

## Section VI. Schedule of Supply

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**1.0 List of Goods and Related Services (as per BoQ)**

Item	Description	Unit	Quantity
1	Supply & delivery of HDPE House Hold bins of 20 litres Capacity ( Green Coloured)	Nos.	49500
2	Supply & delivery of HDPE House Hold bins of 20 litres Capacity ( Blue Coloured )	Nos.	49500
3	Supply & delivery of HDPE Shoulder Bins (60 liter capacity)	Nos.	312
4	120 liter capacity HDPE Bins with wheels and provision of Hooks for locking	Nos.	924
5	Litter Bins - Pole Mounted - Pair of Blue & Green coloured bins - 60 liter Capacity each including fixing	Nos.	2030
6	Push Carts for Street Sweeping with 4 Bins (Blue & Green bins 2 nos, each)	No.	700
7	Supply & delivery of following personnel protective Equipments and Accessories as per specifications,		
7 a	PVC Hand Gloves	No	7152
7 b	Gumboots	No	64
7 c	Cotton Mask	No	28,608
7 d	Rain coats with Pant	No	596
7 e	Protective caps/helmets	No	32
7 f	Goggles	No	32

**2.0 Delivery and Completion Schedule**

The delivery period shall start from the date of detailed supply order after signing of contract agreement.

Item No.	Description of Goods or Related Services	Delivery Schedule (Duration)	Location	Required Arrival Date of Goods and Completion Date for Related Services
1	Supply, transportation, local handling, delivery at site with all accessories Different types of Bins and Personnel Protective Equipment and installation, testing, commissioning of Litter bins with MS frame fixed to a pole as specified in the Drawing	i). <b>Twelve (12)</b> months in maximum of <b>4</b> equal consignments. As per the table of Delivery Schedule Given below.	Shillong	i). First consignment: by <b>100 days</b> ; Second consignment: by <b>180 days</b> ; Third consignment: by <b>270 days</b> ; Fourth consignment: by <b>365 days</b> ;

**Table for Delivery Schedule**

Item	Description	Unit	100 Days	180 Days	270 Days	365 days
1	Supply & delivery of HDPE House Hold bins of 20 litres Capacity ( Green Coloured)	Nos.	12000	12000	12000	13500
2	Supply & delivery of HDPE House Hold bins of 20 litres Capacity ( Blue Coloured )	Nos.	12000	12000	12000	13500

<b>Table for Delivery Schedule</b>						
<b>Item</b>	<b>Description</b>	<b>Unit</b>	<b>100 Days</b>	<b>180 Days</b>	<b>270 Days</b>	<b>365 days</b>
3	Supply & delivery of HDPE Shoulder Bins (60 liter capacity)	Nos.	200	112		
4	120 liter capacity HDPE Bins with wheels and provision of Hooks for locking	Nos.		500	424	
5	Litter Bins - Pole Mounted - Pair of Blue & Green coloured bins - 60 liter Capacity each including fixing	Nos.	500	500	1000	530
6	Push Carts for Street Sweeping with 4 Bins (Blue & Green bins 2 nos, each)	No.		400	210	
7	Supply & delivery of following personnel protective Equipments and Accessories as per specifications,					
7 a	PVC Hand Gloves	No	7152			
7 b	Gumboots	No	64			
7 c	Cotton Mask	No	28,608			
7 d	Rain coats with Pant	No	596			
7 e	Protective caps/helmets	No	32			
7 f	Goggles	No	32			

### **3.0 Technical Specifications**

#### **3.1 Preamble**

The North Eastern Region Capital Cities Development Investment Program (NERCCDIP), financed by Asian Development Bank (ADB), includes a phased scheme for developing the basic infrastructure facilities in Shillong of Meghalya state. The program includes Development of Solida Waste Management including development of landfill site and solid waste collection in the city area and laying of sewerage collection system and waste treatment facility, for Shillong. To supplement the solid waste collection system, Governmen of Meghalya intends to procure different types of Bins and Personnel Protective Equipments. -Shillong under the program for which the present bid document is referring to.

#### **3.2 Scope of Work**

The scope of work under this contract package includes:

Design, manufacturing, fabrication, assembling, testing at manufacturing works, Third Party Testing, delivery, installation, trial run, testing, commissioning and satisfactorily handing over to end user including Product manufacturer's Guarantee routine and preventive maintenance for a period of 12 months of different types of Bins and Personnel Protective Equipment -Shillong, including necessary accessories, local handling, inland transportation, insurance and training of personnel etc complete in all respect.

1. Supply & delivery of HDPE House Hold bins of 20 litres Capacity in Green and Blue colours.
2. Supply & delivery of HDPE Shoulder Bins (60 liter capacity)
3. 120 liter capacity HDPE Bins with wheels and provision of Hooks for locking
4. Litter Bins - Pole Mounted - Pair of Blue & Green coloured bins - 60 liter Capacity each including fixing
5. Push Carts for Street Sweeping with 4 Bins (Blue & Green bins 2 nos, each)
6. Supply & delivery of following personnel protective Equipments and Accessories as per specifications.

