**2013 TRANSFER STATION EXCELLENCE AWARD**

**RELEASE FORM**

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Printed Name of Representative: **Patrick D. Carroll**

Organization Name: **Solid Waste Authority of Palm Beach County**

Signature: **[Signature]**

Date: **4/30/13**
South County Transfer Station

SWANA Excellence Award Nomination

Solid Waste Authority of Palm Beach County, Florida

2013
The Solid Waste Authority of Palm Beach County provides solid waste management services to 1.3 million residents distributed across the 2,386 square miles of Florida's largest County. To accomplish this monumental task, the Authority has developed a state of the art integrated waste management system which includes six transfer stations used to efficiently collect waste over such a large area and deliver it to the disposal facilities.

The South County Transfer Station (SCTS) located in Delray Beach, Florida in the southern most portion of the County was the first of these stations to be completed. Coming on line in 1985, the facility is situated on a small former dump site of approximately eight acres in the heart of the most densely populated portions of the County. Transferring over 300,000 tons of municipal solid waste (MSW) per year, this station was the work horse of the transfer system for many years. After providing over twenty-five years of service, the facility was in very poor condition, and the Authority embarked on a major renovation project comprised of three phases and spanning nearly ten years.

The third and final phase spanned eighteen months and was completed in December of 2012. The project included selective demolition of the transfer building, the vegetation transfer area, the household hazardous waste (HHW) collection facility, and complete demolition and renovation of the scale house and office facilities. The resulting facility provides greatly improved traffic flow through the entire facility, significantly improves the area available for yard waste transfer, and provides a larger covered area for HHW collection. The main structure was modified extensively to provide additional tipping floor space and was equipped with new and more efficient loading equipment. Finally the office/scale house was completely rebuilt, the two existing scales were replaced, and a new unattended scale was added. The new facilities provide a major upgrade for facility staff in terms of working conditions and ergonomics.

Although there were many challenges and surprises along the way, ultimately the project was a tremendous success that equipped the facility to continue to be an integral part of the Authority system for many years to come.
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AIA Awards Article
1.0 DESIGN OF THE FACILITY

The newly refurbished SCTS includes a refurbished transfer station and new combined scale house/operations office, scale house scales, unattended scale, HHW collection area, vegetation load-out area, site paving, landscaping, irrigation, and parking canopy.

1.1 Transfer Station Site

The SCTS is located at 1901 S.W. 4th Avenue, Delray Beach, Florida on a 7.6-acre parcel of land (old landfill site) leased from the City of Delray Beach (City). Adjacent the property are commercial warehouses to the north, the F.E.C. Railroad to the east, S.W. 4th Avenue to the west, and a City park with baseball fields to the south. The site is located 0.6 miles east of Interstate 95, 0.2 miles south of Linton Road on S.W. 4th Avenue. Round trip distance to the Solid Waste Authority of Palm Beach County Authority landfill at 6330 North Jog Road, West Palm Beach, is 58 miles.

1.1.1 Design Criteria

A. Site area is 7.6 acres. The design team was limited by the size and shape of the existing parcel to provide a full service transfer station for the surrounding community. The Authority was able to negotiate with the City for a small portion of property located adjacent the inbound scale providing needed area to construct a bypass inbound drive. The original design provided access to the facility only over the inbound scale. Employees and citizens needing access for work or to drop off HHW needed to wait in line with scale traffic. At high traffic times, scale queuing would extend onto S.W. 4th Avenue.

B. This property is a zero storm water discharge site. There are no storm water drainage sewers, ditches or canals at or adjacent this site to connect a storm water system. Criteria required storm water retention on one half of the property, 3.82 acres. This limited the area for pavement, landscaping, and building improvement to the other half. The existing transfer station building footprint area of 20,000 square feet was used for the reconstruction of the new facility. The old transfer station building, scale house, and scales were supported by steel H-piles due to the property being an old City landfill. Design criteria established the reuse of the existing transfer station building foundation, walls, and tipping floor. The old metal building was replaced with a new pre-engineered metal building (PEMB) supported on the original foundation’s anchor bolts.

C. Total pavement area was limited to 144,114 square feet. All roadway pavements were replaced with 2.5-inch asphalt pavement on 8-inch limerick base with concrete curb and gutter. Concrete inlets and pipes conveyed storm water to retention basins.

D. Landscaped area is 166,399 square feet. The City Landscaping Code provided the criteria for extensive landscaping.

E. A new office and scale house were needed to replace the existing modular office and scale house. The design provided a structure that combined the scale house and operations office.

F. The Authority decided to maximize the transfer station tipping floor area to 16,200 square feet from the old 14,000 square feet by eliminating two existing compactors. The tipping floor
compactor pits were spanned with structural slabs thusly adding the needed floor space. Paper and comingle recyclables storage bins replaced the old compactor pits.

G. Vegetation loading was relocated from inside the transfer station to an exterior loading area.

H. The transfer station entrance and exit roll-up doors were heightened by two feet to prevent being hit by raised truck beds.

I. The old HHW drop-off was located adjacent to inbound truck traffic with little parking and had no bypass exit from the site. The only exit was over the tipping floor. A new covered HHW drop-off area with drop-off parking and bypass lane was provided.

