OFFICE OF THE MUNICIPAL COMMITTEE KOT ADDU

To

The Chief Engineer (South Punjab)
Punjab Local Government Board (HQ),
LG&CD Department,
Multan.

No. MC/KA-401 Dated. 08-11-2022

Subject: **REQUEST FOR TECHNICAL SANCTION**

Kindly refer to the subject cited above.

It is stated that the following Estimate has been framed and submitted to your good office for seeking Technical Sanction please.

The detail of estimate and cost mentioned as under:-

Sr No.	Name of Scheme	Cost in Million
1	Improvement and Construction of Concrete Pavers in Kot Addu City	133.55

Municipal Officer (I&S)
Municipal Committee,
Kot Addu.

بلدیہ مستحکم – پنجاب مستحکم

OFFICE OF THE
CHIEF ENGINEER (SOUTH)
PUNJAB LOCAL GOVT. BOARD (H.Q) MULTAN
DISTRICT COUNCIL MULTAN
E-mail chiefengineersouthpunjab@gmail.com

To,

Municipal officer (I&S),
Municipal Committee, Kot Addu.

No. CE(South)PLGB/TS(78)/2022
Dated 11th November 2022.

Subject: **TECHNICAL SANCTION.**

Reference your letter No MC/KA-401 Dated 08th November 2022 on the subject noted above.

Sr. No	Name of Scheme	Estimated Cost (in Million)
1	Improvement and Construction of Concrete Paver in Kot Addu City.	133.55

Estimate provided by this department is technically sanctioned is hereby accorded after scrutinized / evaluated and found structurally feasible. Returned for further necessary action subject to following conditions.

Conditions:-

1. Valid charge, provision of requisite funds, Administrative Approval as per scope and item work provided in the estimate, transfer of requisite land in the name of department and no complaint / inquiry already being conducted by any Department regarding execution of the Project.
2. The competent authority of the executing agency and the engineer incharge shall ensure that the work is carried out after observation of all financial, codal formalities and strictly in accordance with the sanctioned estimate / specifications of tender accepting authority. The responsibility of the authority approving the rates, as the rates provided for estimation purpose only. The tender accepting authority shall also check and satisfy himself regarding quality, durability, economy and lowest market rate in the actual before accepting the rates of supply item. The payment shall be made as per quantity of each item of work/actual work executed at site after record entries with specification and nomenclature as the quantity of each items of works in the estimate is for estimation purpose only and shall not confer any authority for its payment.
3. The quantity of each item of work taken for estimation purpose only. The exact quantity of earth work will be worked out after conduction leveling before executing of E/W in order to avoid possibility of any wrong payment besides preparation of lead chart of E/W showing borrowing areas specifying exact khasra and khatoni number.
4. The responsibility for feasibility, sustainability, correctness and authenticity of all designs, drawings, plans, technology used, calculation, quality and quantity, successful implementation, avoiding any irregularities, lies on the consultants and Punjab Cities Program.
5. Before commencing work in the approved project or during the course of work, laboratory report design, which is necessary for any work, the approved estimate must be submitted for Technical Approval.
6. The non-schedule rates as contained in the estimate are for estimate purpose only and should not be taken as authority for payment. The payment of such item will also made after getting competitive rates after observation of all financial and codal formalities.
7. The credit for existing or old dismantled materials should be afforded to the project in accordance with the codal rules and financial procedure properly.
8. The Engineering incharge will certify before making payment be there is no over lapping of the work / item of quality and durability of all terms of works before making the payment.
9. Inform about the schedule of execution.

11/11/22

(ZAHID QAYYUM)
CHIEF ENGINEER (SOUTH),
PUNJAB LOCAL GOVT. BOARD,
HEADQUARTER (MULTAN)

11/11/22

OFFICE OF THE
COMMISSIONER
DERA GHAZI KHAN DIVISION
DERA GHAZI KHAN

ORDER

In exercise of the powers conferred upon me by the Government of the Punjab, Finance Department vide No.FD(FR)II-5/82-P-III dated 07.07.2009 read with Notification No.FD(FR)II-5/82-P-II dated 24.04.2017 and in the light of the recommendations of the Divisional Development Working Party (DDWP) D.G Khan in its 3rd meeting held on 16.12.2022, vide minutes of meeting issued under Endst: No.DDF/1-42(/13-2022)/12905 dated 20.12.2022, the Administrative Approval is hereby accorded for the implementation of following World Bank Funded Scheme FY 2022-23 of Municipal Committee Kot Addu.

Sr. No.	Name of Scheme	Approved Cost (In Millions)
	PUNJAB CITIES PROGRAM	
1	Improvement and Construction of Concrete Pavers in Kot Addu City	133.550

Administrative approval issued subject to the following conditions.

i. No change in scope of work be made without approval from the competent forum.
ii. The scheme is approved subject to availability of funds, therefore this shall be completed within the period mentioned in PC-I / detailed estimate.
iii. PPRA Rules shall be followed in letter and spirit.
iv. Executing agency shall be responsible for observance of all codal, procedural, legal, financial budgetary and audit requirements.
v. The executing agency shall make snaps/pictures before and after the execution of work.
vi. The Administrative approval so accorded is based on rough cost estimates and subject to availability of fiscal space/approval of the competent authority and requisite funds.
vii. Final responsibility of rates, provisions, quantities and quantity shall rest with the authority competent to accord Technical Sanction and Executing Agency.
viii. All codal/legal/procedural formalities, all relevant rules and instructions shall be observed strictly.

ix. No commitment be made, liability be created, work be allotted to executed without availability and receipt of funds in any case.

x. The Executing Agency shall ensure before starting the work that the site taken for execution of scheme is free from all types of legal encumbrances.

xi. Conditions tagged with minutes of meeting shall be observed in letter and spirit.

(Liaqat Ali Chatha)
Commissioner,
Dera Ghazi Khan Division,
Dera Ghazi Khan.

No. MCK/CAdmn-II/136 Dated. 23 December, 2022

Copy forwarded for information and necessary action to:-

1. The Chairman, Planning & Development Board, Lahore.
2. The Secretary, Govt. of the Punjab, Finance Department, Lahore.
3. The Secretary, Govt. of the Punjab, P&D Board, Lahore.
4. The Secretary, Govt. of the Punjab, LG & CD Department, Lahore.
5. The Deputy Commissioner, Muzaffargarh.
6. The Deputy Commissioner, Kot Addu.
7. The Director (Dev. & Finance), Dera Ghazi Khan.
8. The Deputy Director (Development), Muzaffargarh & Kot Addu.
9. The Chief Officer, Municipal Committee Kot Addu.
10. PS to Commissioner, Dera Ghazi Khan Division.
11. Master File.

Administrator, 23/12/2022
Municipal Committee,
Kot Addu.

Local Government & Community Development Department

Punjab Cities Program

Improvement of Streets in

MC Kot Addu

PC-I

EstimatedCost PKR 133.55Million

October 2022

Municipal Committee Kot Addu

JERS CONSULTANCY (PVT) LTD
(Formerly Jers Engineering Consultants)
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

Punjab Cities Program

PC-I Form for Improvement of Roads & Chowks Project in Vehari City

Table of contents

PC-I FORM
for
Construction of Tuff Paver Project in Kot Addu City

Project Serial Number

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

1. Name of the project	**Punjab Cities Program** **Construction of Tuff Paver Project in Kot Addu City**
2.Location	Kot Addu Town is located at east of the Indus River at distances of about 100 km from Multan, 80 km from D.G.Khan, 60 km from Muzaffargarh, 60 km from Layyah and 16 km from Taunsa Barrage. The geographical coordinates of the Town are: N 30° 28' and E 70° 58'Location map of the city is attached in **Annexure-A**
3. Authorities responsible for	
i- Sponsoring	Government of the Punjab (through World Bank funding)
ii- Execution	District Council MC Kot Addu
iii- Operation and Maintenance	District Council MC Kot Addu
iv-Concerned Provincial Department	Local Government and Community Development Department Punjab
4a.Plan Provision	
i. If the project is included in medium term/five year plan, specify actual allocation	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.

Total loan from World Bank	USD 200.00 million
Component-1 Infrastructure development (PforR)	USD 180.00 million
Component-2 Technical Assistance	USD 20.00 million
MCs share (20% of PforR component) equivalent to:	USD 36.00 million
Total Program cost	USD 236.00 million

Component-2 i-e Technical Assistance component of Program costing USD 20.00 million is meant for management cost of the Program and

	capacity building of MCs & Government Departments and is included in the medium term/ five-year plan and has been funded now in ADP 2021-22 - under General Serial No-2521 with allocation of PKR 100.00 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.100.00 million under ADP 2021-22 General Serial No 2521 for Component-2 of the Program i-e Technical Assistance 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, 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 Kot Addu 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 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 of the city and the surrounding areas, is to improve the roads and important cross roads.

<table>
<tr><td>ii. Description of the subproject-</td><td>The project comprises of improvement of 03 Nos damaged roads with total length of 23.36 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:
A
<table><tr><th>S. N.</th><th>No of Package</th><th>Detail of works involved</th></tr><tr><td>1</td><td>Package-5</td><td>• Rehabilitation of Existing Pavement Structure
• Improvement of drainage system</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 Kot Addu 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 is 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>
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<table>
<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>Road Works</td><td>112.65</td></tr>
<tr><td>2</td><td>Storm water Drainage</td><td>11.91</td></tr>
<tr><td>3</td><td>Environmental Mitigation Cost</td><td>0.25</td></tr>
<tr><td></td><td>Total</td><td>124.82</td></tr>
<tr><td></td><td>Contingencies @2%</td><td>2.49</td></tr>
<tr><td></td><td>PRA Charges @5%</td><td>6.24</td></tr>
<tr><td></td><td>Grand Total</td><td>133.55</td></tr>
<tr><td colspan="3">See Annexure-B for details</td></tr>
</table></td></tr>
<tr><td>i- Indicate date of estimation of the project cost.</td><td>The project estimates have been framed during the month of September, 2022</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 Kot Addu 2nd biannual of year 2022).
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>Sr. #</th><th>Package No</th><th>Year 2022-2023</th></tr>
<tr><td>1</td><td>Package-5</td><td>100%</td></tr>
</table></td></tr>
</table>

iv- Phasing of capital cost on the basis of each item of work.

The phasing of capital cost of the project is included in the following table:

(All figures are in million rupees)

S. #	Items of Road	Total (PKR million)	Year 2022-2023 (100%)
1	Road Work	112.65	112.65
2	Storm water Drainage	11.91	11.91
3	Environmental Mitigation Cost	0.25	0.25
	Total	**124.82**	**124.82**
	Contingencies @2%	2.49	2.49
	PRA Charges @5%	6.24	6.24
	Grand Total	**133.55**	**133.55**

8-Annual recurrent cost after completion of the project and source of financing

The roads are already being repaired and maintained by the District Council MC Kot Addu out of its own financial resources. No additional cost will be required after completion of the improvement and up-gradation of the roads 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.

9- Demand & Supply Analysis

i- Existing Capacity of services

Existing supply level

- Existing geometry of the roads is not well enough to sustain the smooth traffic flow. Existing pavement structure of the roads is deteriorated which needs the rehabilitation to bear the traffic loading and better riding quality.
- District Council MC Kot Addu 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 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	• Project roads of MC Kot Addu 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 • 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.

v-Designed capacity and output of the project

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:

Sr. No.	Package No	Pavement Type	ROW	Carriage way Type	Metaled Width	Length (km)
1	Package-5	Tuff Paver	20 ft varies	Single	-	11.02

2. Roads are designed for 10-year life.
3. Improvement of these roads will decrease the travel time of commuters which will ultimately improve the economy of city.

10. Financial Plan

Sources of financing

Debt

a) Indicate the local and foreign debt Loan

Below given loan for the Punjab Cities Program has been funded by World Bank for 16 PCP cities in Punjab.

Total loan to Government of Pakistan/Punjab	USD 200 million
Component-1 for Infrastructure Development	USD 180 million
Component-2 for Investment Project Financing For capacity building of MCs & three Govt. organization and program management.	USD 20 million
20% share of Municipalities is equivalent to	USD 36 million
Total funds available for Infrastructure Development	USD 216 million
This project will be funded under this financing.	

b) Equity

A. Loan/grant to MC

The amount of loan converted to grant to Kot Addu Unit will be **PKR 106.84 million**. The financing of the project will be as given below:

Grant to Unit for the year 2022-2023 (80% of cost of PC-I)	PKR 106.84 million
20% Co-finance by MC (20% of the cost of PC-I)	PKR 26.71 million
Total available funds	PKR **133.55** Million

B. Project Cost PKR 133.55 million

*The loan is from World Bank to Government of Pakistan/Punjab which will trickle down to Kot Addu Unit as grant.

c) Grants

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.

d) Weighted cost of capital

Nil

11-Project benefits and analysis

i. Financial: Income to the project with assumption	• The project comprises of improvement of roads and cross roads in the city. • Kot Addu 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**.
ii. Social benefits to the target group	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
iii. Environmental Impact negative/positive	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. Based on the remarks of the screening checklist, Environment and Social Management Plans (ESMPs) are prepared and the necessary costs for implementation of ESMPs have been provided in this PC-1.The

	Environment, Health and Safety SOPs for labor/workers are provided as Annexure E (B).
iv. Quantifiable project outputs	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).
v. Unit cost analysis	The unit cost analysis is produced below; Project capital cost: PKR 133.55 million Population of the city in year 2023: 425,593 persons Unit capital cost per capita: PKR 315 • Unit R&M cost: – The Repair & maintenance cost is already being borne by Kot Addu 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.
vi. Employment generation (direct and indirect)	**Employment Analysis** **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. **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* Kot Addu 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 December 2022 and to be completed by May 2023 with project implementation period of 06 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 Kot Addu 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 Kot Addu 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/Khanewal. **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

c) Contractor's Technical staff, skilled & non skilled labor

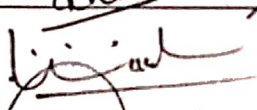
The contractors will employ the supervisory technical staff and skilled & non skilled labor for execution of works. The works will be supervised by experienced Engineers and sub engineers and the number of slots for engineers and skilled and non-skilled will depend upon the type and quantity of work 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

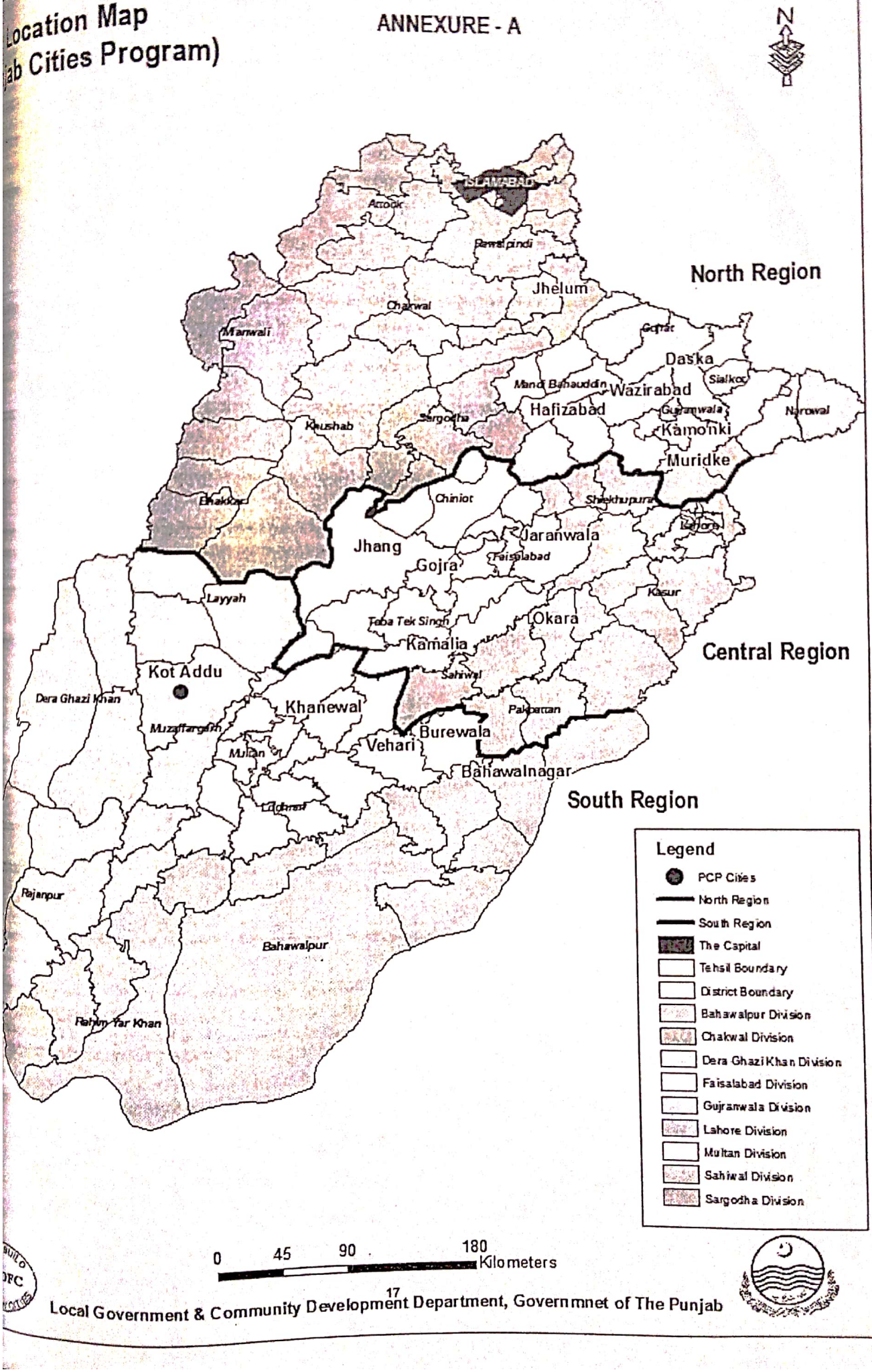
	• Recruit additional staff as per need of the infrastructure after obtaining the sanctions from the competent authorities.
14-Additional projects /decisions required to optimize the investment being undertaken	**1) Shortage & frequent transfers of Provincially appointed staff** MC is facing shortage 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) District Council Unit Kot Addu	Signatures	
	Chief Officer District Council Kot Addu	Signatures	
	Administrator Municipal Committee Kot Addu	Signatures	
Vetted by	Senior Program Officer PMDFC	Signatures	
Forwarded by	Secretary LG&CD	Signatures	

