



مدیریت کسب و کار در صنعت ساخت (Construction Business Management)

ماژول ۳: ارزیابی کسب و کار

بخش سوم: اندازه گیری عملکرد

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What we will learn?

- ☐ Performance Measurement
- ☐ What to Measure?
- ☐ Setting the Client's Expectations
- ☐ Risk-Based Preplanning
- ☐ Measuring Project Performance
- ☐ Measuring Past Performance
- ☐ Performance-Based Client Relationships
- ☐ Measurement and Leadership
- ☐ Exercises

Performance Measurement

Performance measurement

❑ **Simple** and **effective measurement** of performance is **rarely seen** in the construction industry.

- ❖ For example, **most construction owners** do **not track** contractor or designer performance in terms of project metrics such as dollars, time, change order rates, delay rates, causes of change orders and delays, skills sets, and key individuals.

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Performance measurement

- ❑ If a **client** holds an opinion of a contractor's capability to perform, it is typically a **general perception** based upon either
 1. **Past firsthand interaction** with that contractor or
 2. What the client has **"heard"** about a contractor's ability, including word-of-mouth and marketing or branding by the contractor.
 - ❖ This opinion of performance is the **basis** for **most client-contractor relationships** (outside of a specific project setting).

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Performance measurement

- ❑ A **client-contractor relationship** is not sustainable over time and alone is **not sufficient** to be a reliable business practice.
 - ❖ The reason for this is that a construction company does **not actually** have a “**relationship**” with any client organization.
 - ❖ The actual relationship is between **individual people** in the construction firm and **individual people** in the client organization.
 - People are not sustainable.
 - They retire, get new jobs, win the lottery, etc.

Performance measurement

❑ Many contractors have seemingly **gone** from having a **great relationship** with a client

to **having no relationship** with a client.

❖ This is **not because of a decline** in performance, but because

The **proof of the capability** to perform (from the **client's perspective**) was housed in

the **minds and opinions** of one or a **few key people** in the client's organization.

If these people are **no longer part** of the client's organization, then the **construction contractor** has lost evidence of their ability to perform.

Performance measurement

❑ Performance measurement and documentation of proven performance must be housed both

1. Qualitatively in the **relationships** and **opinions** of individuals and also
2. Quantitatively in the use of **metrics** and **performance-based closeout documentation**.

This Section explores the **uses of performance information** by construction contractors.

A client-contractor relationship is not sustainable over time and alone is not sufficient to be a reliable business practice.

What to Measure?

What to measure?

- ☐ The actual metrics that are of significance in the construction industry are simple:
 1. Money,
 2. Time, and
 3. Customer satisfaction.
- ☐ It should be remembered that clients are **attempting** to elicit value from project proposers,

where value, in its purest sense, is the **comparison** of one option versus another.

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What to measure?

- ❑ Clients want the **greatest value** for their construction dollar and what **they set their opinions of value** around are the expectations set by the contractors in **their proposals (or bids)**.
 - ❖ In **simpler terms**, performance will be measured against the expectations the contractors set for themselves during the proposing and contracting process.

... performance will be measured against the expectations the contractors set for themselves during the proposing and contracting process.

Setting the Client's Expectations

Setting the client's expectations

❑ The **potential disconnect** between

- ❖ the contractor's team that gets the work and
- ❖ the team that actually does the work

can **create risk** for a contractor to **meet the expectations** they have set in the **client's mind**.

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Setting the client's expectations

- ❑ Exacerbating this problem is that **construction planning, or preplanning**, often occurs **after the contract** has been signed, meaning that the **first time** the **project execution team** significantly considers the project and **discusses** it with the client project team is **after the expectations** have already been set.

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Setting the client's expectations

- ❑ A **preplanning technique** that has proven to be successful if implemented properly is pre-contract planning and coordination.
- ❑ This will require the **contractor to suggest to the client's team** that **before** the contract is finalized and signed, the **two project teams** should be allowed to clarify, detail, and coordinate the construction activities.

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Setting the client's expectations

- ❑ A **centerpiece** to this effort must be the identification and minimization planning of project **risks**,
specifically risks that are **outside of the control** of either or both project teams.
- ❑ **Most client** project teams will **value** the **opportunity** to pre-coordinate with the contractor.
 - ❖ **Some clients will not see** the value in having coordination and planning activities prior to **contract signing**;
if this is the case, a **contract should proceed as usual**,
but the **contractor should still strive** to incorporate a **risk-based approach** to the preconstruction activities.

Risk-Based Preplanning

Risk-based preplanning

- ❑ An **expert contractor**, able to consistently perform at a **high level of competency**, will be able to successfully implement **risk-based preplanning actions** into their projects and **negotiations** with their participant clients.

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Risk-based preplanning

❑ **Best practices** around risk-based preplanning (again, **ideally completed before the contract is signed**) include three major activities:

- 1) preplanning kickoff;
- 2) coordination and finalization; and
- 3) summary review of the agreed plan.

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Risk-based preplanning

- ❑ As much as possible, the **draft day-by-day schedule** of the preplanning period should be **coordinated before the completion** of the **kickoff meeting**.

