity	Unit Rate (Rs.)	Amount (Rs.)
		SWM Garbage Container Cage				
28	N.S	Providing and fabricating MS cage for SWM containess fabricated with MS square pipe 1-1/2" X 1-1/2" X 3/16" on outer edges welded with MS sheet 14 SWG and braced with 1-1/2" X 1-1/2" X 3/16" angle icon @24" c/c (Horizantally or vertically) Painted with one coat of primer and two coats of powder coating. The cleaar size of cage is required 15' X 5' X 5'. Supplier shall get approvel of cage design/deawing prior to fabrication. This item includes all kind of cutting , jointing leads and left as dineted by the engineer incharge .	Each	50.00	530,889	26,544,436
		Plantation				
29	N.S	Providing and planting, Foxtail palm, Hyophorbe lagenicaulis, Bakain, Chinaberry, Dharaik, and palm (Having Age 0.5 Years), including look after for 3 months Manuring the plantation twice an year sparaying the pestisides, watering etc. complete in all respect. (Quality of plants as approved by Engineer incharge)	Each	30.00	4,500	135,000
		Total Amount Rs.				**130,668,999**

PUNJAB CITIES PROGRAM (PCP)
DETAILED DESIGN OF INFRASTRUCTURE SUB-PROJECTS AND RESIDENTS SUPERVISION IN 16 CITIES OF PUNJAB

DETAILED COST ESTIMATE

CANAL ROAD

ROADS NETWORK

Sr. No	1st BI-Annual-2023 (Jan to June) Sheikhpura	Description	Unit	Quantity	Unit Rate (Rs.)	Amount (Rs.)

PUNJAB CITIES PROGRAM (PCP)
DETAILED DESIGN OF INFRASTRUCTURE SUB-PROJECTS AND RESIDENTS SUPERVISION IN 16 CITIES OF PUNJAB

DETAILED COST ESTIMATE

CANAL ROAD

ROADS NETWORK

Sr. No	1st BI-Annual-2023 (Jan to June) Sheikhpura	Description	Unit	Quantity	Unit Rate (Rs.)	Amount (Rs.)
		Improvement of Street Lights				
		Scheduled Items (A)				
		Excavation				
1	3/21	Excavation in foundation of building, bridges and other structures, including dagbelling, dressing, refilling around structure with excavated earth, watering and ramming lead upto one chain (30 m) and lift upto 5 ft. (1.5 m)				
		1) By Manual				
		ii) in ordinary soil.	%oCft	81.52	11,658.25	950,381
		Pole Foundation				
2	6/6	Providing and laying reinforced cement concrete (including prestressed concrete), using Ordinary Portland Cement / Sulphate resisting cement / Slag cement as may be required; coarse sand and screened graded and washed aggregate, in required shape and design, including forms, moulds, shuttering, lifting, compacting, curing, rendering and finishing exposed surface, complete (but excluding the cost of steel reinforcement, its fabrication and placing in position, etc.):-				
		(a)(iii) Reinforced cement concrete in slab of rafts / strip foundation, base slab of column and retaining walls; etc and footing beams, other structural members other than those mentioned in 6(a) (i)&(ii) above not requiring form work (i.e. horizontal shuttering) complete in all respects:-				
		(3) Type C (nominal mix 1: 2: 4)	Cft	2,784.00	473.85	1,319,198
		Steel				
3	6/12/c	Fabrication of mild steel reinforcement for cement concrete, including cutting, bending, laying in position, making joints and fastenings, including cost of binding wire and labour charges for binding of steel reinforcement (also includes removal of rust from bars):-	100Kg	63.16	31,929.80	2,016,619

PUNJAB CITIES PROGRAM (PCP)
DETAILED DESIGN OF INFRASTRUCTURE SUB-PROJECTS AND RESIDENTS SUPERVISION IN 16 CITIES OF PUNJAB

DETAILED COST ESTIMATE

CANAL ROAD

ROADS NETWORK

Sr. No	1st BI-Annual-2023 (Jan to June) Sheikhpura	Description	Unit	Quantity	Unit Rate (Rs.)	Amount (Rs.)
4	24/6	Supply and erection PVC pipe for recessed wiring (main and sub-main) purpose, including bends, specials, etc. in floor, wall				
		i) 50 mm i/d	Rft	31,680.00	177.75	5,631,120
5	24/12	Supply and erection of single core PVC insulated, PVC sheathed copper conductor, 660/1100 volts grade cable, in prelaid G.I. pipe/ M.S. conduits/ PVC pipe/ G.I. wire/ trenches, etc (rate for cable only):-				
		ii) 6 mm sq (7/0.044")	Rft	20.00	119.20	2,384
6	24/13/c	Supply and erection of copper conductor cables for service connection, in prelaid pipe/G.I. wire / trenches, etc. (rate for cable only):-				
		b) PVC insulated, PVC sheathed 3 core, 660/1100 volt cable:-				
		iii) 7/0.74 mm (7/0.029")	Rft	3,880.00	114.25	443,290
		c) PVC insulated, PVC sheathed 4 core, 660/1100 volt non armoured cable:-				
		vi) 10 mm (7/0.052")	Rft	31,680.00	525.75	16,655,760
		vii) 16 mm (7/0.064")	Rft	200.00	694.80	138,960
7	N.S	Supplying, installation testing and commissioning of Octagonal shape electric street light pole, made of hot dipped 4.5 mm thick (7 SWG) galvanized steel, tappered from 225 mm at bottom to 100 mm at top, with 1500 mm x 60 mm x 4mm thick dia. arm for luminaire installation, duly G.I.welded with 470x470x20 mm base plate with the help of 4 no triangular stiffeners 100x350x20 mm of GI sheet, with built in junction box with shutter, i/c the cost of nuts & J-rag bolts, duly fixed in prelaid concrete foundation, foundation will be paid additionally as approved and directed by the Engineer In charge				
		a) Single Arm				
		(i) 6 mtr height	Each	116.00	65,400.00	7,586,400

PUNJAB CITIES PROGRAM (PCP)
DETAILED DESIGN OF INFRASTRUCTURE SUB-PROJECTS AND RESIDENTS SUPERVISION IN 16 CITIES OF PUNJAB

DETAILED COST ESTIMATE

CANAL ROAD

ROADS NETWORK

Sr. No	1st BI-Annual-2023 (Jan to June) Sheikhpura	Description	Unit	Quantity	Unit Rate (Rs.)	Amount (Rs.)
8	24/69/c	Supplying, installation and commissioning of LED Cobra-head Luminaries of specified wattage and lumens conforming to IP 66 & IK 08 or above Philips /Osram/ Thorn or equivalent with corrosion resistant die casted Aluminum housing, silicon gasket in special groove, UV stable & scratch resistant synthetic materials, thermally hardened glass complete with LED Chip (Philips Lumiled/ Cree/ Nichia/ Osram make or equivalent), programmable LED driver (Harvard/TCI/ Lumotech/ Philips/ VOSSLOH Schwabe/ Lightech make or equivalent), minimum 10kV surge protection rating i/c the cost of all accessories/components required for proper operation, fully flexible for future upgradation and easy replacements for maintenance purposes, bucket elevator charges as approved and directed by the				
		c) 120 Lm/Watt				
		(v) 90 Watt with 10800 Lumens	Each	194.00	52,598.60	10,204,128
9	24/77	Supply and erection of electric energy meter, including meter testing fee, etc.				
		b) three phase, 4 wires:				
		ii) 3x50 Amp, 400 volts	Each	1.00	15,843.30	15,843
10	24/105/i.iii	Supply, insatllation, commissioning and testing of oil cooled type, Step down Power Transformer of specified rating,11/0.415 kV, i/c the cost of lifting hooks, thermometers, LT & HT bushing 5-steps, tap changer, imported double float buchholz relay, 2 earthing terminals, roller wheels, connecting terminals for cables M.S box on transformer in order to cover complete L.T side, all necessary materials required for connections on H.T & L.T side, rated voltage 11000/415/240 V impedance 6.25% or as specified by WAPDA/IEC system earth: Delta / Star, neutral solidly earthed, i/c Wapda testing charges,complete in all respects made of PEL, Siemens, as approved and directed by the Engineer Incharge				