#### **3.3 Specifications for Different Type of Bins**

##### **3.3.1 General**

All requirements of the latest Indian Standards (BIS),Rules/Acts and any other statutory rules and regulations in force shall be strictly adhered to.

It shall be responsibility of the bidder to procure the bins conforming to all the requirement of environment and pollution control if applicable and obtain if any approval and clearance is required from the concern authorities before supply.

It shall be the responsibility of the bidder to obtain necessary approval from the concerned Quality inspecting authority appointed for the purpose by the purchaser and shall furnish necessary quality approval certificate documentation for the same.

All the materials used shall be as per relevant IS/BS or any other standard applicable.

Successful bidder shall submit the technical data and all the other relevant documents like QAP for approval of Employer, before procurement.

### 3.4 House Hold Bins of Twenty (20) Litres Capacity.

The bins shall be made of good quality Virgin HDPE (High Density Poly Ethylene) / Virgin HMHDPE. It shall be bucket type with cover and shall be easy to handle. The bins shall be in two colours with the embossed words as "Bio Degradable Waste" and "Non Bio Degradable Waste". The bins shall be green in color and blue in color respectively.

These Bins shall meet the following minimum requirement:

- I. The manufacturing process shall be injection moulding.
- II. Marking: Each bin complying with the requirements with ISI Standard, shall be duly marked with indelible paint /screen printed the following details.
  - The reference of this ISI Standard,
  - Manufacturer's name or the trade mark.
  - Year & month of manufacturing
  - Sr. No & Batch No etc
  - QC passed stamp
- III. Each bin shall have SMB letter and logo on front side either screen printed or hot stamping, the details of which shall be given at the time of placing the order.
- IV. The dealer shall submit valid Certification copy issued by the relevant authorities for supplies made to other municipal agencies along with the Tender document. (The certification copy will be latest of 2012).
- V. The typical drawing number MMD-260652-C-DR-SWM-00-0005(1 of 2) is attached for reference with the tender document. However the Tenderer shall submit his detail drawing and brochure/literature. The drawing and brochure/literature shall specially indicate the nominal load lifting capacity of the bins, and the nominal weight of the bins. Bidder may suggest any modification and his own design which could benefit the employer without compromising in minimum quality requirement set in this documents and is cost effective to the Employer.
- VI. The bins shall have no obvious damages, no cracks, bubbles, large flashes or sharp edges in hand grip areas. The damaged bins received at site shall be summarily rejected and shall be replaced immediately for the same by the supplier without any additional cost to the Purchaser.
- VII. The bins shall be made from Virgin High Density Poly Ethylene (HDPE) / Virgin HMHDPE Injection Moulding process. The material shall be heat and chemical resistant and shall be UV stabilized.
- VIII. The bins shall be provided with suitable lid of HDPE at the top. The HDPE lid shall also be made of virgin material by Injection Moulding process. Apart from that the bin shall have peripheral hand grip for easy opening.
- IX. The bins shall be of minimum volume of **20** litres and the minimum weight of the bin with Lid and without handle shall be 1000 + / - 10 grams.
- X. The bins shall be provided with single piece lifting handle
- XI. The Supplier shall submit a sample of each of the bins at the time of submission of their offer for approval.

XII. The successful bidder/Supplier shall submit a certificate from the manufacturer about the Virgin HDPE / Virgin HMHDPE raw material procured from the HDPE / HMHDPE material manufacturer and used for manufacturing the bins before start of the manufacturing and also set aside a sample of raw material used for each batch of materials for record so as to enable the client to re-check in case of any defects/failure in quality of the bins supplied. The approved make of the HDPE / HMHDPE resin material shall be any of IPCL/GAIL/Reliance or equivalent

### **3.5 Specifications for HDPE Shoulder Bins (60 liter capacity)**

The HDPE Shoulder bins will be used for collection of garbage from inaccessible households and small shops which are inaccessible by the collection vehicles. The bins shall be carried on the shoulder of the garbage collector for collecting the solid waste and will be transferred into the primary collection vehicles or will be unloaded in a waiting truck at the nearest Secondary collection Point. These bins shall generally meet the following requirement:

1. The design of the bins shall be as shown drawing number MMD-260652-C-DR-SWM-00-0005 (2 of 2). However bidder may suggest any changes which could benefit to employer with meeting the minimum quality requirements and cost effective for the employer without compromising in minimum quality requirement set in this documents and is cost effective to the Employer.
2. The manufacturing process shall be injection moulding.
3. Marking: Each bin shall comply with the requirements with DIN/EN Standard, shall be duly marked with the following details.
  - The reference of Standard,
  - Manufacturer's name or the trade mark.
  - Year & month of manufacturing
  - Sr. No & Batch No etc
  - QC passed stamp
4. Each bin shall have SMB letter and logo on front side either screen printed or hot stamping, the details of which will be given at the time of placing the order.
5. The supplier shall submit valid Certification copy issued by the relevant authorities for supplies made to other municipal agencies copy along with the Tender document. (The certification copy will be latest of 2012).
6. The typical drawing number MMD-260652-C-DR-SWM-00-0005 (2 of 2) is attached for reference. However the successful bidder shall submit his detail drawing and brochure/literature for approval to Engineer Incharge before procurement. The drawing and brochure/literature shall specially indicate the nominal load lifting capacity of the bins, and the nominal weight of the bins etc; with all the technical details like lifting arrangement etc; complete..
7. The bins shall have no obvious damages, no cracks, bubbles, large flashes or sharp edges in hand grip areas. The damaged bins received at site shall be summarily rejected and shall be replaced immediately for the same by the supplier without any additional cost to the Purchaser.
8. The bin shall have shoulder straps with three screws firmly fitted on to the upper edge of the bin and two screws are fitted on each strap at the bottom for carrying the bin easily on the shoulders by the garbage collector while collecting the garbage. The material shall be UV resistant and resistant to heat and chemicals.

