

Engineering Business Plan

By: Joe Alvin Haun, PE, MSE

Receiving course credit

This is only the text file for the course. Please review or download file for later review. Course credit can not be granted until the following steps are completed.

1. You will need to purchase the course. To purchase the course, please
 - a. Enter the Engineering Business Publications Continuing Education Center web page:

<http://www.engineeringbusinesspubs.com/classes/>
 - b. Or type the link into your browser.
2. If not already, you will need to register on the site. Once you have register, each time you log-in you will be able to view any courses that you have purchased in past visits, or purchase new courses. To find this course you will first click on the category "Engineering Business Plan Strategies". You will then see all of the available courses under this category. Next click on "Engineering Business Plan".
3. If you have not already paid for the course, you will then be forward to PayPal to pay for the course. Once you have completed the payment with PayPal, you will be redirected back to the Continuing Education site.
4. If you are ready, you can now immediately take the online quizzes. When you complete an online quiz, your score will automatically be calculated. Once you have received a passing score of 80% or higher, you may download your course Certificate of Completion. If you do not pass a quiz, you can retake the quiz as many times as needed.

If you have any questions, please contact us at our website
www.engineeringbusinesspubs.com .

Engineering Business Publications

Seminars and Publications

P.O. Box 33611

Las Vegas, Nevada 89133-3611

www.engineeringbusinesspubs.com

Table of Contents

Congratulations!!	3
How to Use this Guide	3
What is a successful Engineering Business Plan?	4
Why Start an Engineering Business?	4
Engineering Business Plan	5
Elements of a Business Plan.....	8
The Purpose of the Business.....	9
Description of the Business.....	10
Marketing.....	12
Competition.....	14
Operating Procedures.....	15
Personnel.....	16
Business Insurance.....	17
<i>General Liability Insurance</i>	18
<i>Product Liability Insurance</i>	18
<i>Professional Liability Insurance</i>	18
<i>Commercial Property Insurance</i>	18
<i>Home-Based Business Insurance</i>	19
Financial Data.....	19
<i>Loan Applications</i>	19
<i>Capital Equipment and Supply List</i>	20
<i>Balance Sheet</i>	20
<i>Breakeven Analysis</i>	20
<i>Pro-Forma Income Projections (Profit & Loss Statements)</i>	21
<i>Three-Year Summary</i>	21
<i>Detail by Month, First Year</i>	21
<i>Detail by quarters, second and third years</i>	21
<i>Projections Assumptions</i>	21
<i>Pro Forma Cash Flows</i>	21
Supporting Documents.....	23
<i>Tax Returns of Principals</i>	23
<i>Franchise Contract</i>	23
<i>Building Lease or Purchase Agreement</i>	24
<i>Licenses and Other Legal Documents</i>	24
<i>Principals Resumes</i>	24
<i>Letters of Intent</i>	24
About the Author	34
Recommended Reading List	35
Contact Us	35

Congratulations!!

Welcome to *Engineering Business Plan*, your do-it-yourself guide to creating a Business Plan that works for your engineering firm.

Once you've been through this guide, you'll know precisely what it takes to write an effective Engineering Business Plan and supporting documentation. More importantly, you'll have a sample of a powerful Business Plan to get you started.

This is the next step in your business story. From this point on, you won't have to stab in the dark – you'll have clear direction. You'll start to see some real results for your efforts.

Once completing the on-line courses at our web-site www.engineeringbusinesspubs.com you will be awarded with two separate certificates worth 6 PDH. The on-line courses include reading this guide and passing the two tests on our web-site.

Currently 30 U.S States require licensed engineers to continuing education credits (PDH) in order to renew their license. The PDH awarded by our seminar will be accepted by your state licensing board. **I personally guarantee it.** If your state board rejects our on-line seminar PDH, please forward us a copy of the board's letter and we will refund to you the cost of the on-line seminar.

How to Use this Guide

Each step covers an important aspect of your Business Plan – these are things that you must give special consideration to before releasing your Business Plan.

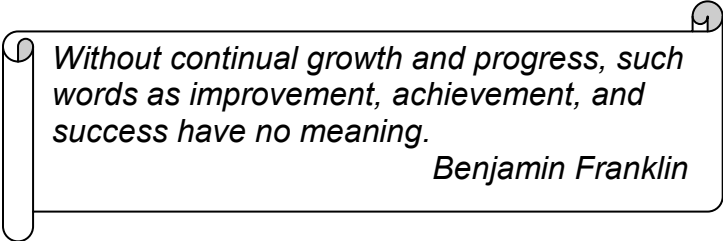
You will be surprised how much this guide will reveal about your business. It will get you to think about important issues that may have never crossed your mind in the past. It may also uncover new issues. But it is never a better time to put together or update your Engineering Business Plan than now.

Please go ahead and jot down some notes in the spaces provided. It will help to improve your Engineering Business Plan.

Later sections will go into greater depth describing the Engineering Business Model.

Now, it's time to get started.

What is a successful Engineering Business Plan?



Without continual growth and progress, such words as improvement, achievement, and success have no meaning.

Benjamin Franklin

During a down turn in the economy it is more important than every to manage your business as efficiently as possible. Professional entrepreneurs are extremely knowledgeable about their professions, but are rarely the experts in operating their company's. An engineer will have spent 8 to 10 years in college and post graduate training before being licensed as a Professional Engineer without ever taken one class in business. When the projection of incoming revenues slow or stop coming in the door your first reaction is to find more clients from the same source and second to cut costs by downsizing. This is not always the best course of action. Usually the better method is to re-examine each of your markets and clients in those markets, and to determine if those markets change in direction is temporary or long term, and then to careful review of your company's services and products. Operating any business should be a constant review of the process of that business, and whether it is operating at its best. Mistakes in the operation of the business during the good times are easy to compensate, but during the not so good times the same mistakes can close the business. A careful review may also show that your company is relying on one market to heavily and may need to diversify into other markets.

Why Start an Engineering Business?

Maybe after running a business for a few years you may find yourself asking the question that every business owner eventually does. Why did I ever want to start this business? Is it worth all of these headaches? What keeps a business going is the entrepreneur's passion. The entrepreneur's drive is to make it work and to find a way to keep the doors open. It is the thrill of doing something you like and making some cash as an added benefit. But eventually the business is no longer a hobby, but a real market impacting profitable business that is responsible to not only its clients, but also to the staff that depends on its success for their own financial security.

