

It goes by many names: Modular, Portable, Prefabricated, Pre-Checked (PC), Relocatable, and Factory-Built. The stories people tell about it can be even more varied than its nicknames. What we are referring to are the engineered building systems, approved by DSA, designed to be wholly, significantly, or partially assembled off-site, transported as components, and installed on a foundation. The fundamental goals have traditionally been to save time, money, or both in the development of the most common types of school facilities. As we learn more about how students learn, concerns about indoor environmental quality and life-cycle costs increase in importance, especially when your installation is permanent, or nearly so. When purchasing a prefabricated system, balance the long-term impact on educational outcomes against your short-run advantages. Whether you are a world-weary or yet uninitiated facilities professional, get ready to learn something new about the...



Manufacturer?

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Need-to-Knows If You Plan to Install a DSA-Approved Component Building System



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1 Take care when “Piggybacking”

Piggybacking” modular components for buildings permanently ‘affixed to the land’ is not allowed, according to the State Allocation Board, The State Attorney General, and OPSC. Historically, “piggybacking” is the allowed acquisition of building components when deemed “personal property” under the provisions of Public Contract Code Section 20118. In 2006, the Attorney General ruled that the section could not be applied to modular building components purchased for permanent installation on a foundation, categorizing them as real property, and not personal property.

“A school district may not, without advertising for bids, contract with another public agency to acquire factory-built modular building components for installation on a permanent foundation.”

In July of 2021, California’s Office of Public School Construction issued a notice reiterating the AG’s opinion and warned that piggybacking could jeopardize state funding.

So, beware!

Piggybacking has been primarily used to quickly mobilize classrooms onto school sites to accommodate new programs, enrollment increases, or class-size reductions. Manufacturers that have capitalized on this method have included AMS, Enviroplex, Silver Creek, Willscot, Global, Mobile Modular, and others. Buildings tend to be highly standardized, and relatively inexpensive. They have often been installed on permanent concrete perimeter footings or on temporary wood sleepers. Without piggybacking, you would have to find another way of purchasing, such as standard design-bid-build, or a collaborative alternative method like lease-leaseback or design-build. Be sure to consult your legal counsel on the best way to proceed given your project needs.

We are interested to see how this topic evolves, however. In February of 2022, the State Allocation Board left the door open for future discussion on the subject. In fact, on June 22, 2022, the SAB reiterated the position consistent with the AG “regarding piggyback contracts and Public Contract Code compliance relative to modular school facilities ... school districts would continue to be ineligible for state funding for projects where the piggyback contract is known prior to recommendation for funding. Staff would return the application to the district.”

americanmodular.com	mobilemodular.com
enviroplex.com	gdvi.net
willscot.com	silver-creek.net



2 Not All Component Building Systems are Created Equal

In general, factory-assembled building systems can take advantage of a controlled fabrication environment and savings in labor rates. Processes are repetitive and automated and there are economies of scale. More specifically, there are as many manufacturing and engineering approaches as there are names for this kind of construction. Here we are going to try to categorize some common products.

3-Dimensional Unitary “Relocatable” Classrooms

This is the classic “relocatable classroom”. Each unit has a roof, a floor, and walls forming a three-dimensional module, set up with all MEP systems pre-installed, ready to plug and play. Think Jenga or Legos. They are transported to the site as box-like units (i.e., two or three units per classroom) and lowered onto the perimeter footing that was placed before arrival. Plumbing and electrical systems are subsequently connected. The list of manufacturers identified above under “piggybacking” are all good examples. Note that these products DO offer “custom” lines to compete with alternative solutions.

Wall-Panel/Roof-Structure Component Systems.

This type of manufacturer has focused on the most common and repeated element of any school building – walls and roof – as an opportunity to save time and money. Factory panel assembly affords better quality control, assembly conditions (because there’s no weather and the environment is controlled), and savings in labor rates. Processes are repetitive and automated and there are economies of scale.

