From Vision to Reality:
A Case Study in Integrated Project Delivery

Introductions

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Agenda

1. What is Integrated Project Delivery
2. Identifying Project Risks
3. Recent Market Challenges
4. Case Study

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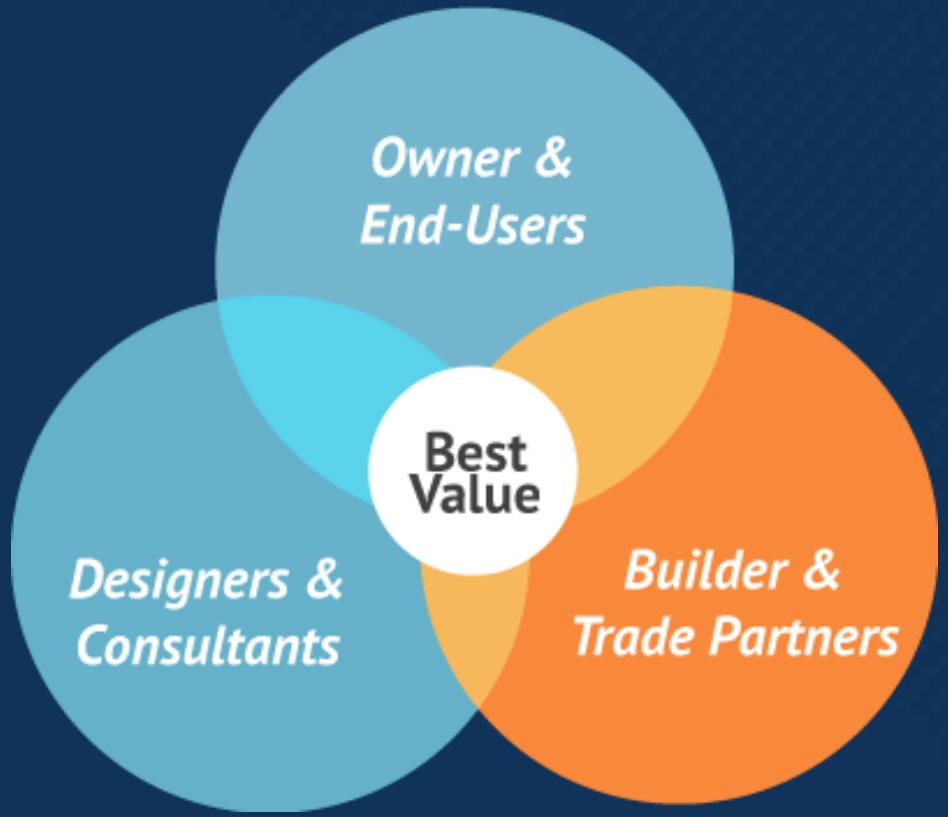
From Vision to Reality: A Case Study in Integrated Project Delivery - AIA Course

Survey Question

Integrated Project Delivery

What is Integrated Project Delivery?



What is Integrated Project Delivery?

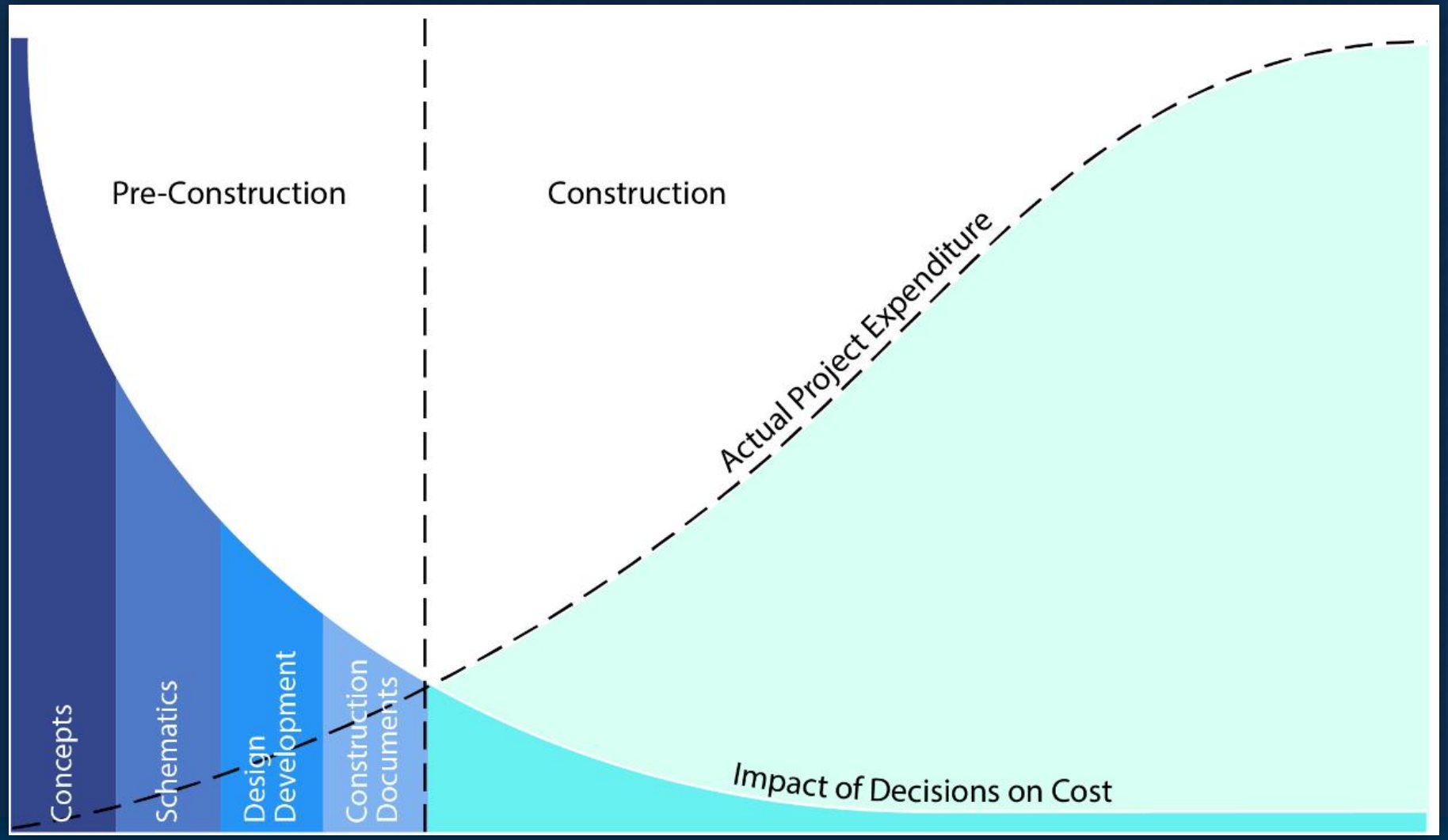
Key Difference is Timing of Builder Involvement

