

LMC-KTGY A-Town Block E Anaheim, CA Trash Management Plan

Task: Design a waste and recycling system for this 5-story story residential mixed use project comprised of 256 residential units that minimizes costs, staffing requirements and environmental impacts, while providing convenient trash disposal for the building's tenants. Please note the word "trash" when used in this plan covers both waste and recycling.

Compliance: Long-term California Diversion Requirements.

Since 1989 and the passage of the first major piece of recycling legislation in California, AB 939, the State has aggressively legislated waste diversion goals and mandates. The major pieces of California legislation are below.

AB 939 (1989) required 50% diversion levels to be achieve by the year 2000.

AB 341 (2008) requires all business generating 4 cubic yards of waste per week to actively implement and participate in recycling programs. This establishes a goal of 75% diversion by 2020, with appropriate reviews of by local jurisdictions conducted periodically.

AB 1826 (2014) mandates businesses divert organics.

The City of Anaheim supports these diversion initiatives by offering waste, mixed recycling and yard waste collection. Compost collection will be implemented at a later date.

They also operate a "dirty MRF" which means trash is collected in a single stream and sorted at the Materials Recovery Facility (MRF [pronounced "murf"]). In addition, the City has planned to implement a compost food waste diversion program for the past two years, but to date has not done so. Conversations with the City indicate that multi-family properties can dispose of waste and recycling in a single stream, however to abide by the future California legislation they recommend collecting compost in a separate container.

Waste and Recycling Removal: The City of Anaheim has a single waste hauler, Republic Services, which purchased the local franchise holder, Anaheim Disposal, in 2012. This franchise (in various forms) has been in effect since 1948; with the approved transfer of the franchise to Republic, it was extended to 2031. Republic is the sole legal waste hauler. Waste, mixed recycling and yard waste service are provided. As mentioned previously, conversations with the City indicate they recommend collecting compost in a separate container in order to abide by AB 1826.



Specific Project Design Summary:

First, residential trash must be collected in 2 streams, waste and recycling, to meet the State requirement of AB341 and the local Recycling Ordinance. Food scrap recycling is not currently required in multi-family dwellings, however in order to prepare for future compost collection, Slim Jims will be placed in each trash chute vestibule. Staff will then empty these containers into Toter carts in the trash collection

Second, this project is designed with one chute core with (2) 30" diameter residential trash chutes instead of the code minimum 24". This is to reduce potential jams of large items, particularly cardboard boxes from online shopping and food delivery. Chutes will discharge into chute-fed waste and recycling compacted containers.

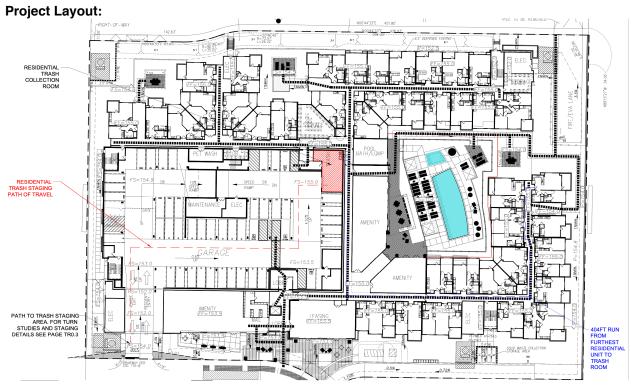
Third, the ground level units need a safe, convenient and accessible way to dispose of trash. Thru-wall intakes at the ground level will provide a safe method of trash disposal for residents on the ground floor.

Fourth, bins will be staged in the designated area off of Metro Street at the end of the EVA. Front load service requires a 25' vertical clearance. Waste and recycling will be emptied into the compactor throughout the week and serviced when full.

Fifth, add 1 CFM/SF mechanical ventilation per CBC, floor drain, hose bib and odor control to the trash collection rooms. Additionally NFPA 82 requires gravity chutes vent through the roof at least 36" and at full diameter.

