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Project Scoping When the Scope is Unknown

Tue, Nov 21, 2023, 1:00-2:30 EST

Presenter:

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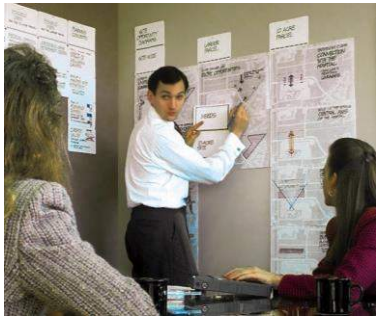
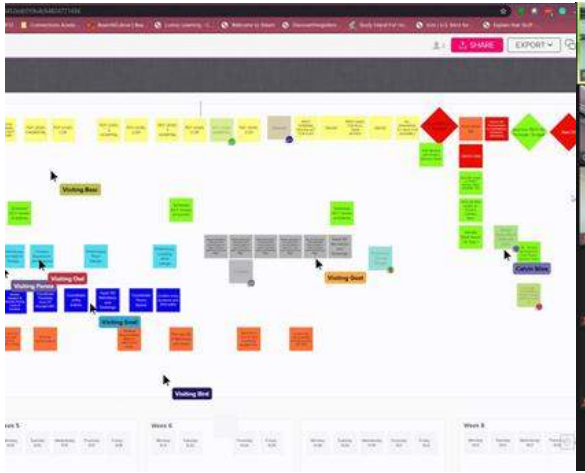
Principal

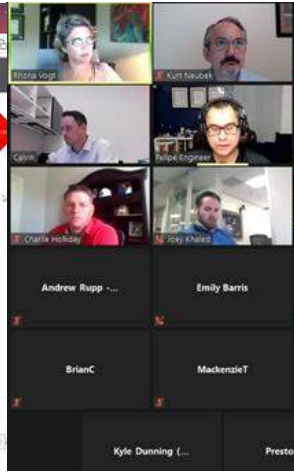


Getting Decisions that Stick in Design and Construction (Part 1)

By Kurt Neubek / March 15, 2021

The design process is an organized method to gather the thousands of decisions needed to design a building, ranging from the big picture vision and architectural image to excruciating details about every system and every surface in every room. Despite having a well-established process honed over centuries, too many projects ...





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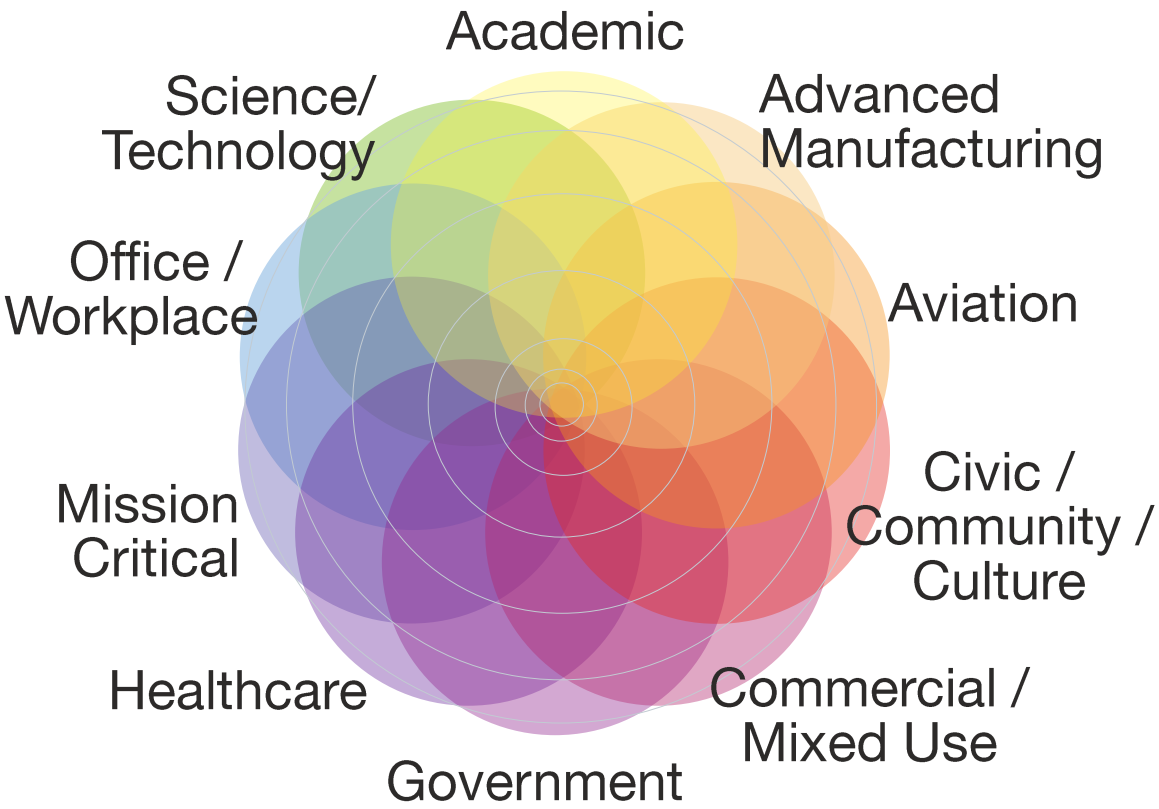
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/1 Opening Remarks

/2 State of the Industry

/3 The Process

/4 Q&A

- Facility Managers are often asked,
  “How much would it cost to…” or
  “How much should I budget for…”
  a one-sentence description of a perceived need.
- Many projects are doomed to failure from the beginning because the initial scope and budget are incompatible.
- This presentation provides tips to overcome those hurdles.