Design-Bid-Build

Design-CMAR

Design-Build

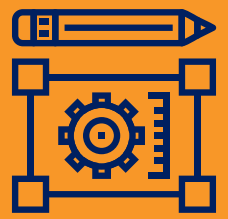
Influence Over Costs



Integrated Project Delivery Myths

Early Builder Engagement Reduces Price Competition

Factors Beyond Price Lead to Favoritism during Award

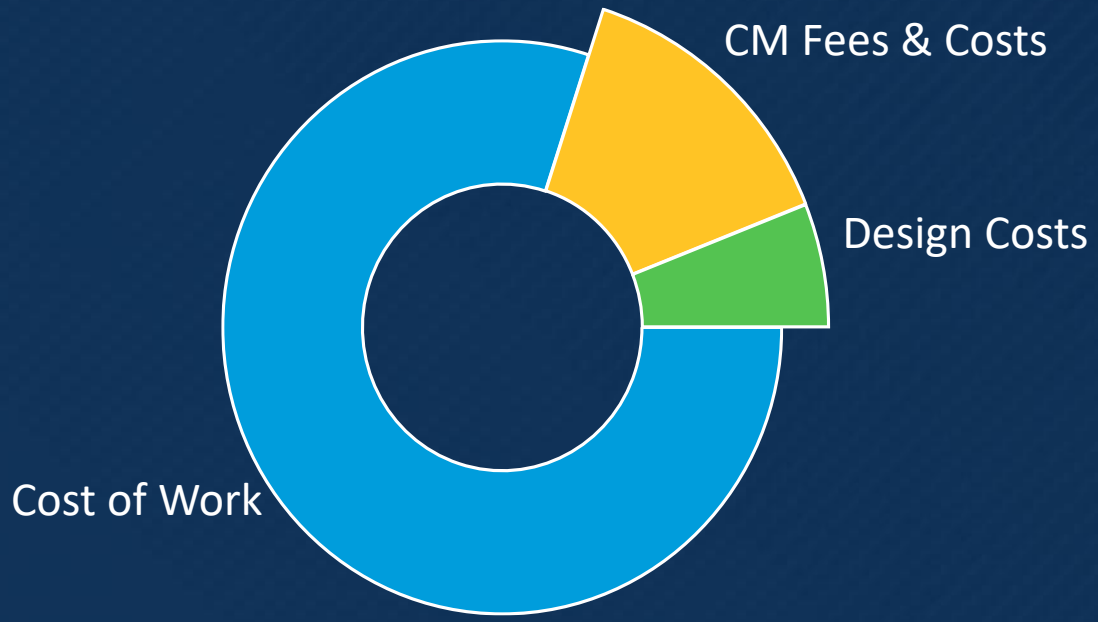


Owner Loses Control of the Project Design

Choosing the Best Delivery Approach

Integrated Project Delivery

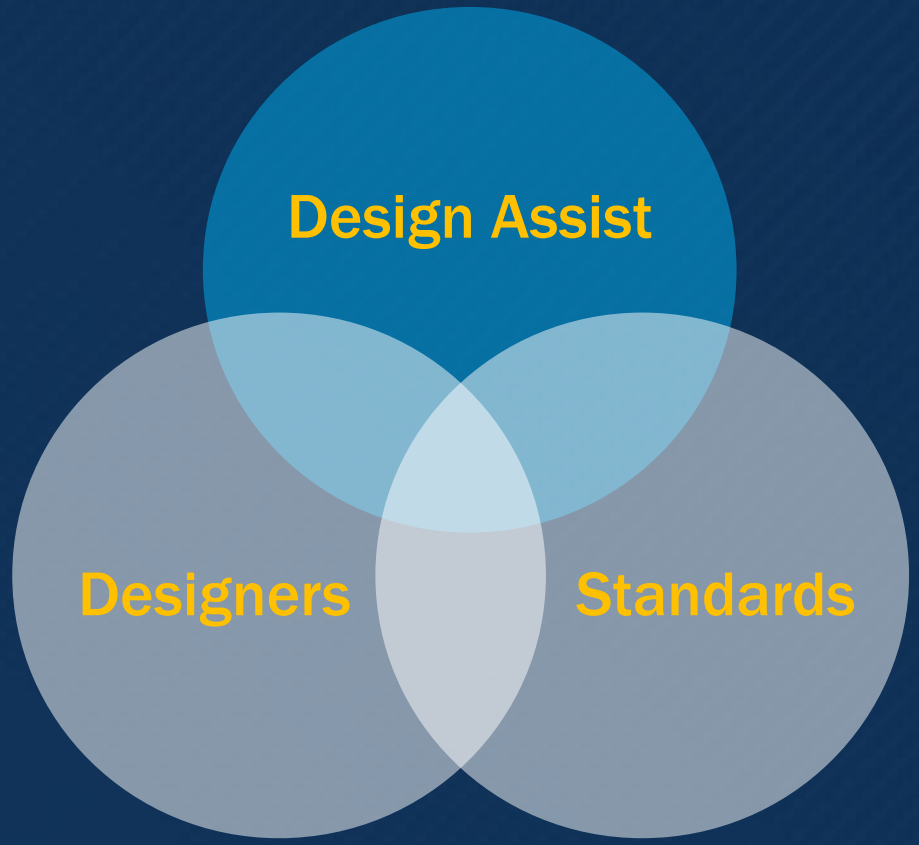
- Reduces Construction Fees & Cost
- Reduces Design Cost
- Shortens Project Timeline
- Improves Access to Materials
- Eliminates Layers of Markup
- Increases Coordination Effort/Risk