Sixth, this building is projected to generate around 896 cardboard boxes per week.







Volume Projections for Residential Waste: Projections for residential waste, and recycling follows. For waste and recycling, both loose dumpster and compacted services are projected, which allows for evaluation of each type of service. The following metrics were used to project residential waste and recycling levels:

Residential Waste: 0.15 Cubic Yard (30 gallon) per week/unit. **NOTE: This is the equivalent of almost 3 large kitchen garbage cans per unit week (~2.5 - 13 gallon bags).**

Residential Recycling: 0.15 Cubic Yard (30 gallon) per week/unit. **NOTE: This is the equivalent of almost 3 large kitchen garbage cans per unit week (~2.5 - 13 gallon bags).**

Residential Compost: 0.012 Cubic Yard (2.4 gallon) per week/unit. **NOTE: This is the equivalent of small compost pail per unit week.**

Trash Volume Projections

Below is a summary of projected total weekly trash volumes. See detailed analysis on page 18.

	Units	Loose Waste Volume CY/WK	Loose Recycle Volume CY/WK	Compact Waste Volume CY/WK	Compact Recycle Volume CY/WK	Total Compact Waste 3CY Bins/ WK	Total Compact Recycle 3CY Bins/ WK
Total	256	38.4	38.4	9.6	9.6	4	4

Residential Trash Handling System

To comply with City ordinances, residential trash will be collected in 2 different streams: waste and mixed recyclables (paper, cardboard & glass containers).

Compactors Waste and recycling will be collected in chute-fed front load compactors.

Service	Compaction Ratio	Monthly Fee
(13) 3-CY loose bins per week	N/A	\$2,299.18
(4) 3-CY compacted bins per week	4:1	\$1,414.80

<u>Lower Waste Disposal costs</u>. Front-load compaction is 62% less expensive than front-load loose waste services. Please see cost benefit analysis starting on page 18.

<u>Lower labor costs.</u> A 3-cubic yard loose waste bin serviced Monday-through-Sunday must be moved from the trash chute to the trash service location 4x per week. Additionally loose bins must be rotated or raked daily since trash forms a pyramid at the bottom of the chute and does not flow evenly into the containers. Comparable compacted service (4) 3-cubic yard bins picked up 1x per week. That represents 75% fewer times to move the bin from the trash area to the street for pickup. (See cost benefit analysis on page 18).



No need for custom handling products. Because of the large number of ground floor units, this project will use thru-wall intakes. Accessibility requirements are such that the thru-wall intake must be mounted lower than the clearance height for a standard loose front load trash bin. Loose service would require a) purchasing custom drop-side front load bins and b) gaining approval from the City of Anaheim for their use.

<u>Cardboard</u>. Due to the number of units, this project is projected to generate ~896 cardboard boxes per week. Detailed analysis is on page 18.

<u>Compost.</u> Food waste collection is not required at this time in multi-family properties in the City of Anaheim. To prepare for future compost collection, Slim Jims will be placed in each trash chute vestibule. Staff will then empty these containers into Toter carts in the trash collection. Compost carts will be staged on collection days by. Building staff.

<u>Bulky item collection:</u> Building staff will move bulky items to the bin storage room on the ground floor level, then to the staging location for pick up. Residents must arrange for bulky item pick up through the waste hauler or a 3rd party vendor. Property management will inform residents of bulk items service, and clear signage will be added to all the trash rooms and vestibules.



Residential Trash Bin Moving: All full compactor bins will be towed using an electric utility vehicle from each of the collection rooms to the bin staging area for emptying by hauler.

Trash System Equipment - Residential

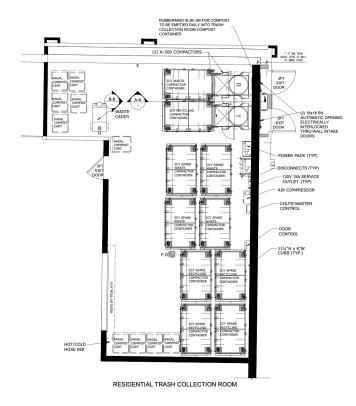
Below is a summary of the trash system equipment.

