

Quality in Construction (QIC)

Microsoft Teams Meeting

November 17, 2021

9:00 am - 12:00 pm

Attendees:

- Ann McGauran, OSA
- Alan Robertson, OSA
- Chris Byerly, OSA
- Ted Hayden, STREAM
- Jennifer Murphy, STREAM
- Brian Wilson, STREAM
- Austin Oakes, UT
- Michelle Crowder, UT
- Patti Miller, THEC
- Paul Marshall, THEC
- Philip Zoch, APSU
- Bill Waits, MTSU
- Jim Cobb, TTU
- Tony Poteet, UM
- John Kenny, ACEC
- Jim Prillaman, ACEC
- Kurt Boyd, ACEC
- Rich McNeil, AIA
- Greg Campbell, AIA
- Trey Wheeler, AIA
- Ashley Cates, AIA
- Grace Rodgers, AGC
- Jason Madeiros, AGC
- John Gromos, AGC
- Marty Gibbs, AGC
- Leslie Gower, AGC
- Bryan Hay, ABC
- Clay Crownover, ABC
- Bob Pitts, ABC
- Chris Bainbridge, DCI
- Philip Cameron, DCI

Discussion:

- I. A role call was conducted, and each attendee identified themselves by name and the organization that they represent.
- II. State Fire Marshal's Office (SFO), Codes Enforcement Update – Chris Bainbridge, (DCI)
 1. Chris Bainbridge provided a presentation regarding code enforcement. He indicated that all staff are operating at home and noted an average of 10-12 day turnaround time for plan reviews.
 2. Chris Bainbridge indicated that inspections are delayed due to staffing issues and that efforts are ongoing to improve inspection times. He indicated that in-person inspections are preferred but that remote inspections are possible if needed.
 3. Chris Bainbridge noted the recent completion of State residential code adoptions and provided links to these details. He stated that commercial code adoption is ongoing and estimated that commercial code adoptions are about one year from completion.
 - a. Ann McGauran asked if any QIC members were having any concerns with plan reviews where State codes are not aligned with local jurisdictional codes.
 - b. Jim Prillaman indicated that their practice is to list both State and local codes and that the design intent meets the most stringent of the two.
 - c. Alan Robertson asked Chris Bainbridge to speak to the fact that the State typically does not adopt codes early. Chris Bainbridge indicated that the State does this intentionally in order to assess code impact but that efforts are underway more to quickly adopt codes in the future where feasible.
 4. Chris Bainbridge noted that the SFO releases a quarterly newsletter in order to keep the public aware of current issues and solicited input from the QIC members. He concluded the presentation and solicited questions.

- a. Alan Robertson noted discrepancies by SFO between approved plans and field inspections and that concerns appear to arise where new construction and existing conditions interface.
- b. Chris Bainbridge noted that there is a process to minimize these discrepancies internally. He stated that a visual inspection of an existing building during pre-design is not typical but that the SFO can conduct these inspections if requested. Philip Cameron seconded this statement and encouraged designers to request inspection of existing conditions where needed. With no further questions from the QIC members, Chris Bainbridge concluded the SFO presentation.

