



بلائیہ مستحکم - پنجاب مستحکم

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

To,

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

No. CE(South)PLGB/TS(128)/2022
Dated 22th February 2022.

Subject:

REVISED TECHNICAL SANCTION.

Reference your letter No MC/KA-68 Dated 22-02-2022 on the subject noted above.

Sr. No	Name of Scheme	Estimated Cost (in Million)	Revised Estimated Cost (in Million)
1	Provision of machinery & Equipment for Improvement of Solid Waste Management in kot Addu City.	143.368	145.699

Revised 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.
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 Revised 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.

(KH.IRFAN ASLAM)
CHIEF ENGINEER (SOUTH),
PUNJAB LOCAL GOVT. BOARD,
HEADQUARTER (MULTAN)

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-68

Dated. 22-02-2022

Subject:

REQUEST FOR AMMENDED 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	Provision of Machinery & Equipment for Improvement of Solid Waste Management in Kot Addu City.	145.699

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



To,

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

No. CE(South)PLGB/TS(74)/2021
Dated 28th August 2021.

Subject:

TECHNICAL SANCTION.

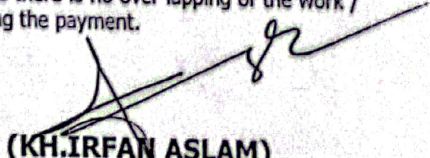
Reference your letter No MC/KA/446 Dated 28-08-2021 on the subject noted above.

Sr. No	Name of Scheme	Estimated Cost (in Million)
1.	Provision of machinery & Equipment for Improvement of Solid Waste Management in kot Addu City.	143.368

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.
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9. Inform about the schedule of execution.


(KH.IRFAN ASLAM)
CHIEF ENGINEER (SOUTH),
PUNJAB LOCAL GOVT. BOARD,
HEADQUARTER (MULTAN)

OFFICE OF THE MUNICIPAL COMMITTEE KOT ADDU

To

The Chief Engineer (South Punjab)
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No. MC/KA-446

Dated. 28-08-2021

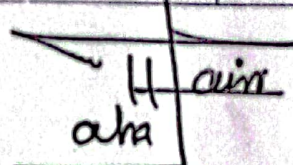
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Municipal Officer (I&S)
Municipal Committee,
Kot Addu.

**Local Government & Community Development
Department**



**Amended PC-I
for
Provision of Machinery & Equipment
for
Improvement of Solid Waste
Management in Kot Addu City**

Estimated Cost = Rs.145.699 Million

Year 2020-21

Municipal Committee Kot Addu

**PC-I Form
For
PROVISION OF EQUIPMENT MACHINERY
FOR
IMPROVEMENT OF SOLID WASTE MANAGEMENT IN KOT ADDU CITY**

Table of contents

S.Nr	Annexure	Captions	Page Nos.	
			From	To
1	-	PC-I Form	1	12
2	A	Location and description of the City	A-1	A-2
3	B	Existing situation analysis	B-1	B-10
4		Description of the project		
	C	Section-I Design Criteria	C-1	C-11
	D	Section-II Proposed project	D-1	D-5
5	E	Standards and Specifications	E-1	E-34Q
6	F	Cost Estimate	F-1	F-1
7	Maps	1-Existing coverage of solid waste management	M-1	
		2-Compactor & mini tipper catchment areas	M-2	
		3-Design distances for compactors	M-3	
		4-Compactor truck zones	M-4	
		5-Roads to be swept by suction type road sweepers	M-5	

PC-I FORM
for
**Provision of Machinery & Equipment for improvement of Solid Waste
Management in Kot Addu City**

Project Serial Number

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

1. Name of the project	Provision of Machinery & Equipment for improvement of Solid Waste Management in Kot Addu City
2. Location	<p>Location</p> <p>Kot Addu is located just east of the Indus River, about 866 km (538 mi) from Karachi, 600 km (370 mi) from Islamabad, 100 km from Multan, 80 km from D.G.Khan, 60 km (37 mi) from Muzaffargarh, 60 km from Layyah, and 16 km (9.9 mi) from Taunsa Barrage. It's bearing N 30° 27 59" and E 70° 57' 56". It is connected with entire province through road and rail links.</p> <p>Location map and city description has been given in Annexure-A</p>
3. Authorities responsible for:	
i- Sponsoring	World Bank funding through loan for Punjab Cities Program administered by PMDFC.
ii- Execution	Municipal Committee Kot Addu under the oversight of PMDFC
iii- Operation and Maintenance	Municipal Committee Kot Addu
iv- Concerned Provincial Department	Punjab Local Government and Community Development Department
4a. Plan Provision	
i. If the project is included in medium term/five year plan, specify actual allocation	The Technical Assistance (TA) Component of the Punjab Cities Program (PCP) has been funded in ADP 2020-21 at Serial No-1922 with an allocation of Rs180 million. The subproject under this PC-I is one of the projects being planned and executed under Punjab Cities program.
ii- If not included in the current plan, what warrants its	PCP is a World Bank funded Program and as per policy of Government of Punjab, Foreign Funded Programs /projects are not reflected in the ADP. However, as indicated above, the Technical Assistance (TA) Component of PCP has been reflected in ADP 2020-21 at Serial No 1922 with an allocation of

	<p>Scope of the Sub-project The scope of the subproject includes :</p> <ol style="list-style-type: none"> 1) Provision of equipment and machinery for primary collection of the solid waste in effective manner. 2) Provision of machinery for secondary collection and safe transportation of the solid waste to dumping sites. 3) Provision of machinery for excavation, re-handling and compaction of the solid waste in dumping sites. 4) Provision of motor bikes for easy mobility of the sanitation supervisory staff. 5) Provision of mobile workshop for at site and speedy repairs of the equipment and machinery for reducing the breakdown periods and increasing the efficiency of these machines. <p>Hence, the objectives of the project are in line with the sector objectives given at Sr.No-5 given above.</p>																																				
<p>6. Description, justification, technical parameters and technology transfer aspects (enclose feasibility study for projects costing Rs.300 million and above</p>																																					
<p>i. Present Condition</p>	<p>Existing situation of solid waste management in the city is given in Annexure-B</p>																																				
<p>ii. Description of the subproject-</p>	<p>Description of the project including the planning, design and the proposed scope of work has been given as under: Section-I Design Criteria: Annexure-C Section-II Project Proposal: Annexure-D</p>																																				
<p>iii Provide details of civil works, equipment, machinery and other physical facilities required for the project</p>	<p>The details of the machinery and equipment to be procured by MC under the project are given below:</p> <table border="1" data-bbox="475 1205 1268 1848"> <thead> <tr> <th>S.N.</th> <th>Detail of machinery & equipment</th> <th>Nos</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>Solid waste management machinery</td> <td></td> </tr> <tr> <td>1</td> <td>Compactor trucks</td> <td>4</td> </tr> <tr> <td>2</td> <td>0.8 m³ containers</td> <td>264</td> </tr> <tr> <td>3</td> <td>Three wheeled conventional handcarts</td> <td>153</td> </tr> <tr> <td>4</td> <td>Three wheeled handcarts with adjustable height compatible with 0.8 cubic meter containers</td> <td>17</td> </tr> <tr> <td>5</td> <td>Mini tippers</td> <td>4</td> </tr> <tr> <td>6</td> <td>Water bowsers with spray system</td> <td>2</td> </tr> <tr> <td>7</td> <td>Front blade Tractor</td> <td>1</td> </tr> <tr> <td>8</td> <td>Front End Tractor</td> <td>1</td> </tr> <tr> <td>9</td> <td>Dumper truck 5 m³</td> <td>2</td> </tr> <tr> <td>11</td> <td>Motor bike 70 cc</td> <td>2</td> </tr> </tbody> </table>	S.N.	Detail of machinery & equipment	Nos	A	Solid waste management machinery		1	Compactor trucks	4	2	0.8 m ³ containers	264	3	Three wheeled conventional handcarts	153	4	Three wheeled handcarts with adjustable height compatible with 0.8 cubic meter containers	17	5	Mini tippers	4	6	Water bowsers with spray system	2	7	Front blade Tractor	1	8	Front End Tractor	1	9	Dumper truck 5 m ³	2	11	Motor bike 70 cc	2
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inclusion and how it is now proposed to be accommodated	Rs 180 million and the sub project under this PC-I is one of the subprojects being implemented under PCP.
iii- If the project is proposed to be financed out of block provision indicate.	No; the Program is not funded under the Block Allocation.
4 Provision in the current year PSDP/ADP	Rs. 180 million have been allocated under ADP 2020-21 at Sr. No-1922 under the caption of Technical Assistance (TA) Component for Punjab Cities Program.
5. Project objectives and its relationship with sector objectives	<p>Sector Objectives</p> <p>The sector objectives included in the Annual Development Program 2020-21 as <i>Strategic Intervention (2020-21)</i> are given below:</p> <ol style="list-style-type: none"> 1) Construction of wastewater treatment plant at Sahiwal and Sialkot will be initiated under Asian Development Bank assisted project "Punjab Intermediate Cities Investment Improvement Program (PICIIP). 2) To Rehabilitate / Improve Water Supply & Sewerage System in Sahiwal project amounting Rs. 9,290 Million will be launched under PICIIP. 3) To Rehabilitate / Improve Water Supply & Sewerage System in Sialkot project amounting Rs. 6,560 Million will be launched under PICIIP. 4) To conserve historical Lahore Fort and to improve tourism in walled City of Lahore and AFD assisted project amounting Rs. 3,600 Million. 5) Performance Based Grants amounting Rs. 7,000 million to 16 cities for improvement of Municipal services under DLI based World Bank Funded "Punjab Cities Program". 6) Development Package amounting Rs. 300 million for Provision of Basic infrastructure at the Local level. 7) CRVS project will be launched for integration of death and birth <p>Objectives of Sub-Project</p> <ul style="list-style-type: none"> • Provision of new improved, economical, efficient and cost effective Solid Waste Collection and Transportation machinery & Equipment for improving the efficiency of collection and disposal of solid waste and the sanitary and hygienic conditions in the city. • Raising the service delivery level in the sector of Solid Waste Management for reduction of the vector and water borne diseases to improve general health standards of the citizen.

	<table border="1"> <tr> <td>12</td> <td>HR cost</td> <td>03 years</td> </tr> <tr> <td>13</td> <td>Monitoring & vehicles tracking cost</td> <td>03 years</td> </tr> </table>	12	HR cost	03 years	13	Monitoring & vehicles tracking cost	03 years																																					
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iv Indicate governess issues of the sector relevant to the project and strategy to resolve them	<ul style="list-style-type: none"> MC has a number of sections that deal with the service delivery, however for design, planning, marketing, and regulating the services MC needs strengthening of certain sections in terms of additional manpower as well as diverse skills. It should have the financial and technical capacity to operate and maintain the existing and additional infrastructure being provided under the project. Presently all MCs in Punjab are short of manpower required for the collection and disposal of waste because of the ban imposed on recruitment of staff since long. The population has increased whereas the manpower has been reduced because of death and retirement of number of skilled and non-skilled workers. Hence even the provision of most efficient machinery and equipment for solid waste collection and disposal will not bring about targeted results if the required manpower is not provided to the MCs. MC Officers and workers responsible for the solid waste management will have to be trained for operation and maintenance of the machinery and equipment and will have to be monitored for at least Program implementation period to derive the best possible efficiency. 																																											
7- Capital Cost of Project	<p>The total costs of the machinery & equipment has been worked out as given in the table below:</p> <p>(All figures are in PKR)</p> <table border="1"> <thead> <tr> <th rowspan="2">S. N.</th> <th rowspan="2">Detail of equipment & machinery</th> <th rowspan="2">Unit</th> <th colspan="3">Rates</th> <th rowspan="2">QTY</th> <th rowspan="2">Cost</th> </tr> <tr> <th>Truck Chassis</th> <th>Super Structure</th> <th>Total</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Garbage container 0.8 cubic meters capacity</td> <td>No</td> <td>-</td> <td>75000</td> <td>75000</td> <td>264</td> <td>19,800,000</td> </tr> <tr> <td>2</td> <td>Garbage compactor 8.0 cubic meter capacity</td> <td>No</td> <td>6,100,000</td> <td>4,250,000</td> <td>10,350,000</td> <td>4</td> <td>41,400,000</td> </tr> <tr> <td>3</td> <td>Three wheeled conventional handearts</td> <td>No</td> <td>-</td> <td>50,000</td> <td>50,000</td> <td>153</td> <td>7,650,000</td> </tr> <tr> <td>4</td> <td>Three wheeled handearts with adjustable height compatible with 0.8 cubic meter containers</td> <td>No</td> <td>-</td> <td>72,000</td> <td>72,000</td> <td>17</td> <td>1,224,000</td> </tr> </tbody> </table>	S. N.	Detail of equipment & machinery	Unit	Rates			QTY	Cost	Truck Chassis	Super Structure	Total	1	Garbage container 0.8 cubic meters capacity	No	-	75000	75000	264	19,800,000	2	Garbage compactor 8.0 cubic meter capacity	No	6,100,000	4,250,000	10,350,000	4	41,400,000	3	Three wheeled conventional handearts	No	-	50,000	50,000	153	7,650,000	4	Three wheeled handearts with adjustable height compatible with 0.8 cubic meter containers	No	-	72,000	72,000	17	1,224,000
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5	Front Blade Tractor 4WD	No	3083,000	221,000	330,4000	1	330,4,000	
6	Front End loader 4WD	No	3083,000	1,016,800	40,99,800	1	4099,800	
7	Mini tipper 1.0 cubic meter	No	1434000	700,000	2,134,000	4	8,536,000	
8	Water truck with spray system	No	6,100,000	2,000,000	8,100,000	2	16,200,000	
9	Dump truck 5 cubic meter	No	6,100,000	2,500,000	8,600,000	2	17,200,000	
10	Motor cycle	No	115,000	-	115,000	2	230,000	
Total of work outlay								119643800
Contingencies							2.0%	2392876
Public awareness							0.25%	299110
Total								122335786
HR cost for three years for 03 years								20,520,000
Monitoring & Vehicle tracking cost for 03 years								2843568
Grand Total								145699354
Cost in million PKR								145.699

The specifications and standards for manufacturing the machinery & equipment have been given in Annexure-E

The details of the cost estimates have been given in Annexure -F (1&2)

i- Indicate date of estimation of the project cost	The project estimates have been framed during the month of April, 2021.
ii- Basis of determining the estimates be provided.	<p>The cost estimates have been framed on the basis of standards and specifications and bill of quantities derived from the planning and design of the equipment and machinery as per population of the city duly taking into consideration the machinery and equipment already available with MC.</p> <p>The cost estimation has been based on the market rates for which quotations from the manufacturers have been obtained and included in the PC-I. The quotations provided by the manufacturers for truck chassis have validity period of only 45 days. The rates may change after this period and the PC-I may need revision due to change in these rates.</p>

iii- Provide year wise estimation of physical activities	<p>The physical and financial requirements, year wise are included in the following table:</p> <p>A. Physical Phasing</p> <table border="1"> <thead> <tr> <th>S. #</th> <th>Items of work</th> <th>Total</th> <th>Year 2020-21</th> <th>Year 2021-22</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Machinery & equipment</td> <td>100 %</td> <td>50 %</td> <td>50 %</td> </tr> <tr> <td>2</td> <td>Contingencies @ 2%</td> <td>100%</td> <td>50%</td> <td>50%</td> </tr> <tr> <td>3</td> <td>Public awareness @ 0.25%</td> <td>100%</td> <td>50%</td> <td>50%</td> </tr> <tr> <td>5</td> <td>HR cost</td> <td colspan="3">Year 2021-22 to 2023-24</td> </tr> <tr> <td>6</td> <td>Monitoring & Vehicle tracking cost</td> <td colspan="3">Year 2021-22 to 2023-24</td> </tr> </tbody> </table>	S. #	Items of work	Total	Year 2020-21	Year 2021-22	1	Machinery & equipment	100 %	50 %	50 %	2	Contingencies @ 2%	100%	50%	50%	3	Public awareness @ 0.25%	100%	50%	50%	5	HR cost	Year 2021-22 to 2023-24			6	Monitoring & Vehicle tracking cost	Year 2021-22 to 2023-24							
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iv- Phasing of capital cost on the basis of each item of work.	<p>The phasing of capital cost of the project is included in the following table:</p> <p>B. Financial Phasing (All figures are in million rupees)</p> <table border="1"> <thead> <tr> <th>S. #</th> <th>Items of work</th> <th>Total</th> <th>Year 2020-21</th> <th>Year 2021-22</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Machinery & equipment</td> <td>119.6438</td> <td>119.6438</td> <td>119.6438</td> </tr> <tr> <td>2</td> <td>Contingencies</td> <td>2.392876</td> <td>2.392876</td> <td>2.392876</td> </tr> <tr> <td>3</td> <td>Public awareness</td> <td>0.29911</td> <td>0.29911</td> <td>0.29911</td> </tr> <tr> <td>4</td> <td>HR cost for 03 years</td> <td>20.520</td> <td colspan="2">Year 2021-22 to 2023-24</td> </tr> <tr> <td>5</td> <td>Monitoring & vehicle tracking cost for 03 years</td> <td>2.844</td> <td colspan="2">Year 2021-22 to 2023-24</td> </tr> <tr> <td></td> <td>Total</td> <td>145.699</td> <td></td> <td></td> </tr> </tbody> </table>	S. #	Items of work	Total	Year 2020-21	Year 2021-22	1	Machinery & equipment	119.6438	119.6438	119.6438	2	Contingencies	2.392876	2.392876	2.392876	3	Public awareness	0.29911	0.29911	0.29911	4	HR cost for 03 years	20.520	Year 2021-22 to 2023-24		5	Monitoring & vehicle tracking cost for 03 years	2.844	Year 2021-22 to 2023-24			Total	145.699		
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8- Annual recurrent cost after completion of the project and source of financing	<p>i. Annual recurring cost of the project</p> <p>Annual operation and maintenance cost of existing manpower, POI. & repair and maintenance of machinery & equipment is quite higher because of the inefficient and non-cost effective machinery like tractors which consume much higher POL as compared with the trucks. The POI. consumption in case of new machinery will be lower but as 100% efficiency of the solid waste management is targeted hence it may exceed but not so appreciably.</p> <p>Further lower manpower is required in case of compactor trucks than tractors trolleys as it carries almost triple quantity of waste as compared to the tractor trolleys whereas only one vehicle driver is needed as compared with three drivers in case of tractor trolleys. Hence the cost incurred on the vehicle drivers may reduce.</p> <p>Hence it is estimated that the cost presently incurred on O&M of the solid waste machinery and equipment will almost remain the same</p> <p>(ii). Source of Financing</p> <p>MC is already bearing cost of operation and maintenance of this municipal service and will finance the O & M cost of the facility out of its own resources in future as well. However, HR cost for operation of</p>																																			

