SOLID WASTE ENCLOSURE DESIGN GUIDE

PUBLIC WORKS UTILITIES & OPERATIONS MISSION

The Mission of the City of Davis' Public Works Utilities and Operations Department is to support the community's quality of life by protecting public health and the environment through sound practices, technology, and teamwork to provide dependable, responsive utility services and maintain critical infrastructure.

OBJECTIVE

This guide provides information, resources and requirements for designing waste enclosures for the storage of municipal solid waste (MSW), including trash, recyclable materials and organics, that will be used by building occupants in new developments and in existing structures that undergo remodels or additions that require a permit.

Along with ensuring adequate capacity for all the above-mentioned waste generated, waste enclosures for food service facilities that generate kitchen oil/grease must also be able to accommodate the storage of grease bins (unless grease bins are already stored in an approved location internal to the business), and protect the City's storm drain and wastewater collection systems from waste and related pollutants. This guide is also intended to ensure compliance with State and local solid waste diversion regulations, including, but not limited to, AB 939, AB 341, AB 1826, AB 827, and SB 1383.

The City, in cooperation with its contract hauler, offers free waste assessments and consultations to help determine what types of waste may be generated at a location and provides resources and recommendations related to containers, waste generation and waste diversion.

DEFINITIONS

For the purpose of this guide, the following words and phrases have the meanings respectively ascribed to them by this section:

- **Business & Commercial Establishments (Business or Businesses).** All hotels, motor courts, restaurants, offices or office buildings, stores, warehouse, factories, hospitals, assisted living facilities and all other premises used for functions other than dwelling units.

- **City:** “City” means the City of Davis, and the words “the City or “this city” shall be construed as if followed by the words “of Davis”
- **Communally-Serviced Residence.** Apartments, quadruplexes, condominiums, mobile home parks and other resident occupancies at which wastes from individual resident units are commingled in a common group of containers.
- **Contract Hauler.** The entity under contract with the City to haul solid waste in Davis.
- **Comingle Recycling.** Plastic, metal and glass recyclables. These materials are collected separately from paper recyclables by the City’s contract waste hauler.
- **Food Service Establishment (FSE).** Those establishments engaged in activities of food preparation, food service or the making available for consumption foodstuffs.
- **Individually-Serviced Residence.** Single-family houses, each dwelling unit of a duplex, triplex, quadruplex, mobile home park, condominium or other residence facility in which wastes are sorted, stored and made available for collection at each individual residence unit.
- **Multi-Family Property.** A building, dwelling unit or complex containing five or more residential dwelling units which have centralized collection point(s) for trash, recycling and organics where wastes from individual resident units are commingled in a common group of containers. Multifamily premises do not include hotels, motels, or other transient occupancy facilities, which are considered commercial businesses.
- **Organic Waste or Organics.** Yard materials, food scraps and food-soiled paper, including fruit, vegetables, pasta, bread, rice, meat, dairy, coffee grinds and filters, tea bags, paper plates, paper towels, paper napkins and any other materials authorized by the City for organics collection.
- **Paper Recyclables.** Magazines, newspapers and other paper that is not contaminated by trash or other waste material and small pieces of cardboard.
- **Recyclables.** In general the term “Recyclables” refers to all magazines, newspapers, recyclable paper, cardboard, cans, food and beverage container glass, plastic containers, and any other material that is not contaminated by trash or other waste material that is collected or accepted as part of the City recycling program.
- **Sanitary Sewer**. Also called a collections system. A pipe or conduit which carries wastewater only and to which storm, surface and groundwaters are not intentionally admitted.
- **Solid Waste or Waste.** Includes trash, recyclables and organic waste.
- **Storm drain System.** A drainage inlet and the corresponding conveyance facilities and systems that carry stormwater directly to waters of the State or of the United States that are owned, operated or controlled by the City.

- **Trash.** Non-hazardous solid waste that is not accepted in recycling or organics recycling carts.