PUNJAB CITIES PROGRAM (PCP)
DETAILED DESIGN OF INFRASTRUCTURE SUB-PROJECTS AND RESIDENTS SUPERVISION IN 16 CITIES OF PUNJAB

DETAILED COST ESTIMATE

CANAL ROAD

ROADS NETWORK

Sr. No	1st BI-Annual-2023 (Jan to June) Sheikhpura	Description	Unit	Quantity	Unit Rate (Rs.)	Amount (Rs.)
		(iii) 25 KVA	Each	2.00	581,485.15	1,162,970
11	24/70	Earthing of iron clad/aluminum switches, etc. with G.I. wire No. 8 SWG in G.I. pipe 15 mm (½") dia, recessed or on surface of wall and floor, complete with 1.5 metre long G.I. pipe, 50 mm (2") dia with reducing socket 4 to 5 metre below ground level, and 2 metre away from building plinth.	Job	200.00	10,199.15	2,039,830
		Sub Total Scheduled Items: (A)				**48,166,884**
Non Schedule		**Part-B**				
12		Fabrication, Supply, testing and commissioning of following Light control panels (LCP), floor standing weather proof, IP 65 Rated of appropriate size, made of MS Sheet 16 SWG with hinged door, handle, catcher, 2 coats of antirust and powder coated paint of approved colour, AC3 megnatic contactor, photocell for automatic operation of lights, CBs, Hand/Off/Auto switch, push button and all necessary accessories complete in all respects. LCP shall be manufactured as per specifications, single line diagram complete in all respect up to the satisfaction of Engineer incharge.				
	(a)	LCP-3 Phase	No.	2.00	214,800	429,600
13	N.S	Dismantling of existing 10M high M.S light Pole from site to factory for alteration of pole height 10M to 6M from top alteration, Modification, Reinstallation of pole at site. Including cost of transportation, loading, unloading and cutting lengths of poles shift to MC Store Complete in all respects.	Each	94.00	15,000	1,410,000
		Total Cost (Part B)			**Rs.**	**1,839,600**
		Grand Total (Part A + Part B)			**Rs.**	**50,006,484**
		Grand Total Amount Rs.				**180,675,483**

PUNJAB CITIES PROGRAM (PCP)
DETAILED DESIGN OF INFRASTRUCTURE SUB-PROJECTS AND RESIDENTS SUPERVISION IN 16 CITIES OF PUNJAB

CANAL ROAD

CALCULATION OF QUANTITES

ROADS NET WORK

Sr. No	Description	No.	Length	Width	Height	Qty.	Unit.
	Dismantling						
1	Dismantling and removing road pavement, etc., including screening and stacking of byproducts upto one chain lead (30 metre).						
	RD 0+000 to 3+500	1	3,500	20.00	0.17	11,900	Cft
	RD 0+000 to 0+460 (Left side of canal)	1	460	20.00	0.17	1,564	Cft
	RD 3+500 to 4+500	1	1,000	20.00	0.17	3,400	Cft
	RD 6+270 to 8+100	1	1,830	20.00	0.17	6,222	Cft
	RD13+600 to 14+834	1	1,234	20.00	0.17	4,196	Cft
					Total	27,282	Cft
					Total.	**272.82**	**%Cft**
2	Ploughing and Compaction of Existing road surface upto 6" depth i/c dressing, leveling, supplying and spreading of stone screening (Khaka) and compaction to achieve to 100% maximum ASSHO dry density complete in all						
	RD 0+000 to 3+500	1	3,500	20.00	0.50	35,000	Cft
	RD 0+000 to 0+460 (Left side of canal)	1	460	20.00	0.50	4,600	Cft
	RD 3+500 to 4+500	1	1,000	20.00	0.50	10,000	Cft
	RD 6+270 to 8+100	1	1,830	20.00	0.50	18,300	Cft
	RD13+600 to 14+834	1	1,234	20.00	0.50	12,340	Cft
					Total	80,240	Cft
					Total.	**802.40**	**%Cft**

PUNJAB CITIES PROGRAM (PCP)
DETAILED DESIGN OF INFRASTRUCTURE SUB-PROJECTS AND RESIDENTS SUPERVISION IN 16 CITIES OF PUNJAB

CANAL ROAD

CALCULATION OF QUANTITES

ROADS NET WORK

Sr. No	Description	No.	Length	Width	Height	Qty.	Unit.
	Water Bound Macadam						
3	Providing and laying base course of crushed stone (Water Bound Macadam) of approved quality and grade including, placing, mixing, spreading and compaction of base course material to required depth, camber and grade to achieve 100% maximum modified AASHTO dry density, including carriage of all material to site of work complete in all respect as per specifications and as directed by the engineer incharge. (Crushed stone aggregate from Sargodha querry to site, actual compacted depth shall be considered for payment)						
	Crushed stone aggregate from approved quarry						
	For Road						
	RD 0+000 to 3+500	1	3,500	20.00	0.33	23,100	Cft
	RD 0+000 to 0+460 (Left side of canal)	1	460	20.00	0.33	3,036	Cft
	RD 3+500 to 4+500	1	1,000	20.00	0.33	6,600	Cft
	RD 6+270 to 8+100	1	1,830	20.00	0.33	12,078	Cft
	RD13+600 to 14+834	1	1,234	20.00	0.33	8,144	Cft
					Total	52,958	Cft
					Total.	**529.58**	**%Cft**
	Prime Coat						
4	Providing and laying bituminous priming coat, using 10 lbs. kerosene oil and 10 lbs. binder per 100 Sft. or 0.5 Kg kerosene and 0.5 Kg binder per						
	RD 0+000 to 3+500	1	3,500	20.00		70,000	Sft
	RD 0+000 to 0+460 (Left side of canal)	1	460	20.00		9,200	Sft
	RD 3+500 to 4+500	1	1,000	20.00		20,000	Sft
	RD 6+270 to 8+100	1	1,830	20.00		36,600	Sft
	RD13+600 to 14+834	1	1,234	20.00		24,680	Sft
					Total	135,800	Sft
					Total.	**1,358.00**	**%Sft**
	Tack Coat						
5	Providing and laying bituminous tack coat, using 10 lbs. of bitumen per 100 Sft (0.49 Kg of bitumen per sq.m.)						
	RD 8+100 to 13+600	1	5,500	20.00		110,000	**Sft**
					Total.	**1,100.00**	**%Sft**
	Carpeting						

PUNJAB CITIES PROGRAM (PCP)
DETAILED DESIGN OF INFRASTRUCTURE SUB-PROJECTS AND RESIDENTS SUPERVISION IN 16 CITIES OF PUNJAB

CANAL ROAD

CALCULATION OF QUANTITES

ROADS NET WORK

Sr. No	Description	No.	Length	Width	Height	Qty.	Unit.
	AWC						
6	Providing and laying plant premixed bituminous carpet, including compaction and finishing to required camber, grade and density. (2 inch thick) (iv) 4.5% Bitumen						
	RD 0+000 to 3+500	1	3,500	20.00		70,000	Sft
	RD 0+000 to 0+460 (Left side of canal)	1	460	20.00		9,200	Sft
	RD 3+500 to 4+500	1	1,000	20.00		20,000	Sft
	RD 6+270 to 14+834	1	8,564	20.00		171,280	Sft
					Total	270,480	Sft
					Total.	**2,704.80**	**%Sft**
	Paint For Traffic Lanes						
7	Painting Traffic Lane Marking of specified width (1.5mm thick), with Thermoplastic (TP) Paint including Glass Beads, complete in all respect, as approved and directed by Engineer incharge.						
	RD 0+000 to 3+500	2.5	3,500			8,750	Rft
	RD 3+500 to 4+500	2.5	1,000			2,500	Rft
	RD 6+270 to 14+834	2.5	1,830			4,575	Rft
					Total.	**15,825**	**Rft**
	Kerb Stone						
8	Providing and fixing precast Edge Kerb Stone (4"to 6" thick), of 3500 PSI Compressive Strength, embeded in PCC 1:2:4 over lean concrete 1:4:8 etc complete in all respect.						
	b) With Painting						
	(i) 14" high	1	1,000			**1,000**	**Rft**
	Painting old surfaces:-						
9	Painting small detached articles, not exceeding one square foot (Sq.m) of painted surface:-						
	i) first coat						
	ii) each subsequent coat						
	RD 0+000 to 3+500	2	3,500			7,000	Nos.
	RD 3+500 to 4+500	2	1,000			2,000	Nos.
	RD 4+500 to 6+270	2	1,770			3,540	Nos.
	RD 6+270 to 14+834	2	8,564			17,128	Nos.
					Total.	**297.00**	**Nos.**

