Incentive Compensation: Bonusing and Motivation

by

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Bachelor of Science in Civil and Environmental Engineering
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ABSTRACT

Management is often frustrated by the lack of motivation generated by end of the year bonuses. Currently, there are two compensation ideals, merit-based versus incentive-based. Merit based compensation correlates compensation to one's job performance, whereas incentive based on set goals and correlates bonus rewards before the time frame used to evaluate the performance.

An effective incentive program contributes to a company's overall competitiveness by encouraging superior performance as well as improving the company's earning and cash flow. An incentive compensation program is not a substitute for lack of staff accountability, rather it should be used to motivate individuals and align the goals of individuals with those of the company.

The purpose of this study is three-fold. First to determine current incentive package in A/E/C firms and comparing them with other industries' compensation. Second, research how more fitting incentive packages will help to make the industry more efficient, and transform the industry to a non-zero sum situation for all parties. Lastly, determine factors needed to have a complete incentive package, as well as explore possible ways of implementation of the incentive programs.

In conclusion, not all A/E/C firms will benefit from incentive programs, but those that are in certain fields of the industry will see an increase in productivity and overall competitiveness of the firm.

Thesis Supervisor: Fred Moavenzadeh
Title: James Mason Crafts Professor Systems Engineering and Civil and Environmental Engineering

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Mom and dad, thank you for you invaluable support throughout the years. I would not be here today without you, it has been a long journey, but it has finally happened.

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Chapter 1: Introduction

The core of any company is its staff. The effectiveness of a company to maintain a quality team of employees is linked to its ability to manage the staff as well as recognize the contributions of each individual. Effective performance management programs enable companies to function to the best of its ability by aligning goals of individuals with that of the company. When goals are aligned, companies are better able to compete in the industry, and morale is also higher when employees are properly motivated.

Job satisfaction must be high for an employee to stay with his/her current job, especially in the face of higher salary potential elsewhere. A well planned incentive compensation plan gives employees the feeling that the company is fair, and it is very important that employees understand their potential earnings so that other company offers are not as attractive.

1.1 The Construction Industry

The construction industry is $4 trillion worldwide, and even in just the United States, the industry is extremely large. The industry is very unique in that each project brings together a team of people who have never worked with each other before, and at the end of the project, split up, and will probably never work with that exact group of people again. Each project is unique, whether it is a building, a freeway, a water treatment plant, or a bridge, the conditions for each project will never be exactly the same as another. There are low barriers to entry in the construction industry, anyone with a pickup truck and some tools may call themselves a construction company. Though low barriers to entry, there are very high barriers to exit the industry, and hence many companies may wish to leave the industry but are unable, as construction tools, and other large items are highly specialized and hence difficult to sell.

The tradition construction process had been design/bid/build. This process has long been the favorite, having architects and engineers complete a detailed design, which is then big out to general contractors. No longer is design/bid/build the driving delivery method, other delivery methods are being embraced by owner, either due to cost of time constraints. A better incentive package allows companies to stay competitive in a changing industry.

1.2 The Need For Incentives

In the construction industry, the firm's people are its great asset, therefore, firms must implement programs to attract, and retain quality employees. A well-construction incentive compensation plan will allow the firm to fairly compensate employees based on the performance of the company.[1] Very important in planning for an incentive compensation plan is aligning the goals of the company with those of the employee. If the owner works with the employee to see what is important to the employee, fit it in with the goals of the company, that relationship will be a win win for both parties. Incentives may come in many forms, and depending on the work force, the company must strategically position its compensation package to attract, retain, and motivate the best employees.

[1] Hessen, Cory. *Using an Incentive Compensation Plan to Achieve Your Firm's Goals.* FMI: Management Consultants to the Construction Industry

The objectives of a compensation package are to[2]:

- Attract the best employees
- Retain the high performing employees
- Motivate employees for superior performance
- Create a competitive advantage for the company

1.3 Scope

The scope of this study is to determine current incentive packages in the construction industry and compare them with those of other industries' compensation. Next, research how a more fitting incentive package will help make the industry more efficient, transforming the industry to a non zero sum situation for all parties. The last portion of the paper will be to explore possible ways of implementing incentive programs, and variables the company needs to consider before attempting to implement a new incentive compensation plan.

1.4 Methodology

The project will be approached with the intent of supporting the findings of the paper with past research. Also, a theoretical example of productivity and compensation will be given.

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[2] Sharpnack, Rick. *Compensation in the Construction Industry.* FMI: Management Consultants to the Construction Industry

1.5 Future Chapters

This research paper will cover the aforementioned scope with the methodology mentioned above. Below is a summary of chapters in the paper.

Chapter 2 provides an overview of incentive systems and how the systems help companies stay competitive. It explores behaviors of employees in different environments and bonus incentives. Objectives of compensation packages are listed, as well as how firms implement various compensation packages.

Chapter 3 explores the construction industry, and how it differs from other industries. The industry is a very low profit margin industry consisting of mostly singular free standing projects. Each construction project is a compilation of many players, but each project consists of a different set of players each time. The different delivery methods are explained in detail in this chapter.

Chapter 4 analyzes the important of attracting, retaining, and motivating employees. An example of how valuable employees are to a company, and the potential loss for the bottom dollar to a company when losing an employee is analyzed. It also explores specific reasons for construction companies to change present incentive systems. Analysis is done on how the growing number of delivery methods and how contracts are written are especially important to incentive systems.

Chapter 5 gives the conclusion and recommendation for future implementation of incentive programs to best fit the construction industry given the needs of companies and employees. There is not one compensation package that will fit the needs of every company, but there are factors the company needs to evaluate for it to stay competitive in the industry today.

Chapter 2: Incentive Systems

2.1 Overview

Why would a firm give bonuses when a salary is already given to individuals? Firms often give bonuses in hopes of attracting potential employees, motivating current employees, and retaining superior management and employees to remain competitive. By sharing profits with employees, firms also have less corporate taxes to pay.

Frederick Herzberg, a noted behavioral scientist, claims *dissatisfiers* and *satisfiers* influence an employee's performance. Dissatisfiers are criterias that must be met by employers to guarantee the minimum performance of employees; examples include supervision, work conditions, and salary. Satisfiers are criteria which motivate an employee to increase his or her productivity; examples include recognition, achievement, and the actual work. Salary in Herzberg's research is mentioned as a dissatisfier, meaning it does not necessarily motivate him or her to perform at a higher level. Hence, offering a higher salary does not motivate employees to perform at a higher level. Increase in salary is only the result of the supply and demand of the market.[3]

Job satisfaction is the pleasure an individual received from performing one's responsibilities. Most people rate job satisfaction as more important than compensation. That is not to say that compensation is not important, but the individual perceives compensation above a certain point, then other factors are more important. On the following page, in Figure 1, is a survey conducted by the 14th Annual Thomas Staffing Survey, which shows the most common reasons for employees to leave their jobs. Opportunities elsewhere is the highest on the list, but companies will be able to change that if the company is able to understand the needs of the individual, and match it with those of the company.

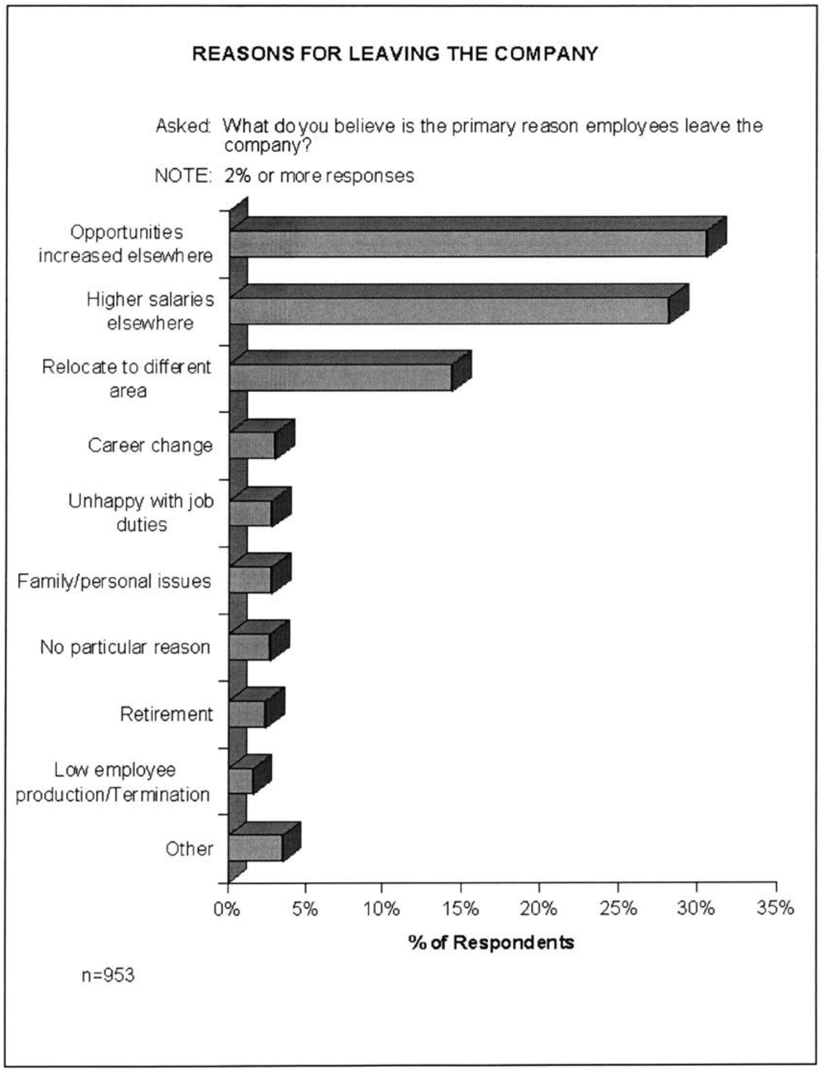

Figure 1: Reasons for Employees to Leave the Company[4]

Higher salaries elsewhere is a larger reason for employees to leave the company, but studies have shown that job satisfaction plays an important role in the decision making process. If an

[3] Herzberg, Frederick. *The Motivation to Work.* New York: Wiley, 1959

employees is satisfied with his/her current job, feels he/she is fairly compensated, and understands the compensation package, a higher salary at a rival company may not be enough to lure them away.