COLLECTION AND STORAGE REQUIREMENTS

General

The Davis Municipal Code requires each occupancy within the City of Davis to subscribe to waste collection service offered by the City or Contract Hauler (DMC 32.01.020). All customers, businesses and tenants are required to separate recyclables and organics from other wastes generated on the property, and shall deposit them into the appropriate recycling or organics bin. There are 5 types of waste collection services offered through the City of Davis' contract hauler: comingle recycling, cardboard (either flattened for loose pick-up or in recycling dumpsters, paper recycling, organic waste and trash. The City requires adequate areas for collecting recyclable and organic materials (DMC 32.03).

1. Waste collection shall be at such frequency that sanitation, aesthetic and nuisance problems do not occur (DMC 32.01.070). Sizing and frequency vary by business type.
2. All waste enclosure plans for new development and waste enclosure retrofit plans must provide sufficient space in the waste enclosure for all recyclables and organics generated on the premises to be diverted into the appropriate container (at minimum two recycling carts and one organics cart within, or next to, each waste enclosure).
3. Any project which proposes to site fewer than three carts per waste enclosure shall submit written explanation as to the basis for requesting an exemption. The Community Development and Department, in consultation with the Public Works Utilities and Operations Department, shall make the determination of whether or not the exemption should be granted. (DMC 32.03.040)
4. Building permits must be accompanied by waste enclosure retrofit plans. Issuance of a building permit for an existing communally-serviced residence shall be conditioned upon provision of a waste enclosure(s) that conforms to the standards set by the City for new development or an approved plan to accommodate recycling carts. (DMC 32.01.110 (f))

Maximizing Collection Efficiency

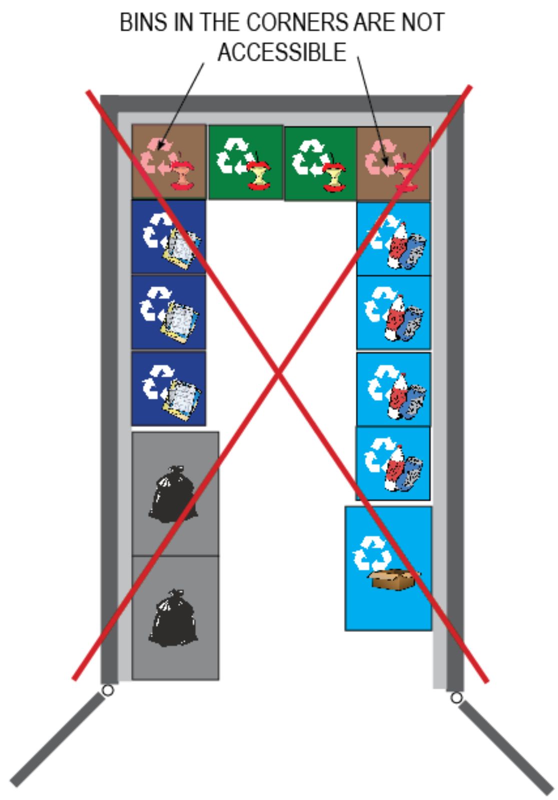
The automated collection trucks used by the City's contract hauler achieve maximum efficiency when the number of times the driver gets out of the truck is minimized and if trucks only need to service a site once or twice per week. Properly designed waste enclosures allow the driver to operate and empty bins without getting out and physically moving it, Ideally, waste enclosures should be large enough to contain one-week's volume of trash, recyclable and organic materials (half a week for Food Service

Establishments) when possible. Maximizing efficiencies can also help property owner management of solid waste fees.

