

Working with Consultants, Architects, and Contractors

by Kevin Scott

Whether you're working on a renovation or breaking ground on a new facility, it's important to carefully choose your building professionals. You'll develop a unique relationship with your consultants, architects, and contractors because ultimately you are in charge – yet you rely on their services and knowledge to bring your ideas to life. The very best in each of these fields will get to know you and try to understand your vision for the project. They'll provide their own insights and offer new ideas, but always respectful of your vision. Hiring the best or most appropriate consultants and architects doesn't preclude disagreements, but it will help to make the design process fruitful and the construction phase as efficient as possible.

Perhaps the single greatest piece of advice that can be given is to employ consultants, architects, and contractors with previous planetarium building experience. We wouldn't think of taking our automobile to a repair shop that specializes in lawnmowers, yet it is extraordinarily rare for a new planetarium project to employ an architect with experience designing and building planetaria. The reasons may be political, financial, or simply that one cannot find a "local" architect with experience. It bears repeating – find an architect familiar with the nuances of planetaria and you will save time, money, and your own sanity.

Consultants

There are three basic varieties of consultants. There are former planetarians that now specialize in planetarium design and operation. You'll also find "consultants" currently working in planetaria around the world. Finally, you may run across consultants that are familiar with planetaria but tied to a particular vendor or planetarium manufacturer. Each will, usually for a fee, provide advice on building or renovating a theater. Consultants can be a wonderful resource if carefully chosen and utilized, but each comes with their own unique difficulties.

If you're renovating an existing theater, don't overlook your current staff. Their collective experience may prove useful, even if you intend to implement a dramatic change in philosophy or program emphasis. Given the opportunity, existing staff may provide creative suggestions worthy of consideration. All too often, administrators dismiss their current employees as the source of a status quo without giving them the opportunity to shape their own future. Having said that, sometimes a planetarium really is stuck in a rut and needs a fresh approach. Still, it takes very little effort to simply ask the existing planetarians for their input.

When designing a new planetarium, the best consultant may be the person who will supervise the day-to-day operations of the theater once it is completed. He or she will have a vested interest in making sure that the new planetarium is the best that it can be when utilizing available resources. Obviously this person will have their own opinions on the development of the planetarium, but the idea is to bring in a person that shares your vision and understands your expectations. The experiences of the members of the

International Planetarium Society have shown that many costly oversights, design shortcomings, and construction errors in new planetariums could have been averted if an experienced planetarium director had been hired early enough in the planning stages. Find the funding to hire this person in advance.

Perhaps the first task when considering a potential consultant is to thoroughly check their work history and professional activities. You might ask some of these questions:

- Does the consultant have a positive reputation among his/her peers?
- Does the consultant have professional experience working in a planetarium?
- Do you like the style of projects that the consultant has worked on previously?
- Do you agree with their overall approach to planetarium design?
- Is the consultant a representative of a planetarium vendor or manufacturer?
- What are the consultant's fees and terms of compensation?

Given the unique nature of the planetarium chamber, it's appropriate to look for consultants that are either currently working in planetaria or have past experience in one or more theaters. This experience will color their approach to design and theater operation, but good consultants will hold your interests above their own.

Beware of consultants who also sell or are associated with companies who sell planetariums, especially in the very early planning stages. If you have independently decided to purchase products or services from a vendor, then, by all means, consult with them as to how to plan for, use and maintain their products. Let common sense be your guide.

Non-vendor consultants, on the other hand, work for you alone. The best ones will take the time to get to know your unique goals, needs and resources. If you decide to use such a consultant, make sure that he or she has recent experience with, or is currently working in, the kind of planetarium you have in mind.

In addition to visiting established planetariums and talking with their staff, the professional planetarium organizations listed in this document can advise you of regional and international planetarium meetings. Some of them will also have resource lists to help you further, and many publish journals and special reports. The International Planetarium Society Directory gives addresses and technical statistics of planetariums worldwide; a useful resource when searching for local contacts.

Architects

Chances are, designing a planetarium will be a first for your architect. If you're lucky, you'll find an architect that actually understands what a planetarium is. To be fair, most will find the novelty of this round room to be quite a challenge and they'll take on the design with great enthusiasm. If you simply cannot find a

local architect with planetarium design experience, at the very least you should consider inviting an experienced architect to meet with your chosen firm. Otherwise, find a theater that you want to emulate and visit it in person with your architect, or request a set of drawings to define a starting point. Tread carefully here – you can't use another firm's design drawings without proper compensation and your own architects might feel that you question their skill. Still, experience is invaluable.