Factors which lead to high job satisfaction include[5]:

- Good management supervision
- Feedback on job performance
- Opportunity for self-development and career planning
- Freedom for self direction
- Responsibility for a task from beginning to end
- Working with fellow employees in self directed teams

Job satisfaction must be high for an employee to stay with a job. A high base salary is necessary to compete in the market, but does not guarantee retention or motivation. A good compensation package in the company is the key, and having employees understand the compensation package is as essential as the package itself. If an employee does not understand the compensation, then no matter how well thought out the package is, it does not play a factor in the employee's decision making.

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[4] http://www.thomas-staffing.com/survey99/image53.gif

[5] Funsten, Landon and Sharpnack, Richard. *Comparing Compensation and Job Satisfaction.* FMI: Management Consultants to the Construction Industry

The objectives of compensation packages are to[6]:

- Attract the best employees
- Retain the high performing employees
- Motivate employees for superior performance
- Create a competitive advantage for the company

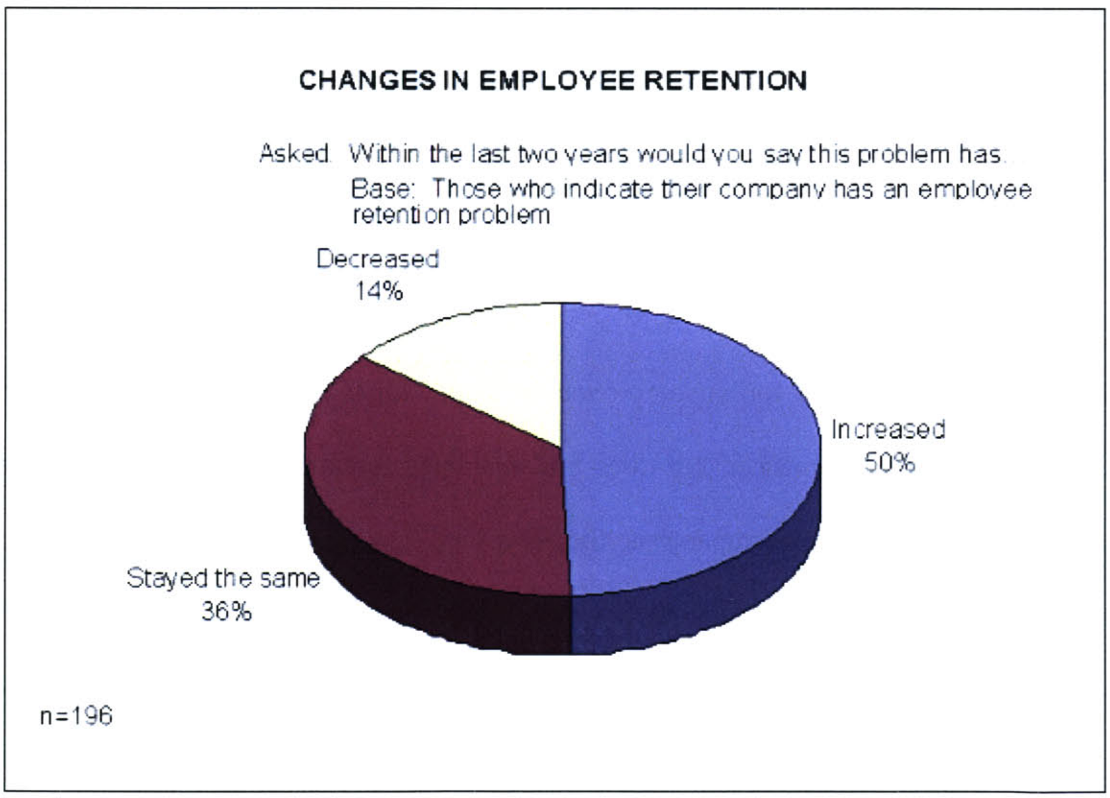

Figure 2: Changes in Employee Retention[7]

[6] Sharpnack, Rick. *Compensation in the Construction Industry.* FMI: Management Consultants to the Construction Industry
[7] http://www.thomas-staffing.com/survey99/image52.gif

A high salary may attract the employee, but retention of the employee has become more and more difficult. Figure 2, shows the changes of employee retention. As seen in Figure 2, employee retention has become a greater problem in recent years.

Some elements in incentives are more effective than other in accomplishing the goals of the company. Table 1, shown on the next page is a matrix illustrating the effectiveness of each element in regards to accomplishing the total compensation goals.

Total Compensation	**Total Compensation Goal**		
Element	**Attract**	**Retain**	**Motivate**
Salary	High	High	Low
Short-term variable compensation	Low to Medium	Medium to High	High
Equity-based compensation	Low to Medium	Medium to High	Medium
Pensions	Low to Medium	Medium	Low
Non-qualified deferred compensation	Low to Medium	High	Medium to High
Benefits	Medium	Medium	Low

Table 1: Effectiveness of Compensation Towards Compensation Goal[8]

As stated above, a high salary attracts employees, and may even retain employees, but employees will lack the motivation to perform to the best of their ability. Short term variable compensation, which would be incentive compensation, has a high motivation factor. Although it does not have a high attraction or retention level, incentive compensation, coupled with a competitive salary will accomplish the goals of attracting, retaining, and motivating employees.

Management in construction companies are beginning to realize the cost of losing good employees and replacing them, hence has placed an emphasis on employee retention. The cost

[8] Ibid.

to hire an employee, train and pay that employee for five years and then hire a replacement often approaches $500,000 to $750,000.[9]

Firms can effectively manage employees by shifting the focus of compensation from market-driven factor to performance-driven factors by using an incentive compensation plan.[10] An incentive plan should reinforce actions and job functions which are more important to the firm, and should correlate to an employee's performance with that of the overall performance of the firm.

Many companies inaccurately interchange traditional bonus pay with incentive pay. A bonus pay is traditionally reactive while an incentive pay is proactive.[11] In a tradition bonus pay system, the individual has no knowledge of possible gain, or the criteria in the decision of the bonus amount. The pay is decided at the end of the year, after all the work is done, hence reactive. An incentive pay system will establish goals as well as target rewards before the period of the reward, and state clearly the standards by which performance will be measured against. In this situation, the individual is fully away of what he or she must do to obtain the specified incentive. A more in depth analysis of the difference between bonus and incentive pay will be presented later in the chapter.

Often, incentive systems are poorly thought out implemented by management before full ramifications are realized. An incentive system is not a proper substitute for inability to hold

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[9] Sharpnack, Rick. *Retaining Key Employees in This Era of Tight Labor.* FMI: Management Consultants to the Construction Industry

[10] Hessen, Cory. *Using an Incentive Compensation Plan to Achieve Your Firm's Goals.* FMI: Management Consultants to the Construction Industry

individuals accountable for their respective responsibilities. The lack of accountability in the firm, coupled with the poorly thought out incentive system will only result in a weaker firm. A well prepared incentive compensation plan will attract, motivate, and retain employees.

Incentives have the potential to make a well managed firm better, but it will not make a poorly managed firm good.

2.2 Differences by Industry

Incentive systems vary from industry to industry, and oftentimes, vary greatly within an industry as well. Incentive packages also vary between the private and public sector. According to the Thomas Staffing's 14th Annual Survey, the construction industry is doing less to manage employee turnover than any other industry surveyed, including retailing and manufacturing, two industries notorious for employee turnover.[12]

Each industry attempts to reward its employee based upon the characteristics of the industry. Some industries have compensation totally based on performance, like the selling of insurance. Many jobs are based solely on commission, while other industries such as telemarketing have a base wage plus commission. On the other extreme are jobs for the government, which do not have bonuses. The government gives an annual compensation, and employees are expected to work eight hours a day. Any additional hours, employees are paid overtime for their efforts, but

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[11] http://www.wahby.com/articles/rly01.htm
[12] www.thomas-staffing.com/survey99/retention_table2.htm

no bonus. There is a lack of tie-in between job performance and compensation for government employees

The consulting industry is one which has a base salary, but a portion of total compensation is expected to be the bonus. Consultants are expected to work long hours, with the regard of a potential large bonus at the end of the year. Some consulting companies take the approach of quarterly incentives to compensate for the long hours and long wait consultants have till their bonus. This move towards a quarterly incentive keeps consultants motivated, as well as reward achievement closer to time of completion of projects rather than waiting a year to compensate for a job well done earlier in the year.

Financial services have taken the approach of a single bonus at the end of the year. At the beginning of the year, employees make goals, and the employee performance is assessed mid-year, as well as end of year. Employees and their employers work to reassess goal during the mid-year to make sure that employees and management are on the same page.

The telemarketing industry compensates at a very low base rate, and compensates for results driven. If the company deals in donations, employees are compensated by the total amount donated as well as number of donations. Some telemarketing, such as subscriptions or credit cards compensate in term of number of positive results. Another industry which compensates at a low base rate is waitressing. Waitresses receive an extremely low base rate, and are expected to earn the rest by performance, ie. service to customers.