Annexure-A
Location Map

Location Map
jab Cities Program)

ANNEXURE - A



Local Government & Community Development Department, Governmnet of The Punjab

PUNJAB CITIES PROGRAM (PCP)

DETAILED DESIGN OF INFRASTRUCTURE SUB-PROJECTS AND RESIDENTS SUPERVISION IN 16 CITIES OF PUNJAB

ROAD WORKS

MC KOT ADDU

DETAILED COST ESTIMATE

SUMMARY

Quotation attached dully Verified by Engineer Incharge

(KH. IRFAN ASLAM) CHIEF ENGINEER (SOUTH) HEADQUARTER (MULTAN) LOCAL GOVT BOARD LG&CD DEPTT

Nearest Govt. Approved quarry and Shortest route responsibility of Engineering Incharge

TECHNICALLY VETTED

Sr. No.	Description	Amount (Rs.)
1	ROAD WORKS	112,657,576
2	DRAINAGE SYSTEM	11,910,952
3	ENVIRONMENTAL HEALTH AND SAFETY BUDGET	249,475
	Total Amount (Rs.)	124,818,003
	Contingencies @ 2%	2,496,360
	PRA Charges @ 5%	6,240,900
	Total Amount. Rs.	133,555,263

CHIEF ENGINEER (SOUTH) HEADQUARTER (MULTAN) LOCAL GOVT. BOARD LG&CD DEPTT 11/11/2022

INSTRUCTION:

Engineer Incharge and subordinate staff shall be responsible for;-

1. Excavation of work in accordance with specification contained in the estimate;
2. Allotment of funds and order for its commencement issued by competent authority
3. The terms of contract are strictly enforced.
4. All codal formalities should be ensured before commencement of work.
5. Provision of Section 4(5) & 5(2) of th Punjab Local Government (Work) Rules, are adhered.
6. Technical analysis/rate analysis of non-standardized items is incorporated with the estimate on the basis of technical features and lowest market quotations.
7. Feasibility and drawings, L&X Sections are based on site and parameters contained in the estimate.
8. The credit for existing or old dismantled materials should be afforded to the project in accordance with the codal rules and financial procedure properly.
9. Quality control test of the materials, if required shall be carried out and reports annexed with the file.
10. The contractor or his responsible agent shall remain present during execution of work at site and will comply with orders and instruction of Engineer for faithful completion of schemes.
11. If at any time, during execution of work, any alteration, addition, omission or substitution may be brought into the notice of undersigned and approval for such alteration / addition shall be obtained form competent forum.
12. The payment will be made as per actual work done according to quality and quantity.

Sub E... M...

Deputy Municipal Officer (I&S) Municipal Committee Kot Addu

Chief Officer Municipal Committee Kot Addu

All Taxes deduction As per Govt Policy will be on responsibility of Municipal Committe Kot Addu.

Estimate Technically Sanctioned for Rs= 133-55 (Million)

Rupees One Hundred Thirty Three Point Fifty Five only.

MC KOT Addou.

Zahid Qayyum
CHIEF ENGINEER (SOUTH),
PUNJAB LOCAL GOVT. BOARD,
HEADQUARTER (MULTAN)
11/11/2022

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

MC KOT ADDU

DETAILED COST ESTIMATE

SUMMARY

Sr. No.	Description	Amount (Rs.)
1	ROAD WORKS	
1.1	PACKAGE - 5	112,657,576
	1) Total Amount. Rs.	112,657,576
2	STORMWATER DRAINAGE SYSTEM	
2.2	PACKAGE - 5	11,910,952
	2) Total Amount. Rs.	11,910,952
3	ENVIRONMENTAL HEALTH SAFETY BUDGET	249,475
	Total Amount (Rs.) "1+2+3"	124,818,003
	Say Millions	124.818

Sub Engineer
M.C Kot Adu

Deputy Municipal Officer (I&S)
Municipal Committee Kot Addu

Chief Officer
Municipal Committee
Kot Addu

ROAD WORKS

PUNJAB CITIES PROGRAM (PCP)
DETAILED DESIGN OF INFRASTRUCTURE SUB-PROJECTS AND RESIDENTS SUPERVISION IN 16 CITIES OF PUNJAB
DETAILED COST ESTIMATE
PACKAGE - 5
ROADS NETWORK

Sr. No	2nd BI-Annual-2022 (July to Dec) Muzafargarh	Description	Unit	Quantity	Unit Rate (Rs.)	Amount (Rs.)
		ROAD WORK				
		Dismantling				
1	4/29	Dismantling brick or flagged flooring without concrete foundation. (Shift to MC Store)	100Sft	1,056.99	863.50	912,711
		Excavation				
2	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 from trenches, back filling and surplus excavated material disposed of and dressed within 50 ft. (15 m) lead:- i) ordinary	1000Cft	188.75	9,016.70	1,701,902
		Compaction of Earthwork				
3	3/25	Compaction of earthwork with power road roller, including ploughing, mixing, moistening earth to optimum moisture content in layers, etc. complete. i) 95% to 100% maximum modified AASHO dry density.	1000Cft	188.75	1,783.25	336,588
		Sub Base Course				
4	18/3/a/ (ii) + 1/1	Providing and 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 and grade to achieve 98% maximum dry density determined according to AASHTO T-180 method-D, 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 Sakhi Sarwar querry to site, actual compacted depth shall be considered for payment)	100Cft	1,887.48	17,101.80	32,279,305

Sub Engineer

22 Aug

Deputy Municipal Officer (E&S)
Municipal Committee Kot Addu

Executive Engineer

PUNJAB CITIES PROGRAM (PCP)
DETAILED DESIGN OF INFRASTRUCTURE SUB-PROJECTS AND RESIDENTS SUPERVISION IN 16 CITIES OF PUNJAB
DETAILED COST ESTIMATE
PACKAGE - 5
ROADS NETWORK

Sr. No	2nd BI-Annual-2022 (July to Dec) Muzafargarh	Description	Unit	Quantity	Unit Rate (Rs.)	Amount (Rs.)
		Tuff Paver				
5	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	377,495.00	194.65	73,479,402
		Road Edging				
6	18/5	Providing and laying road edging of 3" (75 mm) wide and 9" (225 mm) deep brick on end, complete in all respects.	Rft	59,870.00	52.80	3,161,136
7	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				
		3 ft size	P.Sft	180.00	948.15	170,667
8	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 embeded in PCC 1:2:4 etc, complete in all respect				
		(b) 3 inch diameter	Rft	330.00	1,259.90	415,767
9	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	180.00	1,111.65	200,097
		Total Amount Rs.				**112,657,576**

Sub Engineer
MC Kot Addu

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Deputy Municipal Officer (T&S)
Municipal Committee Kot Addu

Chief Officer
Municipal Committee
Kot Addu

PUNJAB CITIES PROGRAM (PCP)
DETAILED DESIGN OF INFRASTRUCTURE SUB-PROJECTS AND RESIDENTS SUPERVISION IN 16 CITIES OF PUNJAB
DETAILED COST ESTIMATE
PACKAGE - 5
ROADS NETWORK

Sr. No	2nd BI-Annual-2022 (July to Dec) Muzafargarh	Description	Unit	Quantity	Unit Rate (Rs.)	Amount (Rs.)
		DRAINAGE SYSTEM				
		Excavation				
1	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	28.44	9,016.70	256,444
		P.C.C				
2	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	22.46	28,929.30	649,752
		(f) Ratio 1: 2: 4	100Cft	67.37	38,126.10	2,568,555
		Brick Work				
3	7/7/i	Pacca brick work other than building upto 10ft. (3 m) Cement, sand mortar:- Ratio 1:3	100Cft	44.91	32,769.10	1,471,660
		Plaster				
4	11/8/b	Cement plaster 1:3 upto 20' (6.00 m) height:-				
		b) ½" (13 mm) thick	100Sft	59.88	3,420.40	204,814
		R.C.C Work				
5	6/6/a/i/3	Providing and laying reinforced cement concrete (i/c pre-stressed concrete), using coarse sand and screened graded and washed aggregate, in required shape and design, i/c 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, complete				
		a).(i) Reinforced cement concrete in roof slab, beams, columns, lintels, girders and other structural members laid in situ or pre-cast laid in position, or pre-stressed members cast in situ, complete in all respect. Type C (nominal mix 1:2:4)	P Cft	1,497.00	556.50	833,081

Sub Engineer
M.C. Muzaffargarh

Deputy Director (Works)
Municipal Committee Kot Addu

PUNJAB CITIES PROGRAM (PCP)
DETAILED DESIGN OF INFRASTRUCTURE SUB-PROJECTS AND RESIDENTS SUPERVISION IN 16 CITIES OF PUNJAB
DETAILED COST ESTIMATE
PACKAGE - 5
ROADS NETWORK

Sr. No	2nd Bi-Annual-2022 (July to Dec) Muzafargarh	Description	Unit	Quantity	Unit Rate (Rs.)	Amount (Rs.)
		Steel				
6	6/12/c	Fabrication of mild steel reinforcement for cement concrete, i/c cutting, bending, laying in position, making joints and fastening, i/c cost of bending wire and labour charges for bending of steel reinforcement (also includes removal of rust from deformed bars) Gade 60	100Kg	45.85	31,809.85	1,458,433
		Kerb Stone				
7	6/52/b	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	1,497.00	516.65	773,425
		Type - 1 Drain				
8	20/6	Constructing Punjab Standard Drains. of cement concrete 1:2 ½ :5, with cement concrete bedding ratio 1:6:12, complete, laid to lines, grades, slopes and shapes, rendering exposed surface of concrete with 1:1 cement, sand mortar, ¼" (6 mm) thick, as per Engineer's drawing (excluding excavation):-				
		a) Type I	Rft	7,484	184.95	1,384,166
		P.C.C				
9	6/3	Cement concrete brick or stone ballast 1½ " to 2" (40 mm to				
		(d) Ratio 1: 6:12	100Cft	37.42	21,060.85	788,097
10	20/1/b	Tega formed of pacca bricks on end, laid in and over cement sand mortar projecting to a height of not more than 6" (150 mm) top of drain along the property side where required, laid to lines, grades, slopes and shape according to the Engineer's drawing:-				
		B) 4½" thick (113 mm)				
		i) ratio 1:3	100Rft	74.84	9,724.65	727,793

Sub Engineer
M.C Kot Adu

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Deputy Municipal Officer (F&S)
Municipal Committee Kot Adu

PUNJAB CITIES PROGRAM (PCP)
DETAILED DESIGN OF INFRASTRUCTURE SUB-PROJECTS AND RESIDENTS SUPERVISION IN 16 CITIES OF PUNJAB
DETAILED COST ESTIMATE
PACKAGE - 5
ROADS NETWORK

Sr. No	2nd Bi-Annual-2022 (July to Dec) Muzafargarh	Description	Unit	Quantity	Unit Rate (Rs.)	Amount (Rs.)
11	20/3	Pacca brick on edge, laid in reimbursement, in cement, sand mortar, on sides of drains and on other works where required. All joints to be completely filled and struck flush:-				
		a) ratio 1:3	100Sft	56.13	14,158.80	794,733
		Total Amount (Rs)				**11,910,952**
		Grand Total Amount Rs.				**124,568,528**

Sub Engineer
MC Kot Adu

Deputy Municipal Officer (BS)
Municipal Committee Kot Addu

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

PACKAGE - 5

CALCULATION OF QUANTITES

ROADS NET WORK

Sr. No	Description	No.	Length	Width	Height	Qty.	Unit.
	Dismantling						
1	Dismantling brick or flagged flooring without concrete foundation. (Shift to MC Store)						
	From Node 1 to 1.1	0.28	154	12.00		517	Sft
	From Node 1.1 to 1.2	0.28	274	12.00		921	Sft
	From Node 1.2 to 1.3	0.28	119	12.00		400	Sft
	From Node 1.3 to 1.4	0.28	95	12.00		319	Sft
	From Node 1.4 to 1.5	0.28	172	12.00		578	Sft
	From Node 1.5 to 1.5.1	0.28	59	10.00		165	Sft
	From Node 1.5.1 to 1.4	0.28	223	5.00		312	Sft
	From Node 1.5.1 to 1.5.2	0.28	15	10.00		42	Sft
	From Node 1.5.2 to 1.5.3	0.28	63	10.00		176	Sft
	From Node 1.5.3 to 1.5.4	0.28	32	6.00		54	Sft
	From Node 1.5.4 to 1.5.5	0.28	38	6.00		64	Sft
	From Node 1.5.3 to 1.5.3.1	0.28	116	10.00		325	Sft
	From Node 1.5.3.1 to 1.3.2.1	0.28	173	10.00		484	Sft
	From Node 1.5.3.1 to 45.2	0.28	218	10.00		610	Sft
	From Node 1.5.2 to 45.1	0.28	335	10.00		938	Sft
	From Node 1.5.5 to 1.3.1	0.28	267	7.00		523	Sft
	From Node 1.3.1 to 1.3.2	0.28	141	8.00		316	Sft
	From Node 1.3.2 to 1.3.3	0.28	113	10.00		316	Sft
	From Node 1..3.3 to 1.3.4	0.28	115	12.00		386	Sft
	From Node 1..3.4 to 1.3.5	0.28	221	11.00		681	Sft
	From Node 1..3.4 to 1.3.4.1	0.28	208	10.00		582	Sft
	From Node 1..3.4.1 to 1.3.3.1	0.28	117	12.00		393	Sft
	From Node 1..3.3.1 to 1.3.3	0.28	195	12.00		655	Sft
	From Node 1..3.2 to 1.3.2.2	0.28	398	10.00		1,114	Sft
	From Node 1.3.2.1 to 43.3	0.28	58	10.00		162	Sft
	From Node 2 to 2.1	0.28	184	12.00		618	Sft
	From Node 3 to 1.3.2	0.28	519	9.00		1,308	Sft
	From Node 4 to 4.1	0.28	386	25.00		2,702	Sft
	From Node 4 to 12.1.1	0.28	520	30.00		4,368	Sft
	From Node 5 to 5.1	0.28	320	8.00		717	Sft
	From Node 5.1 to 1.3.3	0.28	180	12.00		605	Sft
	From Node 5.1 to 6.1	0.28	89	8.00		199	Sft
	From Node 6 to 6.1	0.28	287	12.00		964	Sft
	From Node 6.1 to 6.2	0.28	23	10.00		64	Sft
	From Node 6.2 to 6.3	0.28	115	10.00		322	Sft
	From Node 6.3 to 6.4	0.28	98	10.00		274	Sft
	From Node 6.3 to 1.3.4	0.28	52	10.00		146	Sft
	From Node 7 to 7.1	0.28	163	30.00		1,369	Sft
	From Node 8 to 4.1	0.28	205	6.00		344	Sft
	From Node 9 to 9.1	0.28	252	5.00		353	Sft
	From Node 6.2 to 9.1	0.28	147	8.00		329	Sft
	From Node 9.1 to 9.2	0.28	60	8.00		134	Sft

Sub Engineer
M.C Kot Addu

Deputy Director (E&S) Municipal Committee
Municipal Committee Kot Addu

25849

PUNJAB CITIES PROGRAM (PCP)