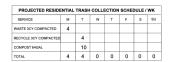
Core	Gravity Chutes	Chute Size	Compactors	Thru walls	Intake Doors	Bin Type	# of Bins	Bin Size Cubic Yards
Trash Collection Room	2	30"	2	2	ADA Auto Opening	Front Load	5 Waste 5 Recycle 10 Compost	3CY Bin 3CY Bin 64G Cart

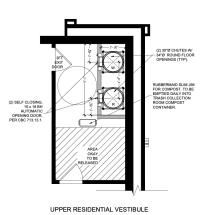
- 1. Section 14 91 00 Trash Chutes & Intake Doors
- 2. Section 44 31 00 Odor Control
- 3. Section 41 63 23 Electric Utility Vehicle for Bin Moving



Residential Trash Collection Room and Upper Floor Trash Vestibule Layout:



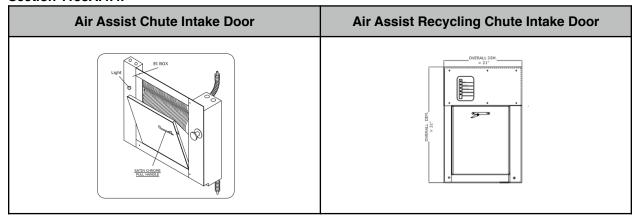






Residential Trash Chute Intake Doors

Automatic Opening (Pneumatic) Chute Intake Door Recommended to meet Housing Accessibility Section 1138A.4.4.



This is a summary of the current state as we understand it. This is not intended to be legal advice and should not be relied upon with out seeking advice of an ADA expert and your legal counsel.

Per most building codes and FHA requirements, "common use" building areas and building elements, such as a trash rooms and trash chutes are required to be accessible. Specifically, the trash chute door is required to comply with accessibility requirements:

- Clear floor space for a wheel chair at the chute door
- · Chute door hardware within reach range
- Chute door hardware complying with operability requirements.

The operability requirements mandate that the chute door hardware must not involve any of the following:

- Two handed operation (such as depressing a button while turning a door handle)
- · Tight grasping or pinching
- Twisting of the wrist
- Force to activate the hardware that exceeds 5.0 pounds.

The majority of manual chute intake chute door installations do not comply with the accessibility requirements. Lower quality chute doors require grasping, twisting of the wrist and more than 5 pounds of force to open the chute door. Regardless of what has been installed for the chute door, the chute door is still required by both Code and FHA requirements to comply with accessibility requirements. In the cases where non-compliant chutes have been installed, the building Owner has made management decision to handle the accessibility requirement using other means.

Residential and other buildings are subject to the progressively revised provisions of Federal and Local ADA laws and regulations. To meet the current ADA Standards as they apply to Gravity Trash Chute Intake Doors, the person using the door must not have to grasp, twist, or pinch the control mechanism in order to operate the intake door. ADA Standards also limits the maximum operating force required to



open an interior door (without specificity to size) to 5 pounds of force. The maximum allowable mounting height of the operating mechanisms (i.e. door handle, etc) of an ADA compliant device is 48" (for side reach revised as of July 1, 2012 from 54") or 48" (for front reach when hopper door is open). The maximum allowable projection of an ADA compliant device is 4" off the projection surface of the wall.

The Wilkinson Signature Series and IDC-2000 Recycling Manually operated doors require the person operating the door to push a membrane selector switch (waste, recycling or compost) and grasp the ushaped handle, push down on the thumb latch with a finger and pull open the door. This type of intake doors meets the mounting height, the projection, the twist and the pinch requirements but it does not meet the pulling force or the grasp requirement.

Lower quality manual chute intake doors from other manufacturers all use a T-handle or L-handle operating mechanism. These doors fail on 3 counts. They do not meet the pulling force, the grasp and twist requirements. These door are especially hard to operate for persons with arthritis due to the required simultaneously grasping, twisting and pulling motion.