Many businesses are started on someone's kitchen table by drawing out the basic structure of the company, determining what services and products the company will provide, and what type of clients the company will market. It all looks so easy. Open the doors and they will come. Little thought is placed on the company's legal structure, revenues, expenses, investments, marketing, staffing, and so on. Those of us brave enough to start a business

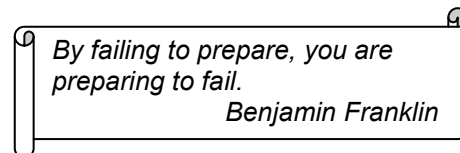
do so for various reasons. For some it's a desire to do something different, and for others it's the willness to take the risk and step out on your own.

According to national statistics, 9 out of 10 companies will ultimately fail. Why? Not because there is a good economy or bad. Many fail due to improper financing, some lack of vision, some inadequate management skills, and many other reasons. With all of these risks why do we continue to open businesses? Why open or expand an engineering business?

Whatever is or was your reason, you are now in business. And the name of the game is not survival, but success. There is never a better time then now to take a good look at the structure of the company, and if necessary, make changes to the sit-up to create the most profit.

Engineering Business Plan

The kitchen table sketch may have been the beginnings of a engineering business plan, but as the company continues to operate and grow, the business plan needs to be formalized and updated periodically. The engineering business plan is nothing more then an outline, summarizing how the company will operate to be a successful business. Within the plan there are estimates based on industry research and personal experience which determines how much the company can expect to profit. This is established by quantifying the amount of services and products to be sold minus the expenses. Reviewing and updating the business plan is absolutely a primary necessity of the business owner.



The business plan determines the direction and purpose of the company. Without a plan the company can and often will wonder aimlessly, and may eventually fail. A slowing economy can be very damaging to poorly structured companies whether they are large or small. These companies are usually not a position to handle the changing market conditions, and end up closing their doors. The stronger companies are usually far more managed with operations plan in place to handle the ups and downs of the economy or the changing target market conditions. These companies tend to survive a recession, and are set to expand during the economy's recovery period.

There are many resources on the subject of writing a business plan, including websites, computer software and books. Unfortunately most of these sources address the generic business such as retail or services business. A professional service business like engineering is unlike any other business.

ENGINEERING BUSINESS PLAN STRATEGIES

A very good resource is the United States Small Business Administration website www.sba.gov. According to the website, the minimal requirements for a business plan are as follows:

1. Description of the business: What is the structure of the business, and what are the services and products it provides?
2. Marketing: What are the potential clients and how will the business communicate with them?
3. Finances: What are the expected revenues sources and what are the expenses? Also what are the potential profits and losses?
4. Management: Who are the key personnel and who is responsible for the various functions of the company?

Now its take some time and jot down some thoughts

1. Description of your business:

Sole Proprietor Partnership Limited Liability Corporation S-Corporation C-Corporation

Services Provided:

Products Provided:

2. Marketing:

Potential Clients:

ENGINEERING BUSINESS PLAN STRATEGIES

Method of Communication:

3. Finances:

Expected Revenue Sources:

Expected Expenses (Monthly, Annually):

Expected Profits/Losses (Monthly, Annually for the next 3 Years):

4. Management:

Key Personnel and Responsibilities:

A more detailed business plan should include an executive summary, supporting documents, and financial projections. Depending on the use of the plan, certain financial projections are more important than others.

A business plan for potential investors may require a return on investment (ROI) analysis. Investors use these reports to compare several business plans.

A business plan for a bank loan requires a break even analysis and a profit potential analysis so that the bank can determine whether the business has the ability to repay the loan.

Although there is no single formula for developing a business plan, some elements are common to all business plans. They are summarized in the following outline:

Elements of a Business Plan

1. **Cover sheet** (Executive Summary)
2. **Statement of purpose** (What will the company be offering clients)
3. **Table of contents**
 - a. **The Business**
 - i. Description of business
 - ii. Marketing
 - iii. Competition
 - iv. Operating procedures
 - v. Personnel
 - vi. Business insurance
 - b. **Financial Data**
 - i. Loan applications
 - ii. Capital equipment and supply list
 - iii. Balance sheet
 - iv. Breakeven analysis
 - v. Pro-forma income projections (profit & loss statements)
 - vi. Three-year summary
 - vii. Detail by month, first year
 - viii. Detail by quarters, second and third years
 - ix. Assumptions upon which projections were based
 - x. Pro-forma cash flow
 - c. **Supporting Documents**
 - i. Tax returns of principals for last three years Personal financial statement (all banks have these forms)
 - ii. For franchised businesses, a copy of franchise contract and all supporting documents provided by the franchisor
 - iii. Copy of proposed lease or purchase agreement for building

- iv. Copy of licenses and other legal documents
- v. Copy of resumes of all principals
- vi. Copies of letters of intent from suppliers, etc.

When writing the business plan be realistic with the projections, and you and the staff will be more likely to follow the plan. Once the plan has been written, the next step is to implement the plan. The plan will do no good if you do nothing to make the necessary changes to reach your objectives. Finally, periodically come back to the plan and make changes, setting new goals and objectives. At a minimum the plan should be reviewed annually, but if the business is not going as expected, either better than expected or worse than expected, than quarterly reviews are in order.

To often a company will spend thousands of dollars to create a business plan for loans or investors, and leave it on a shelf until needed again. In some cases once the plan is found it is so out of date that it barely resembles the company, and requires thousands of dollars to update or rewritten from scratch. Do not let this be your company. The business plan is a companion.

The Purpose of the Business

The **Company's Purpose** contains one or more of the following elements.

- Who founded the company
- When the company was founded
- The company's position in the market (especially if it is a market leader)
- The company's legal organization (corporation, non-profit, private, public, etc.)
- Company purpose, mission, dedication, profile, scope, or statement
 - The product or service
 - Words that describe the product or service
 - Who is the customer

Example of company purpose is:

- HAUNTEC was formed in 2005 by Joe Alvin Haun, PE. HAUNTEC is a leading Civil Engineering company in the Las Vegas community with emphases on Land Development design. HAUNTEC has grown to providing the community with professional engineering services in Entitlements, Tentative Maps, Technical Drainage Study, Traffic Reports, Improvement Plans, Master Planned Communities, Water Resources, and Surveying.

What is the Purpose of Your Company?