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Risk-based preplanning

❑ The takeaways from a **properly run preplanning kickoff meeting** will be:

- 1) the **client** having a **high level of clarity** around the contractor's approach to the project;
- 2) an **agreed understanding** of the pertinent risks to the project, thus setting (or resetting) **client expectations** for the project and providing **clarity** around the **project constraints** such as budget and schedule (and, of course, a contractor's cost should not change from their original proposal);
- 3) an increase in **client comfort** with the contractor's **ability to deliver value**; and
- 4) the client having a **clear path forward** on what it needs to accomplish in the **forthcoming days** to facilitate the contractor's ability to effectively provide the agreed construction services.

Risk-based preplanning

- ☐ The **preplanning efforts** themselves should follow the **agreed schedule** of the preplanning activities.
- ☐ Client, engineers or technical personnel should be **encouraged to participate** in addition to designers and other professionals that may be under contract to the client.
- ☐ **Coordination** and **follow-up** of who will be doing what and when are critical.

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Risk-based preplanning

❑ **Components** of the preplanning document must include

1. a **detailed schedule** that not only outlines **construction activities**, but includes
2. **key client activities** (including any key decisions, or when access or information will be available, designer activities, etc.), and
3. any “**risky**” **areas** where all parties recognize factors outside of the direct control of the contractor will be at play

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Risk-based preplanning

- ❑ **Color coding** the schedule has been shown to be an **effective communication technique** for enhanced understanding of **roles and responsibilities**.
- ❑ In addition to the schedule, a **risk plan** should also be **documented** to include a prioritized list of the agreed risks, accompanied by
 - ❖ risk explanations,
 - ❖ occurrence minimization plans,
 - ❖ impact minimization plans, and
 - ❖ insight into each risk's potential impact to the client expectations.
- ✓ Contractors have used the **risk plan to review and include changes** that will need to be **processed due to design or other errors** (if drawings are available).

Risk-based preplanning

❑ Some contractors have found that having

- ❖ A separate list of agreed client action items (as well as other parties' action items),
- ❖ Detailed with the activity,
- ❖ Person responsible for its fulfillment,
- ❖ Date due, and
- ❖ Contact information of the accountable person,

to be a useful preplanning and project management tool.

Some contractors have found that having a separate list of agreed client action items (as well as other parties' action items) . . . to be a useful preplanning and project management tool.

Risk-based preplanning

❑ **Outside of the contract** itself, which includes

all the **traditional terms and conditions**,

❖ other information in the **preplanning document** could include a

1. Simplified scope plan,
2. Contingency allotment protocols (for both cost and time contingencies), and
3. Of course, the agreed to **performance measurement and tracking process** that will be employed both during the project delivery and at project closeout.

Risk-based preplanning

- ❑ It is important to remember that the **aforementioned activities** are to be conducted by the **actual project level personnel** (client project manager, construction project manager, superintendent, critical subcontractors, foremen, etc.).
 - ❖ The preplanning activities should **not be primarily completed or directed** by supervisory personnel.
 - ❖ **Supervisory and executive level personnel** should facilitate and enforce the proper completion of the preplanning efforts, providing **oversight and review** where beneficial.

Risk-based preplanning

❑ The **final activity** of the preplanning should be a summary meeting reviewing the already **agreed plan**.

❖ This meeting, unfortunately, is **often skipped** but a **final review to ensure** that

1. **All key project** participants **understand** the project plan and potential risk items and
2. **Have clear expectations** of each other is an extremely valuable exercise.

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Risk-based preplanning – Example

❑ *An example of effective pre-contract planning was evidenced in a CMAR project for the construction of a \$40 million facility.*

❖ The project site was located in a **remote location** with uncertain and **conflicting municipal oversight** as well as **unknown water pressure** availability.

❖ Working in conjunction with the **design team** (who was hired simultaneously with the CM),

the **project team identified** that the **availability of water pressure** was a risk and that the **available water pressure** would be **unknown until three or four weeks** into the project **schedule** (excavation was necessary).

Risk-based preplanning – Example

- Depending upon pressure availability, the contractor team (working closely with the design team) identified **three potential scenarios** as part of the risk expectation:
- 1) **adequate water pressure** available, no change in building parameters;
 - 2) **inadequate water pressure** available, **impacting some** building parameters, such as quality, and potentially size; and
 - 3) **worst-case scenario**, **no water pressure** available, **requiring substantial underground** work, tanks, etc., which would impact the size and other parameters of the building.

Risk-based preplanning – Example

- ❑ A few weeks into the project, the **determination identified** that it was the worst-case scenario, resulting in a **reduction of the project scale**.
- ❖ The client's reaction upon being presented this news, **while not “happy,”** was one of **acceptance and acknowledgement**, along with **appreciation of the project team's efforts**, and an **increase of trust** in the project team.

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Risk-based preplanning – Example

- ❑ One of the **greatest values** of risk-based preplanning is the **establishment of expectations** that
can **minimize the element of surprise** and the **inefficient natural human response**.
- ❑ **Minimization** of the risk itself is **preferred**,
but the **secondary effect** of minimizing the surprise to the client and the possibility of an **emotional response** also has tremendous benefit.
 - ❖ With proper preplanning, the ability to perform is increased, in large part to **having a more realistic expectation** to perform and compare against.