DETAILED DESIGN OF INFRASTRUCTURE SUB-PROJECTS AND RESIDENTS SUPERVISION IN 16 CITIES OF PUNJAB

PACKAGE - 5

CALCULATION OF QUANTITES

ROADS NET WORK

Sr. No	Description	No.	Length	Width	Height	Qty.	Unit.
	From Node 9.2 to 9.2.1	0.28	415	8.00		930	Sft
	From Node 9.2 to 9.3	0.28	95	8.00		213	Sft
	From Node 9.3 to 9.4	0.28	382	8.00		856	Sft
	From Node 9.4 to 9.5	0.28	76	12.00		255	Sft
	From Node 9.5 to 9.2.1	0.28	47	12.00		158	Sft
	From Node 9.3 to 10.1	0.28	118	8.00		264	Sft
	From Node 10 to 10.1	0.28	195	12.00		655	Sft
	From Node 10.1 to 10.2	0.28	185	12.00		622	Sft
	From Node 10.2 to 11.1	0.28	133	20.00		745	Sft
	From Node 10.2 to 10.3	0.28	167	12.00		561	Sft
	From Node 10.3 to 10.4	0.28	194	12.00		652	Sft
	From Node 10.3 to 9.4	0.28	116	12.00		390	Sft
	From Node 10.4 to 39.1	0.28	154	12.00		517	Sft
	From Node 11 to 11.1	0.28	387	8.00		867	Sft
	From Node 11.1 to 11.2	0.28	86	12.00		289	Sft
	From Node 11.2 to 10.4	0.28	428	10.00		1,198	Sft
	From Node 11.2 to 15.4.1	0.28	120	12.00		403	Sft
	From Node 12 to 12.1	0.28	181	20.00		1,014	Sft
	From Node 12.1 to 12.2	0.28	71	30.00		596	Sft
	From Node 12.1 to 12.1.1	0.28	229	10.00		641	Sft
	From Node 12.2 to 12.2.1	0.28	111	30.00		932	Sft
	From Node 12.2.1 to 12.3.1	0.28	88	30.00		739	Sft
	From Node 12.3.1 to 12.3	0.28	114	10.00		319	Sft
	From Node 12.3 to 12.3.2	0.28	103	3.00		87	Sft
	From Node 12.2 to 12.3	0.28	92	10.00		258	Sft
	From Node 13 to 13.1	0.28	88	8.00		197	Sft
	From Node 14 to 14.1	0.28	97	11.00		299	Sft
	From Node 15 to 15.1	0.28	323	8.00		724	Sft
	From Node 15.1 to 15.2	0.28	151	12.00		507	Sft
	From Node 15.1 to 15.1.1	0.28	86	8.00		193	Sft
	From Node 15.1.1 to 15.1.1.1	0.28	97	6.00		163	Sft
	From Node 15.1.1 to 15.1.2	0.28	101	5.00		141	Sft
	From Node 15.2 to 15.2.1	0.28	111	12.00		373	Sft
	From Node 15.2.1 to 15.2.1.1	0.28	88	6.00		148	Sft
	From Node 15.2.1 to 15.2.2	0.28	96	12.00		323	Sft
	From Node 15.2.2 to 15.2.3	0.28	140	7.00		274	Sft
	From Node 15.2 to 15.3	0.28	129	12.00		433	Sft
	From Node 15.3 to 15.4	0.28	170	12.00		571	Sft
	From Node 15.4 to 15.5	0.28	61	12.00		205	Sft
	From Node 15.4 to 15.4.1	0.28	218	12.00		732	Sft
	From Node 15.3 to 37.2.1	0.28	203	12.00		682	Sft
	From Node 15.2.2 to 37.3	0.28	349	10.00		977	Sft
	From Node 16 to 16.1	0.28	98	10.00		274	Sft
	From Node 17 to 17.1	0.28	259	12.00		870	Sft
	From Node 19 to 19.1	0.28	269	10.00		753	Sft
	From Node 19.1 to 19.2	0.28	258	12.00		867	Sft

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Sub Engineer, M.C. Kot Adu

Officer (I&S), Municipal Committee Kot Adu

PUNJAB CITIES PROGRAM (PCP)
DETAILED DESIGN OF INFRASTRUCTURE SUB-PROJECTS AND RESIDENTS SUPERVISION IN 16 CITIES OF PUNJAB
PACKAGE - 5
CALCULATION OF QUANTITES
ROADS NET WORK

Sr. No	Description	No.	Length	Width	Height	Qty.	Unit.
	From Node 19.2 to 19.3	0.28	114	12.00		383	Sft
	From Node 19.3 to 19.4	0.28	134	8.00		300	Sft
	From Node 19.4 to 19.5	0.28	91	5.00		127	Sft
	From Node 19.5 to 19.6	0.28	174	6.00		292	Sft
	From Node 19.5 to 34.3	0.28	69	5.00		97	Sft
	From Node 19.4 to 23.2	0.28	286	10.00		801	Sft
	From Node 19.3 to 19.3.1	0.28	63	5.00		88	Sft
	From Node 18 to 18.1	0.28	332	18.00		1,673	Sft
	From Node 18.1 to 12.3	0.28	309	10.00		865	Sft
	From Node 18.1 to 18.2	0.28	148	18.00		746	Sft
	From Node 18.2 to 12.3.1	0.28	283	30.00		2,377	Sft
	From Node 20 to 22.1	0.28	580	12.00		1,949	Sft
	From Node 21 to 21.1	0.28	95	12.00		319	Sft
	From Node 22 to 22.1	0.28	315	12.00		1,058	Sft
	From Node 23 to 23.1	0.28	261	12.00		877	Sft
	From Node 24 to 24.1	0.28	260	8.00		582	Sft
	From Node 26 to 26.1	0.28	80	7.00		157	Sft
	From Node 27 to 27.1	0.28	135	5.00		189	Sft
	From Node 28 to 28.1	0.28	151	6.00		254	Sft
	From Node 29 to 29.1	0.28	161	10.00		451	Sft
	From Node 29.1 to 29.1.1	0.28	68	6.00		114	Sft
	From Node 29.1 to 29.2	0.28	40	10.00		112	Sft
	From Node 29.2 to 23.2	0.28	224	12.00		753	Sft
	From Node 29.2 to 31.1	0.28	78	10.00		218	Sft
	From Node 31 to 31.1	0.28	230	10.00		644	Sft
	From Node 32 to 32.1	0.28	229	10.00		641	Sft
	From Node 31.1 to 32.1	0.28	126	10.00		353	Sft
	From Node 33 to 33.1	0.28	222	12.00		746	Sft
	From Node 33.1 to 33.2	0.28	28	10.00		78	Sft
	From Node 33.2 to 33.3	0.28	74	6.00		124	Sft
	From Node 33.1 to 34.3	0.28	52	10.00		146	Sft
	From Node 34 to 34.1	0.28	208	10.00		582	Sft
	From Node 34.1 to 34.2	0.28	64	10.00		179	Sft
	From Node 34.2 to 34.4	0.28	136	5.00		190	Sft
	From Node 35 to 35.1	0.28	208	10.00		582	Sft
	From Node 35.1 to 34.1	0.28	145	10.00		406	Sft
	From Node 35.1 to 36.1	0.28	129	10.00		361	Sft
	From Node 36 to 36.1	0.28	209	12.00		702	Sft
	From Node 36.1 to 19.2	0.28	186	12.00		625	Sft
	From Node 36.1 to 37.4	0.28	162	12.00		544	Sft
	From Node 37.4 to 37.5	0.28	106	10.00		297	Sft
	From Node 37 to 37.1	0.28	163	12.00		548	Sft
	From Node 37.1 to 37.1.2	0.28	153	8.00		343	Sft
	From Node 37.1 to 37.1.1	0.28	135	6.00		227	Sft
	From Node 37.1 to 37.2	0.28	56	12.00		188	Sft
	From Node 37.2 to 37.2.1	0.28	39	12.00		131	Sft

Sub Engineer
M.C. Kot Addu

Municipal Committee Kot Addu

PUNJAB CITIES PROGRAM (PCP)
DETAILED DESIGN OF INFRASTRUCTURE SUB-PROJECTS AND RESIDENTS SUPERVISION IN 16 CITIES OF PUNJAB
PACKAGE - 5
CALCULATION OF QUANTITES
ROADS NET WORK

Sr. No	Description	No.	Length	Width	Height	Qty.	Unit.
	From Node 37.2.1 to 37.2.2	0.28	68	12.00		228	Sft
	From Node 37.2.2 to 37.2.2.1	0.28	78	10.00		218	Sft
	From Node 37.2.2 to 37.2.3	0.28	120	12.00		403	Sft
	From Node 37.2.3 to 37.2.3.1	0.28	92	6.00		155	Sft
	From Node 37.2.3 to 38.2	0.28	89	8.00		199	Sft
	From Node 38 to 38.1	0.28	98	10.00		274	Sft
	From Node 38.1 to 38.1.1	0.28	101	10.00		283	Sft
	From Node 38.1 to 38.2	0.28	108	10.00		302	Sft
	From Node 38.2 to 39.1	0.28	200	8.00		448	Sft
	From Node 39 to 39.1	0.28	257	12.00		864	Sft
	From Node 40 to 40.1	0.28	506	8.00		1,133	Sft
	From Node 41 to 41.1	0.28	326	8.00		730	Sft
	From Node 41.1 to 41.1.1	0.28	72	3.00		60	Sft
	From Node 41.1 to 41.2	0.28	133	8.00		298	Sft
	From Node 41.2 to 9.5	0.28	161	6.00		270	Sft
	From Node 41.2 to 42.3	0.28	56	8.00		125	Sft
	From Node 42 to 42.1	0.28	326	8.00		730	Sft
	From Node 42.1 to 42.1.1	0.28	96	5.00		134	Sft
	From Node 42.1 to 42.2	0.28	262	8.00		587	Sft
	From Node 42.2 to 42.3	0.28	142	8.00		318	Sft
	From Node 42.2 to 43.4	0.28	118	8.00		264	Sft
	From Node 42.1 to 43.1	0.28	68	8.00		152	Sft
	From Node 43 to 43.1	0.28	234	6.00		393	Sft
	From Node 43.1 to 43.2	0.28	42	8.00		94	Sft
	From Node 42.2 to 43.3	0.28	230	10.00		644	Sft
	From Node 43.2 to 43.2.1	0.28	58	8.00		130	Sft
	From Node 43.2.1 to 43.2.1.1	0.28	105	6.00		176	Sft
	From Node 43.2.1 to 45.2	0.28	157	8.00		352	Sft
	From Node 44 to 44.1	0.28	161	16.00		721	Sft
	From Node 45 to 45.1	0.28	217	8.00		486	Sft
	From Node 30 to 46	0.28	2,545	30.00		21,378	Sft
					Total	105,699	Sft
					Total.	**1,056.99**	**%Sft**
	Excavation						
2	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 from trenches, back filling and surplus excavated material disposed of and dressed within 50 ft. (15 m) lead:- i) ordinary						
	From Node 1 to 1.1	1	154	12.00	0.50	924	Cft

PUNJAB CITIES PROGRAM (PCP)
DETAILED DESIGN OF INFRASTRUCTURE SUB-PROJECTS AND RESIDENTS SUPERVISION IN 16 CITIES OF PUNJAB
PACKAGE - 5
CALCULATION OF QUANTITES
ROADS NET WORK

Sr. No	Description	No.	Length	Width	Height	Qty.	Unit.
	From Node 1.1 to 1.2	1	274	12.00	0.50	1,644	Cft
	From Node 1.2 to 1.3	1	119	12.00	0.50	714	Cft
	From Node 1.3 to 1.4	1	95	12.00	0.50	570	Cft
	From Node 1.4 to 1.5	1	172	12.00	0.50	1,032	Cft
	From Node 1.5 to 1.5.1	1	59	10.00	0.50	295	Cft
	From Node 1.5.1 to 1.4	1	223	5.00	0.50	558	Cft
	From Node 1.5.1 to 1.5.2	1	15	10.00	0.50	75	Cft
	From Node 1.5.2 to 1.5.3	1	63	10.00	0.50	315	Cft
	From Node 1.5.3 to 1.5.4	1	32	6.00	0.50	96	Cft
	From Node 1.5.4 to 1.5.5	1	38	6.00	0.50	114	Cft
	From Node 1.5.3 to 1.5.3.1	1	116	10.00	0.50	580	Cft
	From Node 1.5.3.1 to 1.3.2.1	1	173	10.00	0.50	865	Cft
	From Node 1.5.3.1 to 45.2	1	218	10.00	0.50	1,090	Cft
	From Node 1.5.2 to 45.1	1	335	10.00	0.50	1,675	Cft
	From Node 1.5.5 to 1.3.1	1	267	7.00	0.50	935	Cft
	From Node 1.3.1 to 1.3.2	1	141	8.00	0.50	564	Cft
	From Node 1.3.2 to 1.3.3	1	113	10.00	0.50	565	Cft
	From Node 1..3.3 to 1.3.4	1	115	12.00	0.50	690	Cft
	From Node 1..3.4 to 1.3.5	1	221	11.00	0.50	1,216	Cft
	From Node 1..3.4 to 1.3.4.1	1	208	10.00	0.50	1,040	Cft
	From Node 1..3.4.1 to 1.3.3.1	1	117	12.00	0.50	702	Cft
	From Node 1..3.3.1 to 1.3.3	1	195	12.00	0.50	1,170	Cft
	From Node 1..3.2 to 1.3.2.2	1	398	10.00	0.50	1,990	Cft
	From Node 1.3.2.1 to 43.3	1	58	10.00	0.50	290	Cft
	From Node 2 to 2.1	1	184	12.00	0.50	1,104	Cft
	From Node 3 to 1.3.2	1	519	9.00	0.50	2,336	Cft
	From Node 4 to 4.1	1	386	25.00	0.50	4,825	Cft
	From Node 4 to 12.1.1	1	520	30.00	0.50	7,800	Cft
	From Node 5 to 5.1	1	320	8.00	0.50	1,280	Cft
	From Node 5.1 to 1.3.3	1	180	12.00	0.50	1,080	Cft
	From Node 5.1 to 6.1	1	89	8.00	0.50	356	Cft
	From Node 6 to 6.1	1	287	12.00	0.50	1,722	Cft
	From Node 6.1 to 6.2	1	23	10.00	0.50	115	Cft
	From Node 6.2 to 6.3	1	115	10.00	0.50	575	Cft
	From Node 6.3 to 6.4	1	98	10.00	0.50	490	Cft
	From Node 6.3 to 1.3.4	1	52	10.00	0.50	260	Cft
	From Node 7 to 7.1	1	163	30.00	0.50	2,445	Cft
	From Node 8 to 4.1	1	205	6.00	0.50	615	Cft
	From Node 9 to 9.1	1	252	5.00	0.50	630	Cft
	From Node 6.2 to 9.1	1	147	8.00	0.50	588	Cft
	From Node 9.1 to 9.2	1	60	8.00	0.50	240	Cft
	From Node 9.2 to 9.2.1	1	415	8.00	0.50	1,660	Cft
	From Node 9.2 to 9.3	1	95	8.00	0.50	380	Cft
	From Node 9.3 to 9.4	1	382	8.00	0.50	1,528	Cft

Sub Engineer
M.C Kot Addu

Deputy Municipal Officer (I &S)
Municipal Committee Kot Addu

PUNJAB CITIES PROGRAM (PCP)
DETAILED DESIGN OF INFRASTRUCTURE SUB-PROJECTS AND RESIDENTS SUPERVISION IN 16 CITIES OF PUNJAB
PACKAGE - 5
CALCULATION OF QUANTITES
ROADS NET WORK

Sr. No	Description	No.	Length	Width	Height	Qty.	Unit.
	From Node 9.4 to 9.5	1	76	12.00	0.50	456	Cft
	From Node 9.5 to 9.2.1	1	47	12.00	0.50	282	Cft
	From Node 9.3 to 10.1	1	118	8.00	0.50	472	Cft
	From Node 10 to 10.1	1	195	12.00	0.50	1,170	Cft
	From Node 10.1 to 10.2	1	185	12.00	0.50	1,110	Cft
	From Node 10.2 to 11.1	1	133	20.00	0.50	1,330	Cft
	From Node 10.2 to 10.3	1	167	12.00	0.50	1,002	Cft
	From Node 10.3 to 10.4	1	194	12.00	0.50	1,164	Cft
	From Node 10.3 to 9.4	1	116	12.00	0.50	696	Cft
	From Node 10.4 to 39.1	1	154	12.00	0.50	924	Cft
	From Node 11 to 11.1	1	387	8.00	0.50	1,548	Cft
	From Node 11.1 to 11.2	1	86	12.00	0.50	516	Cft
	From Node 11.2 to 10.4	1	428	10.00	0.50	2,140	Cft
	From Node 11.2 to 15.4.1	1	120	12.00	0.50	720	Cft
	From Node 12 to 12.1	1	181	20.00	0.50	1,810	Cft
	From Node 12.1 to 12.2	1	71	30.00	0.50	1,065	Cft
	From Node 12.1 to 12.1.1	1	229	10.00	0.50	1,145	Cft
	From Node 12.2 to 12.2.1	1	111	30.00	0.50	1,665	Cft
	From Node 12.2.1 to 12.3.1	1	88	30.00	0.50	1,320	Cft
	From Node 12.3.1 to 12.3	1	114	10.00	0.50	570	Cft
	From Node 12.3 to 12.3.2	1	103	3.00	0.50	155	Cft
	From Node 12.2 to 12.3	1	92	10.00	0.50	460	Cft
	From Node 13 to 13.1	1	88	8.00	0.50	352	Cft
	From Node 14 to 14.1	1	97	11.00	0.50	534	Cft
	From Node 15 to 15.1	1	323	8.00	0.50	1,292	Cft
	From Node 15.1 to 15.2	1	151	12.00	0.50	906	Cft
	From Node 15.1 to 15.1.1	1	86	8.00	0.50	344	Cft
	From Node 15.1.1 to 15.1.1.1	1	97	6.00	0.50	291	Cft
	From Node 15.1.1 to 15.1.2	1	101	5.00	0.50	253	Cft
	From Node 15.2 to 15.2.1	1	111	12.00	0.50	666	Cft
	From Node 15.2.1 to 15.2.1.1	1	88	6.00	0.50	264	Cft
	From Node 15.2.1 to 15.2.2	1	96	12.00	0.50	576	Cft
	From Node 15.2.2 to 15.2.3	1	140	7.00	0.50	490	Cft
	From Node 15.2 to 15.3	1	129	12.00	0.50	774	Cft
	From Node 15.3 to 15.4	1	170	12.00	0.50	1,020	Cft
	From Node 15.4 to 15.5	1	61	12.00	0.50	366	Cft
	From Node 15.4 to 15.4.1	1	218	12.00	0.50	1,308	Cft
	From Node 15.3 to 37.2.1	1	203	12.00	0.50	1,218	Cft
	From Node 15.2.2 to 37.3	1	349	10.00	0.50	1,745	Cft
	From Node 16 to 16.1	1	98	10.00	0.50	490	Cft
	From Node 17 to 17.1	1	259	12.00	0.50	1,554	Cft
	From Node 19 to 19.1	1	269	10.00	0.50	1,345	Cft
	From Node 19.1 to 19.2	1	258	12.00	0.50	1,548	Cft
	From Node 19.2 to 19.3	1	114	12.00	0.50	684	Cft

Sub Engineer

Deputy Commissioner Office (DC)
Municipal Committee Kot Addu

89479

PUNJAB CITIES PROGRAM (PCP)
DETAILED DESIGN OF INFRASTRUCTURE SUB-PROJECTS AND RESIDENTS SUPERVISION IN 16 CITIES OF PUNJAB
PACKAGE - 5
CALCULATION OF QUANTITES
ROADS NET WORK

