CONSTRUCTION & DEMOLITION RECYCLING

C&D FACILITY DESIGN

Knowing your space

Betsy Powers of SCS Engineers discusses how to best plan for a new C&D recycling facility.

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Permitting, designing and building a construction and demolition (C&D) recycling facility often come with significant upfront costs. With several factors at play, such as the size of the site, environmental constraints and regional end markets, the planning and capital needed to open a recycling facility are significant.

Construction & Demolition Recycling spoke with Betsy Powers, a vice president and senior project manager at Long Beach, California-based SCS Engineers, about the current obstacles and opportunities companies could encounter in constructing a C&D facility, as well as some operational best practices once the facility is up and running.

***Construction & Demolition Recycling (C&DR):* What are some of the current challenges and opportunities related to permitting and constructing C&D recycling facilities?**

Betsy Powers (BP): Well, I think one challenge that any recycler faces, whether it's C&D or … single-stream recyclables, is just finding reliable end markets that can be ever-changing, and their quality expectations could be changing. There [could be] legislation changes that [don't] allow use anymore, as opposed to the use of a [certain] material. So, that's always a challenge.

But then having to find reliable labor if you want to rely on manual sortation of the commodities [can be a challenge]. So, that's a big challenge, I'd say, for owners and operators: making that decision for which route to go. And a lot of it will have to do [with] where you're located.

In a big city it [often] makes more sense to automate. You're trying to run more material through your system [and] maybe you get a higher tipping fee originally or you're able to charge a higher price for your post-commodity. It makes sense to make that investment in [a] more automated system.

I think some of the opportunities [in C&D recycling] are just the general push and knowledge about the whole concept of sustainability that the general public has and … that businesses are adopting. Maybe they have sustainability goals, whether that might be for their operations [or] for any sort of renovations they do or new builds they do where they want to be able to [share] their sustainability goals. That can be a real opportunity for C&D recyclers.

***C&DR:* In general, what do current permitting processes look like for C&D facilities? How does this vary by region?**

BP: With most of them, you're going to have some location criteria you're going to need to comply with. You're going to need to look out [for] wetlands, endangered [habitats], that kind of stuff.

[Sometimes] they'll do a formal plan submittal … to show how your operations are going to be occurring. … [For example,] is everything going to be handled and managed indoors? [This is] so the agency can see and buy in on it if they feel you're not going to be a nuisance to the neighbors and the surrounding industries.

There's certainly going to be variation depending on where you go and what level of permitting is involved. But I'd say … most likely you're going to run into some form of permitting that handles those environmental features.

Photo courtesy of GreenWaste

BP: The first thing is going to be location. What constraints are you facing [at] that location that you want to build at? Are there environmental features like wetlands, waterways, endangered [habitats], any archaeological sites, that kind of stuff, … [or] any required setbacks you have for where your building is sitting on the property?

Then, there are things you want to consider like traffic. You're going to have a lot more traffic heading into that facility. … We need to think about it in terms of traffic and getting the vehicles in and out of the facility, and if there are any weight restrictions because C&D material is heavy. There are going to be zoning requirements you have to look at and then, of course, the overall permitting process. Then there are some of the additional things like the amount of space that's needed.

How much material are you anticipating you might be managing? How big of a tipping floor do you need? Then, you want to think about what we talked about earlier, [such as whether] you're going to rely more on automated sorting versus manual sorting. What makes sense for [your] facility, [your] location and the types of materials [you're] going to target to remove? Where are you going to store materials once they've been segregated? Who are your end markets? You're going to have an end market before you develop anything.

And things like dust control are big. … You can use things like misters indoors for dust control to tamp [it] down, … [or] have additional enclosures and additional walls in your facilities where there's more agitation of materials happening. If you have automated sorting, maybe try to [restrict] those to really confined spaces so the dust is confined to those areas.

C&DR: What are some best practices for traffic management at a C&D facility?

BP: [Have] the right size tipping floor area for the volumes that you're expecting so you're not backing a lot of traffic up onto public streets. Also, a big consideration is if your facility is going to allow for a public drop-off area. If you are, you want to ideally try to have a separate space that your general public can be pulling into and unloading by hand … [away from] your big trucks coming in. That's from a traffic flow standpoint and just a general safety standpoint —try to keep those two [groups] separate at your site.

C&DR: How should a facility be laid out to ensure it can produce high-quality recycled materials?

BP: Usually, you're going to have a load come in, and it's going to be a mishmash of all different types of material because most of the material is from old construction rather than

Then it comes back to [questions such as] “How did you set up your facility?” and “Did you want to rely on manual sorting more heavily than automated sorting?” That’s really going to dictate how it’s sorted. If you’re going to do an automated [system], you’re probably trying to sort some of the larger materials from the smaller materials. Maybe you have a shredder at the beginning to at least get some of the larger material and downsize it a bit before it goes through the rest of your equipment.

You might also try to do some density separation, get[ting] your aggregates—the heavier material—separated from the lighter materials [and] maybe the paper and cardboard segregated from the 3D-type materials, so that [with] any hand sorting you have, the more you can separate initially.

And then, maybe [finish] with some hand separation. The more you can do [in] the initial sorting, the better off, and the higher quality you’re going to get at the back end. In terms of how you segregate, it’s really going to depend on how you set it up to start with. There’s more and more equipment that’s being improved to do a better job for C&D facilities. Even robots now are being incorporated at some C&D facilities where that would have been not considered to be very viable not that long ago. And now we’re starting to occasionally see some in C&D processing facilities.

Betsy Powers is a vice president and senior project manager for SCS Engineers, based in Long Beach, California. Visit www.scsengineers.com for more information.