



Municipal Solid Waste Projects and the Design-Build Process

Challenging solid waste projects require a proven process to work through a design-build project while keeping it within budget, on schedule and delivering a quality product.

■ Evan Williams

Solid waste construction projects present unique challenges for end users, specifically municipalities. A design-build approach can help smooth this process. Challenges come from many areas and include, but are not limited to: community impacts, permitting, transparency in process, cost control and successful implementation. This approach is being used for a new transfer station in Missouri.

Municipal projects tend to be a lightning rod for attention, even more so when it is a solid waste project with community impact. A high priority for these is often to mitigate the environmental effects of the proposed project, as well as plans to address existing concerns on the site. The design-build process adds value in its ability to integrate design and project delivery into one team. In this area, the city, design, and build teams can work together with stakeholders to identify areas of concern and propose remediation measures. Where the typical design-bid-build approach prescriptively dictates one solution, the design-build approach engages the procurement portion of the build team to get accurate pricing data and determine the schedule impacts of the proposed options, assigning real-time cost/schedule impacts to the proposed solutions. This better informs the decision makers to help them make the best choice from a quality, schedule and cost standpoint. At the Missouri Transfer Station, the project team decided to situate the building with its doors away from two adjoining roads and towards an adjacent sewage treatment plant. In addition, the site channels all storm water to a single detention basin with one outfall to improve monitoring. By conducting the proper due-diligence and design vetting during the pre-design stages, the final product best reflects the goals of the project as well as remaining mindful of the schedule and budget.

Environmental Permitting

The environmental permitting of a solid waste project has the potential to have a major impact to both the schedule and final design of a solid waste project. In keeping with the design-build approach, a permitting consultant is brought in as a project partner from day one to coordinate the environmental permitting work. With this approach, the design development and environmental permitting work can proceed on parallel tracks, rather than sequentially. With the Missouri Transfer Station, the permitting consultant was able to fast-track permitting with the state's Department of Natural Resources. This allowed for reviews and comments on submittals to be expedited. In addition, the consultant's involvement on weekly owner/design meetings allows for feedback and direction that helps keep the final design in line with what is permitted, as well as to vet any proposed modifications to the permitting submittals that might come up in the course of the design.

A Common Issue: Lack of Transparency

A common issue with municipal projects is an appearance of a lack of transparency. When there is transparency, there is no disconnect between the project team and the project costs. The owner can see during project billing where the project costs are being allocated, and they are a part of the construction sub-contractor selection process, so they are aware of the multiple vendors being considered for the project, and how well those numbers are tracking to the project budget. This open book encourages both the owner and the design-build company to be accountable, as both have a vested interest in tracking project costs, and how those decisions impact the overall project. The transparency approach with the Missouri Transfer Station has been to

3D rendering of a proposed transfer station. Images courtesy of Cambridge Companies.

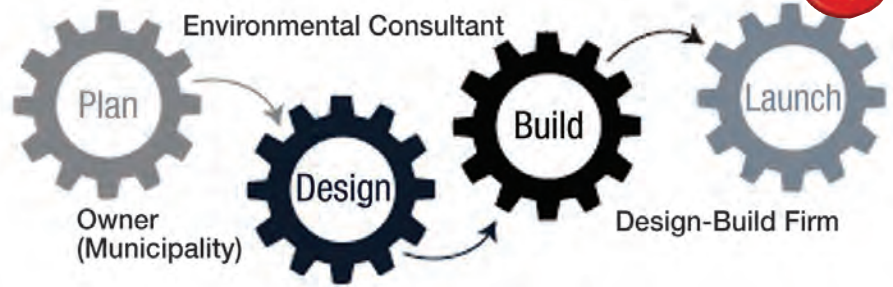




open the books. With this approach, all project costs—consultants, fees, administrative costs, construction contractors, materials and overhead—are available for review and approval by the owner.