PUNJAB CITIES PROGRAM (PCP)
DETAILED DESIGN OF INFRASTRUCTURE SUB-PROJECTS AND RESIDENTS SUPERVISION IN 16 CITIES OF PUNJAB

CANAL ROAD

CALCULATION OF QUANTITES

ROADS NET WORK

Sr. No	Description	No.	Length	Width	Height	Qty.	Unit.
	Tuff Paver						
10	Providing and laying Tuff pavers, having 7000 PSI, crushing strength of approved manufacturer, over 2" to 3" sand cushion i/c grouting with sand in joints i/c finishing to require slope. complete in all respect. (50% Grey / 50% Coloured)						
	RD 0+000 to 3+500	2	3,500	4.00		28,000	Sft
	RD 3+500 to 4+500	2	1,000	4.00		8,000	Sft
	RD 4+500 to 6+270	2	1,770	4.00		14,160	Sft
	RD 6+270 to 14+834	2	8,564	4.00		68,512	Sft
					Total	118,672	Sft
	Qty to be used on both sides of Canal				**Total.**	**118,672**	**Sft**
	Cat Eyes						
11	Providing & fixing Cat Eyes of size 4" x 4" x 3/4" duly casted with specified material having plastic strip containing mini retro-reflective glass beads of color white/red/yellow having specifid reflections , quality & shape i/c the cost of self built in 12 mm diax120 mm long steel zinc plated nail,fixing to road with epoxy/ hammering with						
	b) Aluminium Alloy						
	(A) Dual-Directional						
	(ii) 43x2=86 Glass beads a side	3266				**3,266**	**Each**
12	Providing, fabrication and fixing pole mounted Direction Board / road delineator of any shape and size, with specified Sheet and thickness, supported with G.I Channel, (excluding the cost of vertical post and painting) etc complete in all respect.						
	(a) G.I Sheet 14 SWG						
	CIRCULAR/TRIANGULAR						
	a) 3-4 ft size	20	3.00	2.00		**120**	**Sft**
13	Providing, fabrication and fixing Vertical Post comprising of medium quality G.I Pipe of specified diameter, including the cost of clamping arrangements, top cover, hold fasts, PCC 1:2:4 footing of specified depth and excavation etc complete in all respect, as approved and directed by the engineer incharge.						

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CANAL ROAD

CALCULATION OF QUANTITES

ROADS NET WORK

Sr. No	Description	No.	Length	Width	Height	Qty.	Unit.
	(b) 3 inch diameter	20	11			**220**	**Rft**
14	Lettering and printing of signage /direction boards/ road delineators of any colour by machine i/c cost of Digital Lettering, Lamination & pasting etc complete in all respect.						
	a) High Intensity Prismatic (HIP) Tape					**120**	**Sft**
15	Supplying and filling sand under floor; or plugging in wells.						
	For Drainage Pipe	234	6.00	1.00	1.00	1,404	Cft
					Total.	**14.04**	**%Cft**
	uPVC Pipe						
16	Providing, fixing, testing and commissioning of µ-PVC (Unplasticized polyvinyl Chloride) Nikasi /waste pipe make of dadex / Popular / Beta/ BBJ plain / socket ended conforming to code EN-1401 of specified SDR (Standard Dimension Ratio) including the cost of specials and Solvents complete in all respect as approved and directed by the Engineer Incharge						
	Type (SDR 41/SN-4)						
	(vii) 8"(200 mm)	234	6.00			**1,404**	**Rft**
	PROTECTION WALL + MANHOLE RAISING						
	Dismantling for manhole						
17	c) Dismantling cement concrete 1:2:4 plain.	40	8.64	0.75	0.50	130	Cft
					Total	**1.30**	**%Cft**
	Excavation						
18	Earthwork excavation in open cutting upto 5'-0" (1.5 m) depth for storm water channels, drains, sullage drains in open areas, roads, streets, lanes, including under pinning of walls and shoring to protect existing works, shuttering and timbering the trenches, dressed to designed level and dimensions, trimming, removal of surface water fromtrenches, back filling and surplus excavated material disposed of and dressed within 50 ft. (15 m) lead:- i) in ordinary soil						
	RD 0+000 to 3+500	2	3,500	2.00	2.00	28,000	Cft

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CANAL ROAD

CALCULATION OF QUANTITES

ROADS NET WORK

Sr. No	Description	No.	Length	Width	Height	Qty.	Unit.
					Total.	**28.00**	**%oCft**
	P.C.C						
19	Cement concrete plain including placing, compacting, finishing and curing complete (including screening and washing of stone aggregate):						
	(i) Ratio 1: 4: 8						
	RD 0+000 to 3+500	2	3,500	2.00	0.25	3,500.00	Cft
					Total.	**35.00**	**%Cft**
	(f) Ratio 1: 2: 4						
	RD 0+000 to 3+500	2	3,500	1.13	0.25	1,968.75	Cft
	Manhole Neck	40	8.64	0.75	0.75	194	Cft
					Total.	**21.63**	**%Cft**
	Brick Work						
20	Pacca brick work other than building upto 10ft. (3 m) Cement, sand mortar:- Ratio 1:3						
	RD 0+000 to 3+500						
	1st Step	2	3,500	1.875	0.50	6,563	Cft
	2nd Step	2	3,500	1.50	0.50	5,250	Cft
	3rd Step	2	3,500	1.13	0.75	5,906	Cft
	Manhole Neck	40	8.64	0.75	0.75	194	Cft
					Total	17,913	Cft
					Total.	**179.13**	**%Cft**
21	Extra for pacca brick work in steining of wells or any other circular masonry.	40	8.64	0.75	0.75	194	Cft
					Total.	**1.94**	**%Cft**
22	Providing and fixing RPC Manhole Cover Manufactured with 100% Reinforced Plastic Composite Material, 650 mm dia with clear opening size 600 mm (24" dia) and RPC manhole frame having dia meter 790 mm (Complete) (Certified under ISO 9001-2015)	40				**40**	**Set**
	G.I Pipe Railing on bridges						

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CANAL ROAD

CALCULATION OF QUANTITES

ROADS NET WORK

Sr. No	Description	No.	Length	Width	Height	Qty.	Unit.
23	Providing and fixing G.I. pipe railing, as per standard drawing.						
	Culverts						
	0+470	2	29.00			58	Rft
	1+110	2	32.00			64	Rft
	1+610	2	32.00			64	Rft
	2+100	2	33.00			66	Rft
	7+120	2	29.00			58	Rft
	8+150	2	28.00			56	Rft
	8+450	2	28.00			56	Rft
	9+470	2	28.00			56	Rft
	11+420	2	28.00			56	Rft
	12+040	2	28.00			56	Rft
	14+410	2	23.00			46	Rft
	Bridges						
	0+000	2	29.00			58	Rft
	3+500	2	34.00			68	Rft
	5+500	2	34.00			68	Rft
	6+080	2	28.00			56	Rft
	10+510	2	29.00			58	Rft
	11+810	2	28.00			56	Rft
	13+030	2	23.00			46	Rft
	14+010	2	23.00			46	Rft
					Total	**1,092**	**Rft**
	Improvement of Street Lights						
	Excavation						
1	Excavation in foundation of building, bridges and other structures, including dagbelling, dressing, refilling around structure with excavated earth, watering and ramming lead upto one chain (30 m) and lift upto 5 ft. (1.5 m)						
	a) By Manual						
	ii) in ordinary soil.						
	For pipe 50mm dia from TR to LCP and LCP to poles	1	31,680	1.00	2.50	79,200	Cft
	Pole Foundation	116	2.00	2.00	5.00	2,320	Cft
					Total	81,520	Cft
					Total	**81.52**	**%oCft**