	the proposed machinery for 3 years has been provided in this PC-I. Rest of the cost will be borne by MC.						
<p>9- Demand & Supply Analysis</p> <p>i- Existing Capacity of services</p>	<p>I. Existing supply level</p> <ul style="list-style-type: none"> MC is unable to render satisfactory service to the entire area of city due to shortage of efficient equipment and manpower. Some areas are reasonably served whereas others are deprived of the required level of the service and are served once or twice a week. In present scenario, most of the areas are poorly served and heaps of solid waste accumulated in these areas are only removed when the tolerance level of inhabitants of the area exceeds. The level of service in different areas of the city is given as under; <table> <tr> <td>Muhallas and colonies wherein full service is presently being rendered (51 % area)</td> <td>41 Nos</td> </tr> <tr> <td>Muhallas and colonies wherein partial service is presently being rendered.(21 % area)</td> <td>5 Nos</td> </tr> <tr> <td>Muhallas and colonies wherein no service is presently being rendered (28 % area)</td> <td>7 Nos</td> </tr> </table> <ul style="list-style-type: none"> The details of the muhallahs and colonies has been included in Existing Situation Analysis given in Annexure-B. <p>II. Capacity of machinery & equipment</p> <ul style="list-style-type: none"> The existing equipment and machinery is being operated at its full capacity but still it is not possible to attain full service efficiency due to low efficiency of equipment consuming larger time and money in its operation. The tractor trolleys are slow moving and consuming large fuel and time but carry only one third of the waste to dumping sites as compared to the compactor trucks. Similarly the container carriers haul only one container carrying 3.4 m³ of waste to the dumping site. These carriers are also hauled by tractors having slow speed, high fuel consumption and very low efficiency. Both of these secondary collection systems are having very poor efficiency and also require larger manpower. The MC's administration feels that they require much more manpower as compared to the existing sanitation establishment. The proposition of continued use of this equipment with enhanced number of manpower will not cure the problem. Rather it will increase the operation and maintenance cost with very little improvement of the service delivery level. <p>III. Capacity of the dumping sites</p> <ul style="list-style-type: none"> The previous open dumping site was located along railway track going towards DG Khan City at North West part of city and was a big health hazard as it was producing obnoxious smell and deteriorating and degrading the environment of the city and nearby 	Muhallas and colonies wherein full service is presently being rendered (51 % area)	41 Nos	Muhallas and colonies wherein partial service is presently being rendered.(21 % area)	5 Nos	Muhallas and colonies wherein no service is presently being rendered (28 % area)	7 Nos
Muhallas and colonies wherein full service is presently being rendered (51 % area)	41 Nos						
Muhallas and colonies wherein partial service is presently being rendered.(21 % area)	5 Nos						
Muhallas and colonies wherein no service is presently being rendered (28 % area)	7 Nos						

	<p>inhabitations.</p> <ul style="list-style-type: none"> • MC has now started dumping the waste along the Muzaffargarh Canal on its left bank near Chandiwali village. This is also creating all the hazards associated with open dumping sites. • MC will continue to dump the waste in the present dumping site unless some other site is available in the vicinity. <p>IV. Efficiency of the service As described in the situation analysis, the present waste collection and disposal efficiency is not more than 60 % which shows a large gap between supply and demand.</p>
ii- Projected Demand for 10 years	<ul style="list-style-type: none"> • The municipal service requires radical improvement to enhance the efficiency of the service to increase service delivery to a satisfactory level. For this purpose the presently available equipment and machinery with poor efficiency will have to be replaced by a much more efficient one to reduce the operating costs, increase the efficiency, consume lesser manpower and result in satisfactory service delivery level. • Sanitary landfill for safe and sanitary dumping of the waste is required to eliminate the present insanitary conditions around the present dumping sites and reduce vector diseases. <p>Equipment and machinery The demand of the equipment, machinery for the next 5 years has been worked out and given in Serial No-7 of this PC-I (Capital cost of the Project).</p> <p>Parking area for the vehicles The solid waste and other vehicles of MC Kot Addu are being parked in an MC Office having area measuring 3 Kanals. This is unpaved area equipped with temporary type of sheds. All required facilities remain to be provided in this area. A separate PC-I will be drawn for the development of this Parking Area wherein all facilities and sheds will be provided. The development of this area will be done simultaneously with the manufacture of the machinery and equipment and the development will be completed before the machinery is received in the MC.</p> <p>The facilities so provided in this parking areas will include:</p> <ul style="list-style-type: none"> • Boundary wall and gate • Parking sheds • Office room • Workshop • Vehicle washing & inspection deck • Toilet • Guard room • Water supply facilities for washing and drinking purposes. • Waste water disposal arrangements.

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.
iv- Supply and Demand gap	<p>The nature of supply and demand gap has been explained in the preceding paras which concludes that:</p> <ul style="list-style-type: none"> • The existing equipment and machinery has poor efficiency. • It is consuming more time, fuel and requires excessive manpower to operate. • The overall delivery level of the service is not satisfactory. • Numerous public complaints are the talk of the day. • The overall efficiency of collection of waste is 60% instead of 95% to 100%. • Waste dumps site is a big health hazard. • No proper parking area for the sanitation vehicles and equipment exists in MC. • Hence there is a large gap between the supply and demand which is to be bridged by provision of latest more efficient collection and transportation equipment & machinery and construction of vehicle parking area.

v. Designed capacity and output of the project	<p>The machinery & equipment has been designed to fill-up the above mentioned gaps between supply and demand by the provision of much more efficient machinery and equipment. Upon completion of the project;</p> <ul style="list-style-type: none"> • The present efficiency (60%) of solid waste management will be raised to 95 to 100% provided required manpower is sanctioned by the competent authority and MC is allowed to recruit that manpower by lifting the ban on recruitment. • The operation and maintenance cost of the machinery and equipment will remain almost the same although entire city area will be covered. • The parts of the city presently receiving poor service or no service at all, will get satisfactory service. • The entire city will have cleaner look with improved environments. • The health hazards presently generated by the waste heaps lying in the city will be eliminated. • The vector diseases generated because of the present insanitary conditions inside the city will be eliminated.
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10. Financial Plan - Sources of financing

a) Equity	(All figures are in million rupees)			
	Source	Local	FEC	Total
	World Bank loan	-	116.5592	116.5592
	Co-financing by MC @ 20%	29.1398	-	29.1398
	Total	29.1398	116.5592	145.699

b) <u>Debt</u> Indicate the local and foreign debt	Nil
c) Grants	The loan of Rs. 114.694 million from World Bank will trickle down to MC as Grant.
d) Weighted cost of capital	Nil
11-Project benefits and analysis	
i. Financial: Income to the project with assumption	It is a social sector project and the capital cost of the project is not intended to be recovered. MC has not levied any sanitation fee or tax so far but ultimately to recover the operation & maintenance cost of the machinery & equipment MC will have to levy this fee.
ii. Social: Quantify benefits to the target group	<p>The completion of the project will result in the following benefits:</p> <ul style="list-style-type: none"> • Improvement in the environment of the city; • The efficiency of the waste collection and transportation system will increase to 95-100% provided required manpower is sanctioned by the competent authority and recruited by MC. • The service delivery level will be improved. • Present health hazards generated in the form of vectors and vector generated diseases because of the waste heaps in the city, will be eliminated. • General public health standards will be improved. • Public mental tension, frustration will be minimized; • Obnoxious smell because of poor service delivery and open heaps will be eliminated. • Reduction in the water borne and vector diseases will reduce the expenditure on medicine and hence effect savings in the national economy
iii. Environmental Impact negative/positive	There will be no negative impact because of procurement and operation of the machinery & equipment. Rather positive impacts because of improvement of the environment in the city will be observed and present health hazards will be eliminated. Hence overall positive impacts due to operation of the project will be experienced.

12. Project Analysis							
i. Quantifiable project outputs	<p>The project outputs which can be quantified are given below:</p> <p>A. Vector diseases will be reduced/eliminated because of improvement of the environments due to safe and sanitary waste collection and transportation. This will result in;</p> <ul style="list-style-type: none"> • Improvement of general public health standards. • Reduction in the expenditure on curative medicine • Saving in the man days of the inhabitants. • Improvement in the local, district and national economy. <p>B. With the use of efficient, fast and speedy transportation vehicles under mentioned results will be achieved;</p> <ul style="list-style-type: none"> • Lesser fuel consumption and lesser deployment of labor will give saving in O&M charges. • Fast and efficient transportation will improve the efficiency of the service and improve the service delivery level. • Efficient working of machinery will have lesser repair and maintenance cost. <p>C. Elimination of double handling of waste will result in;</p> <ul style="list-style-type: none"> • Efficient service delivery. • Lesser labor deployment. • Saving in manpower cost. • Safety of the workers. • Elimination of health hazards associated with body to waste contact. 						
ii. Unit cost analysis	<p>The unit cost analysis is produced below;</p> <table border="1" data-bbox="496 1099 1257 1211"> <tbody> <tr> <td>Project capital cost</td> <td>Rs. 145,699 million</td> </tr> <tr> <td>Projected population in year 2026</td> <td>219,772 persons</td> </tr> <tr> <td>Unit capital cost per capita</td> <td>Rs. 663</td> </tr> </tbody> </table>	Project capital cost	Rs. 145,699 million	Projected population in year 2026	219,772 persons	Unit capital cost per capita	Rs. 663
Project capital cost	Rs. 145,699 million						
Projected population in year 2026	219,772 persons						
Unit capital cost per capita	Rs. 663						
iii. Employment generation (direct and indirect)	<p><u>Employment Analysis</u></p> <p><i>Direct Employment</i> The manufacture of the machinery and equipment will require skilled and non-skilled labor.</p> <p><i>Indirect Employment</i> Indirect employment for production, marketing and transportation of steel will be generated</p>						
iv. Impacts of delays on project cost and viability	<ul style="list-style-type: none"> • The impact of delay in project implementation will result in increased cost due to escalation in cost of material and labor. • The targeted benefits to the general public will also be delayed for the period the projects remains unexecuted 						
13-Implementation Schedule							

i- Indicate starting and completion date of the project	The project is anticipated to commence by start of May 2021 and to be completed by October 2021 with project implementation period of 6 months
ii- Item wise/year wise schedule in line chart	The machinery and equipment will be supplied by the manufacturers within 6 months. The supply to be effected in each month cannot be estimated at this stage as it will depend upon the availability of the truck chassis from the truck manufacturers which cannot be predicted.

14. Management Structure and manpower requirements

i- Administrative arrangements for the implementation of the project	The project will be executed by Municipal Committee Kot Addu through Municipal Officer (Infrastructure and Services) being the Engineer in Charge and supervised by the Supervision Consultants which will be hired and deployed by PMDFC.
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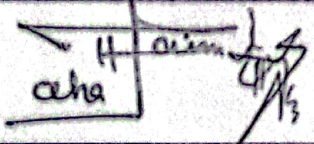
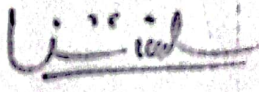
ii-The manpower requirements by skills during execution and operation of the project	<p>i. Planning and design The planning and design of the project has been done by PCP Infrastructure Wing which has got its own recruited staff under the management of PCP. The resident supervision of the project will be done by the Supervision Consultants. The staff deployed for both activities is as under:</p>
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S #	Designation	Nr of slots	Qualification	Experience
A Planning & design				
1	Senior Program Officer (Infr. Dev.)	1	BSc. Civil Engg.	50 years
2	Program officer (ID)	1	BSc. Civil Engg	15 years
3	CAD operator	1	Diploma in draftsman	10 years
4	Accounts officer	1	MBA (Finance)	10 years
B Project supervision				
1	Senior engineer	1	BSc. Mechanical Engg.	20 years
2	Supervisory engineer	1	BSc. Mechanical Engg	10 years
3	Inspector	1	Diploma in Associate Engineer	10 years
4	Accounts officer	1	MBA (Finance)	10 Years

ii-Manufacturing staff

Manufacturer's technical staff will comprise of various skilled labor for cutting, drilling, fabrication, welding, cleaning, painting, galvanizing and transportation along with electrical/ mechanical engineers & managers.

<p>iii The job description, qualification, experience, age and salary of each post -</p>	<p>a. Municipal Committee Kot Addu Municipal Officer (I&S) will be the Project Manager / Engineer in Charge for execution of the project and the project will be executed under his management. He will be assisted by his support staff who are qualified engineers and sub engineers. All of these engineers are regular employees of MC Kot Addu or provincial government.</p> <p>iii. Operation and Maintenance After completion the machinery & equipment will be operated and maintained by MC Kot Addu through its regular staff. The additional staff as and when so required, will be recruited by MC. The HR cost for the proposed machinery for 03 years and the Monitoring & Vehicle Tracking cost for 03 years has also been provided in the PC-1</p>
<p>15-Additional projects /decisions required to optimize the investment being undertaken</p>	<p>MC Kot Addu is facing sanitation manpower shortage for rendering service to the entire city. For accruing the targeted benefits from the project, vehicle drivers and other allied staff needs to be recruited by MC for which sanction of the competent authority is required. Present ban on the recruitment needs to be lifted for this recruitment.</p>
<p>16-Certificate</p>	<p>Certified that the project proposal has been prepared on the basis of guidelines provided by the Planning Commission for the preparation of PC-1 for social sectors projects</p>

Prepared by		Checked by	
Name	M. TAHA HUSSAIN	Name	Zafar Iqbal
Designation	Municipal Officer (I&S) MC Kot Addu	Designation	Chief Officer MC Kot Addu
Signature		Signature	

Annexure-A City Background

1. City Status

Kot Addu city lies in Muzaffar Garh District and was given the status of Municipal Committee in 2019. It is situated at an elevation of 217 m (712 ft). The city serves as the headquarters of Kot Addu Tehsil, an administrative subdivision of the district.

1.1. Location

Kot Addu is located just east of the Indus River, about 866 km (538 mi) from Karachi, 600 km (370 mi) from Islamabad, 100 km from Multan, 80 km from D.G.Khan, 60 km (37 mi) from Muzaffargarh, 60 km from Layyah, and 16 km (9.9 mi) from Taunsa Barrage. It is a railway station on Multan-Kundian Railway track. It's coordinates are 30° 28' North and 70° 58' East. It is connected with entire province through road links.

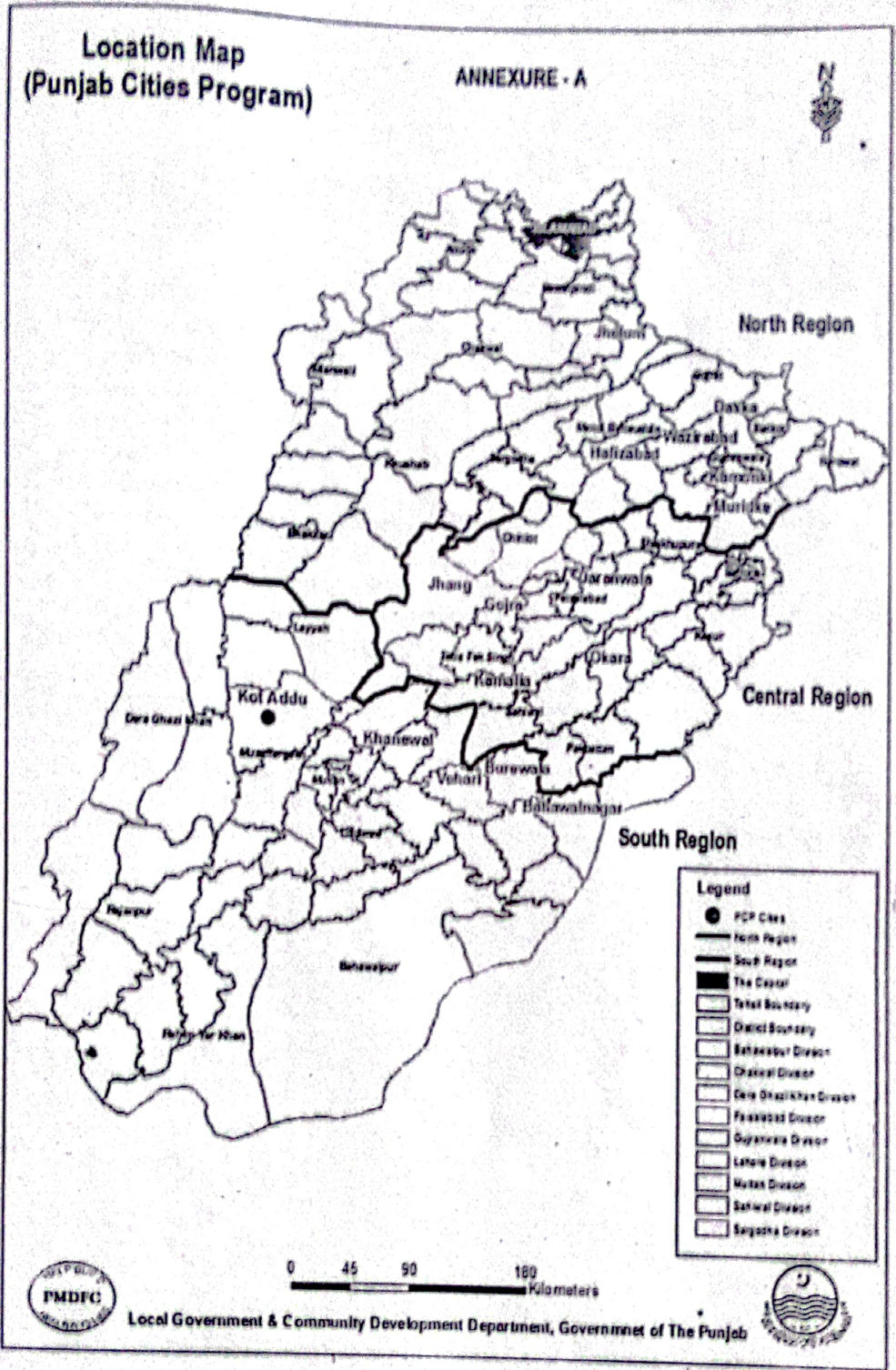
1.2. Climate

a) Weather

The climate of Kot Addu is usually warm and dry. The coldest months are December to February, when temperatures may drop to 1 °C, with moderate rainfall. The summer season starts from the month of April and continues till October. May and June are the hottest months with day temperature usually ranging from 40 to 45 degree centigrade. The winter season begins from the month of November and continues till March. The average rainfall is roughly 127 millimeters (5.0 inches).