Measuring Project Performance

Measuring project performance

- ❑ Measurement of project performance should be **built around deviations** in cost, time, and client expectations from the agreed plan (made ideally before the contract was signed).
 - ❖ Specifically, **any time the contractor sees** a project risk occurring, or potentially occurring, it should be **identified and tracked**.
 - ❖ The **tracking mechanism** should include

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Measuring project performance

- ❑ The **tracking mechanism** should include
 - ❖ the date the risk was identified,
 - ❖ the cause of the risk (owner scope, contractor activity, design issue, etc.),
 - ❖ a simple overview of the activities necessary to address the risk and
 - ❖ a log of its management, and, of course,
 - ❖ the impact (if any) to the cost and critical path of the project.

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Measuring project performance

☐ The client's construction manager or representative will then **rate their satisfaction** with how the risk has been minimized.

☐ Considering

current, new, and potential risks

on a **weekly basis** has proven to be the **most effective form** of utilization of this form of performance measurement.

Typically it will consume **5–15 minutes a week** once the construction company has established its risk tracking tools.

Measurement of project performance should be built around deviations in cost, time, and client expectation from the agreed plan (made ideally before the contract was signed).

Measuring project performance

- ❑ A **proper tracking tool**, when employed across **multiple projects simultaneously** and over time, will result in the ability to track the following performance measurements:
- ❖ **Project performance** in terms of **percent** on budget and percent on time
 - ❖ **Overall customer satisfaction**, real time, on any given project and across the construction organization
 - ❖ **Change order rates and totals**, with raw and percentage breakouts of the sources of cost changes
 - ❖ **Delay rates and totals**, with raw and percentage breakouts of the sources of delay
 - ❖ **Performance information by client**, identifying and tracking a client's change order approval rate, difficulty to work with, etc.
 - ❖ **Performance information by project manager** with satisfaction, time, and cost performance

Measuring project performance

- ❑ A **proper tracking tool**, when employed across **multiple projects simultaneously** and over time, will result in the ability to track the following performance measurements:
- ❖ **Performance information by superintendent** with satisfaction, time, and cost performance
 - ❖ Performance information by subcontractor, supplier, etc.
 - ❖ Performance information by designer/architect and specific engineers and firms
 - ❖ Performance information by project type, size, region, duration, season, complexity, etc.

Measuring project performance

❑ This information also becomes of extreme worth to **proposal development**, as a **contractor will now have the resources**

to **clearly show**

- ❖ the company's performance, along with
- ❖ the performance of the key individuals and
- ❖ team members being proposed.

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Measuring Past Performance

Measuring past performance

❑ Development of the **measurement** tools and **implementation** of the tools will take time and discipline for a contractor to successfully **create a consistent performance measurement environment**.

❖ In the **interim**, a contractor **eager** to become more measured and **insert** this information into project proposals should pursue **gathering past performance measurement** from past clients.

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Measuring past performance

- ❑ To be time effective, the **information** should be **qualitatively derived**.
- ❑ **Qualitative performance** information should be collected around the contractor's capabilities relating to the management of
 - ❖ cost,
 - ❖ time,
 - ❖ quality, risk,
 - ❖ operationwithin
 - ✓ rules and regulation,
 - ✓ effectiveness at communication, and
 - ✓ overall capability or client satisfaction.

Measuring past performance

- ❑ These measurements should be taken on a **scale of the contractor's choosing**, with one-to-five, one-to-seven, and one-to-ten scales being the most prevalent.
- ❖ *For example, using a one-to-five scale, a client for a specific past project could rate his or her opinion of the contractor's performance around cost management with a "4."*
 - ✓ This rating, of course, would be **more reflective** of the actual performance of the **project manager and/or superintendent** than that of the construction company itself.

Measuring past performance

- ❑ As such, it is **preferable** that for each past performance **reference measured**, the **project information** be **referenced to not only** the firm but also to the **key** project individuals and key subcontractors, thus allowing a **contractor to quickly have a database of**
1. Past performance for their firm,
 2. Key team members, and
 3. Key subcontractors (and suppliers).

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Performance-Based Client Relationships

Performance-based client relationships

❑ **Maintaining** sustainable client relationships entails

1. Traditional skills and influence coupled with
2. Performance measurement in project documentation and project closeout protocols.

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Performance-based client relationships

- ❑ The aggregation of the **contractor's performance** for a client, if **positive**, can be a highly effective proposal and marketing tool in RFP responses and afford greater **trust and flexibility** in working with the client organization.
 - ❖ **Performance-based client relationships** are established by enhancing and verifying the **interpersonal relationship** with the agreed performance documentation.
 - ❖ The **closeout process**, if done properly, is also a **positive and relationship-solidifying** exercise.
 - ✓ It should be **formal and scheduled** by the contractor.
 - An ad hoc closeout is not as effective in setting the tone and memory that is most beneficial.

Some examples of closeout and performance measurement tools are provided in Tables 18.1 , 18.2 , and 18.3

Performance-based client relationships

- ❑ Table 18.1 is a “**top page**” or **summary** of a project closeout; it is from a medium-size contractor and tracks the essential project details. It is built for **alternative delivery methods** and seeks to capture the essence of the project’s story.

Table 18.1 Example of a “Top Page” Or Summary of a Project Closeout Report

Project Summary					
Client Name and Project Name					
Delivery Method:	Identify the delivery method here (DBB, DB, CMAR, etc.)				
Owner:	Insert owner org name				
	Contact:	Insert client rep name with contract info			
Constructor	Insert your company name				
	Contact:	Insert your contact name and info			
Designer/Engineer:	Insert firm name				
	Contact:	Insert design rep name with contract info			
Start Date:					
Completion Date:					
Contract Days:					
Contract Amount:					
Final Contract Amount:					
Project Description					
INSERT Short description of the project					

Performance-based client relationships

- Table 18.2 provides much more detail around project performance with some key cost and schedule information.