III. State Process Efficiency Discussion – Ann McGauran, (OSA)

1. Ann McGauran opened a discussion and solicited members to share opinions on potential opportunities for increased efficiency relating to construction procurement and delivery processes.
 - a. Rich McNeil suggested that the state issue a timetable for project designer and CMGC selection as a means to better estimate RFQ/RFP issuances.
 1. Austin Oakes noted that UT had about 90% of new budget projects in front of the SBC within 2-3 months.
 2. Brian Wilson noted that STREAM typically aims to get 80%-90% of projects approved by SBC in October.
 - b. Trey Wheeler noted that there does not appear to be a relationship between project complexity and the amount of time allowed for response where less complex projects may allow for more time for response and more complex projects may allow for much less.
 - c. Greg Campbell suggested that providing for more time on the front end of a project may better contribute to more efficient project lifecycle, including design, construction and delivery.
 - d. John Gromos added that speed to market might be improved through concurrent early release packages such as site/civil packages and the ability to break out long lead time equipment from GMP where possible.
 - e. Greg Campbell indicated that a successful approach to compressing the design and construction schedule has been related to having concurrent design and construction contracts operating as early as SD phase or during pre-design.
 - f. Jim Prillaman agreed that CMGC involvement early and at all project scales may be beneficial. Jim also indicated that replacement and improvement projects may benefit from engaging design services during the programmatic studies or even prior to budget submission in order to more accurately define project needs and scope.
 1. Brian Wilson indicated that STREAM allocates about \$2 million each year for such services and is open to areas of continued feedback from the design and construction industry on ways to utilize these funds toward improved delivery efficiency.
 2. John Kenny noted that over the last couple decades that building programming has improved.
 3. Ann McGauran indicated that STREAM, THEC, F&A and the SBC have been working to gain a better understanding of project programming and how projects are moving toward completion.
 4. John Kenny stated that project programming needs can be impacted by changes in faculty or changes in needs which may impact programming verification schedules.
 5. Brian Wilson noted that STREAM is working to better integrate users into building programming and stated that major changes to programming may require project phases to be re-set to programming.

- g. Alan Robertson inquired as to the impact of increased enrollment on programming for the UT Nursing Building.
 - 1. Austin Oakes stated that the Nursing Building programming began 12 months prior to SBC action. He agreed that faculty changes can have impact on programming. Austin stated that in the case of the Nursing Building, enrollment growth contributed to programmatic revisions and that anticipated enrollment changes can be factored into future assumptions driving programmatic development.
- h. Ann McGauran asked if construction and designer representatives were saying that the State may benefit from CMGC delivery even on smaller projects such as simple chiller replacements.
 - 1. Trey Wheeler stated that in his opinion there is no longer a compelling reason to stick with the traditional design/bid/build process. Further noting that it is not common within the private sector.
 - 2. Bryan Hay agreed that speed to market, supply chain issues and material cost volatility have led to a shift away from typical design/ bid/ build delivery.
 - 3. Greg Campbell noted the benefits of qualification-based selection and CMGC delivery citing improved planning, constructability, speed to market resulting in overall better product delivery to the client.
 - 4. Bryan Hay stated that packaged permitting has driven the market away from design/ bid /build in order to expedite projects where multiple early release packages can facilitate project mobilization and improve cost management.
 - 5. Ann McGauran noted that concerns at the State level have arose when construction has commenced but early release packages have missed the target budget and adding funds becomes necessary in order to complete construction.
 - 6. Greg Campbell again underscored the value of relying on early collaboration with the GC in order to better estimate projected costs via direct and consistent communication with subcontractors.
- i. Ann McGauran summarized previous responses stating the sophistication of the contractors and the design groups across the State in combination with improved programming documents or pre-planning documents by the SPA's may assuage concerns associated with potential movement away from design/ bid/ build delivery toward CMGC delivery.
- j. John Gromos noted that a big differentiator in the private sector is a true RFP or RFQ where the owner is short listing 3 or 4 contractors whom they are confident can reliably perform and deliver projects as expected.
- k. Brian Wilson inquired to the group as to what an appropriate percentage of self-performed CM work typically is and how the subcontractor market responded to this during bidding.
 - 1. Greg Campbell noted that CMs in the private sector are typically sophisticated in determined the best value proposition between self-performance or subcontracting components of the work.
 - 2. John Gromos noted that in private sector and federal work, CMs are afforded measures of flexibility that encourage contractors to optimize self-performed work by enabling contractors to determine the most effective route to delineating self-performance noting that private sector or federal contracts often define a minimum of self-performance opposed to maximums as with State contracts.
 - 3. Brian Wilson noted that a historical challenge with the State relates to the priority of allowing broad opportunity to access State projects where large contractors may be in a position to out-compete smaller contractors through such contracting models.
- l. Alan Robertson noted that equal access to State projects as a priority will likely result in the continued need for design/ bid/ build delivery especially on smaller projects and

that proactive approaches to replacement and improvement projects can lend toward balancing project access, competitiveness and measures of efficiency.

- m. Ann McGauran noted that she appreciated the discussion especially given the State's desire to allocate dollars to projects in a timely and effective manner.

