

When planning new work it is the small details, as well as strong communication, that make all the difference

The 'other' costs of the project

The success of any project is always judged by three simple things: scope, schedule, and budget. No matter if it is as large as a tank farm expansion or greenfield terminal, or as small as minor maintenance and repair, no project is truly a success unless it has hit all three.

A project may come in 20% under budget and right on time, but if it does not 'do' what it is supposed to it has not been a success... and it will just cost even more time and money to make it right.

On the other hand if the new system performs perfectly and came in right on the money, but was completed a few months too late due to permitting delays or confusion with the contractor it is still deemed unsuccessful.

There is no such thing as partial success.

The key to getting these three goals met (scope, schedule, and budget) is not by luck, or by having enough contingency or weather days programmed in. It is by good solid front-end planning, and by involving the right people to discuss it. The beginning of the project is where all the promises are made – project cost, delivery date, and functionality – but too many projects get shortchanged at this stage.

Huge amounts of time and money can be saved just by having a better understanding of what it will take to make the project happen.

The industry's time, money and knowledge are all very firmly planted in the product systems and what make these



Project progression

systems run. And it should be focused on these systems since these are the parts of the business that either make the money or support what makes the money.

Everything else – be it stormwater systems, a foam sprinkler system under the canopy, or mitigation of environmental issues – is just a drain on the budget and produces no direct revenue. But unfortunately, since they are not related to revenue, they also tend to get minimised or misunderstood – to the detriment of the project.

The best projects – the ones that hit the budget and are done earlier than promised – all have in common that the project was well understood and well researched before ever starting. By following a few steps and taking a little more time on the front end of a project, any project can avoid most pitfalls of project problems

- Getting familiar with the 'other' costs that can consume time and money
- Developing a scope to let

you discuss the project intelligently with everyone that matters, and then

- Discussing the project with everyone that matters.

What are the 'other' costs?

These are due to one or both of the following:

- They are not part of the product system, or
- They tend to vary from site to site.

These do not have direct or indirect impact on your regular revenue generation (such as tanks, piping, electrical, and control systems), and because of this they are usually not as well understood, or they can be severely underestimated in their impact on a project.

Things that tend to vary from site to site are generally either Mother Nature or Uncle Sam (government). For example, a site with very poor soils can increase the cost of new tankage or structures greatly due to the need to either replace or "improve" the soils. Without direct knowledge of your particular location, it is difficult to estimate how much a tank

foundation or new structure could cost. And the differences for permitting a project can be dramatic – depending largely on the permit agencies: are they business-friendly, are they organised, are the local relationships with operations friendly or hostile.

What the 'other' costs can do

Any of these things, such as stormwater management requirements, issues with local soils or geology, environmental or noise rules, or local politics and agencies, can have huge impacts on a project because they introduce additional liabilities – liabilities that cannot be easily communicated with line-item cost estimates.

These liabilities can be any of the following:

- **Re-work**, either during design, permitting, or construction due to unexpected or unwanted change;
- **Schedule delays**, due to re-work, permitting barricades, or contractor issues;
- **Unusable real estate**, due to requirements to either mitigate environmental

impact (such as wetlands or trees), or to meet other permit requirements (such as stormwater ponds or fire access roads). Knowing how to approach the project and permitting can save valuable real estate;

- **Impact on operations**, either negatively impacts an existing system, or makes the local operation's work more difficult or less safe; and
 - **Failure to live up to commitments**, by missing the contractual deadline or the final system not living up to the deal (such as tank working capacity or reduced pumping performance.)
- The good news is that most of these issues can be avoided, simply by some up-front investigations. This should include talking to local permit agencies, industry contacts, and with some 'feet on the ground' time with operations. 'Vetting the project' – talking it through with the right people – can save vast amounts of time and money.

A picture (or drawing) is worth a thousand words

In order to vet the project, the engineer has to be able to discuss the project needs and concept in a way that others can understand, visualise, and provide useful comments and insight. Nothing is worse than having a great phone call early in the process with, say, the local fire department where they provide positive and useful feedback on what they want and need, only to find out later during permit review that they did not know was meant by a specific chemical. Or that the local codes actually modify the national versions, but they did not think about it at the time because they were not fully engaged in the conversation.