Project Evolution						
(Changes to Project From Inception to Completion)						
Description/Reason	Cost		Created By		Owner Satisfaction	
	Time/Quality/ Money		Owner/Contractor/ Engineer		0 (not) - 10 (very)	
Project Team Comments/Quotes						
Owner: Insert any owner comments or info that would be useful						
Contractor: Insert any contractor info or comments that would be useful						
Engineer: Insert any designer/engineer comments that would be useful						

Performance-based client relationships

- ❑ Table 18.3 shows some qualitative performance measurement questions. These questions could also be used in the accumulation of past performance measurements.

Table 18.2 Example of Detailed Project Performance Measurements

Allocated Funds:	\$0	Awarded Duration:	0 days
Proposal Cost:	\$0	Original Substantial Completion:	mm/dd/yyyy
Accepted VA Items:	\$0	Original Completion Date:	mm/dd/yyyy
Awarded Cost:	\$0	Total Project Delays:	0
Total Cost Increases:	\$0	Client Delays:	0
Client Increases:	\$0	Vendor Delays:	0
Vendor Increases:	\$0	Design Delays:	0
Design Increases:	\$0	Unforeseen Delays:	0
Unforeseen:	\$0		
		Actual Substantial Completion:	mm/dd/yyyy
Final Cost:	\$0	Actual Completion Date:	mm/dd/yyyy
Percent Increase:	0.0%	Percent Increase:	0.0%

Performance-based client relationships

- Also, a slight rewording of the questions allows them to be used for individuals and subcontractors (internally or externally), affording the development of a robust performance measurement environment.

Table 18.3 Example of Qualitative Measurement Criteria

#	Performance Question	Scale	Rating
1	How well did we manage the project costs?	(1–10)	
2	How well did we maintain the project schedule?	(1–10)	
3	How was our quality of work?	(1–10)	
4	How well did we communicate?	(1–10)	
5	How well did we explain, manage, and document the project risks?	(1–10)	
6	How well did we follow the rules, regulations, and requirements?	(1–10)	
7	What is your overall customer satisfaction and comfort level in hiring us again?	(1–10)	

Printed Name (of the client)

Signature (of the client)

Date

Measurement and Leadership

Measurement and leadership

❑ **Performance measurements** cannot be used to punish, embarrass, or penalize project level personnel.

❖ If the information is used for those purposes,

- ✓ the accuracy,
- ✓ regularity of submission, and
- ✓ usefulness of the information

will decrease dramatically

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Measurement and leadership

❑ **Performance measurement** can only be accurately generated from **those who** deal with a project on a **day-to-day basis**.

❖ For a project supervisor or executive to **collect the performance measurement** from the project team and

then **turn around with the same information** and communicate to the team **that they are ineffective** is poor leadership.

✓ The **team** will adapt and **no longer provide meaningful information**.

*Performance measurement should only be used to provide **positive accountability** and **transparency**, and to assist individuals in the **completion of their projects**.*

Measurement and leadership

- ❑ For example, if a project is **behind schedule**,
*proper performance measurement will **identify the causes, sources of delay,***
*and **actions taken** thus far to **avoid or minimize the impacts.***
- ❑ This information may **assist** in
 - ❖ Adjusting the current work,
 - ❖ Provide effective communication and resources, and
 - ❖ Will certainly be of benefit on future work in terms of planning and personnel assignments.

Measurement and leadership

❑ **Identification and group recognition of performance slippage**

facilitates faster response and resolution,

both on a microscale (project or task level) and a macro-scale (organizational).

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Measurement and leadership

- ❑ For example, when **confronted with a project problem** or concern
some project managers will attempt to **solve the problem**
before anyone *more senior hears* of the problem.
- ❑ The **problem is hidden** by omission of reporting or identification,
with the problem **not being externally communicated**
until it is of **significant scale**
to be **beyond the project manager's ability** to camouflage
any longer.

Measurement and leadership

- ❑ A **common lament** of program managers or supervisory personnel is that by the **time they learn** of a project problem, it is often a much bigger problem than it needs to be, and if they **had been informed earlier**, the problem could have **been resolved with greater ease**.
- ❖ A working performance measurement and reporting process will **minimize this**;
however, to **develop a working measurement process** requires the organizational leader to develop the **institutional trust necessary for the reporting** to be beneficially accurate and timely by the project personnel.

Measurement and leadership

☐ As project teams see the information

1. Helping the **organization gain new work**, and
 2. Experience it being used by their **supervisors to help the project teams** successfully finish their projects,
- the system will advance and mature quickly.

☐ Good leadership creates this environment through

1. Steady communication,
2. Constant education,
3. Consistency, and
4. Honesty

Exercises

1. If you were a large client organization that purchases lots of construction services, what type of performance information would be most useful for you to know about proposing contractors?
2. Describe some of the underlying conditions that may cause the client's project team to have different expectations of performance than what was stated in the contract.
3. If you were the leader of a construction firm, how would promote a positive company atmosphere around performance measurement and transparency?