9. The specifications given are only indicative and the successful bidder shall be required to submit the detailed technical and dimensional drawing of the bins along with QAP and the sample piece before procurement to the Engineer Incharge for approval. The detailed technical and dimensional drawing (along with the sample piece) shall be scrutinised by the engineers of the department and shall be approved in principle after having detailed clarifications. However, this does not absolve the contractors from the performance of the bins as per the contract conditions. The drawing should contain all technical details such as material, thickness, manufacturing process, details of wheels etc complete.
10. Since, the parameters given above are for guidance only, as such position of wheels, position of trunion, size, shape, position may vary on actual based on the manufacturer's design submitted for approval of the client.
11. The successful bidder/Supplier shall submit a certificate from the manufacturer about the Virgin HDPE raw material procured from the HDPE material manufacturer and used for manufacturing the bins before start of the manufacturing and also set aside a sample for each batch of materials for record so as to enable the client to re-check in case of any defects/failure in quality of the bins supplied. The approved make of the HDPE resin material shall be any of IPCL/GAIL/Reliance or equivalent

The shoulder bins shall conform to following minimum technical specifications:

<b>Parameter</b>	<b>:</b>	<b>Minimum Requirement</b>
Volume	:	60 litres
Total Height	:	550 mm
Total top Width	:	350 mm
Total bottom width	:	320 mm
Lifting System	:	Straps are fastened with three screws on the top and two screws at the bottom on each strap onto the bin.
Construction Technology	:	Injection Moulding
Construction Norm	:	DIN-EN 840-2
Material	:	High Density Poly Ethylene (HDPE)
Processing	:	Mass colouration with UV protection
Specific gravity	:	0.955 gms/cu.cms
Notched Impact Test	:	7.6 Mj/mm <sup>2</sup>
Melting Temp.	:	126° C
Hardness	:	48N/mm <sup>2</sup>
Bending Resistance	:	20N/mm <sup>2</sup>
Tearing Resistance	:	29N/mm <sup>2</sup>
Liquid Absorption	:	None
Corrosion Resistance	:	100 %

The typical drawing number MMD-260652-C-DR-SWM-00-0005 (2 of 2) is attached for reference. However the successful bidder shall submit his detail drawing and brochure/literature for approval to Engineer Incharge before procurement. The drawing and brochure/literature shall specially indicate the nominal load lifting capacity of the bins, and the nominal weight of the bins.

The above specifications are only indicative and the contractor shall be required to submit the detailed technical and dimensional drawing of the bins with fixing and tilting arrangement along with the sample piece before procurement for the approval of Engineer Incharge. The detailed technical and dimensional drawing (along with the sample piece) shall be scrutinised by the engineers of the department and shall be approved after having detailed clarifications. However, this does not absolve the contractors from the performance of the bins as per the contract conditions. The drawing should contain the technical details such as material, thickness, manufacturing process, etc.

### **3.6 Specification for 120 liter capacity HDPE Bins with wheels and provision of Hooks for locking**

The single litter bin (120 litter capacity) with wheels shall be placed in the gardens, main roads, public places, commercial places etc as directed by the Engineer-in-charge

The general requirement of these bins shall be as follows:

1. The bins shall conform to the relevant BIS standards.
2. The litter bins shall be absolutely smooth, strong & sturdy.
3. The internal form and surface of the container shall be such that it will not trap the contents.
4. All the edges shall be smooth and there shall be no sharp edges anywhere on the container.
5. The internal & external surfaces shall be smooth and non porous, free from cracks, splits, dents, distortion, blisters, voids, air bubbles and other surface blemishes or defects. The damaged bins received at site shall be summarily rejected and shall be replaced immediately for the same by the supplier without any additional cost to the Purchaser.
6. The bins are expected to be used in outdoor conditions. They should be able to withstand outdoor weather conditions in India.
7. The test certificate of U.V. stabilization from original manufacturer of Virgin HDPE is to be supplied with bins. The approved make of the HDPE resin material shall be any of IPCL/GAIL/Reliance or equivalent
8. The moulded plastic container shall be made in one piece through Roto Moulded/ Injection Moulded Process with top rim outside.
9. The bins shall conform to the colour code and have embossment of Logo of ULBs and any other markings, labelling as approved by the ULB.
10. The bins shall be provided with adequate stiffeners/ribs on all sides and at bottom for enhancing the structural strength of the bin.
11. The Front rim of the bin shall be fitted with support and guide ribs and bar net of high capacity double angle edge for greater safety during tipping.
12. The successful bidder/Supplier shall submit a certificate from the manufacturer about the Virgin HDPE raw material procured from the HDPE material manufacturer and used for manufacturing the bins before start of the manufacturing and also set aside a sample for each batch of materials for record so as to enable the client to re-check in case of any defects/failure in quality of the bins supplied. The approved make of the HDPE resin material shall be any of IPCL/GAIL/Reliance or equivalent
13. The installation shall be carried out as shown in the drawing and at the places decided by ULB