Cost Control

A critical element of any project should be cost control. In a typical design-bid-build approach, the design is worked out between the Engineer of Record and the owner. Once this is set, they typically engage an environmental permitting consultant to get the needed state approvals. Once the plans are approved, they are then publically put out to bid. If the bids from contractors come back higher than expected, this presents an issue for the design-bid-build approach. At this time, the plans may need to be re-worked to fit within the required budget, and revised plans need to be re-submitted to the environmental permitting agencies and re-bid. This can present a significant risk to the schedule and budget of the project. A different, design-build approach was used on the Missouri Transfer Station to help with this project's goal of controlling costs. By using an open book design-build approach, the Missouri Transfer Station project has been able to move forward with design development and environmental permitting simultaneously with ongoing estimating budgetary updates. As the plans are being developed and refined by the owner and other stakeholders, they are being kept aware of potential budget impacts to help make informed decisions and keep the project budget and schedule on track. In addition, since the project is design-build, there is a collaborative relationship between the design and construction teams. This allows the contractors who have much practical field experience to offer alternate approaches that can yield a better final project at a lower cost. Where timing and costs are critical, the design-build approach presents a good alternative to better manage costs.



The design-build process includes members of the team from planning through to completed construction.

A Plan for Successful Implementation

All of the potential benefits of the design-build approach for a municipal solid waste project would be diminished without a plan for successful implementation. This process has several best practices in place to ensure the best possible project. A project development team should include the municipality's planning staff, the environmental permitting consultant, the design team and the construction team. The Missouri Transfer Station team conducts weekly meetings with all of these members. These meetings are recorded digitally and minutes are kept and distributed immediately after the call. This allows items to be tracked through the project development process, as well as assigns responsibility to ensure that they are addressed. In addition, during the early phases of the project, there are weekly design meetings to keep the project design processes on track.

Another component of the successful implementation plan is a focus on lessons learned. By joining the customer, design and construction teams, there is the potential for process improvement by analyzing past experience to minimize future problems. Simply put, the process is to learn from past mistakes to avoid them in the future. By using a design-build approach that includes team members with a breadth of experience, the possibilities for minimizing surprises increases. For the Missouri Transfer Station project, there were several items that were changed based on previous experience. They included: selection of above-ground scales, use of embedded steel push wall wear plates, use of high-strength aggregate in the floors, provisions for equipment block heaters, single storm water outfall to improve monitoring, etc. These are a few of the many items that were improved by including the input of multiple parties with vast experience on solid waste projects. Going forward, ensuring successful implementation will start to focus on bidding and construction processes. Similar to the design lessons-learned process, there will be stages in the project where input is solicited from team members. By maintaining open communication through effective meetings to improving the final design and construction with feedback from multiple experienced team members, the successful implementation of the project is improved.

A Smoother Process

Municipal projects are rarely considered simple, and solid waste projects add layers of complexity from regulatory approvals to public relations realities. There are several project delivery approaches and they each offer benefits for different applications. In the case of a complex public solid waste project, the design-build approach presents many advantages that lead to a smoother project from start to finish. | **WA**

Evan Williams is a Design Project Manager for Cambridge Companies (Griffith, IN). Cambridge Companies is the design-build firm hired to work with the City of Cape Girardeau (Missouri) on a new Transfer Station. Cambridge has worked in the waste industry for more than 20 years. During this time, more than 100 solid waste design-build projects have been completed including new build, repairs, upgrades and/or modifications at transfer stations, recycling centers/MRFs, hauling companies, landfill facilities, office buildings and more. Cambridge continually monitors the industry to determine any new needs, changes or improvements that will benefit their clients and improve their design-build solutions. Evan can be reached at (219) 369-4008, via e-mail at EvanWilliams@CambridgeCoInc.com or visit www.CambridgeCoInc.com.



Multilingual, multi-currency & multi-entity
 Cloud-based or on-site server for 10+ users
 Proven & feature-rich truck routing app/fleet app
 Commercial & Municipal — Hauling LF, transfer, MRF



1-844-674-8418
www.xerowaste.ca
 Vancouver, BC



CLICK HERE FOR MORE INFORMATION!