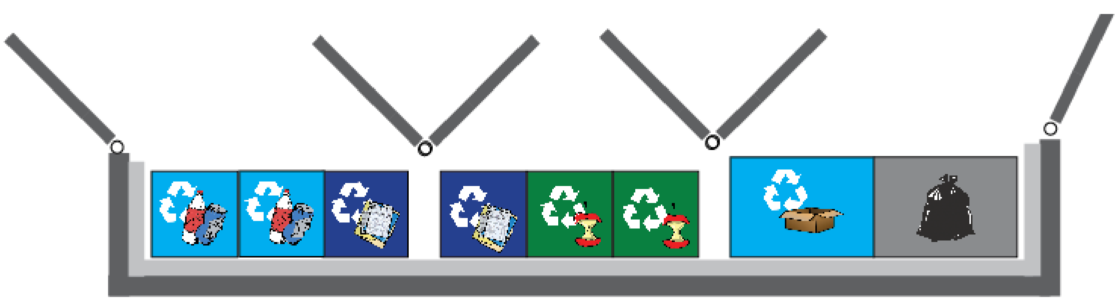
WASTE ENCLOSURE SIZING GUIDELINES

1. Waste enclosures must be sized to ensure a minimum of 75% waste diversion from all the waste generators that use the waste enclosure, with enough space for all the generated recycling and organic waste containers to be placed within. Each waste material (trash, comingle recycling, paper recycling and organics) must be placed into separate containers (or sections of containers) to be collected by the contract waste hauler.
2. Each waste enclosure must have either a cardboard recycling bin or a designated and labeled space for cardboard to be flattened for collection.
3. Use the City's Waste Generation Calculator to determine the site's estimated waste generation, the number of waste enclosures needed, the number of containers, size of the containers and frequency of pick up. Please note that these calculations are only a prediction of the amount of waste that will be generated.
4. For multi-family and communally-serviced waste enclosures, the UNITS identified in the calculator are "bedrooms" not "rentable units."
5. For all other commercial waste enclosures, UNITS identified in the calculator for each business type varies, so please verify you are entering the correct units identified in the calculator.
6. Waste enclosures must be designed to have sufficient service to prevent material from overflowing or being stored on the ground. Sizing waste enclosures to require collection more than 3 times per week may require the applicant to submit a written request for approval from the City.
7. All developments that include Food Service Establishments with grease-generating businesses must also include a used kitchen oil grease bin in the waste enclosure or in an approved location internal to the business.
8. When designing waste enclosures, please keep in mind that businesses can come and go, and the waste enclosure should be flexible enough to service most tenants, barring a significant change of use. Consider designing the waste enclosure for the largest container possible.
9. Trash compactors are never recommended and require special approval by Public Works Utilities & Operations Director or authorized representative. Approvals are only granted in special circumstances and require a written request with details of the circumstances that prevent traditional loose waste collection. Additional design and compliance requirements will be determined on a case-by-case basis.

CONTAINER LAYOUT IN THE WASTE ENCLOSURE



1. The users of a waste enclosure must be able to access all of the containers within the enclosure with a full trash bag in hand without moving other containers or brushing against them. See the figure to the right for an example of an unacceptable arrangement and the figure below for an acceptable arrangement.
2. Trash, recycling and organics containers are picked up by different trucks at different times. The hauler should not be required to remove a bin (or bins) from the waste enclosure in order to access a different bin for service.
3. Dumpsters should be accessed by users from the long side where they can lift the lid up and away from where they stand.
4. Designs that block or partially block access from the longest side may not be approved since the dumpster will not be fully loaded on the blocked portion.
5. There must be a minimum 36-inch aisle along the longest side of the dumpsters to allow for the dumpster to be remove from the waste enclosure for service.
6. Dumpsters do not easily rotate on a fixed point and cannot make a sharp 90° turn. Unless the waste enclosure is large enough to allow the dumpsters a wide 90° turn, it will not be able to rotate--which may impede its ability to get out of the waste enclosure gate.
7. The gates must span the full width of the waste enclosure so that dumpsters can be pulled straight out.



8. Provide an aisle that is at least 12 inches wider than the dumpster for removal. The aisle must be free and clear of gate hardware, debris and other containers from where the dumpster typically rests all the way along the path of travel to the waste removal truck, so do not minimize this dimension.

Kitchen Oil/Grease Containers

1. Kitchen oil/grease containers are required for Food Service Establishments that deep-fry food or separate grease.
2. Some grease containers have wheels, others do not, so if storing used oil/grease in the waste enclosure, design for immovable containers (these are emptied via suction hose so the truck must be able to drive up to the waste enclosure and put a hose in the container). Contact grease removal companies for standard grease bin dimensions as they can vary.

