



**W**HEN Steve Corell purchased two C&D landfills in Iowa and opened Landfill of Des Moines in 1988, adequate capacity was not an issue. By the mid-1990s, however, space at one of the landfills was disappearing and the other was about to close. The solution was to market a portion of incoming materials instead of landfilling everything. The opportunity arose when Landfill of Des Moines became a partner in a \$483,000 Iowa Department of Natural Resources (DNR) demonstration project to increase C&D recycling. When the grant was awarded, the company changed its name to Central Construction & Demolition Recycling, Inc. and shifted much of its business to the recycling market. In the past fiscal year ending in July, 43 percent of the 87,038 tons of material received was recycled. The company received an honorable mention in the recycling category of the Iowa Governor's Waste Reduction Awards.

To initiate recycling, Central had to obtain amendments to its sanitary solid waste permit allowing for processing and storage of C&D debris. Under state regulations, material storage limits range from 30 days for drywall to six months for wood chips to 12 months for shingles.

**PROCESSING OPERATION**

Staff is comprised of 16 laborers for sorting, five equipment operators, a site foreman and a marketing specialist. Central owns no collection vehicles, relying on general contractors and haulers to bring material.

Its in-town location is the key attraction to the company's approximately 300 customers, who generally pay a \$30/ton tipping fee. The municipal landfill charges the same rate, but is east of Des Moines. "Our customers can pay the same tipping fee and use less time," notes Rob Hosier, vice president.

# PROCESSING C&D DEBRIS FOR MARKETS

**Iowa company extends the life of its landfill by strategically recycling an extensive list of materials.**

"Plus, we recycle, which isn't the case at the municipal landfill." Charges are higher for materials that require special handling. The fee for stumps, for example, is \$45/ton.

No additional land was purchased for the C&D debris recovery operation. Central's site encompasses 23 acres, of which five are dedicated to materials recycling. Separate piles of asphalt/concrete, glass and OCC sit near each other next to a large infeed area. Enclosed units for drywall recycling are adjacent to that area. The north end of the site includes scales, separate areas for metals and white goods, additional storage space and an office. Equipment includes two back hoes, a rubber tire loader, a skid loader, two track loaders, a track dozer and a Vermeer tub grinder.

Central conducts a rough sort on the dropoffs to minimize what needs to be processed mechanically. Loads comprised primarily of metal, wood, etc. are dumped in their own separate areas. After a worker removes any contaminants, customers purchase and pick up the desired material. "The only things that are sorted mechanically are commingled loads where we can't identify one main commodity over another," says Hosier.

**MECHANICAL PROCESSING**

Acceptable mixed loads are directed to the processing line, which was paid for with \$300,000 of the DNR grant. First, they are put through a Re-Tech screen with one-inch

**Central Construction & Demolition Recycling conducts rough sorts on dropoff loads to minimize mechanical processing.**

**Improvements have included supplementing hand picking with an extra laborer for each commodity, which increases efficiency and enables the main conveyor belt to be run faster.**

openings to remove gravel, sand and fines, which are used as landfill cover. The rest goes to a 50-foot conveyor with eight picking stations for manual sorting. Asphalt and concrete are removed first and sold as gravel or material for new concrete. Next, cardboard is pulled out and dropped into containers below the station for collection and sale. A third station separates various metals and a final one takes out wood. (A tub grinder later reduces the wood, removing any nails with a magnet.)

The most recent upgrade to the processing line has been the addition of a conveyor that has improved product quality and decreased the need for mobile equipment. "Originally, when we picked out lumber, it dropped down a chute and was trucked to another location on site, where it was stockpiled until being ground into wood chips," explains Hosier. "While it sat on the ground, papers blew into the pile and dirt got in as it was pushed around. Now lumber falls onto the conveyor belt and goes straight into the grinder."

Other improvements have included adding more laborers for each commodity, which increases efficiency and enables the main conveyor belt to be run faster. In addition, reducing the screen size for incoming material has decreased wear on the belts, allowing for easier handling and producing more marketable fines.

#### OPERATIONAL IMPROVEMENTS

Formerly, staff took metal a mile away to a contractor's yard. Today, a contractor bales it on site, decreasing downtime for the 20-cubic yard rolloff container for metal at the processing line from almost 20 minutes to just a few. We can do that because of the high volume of metal," notes Hosier. "Before, we couldn't guarantee enough volume." In addition, the purchase of a second scale has helped traffic.

Asphalt shingle and drywall recovery also has been implemented since

the operation began. The primary issue with the shingles was obtaining a permit and system to test them for asbestos content, notes Hosier. Generators must provide proof of testing or pay Central to do the analysis. The material is shredded and reused for road base or driveway blacktop. For drywall, the challenge was finding markets and earmarking areas for loading, separation and stockpiling. The drywall - mostly new material rejected by a manufacturer, construction project or lumber yard - is simply stockpiled and shipped to a gypsum processor, who removes paper for marketing and regrinds the drywall for use

in new product.

Both materials primarily come in source separated and therefore don't go through the processing line. Contamination is limited to easily removable items such as a pallet in a shingle load or a metal gutter.

#### END USES

Values of materials have not fluctuated dramatically over the last few years, according to Hosier. Prices for the most valuable commodity, metal, have remained steady, although the company temporarily gave up on recycling corrugated when markets for it disappeared. "Usually, there's not enough of a fluctuation to give up on a commodity, because there's still landfill diversion," says Hosier.

Brush is chipped and used primarily for erosion control at the site. "The brush wood chips are longer and have dirt in them," he explains. "We can sell them, but there's not much of a market. The chips we make from lumber are clean, pale ones that will accept coloring agents more easily than green wood waste."

White goods such as used washers, dryers and refrigerators are accepted for an extra processing charge. PCBs, freon, mercury and any other hazardous materials are removed and the appliances are sent to a processor with the rest of the metal for recycling.

Certain materials are landfilled for lack of markets or because they can't be cleaned up and recycled economically. Those include flat tearoff roofs that contain tar, pea gravel and fiberglass insulation; shake shingles, which are made of wood, but are too dirty because of the asphalt shingles on top of them; odd plastic tubing and piping (although some plastic pipes and buckets are recovered); certain OCC smeared with grit and grime; Styrofoam; fiberglass; and "odds and ends" associated with construction, such as muddy drywall, painted lumber and certain types of particleboard.

Depending upon the commodity and market, low levels of certain contaminants are permissible. "It varies," Hosier explains. "If you have a little bit of wood in asphalt shingles, it's not a problem, but you can't have metal. With drywall, some metal and paper are okay, but they don't want wood. With wood chips, a little bit of paper and plastic won't hurt anybody, but they don't want any metal. With every commodity, there are do's and don'ts."

A future option for expanding operations is entering the market for refuse-derived fuel in pelletized or fluff form, which would provide an outlet for particleboard that currently is landfilled. "Another possibility could be plate glass; we're doing market research on that now," says Hosier. But mostly, we're just trying to find value-added markets for what we have. If we found out tomorrow that a particleboard company would pay us more for wood chips, we'd be there. We're trying to do as little processing and handling of material as necessary and still be marketable to someone." - D.B. ■



Acceptable mixed loads are directed to the processing line for manual sorting.