14. The supplier shall submit the QAP for approval of the client before supply and bear all the third party inspection cost for the inspection by third party appointed by the client for the purpose.

15. The typical drawing number MMD-260652-C-DR-SWM-00-0005 (2 of 2) is attached. However the successful bidder shall submit his detail drawing and brochure/literature for approval to Engineer Incharge before procurement. The drawing and brochure/literature shall specially indicate the nominal load lifting capacity of the bins, and the nominal weight of the bins.

The single litter bin mounted on MS frame shall conform to the following dimensions/description.

<b>Parameter</b>	<b>:</b>	<b>Minimum Requirement</b>
Volume	:	120 Litres Capacity
Thickness	:	Minimum 4mm
Embossing	:	Logo of the Local Municipal Body to be embossed on one side of the container body
Colour	:	Blue or green ( as decided by the ULB)
Wheels	:	2 wheels of 200mm size is fitted to the bin on either sides to facilitates easy mobilization.
Dimensions	:	935mm X480mm X560mm. The bin has 870mm upper end comb and rests on flat bottom. Locking arrangement shall be provided.
Lid	:	The lid should be fully openable but should not depart from the bin at the time of opening, In closed position there should be garbage dropping space on the front side.
Handle	:	On the back side of the bin there should be an inbuilt HDPE Rod for easy pushing of the Bin.

#### **Material Quality for HDPE all type of Bins:-**

The body of the bins shall be made of Virgin UV stabilized High Density polyethylene (HDPE), absolutely non-toxic, free from contamination, chemical resistant & blended with special grade of stabilizers manufactured by Roto moulding/ Injection Moulding process and confirming to the following:

<b>Property</b>	<b>Testing Method</b>	<b>Unit</b>	<b>Value</b>
Density	IS-7328-1992	gm/cm <sup>2</sup>	Should be between 0.930 to 0.943
Tensile Strength	IS-8543, part-4/Sec 7- 1984	Kg/ cm <sup>2</sup>	120
Flexural Modulus	IS-13360 Part 5/Sec 7- 1996	Kg/ cm <sup>2</sup>	3000
Hardness (Shore)	IS-13360 Part 5/Sec 1-1992	D Scale	>D 50
Impact Strength (2.5 kg/1ms)	IS-12701-1996	--	No sign of cracking Puncture/damage of sample

These Bins shall be tested as following:

1. The bin container should be free from defects like de-shaping, holes; cuts/cracks etc. are to be checked visually under adequate light.
2. The dimensions of the container are to be measured by measuring tape.
3. The capacity is to be checked by water quantity measure .
4. The thickness is to be checked by ultrasonic gauge
5. The density test/MFI/tensile strength/flexural modulus / impact / hardness / weathering (colour fastness) and accelerated ultra violet tests (AUV) on bin material and bins are to be carried out only at Government approved laboratory and the testing charges shall be borne by the supplier.
6. One sample per supply lot shall be collected at random by competent authority/third part inspection agency appointed for the purpose in the presence of purchaser and got tested by the supplier at his expense.
7. Any other test on container/lid/MS frame/Wheels/Finish/or any other component as decided by the inspecting authority shall be got conducted by the contractor at his own cost and nothing extra shall be paid
8. The typical drawing number MMD-260652-C-DR-SWM-00-0005 (2 of 2) is attached for reference. However the successful bidder shall submit his detail drawing and brochure/literature for approval to Engineer Incharge before procurement. The drawing and brochure/literature shall specially indicate the nominal load lifting capacity of the bins, and the nominal weight of the bins.

The above specifications are only indicative and the contractor shall be required to submit the detailed technical and dimensional drawing of the bins with fixing and tilting arrangement along with the sample piece before procurement for the approval of Engineer Incharge. The detailed technical and dimensional drawing (along with the sample piece) shall be scrutinised by the engineers of the department and shall be approved after having detailed clarifications. However, this does not absolve the contractors from the performance of the bins as per the contract conditions. The drawing should contain the technical details such as material, thickness, manufacturing process, etc.

### **3.7 Specification for Litter Bins - Pole Mounted - Pair of Blue & Green coloured bins - 60 liter Capacity each including fixing**

The litter bins shall be smooth, strong & sturdy and should conform to the following:

The internal form and surface of the container shall be such that it does not trap the contents. There shall be no sharp edges on the container.

The internal & external surfaces shall be smooth and non porous, free from cracks, splits, dents, distortion, blisters, voids, air bubbles and other surface blemishes or defects.