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مدیریت کسب و کار در صنعت ساخت (Construction Business Management)

ماژول ۴: توسعه کسب و کار

بخش اول: توسعه پروژه‌ها

ارائه دهنده:

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What we will learn?

- ☐ Increase in Project Size
- ☐ Limits of Growth
- ☐ Increased Risks With Larger Projects
- ☐ Increased Risks With Larger Projects: Case Study
- ☐ Underestimating the Size
- ☐ Underestimating the Size: Case Study
- ☐ Owners and Retainage
- ☐ Allocating Time
- ☐ Alternatives to Taking on Large Projects
- ☐ Exercises

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Increase in Project Size

Increase in project size

- ❑ This section concentrates on the **most frequent cause of contractor failure**, which is undertaking projects that are **much larger than a contractor** is accustomed to doing.
- ❑ There are times when contractors will **feel pressured to take on larger projects**, but there are **serious reasons** that contractor should **stick with what has made them successful**.

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Increase in project size

- ❑ For instance a **start-up company** will typically grow for a number of years until it establishes a size that the **founder(s) are comfortable** with or have targeted.
- ❖ In this case, **attempting larger and larger projects** is required to find and establish a **comfortable size**.
 - ✓ Obviously this is **one of the risks** related to start-up companies that are **breaking into the market**.
 - These growing pains are **difficult to avoid** and are a **large part of the reason** that **start-up construction companies** have an **extremely high failure rate**.
- Continuing to take on **larger projects** during a **short growth period** **magnifies the start-up's risks**.

Increase in project size

- ❑ A **common reason** an established firm attempts an **enormous project** is due to lack of work.
- ❑ A **contractor** can run **out of work** for a lot of reasons:
declining market, increased competition, higher interest rates, or local construction moratoriums.
 - ❖ When **backlog is down**, larger projects seem a **quick way out**.

A project fifty percent larger than any previous one carries much less risk than a project two hundred percent larger.

Increase in project size

❑ Failed companies have used all the excuses for taking on the final big project:

- ❖ “A close client wanted us to bid on it”;
- ❖ “The job was right next door to our office”;
- ❖ “We had an in with the owner”; or, the worst one of all,
- ❖ “We adjusted our bid after we were informed of the other bids.”

Often the reasons for taking on much bigger jobs are opportunistic and the risks are far too great for any of these reasons to make good business sense.

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Limits of Growth

- ☐ Determining the limits of expansion is **not easy** because there are **few rules or restrictions**.

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Limits of growth

❑ There are fundamental **financial constraints** to healthy and sustainable growth.

❖ The management of growth requires **careful balancing** of sales objectives with the **firm's operating efficiency** and **financial resources**.

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Limits of growth

- ☐ Each **entrepreneur** has limits to his abilities, available resources, and capital.
- ☐ Each **organization** is capable of **doing** just so much.
- ☐ During periods of **rapid growth**, construction companies **change dramatically**;
they really become **new untested organizations** with a **lot more work to do**.
- ☐ The **prior organization** that was such a **success is gone forever**.
- ☐ If an organization is to grow, its **management must grow**.
- ☐ Note that growth does not mean more of the same, **growth means to change**.
- ☐ The **organization's growth** must be qualitative, not just quantitative.

Limits of growth

- ❑ **Qualitative organizational growth** takes time and needs to occur prior to sales growth.
- ❑ It usually takes **more time than** it takes to capture **larger projects** and, almost universally, construction companies **increase management** after additional work is on hand, not before.
- ❑ Growth for the sake of growth is risky in any business, but **growing in the construction business** by taking on projects two to three times larger than anything done before is by **far much riskier**.

*Growth for the sake of growth
is risky in any business...*

Increased Risks With Larger Projects

Increased risks with larger projects

- ❑ Primarily, the **increased risks** involved in drastic changes with larger project sizes can be attributed to the **lack of experience**.
- ❑ An organization with a **profitable track record** doing projects of a certain size **cannot simply assume** they can profit from a **project of any size**.
 - ❖ Some might disagree and say, “I used to do much smaller jobs than I do now and I’m still making money.”
 - ✓ This **may be true**, but **how long did the evolution take** before becoming profitable?
 - There is a **big difference** between having money in the bank and making profit.

Increased risks with larger projects

- ❑ A company may be **able to double the size** of their projects,
but that does **not mean** they should **double it again and again**.
- ❑ It is difficult for a contractor to know just **how large a jump in project size** can be attempted at modest risk.
 - ❖ However, it is appropriate to **understand the nature** of the risk and **how to evaluate it before staking** the business and its future on a giant project

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Increased Risks With Larger Projects

Case Study

- ☐ Consider the story of a construction company that averaged **annual revenue of sixteen million dollars** in commercial and multi-residential work.
- ☐ They had been in business for **15 years** and had **experienced steady growth** from their success.
- ☐ They had been doing **two or three major projects** a year along with a lot of smaller work in a **two-county area** of their state.
- ☐ Their average-size project had grown proportionately as the company grew.
- ☐ The largest project to date had been \$6.5 million, but they considered anything over \$3 million a major project for them.
- ☐ One-third of their volume was small jobs, many under \$500,000.
- ☐ Profits were always good, and development in their area was on the upswing.

