

Solid Waste Management System in Ahmedabad City



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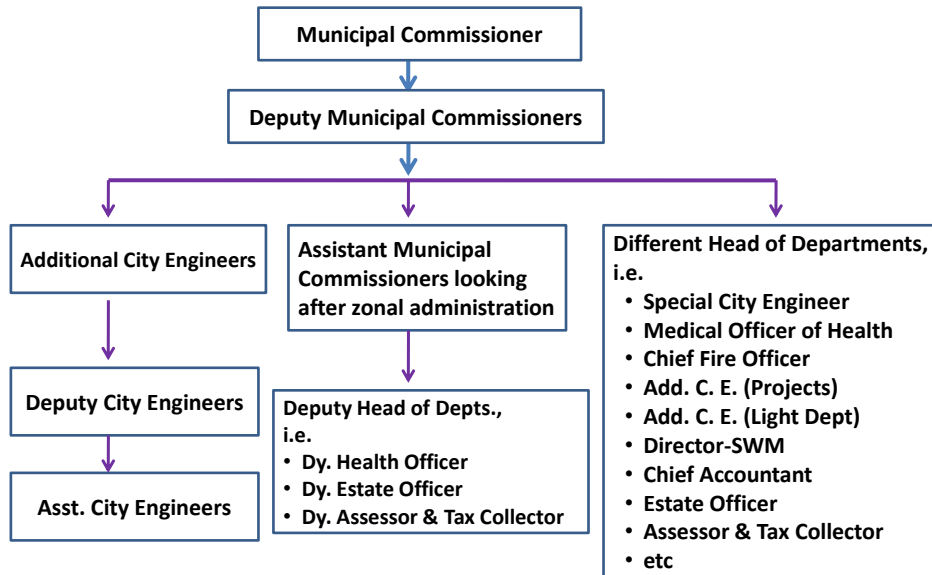
Ahmedabad, an Overview

- 7th Largest Metropolis in India
- Population: 60 Lakh plus(Large Floating Population)
- Area : 466 Sq Km
- Density : 22,473 / km² (58,205 /sq mi)
- 6 Municipal Zones - 64 Municipal Wards (each zone comprising of 10 to 12 wards)
- City is witnessing a major infrastructure boom and population increase.
- A rising center of Education, Manufacturing Industries, the city of Ahmedabad, is globally the 3rd fastest growing city as per Forbe's study



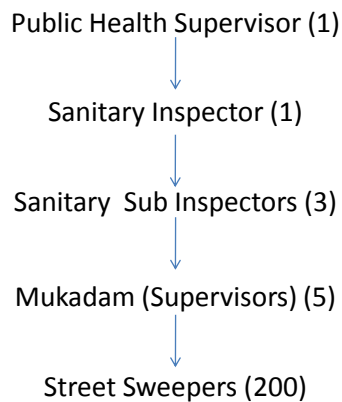


Ahmedabad Municipal Corporation

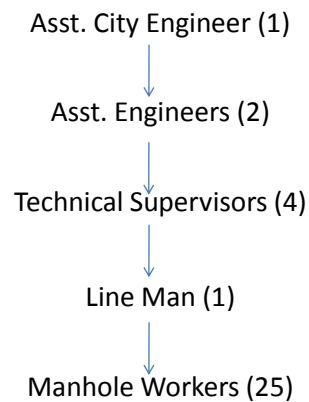


DEPLOYMENT OF STAFF AT WARD LEVEL

Health Department



Engineering Dept.





WORKING SYSTEM AT WARD LEVEL

Working of Health Dept.

- Street Sweeping.
- Door to Door Solid Waste Collection.
- Cleaning of public latrines and toilets.
- Cleaning of nuisance spots and spraying of insecticides.
- Transportation of waste from above sites to the specified waste storage container sites through containerized handcart .
- Transportation of dead bodies of small animals like dogs, cats, pigs etc. to the specified site.
- Regular checking of quality of drinking water
- Activities during certain campaigns, like Polio

Working of Engineering Dept.