The bins are expected to be used in outdoor conditions. They should be able to withstand outdoor weather conditions in India.

The test certificate of U.V. stabilization from original manufacturer of polyethylene is to be supplied with bins. The approved make of the polyethylene material shall be IPCL/GAIL/Reliance.

The moulded plastic container shall be made in one piece through Injection/ Roto Moulded Process with top rim outside.

The bins shall conform to the colour code and have embossment of Logo of ULBs and any other markings as specified through a sticker fixed on the body of container.

The bins shall be provided with adequate stiffeners/ribs on all sides and at bottom for enhancing its structural strength.

The Front rim of the bin shall be fitted with support and guide ribs and bar net of high capacity, double angle edge for greater safety during tipping.

**(b) Dimensions and Other particulars:**

1 Volume 60 Ltrs.

2 Container Dimensions:

- a) Top Min 350 x 350mm (clear inside dimensions)
- b) Bottom Min 300 x 300mm (clear inside dimensions)
- c) Height Min 550 mm (clear dimensions)

3 Thickness Minimum 4mm

4 Embossing Logo of the ULB to be embossed on one side of the container body

5. Colour Blue or green ( as specified )

6 MS Jacket A jacket of MS Flat 30mm x 5 mm shall be riveted to the bin.

7 MS Frame A Frame of 32x32x5 mm MS Square Pipe comprising Two No verticals & one Nos Horizontals shall be provided with 2 Nos of 32x32x5 mm MS Angle Hold fasts 200mm long at Bottom. Locking arrangement shall be provided.

8 Lid The lid shall be fully openable but should not depart from the bin at the time of opening. In closed position there should be garbage dropping space on the front side.

9 Handle On the back side of the bin there should be an inbuilt HDPE Rod for easy pushing of the Bin.

10 Painting All metallic parts shall be powder coated with minimum 40 micron thickness & black in colour.

**(c) Material specifications and Body Construction :** The body of the bins shall be made of Virgin UV stabilized High Density Polyethylene (HDPE) / Linear Low Density Polyethylene ( LLDPE) with appropriate quantity of HALS to give long service with continuous outdoor exposure with or without blending of any carbon black manufactured by Roto moulding/ Injection Moulding process and confirming to the typical characteristics as per BIS/ ASTM standards. It should meet the requirements stipulated in standard IS 10146-1982 and confirming to the following:

Sr. No	Property	Testing Method	Unit	Value
1	Density	IS-7328-1992	gm/cm <sup>2</sup>	Should be between 0.94 to 0.96
2	Melt Flow Index	IS-2540-1963	gm/10min	0.8 to 5
3	Tensile Strength	IS-8543 part-4/Sec 7- 1984	Kg/ cm <sup>2</sup>	224 to 255
4	Flexural Modulus	IS-13360 Part 5/Sec 7- 1996	MPa	900 to 1000
5	Hardness (Shore)	5 IS-13360 Part 5/Sec 1-1992	D Scale	>D 50
6	Vicat Softening Temp.	IS-13360, Part 6/Sec 1-1992	Deg. C	> 90

Sr. No	Property	Testing Method	Unit	Value
7	Impact Strength(2.5kg/1 mts)	IS-12701-1996	J/mm2	No sign of cracking, puncture/damage of sample
	Weathering	IS-22530-1963		No 4 gray scale
	Colour fastness to Artificial light/Rating	IS-2454: 1985		As per guidelines of IS 2454 (using sun test) CPs + Instrument
	Accelerated Ultra Violet Test (QU.V)	ASTM-G-53, (50° C)		Should be tested with QUV test type accelerated weather meter for 200 hours. Tensile strength and flexural modules should each be not less than 70% of the values before exposure.

**(d) Tests for Litter Bins:**

The bin container should be free from defects like de-shaping, holes, cuts/cracks etc.

The thickness is to be checked by ultrasonic gauge

The density test/MFI/tensile strength/flexural modulus / impact / hardness / weathering (colour fastness) and accelerated ultra violet tests (QUV) on bin material and bins are to be carried out only at Government approved laboratory and the testing charges shall be borne by the supplier. One sample per supply lot shall be collected at random by inspecting authority in the presence of supplier and got tested by the supplier at his expense. Any other test on container/lid/MS frame/Wheels/Finish/or any other component as decided by the inspecting authority shall be got conducted by the supplier.

The typical drawing number MMD-260652-C-DR-SWM-00-0005 (2 of 2) is attached for reference. However the successful bidder shall submit his detail drawing and brochure/literature for approval to Engineer Incharge before procurement. The drawing and brochure/literature shall specially indicate the nominal load lifting capacity of the bins, and the nominal weight of the bins.

The above specifications are only indicative and the contractor shall be required to submit the detailed technical and dimensional drawing of the bins with fixing and tilting arrangement along with the sample piece before procurement for the approval of Engineer Incharge. The detailed technical and dimensional drawing (along with the sample piece) shall be scrutinised by the engineers of the department and shall be approved after having detailed clarifications. However, this does not absolve the contractors from the performance of the bins as per the contract conditions. The drawing should contain the technical details such as material, thickness, manufacturing process, etc.