Design Assist with Integrated Project Delivery

Design Assist engages vendors or SMEs during the design phase to streamline construction, reduce costs, and improve quality

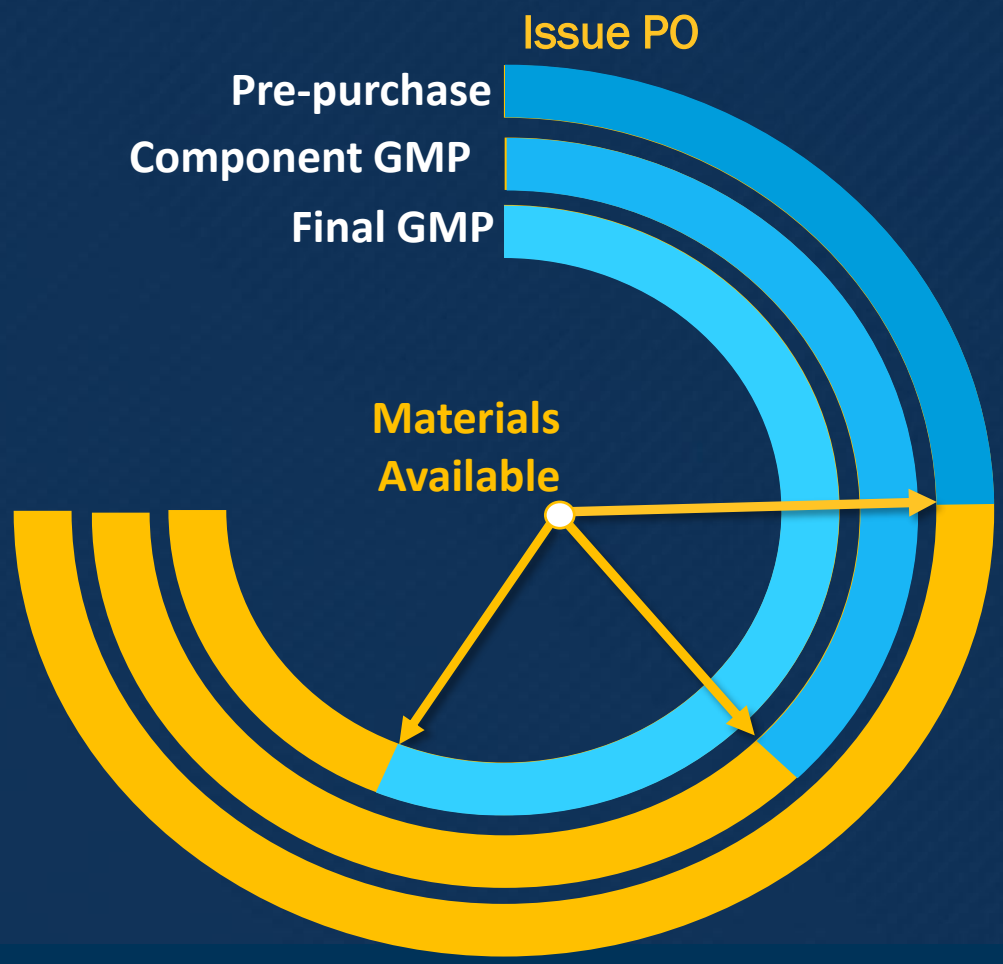
- Preferred/Proprietary Providers
- Existing & Under Warranty Systems Providers
- Recognized Subject Matter Experts
- Local & OEO Suppliers
- May Reduce Competition During Bidding Period



Benefits of Early Procurement

Cost savings, reduced risk of delays, ensures items are available when needed, and avoid potential delays and cost overruns.

- Removes Material from Critical Path
- May Eliminate Layers of Markup
- May Reduces Inventory & Training Cost
- May Increase Local & OEO
- Improves Parity & Equity
- May Add Storage & Warranty Extension Cost

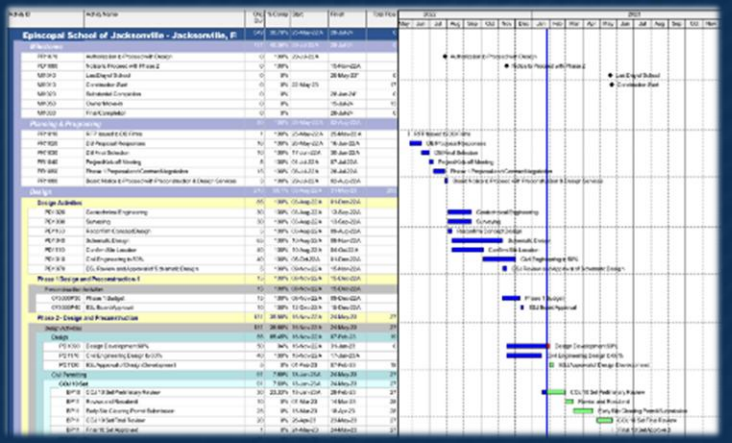


Identifying Project Risks

Typical Project Risks

Site Conditions

Cost Control



Scheduling

Construction Documents Coordination

AHJ / Permitting

Market Input

Risk Mitigation Strategies

1

Understand and Identify Risks

Identifying potential risks to your project by reviewing past projects, collaborating with stakeholders, conducting brainstorming sessions, etc.

