

Stress Testing Your Construction Business

TRAVELERS 

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Webinar

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The What and Why of Stress Testing

What is a business stress test?

- An interactive analysis of your business's ability to sustain itself under varying economic conditions
- Simulation of different scenarios resulting in the ability to project revenue, profitability, and cash flows over a variety of durations

Why do a stress test?

- We are entering a period of significant economic uncertainty. Most businesses will experience pressure that will likely affect both profits and cash flow
- There may be difficult choices to make in order to maintain profitability and to position your business to “weather the storm” and successfully navigate the cycle
- Stress testing provides information, data, and insight for making choices



The Four Areas of Your Business to Stress Test

- **Capitalization** – the strength of your balance sheet and the amount of equity you have to sustain losses
- **Liquidity** – a measure of cash and access to cash that is available to fund shortfalls in gross profit
- **Backlog quality** – a measure of risk in the revenue and profit in your backlog
- **Market position and pipeline** – an assessment of the degree to which your pipeline of future work and associated profit could be impacted

Stress Testing

Capitalization

A strong asset base with minimal debt positions a business to ride out dips in the economic cycle

1. Strong balance sheets are characterized by:
 - a. Low debt to equity ratios, resulting in limited fixed obligations to lenders
 - b. High quality asset base
2. It's not a one size fits all. Different sectors require different capital structures
 - a. Differences for GCs, trades, and heavy civil

Stress Testing

Liquidity

Adjusting to a decline in volume takes time. Stress test your ability to fund obligations and costs no longer covered by job profit

1. Evaluate your working capital position
 - a. Cash Stress Test Model (*see following page*)

Stress Testing

Cash Stress Test Model

Base Case (in thousands)		Base	Scenario 1	Scenario 2	Scenario 3	
January 1 Cash	1,000					
Annual Revenue	100,000	Revenue Impact	0%	(25%)	(50%)	
GP Margin	5.0%	Margin Impact	0%	(25%)	(50%)	
Annual Overhead	3,000	Overhead Impact	0%	0%	10%	0%
Annual Debt Service	0					
Annual Cash Flow	2,000					
Base Net AR (AR-AP)	1,000	% Uncollectible AR	0%	0%	0%	25%
Base Net AR Days	3.7	Net AR Days Impact	0	0	0	15
Impact Start (Month)	4	Duration of Impact	0	2	6	9
Bank Line Amount	1,000					
Bank Line Usage	0					
Days Cash	122					
Days Cash & Bank Line	243					

Cash Balance	% of Revenue	One off cash flows	Base	Scenario 1	Scenario 2	Scenario 3
January 1 Cash	0%		1,000	1,000	1,000	1,000
January	8%	0	1,167	1,167	1,167	1,167
February	8%	0	1,333	1,333	1,333	1,333
March	8%	0	1,500	1,500	1,500	1,500
April	8%	0	1,666	1,583	1,422	1,203
May	8%	0	1,833	1,666	1,345	907
June	8%	0	1,999	1,832	1,268	611
July	8%	0	2,166	1,999	1,191	315
August	8%	0	2,332	2,165	1,114	18
September	8%	0	2,499	2,332	1,037	(278)
October	8%	0	2,665	2,498	1,203	(574)
November	8%	0	2,832	2,665	1,370	(870)
December	8%	0	2,998	2,831	1,536	(1,166)
	100%					

Stress Testing

Liquidity

1. Evaluate your working capital position – *continued* –
 - b. Modify/elaborate on the impact of over billed and under billed cost
 - i. Quantify the amount of cash that will be required to fund any net over billed positions if you anticipate the volume of your business to decline
 - ii. Over billed positions are effectively loans you've received from the customer – they are repaid by putting work in place with no further payment
 - c. Evaluate quality of any at risk working capital assets such as claim amounts booked as unbilled cost – be realistic in your assessment of collectability

Stress Testing

Liquidity

- 2. Add the capacity of your line of credit**
 - a. You may draw on it to access additional cash
 - b. Assess any risks for revocation/drawdown before counting on it
- 3. Inventory balances**
 - a. Conversion rates of inventory will slow
 - b. Begin to adjust your procurement patterns now
- 4. Looking at fixed obligations and ability to shed**
 - a. Leases, equipment financing

Stress Testing

Backlog Quality

Stress test the potential for future revenue and profit under contract to deteriorate

- 1. For the majority of contractors, revenue and profit that has been contracted and is in backlog is secure**
- 2. Don't assume that because it's been contracted that there won't be any impact**
 - a. Review what you call backlog, verifying what is contracted vs. what has simply been awarded**
 - b. Review contract terms for ability of owner to cancel or delay**
 - c. Evaluate the financial viability of projects in your backlog now that the economy has changed**
 - i. Example – a resort hotel project represents a significantly greater risk of delay or cancellation than a health care bed tower addition**