Demographic status

The provisional results published by Government for census 2017 for the Punjab Cities show the population of 179,730 persons for Kot Addu city with an annual growth rate of 2.26 % which is expected to rise to 219,772 in the year 2026 which is planning horizon for this subproject.



Annexure-B

EXISTING SITUATION ANALYSIS

1. Existing solid Waste Management System

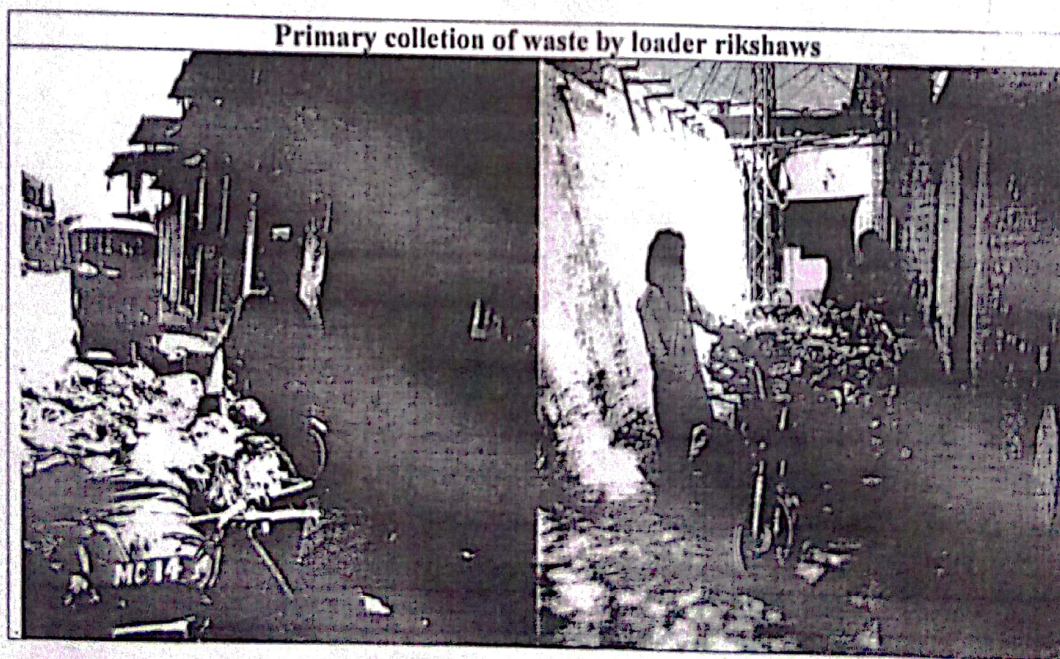
Present system of waste collection, transportation and ultimate disposal in Kot Addu city is described as under;

1.1. Primary Collection

1.1.1. Residential & commercial areas

The primary collection from these premises comprises of;

- Street and road sweepings by sanitary workers and is carried to open dumps and by 24 motorcycle rickshaw loaders as shown in pictures below.
- Solid waste including debris, tree cuttings and silt & muck taken out from drains/sewers, is also collected by loader rikshaws and discharged in open dumps located in the city on main roads by sanitary workers.
- Originally the rikshaws were directly driven to the dumping site located near the railway track leading to Taunsa Barrage (see Map-1) and unloaded over there as the dumping site was quite near to the city.
- Recently the waste is being collected by loader rikshaws and transported to a transfer station located near stadium in Kot Addu City. The waste is then transported through tractor trolleys to dumping site located near Tibi Chandio Wali on left bank of Muzaffargarh Canal. (See Maps 6-A & 6-B , Location map s of Recent Dumping Site)
- The primary collection methods and open dumping are shown below
- Sometimes the waste in open dumps is burnt thus polluting the air.





Silt and muck is taken out from drains, semi dried and collected in the loader rikshaws



Waste collected from streets in loader rikshaws

1.2. Secondary Collection System & disposal

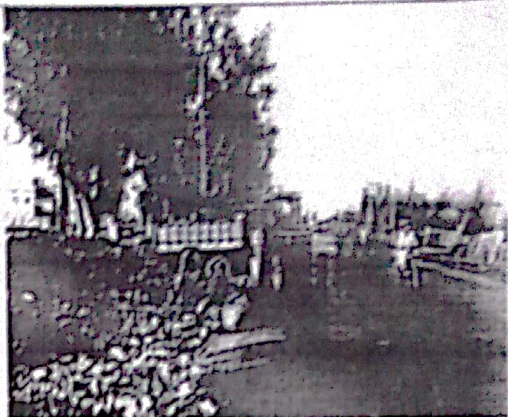
1.2.1. Secondary collection from heaps/dumps, filth depots

- The waste from the transfer station near Stadium in the City is transported to the dumping site recently established by MC near Tibi Chandiowali at left bank of Muzaffargarh Canal through tractor-trolleys by loading the trolleys by front end loader. Presently 05 tractors and 05 trolleys have been deployed for this job which are equipped with jacks and the unloading is therefore automatic. One front blade tractor is used re-handle the waste. Two tractors are used for spraying water through water tanks.
- MC has one container carrier hauled and operated by tractor which carries the containers to dumping site.
- MC has 12 containers of 5m³ capacity out of which only 3 Nos have been deployed at different locations in the city shown in Map M-1 (Existing Coverage of

- solid waste management). In entire town, except these places, the waste is dumped in open heaps by the house holds, commercial centers etc.
- Mc has recently procured a mechanical sweeper which is hauled and operated by tractor.

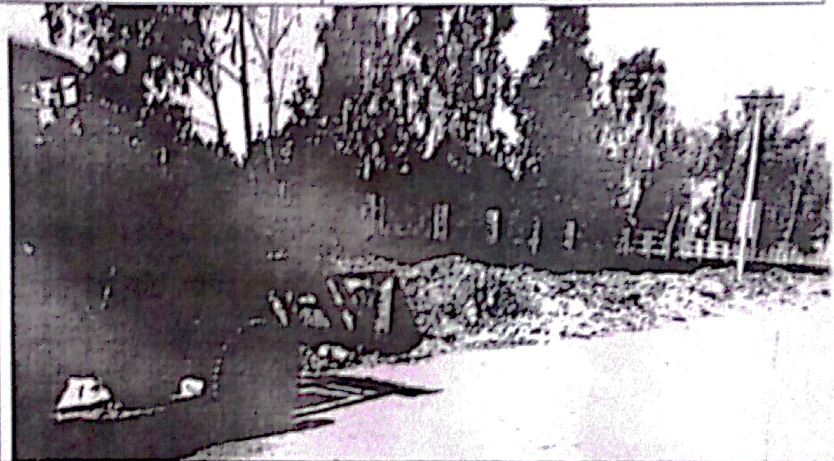


Mechanical sweeper



Tractor Trolley being loaded with Front end Loader

Heaps of waste in the city which will be loaded in tractor trolleys through front end loader



Transportation of waste by Tractor Trolley



Tractor Trolley being loaded manually with waste

1.2.2. Hospital wastes

The Tehsil Headquarter Hospital management has not installed any incinerator nor have got their own arrangement of waste disposal. As such all hazardous and other type of waste is being handled by MC Kot Addu. This waste is directly loaded in tractor trolleys by MC sanitary staff through front end loader and is transported to the dumping site

1.2.3. Slaughter house wastes

The waste from the slaughter house is also managed by MC. It is lifted twice / thrice a week and is disposed-off through tractor trolleys to final disposal point.

1.2.4. Demolition and Construction Wastes

The construction material which is surplus of the requirement of dwellers remains on the streets/roads for extended periods. The collection and disposal is part of the municipal solid waste management function.

1.3. Transportation

- The waste is transported to the dumping site in quite insanitary manner through uncovered trolleys. Most of the trolleys have no back shutters as shown above and during hauling of these trolleys to dumping sites, some of the waste is scattered on roads. Apart from reducing the carrying capacity of these trolleys, the scattered waste on the roads creates highly insanitary environments.
- Further the tractor trolleys are not provided with any cover during hauling through the congested populated areas which not only spreads obnoxious smell but also gives shabby look and deteriorates the environments.
- The speed of the tractors is very slow as compared with the trucks and it consumes excessive POL apart from taking much more time in one trip.
- As such the transportation method is very inefficient, non-cost effective, insanitary and unhygienic.

2. Ultimate disposal of waste**2.1. Previous dumping site**

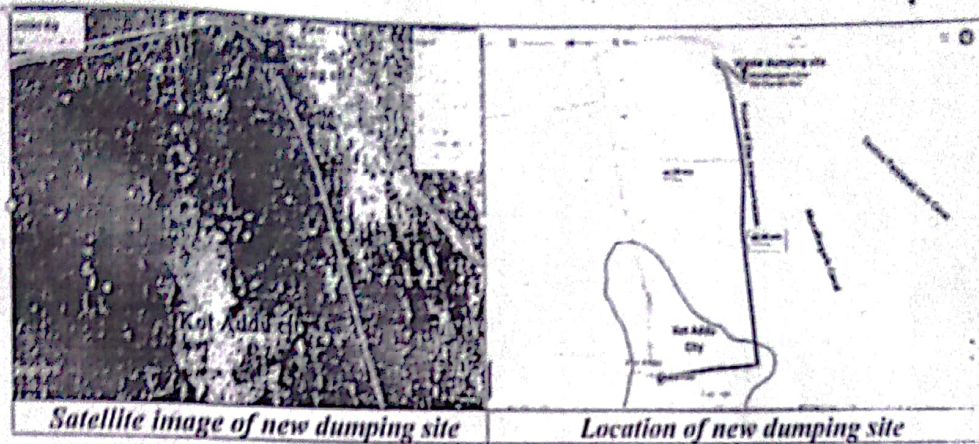
The waste was being dumped along Kot Addu-DG Khan railway track at North West part of city (Map M-1). This dumping was being managed without any earth cover which is spreading litter, creating obnoxious smell and vectors, polluting sub soil water and spreading vector diseases.

Previous dumping site along railway Kot Addu- DG Khan Railway track



2.2. Recent dumping site

The waste is now being dumped along Muzaffargarh Canal near its left bank near Tibi Chandio wali at a distance of 11 Km from the city which is quite a long distance but MC has got no nearer site for dumping.



New dumping site along left bank of Muzaffargarh canal

Method of dumping of waste of waste

- The waste is not being compacted in the dumping site by any method. Mostly the placement of waste is in indiscriminate manner. Hence the waste is consolidating in its natural way.
- The haphazard dumping of waste is badly polluting the sub soil.
- No earth cover is being provided on the waste and littering, obnoxious smell and breeding of vector is a common phenomenon thus creating vector diseases.
- MC has no land at present which can be utilized for development of a proper landfill site.
- Government of Punjab may go for construction of Regional Landfills wherein MC Kot Addu can dump its waste. For this purpose, a transfer station will be required to be built. Necessary steps will be taken by MC as per circumstances prevailing in future.

3. Present Solid Waste Management System

The existing solid waste management system is included in the table below:

Waste producing areas	Primary Collection		Secondary Collection		Disposal
	Street Sides		Transfer place	Transfer Vehicle	
	Storage	Collection			
Residential premises	Street side heaps	Loader rikshaws	Heaps at open places & roads/ 3 containers	Tractor Trolley/ Container carrier	Open and insanitary Dumping site along Muzaffargarh Canal near Tibbi Chandio wali
Commercial premises	Thrown in streets/road heaps				
Street sweepings / Drain muck	Street side heaps				

4. Available resources of Equipment & Machinery

The existing machinery & equipment being used by MC Kot Addu has been given at Appendix-1.

The existing machinery is neither sufficient nor cost effective and efficient giving rise to low efficiency of collection and disposal of the waste and as a result of that MC is facing increased waste management cost as well as complaints regarding the insanitary conditions in the city. Efficient and cost-effective machinery is needed to increase the efficiency of collection and transportation for improving the sanitary conditions in the city and lowering down the operational and maintenance costs.

5. Solid waste Generation & Disposal

PMDFC is collecting the solid waste data from the MCs regularly. The solid waste management efficiency as calculated by PMDFC on the basis of data provided by MC for the month of July, 2020 is given below:

Vehicle	Number	Capacity (Tons)	Trips per month	SW disposed per month	Avg. trips per day	Avg. SW disposed per day
Tractor Trolley	CHC-3802	1.75	209	365.75	6.74	11.8
Tractor Trolley	CHC-3828	1.75	194	339.5	6.26	10.95
Tractor Trolley	MHD 5266	2.25	205	461.25	6.61	14.88
Tractor Trolley	SNH 304	1.5	218	327	7.03	10.55
Average Total Waste Lifted Per Day:			48.18 tons			
Estimated Population:			194544 Persons			
Waste generated per capita per day			0.4 Kg			
Estimated Waste Generated			77.82 tons			
Percent waste disposed per day:			62 %			

Keeping in view the absence of back shutters of the trolleys and littering of waste on the roads during transportation, it can be easily estimated that the actual efficiency of the disposal of waste would be less than 60%.

6. Un-served and partially served areas

The entire city is not served daily with solid waste collection and disposal. The average efficiency of the service as given above 60 %. The position of the service in the city is given below:

6.1. Completely Served Areas (51% of the city)

1	Awan Factory Mohallah	15	Mohalla Chah Shamas Wala	29	Ward No.09
2	Basti Mandi Mawaishian	16	Mohalla Kaky Wala	30	Ward No.10
3	Basti Naqdabad	17	Mohalla Mari Wala	31	Ward No.14
4	Buzdar Town	18	Mohalla Qazi Qleemullah	32	Ward No.4
5	Canal Colony	19	Mohallah Gaman Shah	33	Zeeshan Colony
6	Faisal Colony	20	Nooray Wala Mohalla	34	Zia Colony
7	Gailani Mohalla	21	Sabzi Mandi Town	35	UC-3
8	Gareebabad	22	UC-1	36	Scheme No.5
9	Gulshan-e-Usman	23	UC-2	37	Sindhi Basti
10	Gulshan Iqbal	24	UC-2	38	Sindhi Basti
11	Lala Zar Colony	25	UC-4	39	Stadium Colony
12	Lodhi Town	26	Ward No. 1	40	Qureshi Town
13	Madni Town	27	Ward No.03	41	Railway Colony
14	Millat Colony	28	Ward No.07		

6.2. Partially Served Areas (21% of the city)

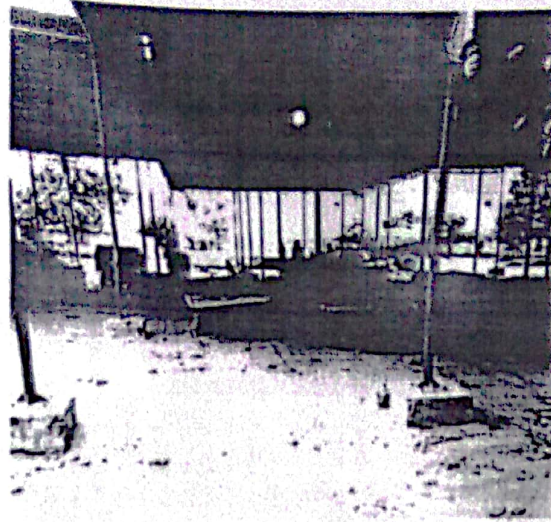
- 1 Basti Manjuthi
- 2 Ghari Quresh Wali Basti
- 3 6.4. Mashoori Mohalla
- 4 Mohalla Chah Badar Wala
- 5 Tibba Sultan Wala

6.3. Unserved Areas (28% of the city)

- 1 Basti Channan Wali
- 2 Basti Gadion Wali
- 3 Mohalla Bhadri Wala
- 4 Mohalla Chah Hoot Wala
- 5 Mohalla Farooq-e-Azam
- 6 Monshi Wali Basti
- 7 Ansar Colony

7. Parking area

The solid waste and other vehicles of MC Kot Addu are being parked in an area measuring 3 Kanals located at MC office. This is unpaved area with sheds. Parking area needs improvement for existing and additional machinery and equipment.



Current parking facility in MC Kot Addu at MC office

8. Reasons for poor service

Resources available to handle the solid waste are limited to serve the whole area of city.

Limitations in resources are described here.

- a) Shortage of sanitary workers and vehicle drivers.
- b) Shortage of equipment and machinery.
- c) Poor efficiency of the machinery and equipment as explained above.
- d) Waste is temporarily collected in heaps in the streets giving insanitary conditions.
- e) Spreading of the waste on to the roads during transportation due to absence of back shutter of trolleys.
- f) Obnoxious smell and insanitary conditions in the city due to non-covering of waste during transportation.
- g) Littering of the waste from dumping site and creating all sort of hazards say; pollution of underground water, vector and vector borne diseases, obnoxious smell and high insanitary conditions around the dumping site due to non-provision of the earth covers over the waste and non-provision of impervious media under the waste bed.

Annexure-C

Description of the Project
Section-I Design Criteria

Below given design criteria has been established for Provision of Solid Waste Management machinery & equipment in 16 Program MCs. This design criteria covers below mentioned services /activities:

Provision of equipment & machinery for:

- Primary & secondary collection of solid waste
- Transportation of waste to the landfills or dumping sites
- Placement, compaction of waste in landfills or dumping sites and provision of earth covers.
- Mobile workshop for site repairs
- Motor bikes for mobility of the staff

The design criteria established for all above items is given below.

1. Population

The population of the Program Cities as per Census-2017 will be used to project it to the year 2026 on the given annual growth rate for designing the machinery and equipment required by Program Cities.

The population of the PCP cities a per Census-2017 and projected up to the year 2026 is given below:

Sr. No.	MC	Population (2017)	Growth Rate	Projected population year 2026
1	Bahawalnagar	199,367	2.24	243,355
2	Burewala	289,236	2.18	351,193
3	Daska	189,327	2.00	226,263
4	Gojra	180,951	1.82	212,843
5	Hafizabad	269,424	3.05	353,076
6	Jarranwala	230,162	2.57	289,212
7	Jhang	493,108	1.86	582,070
8	Jhelum	261,711	1.40	296,595
9	Kamalia	145,713	1.82	171,394
10	Kamoke	264,217	2.4	327,085
11	Khanewal	216,181	1.98	257,901
12	Kot Addu	179,730	2.26	219,772
13	Muridke	258,152	2.77	330,121
14	Okara	463,302	2.29	568,019

15	Vehari	175,042	2.18	212,537
16	Wazirabad	138,433	2.40	171,372
	Total	3,954,056		4,812,808

2. Planning horizon

The planning horizon for the subproject of "Provision of Machinery and Equipment for improvement of solid waste management" will be 5 years. After the passage of this period and at the end of closure of the program, the assessment of the machinery requirements of all the cities will be again made and the gap for the next 5 years will be filled up by supply of additional machinery and equipment required therein.