J. The old transfer station facility had an emergency generator providing electric power for two hopper grapplers and a small generator for the scale house. Site, building, and office power were not included. Design criteria for the new facility included emergency power for the entire site.

K. The old transfer station was designed with a steep earthen side slope adjacent the railroad tracks. This earth slope slipped onto the adjacent railroad property. A steel pile retaining wall was added to support the earth embankment.

L. The old transfer station tipping floor had been overlain with a 6-inch silica fume concrete sacrificial wearing surface that was replaced with a new 6-inch silica fume concrete surface.

M. The old transfer station had a diesel fuel pump station connected to a 2,000-gallon above ground concrete encased fuel tank that was replaced with a new 12,000-gallon above ground concrete encased fuel tank. The new tank provides diesel fuel for transfer station equipment daily and for emergencies such as a hurricane.

Table 1.0 Basic Design Criteria:

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<table>
<thead>
<tr>
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<tbody>
<tr>
<td>1</td>
<td>Provision 2007 Florida Building Code with the 2009 Supplements</td>
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<td>Wind Speed: 140 miles per hour (MPH)</td>
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<td>3</td>
<td>Exposure Category: C</td>
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<td>4</td>
<td>Building Category: III</td>
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<td>5</td>
<td>Scale House: Enclosed</td>
</tr>
<tr>
<td>6</td>
<td>Transfer Station: Partially Enclosed</td>
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<tr>
<td>7</td>
<td>HHW Canopy: Open</td>
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<tr>
<td>8</td>
<td>Design Live Loads:</td>
</tr>
<tr>
<td>a</td>
<td>Work Area: 200 pounds per square foot (psf)</td>
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<tr>
<td>b</td>
<td>Office Area: 100 psf</td>
</tr>
<tr>
<td>c</td>
<td>Roof: 20 psf</td>
</tr>
<tr>
<td>d</td>
<td>Push Walls: 3.4 kips/foot @ 10-foot width</td>
</tr>
<tr>
<td>e</td>
<td>Existing tipping floor: HS20-44 vehicle</td>
</tr>
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</table>

1.2 Merits of the Facility

The SCTS facility is the oldest of the Authority’s six transfer stations, being constructed in 1985. Even though it is built on the smallest piece of property (7.6 acres), it is one of the most utilized by the community and commercial haulers. The location is in southeast Palm Beach County and serves, among others, the Delray and Boca Raton areas. Daily tonnage transferred from the site averages 725 tons and at times exceeds 1,000 tons. Also, the HHW drop-off facility is a popular feature. The old facility was congested at all times, parking limited, and vehicle back-ups at the scales at times overflowed onto S.W. 4th Avenue.
The new facility was designed and permitted by the City to be constructed in three phases. Phase I provided a bypass at the incoming scale for HHW and employee traffic and Phase II provided a new site for the HHW drop-off. Phase I was construction with a one month shutdown and Phase II was completed with the facility open for business. Phase III required an eighteen month closure but was timed with the opening of the newly constructed Southwest County Transfer Station (SWCTS) located in southwest Palm Beach County. SWCTS, Central County Transfer Station (CCTS), and West Central County Transfer Station (WCCTS) handled the bypassed traffic during construction.

The following paragraphs provide a brief discussion on the merits of primary elements of the SCTS facility. The Authority took its oldest and most out-of-date transfer station and transformed it into a state-of-the-art campus.

### 1.2.1 Scale House and Office

A. A new scale house is combined with the operations office designed to accommodate 24 transfer station employees and 2 scale house attendants. A wall divides the two areas for security but all employees share the break room.

B. The building ventilation and air conditioning system includes a complete Direct Digital Control (DDC) System, web-based Building Automatic System (BAS) Net Communications Network, equipment monitoring, auto dial/auto answer communication, dynamic color graphics, and equipment controls. All is networked to the Authority Central Facilities Department via a Trane Tracer System.

C. An uninterrupted power system (UPS) provides clean power and surge protection for the scale equipment and computers, including the unattended scale. Surge protection is provided for all switchboards, panel-boards, motor control centers, and the electronic instrumentation systems.

D. An addressable, microprocessor based fire detection and alarm system consisting of manual and automatic initiating devices was installed, including one-year extended monitoring services.

E. Lights are controlled by an automatic control system for energy management.

F. The exterior doors and door between the scale house and office are secured by a card reader/access system and monitored by a security/intrusion detection system including key pads and motion detectors.

G. The break room includes a stainless steel kitchenette, vending machines, and television with satellite dish. A DVD player is included for employee training.

H. The site public address (PA) system controller is located in the reception office.

### 1.2.2 Transfer Building

A. The existing transfer PEMB was totally removed. The reinforced concrete sub-structure was left in place. A new hot-dipped galvanized PEMB was designed to fit on the original structure’s anchor bolts but new hot-dipped galvanized bolts were installed after it was found the existing bolts were corroded.

B. To minimize impact damage to tipping floor overhead doors, the existing 23-foot high doors were replaced by hot-dipped galvanized doors 25 feet high, motorized with push button operators. The overhead roll-up door frames...
are hot-dipped galvanized. Exterior personnel doors are fiberglass reinforced plastic (FRP) with resin transfer molded door frames providing a 25-year manufacturer’s warranty against failure due to corrosion.