Stress Testing

Backlog Quality

2. Don't assume that because it's been contracted that there won't be any impact – *continued* –
 - d. Review the contractual payment terms of projects in backlog
 - i. Assess the credit quality of the contracted party (ex. corporate balance sheet or special purpose LLC)
 - ii. For projects being financed by construction loans, assess the risk of financing
 - This is relevant for GCs accessing payment from owners
 - Also subcontractors receiving payment from GCs

Stress Testing

Market Sector and Pipeline Quality

- 1. Almost all contractors will feel an impact from the change in the economic cycle**
- 2. The degree of stress will be influenced by the markets where you compete and the type and quality of the projects your business pursues**
- 3. Market and pipeline factor to consider**
 - a. Your market sector**
 - i. Contractors focused across a diverse group of markets or specifically in markets expected to remain stable will experience less stress**

Stress Testing

Market Sector and Pipeline Quality

3. Market and pipeline factors to consider – *continued* –

b. Your sales pipeline

- i. Evaluate factors such as volume of pipeline in at risk sectors
- ii. Project financing for critical projects in your pipeline – is it secured?
- iii. Will there be major changes to the capital plans for your key clients or customer segments?

Stress Testing Requires Forecasting

1. Forecasts of future revenue and job profit levels – see Macro- and Scenario-Specific approaches on next two slides
2. Overhead forecasting
 - a. Start with your baseline budget – this is your initial break-even target
 - b. Evaluate options to adjust depending on change in job profit contribution
3. Identify your break-even levels at different volume and margin levels
 - a. Job profit required to cover existing overhead
 - b. Identify break even points with different or reduced overhead structures
 - c. Ensure your break even covers other fixed obligations such as:
 - i. Debt service
 - ii. Lease obligations
 - iii. Tax liabilities

Stress Testing Requires Forecasting

4. Macro-stress testing

- a. Consider general macro impacts and specific sector impacts
 - i. If you perform work in different sectors, consider each one independently
 - ii. Model expected changes in margin level as well as volume
 - iii. Consider the duration of the recession and speed of recovery – model different scenarios
- b. Evaluate how you would adjust your overhead cost model to adapt to different volume/margin scenarios
 - i. Would you adjust your organizational model to lower your cost structure?
 - ii. Would you sustain structure and fund with cash reserves?
 - iii. Likely some combination

Stress Testing Requires Forecasting

5. **Scenario-stress testing – modeling more precise or specific possibilities**
 - a. Identify key projects in backlog or pipeline that are significant “bets” towards your future financial results
 - i. Forecast the impact of a delay or cancellation
 - ii. Are the resources you planned to dedicate transferrable to another project? If not, will you carry them on your bench? At what cost?
 - b. Identify projects which could be impacted by unique disruption
 - i. Key trade failure or disruption
 - ii. Owner issues – funding delays or payment challenges (subcontractors are at risk here as well)

Stress Testing Requires Forecasting

5. Scenario-stress testing – *continued* –

- c. Identify/evaluate any situational supply chain risks
 - i. Key trades that may become vulnerable – example of curtain wall contractors in last recession
 - Financial and performance (schedule) impact
 - Re-procurement risk (financial impact if you have to re-procure)
 - ii. For GCs that have SDI programs – evaluate adequacy of your reserves and what impact this could have on cash and equity

Stress Testing Requires Forecasting

6. Do your forecasting with a reliable financial model

a. What is a reliable model?

- i. You've used it to plan and run your business
- ii. Is based on actual work in your backlog and reliable burn rates and project margin assumptions
- iii. Is linked to or based on a good overhead budgeting model
- iv. Forecasts new work and how it gets converted into revenue and profit
 - Based on an objective assessment of your pipeline
 - Reasonable assumptions for hit rates
- v. Forecasts to an operating profit level (after overhead and other expenses)
 - Profit can be used as a proxy for cash flow – unless there are significant projects with disadvantaged payment terms
 - Profit and loss forecasts can be used to determine future changes in equity and associated implications for bonding and other covenants

Stress Testing Requires Forecasting

6. Do your forecasting with a reliable financial model – *continued* –

b. If you don't have a forecast tool

i. Take Action and build one quickly!