Industries such as insurance are generally driven by a performance based compensation all together. Employees are only compensated for results driven, with no base compensation. Jobs like this are often not as constant, since pay is not guaranteed, but the compensation per result driven is much higher than other industries.

The evolution of incentive compensation in each industry has taken time to become what it is today, and to best fit the needs of the company and the industry. Not every company in the same industry employees the same compensation plan, it is dependent on the needs of the company, its goals, and the employees it wishes to attract. Incentive compensation is incredibly hard to hard, and takes much time. It takes much thought, as well as trial and error and observation of others for a company to really grasp the best incentive compensation package it may offer its employees

2.3 Merit Based vs. Incentive Based Compensation

Many firms make the mistake of confusing the definitions of merit based bonuses and incentive based bonuses. Management teams may have the same goal when applying either compensation method, but there are differences their respective outcomes. The definitions, as well as a comparison of the two will be made in this section.

2.3.1 Merit Based Bonuses

The concept of correlation between compensation and one's job performance is accepted universally. Managers of most engineering firms used merit-based bonusing to determine a bonus pool at the end of the year. This bonus pool typically is allocated on the basis of money available. Managers then decide, with knowledge of the employees' previous bonus, what the current year's bonus should be. Then, bonus amounts are compared between employees; managers add opinions of the employee's comparative value and contribution to the firm. The merit base bonus amounts are then adjusted to fit within the bonus pool relative to other employees.

2.3.1.1 Objectives

This approach allows for management to accomplish two objectives. First, management is able to evaluate employee performance in a collaborative manner, allowing for sharing of managerial views on employee contributions to the success of the firm. Secondly, the profits of the company are distributed to the people in the firm rather than paying high corporate income taxes.

Those companies which believe in merit based compensation believe that this distribution of profit is effective in motivating employees, hence the company maintains a competitive advantage over competitors.

2.3.1.2 Pitfalls

As with any program, there are pitfalls to the merit based incentive compensation:

- Employees not satisfied with the bonus amount

- No direct correlation between bonus amounts and the employee's performance
- Employees accustomed to bonus
- Inability to retain employees

Dissatisfaction with Bonus

At the end of the year, it is not unusual that to hear that employees are dissatisfied with their bonuses. Dissatisfaction can lead to lower morale in the company, and lower productivity, which is the exact opposite of what management is hoping to accomplish.

Correlation Between Performance and Bonus

The lack of correlation between performance and the actual bonus will limit the potential improvement in motivation. Employees may also become accustomed to compensation without an objective basis. If there is a downturn in the market, bonuses may be limited or unavailable, and this would lead to employee dissatisfaction and seeking employment elsewhere.

Lack of Employee Motivation

After bonuses are distributed, management teams may often be frustrated by the lack of employee motivation. If the employee does not see a direct correlation between performance and bonus, this may lead to a lack of motivation because employees see no reason to perform better.

Lack of Employee Retention

As mentioned before, salary in Herzberg's research is mentioned as a dissatisfier. Hence higher salary does not necessarily motivate the employee to perform at a higher level. If a bonus plan is used with no correlation to actual performance, a higher salary will not retain them if there are higher salaries being offered. Studies have shown that employees greatly value satisfaction in the workplace, which they do not receive if incentives are not based upon performance.

2.3.2 Incentive Based Bonuses

Incentive based bonusing is the alternative for construction firms. An effective incentive plan will set goals and appropriate bonus rewards before the timeframe used to evaluate and measure performance commences. There is collaboration on the part of managers and employees to set goals ahead of time, and goals must be perceived as reasonable, achievable, but also challenging. The right balance of the three requirements must be made, or else the goals will not inspire employees to try to attain the goals. The reward potential is established well before employees start, and is a good blend of company, team, and individual performance.

2.3.2.1 Objectives

The objectives of incentive based bonuses include increasing employee accountability, mitigating subjectivity of management, establishing clear expectations, aligning actions to achieve goals or strategic objectives, and linking bonus rewards to performance.

Companies who implement incentive based bonuses believe that tying bonus rewards to actual performance and results are critical in motivating employees. The goal setting in the incentive based bonuses also give employees the satisfaction of reaching goals, and seeing where future improvement may lie.

2.3.2.2 Pitfalls

Just as with all plans, a bad incentive based bonusing system may have grave affects on the company. Many firms, when in a competitive market, rush into incentive plans believe that is the way to increase productivity within the firm. A bad incentive plan may lead to many of the pitfalls discussed in the pitfalls of a merit based incentive plan. Incentive base bonus plans also have the opposite effect. Employees may become discouraged if the goals set in the plan are unreasonable, leading to anger and lack of motivation, the exact opposite of what the plan is hoping to achieve. Setting the right goals for the plan is extremely important, if the goal is not in line with the goals of the company, the employee may excel, but with no real benefit to the company's bottom line. Incentive plans are a way to motivate employees to help make the company more competitive, and that can only be done if the company understands which aspects of its services are most important, and set goals accordingly.

2.3.3 Comparison of Bonuses

The decision of the way to bonus is entirely up to management. Some feel that the merit based bonusing is reliable, and is expected from employees. Incentive based bonusing is not what the majority of companies do, but is the system which is attracting more attention from industries, from consulting to marketing to Wall Street. Shown in Table 2 is a comparison of two incentive systems.

Comparison of Bonus Systems	
Merit-based bonusing	**Incentive-based bonusing**
Subjective	Objective
Dependent upon management opinions	Tied to actual performance/results
Bonus amount loosely related to previous year's amount	Bonus amount directly related to current year results
Unclear expectations of how bonuses are calculated	Clear expectations of how bonuses are calculated
Emphasizes individual performance	Based on firm, team, and individual performance
Easy to implement	Challenging to implement
Management holds power/control	Employee hold power to influence outcomes
No/low accountability	High accountability
Bonus pool	Bonus pool range
Avoids corporate taxes	Avoids corporate taxes
Lack of research support	Significant research support

Table 2: Comparison of Bonus Systems[13]

Incentive systems not only affect employees, they affect management as well. As seen above, management may perceive itself to losing some power in the incentive base bonunsing, as the system is tied to actual performance and results, rather than opinion of management. Rather losing power, management should think of it as a power shift. Management can lay the goals for the employees, rather than rate results of the employees at the end of the year.

[13] Anderson, Daron. *Incentive Compensation: Bonusing and Motivation.* CE News, February 2004.

As stated before, merit base bonusing is reactive, whereas incentive based bonusing is proactive. Management takes a proactive approach when using the incentive based bonsuing, it is able to decide the direction of the company, rather than at the end of the year, rate the performance of the company. When it is unclear of how bonus amounts are calculated, there is more of a mystery. That may work in managements favor in that employees might feel the need to excel in every aspect of the job, rather than just those in their goals in the incentive based bonus system. A higher emphasis is placed on individual performance in the merit based system, as employees do not know what they are being judged upon, whereas in incentive based systems, depending on the goals set, may be more inclined to help with firm and team performance as well as their individual performance.

There is no or low accountability on the part of employees in the merit based system, while employees with incentive based systems are accountable for the goals that were set for them. If set up correctly, the incentive based system will increase the firm's value, and from that is where the bonus amount come. In a merit based system, with less accountability, no set goals, and lack of correlation with actual performance, there is no standard, and the money which is used for bonuses is randomly assigned. Both bonus systems allows the company to pay less corporate taxes.

A very big difference between the two systems is the effort in putting the system in place. A merit based system is easier in that management can decide near bonus time that bonuses are going to be given, whereas with incentive based bonuses, the plan and goals need to be set long before the bonus is given. Significant research need to go into the planning of the incentive based bonuses, from goals of the company to personal goals of each employee, and also what will give the company a competitive edge with the competition.

In an incentive based system, employees feel they have more control over their own destiny within the company. With the goal setting each period, an employee is also able to track his or her own record, and hence there are less surprises at any time.

2.4 Successes of Incentive Plans

A successful compensation plan will attract, retain, and motivate employees. A incentive based compensation plan will help employees set and obtain goals, have a better knowledge of the company, and have a better understanding of how he or she fits in the company. As stated earlier, factors which lead to high job satisfaction include[14]:

- Good management supervision
- Feedback on job performance
- Opportunity for self-development and career planning
- Freedom for self direction
- Responsibility for a task from beginning to end
- Working with fellow employees in self directed teams

[14] Funsten, Landon and Sharpnack, Richard. *Comparing Compensation and Job Satisfaction.* FMI: Management Consultants to the Construction Industry

An good inventive plan will lead to high job satisfaction, which will in the long run, make the company stronger and better equipped to compete.

2.5 Pitfalls of Incentive Plans

Many times, incentive systems lead to internal strife within the company. The employee should find incentive in helping the company as well as other individuals achieve the collective goal. A bad incentive system will improperly align the goals of the individual with the goals of the company. An incentive system based purely on an individual's accomplishment without strong ties to group performance will create problems as well. If the focus of the individual is only on individual work, it will create destructive competition within the firm by placing individual performance above the overall firm achievement.

Poorly constructed incentive systems have led to additional costs without any gains to the company. If the incentive is not ultimately tied to the financial stability of the company, incentives may be given at the expense of the overall health of the company. Incentives need to be structured in a way in which if the goals are not reached, the firm incurs no additional expenses.

If so much thought is given to constructing a good incentive compensation package, but the employees are not educated in the benefits of the compensation, the time spent making the plan is wasted. Employees must understand the plan, their compensation potential, and be able to relate that to other potential offers by other companies.

