

CONTRACT ENGINEERING – AN ALTERNATE EMPLOYMENT PATH  
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## CONTRACT ENGINEERING

Opportunities for engineers vary with supply (engineering degree production and immigration) and demand. Those familiar with the Deutsch, Shea & Evans High Technology Recruitment Index (DS&E HTRI) have seen the demand fluctuate for a 30 year period. To summarize an analysis by Robert Rivers, the DS&E curve shows only 22% of the time when there was room for new engineers without displacing older engineers. Seventy eight (78%) percent of that period we actually had a surplus of engineers when new engineers displaced older engineers. We have seen our engineering associates cut out of the profession to work in stores like Home Depot, Trader Horn, etc., and be forced out of the profession forever. We also know our young graduates are not getting the engineering jobs that they studied for so hard. The only way to increase the opportunities for engineers is to overcome the Shortage Shouters and try to balance the supply/demand ratio. This will require the efforts of the engineering community, working together, to increase opportunities for members of the engineering profession.

On the positive side we have Contract Engineering (CE) or Job Shopping which, although also influenced by supply and demand, does provide some opportunities for those considered unemployable by age or willing to sacrifice the false security of direct employment for the realities of contract engineering. Contract Engineering has also provided an alternate path to direct employment. And, although this isn't for every one, it could when caught in a bind and facing long term unemployment provide an opportunity to work and pay the bills. Some CE s have spent almost their entire career in contract engineering, and those with needed skills fare better than others. There is also the bad side as some have experienced career down time or unemployment of 30 to 40 percent of the time. Can you handle a year of unemployment and live on savings and employment insurance?

Engineers are divided not only by discipline, but also the way they market their services. Most engineers are direct employees of companies and are almost always referred to as *permanent* employees, but in today's market the term *permanent* is a joke so we shall just refer to them as *direct* employees. Let's be just a little more

realistic and scratch the word *permanent* from our employment terminology.

Another method of marketing our services is to become Independent Contractors (IC s). This was quite popular until the mid 1980's when the government introduced legislation making it almost impossible for engineers to market their services as independent contractors. Still another method, and the one we shall concentrate on here, is the Contract Engineer (CE) or more communally and crudely known as the "Job Shopper." Since we need all the image we can muster, we shall stick to the term Contract Engineer or CE.

Contract Engineering is a three party arrangement comprised of the Contract Engineer (CE), Contract House (CH) or job shop, and the Client Company (CC). The CC is any company, i.e., aerospace, auto manufacturer, military, commercial, medical, etc., that employs engineers and sometimes hires you, the CE on a temporary basis, through a Contract House. Simply put, the CC needs manpower and calls the CH who in turn calls the CE to fit the requirement or assignment of the CC. You as the CE are hired as a direct employee of the CH who leases you to the CC. Your work effort is almost always performed on site at the location of the CC. Your abilities are purchased by the CC from the CH via a purchase order for a specific hourly price and a specified period of time. The employment or purchase order can be terminated at any time for almost any reason and your employment can also be either extended or terminated just as quickly. Although the CC is not your direct employer, they are the people that you must satisfy and they are also the people that control your longevity and job assignment.

This is an honest way to make a living - you work and you get paid for every hour including overtime. There is no free lunch in this business. The CH makes money on every hour that you work so overtime must be paid or the CH loses their percentage. . Just remember; professionals get paid and amateurs do not. Your relationship with other engineers on the job is important and working for nothing deprives another engineer of an opportunity. You will be working with other CE s and Direct Engineers (DE s) and it is up to you to set the example for a professional and friendly relationship

You will probably never meet the personnel at the CH and only speak with them by phone on

occasion and keep them informed about your weekly time card. Another important point is the assistance the Contract House provides in searching for a position for you. This third party arrangement is important since their assistance and contacts will help you and they are motivated by profit. There is nothing better than having others recommend you for a position and they may know about a job around the corner that you will never hear about. They will also call you about out of town opportunities if you let them know that you are willing to travel. Remember, the CH provides the service to and is obligated to the client company and not to you. You only benefit because the CH needs something to sell. You are the commodity.

Beside the fact that we are divided by discipline and specialties we are also separated by the method in which we market our services. The point I like to stress is that we are all members of the same engineering community and we should not divide ourselves because we are direct employees, contract engineers or independent contractors. We should all be helping each other and unite to discuss our opportunities and our problems. We should all stay tuned-in to our profession and our associates. Don't be an information diode! Let's cooperate, work together and get information moving in both directions among engineers. I know some engineering diode types that won't give you the right time. I just try to avoid them.

If you are willing to travel, you have a better opportunity to select the work which will continue to enhance your skill level and keep you current. Age is never a problem. Experience usually comes with age and the more useful experience you have, the more valuable you will be to the client. The CCs look for engineers who have done, in the past, exactly what they wish to do in the present. Thus, experience is significant.

