

HOUSTON AIRPORT SYSTEM

How to Estimate Projects
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HAS OBO

****Disclaimer:****

The information presented in today's webinar is for informational purposes only and does not reflect the opinions or recommendations of the Houston Airport System.



Event Agenda

- Event Purpose
- HAS OBO Overview
- HAS OBO Responsibilities and Duties
- HAS OBO Commitment
- Estimating Project (Professor Muhammad Siddiqui)
 - The ABCs of Estimating
 - Estimating Methods for Construction, Professional Services and Goods/Supplies
 - Estimating Tools and Resources
 - Market Research and Estimating
 - Mark-Up Strategies
- Q&A
- Closing Remarks



Event Purpose

Our purpose today is to equip participants with the knowledge, tools, and techniques necessary to excel in project estimation. This event aims to address the challenges faced by project managers, business analysts, and professionals involved in project planning and execution by providing practical insights and best practices for accurate estimation.





HAS OBO Overview

Vision The Office of Business Opportunity's vision is to **eliminate systemic barriers** to prosperity and economic opportunity in the Greater Houston region.

Mission The Office of Business Opportunity is committed to **cultivating an inclusive and competitive economic environment in the City of Houston** by promoting the success of small businesses and developing Houston's workforce, with a special emphasis on historically underutilized businesses and disenfranchised individuals.

Objectives The Houston Airports Office of Business Opportunity **promotes the utilization** of Disadvantaged Business Enterprises (DBEs) in Department of Transportation (DOT) Federal Aviation Administration (FAA) financially-assisted contracts; the inclusion of Minority and Women, Small (SBE) and Persons with Disabilities Business Enterprises (MW/S/PDBEs) in City of Houston funded contracts; **improved access to Houston Airports contract and procurement opportunities** for MW/PDBE and non-MW/PDBE and SBE companies; and compliance with local and federal mandates.



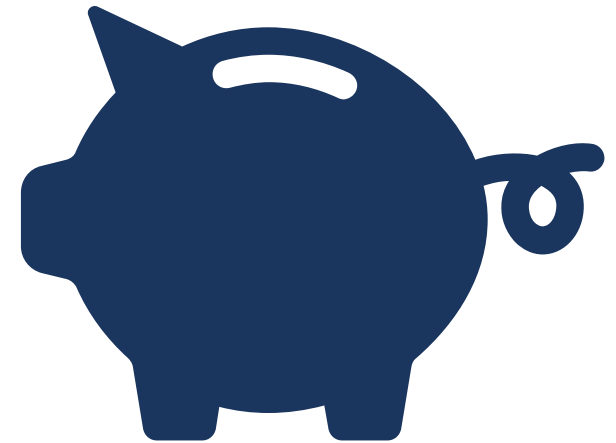
HAS OBO Responsibilities and Duties

- Provide contract information to M/W/S/P/DBEs
- Serve as an advocate for M/W/S/P/DBEs
- Support policies and activities to maximize their small business participation on HAS contracts
- Assist Prime Contractors identify certified M/W/S/P/DBEs to participate on contracts as subcontractors and concessionaires
- Educate M/W/S/P/DBEs on accessing HAS contracting opportunities



HAS OBO Responsibilities and Duties

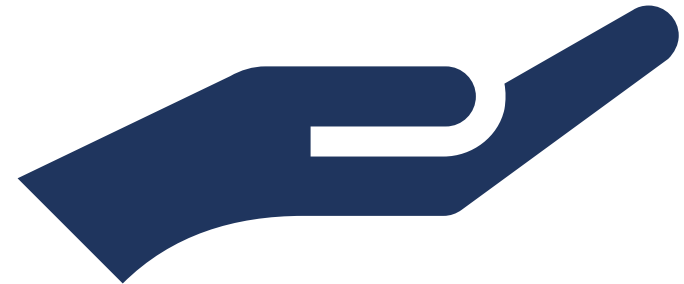
- Monitor M/W/S/P/DBEs utilization on contracts with participation goals
- Ensure that wage standards are met on all construction projects with Federal and City funding
- Host small business and minority forums for networking
- Provide information and referral services to M/W/S/P/DBEs



HAS OBO Commitment

Create a level playing field on which:

- DBEs and M/W/S/PDBEs can participate in an environment that removes barriers
- Ensures equal access and non-discrimination
- Provides tools necessary to compete successfully within the Houston Airport System



Estimating Projects

Professor Muhammad Siddiqui

- Over 30 years of experience in the fields of architecture, project management, business consulting, construction management and planning.
- Currently working as Project Manager and Architecture department head with a large international EPC company where responsibilities over the past 18 years have included management of several large projects.
- Also active as part of the adjunct faculty with the College of Engineering, University of Houston, where Mr. Siddiqui currently teaches Advanced Construction Estimating.