- ❑ When an out-of-state developer announced plans to put up a luxury condominium in the company's area, the contractor's estimator sent for the plans.
- ❑ When the contractor and estimator saw the size of the project, they almost sent the plans back immediately, but hesitated.
- ❑ The project was enormous for them, they guessed about ten million, but as far as they could tell, they were the only local contractor bidding the job.
- ❑ The other bidders were larger contractors from out of the area or out of state.
- ❑ They felt they had a real competitive advantage and decided to bid the job.
- ❑ They had three major projects underway at the time, but only one was bonded.
- ❑ Since it was almost complete, they were able to get approval from their surety for the bid bond, which was very large for their company.

- ❑ The design was first class all the way, and as the bid date neared, it became obvious that the project was closer to \$12 million, higher than the \$10 million initial guessed.
- ❑ They had some difficulty getting their prices together since some of the specialty items were from distant suppliers and sources they had never dealt with before.
- ❑ The size of the electrical and mechanical work on this project precluded the ability of the local subcontractors that they were used to working with.
- ❑ This created some difficulty for the estimator because he was dealing with strangers on some very sophisticated systems and controls.
- ❑ He had to be sure that everything was included but not duplicated.
- ❑ There was a last-minute snag on the bonding, but a hastily arranged meeting overcame that and they submitted their final price at \$11.8 million.
- ❑ During this overwhelming period the estimator recalled passing on several small worthwhile projects.

- ☐ The contractor had taken into consideration the owner's specification requirement of having a full-time project manager and a field superintendent.
- ☐ But, he thought he would not need both of them for three or four months until the project got rolling.
- ☐ However, immediately when the job started, the owner's fulltime field representative insisted that both positions be filled from the first day on-site.
- ☐ The company had three key field superintendents running their three major projects, one of which was nearly completed.

- ☐ The contractor put his best superintendent on the job as project manager and another as superintendent.
- ☐ This left one superintendent to run two major projects and finish up the third.
- ☐ The contractor figured he would help out also.
- ☐ When the project manager began to lay out the new job for excavation, he was reminded by the owner's representative that the specifications called for a licensed surveyor to lay out the project.
- ☐ The contractor began to see that they were in an entirely new game.

- ❑ Once underway, both the contractor and his estimator had to spend what seemed to them an inordinate amount of time at site meetings, updating schedules, and reviewing shop drawings and submittals.
- ❑ The shop drawings were a particular problem because, in the past, the company had never been required to formally sign off on shop drawings.
- ❑ They reasoned, correctly, that if they were going to sign off on all submittal and shop drawings, they had better review them carefully.
- ❑ It took a lot of time, and they eventually hired a draftsman to handle the preliminary review and coordinate the submissions.

Case study

- ☐ The contractors' assumptions that the client would overlook some of the specifications he considered to be excessive also became costly.
- ☐ The contractor was required to hire an on-site project engineer even though he didn't believe he needed one.
- ☐ He also didn't think that he would have to follow the strict emergency and first-aid requirements laid out in the specifications;
the owner's representative wasn't as laid back with the requirements.

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- ❑ The payments on the project were very slow, and the contractor became frustrated when he was unable to get through to anyone with authority at the developer's home office.
- ❑ Eventually, after using up all of his line of credit to finance the project and keep the job moving, he threatened to stop the job if he wasn't paid quicker.
- ❑ This quickly got the attention of the developer, and the contractor was invited to the developer's home office.
- ❑ Over an elaborate lunch, a senior member of the firm (who happened to be an attorney) explained that they would do their best to pay him as they paid everyone in their normal course of business.

- ☐ But, the developer made it clear that another threat to stop the job would result in the contractor's termination from the project.
- ☐ They weren't happy with his progress (at this point the project was thirteen days behind schedule).
- ☐ The developer warned him to expedite the work to avoid any disputes over losses the owner might incur if the project was delivered late.
- ☐ The contractor went home and managed to arrange a little larger line of credit and continued to push on.

Case study

- ☐ The contractor's two key people felt they were overworked with the large project, which was outside of their expertise and comfort zone.
- ☐ As the job progressed, the level of activity and number of tradesmen were more than they were used to or were comfortable with.
- ☐ The constant presence of the owner's representative and his staff (which had grown to three people by the height of the project) consumed a lot of the project manager's and superintendent's time, and they became very apprehensive.

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- ❑ The figures on the project started to slip, and the contractor was pushing the project manager pretty hard.
- ❑ There was plenty of other work in the area, and the project manager was genuinely apologetic when he quit.
- ❑ He explained that he simply couldn't handle the pressure.
- ❑ There wasn't a replacement for him in the company and with so much work in the area, little chance to hire from outside.
- ❑ So, the contractor promoted the superintendent to project manager, and a good foreman was made superintendent.
- ❑ The contractor was surprised when the foreman was approved as superintendent by the owner's representative.
- ❑ What the contractor didn't realize was that the owner's representative knew he could get more out of a contractor if the field management was not particularly strong.

- ☐ By the time the project was two-thirds completed, the contractor knew he had a substantial loss on his hands.
- ☐ He was not sure if his bank would extend his line of credit further, and his cash flow problems were mounting.
- ☐ These financial problems were compounded because the two major projects underway when he started the big one both had finished poorly.
- ☐ He knew that the poor performance on these projects was the result of taking his best men off the jobs to man the larger project.
- ☐ He had expected his less qualified superintendent to do both projects and close out a third at the same time.
- ☐ The contractor hadn't been able to help the overworked superintendent because he had to spend all his time at meetings and solving problems on the big job.