Questions from Attendees

- How to budget when the scope is unknown/ at Feasibility Phase?
- How to know your planning will lead to the desired outcome?
- Best time to determine the scope?
- Best questions to ask?
- Resources for budgeting for conceptual projects?
- How to develop cost ranges for various estimating divisions?
- How to figure cost escalation?
- Managing expectations of internal leaders /
  Keeping the owner from getting married to the rough order of magnitude prior to starting design
- What to do when the scope begins to grow outside your department's capacity?
- Contracting strategies: lump sum, time & materials, unit prices, allowances?

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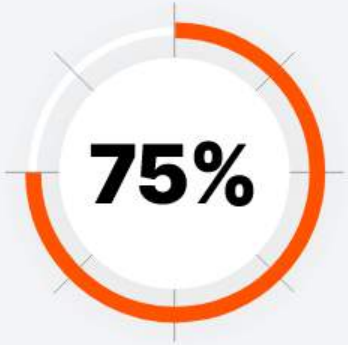
May 2021 Survey of over 500 North American Construction Projects

Research conducted by International Data Corporation (IDC), commissioned by Procore



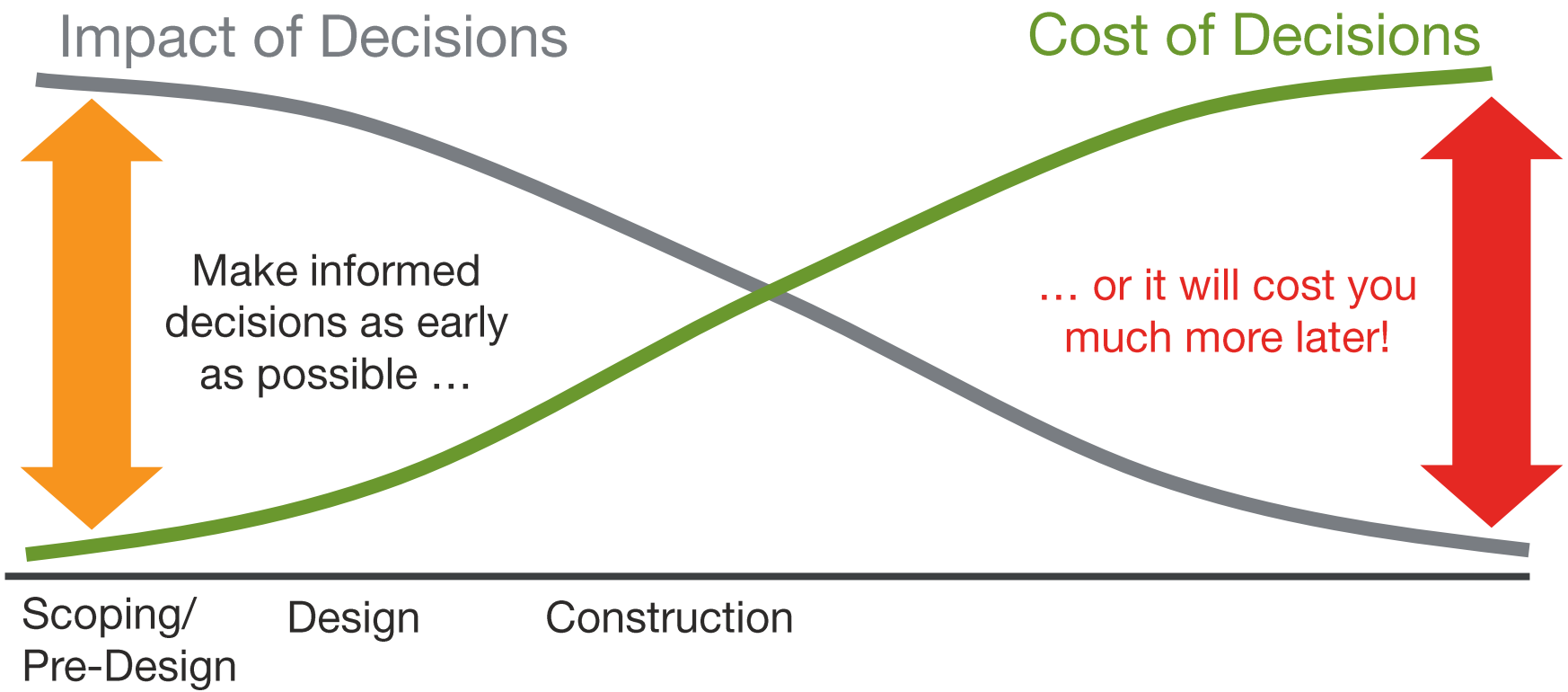
of projects delivered **late**, **over budget**, or **both**