Construction Management
Cullen College of Engineering

Objectives

1. The ABC's of estimating: What is estimating and estimating terminology like classes of estimates and levels of accuracy and be able to understand and evaluate estimates.
2. Useful methods of conceptual and preliminary estimating for construction projects, services and goods.
3. Tools and methodologies to aid in estimating.
4. Importance of market research and awareness.
5. Considerations for determining reasonable profit / mark-up.

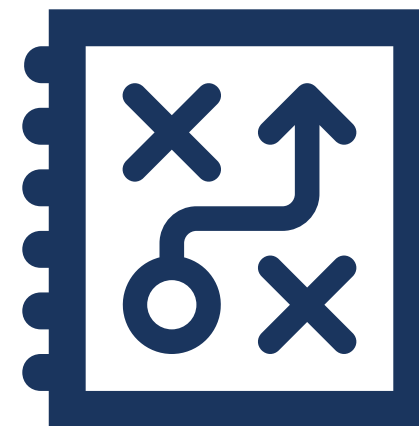


The ABCs of Estimating

From the moment a project is conceived, one of the top questions is “how much will the project cost?” This implicitly requires that the proponents of the project must know a “budget” number.

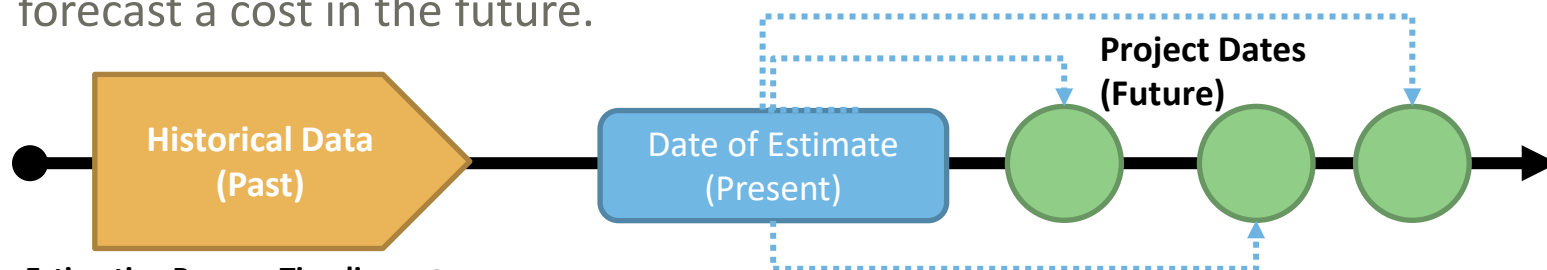
When a project is tendered and actual constructors, designers and suppliers are required to submit “hard” numbers to deliver specific portion of the project, they have to base their proposals on ESTIMATES that are based on provided information, technical knowledge and market reality rather than guesswork or “judgement”.

The purpose of this short presentation is to provide a high-level understanding of estimating as it pertains to construction projects and create an awareness of factors that contractors should consider.



The ABCs of Estimating

- ❑ Estimating is a part of our daily lives...
- ❑ In construction, the purposes of an estimate is to determine the forecast cost required to complete a project in accordance with plans and specifications.
- ❑ Estimating is NOT an exact science, but the best projection of cost based on the level of available information.
- ❑ The estimating process varies from company to company and among estimators.
- ❑ Developing an estimate requires knowledge of construction, experience, judgement and ... *common sense*.
- ❑ Estimates are based on historical data, evaluated at the present in order to forecast a cost in the future.