Description of the Business

Yes, your company is a Civil Engineering firm that provides professional engineering services, but there is more to the company than that. The description of your business should clearly identify goals and objectives, and it should clarify why you are, or why you want to be, in business. When describing your business, generally you should explain:

- Business form: proprietorship, partnership, corporation. If you are not sure which type, refer the Types of Business forms in Engineering Business Plan, Part II.
- The licenses or permits your business requires.
- Business type: Professional service. What services will your firm provide to the community?
- Why your business will be profitable.
- What are the growth opportunities?
- When your business will be open (days, hours)?
- What you have learned about your kind of business from outside sources (government, bankers, other engineers and publications).

What are the purposes and goals of the company, who are your anticipated customers, and what services and products do you plan to provide.

Goals - Goals are general statements of what you want to achieve. So they need to be integrated with your vision. They also need to be integrated with your mission of how you are going to achieve your vision.

A goal should meet the following criteria:

- Suitable: Does it fit with the vision and mission?
- Acceptable: Does it fit with the values of the company and the employees?
- Understandable: Is it stated simply and easy to understand?

ENGINEERING BUSINESS PLAN STRATEGIES

- Flexible: Can it be adapted and changed as needed?

Examples of company goals are:

- To improve profitability
- To increase efficiency
- To capture a bigger market share
- To provide better customer service
- To improve employee training
- To reduce carbon emissions

Objectives - Objectives are specific, quantifiable, time-sensitive statements of what is going to be achieved and when it will be achieved. They are milestones along the path of achieving your goals.

Objectives should meet the following criteria:

- *Measurable*: What will happen and when?
- *Suitable*: Does it fit as a measurement for achieving the goal?
- *Feasible*: Is it possible to achieve?
- *Commitment*: Are people committed to achieving the objective?
- *Ownership*: Are the people responsible for achieving the objective included in the objective-setting process?

Examples of an engineering company's objectives are:

- To lower operating costs by 15 percent over the next two years by improving the efficiency of the manufacturing process.
- To reduce the call-back time of customers inquiries and questions to no more than four hours.
- To increase the company's share of the market by increasing the number of projects by 10% this year.
- To increase the company's profits by 10% this year.
- To reduce agency project plan review to only one set of comments 90% of the time.
- To provide a minimum of 15 hours of professional and design staff training.

Now let's take those early thoughts you wrote and expand upon them.

Describe your Company

What are your Company's Goals?

What are your Company's Objectives?

Services Provided:

Products Provided:

Marketing

Marketing is simply getting the word out about your company and the services and products it provides, and then repeating the process over and over again. How does your company market to its potential clients? Professional service companies do not market like a retail business. Marketing for a retail business does not apply to

engineering. In fact, most people will never ever know anything about your company. Even the marketing for other professional services like doctors, lawyers, accountants, and real estate agents do not always apply to engineering. Marketing is so important to the livelihood of your business that there is whole chapter dedicated to it in our book *Engineering Business Success*. You can find the book on our web-site

www.engineeringbusinesspublications.com .

The Business Plan needs to cover the following subjects under marketing

Target Market

You should be able to list your major clients that your firm will be able to contract services. You should also know the market size that you will be targeting and what share of that market you hope to provide these services to. Niche markets can be very competitive and may reduce your profit percentages. Engineers provide services to these niche markets whether they are public or private. There should also be an explanation as to the expected growth rate of the market segment. At the end 2007 most business plans indicated a steady growth in residential and commercial development, they were wrong. Be sure to study the indicators and be prepared to revise your Business Plan accordingly.

Example: HAUNTEC is small engineering business that will cater to the smaller commercial and residential developer. The average client's project size within the Las Vegas Valley is less than \$500 million. This market has significantly reduced since 2007, but it is estimated that are at least \$2 billion of projects that will be in design for the Las Vegas area in 2010. Due to the reduced competition, HAUNTEC is seeking to increase its share of the market to 5% of this year. This market has started a turn-around and is expected to gradually grow at 1 to 3 percent annually for the next 5 years.

Who are your company's Targeted Market?

Is there an expected growth in the Market or a decline? Explain why.

What services is your firm providing to this target market?

Explain your firm's pricing strategy in order to maintain a reasonable profit and still be able to compete.

Competition

When you first started your business every engineering company in your region was your competition. When you grow your business every engineering company in your region is your competition. When you are the largest engineering company in your area every engineering company in your region is your competition. Get the idea. You must know your competition, because they know you and they are looking for ways to gain greater market share. Although a recession may get rid of the weaker companies, companies who significantly reduce their prices or even offer free services in order to stay in business. As a business manager you must know what your competition is doing.

Who is your competition?

ENGINEERING BUSINESS PLAN STRATEGIES

What services and products do they provide?

What are their fees (High/Medium/Low)?

What is their reputation?

Who are their clients?

Operating Procedures

Who is responsible to contact clients, marketing, accounting, hiring employees, writing proposals, and on and on. How does the company operate in its day to day activities?

What are the procedures in creating a set of Improvement Plans, preparing technical reports, parcel maps, and so on? Who does the printing, the binding, and the mailings? When you look at it, there are a lot of activities in the operations of a Civil Engineering firm. Unless it is well defined who is responsible for what, you will have people duplicating jobs and thus costing the company money.

But you do not have to specifically explain each of these procedures in the Business Plan. The point is to emphasize that these plans have been implemented and followed by the staff. Each Standard Operating Procedure should be listed with a purpose and a brief summary.

What Operating does your company have? What are their purposes? Why are they used?

Personnel

Before you can determine the necessary personnel in the firm job positions need to be defined. A smaller firm will have personnel covering several positions. As the firm grows the staff will also grow to fill each position. Below is a partial list by potential departments and staff positions;

- Design Department
 - Project Manager
 - Project Engineer
 - Project Coordinator / Project Manager Assistant
 - Engineer Intern (Engineer-in-Training)
 - CAD Manager
 - CAD Designer
 - CAD Operator
- Surveying Department
 - Survey Manager
 - Surveyor
 - Party Chief
 - Rod Man
- Hydrology Department
 - Hydrology Manager
 - Hydrologist
- Transportation Department
 - Transportation Manager
 - Transportation Engineer
 - Traffic Analyst

ENGINEERING BUSINESS PLAN STRATEGIES

- Traffic Counter
- Landscape and Parks Department
 - Landscape and Parks Manager
 - Landscape Architect
 - Landscape Designer
 - Landscape CAD Operator
- Information Technology Department
 - IT Manager
 - IT Programmer
 - IT Technician
- Administration Department
 - Office Manager
 - Receptionist
 - Accountant / Bookkeeper
 - Carrier
 - Printer
- Marketing Department
 - Marketing Manager
 - Marketing Assistant

Sometimes staff positions overlap into several departments. A CAD Operator filling the role in Land Development and Public Works. When a company is small or just beginning most of the positions are filled by one or two people, while larger firms have individuals filling each job title.