2.6 Implementation

Implementation of an incentive plan is always challenging. The key is for the compensation plan to be well thought out, and slowly implemented. Employees must understand the new compensation plan for it to be effective. A good compensation plan is good if the company and its employees are on the same page with respect to the plan.

2.7 Chapter Summary

An effective compensation plan is intended to influence the behavior of employees, hence it is extremely important for management to define the desired behaviors to achieve the firm's goal prior to the implementation of the incentive compensation plan.

Incentive plans vary a lot by industry, and even within industry, companies decide the compensation based on the goals of the company, and the needs of the employees. There is no correct incentive plan for any specific industry, but given the needs of the company and employees, there are compensation plans which fit the company better than others.

Some incentive plans are proactive, while other are reactive. The company must decide the time period of bonuses given out, as well as the metrics for giving out plans. Proactive incentive plans involve employees in the goal setting as well as know the exact metrics they will be judged upon. Reactive incentive plans bonus employees, generally at the end of the year, and employees are generally not as sure of goals and metrics for the bonusing.

A good incentive plan takes much thought, and it is usually takes a lot of effort on the part of the company to define the plan, as well as educate employees so that the incentive package is fully understood. Without the understanding of the plan for employees, the compensation plan is not doing its job of attracting, retaining, and motivating the employees.

Chapter 3: The A/E/C Industry

The A/E/C Industry is very different than other industries. The A/E industry is a very low profit margin industry. Hence, management in the companies may find employing or even retaining of employees very difficult when in competition with other firms, and especially difficult when in competition with other industries which may have better compensation packages.

Those who work in the construction industry are the ones who love the job, but as with any job, compensation has to have some benefits, or else the salary of another job may outweigh the satisfaction one derives from doing work they love.

3.1 Overview

The construction industry is a difficult industry to be in. The industry is high risk, low margin, and plagued with fragmentation. According to ENR, the top 400 contractors generated revenues of $194.39 billion in 2002, a 3.2% drop from the $200.93 billion in 2001. That is the first decline in revenues since 1995. In that same year, international revenue dropped 10.9% to $19.2 billion in 2002, from the $22.03 billion in 2001.[15] The market has become much tighter in recent years, and hence margins are much lower.

[15] http://enr.construction.com/features/bizlabor/archives/030519.asp

Characteristics of the Industry:

- Huge - $4 trillion worldwide
- Local
- Project Based
- Unique end product
- Hundreds of firms all working with dozens of firms
- Low barriers to entry
- High barriers to exit

The construction industry is extremely large worldwide, and even in just the United States. It is very unique in that each project brings together a team of people who have never worked with each other before, and at the end of the project, split up, and will probably never work with that exact group of people again. Each project is unique, whether it be building, freeway, water treatment plant, or bridge, the conditions for each project will never be exactly the same as another. There are low barriers to entry in the construction industry, anyone with a pickup truck and some tools may call themselves a construction company. Though low barriers to entry, there are very high barriers to exit the industry, and hence many companies may wish to leave the industry, as construction tools, and other large items are highly specialized, and are difficult to sell.

Implications of the Industry:

- Few economies of scale
- Fragmentation (ENR 400 in aggregate < 25% of US market)[16]
- Low margins
- High risk

With all the characteristic of the industry, it leads to certain implications. It first begins with the uniqueness of the project, which are usually performed with drawings and specifications which are developed for the first and only time for that particular project. The documents in a specific project are one of a kind, and will only used for that project, hence there is no prior experience which can identify errors. Past work experience may mitigate this risk, but nonetheless, there will always be unidentified errors and ambiguities which are solved on the job, hence there are few economies of scale in the construction industry.

As discussed before, anyone can start a construction company, it takes does not take much capital or equipment initially. The competitiveness of the bidding process makes this industry a difficult industry to survive in. The highly competitive market forces competitive bids, which generate low margins. Bids are so competitive that they produce prices which have little or no leeway for solving design problems which may occur during the job.[17]

[16] http://www.enr.com
[17] http://www.fta.dot.gov/transit_data_info/reports_publications/publications/best_practices_procurement/9389_9419_ENG_HTML.htm

The tradition construction process has been design/bid/build. This process involves hiring an architect/engineer (A/E) to complete a detailed design of the project. After the detail design is completed, bids are solicited from general contractors. After the award of the construction contract, often the A/E is retained by the owner to act as the owner's agent during the construction phase. The A/E then inspects the construction work, doing quality assurance (QA), to ensure that the structures are built according to the designs and specifications.

There are many advantages to a traditional design/bid/build project. A major advantage is that with the sequential design and construction, the project is planned to the very last detail before construction begins, therefore, the gives the most accurate estimate of final project costs. If problems arise with the designs in the latter stages of the project, the earlier design can be modified before any construction work has been done, thus avoiding change orders, claims, and delays. The owner in this case also knows the construction costs before construction commences. Disadvantages to the traditional design/bid/build include a longer time required to complete the project, since design must be completed before construction begins.

Due to changes in the industry, and the success of recent projects such as the Chunnel in Europe, the JFK Terminal 4 International Airport, several water treatment projects in China, owners are now more open to other contracting methods, and with this change, firms in the construction industry must change its practices to stay competitive in this already highly competitive market. The construction industry is cyclical, and with low profit margins compared to other industries, high compensation must be associated with a high company performance.

3.2 Different Delivery Methods

The more common use of alternative contracting methods have changed the industry fundamentally. No longer is design/bid/build the first choice of delivery method, and alternatives treated as foreign methods. Alternative methods are used more than ever today. No method is always better than another, it is just dependent and the needs of the project and owner, and a decision must be made on a per project basis. Owners are slowly being educated on how alternative methods of contracting may be beneficial to them or the specific project. The following sections will discuss each of the delivery methods, as well as advantages and disadvantages to owners using the delivery method.

Potential advantages of alternative contracting methods include:

- Allows contractors to participate in the design method, thus augmenting the designer's construction experience and total project cost can be affected during the design development than during the construction phase
- Provide incentives for the contractor to save the owner money
- Provide alternative financing methods
- Creates more designer-contractor teamwork by reducing adversarial relationship
- Shorten the duration of project by fast tracking

3.2.1 General Contractor

The general contractor is a single business entity acting as the contractor in complete and sole charge of field operations, including the marshalling and allocation of manpower, equipment, and materials. A general contractor may be hired as fixed price or reimbursable.

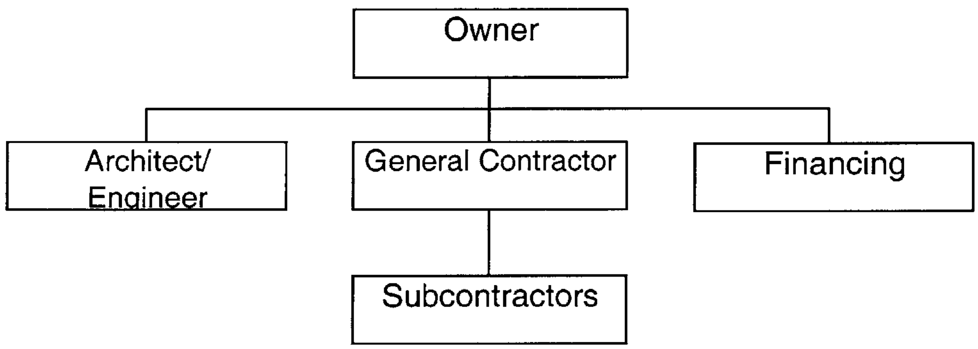

Figure 3: General Contractor Organizational Structure

3.2.1.1 Advantages

Advantages of general contracting include:

- Method often used
- Prices are fixed, and manageable

General Contracting is a widely used method of delivery, meaning that all players involved know what to expect. There is not question about how the process works, and the roles and responsibilities of each party are clear in everyone's mind. In a fixed price contract, prices are fixed (other than change orders), and the owner does have a very good idea of the ballpark of the end price. In a reimbursable contract, it is up to the owner to do quality assurance, and also that work is being done in a timely matter.

3.2.1.2 Disadvantages

Disadvantages of general contracting:

- Separation of design and construction
- Design changes difficult
- Owner normally has no share in savings during construction process

The separation of design and construction deprives owners of planning knowledge such as value engineering and constructability of a project which a general contractor may have brought early on. With a fixed price contract and separate design professions, an adversarial relationship between the owner, contractor, and design professional may occur. The fixed price has also created a zero-sum game in which anything gained by the owner is lost on the contractor, and vice versa. A general contractor working for a reimbursable price has less price accountability, and possibly less efficiency may occur on the job. The contractor in this situation has no motivation to limit costs to time and material. The total price of the project will not be revealed until the end, although methods such as GMP may mitigate this risk.

3.2.2 Construction Management

A construction manager is a single business entity acting as a construction consultant to the owner and project manager, either for a fixed fee or a fee as a percentage of the cost. Working with a construction manager, the cost of the project should not be greater, the size of the project is not enlarged, there is only a shifting of responsibilities.