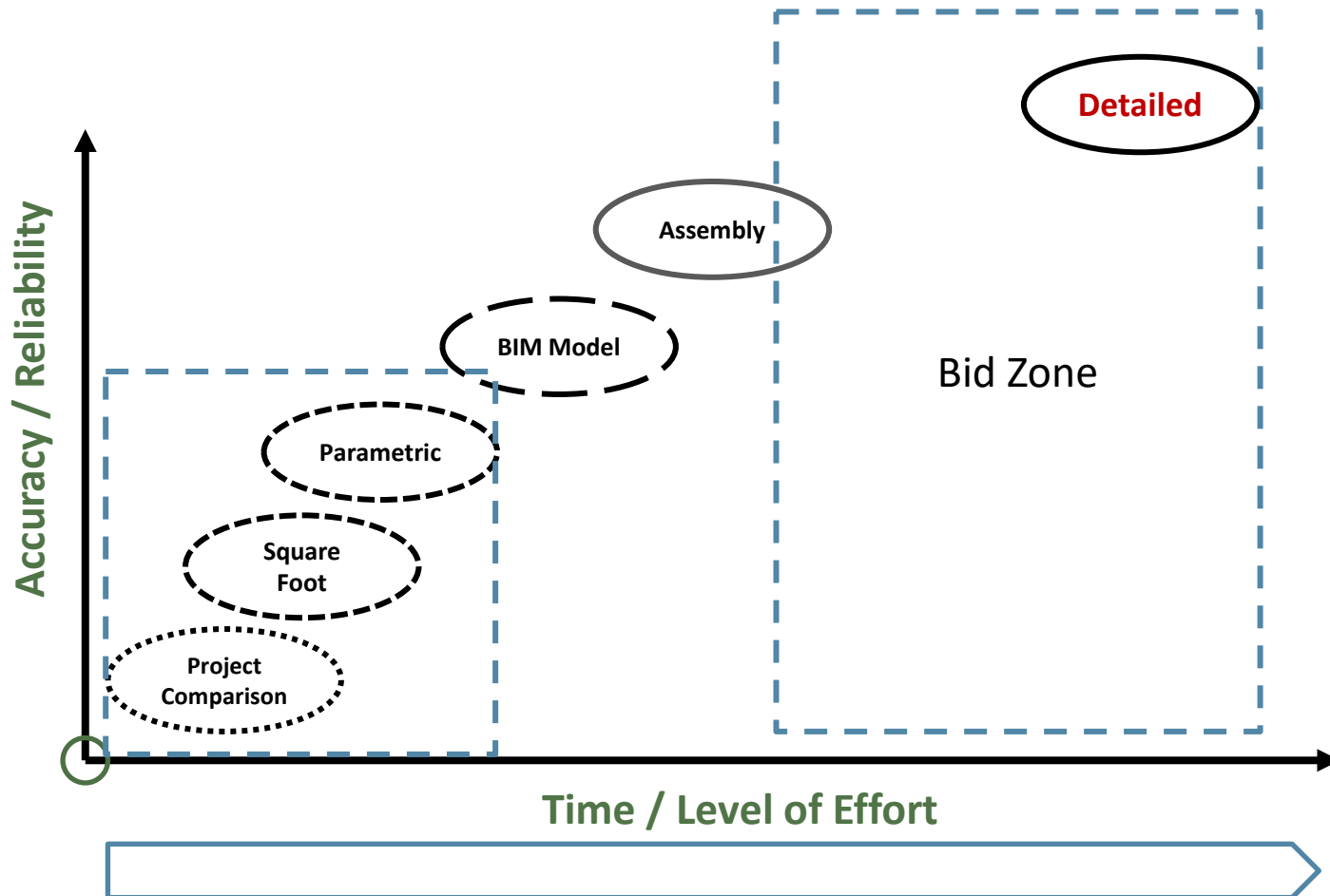


Estimating Process Timeline – © muhammad a siddiqui

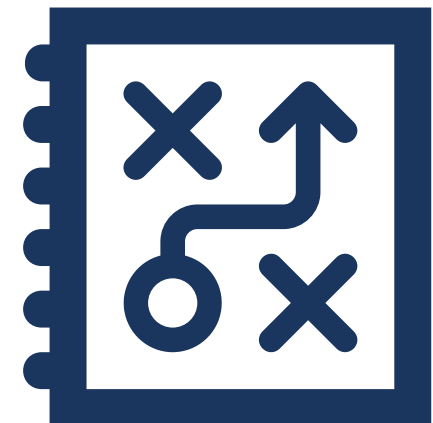
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The ABCs of Estimating