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CANAL ROAD

CALCULATION OF QUANTITES

ROADS NET WORK

Sr. No	Description	No.	Length	Width	Height	Qty.	Unit.
2	Providing and laying reinforced cement concrete (including prestressed concrete), using Ordinary Portland Cement / Sulphate resisting cement / Slag cement as may be required; coarse sand and screened graded and washed aggregate, in required shape and design, including forms, moulds, shuttering, lifting, compacting, curing, rendering and finishing exposed surface, complete (but excluding the cost of steel reinforcement, its fabrication and placing in position, etc.):-						
	(a)(iii) Reinforced cement concrete in slab of rafts / strip foundation, base slab of column and retaining walls; etc and footing beams, other structural members other than those mentioned in 6(a) (i)&(ii) above not requiring form work (i.e. horizontal shuttering) complete in all respects:-						
	(3) Type C (nominal mix 1: 2: 4)	116	2.00	2.00	6.00	2,784	Cft
					Total	**2,784**	**Cft**
	Steel						
3	Fabrication of mild steel reinforcement for cement concrete, including cutting, bending, laying in position, making joints and fastenings, including cost of binding wire and labour charges for binding of steel reinforcement (also includes removal of rust from bars):- ('c) Deformed bars (Grade-60)						
	5lbs / cft					6,316	Kg
					Total	**63.16**	**Kg**
4	Supply and erection PVC pipe for recessed wiring (main and sub-main) purpose, including bends, specials, etc. in floor, wall or trenches:-						
	i) 50 mm i/d						
	From LCP to Pole and pole to pole (Up + Down)	1	31,680			**31,680**	**Rft**
5	Supply and erection of single core PVC insulated, PVC sheathed copper conductor, 660/1100 volts grade cable, in prelaid G.I. pipe/M.S. conduits/PVC pipe/G.I. wire/trenches, etc (rate for cable only):						
	ii) 6 mm sq (7/0.044")						
	For two nos. Earthing lead	1	20.00			**20**	**Rft**

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CANAL ROAD

CALCULATION OF QUANTITES

ROADS NET WORK

Sr. No	Description	No.	Length	Width	Height	Qty.	Unit.
6	Supply and erection of copper conductor cables for service connection, in prelaid pipe/G.I. wire / trenches, etc. (rate for cable only):-						
	b) PVC insulated, PVC sheathed 3 core, 660/1100 volt cable:-						
	iii) 7/0.74 mm (7/0.029")						
	From Terminal Box to light fixture on pole (P+N+E)	194	20.00			**3,880**	**Rft**
	c) PVC insulated, PVC sheathed 4 core, 660/1100 volt non armoured cable:-						
	vi) 10 mm (7/0.052")	1	31,680.00			**31,680**	**Rft**
	vii) 16 mm (7/0.064")	1	200.00			**200**	**Rft**
7	Supplying, installation testing and commissioning of Octagonal shape electric street light pole, made of hot dipped 4.5 mm thick (7 SWG) galvanized steel, tappered from 225 mm at bottom to 100 mm at top, with 1500 mm x 60 mm x 4mm thick dia. arm for luminaire installation, duly G.I.welded with 470x470x20 mm base plate with the help of 4 no triangular stiffeners 100x350x20 mm of GI sheet, with built in junction box with shutter, i/c the cost of nuts & J-rag bolts, duly fixed in prelaid concrete foundation, foundation will be paid additionally as approved and directed by the Engineer In charge.						
	a) Single Arm						
	(i) 6 mtr height	116				**116**	**Nos.**

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CANAL ROAD

CALCULATION OF QUANTITES

ROADS NET WORK

Sr. No	Description	No.	Length	Width	Height	Qty.	Unit.
8	Supplying, installation and commissioning of LED Cobra-head Luminaries of specified wattage and lumens conforming to IP 66 & IK 08 or above Philips /Osram/ Thorn or equivalent with corrosion resistant die casted Aluminum housing, silicon gasket in special groove, UV stable & scratch resistant synthetic materials, thermally hardened glass complete with LED Chip (Philips Lumiled/ Cree/ Nichia/ Osram make or equivalent), programmable LED driver (Harvard/TCI/ Lumotech/ Philips/ VOSSLOH Schwabe/ Lightech make or equivalent), minimum 10kV surge protection rating i/c the cost of all accessories/components required for proper operation, fully flexible for future upgradation and easy replacements for maintenance purposes, bucket elevator charges as approved and directed by the Engineer Incharge.						
	c) 120 Lm/Watt						
	(v) 90 Watt with 10800 Lumens	194				**194**	**Nos**
9	Supply and erection of electric energy meter, including meter testing fee, etc.						
	b) three phase, 4 wires:						
	ii) 3x50 Amp, 400 volts	1				**1.00**	**Nos**
10	Supply, insatllation, commissioning and testing of oil cooled type, Step down Power Transformer of specified rating,11/0.415 kV, i/c the cost of lifting hooks, thermometers, LT & HT bushing 5-steps, tap changer, imported double float buchholz relay, 2 earthing terminals, roller wheels, connecting terminals for cables M.S box on transformer in order to cover complete L.T side, all necessary materials required for connections on H.T & L.T side, rated voltage 11000/415/240 V impedance 6.25% or as specified by WAPDA/IEC system earth: Delta / Star, neutral solidly earthed, i/c Wapda testing charges,complete in all respects made of PEL, Siemens, as approved and directed by the Engineer Incharge						
	(i) 25 KVA	2				**2.00**	**Nos.**

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CANAL ROAD

CALCULATION OF QUANTITES

ROADS NET WORK

Sr. No	Description	No.	Length	Width	Height	Qty.	Unit.
11	Earthing of iron clad/aluminum switches, etc. with G.I. wire No. 8 SWG in G.I. pipe 15 mm (½") dia, recessed or on surface of wall and floor, complete with 1.5 metre long G.I. pipe, 50 mm (2") dia with reducing socket 4 to 5 metre below ground level, and 2 metre away from building plinth.	200				**200.00**	**No.**
12	Fabrication, Supply, testing and commissioning of following Light control panels (LCP), floor standing weather proof, IP 65 Rated of appropriate size, made of MS Sheet 16 SWG with hinged door, handle, catcher, 2 coats of antirust and powder coated paint of approved colour, AC3 megnatic contactor, photocell for automatic operation of lights, CBs, Hand/ Off/ Auto switch, push button and all necessary accessories complete in all respects. LCP shall be manufactured as per specifications, single line diagram complete in all respect up to the satisfaction of Engineer incharge.						
	LCP-3 Phase	2				**2.00**	**Nos.**
13	Dismantling of existing 10M high M.S light Pole from site to factory for alteration of pole height 10M to 6M from top alteration, Modification, Reinstallation of pole at site. Including cost of transportation, loading, unloading and cutting lengths of poles shift to MC Store Complete in all respects.	94				**94.00**	**Each**

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DETAILED COST ESTIMATE

CANAL ROAD

ROADS NETWORK

Sr. No	1st BI-Annual-2023 (Jan to June) Sheikhpura	Description	Unit	Quantity	Unit Rate (Rs.)	Amount (Rs.)
		ROAD WORK				
		Dismantling				
1	4/46	Dismantling and removing road pavement, etc., including screening and stacking of byproducts upto one chain lead (30 metre).	100Cft	237.18	2,960.50	702,171
		Sub Base Course (Relaying)				
3	18/3/a labour Rate	Laying sub-base course of stone product of approved quality and grade, including placing, mixing, spreading and compaction of sub-base material to required depth, camber, grade to achieve 100%maximum modified AASHO dry density, including carriage of all material to site of work except gravel and. aggregate.	100Cft	213.46	6,035.25	1,288,284
		Sub Base Course				
4	18/3/a	Provding & Laying sub-base course of stone product of approved quality and grade, including placing, mixing, spreading and compaction of sub-base material to required depth, camber, grade to achieve 100% maximum modified AASHO dry density, including carriage of all material to site of work except gravel and. aggregate.	100Cft	148.68	17,529.97	2,606,355

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DETAILED COST ESTIMATE

CANAL ROAD

ROADS NETWORK

Sr. No	1st BI-Annual-2023 (Jan to June) Sheikhpura	Description	Unit	Quantity	Unit Rate (Rs.)	Amount (Rs.)

