

Build It and They Will Come

A Charlotte County, FL, success story for development of solid waste convenience centers.

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After several years of site acquisition, permitting, and construction activities, the West County Mini-Transfer Station and the Mid-County Mini-Transfer Station began operation in September 2001 and November 2005, respectively. Both sites were designed as customer convenience centers to accommodate voluntary drop off of residential yard waste, recyclables, household hazardous waste, and non-putrescible waste. Recyclable materials that are accepted include cardboard, mixed paper, newspaper, aluminum and steel cans, glass, and plastics. Tires, white goods, and used home medical products are also accepted. Scrap metal, lumber, wallboard, and insulation are accepted from residents, but businesses are not permitted to use the site. Both facilities have the following features and operations on site:

- Administration building for on-site personnel.

- Covered bays for yard waste and garbage-type waste drop-off.
- Household hazardous waste collection area.
- Waste tire area.
- E-waste (electronics) area.
- White goods unloading area.
- Free mulch area.
- Recycling drop off area for paper, aluminum, glass, steel, and plastics.
- Metal canopies located over the roll-off bays, recyclables drop-off area, and household hazardous waste collection area.
- Re-Use Store unwanted household items.

Innovation and Community Benefits

While the county has a sanitation district with franchised curbside collection

of solid waste, recyclables, and yard waste, the county is aware that some residents may not wish to store these materials at their place of residence until the next pickup or special drop-off event. Thus, the mini-transfer stations were designed to provide opportunities for convenient waste handling and disposal, while at the same time reducing illegal dumping of materials along the county's right-of-ways.

Both facilities also have an innovative "re-use stores" co-located on site, which is sponsored by the Center for Abuse and Rape Emergencies (C.A.R.E.), a local not-for-profit, charitable organization. This partnership has been a win-win for both the county and for C.A.R.E. with the county diverting tonnage from its landfill and C.A.R.E. receiving an additional revenue stream to help victims of sexual assaults, domestic violence, and to provide crisis intervention and counseling.

Typically, most similar stations implemented by other communities are fairly low-tech with no or limited customer amenities such as attendants, fully paved and landscaped sites, and covered drop off areas. When the county decided to implement these stations, the decision was made to construct them with all of these amenities; although in 2001 when the first station was built it was uncertain how many residents would utilize the facilities.

Usage of both stations by the public has been phenomenal (See Tables 1 and 2.), and plans are to expand the West Charlotte station and construct additional regional stations in the county. All the materials are accepted at no cost to residential customers living in the county. The operational cost for the stations are included in non *ad valorem*



The West County Mini-Transfer Station with household chemical waste and swap shop areas in center of photograph and covered refuse/yard waste drop off facility at the far left.

**Table 1. Customer Traffic
(FY 04/05)**

Customer Use	Number of Visits
Cars	3,444
Cars w/trailers	597
Trucks	20,099
Trucks w/trailers	5,639
Truck w/sides	1,727
HHW	4,745
E-waste	798
Sharps	408
Yard Waste/ Garbage	53,480 cu yd

assessments for solid waste collection.

Key Design Criteria and Features

These facilities generally place a lot of different use areas in close proximity to maximize the limited property typically available. Thus, there are a surprising number of design issues that should be considered in the planning stage. Some of the key design criteria and features of citizen drop-off areas are listed in the attached box.

Elevated ramps or platforms where the public can drive their car on are sometimes used to make the transfer of trash to the transport vehicles more efficient. One potential safety hazard is the drop-over edge. This is the end of the platform where people stand to unload the waste from their vehicle and toss it into a container located a few feet below the platform level. Keep in mind these safety items when designing this aspect of the facility:

- Some design elements dictated by local building code, especially fall prevention features.
- Elevated platforms (usually over 30

in. high) require railing or barriers at the drop-over edge to prevent falls:

1. Barriers should be a minimum of 42 in. high.
2. Barriers capable of supporting a 200-lb force applied in any direction (usually dictates concrete, heavy steel plate, or heavy steel railing construction).
3. Consider heavy-duty wheel bumpers or high curbs to stop vehicles at least five ft away from drop-over edge.

Some Risks, but Positive Benefits

As previously stated, the facilities were designed primarily to supplement the services provided by the county's franchise waste haulers through its solid waste collection program. At the time the West County facility was sited and designed, anticipated projections showed that the facility would be open only on a part-time basis, until customer activity warranted an increase in the hours of the operation. However, as early as the initial months of operation, the county's drop center concept proved to be popular with the public, resulting in the quantity of materials disposed of at the facility exceeding the design projections for the site. Subsequently, the design of the Mid-County facility was



The Mid County Mini-Transfer Station. The limited site size required the design of the facility to utilize and maximize every inch of land possible.

modified before construction to accommodate added capacity. The West

Basic Design Criteria Checklist

- Attended or not (Will you need an office facility?)
- Elevated platforms—fall prevention devices with adequate height and strength.
- Traffic volumes (allow for growth).
- Rugged, fire-resistant construction (concrete or steel; no wood).
- Provide formal drainage controls (lots of impermeable surfaces).
- Speed controls.
- Durable driving surfaces.
- Fire water supply.
- Avoid processing machinery (i.e., grinders, etc.).
- Drive-through access preferred—avoid areas where cars have to back out.
- Transfer containers (roll-off, open top trailers, etc.).
- Orientation and number of parking spaces.
- Clear signage/bi-lingual.
- Covered drop-off areas or not.
- Full perimeter security fence.
- Site facility for convenience, but consider impacts of heavy customer traffic near sensitive areas.
- Large radius turns.
- One-way traffic flow.

Table 2. Materials Diverted (FY 04/05)

Materials Diverted	Pounds Diverted from Waste Stream
Used Oil	44,480
Batteries	84,760
E-waste	48,056
HHW	33,607
Paint	85,100
Propane Cylinders	17,499

County station is undergoing re-design and expansion at this time to enable it to meet increased customer demand.

Lessons Learned

At the time the county initiated the drop-off center program, the level of use the public would make of these stations was unknown given the existing mandatory solid waste collection program. Both stations have proven to be extremely popular with the public. As a result, the county has expanded the design capacity and services at both of these stations and plans to add another two centers in the near future. Further, a customer-friendly, standard design concept for such drop-off stations has been developed, which would offer potential construction and operational cost savings for other communities.

Lessons learned from the West County facility that were applied in the design of the newer Mid-County facility included:

- Beyond a certain volume of waste collected at the drop-off area, open-top trailers are less expensive in the long run than roll-off boxes because they can haul more waste with less trips to the landfill.
- Improve the fall prevention features at the drop-over edge of the drop-off area.
- Pay careful attention to traffic vol-



The Mid County Station was constructed with three drop-off bays that utilize three 100 yard transfer trailers. The modified West County Station will incorporate this new design to improve capacity.

ume and circulation patterns to minimize customer delays and potential for accidents.

The Mid-County project was delayed in 2004 due to Hurricane Charlie and construction was started in February 2005. The \$1.8-million expenditure was a success with some 3,000 residents using the facility in the first 45 days of operation.

The county has embarked on renovating and expanding the capacity and convenience of the West County facility and is incorporating these same

improvements, as well as other design and operating improvements learned since the new Mid-County station has been online. It is anticipated that when the renovation of the West County facility is complete, it will be a similar “hit” with the community.

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