

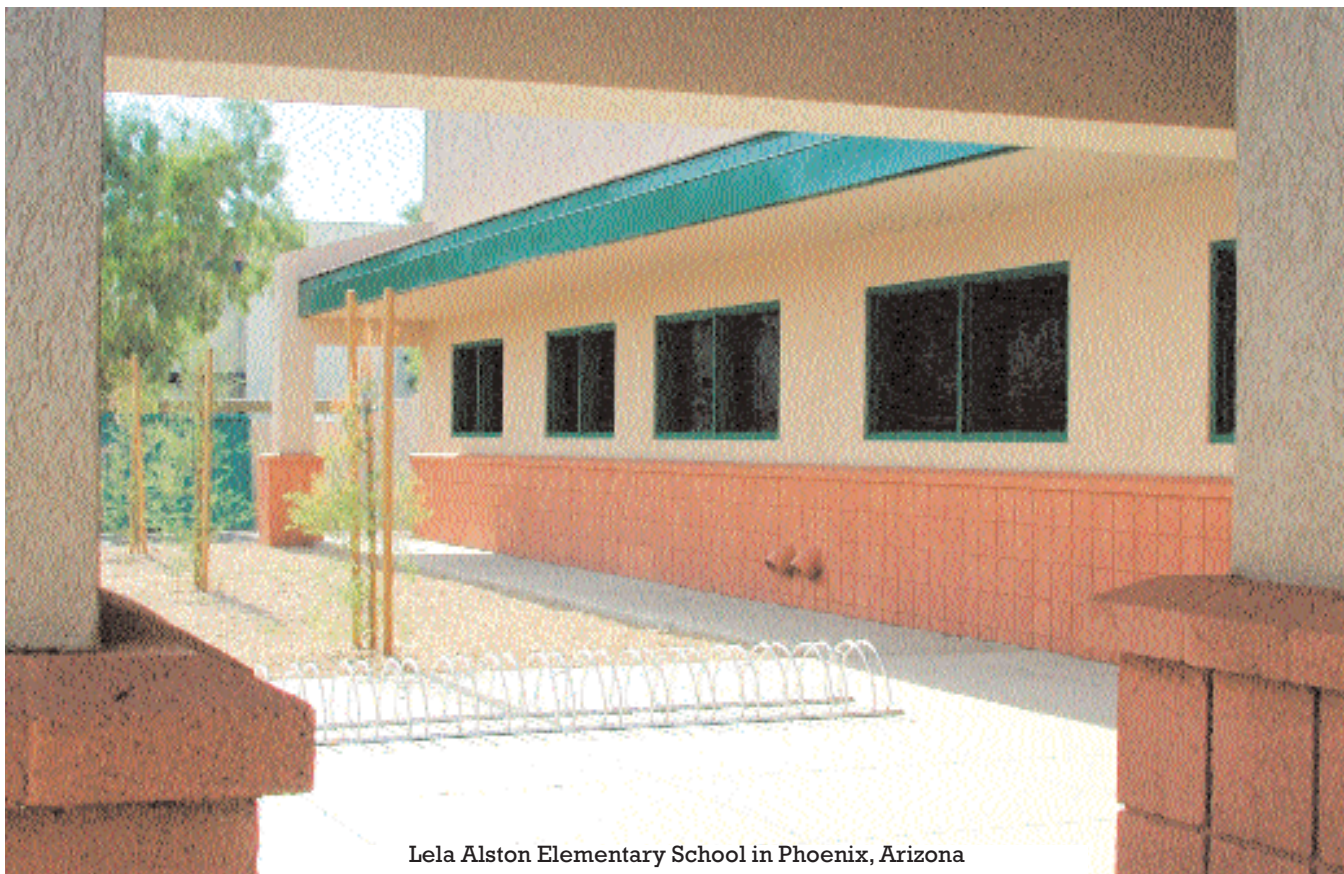
Portable or Modular? There Is a Difference . . .

As is the case with most innovative technologies, the modular building industry is steeped in history, some of it true and, regrettably, some of it based on misperception. Was the precursor to today's modular method of construction the mobile home? Yes. Was the nation's first capitol building such a structure? No. Were "portables" commercial offshoots of those first residential buildings? Yes. Are today's commercial modular structures the same as those "portables"? While many think the answer is yes, in truth, the answer is absolutely not.