2

Assess Identified Risks

Collaborating with team members to analyze the identified risks and determine which ones are most likely to occur and how large of an impact they would have on the project.

3

Create Mitigation Plan

Creating an actionable plan on how to mitigate each of the identified risks with a focus on the most likely to occur and greatest impact.

4

Monitor and Control Risks

Monitoring the status of each risk throughout design and construction and updating the mitigation action plan. This includes adding new risks as they are identified and new mitigation strategies.

Recent Market Challenges

Integrated Delivery Solution

- Engage Key Subs Early to Lock in Labor Commitments
- Attract Subs from Other Markets
- Engage Labor Force Directly about Project

Materials

- Lead Times

Collaborative Delivery Solution

- Tracking Current Trends
- Communicating Challenges Early
- Alternate Materials/Equipment
- Early Procurement Strategies
- Communicate directly with vendors

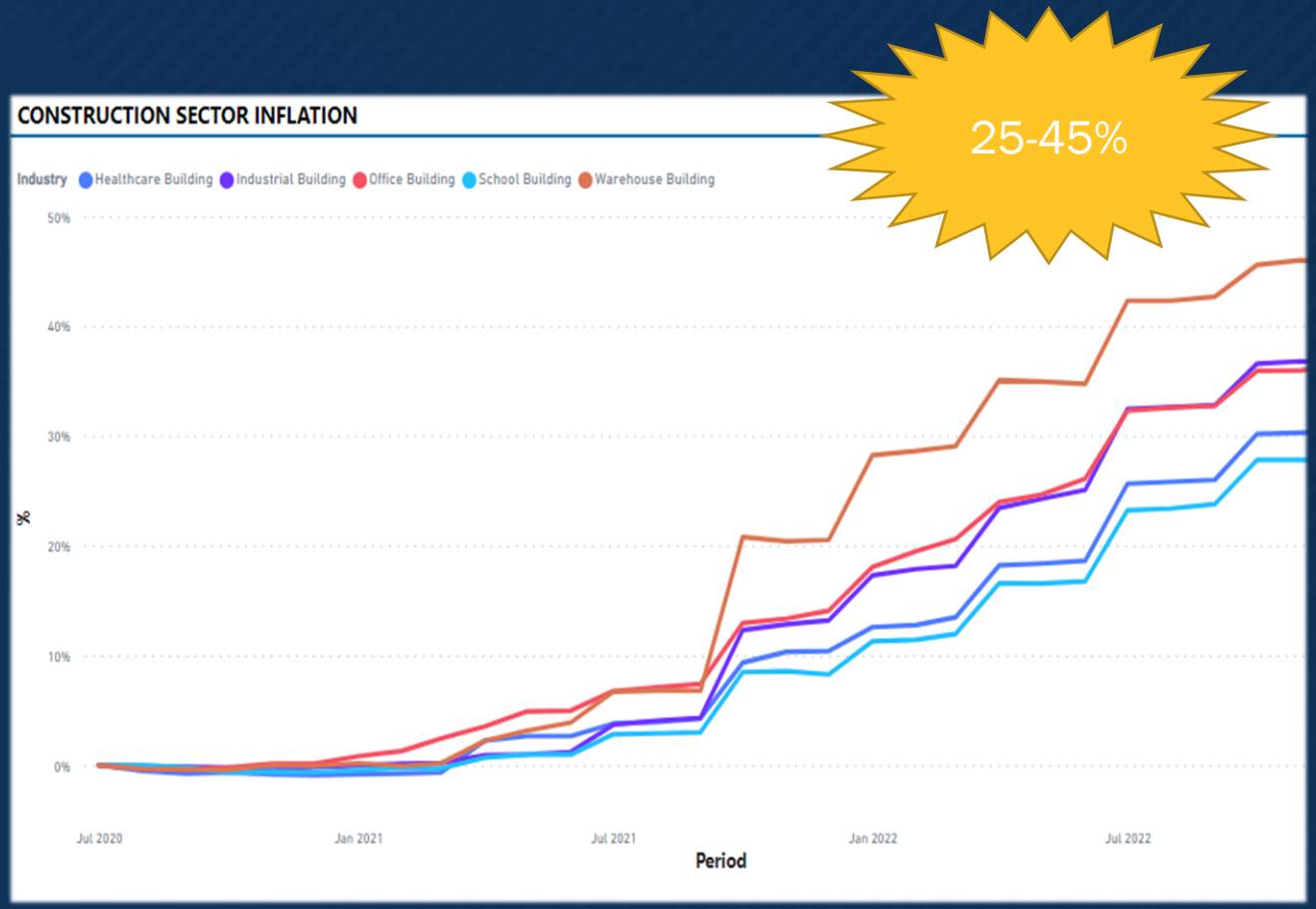
MATERIAL LEAD TIMES IN WEEKS			
Description	Material Lead Time	Contract and Submittal	Total Lead Time
262400 Switchboards Average	72	10	82
262300 Low-Voltage Switchgear Average	59	10	69
261200 Medium Voltage Transformers Average	62	6	68
263200 Generator Average	56	8	64
236400 Packaged Water Chillers Average	44	10	54
072200 Polyiso Insulation Average	45	6	51
133419 Pre-Engineered Metal Buildings Average	34	16	50
262416 Distribution Panelboards Average	40	10	50
237400 RTU Average	39	10	49
142000 Elevators - Traction Average	33	12	45
237300 Air Handler Unit Average	33	10	43
262200 Low-Voltage Transformers Average	32	10	42
262416 Panelboards Average	29	10	39
236500 Cooling Towers Average	28	10	38
114000 Kitchen Equipment Average	25	12	37
072216 Coverboard Average	30	6	36
412213.13 Bridge Cranes Average	27	8	35
081400 Wood Doors Average	25	10	35
061600 Exterior Sheathing Average	26	8	34
084513 Polycarb Panels Average	26	8	34
235200 Boilers Average	26	8	34
074213 Insulated Metal Panels Average	25	8	33
084300 Aluminum Storefront Average	21	12	33
230920 VFDs Average	25	8	33
221123 Booster Pump Average	24	8	32