WASTE ENCLOSURE DESIGN AND COMPLIANCE REQUIREMENTS

Accessibility

1. When designing access, all waste enclosures must be compliant with State and federal accessibility regulations.

Location

1. All waste enclosures are recommended to have direct access for collection trucks, so that the waste hauler will not need to move bins out of the way prior to servicing.
2. Waste enclosures shall not be installed behind parking spaces or landscaping.
3. Containers shall not be placed in front of fire hydrants or other public utility equipment and no bin shall be placed within 5 feet of a combustible building wall, opening or combustible roof eve line.
4. Stormdrain inlets shall not be placed in the immediate vicinity of the waste storage area, and should be located as far away as possible from the enclosure, but at least 35 feet away.
5. Waste enclosures should be placed at least 20 feet from landscaped areas containing dense shrubs or ground cover to reduce rodent foraging and vector issues.
6. Waste bins should not be transported though public or customer areas by the hauler to the truck for service.
7. Waste enclosures should be set back enough to prevent gates from opening into public right-of-way.

Interior

1. Waste enclosures must be sized to allow a minimum of 14 inches of separation between dumpsters, 6 inches between carts.
2. Enclosures that contain dumpsters, or may contain them at some point in the future, must provide interior curb bumpers that are 8 inches high and 8 inches wide along each wall to prevent damage to the interior walls
3. The internal pad of the enclosure shall drain to a sanitary sewer connection and a hose bib shall located within 35 ft the enclosure. The internal pad shall be graded properly to interior sanitary sewer drain so that it will drain away any wash waster associated with cleaning of the enclosure.
4. All utilities should be designed on the outside of the enclosure (such as water spigots). If there are any utilities within the enclosure they should be protected with bollards.

Wall Height and Roof Requirements

1. Minimum waste enclosure wall height is 6 feet for dumpsters and 5 feet for carts only, with a maximum height of 8 feet.
2. Security screens or rails between the walls and roof are recommended to prevent unlawful entrance and tossing waste over the wall.
3. The lowest part of roof is recommended to not be lower than 8’ (eight feet) high.
4. Extending the roof past the opening a distance equal to ½ the height of opening is recommended.
5. A 6” (six inch) roof overhang is recommended.

Gates, Entrances & Pedestrian Doors

1. Two gates are required for enclosures, whenever possible. A large, industrial gate for the contract hauler to bring out the containers for service is required. When possible, an accessible gate for the building occupants to use should be included.
2. Large industrial gate opening should be a minimum of 6 feet wide for bins 2 yards and smaller with bollards to protect the corners. For bins 3 yards and larger a minimum of 8 feet wide shall be designed with bollards.
3. Gates shall be free standing with no center pole, or if there is a center pole, add 12 inches to the length of the gate.
4. Provide means to secure gate doors both opened and closed (e.g. cane bolt w/ sleeve and slide latch between doors and sleeve in pavement). The bolts should be a minimum ½ inch in diameter and the sleeves for both should be a minimum of 1 inch or double the size of the bolt to allow flexibility. Be sure to have bolt drop a minimum of 4 inches into the ground.

Stress Concrete Apron

1. Apron surface shall be the same elevation as the enclosure pad threshold and the surrounding surfaces, with a slope of 1/8 inch (1% grade) per foot away from the enclosure pad.
2. To prevent damage to the asphalt paving by container impact, the enclosure shall be provided with an apron that extends a minimum of 12 feet from the enclosure pad and matches the width of the enclosure opening. This apron shall have a minimum sub-base of 6” of class 2 aggregate and shall consist of 3,000 psi concrete or stronger, which is at least 6” thick with #4 rebar placed mid height at 12” on center each way. This follows the City of Davis Design Standard for “Medium Driveway” and shall be the minimum design standard for the apron. City of Davis “Heavy Driveway” design standards should be used for high frequency and large volume waste enclosures. City of Davis Design Standards (page 77)

Material

1. Enclosure must generally be constructed of non-combustible materials, with finishes and colors that are compatible with the adjacent architecture.
2. Landscaping and/or screening shall be included, when possible, to help visually buffer loading area and enclosure where the enclosure is visible from the public right of way.