3. Waste Generation

3.1. Waste generation rate in various cities of Pakistan

Per capita quantity of municipal solid waste generated daily varies significantly from city to city and even from place to place within the city depending upon the life style which in turn depends upon the economic conditions of the people living in the particular locality. (World Resources Institute, 1996).

The ministry of Environment Pakistan undertook a study during 1996 on "Data Collection for Preparation of National Study on Privatization of Solid Waste Management" in eleven selected cities of Pakistan. This study gave the under mentioned waste generation rate.

Solid Wastes Generation Rate in Different Cities

(Source: EPMC Estimates-1996)

Sr. Nr.	City	Kg/Capita/day	Sr. Nr.	City	Kg/Capita/day
1	Gujranwala	0.47	7	Quetta	0.28
2	Faisalabad	0.39	8	Sibi	0.28
3	Karachi	0.61	9	Mailsi	0.40
4	Hyderabad	0.56	10	Chakwal	0.45
5	Peshawar	0.49	11	Kasur	0.45
6	Bannu	0.44			

3.2. Waste generation rate for PCP Cities

Taking the case of two big cities (Faisalabad & Gujranwala) in Punjab, the waste generation rate varies from 0.39 to 0.47 Kg. The cities included in PCP have lesser population as compared to Faisalabad and Gujranwala and hence the rate of waste generation for these cities may be taken as 0.35 Kg per capita per day.

4. Selection of machinery and equipment for PCP Cities

4.1. Use of tractor trolleys

- Presently the principal method of collection and transfer of waste to the disposal site is by tractor trolley. However some of the MCs are using arm rolls along with 5.0 cubic meter capacity communal containers for this purpose. The transportation with

tractors and trolleys entails manual transfer of waste from collection points to the tractor trolley. This method is labor intensive, slow, inefficient and unhygienic, exposing personnel to unnecessary risks.

- The transfer of uncovered and un-compacted waste by tractor trolley results in increased littering during waste collection and transportation. Further most of the trolleys possessed by the MCs have no back shutter resulting in reduction of quantity of waste transported in one trip on one side and littering the roads on the other end. Significant odors are also associated with this method of transportation, affecting urban populations since tractor trolleys travel on main roads through urban centers.
 - The slow speed of collection and travel in case of tractor trolley increases congestion on the main collection routes and consumes more fuel as compared to the arm rolls and compactor trucks.
 - The payload of tractor trolleys is low compared to the compactor trucks. The densities of waste are typically 1.5-2.5 times higher in compactor trucks than in open, un-compacted trolleys. Allied with the greater capacity of medium to large-sized compactor trucks (for example, 8m³ or 13m³ as against 4-5 m³ for trolleys) the waste load carried by compactor trucks is significantly higher than that carried by tractor trolleys. Further the payload is reduced to 2.5-3.5 cubic meters for the trolleys without back shutter making this method of transport still more inefficient
 - Keeping in view the above mentioned facts & figures, the use of tractor trolleys is known to be the least cost-effective method of collecting and transferring waste as they have the highest cost for waste transportation on a per ton basis.
 - Therefore it has been proposed not to use the tractor trolleys after procurement of most cost effective and efficient machinery for use in Program MCs and the capacity of the existing tractor trolleys will be neglected while assessing the total waste to be transported.
- 4.2. Proposed transportation machinery**
Below given machinery and equipment has been proposed to be procured for MCs to collect and transport the waste generated in the entire city.

4.2.1. Arm rolls

Arm rolls are being used in some of the MCs with 5 cubic meter capacity communal containers. These vehicles will be continued to be used in transportation of the waste and the capacity handled by them will be subtracted while working out the number of compactor trucks and 0.8 cubic meter capacity containers.

4.2.2. Compactor trucks

It is proposed to use the garbage compactor trucks with 0.8 cubic meter capacity containers which is the most efficient method of collection & transportation of waste.

However for smaller streets mini tippers with 1.0 cubic meter payload will be used. The mini tippers will discharge the waste in the compactor trucks or containers placed on main roads whatever is the situation at that time.

a) Capacity of the compactor trucks

Compactor trucks are available in various capacities like 4.0, 7.0, 8.0, 11.0 & 13.0 cubic meters compacted waste. Compactor truck with 4.0 cubic meter capacity is not as efficient as no significant POL reduction as compared to 8 cubic meter compactor truck for the same travel distance, has been observed. Further the manpower used in both cases is the same. The only merit of this size of the truck is that it is pliable on smaller roads for which the mini tippers are proposed.

The compactor trucks of 11.0 and 13.0 cubic meter capacities are too large for plying on the roads and streets of intermediate and smaller cities. Hence compactor trucks with intermediate capacity of 8.0 cubic meter compressed waste will be efficient and pliable on these roads and this will be used as a waste transportation vehicle.

b) Number of compactor trucks

- As stated above the waste from hand carts, mini tippers and containers will be discharged in the compactor trucks which will compact the waste in the ratio of 1:2 and transport the compacted waste to the landfills or dumping sites.
- The number of compactor trucks required for a particular city will depend upon the quantity of waste generated per day by that city.
- Further the distance of the landfill from the center of the cities varies drastically from city to city depending upon the location of the dumping sites. The number of trips traversed by the compactor per day will be calculated from the average distance of the dumping site from various points in the city and its speed which in turn will again depend upon the traffic intensity on the compactor routes to the dumping site and congestion on these roads. However and average speed of 25 Km/hour has been assumed keeping in view the open and the congested roads in various cities
- The total waste generated per day and the number of tips a compactor can make per day will form the basis for calculating the number of compactors required for a particular city.

4.3. Collection equipment & machinery

For primary collection under mentioned equipment & machinery will be used:

4.3.1. Hand carts

- Three wheeled hand carts of 0.25 cubic meter capacity will be used for door to door collection of waste and for street sweepings. During the site visits of various cities it has transpired that very few house hold discharge the waste directly into the containers placed at the main roads where compactors can ply and hence the waste discharged directly in containers is negligible.

- Hence the entire quantity of waste will be handled by the hand carts for discharge either in the containers or in the mini tippers and the number of hand carts will be designed to handle 100% of the waste.
- The sanitary workers have to throw the waste on the ground and then handle it again manually to throw it in the containers. This involves double handling of the waste which requires additional labor and time. In order to eliminate the double handling, a hand cart will be designed with adjustable height to make it compatible with container for discharging the waste directly in the container without double handling. Initially 10% of the hand carts will be piloted to see the performance and functionality. If the performance is found to be satisfactory then all the hand carts will be replaced by the newly designed carts after their perishing. Rest of 90% will be conventional three wheeled hand carts.

4.3.2. Mini tippers

- These vehicles are basically meant to collect waste from the narrow streets where the compactor trucks cannot ply. Most of the cities included in PCP are of intermediate and smaller size not having a higher living style and are having large number of streets ranging from 6 feet to 20 feet. Hence adequate number of mini tippers will be required to collect solid waste from these streets. Further use of these vehicles will reduce the plying distance of the hand carts thus improving the waste collection efficiency.
- The mini tipper requires manual loading of waste whereas waste can be discharged on ground, into the containers and into the hopper of the compactor trucks directly by the mini tipper by electro mechanical mechanism without manual handling.
- All of cities included in the Punjab Cities Program have number of smaller streets and the number and length of these streets varies from city to city. As such the exact quantity of waste collected from these streets will vary in Program Cities which will be calculated as given below.

a) Working out the requirement of mini tippers

- The roads on which compactors can ply will be determined and marked on the plan in red line whereas the roads and streets on which the mini tippers can ply will also be marked in black line.
- It has been observed from the site visits and interviews with the sanitary supervisors that a hand carts usually collects the waste and transports through a distance of 1000 feet. Hence it is assumed that the waste through the distance of 1000 feet on both sides of the roads on which the compactors can travel, will be handled by hand carts and discharged directly into the containers but the waste beyond that distance will be handled by the mini tippers.
- In this way the city areas directly covered by the hand carts discharging into the containers directly will be worked out and subtracted from the total inhabited area of the city.
- After visiting some of the cities and conducting interviews with the waste managers, it has been estimated that the mini tippers can traverse 12 to 15 trips

per day depending upon the distance traversed and the congestion on the roads and streets. Hence the round trips of the mini tippers will also be worked out on the basis of the collection time and the round trip time.

- After working out the population density & area covered and in turn the total population covered by the mini tippers and the number of trips mini tippers can traverse per day, the requirement of number of mini tippers will be worked out for a particular city.

4.3.3. Containers for compactor trucks

Most of the waste from entire area of the cities will be collected in the containers of 0.8 cubic meters capacity being the size of hopper of the compactor trucks as the hand carts and mini tipper will, most of the time, discharge waste into these containers except for the time when the compactor in being loaded with waste in the area where the mini tipper is plying and it can directly discharge the waste in the hopper of the compactors. Hence the number of containers will be worked out according to the total waste generated by the city.

5. Density of the solid waste

The density of waste in various countries is given below:

Zone	Country	Density in Kg per meter cube
Industrialized countries	United Kingdom	150
	USA	100
Middle income countries	Singapore	175
	Tunisia	175
	Hong Kong	233
	Egypt	330
	Bangladesh	600
Low income countries	Burma	400
	China	476
	India	300-560
	Indonesia	250-400
	Nepal	350-600
	Pakistan	210-500
	Sri Lanka	400
	Thailand	290-390

Source: Jindal et al (1998), Mutt Amara et al (1994), Habitat

Under the light of above mentioned waste densities the assessment of numbers / quantity of equipment and machinery will be based on the following densities:

Density of waste in waste bins, handcarts, mini tippers and 0.8 m³ containers 400 Kg/cubic meter

Density of waste in 5.0 m ³ containers	500 Kg / cubic meter
Density of waste in compactor trucks	800 Kg / cubic meter

6. Disposal points and travel distance

The landfills or dumping sites of various cities are located at a distance ranging from 6 to 15 Km from center of the cities. As described above the trips traversed by a compactor truck or arm rolls will be worked out as under:

The compactor trucks will take more time for loading the 0.8 cubic meters waste containers from various points for one trip whereas the arm rolls will load only one 5.0 cubic meter container only from one site.

6.1. Collection time for compactors

The waste collection time depends upon the capacity of the compactor. The collection time for various capacity compactors is given below:

4 m ³	0.6	hours
7 m ³	1.0	hours
8 m ³	1.2	hours
11 m ³	1.75	hours
13 m ³	2.5	hours

Hence the waste collection time for the 8.0 cubic meter capacity compactor in general will be taken as 1.2 hours.

6.2. Collection time for arm roll

The arm roll will collect only one container of 5.0 cubic meters by placing an empty container at that site. Hence the collection time of the arm roll will not be more than 30 minutes. However the speed of the arm roll is generally lower than the compactor truck because of the detached pay load which requires lower speed for travelling.

6.3. Round trips of compactors and arm rolls

The round trip time for the compactors and the arm rolls from collection points to the dumping sites and back will vary from city to city and will comprise of the under mentioned components.

- Waste collection time
- Travelling time to dumping site
- Waste un-loading time
- Travelling time to the next collection point

For working out the number of trips per day for compactors and arm rolls, the round trip time for these vehicles will be worked out for each city. The average working time of the sanitary staff per day is 8 hours and the requirement of the compactor trucks for a particular city will be worked out accordingly.

7. Other machinery requirements

7.1. Life of existing machinery & vehicles

The standard life of movable machinery and equipment is taken as 10 years. Life of existing machinery & vehicles to be considered as usable in next 5 years will be taken as 6 years meaning thereby that all vehicles having age of more than 6 years will be considered as discarded for calculation of the demand of any city in next 5 years.

7.2. Truck mounted suction type road sweepers

The number of suction sweepers used for sweeping the roads in any city will depend on the length of main roads required to be swept which in turn will vary from city to city.

The length of such roads to be swept will be worked out in consultation with the MCs.

The number of sweepers required for a particular city will be worked out as under:

Average speed of the suction sweeper	12 km/hour
Total working hours per day	8 hours
Recess time	30 minutes
Travel time from and to parking area	45minutes
Waste emptying time from place to place intermittently	45 minutes
Net sweeping time	6 hours
Length of roads swept on single side	72 Km
Length of roads swept on both sides	36 Km

The requirement of sweepers for a particular city will be worked out accordingly.

7.3. Other machinery & equipment

The requirement of other kinds of machinery & equipment has been based on the population of the cities. The estimated quantity and number of machinery and equipment according to population is worked out in below given table;

S N.	Population	150,000	200,000	250,000	300,000	400,000	500,000	600,000
1	Front blade tractor (One for 200,000 population with minimum as one)	1	1	1	2	2	2	3
2	Front end loaders (One for 150,000 population with minimum as one)	1	1	2	2	2	3	4
3	Water bowsers ((One for 150,000 population with minimum as one Nos)	1	1	2	2	2	3	4
4	Dumper trucks	1	1	1	1	2	2	2
5	Motor bikes (one for 75000 population)	2	2	3	4	5	6	8

Provision of Equipment and Machinery for solid waste management to Program MCs

Abbreviations

ANSI	American National Standards Institute
ASTM	American Society for Testing and Materials
CC	Cubic Centimeters
CEN	European Committee for Standardization
CFC	Chlorofluorocarbon
DIN	German Institute for Standardization
DFT	Dry Film Thickness
EN	European Norms; European Standards
FHD	Full High Definition
GVW	Gross Vehicle Weight
HDMI	High Definition Multimedia Interface
HP	Horsepower
HCFC	hydro chlorofluorocarbons
ISO	International Organization for Standardization
LED	Light Emitting Diode
LPM	Liter Per Minute
m	Meter
min.	Minimum
mm	Millimeters
NFPA	National Fire Protection Association
PLC	Programmable Logic Controller
PS	Pferdestrke: Unit for Vehicle Power 1PS = 0.986 Horsepower
PTO	Power Takeoff
RHD	Right Hand Drive
SAE	Society of Automotive Engineers
VTMS	Vehicle Tracking Monitoring System
VDU	Video Display Unit

PUNJAB CITIES PROGRAM (PCP)
Provision of Machinery & Equipment
For
Improvement of Solid Waste Management in Kot Addu City

Specifications and Standards

The scope of services for this project includes designing, manufacturing / fabrication as per applicable international standards mentioned hereunder, inspection / testing at manufacturer's works, supplying at designated site, testing at site, training to the Client's designated personnel for operation and maintenance, one (01) year's warranty, maintenance of the equipment/machinery for one (1) year during defect liability period (DLP) of each item of following equipment / machinery:

Sr. No.	Detail of machinery & equipment	Nos
1	Garbage Container 0.8 m ³ capacity	264
2	Garbage Compactor Truck	4
3	Mini tipper 1.0 m ³	4
4	Water bowsers with spray system	2
5	Handcart/waste tipping trolley	170
6	Dumper Truck 5 m ³	2
7	Truck Mounted Vacuum Road Sweeper	1
8	Front blade tractor	1
9	Front end loaders	1
10	Motor Cycle	2
11	Vehicle Tracking & Monitoring System	

The design shall provide maximum levels of reliability and availability, convenience of operation and maintenance, neat and orderly arrangement which shall take in to account the functional requirements of various systems/components and pleasing physical appearance of equipment & machinery.

The design shall keep in view load distribution for better performance of the vehicle as per recommendations of the manufacturer of Chassis and design/drawings shall be submitted to the Employer/Engineer for review/approval.

The quantity shall be supplied as required in bill of quantities attached with these specifications

Photos shown in these specifications are for illustration purposes only.

Section-I Specifications, standards and other requirements

Item No	Manufacturing & fabrication Standards
1	<p>The equipment/machinery shall conform to the applicable requirements of ANSI/ASTM/ISO/BS/EN/SAE standards and specifically mentioned standards hereunder shall be followed:</p> <ul style="list-style-type: none"> • ANSI Z 245.1 – Mobile Refuse Collection and Compaction Equipment • ANSI B 56.1 – Safety Standard for Powered Industrial Trucks • AS 4123 – Mobile Waste Containers • ASTM A 36 – Standard Specification for Carbon Structural Steel • ASTM A 240 – Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications • BS EN 280 – Mobile elevating work platforms – Design calculations, Stability criteria, Construction, Safety, Examinations and tests • BS EN 840 – Mobile Waste and Recycling Containers • BS EN ISO 1461 - Hot dip galvanized coatings on fabricated iron and steel articles. Specifications and test methods • DIN ST52- Standard Specification for Carbon Structural Steel • ISO 3691 – Industrial trucks — Safety requirements and verification • ISO 3834 – Quality Requirements for Fusion Welding of Metallic Materials • ISO 8501-1 – Preparation of steel substrates before application of paints and related products- Group A. Visual assessment of surface cleanliness • ISO 8503 – Preparation of steel substrates before application of paints and related products – Surface roughness characteristics of blast-cleaned steel substrates • ISO 8504 – Preparation of steel substrates before application of paints and related products — Surface preparation methods • ISO 5817 – Welding-Fusion welded joints in steel, nickel, titanium and their alloys (beam welding excluded) — Quality levels for imperfections • ISO 3320 – Fluid power systems and components -Cylinder bores and piston rod diameters and area ratios – Metric series • ISO 5597 – Hydraulic fluid power — Cylinders — Dimensions and tolerances of housings for single-acting piston and rod seals in reciprocating applications • ISO 6020 – Hydraulic Fluid Power – Mounting Dimension for Single Rod Cylinder, 16 Mpa (160 bars) • ISO 6022 – Hydraulic Fluid Power – Mounting Dimension for Single Rod Cylinder, 25 Mpa (250 bars) Series • ISO 6015 - Earth-moving machinery -- Hydraulic excavators and backhoe loaders – Methods of determining tool forces • ISO 9606 – Qualification Test of Welders – Fusion Welding • ISO 9906 – Rotodynamic pumps — Hydraulic performance acceptance tests

- ISO 9692 - Welding and Allied Processes-Recommendations for Joint Preparation
- ISO 9001 - Quality Management Systems
- ISO 12117-2 - Earth-moving machinery - Laboratory tests and performance requirements for protective structures of excavators - Part 2: Roll-over protective structures (ROPS) for excavators of over 6 t
- ISO 10262 - Earth-moving machinery - Hydraulic excavators - Laboratory tests and performance requirements for operator protective guards
- ISO 14001 - Environmental Management Systems
- ISO 17559 -Hydraulic Fluid Power - Electrically controlled Hydraulic Pumps- Test methods to determine performance characteristics
- ISO 17559 -Hydraulic Fluid Power - Electrically controlled Hydraulic Pumps- Test methods to determine performance characteristics
- ISO 4409 - Hydraulic Fluid Power - Positive Displacement Pumps, motors and integral transmissions- Determination of Steady State Performance
- ISO 10100 - Hydraulic fluid power -Cylinders - Acceptance tests
- ISO 21308 - Road vehicles - Product data exchange
- between chassis and bodywork manufacturers (BEP) -Part 2: Dimensional bodywork exchange parameters
- SAE J517 - Hydraulic Hose Specifications
- SAE J1334 - Hydraulic Cylinder Integrity Test
- SAE J745 - Hydraulic Power Pump Test Procedure
- SAE J1336 - Hydraulic Cylinder Leakage Test
- SAE-J1374 - Hydraulic Cylinder Rod Seal Endurance Test Procedure
- SAE J1335 - Hydraulic Cylinder No-Load Friction Test
- SAE J1097 - Hydraulic Excavator Lift Capacity Calculation and Test Procedure
- JIS 3101 - Rolled Steel for General Structure
- NFPA 22 - Standard for Water Tanks for Private Fire Protection
- NFPA-T3.6.7 - Fluid power systems and products - Square head industrial cylinders - Mounting dimensions
- SAE Recommended Practice and Ground Vehicle Standards International Trucks Body Installation / Mounting Directives
- Any other applicable international standards duly approved by the Employer/Engineer.

