Feature Article

How to Know When Your Construction Job is a Success

by Ralph J. Stephenson, P.E., Consulting Engineer

Hallmark - *"An indication of quality or excellence -- a mark placed on an article to indicate purity and quality"*

Many influences determine the success of a facility design and construction. Among these are:

- The validity of the defined project goals & objectives.
- The type & amount of profit desired
- The excellence of the job plan and sequence
- The competence and disposition of the participants
- The kinds and intensity of problems that are encountered

Once owners, planners, designers and builders recognize the nature and importance of these factors, a major success step is already taken.

On any construction program, from concept to full use, there are at least six major goals that must be met to achieve project success for all.

Briefly, the goals are:

1. That the facility program and the facility design have met the needs, desires and wishes of the owner/user, the design ers, and the constructors.

2. That the planning, design and construction work on the project has been accomplished within the time and cost structure required and desired.

3. That all relationships on the project have been maintained at a high technical and professional level, and have proven rewarding for those affected.

4. That the people involved at all levels of work on the job have realized a financial, professional and technical profit for themselves and their associates by being on the project.

5. That the project has been closed out with little or no residual potential for major operational or maintenance problems.

6. That the entire design and construction process has been free of unresolved contested claims for any additional money, additional time, damage payments, and there is no potential for future financial demands.

Any valid evaluation of progress success, or lack of it, must include a method of measuring profit. Experience with many different people, companies, organizations, committees, social structures and other goal oriented groups indicate there are at least seven kinds of profit those participating can expect to receive. Not all are a part of any single individual's expectations. All, however, are usually expected to be gained through the total project effort.

The seven profits are:

Financial - an improvement in a money position.
Social - a gratifying experience contributing to society's well being.
Self actualization - a gain in personal non financial satisfaction by contributing work.BCF Engineering Inc
Value system - a reward gained by application of values in which one believes.
Technical - an acquisition of technical skill or technical data of value.
Enjoyment - a personal enjoyment of a situation gained from involvement in it.
Educational - a learning made possible by efforts

exerted in any given situation

A homely example of different profit types and how they can contribute to the potential for project success may clarify the importance of understanding profit motives.

Visualize a state park rest stop being built by the Michigan Department of Transportation (MDOT) as a tourist center and showplace for the beauties of the state and nearby areas. The general contract has been awarded to the low bidder on a competitively bid hard, money proposal.

Some of those involved in the project include:

The general contractor - The general contractor's goal is to do a good job within the contract scope and make a financial profit. They also wish to use this small project to train a new superintendent and project manager to work profitably. Both are important to the contractor.

MDOT's resident inspector - The owner's repre sentative wants to add a good project to his or her professional record. The inspector's goal is to get the best quality work, in the time specified, and with no additional cost. Then MDOT and the inspector are profitable.

DNR's technical monitoring known contamination abatement - This regulatory employee is primarily concerned with protecting the health, safety and welfare of the public as affected by the environment. When this is achieved the DNR and the employee have made a profit.

The architect & engineer of record - They want a good looking, well functioning facility that they have designed within their fee and abilities. Their profit is the fee and the satisfaction of a good design.

Your subcontractors and vendors - This group looks to the general contract tor to help them make a financial profit by your skills and leadership. They also want to con struct a project they are proud of and can show off as an example of their skill. When this happens they are profitable.

Bureau of Tourist Affairs - These are the operators who use the rest stop space to convince the public that Michigan is the place to visit. They want to do this in a pleasant, safe and well designed space. When the tourist public likes what the Bureau is selling, both the tourist staff and the public have made a profit.

The tax payer - the financier and user of the facility After all is said and done, the real profit goal to consider, is that of the public. What they want is a facility that meets their needs. They want to have a rest stop that was worth their hard earned tax payments. This is their profit on that hard work.

As you can see, the profit drive ranges from a pure and simple desire to make money to having fun on a vacation. Your job, whatever role you play, is to help insure everyone involved makes the profit they desire. When this happens you will probably have built a successful rest stop.

So far we have considered the end results by which a successful project may be identified. This is not totally adequate in a how to discussion of success. The process of achieving success itself must be clearly defined so guidelines to success are visible each step of the way.

Some well recognized authorities say that there are nine major steps to follow in successful design construction. How well you do them determine how successful you will be.

The steps are:

1. Conceive the basic project - Visualize and state the fundamental nature of the proposed project, what purpose it is to serve, and its base characteristics.

2. Prepare the project program - Set down the physical characteristics of the total project in written and graphic form to clearly define the facility conceived.

3. Articulate the program for approval - Merge the concept, and the program into written and graphic construction language which can be understood and ap proved by the ultimate decision makers for full design.

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4. Approve the project - Release the concept and the program so the full design and construction process can be started.

5. Design the project - Prepare full contract documents for construction use.

6. Construct the project - Award and build the project ready for turnover to the owner or end user.

7. Turn over the project - Release the constructed project to the owner or end user with full documentation needed to operate and maintain the completed environment.

8. Operate the project - Take over, run in, and make the new facility fully operational.

9. Maintain the project - Keep the new facility in proper operating condition.

A successful project is one that has been kept free, not necessarily of conflict, but of damaging conflict.

Note the responsibility for acting crosses back and forth between the owner, the end user, the designer, the builder and the operator of the facility. It is the effective passing of the relay baton to each party in turn that keeps the process working well. The process should be functionally seamless!

And next - A few words of warning.

We have examined end measures of success and have looked at the generic process of achieving project success. Now let us consider some of the disruptive forces that diminish the probability of project success.

There are many types and kinds of design and construction problems. However the ones that have been most disruptive to project success are those attracting extensive involvement of outside non liable third parties. These are the individuals who profit through out difficulties.