The Wilkinson Signature Series and IDC 2000 Pneumatic Assist door meet all the above requirements since it is operated by pushing the membrane selector switch which opens the door automatically. The door closes after a set time and latches so it meets all the current fire code requirements. The air assist mechanism is designed to preclude the need to grasp, twist, or pinch the control mechanism in order to operate the intake door. The membrane meet the height, projection and force requirements too. It is conceivable, however that certain disabled persons will still not be able to operate this type of door. ADA law requires one to accommodate all persons with disabilities.

The supra-majority of all new construction within the US still uses manually operated chute intake doors due to the extra upfront (~ \$900 per floor) and higher maintenance costs of the Pneumatic Assist Chute Intake type of doors. Many building owners have chosen to only install the pneumatic assist doors in facilities with a high senior or disabled population and in order to meet the above ADA requirements make it their policy to provide a staff person to assist any individual with disabilities who need assistance in operating the manual operated door.

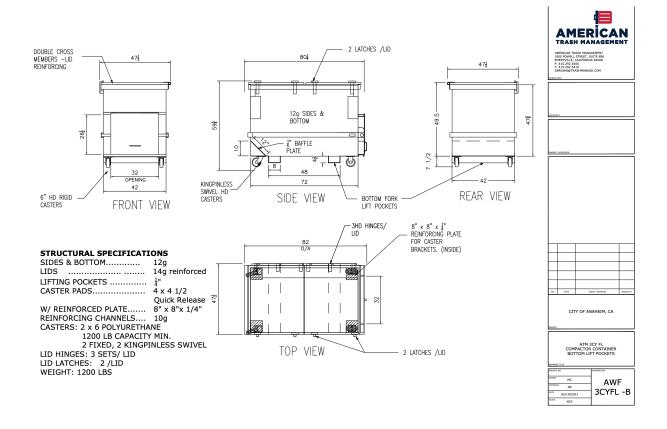
Trash chute systems have been designed to meet the fire and life safety found within Building Codes. All trash chute intake doors are required to be behind a rated fire-barrier and any door in these walls is required to be a fire-rated door.

This fire-rated-door is required to be self-closing (or automatic-closing upon the detection of smoke), so it has a closer mechanism and positive latch. Because this door is designated as a "fire-door", per most codes and accessibility standards (including ANSI A117.1 used for FHA compliance), the door opening force for this door is exempt from typical accessibility requirements (maximum 5 pounds) and allowed to have a minimum opening force allowed by the authority having jurisdiction (typically a maximum of 15 pounds). The opening force for the required fire-rated doors in front of trash chute intake doors routinely exceeds 5 pounds and is more typically in the 14-18 pound range.

Requiring the chute intake door to meet accessibility requirements while allowing the fire-rated door in front of the trash chute intake door to not meet the pull force and grasp requirements is illogical. If an individual with accessibility needs cannot open the fire door in front of the trash chute intake then they will not be able to access the non compliant chute. Owners should always have a policy in place to provide assistance to any person who can not access the trash chute (with or without automatic opening doors).



3CY FL Compacted Containers - Bottom Lift Pockets:





Future Compost Collection Containers



3540-60 Slim Jim® with Venting Channels



Features innovative patent-pending solutions that increase efficiency and improve worker well-being.

- Integrated, patent-pending venting channels take the strain out of liner removal.
- Space-saving profile fits virtually anywhere.
- Four patent-pending can liner cinches improve productivity.
- Molded-in handles and base grips make lifting and emptying
- Available with Universal Recycling Symbol, SKU# 3540-07.
- Custom imprinting available; contact Rubbermaid Customer Service at (800) 347-9800 for details.