2

Submittal and Supplements

The Contractor shall submit electronic copies of the applicable international Standards (latest editions). The following documents/drawings and other submittals as required in both electronic and hard form shall be submitted for review and approval by the Employer/Engineer:

- Shop drawings: General assembly, components, dimensions, thicknesses, weights and methods of assembly including material specifications.
- Load distribution design/drawings of vehicles
- Technical brochure
- Detailed specifications
- Operation/maintenance manual along with troubleshooting

- Illustrated instruction book (one version English, one version Urdu language) covering the following:

A. Description of unit and component parts:

1. Complete nomenclature and commercial number of replaceable parts
2. Metallurgy of Parts and their equivalence according to ASTM
3. Function, normal operating characteristics

B. Operating procedures:

1. Start-up, break-in, normal and emergency operating instructions
2. Special operating instructions

C. Maintenance Procedures:

1. Routine operations/maintenance (daily, weekly, monthly or annual)
2. Guide to "Trouble-shooting".
3. Disassembly, repair and reassembly

D. Servicing and lubrication:

1. List of lubricants with their equivalents and their schedule for applying. These lubricants shall be easily available in Pakistan.
2. Sketches indicating all points where lubricants are to be applied.

E. Predicted life of parts subject to wear, list of original manufacturer's spare parts, and recommended quantities to be maintained in storage.

F. Other data as required under pertinent sections of Specifications or as required by the Employer/Engineer.

G. Additional requirements for operating and maintenance as given below and as deemed necessary.

- Manufacturer/Supplier's Quality Assurance/Quality Control Performance
- Manufacturer/Supplier's valid ISO 9001 Certificate
- Manufacturer/Supplier's valid ISO 14001 Certificate
- Original Equipment Manufacturer's authorization letters for all the equipment
- Original Equipment Manufacturer certificate for all the equipment
- Material Test Certificates of material used in the fabrication.
- Test certificates and OEM certificates of Hydraulic equipment including pumps and cylinders as per standards mentioned in Item No. 2.
- Import Documents including Bill of Lading and Goods
- Declaration form for all import equipment.
- End User's Certificates for minimum 8 years satisfactory operation in the Purchasers' country.
- First aid kit and safety equipment as required according to
- Pakistan legislation
- Maintenance tool set required for each equipment/machinery.

3

Warranty

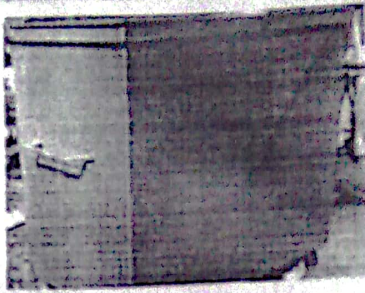

All equipment/machinery under each item to be furnished shall be guaranteed / warranted for a period of one (1) year from the date of Preliminary Acceptance against defective materials, design, performance or workmanship. Any deficiency shall be replaced or corrected by the Contractor as directed by the Employer/Engineer at no additional expense to the Employer.

	<p>3.1 Defects Liability Period All equipment/machinery shall have a defect liability period of one (1) year after taking over.</p>
4	<p>After Sales Services All the equipment/machinery to be supplied by the Contractor shall have 4S service workshops in Pakistan.</p> <p>Repair time Maximum one (1) month time period in case that major faults¹ are detected and maximum 10 days period in case of minor repairs².</p> <p>Response time On-site response by the end of next business day (17 hour), following the request for service</p>
5	<p>Training The contractor/manufacturer/supplier shall arrange training to the Employer's designated personnel for operation and maintenance of each equipment/machinery as described herein below:</p> <ul style="list-style-type: none"> • Two (2) days training for each equipment/machinery at Manufacturer's works/factory at supplier's cost for four (4) persons nominated by the Employer. • Three (3) days training (mainly outdoor) at the project location for each equipment/machinery to the workshop staff, drivers and co-drivers.
6	<p>Equipment and machinery All the equipment/machinery/vehicles mentioned herein below shall be designed, manufactured, fabricated and tested as per specified international standards i.e. ANSI/ASTM/ ISO/BS/EN/SAE. The latest edition and amendments shall apply in all cases. The Bidder shall state in his bid the standards and codes which he proposes for any equipment.</p> <p>The country of origin of manufacturing/fabrication shall be USA/Europe/Japan and any eligible ADB member country. The Contractor shall provide the name of country of origin for each equipment/machinery/vehicle for approval of the Employer/Engineer.</p> <p>The specifications of the equipment / machinery / vehicles to be supplied by the Contractor are given herein below. The Contractor may submit alternate proposal having better performance and extended useful life of the equipment. However, for any alternate equipment, the Employer/ Engineer's approval shall be mandatory.</p>

Explanations

¹Major faults - cover any faults which do not allow functionality or operation of the equipment/machinery.

²Minor repairs - cover everything which hinders full functionality or operation of equipment, or limits safety and security of personnel operating equipment/machinery

Section-II	
Specifications of the machinery and Equipment	
No.	Description, Specifications, and Standards
1	<p>Garbage Container 0.8 m³ capacity</p>  <p>The rectangular garbage container shall be provided with overall 0.8 m³ capacity. The material of the container shall be hot dip galvanized iron (GI) as per ISO 1461 or ASTM A123. Thickness of the main body shall not be less than 3 mm and thickness of top lid shall not be less than 2 mm. The container dimensions shall be approximately 1200mm x 1200mm x 800mm (±5%). The container shall be provided with six (6) nos. Teflon/steel wheels with NTN, SKF or FAG bearings and a wheel locking mechanism to prevent movement when placed at a location.</p>
2	<p>TRUCK MOUNTED GARBAGE COMPACTOR 8.0 m³</p>  <p>The Compactor shall be of Pack Plate Type Compactor with a minimum Compaction ratio of 1:2. The hopper loading height shall not be more than 900-950 mm and system-working pressure for compaction shall be about 160 to 180 bars. The body design shall be of independent construction and mounted to meet the Health and Safety of the working personnel. The superstructure's assembly shall be according to the truck's superstructure installation directives. The superstructure shall be mounted with rigid connection at rear, and flexible connection in front to provide the required elasticity. The design shall keep in view equal load distribution for better performance of the vehicle. All steel surfaces shall be applied with two coats of Zinc-rich Epoxy primers to give protection against rust and corrosion to enhance the design life, and one final coat outer side using 2- component polyurethane paint of min. 200 microns DFT in the color shade approved by Employer/Engineer. The paint shall be applied after sand/shot blasting according to SA 2.5</p>

The garbage compactor equipment shall conform to following specifications:

Chassis

- GVW** 8800 ~ 9000 kg on 6 tires
- Engine** Emission standards: Euro II
Type: Diesel, 4 stroke, 4 cylinders inline, water cooled, direct injection, turbocharged with intercooler
Power: 120 ~ 140 PS
Torque: 25 ~ 40 kgf-m
Displacement: 3500-4500 cc
- Clutch** Dry single plate diaphragm type, hydraulic control
- Transmission** min. 5 forward & 1 reverse
- Axle** Front: Reverse Elliot "I" section beam
Rear: Full floating type
- Brakes** Service: Hydraulic with dual circuit
Exhaust: Vacuum operated
Parking: Mechanical expanding type on shaft
- Dimensions** Wheel base: 3800 ~ 4000 mm
Width: 1900 ~ 2100 mm
Ground clearance: 200 ~ 210 mm
- Electrical** Batteries: 2 x 12 V, minimum 65 AH
Generator: 24 V
- Steering** RHD
- Suspension** Semi-elliptic, laminated leaf springs, hydraulic double acting telescopic type shock absorbers on front and rear
- Wheels** Tire size: 7.50-16 with 14 PR
No. of tires: 7 including one spare
- Fuel tank** Minimum 100 liters

Capacity

Cab Rigid cab all structural steel welded construction reinforced with beams in doors including air conditioning.

The cabin shall be factory built, beautifully designed, elegantly styled and comfortable finished. It shall have seating capacity for 3 persons (including driver).

Frame Ladder-shaped "I" channel section made of high strength structural steel

Authority letter from chassis manufacture describing that it is in operation in Purchaser's country for at least eight (8) years shall be attached with the bid.

Body

- Capacity** 8.0 m³ Excluding Hopper
- Body Material** DIN ST52, JIS SS 400, equivalent or better grade steel
- Body floor** 4.00~6.00 mm

If steel grade used is of yield strength more than 340Mpa, only then 4 mm thickness shall be allowed for Body floor. For DIN ST52 or equivalent material, 5.00 mm plate shall be used.

- Body Roof** 3.00 mm
- Body Side Plate** 4.00 mm

Stiffeners to be provided and these shall be full-seam welded on the body if required.

Safety Bars Locking & Sealing

2 Nos. Safety Bars under the hopper for maintenance. Hydraulic locking by means of two hydraulic tailgate lifting cylinders which shall also prevent the leakage of the wastewater.

Control Valves

Solenoid/Electromechanical valve with safety relief valve for operation from hopper side for press & pack cylinders and on driver side of chassis for Dumping / Ejection Operation.

PTO

2 Gear type operated through Electro-vacuum actuator from Cab. This shall be close coupled with Hydraulic Pump.

Hydraulic Pump

Pump shall be close-coupled with PTO 50-55 cc / rev. Piston type. The operating pressure shall be minimum 180 bars and Max. Pressure 350 bars.

Hydraulic Cylinder Double Acting Type

There shall be 8 units of hydraulic double acting cylinders; 4 Nos for Press & Pack plate, 2 Nos for hopper lift and 2 Nos for Bin lift with honed tube and chrome plated rod as per applicable ISO and SAE Standards. The dimensions of cylinders shall be designed to accomplish the stipulated cycle times and compaction ratio. The cylinder shall be warranted for 02 years.

Hydraulic Oil Tank

Hydraulic Tank. Capacity min. 75 liters, equipped with line return filter, suction filter, level & temperature gauge & breather cap.

Hydraulic Hoses

All high pressure hydraulic oil hoses shall be double braided according to SAE and shall have a burst pressure rating 2 times the working pressure. The hoses in motion are covered and Protected by steel wire.

Operation

Auto Cycle with Electro microprocessor control with manual option shall be provided. The system shall be equipped with emergency stop for safety. The operational control shall be placed on driver side with proper weather protection. Following options shall be available:

Auto Continuous: With this option the hopper operation shall continuously operate until stopped.

Manual: With this operation each action can be done separately by push buttons.

Manual override. Manual override shall be provided in each valve for operation.

The system shall be controlled from the PLC control box, which enables start, stop, 1 cycle, continuous cycles, and rescue activities. Tailgate and ejector controls shall be in front side of the body. All devices for loading control shall be mounted on tailgate right side, and all shall be manual control for safety purposes. Compaction shall be controlled electrically via push buttons, and manually whenever required. An emergency stop button shall be provided on each side of the truck on the control panel.

Control / Hopper Life Operation

Emergency operational control to be placed on driver side of body with emergency shut off for safety.

Water Tank

One tank of minimum 160 liters capacity under the hopper and other tank of minimum 75 liters capacity under the floor with discharge facility complete in all respects.

Mudguards

Two steel mudguards with rubber flaps at rear ends.

Foot board

Two foldable type rear footboards for crew to stand.

Handles

One handle at each side 1/2" pipe handle for the crews to grasp.

Service and maintenance

An authorized sales and service point for the truck brand shall be nominated.

Frame Compactor

- Sub frame should be integral part of the container floor reducing total body weight.
- Oil tank shall be built into the compactor container for modern look and reduced build length.
- Container and compacting parts shall be made of high grade steel for intensive use.
- Hopper construction should be made from hard Steel wear plates with high strength and high hardness such as Hardox, Abrazo or equivalent. The ejector plate slides shall be special heavy duty sliding blocks for smooth operation and low maintenance cost.
- Water tight sealing shall be provided between body and tailgate.
- Self-cleaning function shall be present in hopper during unloading.
- Drain valves shall be available for convenient emptying of waste liquids from the body and the hopper.
- The following items shall also be provided in the vehicle:
 - Integrated sewage tank
 - Rear lights mounted on body.
 - Automatic release/engage tailgate lock.
 - Both sides emergency shut-off switches.

Cab Exterior

- Color of Cab: As approved by the Employer
- Labelling: Logo, Motives and other labelling in both English and Urdu on both sides of the tank as per approval of the Employer.
- Front mirror
- Kerb mirror

Cab Interior

- Driver's seat with spring loaded type, seat belt and Co-drivers seats for 2 persons.
- Air conditioning system with temperature control without CFC and HCFC
- Instruments: Approved Tracking device, operational (fees paid) for the year in which the unit will be supplied to the Employer. Fuel Level monitor, Battery Condition & Water Temperature, Routing transmitter for tracking system. The vehicle tracking system, as a minimum being capable to monitor speeding, harsh braking, mileage, etc.

Lights

- Standard twin headlights for right-hand traffic
- Two (2) standard revolving beacons on cab roof left and right; yellow;
- One (1) Standard revolving beacon on roof back side of vehicle; yellow
- Protective grid: Hazard-warning lamps; synchronic blinking

Safety Equipment and Drive

- According to Pakistan Law on technical conditions of vehicles.

Supplements

- First aid kit and safety equipment as required according to Pakistan legislation
- Tool set (jack and spanner for change of wheel)
- Side and rear protection for truck.
- A Spare wheel (mounted on suitable place on the truck chassis).

3 Mini tipper 1.0 cubic meter



The mini tipper shall be designed to dump the waste directly in to the road side containers or hopper of garbage compactor. The tipper shall be designed to complete operation with double action cylinder. Two hydraulic stabilizers shall be provided to cater for uneven roads. Design shall be maintenance friendly and allow sanitary worker to directly load garbage into it. The design shall be ideal for door to door collection of waste in combination with Garbage Compactors. The mini tipper equipment shall conform to following specifications:

Chassis

Type	RHD
Engine	800~1000 CC (+/- 10 %) Petrol, EFI delivering 30~45 HP Emission Standard : Euro II
Length	3200~3300 mm +/- 10% Width 1400~1500 mm +/- 10%
Height	1600~1700 mm +/- 10%
Transmission	4 forward & 1 reverse
Fuel Tank	Minimum 35 liters
Tires	4.50 - 12

Container Volume One Cubic Meter (Approx.)

Authority letter from chassis manufacture describing that it is in operation in Purchaser's country for at least eight (8) years shall be attached with the bid.

- Body Sides shall be made from minimum 3 mm thick of material ASTM A 36, equivalent or better grade steel sheets corrugated for additional strength without increasing the weight of the body. The container shall have round profile near the floor joint to avoid corrosion and to assist the emptying of the container.
- Body Floor shall be made from minimum 4 mm thick of material ASTM A 36, equivalent or better grade steel. The floor shall be single piece for corrosion protection and built-in cab protector shall also be provided.
- Floor Stiffeners shall be minimum 3 mm thick of material ASTM A 36, equivalent or better grade steel "U" profile stiffeners shall be provided throughout the length of the floor for strengthening the floor.
- 5 mm thick Robust Hydraulic cylinder mounting brackets duly reinforced with mounting bracket plate (to avoid point load on the container) shall be provided.
- Two pivot brackets duly reinforced with 5mm thick Gussets shall be provided.
- All steel surfaces shall be applied with two coats of Zinc-rich Epoxy primers to give protection against rust and corrosion to enhance the design life, and one final coat outer side using 2-component polyurethane paint of min. 200 microns DFT in the color shade approved by Employer/Engineer. The paint shall be applied after sand/shot blasting to SA 2.5.
- Sub Frame: Rectangular Pipes 1.5 x 3 inch having thickness of 5 mm, suitably mounted on the pickup chassis. The Frame shall be mounted on the same cargo deck brackets originally installed by OEM to maintain strength of the chassis. Sub frame shall be attached to the chassis with High Tensile strength Nuts and Bolts. The canvas rubber Padding shall be provided.

- **Sub Frame Pivot Brackets** 8mm thick of material ASTM A 36, equivalent or better grade steel brackets shall be provided with Bi-Metallic Bushes for retaining lubrication. All lifting pins shall be equipped with grease nipples and spiral grease pathways to increase the productivity and design life of the structure.
- **Tipping Angle** shall be minimum 70 degrees which shall allow complete emptying of the container.
- **Tipping Height** of the body shall allow the waste to be emptied into a standard hopper of the compactor of 8.0 cubic meter capacity
- **Paint:** All steel surfaces shall be applied with two coats of Zinc-rich Epoxy primers to give protection against rust and corrosion to enhance the design life, and one final coat outer side using 2-component polyurethane paint of min. 200 microns DFT in the color shade approved by Employer/Engineer. The paint shall be applied after sand/shot blasting to SA 2.5.