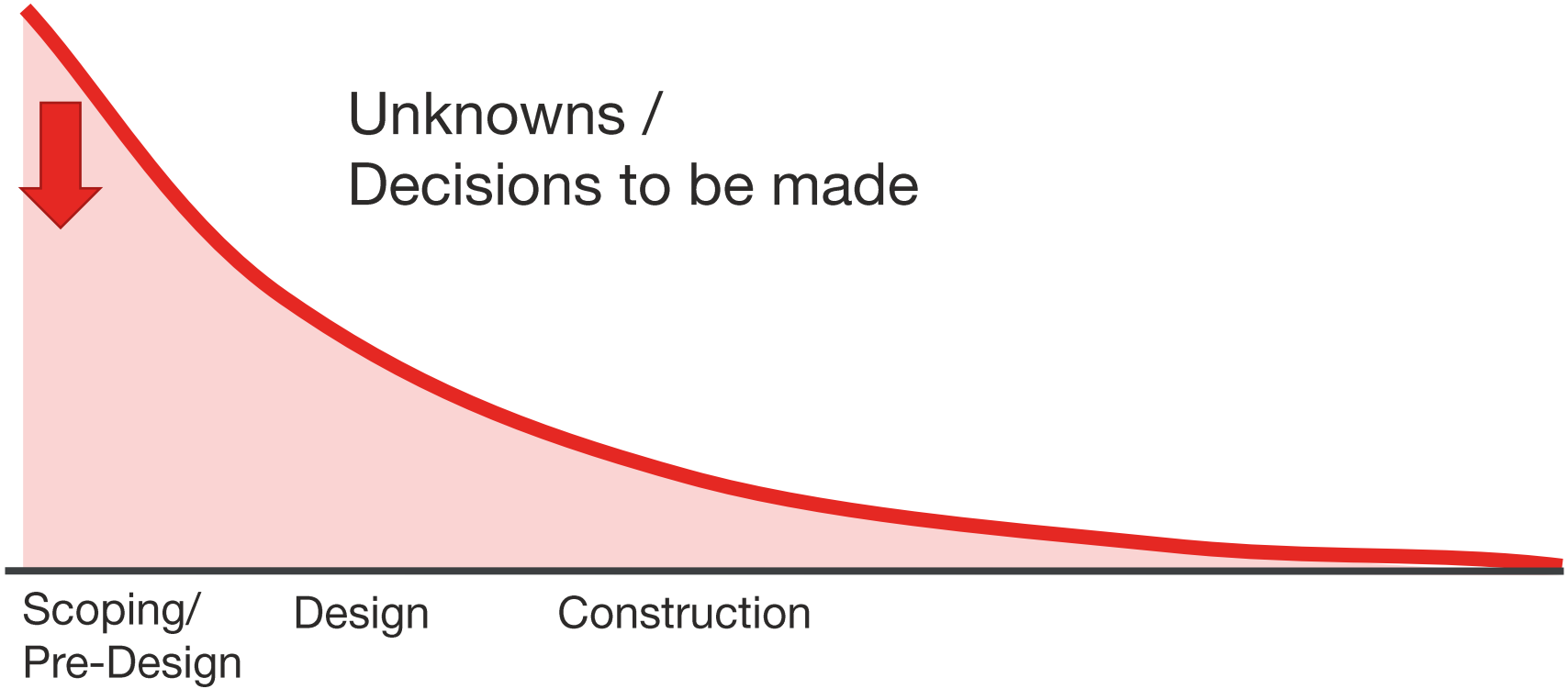
69
DAYS

Project delivery averaged **69 days late**

Costs **increased 15%** due to changes in budget and schedule

People ***will*** remember the first number you tell them!


Impact of Decisions
Cost of Decisions
Make informed decisions as early as possible …
… or it will cost you much more later!
Scoping/ Pre-Design
Design
Construction


Unknowns /
Decisions to be made
Scoping/
Pre-Design
Design
Construction

/1 Opening Remarks

/2 State of the Industry

/3 The Process

/4 Q&A

fore·cast

: to calculate or predict (some future event or condition) usually as a result of study and analysis of available pertinent data

Scope SF (or other units)

Schedule x $/SF

Budget = $

Identified Functions & Spaces
+ Anticipatable Needs + Contingency

SF
(or other units)

Complexity, Quality, Amenities
Escalated for Schedule

x $/SF

Construction Budget = $

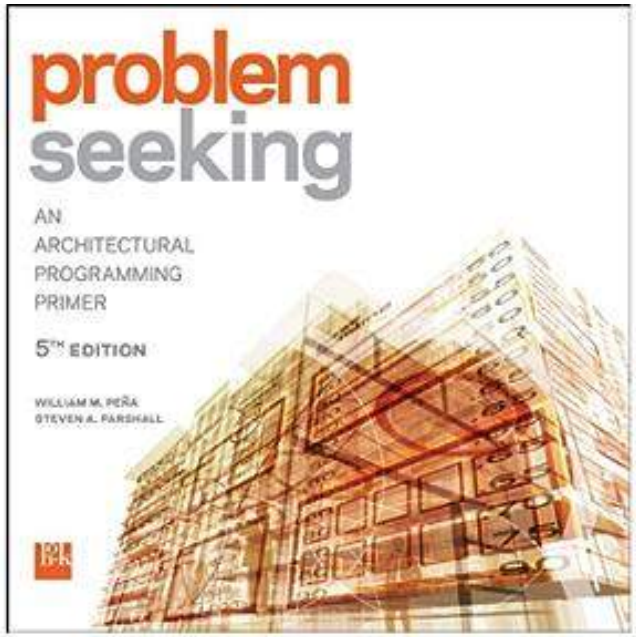
What is the **question**?