List your company's Key Personnel and their Responsibilities:

Business Insurance

There are multiple insurance policies that an engineering firm should carry to protect the firm's liable risk. Insurance coverage is available for every conceivable risk your business might face. Cost and amount of coverage of policies vary among insurers. You should discuss your specific business risks and the types of insurance available with your insurance agent or broker.

Be aware that not all insurance agents and brokers can provide you with every type of insurance your firm will need. It is best to find an agent or broker that capable of providing Professional Liability insurance as well as business insurance.

Your agent can advise you on the exact types of insurance you should consider purchasing. According to the United States Small Business Administration, the types of business insurance available are described as follows:

General Liability Insurance

Business owners purchase general liability insurance to cover legal hassles due to accident, injuries and claims of negligence. These policies protect against payments as the result of bodily injury, property damage, medical expenses, libel, slander, the cost of defending lawsuits, and settlement bonds or judgments required during an appeal procedure.

Product Liability Insurance

Companies that manufacture, wholesale, distribute, and retail a product may be liable for its safety. Product liability insurance protects against financial loss as a result of a defected product that causes injury or bodily harm. The amount of insurance you should purchase depends on the products you sell or manufacture. A clothing store would have far less risk than a small appliance store, for example. In most cases a Civil Engineering firm would not need to carry this type of insurance, unless the firm represents or is contracted to tests and develop products.

Professional Liability Insurance

Business owners providing services should consider having professional liability insurance (also known as errors and omissions insurance). This type of liability coverage protects your business against malpractice, errors, negligence in provision of services to your customers. You may be required by your state government to carry such a policy. An error in the grading design of a site could cost the firm hundreds of thousands of dollars to fix.

Commercial Property Insurance

Property insurance covers everything related to the loss and damage of company property due to a wide-variety of events such as fire, smoke, wind and hail storms, civil disobedience, and vandalism. The definition of "property" is broad, and includes lost income, business interruption, buildings, computers, company papers and money.

Property insurance policies come in two basic forms: (1) all-risk policies covering a wide-range of incidents and perils except those noted in the policy; (2) peril-specific

policies that cover losses from only those perils listed in the policy. Examples of peril-specific policies include fire, flood, crime, and business interruption insurance. All-risk policies generally covers risk faced by the average small business, while peril-specific policies are usually purchased when there is high risk of peril in a certain area. Consult your insurance agent or broker about the type of business property insurance best suited for your small business.

Home-Based Business Insurance

Contrary to popular belief, homeowners' insurance policies do not generally cover home-based business losses. Depending on risks to your business, you may add riders to your homeowners' policy to cover normal business risks such as property damage. However, homeowners policies only go so far in covering home-based businesses and you may need to purchase additional policies to cover other risks, such as general and professional liability.

For additional information visit the following website; www.business.gov.

List your company's Insurance Policies:

Financial Data

Loan Applications

In the operation of a business, loans are acquired to pay for a wide range of financial obligations. Some of the situations requiring loans are for making payroll, paying for new equipment, new vehicles, office buildings, mergers, and so on. A list of loan obligations show a portion of the company's liabilities

List your company's Loan obligations including amounts:

Capital Equipment and Supply List

Provide a list of equipment and supplies that is owned by the company with an estimate value. These items are considered business assets.

List your company's equipment (Plotters, Computers, Printers, Copiers, Table, Cabinets, and so on) and estimated value:

List your company's supplies (Plotter paper, Office Supplies, and so on) and estimated value:

Balance Sheet

This sheet shows the company's income and expenses. The difference is the balance which shows that either the company is making a profit or taking a loss. If your office is utilizing financial software like Quick Books then this is as simple as a click of the mouse. If your office is utilizing financial software like Quick Books, then this is as simple as a click of the mouse.

Breakeven Analysis

Breakeven Point is the "no loss, no profit" level of operations; the point where the company is not losing money nor gaining profits, breakeven. It is a point where Revenue equals Total Cost. This is probably one of the most difficult analyses to complete for a professional service firm. Especially since the price for a service can vary depending on the job. The break-even analysis then is based on the billable man hours required to pay all expenses per month. Again, if your office is utilizing financial software like Quick Books, then this is as simple as a click of the mouse.

Pro-Forma Income Projections (Profit & Loss Statements)

Based on market forces and the expected growth of the company one can estimate the projected income of the company. These may need to be updated periodically (Yearly, Quarterly, or, if necessary, Monthly) to account for changes in the market. Again, if your office is utilizing financial software like Quick Books, then this is as simple as a click of the mouse.

Three-Year Summary

Summarize the expected sales and profits for the next three years. This is a subjective estimate based on the likelihood of winning new jobs, and the local economy. Rapid down turns in the economy is not usually anticipated. Again, if your office is utilizing financial software like Quick Books, then this is as simple as a click of the mouse.

Detail by Month, First Year

In a table detail where the expected income will be coming from for the next year for each month and do the same for expense. This is fairly easy when using project schedules in your contracts, and estimated number of proposals that will be awarded over the coming year.

Detail by quarters, second and third years

In a table detail the where the expected income will be coming from for the 2nd and 3rd year for each quarter and do the same for expense. This can be difficult, but it is based on your marketing plan.

Projections Assumptions

Describe in detail how the assumptions were made and, if available, reference any supporting documents. Since most engineering contracts run for 1 to 2 years, projections can be made in part on the current project receivables. Most other supporting documents can be obtained from your local government and Chamber of Commerce.

Pro Forma Cash Flows

A pro forma cash flow is created to predict inflow and outflow of cash to your business. It is particularly valuable in predicting when your business may experience a cash shortage. This allows you to determine in advance whether or not you will need to cover your cash shortage by borrowing money, selling more stock in the business, or taking other steps, such as cutting expenses, to improve your cash position. To demonstrate

the steps of building a pro forma cash flow, let's use a hypothetical company, West Coast Civil Engineering, Inc.