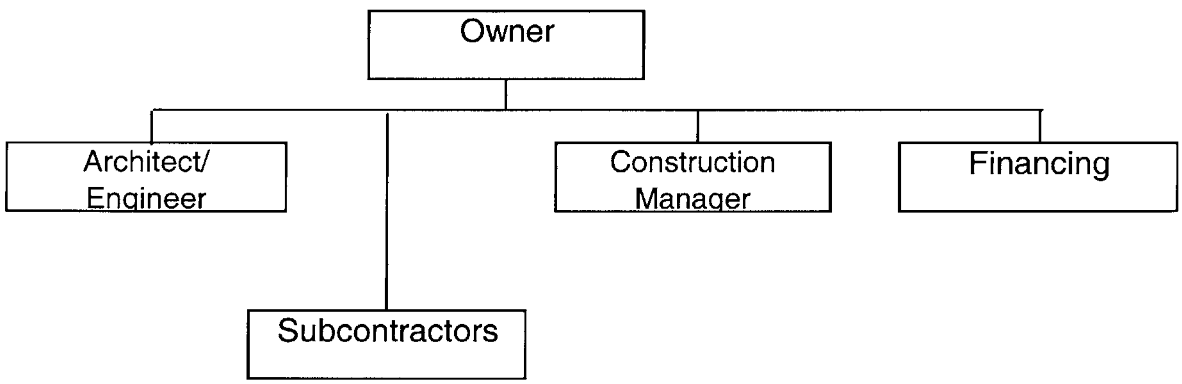

Figure 4: Construction Manager Organizational Structure

3.2.2.1 Advantages

There are many advantages to construction management as a delivery method.

- Allows for fast track scheduling
- Flexibility for changes
- Better relationship between contractor, owner, and design professional

With construction management as a delivery method, it's beneficial for companies, as it allows for fast track schedules. Individual contracts can be awarded as soon as the documents are completed. The construction manager can be on the team during the design process to provide construction services such as estimating, scheduling, constructability analysis, value engineering, and labor issues. This makes for a more fiduciary relationship between all parties, ie. Owner, contractor, and design professional. This method also allows owners direct access to the material and sub-contractor market to realize savings from bid packaging, and will also reduce the owner's dependence on a large contractor to complete all the work.

3.2.2.2 Disadvantages

Although there are many advantages to construction management as a delivery method, there are disadvantages as well:

- Total cost and schedule are normally not known
- Poor bid packaging may result in gaps between contracts
- Unknown roles for players

In a construction management contract, the total cost and schedule are not normally known if the project is fast tracked. The construction manager has a very important role in the success of the project, and poor bid packaging may result in gaps between contracts, where parties do not lay claim to missed responsibilities. Other problems may include inadequate site management, which can result in costly and unpleasant chaos on the job. The addition of the construction manager is to shift roles, but often times, it only adds a new layer of supervision, making decisions and communication more difficult between all players.

3.2.3 Multiple Primes

Using multiple primes means using more than one contractor holding contracts directly with the owner. These contractors perform specific parts of the same project. The contract may be general contractors overseeing various trades, or subcontractors performing one specific trade. The owner is the one responsible for the overall project management and coordination, replacing the general contractor or a construction manager.[18]

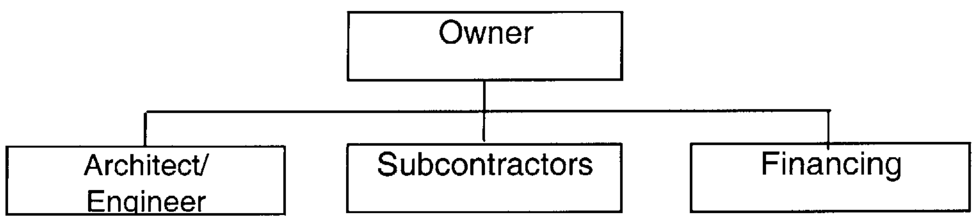

Figure 5: Multiple Primes Organizational Structure

3.2.3.1 Advantages

Multiple primes has many advantages:

- Allows fast track scheduling

- Flexibility for change
- Owner directly involved

Having multiple primes allows a fast track schedule, as individual contract can be awarded as soon as documents are complete. There is more flexibility for changes in a multiple prime situation, as the owner is directly involved in all aspects of the project. This also allows owners direct access to the material and sub contractor markets to realize savings from big packaging and control types. Multiple primes reduce owner dependence on a larger entity such as a general contractor.

3.2.3.2 Disadvantages

Multiple primes' disadvantages include:

- High owner involvement required
- Total cost and schedule not known
- Project lacks pre-construction services from contractor

When an owner decides to go with multiple prime contractors, the owner should have a lot of knowledge about construction, and be ready to be heavily involved in the construction process. The owner also loses pre-construction services from a contractor, services include estimating, a constructability analysis, and value engineering. The total costs of the project are normally unknown, and the schedule is not set or guaranteed at the start of construction.

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[18] http://www.nawgits.com/icdn/itop.html

3.2.4 Design Build

A design/build team is a single business entity which performs both design and construction of a project. The team can be one company or a partnership of firms. Design Build may be for a fixed price, or contracted on a reimbursable basis.

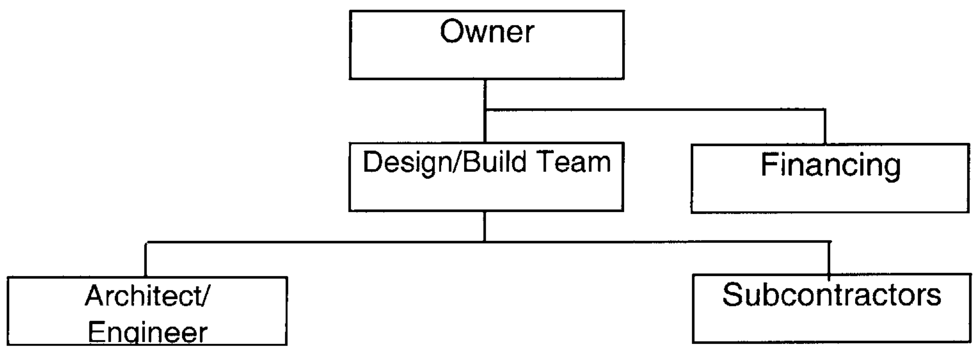

Figure 6: Design Build Organizational Structure

3.2.4.1 Advantages

Design/build is often times very advantageous to owner, but it is also advantageous to the A/E/C industry as well.

Advantages include the following:

- Design changes often expensive for owner
- Company has more control over detailed design process

- Owner is dependent on one entity

3.2.4.2 Disadvantages

As there are advantages, there are disadvantages to a design/build project:

- Design changes often expensive
- Loss of flexibility in project
- Owner has lost fiduciary relation with design professional
- Huge owner knowledge needed to establish initial parameter
- Owner is dependent on one entity

In a design build contract, the owner must be extremely knowledge in order to establish initial parameters of the project, and then during the project, have the ability to monitor the process. The initial design parameters are extremely important, as the owner loses some flexibility and control over the detailed design process, and design changes are often expensive. With a design build for a reimbursable price, there is less accountability, and less efficiency for the firm. This then becomes the burden of the owner to make sure, just as the general contractor reimbursable that time and materials are accurately accounted for. In a design build, if the contract is reimbursable, the total cost may not be known until the end of the project, which would present problems for a risk averse owner.

3.2.5 Turnkey

The turnkey team is one business entity that performs the design, construction, and financing of the project. Payment is made at the completion of the project (when the contractor turns over the "key.") A turnkey contract may be fixed price or reimbursable.

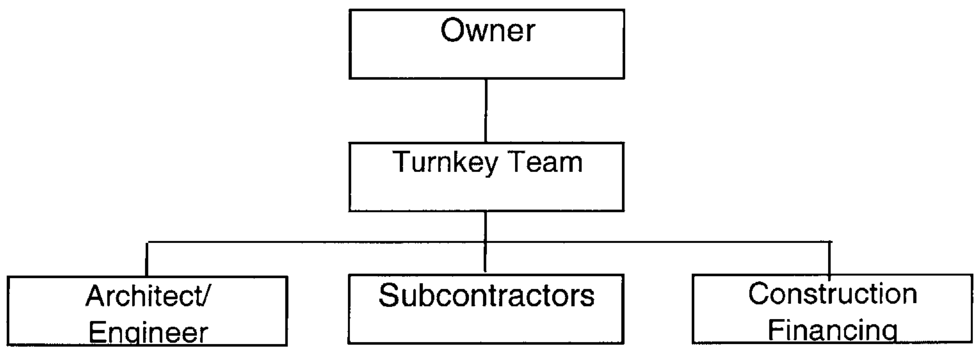

Figure 7: Turnkey Organizational Structure

3.2.5.1 Advantages

Advantages to firms working in a turnkey team include:

- Construction cost and schedule known
- Owner has no liability for change orders
- Owner only deals with one entity, and delegates all responsibility
- Short term financing responsibilities is eliminated

A turnkey team promotes team work between the designer and contractor during design, and the construction is enhanced. The cost and schedule of the project is known before the start of design and construction. The owner delegates the short term financing responsibilities to the turnkey team, and has no site responsibility. Any changes on the project, other than scope or site conditions, are the responsibility of the turnkey team. In a fixed price contract, the turnkey team has an incentive to finish earlier since the team is carrying the financing costs. With a reimbursable contract, changes during the design are easier to negotiate. The owner is also, in this situation able to choose a team based entirely on qualifications and eliminate the lengthy proposal process.

3.2.5.2 Disadvantages

Disadvantages for the turnkey team include:

- Loss of design professional's fiduciary relationship with owner
- Owner loses fiduciary relationship with design professional
- Owner dependent upon one entity

A turnkey contract is very unique in that the owner has virtually nothing to do with anything that goes on during construction. Therefore, making design changes is often expensive and difficult. The owner definitely loses flexibility and control over the detail design process. In a turnkey contract, the owner must be extremely knowledgeable to establish the initial parameters. The owner is entirely dependent on one entity, and because the design is bundled with the construction, the owner loses the fiduciary relationship with the design professional. If the contract is reimbursable, the turnkey team also has less price accountability, and as with any reimbursable contract, the possibility of less efficiency exists, making the total price until till the end of the project.

