STRUCTURAL BUILDING COMPONENTS MAGAZINE (FORMERLY WOODWORDS)> May 2001

Knowledge is Power

"Some Questions to Consider" by Kirk Grundahl

What is the future of the truss plate? This seems like an almost irrelevant question, until you think about it for a bit. Carroll Sanford took the plywood gusset concept and made it out of metal. This evolved into Cal Juriet, Bill Black Sr., Charlie Harndon, Bill McAlpine and George Eberle, among others, developing the “nail-plate” between 1952 and 1960. Who could have predicted the impact this would have on the construction industry? So back to the question, what is the future of the truss plate?

One has to believe that there may be another concept out there that will lead to the development of a product that could, once again, transform an industry. The real question is what that product will look like. What problem will it solve that saves on material, labor or manufacturing costs? In all likelihood it will be as simple as the truss plate, yet profound in its ability to simplify construction and meet builder needs as follows:

- Reducing construction costs—how much can I save per house?
- Providing greater reliability of construction costs—is my mortgage cost fixed?
- Providing more labor efficiency—by how many days can I improve my cycle time and how will it help me produce an even flow of production?Improving economic efficiency in other areas of construction.

In other words, the product will wrap itself around the desire to use the best economic and performance system.

As you think about the future, take a walk through the truss plant and find out which questions you are currently working on to improve your truss plant performance, and where opportunities remain. Looking at truss plant economics, it becomes clear that the only places that there are significant cost savings possibilities are in labor factors and in lumber (basic raw material) utilization. This means that an efficient operation will look closely at its lumber purchasing strategy; implement policies that fully utilize every stick of lumber; and simplify the flow of material through the plant so that labor, in each phase of plant operations, is optimized and efficient.

Given these parameters, let's take a walk through the current truss plant and reflect on these key aspects of plant operations. Along the way, we'll ask some questions that may give us some guidance about our industry's future.

COST OF LUMBER

Many truss plant owners pride themselves on being the best lumber buyers in the world. However, beyond buying low, selling high, collecting early and paying late, a truss manufacturer should also consider the following:

- What purchasing strategies have you implemented to make your profit margins reliable?
- What partnerships have you made with your lumber suppliers to control lumber cost so you can accurately and reliably price your product at a consistent profit? Or, if you believe that the market won't meet your price, do you at least know how much money you are losing (or how much less your family's income is going to be) on each job that you ship out the door?
- What are the causes of waste? Which standard lengths produce the least amount of waste? What changes can be made to the process to reduce waste?
- What is the cost premium for buying standard lengths versus random lengths?
- How much of a bunk of lumber is damaged or wasted through incoming shipping and storage? Do you know the amounts and the reasons for all the damaged product you receive?
- Do you track the cull rates due to warp, twist, crook, wane and mold by lumber supplier or mill you purchase from? Are you willing to return lumber or change lumber suppliers or mills if you find you are culling too much material? Are you willing to pay more for your lumber to get higher quality and less cull?
- What is done with the lumber that is culled from a bunk? How much of it can be used in other parts of a truss? What is the total added cost to each truss you produce due to your cull rate?
- What is the moisture content of the lumber? Do you track moisture content and cull rate to see if moisture content is a problem? How does it impact your costs if you have to cull lumber after it twists and warps during the air drying process in your plant? Does your truss designer up-size your plates to account for high moisture contents? What is this additional cost for each truss?
- What dollar amount does the cost of the truss increase due to using higher grades of lumber in locations that a lower grade could be used?
- Given that truss plates are only five percent of the cost of a truss, is it reasonable to consider larger plate sizes to cover over many of the lumber characteristics that negatively impact truss quality?

LUMBER DESIGN CONSIDERATIONS & ANALYSIS

There is no more important operation in a truss plant than the “truss technician” department. The decisions made here can either save or cost a truss company thousands of dollars. Implementing truss designs that optimize the use of lumber (raw material) will have a positive impact on profit. The companies that learn how to do this, while still performing efficient truss designs, will be more profitable than their competition. Some additional considerations:

- Do you know the species, grade, size and lengths that fit the majority of your lumber needs?
- Has your truss designer or lumber supplier run an analysis for you to determine optimal lumber use through your plant from a truss design perspective? Is your purchasing strategy based on this optimal lumber use analysis or have you set up your purchasing patterns based on your purchase history?
- What is the added cost of the truss when you use lumber that is in inventory versus lumber that would optimize the use of its design properties?
- On the flip side, what is the added cost to the truss for stocking enough lumber grades and

sizes to optimize the use of the lumber design properties?
- What is the perfect balance between inventory and lumber design properties for the best-cost truss?