Sr. No	Description	No.	Length	Width	Height	Qty.	Unit.
	From Node 19.3 to 19.4	1	134	8.00	0.50	536	Cft
	From Node 19.4 to 19.5	1	91	5.00	0.50	228	Cft
	From Node 19.5 to 34.3	1	174	6.00	0.50	522	Cft
	From Node 19.4 to 23.2	1	69	5.00	0.50	173	Cft
	From Node 19.3 to 19.3.1	1	286	10.00	0.50	1,430	Cft
	From Node 18 to 18.1	1	63	5.00	0.50	158	Cft
	From Node 18.1 to 12.3	1	332	18.00	0.50	2,988	Cft
	From Node 18.1 to 18.2	1	309	10.00	0.50	1,545	Cft
	From Node 18.2 to 12.3.1	1	148	18.00	0.50	1,332	Cft
	From Node 20 to 22.1	1	283	30.00	0.50	4,245	Cft
	From Node 21 to 21.1	1	580	12.00	0.50	3,480	Cft
	From Node 22 to 22.1	1	95	12.00	0.50	570	Cft
	From Node 23 to 23.1	1	315	12.00	0.50	1,890	Cft
	From Node 24 to 24.1	1	261	12.00	0.50	1,566	Cft
	From Node 26 to 26.1	1	260	8.00	0.50	1,040	Cft
	From Node 27 to 27.1	1	80	7.00	0.50	280	Cft
	From Node 28 to 28.1	1	135	5.00	0.50	338	Cft
	From Node 29 to 29.1	1	151	6.00	0.50	453	Cft
	From Node 29.1 to 29.1.1	1	161	10.00	0.50	805	Cft
	From Node 29.1 to 29.2	1	68	6.00	0.50	204	Cft
	From Node 29.2 to 23.2	1	40	10.00	0.50	200	Cft
	From Node 29.2 to 31.1	1	224	12.00	0.50	1,344	Cft
	From Node 31 to 31.1	1	78	10.00	0.50	390	Cft
	From Node 32 to 32.1	1	230	10.00	0.50	1,150	Cft
	From Node 31.1 to 32.1	1	229	10.00	0.50	1,145	Cft
	From Node 33 to 33.1	1	126	10.00	0.50	630	Cft
	From Node 33.1 to 33.2	1	222	12.00	0.50	1,332	Cft
	From Node 33.2 to 33.3	1	28	10.00	0.50	140	Cft
	From Node 33.1 to 34.3	1	74	6.00	0.50	222	Cft
	From Node 34 to 34.1	1	52	10.00	0.50	260	Cft
	From Node 34.1 to 34.2	1	208	10.00	0.50	1,040	Cft
	From Node 34.2 to 34.4	1	64	10.00	0.50	320	Cft
	From Node 35 to 35.1	1	136	5.00	0.50	340	Cft
	From Node 35.1 to 34.1	1	208	10.00	0.50	1,040	Cft
	From Node 35.1 to 36.1	1	145	10.00	0.50	725	Cft
	From Node 36 to 36.1	1	129	10.00	0.50	645	Cft
	From Node 36.1 to 19.2	1	209	12.00	0.50	1,254	Cft
	From Node 36.1 to 37.4	1	186	12.00	0.50	1,116	Cft
	From Node 37.4 to 37.5	1	162	12.00	0.50	972	Cft
	From Node 37 to 37.1	1	106	10.00	0.50	530	Cft
	From Node 37.1 to 37.1.2	1	163	12.00	0.50	978	Cft
	From Node 37.1 to 37.1.1	1	153	8.00	0.50	612	Cft
	From Node 37.1 to 37.2	1	135	6.00	0.50	405	Cft
		1	56	12.00	0.50	336	Cft

Sub Engineer

PUNJAB CITIES PROGRAM (PCP)

DETAILED DESIGN OF INFRASTRUCTURE SUB-PROJECTS AND RESIDENTS SUPERVISION IN 16 CITIES OF PUNJAB

PACKAGE - 5

CALCULATION OF QUANTITES

ROADS NET WORK

Sr. No	Description	No.	Length	Width	Height	Qty.	Unit.
	From Node 37.2 to 37.2.1	1	39	12.00	0.50	234	Cft
	From Node 37.2.1 to 37.2.2	1	68	12.00	0.50	408	Cft
	From Node 37.2.2 to 37.2.2.1	1	78	10.00	0.50	390	Cft
	From Node 37.2.2 to 37.2.3	1	120	12.00	0.50	720	Cft
	From Node 37.2 3 to 37.2.3.1	1	92	6.00	0.50	276	Cft
	From Node 37.2.3 to 38.2	1	89	8.00	0.50	356	Cft
	From Node 38 to 38.1	1	98	10.00	0.50	490	Cft
	From Node 38.1 to 38.1.1	1	101	10.00	0.50	505	Cft
	From Node 38.1 to 38.2	1	108	10.00	0.50	540	Cft
	From Node 38.2 to 39.1	1	200	8.00	0.50	800	Cft
	From Node 39 to 39.1	1	257	12.00	0.50	1,542	Cft
	From Node 40 to 40.1	1	506	8.00	0.50	2,024	Cft
	From Node 41 to 41.1	1	326	8.00	0.50	1,304	Cft
	From Node 41.1 to 41.1.1	1	72	3.00	0.50	108	Cft
	From Node 41.1 to 41.2	1	133	8.00	0.50	532	Cft
	From Node 41.2 to 9.5	1	161	6.00	0.50	483	Cft
	From Node 41.2 to 42.3	1	56	8.00	0.50	224	Cft
	From Node 42 to 42.1	1	326	8.00	0.50	1,304	Cft
	From Node 42.1 to 42.1.1	1	96	5.00	0.50	240	Cft
	From Node 42.1 to 42.2	1	262	8.00	0.50	1,048	Cft
	From Node 42.2 to 42.3	1	142	8.00	0.50	568	Cft
	From Node 42.2 to 43.4	1	118	8.00	0.50	472	Cft
	From Node 42.1 to 43.1	1	68	8.00	0.50	272	Cft
	From Node 43 to 43.1	1	234	6.00	0.50	702	Cft
	From Node 43.1 to 43.2	1	42	8.00	0.50	168	Cft
	From Node 42.2 to 43.3	1	230	10.00	0.50	1,150	Cft
	From Node 43.2 to 43.2.1	1	58	8.00	0.50	232	Cft
	From Node 43.2.1 to 43.2.1.1	1	105	6.00	0.50	315	Cft
	From Node 43.2.1 to 45.2	1	157	8.00	0.50	628	Cft
	From Node 44 to 44.1	1	161	16.00	0.50	1,288	Cft
	From Node 45 to 45.1	1	217	8.00	0.50	868	Cft
	From Node 30 to 46	1	2,545	30.00	0.50	38,175	Cft

Sub Engineer
M.C Kot Addu

Deputy Municipal Officer (T&S)
Municipal Committee Kot Addu

PUNJAB CITIES PROGRAM (PCP)
DETAILED DESIGN OF INFRASTRUCTURE SUB-PROJECTS AND RESIDENTS SUPERVISION IN 16 CITIES OF PUNJAB
PACKAGE - 5
CALCULATION OF QUANTITES
ROADS NET WORK

Sr. No	Description	No.	Length	Width	Height	Qty.	Unit.
					Total	188,748	Cft
					Total.	**188.75**	**%Cft**
	Compaction of Earthwork						
3	Compaction of earthwork with power road roller, including ploughing, mixing, moistening earth to optimum moisture content in layers, etc. complete. i) 95% to 100% maximum modified AASHO dry density.						
	From Node 1 to 1.1	1	154	12.00	0.50	924	Cft
	From Node 1.1 to 1.2	1	274	12.00	0.50	1,644	Cft
	From Node 1.2 to 1.3	1	119	12.00	0.50	714	Cft
	From Node 1.3 to 1.4	1	95	12.00	0.50	570	Cft
	From Node 1.4 to 1.5	1	172	12.00	0.50	1,032	Cft
	From Node 1.5 to 1.5.1	1	59	10.00	0.50	295	Cft
	From Node 1.5.1 to 1.4	1	223	5.00	0.50	558	Cft
	From Node 1.5.1 to 1.5.2	1	15	10.00	0.50	75	Cft
	From Node 1.5.2 to 1.5.3	1	63	10.00	0.50	315	Cft
	From Node 1.5.3 to 1.5.4	1	32	6.00	0.50	96	Cft
	From Node 1.5.4 to 1.5.5	1	38	6.00	0.50	114	Cft
	From Node 1.5.3 to 1.5.3.1	1	116	10.00	0.50	580	Cft
	From Node 1.5.3.1 to 1.3.2.1	1	173	10.00	0.50	865	Cft
	From Node 1.5.3.1 to 45.2	1	218	10.00	0.50	1,090	Cft
	From Node 1.5.2 to 45.1	1	335	10.00	0.50	1,675	Cft
	From Node 1.5.5 to 1.3.1	1	267	7.00	0.50	935	Cft
	From Node 1.3.1 to 1.3.2	1	141	8.00	0.50	564	Cft
	From Node 1.3.2 to 1.3.3	1	113	10.00	0.50	565	Cft
	From Node 1..3.3 to 1.3.4	1	115	12.00	0.50	690	Cft
	From Node 1..3.4 to 1.3.5	1	221	11.00	0.50	1,216	Cft
	From Node 1..3.4 to 1.3.4.1	1	208	10.00	0.50	1,040	Cft
	From Node 1..3.4.1 to 1.3.3.1	1	117	12.00	0.50	702	Cft
	From Node 1..3.3.1 to 1.3.3	1	195	12.00	0.50	1,170	Cft
	From Node 1..3.2 to 1.3.2.2	1	398	10.00	0.50	1,990	Cft
	From Node 1.3.2.1 to 43.3	1	58	10.00	0.50	290	Cft
	From Node 2 to 2.1	1	184	12.00	0.50	1,104	Cft
	From Node 3 to 1.3.2	1	519	9.00	0.50	2,336	Cft
	From Node 4 to 4.1	1	386	25.00	0.50	4,825	Cft
	From Node 4 to 12.1.1	1	520	30.00	0.50	7,800	Cft
	From Node 5 to 5.1	1	320	8.00	0.50	1,280	Cft
	From Node 5.1 to 1.3.3	1	180	12.00	0.50	1,080	Cft
	From Node 5.1 to 6.1	1	89	8.00	0.50	356	Cft
	From Node 6 to 6.1	1	287	12.00	0.50	1,722	Cft
	From Node 6.1 to 6.2	1	23	10.00	0.50	115	Cft

PUNJAB CITIES PROGRAM (PCP)
DETAILED DESIGN OF INFRASTRUCTURE SUB-PROJECTS AND RESIDENTS SUPERVISION IN 16 CITIES OF PUNJAB
PACKAGE - 5
CALCULATION OF QUANTITES
ROADS NET WORK

Sr. No	Description	No.	Length	Width	Height	Qty.	Unit.
	From Node 6.2 to 6.3	1	115	10.00	0.50	575	Cft
	From Node 6.3 to 6.4	1	98	10.00	0.50	490	Cft
	From Node 6.3 to 1.3.4	1	52	10.00	0.50	260	Cft
	From Node 7 to 7.1	1	163	30.00	0.50	2,445	Cft
	From Node 8 to 4.1	1	205	6.00	0.50	615	Cft
	From Node 9 to 9.1	1	252	5.00	0.50	630	Cft
	From Node 6.2 to 9.1	1	147	8.00	0.50	588	Cft
	From Node 9.1 to 9.2	1	60	8.00	0.50	240	Cft
	From Node 9.2 to 9.2.1	1	415	8.00	0.50	1,660	Cft
	From Node 9.2 to 9.3	1	95	8.00	0.50	380	Cft
	From Node 9.3 to 9.4	1	382	8.00	0.50	1,528	Cft
	From Node 9.4 to 9.5	1	76	12.00	0.50	456	Cft
	From Node 9.5 to 9.2.1	1	47	12.00	0.50	282	Cft
	From Node 9.3 to 10.1	1	118	8.00	0.50	472	Cft
	From Node 10 to 10.1	1	195	12.00	0.50	1,170	Cft
	From Node 10.1 to 10.2	1	185	12.00	0.50	1,110	Cft
	From Node 10.2 to 11.1	1	133	20.00	0.50	1,330	Cft
	From Node 10.2 to 10.3	1	167	12.00	0.50	1,002	Cft
	From Node 10.3 to 10.4	1	194	12.00	0.50	1,164	Cft
	From Node 10.3 to 9.4	1	116	12.00	0.50	696	Cft
	From Node 10.4 to 39.1	1	154	12.00	0.50	924	Cft
	From Node 11 to 11.1	1	387	8.00	0.50	1,548	Cft
	From Node 11.1 to 11.2	1	86	12.00	0.50	516	Cft
	From Node 11.2 to 10.4	1	428	10.00	0.50	2,140	Cft
	From Node 11.2 to 15.4.1	1	120	12.00	0.50	720	Cft
	From Node 12 to 12.1	1	181	20.00	0.50	1,810	Cft
	From Node 12.1 to 12.2	1	71	30.00	0.50	1,065	Cft
	From Node 12.1 to 12.1.1	1	229	10.00	0.50	1,145	Cft
	From Node 12.2 to 12.2.1	1	111	30.00	0.50	1,665	Cft
	From Node 12.2.1 to 12.3.1	1	88	30.00	0.50	1,320	Cft
	From Node 12.3.1 to 12.3	1	114	10.00	0.50	570	Cft
	From Node 12.3 to 12.3.2	1	103	3.00	0.50	155	Cft
	From Node 12.2 to 12.3	1	92	10.00	0.50	460	Cft
	From Node 13 to 13.1	1	88	8.00	0.50	352	Cft
	From Node 14 to 14.1	1	97	11.00	0.50	534	Cft
	From Node 15 to 15.1	1	323	8.00	0.50	1,292	Cft
	From Node 15.1 to 15.2	1	151	12.00	0.50	906	Cft
	From Node 15.1 to 15.1.1	1	86	8.00	0.50	344	Cft
	From Node 15.1.1 to 15.1.1.1	1	97	6.00	0.50	291	Cft
	From Node 15.1.1 to 15.1.2	1	101	5.00	0.50	253	Cft
	From Node 15.2 to 15.2.1	1	111	12.00	0.50	666	Cft
	From Node 15.2.1 to 15.2.1.1	1	88	6.00	0.50	264	Cft
	From Node 15.2.1 to 15.2.2	1	96	12.00	0.50	576	Cft
	From Node 15.2.2 to 15.2.3	1	140	7.00	0.50	490	Cft

Sub Engineer
M.C Kot Addu

Deputy Director (T&S)
Municipal Committee Kot Addu

PUNJAB CITIES PROGRAM (PCP)
DETAILED DESIGN OF INFRASTRUCTURE SUB-PROJECTS AND RESIDENTS SUPERVISION IN 16 CITIES OF PUNJAB
PACKAGE - 5
CALCULATION OF QUANTITES
ROADS NET WORK

Sr. No	Description	No.	Length	Width	Height	Qty.	Unit.
	From Node 15.2 to 15.3	1	129	12.00	0.50	774	Cft
	From Node 15.3 to 15.4	1	170	12.00	0.50	1,020	Cft
	From Node 15.4 to 15.5	1	61	12.00	0.50	366	Cft
	From Node 15.4 to 15.4.1	1	218	12.00	0.50	1,308	Cft
	From Node 15.3 to 37.2.1	1	203	12.00	0.50	1,218	Cft
	From Node 15.2.2 to 37.3	1	349	10.00	0.50	1,745	Cft
	From Node 16 to 16.1	1	98	10.00	0.50	490	Cft
	From Node 17 to 17.1	1	259	12.00	0.50	1,554	Cft
	From Node 19 to 19.1	1	269	10.00	0.50	1,345	Cft
	From Node 19.1 to 19.2	1	258	12.00	0.50	1,548	Cft
	From Node 19.2 to 19.3	1	114	12.00	0.50	684	Cft
	From Node 19.3 to 19.4	1	134	8.00	0.50	536	Cft
	From Node 19.4 to 19.5	1	91	5.00	0.50	228	Cft
	From Node 19.5 to 19.6	1	174	6.00	0.50	522	Cft
	From Node 19.5 to 34.3	1	69	5.00	0.50	173	Cft
	From Node 19.4 to 23.2	1	286	10.00	0.50	1,430	Cft
	From Node 19.3 to 19.3.1	1	63	5.00	0.50	158	Cft
	From Node 18 to 18.1	1	332	18.00	0.50	2,988	Cft
	From Node 18.1 to 12.3	1	309	10.00	0.50	1,545	Cft
	From Node 18.1 to 18.2	1	148	18.00	0.50	1,332	Cft
	From Node 18.2 to 12.3.1	1	283	30.00	0.50	4,245	Cft
	From Node 20 to 22.1	1	580	12.00	0.50	3,480	Cft
	From Node 21 to 21.1	1	95	12.00	0.50	570	Cft
	From Node 22 to 22.1	1	315	12.00	0.50	1,890	Cft
	From Node 23 to 23.1	1	261	12.00	0.50	1,566	Cft
	From Node 24 to 24.1	1	260	8.00	0.50	1,040	Cft
	From Node 26 to 26.1	1	80	7.00	0.50	280	Cft
	From Node 27 to 27.1	1	135	5.00	0.50	338	Cft
	From Node 28 to 28.1	1	151	6.00	0.50	453	Cft
	From Node 29 to 29.1	1	161	10.00	0.50	805	Cft
	From Node 29.1 to 29.1.1	1	68	6.00	0.50	204	Cft
	From Node 29.1 to 29.2	1	40	10.00	0.50	200	Cft
	From Node 29.2 to 23.2	1	224	12.00	0.50	1,344	Cft
	From Node 29.2 to 31.1	1	78	10.00	0.50	390	Cft
	From Node 31 to 31.1	1	230	10.00	0.50	1,150	Cft
	From Node 32 to 32.1	1	229	10.00	0.50	1,145	Cft
	From Node 31.1 to 32.1	1	126	10.00	0.50	630	Cft
	From Node 33 to 33.1	1	222	12.00	0.50	1,332	Cft
	From Node 33.1 to 33.2	1	28	10.00	0.50	140	Cft
	From Node 33.2 to 33.3	1	74	6.00	0.50	222	Cft
	From Node 33.1 to 34.3	1	52	10.00	0.50	260	Cft
	From Node 34 to 34.1	1	208	10.00	0.50	1,040	Cft
	From Node 34.1 to 34.2	1	64	10.00	0.50	320	Cft
	From Node 34.2 to 34.4	1	136	5.00	0.50	340	Cft