Example:

West Coast Civil Engineering, Inc. Cash Flow Projection

Starting cash

To create a pro forma cash flow, you need to know your current cash position. West Coast Civil Engineering is beginning 2007 with \$90,000 in its checking account.

Cash sources

- Receivables (sales) - West Coast Civil Engineering provides professional engineering services to developers of commercial and residential properties on a fix fee basis. Developers pay their accounts to West Coast Civil Engineering within thirty days after they are invoiced. This means that in January 2007, West Coast Civil Engineering will not receive cash from services performed in January, but will be collecting on services performed in December 2006. Those services totaled \$15,500, so that amount is entered in the January sales column of the cash flow.
- Total cash sources - This is a totaling of all cash received from all sources. Receivables from professional services to developers constitute the only source of cash for West Coast Civil Engineering. The total Cash Sources for January is \$15,500. Your cash sources may be more involved.

Cash uses

- Cost of goods - West Coast Civil Engineering does not purchase any manufactured goods. So the company enters \$0.00.

Note: If you company does sell products then enter the amount for the month. Your company may try to balance its receipt of goods to match anticipated sales. This will result in a vacillating cost of goods figure each month. Most firms buy goods on credit and delay paying for those goods as long as they can to improve their cash flow. These factors need to be taken into consideration when creating a pro forma cash flow. Small or new firms, however, often have to prepay for goods until credit is established.

- Operating expenses - The operating expenses for West Coast Civil Engineering are \$4,500 per month.

ENGINEERING BUSINESS PLAN STRATEGIES

- Income taxes - Income taxes for most businesses fluctuate from month to month because both state and federal taxes are paid as estimates on a quarterly, not monthly, basis. West Coast Civil Engineering paid its estimated tax installments in December and doesn't have any tax payments due in January.
- Total cash uses - This is a totaling of all cash expenditures. In the case of West Coast Civil Engineering, in the month of January, this amounts to \$4,500 derived from cost of goods and operating expenses.

Net change in cash position

This figure is derived by subtracting the estimated cash uses from the estimated cash sources. For West Coast Civil Engineering there is a net change in cash position of +\$11,000.

By adding the net change figure to the starting cash figure, you will have the starting cash figure for the next month or time period for which you are calculating a cash flow.

1) Cash On-Hand in of December:		\$90,000.00
2) Cash Sources		
a. Receivables	\$15,500.00	
Total Cash Sources (2.a)		\$15,500.00
3) Cash Uses		
a. Cost of Goods	\$0.00	
b. Operating Expenses	\$4,500.00	
c. Income Taxes	\$0.00	
Total Cash Uses (3.a + 3.b + 3.c)		\$4,500.00
4) Cash On-Hand in of January (1 + 2 - 3)		\$101,000.00

In this case, West Coast Civil Engineering will begin February with \$101,000.

Supporting Documents

Tax Returns of Principles

Tax returns of principals for last three years and the Personal financial statement (all banks have these forms). Although recommended for the business plan, these documents should not be made readily available to the public unless requested.

Franchise Contract

In extremely rare instances there maybe engineering firms that are franchises. In these cases a copy of franchise contract and all supporting documents provided by the

franchisor should be included in the plan. Civil Engineering firms are not generally a franchise.

Building Lease or Purchase Agreement

Copy of proposed lease or purchase agreement for building should be included in the Business Plan.

Licenses and Other Legal Documents

This section of the Business Plan should include the following:

- A copy of all Professional Engineer licenses and Professional Land Surveyor licenses,
- A copy of any state, county and city business licenses and permits necessary to operate the business, and
- Any other business related legal documents.

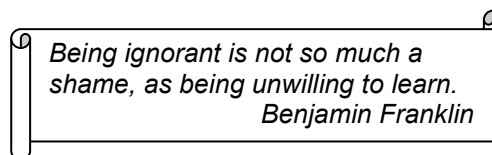
Principals Resumes

A copy of each of the principals resumes should be included to demonstrate the experience and knowledge of the individuals managing the firm

Letters of Intent

In the Civil Engineering professional we do not normally have any suppliers of products. Our business is in the professional service sector and Letters of Intent are not normally provided.

Types of Businesses



Let's review the various types of business structures; Sole Proprietor, Partnership, Limited Liability Corporation, and Corporation.

Table 1 - Types of Business Structures

<p>SOLE PROPRIETOR</p> <p>A Sole Proprietor business has only one owner that receives all of profits and is responsible for all of the debt.</p>	<p>A sole proprietor is only suited for a small business just starting. Once employees are being hired the liability alone makes little economic sense.</p>
<p>PARTNERSHIP</p> <p>A Partnership business has more than one owner and both profits and liability are shared by the owners.</p>	<p>Partnerships are basically sole Proprietor businesses. The Partnership spreads out the risks. Only well defined partner roles can work. Otherwise, due to economic reason, partnerships are not the best form of business.</p>
<p>CORPORATION</p> <p>A Corporation refers to a business started by more than one person that seeks to sell shares to investors.</p>	<p>Due to the tax advantages, a corporation is the best business form for a large company. If your firm is not already a corporation, then it usually recommended to file the necessary state paperwork to incorporate as soon as possible.</p>

Becoming a Sole Proprietor

Believe it or not, you might already be a sole-proprietor without knowing it! Are you a freelance CAD operator? Do you sub-contract your skills to an engineering firm? Maybe you're a technical salesman who only receives a 10% commission? Well, guess what? You're a sole proprietor!

Of the three different types of business structures mentioned here, setting up as a sole-proprietor is by far the easiest. Very little paperwork is involved, if any. Messy agreements are out of the picture. And lawyers may not even be necessary (although they are, of course, highly recommended).

Most states will require you to obtain special permits or licenses that will allow you to conduct your engineering business, and almost all of the states will that in order to provide engineering services a state registered Professional Engineering must be employed. For more information about state and local laws, check with your accountant or lawyer, or even make a call to City Hall. Your lawyer will also know where to buy your business permit, and can inform you of any other laws or ordinances that your business will have to follow.

There are several attractive advantages to being a sole-proprietor, while there are just as many disadvantages. So let's address the key issues that you should consider before you start up your own sole proprietorship.

