BUSCH® SYSTEMS

Let's Recycle Better, Together.

1-800-565-9931 buschsystems.com 81 Rawson Avenue, Barrie, Ontario, Canada L4N 6E5

Today's Panelists

Clare Miflin

Principal, ThinkWoven

Executive Director, Center for Zero Waste Design

Ayodeji Oluwalana

Waste Reduction & Recycling Program Manager

Penn State University

Kerstin Mayer

Sustainability & Diversion Advisor

Busch Systems

Join the Discussion

From your toolbar:

Share your experience & opinions

Look for links to resources

Type direct questions for panelists

Waste is a design flaw.

Center for Zero Waste Design

Think Woven

The Center for Zero Waste Design is a nonprofit that advocates for a future without trash.

We adapt the strategies within the Zero Waste Design Guidelines to the context of other cities, expand the database of case studies, and develop research and policy tools for designing cities and buildings for zero waste.

ThinkWoven consults with entities managing existing buildings and campuses; design teams for new developments; and municipalities, to ensure systems are designed to reduce and better manage waste, and to achieve TRUE Zero Waste certification.

HOW DID AN ARCHITECT GET INTO ZERO WASTE DESIGN?

How does a 21 gallon organics bin fit into this building's waste system?

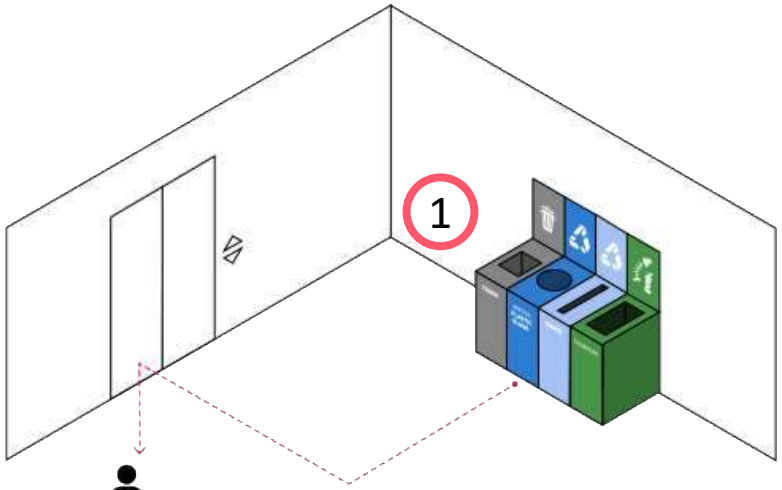
Zero Waste

Design Guidelines

Design Strategies and Case Studies for a Zero Waste City

AIA New York
CENTER FOR ARCHITECTURE
Kiss + Cathcart, Architects
foodprint group
CLOSEDLOOPS
With support from
The ROCKEFELLER FOUNDATION

WASTE MANAGEMENT PLANNING



1. Plan for tenant disposal and separation

- Waste stream types and quantities
- Location of waste stations
- Types of bins
- Signage

2. Plan for movement of recyclables and waste to central storage

- Responsibility
- Frequency
- Transport containers
- Route

3. Plan for waste storage

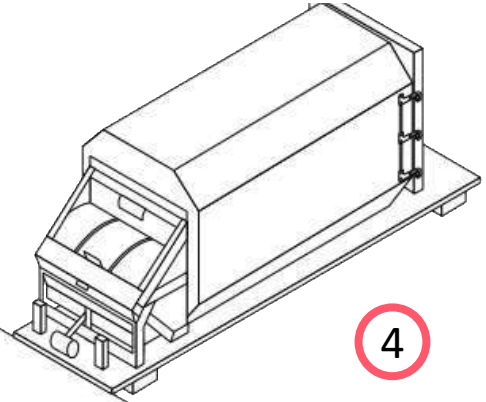
- Calculate area required
- Volume reduction equipment
- Location
- Layout of storage space
- Accessibility
- Time restrictions

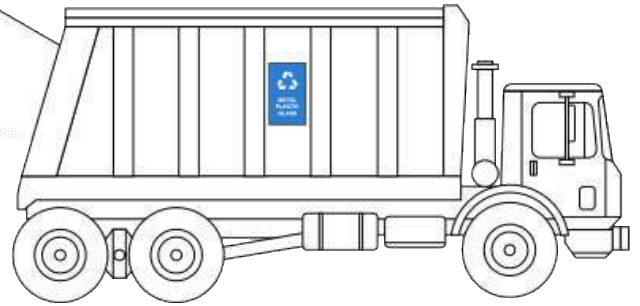
4. Plan for collection

If bags on curb:
- Designated area, size and location

If set out containers:
- Designated area, size and location
- Staffing to return containers
- Area to wash containers

If compactor containers:
- Collection vehicle access
- Ceiling height





Review:

- Requirements for waste separation – recycling, food scraps
- Minimum square footage requirements
- Any other local requirements for waste handling or storage

sanitation

Commercial Organics Requirements

Certain New York City businesses are required under **Local Law 146 of 2013** to separate their organic waste (food scraps, food-soiled paper, and plant waste).

If your business meets the minimum requirements outlined below, you must comply with the NYC Commercial Organics Rules.

Food Services

These rules apply to restaurants, delis, coffee shops, and cafeterias if they:

- Occupy a floor area of at least 7,000 square feet, or, when combined with all food services in the same building or location, at least 8,000 square feet
- Are part of a chain with two or more NYC locations with a combined floor area of at least 8,000 square feet
- Are located within a hotel that has at least 100 guest rooms

SAN FRANCISCO ENVIRONMENT DEPARTMENT

Waste Diversion Rate Calculator

Calculate your waste diversion: convert volume to weight (.XLS)

sfe_zw_volume_to_weight_calculator.xls

Compliance and regulations

Recycling and composting requirements for businesses

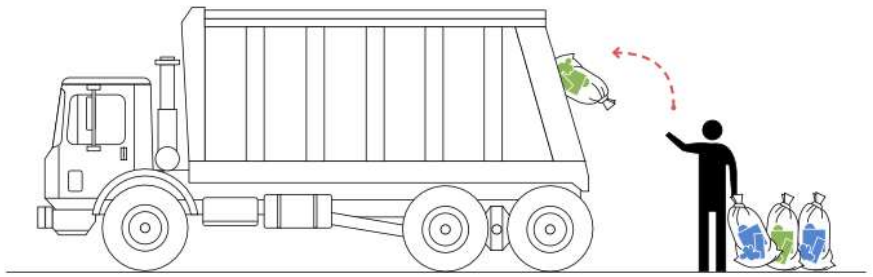
State Law SB 1383: Food recovery requirements

Construction & Demolition debris recovery law

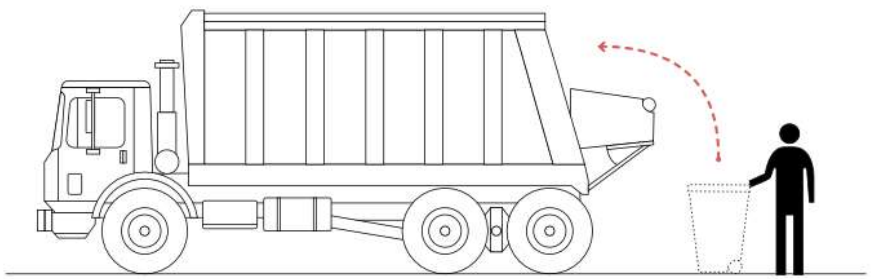
Refuse Separation Law for large refuse generators

