Question of the Day...

Can organizational self-assessment and critical reflection help my business?

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Following-up on last month’s article, which garnered more comments than usual, I think that we should take a bit deeper dive into metal plate connected wood truss permanent bracing from “the field’s” perspective, and what the CM might do to assist. Permanent Bracing is the final critical design assumption that must be met in order for the trusses to perform as designed and sealed. The best design and in-plant QC process in the world is useless unless these final touches are properly detailed and executed on the job.

Mark Chubb, Chief Resilience Officer & Chief Strategist, ManitouNW, in his recent NFPA blog posting “It Takes Intelligence” comments: “Many professions rely on self-assessment and critical reflection to encourage growth and development. Others see it as a tool for gathering organizational intelligence and feedback on performance. Even the fire service depends on self-assessment to improve reliability, most notably in the accreditation process, but also in ordinary debriefs and hot-washes following incidents. Self-assessment is a critical component of every continuous improvement program.”

Many Component Manufacturers (CMs) and Building Designers (BDs) could benefit from similar intelligence gathering and critical assessment. I do not believe that we can, or should, leave the policing of correct wood truss permanent bracing installation up to the code officials or inspection agencies. As stated last month, many framers claim to have never witnessed a truss web and/or chord bowing due to excessive compression. In and of itself, that may or may not be true. I’m quite sure that they all have witnessed a time or two when they needed to remove temporary lateral restraints to beat the truss over to its appropriate on-center spacing when applying the top chord permanent bracing known as sheathing.

What about when the compression member isn’t quite as obvious as in interior bearing or under/over-framing situations (piggyback trusses and diagonal webs to bearings are good examples, see below).

In the case of the piggyback set above, the need for lateral restraints on the flat top chord section of the base truss may not be as obvious on the Truss Design Drawing as the other two examples where the restraint is indicated. In some cases the installer, Building Designer and Code Official would need to look at the Bracing Summary to see the options and maximum on-center spacing of the restraints (see next page).
Bracing Summary

TC Bracing: Sheathed or Purlins at 3-9-0, Purlin design by Others
BC Bracing: Sheathed or Purlins at 10-0-0, Purlin design by Others

In the case shown above, the top chord of the base truss would need to have lateral restraints (and their associated diagonal bracing) at a maximum of 3'-9” on-center along its entire length. How was the framer supposed to know about this at the bid stage?

There are times when wood truss permanent chord and/or web member restraint and bracing is unavoidable and even desirable. Take the piggyback application shown above. The fire service would much prefer the proper installation of lateral restraints and diagonal bracing to the flat top chord section of the base truss in lieu of sheathing so as to not create a cockloft (hidden space) that would prevent reaching a fire with a hose stream. Valley truss over-framing is a similar scenario.

There are many other times though that permanent lateral restraints (and their associated diagonal bracing sets) can be eliminated by simply up-sizing or up-grading the truss member itself, or flipping the web so that it is in tension in the truss rather than in compression (see examples below).

Yes, this may take the CMs Truss Technician or optimizer a few extra minutes (and time is money), but don’t you think that the framer would be appreciative? What about the Building Designer, he/she knows that you are looking out for them as well when there is not the additional required bracing for them to design and inspect. This sure seems like a win-win for the framer and the BD, but how does the CM get paid for this time and expertise? [Thanks for staying with me this long for we have just reached this month’s Question of the Day!] Can organizational self assessment and critical reflection really help my business? I say yes!

Taking Chubb’s advice, “Many professions rely on self-assessment and critical reflection to encourage growth and development,” I advise CMs to look within for ways to set themselves apart from their competition by going the extra mile for their customers, both direct and indirect. How do you become both the framer’s and the Building Designer’s best and most trusted supplier? Chubb goes on to state, “Well-designed self-assessments are powerful tools for reflection and action.” One of the best ‘actions’ I have found is to be willing to alter your schedule. Be willing to work and collaborate with the Building Designer up front (and provide them with the work you are going to do anyway) in exchange for a no-break specification in the Construction Documents. This way, all of the truss designing can be completed ahead of time and the BD can create a truss bracing plan for the framers to bid and work from. I fully understand that this is a break from the deferred submittals that has become the industry norm, but that norm has very little respect for the framers who must guess how much material and labor they will need to supply for permanent truss bracing or for the Building Designer who must oversee the construction and assure compliance with the plans, specs and truss bracing! Is it any wonder that the framer has no interest in putting in anything more that what is necessary for them to safely erect the building? Are you doing everything that you can to minimize the restraints and therefore the material and labor necessary to install them? Are your Sales folks out there actively selling that concept to your customers? Have you, or your management, reached out to your architects, engineers and specifying community (your indirect customers) with the offer to assist them up front and take the guess-work out of truss permanent bracing? As Chubb states above, “Self-assessment is a critical component of every continuous improvement program.” Simply changing the schedule in which you fulfil your role in the application of wood trusses in the construction process could have a profound effect on the built environment.

To help, the Truss Plate Institute is currently developing ANSI/TPI 3, a new American National Standard to assist the Building Designers with designing and optimizing wood truss temporary and permanent bracing. TPI 3, the Design of Bracing for Metal Plate Connected Wood Trusses, is in the latter stages of consensus committee development and looks to publish late this year or early next. With this new Standard, implementation guidance from BCSI and your help as CMs, the work of the framer will become more profitable, the work of the BD and inspector will become easier and you will have a whole slew of newly acquired friends in the building industry. Best yet, we’ll be another step closer to having buildings constructed where all design assumptions are met and the structure’s resiliency and durability are far improved. Thanks for reading, S.