Sub Engineer
M.C. Sadiq

Deputy Chief Engineer (I&S)
Municipal Committee Kot Addu

PUNJAB CITIES PROGRAM (PCP)
DETAILED DESIGN OF INFRASTRUCTURE SUB-PROJECTS AND RESIDENTS SUPERVISION IN 16 CITIES OF PUNJAB
PACKAGE - 5
CALCULATION OF QUANTITES
ROADS NET WORK

Sr. No	Description	No.	Length	Width	Height	Qty.	Unit.
	From Node 35 to 35.1	1	208	10.00	0.50	1,040	Cft
	From Node 35.1 to 34.1	1	145	10.00	0.50	725	Cft
	From Node 35.1 to 36.1	1	129	10.00	0.50	645	Cft
	From Node 36 to 36.1	1	209	12.00	0.50	1,254	Cft
	From Node 36.1 to 19.2	1	186	12.00	0.50	1,116	Cft
	From Node 36.1 to 37.4	1	162	12.00	0.50	972	Cft
	From Node 37.4 to 37.5	1	106	10.00	0.50	530	Cft
	From Node 37 to 37.1	1	163	12.00	0.50	978	Cft
	From Node 37.1 to 37.1.2	1	153	8.00	0.50	612	Cft
	From Node 37.1 to 37.1.1	1	135	6.00	0.50	405	Cft
	From Node 37.1 to 37.2	1	56	12.00	0.50	336	Cft
	From Node 37.2 to 37.2.1	1	39	12.00	0.50	234	Cft
	From Node 37.2.1 to 37.2.2	1	68	12.00	0.50	408	Cft
	From Node 37.2.2 to 37.2.2.1	1	78	10.00	0.50	390	Cft
	From Node 37.2.2 to 37.2.3	1	120	12.00	0.50	720	Cft
	From Node 37.2.3 to 37.2.3.1	1	92	6.00	0.50	276	Cft
	From Node 37.2.3 to 38.2	1	89	8.00	0.50	356	Cft
	From Node 38 to 38.1	1	98	10.00	0.50	490	Cft
	From Node 38.1 to 38.1.1	1	101	10.00	0.50	505	Cft
	From Node 38.1 to 38.2	1	108	10.00	0.50	540	Cft
	From Node 38.2 to 39.1	1	200	8.00	0.50	800	Cft
	From Node 39 to 39.1	1	257	12.00	0.50	1,542	Cft
	From Node 40 to 40.1	1	506	8.00	0.50	2,024	Cft
	From Node 41 to 41.1	1	326	8.00	0.50	1,304	Cft
	From Node 41.1 to 41.1.1	1	72	3.00	0.50	108	Cft
	From Node 41.1 to 41.2	1	133	8.00	0.50	532	Cft
	From Node 41.2 to 9.5	1	161	6.00	0.50	483	Cft
	From Node 41.2 to 42.3	1	56	8.00	0.50	224	Cft
	From Node 42 to 42.1	1	326	8.00	0.50	1,304	Cft
	From Node 42.1 to 42.1.1	1	96	5.00	0.50	240	Cft
	From Node 42.1 to 42.2	1	262	8.00	0.50	1,048	Cft
	From Node 42.2 to 42.3	1	142	8.00	0.50	568	Cft
	From Node 42.2 to 43.4	1	118	8.00	0.50	472	Cft
	From Node 42.1 to 43.1	1	68	8.00	0.50	272	Cft
	From Node 43 to 43.1	1	234	6.00	0.50	702	Cft
	From Node 43.1 to 43.2	1	42	8.00	0.50	168	Cft
	From Node 42.2 to 43.3	1	230	10.00	0.50	1,150	Cft
	From Node 43.2 to 43.2.1	1	58	8.00	0.50	232	Cft
	From Node 43.2.1 to 43.2.1.1	1	105	6.00	0.50	315	Cft
	From Node 43.2.1 to 45.2	1	157	8.00	0.50	628	Cft
	From Node 44 to 44.1	1	161	16.00	0.50	1,288	Cft
	From Node 45 to 45.1	1	217	8.00	0.50	868	Cft
	From Node 30 to 46	1	2,545	30.00	0.50	38,175	Cft

PUNJAB CITIES PROGRAM (PCP)
DETAILED DESIGN OF INFRASTRUCTURE SUB-PROJECTS AND RESIDENTS SUPERVISION IN 16 CITIES OF PUNJAB
PACKAGE - 5
CALCULATION OF QUANTITES
ROADS NET WORK

Sr. No	Description	No.	Length	Width	Height	Qty.	Unit.
					Total	188,748	Cft
					Total.	188.75	%oCft
	Sub Base Course						
4	Providing and 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 and grade to achieve 98% maximum dry density determined according to AASHTO T-180 method-D, 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 Sakhi Sarwar querry to site, actual compacted depth shall be considered for payment)						
	From Node 1 to 1.1	1	154	12.00	0.50	924	Cft
	From Node 1.1 to 1.2	1	274	12.00	0.50	1,644	Cft
	From Node 1.2 to 1.3	1	119	12.00	0.50	714	Cft
	From Node 1.3 to 1.4	1	95	12.00	0.50	570	Cft
	From Node 1.4 to 1.5	1	172	12.00	0.50	1,032	Cft
	From Node 1.5 to 1.5.1	1	59	10.00	0.50	295	Cft
	From Node 1.5.1 to 1.4	1	223	5.00	0.50	558	Cft
	From Node 1.5.1 to 1.5.2	1	15	10.00	0.50	75	Cft
	From Node 1.5.2 to 1.5.3	1	63	10.00	0.50	315	Cft
	From Node 1.5.3 to 1.5.4	1	32	6.00	0.50	96	Cft
	From Node 1.5.4 to 1.5.5	1	38	6.00	0.50	114	Cft
	From Node 1.5.3 to 1.5.3.1	1	116	10.00	0.50	580	Cft
	From Node 1.5.3.1 to 1.3.2.1	1	173	10.00	0.50	865	Cft
	From Node 1.5.3.1 to 45.2	1	218	10.00	0.50	1,090	Cft
	From Node 1.5.2 to 45.1	1	335	10.00	0.50	1,675	Cft
	From Node 1.5.5 to 1.3.1	1	267	7.00	0.50	935	Cft
	From Node 1.3.1 to 1.3.2	1	141	8.00	0.50	564	Cft
	From Node 1.3.2 to 1.3.3	1	113	10.00	0.50	565	Cft
	From Node 1..3.3 to 1.3.4	1	115	12.00	0.50	690	Cft
	From Node 1..3.4 to 1.3.5	1	221	11.00	0.50	1,216	Cft
	From Node 1..3.4 to 1.3.4.1	1	208	10.00	0.50	1,040	Cft
	From Node 1..3.4.1 to 1.3.3.1	1	117	12.00	0.50	702	Cft
	From Node 1..3.3.1 to 1.3.3	1	195	12.00	0.50	1,170	Cft
	From Node 1..3.2 to 1.3.2.2	1	398	10.00	0.50	1,990	Cft
	From Node 1.3.2.1 to 43.3	1	58	10.00	0.50	290	Cft
	From Node 2 to 2.1	1	184	12.00	0.50	1,104	Cft
	From Node 3 to 1.3.2	1	519	9.00	0.50	2,336	Cft
	From Node 4 to 4.1	1	386	25.00	0.50	4,825	Cft
	From Node 4 to 12.1.1	1	520	30.00	0.50	7,800	Cft

PUNJAB CITIES PROGRAM (PCP)
DETAILED DESIGN OF INFRASTRUCTURE SUB-PROJECTS AND RESIDENTS SUPERVISION IN 16 CITIES OF PUNJAB
PACKAGE - 5
CALCULATION OF QUANTITES
ROADS NET WORK

Sr. No	Description	No.	Length	Width	Height	Qty.	Unit.
	From Node 5 to 5.1	1	320	8.00	0.50	1,280	Cft
	From Node 5.1 to 1.3.3	1	180	12.00	0.50	1,080	Cft
	From Node 5.1 to 6.1	1	89	8.00	0.50	356	Cft
	From Node 6 to 6.1	1	287	12.00	0.50	1,722	Cft
	From Node 6.1 to 6.2	1	23	10.00	0.50	115	Cft
	From Node 6.2 to 6.3	1	115	10.00	0.50	575	Cft
	From Node 6.3 to 6.4	1	98	10.00	0.50	490	Cft
	From Node 6.3 to 1.3.4	1	52	10.00	0.50	260	Cft
	From Node 7 to 7.1	1	163	30.00	0.50	2,445	Cft
	From Node 8 to 4.1	1	205	6.00	0.50	615	Cft
	From Node 9 to 9.1	1	252	5.00	0.50	630	Cft
	From Node 6.2 to 9.1	1	147	8.00	0.50	588	Cft
	From Node 9.1 to 9.2	1	60	8.00	0.50	240	Cft
	From Node 9.2 to 9.2.1	1	415	8.00	0.50	1,660	Cft
	From Node 9.2 to 9.3	1	95	8.00	0.50	380	Cft
	From Node 9.3 to 9.4	1	382	8.00	0.50	1,528	Cft
	From Node 9.4 to 9.5	1	76	12.00	0.50	456	Cft
	From Node 9.5 to 9.2.1	1	47	12.00	0.50	282	Cft
	From Node 9.3 to 10.1	1	118	8.00	0.50	472	Cft
	From Node 10 to 10.1	1	195	12.00	0.50	1,170	Cft
	From Node 10.1 to 10.2	1	185	12.00	0.50	1,110	Cft
	From Node 10.2 to 11.1	1	133	20.00	0.50	1,330	Cft
	From Node 10.2 to 10.3	1	167	12.00	0.50	1,002	Cft
	From Node 10.3 to 10.4	1	194	12.00	0.50	1,164	Cft
	From Node 10.3 to 9.4	1	116	12.00	0.50	696	Cft
	From Node 10.4 to 39.1	1	154	12.00	0.50	924	Cft
	From Node 11 to 11.1	1	387	8.00	0.50	1,548	Cft
	From Node 11.1 to 11.2	1	86	12.00	0.50	516	Cft
	From Node 11.2 to 10.4	1	428	10.00	0.50	2,140	Cft
	From Node 11.2 to 15.4.1	1	120	12.00	0.50	720	Cft
	From Node 12 to 12.1	1	181	20.00	0.50	1,810	Cft
	From Node 12.1 to 12.2	1	71	30.00	0.50	1,065	Cft
	From Node 12.1 to 12.1.1	1	229	10.00	0.50	1,145	Cft
	From Node 12.2 to 12.2.1	1	111	30.00	0.50	1,665	Cft
	From Node 12.2.1 to 12.3.1	1	88	30.00	0.50	1,320	Cft
	From Node 12.3.1 to 12.3	1	114	10.00	0.50	570	Cft
	From Node 12.3 to 12.3.2	1	103	3.00	0.50	155	Cft
	From Node 12.2 to 12.3	1	92	10.00	0.50	460	Cft
	From Node 13 to 13.1	1	88	8.00	0.50	352	Cft
	From Node 14 to 14.1	1	97	11.00	0.50	534	Cft
	From Node 15 to 15.1	1	323	8.00	0.50	1,292	Cft
	From Node 15.1 to 15.2	1	151	12.00	0.50	906	Cft
	From Node 15.1 to 15.1.1	1	86	8.00	0.50	344	Cft
	From Node 15.1.1 to 15.1.1.1	1	97	6.00	0.50	291	Cft

Sub Engineer
M.C. Kot Addu

PUNJAB CITIES PROGRAM (PCP)
DETAILED DESIGN OF INFRASTRUCTURE SUB-PROJECTS AND RESIDENTS SUPERVISION IN 16 CITIES OF PUNJAB
PACKAGE - 5
CALCULATION OF QUANTITES
ROADS NET WORK

Sr. No	Description	No.	Length	Width	Height	Qty.	Unit.
	From Node 15.1.1 to 15.1.2	1	101	5.00	0.50	253	Cft
	From Node 15.2 to 15.2.1	1	111	12.00	0.50	666	Cft
	From Node 15.2.1 to 15.2.1.1	1	88	6.00	0.50	264	Cft
	From Node 15.2.1 to 15.2.2	1	96	12.00	0.50	576	Cft
	From Node 15.2.2 to 15.2.3	1	140	7.00	0.50	490	Cft
	From Node 15.2 to 15.3	1	129	12.00	0.50	774	Cft
	From Node 15.3 to 15.4	1	170	12.00	0.50	1,020	Cft
	From Node 15.4 to 15.5	1	61	12.00	0.50	366	Cft
	From Node 15.4 to 15.4.1	1	218	12.00	0.50	1,308	Cft
	From Node 15.3 to 37.2.1	1	203	12.00	0.50	1,218	Cft
	From Node 15.2.2 to 37.3	1	349	10.00	0.50	1,745	Cft
	From Node 16 to 16.1	1	98	10.00	0.50	490	Cft
	From Node 17 to 17.1	1	259	12.00	0.50	1,554	Cft
	From Node 19 to 19.1	1	269	10.00	0.50	1,345	Cft
	From Node 19.1 to 19.2	1	258	12.00	0.50	1,548	Cft
	From Node 19.2 to 19.3	1	114	12.00	0.50	684	Cft
	From Node 19.3 to 19.4	1	134	8.00	0.50	536	Cft
	From Node 19.4 to 19.5	1	91	5.00	0.50	228	Cft
	From Node 19.5 to 19.6	1	174	6.00	0.50	522	Cft
	From Node 19.5 to 34.3	1	69	5.00	0.50	173	Cft
	From Node 19.4 to 23.2	1	286	10.00	0.50	1,430	Cft
	From Node 19.3 to 19.3.1	1	63	5.00	0.50	158	Cft
	From Node 18 to 18.1	1	332	18.00	0.50	2,988	Cft
	From Node 18.1 to 12.3	1	309	10.00	0.50	1,545	Cft
	From Node 18.1 to 18.2	1	148	18.00	0.50	1,332	Cft
	From Node 18.2 to 12.3.1	1	283	30.00	0.50	4,245	Cft
	From Node 20 to 22.1	1	580	12.00	0.50	3,480	Cft
	From Node 21 to 21.1	1	95	12.00	0.50	570	Cft
	From Node 22 to 22.1	1	315	12.00	0.50	1,890	Cft
	From Node 23 to 23.1	1	261	12.00	0.50	1,566	Cft
	From Node 24 to 24.1	1	260	8.00	0.50	1,040	Cft
	From Node 26 to 26.1	1	80	7.00	0.50	280	Cft
	From Node 27 to 27.1	1	135	5.00	0.50	338	Cft
	From Node 28 to 28.1	1	151	6.00	0.50	453	Cft
	From Node 29 to 29.1	1	161	10.00	0.50	805	Cft
	From Node 29.1 to 29.1.1	1	68	6.00	0.50	204	Cft
	From Node 29.1 to 29.2	1	40	10.00	0.50	200	Cft
	From Node 29.2 to 23.2	1	224	12.00	0.50	1,344	Cft
	From Node 29.2 to 31.1	1	78	10.00	0.50	390	Cft
	From Node 31 to 31.1	1	230	10.00	0.50	1,150	Cft
	From Node 32 to 32.1	1	229	10.00	0.50	1,145	Cft
	From Node 31.1 to 32.1	1	126	10.00	0.50	630	Cft
	From Node 33 to 33.1	1	222	12.00	0.50	1,332	Cft
	From Node 33.1 to 33.2	1	28	10.00	0.50	140	Cft

Sub Engineer

PUNJAB CITIES PROGRAM (PCP)
DETAILED DESIGN OF INFRASTRUCTURE SUB-PROJECTS AND RESIDENTS SUPERVISION IN 16 CITIES OF PUNJAB
PACKAGE - 5
CALCULATION OF QUANTITES
ROADS NET WORK