C. To maximize function on the existing tipping floor, two compactor pits were spanned with reinforced concrete slabs designed to support the same load as the adjacent tipping floor. The additional 1,800 square feet provided area for two storage bins for recyclables. Recyclables were previously stored outside on an open air tipping floor. Windborne debris was a serious problem.

D. The two existing hoppers for top loading open trailers were reconstructed with new ¾-inch steel plate. Ten-inch plastic brushes are bolted to the bottom of each hopper to close the gap between trailer tops and the concrete hopper support beams. Two new Grizzly grapple units were installed on a cross beam over the center of each hopper for operator’s ease of loading. The Grizzly grapple’s specifications include compaction/down-force of 5,000 pounds minimum at full extension, lift capacity rating of 21,500 pounds at 8 feet, maximum overall boom length of 25 feet 1 inch, below ground-level reach of 13 feet, insulated operator cab, adjustable seat for operator, and safety automobile-type glass. Each cab was supplied with conditioned air from a central air conditioning unit.

E. To minimize dust on the tipping floor, a high pressure misting system with fogging nozzles was installed over the tipping floor and in the tunnels below. The misting system is designed with seven zones for independent control.

F. To provide natural light on the tipping floor, a Kalwal Corporation system of sandwich panels of flat fiberglass reinforced translucent face sheets was installed on the roof dormer and wall panels.

G. The height of the tipping floor roof, 35 feet 4 inches, provides adequate height for the wet pipe fire protection and floor lighting systems.

H. The structural concrete tipping floor slab was overlaid with a sacrificial 6-inch silica fume concrete wearing surface specified to have a minimum compressive strength of 8,000 pounds per square inch. The tunnel and tipping floor approach slabs were constructed of silica fume concrete to resist chemical deterioration from leachate.

I. Six-foot high hot-dipped galvanized steel pipe bollards protect the overhead door frames on the tipping floor from equipment impact. These bollards are covered with yellow high density polyethylene (HDPE) bollard skirts.

J. Cross ventilation for the tipping floor is provided by a combination of pre-finished aluminum louvers installed on the perimeter walls, the roof dormer, and five propeller exhaust fans.

K. A break room with a stainless steel kitchenette and restrooms for gentlemen and ladies is provided for employee convenience.

L. Compressed air is supplied to hydraulic fluid, motor oil, grease, and air hose reels located at the equipment maintenance service work pad and on the tipping floor to service the Grizzly grapple units and power units.

Design of the Facility

2013
A high pressure wash water system was installed with hose reels located on the tipping and tunnel floors. The booster pump provides wash water at 120 psi.

Wash water is stored in an underground 5,000 gallon double lined containment tank. This effluent is pumped from the holding tank by a septic service.

A switchboard, automatic transfer switch (ATS), and main breaker was installed in a new electric room protected by an Inergen (clean agent) fire suppression system.

1.2.3 Vegetative Waste Transfer Area

An exterior vegetative waste transfer area was constructed to transfer vegetative waste to transfer trailers by an excavator equipped with a grappling unit. Customers drop vegetation onto a 10,000 square foot, high-strength silica fume concrete slab. The excavator, located on top of a platform, loads vegetation stacked on one side into the trailers parked back-to-back on the other side. Tractor trailer axle scale score boards mounted on the adjacent HHW canopy give the operator the weight of the trailer being loaded. Authority tractor trailers cannot leave the transfer station with weight over 80,000 pounds.

A 20-foot 6-inch high debris screen inhibits vegetation debris, mostly leaves, from blowing into the HHW collection area.

The debris fence is mounted on top of a reinforced concrete push wall clad with ¾-inch steel plate. The loading platform walls are also clad with ¾-inch steel plate.

1.2.4 Household Hazardous Waste Canopy

The old HHW drop-off area located alongside the entrance road to the tipping floor was replaced with a new HHW facility designed to allow customer drop-off under a canopy roof away from transfer station waste haulers traffic. The new HHW facility includes one precast concrete storage building, four metal storage buildings, and two dumpsters. A Code Blue box is provided for customer communication assistance.

The 5,500 square foot overhead canopy is hot-dipped galvanized and 17 feet high at the eaves.

Closed-circuit cameras provide for security.

Overhead lighting is included.

1.2.5 Scales

The old transfer station had two mechanical 10-foot X 60-foot pit scales. To accommodate modern tractor trailers, the original scale house exit scale was replaced with a 10-foot X 70-foot Rice Lake Weighing Systems Survivor OTR Series (Rice Lake) digital scale system installed in a new reinforced concrete pit. The entrance scale was replaced by a 10-foot X 60-foot Rice Lake scale installed in the original pit on new foundations. New sump pumps and high water control systems were installed.
B. A Rice Lake 12-foot X 70-foot unattended scale was installed in the exit road from the transfer station to weigh out-bound Authority tractor trailers. This scale was constructed flush with the roadway surface. Storm water drains from the slab under the scale deck directly into the adjacent storm water basin. This scale was designed certified for trade; thus, the vehicles being weighed receive a certified weigh ticket.

C. Fiber optic cables are installed between the scale house scale indicators and all scale equipment, including the scale score boards. Single point grounding is provided for all scale decks and surge protection is provided at each point source of data and electric service. A UPS was installed in the scale house to provide clean power to the unattended scale and scale house computers.