Inflation

- Driven by Material Shortages
- Affected all Sectors

Integrated Delivery Solution

- Forecasting and Appropriate Budgeting
- Alternate Materials/Equipment
- Early Procurement Strategies



Case Study

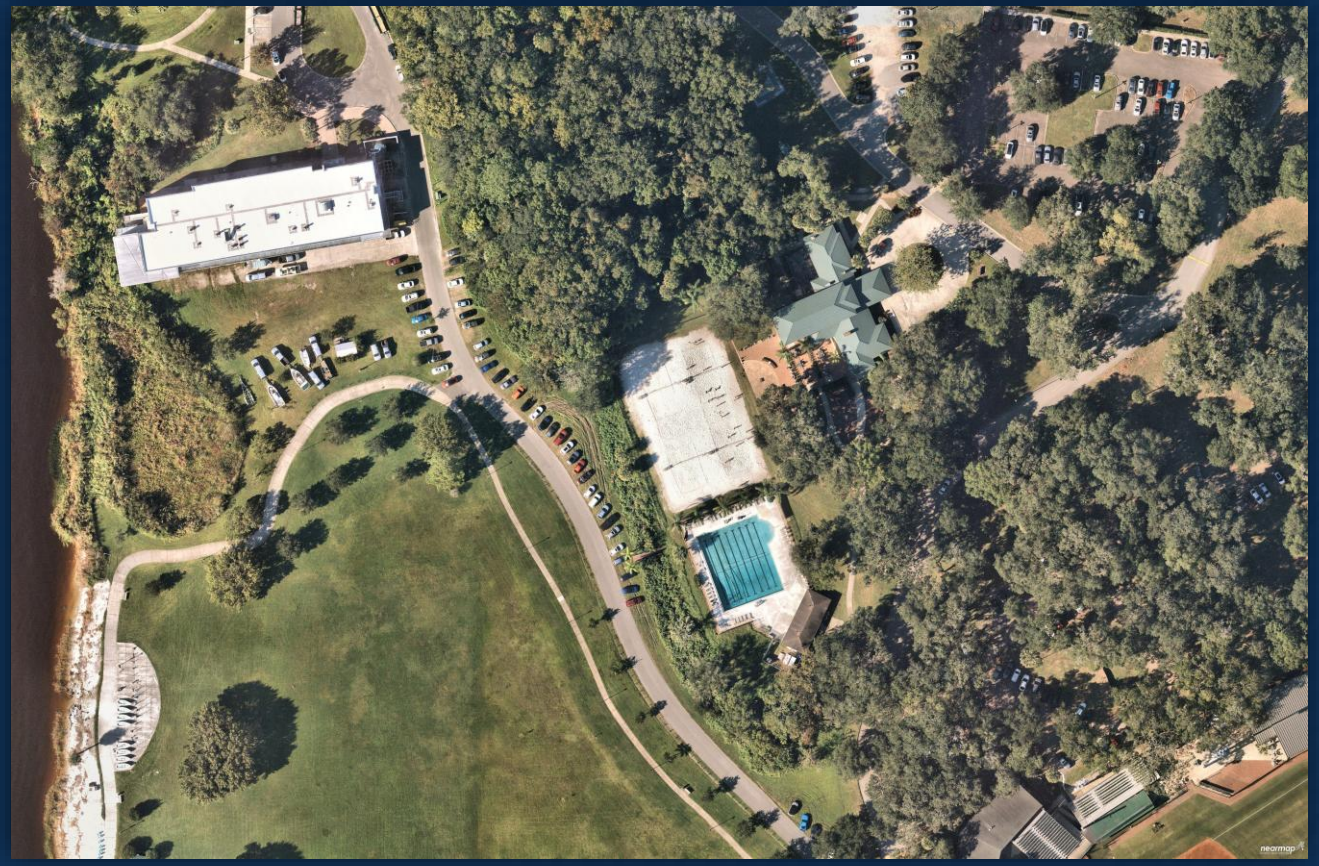
Case Study

Jacksonville University Athletic Complex

Jacksonville University

Jacksonville University envisioned replacing their existing outdated pool facility and create a new Athletic Complex with resort-style amenities.

(New Resort Style Pool with Sun Deck, Beach Volleyball courts, Amenity Buildings for both programs).