IV. HPBr, BIM and Project Team Evaluations – Chris Byerly (OSA)

1. Chris Byerly noted that OSA has received HPBr documents for approximately 97% of 2020 substantially completed projects.
2. Chris noted that OSA has received project team evaluations for around 70% of the 2020 substantially completed projects and that there is a substantial backlog of 2021 documentation for both HPBr and team evaluations on file that will be updated based on the January 25, 2022 capital projects reporting.
3. Chris Byerly solicited questions and comments relating to HPBr.
4. Ann McGauran queried the group as to potential credit opportunities for HPBr or other suggestions as to the continued improvement of HBPr in order to enhance the quality of product delivery to the State.
 - a. Jim Prillaman agreed that the mechanism of HPBr is more effective in terms of cost and execution than other high-performance building standards.
 - b. Rich McNeil also agreed that the HPBr standards and processes are preferred when compared to other standards and believes that the State should continue to execute these standards due to its success in being results oriented while minimizing documentation requirements.
5. Alan Robertson asked Chris Byerly if all SPA's had been given the opportunity to participate in the HPBr and project team evaluation presentation. Chris stated that all SPA's had been provided the opportunity to participate and further noted that if a SPA would like an update on the presentation or a copy it for reference that they can contact him directly.
6. Ann McGauran noted that based on feedback from QIC members and the industry as a whole, that OSA continues to facilitate the implementation of HBPr as opposed to other high-performance building standards.
7. Chris Byerly reminded SPA's that for current BIM projects across the State to rely on OSA as resource to navigate BIM requirements as needed especially with regard to OSA review of draft RFQ's.
8. Ashley Cates requested that OSA continue to provide BIM, team evaluation and HPBr learning opportunities and updates to the design and contractor industry when pertinent. Ann McGauran and Chris Byerly agreed to continue to keep both groups informed as to these opportunities and updates.
9. John Kenny inquired as to the status of the project team evaluation data summary. Chris Byerly noted that OSA is continuing to add evaluations and that he estimates a comprehensive set of evaluation information should be available within a year to 18 months. He and Ann McGauran noted that should a SPA desire an interim data set for the team evaluations, that OSA can provide that upon request.

V. SPA Projects Update – Tony Poteet (UM)

1. Tony Poteet noted that the STEM project is providing 65,000 sf of engineering space and the renovation of about 15,000 sf of existing space. Tony stated that given escalation, current VE processes are seeking to eliminate about \$2 million in cost reduction.
2. Tony stated that they are currently in the process of establishing their capital maintenance projects for next year.

VI. SPA Projects Update – Bill Waits (MTSU)

1. Bill Waits highlighted 2 projects that are currently in design indicating that both will implement CMGC delivery. He noted the Applied Engineering Building as a \$54.9 million project and estimated CMGC advertisement for the end of January or early February 2022. Bill also noted the Student Athlete Performance Center as \$66 million project and anticipates late April or May 2022 for the CMGC advertisement.
2. Bill Waits indicated that there are a few utility projects, roof replacements and a large HVAC project for the Science Building that will likely be design/ bid/ build projects.
3. Bill also noted large renovation projects at Kirksey Old Main and Rutledge Hall. Rutledge Hall will be converted from dormitory space to office and classroom space.
4. Bill stated that there is \$62.2 million project for the Aerospace Department that is pending budget approval for FY 22-23.

VII. SPA Projects Update – Jim Cobb (TTU)

1. Jim noted 2 large projects including the Innovation Center Residence Hall estimated at \$50.1 million. The CMCG selection for this project is complete. Jim noted that they had recently opened bids for the early site package for Engineering Building project estimated at \$62.3 million.
2. Jim indicated that all capital maintenance projects for this fiscal year are through designer selection and will implement design /bid/ build. These projects include mechanical projects, including architectural improvements and repairs.
3. Jim indicated that TTU is focusing on programming for next budget cycle. He indicated 2 major projects on THEC's recommended disclosure list. One of the major projects includes the renovation of the College of Business which will include Foster Hall and will include major building and infrastructure components.
4. Jim noted that the next budget cycle will include a budget request for a 2nd engineering building.
5. Finally, Jim noted that they are currently planning 4 projects for athletics. These projects will include a new lighting system and other improvements for baseball estimated at \$15 million and 2 projects for football which will include an operations center and a practice field. Also included in the football project will be the demolition and replacement of one side of the football stadium to be replaced with new grandstand seating and support space which is estimated at \$30 million.
6. Alan Robertson inquired as to the current status of new Engineering Building.
 - a. Jim replied that they are circulating a draft contract for the early site package.