3.2.6 Build Operate Transfer

A build operate transfer team is a business entity that performs the design, construction, long-term financing, and temporary operation of the project. At the end of the operation period (which may span many years), the operation of the project is then transferred back to the owner.

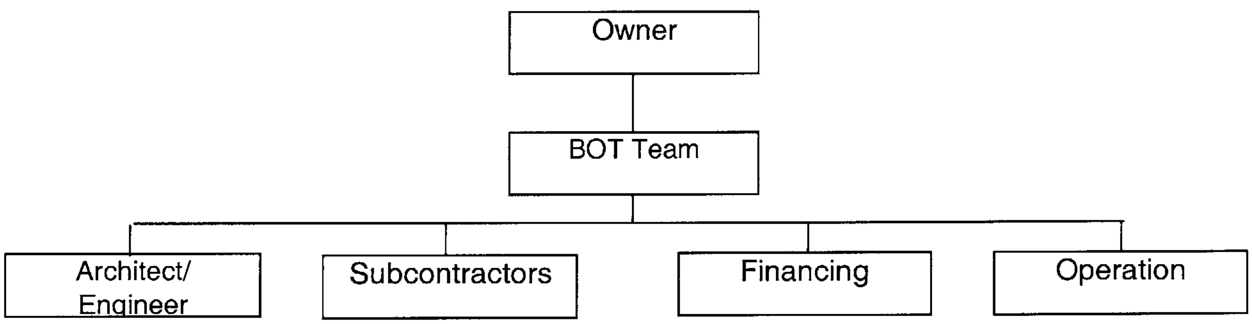

Figure 8: Build Operate Transfer (BOT) Organizational Structure

In a typical project, a concession is award to the success bidder, the concessionaire. The concessionaire establishes the infrastructure, as well as operation and maintenance systems. The financing is up to the concessionaire, but is normally a mix of debt and equity finance, and contained within the project. Once the project is built, the revenue generated through the use of the infrastructure belongs to the concessionaire for a fixed period of time. At the end of the concession period, the infrastructure is transferred free of charge to the host government. Many countries, including China, Africa, and Egypt, are using BOT as a method to improve infrastructure.

3.2.6.1 Advantages

Advantages to build operate transfer contracts include:

- Owner delegates operation responsibilities to one entity
- Fast tracking in schedules
- Owner delegates financing responsibilities

A build operate transfer team is very unique. The owner is able to delegate the entire project, from financing to construction to finally operation of the project over to the team; owner involvement is at a minimum. This method allows the team to have a fast track schedule. The owner does not need to have a separate selection process from the contractor and arrangement of operations is eliminated. There is more teamwork between the designer, contractor, and operator during the design, and construction is enhanced. The owner is free of normal financing responsibilities because the build operate and transfer team is responsible, and has no liability for change orders. This contract is very useful for introducing new technologies and management techniques to a region, as well as training to its residents. Infrastructure establishment in many developing parts of the world has been successful because of the BOT model.[19]

[19]McKenchnie, Ian. BOT- The way forward: http://www.mwa.co.za/bot.htm

3.2.6.2 Disadvantages

Disadvantages to a build operate and transfer project include:

- Design changes often difficult
- Owner must be knowledge to establish initial parameters
- Owner is entirely dependent on one entity

While there are many advantages to working with a build operate and transfer team, there are disadvantages. Making design changes is often difficult and costly. The owner also loses flexibility in, and control over the detail design process. While some may say it is wonderful that the owner only deals with one entity, the owner may run into problems if the team is not functioning well, and has no one else to turn to.

Many parties are usually involved in a BOT. Parties include the host government, project consortium, lenders, construction companies, equipment suppliers, and independent capital investors. Often, the project consortium will also consist of construction companies, engineering equipment suppliers, and other private investors, and the project operator. Complicated financing arrangements are necessary, not only due to the large number of parties involved, but with no guarantees, the project consortium and the lender must find the means to cover risk. The contractual arrangements and risk allocation in build operate and transfer projects can therefore be complex and require lengthy negotiations.[20]

3.3 Different Payment Methods

In choosing a delivery method, the owner must also negotiate payment methods. There are many payment methods, and depending on a number of factors, the owner must decide upon the best payment method for the project.

3.3.1 Lump Sum

A lump sum contract is one which a fixed price is given, and unless there are change orders, that is the price the owner will pay for the project. This is for the more risk averse owner, but can lead to contractors cutting corners if the bid given was too low to complete the project. Quality is not assured in this case, as the contractor is working on a budget, and with highly competitive bids, not left enough room in the budget for any unforeseen circumstances. Also, the profit to the contractor is the difference between contract price and the actual cost.

3.3.2 Unit Price

A unit price contract is when contractors estimate and submit unit price for pay items. Examples include $/cubic year of earth to be moved, or $/lineal feet of piles to be driven, or $/cubic yard of concrete to be place. Each contractor's unit costs is multiplied by the engineer's estimates, and that results in the bid price. The profit for the contractor is the difference between the amount paid for units in place and the actual cost of the work done.

[20] United Nations Commission on International Trade Law, New York, 28 May - 14 June 1996: http://www.uncitral.org/english/sessions/unc/unc-29/acn9-424.htm

3.3.3 Cost Plus

A cost plus contract is a reimbursable contract, the owner agrees to pay the contractor a percentage or a specific amount above the actual amount of the work done. If it is a percentage of the work, contractors have no incentive to save on time and materials, in fact, there is more incentive to spend more, as the profit is a percentage of the cost. In the situation of a set amount to be paid to the contractor, the contractor still has no incentive to save on cost, as the owner has agreed to reimburse the contractor for all costs. Cost plus contracts require owners to follow the project closely, and make sure that work is being done efficiently, and materials are not wasted. The advantage of a cost plus contract is that contractors will not feel the need to cut corners since they will be reimbursed for costs, so quality may be higher than other contracts.

3.3.4 Guaranteed Maximum Price (GMP)

This payment method may mitigate delivery methods which total price is not known until the end for owners, but gives those working on the project the burden of keeping below the maximum price. This method allows for firms to be more competitive since owners have more of a sense of what financial burden they are going to be responsible for. This contract is generally used with delivery method of general contractor.

3.4 Contracts

Many contracts today are being written to give incentive to construction companies to finish jobs early, and there are still stiff penalties associated with late work. Liquidated damages are a common clause in current contract, and such damages are negotiated in advance.[21] A more in depth explanation of liquidated damages can be found in Appendix B. Often, bonuses are in contracts for construction companies if jobs are finished ahead of schedule, and a good way to earn this bonus time and time again is to involve the employees. This will be explored in more detail in Chapter 4.

3.5 Current Incentive Systems in the A/E/C Industry

For many years, the common incentive in many A/E/C firms is the typical discretionary bonus pay at the end of the fiscal year. The firm generally waits until the end of the year, by that time, accounting is settled, and the total amount of bonuses is known. Management generally discusses an individual's performance throughout the previous year, and assigns bonuses to individuals on a purely subjective basis.

This type of incentive system is the merit based bonusing discussed in the earlier chapter. It is highly dependent upon management opinion, but does not make clear of expectations of the employee. Bonuses based at the end of the year is a very difficult motivator in such an industry such as construction, where jobs are project based.

This system does not take into account the alternative delivery methods, which are becoming more prevalent in today's construction industry. The low accountability of the employee will hurt the firm unless firms are able to tie bonuses with actual performance or results of a project.

[21] http://www.keepmedia.com/ShowItemDetails.do?itemID=122604&extID=10032&oliID=213

Without this incentive for the employees, firms will lose competitive edge and be unable to compete in the highly competitive construction industry.

3.6 Chapter Summary

The construction industry is unique in its own way, bringing teams together to complete a project, and perhaps never work with each other. The industry is extremely high risk, low margin, plagued with fragmentation, with no real signs of economies of scale. The project are so unique that past work experience may mitigate risks, but there are always unidentified errors and ambiguities which may occur at any time.

The tradition construction process of design/bid/build has other competitors. More delivery methods are being embraced by owners as it gives them more flexibility with respect to schedule and cost. The implications of this are that companies in the industry need to be better equipped to deal with the changing needs of industry customers, and be able to compensate employees to work efficiently to stay competitive.

Different payment methods also lead to efficiency potentially being key. In most cases construction companies do earn money if the company completes the project is less time than expected. If the company comes to a point that it is efficient, in both building, and estimation of the cost and labor, it may either have lower prices to be the most competitive company out there, or it may decide to compensate its employees further to spur more efficiency within the company.

The current incentive systems in the A/E/C industry are not the most efficient. It relies upon pure judgment decision by executives, paid out once a year. By the time the end of the year rolls around, employees may have forgotten the reason they earn the bonus, or not even realize which actions got them the bonus. For such a unique industry, which is project based, a new incentive compensation package needs to be more commonly implemented for companies to stay competitive.

Chapter 4: Analysis

The objectives of a compensation package are to[22]:

- Attract the best employees
- Retain the high performing employees
- Motivate employees for superior performance
- Create a competitive advantage for the company

It must be noted that there is a difference between union and non union companies. Non union companies have more freedom to give incentives to employees, while unions have guidelines on such issues as compensation. This analysis is also on a higher level, such as management, but similar conclusion may be drawn to everyday employees with the same analysis. Compensation needs would be different, depending on the type of employee the package is designed for. Even within a company, management compensation will be different than those working at the site every day.