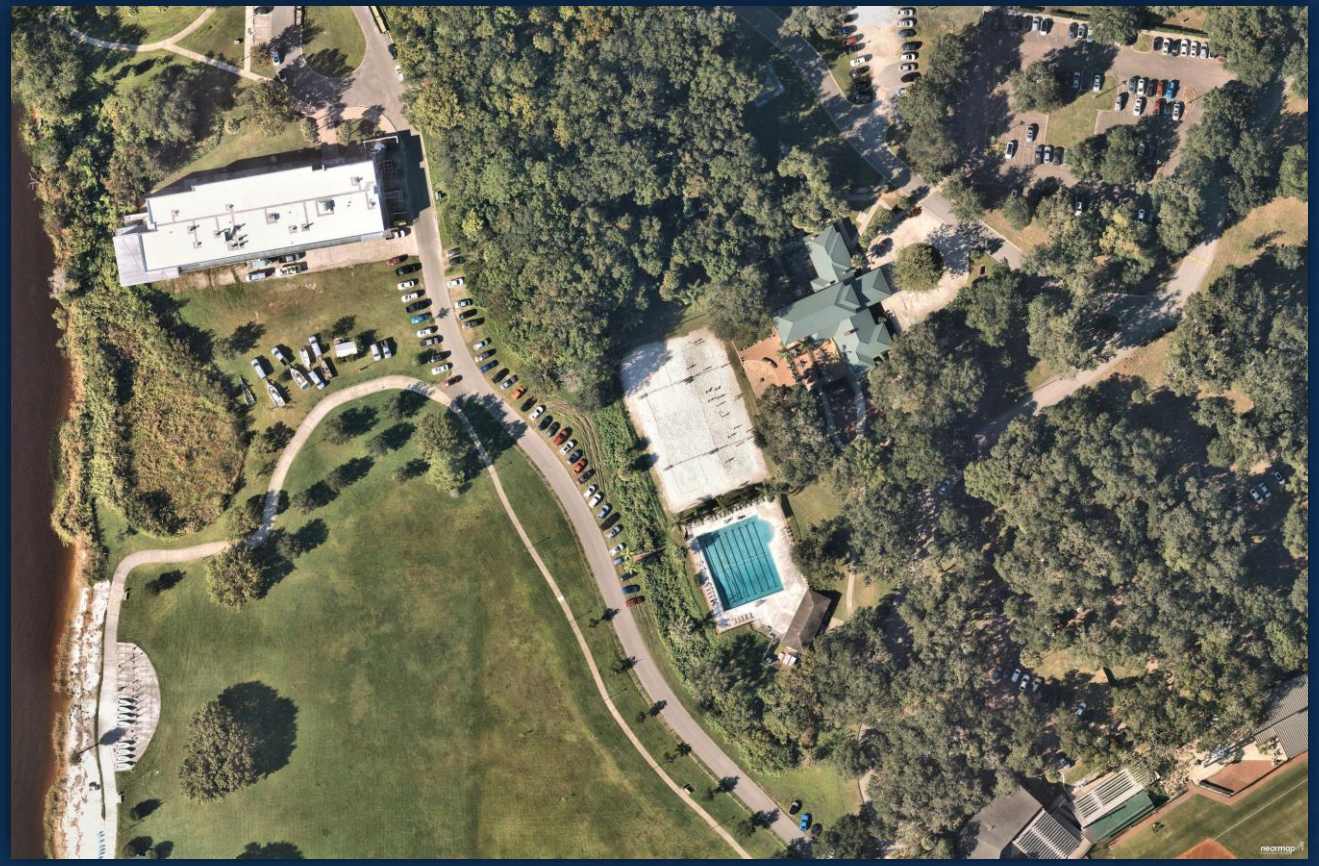


Key Project Metrics

- Public Private Partnership / P3
- Integrated Project Delivery

Constraints

- Fixed Client Budget
- Fixed Schedule
- Predeveloped Site with Existing Building
- Adjacent to a Wetland
- Historic Oak Trees
- Archeological Issues
- Temporary Beach Volleyball Courts



Design Option

- To create this facility, the site was reimagined as a vibrant and inviting environment.
- The design had to respond to the surrounding context, including an existing building and an adjacent wetland.
- The existing pool and volleyball courts had to be removed to make way for the new Athletic Complex.

Design Option

Budget Options

	Two Buildings Scheme "A"		One Building Scheme "B"			
Design & Engineering	$18.50	$555,000	$18.50	$555,000	$0	
Preconstruction	$2.00	$60,000	$2.00	$60,000	$0	
General Conditions	$14.00	$420,000	$14.00	$420,000	$0	
General Requirements	$5.00	$150,000	$5.00	$150,000	$0	
Sitework	$9.33	$580,000	$9.33	$280,000	$0	
Structure	**$42.33**	**$1,269,815**	**$33.26**	**$997,815**	-$272,000	
Exterior Closure	$3.87	$116,010	$3.87	$116,010	$0	
Roofing	**$4.77**	**$143,000**	**$6.13**	**$184,000**	$41,000	
Interior Finishes	$12.89	$386,750	$12.89	$386,750	$0	
Equipment & Furnishings	$3.00	$90,000	$3.00	$90,000	$0	
Mechanical	$37.50	$1,125,000	$37.50	$1,125,000	$0	
Electrical	$37.17	$1,115,000	$37.17	$1,115,000	$0	
AV Equipment & Install	$0.34	$10,200	$0.34	$10,200	$0	Owner Provided Budget
Moveable Storage Shelving	$45.00	$1,350,000	$45.00	$1,350,000	$0	Owner Provided Budget
Construction Totals	$237.86	$7,135,775	$227.99	$6,839,775	**-$296,000.00**	
Subtotal		$7,135,775		$6,839,775		
Owner Budget (Per Facilities Program)		**$6,845,000**		**$6,845,000**		
Delta		**-$290,775**		**$5,225**		

Two Buildings Scheme "A"
One Building Scheme "B"

Risk Matrix

- Project GMP Set at 60% Design in lieu of 100% due to Schedule
- Long Lead Materials Identified