- What problem are we solving?
- What are the Conditions of Satisfaction? (e.g., How detailed or reliable of an answer is needed? By when? For whom?)

What **process** will we use to decide?

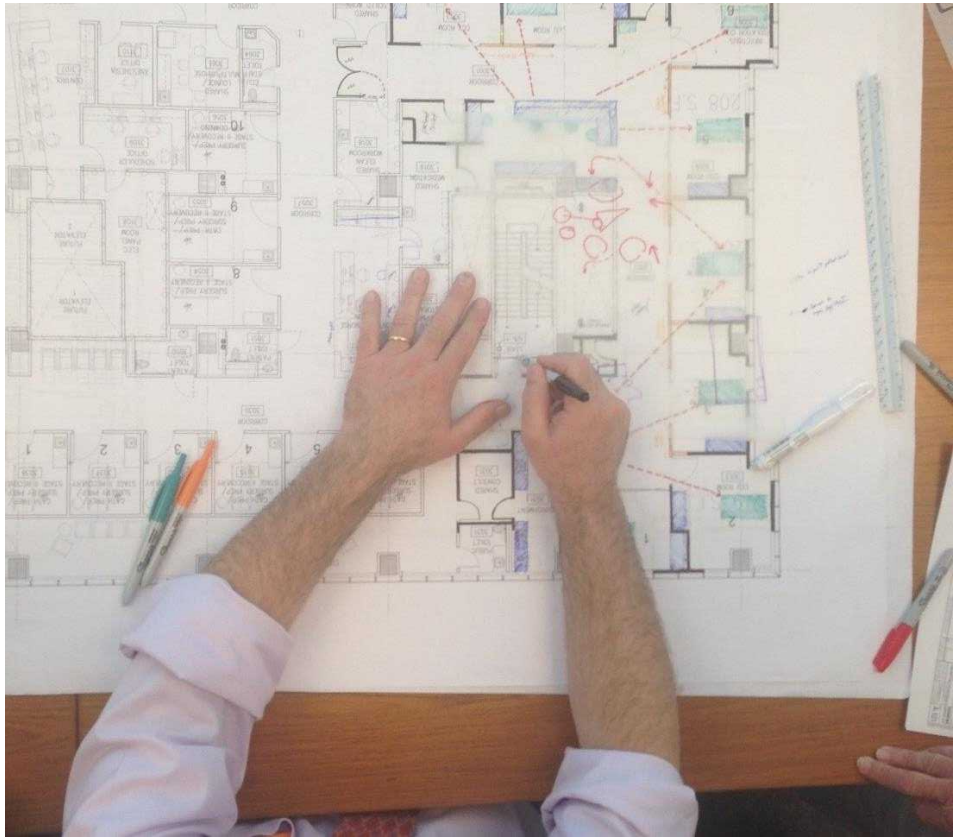
- Who needs to be involved?
- Who are the decision makers?
- Who are the decision breakers? (Who can override later or add on to the scope?)

1. Establish **Goals**
   - Function, Form, Economy, Time
2. Collect and analyze **Facts**
   - Existing conditions, givens
3. Uncover and test **Concepts**
   - Brainstorm possible strategies to achieve the goals in light of the facts.
   - Rough schedule and budget for each
4. Determine **Needs**
   - Quantify scope, schedule, budget
5. State the **Problem**



Summarize the Scope

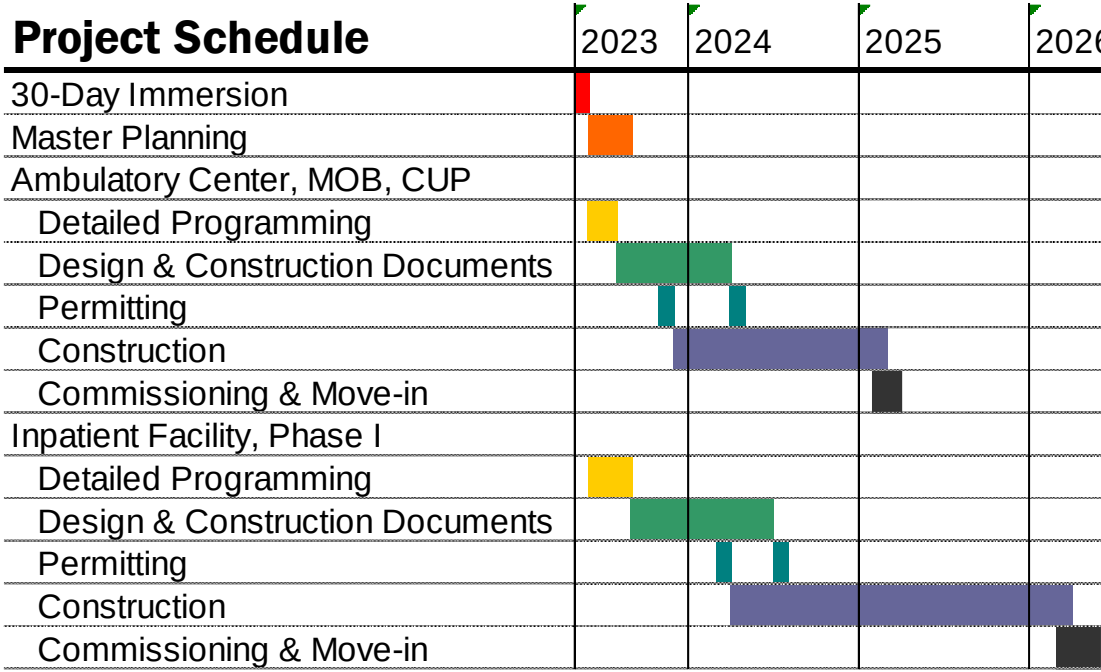
- What's being included
  - Key Planning Units (people, rooms, square feet…)
  - All Assumptions: Basis of Design, Project Delivery Approach, etc.
  - Often simple diagrams to communicate the scope
  - Be realistic, not optimistic!
- Factor in phasing & dominoes
- Clearly state what's ***ex***cluded



