



*Through a charrette approach, owners and users provide input as to the final facility design. This process allows the staff to create its ideal system.*

# A Common Sense Approach to Design

**I**f you have never participated in a design charrette, then you have missed one of the most innovative decision-making processes.

“Common sense is not so common.” While Voltaire may not have had design and engineering in mind when he coined that phrase, it still applies. When it comes to preliminary designing and engineering of wastewater facilities, that application could not be starker. It might seem like common sense to have owners and users integrally involved in the preliminary design process, but that is the exception, not the rule. However, some pioneering architecture and engineering firms are changing all of that. Best of all, this process can be applied in the water and wastewater industries.

“The best facilities are the ones that are designed hand-in-hand with the owner,” said Mark Ellis, senior project manager for the Maintenance Design Group (MDG). “It makes perfect sense. They are the ultimate user and it is their dime. As designers, we walk away and

move onto another project. We don’t live in that facility everyday. They do. So they should have intense, valuable input into the design.”

“Now that sounds like a great marketing strategy—and it is—but it also is a working philosophy,” Ellis said, “and it serves a very real purpose: we bring our expertise to the client’s facility and incorporate their individual and specific needs during an open and evolving forum. We don’t design anything in a vacuum. We work with the owner’s people—the end users—to address issues up front and make more options available to owners in a faster and less expensive timeframe.”

## Creating an Ideal Facility

Ellis and his MDG team recently applied this philosophy for the Town of Windsor, Calif., Corporation Yard. The planned facility is located on 10 acres at

the Town’s wastewater processing facility. Deploying a wide number of innovative planning techniques, the team incorporated considerable owner input throughout the design process, culminating in two four-day, onsite design charrettes. Ellis believes that the charrette approach (a process where the design team essentially brings a complete design studio to an owner’s facility for an extended, integrative design session) not only saved money, it further empowered the Town’s staff to create their ideal system.

“Everyone has preconceived notions of how they want a facility to look and function,” Ellis said. “In Windsor, we went through the charrette process and it changed everyone’s mind quite a bit.”

A great example is the overall architectural design and the highly functional and flexible layout of the various buildings and yard elements. Traditionally, corporation yards are industrial in nature with limited opportunity for “curb appeal.” For Windsor, putting aesthetically pleasing structures on the recently improved Windsor Road was as important to the Town Council as the function of the yard was to the public works staff.

“During the charrette, we showed the Town staff how to achieve the design

*Charrettes make the design process interactive, with users addressing concerns and designers providing immediate revisions until the most suitable design is achieved.*

goal and still get the ideal facility from a functional standpoint,” Ellis said. Also, due to funding constraints, the Town needed to phase the Corporation Yard development. This presented an additional set of issues to the design team.

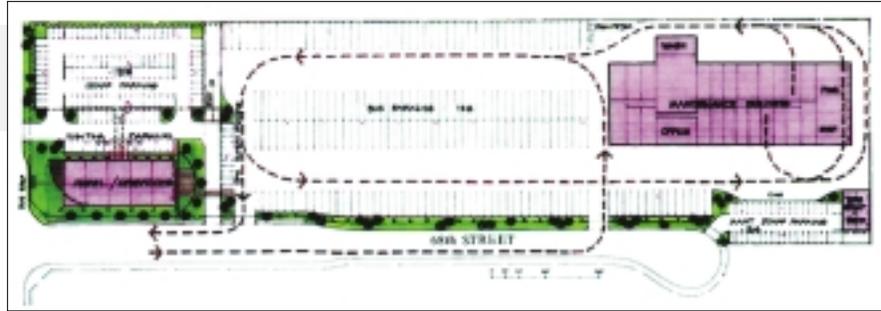
“Although we were developing concepts based on a campus approach, which typically is the best if we know going in that we will need to phase the development, in this case we needed to be able to phase the construction of individual structures and still accommodate the projected growth within spaces that were being designed with specific functions in mind.”

The charrette process allowed the design team and the Town to explore numerous phasing options and building configurations very quickly, efficiently and successfully. The final challenge for the design team was the existing wastewater plant operation.

“We had to incorporate the daily operation of the wastewater processing plant and design around the various large infrastructure components already in place,” Ellis said. “The plant also had its own plans for expansion in the proposed Corporation Yard site. So, during the charrette we brought in a wastewater plant design expert to provide input on an effective plant expansion plan that could work with the various Corporation Yard concepts we were developing.”

“In addition, we were able to provide the Town with conceptual master plans for adjacent properties that included a new Fire Station and an alternative learning center for the new High School. It’s not difficult to get people involved in the process when it’s going to be their new facility,” Ellis said. “In this particular instance, we were faced with a number of challenging design and functional issues and were able to address them all and still provide the Town with their ideal facility. That’s exactly why we go through this process.”

Steve Silkworth, MDG senior project manager, believes that the onsite design



charrette may be the single most important innovation for creating facilities that truly serve their owners’ needs.

“Unless someone is constantly involved in design work, it’s very difficult for them to look at a space needs program (basically a spreadsheet with room names and dimensions) and truly understand what those numbers mean in a real physical sense,” he said. “The charrettes not only deepen that understanding, they make the whole design process more interactive.”

Essentially, the design process is a series of review meetings during which the client has the opportunity to choose the best from the best. Each day the designer comes back with different revisions, solving problems, adding options, addressing concerns. There is never an ideal site or set of conditions that address site issues and conditions. Charrettes illustrate how the design process evolves and builds consent among all shareholders.

### Speeding Up the Design Process

While providing a more tailored facility for the client, the single greatest advantage of a charrette is speed. Rather than a design team presenting drawings, hearing feedback, going back to the drawing board, then returning weeks later with revised drawings, the charrette facilitates actual design changes in immediate, real time.