D. Each scale has an arm gate installed to control traffic entering the scale decks. The arm gates are opened by a push button control system in the scale house and closed by combination photo eye and roadway loop system.

E. All traffic entering the transfer station is monitored by a radiation detector located at the in-bound scale.

1.2.6 Twelve-Thousand Gallon Diesel Fuel Tank

A. A new 12,000 gallon diesel fuel tank was installed to replace the existing 2,000 gallon tank. The tank is above ground, insulated, concrete encased, vehicle impact protected, and projectile resistant.

B. The fuel dispensing system is connected to the Authority’s network fuel system.

C. The 12,000 gallon tank supplies fuel to a day tank installed on the diesel engine powered fire pump, the new standby engine-generator (EG), and the fuel dispenser for fueling on-site equipment.

D. The 12,000 gallon tank has sufficient capacity to supply fuel during emergencies, e.g., hurricanes.

1.2.7 Covered Parking Canopy

Next to the transfer station is a City baseball field. Foul baseballs fly over the fence onto the parking area. A hot-dipped galvanized structural steel canopy was installed to protect the parked vehicles.

1.2.8 Standby Engine-Generator

The old site had two standby EG’s; one for the scale house and one for the transfer station grappers. The new diesel EG provides the entire site with electric power in case of power loss. The EG is located outside in a weatherproof and sound attenuating aluminum enclosure.

1.2.9 Site Yard Lighting

Four high mast (60 feet) Musco Green Generation 480 volt (V) yard light poles were installed to provide yard lighting. Each pole mast has three to nine 1,500 watt (W) fixtures. The primary goals of the site lighting project are:

A. Life Cycle Costs: In order to reduce the operating budget, the lighting system was constructed to be energy efficient and cost effective to operate. All maintenance is provided by the supplier for a 10-year period.
1.2.10 Landscaping and Irrigation

A. New landscaping and irrigation was installed for the entire site per City Landscape Code.

B. An automatic irrigation control system with an anti-rust chemical injection system was installed to treat water pumped from an existing well.

C. The water retention basins were planted with Floritam grass sod on the bottoms and Peanut sod on the steep side slopes. Peanut sod is a thick low growing ground cover.

1.2.11 Closed Circuit Television (CCTV)

A. The scale house interior, scales, HHW drop-off, tipping floor, tipping floor entrance and exit ramps, and tunnels are monitored by a closed circuit television system, including DVR recorder-player, cameras, power supplies, mounting hardware, cables, panels, etc.

B. The CCTV system is coordinated with the Authority’s existing Wave Reader Software security system.

B. Guaranteed Light Levels: Selection of appropriate light levels impact safety. Therefore, the lighting system was designed such that the light levels are guaranteed for a period of 19 years. Site roadway lighting is designed for average constant light levels of 6.7-foot candles, HHW area at 19.3-foot candles, and the vegetation waste drop-off area at 19.8-foot candles.

1.3 Innovative and Unique Aspects of the Facility

The design of the SCTS integrates a number of innovative and unique features and technological advances into everyday transfer station operations. Among these are the following:

A. A combined office-scale house. Locating the transfer station office area apart from the transfer station building provides an odor free and noise free environment for the operations staff while keeping it close to transfer station activities.

B. An unattended scale for Authority tractor trailers. This provides for bypass of backed-up traffic at the exit scale.

C. An exterior vegetation load-out area. The large tipping area provides small landscape trucks and trailers space to hand unload without clogging the main transfer station tipping floor. Commercial haulers are readily accommodated.

D. On-board scale systems are installed on all the Authority tractor trailers. Scoreboards are provided behind the hoppers in the transfer station and the yard waste vegetation loading area.

E. Natural light on the transfer station tipping floor is provided by a Kalwal Corporation System of sandwich panels of flat fiberglass reinforced translucent face sheets. The system was engineered to provide the tipping floor with natural light for an environmentally friendly interior.
A web-based operations monitoring system using CCTV technology allows the operations areas and the HHW drop-off area to be monitored from the transfer station supervisor’s office, the main HHW office, and the Authority’s Risk Management office.

A sacrificial wearing surface of high-strength silica fume concrete is placed on top of the transfer station tipping floor and approach slabs.

A high pressure misting system provides a fog to keep dust down.

A state-of-the-art surge protection system protects electrical equipment from low and high voltage surges.

A standby emergency EG system provides emergency electric power for the entire facility.

State-of-the-art fire suppression systems for the transfer station and HHW storage building.

Grizzly grapplers mounted on a center beam over the transfer station hoppers for easy loading of trailers.

Hopper walls, containment walls, and push walls are clad with 3/4-inch steel plate. This feature will eliminate downtime and replacement costs.

Musco high mast Green Generation light poles provide the entire yard lighting with only four 60-foot poles. Musco provides 10 years of maintenance and guarantees 19 years for light levels.

The HHW drop-off area is covered by a steel canopy providing shelter from the elements for the drop-off customers and Authority employees.

Recyclables are stored on the transfer station tipping floor in two bins contained by 20-foot high walls clad with 3/4-inch steel plate.