- ☐ About this time, the contractor came to another realization; he was in the middle of a construction boom in his area but was running out of work.
- ☐ He was doing fewer small jobs than ever because his estimator hadn't had time to bid them. They'd let the small ones go.
- ☐ Yet these smaller projects had always been profitable and were now sorely missed. The larger job was the real problem.
- ☐ Just after getting the big job a \$3 million job was available from one of their best clients.

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- ☐ They spent a great amount of time putting a bid together but were shocked when they couldn't get a bond for it and had to pass.
- ☐ In the past this was their averaged size job but now they were only able to get bonding for smaller jobs because they had tied up all of their bond credit on the large project.
- ☐ They needed work badly and were promised additional bonding as soon as their yearend statement was available.
- ☐ Their internal reports revealed exceptionally high receivables from the big job, and the surety was getting nervous.

- ☐ When the financial statements came out, they weren't good.
- ☐ The disproportional payables dried up most of their cash flow.
- ☐ Tight money had caused the big job to lag.
- ☐ Several subcontractors complained to the owner about nonpayment, and the owner put the bonding company on notice of the payment problem.

Finally, once the contractor's credit dried up he couldn't pay his bills and was eventually forced out of business.

Underestimating the Size

Underestimating the size

- ☐ A common occurrence in the construction industry is **underestimating the size of the job**
before the job is even **estimated**.
- ☐ **When** an organization is **bidding work considerably larger** than they are used to, there is a **tendency to relate the work items** to the **scale of the work** to which the company is **accustomed**.
 - ❖ This is **particularly true** on work that is **not taken off by units** such as setting up equipment, cleanup, and so forth.
- ☐ If you are estimating **man-hours from your own experience**,
you may forget or not realize that the equipment on the project is **three times as big as normal** or that the building, road, or bridge is twice as large as those with which you usually work.

Underestimating the size

- ☐ The **first precaution** in considering much larger projects is to carefully review the bidding process.
- ☐ If the **estimator lacks experience** with the size of the project, they need to **make sure** they are not scaling down the project in their minds to conform to their expectations.

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Underestimating the size

- ❑ The **second area** of concern involves doing the job once you get it.
 - ❖ Again, organizations with **no experience in larger projects** often **downscale the job** in their minds and **believe they can run it with as few people** as they typically would their everyday work.
- ❑ They need to determine
 - ❖ **How many key people** this job will tie up, and
 - ❖ For **how long**, and
 - ❖ Then take a look at **what other work** they have and **how that will be affected**.
- ❑ The **impact of tying up key people** needs to be evaluated as well as the **inability to go after additional normal-size work** in the marketplace.

Underestimating the size

❑ If there is **little work around**, of course, that is **less of a concern**,

but **someone has to ask** the hard questions:

*Can the key people really do this **job** and **make a profit** and do they have any **experience** with this size work?*

- ❖ If **additional people** have to be **hired** for the project, the **risks** grow.
- ❖ The **ability and loyalty** of new people are **untested**.
- ❖ If they **don't work out** and need to be **replaced mid-project**, another set of **problems** develops.

Underestimating the size

- ❑ A **third area** of concern is **variation in costs** that may be unexpected as **job size increases significantly**.
- ❑ **Even unit costs** that are normally familiar to a particular contractor **may vary considerably** in the larger project and it **becomes extremely important** to use information resources like RSMeans to assist in predicting those costs.

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Underestimating the size

- ❑ **Also remember** that the owner's representatives, designers, and inspectors will probably be **more used to the size** of the project **than the company's field management.**
- ❑ As seen in the **case study presented earlier**, the **project management team got over** their head with the technical requirements of the project and **quickly became frustrated.**

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Underestimating the Size

Case Study

Case study

- ❑ A utility contractor, whose largest previous job was **\$2 million**, captured a **\$4.3 million** sewage treatment plant renovation project.
- ❑ **Six months later**, they were awarded a \$7.6 million job with the next two bidders at \$9.2 and \$9.9 million.
- ❖ An extensive study of the **entire bid was undertaken by the surety** company's consultants with the cooperation of the contractor, and there were no major mistakes or arithmetical errors.

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Case study

❑ **Yet** when the bid was carefully analyzed and compared to an **independent takeoff** by a **qualified estimator**,

it was determined, quite to the amazement of the contractor, that almost **every line item** was **low**.

❖ There **wasn't a single sizeable mistake**, but literally hundreds of separate items were **consistently low**.

✓ **Although** it was the **same kind of work** the contractor always did, **no one who prepared** the bid, or in the company for that matter, **had ever worked** on a job this **size**.

Case study

❑ They simply scaled the **entire job down** in their minds to coincide with their experience and expectations.

- ❖ In fact, the **scale on the drawings** for this large sewage treatment plant was **smaller than any scale** on which the organization **had ever bid**.
- ❖ They simply estimated **too low in too many places**.

The size of the loss put this otherwise successful company out of business.

*Years of **hard work and successful projects** were all shot on one job that **shouldn't have been attempted in the first place** because it was **too big for the company**.*

*They had been in business for **over 40 years**.*

Owners and Retainage

Owners and retainage

- ❑ The risk of **undertaking a larger project** is increased with an **unfamiliar client**.
- ❑ It's always important to **know something about** an owner, but if a company is **out of work and desperate**,
an **unknown owner** probably won't change the decision to attempt a larger project.
 - ❖ It's prudent to find out something about **their payment procedures** and **reputation**
while determining the impact on the **company's cash flow**.