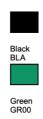
AVAILABLE COLORS

Order #	Color	Product UPC/ UCC Code
FG354060 GRAY	GRAY	086876186376 /
		10086876186373
FG354060 BLA	BLA	086876186352 /
		10086876186359
FG354060 BEIG	BEIG	086876186369 /
		10086876186366
1835671	GR00	10086876217053 /
		N/A
1835530	BL00	10086876217046 /
		N/A





Blue



SPECIFICATIONS

Cartons Per Pallet:

	U.S.	Metric
Length:	22.0 in	55.9 cm
Width:	11.0 in	27.9 cm
Height:	30.0 in	76.2 cm
Volume Capacity [Nom]:	23 gal	87.1 L
Volume Capacity [Max]:		
Volume Capacity [Min]:		
Carton Length:	22.0 in	55.9 cm
Carton Width:	11.0 in	27.9 cm
Carton Height:	49.5 in	125.7 cm
Carton Cube:	6.93 ft3	
Ship Weight/Carton:	30.60 lb	13.88 kg
Pack Quantity:		4

ADDITIONAL INFORMATION:

Product Sell Sheets: RCP_SM700_SlimJimVentingChannels.pdf Chemical Resistance Guide: chem.pdf

Products in Slim Jim® with Venting Channels

Item #	Description	Length	Width	Height	Volume Capacity
3540-60	Slim Jim® with Venting Channels	22.0 in	11.00 in	30.0 in	23 gal

Accessories for Slim Jim® with Venting Channels (3540-60):

to. Description	No.	Description
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2688-88 Slim Jim® Handle Top for Slim Jim® Containers 8



Compost Collection Carts



96 GALLON EVR® II **UNIVERSAL / NESTABLE**

Part Number: 79296

Description 96 GALLON EVR® II CART

Size (l x w x h) 35.25" X 29.75" X 43.25"

Load Rating

335 LBS/151.9 KG

Wheel Diameter





64 GALLON EVR® II UNIVERSAL / NESTABLE

Part Number: 79264

Description

64 GALLON EVR® II CART

Size (l x w x h)

31.75" X 24.25" X 41.75"

Load Rating 224 LBS/101.6 KG

Wheel Diameter



32 GALLON EVR® UNIVERSAL

Part Number: 76532*

Description

32 GALLON EVR® CART

Size (l x w x h)

24.25" X 19.25" X 38.50"

Load Rating

112 LBS/50.8 KG

Wheel Diameter 10"

* 32 gallon is original EVR design and



48 GALLON EVR® II UNIVERSAL / NESTABLE

Part Number:

79248

10"

Description 48 GALLON EVR® II CART

Size (l x w x h) 28.75" X 23.50" X 37.50"

Load Rating 168 LBS/76.3 KG

Wheel Diameter

24 GALLON EVR® II UNIVERSAL

Part Number:

79224*

Description 24 GALLON EVR® II CART

Size (l x w x h) 24.00" X 19.75" X 34.50"

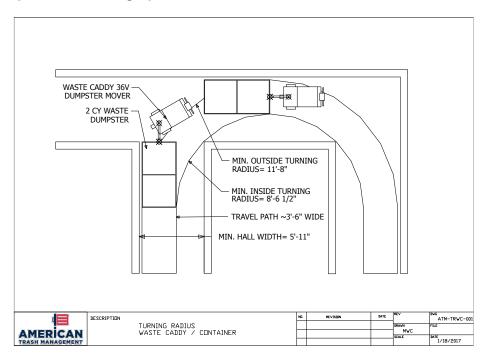
Load Rating 84.0 LBS/38.1 KG

Wheel Diameter 10"

* 24 gallon does not nest fully assembled.

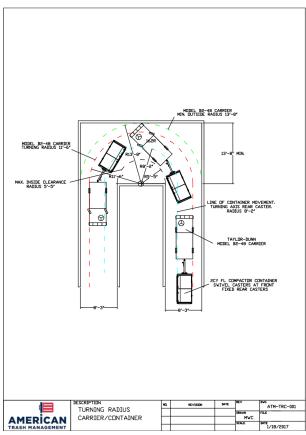


Compactor Bin Moving Options









Bin Moving Equipment and Details

BIGFOOT® 48V

Taylor-Dunn's new line of Bigfoot® electric vehicles has a 10 inch larger operator's compartment, adjustable seats, and tilted steering wheel for improved legroom and operator comfort.