WASTE COLLECTION: Containers and vehicles

1



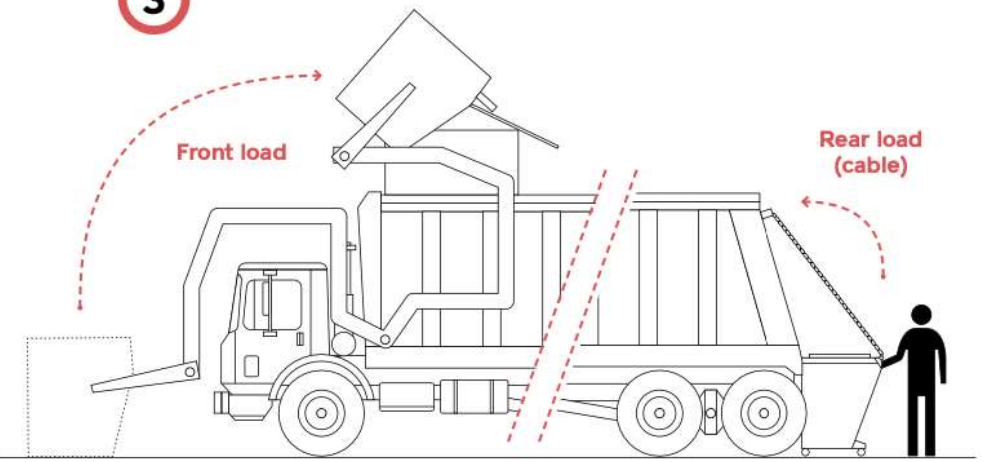
2



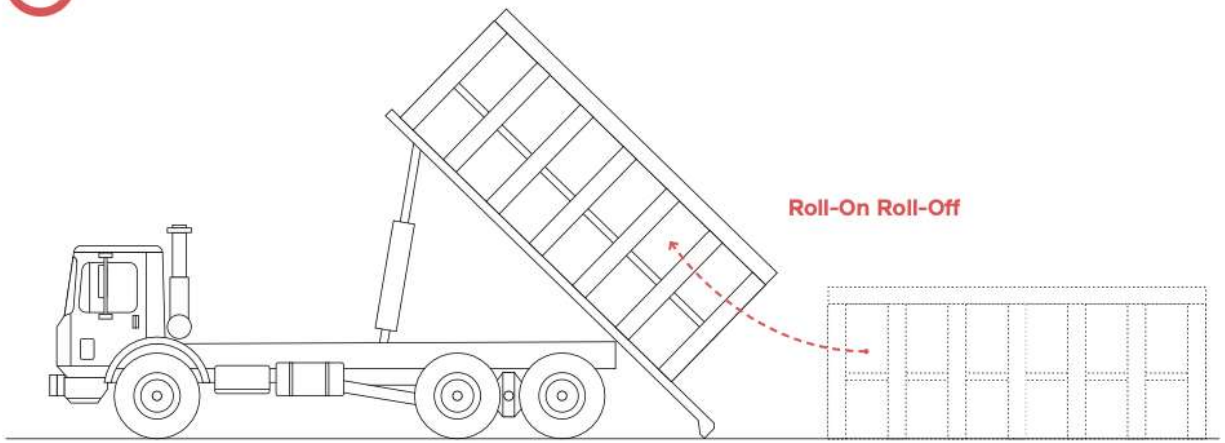
Considerations

- Container/bag types
- Ease and accuracy of waste tracking
- Space requirements
- Truck access requirements

3

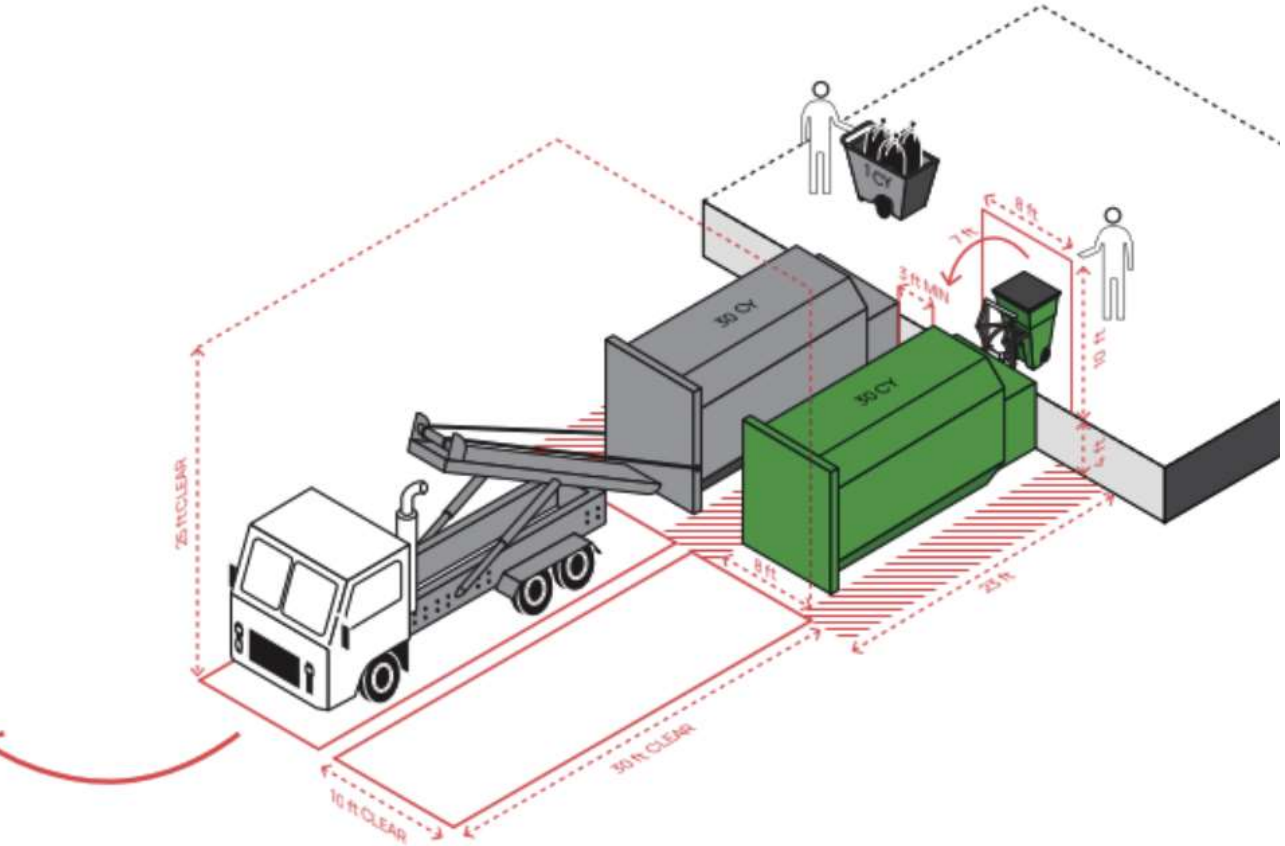


4

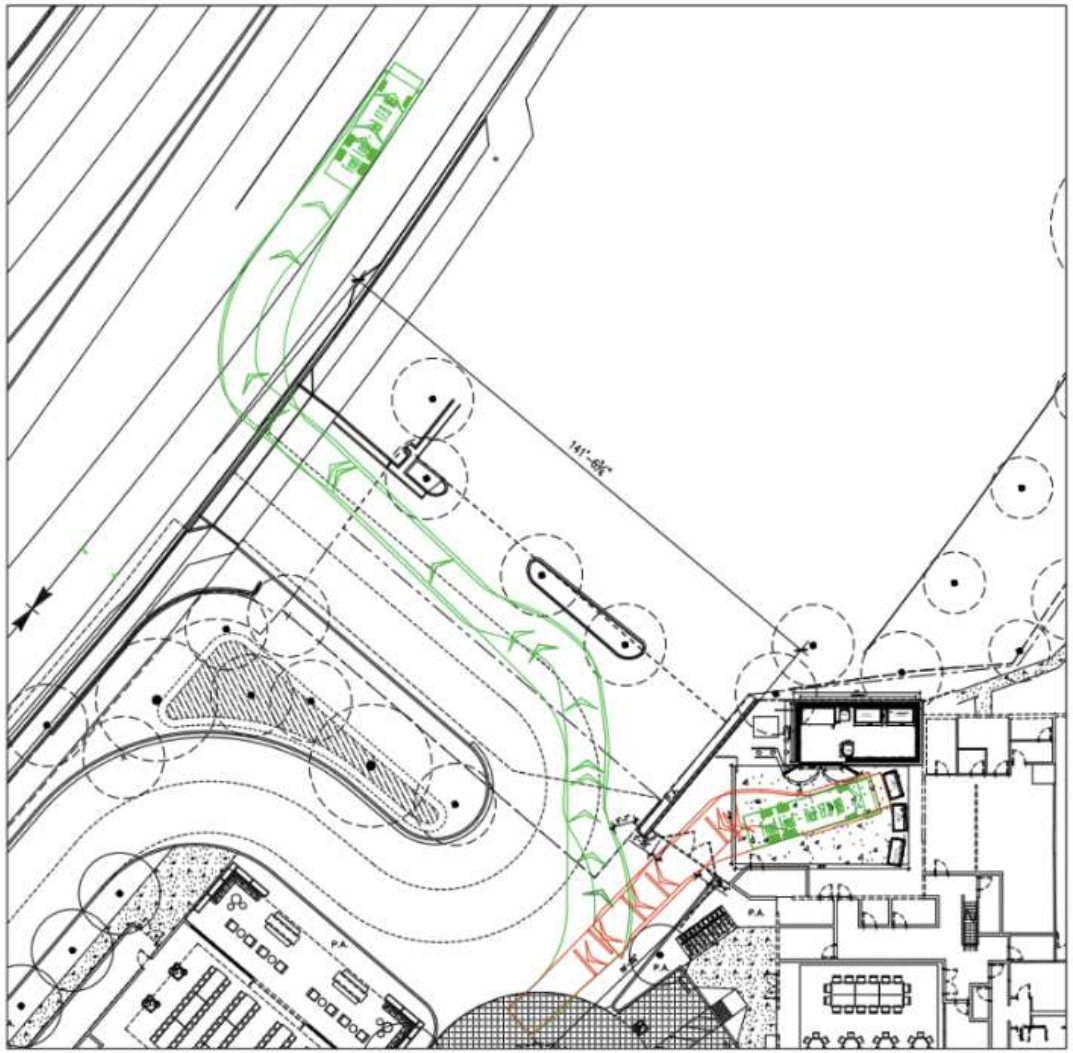


4. COLLECTION: Truck Access, height and area clearances

- Height requirements



- Truck access requirements



TRASH TRUCK MOVEMENT- STEP3

2. PLAN FOR WASTE STORAGE: Waste Quantities – Zero Waste Design Guidelines Calculator

Center for Zero Waste Design

Think Woven

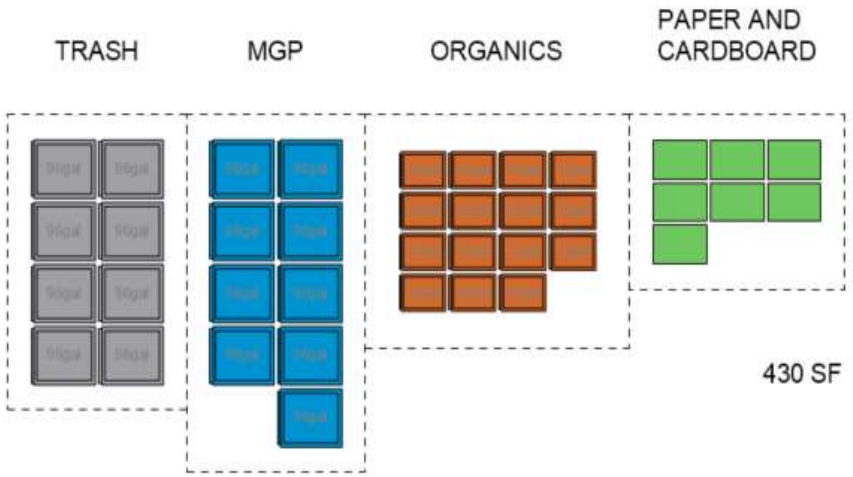
Waste is a design flaw. We develop circular strategies for cities.