### 3.8 Specification for Push Carts for Street Sweeping with 4 Bins (Blue & Green bins 2 nos, each

Containerised hand cart fabricated out of MS angle, Tee and Flats, suitable to accommodate 4 Bins of 30 litre capacity & ideal for solid waste collection and transfer to central collection collectors. The cart shall be strong & sturdy and suitable to satisfy the critical needs of waste collection and transportation. The Hand Cart should be of minimum size 1200 mm x 800 mm x 200 mm with 4 Compartments for accommodating 4 Nos of HDPE bins of 25 litres capacity as per following specifications

**Main frame:** 25mm x 25mm x 3mm thick MS angle in all directions. The frameshould be suitable to fit 4 bins of 30 litre capacity.

**Bottom:** 290mm X290 at the bottom with a total depth of 325mm the frame is constructed 30mm dia MS pipe of 16 gauge thickness.

**Top:** 325mm x 325mm x at the top the frame is constructed 30mm dia MS pipe of 16 gauge thickness.

**Sides:** 25mm x 25 mmX3 mm thick M.S angle frame 3 nos vertically .

**Handle:** The handle of the same width of Cart at about 800 mm width made of 30mm dia M.S pipe of 16 gauge thicknesses fitted with the cart by means of 25 mm x 25 mm x 5 mm M.S angle & supporting angles.

**Wheels:** The Handcarts should be fitted with two numbers of strong & sturdy wheels fabricated out of MS Tee. The front wheel should be about 300 mm dia X 50mm polymer wheel with support of MS flat of 50 x 6 mm MS flat and rear wheel should be about 200mm dia X 50mm width with polymer wheel. 25 x 25 mm single axle double bearing provided on two sides.

**Painting:** Painting with two coats of anticorrosive paint as per colour approved by the purchaser. The front side MS sheet shall be painted with two coats of anticorrosive paint with identification No., name & logo of ULB, slogans etc

**Materials specifications and Body Constructions of Bin :** The body of the bins shall be made of High Density Polyethylene (HDPE) grade conforming to IS 10146- 1982 suitable for injection/ roto moulding applications where good mechanical properties, gloss, dimensional stability & good ESCR are required. The physical characteristics & typical properties of raw material shall be as per BIS/ ASTM standard.

All the MS Material used for fabrication of hand cart shall be of reputed manufacturers such as SAIL, TISCO etc. conforming to IS:2062/99 (updated) or equivalent.

**Accessories:** Every handcart shall be equipped with 1500 mm long 5 mm M S Chain and 7 lever Godrej/ Navtal Lock. M.S. chain should be provided with Fitting arrangement from 6 mm round Bar with each hand cart.

The typical drawing number MMD-260652-C-DR-SWM-00-0005 (2 of 2) is attached for reference. However the succesfull bidder shall submit his detail drawing and brochure/literature for approval to Engineer Incharge before procurement. The drawing and brochure/literature shall specially indicate the nominal load lifting capacity of the bins, and the nominal weight of the bins.

The above specifications are only indicative and the contractor shall be required to submit the detailed technical and dimensional drawing of the bins with fixing and tilting arrangement along with the sample piece before procurment for the approval of Engineer Inchatge.The detailed technical and dimensional

drawing (along with the sample piece) shall be scrutinised by the engineers of the department and shall be approved after having detailed clarifications. However, this does not absolve the contractors from the performance of the bins as per the contract conditions. The drawing should contain the technical details such as material, thickness, manufacturing process, etc.

#### 4.0 Personal Protective Equipments.

##### 4.1 Hand Gloves

The gloves shall be used by conservancy workers/rag pickers as such the material should be impervious to liquids for protection against irritating corrosive substances. The hand glove type shall be universally suitable against all possible hazards. The choice depends on the particular acid, solvent, caustic, oil, chemical and abrasive resistant etc. found in the solid waste. Under the circumstances it has been proposed to go for PVC gloves.

The material of gloves shall be made of virgin PVC and It shall be synthetic thermoplastic polymer with excellent wet grip and abrasion resistance. It should be chemically resistant to oil, grease, acids, and solvents. The gloves shall be lined with skin friendly material inside and shall be impervious to liquids. The gloves shall be flexible as well as at the same time shall have the grip belt so as to be held in position when in use.

The gloves shall be marked with the following information

- Size
- Material
- Manufacturer's name
- Month and Year of manufacture
- S.No & Batch no etc;

The marking shall be at the back, legible, permanent and shall not impair the quality of the gloves.