- Providing basic amenities like safe drinking water, waste water drainage & storm water drainage system
- Maintenance of water network, drainage network & storm water drainage network
- Waste water treatment
- Street lights
- Road & Pavements
- Construction & maintenance of over bridges and Under passes



WORKING OF SWM DEPT. (Centralized)

- Coordination of zonal health department activities
- Looking after implementation of MSW Rules in the City
- Working on Government policies, submissions, legal matters etc
- Conservancy / Street sweepers Establishment & Co- Ordination with Zone.
- Secondary Storage, Transportation, Processing and Final disposal of Municipal Solid Waste.
- Collection, Transportation and final disposal of Municipal Bio Medical waste at incineration plant on Privatization basis from 5 General Hospitals, 54 Referral Hospitals, Maternity Home, Health Care Centers of AMC.
- Transportation of dead bodies of small animals like dogs, cats, pigs etc. to the specified site.
- Collection & Transportation of Dead animals as well as Meat Market, Fish Market and Slaughter House waste.





AMC-Solid Waste Management Practices

Street Sweeping

- 365 days working (one weekly off only, half day working on all national holidays)
- Total 1,484 km roads area is swept on a daily basis.
- Strength of more than 13,000 Street sweepers
- Timing:
 - ✓ 06.30 am to 11.30 am
 - ✓ 03.00 pm to 06.00 pm
- AMC provides 6 bucket hand cart, long broom, short broom, metal tray etc and also provides Gum Boot, hand gloves, mask & other safety equipments where it require

DOOR / GATE TO DUMP SYSTEM

- 365 days working
- More than 700 Vehicles deployed
- Timing: 7 am Onwards
- Introduced in July, 2009
- Closed body Hydraulic Euro III vehicles used for lifting solid waste.
- SW collected in morning from residential units and in evening from Commercial units.
- Refuse Compactors take waste from these vehicles to the treatment plants.
- The Project covers entire city.



STRENGTH OF CONSERVANCY DEPT.

Name of Zone	Total No. of Permanent Sweepers	Total No. of Daily Wage Sweepers	Total No. of Sweepers	Total No. of Mukadams (Supervisors)	SSI	SI	PHS
Central	2473	321	2794	53	31	13	9
East	1508	693	2201	32	44	19	14
West	1462	352	1814	34	36	16	11
North	1663	168	1831	25	37	17	9
South	1211	439	1650	28	33	14	9
New West	166	2928	3094	7	45	20	11
Total	8483	4901	13384	179	226	99	63





DOOR / GATE TO DUMP SYSTEM

Name of Zone	No. of Wards	Types of Vehicles			Present no. of Working Route
		Tata ACE (Chhota Hathi)	Refuse Compactor / Hywa Vehicle	Pedal Rickshaw	
Central	9	85	7	43	90
East	13	88	6	98	88
West	10	100	8	19	88
North	12	101	11	11	104
South	10	85	4	15	88
New West	10	107	11	10	109
Total	64	566	48	196	567



AMC-Waste Management Practices

Secondary Collection and Transportation

- 365 Days Working
- More than 100 Vehicles Used
- More than 1050 container sites
- Working: round the clock
- Minimum one lifting of a bin in 24 hours
- Deployment of a sweeper on each container site in day time

Weigh Bridge

- 365 Days Working
- Daily 3800 MT Waste Weighed
- More Than 1000 Trips
- Working: round the clock
- Oracle based software is used for data capture and development of MIS on a daily basis
- CCTV system is installed for effective supervision.