1% FOR THE PLANET

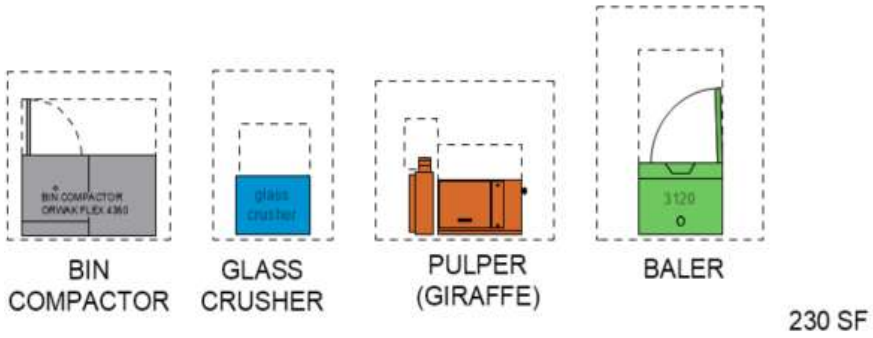
3. ESTIMATE WASTE GENERATION: Waste Volumes, Types and Compaction Equipment

2-DAY COMPACTED

Compacted Waste - All

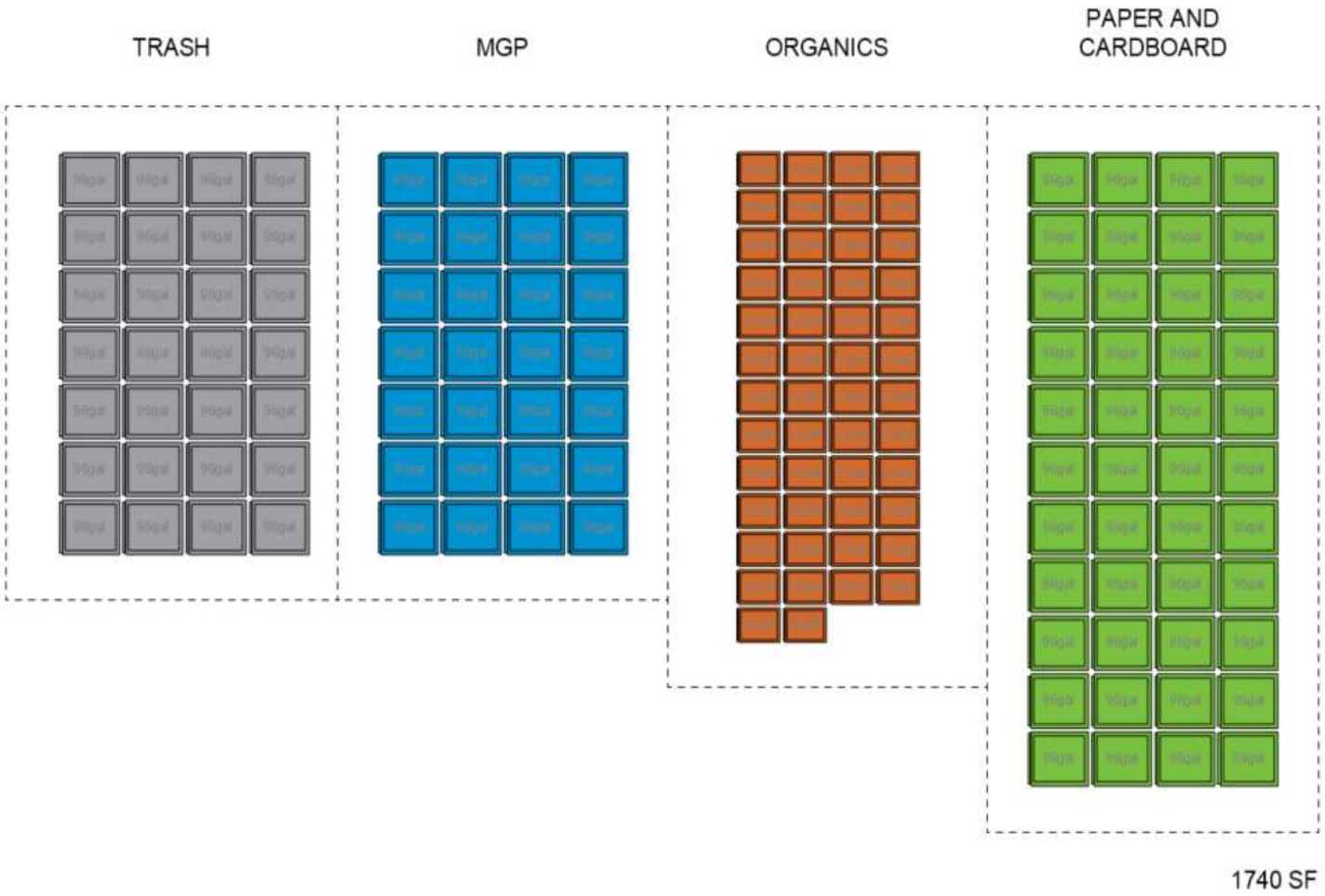


Equipment



2-DAY UNCOMPACTED

Uncompacted Waste - All

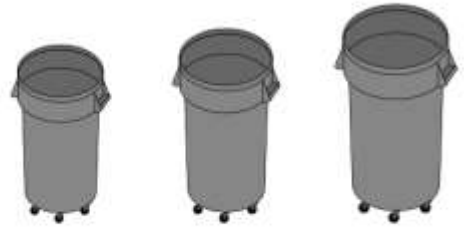


2. PLAN FOR MOVEMENT: Transport Containers and Door and Corridor Widths and transport methods - tugs

Bin on Dolly

Used for transport within building (normally by custodial staff), and sometimes for disposal locations (for example, in a kitchen)

SIZE	TYPICAL DIMENSIONS		FOOTPRINT
	DIAMETER	HEIGHT	
32 gallon	22"	28"	2.6 SF
44 gallon	24"	32"	3.1 SF
55 gallon	27"	33"	4.0 SF



Hamper Bin

Used for transport and storage

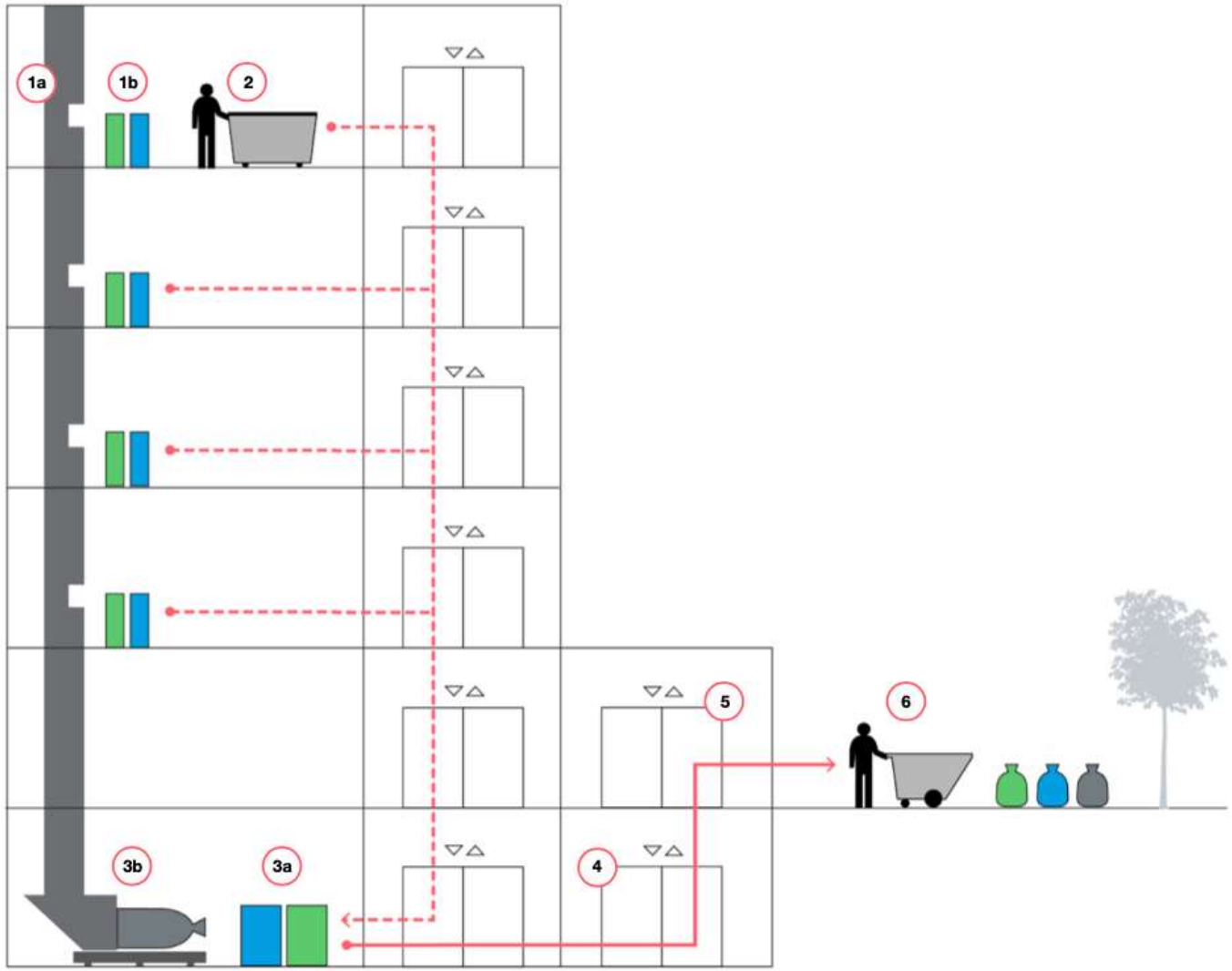
SIZE	TYPICAL DIMENSIONS		FOOTPRINT
	DIAMETER	HEIGHT	
8 cu ft	36"	26"	7 SF
16 cu ft	44"	30"	9 SF
20 cu ft	49"	33"	11 SF

