CDM Podcasts: Cities of the Future
A Conversation with Pete Tunnicliffe

PAUL: I'm Paul Brown, CDM executive vice president and host of our podcasts series, Cities of the Future. In this series, we speak with experts about innovative and practical ways to create urban communities that improve quality of life, protect natural resources, and create economic opportunities. Our topic today is innovation in project delivery. And our guest is Peter Tunnicliffe. Peter is a CDM senior vice president who works with clients to develop and implement major design-build projects around the world. He's also president of the Water Design-Build Council, a group of integrated design-build firms helping to shape the future of water industry. Peter joins us today from our Cambridge, Massachusetts office. Welcome, Pete.

PETE: Thank you, Paul. It's a pleasure to be with you today.

PAUL: Pete, when we talk about project delivery, what are the activities in the life in a project that we're addressing?

PETE: Well, Paul, we address the project from its inception, which is usually during the concept development stage, all the way through implementation, which in many cases includes construction, operation, and long-term preventative maintenance. And it involves any number of different steps depending upon how you take delivery on the project.

PAUL: Well, let's narrow in on the term design-build and particularly in the context of municipal procurement. How does design-build differ from more traditional approaches to project delivery?

PETE: Well, the design-build approach to project delivery has as its fundamental foundation a single firm that provides not only the design but the construction in an integrated manner. And, it allows the owners to deal with one entity and to move more expeditiously through the process of design and construction with an awareness of what the cost decisions are as they develop the design.

PAUL: Well, tell us about how it used to be done. What's the old way?

PETE: Well, the more traditional way in the United States with municipal project delivery is to have the project designed by an independent design engineer and then put the project out to bid, and then have a great period of breath holding while the bids are prepared and then opened and hopefully the project bids are within the city's budget. This process is one that has been used for many years in many municipalities, but often times can create some challenges when the bids come in over the budgeted programs.

PAUL: So, when we pursue a design-build approach, we're putting both of the parties together and you begin to alluding to the benefits of that. Tell us a little bit more about what we gain by having the designer and builder part of the same single entity.

PETE: Well, by having an integrated team, the project metrics are aligned from the start. The engineer and the construction members of the team understand the overall objectives to deliver the project pursuant to the owner's performance requirements but yet doing so within certain budget parameters. And so, cost plays a greater factor during the design development in an integrated design-build delivery than in a conventional design. And also, the schedule efficiency is improved significantly, and that can result in significant savings to the owner. And also, it brings the project into the local economy at a much more rapid clip.

PAUL: And what is the major source of the schedule benefits?

PETE: Well, the source of the schedule benefits are that the design is often times developed in the in a series of steps that ties to the release of certain portions of the construction. So, during part of the project, you have some of the later stage elements—such as detailed electrical wiring and instrumentation—designed as the foundation construction activities are taking place. So, you've essentially overlapped some of the engineering and construction and you achieved schedule savings there. Plus, you achieved schedule savings by not having to stop the design and then go through a bidding period and then initiating construction, which would be the case in a in a conventional design-bid-build process.

PAUL: If I'm a municipal owner trying to pursue this kind of delivery, does this demand a lot more time for me or higher level involvement than I would otherwise have been engaged in?

PETE: In some cases it may. It depends on the owner's level of involvement during design-bid-build project versus a design-build. In some cases, owners require a great deal of time in a conventional delivery, particularly if they have to deal with change orders that are disputed between the design engineer and the constructor during a conventional delivery. In the design-build process, the owner is part of the team and as such is very much integrated in the decision making process. And, depending upon what the owner's perspectives are, that integration of the owner into the team can be a high level or a small level depending upon what staff time the owner has available. From an administrative perspective, there's one bill that comes in as opposed to several different bills. And there's one point of contact, which does make it more efficient for the owner.

PAUL: If we're continuing to compare and contrast the conventional approach to the

design-build approach, you mentioned change orders and it does highlight the almost adversarial role between the designer and the builder in the conventional approach. How are change orders handled in a design-build context, where one party's responsible for the entire project?