XIII. SPA Projects Update – Austin Oakes (UT)

1. Austin Oakes indicated a few major projects including the demolition of the Health Science Center, a new College of Business Building in Knoxville and a new Health Sciences Building in Chattanooga.
2. Austin also noted major renovations of the old State Office Building in Chattanooga and the Cancer Research Building.
3. Austin stated that the Lyndsey Nelson Stadium is currently in programming and that the Haslam Field Expansion project has completed designer selection as well as GC selection.

IX. SPA Projects Update – Brian Wilson (STREAM)

1. Brian Wilson highlighted a couple of major projects including the State Museum Storage Building which is projected to come before SBC in December 2021.
2. Brian noted the Multi Agency Law Enforcement Training Center which will include the training academy, training academy housing and dining, a TDOS and TDOT service center and an emergency vehicle obstacle course.

3. Brian stated that large renovation projects include the Legislative Plaza renovation and a substantial War Memorial Building exterior and interior renovation.
 4. Brian stated that they are expecting several large FY 23 projects.
 5. Brian noted that most FY 22 projects have been approved by SBC and designer selections have been approved.
- X. SPA Projects Update – APSU, ETSU
1. There was not a representative available for a project update.
- XI. Construction Industry Market Update – Bryan Hay (ABC), John Gromos (AGC)
1. John Gromos noted that labor remains an issue and that residential construction continues to put pressure on material cost and availability.
 2. John indicated that the supply chain is still being impacted by port congestion; COVID; and overall demand.
 3. John mentioned that commodity prices are still predicted to increase in the near term.
 4. John indicated market volatility is stabilizing a bit but will remain a challenge into 2022.
 5. John noted that the architectural billings index remains above 50.
 6. John stated that there is a national 4% to 5.5% increase in escalation forecasted into 2022. John noted that locally, a 1.5%-2.0% increase is typically added to the national forecast resulting in an expected local escalation increase of 6%-7.5% forecasted for 2022 depending on various factors including building type.
 - a. Alan Robertson asked John for his opinion on the duration of the estimated supply and demand issues.
 - b. John stated he does not expect these factors to continue beyond 2 years at this point.
 - c. Chris Byerly asked how port congestion is anticipated to impact supply chain concerns.
 - d. John stated that while alternative solutions are being investigated to mitigate supply chain issues, immediate resolutions to these challenges are not expected to be alleviated in the near term.
 7. Bryan Hay began by noting a recent record high in shipping container transportation costs.
 8. Bryan stated that the building cost index from Q3 was up 4.9% with a year over increase of 14.5%.
 9. Bryan added that roof materials lead times are continuing to extend. Roof system lead times are up to 10 months depending on materials specified.
 10. Bryan indicated that appliance demand remains high and not expected to stabilize until Q2 2022.
 11. Bryan added that electrical equipment pricing is up since last quarter and switch gear lead times are at around 44 weeks which is down slightly from 52 weeks from the prior quarter.
 12. Bryan noted that structural steel has plateaued a bit on cost and lead time and is currently at about 25 weeks which is down from 40 weeks in the prior quarter.
 13. Bryan noted that metal studs, acoustic ceilings and suspension systems are experiencing increases. Armstrong announced a 10% percent increase on suspension systems effective October 18, 2021. They furthermore recommended a 5% increase on pricing for estimates beyond February 1, 2022.
 14. Bryan indicated that copper, PVC, stainless steel and fixtures will experience increases resulting from port congestions and overall demand. Bryan added that PVC is up 101%, carbon steel is up 84.5% and copper is up 67% year over.
 15. Bryan indicated that lighting products are forecasted to experience 5%-10% increases into 2022 due to high demand and shipping delays.
 16. Bryan stated that HVAC-related components in general are expected to continue to experience lead times 2-3 times longer than those prior to the pandemic. Custom air handler lead times are at about 30-40 weeks.

