A Few Things Young Engineers Should Know!

By Steven G. Provenghi, S.E., M.ASCE

Having graduated from college into my first job as an engineer a mere 45 years ago, I experienced the things I write about here. Although not easy, I am happy to say that I still love to come in to work and perform engineering. I have worked for four Companies over my career, all good Companies. I started with an ENR Top 10 Engineering firm and have moved to smaller and, for me, more intimate Companies each time I took a new position. I felt that by working for smaller companies, my contributions would have more impact on my clients. Here are a few things that served me well as I began my career and have held up as I advise young engineers on traditional structural engineering career paths. This article was initially prepared and delivered to Dr. Joseph M. Plecnik's Professional Practices Class (CE481) at California State University, Long Beach, in March 2007 and has been updated for publication here. Dr. Plecnik was the author's favorite Professor at CSULB.

That first job. The first obligation of an engineer is to hold paramount the public's health, safety, and welfare. Your first responsibility as an engineer will be to find a job. As a graduate engineer, understand that you will essentially be an intern until you become licensed. You need to be willing to do any and all assignments which can broaden your overall knowledge of the field, including working as a CAD specialist or measuring or monitoring. This will make you a more valuable employee to your company, and it will make you a more rounded and capable engineer with many more future options! Also, stress any past work history. And remember, you are a professional; dress like one.

Organize and be organized. When assigned projects, break the projects into manageable tasks that can be completed one by one. Many engineers at all levels find it helpful to prepare a daily to-do list. Remember, the Pyramids were constructed block by block, and projects are completed on a task-by-task basis.

Once projects are broken up into manageable tasks, they become less daunting, and it is easy to enlist the help of other engineers in your firm. When I get bogged down or feel overwhelmed, I fall back to my to-do lists and complete one task at a time. I continuously tell myself that, by the end of this week or next week, I will have completed all the necessary tasks and the crisis will be over. For me, it is very reassuring.

Engineering license. Pursue becoming a licensed professional – PE/civil engineer (CE)/ structural engineer (SE). Remember that only 20% of all engineers get their licenses, and it is that 20% that get the best jobs and largest salaries. Many states also require Continuing Education Units (CEU) or Professional Development Hours (PDH), leading up to and following licensure. While many companies financially support attendance, be willing to spend some of your own time and money for outside seminars or courses as well. Your education does not stop when you graduate.

Be proactive, especially with communications. If you are waiting for the client or contractor to complete part of the job before you can observe or complete the next step, mark your calendar for a follow-up email or call. If you need something from a co-worker, set clear expectations on the timeline and follow-up per your original plan.

Learn the system. Remember, you are walking into a new office environment that is a well-oiled machine. They have procedures in place for timecards, billing, reports, inspections, etc. Your task is to learn the system that is in place before offering to reinvent the wheel. Your way may be better; it may not. Insisting that your system be used in place of the existing system will not create allies, and you will not get very much cooperation. This is called inertia!

Expectations. Your new boss will have expectations of you even before you start. They will expect you to be technically competent. They may expect you to be in the office or at the job-site early, and they may expect you to stay late when needed. Try to be aware of the expectations and be prepared to go the extra mile when possible. Even if you think they do not notice, they do! If the boss is willing to work extra hours, a team player will consider doing the same.

Check your work. Complex computer analyses can sometimes be a bit of a black box. Learn to do manual checks, being aware of the order of magnitude, sign, and other basics to determine if the results are reasonable. Your boss will soon become wary of your abilities if they regularly need to do extensive work to check your calculations and models. Make sure you examine your work for accuracy and dimension errors. When using standard details or notes, it is easy to overlook the obvious and include something that is not particular to the job you are working on,

i.e., City of XXX, or using wood notes for a concrete masonry job. No one likes sloppy work, and when others see mistakes, they may feel the need to scrutinize the whole project for errors. You must learn to review your work before calling in the Cavalry for help!

No whining. When you are assigned a task, do not whine. If you have a legitimate situation that will prevent you from completing the task on time, let the boss know. You can learn even from tasks you do not enjoy. On the flip side, you should always be a team player to help the team achieve more. I cannot stress how important it is to close or complete a given project; never leave a task 90% complete and expect it to be handled by others.

Invest in others. Be sure to be appreciative of your co-worker's contributions to your projects. A word of appreciation at the appropriate time boosts attitudes and reinforces work efforts.

Keep your Commitments. Regardless of how you feel about keeping commitments on your personal time, it is essential to uphold those made in your professional position! Some of these commitments will be made for you by your boss or supervisor. If you cannot complete the assignment by that date, you must let your boss or supervisor know early. When you let them know, it is even better if you have at least one idea that would allow you to complete the assignment within the allotted commitment time or near the commitment time. There are other times when *you* will have made the commitment, and it is even more imperative that you keep those commitments! There are few things that a boss or supervisor dislikes more than being told that the subordinate has made a commitment (promise) and they are not going to keep it.

Keep within the budget. Find out from the boss how much time they think the project or your assigned task will take. Remember, they set the budget and may have made promises to the client. If you are having a hard time completing the project within the guidelines, alert the boss early. They can give you advice and/or assign someone else to do part of the project. Your boss must also keep the client in the loop.■

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