

# 5 Common Cultivation Facility Design Mistakes

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Controlled environment cultivation is such a unique craft—where the most basic and natural elements of our lives collide with sophisticated and advanced technologies. It’s fascinating to consider how the artisanal aspects of cultivation harmonize with the science of maintaining the environmental and support systems the plants need, with the shared goal of producing the highest quality food and medicine. And just as any artisan needs the highest quality tools to craft the highest quality product, so do cultivators need the best possible environment and support systems to coax the best response from the plants they grow.

Unfortunately, this isn’t a tool you can easily go out and buy, and as cultivating in controlled environments is a farming technique still in its infancy for the most part, cultivators don’t have

as many standards to fall back on to help with facility design decisions as other industries. However, there is experience out there, and anyone considering designing a cultivation facility would be well-served to draw on that experience. Just as experienced cultivation facility designers can offer loads of advice on what to do, they’ve all made mistakes and can offer just as much advice about what not to do.

In our 15+ years of experience serving indoor cultivators, we’ve come across five common mistakes that inexperienced cultivation facility designers make:

1. Poor Coordination
2. Insufficient Clearances
3. Inefficient Workflow and Support Spaces
4. Cutting Corners
5. Designing Without a Clear Purpose

# 1. Poor Coordination



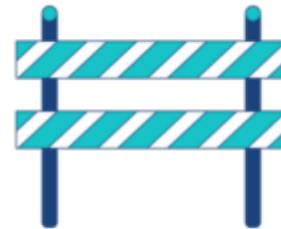
[Coordination of design](#), engineering, and construction trades is absolutely critical. In addition to the high density of electrical and mechanical (HVACD) systems, there are also other supporting functions that require specialized expertise. Start by asking these questions:

- Does the floorplan designer understand how much room the mechanical systems will need?
- Has the structural engineer adequately prepared for the weight of the roof mounted equipment?
- Does the civil engineer understand how much condensate, RO waste and nutrient run off they'll need to account for in the waste-water plan?
- What functions are being managed by a controls system, and who is designing and commissioning it?

These are just a few examples of how critical coordination at the design and construction level is, and how costly it can be if everyone on the team isn't completely aligned on both design integration and scope of work. **Having too many cooks in the kitchen can wreak havoc on your timeline and budget.** One way to avoid these kinds of issues is to ensure that there is an experienced central point of responsibility managing the design project management. Ideally, the design process is fully integrated—from floorplan development, to

lighting layouts, to architectural design and on to facilities engineering. When every component of the facility is considered and implemented at the very beginning of the design, ultimately the process is both faster and less expensive than when decisions are made in silos.

# 2. Insufficient Clearances

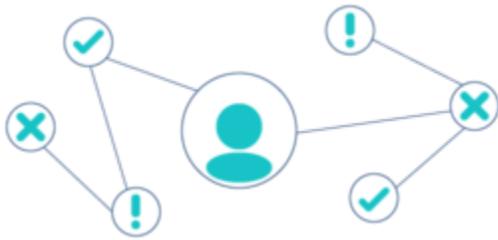


It's hard to resist the temptation to fill every cubic inch of a room with plants, but the smartest designs allow some clearances in the room (at the ceiling and the walls). Why? This helps **homogenize the climate and provides access for maintenance and operations.** Computational Fluid Dynamics ([CFD Analysis](#)) demonstrates that allowing for an envelope somewhere in the room—either above or beside the plant canopy—affords the best opportunity to mix cold, dehumidified air with room air. This ensures that the air delivered to the plant canopy, in both single-tier and vertical applications, has a consistent temperature and humidity. It is also worth noting that sufficient work-space between rows of plants maximizes worker productivity (and comfort).

Keep in mind that much of the equipment for the most critical support functions in the facility—lighting and HVAC/D systems—is accessed from the ceiling. When cultivation rooms are being designed, be sure to consider how maintenance and repair personnel will access those pieces of equipment ahead of

time. Doing so can help you minimize disruptions and costs.

### 3. Inefficient Workflow and Support Spaces



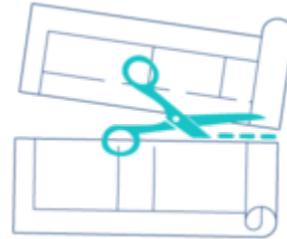
Failing to consider the workflow processes in a grow space will result in **facility layouts that limit productivity**. Most cultivators will tell you that they wish they'd done a number of things differently in their first and even second facilities. This is simply the result of a design team's lack of experience in commercial cultivation. You may have great cultivators and an experienced financial or corporate team, but if your team lacks direct experience in cultivation facility design on a commercial scale, you are destined to repeat the layout mistakes of many growers before you. Your space planner should walk you through the following:

- What makes the most sense to minimize the labor component associated with workflow?
- How much storage space will you need? How wide should your hallways and doorways be?
- How much space should you allocate to drying, trimming, and support spaces?
- How will floorplan design impact odor control and biosecurity?

When answering these questions, consider the order of operations in a cultivation facility, and where plant material travels from germination

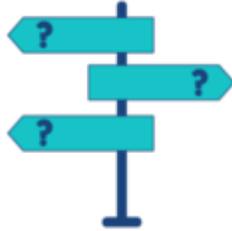
or clone to flower to harvest and on to processing.

### 4. Cutting Corners



Cultivators in new markets are often in a hurry to build, or they start the process underfunded, which can lead to rash decisions. Sometimes this means choosing to focus on technologies that are the cheapest, or fastest to implement, without concern for the long-term costs of those decisions. Unfortunately, many of those cultivators are now out of business because **their facilities weren't built for the long-term realities of the market**. While cultivators don't have to implement the most advanced or expensive technologies out there to be successful, the most competitive cultivators carefully weigh the long term operating costs of the technology decisions they make and ensure that their costs to cultivate will still result in a profit as market prices ebb and flow. That forethought allows them to be more mindful around value-engineering decisions (where it makes sense, and where it doesn't). A reputable and experienced design team can absolutely help with these comparisons.

## 5. Designing Without a Clear Purpose



When designing a cultivation facility, it's always best to start from the end. **What is it that you're trying to accomplish?** You may be thinking, *I want to grow cannabis and make money, duh.* But looking deeper, and being able to more specifically communicate your goals can sometimes make or break your company's future.

For instance, many craft growers are brand-driven. They require super-tight controls so that they can produce repeatable yields, and more importantly, provide their customers with consistent, top-shelf product with every harvest. With that in mind, a craft cannabis operation will have different equipment and design needs than a 100k+ sq. ft. commercial operator who may not be as concerned about controllability, but certainly needs to ensure they have enough power to sustain a suitable grow room climate while minimizing biosecurity risks.

Not only will your facility design and equipment choices be influenced by budget considerations, but they will need to serve your unique facility's goals. A deep understanding of your ultimate goal informs the process, and ensures that each component of the design, from beginning to end, is implemented with your end goal in mind.

## Avoid Mistakes Through Careful Planning and Support From Industry Experts

Each of these common mistakes can be avoided by building an experienced, holistic design team who collaborates early and often. Preventing decisions from being made in a vacuum is your best defense against [delays and expensive change orders](#). And be sure to vet your team carefully.

Choosing an MEP engineering and design team that possesses sufficient experience ensures that one of your most valuable cultivation tools—the environment itself—performs the way your plants need it to, and provides returns on your investment for the long-term.