Estimate the Schedule to establish Bid Date(s) and Completion Date

Based on the assumed approach, how long for

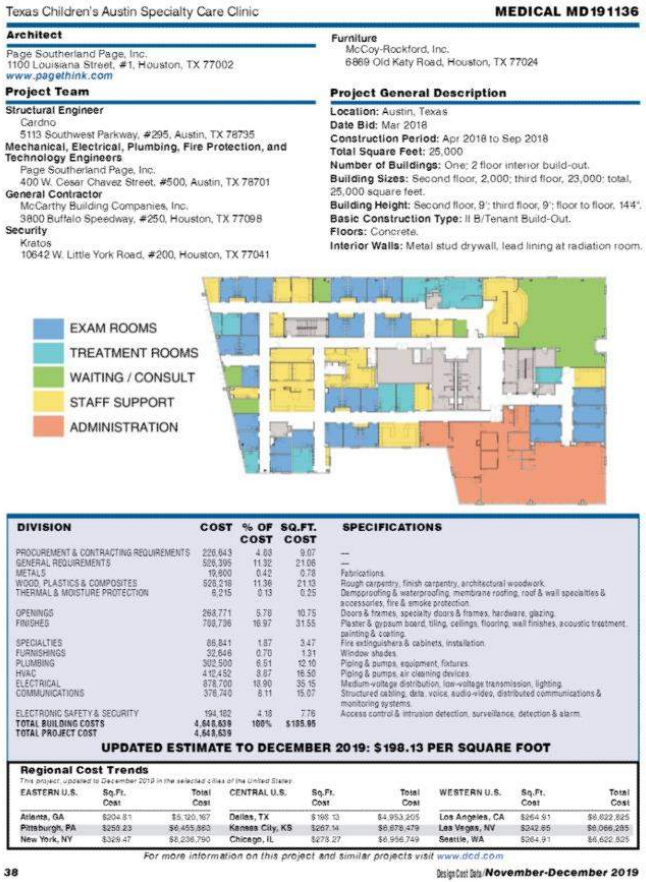
- Design Team Selection?
- Programming & Design
- Approvals & Funding?
- Permitting
- Construction
- Equipping & Move-in
- Any long lead items?



Research Costs of Similar Projects

Document

- Project Scope, Features
- Square Feet
- Location
- Completion Date
- Costs (at the time)



Texas Children's Austin Specialty Care Clinic — **MEDICAL MD191136**

Architect
Page Southerland Page, Inc.
1100 Louisiana Street, #1, Houston, TX 77002
www.pagethink.com

Project Team
Structural Engineer
Cardno
5113 Southwest Parkway, #295, Austin, TX 78735
Mechanical, Electrical, Plumbing, Fire Protection, and Technology Engineers
Page Southerland Page, Inc.
400 W. Cesar Chavez Street, #500, Austin, TX 78701
General Contractor
McCarthy Building Companies, Inc.
3800 Buffalo Speedway, #250, Houston, TX 77098
Security
Kratos
10642 W. Little York Road, #200, Houston, TX 77041

Furniture
McCoy-Rockford, Inc.
6869 Old Katy Road, Houston, TX 77024

Project General Description
Location: Austin, Texas
Date Bid: Mar 2018
Construction Period: Apr 2018 to Sep 2018
Total Square Feet: 25,000
Number of Buildings: One: 2 floor interior build-out.
Building Sizes: Second floor, 2,000; third floor, 23,000; total, 25,000 square feet.
Building Height: Second floor, 9'; third floor, 9'; floor to floor, 144".
Basic Construction Type: II B/Tenant Build-Out.
Floors: Concrete.
Interior Walls: Metal stud drywall, lead lining at radiation room.

DIVISION	COST	% OF COST	SQ.FT. COST	SPECIFICATIONS
PROCUREMENT & CONTRACTING REQUIREMENTS	226,643	4.88	9.07	—
GENERAL REQUIREMENTS	526,395	11.32	21.06	—
METALS	19,600	0.42	0.78	Fabrications.
WOOD, PLASTICS & COMPOSITES	528,218	11.36	21.13	Rough carpentry, finish carpentry, architectural woodwork.
THERMAL & MOISTURE PROTECTION	6,215	0.13	0.25	Dampproofing & waterproofing, membrane roofing, roof & wall specialties & accessories, fire & smoke protection.
OPENINGS	268,771	5.78	10.75	Doors & frames, specialty doors & frames, hardware, glazing.
FINISHES	790,736	16.97	31.55	Plaster & gypsum board, tiling, ceilings, flooring, wall finishes, acoustic treatment, painting & coating.
SPECIALTIES	86,841	1.87	3.47	Fire extinguishers & cabinets, installation.
FURNISHINGS	32,646	0.70	1.31	Window shades.
PLUMBING	302,500	6.51	12.10	Piping & pumps, equipment, fixtures.
HVAC	412,452	8.87	16.50	Piping & pumps, air cleaning devices.
ELECTRICAL	878,700	18.90	35.15	Medium-voltage distribution, low-voltage transmission, lighting.
COMMUNICATIONS	378,740	8.11	15.07	Structured cabling, data, voice, audio-video, distributed communications & monitoring systems.
ELECTRONIC SAFETY & SECURITY	194,192	4.18	7.76	Access control & intrusion detection, surveillance, detection & alarm.
TOTAL BUILDING COSTS	**4,648,639**	**100%**	**$185.95**	
TOTAL PROJECT COST	**4,648,639**			