Stormwater Run-Off

1. Direct runoff from roof downspouts away from the solid waste enclosure.
2. Hydraulically isolate the area; this can be achieved by reverse grading at the perimeter, perimeter curbing, installing a berm, or the use of perimeter or area drains that collect and divert runoff.

Storage

1. Only trash, recyclable and organics containers as well as an oil/grease tank (if applicable) should be stored in the waste enclosure. The waste enclosure is strictly for the storage of containers and cannot be used for general storage of restaurant racks, wood pallets, electronic equipment, bulky wastes, furniture, etc.
2. Structures such as storage sheds and shelving should not be placed within waste enclosures.

Signage

1. “NO PARKING” signs shall either be installed permanently affixed to each gate or painted on each gate in letters no smaller than 6 inches in height.
2. Signage shall be posed inside of the waste enclosure to educate businesses, employees and residents about proper sorting of waste. The property owner/manager shall take all necessary measures to prevent contamination

within the trash, recycling and organic containers. The signage should contain messaging of the importance of keeping wastes in the bins and not on the ground, as well as not overfilling and not leaving lids in the open position.
3. Post signs prohibiting the disposal of liquids and hazardous materials therein.
4. Post signs if collecting loose stacked cardboard for the specific designated area.

<u>Wastewater Pollution Prevention</u>

1. A floor drain connected to the sanitary sewer is required for all waste enclosures.
2. A hose bib is required to be installed on the outside of all waste enclosures.
3. Projects which include or may in the future include Food Service Establishments shall also install a grease removal device or other approved pretreatment prior to discharge to the sanitary sewer collection system.
4. Other projects not considered a Food Service Establishment may be required to install a grease removal device or other pretreatment if determined by the Public Works Utility and Operation Director or designated staff.

<u>Safety</u>

1. If possible, waste enclosure areas should have a light source for security to deter illegal activity and illegal dumping at nighttime. Lights will also be helpful so people can find the correct bin to place their waste into.
2. Access into the enclosure area, including pedestrian access doors, should be lockable to discourage trespassing and illegal dumping. Locking waste enclosures also prevents the theft of recycling materials by unauthorized persons, while allowing authorized person access for disposal of materials. Locks for the industrial gate can be obtained through the City's contract hauler.

<u>Parking Garages and Indoor Locations</u>

1. The waste hauler will not be able to empty dumpsters in parking garages unless the ceiling height exceeds 25 feet of unobstructed vertical clearance. If ceiling clearance is not high enough, the carts and bins must be pulled to the street by hand and are subject to limits on slope and distance (50 feet) for path of travel from the waste enclosure to the truck access point.
2. Waste hauler must have access to parking garages or locked gates without restriction or prior notification.
3. All indoor waste enclosure areas should have the following features:
    a. Fully enclosed room (including ceiling) within the parking garage/building
    b. Walls and floor constructed with a smooth finish that can be easily cleaned
    c. Mechanical ventilation, or with screened vent openings to the outdoors
    d. Floor drain with proper drainage slope connected to the sanitary sewer
    e. Grease Interceptor if required
    f. Spigot with hose for cleaning within 25 feet

CART AND BIN SIZE AND DIMENSIONS

Cart Size	Depth	Width	Height
Small (32 to 35-gallon)	22.3”	22.8”	38.2”
Medium (64 to 65-gallon)	26.5”	25.9”	42.2″
Large (95 to 96-gallon	31.6”	27.7”	46.1″
64-gallon split recycling (individually serviced residential only)	29.0”	29.5”	41.75”

Bin Size	Depth	Width	Height	Rotation clearance
1.0 Yard	35.00”	78.25”	48.50”	55.00”
1.5 Yard	42.00”	78.25”	48.50”	56.40”
2.0 Yard	49.00”	78.25”	50.00”	58.20”
2.5 Yard	56.00”	78.25”	56.00”	60.10”
3.0 Yard	49.00”	81.25”	62.00”	59.50”
4.0 Yard	85.00”	81.25”	67.00”	70.80”
6.0 Yard	69.00”	81.25”	78.00”	65.30”