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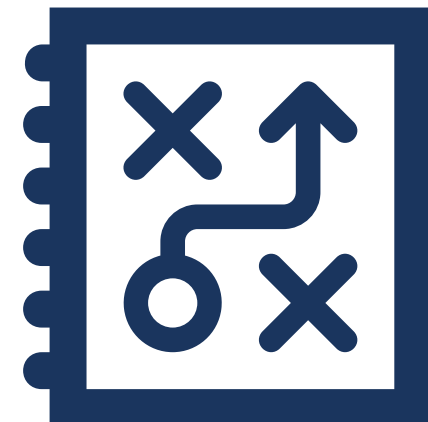
The ABCs of Estimating

Estimate Class *	Level of Definition	Applicability
Class 5 Estimate	0% ~ 2%	Conceptual and strategic business planning
Class 4 Estimate	1% ~ 15%	Feasibility, budgeting, preliminary funding
Class 3 Estimate	10% ~ 40%	Budgets, funding, cost-plus bids
Class 2 Estimate	30% ~ 70%	Bidding, baselines
Class 1 Estimate	60% ~ 100%	Lump sum bids, control baselines

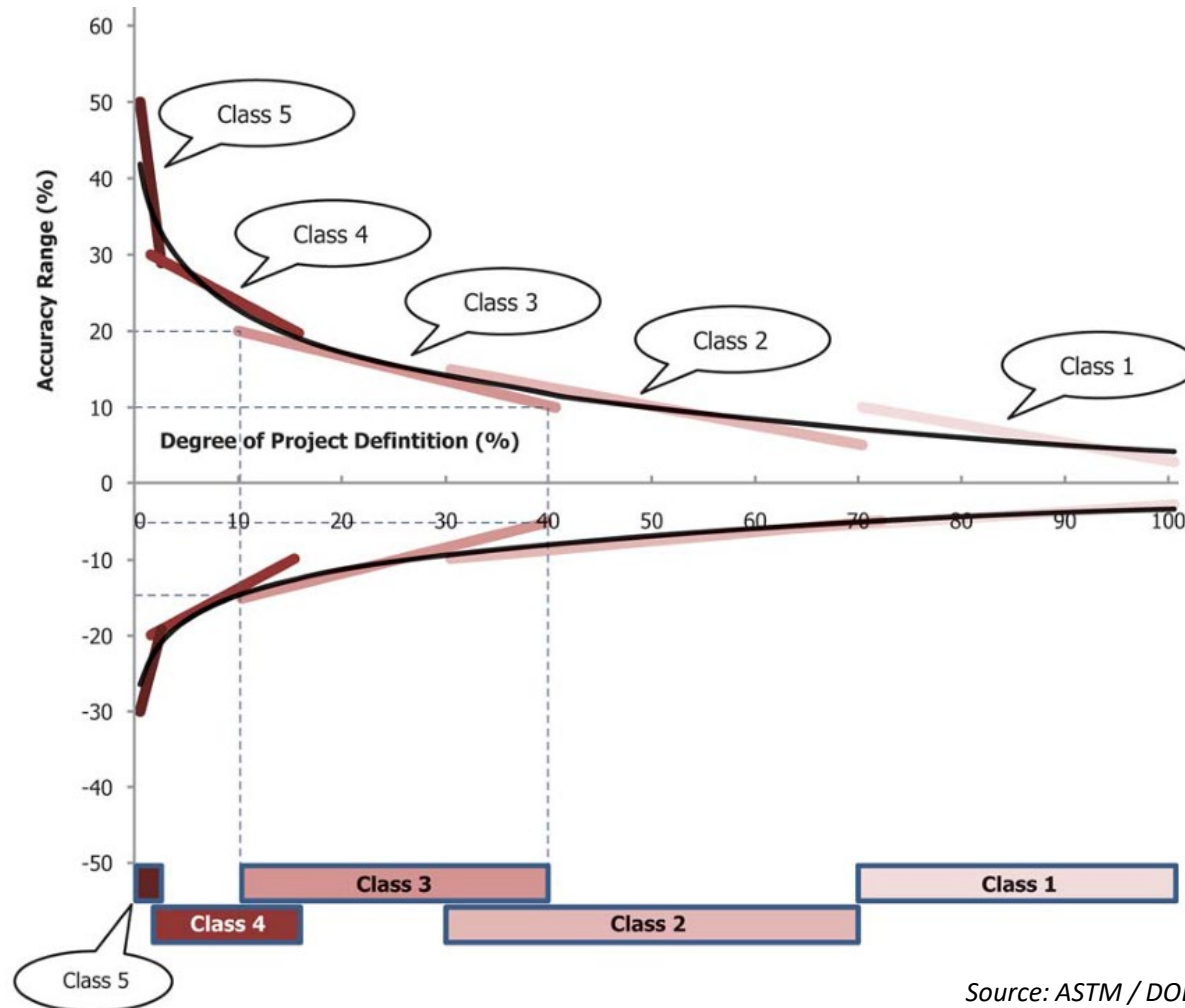
* Based on AACEi definitions and classifications

Note: The Estimate Class definitions, order and range vary from company to company.
Estimators should become familiar with how their clients define the Estimate Classes.