UPDATED ESTIMATE TO DECEMBER 2019: $198.13 PER SQUARE FOOT

Regional Cost Trends
This project, updated to December 2019 in the selected cities of the United States

EASTERN U.S.	Sq.Ft. Cost	Total Cost	CENTRAL U.S.	Sq.Ft. Cost	Total Cost	WESTERN U.S.	Sq.Ft. Cost	Total Cost
Atlanta, GA	$204.81	$5,120,167	Dallas, TX	$198.13	$4,953,205	Los Angeles, CA	$264.91	$6,622,825
Pittsburgh, PA	$258.23	$6,455,863	Kansas City, KS	$267.14	$6,678,479	Las Vegas, NV	$242.85	$6,066,285
New York, NY	$329.47	$8,236,790	Chicago, IL	$278.27	$6,956,749	Seattle, WA	$264.91	$6,622,825

For more information on this project and similar projects visit www.dcd.com

38 — Design Cost Data/**November-December 2019**

Source: https://www.dcd.com/magazine/archive?i=2019-1112&page=36

Adjust Those Costs to Your Location

Location Factors

Cleveland = 104.81
Houston = 93

The same project built in Cleveland, OH costs 12.7% more than in Houston (104.81/93 = 1.127)

Source: https://www.fgould.com/perspectives/location-factors-for-2022/

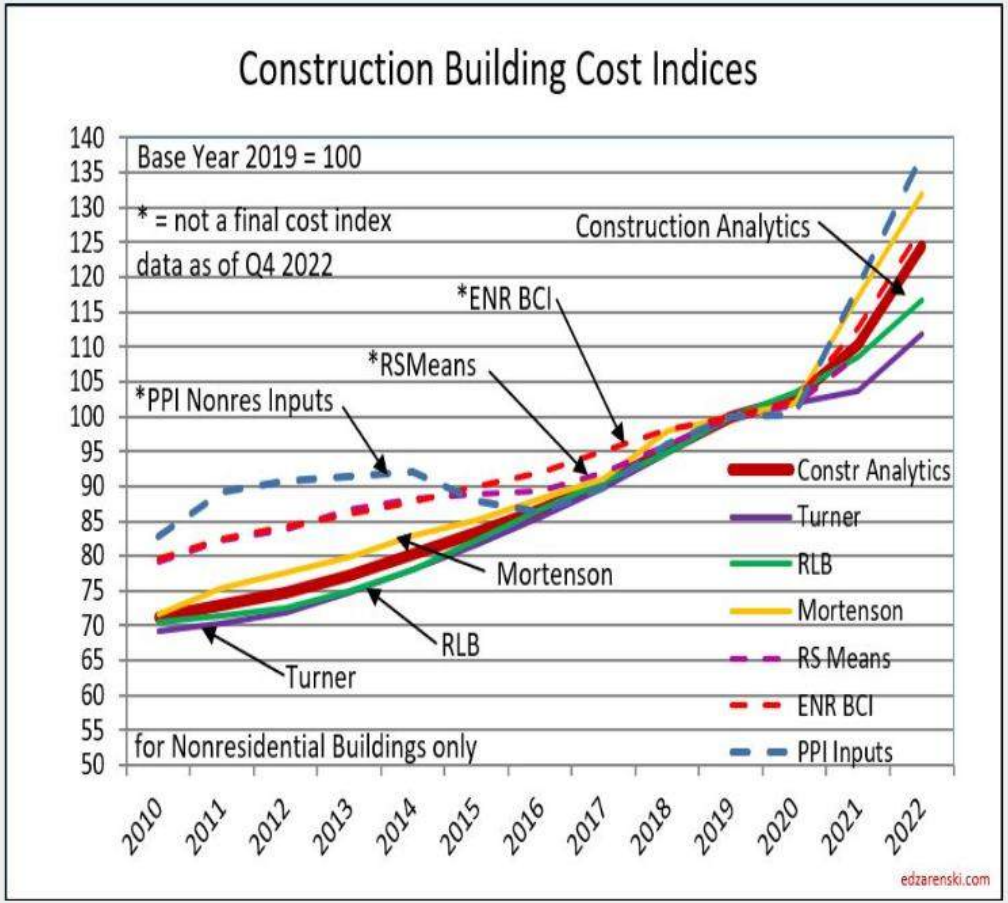
Adjust Those Costs to Your Schedule

Either compare Bid Date to Bid Date or Opening Date to Opening Date

Construction Inflation 2020-2022 was 20%.

Using Cost Indices:
Future Index ÷ Previous

125 Jan'23 ÷ 95 Sep'18 =1.316 or 31.6% more



4-21-23 This table and plot is an extension of the tables and plots above. Data is as of Q4 2022, but the table covers from 1967 to 2000. Data is pretty sparse.