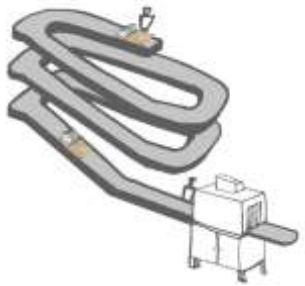
Tilt Truck

Used for transport, contents can be tipped out

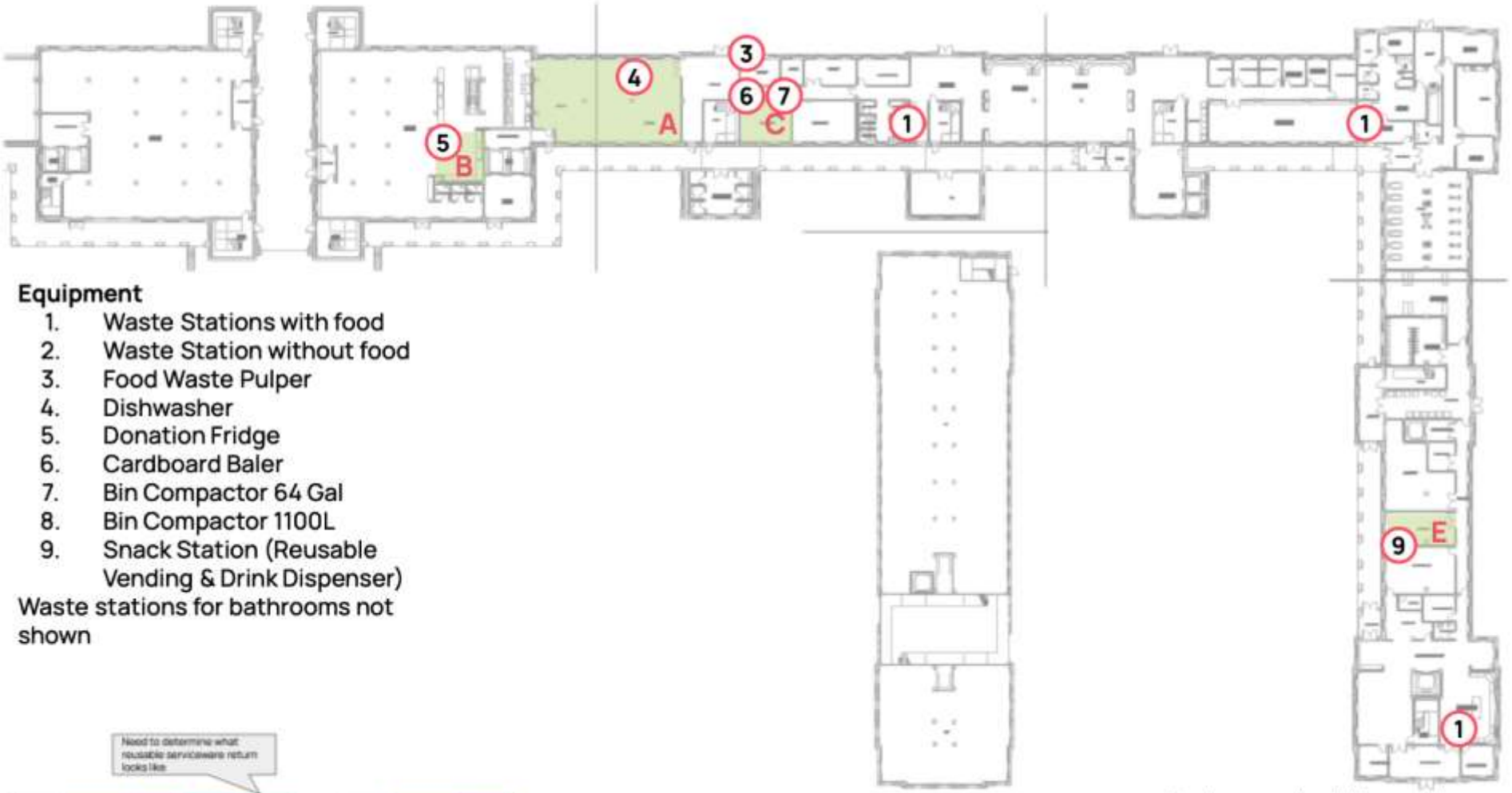
SIZE	TYPICAL DIMENSIONS			FOOTPRINT
	LENGTH	WIDTH	HEIGHT	
⅛ cu yd	65"	30"	39"	14 SF
1 cu yd	73"	33"	44"	17 SF
1 ⅛ cu yd	80"	40"	48"	27 SF

2. PLAN FOR MOVEMENT: Vertical Movement: Chutes, Elevators, Lifts / Dumb Waiters and Conveyors





EXAMPLE PROJECT: Waste Disposal and Equipment Locations

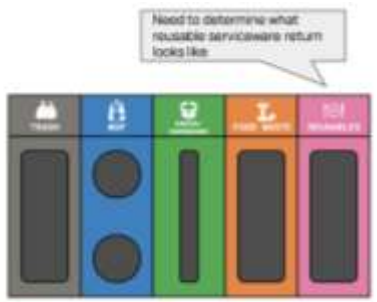


Equipment

1. Waste Stations with food
2. Waste Station without food
3. Food Waste Pulper
4. Dishwasher
5. Donation Fridge
6. Cardboard Baler
7. Bin Compactor 64 Gal
8. Bin Compactor 1100L
9. Snack Station (Reusable Vending & Drink Dispenser)