PUNJAB CITIES PROGRAM (PCP)
DETAILED DESIGN OF INFRASTRUCTURE SUB-PROJECTS AND RESIDENTS SUPERVISION IN 16 CITIES OF PUNJAB

DETAILED COST ESTIMATE

CANAL ROAD

ROADS NETWORK

Sr. No	1st BI-Annual-2023 (Jan to June) Sheikhpura	Description	Unit	Quantity	Unit Rate (Rs.)	Amount (Rs.)
		RCC Work				
9	6/6	Providing and laying reinforced cement concrete (including prestressed concrete), using Ordinary Portland Cement / Sulphate resisting cement / Slag cement as may be required; coarse sand and screened graded and washed aggregate, in required shape and design, including forms, moulds, shuttering, lifting, compacting, curing, rendering and finishing exposed surface, complete (but excluding the cost of steel reinforcement, its fabrication and placing in position, etc.):-				
		(a)(iii) Reinforced cement concrete in slab of rafts / strip foundation, base slab of column and retaining walls; etc and footing beams, other structural members other than those mentioned in 6(a) (i)&(ii) above not requiring form work (i.e. horizontal shuttering) complete in all respects:-				
		(2) Type B (nominal mix 1: 1½: 3)	Cft	23,600.00	528.40	12,470,240
10	1/1 Rate Analysis	Carriage of 100 Cft. (2.83 cu.m) of all materials like stone aggregate, spawl, kankar lime (unslaked), surkhi, etc. or 150 Cft. (4.25 cu.m) of timber, by truck or by any other means owned by the contractor.	Cft	19,824.00	106.69	2,115,003
		Steel				
11	6/12/c	Fabrication of mild steel reinforcement for cement concrete, including cutting, bending, laying in position, making joints and fastenings, including cost of binding wire and labour charges for binding of steel reinforcement (also includes removal of rust from bars):- ('c) Deformed bars (Grade-60)	100Kg	187.39	31,929.80	5,983,325
		Total Amount Rs.				**25,165,379**

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DETAILED COST ESTIMATE

CANAL ROAD

ROADS NETWORK

Sr. No	1st BI-Annual-2023 (Jan to June) Sheikhpura	Description	Unit	Quantity	Unit Rate (Rs.)	Amount (Rs.)
		Sewerage System				
		Dismantling				
1	4/31	Disjoining R.C.C. pipes inside the trench and dismantling and removing the pipes from the trench and shift to MC Store				
		b) 13" to 24" (325 to 600 mm) diameter	Rft	1,770.00	59.15	104,696
		Excavation				
2	3/42	Earth work excavation in open cutting for sewers and manholes as shown in drawing including shuttering of wooden vertical planks, struts and beams, dressing to correct section and dimension according to templates and levels and removing surface water in all types of soil except shingle, gravel and rock.				
		i) 0 ft. to 7.0 ft. (0 to 2.10 m) depth	1000Cft	45.97	12,836.55	590,058
		ii) 7-01 ft. to 15.0 ft. (2.15 to 4.5 m) depth	1000Cft	39.40	18,457.30	727,218
3	7/30	Supplying and filling sand under floor; or plugging in wells.	100Cft	394.00	2,982.00	1,174,914
		Crushed stone aggregate				
4	21/23	Providing and laying crushed stone aggregate of 1/4" to 1" guage under and around the sewer pipe, including leveling, manual compaction, complete in all respects.	100Cft	68.85	9,324.00	641,985
		R.C.C Pipe				
5	21/3	Providing and laying R.C.C. pipe sewers, moulded with cement concrete 1:1½:3 conforming to ASTM Specification C-76-20, Class II. Wall B, including carriage of pipe from factory to site of work, lowering in trenches to correct alignment and grade, jointing with rubber ring, cutting pipes where necessary, testing, etc., complete.				
		iii) 460 mm (18") i/d	Rft	1,770.00	1,252.65	2,217,191
		Transportation				
6	3/17	Transportation of earth all types when the total distance, including the lead covered in the item of work, is more than 1000 ft. (300 m)				

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DETAILED COST ESTIMATE

CANAL ROAD

ROADS NETWORK

Sr. No	1st BI-Annual-2023 (Jan to June) Sheikhpura	Description	Unit	Quantity	Unit Rate (Rs.)	Amount (Rs.)
		a) upto ¼ mile (400 m).	1000Cft	39.40	4,472.30	176,210
		b) for every 330 ft. (100 m) additional lead or part thereof, beyond ¼ mile (400 m) upto one mile. (1.6 Km.)	1000Cft	39.40	442.20	17,423
		c) for every ¼ mile (400 m) additional lead or part thereof, beyond one mile (1.6 Km.) upto 5 mile (8 Km).	1000Cft	39.40	2,749.75	108,341
		Manhole				
7	N.S	Construction of circular brick masonary manhole 4.83 ft dia for 15" to 18" dia sewer complete in all respests as shown in drawing and directed by Engineer incharge. The work includes the excavation, backfilling, PCC (1:4:8) for base, PCC (1:2:4) for benching, Brickwork 1:3 c/s mortar with bitumen coating on outer side, .Collar of PCC (1:2:4) with all finishing (6" thick RPC manhole cover with angle iron CI frame of 22" i/d complete in all respect.				
		i) 0 to 12 feet depth	Each	12.00	180,590.00	2,167,080
		Total Amount (Rs)				**7,925,114**
		Grand Total Amount Rs.				**33,090,493**

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CANAL ROAD

CALCULATION OF QUANTITES

ROADS NET WORK

Sr. No	Description	No.	Length	Width	Height	Qty.	Unit.
	Dismantling						
1	Dismantling and removing road pavement, etc., including screening and stacking of byproducts upto one chain lead (30 metre).						
	RD 4+500 to 6+270	1	1,770	20.00	0.67	23,718	Cft
					Total	23,718	Cft
					Total.	**237.18**	**%Cft**
	Sub Base Course (Relaying)						
3	Laying sub-base course of stone product of approved quality and grade, including placing, mixing, spreading and compaction of sub-base material to required depth, camber, grade to achieve 100%maximum modified AASHO dry density, including carriage of all material to site of work except gravel and. aggregate.						
	RD 4+500 to 6+270	1	1,770	20.00	0.67	21,346	Cft
	90% of existing Dismantle base material						
					Total.	**213.46**	**%Cft**

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CANAL ROAD

CALCULATION OF QUANTITES

ROADS NET WORK

Sr. No	Description	No.	Length	Width	Height	Qty.	Unit.
	Sub Base Course						
4	Provding & Laying sub-base course of stone product of approved quality and grade, including placing, mixing, spreading and compaction of sub-base material to required depth, camber, grade to achieve 100% maximum modified AASHO dry density, including carriage of all material to site of work except gravel and. aggregate.						
	RD 4+500 to 6+270	1	1,770	20.00	0.42	14,868	**Cft**
					Total.	**148.68**	**%Cft**
	RCC Work						
9	Providing and laying reinforced cement concrete (including prestressed concrete), using Ordinary Portland Cement / Sulphate resisting cement / Slag cement as may be required; coarse sand and screened graded and washed aggregate, in required shape and design, including forms, moulds, shuttering, lifting, compacting, curing, rendering and finishing exposed surface, complete (but excluding the cost of steel reinforcement, its fabrication and placing in position, etc.):-						
	(a)(iii) Reinforced cement concrete in slab of rafts / strip foundation, base slab of column and retaining walls; etc and footing beams, other structural members other than those mentioned in 6(a) (i)&(ii) above not requiring form work (i.e. horizontal shuttering) complete in all respects:-						
	(2) Type B (nominal mix 1: 1½: 3)						
	RD 4+500 to 6+270	1	1,770	20	0.67	23,600	Cft
					Total.	**23,600**	**Cft**
	Steel						
10	Fabrication of mild steel reinforcement for cement concrete, including cutting, bending, laying in position, making joints and fastenings, including cost of binding wire and labour charges for binding of steel reinforcement (also includes removal of rust from bars):- ('c) Deformed bars (Grade-60)						
	1.75lbs/cft					18,738.66	kg
					Total.	**187.39**	**%Kg**

