



The Professional Roof Consultant: An Architect's Perspective

By Franklin B. Swanson, AIA

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Architects, contrary to popular belief (especially among other architects), do not have all the answers. Case in point: in 1934, Mr. Herbert Johnson, then CEO of the S.C. Johnson Wax Company, was entertaining friends and associates in his newly completed residence designed by none other than Frank Lloyd Wright. During the dinner, a thunderstorm erupted and water soon appeared over the dinner table in the form of roof leaks. Granted, the roof forms were dynamic and the details complex, but there it was...water on the dining room table. Embarrassed and enraged, the irate Mr. Johnson immediately called on his architect complaining that the leaking roof was ruining his dinner party and that water was dripping on his head.

The fact of the matter is that there are very few things that are more basic or essential to the human condition than the necessity for shelter. An important component of that need is protection from the elements. When architects design new buildings, we are required to provide structures that are safe and that shelter their inhabitants from the extremes of the outside environment. A building that does not do this because the roof does not perform is a building that has failed.

Why then, since this aspect of any design is so critical, do we still encounter roof deficiencies and how, as architects, can we deliver a more reliable overall roof

assembly to our clients? I believe that one solution is for architects to be more proactive and insistent with their clients in requiring the inclusion of roof consultants on the design team. This may not be essential for all projects, but for those that may have complex or large-scale roof systems, the benefits can more than pay for the cost of an additional consultant. This is especially true in the current climate of construction where schedules seem to be more and more compressed and skilled labor harder to find.



I think there are four major areas of consideration that any project architect should review in order to decide whether or not it is beneficial to include a professional roof consultant on his design team. They are:

1. Specialization,
2. Appropriateness,
3. Detailing, and
4. Follow-through.

Depending on the type of project in question, these issues may play an important role in determining the necessity for having a roof consultant on the design team.

Over the past 20 or 30 years, the roofing industry has seen an explosion in the development and production of new materials and assemblies. It used to be that the average architectural practice had a developed set of roof details that were “tried and true” and that could be put to good use on a majority of the projects that the architects were typically accustomed to designing.

This still holds true for many firms, but with the emergence of new roofing materials and systems, what used to be the “standard” is becoming more and more unclear.

Innovative roofing materials for specialized building applications are making it increasingly difficult for the design professional to make intelligent and informed decisions about materials and assemblies. Indeed, this is just the sort of case where architects, who know a little about a lot, need to know more. A professional roof consultant can provide that information and help sift through the scores of specialized roof types while assisting the architect in understanding the physical characteristics and attributes of different systems. Whether the need is for a roof that performs best in a certain application or one that responds to a level of environmental sustainability, knowing the physical limitations and attributes of which a certain material or assembly is capable is an invaluable resource that the roof consultant can provide.

This leads directly into the next area of consideration that the architect should evaluate, which is the issue of appropriateness. Selecting the most suitable roofing system for any project is critical. In order to be able to do this, the designer must have an extensive knowledge of how certain materials perform under prescribed conditions and circumstances. Any roofing manufacturer will tell you that his or her systems work great, but objectivity is something that is hard to come by from someone trying to sell a product. Unless the architect is up to date on roofing issues and performance statistics, it really isn't a well-informed basis on which to make critical judgments. The roof consultant can provide this objectivity in order to fully understand and evaluate systems that work best in the type of application appropriate to the project.

A careful evaluation of appropriate roofing materials and systems can yield information that benefits not only the design, but can also help the owner in other ways. Life-cycle cost analysis of roof options can provide data that will help reduce costs in the long-term which, depending on the type of client in question, may affect decisions on other projects.

As an example, the public school district for the county where I work has adopted a roof design assembly as a “standard” in low-slope applications for new school designs. This decision was based on a roof analysis and design that we performed with the

assistance of a local roof consultant for a new high school prototype project. Indeed, this very same school system now requires that all its architects include a roof consultant on the design team throughout the design process for any school project.

From my perspective as an architect, one of the most beneficial aspects of having a roof consultant on my team is the fact that I know the details they are generating, as well as the relevant specification sections they provide, are getting the individualized attention that today's construction documents require. The technical (as well as practical) knowledge that the roof consul-

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tant provides can prevent critical mistakes from occurring early in the design process by others who may not fully understand a material or system. Typically, we (that is, architects) rely on shop drawings or other information provided by the manufacturer for assistance in making sure a design works or to verify that what we designed is correct. But the day-to-day experience that a specialized consultant can provide with correctly designed details most certainly pays in the long run.

And finally, the last item for architects to consider when deciding if a roof consultant is appropriate for the design team is that of follow-through. Whether the details are drawn in-house or are provided by a consultant, any design is meaningless if not installed correctly. Possibly the most important aspect of a roof consultant's services are those of construction administration. Architects vary on the levels of construction administration they provide, and indeed, it may be unnecessary in many cases, depending on the circumstances. However, in most cases, the design architect may visit a jobsite once a week and even then, is being pulled in a hundred different directions, looking at anything from rebar placement to door hardware installation problems.

A roof consultant who is on-site to inspect and review a roof-related construction activity is focused solely on that activity. An experienced consultant can anticipate problems, detect incorrect installations, and prevent construction delays by ensuring that it is done right the first time. The documentation that is provided con-

cerning the roofing installations can also be extremely helpful if, for any reason, problems arise in the future. In fact, the role that roof consultants play during construction has become so important to many owners that several public school systems throughout North Carolina now require the presence of a roof consultant on-site during construction and installation of the roof.

I am a firm believer that roof consultants are an important and vital component of any successful design project. My experiences with projects that involved these consultants is that design decisions were more informed and relevant, the bid process was

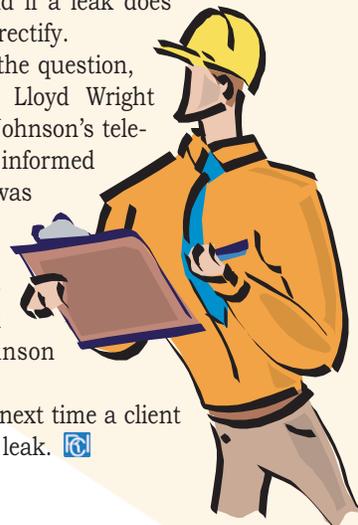
smoother and generated fewer questions (as well as fewer addenda to the construction documents), construction was better coordinated, requiring fewer RFIs or subsequent bulletin drawings, change orders were kept to a minimum for roof-related items, and that at the end of the day, the final product was a better built roof with fewer problems.

The result? From my perspective, the result of designing with a roof consultant's input is that I rest easier when it rains - which, I hope, is something that the owner experiences as well.

Architects hate the dreaded call from an owner (which many have received at one point or another in their careers) saying, “My roof is leaking.” I can't guarantee that having a roof consultant on board as part of the design team will eliminate those calls; however, I am certain that those calls will be fewer and if a leak does occur, easier to rectify.

Which begs the question, how did Frank Lloyd Wright respond to Mr. Johnson's telephone call when informed that his design was leaking on his client's head? Mr. Wright simply suggested that Mr. Johnson move his chair.

Try that the next time a client calls with a roof leak. 





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