17. Bryan noted that hollow metal door prices are seeing up to 50% increases and lead times are currently anticipated at 12 weeks in general.
18. Bryan stated that wood products and sheet goods are coming down from high in May 2021 noting that panel pricing is now at about 14% below Fall 2021 pricing.
 - a. Alan Robertson asked if there were any estimates on pricing or lead times for masonry products.
 - b. John Gromos responded that most masonry-related cost issues are a function of labor shortages and that masonry product prices are not experiencing increases similar to other materials and commodities.
 - c. Ann McGauran asked if a construction market industry update can be provided to OSA for dissemination to the members.
 - d. Bryan Hay stated that he and John Gromos will provide a summary of the construction market industry update to OSA subsequent to the meeting.

XII. Closing Remarks

1. Alan Robertson encouraged continued recommendations from QIC members on future addenda items and adjourned the meeting.

Action Items:

- John Gromos and Bryan Hay to provide Construction Market Update (See Attached)

Next Meeting: February 16, 2022
Virtual / MS Teams

State QIC Meeting, 11-17-21

Construction Industry Market Update

1. General Information

- a. Supply chain forecast indicates continued increases in pricing, lead times and supply constraints due to increased demand, transportation shortages and the pandemic.
- b. Residential construction remains strong and is a contributing factor to these supply chain issues.
- c. AIA Architectural Billings Index has been above 50 since 1Q 2021 - this is a leading economic indicator that leads non-residential construction activity by 9-12 months.
- d. Labor shortages continue in most trades with no relief in sight, impacting both pricing and schedule.
- e. Building Cost Index – up 4.9% from previous quarter (Q2 2021), up 14.5% from previous year
- f. Logistical Crisis - Dozens of container ships sit off the coast of Los Angeles and Long Beach with up to 400,000 containers waiting to be unloaded. Most attribute the bottleneck to increased demand since the pandemic. Product destinations have also increased, putting pressure on already scarce transportation resources. As a result, logistics prices have risen, and this month (Nov. 2021) the median cost of shipping a standard container from China to the West Coast hit a record \$20,586, nearly double from July, which as already double from January.

In mid-September there were a record number of 67 vessels waiting to be unloaded at the LA/Long Beach ports, which account for about 40 percent of all inbound volume from Asia to the U.S. Moving inland, lingering challenges remain: shortages of labor, trucks, chassis and rail equipment are amplifying the problem. Volume is up 18 percent in railroad intermodal units year over year. Problems persist and there has been no relief to shortages of labor. Fuel prices continue to remain elevated, and surcharges are continuing to be enforced. These issues are being experienced at ports globally, and project teams should continue to be aware of extended ship times when determining release dates. Categories to monitor include plumbing fixtures, lighting fixtures, escalators, moving walks and absorption chillers. In some cases, curtainwall and structural steel are impacted. If projects are sourcing glass or fans from Germany, be aware that extended ship times should be expected. Risks: China has implemented a zero-tolerance approach to COVID cases, as risk from the delta variant increases. This means that even a few cases can cause a whole port to be shut down. The second largest port in China went into lockdown for two weeks, and the shutdown created increased backlog in products. If drastic measures continue to be enforced, this could further reduce inventory levels and product availability downstream.

2. Material escalation specifics include:

- a. Architectural Interiors - Steel-based products, such as metal studs and acoustical ceiling suspension systems, continue to escalate. Armstrong has announced an additional increase of 10 percent on all suspension systems effective October 18, 2021. In addition, they are suggesting guidance of an additional five percent for any estimating out beyond

February 1, 2022. Metal studs continue to escalate with Super Stud announcing a 10 percent increase as of October 1, 2021. This brings total inflation on metal studs to 100–120 percent since Fall 2020. After a quiet period for drywall pricing, new increases have been announced by many manufacturers (including USG, CTD and Nat. Gyp.) of 20 percent, effective in October. Poly ISO and polystyrene insulation also continue to escalate. Hunter (polyISO producer) has announced a 10 percent increase, effective Jan. 1, 2022. In addition, Dupont has announced a 10 percent increase on their polystyrene products, effective Oct. 1, 2021. Lead times for Rockwool’s mineral wool product is now exceeding 200 days, leading them to announce that they will continue to acknowledge new orders but will not provide delivery dates.