Research by behavioral scientists have consistently demonstrated that superior job or task performance is primarily driven by three factors: ability, motivation and support / infrastructure. In today's hyper-competitive business climate, where productivity is still the primary driver of wealth creation, a highly motivated workforce is absolutely essential to operating a successful

[22] Sharpnack, Rick. *Compensation in the Construction Industry.* FMI: Management Consultants to the Construction Industry

business.[23] A company uses its compensation package to attract the able employees, and it can also motivate the employees with the compensation, but it does come down to how well the package to put together.

4.1 Attracting Employees

Attracting the right employees is always important. A well thought out compensation plan may be the tipping factor for potential employees choosing between two companies. In regards to attracting new employees with a compensation plan, the plans must be easy to remember, as well as easy to explain. No matter the quality of the plan, if a potential employee cannot figure out the pluses on their own, the plan to too complicated

4.2 Retaining Employees

Employee retention should be a big focus on every company's agenda. The cost of hiring new employees are never realized. Later in this chapter, more detail of the actual cost of hiring new employees will become evident.

4.2.1 The Problem

Understanding that well thought out incentive plans are important is the first step, next is to determine how to make that incentive plan. Each company will need to identify the weaknesses in the company in order to create an incentive plan to fit the company's needs. According to the

[23] http://www.yournxstep.com/docs/ACF1214.pdf

Thomas Staffing's 14th Annual Survey, the construction industry is doing less to manage employee turnover than any other industry surveyed, including the retail and manufacturing industries, two industries notorious for employee turnover.[24] Lack of concern about turnover is that company's underestimate the true cost of losing a good employee.

4.2.2 Cost of Hiring New Employees

Employee retention should be viewed as cost savings in a way. Imagine a piece of equipment which the firm invests in. The firm makes an initial investment of $100,000 to buy the equipment the first year. Imagine the first year, the investment generates $50,000, but has $50,000 of operating expenses. The following year, operating expenses are slightly higher, $55,000, and the equipment generates $80,000. Seen on the next page in Table 3 is a year profitability project for the equipment. It would take 5 years in this scenario for the equipment to turn profitable. If the machine for some reason broke in year 3, you could spend a nominal and get it fixed, and have it up and running again.

Year	Income	Expense	Net Profit
0	-	100,000	(100,000)
1	50,000	50,000	-
2	80,000	55,000	25,000
3	90,000	60,000	30,000
4	100,000	70,000	30,000
5	110,000	80,000	30,000
			15,000

Table 3: Five Year Profitability Projection

[24] www.thomas-staffing.com/survey99/retention_table2.htm

The same analysis could be done for an employee. Now assume that the table is for employee productivity. The zero year expense would be training of the employee, including time from other employees to train them, and profit employees could have been making instead of training the new employee. The year to year expense is the employee salary, while the income is the amount of work the employee performs which the company charges. If the employee were to leave the company at year 2, the company would loose the initial $100,000 investment since the employee broke even the second year. Table 4 shows the net loss or profit dependent on the year the employee leaves.

Year	Income	Expense	Net Profit	If Leave
0	-	100,000	(100,000)	(100,000)
1	50,000	50,000	-	(100,000)
2	80,000	55,000	25,000	(75,000)
3	90,000	60,000	30,000	(45,000)
4	100,000	70,000	30,000	(15,000)
5	110,000	80,000	30,000	15,000

Table 4: Five year projection with net loss or profit dependent employee retention

In this scenario, if the employee leaves before year 5, the company has lost money on its investment of the employee. This is only on a pure numbers basis, this does not account for the time and effort of integrating a new employee in the company, as well as the knowledge the employee gathers from the years he or she works at the company. Those issues are not quantifiable in terms of money, but there is definitely value in them.

4.3 Motivating Employees

Motivating employees is just as important as attracting and retaining the employees. Without the ability to motivate these high performing employees, they may become mediocre performing employees.

4.3.1 Increased Productivity

A productive employee can add a lot to a company's bottom line. Some studies have shown that a productive employee may add 40% or more a year above their salary. If the average salary is $40,000 a year, a productive employee would add $16,000 or more a year to the company's bottom line.[25] Noted labor economists Frank L Schmidt of the University of Iowa and John E. Hunter of Michigan State University published a study with such conclusions in the Psychological Bulletin.

Productivity does vary with skill of work, increased productivity of managers and professional are 48% or more of average salary. So not only does an employee whose productivity is below average costs the company money, the company is losing out on potential gains from a productive employee. Studies show that below average employees may cost as much as 40% of their salary, this is on top of their salary.

[25] http://www.timpearson.net/ajc_hire_smart_grow_smart.pdf

4.3.2 Productivity Example

If an employee has incentive to remain at the company, the company will not have the problem of losing the initial investment. Incentive compensation will also motivate the employee, and hence the income they bring in should be higher, making net profit higher.

Below, in Table 5 is a theoretical case, in which the employee, with an incentive compensation package, does 15% more work a year. The bonus in this instance, is 10% of their salary. In this instance, the employee is motivated by a possible increase in bonus, and works only 15% more efficiently, and the company has already made up for the initial "investment" of the employee in 4 years, rather than the 5 originally without the compensation plan.

Year	Income	Motivation	Total Income	Expense	Bonus	Total Expense	Net Profit	If Leave
0	-	-	-	100,000	-	100,000	(100,000)	(100,000)
1	50,000	7,500	57,500	50,000	5,000	55,000	2,500	(97,500)
2	80,000	12,000	92,000	55,000	5,500	60,500	31,500	(66,000)
3	90,000	13,500	103,500	60,000	6,000	66,000	37,500	(28,500)
4	100,000	15,000	115,000	70,000	7,000	77,000	38,000	9,500
5	110,000	16,500	126,500	80,000	8,000	88,000	38,500	48,000

Table 5: Five year projection with 15% increase in productivity and 10% bonus of salary

Imagine if the incentive were directly related to the motivation and extra work performed. In Table 6 is the scenario in which the motivation is still a 15% increase, and the bonus is 20% of the motivation. This may not seem a like a big motivation, as the bonus was smaller than the example from before, but the company is still getting a much better return from the employee than without the compensation.

Year	Income	Motivation	Total Income	Expense	Bonus	Total Expense	Net Profit	If Leave
0	-	-	-	100,000	-	100,000	(100,000)	(100,000)
1	50,000	7,500	57,500	50,000	1,500	51,500	6,000	(94,000)
2	80,000	12,000	92,000	55,000	2,400	57,400	34,600	(59,400)
3	90,000	13,500	103,500	60,000	2,700	62,700	40,800	(18,600)
4	100,000	15,000	115,000	70,000	3,000	73,000	42,000	23,400
5	110,000	16,500	126,500	80,000	3,300	83,300	43,200	66,600

Table 6: Five Year projection with 15% increase in productivity and 20% bonus of productivity

Table 7 shows a five year projection with a 30% increase in productivity, and a 20% bonus of productivity. In this case, it only takes 3 years for the employee's initial investment be erased by the profits the employee brings in.

Year	Income	Motivation	Total Income	Expense	Bonus	Total Expense	Net Profit	If Leave
0	-	-	-	100,000	-	100,000	(100,000)	(100,000)
1	50,000	15,000	65,000	50,000	3,000	53,000	12,000	(88,000)
2	80,000	24,000	104,000	55,000	4,800	59,800	44,200	(43,800)
3	90,000	27,000	117,000	60,000	5,400	65,400	51,600	7,800
4	100,000	30,000	130,000	70,000	6,000	76,000	54,000	61,800
5	110,000	33,000	143,000	80,000	6,600	86,600	56,400	118,200

Table 7: Five Year projection with 30% increase in productivity and 20% bonus of productivity

These numbers are not close to actual numbers, but rather a representation of how a good incentive compensation plan may help the company.

4.3.3 Productivity and Contracts

A win win situation is possible for both employee and company the way contracts are written. Many contracts currently impose penalties for late work, but on the flip side, incentive is given many time for work to be done early. There are many instances when a bonus is given, per day, per week, or per month, depending on the project. One example is a casino, a construction company was awarded $1 million per month which it completed the project early. The end result for the company was a $4 million gain. The casino, being able open early, was able to make in the addition four months, over $10 million. Hence a win win for the both owner and the company. Now the employees of the company would have more incentive to work harder on the project, or motivate those under them if they got a portion of the bonus the company had. This way, the potential result of liquidated damages being assessed for late work is avoided, and the company earns an additional bonus for being early.

Productivity does not just mean increased work speed, it can also be used to define better workmanship. This many not have a direct affect on the project, but workmanship may play a large role for future project. Reputation can play a big role in this industry in some cases, and having employees who know the goals of the company (ie. Better quality workmanship, faster schedules) will make the company competitive in its niche.

4.3.4 Productivity and Delivery Methods

With the many different delivery methods, companies now need to be more flexible, have better service and workmanship to stay competitive. Owners now have more options, and companies in the industry need to constantly stay one step ahead of everyone else. Part of that will be the ability to produce superior quality work as well as offer slightly faster service or better prices. All this depends on the goals of the company, but a company may choose to be known as very efficient with a high premium, or same scheduled time with superior quality, whatever the goals of the company, the needs of the client will be serviced better if the compensation of employees fits the goals of the company.

4.4 Implementation

Implementation of a compensation plan is as important as the compensation plan itself

4.4.1 Factors to a Successful Compensation

Implementation of a successful incentive compensation is difficult. Factors that should be scrutinized include:

- Goals of company clearly defined
- Accountability
- Consistency

Compensation and recognition of a job well done is appreciated by any employee, and it goes a long way. Employees want to feel that they are a part of an organization which cares about them and that their role is vital to the success of the company. Many employees will be satisfied with a job which challenges them, treat them "well" in their mind.[26]

Never should an incentive compensation package take the place of every day accountability. In the same respect, the company needs to be accountable for the implementation of the plan. The compensation must be both planned and then followed. Employees must realize that the compensation is not an extra bonus thrown in, it should be a goal they can work towards, and their expectation of where they are within the company should lead to no surprises when time comes around for the distribution of the compensation.