As you all know, much is in a name, and the confusion surrounding the terms *modular* and *portable* has led to a reeducation campaign by the modular industry to set the

record straight. Each term represents distinctly different structures and construction techniques, both with their own advantages and disadvantages. The trick is to know which one you're talking about so that you can make a good business decision.

Greatly simplified, *portables* refer to single- or doublewide temporary wood structures that are prebuilt in an assembly-line fashion and then installed at the site. They are one-story facilities and have a limited design configuration. The image in your head is probably accurate. The term *modular*, however, denotes a method of construction for permanent buildings, just like traditional concrete tilt-up or panel construction. Although the word is often used to describe the structure itself, a modular building is one that has been



Lela Alston Elementary School in Phoenix, Arizona

By Mike Morton



Lela Alston Elementary School in Phoenix, Arizona is a 40,500 square foot K-5 elementary school, with room for over 400 students. The school was built in seven months using modular construction.

built using steel construction in the traditional stick-built, or framing, method. The difference from the traditional method is that it's built in sections (modules) in a controlled environment and then transported to the site. These buildings comprise three or more modules, are often several stories high, and can be designed to fit any architectural plan. The image in your head is probably not what you expected!

The original mobile homes mentioned earlier were, and still are, designed as solutions to specific construction challenges. For instance, remote areas present a cost-effectiveness issue to potential builders. With manpower and materials located in metropolitan areas, how does one build affordably in outlying locales? One viable option is to build the structure in the city and then transport it to the site. Indeed, this is one of the core advantages shared by modular and portable buildings today.

With such dynamic advantages, it made sense that the concept of prefabricated buildings would find a home in more than just the residential market. And, indeed, one of the first nonresidential clients would be schools. Here is where these buildings could make a real difference. Schools were overcrowded, had limited funds, and needed buildings fast. Portables were a great quick fix. But here, we would rewrite history if we could. If you refer back to our original description of portables, you will note that they were designed as temporary fixtures. Commercial use and

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residential use are two very different things. Forty years ago, technology could not provide a portable building that would withstand the rigors of educational use for countless years. Unfortunately, instead of serving as temporary solutions to space and budgetary needs, those buildings often became permanent campus structures. Hence, along came the negative connotation of the word *portable*. Instead of describing its original innovative and affordable construction solution, the term now conjures up images much like those you probably had earlier: shoddy, unattractive, and poorly made.

Luckily, you don't have to think of those images anymore. Forty years is a long time, especially in today's society of rapidly advancing technology. Although portable buildings are still available to school districts, and may serve some temporary needs quite well, modular structures

are designed to withstand the rigors of educational use . . . for up to 100 years! In fact, because of their steel and concrete construction, modular life cycles often exceed those of traditional site-built structures.

So, if a modular building isn't a portable, then what is it? The truth is that you probably couldn't pick one out if you had to. As you can see from the photographs on these pages, a well-built modular structure should look and feel

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like a traditional site-built facility. The materials are the same as those of a site-built structure, and the construction method is almost identical. The difference is that the modular method takes the best aspects of both traditional and prefabricated construction methods and combines them. Here's how it works.

The first step is to "componentize" a traditional floor plan. Modular builders can work with outside or internal architects and can comply with virtually any design requirements. The design is simply transferred into three-dimensional, rigid structural steel components, or modules, that can be easily transported on a flatbed truck. Those steel components are manufactured to exacting standards in the manufacturer's plant. The key factor here is that the environment is completely controlled. That means that quality control is easier to manage than at an outside construction site. It also means that a number of traditional construction challenges (i.e., disruption to an existing campus, downtime due to bad weather, unsightly fencing, and security and safety hazards) are avoided.

And here's the second key to modular construction: while these components are being made in the plant, the infrastructure at the site is taking place. That is where the two previously mentioned construction methods converge. Portables are fast because they're already made. The problem is they weren't made just for you. Traditional site construction yields a custom product that is long lasting, but it also takes a long time to get that product. By preparing the building and site simultaneously, modular construction can give you a custom, long-lasting product in significantly shorter time frames than traditional site construction. That is how the client saves money.