Hydraulic System

Hydraulic Power Pack

Hydraulic Pump: 2.1~2.5 cc/rev., DC Motor 1500 w, Tank Capacity = 7~10 Liters (+/- 10%)

Operating Pressures: 100~140 bars

Hydraulic Fittings: High quality galvanized hydraulic fittings for leak free operations.

- **Hydraulic Hoses:** Double Braided SAE 100 R2 (min.) hydraulic hoses with burst pressure twice as much as the working pressure.
- **Hydraulic Lifting Capacity:** 1200 Kg minimum using a hydraulic double acting cylinder.

Hydraulic Lifting System

- **Lifting Cylinders:** Double acting hydraulic cylinders made from hard chromed rods and honed tubes shall be provided. Hydraulic seals suitable for local labeling shall be provided for efficient and long life of the cylinders. All Hydraulic Cylinders shall be equipped with hose burst protection; by means of Pilot operated check valves.
- **Stabilizing Cylinders:** 2 Nos. Double Acting Hydraulic Cylinders made from Hard Chromed Rods and Honed Tubes with hydraulic Seals for efficient and long life of the cylinders.
- The honed tubes, chromed rods, hoses and hydraulic seals shall be as per applicable ISO and SAE Standards

Electrical System

- 12 Volt DC Electrical System, Weather Proof Control Panel with high quality imported switches with Single action tipping operation.
- Operating Buttons placed on side of the vehicle

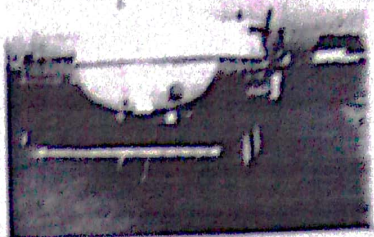
Accessories

Mudguards: Two MS mudguards with rubber flaps at the rear end. Reflective strips on the rear end of the mudguards.

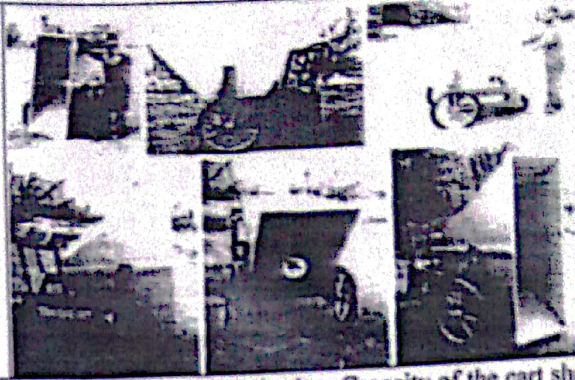
- **Rotating Beacon:** One Rotating Beacon Light on the cabin.
- **Working Light:** One working light for night time operations. Grill shall be provided for Rear Lights for protection.

Color: As per Employer/Engineer's approval

Visibility: Color and Labelling in English and Urdu on front and sides with Logo, Motive, slogan

4	Water bowser with spray system	
<p>The water tanker shall conform to the following specifications:</p>		
<p><u>Truck chassis</u></p>		
Type	Right Hand Drive 4x2	
GVW	8800 ~ 9000 kg on 6 tires	
Engine	Emission standards: Euro-II	
	Type: Diesel, 4 stroke, 4 cylinders inline, water cooled, direct injection,	
	turbocharged with intercooler	
	Power: 120 ~ 140 PS	
	Torque: 25 ~ 40 kgf-m	
	Displacement: 3500-4500 cc	
Clutch	Dry single plate diaphragm type, hydraulic control	
Transmission	Min. 5 forward & 1 reverse	
Axle	Front: Reverse Elliot "I" section beam	
	Rear: Full floating type	
Brakes	Service: Hydraulic with dual circuit	
	Exhaust: Vacuum operated	
	Parking: Mechanical expanding type on shaft	
Dimensions	Wheel base: 3800 ~ 4000 mm	
	Width: 1900 ~ 2100 mm	
	Ground clearance: minimum 200 ~ 210 mm	
Electrical	Batteries: 2 x 12 V, minimum 65 AH	
	Generator : 24 V	
Steering	RHD	
Suspension	Semi-elliptic, laminated leaf springs, hydraulic double acting telescopic type	
	shock absorbers on front and rear	
Wheels	Tire size: 7.50-16 with 14 PR	
	No. of tires: 7 including one spare	
Fuel tank Capacity	Minimum 100 liter	
Cab	Rigid cab all structural steel welded construction reinforced with beams in doors including air conditioning.	
	The cabin shall be factory built, beautifully designed, elegantly styled and comfortable finished. It shall have seating capacity for 3 persons (including driver).	

5

Handcart/waste tipping trolley

The handcart shall be provided for household waste collection. Capacity of the cart shall be 0.25 m³ and it shall be suitable for handling by single person. The material of the handcart shall be galvanized iron as per ISO 1461 or ASTM A123. Thickness of the sheet shall not be less than 2 mm. The bucket / pan shall be supported with stiff suitable size frame made from angle iron fames of 1/4" thickness and the substructure will also be fabricated from the same thickness of angle iron with suitable size to make it robust and sturdy.

a) Three wheeled hand carts with adjustable height for their compatibility with 0.8 cubic meter container

10% of the total Nos of hand carts will be built with adjustable height for discharging the waste directly into the container. The hand cart substructure will be fabricated so as to enable the pan / bucket to be easily lifted, by turning a handle, to a height where the pan / bucket can be easily tilted and the entire waste, in the bucket, can be tipped into the 0.8 m³ garbage container, the specifications of which have been described in the above sections of this table. The mechanism for tipping will be purely mechanical, user friendly and robust at the same time and no hydraulic mechanism will be used for this purpose. The balance of the trolley will be maintained during the tipping of waste into the container and inbuilt mechanism will be provided for that purpose.

A pilot model of the hand cart will be fabricated originally and got tested to conform to the above-mentioned specifications. Mass production will be only done after testing, removal of bugs and approval of the client.

b) Conventional three wheeled hand carts

Rest of the hand carts as per actual requirement will be fabricated without adjustable height to allow discharge of the waste at ground. Except for the mechanism for lifting the bucket of the hand carts, all other specifications will be same as mentioned above or below.

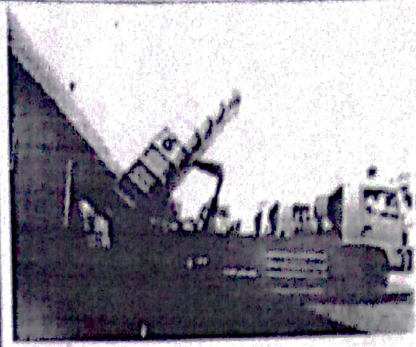
The superstructure shall be hot dip galvanized iron (GI) as per ISO 1461 or ASTM A123. The hot dipping will be carried with minimum film thickness of 70 to 90 micron after its complete fabrication and welding.

Handle shall be made from GI pipe of light quality & weight with minimum diameter of 25 mm. Two nos. wheels with rigid rubber tire having diameter minimum 550 mm shall be provided. One (1) no. jockey wheel of about 300 mm diameter shall be provided. The solid axle rod diameter shall be 30 ~ 35 mm. The substructure shall be painted with approved color with 200 microns DFT min.

A cubical bucket made of ABS Plastic/HDPE of about 20 liters capacity shall be provided with the handcart. A holding grating shall be welded with the handcart to hold the basket.

6

DUMP TRUCK 5.0 m³



The dump truck shall be used for transporting loose material in bulk. The dump truck shall be equipped with a mild steel body hinged at the rear and equipped with hydraulic rams to lift the front, allowing the material in to be dumped on the landfill Site.

The Contractor shall be responsible to design/manufacture the dump truck compatible with front end loaders already existing at site.

The dump truck of minimum 5.0 m³ capacity shall have equipment conforming to the following specifications:

Truck Chassis

Driver Cabin Rigid cab all structural steel welded construction reinforced with beams in doors. The cabin shall be factory built, beautifully designed, elegantly styled and comfortable finished. It shall have seating capacity for 3 persons (including driver).

Drive 4x2 Right Hand Drive

Horse Power 200 ~ 240 PS GVW

17000 to 18000 kg

Wheel Base 4600 to 4700 mm

No. of Tires 07 including one spare

Torque 50 ~ 80 kgf.m

Emission Standard Euro II

Fuel Tank Capacity 200 ~400 Liters

Gear 6 forward 1 reverse

Clutch Hydraulic controlled, Dry single plate

Service Brake Full air brake or Air Over Hydraulic

Exhaust Brake With Pneumatic Control

Parking Brake Mechanical expanding type acting on the shaft

Electric System 24V DC

Ground Clearance 200 mm minimum

Tires minimum 10-20 with 16 PR

Engine Emission Standard: Euro-II

Intercooled, 4-stroke, 6 cylinder, Vertical in-line, water cooled, direct injection Diesel, turbo charged with intercooler

Displacement: 7500~8500 cc

- Authority letter from chassis manufacture describing that it is in operation in Purchaser's

country for at least eight (8) years shall be attached with the bid.

- Wheel base dimensions shall be adopted for proper weight distribution to keep the balance and steering and load calculations shall be provided for approval of the Employer/Engineer.

Superstructure

Material DIN ST52, equivalent or better grade steel

Construction Steel body manufactured from steel sheets with appropriate stiffeners and tailgate to open automatically for dumping and locked during travelling.
The thickness of steel sheets shall be as follows:
Body Sides: 3 mm MS Sheet (with 6-8 Nos Stiffener of same
Body Floor: 4mm MS Sheet (with 10 Nos cross members of same material
Body Front: 4mm MS Sheet (With 2 No. Stiffener of same material
Tail Gate: 4.00 mm (min.)
Sub & Lift Frame: 10.00 mm (min.)
Reinforcement Channels: 4.00 mm (min.)

PTO Side Mounted Power Take Off Unit
Hydraulic Pump Suitable for close couple arrangement with PTO.
Pump Flow: 60-65 cc/rev. Max. Pressure 350 bars
Operating Pressure Shall not be less than 190 bars.

Lifting Scissor/Front End Hydraulic cylinder
Lifting capacity 4 Ton minimum

Hydraulic Cylinder Double action Hydraulic cylinder
Chromed Rods as per applicable ISO and SAE Standards

Pressure Safety To prevent hose bursting valve

Oil Reservoir With level & temperature gauge
Tank Capacity 50-60 Liters

Filters On line return filter, Suction Filter and Breather cap with strainer

Governor Full hydraulic speed governor shall be provided to adjust the engine speed according to system pressure.

Paint All steel surfaces shall be applied with two coats of Zinc-rich Epoxy primers to give maximum protection against rust and corrosion to enhance the design life, and one final coat outer side using 2-component polyurethane paint min. 200 microns DFT in the color shade approved by Employer/Engineer. The paint shall be applied after sand/shot blasting to SA 2.5.

Cab Exterior

- Color of Cab: As approved by the Employer
- Labelling: Logo, Motives and other labelling in both English and Urdu on both sides of the tank as per approval of Employer.
- Front mirror
- Kerb mirror

Cab Interior

- Driver's seat with spring loaded type, seat belt and Co-drivers seats for 2 persons.
- **Instruments:** All standard and necessary instrument and meters for assuring the safe

operation of the vehicle will be provided.

Lights

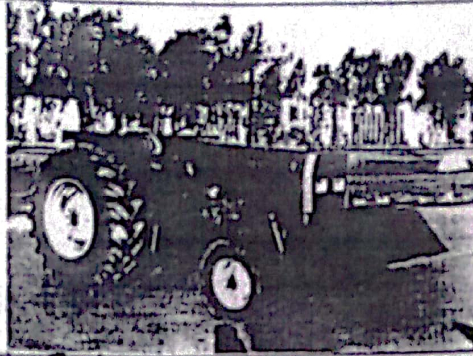
- Standard twin headlights for right-hand traffic
- Two (2) standard revolving beacons on cab roof left and right; yellow;
- One (1) Standard revolving beacon on roof back side of vehicle; yellow
- Protective grid: Hazard-warning lamps; synchronic blinking

Safety Equipment and Drive

According to Pakistan Law on technical conditions of vehicles.

7

Front blade tractors



Tractor	4-Wheel Drive
Rate Engine Power	85 HP @ 2200 rev/min
Max Engine Torque	291 Nm @ 1600 rev/min
Transmission	8 forward, 2 reverse
Fuel Capacity	108 liters
Front End Blade	<ul style="list-style-type: none"> • Front blade for 85 BHP tractor • Blade size (7'x27") with cutting edge of 6"x1/2" of high carbon alloy steel • Ram type : Hydraulic Double acting
Max. lift of blade	21 inches
Max. depth below ground	4 inches
Accessories	<ul style="list-style-type: none"> • Pintle hook • Sun canopy • Standard toolkit

Motor cycle	70 cc
Engine	4-Stroke Single Cylinder Air Cooled
Displacement	72 cm ³
Bore & Stroke	47.0 x 41.4 mm
Compression Ratio	8.8 : 1
Clutch	Multiple wet plates
Transmission	4-speed Constant mesh
Starting	Kick Start
Frame	Backbone Type
Ground Clearance	135-140 mm
Petrol Capacity	8-10 Liters
Tire at front	2.25 - 17 (4 PR)
Tire at back	2.50 - 17 (4 PR)
Dry Weight	80 - 90 Kg

10 Paint and labeling

The paint on the truck chassis shall be applied by the truck chassis manufacturer as per applicable international standards.

The paint on all other fabricated bodies and superstructure of vehicles described in Item No. 7 above, and handcart shall be applied after thorough sand/shot blasting to SA 2.5 and after achieving the appropriate surface profile for proper adherence of the paint. The surfaces shall be applied with two coats of Zinc-rich Epoxy primers to give maximum protection against rust and corrosion to enhance the design life, and one final coat outer side using 2-component polyurethane paint of min. 200 microns DFT in the color shade approved by Employer/Engineer. The paint shall be of internationally reputed paint manufacture such as Akzonobel, Jotun, Sherwin Williams or equivalent approved by the Employer/Engineer.

The paint color, labeling i.e. logo, motives, slogans etc. on the vehicles, garbage container and hand cart etc. shall be applied after approval of the Employer.

II

Allied Accessories (Vehicle Tracking and Monitoring System etc.)**Scope of Work**

The scope of works shall include the design, supply, installation, testing and commissioning of Vehicle Tracking Monitoring System (VTMS) complete with associated electrical and communication wiring works, control equipment, LED video display unit, works stations, mounting brackets and accessories. The Contractor shall be responsible for providing complete turnkey system solution including auxiliary equipment, and all such equipment with accessories shall be deemed to be included in the scope of Contractor and no extra payment shall be made to the Contractor for these. The system shall include Hardware and Software of Vehicle Tracking, wiring, termination, electrical boxes, and all other necessary material for a complete operating system in Control rooms. The bidders may raise the queries for any clarification, missing information or ambiguity if any, within one week after issuance of bidding documents. Any work to be carried out by the owner

/ Main contractor, should be mentioned clearly along with the bid, otherwise no claim against extra work shall be acceptable. Specification, Drawings and BOQ etc. should be read carefully to comply with specified loads, serving landings and other general and special safety features. Any deviation from specification / BOQ should be mentioned well in time before submission of bid.

The Hardware and Software of Vehicle Tracking and Monitoring System (VTMS) works are to be performed; the requirements given in the Technical Specification shall be fulfilled. The Contractor shall be responsible and provide the following:

- Hardware and Software of Vehicle Tracking, and Monitoring System (VTMS).
- Hardware and Software of Tracking, and Monitoring System (VTMS) to remotely control, and transmit information regarding status of each device from the Site to Control Room
- Operator Workstation with LED Video Display Unit at the Central Control Room
- All software packages shall be provided in original installation media along with their licenses
- Preparing an Engineering Design Report covering, at least, the following subsystems:
 - 1) Detailed Construction Drawings and As-Built drawings for the Hardware and Software of Vehicle Tracking and Monitoring System (VTMS)
 - 2) Schematics and interconnection diagrams showing Hardware and Software of Vehicle Tracking and Monitoring System (VTMS) controllers and other elements to monitor and control the processes outlined above.
 - 3) The exact quantities and types of hardware and software required
 - 4) Technical details of the hardware and software of the complete systems
 - 5) Schematic drawing of the complete systems
 - 6) Layout drawings.
 - 7) Cable schedules and routing plan.
 - 8) Detailed description of the data acquisition software, user configurable functions and software features to be provided.
 - 9) Complete details, brochures and pictures of the proposed area.
 - 10) Installation, testing and commissioning procedures and methodology.
- Procure, transport and deliver equipment and hardware to site, after approval of the above report(s) by the Engineer.
- Design, install, test and commission of Hardware and Software of Vehicle Tracking and Monitoring System (VTMS) in accordance with the procedures given in the engineering design report.

- Provide training to the minimum four personnel nominated by Employer for 15 days. Bidder shall submit with his bid the following Documents/Data for all system equipment including Hardware and Software of Vehicle Tracking and Monitoring System (VTMS).
- Brochures and data sheets of each equipment
- Block diagram of Hardware and Software of Vehicle Tracking and Monitoring System (VTMS)
- Test standards and design
- Backup calculations showing that Hard Disks shall be able to record data of all systems for a period of two years.
- International Standard Reports/Certificates

Standards

Materials/Equipment shall be designed, manufactured, tested and installed according to relevant IEC/ISO/ITU/EN/CE Recommendations. Where no such Recommendations have been issued to cover a particular subject then a recognized international standard shall be applied. The latest edition and amendments shall apply in all cases.

The Bidder shall state in his bid the standards and codes of practice which he proposes for any items of system or equipment not covered by IEC/ISO/ITU/EN/CE Recommendations. If required by the Employer, the Contractor shall submit two English language copies of any standard or code of practice. Equipment and design shall comply with international USA / European or Any AIB eligible member Country standards.

General Specifications

All the vehicles described above shall be equipped with a Vehicle Tracking and Monitoring System (VTMS), as a minimum being capable to monitor vehicle routes, speed of travel, distance covered harsh braking, mileage in Control room etc.

Through VTMS all the operational vehicles and their working shall be easily recorded and monitored. By using this web application, the Client shall be able to monitor the operational vehicle route and speed to keep a strict eye on the vehicles. The Vehicles shall be equipped with approved Tracking device

- operational (fees paid) for the year in which vehicle is supplied to the Employer, routing transmitter for tracking system, and
- other instruments such as for Fuel Level, Battery Condition & Water Temperature and Tachometer etc.

All the vehicles shall be equipped with air-conditioning system, weight sensors and wi-fi compatibility approved by the Engineer/Employer. All the equipment/machinery shall be equipped with Vehicle Trip Counting System (VTCS) being automatically operated without any human involvement. This web-based system shall be accessible through internet.