- b. Electrical gear – Pricing for all electrical equipment is up significantly since Q2, as a result of very large demand, reduced labor and increased input costs. Lead time for 600v to 5kV switchgear is also up significantly, now 44 to 52 weeks due to strong demand from data centers and warehousing projects. Busway and solid-state breakers are running 20 weeks and 40 weeks respectively.
- c. Lighting - All major lighting manufacturers have announced price increases in the range of five to ten percent. Prices and lead times are expected to increase over the next six months as demand remains strong and shipping delays and costs increase.
- d. Structural steel – While steel shapes, such as wide flange members, are up significantly in price (75 to 130 percent depending on shape and dimensions), the largest impacts to steel pricing and lead times revolve around joists and decking materials. Because of the significant building activity in warehousing, distribution and data centers, joist lead times remain extended out beyond 40 weeks and decking is out to 25 weeks. In addition, joist and decking prices have increased 300 to 400 percent. In recent weeks, these lead times have started to ease and price increases are slowing.
- e. Plumbing – Prices for copper, PVC, steel and stainless steel plumbing materials are expected to increase over the next six months as demand remains strong and supply chain issues persist. Price and lead time for plumbing fixtures holds the greatest risk over the next six months due to container ship transportation delays and premiums for ocean freight. Non-PPI pricing sources are reflecting higher YTD increase for pipe: up 101 percent for PVC, up 84 percent for carbon steel and up 67 percent for copper.
- f. Wood – Lumber is one of the few bright spots in building material supply chains. Both dimensional lumber and panel pricing are down significantly. Dimensional lumber is down 72 percent from its peak in May and is now 24 percent below pricing seen in fall 2020, before the significant run-up in pricing began. Panel pricing is down 64 percent from the May peak and 14 percent below fall 2020 pricing. However, the free-fall in pricing appears to have ended and is now steadying at current levels.
- g. HVAC - High demand, shortage of factory labor and supply chain constraints have led to significant lead time increases within the past three months across all HVAC equipment manufacturers. Reported lead times are between two and three times longer than typical lead times prior to the pandemic, while actual lead times being experienced by

projects can be as much as four times longer. Air cooled chillers and full custom air handlers are experiencing the longest lead times in the range of 30 to 40 weeks. In order to mitigate risk of late deliveries, projects should add a minimum four week safety factor to all quoted lead times.

- h. Roofing - Roofing material lead times continue to extend. Roofing system deliveries can be as long as 10 months, depending on the materials specified. The toughest product to get is polyISO insulating panels. Lead times for polyISO are now greater than 10 months. In some cases, polystyrene insulation can be substituted for polyISO. However, many projects are taking advantage of this substitution and now polystyrene lead times can be as long as four to six months, depending on the source.
- i. Appliances - Demand for appliances continues to be very high. Relief is not expected until Q2 2022 at best. Prices are expected to rise over the next 6 to 12 months by at least three to five percent. In addition to high demand, production is also being limited by the global semiconductor shortage and shipping challenges.
- j. Lab Casework and Fume Hoods - Lab casework manufacturers are being impacted by two main inputs: steel and resins (for bench tops). Resin pricing has increased by over 300 percent and steel pricing has doubled. In addition, resin is in short supply and is leading to extended lead times. Overall, lab casework pricing is up 10 to 12 percent and lead times have been extended from 8 to 12 weeks, to 26 weeks.

Recommendations

1. Consider an escalation strategy - alignment between owner and contractor regarding where escalation costs should be carried: owner budget (soft cost), construction budget (hard cost) or combination.
2. Consider advance purchase strategies - how can material/equipment pricing be locked-in as early as possible to relieve future escalation, and how can materials/equipment get committed to spots in production lines.
3. Engage in force majeure-related discussions earlier - unknown and unanticipated increases in supply chain costs and delivery times add risks to projects, and discussions about risk management strategies benefit all parties.
4. Phased GMP's and Early Release Packages (ERP) can be effective escalation strategies – ex. structural steel designs can be completed first and can be procured through an ERP, securing a place in the fabrication queue.