Along with the structural steel components, the remainder of the building and all of its systems (e.g., plumbing and electrical) are constructed and tested at the manufacturer's

plant. This method ensures a "true" structure and guarantees that all utilities are functional before installation. At the site, the concrete foundation is poured, and improvements such as sidewalks and landscaping are completed. When both the site and building are ready, often 30% to 50% faster than traditional site construction, the structure is disassembled at the plant and the modules are transported to the site. There, they are craned onto the foundation and welded into place. The result is what you see in the photographs: a building that is indistinguishable from a site-built structure.

Earlier, I described modular buildings as permanent structures and provided some reasons why. The most prominent reason is the foundation and floor system shared by both modular and site-built buildings. As we all know, site-built structures sit on a concrete foundation and, hence, have a concrete floor. Similarly, modular buildings have concrete foundations and concrete floors and, as such, are permanent and not relocatable. On the other hand, portable buildings are temporary structures and they usually sit on a pad-on-pier foundation. That is why you see them sitting up in the air, with staircases leading up to the entrance. They also commonly use a wooden floor system, which can lead to many problems (e.g., termites, decay, squeaking, buckling, and that familiar "hollow" sound).

So, how does one go about acquiring such a building? Here, too, we see differences between portable and modular structures. A portable building is categorized as personal property. That means that acquisition for a school district can be very speedy, sometimes requiring just a purchase order. Like a traditionally built structure, a modular facility is real property and, therefore, must go through either a design-bid-build or design-build procurement process. Differing viewpoints exist for these latter two methods.

In design-bid-build, the owner commissions an architect to prepare plans and specifications. They are then used in a competitive bid process to select a contractor. In most cases, the lowest bidding contractor is selected, not necessarily the best contractor for the job. Although some feel the lowest bid allows a district to save money, others see it as a sacrifice of quality. In the design-build method, one entity executes both the architecture and the construction. This method is also known as "single responsibility." Employing a design-build firm accelerates the construction time line even more by minimizing "middle man" miscommunication and eliminating costly change orders. In a design-build contract, the firm is required to guarantee error-free plans and provides a fixed price for the project. Therefore, mistakes are resolved by the designer-builder on his or her nickel, and incentive exists to resolve mistakes immediately to lessen the cost. In contrast, through the design-bid-build process, it is not uncommon for numerous change orders to be submitted, thus raising the cost of the project unexpectedly, one change order at a time.

Regardless of the purchasing method, the first step in acquiring a modular building is to choose your modular

builder carefully. You should be able to acquire a building that exhibits the same characteristics described earlier, particularly steel construction, concrete floors, and comparable site-built materials. If you're unsure about the company's product, ask to view a completed project similar to your own. Avoid a builder that offers you huge cost savings. As already mentioned, the savings is not in the building itself if the materials are the same as those used in traditional construction. It's in the accelerated time line, which cuts costs (i.e., interim construction financing, insurance, supervision, temporary utilities, etc.). Make sure the construction method is truly modular and that the company has a proven track record.

Even after you've done all that, convincing a school board or district to hire a modular builder might be difficult. There exists the misperception currently being discussed in this article. Many communities may balk the instant the word *modular* is mentioned. But now many of you are armed with the knowledge that modular and portable do not mean the same thing. Portables are smaller structures that are designed to serve temporary space needs. Although they allow for a less expensive initial investment than modular or traditional construction, they will quickly become more expensive if used beyond their lifecycle, due to maintenance

and upkeep. For a flexible solution to long-term space needs, modular buildings are a great option. With today's educational budgets, a modular structure will give you more bang for your buck than traditional site construction, due to the shorter time line, less disruption to your school campus, and subsequent cost savings. These benefits are realized at the same time a building facility is provided that is exactly and precisely the same as if it were site constructed.

No matter what type of construction is used, the goal is to provide high-quality learning institutions for all of our children. In every case, a school's needs should be evaluated and the viable options explored. Perhaps portables will serve your temporary space needs quite well. Maybe an entire new campus is needed and you will have to choose between design-build and a competitive bid process. As consumers, get to know the products and the terminology. Treat this purchase as you would any other, by researching and knowing what's out there. You may be pleasantly surprised at the many options that lay before you. ■

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