Vehicles shall be equipped with a beacon light (yellow, commercial quality) on roof of driver's cab, to be operated from inside the cabin.

Warranty

The Contractor shall provide warranty for all equipment for a period of one (1) year through authorized local distributor commencing the hand-over and acceptance date to the Employer. No equipment shall be accepted without warranty certificate from the manufacturer (OEM). It shall cover all costs for warranty service, including parts replacement, labour, prompt field service, pick-up, transportation, and delivery. No extra cost shall be admissible for Warranty services.

Functional Description

Vehicle Tracking System

The Vehicle tracking system shall be installed at every moving vehicle. The Vehicle Tracking System should have the following features

- Fleet management solution
- Satellite tracking system (GPS) with enhance real time GPRS connectivity
- Solution with nationwide coverage
- 24x7 location on call
- Multiple users' logins
- Geo fence alert
- Battery disconnect alerts
- Vehicle immobilization in case of emergency
- Activity report
- Activity summary report
- Geo fence in/out report (multiple fences)
- Stop report
- Trip wise report
- Mileage report
- Harsh breaking report
- Over speed report
- Live status page (all vehicles live status on one page)
- Bird eye view (graphical reporting)
- Oil change alert (system generated intimation by email) based on tracker kilometers.
- Daily, weekly, monthly, yearly reporting
- Vehicle specific reporting
- Raw data availability (for in-house customized reporting/ data-processing)
- Route/geo-fence violations
- Data shall be provided to company in e-format, as per agreed standards & format
- Complete activity report
- Reports will be fetched against company, category, vehicle type, and town against given time period
- Summary option shall be for day, week, month
- Company geo fence defined in out report
- Trip report detail (during trip start from parking site till pick container then dump at dumping site) travel time, stop time, number of container pick, mileage and other fields
- Container visited summary
- Dumping site visited report
- Workshop visited report
- Continues driving report
- Area wise speed violation report

Fuel Kit

The fuel kit shall be installed at every moving vehicle. The Fuel Kit should have the following features

- Online fuel monitoring through web portal
- Fuel injection/refilling report (liters)
- Fuel consumption vs driven km's report
- Fuel monitoring report

- Online dashboard

Operator Workstation

The minimum configuration of the Operator workstation PCs and the LED Monitors shall be an IBM compatible server computer based on the currently prevailing version of the Intel Core i7 microprocessor. One number Operator workstation shall be installed at control rooms. The minimum configuration of the server shall be as per the following minimum specifications:

- Core i7 8th Generation processor latest version
- Intel series chipset Q370
- 16GB RAM- DDR 4
- 1TB Internal Hard disk drive 7200 RPM 3.5inch
- HDMI port for connection to the High-quality monitor
- DVD/RW drive
- 24" LED monitor FHD with HDMI and VGA
- R/W combination CDR and DVD, Keyboard, Mouse and Peripheral Interface Cards
- Latest MS WINDOWS 10 Professional 64-bit pre- installed Operating System and associated software.
- All components/equipment shall be same brands and shall be OEM Manufacture

4K 55" LED VDU

The 4k 55" LED VDU (video display unit) shall be used to show and monitor all the vehicle routes, speed of travel, distance covered, harsh braking, mileage etc. One number 4k 55" LED VDU shall be installed at control rooms. The minimum configuration of the 4k 55" LED VDU shall be as per the following minimum specifications

- 4k Resolution with HDR (High Dynamic Range).
- 8.3 Million Pixel RGB UHD.
- Quad Core Processor.
- Ethernet LAN Port with wireless Network Card built- in.
- All accessories, wall mounting brackets, Remote, user manual.
- Original manufacturer's with warranty card
- Vehicle Tracking and Monitoring System software shall be installed in Control Room.

EQUIPMENT DATA SHEET

The bidders are required to fill in the following form completely and clearly, for each equipment/machinery/vehicle along with the units of measurement.

Item		Particulars
	Name of Equipment	
	Manufacturer Details with Country of Origin	
	Name	
	E-mail address of the concerned person	
	Phone No.	
	Certifications	ISO 9001
		ISO 14001
		OHSAS 18001
	Service Interval (per operating hours / per km)	
	Average Fuel Consumption (per operating hours / per km)	
	Average Cost Per Service Interval (including fuel and scheduled maintenance)	

Punjab Cities Program

Amended Cost Estimate for Provision of Equipment & Machinery for Improvement of Solid Waste Management System in Kot Addu City

**Summary of cost
(All cost in million PKR)**

1	Group-A	
	Vehicles chassis	62.303
2	Group-B	
	Super structure of the vehicles	60.033
3	Group-C	
	Three years HR cost for operation of Solid Waste Machinery	20.520
	Group-D	
4	Cost of purchase of the Vehicle Tracking System	1.884
	Service charges for 3 years	0.960
	Total cost	145.699


For cost effective procurement, the vehicles will be Chassis procured directly from the manufacturers and will be handed over to successful fabricators (in the bidding process) for fabrication of the required super structures on the chassis.

**Sub Engineer
MC Kot Addu**

**Municipal Officer (I&S)
MC Kot Addu**

1. The engineer in charge and sub-engineer shall be responsible for:-
2. Allocation of work in accordance with specification contained in the estimate;
3. Allotment of funds and order for its commencement issued by competent authority.
4. The terms of contract are strictly enforced.
5. All codal formalities should be ensured before commencement of work.
6. Provision of Section 4(5) & 5(2) of the Punjab Local Government (Work) Rules, 1964 shall be strictly followed.
7. Technical analysis/rate analysis of non-standardized items is incorporated with the estimate on the basis of technical features and lowest market quotations.
8. Feasibility and drawings, L&N sections are based on site and parameters contained in the estimate.
9. The credit for existing or old dismantled materials should be afforded to the project in accordance with the codal rules and financial procedure properly.
10. Quality control test of the materials, if required shall be carried out and reports annexed with the file.
11. 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.
12. 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 from competent forum.
13. The payment will be made as per actual work done according to quality and quantity.

Estimate Technically Sanctioned for Rs: _____
 Purpose: _____


(MUNICIPAL OFFICER)
CHIEF ENGINEER (I&S)
MUNICIPALITY (KOT ADDU)
LOCAL GOVERNMENT (PUNJAB)

Punjab Cities Program
Cost Estimate for Provision of Equipment & Machinery for Improvement of Solid Waste Management System in Kot Addu City (Chassis of the vehicles)

(All cost in PKR)

S. No	Detail of equipment & machinery	Unit	Rates	QTY	Cost
			Truck Chassis		
1	Garbage compactor 8.0 cubic meter capacity	No	6,100,000	4	24,400,000
2	Front Blade Tractor 4WD	No	3,083,000	1	3,083,000
3	Front End loader 4WD	No	3,083,000	1	3,083,000
4	Mini tipper 1.0 cubic meter	No	1,434,000	4	5,736,000
5	Water truck with spray system	No	6,100,000	2	12,200,000
6	Dump truck 5 cubic meter	No	6,100,000	2	12,200,000
7	Motor 70 cycle	No	115,000	2	230,000
Total of work outlay					60,932,000
Contingencies				2.0%	1,218,640
Public awareness				0.25%	152,330
Total cost					62,302,970
Cost in million PKR					62.303

The payment will be made as per actual work done according to "X & L" Section & Lead Responsibility lies with Engg. In-charge.

- The machinery & equipment which are procured by MC as per standards and specification included in the PC-1
- Quotations for the machinery & equipment are annexed in PC-1
- For cost effective procurement, the vehicles will be Chassis procured directly from the manufacturers and will be handed over to successful fabricators (in the bidding process) for fabrication of the required super structures on the chassis.

[Signature]
Sub Engineer
MC Kot Addu

[Signature]
Municipal Officer (I&S)
MC Kot Addu

[Signature]
Chief Officer
MC Kot Addu

Annexure-G

Three years HR cost for operation of Solid Waste Machinery

All costs in PKR

Machine Name	Designation	No of slots	Salary/ Month	Annual Cost	Cost for 3 years	No of vehicles	Cost for three years	
Compactor Truck	Driver	1	35,000	420,000	1,260,000	4	5,040,000	
	Helper	1	20,000	240,000	720,000		2,880,000	
Mini tippers	Driver/ worker	1	25,000	300,000	900,000	4	3,600,000	
Dumper Truck	Driver	1	35,000	420,000	1,260,000	2	2,520,000	
Front Blade Tractor	Driver	1	35,000	420,000	1,260,000	1	1,260,000	
Front End Loader	Driver	1	35,000	420,000	1,260,000	1	1,260,000	
Water Bowser	Driver	1	35,000	420,000	1,260,000	2	2,520,000	
	Helper	1	20,000	240,000	720,000		1,440,000	
Total cost								20,520,000
Million Rupees								20.520

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

Punjab Cities Program
Cost Estimate for Provision of Equipment & Machinery for Improvement of Solid Waste Management System in Kot Addu City (Chassis of the vehicles)
Vehicles super structures and other equipment

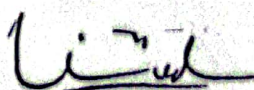
S. No	Detail of equipment & machinery	Unit	Unit rate	QTY	Cost
1	Garbage container 0.8 cubic meters capacity	No	75,000	264	19,800,000
2	Garbage compactor 8.0 cubic meter capacity	No	4,250,000	4	17,000,000
3	Three wheeled conventional handcarts	No	50,000	153	7,650,000
4	Three wheeled handcarts with adjustable height compatible with 0.8 cubic meter containers	No	72,000	17	1,224,000
5	Mini tipper 1.0 cubic meter	No	700,000	4	2,800,000
6	Front Blade Tractor 4WD	No	221,000	1	221,000
7	Front End loader 4WD	No	1,016,800	1	1,016,800
8	Water truck with spray system	No	2,000,000	2	4,000,000
9	Dump truck 5 cubic meter	No	2,500,000	2	5,000,000
Total of work outlay					58,711,800
				Contingencies	2.0%
				Public awareness	0.25%
					60,032,816
Grand Total Cost					60,032,816
Cost in million PKR					60.033

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

- 1 The machinery & equipment will be procured by MC as per standards and specification included in the PC-1
- 2 Quotations for the machinery & equipment are annexed in PC-1
- 3 For cost effective procurement, the vehicles will be Chassis procured directly from the manufacturers and will be handed over to successful fabricators (in the bidding process) for fabrication of the required super structures on the chassis.


 Sub Engineer
 MC Kot Addu


 Municipal Officer (I&S)
 MC Kot Addu


 Chief Officer
 MC Kot Addu

Annexure-H
Cost of Monitoring & vehicle Tracking System

All cost in PKR

S. N.	Machine Name	Unit	No of vehicles	Rate	Cost
1	Cost of purchase of the systems	No	14	134,550	1,883,700
2	Annual Services charges	No	14	68,562	959,868
	Service charges per annum = Rs 22,854				
	Service charges for 3 years = Rs 68,562				
Total cost					2,843,568
Million PKR					2.844

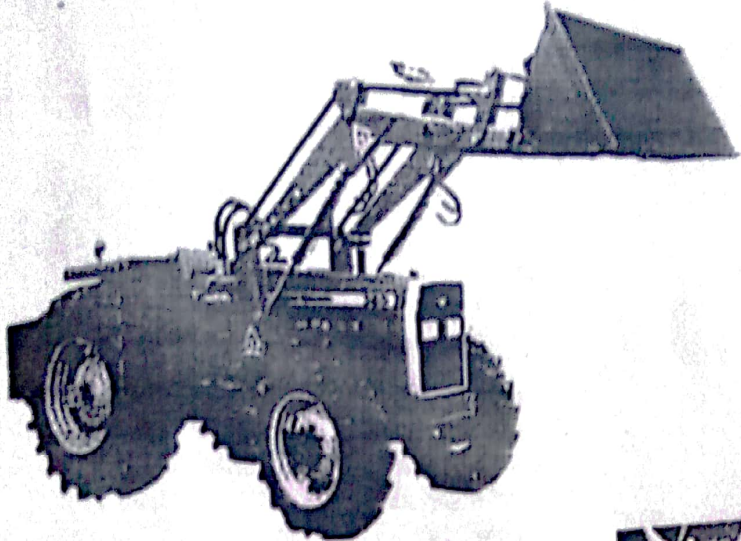
Nearest Govt. Approved quarry and Shortest route responsibility of Engineering incharge



MILLAT TRACTORS LIMITED

MILLAT COMMERCIAL LOADER

Helping to Build the Nation



Hydraulic Oil Tank



Counter Weights



PTO Pump

Millat Commercial Loader is designed to hold, lift and tilt the bucket located at the end of two long arms with strength and safety. The Commercial Loader is hydraulically powered which provides the necessary power to lift the load.

Recommended Use:
Cotton Bale Handling, Husk Application, Coal Application, Loose Cotton Handling, Crusher application and Cotton/ paper industries.

Specification:-

Loader Compatibility with
 Bucket Type
 Bucket Volume
 Bucket Size
 Lifting Time
 Max. Lifting Weight
 Operation
 Lifting Height at Pivot Point
 Lift Ram
 Bucket Ram
 Control
 Weight Box
 Oil Tank

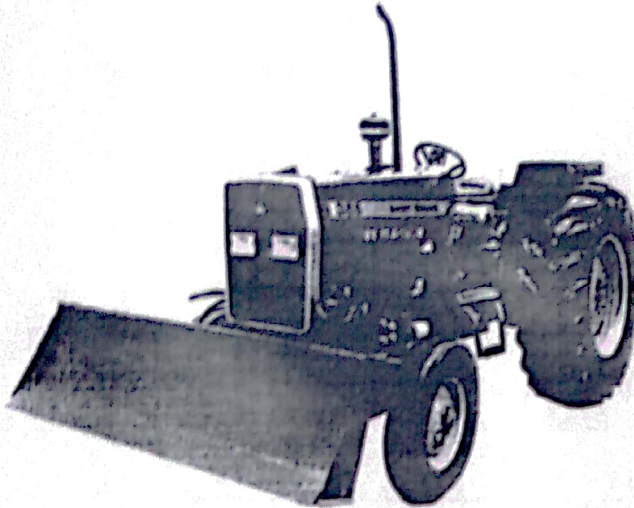
For MF 375, MF 385, MF 385 (4wd)
 Closed Earth Soil Leveling Bucket with Digging Teeth
 0.6 cubic meter
 5.5'
 8-12 sec
 1000 KG
 Hydraulic-Extra Pump PTO Drive Shaft-9 Plunger
 11.5 ft
 2 Cylinders
 2 Cylinders
 80 lit. 2 Spool Valve, 210 bar - Imported
 Fixed Size L: 34" W: 32" H: 34"
 80 Liter with Oil Filter & Oil Level Gauge





FRONT BLADES

"Levelling a Clear Road to Progress"



The Power Dozers are designed and built to match the performance of the Millat Tractors. They are operated hydraulically by single or twin double acting rams. The points of attachment of the dozer to the tractor are reduced to an absolute minimum and the mounting brackets, once fitted, can be left in position enabling the sub-frame and blade to be quickly removed and attached. The blade is fitted with a reversible and replaceable cutting edge of high carbon steel.

SPECIFICATIONS:

Power Dozer to fit	MF 240, 350 Plus, 260, 360, 375, 385, 385-4WD tractors
Blade	Model MT-08/1 = 6' x 24" (Single ram) (MF 240, 350 Plus, 260, 360)
	Model MT-08/2 = 6.5' x 24" (Twin ram) (MF 375, 385, 385-4WD)
Cutting Edge	152mm (6") x 12.7 mm (1/2") section high carbon/alloy steel reversible and replaceable.
Hydraulic Ram	02 Jacks, Heavy duty, double acting
Control Valve	45 ltr. double acting spool valve-Imported
Blade Movement	Maximum lift 533mm (21"). Maximum depth below ground 102mm (4").

Customer: Chief Officer
Municipal Committee
Kot Addu

QUOTATION

Consignee:
As above

MCI No.:	H/M-C/000107
Dated:	Jan 13, 2022
Sales Region:	Central
Price Basis:	Karachi
Validity:	15 Days
Delivery:	3 - 4 Months From the Order Confirmation along with 100% Advance Payment
Color:	Hinopak's Standard
Payment:	100% advance through Pay Order/Bank Draft in favor of "Hinopak Motors Limited"
NTN #:	34-01-0815070-2
Income Tax Exempted #:	Under SRO 18 U/S 153 (4)
Sales Tax #:	02-02-7610-003-73
ISO 9001:2015 #:	MER 19.184/UQ dated 22-08-2019
ISO 14001:2015 #:	MER 19.621/UE dated 23-01-2020
ISO 45001:2018 #:	MER 20.044/UOH dated 28-01-2021

GOODS & PRICES:

S.No	Products	Qty	Unit Price Rs.	Total Amount Rs.
1.	HINO Dutro XZU720R Truck Chassis Turbo Intercooled (Euro-III with ABS)	08	6,000,000/-	48,000,000/-

Note: Transportation charges of Rs. 100,000/- per unit inclusive of transit insurance from Karachi to Kot Addu will be charged separately.

Other Terms:

1. Manufacturer: Hinopak Motors Ltd.
2. Warranty of Chassis: 12 months or 100,000 km, whichever occurs first from delivery of vehicle.
3. Above price is inclusive of 17% General Sales Tax.
4. This proposal is subject to standard force majeure terms and conditions including any interruption in production / Supply / Assembly caused by lockdowns imposed by the Governments of Japan / or Pakistan. Delivery period may please increase due to change in supply chain schedule by COVID-19 pandemic.
5. The quoted price is based on prevailing exchange rate of Japanese Yen/US \$ and fluctuation on current applicable duties, taxes and other government levies. In case of any levies or imposition of any new duties or taxes (Sales Tax, RGST, VAT, Flood Surcharge, Excise Duty etc.), at the time of delivery, our quoted prices will change accordingly which will be entirely on customer's account.

This offer is subject to availability of stocks and prior sale and the General Terms & Conditions as printed on reverse of this Quotation, Prices prevailing at the time of physical delivery of the vehicle will be charged.
for and on behalf of

Hinopak Motors Limited, -

Saqib Khalid

Saqib Khalid
Regional Head- Area Central
Cell: 0302-8735292

Municipal Committee Kot Addu
Hinopak Motors Limited

Multan Office: Bahawalpur Muzaffargarh Road (N-70), Near Hasan Sawail Chowk, Multan.
Tel: 061-4263205-7 Fax: 061-4263208 E-mail: hino-multan@hinopak.com
Head Office: D-2, S.I.T.E., Manghopir Road, P.O. Box No. 10714, Karachi-75700. Tel: 32563510 (9 Lines) 32583525 (3 Lines)
UAN: 111-25-25-25, Fax: 3256-3028 E-Mail: Info@hinopak.com Web site: www.hinopak.com

Dated : 2nd December 2021

Attn:

Chief Officer

Municipal Committee

Kot Addu

Subject: Quotation for Solid Waste Equipment.