Waste stations for bathrooms not shown

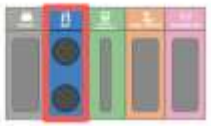
*restroom waste stations not shown



① Locations where food may be eaten

② Locations where there is no food being eaten

Waste Flow

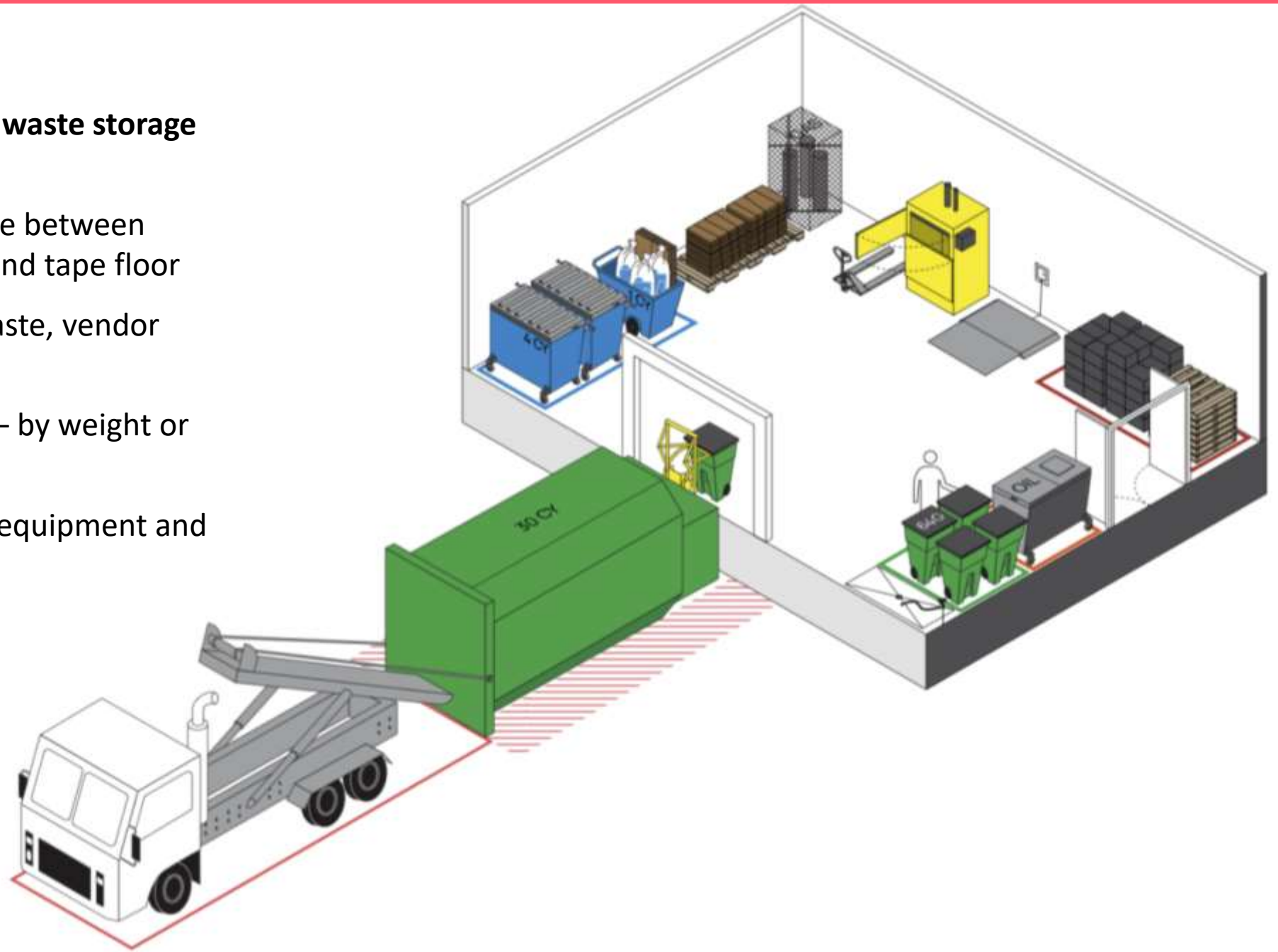
	DISPOSAL	MOVEMENT	STORAGE & COMPACTION	MOVEMENT	WASTE YARD	COLLECTION
MGP Recycling Trash	 Recycling Station	 Staff tip / put bag of recycling into a dolly with 55 gallon round bin	 Staff tip 55 gallon round bin into 96 gallon bins for storage in Local Waste Room	 Staff transport waste in 96 gallon bins to compactor using ride on tug and trailer	 96 gallon bins are tipped into roll off compactor	 Roll off compactors collected every ±5 days by waste hauler

Areas required for waste storage		
C: North Waste Room	1 day uncompacted waste	**172**
F: South Waste Room	1 day uncompacted waste	**305**
D: Central loading dock	2 days compacted waste	**1182**

2. PLAN FOR WASTE STORAGE: Central Storage Room

Review requirements for waste storage room:

- Space for waste storage between collections – allocate and tape floor
- Space for regulated waste, vendor take back
- Means to track waste – by weight or by volume
- Space for compaction equipment and utility requirements
- Consider work flow



2. PLAN FOR WASTE STORAGE: Compaction Equipment

Bin Compactor

Food Waste Pulper

Glass Crusher

Food Waste Dehydrator

Zero Waste Design Guidelines Case Study: ETSY

Floor plan with waste stations highlighted in red

Centralized Waste Stations

Waste tracking

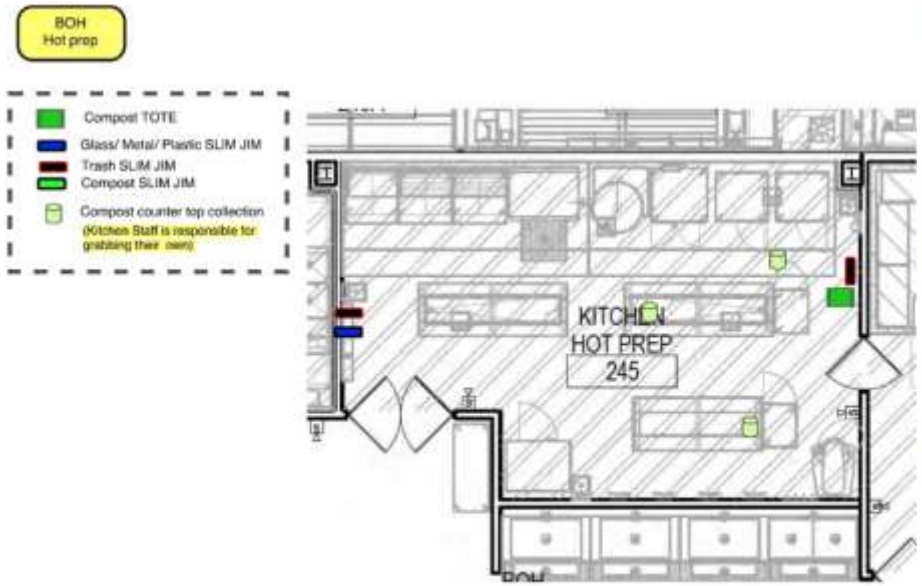
Zero Waste Design Guidelines Case Study: EATALY

FOH

BOH

BACK OF HOUSE – BINS & DISPOSAL PROCEDURE			
Bin Style	**Bag (Color)**	**Image**	**Disposal Procedure**
Cambro (or any small container)	**No bag required**		**When full empty into nearest toter.**
Slim Jim	**Green**		**When full, pull bag & empty into toter in waste storage area.**
32g Toter	**No bag required**		**When full take to loading dock compost storage area. Return with empty toter. Note: If no empty toters are available notify John.**

Housekeeping standard operating procedure for managing organic waste.