PUNJAB CITIES PROGRAM (PCP)
DETAILED DESIGN OF INFRASTRUCTURE SUB-PROJECTS AND RESIDENTS SUPERVISION IN 16 CITIES OF PUNJAB

CANAL ROAD

CALCULATION OF QUANTITES

ROADS NET WORK

Sr. No	Description	No.	Length	Width	Height	Qty.	Unit.
	Sewerage System						
	Dismantling						
1	Disjoining R.C.C. pipes inside the trench and dismantling and removing the pipes from the trench and shift to MC Store						
	b) 13" to 24" (325 to 600 mm) diameter	1	1,770			**1,770**	**Rft**
	Excavation						
2	Earth work excavation in open cutting for sewers and manholes as shown in drawing including shuttering of wooden vertical planks, struts and beams, dressing to correct section and dimension according to templates and levels and removing surface water in all types of soil except shingle, gravel and rock.						
	i) 0 ft. to 7.0 ft. (0 to 2.10 m) depth						
	RD 4+500 to 6+270	1	1,770	3.71	7.00	45,967	Cft
					Total	45,967	Cft
					Total	**45.97**	**%oCft**
	ii) 7-01 ft. to 15.0 ft. (2.15 to 4.5 m) depth						
	RD 4+500 to 6+270	1	1,770	3.71	6.00	39,400	Cft
					Total	39,400	Cft
					Total	**39.40**	**%oCft**
3	Supplying and filling sand under floor; or plugging in wells.	1	1,770	3.71	6.00	39,400	Cft
					Total	**394.00**	**%Cft**
	Crushed stone aggregate						
4	Providing and laying crushed stone aggregate of 1/4" to 1" guage under and around the sewer pipe, including leveling, manual compaction, complete in all respects.						
	RD 4+500 to 6+270	1	1,770	3.89	1.00	6,885	Cft
					Total	**68.85**	**%Cft**

PUNJAB CITIES PROGRAM (PCP)
DETAILED DESIGN OF INFRASTRUCTURE SUB-PROJECTS AND RESIDENTS SUPERVISION IN 16 CITIES OF PUNJAB

CANAL ROAD

CALCULATION OF QUANTITES

ROADS NET WORK

Sr. No	Description	No.	Length	Width	Height	Qty.	Unit.
	R.C.C Pipe						
5	Providing and laying R.C.C. pipe sewers, moulded with cement concrete 1:1½:3 conforming to ASTM Specification C-76-20, Class II. Wall B, including carriage of pipe from factory to site of work, lowering in trenches to correct alignment and grade, jointing with rubber ring, cutting pipes where necessary, testing, etc., complete.						
	iii) 460 mm (18") i/d	1	1,770			**1,770**	**Rft**
	Transportation						
6	Transportation of earth all types when the total distance, including the lead covered in the item of work, is more than 1000 ft. (300 m)						
	a) upto ¼ mile (400 m).					**39.40**	**%oCft**
	b) for every 330 ft. (100 m) additional lead or part thereof, beyond ¼ mile (400 m) upto one mile. (1.6 Km.)					**39.40**	**%oCft**
	c) for every ¼ mile (400 m) additional lead or part thereof, beyond one mile (1.6 Km.) upto 5 mile (8 Km).					**39.40**	**%oCft**
	Manhole						
7	Construction of circular brick masonary manhole 4.83 ft dia for 15" to 18" dia sewer complete in all respests as shown in drawing and directed by Engineer incharge. The work includes the excavation, backfilling, PCC (1:4:8) for base, PCC (1:2:4) for benching, Brickwork 1:3 c/s mortar with bitumen coating on outer side, .Collar of PCC (1:2:4) with all finishing (6" thick RPC manhole cover with angle iron CI frame of 22" i/d complete in all respect.						
	i) 0 to 12 feet depth	12				**12**	**Each**

ENVIRONMENTAL HEALTH SAFETY BUDGET

RATE ANALYSIS

PUNJAB CITIES PROGRAM (PCP)
DETAILED DESIGN OF INFRASTRUCTURE SUB-PROJECTS AND RESIDENTS SUPERVISION IN 16 CITIES OF PUNJAB

Rate Analysis Road - 1

Provding & Laying sub-base course of stone product of approved quality and grade, including placing, mixing, spreading and compaction of sub-base material to required depth, camber, grade to achieve 100% maximum modified AASHO dry density, including carriage of all material to site of work except gravel and. aggregate.

160 KM

Sr. No.	1st BI-Annual-2023 (Jan to Jun) Sheikhpura	Description	Unit	Lead (Km)	Qty	Rate (Rs)	Amount (Rs.)
1	18/3(a)	Provding & Laying sub-base course of stone product of approved quality and grade, including placing, mixing, spreading and compaction of sub-base material to required depth, camber, grade to achieve 100% maximum modified AASHO dry density, including carriage of all material to site of work except gravel and. aggregate.	100 Cft		1	6,683.25	6,683.25
2		Carriage of 100 cft of all materials like stone aggregate spawl kanker lime surkhi etc or 150 cft of timber by truck or by any other means owned by the contratcor.					
		1st KM	100 Cft	1	1.22	305.40	372.59
		2nd KM	100 Cft	1	1.22	145.65	177.69
	1/1	3rd KM	100 Cft	1	1.22	114.10	139.20
		4th KM	100 Cft	1	1.22	81.20	99.06
		5th KM	100 Cft	1	1.22	75.85	92.54
		6th KM	100 Cft	1	1.22	74.60	91.01
		7th KM	100 Cft	1	1.22	69.60	84.91
		8th KM	100 Cft	1	1.22	68.85	84.00
		9th KM	100 Cft	1	1.22	64.75	79.00
		10th KM	100 Cft	1	1.22	60.75	74.12
		From 11 km to 200 km	100 Cft	150	1.22	52.20	9,552.60
		Total.					**17,529.97**
		Total Amount per 100 Cft					**17,529.97**
		Total Cost for Per Cft					**175.30**

PUNJAB CITIES PROGRAM (PCP)
DETAILED DESIGN OF INFRASTRUCTURE SUB-PROJECTS AND RESIDENTS SUPERVISION IN 16 CITIES OF PUNJAB

Rate Analysis Road - 1

Providing and laying base course of crushed stone (Water Bound Macadam) of approved quality and grade including, placing, mixing, spreading and compaction of base course material to required depth, camber and grade to achieve 100% maximum modified AASHTO dry density, including carriage of all material to site of work complete in all respect as per specifications and as directed by the engineer incharge. (Crushed stone aggregate from Sargodha querry to site, actual compacted depth shall be considered for payment)

160 KM

Sr. No.	1st BI-Annual-2023 (Jan to Jun) Sheikhpura	Description	Unit	Lead (Km)	Qty	Rate (Rs)	Amount (Rs.)
1	18/4(a)	Providing and laying base course of crushed stone (Water Bound Macadam) of approved quality and grade including, placing, mixing, spreading and compaction of base course material to required depth, camber and grade to achieve 100% maximum modified AASHTO dry density, including carriage of all material to site of work complete in all respect as per specifications and as directed by the engineer incharge. (Crushed stone aggregate from Sargodha querry to site, actual compacted depth shall be considered for payment)	100 Cft		1	14,009.10	14,009.10
2		Carriage of 100 cft of all materials like stone aggregate spawl kanker lime surkhi etc or 150 cft of timber by truck or by any other means owned by the contratcor.					
		1st KM	100 Cft	1	1.22	305.40	372.59
		2nd KM	100 Cft	1	1.22	145.65	177.69
	1/1	3rd KM	100 Cft	1	1.22	114.10	139.20
		4th KM	100 Cft	1	1.22	81.20	99.06
		5th KM	100 Cft	1	1.22	75.85	92.54
		6th KM	100 Cft	1	1.22	74.60	91.01
		7th KM	100 Cft	1	1.22	69.60	84.91
		8th KM	100 Cft	1	1.22	68.85	84.00
		9th KM	100 Cft	1	1.22	64.75	79.00
		10th KM	100 Cft	1	1.22	60.75	74.12
		From 11 km to 200 km	100 Cft	150	1.22	52.20	9,552.60
		Total.					**24,855.82**
		Total Amount per 100 Cft					**24,855.82**
		Total Cost for Per Cft					**248.56**