- > Download Brochure
- > See More Videos

Compare This Model

Request A Quote



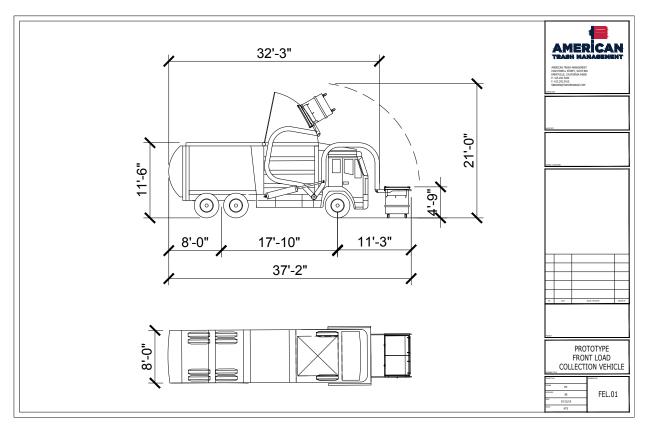
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Noise Levels

Location	Decibel Levels		
Banging on Bins when Emptying	100		
Behind Garbage Truck (while compacting)	89		

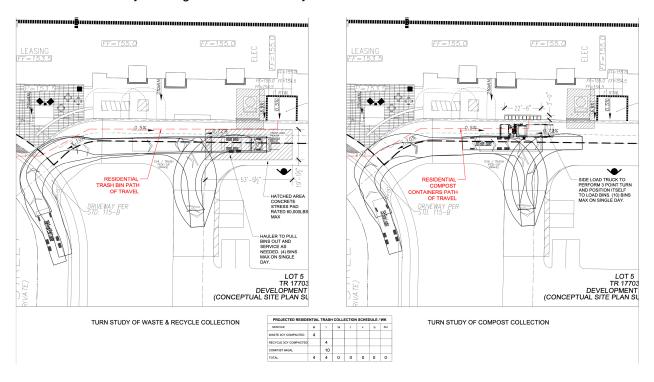
^{*}Noise levels from compactor operation were measured by JV Manufacturing, makers of Cram-a- lot compactors.





Trash Bin Service Location

Bins will be staged in the designated area off of Metro Street at the end of the EVA, and will be moved to and from this area by building staff on service days.





Sample Residential Collection Schedule

Residential Bins	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
3CY Waste Compactor (FL)	4						
3CY Recycle Compactor (FL)		4					
Compost 64G Carts		10					
Total	4	4					

RESIDENTIAL TRASH SYSTEM SPECIFICATIONS: Provided separately.

- 4. Section 14 91 00 Trash Chutes & Intake Doors
- 5. Section 44 31 00 Odor Control



Waste, Recycling and Compost Analysis

Below is a comparative analysis of the disposal and labor costs of handling waste and recycling in loose versus compacted bins. Please note that the projections below are estimates derived from actual audits of comparable multifamily complexes in the San Francisco Bay area. They are not guaranteed. They are to be used for planning purposes only and may be higher or lower than projected.