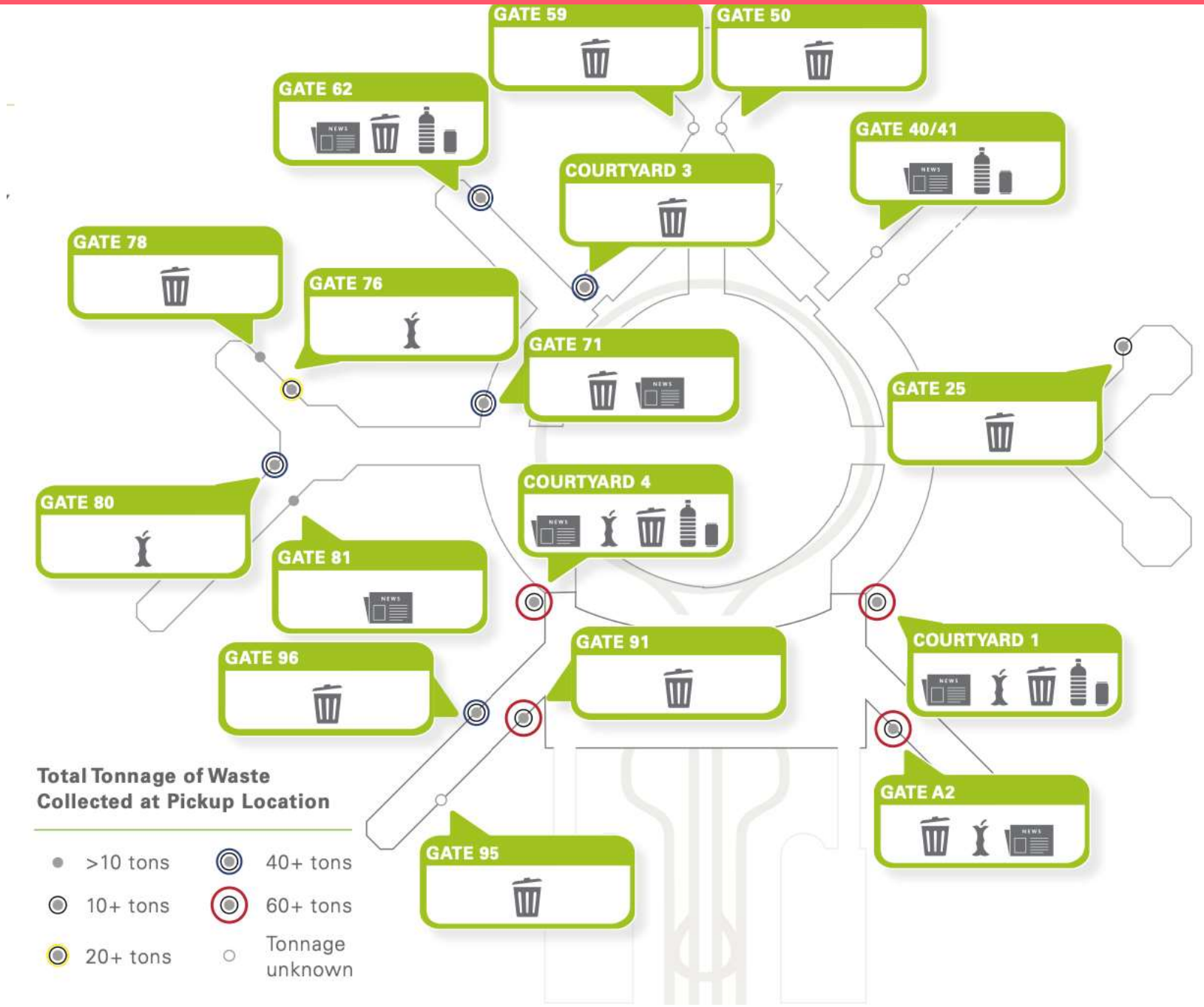
Above:
Signage for staff

Left:
Back of house recycling storage area with bins in marked locations

Airport Study

17 pick up locations

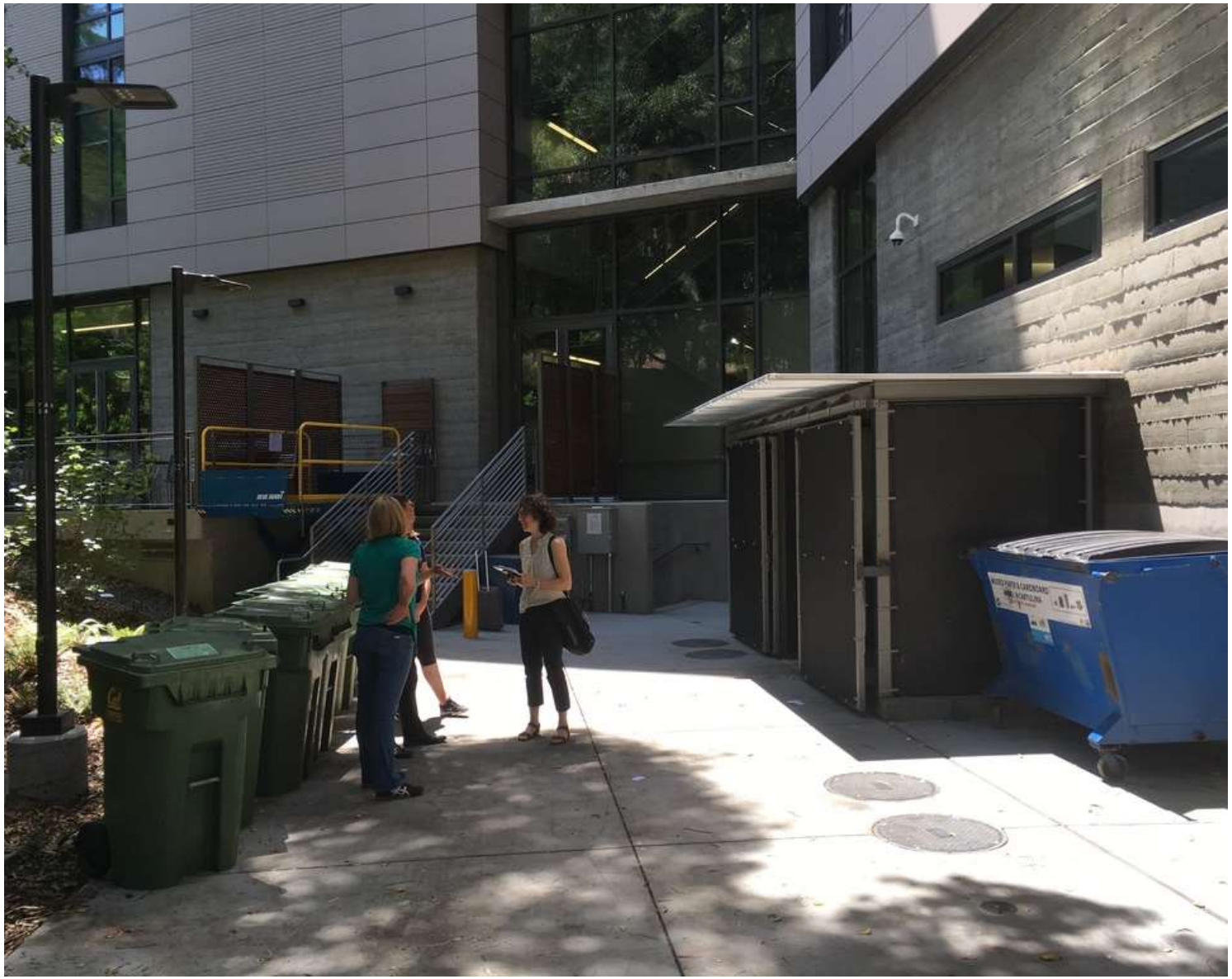
- 2 for all four waste types,
- 8 were trash only.



CASE STUDY: Lack of planning for storage and setout

University Campus

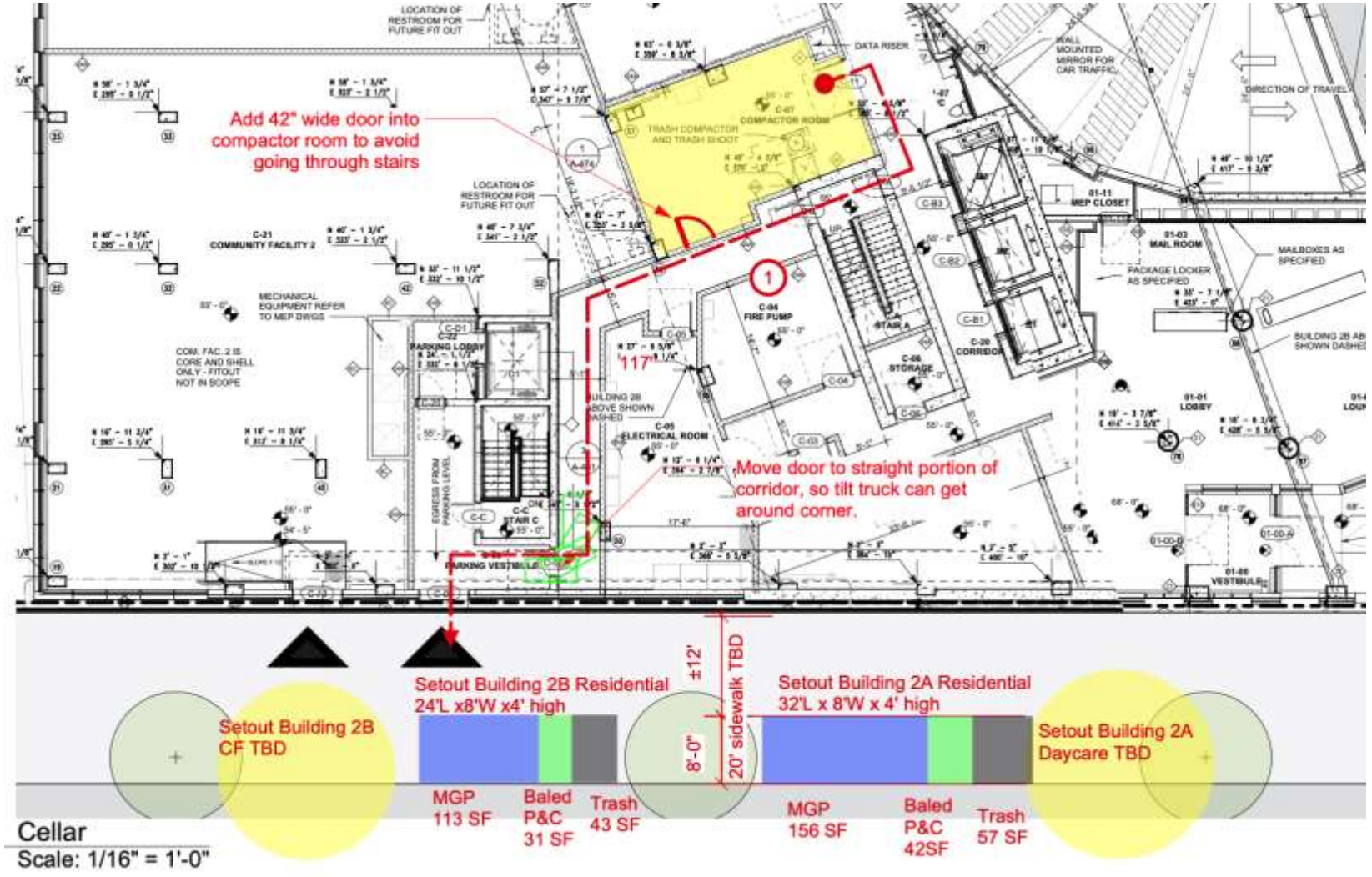
- Dishwashers not sufficient to use reusable dishes in cafeteria
- Waste station didn't fit bins, holes all the same shape
- No space to store containers by collection location
- Designated collection location on a sloped street



Multifamily Building in NYC

Route from compactor room to set out location had issues:

- Went through an exit stair
- Door position at the corner didn't allow a 1 CY tilt truck to get through it



Waste is a design flaw.