Consistency is extremely important, especially when it comes to accountability. Accountability will only be more effective when it is constant. Without consistent accountability, employees will revert back to prior behavior, which may be less productive work. A good way to be consistent with accountability is having a group enforcing the standards, rather than one individual.

Key points to a good incentive compensation plan:[27]

- Never substitute incentives for basic accountability
- The plan should be clearly communicated and thoroughly understood in advance of implementation
- A good plan design can create a powerful recruiting and retention advantage
- A poor plan design can lead to serious internal conflicts
- All goals should be objective and measurable
- Design goals around the behaviors you seek to encourage
- Balance individual performance goals with company-wide goals

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[26] http://www.yournxstep.com/docs/ACF1214.pdf
[27] http://www.wahby.com/articles/rly01.htm

- Allow for additional compensation potential of at least 20% or higher

- Properly designed, the funds to pay incentives will come from increased profits

- Provide frequent updates comparing actual performance to goals

4.4.2 Performance Metrics

Factors which should be considered are:

- Performance of Company
- Performance of Employee
- Success of Goal Planning of Employee and follow through

Employees should be constantly reassessing goals. Never should an employee lose sight of their goal, and how that relates to that of the company. Factors which compensation should be looked at when assessing bonus include the performance of the company, performance of the employee, the goal setting of the employee, and follow through. The added value of an employee is not always clear, for instance, an employee creating a new filing system may drive no results with respect to project, but it has an affect on the bottom dollar in the long run. Employees should not be penalized for contributing in ways which do not directly contribute to the short term success of the company, if that is the case, then the company will lose some of the common goal setting it had with the employee.

There is no cut and drive calculation of just compensation. Some examples of possible compensation may be a portion of the base salary, multiplied by a percentage of highest possible bonus, multiplied by the health of the company, and then finally multiplied by the contribution of the individual. That is a very rough calculation, the health of the company and the contribution of the individual would be then most likely at most 1 so that there is a maximum on the bonus amount. That individual contribution may be substituted for the contribution to the project, if compensation is made at a project level. The maximum amount of bonus may be a fixed sum rather than a percentage of the employee's base salary. Some of these variations were done in previous sections.

4.5 Chapter Summary

There are many ways to compensate employees, the company must decide which compensation method best fits with the needs and goals of the company. The construction industry is very unique in that it is more project specific, hence there can always be constant reassessing of goals between projects. With transparency of the incentive system, companies will be able to motivate employees more effectively when the end compensation can be explained.

Compensation must also take into consideration future health of the company, not just short term goals, this will allow employees more freedom when contributing to the bottom dollar of the company, and know that they too will be fairly compensated as long as their work reflects the needs of the company.

Choosing the right metrics to measure employees is important to the success of the compensation package, and having a package which employees understand and embrace will be the key reason a compensation package succeeds.

Chapter 5: Conclusion and Recommendations

In summary, and effective compensation package will result in a attracting, retaining, and motivating a staff which understand the details of the company. This allows the company to compete at a much higher level than it currently does. The right compensation package is different per industry, and even within industries, the compensation package is different per company. The company goals, and the goals of those the company wishes to attract much be aligned properly for the company compensation to succeed.

The company must set goals, and educate employees to understand that proper alignment of the goals of the company with the goals of the individual can be beneficial to both parties. A proactive approach to compensation leads to more profit for the company's bottom line, as well as employee satisfaction. Employee satisfaction is very important. As discussed in Chapter 4, the cost of hiring new employees is far greater than what most companies believe, and the ability to attract, retain, and motivate employees will set the company apart from others.

Although there is no exact science in shaping incentive compensation packages, a company with clearly defined goals, as the will to follow through with the package will go further in the end. A company must constantly reassess its needs, and help the employee reassess their needs to constantly motivate employees. Compensation packages should be well thought out before implementation, as a bad or unclear package is perhaps worse than no package at all. The purpose of the compensation is to drive growth within the company and make it more competitive in its industry, a bad compensation plan may have the exact opposite effect, transforming a once healthy company to one in financial woes.

An incentive compensation package which fits the company within the industry is useful tool in driving creativity and efficiency in the company. The construction industry is one which has stuck with the reactive way of compensating hard working employees, and it is time for companies to compensate and motivate employees to spur the construction industry to a whole new level.

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Appendix A: ENR Top 40 Contractors

1	Bechtel, San Francisco, Calif.†
2	Fluor Corp., Aliso Viejo, Calif.†
3	Centex, Dallas, Texas†
4	The Turner Corp., Dallas, Texas†
5	Skanska (U.S.A.) Inc., Whitestone, N.Y.†
6	Kellogg Brown & Root (KBR), Houston, Texas†
7	Peter Kiewit Sons' Inc., Omaha, Neb.†
8	Bovis Lend Lease, New York, N.Y.†
9	Washington Group International Inc., Boise, Idaho†
10	The Shaw Group Inc., Baton Rouge, La.†
11	Gilbane Building Co., Providence, R.I.
12	The Clark Construction Group Inc., Bethesda, Md.†
13	Jacobs, Pasadena, Calif.
14	J.A. Jones Inc., Charlotte, N.C.†
15	APAC Inc., Atlanta, Ga.†
16	Foster Wheeler Ltd., Clinton, N.J.†
17	PCL Construction Enterprises Inc., Denver, Colo.†
18	Hensel Phelps Construction Co., Greeley, Colo.†
19	The Whiting-Turner Contracting Co., Baltimore, Md.
20	Hunt Construction Group, Indianapolis, Ind.
21	Granite Construction Inc., Watsonville, Calif.†
22	The Walsh Group, Chicago, Ill.†
23	Zachry Construction Corp., San Antonio, Texas
24	Structure Tone Inc., New York, N.Y.†
25	J.E. Dunn Group, Kansas City, Mo.†
26	ABB Lummus Global, Bloomfield, N.J.†
27	Swinerton Inc., San Francisco, Calif.†
28	Barton Malow Co., Southfield, Mich.†
29	Webcor Builders, San Mateo, Calif.
30	AMEC, New York, N.Y.†
31	Black & Veatch, Overland Park, Kan.
32	TIC Holdings Inc., Steamboat Springs, Colo.†
33	Modern Continental Constr. Co. Inc., Cambridge, Mass.†
34	Chicago Bridge & Iron Co., The Woodlands, Texas†
35	Earth Tech, Long Beach, Calif.†
36	Dick Corp., Pittsburgh, Pa.†
37	DPR Construction Inc., Redwood City, Calif.
38	Perini Corp., Framingham, Mass.†
39	Austin Industries, Dallas, Texas†
40	M.A. Mortenson Co., Minneapolis, Minn.

Companies are ranked by construction revenue (*) in 2002 in $ millions. Firms not ranked last year are designated (†) = subsidiaries included; NA=Not available.

Appendix B: Liquidated Damages[28]

[28] Definition comes from http://www.lectlaw.com/def/l045.htm

LIQUIDATED DAMAGES - When the parties to a contract agree to the payment of a certain sum as a fixed and agreed upon satisfaction for not doing certain things particularly mentioned in the agreement, the sum is called liquidated damages.

The amount of money specified in a contract to be awarded in the event that the agreement is violated. The fixed amount which a party to an agreement promises to pay to the other, in case he shall not fulfill some primary or principal engagement into which he has entered by the same agreement.

The damages will be considered as liquidated in the following cases:

When the damages are uncertain and not capable of being ascertained by any satisfactory or known rule - whether the uncertainty lies in the nature of the subject itself or in the particular circumstances of the case;

When, from the nature of the case and the tenor of the agreement, it is clear that the damages have been the subject of actual and fair calculation and adjustment between the parties.

It differ from a penalty which is a forfeiture from which the defaulting party can be relieved. An agreement for liquidated damages can only be when there is an engagement for the performance of certain acts that if not done would injure one of the parties or to guard against the performance of acts that would be injurious if done. In such cases an estimate of the damages may be made by a jury, or by a previous agreement between the parties who foresaw the consequences of a breach of the engagement and stipulated accordingly. The civil law generally agrees with these principles.

Generally the sum fixed upon will be considered either liquidated damages or a penalty according to the intent of the parties. The use of the words 'penalty,' 'forfeiture,' or 'liquidated damages,' will not be decisive of the question if the instrument, taken as a whole, discloses a different intent.

Rules have been adopted to ascertain whether the sum agreed upon is to be considered a penalty or liquidated damages.

It Has Been Treated As Penalty: 1. Where the parties in the agreement have expressly declared the sum intended as a forfeiture or a penalty, and no other intent can be collected from the instrument; 2. Where it is doubtful whether it was intended as a penalty or not, and a certain debt or damages less than the penalty is made payable on the face of the instrument; 3. Where the agreement was evidently made for the attainment of another object, to which the sum specified is wholly collateral; 4. Where the agreement contains several matters of different degrees of importance, and yet the sum named is payable for the breach of any, even the least; 5. Where the damages are capable of being certainly known and estimated.

It Has Been Considered As Liquidated Damages: 1. Where the damages are uncertain, and are not capable of being ascertained by any satisfactory and known rule; 2. Where, from the tenor of the agreement or the nature of the case, it appears that the parties have ascertained the amount of damages by fair calculation and adjustment.