

PLAY NICE:

“DEALING WITH” YOUR COMMISSIONING AUTHORITY

BY KEITH JOHNSON, PAUL JOHNSON AND JEFF YIRAK

Imagine the scene of a typical project: from the A/E perspective, the design team is working hard, devising innovative and efficient designs on a tight budget and schedule, keeping the project owner happy. Now, out of left field as construction begins, some commissioning guy comes in swinging, criticizing the design, saying it'll never work.

Now let's turn the tables to the commissioning authority's (CxA) perspective: construction is beginning, and the CxA has only just come on board to ensure the owner's project requirements are met through the design, and that the equipment is installed and operating at its optimum level. He's playing catch-up to review the designs and understand intent, observe construction, conduct functional testing and make recommendations to ensure the owner gets what they need, but often feels like no one respects his input, or is even listening.

HAS THIS EVER HAPPENED TO YOU?

It doesn't have to be this way! When an architect, engineer and commissioning authority are all on the same project, we need to act like we're all on the same team. We're all working for the same entity and towards the same goal, but often we find ourselves at cross purposes. We must ensure we understand each other's motivations, investments and directions, and by doing so can improve this relationship to benefit the project with better functional, cost and schedule performance.

There are different perspectives and driving philosophies on commissioning and its application to K-12 projects such as the challenges commissioning authorities face and how we can each help to overcome these challenges and enhance the value of the commissioning process. You can improve team collaboration on your project by synergizing the relationship between the design team and the commissioning authority.

WHAT IS COMMISSIONING?

Though nuanced in the many interpretations of commissioning's definition, we can agree that it is a process of review by which a project's design, construction and systems operation (typically mechanical and electrical systems, but now including the building envelope as well) are aligned to the owner's expectations and needs. Commissioning provides quality assurance through

the life of the project and into occupancy, and a third-party viewpoint that is valuable throughout. It helps ensure that as-built building systems operate with proper functionality, within the engineered parameters and expectations of the design team and owner. The process ideally starts in pre-design and continues all the way through design and construction and into turnover to ensure the owner's project requirements are met. Sometimes this doesn't happen, and some of the benefits of a rigorous and holistic commissioning program are lost.

HOW DO YOU APPLY THE COMMISSIONING PROCESS TO A K-12 NEW CONSTRUCTION PROJECT?

Commissioning supports LEED/WSSP credit achievement, and depending on an owner's project requirements; where LEED or WSSP credits are involved, commissioning has a couple paths to follow. If the project pursues LEED certification, there are credits available for engaging Enhanced Commissioning, whereby commissioning starts with design review and comment early in the process. Without this prescription, commissioning typically starts at construction, although we find there is added value if the CxA is onboard early in the project as we consider alternative systems and equipment selection and to provide design review. If the CxA is retained by the Owner only for construction/closeout services, we lose some of that expertise on the design side. As designers and commissioning authorities, we advocate for this earlier start for commissioning, whether or not guided by implementing LEED Enhanced Commissioning.

Regardless of when the commissioning process begins for a K-12 school project, a rigorous and holistic commissioning program should include Owner's Project Requirements/Basis of Design review, commissioning process planning, construction observations/inspections, systems testing and trend logs, operation and maintenance training review, seasonal testing of systems such as heating and air conditioning, post-occupancy

follow-up and possibly measurement and verification for LEED and Energy Code requirements, depending on the contract.

WHAT ARE THE CHALLENGES FACED BY THE COMMISSIONING AUTHORITY?

The CxA faces multiple challenges. If the CxA is not engaged during the design phase, they face the barrier of playing catch-up when brought on at the beginning of construction. Compounding this, the construction schedule and commissioning schedule are often disjointed, causing the commissioning process to drag on well after the scheduled construction completion date.

In a role as the owner’s advocate, purposefully designed to provide critical and disinterested review, the CxA typically find themselves in a position that can lead to a climate of confrontation involving the design engineers, the contractor, the subcontractor(s) or some combination thereof. Coupled with that is the ironic and often frustrating fact that with no contractual authority over anyone, the commissioning authority has no ability to direct changes, but can only provide recommendations during design and report observations during construction. We have found that collaboration facilitates the process much more smoothly than confrontation, and work hard to ensure respectful and inclusive communication of commissioning subject matter.

HOW CAN THE ARCHITECT HELP OVERCOME THESE CHALLENGES?

In its current language, the AIA Owner-Architect contract identifies the architect as the “initial decision makers.” Being fair and responsible in this role is huge. We collectively recommend that architects advise their clients to start thinking

about commissioning early on, and guide the team’s mindset towards a collaborative end. Think of a CxA as a continuous constructability and value engineering review, if started early.

HOW CAN THE ENGINEER HELP OVERCOME THESE CHALLENGES?

Again, our first recommendation is to advocate for early CxA engagement, the aspect here ensuring that the CxA understands the design intent. Secondly, as part of encouraging a collaborative environment, make communication easy and frequent, and be open to input during the design phase - (from the architect as well as the CxA. It is also important to be knowledgeable about construction tolerance realities and the inevitable changes that arise and influence the actual performance of a system versus engineering calculations. We acknowledge that the CxA provides valuable review comments during design and their ability to make the system function during testing is ultimately a reflection of the design.



The end results are well worth the effort.

COURTESY OF KEITH JOHNSON. PHOTOGRAPH COURTESY OF DOWA |BI

Completed curved wall framing at admin office, Sandy High School, 2012.