Sr. No	Description	No.	Length	Width	Height	Qty.	Unit.
	From Node 33.2 to 33.3	1	74	6.00	0.50	222	Cft
	From Node 33.1 to 34.3	1	52	10.00	0.50	260	Cft
	From Node 34 to 34.1	1	208	10.00	0.50	1,040	Cft
	From Node 34.1 to 34.2	1	64	10.00	0.50	320	Cft
	From Node 34.2 to 34.4	1	136	5.00	0.50	340	Cft
	From Node 35 to 35.1	1	208	10.00	0.50	1,040	Cft
	From Node 35.1 to 34.1	1	145	10.00	0.50	725	Cft
	From Node 35.1 to 36.1	1	129	10.00	0.50	645	Cft
	From Node 36 to 36.1	1	209	12.00	0.50	1,254	Cft
	From Node 36.1 to 19.2	1	186	12.00	0.50	1,116	Cft
	From Node 36.1 to 37.4	1	162	12.00	0.50	972	Cft
	From Node 37.4 to 37.5	1	106	10.00	0.50	530	Cft
	From Node 37 to 37.1	1	163	12.00	0.50	978	Cft
	From Node 37.1 to 37.1.2	1	153	8.00	0.50	612	Cft
	From Node 37.1 to 37.1.1	1	135	6.00	0.50	405	Cft
	From Node 37.1 to 37.2	1	56	12.00	0.50	336	Cft
	From Node 37.2 to 37.2.1	1	39	12.00	0.50	234	Cft
	From Node 37.2.1 to 37.2.2	1	68	12.00	0.50	408	Cft
	From Node 37.2.2 to 37.2.2.1	1	78	10.00	0.50	390	Cft
	From Node 37.2.2 to 37.2.3	1	120	12.00	0.50	720	Cft
	From Node 37.2.3 to 37.2.3.1	1	92	6.00	0.50	276	Cft
	From Node 37.2.3 to 38.2	1	89	8.00	0.50	356	Cft
	From Node 38 to 38.1	1	98	10.00	0.50	490	Cft
	From Node 38.1 to 38.1.1	1	101	10.00	0.50	505	Cft
	From Node 38.1 to 38.2	1	108	10.00	0.50	540	Cft
	From Node 38.2 to 39.1	1	200	8.00	0.50	800	Cft
	From Node 39 to 39.1	1	257	12.00	0.50	1,542	Cft
	From Node 40 to 40.1	1	506	8.00	0.50	2,024	Cft
	From Node 41 to 41.1	1	326	8.00	0.50	1,304	Cft
	From Node 41.1 to 41.1.1	1	72	3.00	0.50	108	Cft
	From Node 41.1 to 41.2	1	133	8.00	0.50	532	Cft
	From Node 41.2 to 9.5	1	161	6.00	0.50	483	Cft
	From Node 41.2 to 42.3	1	56	8.00	0.50	224	Cft
	From Node 42 to 42.1	1	326	8.00	0.50	1,304	Cft
	From Node 42.1 to 42.1.1	1	96	5.00	0.50	240	Cft
	From Node 42.1 to 42.2	1	262	8.00	0.50	1,048	Cft
	From Node 42.2 to 42.3	1	142	8.00	0.50	568	Cft
	From Node 42.2 to 43.4	1	118	8.00	0.50	472	Cft
	From Node 42.1 to 43.1	1	68	8.00	0.50	272	Cft
	From Node 43 to 43.1	1	234	6.00	0.50	702	Cft
	From Node 43.1 to 43.2	1	42	8.00	0.50	168	Cft
	From Node 42.2 to 43.3	1	230	10.00	0.50	1,150	Cft
	From Node 43.2 to 43.2.1	1	58	8.00	0.50	232	Cft
	From Node 43.2.1 to 43.2.1.1	1	105	6.00	0.50	315	Cft

Sub Engineer
M.C Kot Adu

Municipal Corporation Kot Adu

PUNJAB CITIES PROGRAM (PCP)
DETAILED DESIGN OF INFRASTRUCTURE SUB-PROJECTS AND RESIDENTS SUPERVISION IN 16 CITIES OF PUNJAB
PACKAGE - 5
CALCULATION OF QUANTITES
ROADS NET WORK

Sr. No	Description	No.	Length	Width	Height	Qty.	Unit.
	From Node 43.2.1 to 45.2	1	157	8.00	0.50	628	Cft
	From Node 44 to 44.1	1	161	16.00	0.50	1,288	Cft
	From Node 45 to 45.1	1	217	8.00	0.50	868	Cft
	From Node 30 to 46	1	2,545	30.00	0.50	38,175	Cft
					Total	188,748	Cft
					Total.	**1,887.48**	**%Cft**
	Tuff Paver						
5	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						
	From Node 1 to 1.1	1	154	12.00		1,848	Sft
	From Node 1.1 to 1.2	1	274	12.00		3,288	Sft
	From Node 1.2 to 1.3	1	119	12.00		1,428	Sft
	From Node 1.3 to 1.4	1	95	12.00		1,140	Sft
	From Node 1.4 to 1.5	1	172	12.00		2,064	Sft
	From Node 1.5 to 1.5.1	1	59	10.00		590	Sft
	From Node 1.5.1 to 1.4	1	223	5.00		1,115	Sft
	From Node 1.5.1 to 1.5.2	1	15	10.00		150	Sft
	From Node 1.5.2 to 1.5.3	1	63	10.00		630	Sft
	From Node 1.5.3 to 1.5.4	1	32	6.00		192	Sft
	From Node 1.5.4 to 1.5.5	1	38	6.00		228	Sft
	From Node 1.5.3 to 1.5.3.1	1	116	10.00		1,160	Sft
	From Node 1.5.3.1 to 1.3.2.1	1	173	10.00		1,730	Sft
	From Node 1.5.3.1 to 45.2	1	218	10.00		2,180	Sft
	From Node 1.5.2 to 45.1	1	335	10.00		3,350	Sft
	From Node 1.5.5 to 1.3.1	1	267	7.00		1,869	Sft
	From Node 1.3.1 to 1.3.2	1	141	8.00		1,128	Sft
	From Node 1.3.2 to 1.3.3	1	113	10.00		1,130	Sft
	From Node 1..3.3 to 1.3.4	1	115	12.00		1,380	Sft
	From Node 1..3.4 to 1.3.5	1	221	11.00		2,431	Sft
	From Node 1..3.4 to 1.3.4.1	1	208	10.00		2,080	Sft
	From Node 1..3.4.1 to 1.3.3.1	1	117	12.00		1,404	Sft
	From Node 1..3.3.1 to 1.3.3	1	195	12.00		2,340	Sft
	From Node 1..3.2 to 1.3.2.2	1	398	10.00		3,980	Sft
	From Node 1.3.2.1 to 43.3	1	58	10.00		580	Sft
	From Node 2 to 2.1	1	184	12.00		2,208	Sft
	From Node 3 to 1.3.2	1	519	9.00		4,671	Sft
	From Node 4 to 4.1	1	386	25.00		9,650	Sft
	From Node 4 to 12.1.1	1	520	30.00		15,600	Sft
	From Node 5 to 5.1	1	320	8.00		2,560	Sft
	From Node 5.1 to 1.3.3	1	180	12.00		2,160	Sft

PUNJAB CITIES PROGRAM (PCP)
DETAILED DESIGN OF INFRASTRUCTURE SUB-PROJECTS AND RESIDENTS SUPERVISION IN 16 CITIES OF PUNJAB
PACKAGE - 5
CALCULATION OF QUANTITES
ROADS NET WORK

Sr. No	Description	No.	Length	Width	Height	Qty.	Unit.
	From Node 5.1 to 6.1	1	89	8.00		712	Sft
	From Node 6 to 6.1	1	287	12.00		3,444	Sft
	From Node 6.1 to 6.2	1	23	10.00		230	Sft
	From Node 6.2 to 6.3	1	115	10.00		1,150	Sft
	From Node 6.3 to 6.4	1	98	10.00		980	Sft
	From Node 6.3 to 1.3.4	1	52	10.00		520	Sft
	From Node 7 to 7.1	1	163	30.00		4,890	Sft
	From Node 8 to 4.1	1	205	6.00		1,230	Sft
	From Node 9 to 9.1	1	252	5.00		1,260	Sft
	From Node 6.2 to 9.1	1	147	8.00		1,176	Sft
	From Node 9.1 to 9.2	1	60	8.00		480	Sft
	From Node 9.2 to 9.2.1	1	415	8.00		3,320	Sft
	From Node 9.2 to 9.3	1	95	8.00		760	Sft
	From Node 9.3 to 9.4	1	382	8.00		3,056	Sft
	From Node 9.4 to 9.5	1	76	12.00		912	Sft
	From Node 9.5 to 9.2.1	1	47	12.00		564	Sft
	From Node 9.3 to 10.1	1	118	8.00		944	Sft
	From Node 10 to 10.1	1	195	12.00		2,340	Sft
	From Node 10.1 to 10.2	1	185	12.00		2,220	Sft
	From Node 10.2 to 11.1	1	133	20.00		2,660	Sft
	From Node 10.2 to 10.3	1	167	12.00		2,004	Sft
	From Node 10.3 to 10.4	1	194	12.00		2,328	Sft
	From Node 10.3 to 9.4	1	116	12.00		1,392	Sft
	From Node 10.4 to 39.1	1	154	12.00		1,848	Sft
	From Node 11 to 11.1	1	387	8.00		3,096	Sft
	From Node 11.1 to 11.2	1	86	12.00		1,032	Sft
	From Node 11.2 to 10.4	1	428	10.00		4,280	Sft
	From Node 11.2 to 15.4.1	1	120	12.00		1,440	Sft
	From Node 12 to 12.1	1	181	20.00		3,620	Sft
	From Node 12.1 to 12.2	1	71	30.00		2,130	Sft
	From Node 12.1 to 12.1.1	1	229	10.00		2,290	Sft
	From Node 12.2 to 12.2.1	1	111	30.00		3,330	Sft
	From Node 12.2.1 to 12.3.1	1	88	30.00		2,640	Sft
	From Node 12.3.1 to 12.3	1	114	10.00		1,140	Sft
	From Node 12.3 to 12.3.2	1	103	3.00		309	Sft
	From Node 12.2 to 12.3	1	92	10.00		920	Sft
	From Node 13 to 13.1	1	88	8.00		704	Sft
	From Node 14 to 14.1	1	97	11.00		1,067	Sft
	From Node 15 to 15.1	1	323	8.00		2,584	Sft
	From Node 15.1 to 15.2	1	151	12.00		1,812	Sft
	From Node 15.1 to 15.1.1	1	86	8.00		688	Sft
	From Node 15.1.1 to 15.1.1.1	1	97	6.00		582	Sft
	From Node 15.1.1 to 15.1.2	1	101	5.00		505	Sft
	From Node 15.2 to 15.2.1	1	111	12.00		1,332	Sft
	From Node 15.2.1 to 15.2.1.1	1	88	6.00		528	Sft
	From Node 15.2.1 to 15.2.2	1	96	12.00		1,152	Sft

PUNJAB CITIES PROGRAM (PCP)
DETAILED DESIGN OF INFRASTRUCTURE SUB-PROJECTS AND RESIDENTS SUPERVISION IN 16 CITIES OF PUNJAB
PACKAGE - 5
CALCULATION OF QUANTITES
ROADS NET WORK

Sr. No	Description	No.	Length	Width	Height	Qty.	Unit.
	From Node 15.2.2 to 15.2.3	1	140	7.00		980	Sft
	From Node 15.2 to 15.3	1	129	12.00		1,548	Sft
	From Node 15.3 to 15.4	1	170	12.00		2,040	Sft
	From Node 15.4 to 15.5	1	61	12.00		732	Sft
	From Node 15.4 to 15.4.1	1	218	12.00		2,616	Sft
	From Node 15.3 to 37.2.1	1	203	12.00		2,436	Sft
	From Node 15.2.2 to 37.3	1	349	10.00		3,490	Sft
	From Node 16 to 16.1	1	98	10.00		980	Sft
	From Node 17 to 17.1	1	259	12.00		3,108	Sft
	From Node 19 to 19.1	1	269	10.00		2,690	Sft
	From Node 19.1 to 19.2	1	258	12.00		3,096	Sft
	From Node 19.2 to 19.3	1	114	12.00		1,368	Sft
	From Node 19.3 to 19.4	1	134	8.00		1,072	Sft
	From Node 19.4 to 19.5	1	91	5.00		455	Sft
	From Node 19.5 to 19.6	1	174	6.00		1,044	Sft
	From Node 19.5 to 34.3	1	69	5.00		345	Sft
	From Node 19.4 to 23.2	1	286	10.00		2,860	Sft
	From Node 19.3 to 19.3.1	1	63	5.00		315	Sft
	From Node 18 to 18.1	1	332	18.00		5,976	Sft
	From Node 18.1 to 12.3	1	309	10.00		3,090	Sft
	From Node 18.1 to 18.2	1	148	18.00		2,664	Sft
	From Node 18.2 to 12.3.1	1	283	30.00		8,490	Sft
	From Node 20 to 22.1	1	580	12.00		6,960	Sft
	From Node 21 to 21.1	1	95	12.00		1,140	Sft
	From Node 22 to 22.1	1	315	12.00		3,780	Sft
	From Node 23 to 23.1	1	261	12.00		3,132	Sft
	From Node 24 to 24.1	1	260	8.00		2,080	Sft
	From Node 26 to 26.1	1	80	7.00		560	Sft
	From Node 27 to 27.1	1	135	5.00		675	Sft
	From Node 28 to 28.1	1	151	6.00		906	Sft
	From Node 29 to 29.1	1	161	10.00		1,610	Sft
	From Node 29.1 to 29.1.1	1	68	6.00		408	Sft
	From Node 29.1 to 29.2	1	40	10.00		400	Sft
	From Node 29.2 to 23.2	1	224	12.00		2,688	Sft
	From Node 29.2 to 31.1	1	78	10.00		780	Sft
	From Node 31 to 31.1	1	230	10.00		2,300	Sft
	From Node 32 to 32.1	1	229	10.00		2,290	Sft
	From Node 31.1 to 32.1	1	126	10.00		1,260	Sft
	From Node 33 to 33.1	1	222	12.00		2,664	Sft
	From Node 33.1 to 33.2	1	28	10.00		280	Sft
	From Node 33.2 to 33.3	1	74	6.00		444	Sft
	From Node 33.1 to 34.3	1	52	10.00		520	Sft
	From Node 34 to 34.1	1	208	10.00		2,080	Sft
	From Node 34.1 to 34.2	1	64	10.00		640	Sft
	From Node 34.2 to 34.4	1	136	5.00		680	Sft
	From Node 35 to 35.1	1	208	10.00		2,080	Sft

PUNJAB CITIES PROGRAM (PCP)

DETAILED DESIGN OF INFRASTRUCTURE SUB-PROJECTS AND RESIDENTS SUPERVISION IN 16 CITIES OF PUNJAB

PACKAGE - 5

CALCULATION OF QUANTITES

ROADS NET WORK

Sr. No	Description	No.	Length	Width	Height	Qty.	Unit.
	From Node 35.1 to 34.1	1	145	10.00		1,450	Sft
	From Node 35.1 to 36.1	1	129	10.00		1,290	Sft
	From Node 36 to 36.1	1	209	12.00		2,508	Sft
	From Node 36.1 to 19.2	1	186	12.00		2,232	Sft
	From Node 36.1 to 37.4	1	162	12.00		1,944	Sft
	From Node 37.4 to 37.5	1	106	10.00		1,060	Sft
	From Node 37 to 37.1	1	163	12.00		1,956	Sft
	From Node 37.1 to 37.1.2	1	153	8.00		1,224	Sft
	From Node 37.1 to 37.1.1	1	135	6.00		810	Sft
	From Node 37.1 to 37.2	1	56	12.00		672	Sft
	From Node 37.2 to 37.2.1	1	39	12.00		468	Sft
	From Node 37.2.1 to 37.2.2	1	68	12.00		816	Sft
	From Node 37.2.2 to 37.2.2.1	1	78	10.00		780	Sft
	From Node 37.2.2 to 37.2.3	1	120	12.00		1,440	Sft
	From Node 37.2.3 to 37.2.3.1	1	92	6.00		552	Sft
	From Node 37.2.3 to 38.2	1	89	8.00		712	Sft
	From Node 38 to 38.1	1	98	10.00		980	Sft
	From Node 38.1 to 38.1.1	1	101	10.00		1,010	Sft
	From Node 38.1 to 38.2	1	108	10.00		1,080	Sft
	From Node 38.2 to 39.1	1	200	8.00		1,600	Sft
	From Node 39 to 39.1	1	257	12.00		3,084	Sft
	From Node 40 to 40.1	1	506	8.00		4,048	Sft
	From Node 41 to 41.1	1	326	8.00		2,608	Sft
	From Node 41.1 to 41.1.1	1	72	3.00		216	Sft
	From Node 41.1 to 41.2	1	133	8.00		1,064	Sft
	From Node 41.2 to 9.5	1	161	6.00		966	Sft
	From Node 41.2 to 42.3	1	56	8.00		448	Sft
	From Node 42 to 42.1	1	326	8.00		2,608	Sft
	From Node 42.1 to 42.1.1	1	96	5.00		480	Sft
	From Node 42.1 to 42.2	1	262	8.00		2,096	Sft
	From Node 42.2 to 42.3	1	142	8.00		1,136	Sft
	From Node 42.2 to 43.4	1	118	8.00		944	Sft
	From Node 42.1 to 43.1	1	68	8.00		544	Sft
	From Node 43 to 43.1	1	234	6.00		1,404	Sft
	From Node 43.1 to 43.2	1	42	8.00		336	Sft
	From Node 42.2 to 43.3	1	230	10.00		2,300	Sft
	From Node 43.2 to 43.2.1	1	58	8.00		464	Sft
	From Node 43.2.1 to 43.2.1.1	1	105	6.00		630	Sft
	From Node 43.2.1 to 45.2	1	157	8.00		1,256	Sft
	From Node 44 to 44.1	1	161	16.00		2,576	Sft
	From Node 45 to 45.1	1	217	8.00		1,736	Sft
	From Node 30 to 46	1	2,545	30.00		76,350	Sft
					Total	377,495	Sft

Sub Engineer

PUNJAB CITIES PROGRAM (PCP)
DETAILED DESIGN OF INFRASTRUCTURE SUB-PROJECTS AND RESIDENTS SUPERVISION IN 16 CITIES OF PUNJAB
PACKAGE - 5
CALCULATION OF QUANTITES
ROADS NET WORK

