

Fellow Construction Teachers

The lesson I am posting here is something I have a passion for. Many of the students I see in my program are not good thinkers. They only see what is in front of their faces and quite often do not want to think beyond that or question anything. My goal here is to simply get the gray matter working harder. I want my students to think of options, offer their ideas, to question, to figure, to use higher order thinking. This lesson is simply an introduction towards that goal.

The sheet that follows this is the one I developed that inspired this project. I don't hand this out to students until after I see all of their lists. I find that I have to do quite a bit of prompting to get students creating their own lists for this project. They want to write down things like wear your glasses, and lift with your legs. I typically start them thinking in the right direction by talking about layout tools and what it is specifically that each tool tells them. We then talk about why those concepts are important as a builder. I try to get them to think about everything that guides their work (prints, codes, specifications, restrictive covenants, etc....).

I hope that some of you will also find this useful and either use what is here, or be inspired to create something similar that works better for you.

Enjoy,
Jon Kopp

Building Smart Criteria

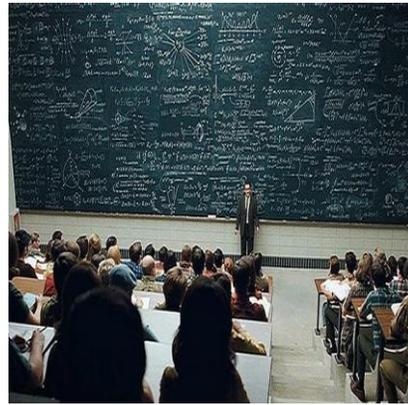
“A Critical Thinking Guide to Doing Good Work.”

Construction is a complex process, and hopefully reading this will help take some of the mystery out of it. There are many things that guide us when we attempt a task. Bosses and clients talk about work with concepts like professional, good craftsmanship, code compliant, beautiful, solid, good looking, and the list goes on.... That is why I feel it is critical to develop an inner guide that will give you confidence to pursue the task that is before you, and the satisfaction of knowing that you did your job well. Consider the following concepts that may apply to your work, and constantly ask yourself:

- ✓ Is my work level
- ✓ Is my work plumb
- ✓ Is my work square
- ✓ Is my work straight
- ✓ Is my work flush
- ✓ Is my work parallel
- ✓ Is my work on layout
- ✓ Have I measured accurately
- ✓ Are my cuts clean and precise
- ✓ Have I selected the proper fasteners
- ✓ Have I fastened things together solidly
- ✓ Does my work conform to the print
- ✓ Does my work meet the specifications
- ✓ Does my work meet the manufacturers guidelines
- ✓ Is my work code compliant
- ✓ Does my work satisfy my customers wishes
- ✓ Does my work look good to the eye
- ✓ Is my work professionally done
- ✓ Is my work something that I would pay for myself
- ✓ Is my work designed well
- ✓ Did I orient my lumber properly
- ✓ Did I use all available safety precautions
- ✓ Did I layout and cut to use materials efficiently
- ✓ Have I built to manage water
- ✓ Is my design energy efficient



Building Smart Student Activity Sheet



Introduction:

As you, the student, start to develop skills in the construction trades you begin to realize that there is more to this than simply pounding nails. Employers are demanding both a high skill level and workers who can “think on their feet”. Workers must make decisions, solve problems, find information, calculate information, and be able to think critically about whatever it is they are doing.

As a teacher, I find it much more important to teach a student how to think rather than teach a student what to think. If I can in any way make you a better information finder, problem solver, decision maker, lifelong learner, and critical thinker; then I have done you a service.

Part 1:

This first part of the assignment will focus on helping you develop a mental checklist for evaluating your work. To be of professional quality, your work must meet the codes, follow the print, satisfy the specifications, be esthetically pleasing, meet certain industry standards, and be executed with good attention to detail. But what does all of that mean?

I wrote a document a few years ago that I entitled, **Keys to Producing High Quality Work**. I did this because I wanted to examine the mental side of building. Sure, we are all developing skills to be able to do the work, but if our minds are not directing that work in a meaningful, productive manner, then we are not at the top of our game. There should be a constant and deliberate questioning process going on to direct everything that you do. Now it is your turn. Each of you will begin with this title and write down your checklist for self evaluation of your work. You should easily be able to write down between 5 and 10 points.

Building Smart Task 1

Name:

My Keys to Producing Quality Work

1.

2.

3.

4.

5.

6.

7.

8.

9.

10.

Part 2:

I often think about construction as an organized collection of problem solving exercises. Every job you are involved in requires you to think about your options and the best solution for getting the job done efficiently and in a cost effective manner. You have options. There are often several ways to accomplish the same task, but the best workers are usually the ones who think carefully through the process before they begin. They know how to work smart and not just hard.

Your task is to simply make a decision about the following construction dilemma. Read the problem and then answer the questions at the end of the problem. You may get help from any source you deem necessary.

You have decided to build a swimming pool for your family. You know that money is a little tight, so you want to build the pool as efficiently as you can with cost in mind. You have determined that to build the pool you will have to have a large hole excavated and the excess dirt hauled away. The pool company wants you to have the hole dug before they show up. They require a hole that is 20' wide, 40' long, and 10' deep. Your options are to go with Dan's Dirt who will dig and haul away the soil at a rate of \$11 per cubic yard of soil, or to hire Bob's Backhoes who will dig the pool for \$8.00 per cubic yard, but must have you haul the dirt away because his truck is in the shop for repairs. Your small dump truck has a bed that measures 5' X 10' X 4' and you can only haul a level load. The dump site is 5 miles from your house and your truck gets 6 mpg while loaded and 8 mpg when empty. Current fuel price is \$2.50 per gallon. What is the most cost effective option for getting the hole dug and removing the dirt for your new pool (show all of your work)? What if you think outside the box and consider your time and wear and tear on your truck; is it still worth it?

Part 3:

Like problem solving, decision making is closely related and something the builder must do daily. As you become an adult, you will find that you are constantly given more control over your decisions. The decisions that you make will not only affect your success in the workplace, but will affect the quality of your entire life. Where you work, who you hang out with, the way you act and speak, who you marry, how you handle your money, are all examples of important and possibly life changing decisions that you will make. Decisions like that are complex and must be thought out, other decisions are easy because the consequences are not as important or long lasting. Think about your daily decisions like deciding what to wear, what to eat, or what to do with your spare time. It is easy to see that your decisions are not all equal.

You will be practicing the decision making process using a well known model to make decisions over which kitchen countertop is best for your customer. Study the following information and try to make an informed decision using the grid analysis process.

The Attributes of Corian vs. Formica

Corian is a brand name of solid surface countertop material known for its soft edges and molded in sinks
Formica is a brand of plastic laminate which comes in large thin sheets and is applied to a particle board base to make a countertop.

Corian

- Up to twice the cost of Formica.
- Quite durable but may be scratched, stained, chipped, and heat damaged. May be repaired if damaged badly.
- Many colors available (over 70), but some designers claim a rather dull selection.
- Easy to maintain except for some stains.
- 20 edge options.
- 10 year warranty.
- Lead time is 3-4 weeks but may be up to 6 weeks for some colors.

Formica

- Relatively low cost, considered the best value out there.
- Tends to wear very well, but may be scratched, chipped, and heat damaged. Must be replaced if damaged badly.
- Over 150 colors from neutral to vibrant and everything in between. Many patterns too.
- Very easy to maintain and take care of. Care must be taken not to allow water under the material to damage the substrate.
- Over 15 different edge options including different woods to coordinate with cabinets.
- 3 year limited warranty.
- Lead time is 2 weeks with all colors being available.



Corian



Formica