1

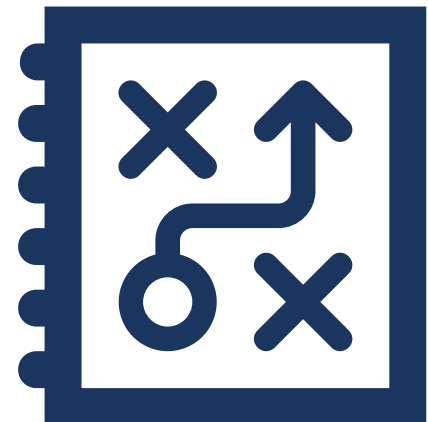


The ABCs of Estimating



Source: ASTM / DOE – Common Usage

1



Estimating Methods for Construction, Professional Services and Goods/Supplies

The 5 Elements of an Estimate

- Materials – Objective & quantifiable
- Labor – Experience & judgement based
- Equipment – Based on site conditions and experience
- Overhead – Varies by company
- Profit – Based on risk and market conditions

2



Estimating Methods for Construction, Professional Services and Goods/Supplies

Estimating Emphasis

	Construction Contractors	Professional Services	Goods Suppliers
Materials	*****	*	*****
Labor	*****	*****	*
Equipment	*****	***	***
Overhead	*****	****	***
Profit	**	***	*****

2



Estimating Methods for Construction, Professional Services and Goods/Supplies

Estimating Requirements

Construction Contractors	Professional Services	Goods Suppliers
<ul style="list-style-type: none"> Detailed Scope of Work Contract Ts & Cs Site logistics Good Engineering documents Schedule 	<ul style="list-style-type: none"> Program of the work Scope of Services Project Complexity Budget Schedule 	<ul style="list-style-type: none"> Specifications Quantities Schedule Delivery / Storage logistics Regulatory controls / conditions

Clarity and completeness of scope and technical information results in a good estimate and lowers risk.

Ambiguity is riskier than absence of information.

2



Estimating Tools and Resources

There is No single universally applicable estimating tool or software

- Excel spreadsheets are the most common estimating “tool”.
- Several reliable and effective material take off tools are on the market like On-Screen Takeoff as an example.
- Historical databases kept by companies are best resource for labor and equipment “go-bys”.
- Overhead costs and allocations are unique to every company.
- For smaller companies, use of trade or commercial databases like R S Means are a useful source of baseline estimating

When using commercial databases or even company historical data, **ALWAYS ADJUST** for project specific conditions – **NO TWO PROJECTS ARE IDENTICAL.**

3



Estimating Tools and Resources

In addition, there are many industry organizations and commercial data base companies that provide a wide variety of estimating data, tools and resources to aid in conceptual estimating.

- R S Means – <https://www.rsmeans.com/>
- DCD (Design Construction Data) – <http://www.dcd.com/guides.html>
- ENR (Engineering News Record) – <http://www.enr.com>
- FEMA – <https://www.fema.gov/assistance/public/tools-resources/cost-estimating-tool>
- ASPE (American Society of Professional Estimators) – <https://www.aspenational.org/>
- AACE International (Association for the Advancement of Cost Engineering) – <https://web.aacei.org/>
- Online tutorials on usage of estimating databases and automated tools

Most of the available databases and industry organizations and publications are subscription based and require membership to access data and use the tools.

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Market Research and Estimating

The value of market research and awareness cannot be overstated. More than half of the costs are a function of intangible, and often volatile factors.