Sr. No	Description	No.	Length	Width	Height	Qty.	Unit.
	Road Edging						
6	Providing and laying road edging of 3" (75 mm) wide and 9" (225 mm) deep brick on end, complete in all respects.						
	From Node 1 to 1.1	2	154			308	Rft
	From Node 1.1 to 1.2	2	274			548	Rft
	From Node 1.2 to 1.3	2	119			238	Rft
	From Node 1.3 to 1.4	2	95			190	Rft
	From Node 1.4 to 1.5	2	172			344	Rft
	From Node 1.5 to 1.5.1	2	59			118	Rft
	From Node 1.5.1 to 1.4	2	223			446	Rft
	From Node 1.5.1 to 1.5.2	2	15			30	Rft
	From Node 1.5.2 to 1.5.3	2	63			126	Rft
	From Node 1.5.3 to 1.5.4	2	32			64	Rft
	From Node 1.5.4 to 1.5.5	2	38			76	Rft
	From Node 1.5.3 to 1.5.3.1	2	116			232	Rft
	From Node 1.5.3.1 to 1.3.2.1	2	173			346	Rft
	From Node 1.5.3.1 to 45.2	2	218			436	Rft
	From Node 1.5.2 to 45.1	2	335			670	Rft
	From Node 1.5.5 to 1.3.1	2	267			534	Rft
	From Node 1.3.1 to 1.3.2	2	141			282	Rft
	From Node 1.3.2 to 1.3.3	2	113			226	Rft
	From Node 1..3.3 to 1.3.4	2	115			230	Rft
	From Node 1..3.4 to 1.3.5	2	221			442	Rft
	From Node 1..3.4 to 1.3.4.1	2	208			416	Rft
	From Node 1..3.4.1 to 1.3.3.1	2	117			234	Rft
	From Node 1..3.3.1 to 1.3.3	2	195			390	Rft
	From Node 1..3.2 to 1.3.2.2	2	398			796	Rft
	From Node 1.3.2.1 to 43.3	2	58			116	Rft
	From Node 2 to 2.1	2	184			368	Rft
	From Node 3 to 1.3.2	2	519			1,038	Rft
	From Node 4 to 4.1	2	386			772	Rft
	From Node 4 to 12.1.1	2	520			1,040	Rft
	From Node 5 to 5.1	2	320			640	Rft
	From Node 5.1 to 1.3.3	2	180			360	Rft
	From Node 5.1 to 6.1	2	89			178	Rft
	From Node 6 to 6.1	2	287			574	Rft
	From Node 6.1 to 6.2	2	23			46	Rft
	From Node 6.2 to 6.3	2	115			230	Rft
	From Node 6.3 to 6.4	2	98			196	Rft
	From Node 6.3 to 1.3.4	2	52			104	Rft
	From Node 7 to 7.1	2	163			326	Rft
	From Node 8 to 4.1	2	205			410	Rft
	From Node 9 to 9.1	2	252			504	Rft
	From Node 6.2 to 9.1	2	147			294	Rft
	From Node 9.1 to 9.2	2	60			120	Rft

PUNJAB CITIES PROGRAM (PCP)

DETAILED DESIGN OF INFRASTRUCTURE SUB-PROJECTS AND RESIDENTS SUPERVISION IN 16 CITIES OF PUNJAB

PACKAGE - 5

CALCULATION OF QUANTITES

ROADS NET WORK

Sr. No	Description	No.	Length	Width	Height	Qty.	Unit.
	From Node 9.2 to 9.2.1	2	415			830	Rft
	From Node 9.2 to 9.3	2	95			190	Rft
	From Node 9.3 to 9.4	2	382			764	Rft
	From Node 9.4 to 9.5	2	76			152	Rft
	From Node 9.5 to 9.2.1	2	47			94	Rft
	From Node 9.3 to 10.1	2	118			236	Rft
	From Node 10 to 10.1	2	195			390	Rft
	From Node 10.1 to 10.2	2	185			370	Rft
	From Node 10.2 to 11.1	2	133			266	Rft
	From Node 10.2 to 10.3	2	167			334	Rft
	From Node 10.3 to 10.4	2	194			388	Rft
	From Node 10.3 to 9.4	2	116			232	Rft
	From Node 10.4 to 39.1	2	154			308	Rft
	From Node 11 to 11.1	2	387			774	Rft
	From Node 11.1 to 11.2	2	86			172	Rft
	From Node 11.2 to 10.4	2	428			856	Rft
	From Node 11.2 to 15.4.1	2	120			240	Rft
	From Node 12 to 12.1	2	181			362	Rft
	From Node 12.1 to 12.2	2	71			142	Rft
	From Node 12.1 to 12.1.1	2	229			458	Rft
	From Node 12.2 to 12.2.1	2	111			222	Rft
	From Node 12.2.1 to 12.3.1	2	88			176	Rft
	From Node 12.3.1 to 12.3	2	114			228	Rft
	From Node 12.3 to 12.3.2	2	103			206	Rft
	From Node 12.2 to 12.3	2	92			184	Rft
	From Node 13 to 13.1	2	88			176	Rft
	From Node 14 to 14.1	2	97			194	Rft
	From Node 15 to 15.1	2	323			646	Rft
	From Node 15.1 to 15.2	2	151			302	Rft
	From Node 15.1 to 15.1.1	2	86			172	Rft
	From Node 15.1.1 to 15.1.1.1	2	97			194	Rft
	From Node 15.1.1 to 15.1.2	2	101			202	Rft
	From Node 15.2 to 15.2.1	2	111			222	Rft
	From Node 15.2.1 to 15.2.1.1	2	88			176	Rft
	From Node 15.2.1 to 15.2.2	2	96			192	Rft
	From Node 15.2.2 to 15.2.3	2	140			280	Rft
	From Node 15.2 to 15.3	2	129			258	Rft
	From Node 15.3 to 15.4	2	170			340	Rft
	From Node 15.4 to 15.5	2	61			122	Rft
	From Node 15.4 to 15.4.1	2	218			436	Rft
	From Node 15.3 to 37.2.1	2	203			406	Rft
	From Node 15.2.2 to 37.3	2	349			698	Rft
	From Node 16 to 16.1	2	98			196	Rft
	From Node 17 to 17.1	2	259			518	Rft
	From Node 19 to 19.1	2	269			538	Rft
	From Node 19.1 to 19.2	2	258			516	Rft

Sub Engineer
M.C. Wah Cantt

Deputy Director (T&C)
Municipal Corporation Rawalpindi

CALCULATION OF QUANTITES

ROADS NET WORK

Sr. No	Description	No.	Length	Width	Height	Qty.	Unit.
	From Node 19.2 to 19.3	2	114			228	Rft
	From Node 19.3 to 19.4	2	134			268	Rft
	From Node 19.4 to 19.5	2	91			182	Rft
	From Node 19.5 to 19.6	2	174			348	Rft
	From Node 19.5 to 34.3	2	69			138	Rft
	From Node 19.4 to 23.2	2	286			572	Rft
	From Node 19.3 to 19.3.1	2	63			126	Rft
	From Node 18 to 18.1	2	332			664	Rft
	From Node 18.1 to 12.3	2	309			618	Rft
	From Node 18.1 to 18.2	2	148			296	Rft
	From Node 18.2 to 12.3.1	2	283			566	Rft
	From Node 20 to 22.1	2	580			1,160	Rft
	From Node 21 to 21.1	2	95			190	Rft
	From Node 22 to 22.1	2	315			630	Rft
	From Node 23 to 23.1	2	261			522	Rft
	From Node 24 to 24.1	2	260			520	Rft
	From Node 26 to 26.1	2	80			160	Rft
	From Node 27 to 27.1	2	135			270	Rft
	From Node 28 to 28.1	2	151			302	Rft
	From Node 29 to 29.1	2	161			322	Rft
	From Node 29.1 to 29.1.1	2	68			136	Rft
	From Node 29.1 to 29.2	2	40			80	Rft
	From Node 29.2 to 23.2	2	224			448	Rft
	From Node 29.2 to 31.1	2	78			156	Rft
	From Node 31 to 31.1	2	230			460	Rft
	From Node 32 to 32.1	2	229			458	Rft
	From Node 31.1 to 32.1	2	126			252	Rft
	From Node 33 to 33.1	2	222			444	Rft
	From Node 33.1 to 33.2	2	28			56	Rft
	From Node 33.2 to 33.3	2	74			148	Rft
	From Node 33.1 to 34.3	2	52			104	Rft
	From Node 34 to 34.1	2	208			416	Rft
	From Node 34.1 to 34.2	2	64			128	Rft
	From Node 34.2 to 34.4	2	136			272	Rft
	From Node 35 to 35.1	2	208			416	Rft
	From Node 35.1 to 34.1	2	145			290	Rft
	From Node 35.1 to 36.1	2	129			258	Rft
	From Node 36 to 36.1	2	209			418	Rft
	From Node 36.1 to 19.2	2	186			372	Rft
	From Node 36.1 to 37.4	2	162			324	Rft
	From Node 37.4 to 37.5	2	106			212	Rft
	From Node 37 to 37.1	2	163			326	Rft
	From Node 37.1 to 37.1.2	2	153			306	Rft
	From Node 37.1 to 37.1.1	2	135			270	Rft
	From Node 37.1 to 37.2	2	56			112	Rft
	From Node 37.2 to 37.2.1	2	39			78	Rft

PUNJAB CITIES PROGRAM (PCP)
DETAILED DESIGN OF INFRASTRUCTURE SUB-PROJECTS AND RESIDENTS SUPERVISION IN 16 CITIES OF PUNJAB
PACKAGE - 5
CALCULATION OF QUANTITES
ROADS NET WORK

Sr. No	Description	No.	Length	Width	Height	Qty.	Unit.
	From Node 37.2.1 to 37.2.2	2	68			136	Rft
	From Node 37.2.2 to 37.2.2.1	2	78			156	Rft
	From Node 37.2.2 to 37.2.3	2	120			240	Rft
	From Node 37.2.3 to 37.2.3.1	2	92			184	Rft
	From Node 37.2.3 to 38.2	2	89			178	Rft
	From Node 38 to 38.1	2	98			196	Rft
	From Node 38.1 to 38.1.1	2	101			202	Rft
	From Node 38.1 to 38.2	2	108			216	Rft
	From Node 38.2 to 39.1	2	200			400	Rft
	From Node 39 to 39.1	2	257			514	Rft
	From Node 40 to 40.1	2	506			1,012	Rft
	From Node 41 to 41.1	2	326			652	Rft
	From Node 41.1 to 41.1.1	2	72			144	Rft
	From Node 41.1 to 41.2	2	133			266	Rft
	From Node 41.2 to 9.5	2	161			322	Rft
	From Node 41.2 to 42.3	2	56			112	Rft
	From Node 42 to 42.1	2	326			652	Rft
	From Node 42.1 to 42.1.1	2	96			192	Rft
	From Node 42.1 to 42.2	2	262			524	Rft
	From Node 42.2 to 42.3	2	142			284	Rft
	From Node 42.2 to 43.4	2	118			236	Rft
	From Node 42.1 to 43.1	2	68			136	Rft
	From Node 43 to 43.1	2	234			468	Rft
	From Node 43.1 to 43.2	2	42			84	Rft
	From Node 42.2 to 43.3	2	230			460	Rft
	From Node 43.2 to 43.2.1	2	58			116	Rft
	From Node 43.2.1 to 43.2.1.1	2	105			210	Rft
	From Node 43.2.1 to 45.2	2	157			314	Rft
	From Node 44 to 44.1	2	161			322	Rft
	From Node 45 to 45.1	2	217			434	Rft
	From Node 30 to 46	2	2,545			5,090	Rft
					Total.	59,870	Rft
7	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						
	3 ft size	30	3.00	2.00		180	Sft

Sub Engineer
M.C. Lal Adu

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Municipal Committee Lal Adda

PUNJAB CITIES PROGRAM (PCP)
DETAILED DESIGN OF INFRASTRUCTURE SUB-PROJECTS AND RESIDENTS SUPERVISION IN 16 CITIES OF PUNJAB
PACKAGE - 5
CALCULATION OF QUANTITES
ROADS NET WORK

Sr. No	Description	No.	Length	Width	Height	Qty.	Unit.
8	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 embeded in PCC 1:2:4 etc, complete in all respect						
	(b) 3 inch diameter	30	11			330	Rft
9	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					180	Sft
	DRAINAGE SYSTEM						
	Excavation						
1	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.						
	Proposed Drain 1.00ft wide drain	1	2,994	3.00	1.50	13,473	Cft
	Type-1	1	7,484	2.00	1.00	14,968	Cft
					Total	28,441	Cft
					Total	**28.44**	**%oCft**
	P.C.C						
2	Cement concrete plain including placing, compacting, finishing and curing complete (including screening and washing of stone aggregate):						
	(i) Ratio 1: 4: 8						
	Proposed Drain 1ft wide drain	1	2,994	3.00	0.25	2,246	Cft
					Total	**22.46**	**%Cft**
	(f) Ratio 1: 2: 4						
	Proposed Drain 1.00ft wide drain	1	2,994	3.00	0.50	4,491	Cft
	Proposed Drain base slab	1	2,994	1.50	0.25	1,123	Cft
	Benching						
	Coping	2	2,994	0.75	0.25	1,123	Cft
	Proposed Drain 1ft wide drain				Total	6,737	Cft

Sub Engineer

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PUNJAB CITIES PROGRAM (PCP)
DETAILED DESIGN OF INFRASTRUCTURE SUB-PROJECTS AND RESIDENTS SUPERVISION IN 16 CITIES OF PUNJAB
PACKAGE - 5
CALCULATION OF QUANTITES
ROADS NET WORK

Sr. No	Description	No.	Length	Width	Height	Qty.	Unit.
					Total	67.37	%Cft
	Brick Work						
3	Pacca brick work other than building upto 10ft. (3 m) Cement, sand mortar:- Ratio 1:3						
	Proposed Drain 1ft wide drain						
	Step-1	2	2,994	0.750	1.00	4,491	Cft
					Total	4,491	Cft
					Total	44.91	%Cft
4	Cement plaster 1:3 upto 20' (6.00 m) height:-						
	b) ½" (13 mm) thick						
	Proposed Drain 1.00ft wide drain	2	2,994		1.00	5,988	Sft
					Total	5,988	Sft
					Total	59.88	%Sft
	R.C.C Work						
5	Providing and laying reinforced cement concrete (i/c pre-stressed concrete), using coarse sand and screened graded and washed aggregate, in required shape and design, i/c 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, complete						
	a).(i) Reinforced cement concrete in roof slab, beams, columns, lintels, girders and other structural members laid in situ or pre-cast laid in position, or pre-stressed members cast in situ, complete in all respect. Type C (nominal mix 1:2:4)						
		0.4	2,994	2.50	0.50	1,497.00	Cft
					Total	1,497.00	Cft
	Steel						
6	Fabrication of mild steel reinforcement for cement concrete, i/c cutting, bending, laying in position, making joints and fastening, i/c cost of bending wire and labour charges for bending of steel reinforcement (also includes removal of rust from deformed bars) Gade 60						
	Concrete Qty		1,497	Cft @	6.75	10,105	lbs/cft

PUNJAB CITIES PROGRAM (PCP)
DETAILED DESIGN OF INFRASTRUCTURE SUB-PROJECTS AND RESIDENTS SUPERVISION IN 16 CITIES OF PUNJAB
PACKAGE - 5
CALCULATION OF QUANTITES
ROADS NET WORK

Sr No	Description	No.	Length	Width	Height	Qty.	Unit.
						4,585	kg
					Total	45.85	Kg
	Kerb Stone						
7	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	0.5	2,994			1,497	Rft
					Total	1,497	Rft
	Type - 1 Drain						
8	Constructing Punjab Standard Drains. of cement concrete 1:2 ½ :5, with cement concrete bedding ratio 1:6:12, complete, laid to lines, grades, slopes and shapes, rendering exposed surface of concrete with 1:1 cement, sand mortar, ¼" (6 mm) thick, as per Engineer's drawing (excluding excavation):-	1	7,484			7,484	Rft
	P.C.C						
9	Cement concrete brick or stone ballast 1½ " to 2" (40 mm to						
	(d) Ratio 1: 6:12	1	7,484	2.00	0.25	3,742	Cft
					Total	37.42	%Cft
10	Tega formed of pacca bricks on end, laid in and over cement sand mortar projecting to a height of not more than 6" (150 mm) top of drain along the property side where required, laid to lines, grades, slopes and shape according to the Engineer's drawing:-						
	B) 4½" thick (113 mm)						
	i) ratio 1:3	1	7,484			7,484	Rft
					Total	74.84	%Rft
11	Pacca brick on edge, laid in reimbursement, in cement, sand mortar, on sides of drains and on other works where required. All joints to be completely filled and struck flush:-						
	(a) ratio 1:3	1	7,484	0.75		5,613	Sft
					Total	56.13	%Sft

ENVIRONMENTAL HEALTH SAFETY BUDGET

PUNJAB CITIES PROGRAM (PCP)

DETAILED DESIGN OF INFRASTRUCTURE SUB-PROJECTS AND RESIDENTS SUPERVISION IN 16 CITIES OF PUNJAB

DETAILED COST ESTIMATE

ENVIRONMENTAL HEALTH SAFETY BUDGET

Sr No	Description	Unit	Quantity	Unit Rate (Rs.)	Amount Rs.
	Labor Safety				
1	Face Masks (3 PLY)	Nos	5.00	700.00	3,500
2	Safety Gum Shoes	Nos	5.00	1,350.00	6,750
3	Hand Gloves	Nos	5.00	245.00	1,225
4	First Aid Box (Including essential Medicine)	Nos	1.00	5,000.00	5,000
5	Safety Hard Helmets MSA	Nos	5.00	2,000.00	10,000
6	Safety Goggles	Nos	5.00	550.00	2,750
7	Reflective Safety Vests	Nos	5.00	550.00	2,750
				Sub Total	**31,975**
	Working Site Safety				
1	Reflective Safety Signs Boards	Nos	1.00	10,000.00	10,000
2	Reflective Safety Barricading Tape	Nos	5.00	1,500.00	7,500
				Sub Total	**17,500**
	Others				
1	Water Sprinkling (Dust Abatement)	L.S	1.00	200,000	200,000
				Sub Total	**200,000**
	Total Amount (Rs)				**249,475**

RATE ANALYSIS

Rate Analysis Road- 2

Description

Providing and 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 and grade to achieve 98% maximum dry density determined according to AASHTO T-180 method-D, 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 Sakhi Sarwar querry to site, actual compacted depth shall be considered for payment)

Crush Stone

110 KM

Sr. No.	2nd BI-Annual-2022 (July to Dec) Muzafargarh	Description	Unit	Lead (Km)	Qty	Rate (Rs)	Amount (Rs)
1		**Material**					
	18-3 a(ii)	ii) Crushed stone aggregate.	100 Cft	1	1	8,925.00	8,925.00
2		**Carriage**					
		1st KM	100 Cft	1	1.20	299.40	359.28
		2nd KM	100 Cft	1	1.20	145.25	174.30
		3rd KM	100 Cft	1	1.20	116.85	140.22
		4th KM	100 Cft	1	1.20	85.30	102.36
		5th KM	100 Cft	1	1.20	80.20	96.24
	1/1	6th KM	100 Cft	1	1.20	79.00	94.80
		7th KM	100 Cft	1	1.20	74.25	89.10
		8th KM	100 Cft	1	1.20	73.50	88.20
		9th KM	100 Cft	1	1.20	69.55	83.46
		10th KM	100 Cft	1	1.20	65.70	78.84
		From 11 km to 200 km	100 Cft	100.00	1.20	57.25	6,870.00
		Total.					**17,101.80**
		Total Amount per 100 Cft					**17,101.80**
		Total cast for Per Cft					**171.02**

ANNEXURE C
ECONOMIC BENEFITS

Economic Benefits

e construction of roads can be beneficial for the community in multiple ways. The Economic nefits of a newly constructed are given below:

- New roads might improve accessibility, either by unlocking areas of land or shifting traffic from congested areas
- New roads may remove some traffic from residential areas and so improve safety, air quality and noise.
- The improvement in constructed roads will be benificial for the people travelling in the area for long term.
- Newly constructed roads will prevent accidents.
- New roads will prevent vehicles from being damaged. The proper drainage constructed along with the roads will be beneficial to the environment.