Design is the most critical part of the construction or renovation process. The more clearly you can specify every detail of your theater, every piece of equipment, every light fixture, every cable, the better off you'll be. Insist that your architect work on solutions to the problems that you give them by coming up with several options and alternatives. Round rooms seem to confuse architects and contractors. Add a dome and things seem to be even more puzzling. You might even sketch designs and options for your architect, helping them toward the solution you favor. Note that some architects are great design architects but not as strong when it comes to actually building a project. In fact, some will only do design. A construction architect is very important to avoid all sorts of headaches. Construction architects specialize in the structural details of a project. They will take the design drawings and flesh out all the particulars that contractors need. There are also special construction engineers that will be involved when it comes to HVAC, electrical needs, and structural issues.

Ask your architect for visualizations of the planetarium chamber. Perhaps the most instructive is to request that your architect execute the design in a 3D modeling package. This exercise will uncover innumerable design considerations that architects would otherwise never consider. Some architects will also create special sets of drawings just for the planetarium. One such drawing is a continuous 360-degree elevation. These can be invaluable when positioning support structures, stairs and doorways. Building physical models and mockups can help as well, especially when evaluating sight lines.

Most major equipment manufacturers publish installation guides for their particular star projector, video system, or laser projector. Make sure your architect gets several copies of these guides so that not only principal architect has a copy, but all of the assistants and design architects have a chance to see them too. You'll need additional copies for your general contractor and for appropriate subcontractors. These guides should almost be a design bible, and referenced often. You as the owner need to make sure that the guidelines are followed appropriately and that each party involved knows how to contact the manufacturer for the resolution of problems or other installation issues. Make sure that you understand the rationales behind the directives in these books. You might even consider having a meeting with your architects and all of your major equipment manufacturers to review design drawings. Manufacturers can often spot potential integration issues, omissions, and other design concerns. Similarly, you'll want to meet early and often with your project engineers, especially the electrical and HVAC engineers. Review design drawings with them and make sure they understand the special needs of the planetarium and its specialized equipment.

Architects can be your best friends when it comes time to dealing with building safety inspectors. Depending on your local laws, an architect may be able to work around any number of regulations dealing with fire codes, exit signs, sprinkler systems, and other safety issues.

Have your architect design for the future as time and budget allow. This can mean extra conduits for cabling, extra electrical circuits, cove space and other oversize structures to allow for growth and future technologies.

Contractors

Quite often a large building project will have a primary job contractor (General Contractor or GC) and then several subcontractors for things like steel, concrete, HVAC, plumbing, electrical, voice/data networks, drywall, flooring, painting, etc. You'll be amazed at the number of different companies that may be involved. The GC coordinates all the construction efforts and will normally have a construction foreman on-site supervising day-to-day activities. This person will hopefully become your best friend. Every client-contractor relationship is different, but as with any business partner, a little respect goes a long way. It is highly probable that none of the construction crew or management will have ever built a planetarium before. It's also very likely that they will be completely unfamiliar with planetaria in general. You'll probably spend a great deal of time explaining the planetarium environment to your architect. Be prepared to do the same with your contractors and construction engineers. Just as round rooms confuse architects, they confuse contractors.

When problems arise, be cognizant of the chain of command and how well that sequence is working at your jobsite. There may be times when you need to meet with both the Sub and GC to be sure the issue is resolved correctly, and not rely on the GC to interpret and relate your needs. It doesn't hurt to be very watchful and keep up on everything that is happening during the construction process, but respect the workers such that you aren't seen as a nuisance. It's also not a bad idea to constantly review prints and drawings to be sure nothing is left out. Misplaced outlets or conduits are easy to move if caught right away.

During construction of any planetarium, the architect and GC will most likely plot out a coordinate system for your theater, including special markers for dome center. Develop a common vocabulary for these markings because they are related to the most critical aspects of planetarium construction: the primary instrument and projection dome. In a tilt dome configuration, these markings become even more critical, and complex. Knee walls and cove shelves will be constructed from these markers. Conduit and HVAC ducts will be sighted using the dome center. Seating is related too, along with almost every other feature in the theater.

Depending on your schedule, you'll need to install (or re-install) some equipment before construction is actually complete. Plastic bags or tarpaulins can serve as extra protection from dust and paint when placed on existing equipment.

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