The most troublesome issues are those that involve the common contested claim. Dozens of different things can go wrong in design and construction that might generate serious conflict and result in a contested claim. However ten of these seem to be the most frequent in our profession.

They are:

1. Constructive acceleration - An action by a party to the contract that forces more work to be done with no time extension, or the same amount of work to be done in a shorter time.

2. Constructive change - An action or inaction by a party to the contract that has the same effect as a written order.

3. Defective or deficient contract documents - Contract documents which do not adequately portray the true contract scope.

4. Delay - A situation, beyond the control and not the fault of a contract party, that causes a delay to the project.

5. Differing site condition - A situation in which the actual conditions at the site of a project differs from those represented on the contract documents, or from reasonable expectations of a site in that area.

6. Directed change - A legitimate change within the contract scope for which the owner is obligated to pay.

7. Impossibility of performance - A situation in which it is impossible to carry out the work within the contract requirements.

8. Maladministration - The interference of one contract party with another contract party's rights, that prevents the latter party from enjoying the benefits of least cost performance within the contract provisions.

9. Superior knowledge - The withholding of knowledge by one party of a contract from another party to the contract during the pre contract period, and that, subsequent to contract execution, adversely affects the second party's construction operations in matters of importance.

10. Termination - Dismissal of a party to the project contract for convenience or default.

Each of these potentially disruptive actions has professionally generated solutions. The action becomes potentially dangerous and corrosive mainly when it is submitted to binding decision solutions by those outside our profession.

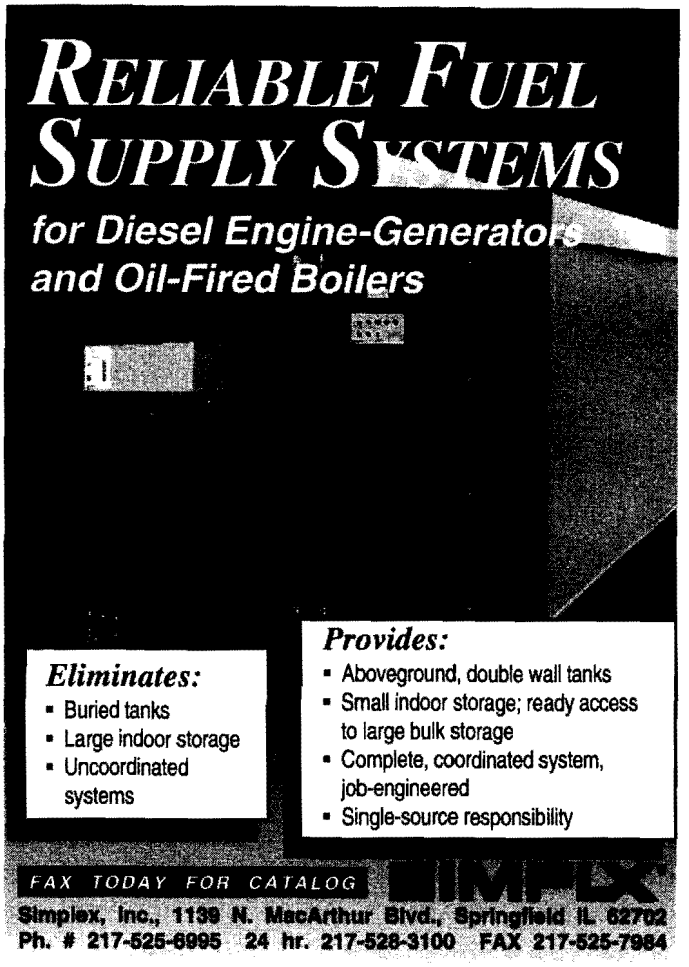
Thus a successful project is one that has been kept free, not necessarily of conflict, but of damaging conflict.

Project success starts with honest people, behaving ethically with a high degree of competence. Project success further requires them to understand the profit needs and demands of all involved in the project, and to help achieve a profit for all. Project success next requires these honest, competent, ethical leaders to fully understand the best sequences to

be followed in competently managing a project. And finally, project success demands we reduce meaningless conflict to a minimum, and spend the time wasted in such contest to improve resolution skills among ourselves.

We need to be successful more often. It's up to you!

Ralph J. Stephenson, P.E is an engineering consultant who has a diversified background in land planning, facilities location, building design, and construction. Since 1952, Mr. Stephenson has been involved at middle and upper management levels in the planning, programming, design, construction, and operation of several billion dollars worth of construction related projects. His broad experience has given him an understanding of the nature of small, medium, and large size companies, and of the need to solve their management problems through creative, systematic, and workable approaches.



Ralph J. Stephenson, P. E., P. C.
Consulting Engineer

April 4, 1993

Nancy Carpenter
Executive Secretary/Editor
Michigan Professional Engineer
215 N. Walnut Street
P. O. Box 15276
Lansing, Michigan 48901-0635

Dear Ms. Carpenter:

Re: ***Construction article for MPE May/June issue***

Enclosed is the article on construction you and Mr. Kolb requested me to write. Also enclosed is a short biography and a picture for your files.

The article contains about 1800 words and may be a bit lengthy for your purposes. Please feel free to edit it as you desire.

Thank you for the opportunity to express some ideas I feel are important and that might be of help to our members in the construction industry.

If you have any questions please call.

Sincerely yours,

Ralph J. Stephenson, P. E.

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April 4, 1993

ARTICLE FOR MICHIGAN PROFESSIONAL ENGINEER

HOW TO KNOW WHEN YOUR CONSTRUCTION PROJECT IS A SUCCESS!

- **Hallmarks of a good design and construction job**

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