Risk Identification and Impact Assessment							Risk Response					
ID	Risk Evaluation Category	Risk Statement	Impact Value $	Risk Owner	Risk Probability	Risk Impact	Risk Response	Mitigation Cost In Estimate	Mitigation Summary	Remaining Exposure	Risk % to Carry	Contingency Cost to Carry
1.00	Pre-Construction	Incomplete design package to provide full GMP. Risk exposure assumes 3% cost of work	$ 1,230,000.00	Duncan	Possible	Major	2-Plan Risk Response			$ 1,230,000.00	50%	$ 615,000.00
4.00	Pre-Construction	One Concrete Bid, risk that they are off by more than 10%	$ 150,000.00	Ware/Duncan	Possible	Moderate	2-Plan Risk Response			$ 150,000.00	25%	$ 37,500.00
5.00	Pre-Construction	Masonry Scope only had two bids and a large gap between them	$ 400,000.00	Ware/Duncan	Possible	Major	2-Plan Risk Response	$ 150,000.00		$ 250,000.00	50%	$ 125,000.00
17.00	Pre-Construction	Electrical scope only two bids and large gap	$ 500,000.00	Ware/Duncan	Possible	Moderate	2-Plan Risk Response			$ 500,000.00	25%	$ 125,000.00
18.00	Pre-Construction	Sitework wide spread in bids and carrying low bidder	$ 450,000.00	Ware/Duncan	Likely	Moderate	2-Plan Risk Response			$ 450,000.00	50%	$ 225,000.00
19.00	Design	Structural support of classroom demising walls		RDB	Unlikely	Minor	1-Watch			$ -	0%	$ -
20.00	Planning & Development	Electrical gear and Mechanical Equipment lead times	$ 150,000.00	Electric and HVAC subconttractors	Possible	Critical	3-Plan Risk Response and Implement		Current GMP includes alternate gear design. Need authorization to release			
21.00	Pre-Construction	Material Escalation - 1% of COW	$ 418,839.40	Ware/Duncan	Possible	Major	2-Plan Risk Response			$ 418,839.40	50%	$ 209,419.70
22.00	Pre-Construction	Buyout Scope Gaps - 1% COW	$ 418,839.40	Duncan/PM	Possible	Major	2-Plan Risk Response			$ 418,839.40	50%	$ 209,419.70

Structural System Analysis

- Analyzed Tilt CMU Vs & Steel Structure
- Exterior of the Building is Arch. CMU with standard CMU and Veneer at the front of the Building

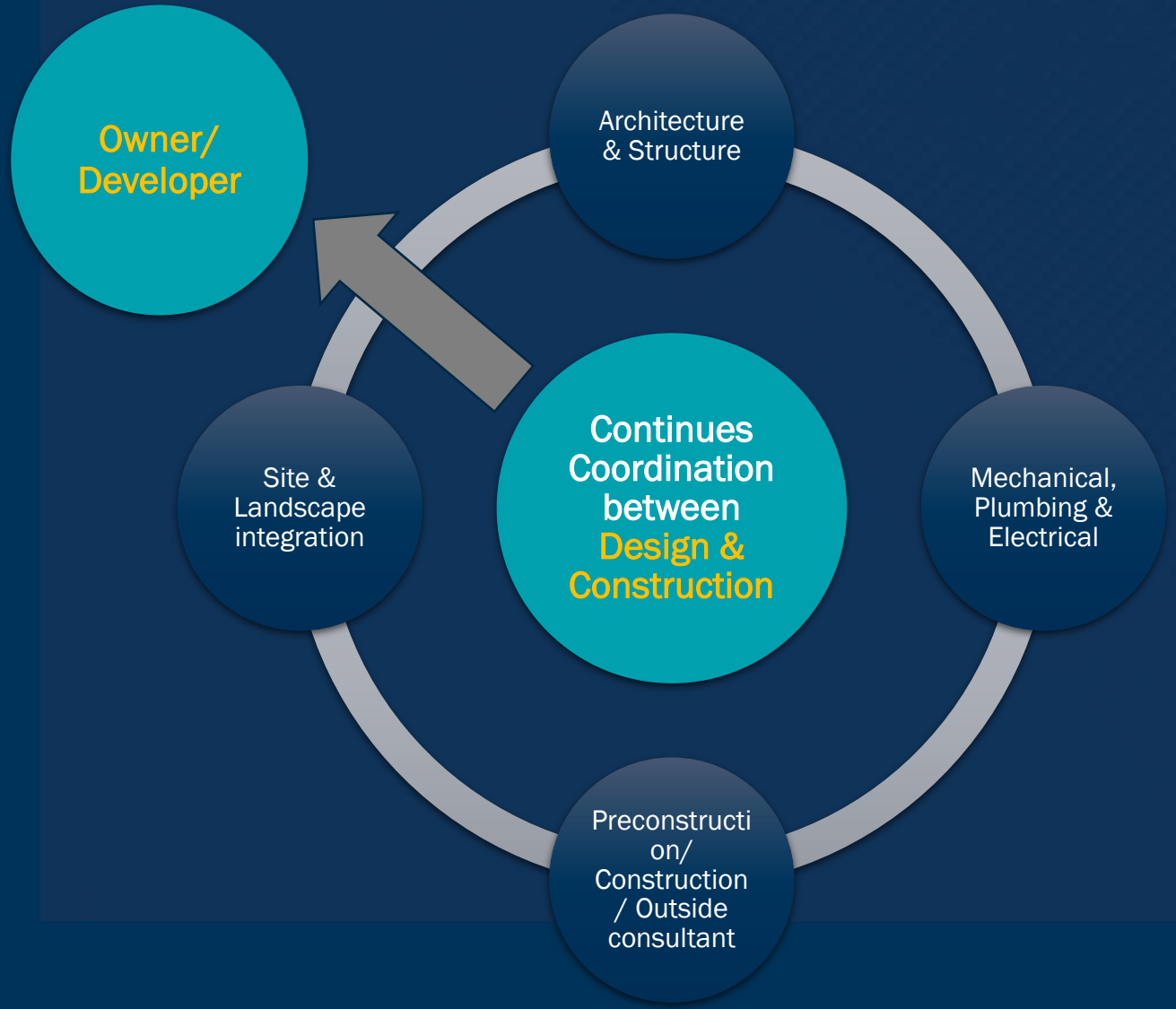
CMU

Tilt-Up Panels and Structural Steel

	CMU	Tilt-Up Panels and Structural Steel
Initial Cost	$ $	$ $
Material Availability	🕒 🕒	🕒 🕒
Overall Schedule	📅 📅	📅 📅
Durability	🏅 🏅 🏅	🏅 🏅 🏅
Sustainability	🍃 🍃	🍃 🍃