Source: https://edzarenski.com/2022/12/20/construction-inflation-2023

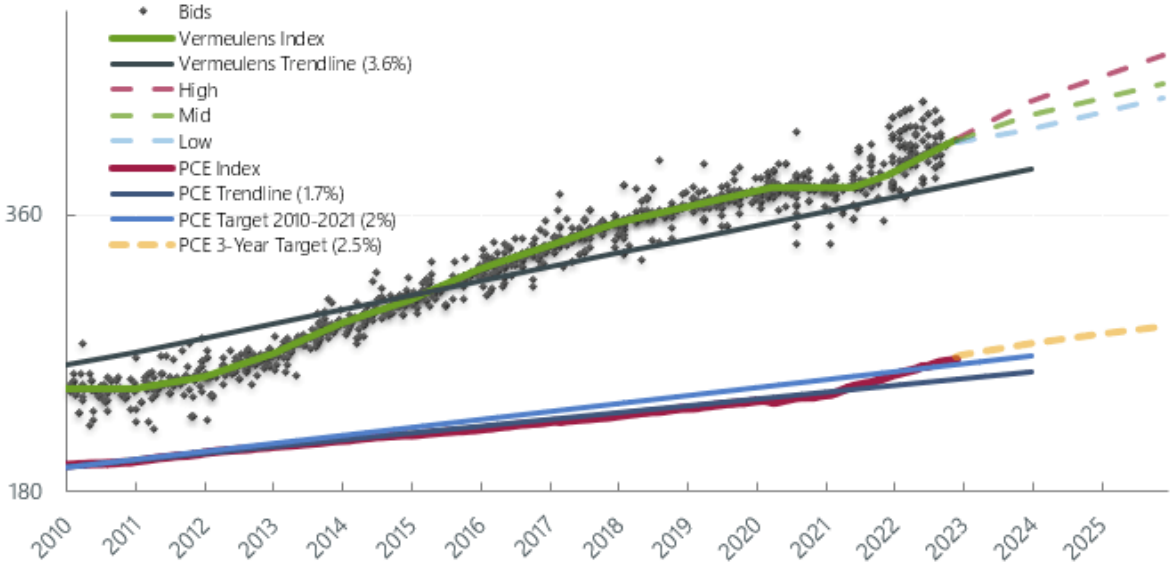
Adjust Those Costs to Your Schedule

Either compare Bid Date to Bid Date or Opening Date to Opening Date

"Inflation" might have averaged 3.5% for decades, but where are we in the cycle?

Using Interest Rates: =Rate^Years

5% over 2.5 years = 1.05^2.5 = 1.13 or 13% more



VERMEULENS

Construction Escalation Forecast

2024 Economic Performance Scenarios	2024 Jobs Creation Economy	2024 Jobs Creation Construction	Bidding Contingency	2023 Escalation	2024 Escalation	2025 Escalation	2026 Escalation	Total Bidding & Escalation
Modest Growth	+2 Million	+100K	+10%	+8%	+8%	+8%	+8%	+42%
Minimal Growth	+1 Million	Zero	+5%	+6%	+6%	+6%	+6%	+29%
Soft Landing	Zero	-50K	0%	+4%	+4%	+4%	+4%	+16%
Minimal Recession	-1 Million	-100K	0%	+4%	+0%	+4%	+4%	+12%
Mild Recession	-2 Million	-200K	0%	+4%	-5%	+4%	+4%	+7%

Source: https://www.vermeulens.com/media-events/market-outlook-quarterly-q4-2022
PCE = Personal Consumption Expenditure

Adjust Those Costs to Your Schedule

Either compare Bid Date to Bid Date or Opening Date to Opening Date

A comparable project in Houston that finished 5 years ago (Sep 2018) for $500/sf would cost in Cleveland, opening in July 2025…

$500	Original
x 1.127	Location Factor
x 1.316	Past Construction Inflation
x 1.13	Escalation
= $838	Construction Cost

Comprehensive Budgeting

“Construction Budget”
+ Equipment
+ Furnishings
+ Fees
+ Administrative Costs
+ IT
+Contingency
= “Project Budget”

Project Budget Authorization Worksheet

PROJECT NAME:
[redacted] 8th Floor Build Out

PROJECT DESCRIPTION:
Build out shell space on the 8th floor of [redacted], adding 26 beds (includes infrastructure modifications to 6th floor)

000	**Construction Costs**	**$ 9,975,800**
010	Building Cost	$ 9,900,800
035	Pre-Construction Planning	$ 75,000
095	Other	$ -
100	**Equipment and Furnishin**	**$ 991,641**
110	Signage/Graphics	$ 38,000
120	Medical Equipment	$ 635,885
125	Furnishings/Equipment	$ 237,852
130	Nurse Call	$ -
135	Security Systems	$ 79,904
140	Telecomm & Data Systems	$ -
145	Electronics	$ -
150	Foodservice Equipment	$ -
155	Pneumatic Tube System	$ -
195	Other	$ -
200	**Professional Fees**	**$ 1,315,338**
205	Architect/Engineer	$ 748,185
212	Foodservice Consultant	$ -
215	Pre-Construction Planning	$ -
220	Interior Design	$ -
225	Civil Engineer	$ -
230	Med. Equipment Planning	$ 73,000
235	Project Manager	$ 349,153
240	Radiation Physicist	$ -
245	Vertical Transportation	$ -
250	Low Voltage	$ -
255	Graphics/Signage Consult	$ -
260	Landscape Architect	$ -
265	Traffic & Parking	$ -
270	Surveyor	$ -
275	Geotechnical	$ -
280	Move Coordinator & Move Ex	$ 25,000
285	Commissioning	$ 95,000
295	Other	$ 25,000