Due to the small amount of paperwork involved, and the minimal price of registration fees, becoming a sole-proprietor is a very simple undertaking. Because there is only one owner, that person has total control over most, if not all, business decisions. All company profits are paid directly to the owner, and aren't split with other people, such as partners. If the owner were to die, the company would be quite easy to dissolve, as it would be given to the beneficiary of the will. Running a business this way allows the owner to control their work schedule, which often delivers greater flexibility than some other options, and this is what makes sole proprietorships so appealing to so many people. Compared to partnerships and corporations, a sole-proprietor doesn't have anywhere near as many rules and regulations to worry about.

The owner is also responsible for all debts of the business, which does leave their personal assets at risk of repossession. And with only one contributing revenue source, it can be very difficult to raise the capital to run a successful business. Hiring a knowledgeable and dependable employee can prove to be a difficult task for a small business, particularly if they can't afford to offer market wage or many opportunities for promotion. The owner is, of course, also responsible for taking care of all tasks, including simple jobs such as cleaning the toilet. And, due to the nature of operating a business, income can be very unstable at times. Not surprisingly, all the problems outlined here can lead to increased stress, and heighten the likelihood of the business owner sustaining stress related injuries.

Forming a Partnership

A partnership is when two or more people join forces, combining their strengths to start an engineering business together. Partnerships require more legwork than sole proprietorships do, but can be worth the effort. The potential partners must meet with a lawyer, who'll create a binding contract between them – and this contract is essential to a successful partnership.

The contract dictates what functions each partner will perform through their role in the business. It outlines the payment situation, as some partnerships do not split profits and expenses equally. The contract also states what will happen to the business if one partner dies or wants to leave, and indicates whether new members can be added to the partnership. And finally, the contract will also dictate the method of resolution for any disputes that may emerge among the partners in the course of running the business.

Like a sole proprietorship, a partnership can also be fairly simple to set up, even with the extra paperwork and lawyer involvement. Each of the partners receives a certain percentage or agreed upon amount of the company's profits. When several partners are involved, there will usually be many more revenue sources available for the procurement of starting capital. The special skills of each partner should complement each other, which in turn creates a stronger and more successful business. For the most part, the company profits will be shown on each partner's personal tax return, so

there's no messing around with complicated tax forms. Partnerships often find it much easier to attract skilled employees than a sole-proprietorship would, as partnerships can offer employees the incentive of achieving their own partnership in the firm, which is particularly popular with lawyers and accountants. And, similar to a sole proprietorship, a partnership is much more flexible than a corporation in terms of rules and regulations.

As is also the case in a sole proprietorship, each partner is liable for the debt that the business accrues. Most business plans are established with the agreement of all partners, which can also cause problems, as disagreements between partners can often occur. Not all employee benefits are tax deductible, and the partnership may have a limited life (as either partner may quit or die at an unknown time), unless the contract includes provisions for this situation.

A partnership is much less flexible than a sole proprietorship, but can suffer the same instability when it comes to income and cash flow. If the business's partners don't get along, or have complementary skills, they could again experience major problems. And if one partner doesn't fulfill their part of the partnership agreement, the contract can be difficult for the other partner (or partners) to sever, even given specific clauses that may have been written into the contract for just such a situation. Stress is also common in partnerships, as not only do the partners have to worry about the business itself, but they must also nurture good working relationships with the other partners.

While a general partnership provides no liability protection and limited investment opportunities, it is easy to create and involves simple tax reporting. Each partner's taxes are based on their own tax levels. All partners must reach an agreement about the percentage each partner holds in ownership as well as what roles each will have in the business. A lawyer is usually involved in a partnership agreement.

Limited Liability Corporation

A limited liability company (LLC) could be an individual, a partnership, or a corporation and is often thought of as being halfway between a corporation and a partnership. The company does not hold a member liable, just like a corporation, but also allows for pass-through taxation and a less rigid structure of operating than a corporation does.

Most states have in the past required a limited liability company to have at least two members. That has changed; however, as most states today now allow sole owner limited liability companies due to changes in IRS regulations. Rules regarding partnerships and corporations are ever-changing.

Developers often create a LLC on each project in order to risk to the main corporation. Engineering companies can also sit-up the business structure by creating a LLC for each of their major Departments (Landscape and Parks, Surveying, and Land

Development). Each LLC is a subsidiary of the parent corporation. Again this is to reduce the risk of law suits on the primary business.

Incorporating a Business

A corporation refers to a business started by more than one person that seeks to sell shares to investors. A partnership also has more than one owner and both profits and liability are shared. The main difference between a sole proprietor or partnership and a corporation is liability and taxes.

A corporation is considered its own unique entity. It functions and has rights and privileges, somewhat like a person. A corporation can sue others in court, and be sued by others in court; can enter into, and be bound by, contracts. A corporation has the ability to borrow money from creditors, and even the government. Any corporation is required to hold a business license in its own name, and must pay taxes.

The liability of each member is protected in a corporation as personal risk is limited by the investment. A partnership, like a sole proprietorship, does not offer limited liability protection. A limited liability partnership, however, has more than one partner who is licensed in a business such as an accountant or lawyer.

Incorporating a business also promotes the existence of a company. For example, the founder of the fast-food chain dies. Since the business is a corporation, it will remain open and continue to grow. Had it been a partnership or sole proprietorship, it might have folded on the death of the founder.

Unlike partnerships and sole proprietorships, corporations face limited liability, which means that the owners (called shareholders) are not held financially responsible for the debts of the business. However, this does not mean that the shareholder is completely “off the hook”, so to speak. The shareholder is still responsible for the number of stocks they own, so in some cases, the shareholder could very well lose their whole investment if these funds are needed, for example, to pay creditors.

Corporations can also enjoy great tax advantages, but these will depend on where the corporation is located. Your local accountant or tax lawyer will have more information regarding this.

Additional funds and capital can be easily gained in a corporation, as shareholders can simply sell off additional stock, and this use of stocks to represent (to some degree) a person’s power within the business also allows company ownership to be easily transferred. Lastly, the corporation’s Board of Directors can contribute considerable knowledge in many areas, and this is usually extremely beneficial to the corporation’s overall success.

Corporations are much harder to set up than other types of businesses outlined here. Many government laws and regulations must be met, and because of this, a corporation usually requires more time and money than the other forms of business to set up. In some cases, instead of tax advantages, the business may actually face tax disadvantages through incorporation, and the business's minority shareholders can be exploited if their knowledge and experience isn't valued by majority stockholders.

Now that you've got the skinny on setting up the proper business, get out there and do it! Make the calls, meet the lawyers, complete the paperwork, and put your college education and experience to work.