Owners and retainage

- ❑ Take a **realistic**, if not pessimistic, look at the **length of time** the job will take and ensure that you have **accurately planned** for retainage rates.
- ❖ If there is a **reduction in retainage** when the job is **50 percent complete**, determine whether this is **definite** or at the **owner's option** and/or dependent upon **owner satisfaction**.
- ❖ A retainage reduction **cannot be assumed**.

Determine the effect if the reduction is not received.

Owners and retainage

- ❑ If retainage is payable **only after final acceptance**, take a **hard look at how long** it will really take to collect even when **dealing with a friendly owner**.
 - ❖ This planning should take place **before the bid goes in**, not after the project is awarded.
 - ❖ Be **realistic** about how long it will take to **collect retainages** and the **effect on the company's cash flow**.
 - ❖ **Well-managed companies predict** how much cash they will need at various times in the future, and then attempt to raise that amount **before it is actually required**.
 - ❖ At the **very least** they make **plans for securing** the cash when they need it.

Huge outstanding retainages are common among distressed construction enterprises that find themselves at the mercy of their bank lenders or sureties.

Allocating Time

Allocating time

- ❑ Once a larger project is undertaken it is **critical to give it the time** it deserves as it will represent a **significant portion of total volume**.
- ❖ However, **top management** also needs to look carefully at **allocating time** and **not forgetting** about the **other work on hand**.
- ❖ The other projects **may be smaller**, but they **may be and should continue** to be the company's **bread and butter**.
- ❖ An organization **seldom wants to lose the profits** small jobs generate, and may **not be able to afford** the losses they could produce from **lack of attention**.

Alternatives to Taking on Large Projects

Alternatives to taking on large projects

❑ What are the **alternatives** for a contractor if he is running out of work because of a **declining marketplace**?

- ❖ The hardest alternative to **sell in the construction industry** is to do less work.
 - ✓ It just **isn't in the nature of most contractors** to accept such a notion, but it is a **very viable alternative**.
 - ✓ **Cutting back overhead and becoming a smaller business** to suit a declining marketplace is **very realistic**.

If the entire market in an area is soft, then all of the contractors will be looking for work.

Alternatives to taking on large projects

- ❑ **Larger contractors** who don't usually compete with smaller ones will be going after the **smaller work**.
- ❖ **Bidding within a normal or smaller project size** has far **less risk** than shooting for larger work.
 - ✓ The problem, of course, is that **an organization's volume** will necessarily **drop with the smaller projects**.
 - ✓ It is **difficult and unlikely** to hold **volume with a larger number of smaller jobs** because in a soft market there are fewer jobs and more competition.

Alternatives to taking on large projects

- ❑ **Another alternative** would be to **expand the company's work area** and look for work in their **best project size** and **market niche elsewhere**.
- ❑ The risk involved with **geographic change** discussed, but this option can be **explored and balanced against** the risk of going into a **very large project**.

Unfortunately, most construction businesses **aren't very flexible**.

They aren't set up to expand and compress with the availability of work.

A construction organization should have "flexible overhead" ...

Alternatives to taking on large projects

- ❑ A construction organization should have “**flexible overhead**” and be **cautious of building large organizations** with fixed overheads in a fickle marketplace.
- ❑ A **portion of overhead** needs to be flexible, that is, overhead that is easily removed, **like short-term leases** on some equipment and **some temporary personnel** in administrative positions.
 - ❖ It is prudent for a construction enterprise to **maintain 20–25 percent of their total overhead** in a form that it is easily shed.

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Alternatives to taking on large projects

- ❑ It is prudent for a construction enterprise to **maintain 20–25 percent of their total overhead** in a form that it is easily shed.
- ❖ **Instead of hiring permanent** office staff each time a company expands, it can utilize the **services of temporary placement services** until the new organization is **assured or expands again**,
 - maintaining some portion** of overhead staff on a nonpermanent basis that is easy to **let go if work slows down**.
 - ✓ The same can be done with **vehicles and equipment fleets** with a portion on short-term rental rather than purchased, allowing much greater overhead flexibility.

Alternatives to taking on large projects

- ❑ It's the **permanent overhead** that cannot be easily reduced that requires construction companies to compete for sales in a declining marketplace to the point of desperation.
- ❖ Bidding with **little or no profit** on the work just to support overhead **magnifies risk** and in a declining market can be **suicide**.
 - ✓ **Some construction executives** are convinced **overhead can't be let go**, particularly people, but also equipment,
because it will be needed when the **business cycle turns around**.
It is a compelling argument, but if the company does not survive a down market the argument is defeated.

Alternatives to taking on large projects

- ❑ Business is about recognizing, minimizing, and managing risk.
 - ❖ It's **not about** maintaining size or maintaining potential for a future market.
- ❑ **Every construction enterprise** must operate in its current market by **using past experience** to navigate.
- ❑ **Large construction projects** have substantial risk and are to be avoided if the company lacks the experience.

*Business is about recognizing,
minimizing, and managing risk.*

Exercises

1. What does it mean to underestimate the size of the job before the job is even estimated?
2. How can a contractor minimize the risks with taking on a large project?

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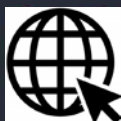
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