##### 4.2 Gumboot

The gumboots shall have the following general features:

- Rubber gum boots shall generally conform to IS: 15298
- The sole and heel shall be of anti slip
- Rubber gumboots shall be Acid alkali fuel oil resistant
- The design life guarantee shall be minimum 1 year. In case of any manufacturing defect boots be replaced free of cost

The gumboots shall meet the following minimum requirements

<b>Parameters</b>	<b>:</b>	<b>Minimum Requirements</b>
Appearance & Design	:	Knee high Rubber gum boots
Classification	:	As per IS15298
Sizes of Gum boot	:	6 to 10
Colour	:	Black
Manufacturing Process	:	Single piece compression moulding or direct injection moulded

<b>Parameters</b>	<b>:</b>	<b>Minimum Requirements</b>
Height	:	Height of Upper (Minimum)270mm for size 6 and in multiples of 10mm for sizes 7 to 10
Leakproofness	:	No leakage of air
Thickness	:	Thickness of upper minimum 1.5mm
Tensile properties	:	Upper breaking force=180 Newton
Flexing Resistance	:	Flexing Resistance of Upper125000-Minimum number of Flex without cracking
Thickness of outsole	:	(1) For direct injected, vulcanised- Minimum 4 mm (2) For other method-Minimum 3 mm
Abrasion Resistance of outsole	:	As per IS:15298
Flexing resistance of outsole	:	The cut growth shall be maximum 4 mm before 30000 flex cycles

The boots shall be legibly & permanently stamped/Marked with following information

- Size
- Manufacturer's Identification Mark
- Date/Year of manufacture
- BIS marking/Licence

The right and left boot of each pair shall be tied together by laces. It shall be packed in a suitable box or as agreed to between the purchaser and supplier

Following documentation & inspection shall be made available

- The bidder shall submit a sample of the offered item for approval to Engineer Incharge before procurement.
- The bidder/manufacturer shall carry out tests as per IS 5557. The tests are to be carried in Govt./Govt.approved laboratories and tests reports are to be presented
- Warranty/Guarantee certificates to be supplied along with the item
- Inspection to be carried out by the representative of the department and the indenter before the supply.

#### **4.3 Mask**

- The material of mask shall Good quality cotton Non Woven
- Mask shall be made from 100% breathable fine grade cotton fabric
- Mask shall be wrinkle free manufactured from fine quality cotton.
- Mask shall be single ply, high filtration efficiency
- The size of mask shall 16X10.5 cms.
- The mask shall be highly durable and 100 % hygienic

#### **4.4 Rain Coat with pant**

The Rain coat/suit, shall be supplied with detachable hood as per "per relevant "BIS Standards". It shall conform to BIS with latest amendment (for materials used & testing).

Rain Coat shall be two piece with detachable hood / cap, front two pockets each in jacket & trouser, Zipper front, elastic waist & cuff, Light weight, Polyester /Nylon coated fabric, soft durable & resistance to peeling, 100% Water proof.

The Colour of rain coat/suit shall be Light Gray / Black

The size of the rain coat shall be of standard XL/XXLsize.

The Material Cross Section shall be as per relevant BIS with latest amendment. Minimum 0.35 mm. It shall be suitable for out door with good quality tape with all joints properly tapped from inside. Overall dimension tolerance of the rain coat/suit shall be within + 10%. Technical QAP & data and sample shall be submitted to Engineer Incharge for approval before procurement. Sizes to be marked inside of the Rain coat.

Authorized Distributors certificate should be provided

The period of guarantee must be specified.

Technical specification & Test report of the coated material must be submitted.

Five (5) sets of rain coat/suits shall be packed in box/carton marking serial number on each box or packing as may be specified by the Engineer-in- charge..

Rain coat/Suit shall meet the requirement of - IS: 5915 – 1970 or its latest amendment.

#### 4.5 Specification for safety caps/ helmet

The safety helmet shall be supplied as per “per relevant “BIS Standards”. It shall conform to BIS with latest amendment (for materials used & testing).

**The helmet shall have** a dome-shaped shell covering for the head and made of hard and durable materials such as High density polyethylene (HDPE)or Acrylonitrile-butadiene-styrene (ABS. The outer surface of the shell should be smoothly finished.It shall include:a brim (or/and a peak *The helmet shall have a harness* assembly maintaining the helmetin position on the user’s head and absorbing kinetic energy within the shell during an impact.It shall have a cradle , a headband, a nape strap, a sweatband, a chin strap and a protective padding

The general specification is as below:

Material:	HDPE
Color:	As specified by SMB
Certificate:	CE and ANSI certificate
Suspension:	4-point or 6-point
Adjustable knop:	Ratchet style or Press style or Pulling style
Lining:	Textile or PU
N.W./G.W.	16/17KGS

#### 4.6 Specification of Safety goggles

The safety helmet shall be supplied as per “per relevant “BIS Standards”. It shall conform to BIS with latest amendment (for materials used & testing).

The goggles shall consist of a frame, lens or lenses and an adjustable head-band or any suitable device to retain the goggles in front of eyes. When properly adjusted for the wearer, distance from the pupil of the eye to the inner surface of the lenses shall be such as to permit an affective angle of vision of not less than 105’for each eye but shall in no cast be less than 14 mm. Adjustable parts or components of



goggles shall be easily accessible for adjustment or replacement. Effective ventilation in the goggles shall be provided. The goggles shall be designed to prevent direct access of any particle to the eyes. The method of attachment of the lenses to the frame shall be such that lens is not dislodged from its seat when it is subjected to the test specified as per BIS standards

**Workmanship and Finish** The goggles shall be free from projections, sharp edges or other features likely to cause discomfort in wear. Lenses shall be free, to within 3 mm of the edges, from surface defects such as holes, scratches, cracks, waves, dull spots and from inherent defects such as bubbles, grain and clauding. The design of goggles shall be such that it shall not cause discomfort to wearer. This may be achieved by providing padding or other suitable means.