1.4 What Makes this System Different From the Rest?

A 25-year-old transfer station was renovated to a state-of-the-art facility with special attention to details of modern technology. This facility includes a scale house, operations office, protected parking area, covered HHW drop-off area, exterior vegetation load-out area, zero-discharge storm water collection basins, and a 16,000 square foot transfer station tipping floor that can transfer an excess of 1,000 tons of waste daily.
2.0 Environmental Controls and Regulatory Compliance

2.1. Environmental Protection

A. The SCTS renovation was designed to protect the sensitive South Florida environment and comply with all applicable federal, state and local environmental regulations. The old 25-year-old facility was updated to meet or exceed current environmental regulations, thus improving levels of environmental protection and working conditions.

B. The City of Delray Beach issued a Zero Discharge Industrial Wastewater permit. Leachate from the transfer station tipping and tunnel floors is stored in a 5,000 gallon underground holding tank and pumped out as needed by a septic collection service for off-site disposal.

C. The Florida Department of Environmental Protection (FDEP) issued an Environmental Resource Permit (ERP) for surface water management. This zero discharge site stores runoff water in retention basins; the water eventually removed by percolation into the ground below, evaporation, and transpiration.

D. The existing water supply mains were replaced with new ductile iron pipe per FDEP, Palm Beach County Health Department, and City permits.

E. The 12,000 gallon fuel tank was permitted by the Palm Beach County Environmental Management (ERM) Storage Tank Program.

F. The South Florida Water Management District (SFWMD) issued a General Water Use for Irrigation permit. The irrigation system is supplied by well water.

G. The City Building and Zoning Department issued a Site Plan permit to the Authority and Contractor building permits. Certificate of Occupancy/Certification of Completion were dated December 4, 2012.

H. Project Approval Letter for landscaping was issued on November 21, 2012.

I. An FDEP Transfer Station Operating permit was issued with an expiration date of September 21, 2014.

2.2 Impact of the Program on Human Health, Environmental Quality, and Resource Conservation

The Authority’s integrated solid waste management program promotes human health, environmental quality, and resource conservation in many ways including franchise agreements with waste haulers and inter-local agreements with municipalities to provide solid waste and recyclables collection service to residents and businesses in Palm Beach County. This greatly reduces the potential for illegal dumping of waste materials and assures that solid waste will be processed or disposed of in an environmentally responsible manner at Authority facilities. A state-of-the-art recovered materials processing facility (RMPF) processes 110,000 tons of fiber and co-mingles recyclable material saving considerable landfill volume and conserving valuable resources.
2.3 Compatibility with the Environment

The SCTS is bordered by a railroad on the east, a City park on the south and west, and commercial warehouses on the north. The architectural design, combined with extensive landscaping, blends the facility into the immediate area. The on-site storm water management system is designed to collect and treat runoff from the 24-hour, 100-year design storm with zero discharge to surrounding property.

2.4 Environmental Compliance

Table 2.0 Environmental Compliance:
Numerous environmental permits were required prior to beginning construction of the SCTS including the following:

1) FDEP Solid Waste Processing Facility Construction Permit
2) FDEP-ERP Surface Water Management System
3) FDEP Operating Permit
4) City Industrial Waste Water Zero Discharge Permit
5) SFWMD General Water Use Permit for Irrigation
6) Palm Beach County Health Department Operating License

2.5 Awards, Letters, or Facility Inspection Data

During and following construction, the SCTS was inspected with approval by all applicable regulatory agencies. The Palm Beach Chapter of the American Institute of Architects conferred the HONOR AWARD to Stephan L. Boruff, AIA, Architects & Planners, P.A. for the SCTS and for their Outstanding Contribution to Architectural Design.

2.6 Integration and Complementation of the System with Other Local Solid Waste Management Systems

The Authority has agreements with franchise haulers to collect waste in unincorporated Palm Beach County for delivery to Authority collection sites. Also, the Authority has inter-local agreements with local municipalities in the County to accept their waste for a fee. The Authority permits and monitors privately owned companies that process construction and
landscaping debris. The SCTS is fully integrated with the remainder of the Authority system. The supervisors communicate daily to coordinate delivery of waste, including MSW, vegetation, and recyclables to the waste-to-energy plant, RMPF, and landfill. HHW is collected and delivered to the central HHW for processing. The Authority has an agreement with the Palm Beach County Sheriff’s Department for their disposal of illegal substances.

3.0 Program Planning

3.1 Description of Facility’s Planning Process

Renovation planning began in 1996 with a Feasibility Study. This transfer station was originally built in 1985, was heavily used, and in poor condition. Maintenance and operation costs were increasing yearly. Conditions were cramped with collection of MSW, vegetation, recyclables, and HHW, all on a 7.6 acre site. Working conditions were not the best. Meetings were held with City Utilities, Engineering, Landscaping, and Building and Zoning Departments to gather criteria for design. Meetings were conducted with environmental permitting agencies, including the FDEP, SFWMD, and County Health Department. Last, but not least, were numerous discussions with Authority operating, maintenance, and environmental staff. This resulted in the Authority being fully invested in the basis of design for the facilities and getting exactly what was needed operationally from the completed project. The planning process concluded with City Site Plan approval.

3.1 Effectiveness of the Facility Planning Process

The SCTS renovation project was politically sensitive and, although the planning process took a number of years to complete, it was extremely effective in that the benefits of the project were thoroughly agreed upon by all the various parties involved. Without the diligence of Authority managers, our consulting engineers, and staff working with elected officials and City staff, it is possible that the SCTS renovation may never have moved forward.