Annexure-C

Project Economic Analysis

FINANCIAL ANALYSIS ROAD NETWORK

TABLE - 9.1

AVERAGE OPERATING SPEEDS

Km/Hr

WITHOUT PROJECT CONDITION

Years	Cars/Jeeps	Hiace Wagon/ Pickup	Coaster/ Mini Buses	Buses	Trucks 2-AXLE	Trucks 3-AXLE & 4-AXLE	Trucks 5-AXLE & 6-AXLE
Base Year(2022)	25	20	20	15	15	15	15
2029	20	15	15	10	10	10	10
2037	15	10	10	10	10	10	10

WITH PROJECT CONDITION

Years	Cars/Jeeps	Hiace Wagon/ Pickup	Coaster/ Mini Buses	Buses	Trucks 2-AXLE	Trucks 3-AXLE & 4-AXLE	Trucks 5-AXLE & 6-AXLE
Base Year(2022)	40	40	40	40	40	40	40
2029	35	35	35	35	35	35	35
2037	30	30	30	30	30	30	30

TABLE - 9.3
VEHICLE OPERATING COSTS
FOR POOR ROAD CONDITIONS
WITHOUT PROJECT

Rs/Km

SPEEDS	MOTOR CYCLE	RICKSHAW	CAR	WAGON	MINI-BUS	BUS	TRUCK 2-AXLE	TRUCK 3-AXLE & 4-AXLE	TRUCK 5-AXLE & 6-AXLE
10	4.94	6.86	56.39	57.04	68.24	97.79	103.44	109.08	114.72
15	4.21	5.89	47.21	47.89	57.70	82.34	86.88	92.52	98.16
20	3.80	5.35	42.43	43.08	52.15	74.07	75.86	81.50	87.14
25	3.53	5.00	39.47	40.32	48.67	68.87	67.55	73.19	78.83
30	3.35	4.76	37.48	38.27	46.28	65.37	61.01	66.65	72.29
35	3.23	4.60	36.09	36.79	44.55	63.00	55.82	61.46	67.10
40	3.16	4.51	35.10	35.70	43.28	61.46	51.79	57.43	63.07
45	3.12	4.47	34.42	34.89	42.35	60.58	48.80	54.44	60.08
50	3.12	4.47	33.99	34.31	41.69	60.28	46.78	52.42	58.07
55	3.16	4.53	33.76	33.91	41.26	60.48	45.70	51.34	56.98
60	3.22	4.64	33.71	33.68	41.03	61.14	45.52	51.16	56.80
65	3.30	4.77	33.82	33.58	40.98	62.24	46.22	51.86	57.50
70	3.42	4.95	34.09	33.62	41.09	63.76	47.80	53.44	59.08
75	3.56	5.18	34.49	33.77	41.36	65.68	50.23	55.87	61.51
80	3.73	5.42	35.02	34.04	41.76	67.99	53.51	59.15	64.79
85	3.93	5.73	35.68	34.41	42.31	70.68	57.63	63.28	68.92

TABLE- 9.4
FOR GOOD ROAD CONDITIONS
WITH PROJECT

Rs/Km

SPEEDS	MOTOR CYCLE	RICKSHAW	CAR	WAGON	MINI-BUS	BUS	TRUCK 2-AXLE	TRUCK 3-AXLE & 4-AXLE	TRUCK 5-AXLE & 6-AXLE
10	3.71	5.12	35.59	34.99	41.42	61.63	65.14	69.34	73.54
15	3.08	4.29	28.49	28.17	33.56	50.94	54.02	58.23	62.43
20	2.73	3.83	24.80	24.60	29.44	45.22	46.71	50.92	55.12
25	2.50	3.53	22.53	22.35	26.84	41.60	41.22	45.42	49.62
30	2.35	3.33	21.00	20.80	25.05	39.13	36.87	41.08	45.28
35	2.25	3.19	19.92	19.67	23.75	37.40	33.40	37.60	41.80
40	2.19	3.11	19.16	18.83	22.77	36.21	30.65	34.85	39.06
45	2.15	3.07	18.62	18.20	22.05	35.43	28.55	32.76	36.96
50	2.15	3.08	18.26	17.73	21.51	35.01	27.06	31.26	35.46
55	2.17	3.12	18.06	17.39	21.13	34.89	26.13	30.33	34.54
60	2.21	3.19	17.99	17.17	20.88	35.05	25.76	29.96	34.16
65	2.28	3.30	18.04	17.06	20.76	35.48	25.92	30.12	34.32
70	2.37	3.44	18.19	17.03	20.74	36.14	26.61	30.81	35.01
75	2.49	3.61	18.45	17.09	20.83	37.04	27.82	32.02	36.22
80	2.62	3.81	18.80	17.23	21.01	38.17	29.54	33.74	37.94
85	2.77	4.04	19.24	17.44	21.29	39.52	31.77	35.98	40.18
90	2.95	4.31	19.77	17.73	21.65	41.08	31.77	35.98	40.18

TABLE - 9.5
VALUE OF TRAVEL TIME

DESCRIPTION	MOTORCYCLE	CAR	WAGON	COASTER/ FLYING COACH	TRUCK	BUS
TRAVEL TIME VALUE OF PASSENGERS/OCCUPANTS						
Average Income of Passenger (Rs./Month)	40,000	60,000	30,000	22,000	35,000	30,000
Average Income of Passenger (Rs./Annum)	480,000	720,000	360,000	264,000	420,000	360,000
Working Hours /Annum	2424	2424	2424	2424	2424	2424
Rate of passenger Rs./Hour	198	297	149	109	173	149
No. of Occupants	2.00	5.00	16.00	29.00	2.00	45.00
Travel Time Value of occupants---in financial terms (Rs./Hour)	396.04	1485.15	2376.24	3158.42	346.53	6683.17
Travel Time Value of occupants---in economic terms (Rs./Hour) 25%	**99.01**	**371.29**	**594.06**	**789.60**	**86.63**	**1670.79**

NOTE:- 'The value of travel time in a number of studies have been estimated at 25% to 33% of the wage rate due to lack of information on the split of work and non-work travel among passengers and the 'proportion of non-wage earners among passengers.

TABLE - 9.6

Road Length (4.52 km)

ANNUAL VEHICLE OPERATING COST

WITHOUT PROJECT

(Million Rs.)

Years	Voc/Km (Rs.)	Traffic Volume ADT	Distance Annual Km	Total Cost Million Rs.
Motor Cycles\Rickshaw				
Base Year(2022)	4.26	1103	1,650	7.76
2029	4.57	1875	1,650	14.15
2037	5.05	3375	1,650	28.12
Cars				
Base Year(2022)	39.47	635	1,650	41.35
2029	42.43	1080	1,650	75.56
2037	47.21	1943	1,650	151.33
Wagons				
Base Year(2022)	43.08	95	1,650	6.75
2029	47.89	162	1,650	12.76
2037	57.04	291	1,650	27.35
Bus				
Base Year(2022)	82.34	7	1,650	0.95
2029	97.79	12	1,650	1.92
2037	97.79	21	1,650	3.46
T.Trolly + Trucks 2-AXLE				
Base Year(2022)	86.88	14	1,650	2.01
2029	103.44	24	1,650	4.06
2037	103.44	43	1,650	7.31
Trucks 3-AXLE & 4-AXLE				
Base Year(2022)	92.52	0	1,650	-
2029	109.08	0	1,650	-
2037	109.08	0	1,650	-
Trucks 5-AXLE & 6-AXLE				
Base Year(2022)	98.16	0	1,650	-
2029	114.72	0	1,650	-
2037	114.72	0	1,650	-
TOTAL				
Base Year(2022)				**58.82**
2029				**108.46**
2037				**217.58**

Note :"VOC" means Vehicle Operating Cost

TABLE - 9.7

ANNUAL VEHICLE OPERATING COST
WITH PROJECT

(Million Rs.)