### **5.0 Defect Liability Period & Guarantee for all the Materials supplied:-**

The Supplier shall guarantee all goods supplied under the Contract to be suitable for the application for which it is designed, and against defects due to manufacture or poor workmanship for a period of minimum **12 months** from the date of commissioning. The Supplier shall be responsible to rectify and replace free of cost the whole equipment or parts thereof which may be found defective during this period, and to ensure the proper working of the equipment during the guarantee period in accordance with Clause 28 of General Conditions of Contract and clarification in Special Conditions of Contract.

### **6.0 Quality assurance system to be followed at manufacturer's works**

Successful Bidder shall furnish detailed Quality Assurance Programme and Quality Plan for all materials and accessories to be supplied and installed under the scope of work as noted above in the relevant paras.. The Quality Plans shall include all tasks /checks as per the relevant Standards and the requirements of this specifications.

The Supplier shall ensure that the manufacturer must have a proper setup and independent procedure in quality control with adequate equipment, facilities and personnel for this purpose to ensure quality control from procurement of materials to manufacture, delivery and selection of sub-suppliers to incoming inspection, stage inspection and final inspection.

The Supplier shall further ensure that the equipment ordered are subject to quality check at any time by purchaser's representative or by representative of inspecting authority deputed by the purchaser. Proper written record of quality assurance system must, therefore, be kept by the manufacturer which would be subject to quality checks by the client or his authorised representative.

### **7.0 Manufacturer's Test Certificate:**

Manufacturer's test certificate including Material test certificates should be submitted by the Supplier to the Employer.

### **8.0 Testing by Third Party Agency**

Any agency among the agencies appointed or authorized by the Employer will undertake independent third party inspections and testing during the manufacture or assembly of the equipment as may be applicable. Prior to commencement of the works the Engineer, in consultation with the Employer, shall

inform the supplier of the name of the firm(s) who will be authorized to conduct independent Third Party inspections on the employer's behalf. The Contractor shall be wholly responsible to make his own arrangements with the approved third party inspection agencies for carrying out the required tests. The Contractor shall be responsible to obtain permission for and provide all facilities to such agency for carrying out such inspections or testing as may be required. The Third Party Inspection charges of the agency only will be paid by the employer and all the other costs for such independent inspection and testing shall be borne by the contractor.

A quality assurance plan will be developed and submitted by the supplier for approval prior to manufacture clearance of goods and provides for inspection and certification by the third party inspection agency at specified times during the manufacture and fabrication of such items. Third party inspection agency's charges will initially be paid by the contractor which shall be reimbursed by the Employer. Bidder shall make necessary arrangements for third party inspections at manufacturers site and cost (other than inspection agency's fees) towards such arrangements shall be borne by the bidder and will not be reimbursed by the employer.

## **9.0 Rejection**

The Employer or Employer's representative reserves the right to reject any good under this contract if the same does not meet the specifications, requirements, subject to tolerances as approved in the QAP. The rejected good under this contract shall be replaced by good under this contract complying with the requirements of the specification at the bidder's cost. If the commissioning of the project is likely to be delayed by the rejection good, the Employer's Representative reserves the right to accept the rejected good under this contract until the replacement good under this contract is made available. Transporting the rejected goods and replacement of good as well as installation and commissioning of both the good shall be at the bidder's cost. The supplier shall not be eligible for any compensation what so ever due to rejection & replacement of the defective goods

## **10.0 Training Employer's Personnel**

After testing and commissioning of each good supplied under this contract at site, the bidder prior to taking over by the employer shall train the employer's personnel for use of all goods supplied, independently in the future. The cost towards training materials and training the personnel/ bidder's engineer shall be borne by the bidder.

### 11.0 Approval of Drawing

The supplier shall prepare and submit the GA and fabrication drawings of all the goods to be supplied under this contract before commencement of fabrication and procurement. The drawings will be reviewed and commented/ approved by the employer. Supplier will fabricate as per approved drawings and based on approved QAP of the client.

All the technical data specifications of all the goods to be supplied under this contract shall be submitted by the successful bidder for approval prior to procurement.

However for reference only following drawings are enclosed.

SI. No.	DRAWING No.	DRAWING TITLES
1	Regional Setting Plan & Location of GSPA	MMD-260652-C-DR-00-SWM-0001
2	Map of GSPA Showing project area (outside SMB)	MMD-260652-C-DR-00-SWM-0002
3	Typical Details of Household Bins of (20L )	MMD-260652-C-DR-00-SWM-0005 (Sheet 1 of 2)
4	Typical Details of various Type of Bins (Shoulder Bin 60 L, Pole Mounted 60 L, Push Cart 4 Bins, 120 L Bin).	MMD-260652-C-DR-00-SWM-0005 (Sheet 2 of 2)