Design plans and specifications were completed in 2000 but facility operations could not be shut down for an extended time for construction. Consensus was to construct the project in three phases to minimize down time. Phase I provided a by-pass road at the scale house entrance and was completed in early 2000 with 30 days shut down. Phase II was done in 2005 and included relocation of the HHW drop-off facility, installation of a 5,000 gallon leachate tank, and the steel retaining wall. Phase II was done without a shut down. Phase III was delayed until completion of the new SWCTS located in the southwest area of the County. This new transfer station provided an alternate site for delivery of waste. The CCTS located approximately 12 miles north was also available to accept waste. Phase III contractor mobilized on site on May 16, 2011 and shut down the facility for construction until December 4, 2012. The Authority's Customer Service Department supplied the public and haulers with notifications. Flyers were made available at the construction site to direct the public to nearby HHW drop-off facilities. Signs were posted at the site entrance notifying the transfer station was “Closed for Construction”. The Authority resumed SCTS operations on Tuesday morning, December 4, 2012.
Performance, Economics, and Cost-Effectiveness

The Authority’s transfer stations play an integral role in providing for an efficient and cost-effective solid waste management system in Palm Beach County. During fiscal year 2012, the Authority transferred in excess of 1.2 million tons through its network of six transfer stations. In aggregate, Authority transfer vehicles hauled approximately 55,000 loads a total of about 2.3 million miles. On average, Authority transfer stations receive about five incoming deliveries for every one outgoing load. The transfer stations play a key role in reducing fuel consumption and green-house gas emissions. They also help reduce traffic, wear and tear on roads, and the overall cost of collection to customers, while increasing system efficiency. The Authority is committed to managing an ever increasing supply of waste in a cost effective and environmentally sound manner.

4.1 Efficiency of Operation

Since the SCTS was opened in December 2012, transfer operations at the facility have been a model of efficiency. Turnaround times for collection vehicles delivering waste to the facility have typically been less than 15 minutes and rarely has the queuing line at the entrance to the transfer building exceeded five vehicles. This is a marked improvement from the previous conditions before the renovations were completed. In addition to the transfer stations, the Authority licenses a number of private mulching operations around Palm Beach County to receive vegetative waste from Authority customers in an attempt to make it easier, more convenient, and less expensive for customers to deliver waste materials to properly operated waste management facilities. During fiscal year 2012, approximately 200,000 tons of vegetative waste were received and processed by such facilities licensed by the Authority to operate in Palm Beach County.

4.2 Operational Performance

During the first three months of operation since opening in December 2012, the SCTS received over 35,000 tons of Class I solid waste, 3,700 tons of vegetative waste, and approximately 2,000 tons of source separated recyclables. During that period, a total of 2,500 loads of material were transported in transfer vehicles from the SCTS to processing and disposal facilities at the Authority’s North County Complex. The average net weight of material transported per load was approximately 21.5 tons. The average gross vehicle weight leaving the SCTS was about 79,400 pounds. This is close to the maximum allowable without exceeding legal highway weight limits and is another indication of the operational efficiency that is achieved by SCTS operations staff.

4.3 How does the Organization Foster Customer Service?

The Authority’s system is designed and managed to maximize service to its customers. The Authority’s website provides customers with general information about the Authority’s system and an overview of the services provided. Specific information is also provided on the location and operating hours for each facility within the system and the materials that are accepted at each location. A customer service phone line is provided to answer any questions that customers may have.
The Authority has established franchise collection areas and contracts with private waste management firms to provide for effective and reliable collection of solid waste and recyclables from its residential customers. The Authority's transfer stations, strategically located throughout Palm Beach County, serve to reduce the fees charged by the franchise haulers for providing the collection services. The transfer stations also provide safe and convenient facilities for customers to deliver HHW materials. In fiscal year 2012, the Authority collected approximately 2.8 million pounds of HHW materials and expects to collect additional HHW material in future years with the SCTS facility coming back on line.

**4.4 Does the Facility Operate within its Budget?**

The operating budget for the SCTS for fiscal year 2013 is approximately $570,000. Through the first three months of operation in this fiscal year, operating expenses at the SCTS have been generally consistent with this budget projection. It is expected that the SCTS will operate within its budget for fiscal year 2013, its first full year of operation.

**4.5 Are the Economics Typical of Those Found in the Industry?**

Over the first three months of operation in fiscal year 2013, the SCTS received over 52,000 tons of solid waste and recyclables for transport to the WTE plant, landfills, mulching facility, and RMPF at the Authority's North County Complex. The Authority anticipates a material handling cost of about $4.50 per ton and a transportation cost of about $10.00 per ton at this facility during fiscal year 2013. These unit costs are comparable to the five other transfer stations in the Authority's system as well as other transfer stations of comparable size and function elsewhere in the U.S. As the Authority's system grows and more waste and recyclable material is delivered to the SCTS facility, the unit cost of material handling will be reduced somewhat.