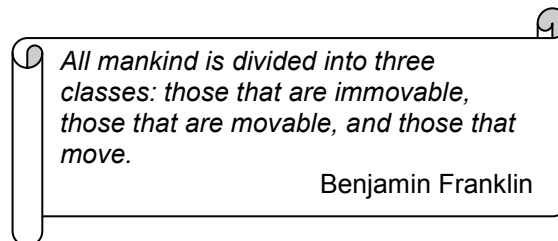
C-Corporation

A C-Corporation is a for-profit, state corporation. The corporation is taxed and pays taxes separate from its shareholders. The shareholders have ownership of the corporation and elect the Board of Directors. Double taxation can occur in a C-Corporation as a corporation must pay taxes on its profits as well as pay taxes again when the profits are paid out as dividends. However, double taxation is sometimes avoided by paying shareholders salaries with fringe benefits rather than dividends.

S-Corporation

An S-Corporation is a C-Corporation that receives "S-Corporation Status" after filing a 2553 IRS form. S-Corporations are taxed in a pass-through manner rather than as a regular corporation taxed on its own basis. The pass-through taxation allows the shareholders to pay taxes like members in a partnership. The shareholders report the S-Corporation's profit or loss on their individual tax returns. Some states may require an additional filing form for "S-Corporation Status" along with the federal 2553 form.

Business Model



Separate from a Business Plan is a Business Model, which are nothing more than a description of the means and methods the firm will employ to earn revenues projected by the Business Plan. The model represents the business as a system of a series of steps (actions) to generate revenue and make a profit. The model includes the components and functions of the business, as well as the revenues it will generate and the expenses it incurs.

The traditional Civil Engineering business model is as simple as the engineering company and the customers within a key market like Land Development. Figure 1 graphically shows the basic model for engineering.

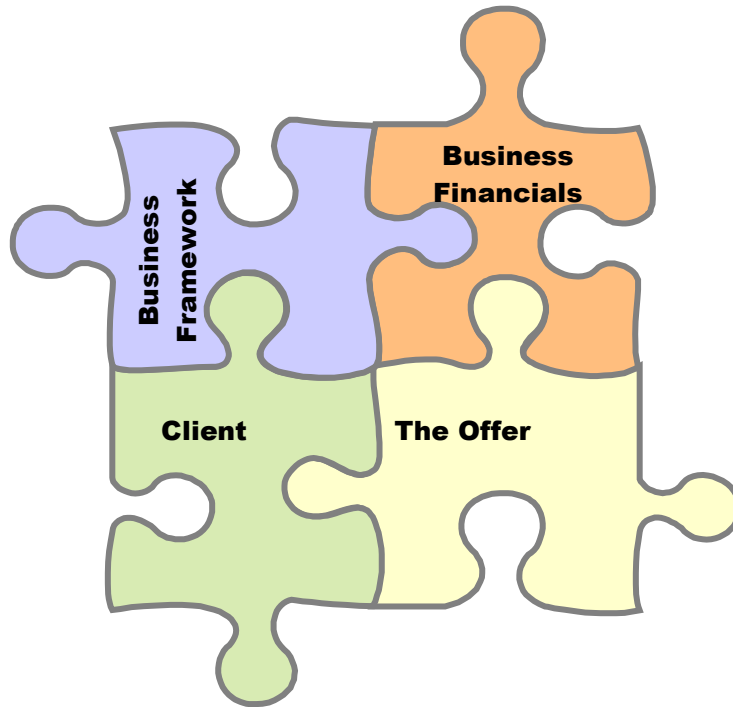


Figure 1 – Basic Engineering Business Model

The business can be further broken down to the key components.

Business Framework:

Key Resources – What are the company’s capabilities necessary to make the business model possible?

Key Activities – What are the company’s activities necessary to implement the business model?

Key Partners – What company partners are motivated to participate in the business model?

Client:

Segment(s) of Clients – What is (are) the targeted audience for the company’s products and services?

ENGINEERING BUSINESS PLAN STRATEGIES

Communication and Distribution Channels (Marketing) – What are the means the company will utilize to reach the customer and offer them those products and services?

Client Relationship – What are the processes the company will establish to maintain its relationship with the clients?

Business Financials:

Revenue Streams – What the company's sources that will generate funds to support the business model?

Cost Structure – What costs will result from engaging in the business model?

Value Proposition (The Offer):

What are the company's products and services being offered to the market?

Now the business looks more like Figure 2. The business resources of technical staff and equipment complemented by business partners are able to offer a wide range of products and services with a particular billing rate to potential and existing clients, which are obtained through on-going marketing efforts of the company's staff with an ultimate goal of presenting a proposal and an agreement between the client and the business to provide certain services and products for revenues.

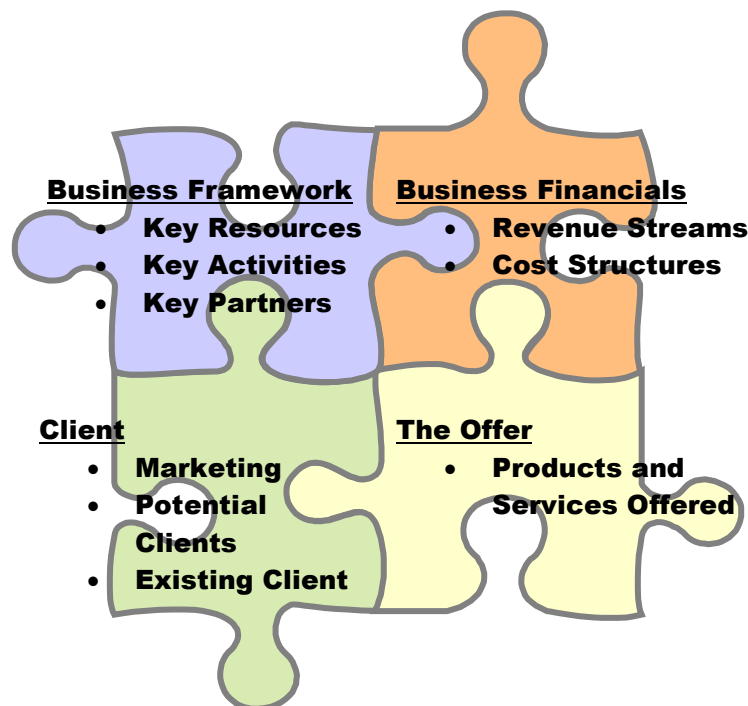


Figure 2 – Detailed Engineering Business Model

These steps or stages can be grouped into categories; the Business Infrastructure, Financial Strategies, Clients, and the Offer or Proposition (see Figure 3).