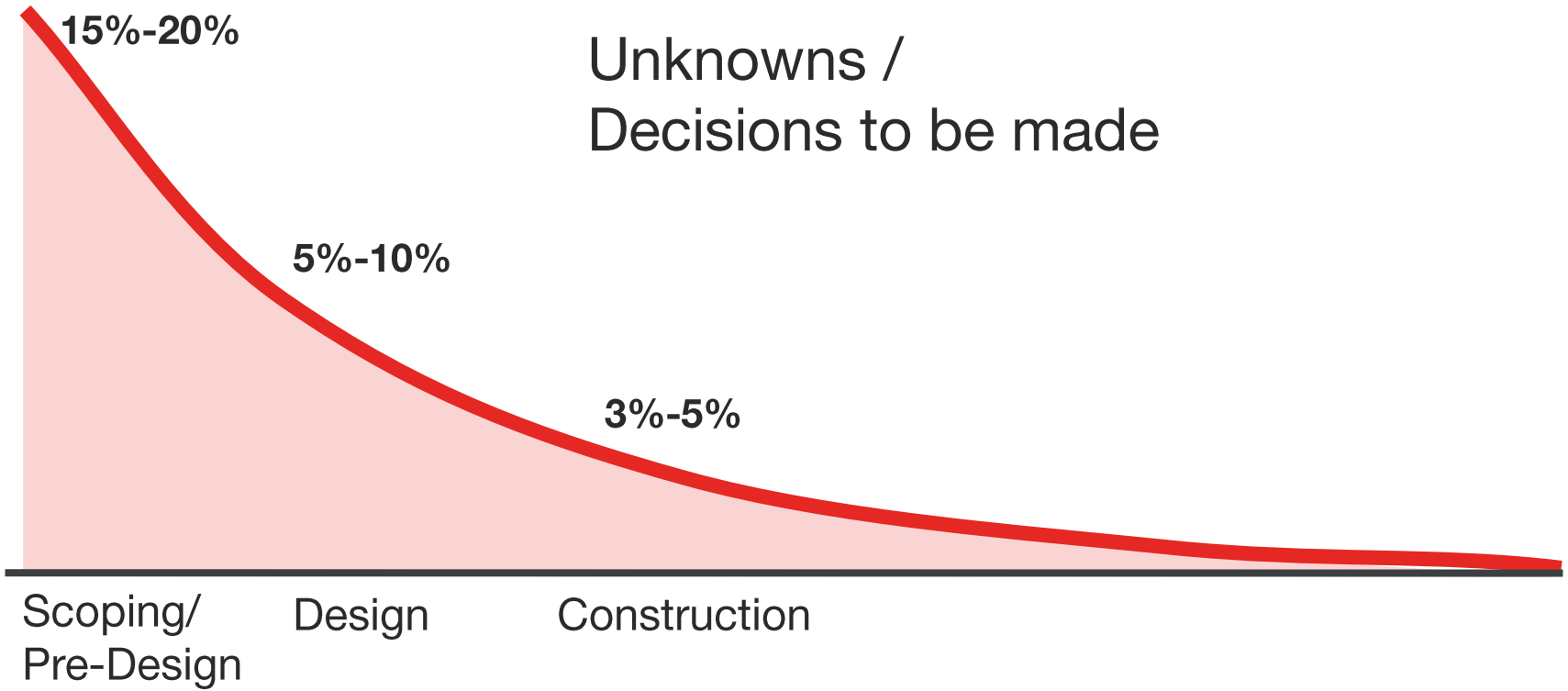
300	**Administrative Costs**	**$ 187,841**
305	Materials Testing	$ -
320	Agency Fees	$ 5,000
330	Utility Fees	$ -
340	Other (Temp Security, EVS)	$ 25,000
350	Reimbursable Expenses	$ 157,841
400	**Information Technology**	**$ 4,560,000**
410	Infrastructure, License, Softwar	$ 4,560,000
500	**Contingency**	**$ 1,492,620**
510	Owners Contingency (10%)	$ 997,580
520	Design Contingency (5%)	$ 495,040
600	**Property/Land**	**$ -**
610	Land Acquisition	$ -
	TOTAL PROJECT BUDGET	**$ 18,523,240**

Comprehensive Budgeting

“Construction Budget”
+ Equipment
+ Furnishings
+ Fees
+ Administrative Costs
+ IT
+Contingency
= “Project Budget”

Project Budget rough guidelines
+35% for simple projects
+50% for complex & renov’s
+65% for hospitals

The Process **CONTINGENCY**



Resources for Cost Data and Escalation Forecasts

- Your own project data!
- Peers' project data
- Design Cost Data
- Dodge, Means, ENR (subscription; some free info) *Don't rely on unit costs*
- AIA, AGC, BLS.gov
- Vermeulens, Faithful+Gould, Ed Zarenski
- Some contractors publish cost reports
- Others that you use?

https://www.consensusdocs.org/resources/price-escalation-clause/

Questions from Attendees

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Questions & Answers

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