The most important part is to develop the scope in a way that it can be both easily communicated to a variety of audiences (management, operations, fire department, city employees), and can also be discussed in enough detail to avoid misunderstanding or confusion. The quickest and most reliable way to do this is by assembling a concept package. An ideal concept package consists of:

- **Scope of construction (written, with photos):**

The scope describes not only the construction plans, but what has to be done to make sure the project is successful (600gpm per arm, limit emissions to X ppm, etc)

- **Site layout (also known as general arrangement) and flow diagram.** Show major parts and pieces and where you want them to go, and why. The 'where' may be great, but telling someone why may elicit other time- or money-saving ways to accomplish the same goal.
- **Cost estimate.** It is needed, regardless of project, but can help reveal the thought process, and reveal what has not yet been considered, (such as geotechnical investigation, design fees, permit fees, tree remediation, etc)
- **Permit information (or permit matrix).** This is a great tool to summarise not only what permits are required, who the permit contact is, and the related timeframes and fees; but also to indicate what has been considered and what was excluded. For example, if the city engineer stated that a land disturbance permit was not needed because of X, it should be recorded here as well as in a follow-up email or letter. It is also important to remember here the final inspections and permit close-outs.
- **Project schedule.** Like the cost estimate, this is another great tool to help reveal the thought process, and what may or may not have been considered. Are the permitting and bidding phases happening successively or in parallel? How much time is there after bid award before we have to mobilize? What if the permit timeframe is extended, what is the critical path and how can we firm it up?

It is not always necessary to share these documents with all the people involved, but the point is to show the concept to local operations or permit agencies so they understand.

The key is to make sure it is descriptive enough to elicit thoughts and comments.

Have the conversation

Once a concept package has been put together it can be talked through with

the people who know the process, know the site, or can negatively impact the project.

These discussions – vetting the project – need to be done with:

- local operations,
- local and regional permit authorities,
- providers such as railroads, pipelines, and harbormasters, and
- vendors of critical items such as tanks and specialty equipment.

The local operations often have very intimate knowledge of the site, the local permit authorities, and the actual operations. The operators have been out there when previous projects have uncovered buried pipe or abandoned tanks, they have lived through previous delays in permitting because they had issues for various reasons, and they know how the systems out there are actually functioning. The discussions with operations are often the biggest single source of time and money savings – primarily because they involve all those intangible parts of the project that cannot otherwise be classified or researched.

Meeting with the local and regional permit authorities, even very early in the project, can illuminate potential issues with long permit reviews, local codes that do not match national codes, potential roadblocks such as zoning requirements, public comment periods, or life-safety concerns.

While each is organised differently with slightly different titles and job functions, a few calls to inquire will often uncover those few key players who will either greatly help or greatly hinder the process. The meetings also help reinforce to the permit reviewers that you understand the role they play, and want to make sure their needs are met. Meetings with permit agencies should always be face-to-face and a meeting with the local fire department is imperative.

Speaking to the providers such as railroads, pipelines and harbormasters seems obvious but their buy-in is critical to the timeframe of the project. They are outside the normal permit/approval process, and so are not necessarily dictated by codes or requirements for timely reviews and comments.

Businesses such as these tend to pay more attention to

those things higher on their radar – either due to increased revenue, better working relationships, or appreciation for working together.

Last, but definitely not least, the vendors and manufacturers of a few critical items can play a huge part in the functionality and delivery of the project.

Never assume that a particular piece of equipment can do X or Y, unless you have talked with a vendor or two about it first.

The biggest mistake people make when having these discussions with vendors is limiting the discussion to the piece of equipment in question, and not informing the vendor about the bigger picture of where it is and what else is going on. For example, a hot-oil heater can do X, but based on site location or use, it may cost many times more for this option in ongoing maintenance or infrastructure upgrades than using a couple of smaller steam boilers instead.

Final thought

Getting this information together and having these discussions is often a very organic, and sometime frustrating, process – meeting with people, developing and re-writing documents, responding to questions and issues, and changing the approach when needed. But this is progress in that it's happening now instead of half-way through construction. The whole point of this is to find out what information is missing.

The key to a successful project is setting expectations of the people who matter (boss, client, or customer). And the only way to set expectations that you can actually meet is to find out what you know and what you do not know, and to get it figured out aggressively up front. No one likes surprises.

In the end, all that matters is that the project does what it was supposed to do, and that it took the time and money expected to get there. Knowing how to get there is not a matter of luck, brilliance, or the ability to see the future – just preparation. ●

For more information:

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