MATERIAL FLOW & LABOR CONSIDERATIONS

The goal with all of these questions is to minimize waste and maximize profits. If the market controls the price you get for your product, then your profits are totally dependent on the costing side of your business. Fundamentally, what this means is that any time that is not expended in adding value to a piece of wood or to a truss plate is wasted time. As such it is an additional cost that needs to be added to the cost of a truss. Given this, the following questions are important:

- How much lumber is damaged in the overall plant handling process? How can this be reduced?
- How is the lumber stored? Does the storage system you use make it easy for the yard personnel to find the lumber they need? Does any damage occur in storage?
- How is the yard organized? How easily does lumber flow to the saws from the inventory stacks?
- What is the number of inventory turns for each item and what is the carrying cost of inventory for each? How many times is the same stick of lumber handled before it arrives at the saw and is cut? After it is cut?
- What is the cost of the person delivering the lumber to the saw, the person sawing the lumber and the person taking the lumber from the saw?
- How smooth is the transition from sawing to the manufacturing area? How many people does this take and what is the cost of the people involved in this transition process? How much dead time is there for these people? What is this cost?
- How many times is the lumber handled during the transition from sawing to truss manufacturing? How far do people have to walk to get the lumber? How many trips do they make?
- How easy is it to get the truss plates one needs to produce the truss? How many people does it take to
- do this? How far do they have to walk to get the plates?
- Why do the slow movers move slowly and can they be eliminated?

TRUSS MANUFACTURING

Our industry often focuses on the actual manufacturing process and the speed with which we can produce a truss. Obviously the faster the equipment, the faster a single truss can be produced. But there are questions here as well:

- How much dead time is there when an individual in the manufacturing area is standing and doing nothing waiting for the truss to be pressed, waiting on lumber and plates, waiting on the finish roller, waiting on stacking, etc?
- Is it possible to create a work environment where there is always some action taking place that adds value? What changes can be made in the operation to do this?

TRUSS STACKING AND STORAGE

This is usually a very critical area of truss production as it is the final check on the quality of the product. Any bottlenecks at this point will cause all the steps of production in front of it to slow down, wasting time.

- How many people are working in this area of production? Is automatic stacking used and would that help reduce the people needed in this area?
- How much dead time is there in this process and are there other activities that could be done to add value to the truss with this dead time?
- How often does the stacking process stop due to a quality problem? How many times does a problem here cause the entire production line to stop?
- How often are manufacturing errors not caught here and then have to be corrected after the trusses get to the field? What is this cost
- Does this area use your most experienced or least experienced people?
- How often are trusses damaged in the stacking, banding, lifting and storage steps in this process?
- Are trusses easy to find after they have been stored?
- How easy is it to load the trusses onto a truck for shipping? What are the labor and handling costs associated with this process?

CONCLUSION

This is a start on the kind of questions that can be asked to aid in determining where there are lumber and labor impacts on profitability.

The key issue is really the time it takes to get the answers and whether or not one has the time to do so. However, can we truly afford not to take the time to incrementally improve these very important phases of our businesses? In today's market, incremental improvements may be the only difference between being competitive and not being competitive. We will continue to work on technology matters for the component industry that seek to put all the issues on the table and look at each to determine if there are any improvements we can make as an industry. This is the perfect role for us as there are areas where fundamental work is required that no one truss manufacturer is going to undertake on his own, yet out of that work will flow proprietary improvements to our industry that will make individual truss plants better.

Who knows, this work may even spawn new product concepts that will have as significant an impact on our industry as the truss plate has. If not, we will have taken the next step in the improvement process that will make our industry stronger and help assure that components are the future of framing.

SBC HOME PAGE

call 608/310-6706 or email editor@sbcmag.info.

The mission of Structural Building Components Magazine (SBC) is to increase the knowledge of and to promote the common interests of those engaged in manufacturing and distributing of structural building components to ensure growth and continuity, and to be the information conduit by staying abreast of leading-edge issues. SBC will take a leadership role on behalf of the component industry in disseminating technical and marketplace information, and will maintain advisory committees consisting of the most knowledgeable professionals in the industry. The opinions expressed in SBC are those of the authors and those quoted solely, and are not necessarily the opinions of any of the affiliated associations (SBCC, WTCA, SCDA & STCA).