Center for Zero Waste Design

Think Woven

Contact:
Clare@ThinkWoven.com

CenterForZeroWasteDesign.Org

ThinkWoven.Com

Live Poll #1

Has your organization studied waste generation patterns to "right-size" or redesign the collection system? *(check all that apply)*

- Yes – to adjust placement/ capacity of F-O-H bins
- Yes – to adjust custodial service arrangement of F-O-H bins (frequency, etc.)
- Yes – to change how waste transported to dumpsters (equipment, chutes, etc.)
- Yes - to change BOH dumpster / compactor arrangement (capacity, type of containers)
- Changed frequency of hauler service
- Other *(share details in the chat)*
- Not in recent past

Back of House : Waste Collections (Penn State University Case Study)

Ayodeji Oluwalana (TRUE Advisor)

Waste Reduction & Recycling Program Manager

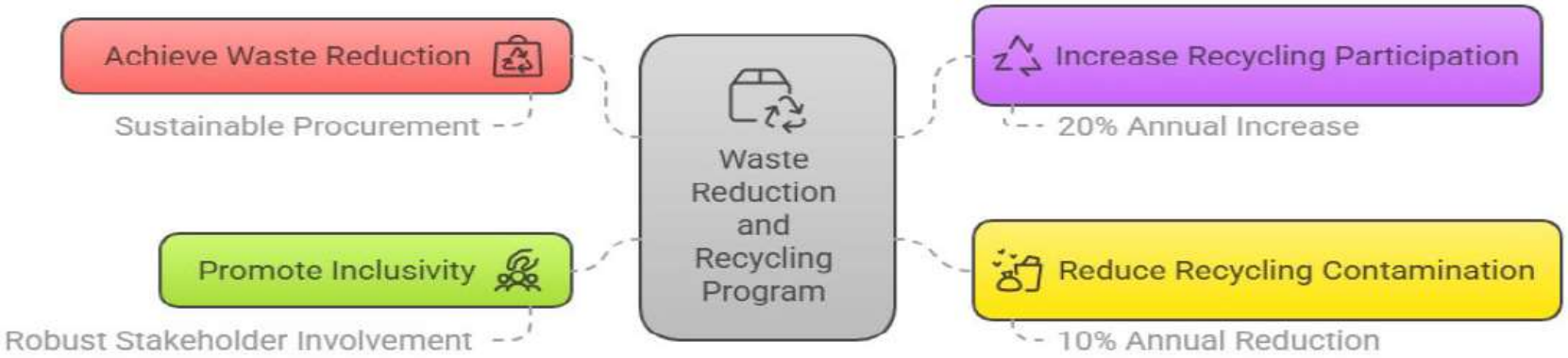
PennState
Physical Plant

We Are Penn State (Overview of Penn State)

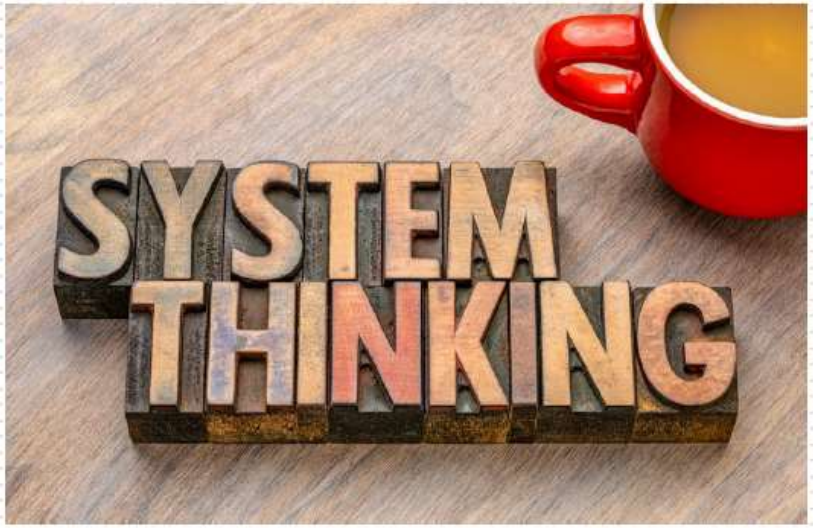
- Land-grant University, founded in 1855
- 24 campuses spread across the State
- Main Campus – University Park (State College, PA)
- R-1 institution **($1.337B in annual research expenditures)**
- Global leader in research, education, and community
- Nearly 88,000 Students and 28,774 Faculty/Staff

Penn State Waste Reduction and Recycling Program

- Located in Office of Physical Plant (Facilities dept.)
- Waste Management Operations
  - Custodians manages indoor waste
  - Solid waste crew haul both recycling and trash (self-haul)
- Program Goals



Our Approach



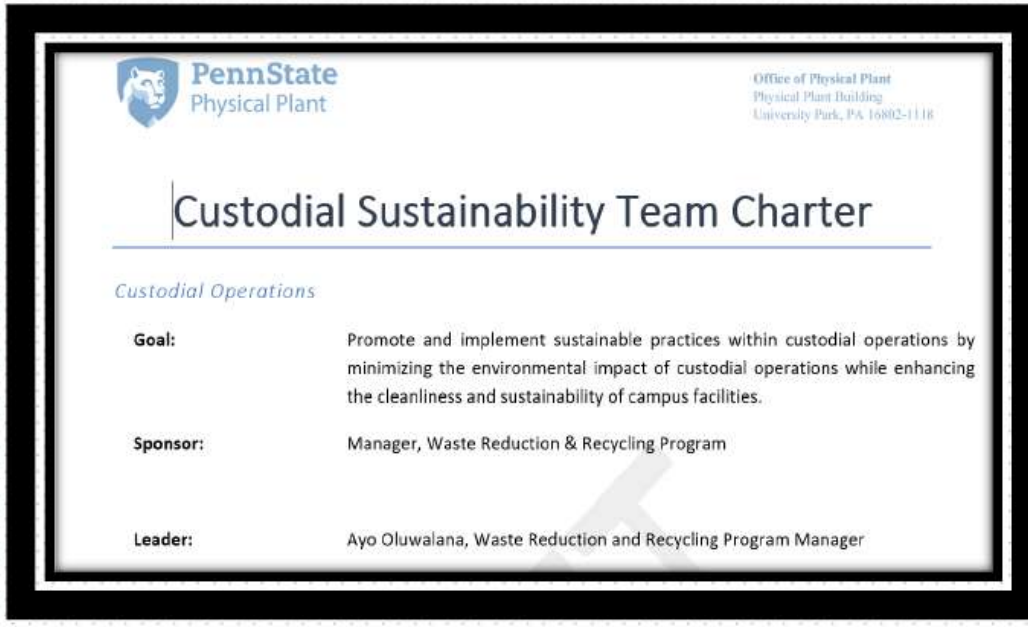
Key concept in achieving waste reduction, robust recycling and contamination reduction

"willingness to see a situation more fully, to recognize that we are interrelated, to acknowledge that there are often multiple interventions to a problem, and to champion interventions that may not be popular"

- The Systems Orientation: From Curiosity to Courage

Some Program Initiatives and Successes

- GIS Mapping of all Indoor Waste Stations
- Development of Custodial Sustainability Team
- Rebranding of Signage to Reduce Contamination
- Compost Facility Upgrade
  - static aerated pile system
  - $3 million upgrade through student fee board support
- Beaver Stadium Game Day Waste Management
  - Zero waste President Suite Initiative
  - Bowl cleanup diversion program
  - Pom-pom collection program
  - Tailgate ambassador initiative – fan engagement
- Strategic Engagement with University's Pouring Rights Sponsor (PepsiCo)



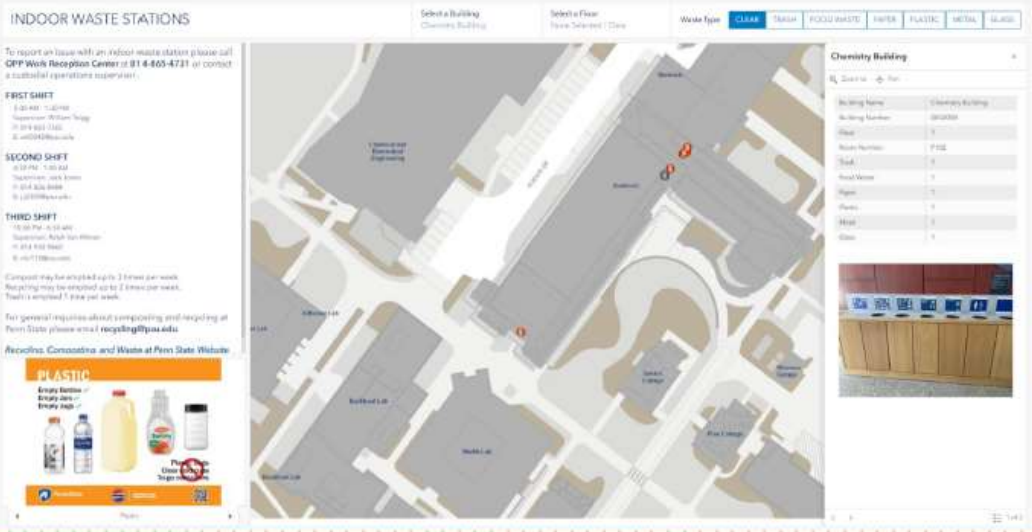
PennState
Physical Plant

Office of Physical Plant
Physical Plant Building
University Park, PA 16802-1118

Custodial Sustainability Team Charter

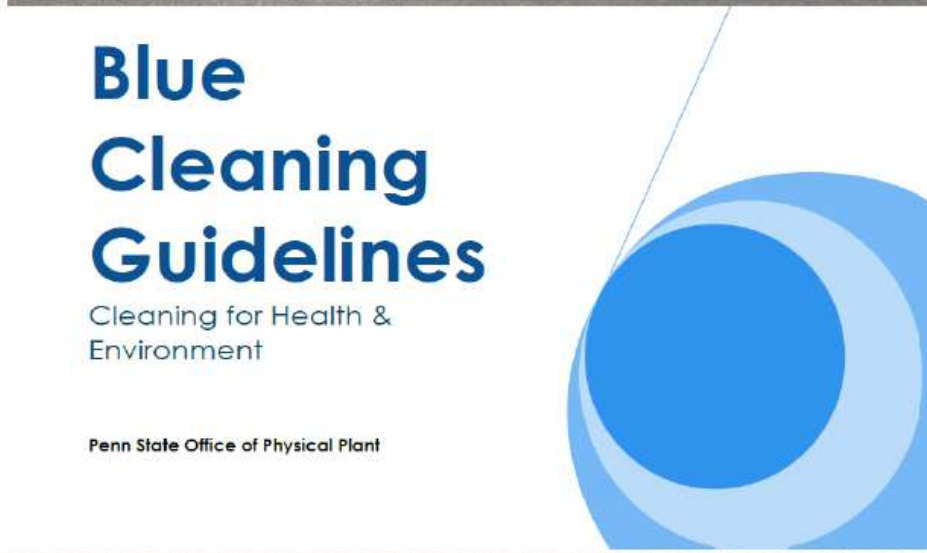
Custodial Operations

Goal:	Promote and implement sustainable practices within custodial operations by minimizing the environmental impact of custodial operations while enhancing the cleanliness and sustainability of campus facilities.
Sponsor:	Manager, Waste Reduction & Recycling Program
Leader:	Ayo Oluwalana, Waste Reduction and Recycling Program Manager