TOTAL RESIDENTIAL WASTE AND RECYCLING SYSTEM ANALYSIS

ASSUMPTIONS:	Units	256		Gallons
	Volume Waste	0.15	cubic yard/week/unit	30.15
	Volume Recycling	0.15	cubic yard/week/unit	30.15
	Volume Compost	0.012	cubic yard/week/unit	2.412
Waste/Recyc	cle Compaction Ratio	4	to 1	
	Staff Labor Rate	\$21.00	per hour - 1 person	
	Time move bins	0.5	hr to move to unloadi	ng area & back
	Rake-Rotate bins	0.15	hr to go to each bin ra	ake or rotate
	# of Trash Rooms	: 1	-	
	Compacted Service	3	cubic yard front load	bins
I	oose Waste Service	3	cubic yard front load	bins
Loos	se Recycling Service	3	cubic yard front load	bins
Loc	se Compost Service	0.32	cubic yard carts (64 0	G Toter Carts)
COST BENEFIT CALCULATIONS:	PROJECTED	PROJECTED	PROJECTED	PROJECTED
SERVICE-Waste	Loose	MIXED LOOSE*	Compacted-FL	Compacted-FL
SERVICE-Recycling	3 Streams	IRF & COMPOS	Loose	Compacted-FL
Loose Waste Volume - CY	38.4	38.4		
Compacted Waste Volume - CY			9.6	9.6
Loose Mixed Recycling Volume - CY	38.4	38.4	38.4	
Compacted Recycling Volume - CY				9.6
Loose Compost Volume - CY	3.1	3.1	3.1	3.1
Waste Bins/week	13	26	4	4
Recycle Bins/week	13	0	13	4
Compost carts/week	10	10	10	10
Containers/week	36	36	27	18
SYSTEM CAPITAL COST	\$0.00	\$0.00	\$20,960.00	\$27,840.00
WASTE COST/MONTH	\$2,299.18	\$4,598.36	\$1,414.80	\$1,414.80
RECYCLING COST/MONTH	\$1,184.69	\$0.00	\$1,184.69	\$1,414.80
COMPOST COST/MONTH	\$544.70	\$544.70	\$544.70	\$544.70
TRASH COST/MONTH	\$4,028.57	\$5,143.06	\$3,144.19	\$3,374.30
COMPACTION SAVINGS/MONTH	N/A	N/A	\$884.38	\$654.27
STAFF LABOR COST/MONTH	\$2,127.76	\$2,127.76	\$1,595.82	\$1,063.88
STAFF SAVINGS/MONTH	N/A	N/A	\$531.94	\$1,063.88
NET MONTHLY TRASH COSTS	\$6,156.33	\$9,741.42	\$4,740.01	\$4,438.18
Monthly Trash Cost per Unit	\$24.05	\$38.05	\$18.52	\$17.34
PAYBACK-MONTHS	N/A	N/A	15	16

CARDBOARD ANALYSIS

896 BOXES/WK



Waste and Recycling (Partial) Rates

City: Anaheim

Vendor: Republic Services

Front Load Loose Waste Rates			
x per week		3CY	Organic Materials Rates
	1	\$176.86	64 G
	2	\$265.26	\$54.47
	3	\$353.57	\$108.95
	4	\$442.08	
	5	\$530.41	
	6	\$618.78	
	7	\$707.25	
Front Load Compacted Waste Ra	tes		
x per week		3CY	
	1	\$353.70	
	2	\$618.95	
	3	\$883.86	
Front Load Compacted Recycling	g Rates		
x per week		3CY	
	1	\$353.70	
	2	\$618.95	
	3	\$883.86	
Front Load Loose Recycling Rate	es		
x per week		3CY	
	1	\$91.13	
	2	\$182.26	
	3	\$273.29	

Recycling only available at 3 times per week service unless hauler approves additional days.

Chute Fed Compactor Cost	\$20,960.00	A500, 2-3CY Towable bins, tax, ship Install
Chute Fed Compactor Cost	\$24,400.00	A500, 3-3CY Towable bins, tax, ship Install
Chute Fed Compactor Cost	\$27,840.00	A500, 4-3CY Towable bins, tax, ship Install
Chute Fed Compactor Cost	\$34,720.00	A500, 6-3CY Towable bins, tax, ship Install

TRASH SYSTEM SPECIFICATIONS: Provided separately.

- 1. Section 14 91 82 Trash Chutes & Intake Doors
- 2. Section 11 82 26 Waste & Recycling Compactors
- 3. Section 44 31 00 Odor Control
- 4. Section 41 63 23 Bin Towing Vehicle (Taylor Dunn Bigfoot)