The manufacturers that have taken this approach offer a wide range of value propositions, so a buyer should consider their features carefully. All of them offer some level of PC-approved options, and previously approved designs. All of them will offer accelerated schedules, better-than-stick-built pricing, and a LOT of flexibility regarding MEP systems, and finishes. Each has, however, its “secret sauce”, differentiating its value from its competitors. Check them out.

timber-quest.com
projectfrog.com

buildfolia.com
hummingbirdbuildings.com

Customizable PC Solutions

A few manufacturers have branded themselves around custom solutions. This group of manufacturers provides several different Pre-Checked (PC) designs for fast approval and construction, providing a higher level of customization than the 3-dimensional manufacturers. Their buildings are intended to be permanent and utilize slab-on-grade foundations. This is because their “standards” are primarily applied to pre-engineered structural systems and their assemblies are not as dependent on “assembly line” processes. Meehleis Modular, JL Modular, and Hummingbird by Flint are all examples of this approach. They may use wood or steel prefab wall and roof components, wood beams, or steel frames that are delivered in pieces or 3-D shapes--whatever works best for the situation! These companies are best suited for collaborative delivery methods like design-build or lease-leaseback. In addition to customizable PC Solutions, these manufacturers also offer custom prefabricated buildings including multi-purpose, gym, and two-story classroom buildings to name a few. They have the capabilities to provide all of a school’s facility needs. Configurations can accommodate almost all school facilities’ typologies. These manufacturers also play well in the Wall-Panel Component Systems space but put little emphasis on PC-approved plans.

meehleis.com
jlcbuild.com

timber-quest.com



3 Make Your Choice Based on Timeline & “Fit,” Not on Price

Price matters, but the price you pay will be a function of your time and design requirements. You will surely set your budget, and shop your system to fit within that, but you’ll still be making feature and quality choices. Most manufacturers are going to have a range of material quality standards available to choose from. The more custom and bespoke builders will have more flexibility to comply with school preferences and standards.

The shortest timeline will be available from the manufacturers that provide complete 3-dimensional classroom units. They are transported to the site in box-like units (i.e., two or three units per classroom) and lowered onto the perimeter footing, after which the plumbing and electrical systems are connected. Many units or “floors” can be installed in a day, and hook-ups and trimming out can happen over a week or two: very fast. See 5. Below – this type does have some constraints. If your desired features are within the prescribed standards, you want the “portability” of the perimeter footing installation, and time is hyper-critical, this could be your best bet.

The wall-panel component systems and custom-manufactured systems are also fast, but not as fast. You can see a ten thousand square foot structure go up in a week, but then there will be several more weeks of site installation of finishes and MEP systems. It is still significantly faster than conventional framing, and that results in significant savings in a contractor’s general conditions costs (project-based overhead costs associated with total construction duration), at least in northern/central California.

Time and cost are not the only two factors that may be worth considering, although they are often the drivers. Manufacturers vary widely in their capacity to be environmentally responsible, durable, and supportive of your more progressive educational methodologies. All students certificated and non-certificated staff will benefit from access to natural light and proper indoor environmental conditions. Even the quality and character of interior finishes can affect human performance. When purchasing a pre-fabricated system, balance the long-term impact on educational and health performance outcomes against your short-run cost and time advantages.

4 Two-Story Pre-Checked Modular Buildings still receive full DSA review, not Over-the-Counter

Even though both a one-story building system and a two-story building system can get a Pre-Checked designation from DSA, a two-story modular component system still has to go through a complete DSA approval process for each specific project, whereas only the one-story system can go through the “over-the-counter” process. You may gain some time if the building system has been approved in the past under the same code cycle—or you may not—that’s just the way DSA is. With digital approval processes, note that even over-the-counter can take weeks, not just a day like in the old days. Because one of the primary advantages of choosing Pre-Checked designs is to save time, this is somewhat neutralized during the over-the-counter approval process when dealing with a 2+ story building.