WHAT MAKES A GOOD COMMISSIONING AUTHORITY?

The primary attributes that a successful CxA will have are broad systems experience; being personable, organized, and reliable; a commitment to comprehensive and objective observation; and an ability and willingness to provide pertinent suggestions when issues arise. A strong background in engineering is also a plus towards understanding design intent, and experience with the construction process is also helpful to build a realistic view concerning an acceptable range for system performance tolerances. Certifications like the Building Commissioning



Crowded mechanical interstitial spaces require precise design and close field coordination.

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Systems and piping chase above admin office with curved wall framing, Sandy High School, 2012.

Field conditions necessitated the addition of an unplanned piping soffit.



COURTESY OF KEITH JOHNSON PHOTOGRAPH COURTESY OF DOWA-IBI

Piping soffit, Sandy High School, 2012

Association's Certified Commissioning Professional (CCP) may also be an indicator of ability.

HOW DOES THE COMMISSIONING AUTHORITY HELP DURING DESIGN?

By now you've surely realized the early involvement of the CxA in design for the input and independent third party view they are able to provide is recommended. There are many instances where the CxA provided great input during design catching system foibles, recommending remedies and helping to incorporate the commissioning requirements and owner's project requirements into the contract documents. Without substantial extra project cost, the CxA can serve like a continuous QC presence, also able to provide constructability reviews, value engineering recommendations and even another set of eyes on substitution requests during bidding.

HOW DOES THE COMMISSIONING AUTHORITY HELP DURING CONSTRUCTION?

"Well, the architect's drawings are only a suggestion of what the building is to be like." With all due respect, this telling comment Keith Johnson once heard from a general contractor confirms why we value commissioning during construction. Commissioning is a quality check on workmanship and a means to ensure the general contractor's compliance with design intent. The CxA provides oversight and a second set of eyes on the systems from a more detailed perspective, which also allows the systematic testing procedures to confirm that operation is as intended. Commissioning is a code requirement in Washington State; the contractors know that commissioning is going to be completed and they have to cooperate.

An ability to recognize and deftly address the subtleties in the team dynamic and flexibly progress towards a resolved outcome is crucial; a good CxA becomes the binding "force" that pushes the issues to completion while maintaining a progressive and collaborative environment. But while the CxA is "out there testing things and making it work," they can't work in a vacuum, and require the ongoing presence and support of the design team to provide input on identified issues so that the design intent is maintained.

THE TAKEAWAY

Ultimately, the owner's, end users', and the maintenance staff's experience with their facility governs the perception of project success; it is in everyone's best interest that the project team as a whole meets their goals and that the goals align with the owner's needs from the get-go. Commissioning is a valuable effort in ensuring a project results in systems that work exactly as designed with optimized performance. The commissioning process should start early with commissioning activities integrated into the design, construction and post-occupancy phases of a project. We encourage our colleagues to consciously create a project atmosphere of collaboration and open communication, enabling and empowering each other to meet the owner's goals and deliver a successful project together.

About Keith Johnson

With over 30 years of architectural experience, Keith Johnson, AIA, LEED AP, DOWA-IBI, has a keen understanding that architecture incorporates other disciplines besides design, including business, fine arts, psychology and communication. As a project manager he is responsible for balancing the integrity of the project's design and coordinating schedule and budget. Keith has the unique ability to comprehend the integrated nature of a project and the aptitude for maintaining its time line and budgetary constraints. Most recently, he was the project manager on the new 310,000 sf Sandy High School replacement project, which is the recipient of the national 2013 AIA Committee on Architecture for Education Design Excellence Award.

About Paul Johnson

Paul Johnson, P.E., LEED AP BD+C, Wood Harbinger, has over 36 years' experience in mechanical engineering and leads Wood Harbinger's Mechanical Engineering team with a holistic approach and extensive knowledge of the project process. Paul has an exceptional track record of guiding his team towards successful project execution and client satisfaction. He has served as principal-in-charge, project manager and mechanical engineer for a variety of building types, with particular focus on K-12 and university projects and also has substantial experience with commercial and residential buildings, communications

facilities, and industrial and maintenance shops. A member of Wood Harbinger's Sustainability Committee, Paul is an ardent supporter of sustainable design and brings an energy efficiency focus to all his work. Paul is a board member of the ACE Mentoring program for high school students in the greater Seattle area, and has contributed multiple articles to Wood Harbinger's Fuel for New Ideas E-Newsletter as well as the Insights blog.

About Jeff Yirak

Jeff Yirak, P.E., LEED AP BD+C, O+M, Wood Harbinger, loves the "high-wire act" of diagnosing and solving complex, unique problems. He has 12 years' experience in design, construction, commissioning and validation of commercial and institutional projects, with a background in pharmaceutical manufacturing

facility management. Jeff is a skilled communicator and enjoys interacting with clients. He serves as project manager for the majority of Wood Harbinger's commissioning projects, which encompasses a diverse portfolio of aviation manufacturing facilities, central energy/utility plants, K-12 and university campuses, and healthcare facilities. His well-rounded experience allows him to provide comprehensive and creative solutions to meet project objectives. Jeff is an accomplished commissioning industry thought leader, with extensive presentation experience and published articles. He has conducted seminars at local AIA and ASPE chapter events, delivered presentations at industry conferences including NCBC, served as an ACE Program mentor for Washington high school students, and served two terms as treasurer of the NW Chapter Building Commissioning Association Board of Directors.

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