**4.6 Was the Facility Designed and Operated as Budgeted and Expected?**

The SCTS is the oldest transfer station in the system of six transfer stations. It has undergone several previous phases of upgrades with this being a total refurbishment. It was rebuilt for approximately 9 million dollars while shut down for approximately 18 months and came in under budget. It benefitted from a highly competitive environment in the construction industry when it was advertised in 2009 and 2010.

As noted above, the SCTS has operated as budgeted in its first three months of operation in fiscal year 2013. It has exceeded the projections for tonnage and revenue figures that were expected during the budgeting process.
5.0 Utilization of Equipment/Systems and Technologies

5.1 Types of Equipment

The Authority has a large transfer station fleet consisting of 65 tractors, 92 trailers, 15 loaders, 10 excavators, forklifts, sweepers, etc. The resources specifically assigned to the newly renovated SCTS include the following:

- Eleven (11) over-the-road tractors
- Eleven (11) 100 CY (48 foot) aluminum trailers with walking floors and tarping systems
- Two (2) 744 John Deere loaders
- One (1) Komatsu 215LC excavator
- One (1) Komatsu 70 articulated sweeper w/attachment
- One (1) Case 590 combination backhoe

The facility also utilizes two stationary mounted Grizzly 215SW Solid Waste Crane grapples that are equipped with a 25-foot boom and are mounted over the load out pits on the tip floor. This configuration has been proven to provide the operator with an excellent view of the trailer being loaded. This, along with the trailer mounted scale system, allows the trailers to be fully loaded the first time avoiding multiple trips to the facility scale.

The facility is also serviced by equipment shared among other Authority facilities. The grounds crew maintains all of the landscaping and the HHW collection facilities are serviced by roll-off and other specialized collection vehicles.

5.2 Efficiency and Effectiveness of Equipment

As discussed previously, the Authority operates a total of six transfer stations throughout the County. This provides a vast wealth of knowledge to draw from. The equipment operators and facility supervisors are intimately involved in the specification process for all equipment allowing them to incorporate lessons learned on other assignments.

The Authority monitors the effectiveness and efficiency of operations at all of its transfer stations on an ongoing basis. The effectiveness of transfer station operations is indicated by regulatory compliance, cleanliness of the site and surrounding areas, and documentation of customer complaints from adjacent property owners. Metrics used by the Authority to monitor transfer station performance include the following:

- Loads per tractor trailer per pay period
- Hours per tractor per pay period
- Average gross weight per load
- Average net weight per load
- Overtime utilization
- Tons per man hour
- Man hours per ton
- Man hours per load

To date, the SCTS has been operating in compliance with all applicable regulatory requirements and has demonstrated a level of performance exceeding Authority standards. Many aspects of the facility refurbishment were done with this in mind. Traffic flow was significantly improved by the reconfiguration.
of the facility. This not only improves the experience of the customers but also keeps any traffic concerns from impacting the neighbors. The facility was equipped with a misting system which can be used for both dust and odor control. Stringent operational procedures designed to prevent the storage of waste at the facility have eliminated any odor concerns. Litter control is a constant battle which is only controlled with daily clean up. All of these things in conjunction with the unique architecture of the building have improved the appearance and overall operation of the facility and have helped to make it an accepted part of the neighborhood.

6.0 Worker Health and Safety

6.1 Employee Training Frequency and Safety Procedures

The Authority provides a qualified and experienced work force to operate the SCTS in accordance with FDEP permit conditions and other local, state and federal regulations. A staff of 24 is assigned to the SCTS transfer operation, including one Supervisor, one Assistant Supervisor, one Field Clerk, seven Equipment Operators, and twelve Truck Drivers. There are four FDEP-certified Transfer Station Operators assigned to the SCTS, including the Supervisor and Assistant Supervisor and two of the Equipment Operators. FDEP certification renewal for these individuals is required every three years. At least one certified Transfer Station Operator is on duty whenever the SCTS is open. All of the Equipment Operators assigned to the facility are certified Spotters with FDEP-approved training and certification renewal required every three years. The Authority’s Truck Drivers all have Florida commercial drivers licenses (CDL's) with physicals required every two years and license renewals required every six years by FDOT. The Authority also operates a random drug testing program of all employees. There are a number of safety measures built into the design of the SCTS. For example, the entrance to the tipping floor on the upper level of the transfer building has a flipper gate which prevents delivery vehicles from entering the building until a Spotter or Equipment Operator determines there is room for them to unload without being impacted by traffic already on the floor. A roll-off turn around area is provided on the south side of the vegetative waste load-out area to avoid these trucks having to perform this activity on the tipping floor. This area also has water service available and doubles as a hot-load area where waste can be wetted down, if needed, to prevent fires from occurring on the tipping floor. The tipping floor is also equipped with five large exhaust fans and a misting system to keep dust to a minimum to assure a safe working environment for Authority staff at all times.

Additionally, the Authority maintains a comprehensive Safety Program for all of its facilities which outlines procedures to be followed for preventing accidents and injuries and measures to be taken should they occur. The Authority’s Risk Management Department conducts monthly safety meetings at each of the Authority’s facilities during which a video of a highlighted safety topic is shown and the topic is discussed with staff as it relates to the specific facility involved.