Final Design

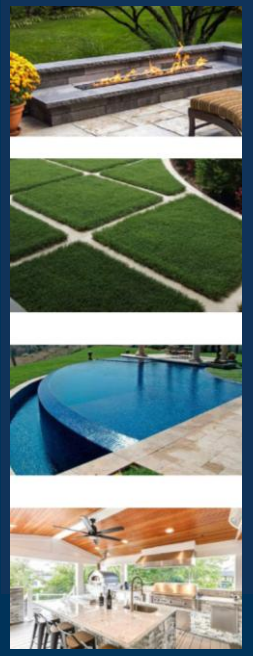
Coordination

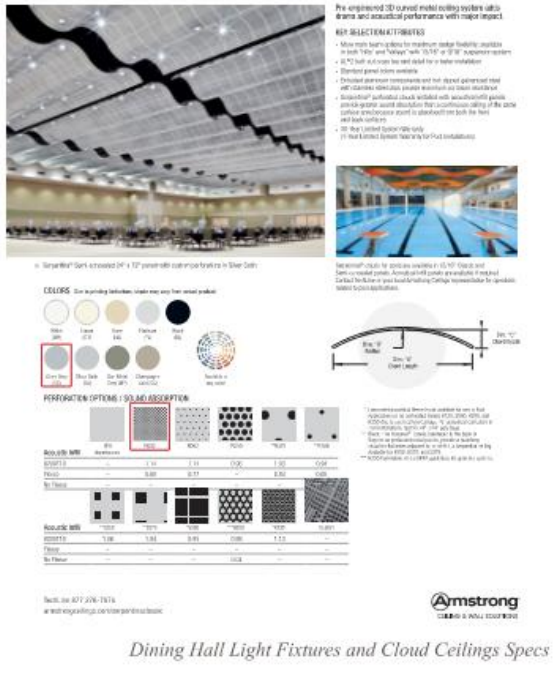


Tools Commonly Used

- BIM / Revit
- Clash Detection / VDC
- Team Coordination Meetings

Coordination





Dining Hall Light Fixtures and Cloud Ceilings Specs

Cloud Ceilings Images

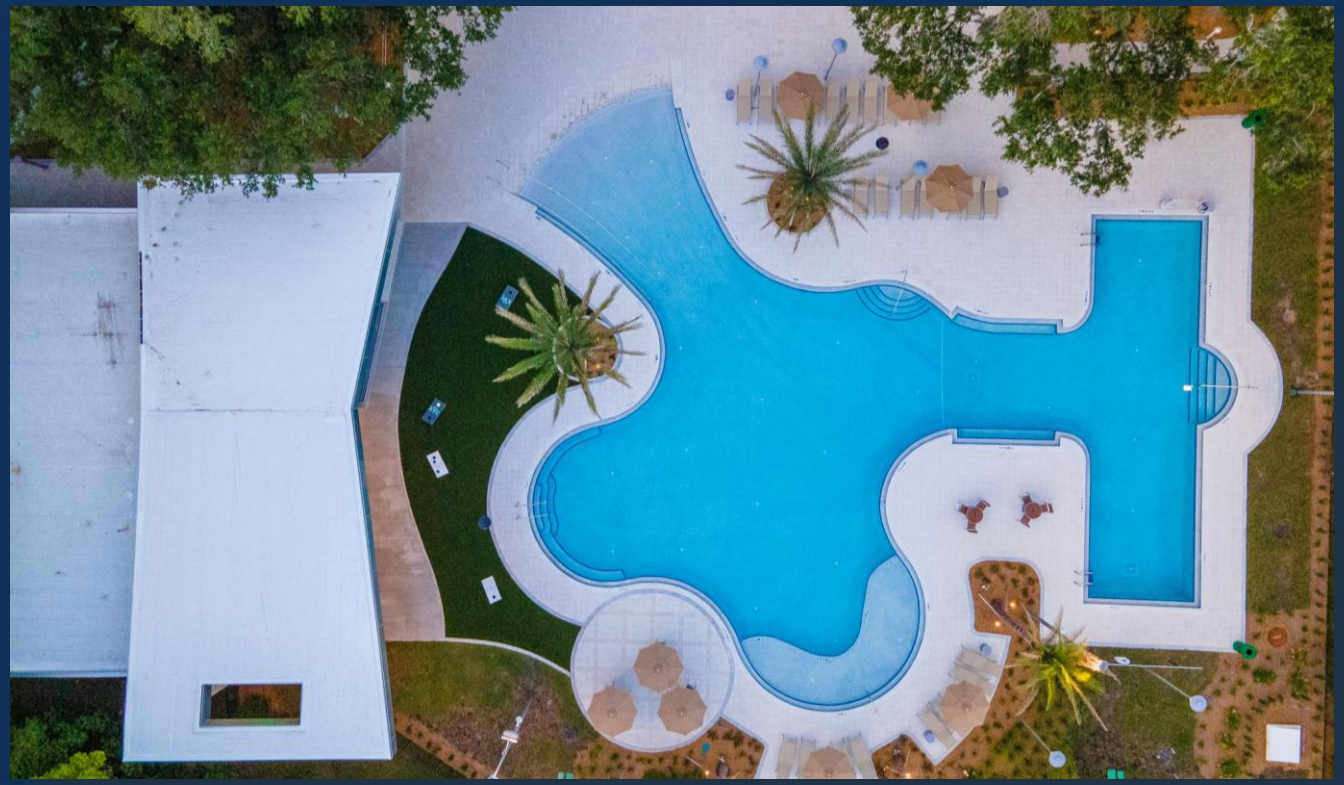
End Results

- On Budget
- Ahead of Schedule
- Happy Client

End Results

End Results

End Results



End Results

End Results

End Results

End Results

End Results

Awards

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Summary

Consider an Integrated Project Delivery Approach

Get Market Input Early in Design Planning Stages

Communicate Openly

Be Innovative

Q&A