The reason for the different DSA policies is pretty simple, too: two-story projects are fundamentally more complex than single-story solutions, and this is true across Fire and Life Safety, Access Compliance, AND Structural Safety reviews.

Fire and Life Safety (FLS): Two-story projects are inherently more involved when it comes to fire and life safety. Egress calculations are more complex, to ensure all occupants can exit safely from the building and to the public right of way. Also, nearly every two-story building will have a fire sprinkler system, and one that has specialized considerations (i.e. elevator shafts and safe areas of refuge). Because fire sprinklers are a critical building system that DSA doesn’t review over-the-counter, having fire sprinklers will always require a project to go in for a full DSA review.

Access Compliance Section (ACS): With the introduction of stairs, an elevator, and railings, ACS review is more involved as well. An elevator has a unique set of requirements to both provide reliable access to upper floors for those with mobility issues, and also meet the needs of the local jurisdiction responding to emergencies. Maintaining compliant travel distances to all accessible restrooms, drinking fountains, elevators, etc. can become quite a puzzle over multiple levels, and thus DSA wants to take more time to review it.



Photo Caption

Structural Safety Section (SSS): All two-story building projects will require a project-specific Geotechnical Hazard Report. This report, once approved by CGS, determines the foundation system of the building. It is critical to design the building’s foundation for the specific soil conditions found on the site. The structural safety review of a project must consider the entirety of the building’s structural system performance from the soil below it to the impact of the wind blowing around it. Since there is not a one-size-fits-all recommendation for the foundations of two-story buildings, this is an item that DSA does not allow to be reviewed over-the-counter.

This being said, nearly all modular or component building manufacturers offer a two-story solution. Check their websites. They are ready to take your call anytime!



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5 Caveat Emptor: Customize at Your Own Risk

No matter what the product, the very nature of the manufacturing process lends itself to repetitive and efficient processes, automation, and economies of scale. You will see the signs of this when you are ordering your building features from a menu of “standards” and a limited number of “upgrades”. You will see the benefits of repetitive processes when you visit the manufacturing plant and see jigs for automated panel assembly, large 3-D steel frames, pre-assembled plumbing trees, and wiring harnesses lined up for installation along a Henry Ford-like assembly floor. When working with highly-standardized systems (primarily 3-D building products) deviations from a manufacturer’s standards may consequently produce surprising and seemingly disproportionate added costs. If your customization means a building needs to be pulled off the line for modified structures, you may neutralize the savings you achieved with off-site construction. This is naturally avoided in manufacturers that are more suited to customization.

Similarly, bulk purchasing can give the manufacturer savings that a School District cannot access. For example, a District’s standard carpet could have a lower retail price per yard than the manufacturer’s standard, but the “upgrade” price from the building manufacturer for the District’s standard will be higher than their base price. This is because their bulk price for their “better” product was much lower than what the school could buy their preferred product, themselves.

A final word...

The market and regulatory environment are constantly shifting, so pay attention and do your research. Before selecting a system or choosing between a pre-fabricated approach and stick-built construction, visit some projects so you can see how they look and hold up over time. It’s important to note that in some instances, prefabrication can be of higher quality than site-built construction. A higher level of environmental control, material handling, and repetitive

optimized processes will yield a more reliable level of quality. Call your facilities department counterparts to hear real stories about the ownership experience, and what manufacturers and installers are like to work with. Some architects are more experienced than others working with each company and can offer you guidance, as well. Even though this phenomenon can go by many different names, it can be navigated to provide tremendous value to a project and your community.



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Our main office is located in downtown San Jose's Arts District, close to the light rail and buses. Our LEED Platinum office lives above a bustling urban market of local food vendors and an architecture-inspired bar.

Our Sacramento office is located in the revitalized historic R Street District, where a diverse array of businesses and restaurants line the neighborhood.

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