PETE: Well, they're handled procedurally somewhat the same in both the conventional and the design-build in that there are change orders that are very clear. Those would be ones that would add scope to the project versus what was included in the original procurement. And then there are those that you would find in that conventional design-bid-build project that would be less likely to occur in a design-build. And let me clarify that, in a design-bid-build project it's very clear that if there is an engineering deviation in the plans and specifications that requires the builder to add features or change work that has been performed because of lack of coordination or a problem with the engineering. It's very clear that builder is entitled to a change order and that case. In the case of a design-build project, there is less clarity in that because the engineer is integrated within the designer- builder's team and the overall team is responsible for delivering the project, including the design and construction elements. So, there are less opportunities for change orders that have to do with coordination. The coordination responsibility is stronger on the designer-builder than in a conventional delivery.

PAUL: You talk about integrated design-build firms when we refer to the Design-Build Council. Is that a whole different approach to how the work gets done?

PETE: Well, there is a significant difference between an integrated design-build firm and a consortium or venture that includes an independent engineer and an independent general contractor. The integrated firms have staff that work for the same company and there's more of a commonality of interests and mission on the project. And the teams are used to working together in the delivery of integrated design-build projects. Where you have an independent general contractor and an engineer, often this is the first time they've worked together in that capacity. And in while intentions are often times very positive, it's like having any new venture working together. The interests still remain independent of each other even though they're attempting to deliver the project together.

PAUL: Changing the subject a little, are there particular types of projects that make better candidates for the design-build process appose to the conventional route?

PETE: Certainly. Most projects that have a degree of definition that is advanced enough to put together a scope of work in detail are good candidates for design-build. In particular, if there are opportunities for innovation, and in the water and wastewater field, the facility complexities are fairly significant and the opportunity for innovation in the design concept, as well as the utilization of some of the innovations, allow owners to really reap a benefit both in cost and in functionality of facility by the use of the

design-build. The other factor that is influencing the municipal water and wastewater field is the area of energy, as cities realize that their overall energy costs for water and wastewater can make up as much as 30 percent of the overall city power costs. So, energy-related efficiencies are now another opportunity for designer-builders to bring in innovation to today's facilities capital works.

PAUL: So, I'm more interested—in the procurement process—in what it is I'm trying to accomplish than exactly how I'm going do it.

PETE: Exactly right, Paul. And, that brings up another very interesting subject and that is, many owners wonder: "How far should I advance my procurement documents before I put them out on the street for procurement?" And what we tend to advise owners is that you should include what are your absolute requirements for your project the "must haves," but don't go beyond that. Don't spend a lot of time and money putting together exhaustive and extensive preliminary design information that goes out for the designer-builder community because in almost every case of major design-build projects across the country, none of those designs have been utilized as the implemented design because the procurement engineers do not have the same objectives as the designer-builders who respond to the procurements.

PAUL: Can you tell us a little bit about the concept of the progressive form of delivering?

PETE: Yes, Paul. And I thank you for asking that because what we've found with many municipal owners is they really want to be involved in the development of the final design concept. They want some input on the features and they want to have this collaborative involvement as the design gets finalize. And what has evolved over the last several years is a term called the progressive form of design-build delivery. And this is an approach where the initial procurement from the municipality identifies a cost of the design development and then will carry a request for a target cost of the construction but yet has sufficient flexibility to move forward in a collaborative manner and have the design evolve some more before the final construction price is established. And many municipalities really don't want to let go of the total scope control that often times is necessary when a fixed priced design-build is issued. Because at that point the scope is fixed and if they want to change or evolve it together with the designer-builder it often times results in change orders, which they are less inclined to have.

PAUL: Pete, this sounds like a complicated subject. If I'm a local government agency manager, where do I go to get more information and find out additional facts about how to pursue an alternative delivery approach?

PETE: Well, there are two sources that I might suggest. One would be the Water Design-Build Council, which is located in Washington, D.C. and can be accessed on the

Web at www.waterdesignbuild.org, and the other is the Design-Build Institute of America, DBIA, also based in Washington. Both organizations are very familiar with design-build delivery. They promote the use of it. They've got demonstrated examples; examples of procurement documents/formats and a staff that is ready and willing to assist interested individuals in exploring design-build delivery.

PAUL: Thank you, Pete. This is Paul Brown. Please join us again for our next Cities of the Future podcast.