6.2 Injury Rates

Since the SCTS opened in December 2012, there have been no reportable injuries at the facility.
7.0 Public Acceptance, Appearance, and Aesthetics

7.1 Appearance and Maintenance of Vehicles
The Authority takes great pride in the appearance of all of its facilities, vehicles, and equipment. The SCTS received the 2012 Honors award from the Palm Beach County chapter of AIA. As the vehicles are the most outward symbol of the organization, they are of particular importance. All Authority vehicles are clearly marked with the vehicle number, the Authority’s logo, and telephone number so that the public can call with complaints if a vehicle is dirty or is operated in an unsafe manner. The Authority has installed a truck washing system at the main maintenance complex and has implemented an asset replacement program that insures that funds are available when necessary to replace outdated equipment. Equipment maintenance is provided by in house trained professional mechanics in a state-of-the-art Equipment Maintenance Facility. The Authority stresses a solid preventative maintenance program where problems are detected before unscheduled downtime occurs.

The Authority also takes great pride in the appearance and condition of all its solid waste facilities which are generally located in close proximity to urban areas. All Authority facilities employ lush vegetation which provides immense buffering to nearby neighborhoods and businesses. In addition, litter is removed daily from all Authority facilities, roadways, and surrounding entrance roads. The Authority employs a full time staff of facility maintenance personnel to keep all areas of the facility operating at optimal performance. Landscape maintenance is also done in house so that the highest standard can be maintained.

7.2 Are Vehicles Properly Maintained for Cleanliness?
As mentioned in the previous section, the Authority understands that the tractor trailer fleet is a highly visible symbol of the organization. For this reason, it is imperative these vehicles are kept in top condition. To this end, the Authority installed a truck wash capable of handling a 70-foot tractor trailer combination. All vehicles are required to get washed on a daily basis while they are in service, more if needed. Vehicle engines are also closely monitored and maintained to promote fuel efficiency and cleanliness.

7.3 Public Relations and Public Education
Public outreach and public education have always been a top priority for the Authority. The Authority has developed a library of information utilizing all types of media. All of these materials have been produced in house by Authority staff and have won multiple awards from different media organizations. The Authority web site www.swa.org provides detailed information about the SCTS and the entire integrated system that the Authority has developed. In addition to our core mission, the Authority is heavily involved in promoting environmental stewardship such as renewable energy, green house gas reduction, recycling, and HHW collection and treatment.
7.4 Is the Facility a Good Neighbor?

The SCTS is situated on a very small parcel of approximately eight acres near downtown Delray Beach in South Palm Beach County. The facility is in a mixed use area which consists of light industrial business and residences. Because there are such a large number of people that live and work in very close proximity to the facility, it is critical that a positive relationship with the neighborhood be maintained at all times.
Palm Beach Chapter

Of the

American Institute of Architects

Is pleased to confer the

Honor Award

To

Stephen L. Boruff, AIA,
Architects & Planners, P.A.

South County Transfer Station

And for
Their outstanding contribution to
Architectural design

2012
Architecture awards salute top concepts in our midst

By Carolyn DiPasolo
Palm Beach Post Staff Writer

What does a garbage transfer station have in common with an estate on Palm Beach, a historic aircraft hangar and a manufacturing plant? They are all recipients of design awards from the Palm Beach Chapter of the American Institute of Architects presented last month at a ceremony at the Max Planck Florida Institute.

**Merit Award:** Oxygen corporate headquarters and plant, Palm Springs. RLC Architects

“The main concept design intent was to keep the spaces and building simple and bright,” said RLC Principal Architect Juan C. Caycedo. “A cosmetic manufacturing company is synonymous with clean and delicate lines where natural light serves as a veil that washes each form, accenting the space.”

Excerpt of judges’ comments: There is a conscious effort to focus on the space created by the unfolding planes, and the designer carries the concept through the lobby and ceiling and the spiral stair. The architecture gives a cue on how to move through the space. The relative thinness of the curving walls celebrates the tilt-wall construction.

**Honor Award:** South County Transfer Station, Delray Beach. Stephen L. Boruff, AIA Architects & Planners, Inc.

The original assignment was to refresh the storm-damaged building. The project turned out to be a more substantial renovation of this “high abuse” facility.

“We wanted the resulting design to be a good neighbor to surrounding properties and the community it serves,” said Robert Curt to, who worked on the concept design. “We really tried to create a rhythm on the façade through the layering of materials and placement of the openings that would appear similar to a typical office or similar use,” Curtto said of the translucent panels that let in natural light. The base and accents are painted with a punch of orange that complements the colors palette of the heavy equipment used inside.

Excerpt of judges’ comments: The use of natural light in the work area enlivens the space. The use of “safety orange” to reveal the structural system and accent the exterior façade, simultaneously emphasizes the “hazard” warning and transforms it into a tectonic and playful expression. In so doing, the very nature of the building is revealed, which is to take that which is hazardous and convert it into something inert and harmless.

**Excellence Award:** Historic hangar at Opa-locka airport. RLC Architects

The hangar “serves as a reminder that architecture should be permanent and should not be designed as a disposable commodity,” Caycedo said. “It is our responsibility (as architects) to preserve valuable historic assets and improve upon them as we create the built environment.”

Excerpt of judges’ comments: The renovation builds on the strength of the original design and reinforces the primary architectural features. The decision to paint the structure white feels contemporary and yet is true to the renovation of the existing structure. It also lightens the space and allows it to frame...