Overview of Custodial Operations – Main campus

- 430 custodial staff
- Manages 300 buildings (14.5 million GSF)
  - academic, athletic, administrative
- 14 districts -
  - 264 1st shift 147 2nd shift, 19 3rd shift
- Responsible for general cleaning and waste removal
  - Manages only central and common spaces waste stations
  - No office space waste removal
  - Tipping Frequency depends on building
    - up to 3x compost/week, 2x recycle/week, 1x trash/week
- "Blue" Cleaning Guide/Manual



Empowering Custodians for a Successful Waste Reduction and Recycling Program

PennState
Physical Plant

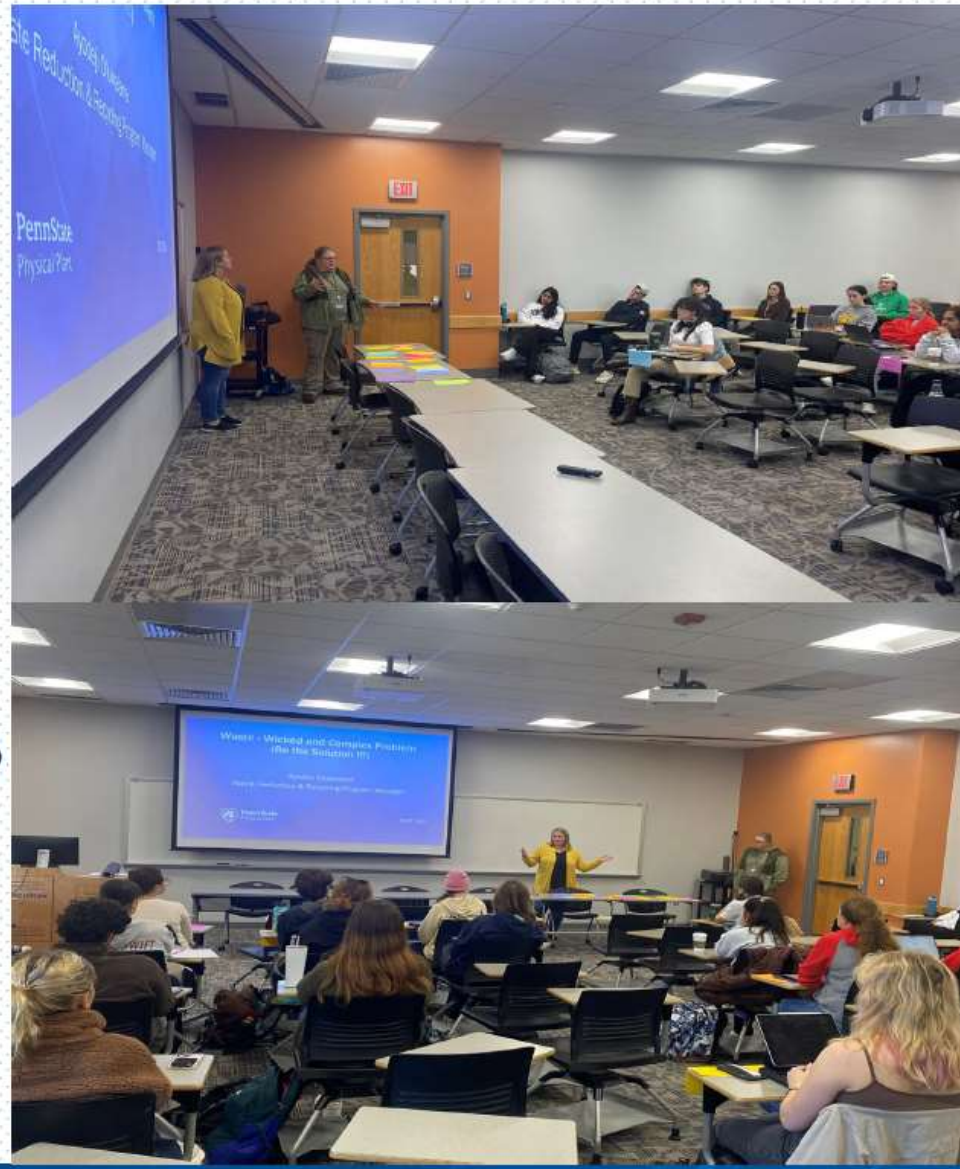
Why Empower Custodians?

Critical to any successful waste diversion initiatives

Strategic allies to engage in creating solutions that works

Vast and broad knowledge of what will work and what will not work

Increased sense of ownership in waste diversion program



Training/Engagement

Annual Summer Town Hall Meetings

Custodial New Employee Orientation Training

Custodial Sustainability team

Guest Lecture Opportunities

Recycling Center Tours

Challenges……

- Potential Union Issues
- Lack of understanding of proper sorting process

Opportunities ……

- Enhanced continuous custodial engagement and recognition

Lessons Learned and Advice

Lessons ……..

- Continuous training is very important
- Building custodial ownership leads to positive outcomes
- Adaptability is key in large and diverse facilities

Advice…….

- Foster strong relationships with your custodial teams.
- Be transparent about challenges and involve all stakeholders in solutions.

Questions!!!

Ayodeji Oluwalana
Waste Reduction and Recycling Program Manager
152D Physical Plant Building
aio5189@psu.edu

PennState
Physical Plant

Share Your Experience:

1. **Beyond general training, how do you engage custodians on recycling / waste issues?**

2. **How has input from custodians been used to improve your recycling & waste collections?**

Type responses into the Chat

Optimizing Indoor Bin Features for Operational Efficiency

Enhancing Ergonomics, Fire Safety, and Program Optimization

www.buschsystems.com • 1.800.565.993181 • Rawson Avenue, Barrie, Ontario, Canada L4N 6E5

Why Indoor Bin Selection Matters

BUSCH® SYSTEMS

Key Indoor Bin Features for Operational Efficiency

www.buschsystems.com • 1.800.565.993181 • Rawson Avenue, Barrie, Ontario, Canada L4N 6E5

Capacity

BUSCH® SYSTEMS

#1 rated Recycling & Waste container brand!

With over 500 reviews on Trustpilot

Certified B Corporation

Portability

Portability

Lid Type

Hinged Lids

Lid Type

The Role of Color, Signage and Openings

BUSCH® SYSTEMS

Ergonomic Considerations

Accessibility

Liners

BUSCH® SYSTEMS

Fire Safety

www.buschsystems.com • 1.800.565.993181 • Rawson Avenue, Barrie, Ontario, Canada L4N 6E5

Fire Safety

- Materials Compliance
- Placement
- Specialized Bins

BUSCH® SYSTEMS

#1 rated Recycling & Waste container brand!

With over 500 reviews on Trustpilot

Certified B Corporation

Best Practices for Indoor Bin Selection

Conduct a Needs Assessment:

- Evaluate waste streams, foot traffic, and custodial capacity.

Collaborate with Stakeholders:

- Engage custodial teams in the selection process to ensure practicality and satisfaction.

Pilot Testing:

- Test bin designs in a small area before rolling out facility-wide.

Aesthetic vs. Operational Priorities:

- Leadership or architects may prioritize aesthetics, but operational functionality should not be sacrificed.
- With research, you can find bins that balance aesthetics and performance.

buschsystems.com

BUSCH® SYSTEMS

www.buschsystems.com • 1.800.565.993181 • Rawson Avenue, Barrie, Ontario, Canada L4N 6E5

Today's Panelists

Clare Miflin

Principal, ThinkWoven

Executive Director, Center for Zero Waste Design

Ayodeji Oluwalana

Waste Reduction & Recycling Program Manager

Penn State University

Kerstin Mayer

Sustainability & Diversion Advisor

Busch Systems

Today's Program Online

- Recording
- Presentation slides
- Resources

Link will be emailed in coming days

Archive of Past Programs

- Centralized office collections
- K-12 waste reduction
- Rebuilding confidence in recycling

+ More

Visit: https://www.buschsystems.com > Resources > Webinars

Report on Indoor Diversion Practices

Insights into trends & lessons learned with:

- Centralized collections from offices & classrooms
- Deskside mini-bins
- Bin standardization

+ More!

Find report online:

Next Up:

Case study presentations:

1. Dolores Park, San Francisco Rec & Parks
2. City of Austin, Parks & Rec. Dept.

Scan to register:

Visit: http://curc3r.org

Thank you to our Panelists!

Clare Miflin

ThinkWoven

Center for Zero Waste Design

clare@thinkwoven.com

Ayodeji Oluwalana

Penn State University

aio5189@psu.edu

Kerstin Mayer

Busch Systems

kerstinm@buschsystems.com