- Consider having it done in order to save time and have out of the box reliability
- Forecasting your backlog burn is relatively straightforward – the work is current and ongoing
- Sales and revenue from new work is more complex

ii. Forecast Examples (*see following slides*)

- Income Statement
- Monthly Revenue

Forecast Example: Income Statement

ABC Construction Company Projected Consolidated Income Statement For the Years Ending December 31, 2020 and 2021 Projection Date: March 31, 2020									
		2020 Consolidated			2021 Consolidated				
		Current Projection	12/31/19 Projection	Change	Current Projection	12/31/19 Projection	Change		
Revenue	-Current contracts	\$25,680	\$27,650	(\$1,970)	\$15,590	\$17,150	(\$1,560)		
	-Future awards	\$15,600	\$16,545	(\$945)	\$22,670	\$29,600	(\$6,930)		
		41,280	44,195	(2,915)	38,260	46,750	(8,490)		
Job Profit	-Current contracts	\$1,290	\$1,430	(\$140)	\$760	\$895	(\$135)		
	-Future awards	\$748	\$850	(\$102)	\$990	\$1,520	(\$530)		
		2,038	2,280	(242)	1,750	2,415	(665)		
% Rev	-Current contracts	5.0%	5.2%	7.1%	4.9%	5.2%	8.7%		
	-Future awards	4.8%	5.1%	10.8%	4.4%	5.1%	7.6%		
		4.9%	5.2%	8.3%	4.6%	5.2%	7.8%		
Other job cost adjustments		-	-	\$0	-	-	\$0		
Total job profit		2,038	2,280	(242)	1,750	2,415	(665)		
% Rev		4.9%	5.2%	8.3%	4.6%	5.2%	7.8%		
General overhead		2,560	2,570	(\$10)	\$2,450	2,670	(\$220)		
Allocations (to) / from overhead		(1,345)	(1,350)	\$5	(\$1,270)	(1,370)	\$100		
Net general overhead		1,215	1,220	(5)	1,180	1,300	(120)		
% Rev		2.9%	2.8%	0.2%	3.1%	2.8%	1.4%		
Income from operations		823	1,060	(237)	570	1,115	(545)		
% Rev		2.0%	2.4%	8.1%	1.5%	2.4%	6.4%		
Deferred Compensation		(145)	(145)	\$0	(\$90)	(155)	\$65		
Profit Sharing		(165)	(175)	\$10	(\$120)	(175)	\$55		
Investment Income		115	125	(\$10)	\$80	125	(\$45)		
Net income		628	865	(237)	440	910	(470)		

Forecast Example: Monthly Revenue

ABC Construction Company Monthly Revenue Forecast Projection Date: March 31, 2020															
Project Numbr	Type	Contract Value	Total Profit	Get %	Actual To Date	Projected Apr-20	Projected May-20	Projected Jun-20	Projected Jul-20	Projected Aug-20	Projected Sep-20	Projected Oct-20	Projected Nov-20	Projected Dec-20	
1000	Current	20,000	1100	100%	14,500	1,500	1,200	1,200	1,100	500	-	-	-	-	
1001	Current	10,000	550	100%	3,000	400	500	600	700	700	600	600	600	500	
2000	Current	12,000	660	100%	500	400	600	700	1,000	1,100	1,100	1,200	1,300	1,200	
3000	Future	18,000	990	50%	-	-	-	-	-	-	-	-	600	700	
3001	Future	10,000	550	30%	-	-	-	-	60	80	90	120	110	150	
3002	Future	20,000	1100	30%	-	400	500	500	600	700	700	500	500	500	
3003	Future	3,000	165	20%	-	-	-	-	70	80	90	100	110	120	
3004	Future	2,000	110	25%	-	-	-	-	-	50	60	70	80	90	
3005	Future	1,000	55	20%	-	-	-	-	-	40	45	50	55	60	
3006	Future	1,000	55	50%	-	-	-	-	-	-	60	60	60	60	
3007	Future	2,000	110	30%	-	-	-	-	-	-	-	50	60	70	
3008	Future	40,000	2200	40%	-	-	-	-	-	-	-	-	50	60	
3009	Future	30,000	1650	30%	-	-	-	-	-	-	-	-	220	290	
3010	Future	10,000	550	30%	-	-	-	-	-	-	-	-	-	180	

Break-Even Analysis and Cost Allocations

- 1. Analyze changes in break-even levels of production assets**
 - a. Produce v. buy (e.g. high unit cost production plant)
 - b. Own v. sell and rent (equipment)
- 2. Allocation of indirect costs on declining volume**
 - a. Depreciation, safety, scheduling, IT, shop and tools
 - b. Volume reduction reduces amount allocated
 - c. Factor into your forecasts
- 3. Other potential hidden costs that will emerge**
 - a. Under-utilized staff “parked on a job”
 - b. Billable preconstruction v. Free-con
 - c. Impacts on bottom line and cash can be material

A Final Thought on Stress Testing

- 1. Can your business continue to execute after adjusting your organization and cost structure?**
 - a. Ability to get and execute work will still determine the winner
 - b. Can leadership move to the front lines and continue to lead?
- 2. Is there “reserve” capacity in the organization and leaders?**
 - a. All-hands on deck approach
 - b. Sustain the sales, estimating, and preconstruction engine
 - c. Dive into the operation details where needed
- 3. Sustain your company’s differentiating edge**

**The Family Business Institute's mission is to
build better contractors!**

**We welcome your questions and feedback –
please call or email us at**

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