Dear Sir,

This is with reference to your inquiry regarding procurement of sanitation solid waste machinery as per specifications given by PMDFC ;

We are pleased to quote our best rates as under.

Serial No.	Part Name	Unit Price (Rs)
1	<u>Garbage container 0.8 M3</u>	Rs 75,000
2	<u>Garbage Compactor 8 cubic meter (without truck)</u>	Rs 4,250,000
3	<u>Truck Mounted Dumper 5M3</u>	Rs 2,500,000
4	<u>Hand Cart</u>	Rs 50,000
5	<u>Hand carts with adjustable height</u>	Rs 72,000
6	<u>Mini Tipper 1.00 M3 on SUZUKI RAVI without Chassis</u>	Rs 700,000
7	<u>Water Truck Spray System</u>	Rs 2,0000,00

Terms and Conditions:

1. The above price is inclusive of all Govt Taxes.
2. Delivery Time: 90~120 Days after receiving firm order
3. QUALITY: Equipment is manufactured according to EN ISO 9001
4. Payment: 50% advance and remaining after successful inspection



13 - Km, Multan Road, Lahore, Pakistan. Tel # +92 42 37512165, Fax # +92 42 37512164



MILLAT TRACTORS LIMITED

MILLAT'S MF 385 4WD

The Strongest Pakistan Made Tractor

Edge Over 2WD

Product Features

- | | |
|--------------------|----------------|
| ● TRACTION | 30 % More |
| ● DRAWBAR POWER | 16 % More |
| ● DRAWBAR PULL | 34 % More |
| ● TYRE WEAR | 15 % Less |
| ● FUEL EFFICIENCY | 15 % More |
| ● FIELD WORK SPEED | 13 - 20 % More |





MILLAT TRACTORS LIMITED

MILLAT'S

MF 385 4WD Specifications

PERFORMANCE	
Engine power at 2,200 rpm	86 (B.S.) hp*
Torque at 1,000 engine rpm	300 Nm
PTO power at 2,200 engine rpm	70hp**

*Certified to BS AU 141a: (1971)
**Manufacturer's estimate

ENGINE	
Type	Diesel / 4,41
No. of cylinders	4
Injection	Direct
Bore	101 mm
Stroke	127mm
Capacity (litres)	4.1
Aspiration	Natural
Compression ratio	15.3:1
Starting aid	Thermostart
Throttle control	Hand & foot
Cooling	Water
Air cleaner type	Oil bath
Air pre cleaner	Over bonnet
Fuel filter	Dual high capacity with sedimentor
Exhaust	Vertical, muffler under bonnet
Oil Cooler	Water Cooled

ELECTRICS	
Voltage	12 Volt, Negative Earth
Battery	118Ah
Alternator / Starter	45A / 2.8 kw

CLUTCH	
Type	Dual
Diameter	305mm x 254 mm
Lining material	Ceramic

TRANSMISSION		
Type	Sliding spur	
Number of gears	6 forward, and 2 reverse	
Road speed at 2,200 engine rpm with 18.4/15-30 rear tyres		
Gear	Speed (km/hr)	
Forward 1 (First low)	2.9	
Forward 2	4.2	
Forward 3	5.8	
Forward 4	7.8	
Forward 5 (First High)	11.0	
Forward 6	17.0	
Forward 7	23.13	
Forward 8	31.0	
Reverse 1 (Low)	4.0	
Reverse 2 (High)	15.7	

POWER TAKE OFF	
Type	Live
Engine speed at 540 PTO rpm	1,769 rpm
Shaft diameter	35 mm
No. of splines	6

HYDRAULICS	
Functions	Draft control, Position control, Response control, Constant pumping
Pump type	4 Piston, Ferguson Pump
Oil flow	16.7 litres/min
Pressure	21 MPa (205 bars) at normal operating temperature
Lift capacity with lower links horizontal	2,145 kg
Lower links	Cat. I & II with interchangeable balls

STEERING	
Type	Hydrostatic

4 WD FRONT AXLE	
Axle Type	Parallel drive
Engagement	Mechanical

REAR AXLE & BRAKES	
Axle Type	Sinaddle with epicyclic reduction unit
Brake Pedal	Pendant
Brake Type	Oil immersed, multi-disc
Braking area	1,774 sq.cm
Brakes Actuation	Hydraulic
Parking brake	Hand lever operated

INSTRUMENTATION	
Gauges	Tachometer, Hourmeter, Fuel level, Water temperature & Battery Condition
Warning lights	Direction Indicator, Electric charge, Head light main beam, Low engine oil pressure, 4WD indication light & Auxiliary socket

TYRES	
Front	12.4 / 11 - 24 (12PR)
Rear	18.4 / 15 - 30 (8 PR)

TRACK ADJUSTMENT	
Front Axle	1,376-1,944 mm
Rear Axle	1,423-2,134 mm

WEIGHTS AND DIMENSIONS (APPROX)	
(With 12.4/11-24 Front & 18.4/15-30 rear wheel with full fuel, oil & water)	

Weight	
Gross Weight	2,790 kg
Dimensions	
Overall length	3,810 mm
Overall Width (min.)	1,871 mm
Wheel base	2,350 mm
Height	
Over exhaust	2,485 mm
Over steering wheel	1,781 mm
Turning Circle	
Without brakes	8,510 mm
Ground Clearance	
Under gear box	501 mm
Under 4WD front axle	395 mm

CAPACITIES	
Fuel Tank	108.0 l
Engine sump	7.5 l
Cooling system	15.2 l
Hydraulic system	42.0 l
Power steering reservoir	1.75 l
Oil bath air-cleaner	0.75 l
Brake Oil	0.5 l
4WD front axle differential	6.5 l
Hub each side	0.7 l

STANDARD EQUIPMENT	
Weight frame without weights, Standard tool box with set of tools, Top link, Top link end Cat-I & II balls, Check chain, Spring suspension seat, Flat top fenders, Operator's & Service manual.	

OPTIONAL EQUIPMENT	
Front end weights, Swinging Drawbar, Sun Canopy, Rear Counter weights, Pintle hook and 9 Hole drawbar	

OPERATOR AREA	
Seat	Cushioned
Fenders	Flat top
Tool	Standard

Note: Millat Tractors Ltd. reserve the right to change specifications without prior notice.





MILLAT TRACTORS LIMITED

P.O. Box No. 12024 Sheikhupura Road, Shahdara, Lahore - Pakistan
 TOLL FREE: 111 200 780 Ext. 405 Tel: 37922259 Fax: 37924199, 37925615
 Email: amir.muzaffar@millat.com.pk, fax_sales@millat.com.pk



QUOTATION

To: Office of the Municipal Committee,
 Kot Addu
 Kind Attention:-
 Contact Details:-

MTL Reference	MTL/Sale/Q/2021/45
Query Reference	Date: 15/11/2021
Cell / Phone No.	Email / 15-11-2021
	066-2243658

Description	Base Price Ex - Factory Lahore (Rs.)	GST % Age	GST (Rs.)	Cost / Unit Ex - Factory Lahore (Rs.)	Qty. (Nos.)	Extension /Set Ex - Factory Lahore (Rs.)
Millat Agricultural Tractor Model MF-385 4WD (85 HP) with Standard Tool Kit	2,120,000	5%	106,000	2,226,000	1	2,226,000
Front Blade (for MF-385 4WD)	160,952	5%	8,048	169,000	1	169,000
Special Heavy Duty Front End Loader	604,206	5%	30,210	721,500	1	721,500
Puntle Hook	27,100	17%	4,620	31,800	1	31,800
Sun Shade	15,641	17%	2,659	18,300	1	18,300

TERMS & CONDITIONS:	
Govt. Taxes & Duties:	Impact on price due to levy of additional Government Taxes, if any, shall be charged extra.
Price etc.	Above are provisional prices. The prices actually payable will be those prevailing on the date of delivery.
Payment:	100% advance in shape of Demand Draft favoring Millat Tractors Limited, Lahore, along with confirmed Purchase Order clearly mentioning Sales Tax Registration or National Tax Numbers.
Offer Validity:	Nil
Inspection:	If required, shall be carried out at our Factory Premises, Lahore, at your cost.
Force Majeure:	This offer is subject to "Force Majeure" Clause.
Income Tax Deduction:	The Institution may deduct Income Tax @ 4% of the gross amount (inclusive all taxes) under section 153 (1) (a) and will deposit as Adjustable Tax with code #4080003. Certificate of Collection or Deduction of Income Tax under rule 42 of ITR 2002 is mandatory.
15th GST Deduction:	As per Eleventh Schedule of the Sales Tax Act 1990, no deduction of GST is allowed, therefore your institution is liable to pay full amount. (Copy of schedule attached)
Requirement of Booking	1- Purchase order - 2- NTN Certificate 3- Payment 4- Correct Certificate Any one of above is missing booking could not be registered.
MTL NTN No	0801437-0
MTL STRN No	13/10-3707-002-32
Tentative Ex-factory Delivery Time (as of today):	After 04-06 weeks, from realization of 100% advance payment in MTL account.
Warranty:	a) For tractors a period of 12 months or 1200 hours which ever comes first. b) For implements a period of 06 months.
Note:	1. Payment/Booking/Delivery seniority will be determined, as per availability of tractors/goods & on first come first serve basis. 2. Transit Insurance against each tractor will be charged at actual in shape of Cash at the time of delivery. 3. This quotation is being issued for local sales only & not for export purposes. 4. The company reserves the right to change the specifications, color, brand name, logo and identification etc. at any point of time without any prior notice. 5. This quotation contains all terms and conditions of the transaction and no other term/condition not contained herein are applicable. 6. In case of fitment and usage of non-MTL /spurious tractor attachments/implements, warranty shall be void if damage occurs to the tractor. 7. We do not transport tractors from our factory to other locations. However, if transportation of your order is required at a desired destination then it will be charged extra at the time of delivery on freight to pay basis after receipt of your authority letter in favor of our concerned authorized area dealer or transporter. 8. The products will be provided on demand as per standard Millat Tractors Ltd specification only. 9. Conditional purchase / supply orders having terms & conditions other than those quoted above will not be accepted. 10. Warranty of implements will be void if not fitted with your tractor at MTL factory premises.

Yours faithfully,

Amir Muzaffar Dy. Manager (Marketing)
 Corporate Sales (Tractors & Implements)

SUZUKI
Way of life!

SUZUKI KOT ADDU MOTORS

KAPCO T POINT CANAL VIEW COLONY,
MAIN G.T ROAD, KOT ADDU, PH: 066-2239133

01/11/2022

(COMC OF KOT ADDU)

QUOTATION FOR SUPPLY OF SUZUKI RAVI VX

Subject:

Dear Sir,

Reference to your enquiry regarding the following vehicle(s) we are pleased to quote as under

Description	Price	W.H.T	Color	Quantity	Total
SUZUKI RAVI VX	1,424,000	10,000	WHITE	4	5,736,000

Terms and Conditions:

1. Prices are subject to change without any prior notice by our principal, M/s Pak Suzuki Motors Company Ltd. In case of price change, new price will be charged.
2. Payment of vehicle(s) in shape of Demand Draft in favor of M/S Pak Suzuki Motor CO Ltd
3. Other terms and conditions as per our Principals M/s Pak Suzuki Motors Company Ltd, will apply.
4. Advance income tax for filer RS 10,000/- and non-filer RS 30,000/-
5. PAK SUZUKI MOTOR CO LTD will accept the booking advance amount from customer RS 500,000/-
6. Booking Time Period 60 DAYS

Thank you for your interest and looking forward to receive your valued order



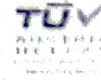
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MILLAT TRACTORS LIMITED

P.O. Box No. 12024 Shikohpur Road, Shikohpur, Lahore. Pakistan.
UAN: +92 42 353 2000 Fax: +92 42 353 2001



Email: amir.muzaffar@millat.com.pk, info_sales@millat.com.pk

QUOTATION

Office of The Municipal Officer (I&S)
Municipal Committee, Kot Addu

Attention: Mr. Muhammad Taha Hussain

Date:

MTL Reference	MTL/A.Sale/Q/2022/631
	Date: 03/10/2022
Query Reference:	E-MAIL Dated: 03-10-2022
Cell/Phone Number	

Description	Base Price Ex - Factory Lahore (Rs.)	GST % Age	GST (Rs.)	Cost / Unit Ex - Factory Lahore (Rs.)	Qty. (Nos.)	Extension /Set Ex - Factory Lahore (Rs.)
Milfat's Agricultural Tractor Model MF-365 4WD (33 HP) with Standard Tool Kit.	3,083,000			3,083,000	1	3,083,000
Special Heavy Duty Front End Loader (For MF-365 4WD)	800,000	17%	147,740	1,010,800	1	1,010,800
Front End Blade (For MF-365 4WD)	188,800	17%	32,111	221,000	1	221,000
Gun Blade	21,450	17%	3,647	25,100	1	25,100

TERMS & CONDITIONS:

Govt. Taxes & Duties:	Impact on price due to levy of additional Government Taxes, if any, shall be charged extra.
Price etc.	Above are provisional prices. The prices actually payable will be those prevailing on the date of delivery.
Payment:	100% advance (including all tax deduction certificates) in shape of Demand Draft favoring Milfat Tractors Limited, Lahore, along with confirmed Purchase Order clearly mentioning Sales Tax Registration or National Tax Numbers.
Offer Validity:	Nil
Inspection:	If required, shall be carried out at our Factory Premises, Lahore, at your cost.
Force Majeure:	This offer is subject to "Force Majeure" Clause.
Income Tax Deduction:	The institution may deduct Income Tax @ 4% of the gross amount (inclusive all taxes) under section 153 (1) (a) and will deposit as Adjustable Tax with code 94000008. Certificate of Collection or Deduction of Income Tax under rule 42 of ITR 2002 is mandatory.

15% GST As per finance Act 2022 you cannot deduct 15th GST.

Requirement of Booking 1- Purchase order 2- NTN Certificate 3-Payment 4- Tax Deposit Certificate (CPN)
If any one of above is missing booking could not be registered

MTL NTN No 0801437-0 **MTL STRN No** 13-10-8707-002-82

Tentative Ex-factory Delivery Time (as of today): After 03-04 week, from realization of 100% advance payment in MTL account.

Warranty: a) For tractors a period of 12 months or 1200 hours which ever comes first.
b) For implements a period of 06 months.

Note:

1. Payment/booking/Delivery priority will be determined, as per availability of tractors/goods & on first come first serve basis.
2. Transit insurance against each tractor will be charged at actual in shape of Cash at the time of delivery.
3. This quotation is being issued for local sales only & not for export purposes.
4. The company reserves the right to change the specifications, color, brand name, logo and identification etc. at any point of time without any prior notice.
5. This quotation contains all terms and conditions of the transaction and no other term/condition not contained herein are applicable.
6. In case of filament and usage of non-MTL spurious tractor attachments/implements, warranty shall be void if damage occurs to the tractor.
7. We do not transport tractors from our factory to other locations. However, if transportation of your order is required at a desired destination then it will be charged extra at the time of delivery on freight to pay basis after receipt of your authority letter in favor of our concerned authorized area dealer or transporter.
8. The products will be provided on demand as per standard Milfat Tractors Ltd specification only.
9. Conditional purchase / supply orders having terms & conditions other than those quoted above will not be accepted.
10. Warranty of implements will be void if not fitted with your tractor at MTL factory premises.

Yours faithfully,

Amir Muzaffar Dy. Manager (Marketing)
Corporate Sales (Tractors & Implements)

**Proposal for supply, delivery, implementation,
Commissioning, warranty support & training of
Trakker**

Prepared For

M.C Kot Addu.

Prepared By



**Tower 75, L Block Main Gulberg (Adjacent to City Sales) Kalma Chowk,
Main Ferozepur Road, Lahore Tel:+92.42.111-000-300 Ext.30422
Website: www.tpltrakker.com**

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Other Terms & Conditions

1. Payment Terms:

Payment will be made within week after invoicing.

2. Delivery Time

Dependent on quantity ordered, following will be delivery schedule from receipt of Purchase Order
Within 1-2 weeks any delays caused due to unavailability of vehicles shall be to your account. Secure location to install equipment to be provided at each site.

3. Warranty

The units installed shall be covered by a One (1) years warranty from date of original installation. However, damages due to vehicles' electrical system failure or poor maintenance and misuse or damage due to operator is not covered and shall be on chargeable basis.
Prior to installation our Technical team will inspect your vehicle's electrical system and provide information on requirement standard. This is essential due to the nature of your operations and a pre-requisite to proper operation of the equipment installed.

4. Government Taxes

All applicable taxes at time of offer have been included. Any new taxes imposed during the currency of the order shall be to your account and payable.

5. Closure of Service

In the event of invoices are not settled within 7 days from issuance, Trakker will deactivate tracker units on account of non-payment.

6. Forex Rates

Quotation is based on the current Forex rates which is (interbank rates of the day of quotation) and the applicable rates would be the date of receiving the confirm work order.

7. Transfer Charges

Unit can be transfer in other vehicle transfer charges will be Rs. 5,975/-

TPL Trakker Limited
Mubashir Afzal
Hub Manager

Proposal

To: M/S M.C Kot Addu.	Ref: TPL-LHR-041122014 Date: 04-11-2022 Sales Region: Center Validity: 15 Days NTN #: 7504487-8 GST #: 32-77-8761-529-41
Mr. M.Taha	

Trakker Services
Features
• 24/7 Tracking
• Battery Tamper (on SMS)
• Geo-Fencing (on SMS)
• Anti-Jammer
• My Trakker (Web Access + Mobile Application)
Reports
• Trip Report
• Movement Report
• Vehicle Status Report
• Vehicle Fuel Monitoring
• Vehicle Stop Report


Purchase Price:

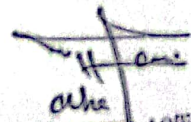
Description	Amount	Total
Equipment Price	115,000+17% PST=134,550	157,404/-
AMC Yearly	19125+19.5% PST=22,854	

All above prices ar Incl Tax below tax ratio will be apply

Equipment Tax:17%

AMC Tax:19.5%


 M.C. Kot Addu


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