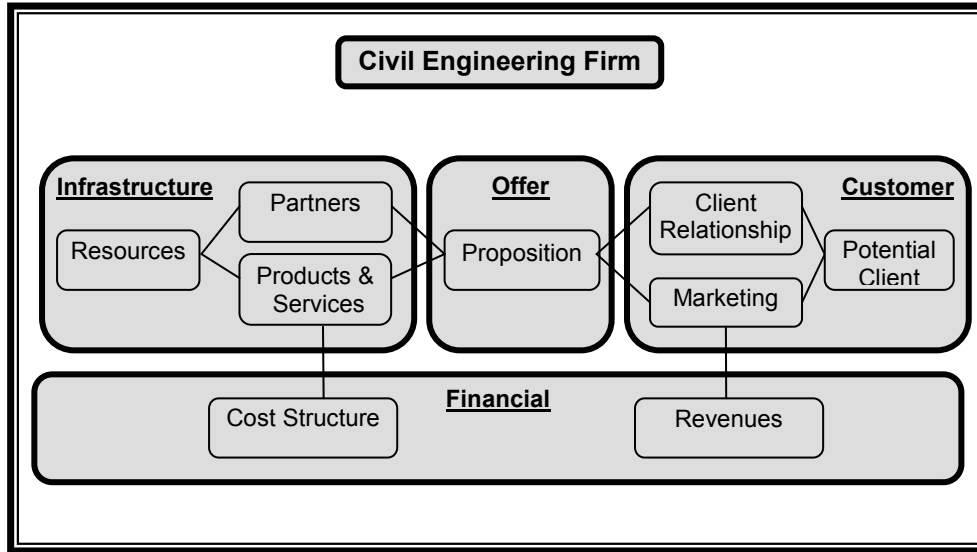


Figure 3 – Engineering Business Model with Categories

Each of the four areas are covered in greater detail at our website www.engineeringbusinesspubs.com . For now it is easier to understand that in order to get to the end result, revenues, each of these four areas must be operating at the best level of efficiency in order to obtain the most revenues. Failure in any step will either reduce the amount of revenue or completely run your business out of business.

It would be difficult to provide services or products to your clients if the resources necessary were inadequate. Imagine if your firm was contracted to provide a Technical Drainage Study for a 200 acre site, but you were not capable of analyzing a proposed open channel using any of the available commercial software. You then have to sub-contract this work out, hopefully to one of your partner companies, to assist you in this area of expertise. Otherwise, you will not be able to provide the service you were contacted to perform.

The same is true if your firm has all of the necessary engineering design expertise it requires and has also contracted with other sub-consultant to provide surveying services, but you have no marketing expertise. Although there are a number of needy

ENGINEERING BUSINESS PLAN STRATEGIES

clients in your local market, you have no way of contacting them nor do you even know how to identify your potential clients. The chain is broken because there is no way for you to contract with clients to provide the services you have available. Of course, no clients means no revenues, and no revenues mean no business.

Even if you have an excellent infrastructure and business partners, and you have a huge pipeline of clients that you obtained through marketing, all will be for not if your proposals do not provide your clients with the necessary services they need at a fair price.

This guide has provided detailed information on how to put together an Engineering Business Plan. If you have not already done so, it's now time to spend the time to either put together your first business plan or update an existing one. Once completed, the plan is a resource with a great deal of information. It will make you well of aware of competition, the market, and your company's capabilities. Updating the plan regularly will keep you well informed on what is happening in your business.

About the Author

Joe Alvin Haun, PE, MSE

Joe Haun is a highly experienced Civil Engineer, author, public speaker, and business advisor who have worked in the engineering profession since 1983.

Mr. Haun's early career was in the United States Air Force as an Engineer Assistant. A Desert Storm veteran he has a unique perspective of the Middle East.

Mr. Haun graduated from the University of Las Vegas, Nevada in 1994 with a BS degree in Civil Engineering and in 1995 with a MSE in Civil and Environmental Engineering.

Mr. Haun worked with several engineering firms in the Las Vegas valley until February 2005 when open his own engineering company HAUNTEC, which has grown to a designing multi-million dollar projects in Nevada and Utah and in the countries of Iraq and Costa Rica. Review his growing company's website at www.haunteceng.com to see the firm's latest capabilities.

Mr. Haun has published articles in engineering magazines and has given speeches on water resources, and is currently working on several articles on permeable pavements.

In 2009, Mr. Haun started Engineering Business Seminars and Publications to. His first publication is the "Engineering Business Success." He has created many self-study engineering business seminars for Professional Development Hours credits. Visit the web-site www.engineeringbusinesspubs.com to review the latest seminars and publications.

Recommended Reading List

Engineers are constantly learning about new techniques, products and design methods. Improving your skills as a business leader is no different. Reading books is one of the best ways to improve your skills. Below is a list of books we recommend.

- *Engineering Business Success* by Joe A Haun (book)
 - *Engineering Business Plan* by Joe A Haun (seminar)
 - *Engineering Marketing Strategies* by Joe A Haun (seminar)
 - *Engineering Operations Strategies* by Joe A Haun (seminar)
 - *Engineering Financial Strategies* by Joe A Haun (seminar)
 - *Engineering Proposal Strategies* by Joe A Haun (seminar)
 - *Engineering Joint Venture Strategies* by Joe A Haun (seminar)
 - *7 Habits of Highly Effective People* by Steven Covey
 - *First Things First* by Steven Covey
 - *Awaken the Giant Within* by Anthony Robbins
 - *Unlimited Power* by Anthony Robbins
 - *The E-Myth Revisited* by Michael E. Gerber
 - *Get Clients Now* by C. J. Hayden
- ❖ Please visit our web-site www.engineeringbusinesspubs.com to order Joe Haun products from our recommended book list.
- ❖ Our on-line seminars include the manual, down-loadable from the web-site www.engineeringbusinesspubs.com , and sample letters and forms. After completing the seminars the participant will receive a PDH certificate showing the number of units awarded.

Contact Us

Engineering Business Seminars and Publications

P.O. Box 33611
Las Vegas, Nevada 89133-3611

www.engineeringbusinesspubs.com