Activity	Yearly Expenses (Rs. in crore) 2012-13	Daily waste collected / transported in metric tons
Street sweeping (Salary to AMC employees)	153.77	1800
Container lifting and transportation (including spot to dump)	41.01	
Door / gate to dump project	18.52	1700
Municipal bio-medical waste collection, transportation & disposal	0.38	1.5
C&D waste and Others	2.26	300
TOTAL	215.94	





Night scrubbing through Road Sweeping Machines



Before



After



- All major broaden public roads, BRTS roads and Model roads are covered under this system.
- Purchase and put in use 15 heavy duty truck mounted sweeping machines
- Working time: 10 pm to 6 am
- Each machine has a cost of Rs. 64 lakh plus
- These machines are helping AMC to keep city as a dust free city.



AMC-MACHINERIES & EQUIPMENTS

No.	Details	Numbers
1	Tipper Trucks	89
2	Dumper Placers	120
3	Skip Lifters	11
4	Refuse Compactors	54
5	Dead Animal Collection Vans	4
6	JCB Machines	32
7	Bobcat Type Machines	33
8	Bull Dozers	5
9	Wheel Dozer Machines	3
10	Heavy Duty Loaders	3
11	Excavator Machines	5
12	Truck Mounted Road Sweeper Machines	15
13	Tractor Mounted Road Sweeper Machines	8
14	Door / Gate to Dump Mini Vans	24
15	Grab Bucket Mounted Lifting Crain	7
16	Soil Compactor	3
17	Dozer Blade Mounted Tractors	7





Collection, Transportation & Safe disposal of e - waste and Carcass Waste (under planning)

e-waste Management

For effective implementation of e-waste (Management and Handling) Rules, 2011 in Ahmedabad, AMC in coordination with GPCB and with the help of Corporate Sector is planning to establish collection centers for e-waste collection, safe transportation and safe storage / disposal. Ernst & Young has prepared a competitive bid document on PPP basis and it is floated now for bidding. Selection process will be finalized in May, 2013.

Scientific and safe disposal of Carcasses of Animals & Waste from Slaughter House, Fish Market, Meat Market etc.

AMC is in the process of issuing a competitive Bid for Design, Construction, Operation & Maintenance of a daily 10-15 tons processing plant on Public Private Partnership mode for 30 years with the help of a competent Consultant firm for exploring best suitable technology.



5



Secured Engineered Landfill Site

Disposal of Inert Solid Waste- Secured Engineered Landfill Site (Operational Since 14.10.2009)

Capacity:

11.50 Lacs Metric Tones

(i.e. 1.15 million tons)



Total construction cost of the site:

Rs. 13 Crore



Area: 12.88 Hectares

(32.8271 acres)



6



SWM Master Plan for 2031

- AMC has decided to prepare a Solid Waste Master Plan for 2031
- Process adopted
 - Process tracking of all streams of SWM
 - Numerous stakeholder consultations
 - Strategy development towards zero waste
 - Infrastructure gap and management assessment
 - Recommendations and capital investment



Truck Mounted Road Vacuum Sweeping Machine



Road Map for Zero Waste Ahmedabad by 2031

AMC has signed a MoU with United Nations Center for Regional Development, Japan (UNCRD) towards making Ahmedabad a zero waste city. UNCRD is providing technical support to AMC for developing a "Roadmap for Zero Waste Ahmedabad". AMC participated at the Special Event of ISWA World Congress 2011 where it and agreed on the "Declaration for Zero Waste Ahmedabad" by 2031.

AMC will move forward for increasing resource efficiency and reduction of waste, development and implementation of policies for resource efficiency and environmentally sound waste management, development and enforcement of policies, strategies, laws, regulations and also involve continued, new & innovative public-private partnerships among industry, governments, academia and other non-governmental stakeholders aiming to enhance capacity and technology. Detailed multi-stakeholders' consultation meeting with the help of UNCRD Japan on 18th April, 2012 for developing a Draft Road Map. 2nd Multi-stakeholders consultation on the Pre-Final Draft Road Map for Zero Waste Ahmedabad held on 12th September, 2012. Meetings jointly organized by AMC & UNCRD with the support of Zero Waste South Australia.