Years	Voc/Km (Rs.)	Traffic Volume ADT	Distance Annual Km	Total Cost Million Rs.
Motor Cycles\Rickshaw				
Base Year(2022)	2.65	1103	1,650	4.82
2029	2.72	1875	1,650	8.42
2037	2.84	3375	1,650	15.83
Cars				
Base Year(2022)	19.16	635	1,650	20.07
2029	19.92	1080	1,650	35.48
2037	21.00	1943	1,650	67.32
Wagons				
Base Year(2022)	18.83	95	1,650	2.95
2029	19.67	162	1,650	5.24
2037	20.80	291	1,650	9.98
Bus				
Base Year(2022)	36.21	7	1,650	0.42
2029	37.40	12	1,650	0.73
2037	39.13	21	1,650	1.38
T.Trolly + Trucks 2-Axle				
Base Year(2022)	22.77	14	1,650	0.53
2029	23.75	24	1,650	0.93
2037	25.05	43	1,650	1.77
Trucks 3-AXLE & 4-AXLE				
Base Year(2022)	34.85	0	1,650	-
2029	37.60	0	1,650	-
2037	41.08	0	1,650	-
Trucks 5-AXLE & 6-AXLE				
Base Year(2022)	39.06	0	1,650	-
2029	41.80	0	1,650	-
2037	45.28	0	1,650	-
TOTAL				
Base Year(2022)				**28.78**
2029				**50.81**
2037				**96.28**

Note :"VOC" means Vehicle Operating Cost

TABLE - 9.8

(Million Rs.)

YEARS	VEHICLE OPERATING COSTS		SAVINGS
	WITHOUT PROJECT	WITH PROJECT	
Base Year(2022)	58.82	28.78	30.04
2029	108.46	50.81	57.65
2037	217.58	96.28	121.30
		TOTAL	**208.99**

TABLE - 9.9

ANNUAL VALUE OF TRAVEL TIME COST
WITHOUT PROJECT

(Million Rs.)

Years	VOT Rs/km	Traffic Volume ADT	Distance Annual (Km)	Total Cost Million Rs.
Motor Cycles\Rickshaw				
Base Year(2022)	3.96	1103	1,650	7.21
2029	4.95	1875	1,650	15.31
2037	6.60	3375	1,650	36.75
Cars				
Base Year(2022)	14.85	635	1,650	15.56
2029	18.56	1080	1,650	33.06
2037	24.75	1943	1,650	79.35
Wagons				
Base Year(2022)	29.70	95	1,650	4.66
2029	39.60	162	1,650	10.55
2037	59.41	291	1,650	28.49
Bus				
Base Year(2022)	39.48	7	1,650	0.46
2029	52.64	12	1,650	1.03
2037	78.96	21	1,650	2.79
T.Trolly + Trucks 2-Axle				
Base Year(2022)	5.78	14	1,650	0.13
2029	8.66	24	1,650	0.34
2037	8.66	43	1,650	0.61
Trucks 3-AXLE & 4-AXLE				
Base Year(2022)	5.78	0	1,650	-
2029	8.66	0	1,650	-
2037	8.66	0	1,650	-
Trucks 5-AXLE & 6-AXLE				
Base Year(2022)	5.78	0	1,650	-
2029	8.66	0	1,650	-
2037	8.66	0	1,650	-
TOTAL				
Base Year(2022)				**28**
2029				**60**
2037				**148**

Note :"VOT" means value of Travel Cost

TABLE - 9.10

ANNUAL VALUE OF TRAVEL TIME COST
WITH PROJECT

(Million Rs.)

Years	VOT Rs/km	Traffic Volume ADT	Distance Annual (Km)	Total Cost Million Rs.
Motor Cycles\Rickshaw				
Base Year(2022)	2.65	1103	1,650	4.82
2029	2.72	1875	1,650	8.42
2037	2.84	3375	1,650	15.83
Cars				
Base Year(2022)	19.16	635	1,650	20.07
2029	19.92	1080	1,650	35.48
2037	21.00	1943	1,650	67.32
Wagons				
Base Year(2022)	18.83	95	1,650	2.95
2029	19.67	162	1,650	5.24
2037	20.80	291	1,650	9.98
Bus				
Base Year(2022)	36.21	7	1,650	0.42
2029	37.40	12	1,650	0.73
2037	39.13	21	1,650	1.38
T.Trolly + Trucks 2-Axle				
Base Year(2022)	22.77	14	1,650	0.53
2029	23.75	24	1,650	0.93
2037	25.05	43	1,650	1.77
Trucks 3-AXLE & 4-AXLE				
Base Year(2022)	34.85	0	1,650	-
2029	37.60	0	1,650	-
2037	41.08	0	1,650	-
Trucks 5-AXLE & 6-AXLE				
Base Year(2022)	39.06	0	1,650	-
2029	41.80	0	1,650	-
2037	45.28	0	1,650	-
TOTAL				
Base Year(2022)				**28.78**
2029				**50.81**
2037				**96.28**

Road Length (4.52 km)

(Million Rs.)

YEARS	ANNUAL VALUE OF TRAVEL TIME COST (VOTT)		SAVINGS
	WITHOUT PROJECT	WITH PROJECT	
Base Year(2022)	28.01	28.78	(0.77)
2029	60.30	50.81	9.50
2037	148.00	96.28	51.72
		TOTAL	**60.44**

TABLE - 9.12

TOTAL PROJECT BENEFITS

(Million Rs.)

YEARS	SAVINGS		TOTAL SAVINGS
	VOC	**VOTT**	
Base Year(2022)	30.04	(0.77)	29.27
2029	57.65	9.50	67.15
2037	121.30	51.72	173.02
		TOTAL	**269**

TABLE - 9.13
Road Length (4.52 km)
Calculation of Economic Internal Rate of Return

Million Rs.

Years	PROJECT ECONOMIC COSTS			Project Economic Benefits	Sensitivity Analysis			
	Investment	O & M	Total Costs		(a)	(b)	(c)	(d)
1	214.255	0.00	232.03	0.00	-232.03	-232.03	-255.23	-255.23
2		1.16	1.16	29.27	28.11	25.18	27.99	25.06
3		1.16	1.16	31.32	30.15	27.02	30.04	26.91
4		1.16	1.16	33.51	32.35	29.00	32.23	28.88
5		1.16	1.16	35.85	34.69	31.11	34.58	30.99
6		1.16	1.16	38.36	37.20	33.37	37.09	33.25
7		1.16	1.16	41.05	39.89	35.78	39.77	35.67
8		1.16	1.16	43.92	42.76	38.37	42.64	38.25
9		1.16	1.16	47.00	45.84	41.14	45.72	41.02
10		1.16	1.16	50.29	49.13	44.10	49.01	43.98
11		1.16	1.16	53.81	52.64	47.26	52.53	47.15
12		1.16	1.16	57.57	56.41	50.65	56.30	50.54
13		1.16	1.16	61.60	60.44	54.28	60.33	54.17
14		1.16	1.16	65.91	64.75	58.16	64.64	58.05
15		1.16	1.16	70.53	69.37	62.31	69.25	62.20
Total :	232.03	16.24	248.27	2764.53	411.70	345.70	386.87	320.88

DISCOUNT RATES	**PRESENT WORTH OF COST**		**Present Worth of Benfefit**	**NET PRESENT WORTH**			
10 %	210.94	218.71	399.98	65.97	37.50	44.10	15.63
12 %	207.17	214.04	311.86	32.84	8.15	11.43	-13.25
18 %	196.64	201.56	170.80	-33.38	-50.20	-53.54	-70.36
20 %	193.36	197.82	145.27	-47.89	-62.88	-67.67	-82.66
ECONOMIC INTERNAL RATE OF RETURN 12% DR				14.52	12.64	12.82	11.03
BENEFIT COST / RATIO AT 12 % D.R			1.46				

* A factor of 0.9 has been used for Capital Cost and O&M Cost in the Economics Terms.
(a) Base Case assuming 10 Years period of analysis.
(b) Benefits decreased by 10 %
(c) Cost over-run by 10 %
(d) Benefit reduction and cost over-run both occuring simultaneously.

Annexure-D

Gant Chart

TENTATIVE PROJECT IMPLEMENTATION SCHEDULE FOR IMPROVEMENT & REHABILITATION OF ROADS IN MURIDKE CITY

YEAR (2022-2023)

Road	JULY-23				AUGUST-23				SEP-23				OCT-23				NOV-23				DEC-23			
P2-Canal Road																								