Once you leave the design field of state-of-the-art engineering your future will start its demise. Another symptom of an oversupply of engineers is the lack of opportunity to remain in design and enhance one's engineering skill level. However, even if you don't feel especially strong in any specific field you may still find employment in an engineering support role. Speak with the CH representative about different types of opportunities.

#### Definitions - Pay Structure:

As members of the engineering community we have been taught not to discuss pay, earnings,

working conditions etc. As members of the American Engineering Association, Inc. we shall decide what is and what is not forbidden and we encourage engineers to discuss employment issues. We have also seen that these issues have been detrimentally influenced by our employers, the federal government and academics for many years. Now it is time for us to take a hand in discussing and influencing our status and income. Remember, this article is not the last word, only the initial attempt to provide visibility to a prime issue of contract engineering.

Pay for CE's, at the same CC location, can vary by a factor of 2:1 with the unknowing or new CE being the victim; so, the more our engineers know, the higher, will be the hourly pay rate. Again, supply/demand is the driving force with today's hourly pay rate creeping back to those rates of the mid 1980's or about \$40/hour and a no-benefit package for degreed engineers. Some engineers are getting half of this figure. Currently, RF and software engineers are getting much more.

In contract engineering we have a three party situation: Client Company, contract house and you the engineer. Two rates are involved: the Billing Rate (BR), that which the contract house charges the client company, and the Direct Labor Rate (DLR) which the house pays the engineer. There are a few variables in these numbers, such as benefits, which may complicate the issue but, we will ignore these for now.

The Delta or difference between the BR and the DLR is a variable and since it includes overhead, business expense and profit it is something the Contract House will maximize even at the cost to the engineer.

Billing Rates will vary from a low of 1.1x DLR to 2xDLR with 1.35xDLR being a fair number with vacation and holiday pay included. A rate of 1.25xDLR is reasonable for a no-benefit package. Our goal is to get our DLR up and keep the Delta or the difference at a reasonable level...

## DEFINITIONS & PAY STRUCTURE

Direct Labor Rate (DLR) is engineer's gross pay.

Billing Rate (BR) is the gross amount the Contract House bills the client.

$BR = DLR + Profit + Overhead + Expenses$

$BR = DLR (1 + x)$  or  $BR = DLR (1 + 0.35)$  or 35 cents on the dollar.

OT = Overtime: This depends on individual state Labor Laws and usually is paid at the time and a half rate.

To keep things simple, a DLR of \$40/Hr. is approximately \$80K per year or  $\$40 \times 2000$  hrs./year. This sounds like a lot until you subtract the cost of health insurance, benefits, pension and Down-Time. Down-Time is the period between jobs when we have zero income or just Employment Insurance to live on. When you stay on a job to the end, you can expect a period of unemployment (Down-Time) before landing a new assignment. Down-time varies due to supply and demand and your marketable skills. It's best to be prepared and keep your resume up to date and send it out to as many contract houses as possible to improve your opportunities. Don't depend on one CH for your livelihood. Get your resume out to as many CHs as you believe necessary to provide you with interviews. The only sure way to eliminate down-time is to get a new assignment before completing the old one. Some engineers have a nose for this and seem to pick up a new assignment just as the old one terminates. These are the most successful contract engineers.

Let's look at the beginning and how an engineer can start or at least sample the experience of Contract Engineering. Initially, we must get our resume in order and out to as many contract houses as possible. Get the name, addresses and telephone numbers of contract houses from advertisements, other engineers and publications. One excellent source of contract houses is from a publication called *Contract Employment Weekly*, published by: C.E. Publications, Inc., P.O. Box 3006 Bothell, WA, 98041-3006, (425) 806-5200,

www.ceweekly.com. This should get the new CE off to a good start.

Your computer, word processor and Fax/modem will enhance your effort to get the message to the contract houses. Their fax machines are on 24 hours a day so you can cut costs by sending out your resume when telephone rates are lowest. Keep a Log to record all of your efforts and contacts by date. Keep a record of all CHs, contacts and names of people you speak to and especially the members of the CC that you speak to during telephone interviews. Once your resume is in the hand of the CH you should follow up with weekly telephone calls to keep CH personnel aware that you are available and interested. If you don't have one, get an answering machine and keep your telephone line open for important calls. That means keep the kids off the phone from 9am till 6pm. If family members answer the phone, make sure they know how to take a message since it may be about your next assignment.