Road Map for Zero Waste Ahmedabad by 2031

The Zero Waste concept for Ahmedabad will serve as catalyst for policy changes at National level in realizing resource efficient and zero waste societies in India.

Hon. Minister for Urban Development, Government of Gujarat released the roadmap on the 12th Jan 2013.

Download document at:

<http://www.egovamc.com/Downloads/Downloads.aspx>



Housekeeping at Sheth V S General Hospital

This general hospital is started in 1931 having a capacity of 1155 beds which is managed by Ahmedabad Municipal Corporation





Housekeeping work at Sheth V S General Hospital

	Bed capacity	monthly cost (Rs)	24 hrs working	The House keeping is done by
Casualty, Minor operation theater, Medical Intensive Care Unit (MICU), Emergency ward and Neuro post operative ward in Trauma Center (where Emergency patients are first brought by 108 ambulance for immediate treatment)	74	923870	<ul style="list-style-type: none"> • 35 sweepers • 46 patient care workers • 4 supervisors • 1 facility executive 	6 Auto-scrubbers 5 single disks 3 High-pressure jets 20 Ringer trolleys 1 Steam Jet
Cath lab and Cardiothoracic Operation Theater (gives treatment to the heart and lungs patients)	60	344462	<ul style="list-style-type: none"> • 21 sweepers • 1 supervisor 	1 Hand Scrubber 5 Garbage trolleys 4 Dust collectors
Jain Ward and parapet and patient shed and Neonatal ICU	22	253404	<ul style="list-style-type: none"> • 22 Sweepers • 1 supervisor 	1 Ladder 1 Telephonic poll
Nursing School and Hostel		551955	<ul style="list-style-type: none"> • 35 female sweepers • 1 female facility executive 	4 Glass cleaner sheets



Sanitation system at Ahmedabad Janmarg Ltd. (Bus Rapid Transit System) (as on 01/04/2013)



- BRTS total Road length is 61 km.
- Total buses deployed are 118 (30 AC Buses)
- Average daily passengers travel are 1.40 Lac
- Till date total project cost is Rs 910 Crore.
- Corridor cleaning is done by 2 Road Vacuum Sweeping Machines.
- Bus stop , grills, and corridor up to 30 mts. from either side of bus stops is cleaned daily.
- Every month third party inspection is done for all operational part of BRTS including housekeeping.
- House keeping at all bus stations are given to two agencies on a monthly payment basis. Bus Stations which have heavy passenger traffic, deploy 1 person for 16 hours (2 shift one person) Bus Stations which have less traffic, deploy only 1 person for whole day who comes 4 hours in the morning and 4 hours in the evening. Small bus stations, where 1 person will look after two bus stations, 4 hours in the morning and 4 hours in the evening shift. Total expenses for 92 bus stations house keeping is Rs. 6.8 lac per month, Each bus stop is cleaned twice a day.





Sanitation system at Kankaria Lake Front Development Corporation (Kankaria Lake)

Kankaria Lake was constructed in 1451 by Sultan Qutb-ud-Din. The lake has a circumference of around 1.4 miles. A lakefront was developed in 2008 by spending Rs 36 Crore which has many public attractions like Zoo, Toy Train, Kids City, Tethered Balloon Ride, Water Rides and Water Park, Food Stalls and entertainment facilities. Kankaria Carnival is a week long festival being held here in last week of December. Many cultural, art and social activities are organised during carnival.



To provide neat & clean surroundings & ambience, AMC has outsourced the comprehensive Mechanized & Manual Housekeeping work is outsourced and given to BVG India Ltd. since January 2009. Payment of Rs. 8 lakh per month has been made after certification/endorsement by Health Department.



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- 1 Steam Jet
- 1 Hand Scrubber
- 5 Garbage trolleys
- 4 Dust collectors
- 1 Ladder
- 1 Telephonic poll
- 4 Glass cleaner sheets



EARTHWORM

Mascot for Clean Ahmedabad

Thank You

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