TENTATIVE PROJECT IMPLEMENTATION SCHEDULE FOR IMPROVEMENT & CONSTRUCTION OF ROADS IN
Kot Addu CITY YEAR (2022-2023)

Road & Chowk Name	DEC-22	JAN-23	FEB-23	MAR-23	APR-23	MAY-23
Package-5						

PUNJAB CITIES PROGRAM

ENVIRONMENT, HEALTH AND SAFETY SOPs FOR LABOR/WORKERS

Labor /workers play key role in the infrastructure development and construction activities. The objective of preparation of the EHS SOPs for Labor/Workers is to address environment, health and safety issues related to the proposed sub-project implementation. These SOPs will provide guidelines to be followed by the contractors for effective management of EHS issues related to labor/workers/daily wagers (including women). These SOPs will be annexed in the general conditions of all the contracts carried out under the PCP. These SOPs are designed for Punjab Cities Program and will be applicable to all types of labor/workers/daily wagers (including women), hired for the construction activities under PCP. Following are the anticipated Environment, Health and Safety issues and their recommended mitigation measures.

Table 1: Construction Camp Management

Activity/ Impact Source	EHS Concerns/issues	Mitigation Measures/ Management Guidelines
Siting and Location of construction camps	Camp sites for construction workers are the important locations that have significant impacts such as health and safety hazards on labor/workers Lack of proper infrastructure facilities, such as housing, water supply and sanitation facilities will increase pressure on the local services and generate substandard living standards and health hazards.	The Contractor shall: Locate the construction camps at areas which are acceptable from environmental, cultural or social point of view. Consider the location of construction camps away from communities in order to avoid social conflict with the surrounding communities. Submit to the relevant MC for approval of a detailed layout plan for the development of the construction camp showing the relative locations of all temporary buildings and facilities that are to be constructed together with the location of site roads, fuel storage areas (for use in power supply generators), solid waste management and dumping locations, and drainage facilities, prior to the development of the construction camps. Local authorities responsible for health, religious and security shall be duly informed on the set up of camp facilities so as to maintain effective surveillance over public health, social and security matters
Construction Camp Facilities	Lack of proper infrastructure facilities, such as housing, water supply and sanitation facilities will generate social issues and impacts on health and environment.	Contractor shall provide the following facilities in the campsites: Adequate ventilation facilities Safe and reliable drinking water supply for personal hygiene (washing or bathing) Adequate housing for all workers Safe and reliable drinking water supply. Water supply from tube wells that meets the Punjab Environment Quality Standards Hygienic sanitary facilities, hand washing facilities and sewerage system. The toilets and domestic waste water will be collected

...ivity/ ...pact Source	EHS Concerns/issues	Mitigation Measures/ Management Guidelines
		through a common sewerage. Provide separate latrines and bathing places for males and females with total isolation by wall or by location. Female toilets should be clearly marked in language or signage clearly understood by the persons using them to avoid miscommunication. The minimum number of toilet facilities required is one toilet for every ten persons. Storm water drainage facilities. Both sides of roads are to be provided with shallow v drains to drain off storm water to a silt retention pond which shall be sized to provide a minimum of 20 minutes retention of storm water flow from the whole site. Channel all discharge from the silt retention pond to natural drainage via a grassed swale at least 20 meters in length with suitable longitudinal gradient. Paved internal roads. Ensure with grass/vegetation coverage to be made of the use of top soil that there is no dust generation from the loose/exposed sandy surface. Pave the internal roads of at least haring-bond bricks to suppress dusts and to work against possible muddy surface during monsoon. Provide child crèches for women working on the construction site. The crèche should have facilities for dormitory, kitchen, indoor/outdoor play area. Schools should be attached to these crèches so that children are not deprived of education whose mothers are construction workers Provide in-house community/common entertainment facilities. Dependence of local entertainment outlets by construction camps to be discouraged/prohibited to the extent possible.
Disposal of Labor Camp waste	Management of wastes is crucial to minimize impacts on the environment as well as on the health of the workers/labor	The Contractor shall: Ensure proper collection and disposal of solid wastes within the construction camps Insist waste separation by source; organic wastes in one pot and inorganic wastes in another pot at household level. Store inorganic wastes in a safe place within the household and clear organic wastes on daily basis to waste collector. Establish waste collection, transportation and disposal systems at their own. Dispose organic wastes in a designated safe place on daily basis. At the end of the day cover the organic wastes with a thin layer of sand so that flies, mosquitoes, dogs, cats, rats, are not attracted. One may dig a large hole to put organic wastes in it; take care to protect groundwater from contamination by leachate formed due to decomposition. Cover the bed of the pit with impervious layer of materials (clayey, thin concrete) to protect groundwater from

Activity/ Impact Source	EHS Concerns/Issues	Mitigation Measures/ Management Guidelines
		contamination. Locate the garbage pit/waste disposal site min 500 m away from the residence so that peoples are not disturbed with the odor likely to be produced from anaerobic decomposition of wastes at the waste dumping places. Encompass the waste dumping place by fencing and tree plantation to prevent children to enter and play with. All solid waste will be collected and removed from the work camps and disposed in approval waste disposal sites.
Fuel supplies for cooking purposes	Illegal sourcing of fuel wood by construction workers will impact the natural flora and fauna	The Contractor shall: Provide fuel to the construction camps for their domestic purpose, in order to discourage them to use fuel wood or other biomass. Make available alternative fuels like natural gas or kerosene on ration to the workforce to prevent them using biomass for cooking. Conduct awareness campaigns to educate workers on preserving the protecting of biodiversity in the project area, and relevant government regulations and punishments on wildlife protection.
Health and Hygiene	There will be a potential for diseases to be transmitted including COVID-19, malaria, exacerbated by inadequate health and safety practices. There will be an increased risk of work crews spreading sexually transmitted infections and HIV/AIDS.	The Contractor shall: Provide adequate health care facilities within construction sites. Provide first aid box facility at the construction site round the clock. Maintain stock of medicines in the first aid facility in camp sites facility and appoint fulltime designated first aider or nurse. Provide ambulance facility for the laborers during emergency to be transported to nearest hospitals and telephone/mobile facility to call for Emergency Services 1122. Initial health screening of the laborers coming from outside areas Train all construction workers in basic sanitation and health care issues and safety matters, and on the specific hazards of their work Provide HIV awareness programming, including STI (sexually transmitted infections) and HIV information, education and communication for all workers on regular basis Provide adequate drainage facilities throughout camps to ensure that disease vectors habitats (stagnant water bodies, puddles) do not form. Regular mosquito repellant sprays in monsoon. Carryout short training sessions on best hygiene practices to

Activity/ Impact Source	EHS Concerns/issues	Mitigation Measures/ Management Guidelines
		be mandatorily participated by all workers. Place display boards at strategic locations within the camps containing messages on best hygienic practices Place display boards of contact information of nearest dispensary/health clinic/hospital
Safety	In adequate safety facilities to the construction camps may create security problems and fire hazards	The Contractor shall: Provide appropriate security personnel (police / home guard or private security guards) and enclosures to prevent unauthorized entry in to the camp area. Maintain register to keep track on a head count of persons present in the camp at any given time. Encourage use of flame proof material for the construction of labor housing/site office. Ensure that these houses/rooms are of sound construction and capable of withstanding storms/cyclones. Provide appropriate type of firefighting equipment suitable for the construction camps Display emergency contact numbers clearly and prominently at strategic places in camps. Communicate the roles and responsibilities of laborers in case of emergency in the monthly meetings with contractor.
Food Safety	There is potential for exposure to poisonous substances by ingestion	Suitable arrangements are to be made for provision of clean eating areas where workers are not exposed to the hazardous or noxious substances
Site Restoration	Restoration of the construction camps to original condition requires demolition of construction camps.	The Contractor shall: Dismantle and remove from the site all facilities established within the construction camp including the perimeter fence and lockable gates at the completion of the construction work. Dismantle camps in phases as the work decreases (do not wait for completion of the entire work. Give prior notice to the laborers before demolishing their camps/units Maintain the noise levels within the national standards during demolition activities Different contractors should be hired to demolish different structures to promote recycling or reuse of demolished material. Reuse the demolition debris to a maximum extent. Dispose remaining debris at the designated waste disposal site by MCs/ESFPs. Handover the construction camps with all built facilities as it is if agreement between both parties (contactor and land-owner) has been made so.

...ity/ ...t Source	EHS Concerns/issues	Mitigation Measures/ Management Guidelines
		Restore the site to its original condition or to an agreed condition with the landowner defined prior to the commencement of the works (in writing). Not make false promises to the laborers for future employment in O&M of the project.

...le 2: Cultural and Religious Issues

...ivity/ ...act Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
...struction ...ities	Disturbance in performance of religious activities	The Contractor shall: Provide separate prayer facilities (men and women) to the construction workers. Show appropriate and non-biased behavior with all construction workers irrespective of their religious or cultural affinities Allow the workers to participate in praying during construction time Inform the local authorities responsible for health, religious and security duly informed before commencement of civil works so as to maintain effective surveillance over public health, social and security matters In case of working during COVID-19 pandemic, SOPs for prayers in Mosque issued by the Government of Punjab, will be applicable and it will be responsibility of contractor to sensitize the labor/workers about it

Table 3: Workers/Labor Health and Safety at Construction Site

Activity/ Impact Source	Impacts	Mitigation Measures/ Management Guidelines
Construction Activities	Construction works may pose health and safety risks to the construction workers and site visitors leading to severe injuries and deaths. The population in the proximity of the construction site and the construction workers will be exposed to a number of (i) biophysical health risk factors, (e.g. noise,	The Contractor shall: Implement suitable safety standards for all workers and site visitors which should not be less than those laid down on the international standards (e.g. International Labor Office guideline on 'Safety and Health in Construction; World Bank Group's 'Environmental Health and Safety Guidelines') and contractor's own national standards or statutory regulations, in addition to complying with the national acts and rules of the Government of Pakistan Provide the workers with a safe and healthy work environment, taking into account inherent risks in its particular construction activity and specific classes of

ivity/ pact Source	Impacts	Mitigation Measures/ Management Guidelines
	dust, chemicals, construction material, solid waste, waste water, vector transmitted diseases etc), (ii) risk factors resulting from human behavior (e.g. STD, HIV etc) and (iii) road accidents from construction traffic.	hazards in the work areas, Provide Personal Protection Equipment (PPEs)1 for workers, such as safety boots, helmets, masks, gloves, protective clothing, goggles, full-face eye shields, and ear protection. Maintain the PPE properly by cleaning dirty ones and replacing them with the damaged ones. Safety procedures include provision of information, training and protective clothing to workers involved in hazardous operations and proper performance of their job Appoint an environment, health and safety manager to look after the health and safety of the workers Inform the local authorities responsible for health, religious and security before commencement of civil works and establishment of construction camps so as to maintain effective surveillance over public health, social and security matters
	Child and pregnant labor	The Contractor shall: not hire children of less than 14 years of age and pregnant women or women who delivered a child within 8 preceding weeks, in accordance with the Employment of Children Act (2015)2 and Pakistani Labor Laws and policies respectively .

Table 4 presents general examples of occupational hazards and types of PPE available for different purposes.

The ECA 2015 defines a child as a person who has not completed his/her 14th year of age. The ECA states but no child shall be employed or permitted to work in any of the occupations set forth in the ECA (such as nsport sector, railways, construction, and ports) or in any workshop wherein any of the processes defined in e Act is carried out

ivity/ act Source idents	Impacts	Mitigation Measures/ Management Guidelines
	Lack of first aid facilities and health care facilities in the immediate vicinity will aggravate the health conditions of the victims	Provide health care facilities and first aid facilities are readily available. Appropriately equipped first-aid stations should be easily accessible throughout the place of work Document and report occupational accidents, diseases, and incidents. Prevent accidents, injury, and disease arising from, associated with, or occurring in the course of work by minimizing, so far as reasonably practicable, the causes of hazards. In a manner consistent with good international industry practice. Identify potential hazards to workers, particularly those that may be life-threatening and provide necessary preventive and protective measures. Provide awareness to the construction drivers to strictly follow the driving rules Provide adequate lighting in the construction area and along the roads
ter and itation ilities at the nstruction es	Lack of Water sanitation facilities at construction sites cause inconvenience to the construction workers and affect their personal hygiene.	The contractor shall provide separate portable toilets and hand washing facilities at the construction sites, if about 25 people are working the whole day for a month. Location of portable facilities should be at least six m away from storm drain system and surface waters. These portable toilets should be cleaned once a day and all the sewerage should be pumped from the collection tank once a day and should be brought to the common septic tank for further treatment. Contractor should provide bottled drinking water facilities to the construction workers at all the construction sites.
her issues	Potential risks on health and hygiene of construction workers and general public	The Contractor shall follow the following management measures to reduce health risks to the construction workers and nearby community: Drainage Management Air Quality Management Noise and Vibration Management Road Transport and Road Traffic Management
ainings	Lack of awareness and basic knowledge in health care among the construction workforce, make them susceptible to potential diseases.	The Contractor shall: Train all construction workers in basic sanitation and health care issues (e.g., how to avoid COVID-193, malaria and transmission of sexually transmitted infections (STI) HIV/AIDS. Train all construction workers in general health and safety matters, and on the specific hazards of their work Training should consist of basic hazard awareness, site specific

SOPs issued by the GoPunjab during COVID-19 Pandemic will be implemented

ivity/ pact Source	Impacts	Mitigation Measures/ Management Guidelines
		hazards, safe work practices, and emergency procedures for fire, evacuation, and natural disaster, as appropriate. Commence the COVID-19, malaria, HIV/AIDS and STI education campaign before the start of the construction phase and complement it with by a strong condom marketing, increased access to condoms in the area as well as to voluntary counseling and testing. Implement COVID-19, malaria, HIV/AIDS and STI education campaign targeting all workers hired, international and national, female and male, skilled, semi- and unskilled occupations, at the time of recruitment and thereafter pursued throughout the construction phase on ongoing and regular basis. This should be complemented by easy access to condoms at the workplace as well as to voluntary counseling and testing.

Table 4: Summary of Recommended Personal Protective Equipment According to Hazard[4]

Protective	Workplace Hazards	Suggested PPE
Eye and face protection	Flying particles, molten metal, liquid chemicals, gases or vapors, light radiation.	Safety Glasses with side-shields, protective shades, etc.
Head protection	Falling objects, inadequate height clearance, and overhead power cords.	Plastic Helmets with top and side impact protection.
Hearing protection	Noise, ultra-sound.	Hearing protectors (ear plugs or ear muffs).
Foot protection	Falling or rolling objects, pointed objects. Corrosive or hot liquids.	Safety shoes and boots for protection against moving & falling objects, liquids and chemicals.
Hand protection	Hazardous materials, cuts or lacerations, vibrations, extreme temperatures.	Gloves made of rubber or synthetic materials (Neoprene), leather, steel, insulating materials, etc.
Respiratory protection	Dust, fogs, fumes, mists, gases, smokes, vapors.	Facemasks with appropriate filters for dust removal and air purification (chemicals, mists, vapors and gases). Single or multi-gas personal monitors, if available.
	Oxygen deficiency	Portable or supplied air (fixed lines). On-site rescue equipment.
Body/leg protection	Extreme temperatures, hazardous materials, biological agents, cutting and laceration.	Insulating clothing, body suits, aprons etc. of appropriate materials.

[4] Source: IFC Environmental, Health, and Safety (EHS) Guidelines