Assuming you did your homework with a good resume you should begin receiving calls from the CH personnel. Initial negotiations will begin when a CH representative calls you about a job or just an introduction. The conversation will start with your availability and the requirements the client needs filled. Tell them what you have done and know what is on your resume. Remember, you want this job so don't shoot yourself in the foot. Keep the conversation friendly and maintain a positive attitude. Don't mention what you don't do and don't voluntarily disqualify yourself. Your goal is to get the interview and the assignment. Remember, the CH representative wants to get you an assignment so they will make their money.

**Direct Labor Rate; Next** they will bring up the rate of pay. How much will you accept? If you don't know ask them what the company is paying their other people with similar skills, education and experience. Start high, since you can't go back up the pay scale. Forty dollars per hour is quite reasonable for (1985 dollars) engineers today and higher for specialties and software people. It is most important here to know what is going on, so keep informed by speaking with your friends and

associates about the job market and rates at different companies. You are not locked into a DLR until after your interview with the CC and you go to contract with the CH.

Once completing the initial interview and negotiations with the CH representative and assuming a match can be made between skill, DLR and availability the CE will be introduced to the client company for their interview. The CC representative (usually the staff you will be working with) will have reviewed your resume and made a preliminary evaluation of your qualifications. The CC/CE interview is just one more step in the hiring process and getting this far is a plus. A discussion on interviews is another subject. However, try to get to discuss the actual work and how you can contribute to the project. Terms and fees are not discussed with the CC representatives. This is the function of the CH.

Assuming you passed the interview the process continues with an agreement between you and the CH on the particulars of the contract, i.e., starting date, DLR, overtime rate, per diem and benefits. You will receive a package and contract from the CH by over-night mail to lock things up.

**Overtime Rate:** Contract engineers do not work without being paid. Overtime pay is agreed upon before the assignment begins. Overtime is controlled by state labor laws that specify time-and-a-half for hourly and temporary workers. Since you are hourly and temporary you should be getting the time-and-one-half rate. CE s should check with the state "Wage and Hour Bureau" to determine how overtime is paid and who is qualified to receive it.

**Per-Diem:** Per Diem is money paid for living expenses when one is on a temporary assignment away from home that usually last for less than one year. Per diem for contract engineers is much different than per diem and travel pay for direct employed engineers. Normally, direct engineers receive an expense package when the company sends them on assignment out of town. This package will cover travel to the location plus complete coverage of meals and lodging expenses. Business covered per diem for CE's is virtually unheard of due to fact that enough engineers are willing to work without it to the detriment of the whole engineering community.

When a contract engineer takes a job out of town (i.e., 100 miles from home) one might expect

the CC and CH to pay the business expenses or per diem. However, I have never seen per diem for CE s exceed \$15 per day even when government employees were getting more than \$100 per day at the same location.

Contract Houses will break out a portion of your pay check, if you qualify, for PD and pay you the Federal Recommended Rate for the geographic location of the company. This is taken off the top of your pay and not taxed. Government Publication 463 and 1542 cover travel expenses and per diem rates for different parts of the country. You can get these publications from the Internet at (<http://www.irs.ustreas.gov>). You may have to justify expenses at the end of the year so be careful and accurate. Some contract houses try to base your OT rate on your base pay less the specified PD rate. Please don't tolerate this and get some advice when you need it. AEA is always willing to assist its members.

**Vacation - Holiday Pay:** Although not as significant as the above, this is still worth about 6 % of your gross. Just know it may be available and negotiate for it when you can. Again, this will also depend on the individual and the demand for his or her skills.

**CONTRACTS:** The contract is an agreement between you, a CE, and the Contract House alone. It is an agreement between two parties but, it is also influenced by law. Preliminary verbal agreements will precede the contract and, as mentioned, may begin as early as your first contact with the CH. Usually the hourly pay rate is suggested prior to an interview with the CC but, is not tied down until the contract is signed. Try to delay the signing of any contracts between the Contract House and yourself until you feel confident and satisfied. You can usually wait until the day or week you start the assignment.

The contract is only between you the CE and the Contract House (CH). This contract will specify your DLR, OT rate, vacation, holiday, benefits and per diem and some other clauses which will try to deprive you of opportunities. When you are not sure about something; ask and find out more. If you don't like it cross it out and initial the change. The contract will also include a Patent Agreement that you should not sign. The client company will want you to sign their Patent Agreement and you can't assign your patent rights to both parties.

## CONTRACT AGREEMENT

BETWEEN CH AND CE  
DIRECT LABOR RATE (DLR)  
OVERTIME RATE  
PER-DIEM  
VACATION OR HOLIDAY PAY  
PATENT AGREEMENT

One of the best ways to help engineers is to keep them informed. Knowing the job market, pay, benefit packages and where to market their skills will enhance their income. In the long run this will help raise rates across the nation. We would like to see engineers keep productive, get what they are worth and have the opportunity to enhance their engineering skills through the practice of their profession. Perhaps, when we work together, we will make these things happen.