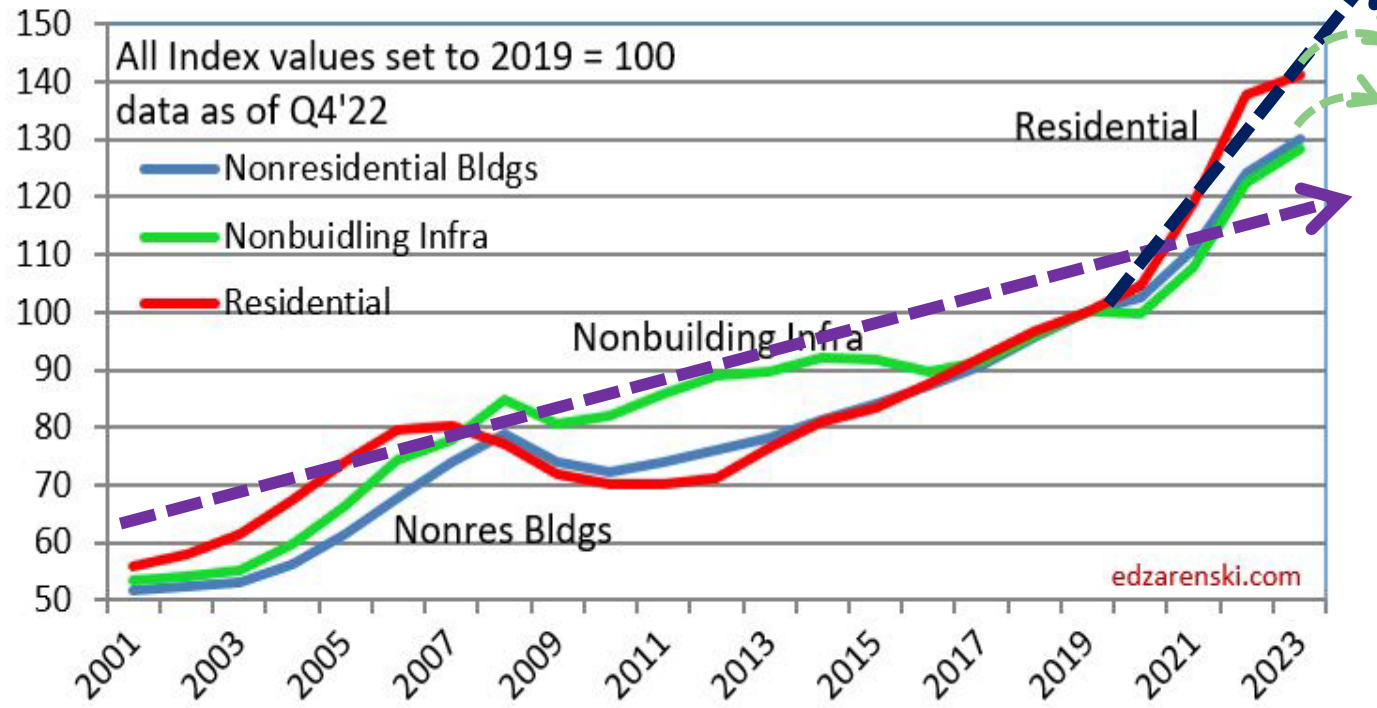
- Availability of labor and costs are variable
- Equipment cost, availability and suitability fluctuates with location and demand
- Marketplace competition affects profit calculations
- Cost escalations and inflation projections have to be factored
- Factors like supply chain disruptions, transportation logistics and funding uncertainties have to be considered

4



Market Research and Estimating

Construction Analytics Building Cost Index
Construction Inflation



Source: Construction Analytics; 2023, <https://edzarenski.com/>

Current Trend
Normalized Long Term
Normalized Short Term
Trend lines superimposed by author.

4



Profit/Mark-Up Strategies

Profit

Added to the total estimate

Added on top of:

Direct costs (materials, labor, equipment)

Project overhead (On location site specific overhead)

Office overhead

Salaries



Profit/Mark-Up Strategies

Mark-Up

Also known sometimes as OH&P – Overhead & profit.

This is a combined cost for all overheads and profit together.



Profit/Mark-Up Strategies

Methods of Adding Profit

- Add percentage to each item as it is estimated
- Add percentage to total price
- Use of bidding strategies
 - Tracking competition
 - Substitutions / Exclusions
 - Incentives



Profit/Mark-Up Strategies

Profit determination is usually adjusted for:

- Risk
- Quality of information
- Accuracy of the takeoff
- Project designer / Owner reputation
- Competition



Q&A





Closing Remarks

Thank you for your interest and attention
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