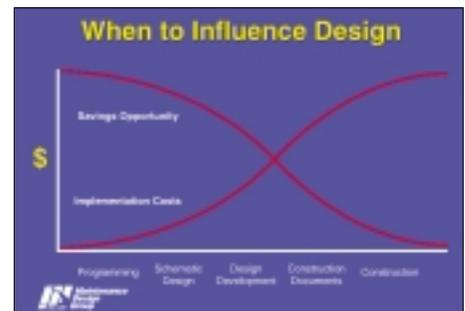
For example, if a client wants a control room center to be in one particular spot, the design team can try that action and see if it fits in with the rest of the plan. If it doesn’t, they’ll propose another solution and try that configuration instantly. Gaining input from all concerned parties, the team irons out the

design in days instead of weeks or months. There are a whole host of intangible benefits as well.

By working closely with all of the future stakeholders in a facility, a design team observes subtleties and preferences that would normally go unnoticed and incorporates them easily into the design. In addition, because the charrette is usually done onsite, anyone can be brought in by the owner to offer their opinion. Lloyd Mack, general superintendent of light rail operations for Denver’s RTD, provides a perfect illustration.

“I had a question about railings,” he said. “I wanted to know what would work best on the work floor. So, I went onto the floor and pulled one of our mechanics into the charrette. First of all, he was shocked—no one had ever asked him about design before. Then something incredible happened. He offered the best perspective we could have gotten on how those railings are used everyday. It never had occurred to us to ask him or someone in his position before. It just never would have happened without the charrette. Now that mechanic feels tremendous ownership in our new facility.”

Mack also found another advantage to the charrette. He got to find out what



*As this chart shows, it is easier and less costly to have design changes at the beginning of the process rather than the end.*



everybody's needs were. This included groups such as facility maintenance, communications and computers that Mack had no idea what their working concerns were. It also gave him a chance to know each group better.

"Traditionally, many of their concerns were afterthoughts; we weren't addressing their needs in the facility design. Now they've got what they need to do their job and they, too, are invested emotionally in the new building," Mack said. "I can't think of a single project where the charrette approach wouldn't help. This was

the first charrette I've ever experienced, but you better believe that I'm going to insist on them from here on out."

### Owner Participation Is Invaluable

The charrette approach is only part of an entire, integrative philosophy of incorporating owner and user input into the initial decision-making process. From identifying key design features particular to individual owners' needs to the application of current equipment and technology to touring existing facil-

ities, the operative concept that separates this process from the traditional modality is the early and valued inclusion of the owner and end user as a resource and valued participant in the design process. Their recognized input in that design process (as opposed to only learning their desires from a Request for Proposal and a series of meetings) serves to reduce the amount of time and rework inherent in the traditional design process.

Understanding the concept is one thing. Expressing it to owners unfamiliar with the approach can be quite another. At first, many owners are skeptical. The process is unfamiliar and many have never been asked in working detail what they want. However, Ellis believes that the concept can be explained clearly by pointing out how the integrative approach takes the traditional approach and "folds it into itself."

The integrative approach also can save time and money. It is easier and more feasible to change one's mind at the beginning of the process. Changes at the end of the process are expensive and difficult. Change orders and RFIs are very costly and do not enable the best designs.

"By incorporating dynamic input from the owner at the beginning of the process, we're folding the change-order and RFI process into programming and conceptual design. For example, we can compress two or three months of conceptual design into a two-week session. That's a more effective way to design and construct a facility and to ensure that owners and users get exactly what they want," Ellis said.

Common sense can never be overrated. Yet as Voltaire admonished, it is often the exception and not the rule. However, for owners who have experienced the benefits of the integrative design approach, common sense is fast becoming the rule for designing their maintenance facilities.

This article was put together by Carter & Burgess, Inc., a national engineering firm headquartered in Fort Worth, Texas.

For more information on this subject, circle 867 on the reader service card.

## An Interactive Approach

The process used to develop a project is almost as important as the final product. Therefore, in order to create a functional facility it is essential for the consultant team to work closely with the all participants having anything to do with the project, including the client staff, boards or councils, the public and the primary users of the facility. There are two approaches to gaining participation from these groups.

- One is to do the work and then allow everyone to review the product.
- The other is to develop a format of participation while the work is going on, allowing active stakeholder and user participation during the actual creation of the product.

MDG believes strongly that the latter approach is the best way to achieve success and create a truly responsive design through the on-site charrette session.

Touted as the most effective way to create an interactive team environment, this intense, week-long program is designed to consolidate into one or more work sessions what would have normally taken weeks, or months to accomplish.

### The Objective

- To bring team members together so that they can effectively study, plan and begin designing a project.

### The Process

- The charrette sessions are focused on balance.
- The on-site begins with the receipt of input concerning goals and objectives. This leads to the brainstorming of many alternative concepts.
- All of these alternatives are put on the wall and discussed. The choices are narrowed and developed further.
- These concepts may include alternative operational concepts, site master plans, floor plans and/or building designs.
- Additional input narrows the choices and more definition is given to the remaining choices.
- Concerns are addressed by modifying alternatives or by generating new hybrid concepts.
- Finally a consensus is reached that involves everyone and the solutions represent equal input from the client, the design team and other key participants.
- The final step involves documentation and further review. It is important to conduct presentation and review meetings with key representatives who will be responsible for evaluating the plans, recommendations and facilitate the necessary decisions.

This program has been used to successfully develop

- Programs
- Master plans
- Strategic operational plans
- Primary architectural designs