

**BRIEFING MEMORANDUM**

**ATTACHMENT 2**

**RE: Overview of Delivery Options for the UCSF Helen Diller Medical Center Program at Parnassus Heights Project**

**Date: November 2019**

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This memorandum provides an overview of the delivery options analyzed for the delivery of the UCSF Helen Diller Medical Center Program at Parnassus Heights.

**A. Background**

UCSF Health Major Capital Projects has been tasked with planning, designing and constructing an architecturally outstanding, energy-efficient, seismically sound, and environmentally sustainable \$2.6B hospital program, *the largest capital program in UC's history*, which must open its doors to patients before 2030 in order to meet state hospital seismic safety standards.

Currently, patients on the Parnassus Heights campus are cared for at two landmark structures known as the Moffitt and Long Hospitals, as well as Medical Building 1 (“Ambulatory Care Center”). Moffitt Hospital was built in 1955 and thus, under state law, it must be decommissioned for inpatient care or retrofitted by 2030 to conform to seismic code requirements. UCSF’s long-range development plan, completed in 2014 (available at <https://www.ucsf.edu/cgr/cgr-projects/lrdp>), envisioned the construction of the new hospital on the site currently occupied by the Langley Porter Psychiatric Hospital and Clinics (LPPH&C), at the corner of Parnassus Avenue and Medical Center Way (see <http://psych.ucsf.edu/lpphc>).

The LPPH&C outpatient clinics will relocate to 2130 3rd St. in 2020 once construction of a new facility is completed. The LPPH&C inpatient and partial hospitalization programs will also relocate off-site (relocation site options are currently being evaluated). Options for seismically retrofitting the existing Moffitt Hospital are being evaluated for the building to remain in place. Moffitt Hospital building’s future use and function will be determined during the Master Planning and Programming phase. The existing Long Hospital building will remain in operation as an inpatient hospital and will connect to the NHPH.

It is anticipated that Long Hospital will require some renovations to accommodate connection to the NHPH. Areas in Long Hospital requiring renovation will be determined during the Master Planning and Programming phase of this program.

Hospital projects, especially large hospital projects, present very significant challenges. They are complex projects that must optimize requirements for patient health, staff efficiency, operating efficiency, sustainability, cost and schedule, in buildings that are densely packed with specialized mechanical equipment and have to meet strict requirements imposed by OSHPD, DHS and other regulators, in addition to building and planning code requirements.

Project delivery choice can strongly affect outcome. Design Build (DB) is a very risky approach with a high probability of cost and schedule overruns, lower quality and disputes.

Construction Management at Risk (CM@R) can improve on DB through early contractor involvement, but has shown highly variable results. One of the reasons that Sutter Health moved to IFOA and Integrated Project Delivery is that their CM@R projects did not reliably meet goals.

## **B. Comparison of Delivery Options**

The campus analyzed California Public Contract Code (CPCC) section 10503 capital program delivery models based on the following goals and assuming a ten (10) year duration, complex healthcare Program:

- a. *Cost and Schedule Reliability:* Maximize reliable delivery of the necessary facilities both on schedule and within budget
- b. *Owner Control:* Optimize UCSF Health Major Capital Project's ability to deliver these facilities attuned to the campus's facility and operational requirements and the Program Objectives set forth below
- c. *Flexibility:* Accommodate changes in business needs and medical technology throughout the evolution of the Program
- d. *Access to Trades:* Provide UC direct access to transparent information, communication and expertise of the trade contractors
- e. *Incentive Compensation Layer:* Spur creativity and align the parties' interests by placing the non-UC Program Risk/Reward Participants' profit into a risk pool ("incentive compensation layer or "ICL") that is augmented or decreased depending upon program outcome (time and cost) and program quality. Risk of program overrun is managed by using the ICL as a "buffer" that pays program costs if the target cost is exceeded. If the ICL is exhausted, UC continues to pay the Risk/Reward Participants' actual costs, without profit. For UC, this buffer greatly extends the range of successful outcomes while providing significant incentive for efficient performance
- f. *Innovation:* Maximize Program participant incentive for innovation, thus allowing UCSF to both benefit and harness the innovative potential of cross-functional design and construction teams
- g. *Change Orders:* Eliminate change orders to UC arising from construction coordination and design errors via contractual limitations
- h. *Claims:* Reduce UC risk and potential claims via contractual limitations

The campus also analyzed the available delivery models in the context of the Program Objectives which include the following aspirational goals:

- Reimagining patient care by creating an optimal healing environment that addresses social, psychological, spiritual, and behavioral components of health in one place
- Designing and constructing buildings based on “whole-patient” needs – from leading-edge diagnostic tests and therapies to the privacy, natural spaces, clean air, and human connection essential to physical and emotional healing
- Creating a new hospital on par with the excellence and pre-eminence of UCSF’s clinicians, scientists and mission
- Maximizing innovation, quality, productivity, flexibility and collaboration in the Program delivery
- Using Integrated Project Delivery (IPD) tools and processes such as IFOA, co-location, pre-fabrication, last planner scheduling system, “just in time” logistics planning, and target value design/target cost to ensure successful delivery of the program, on or under ahead of schedule, on or under budget, by 2030.
- Building an appropriately sized hospital and surgical intervention platform to meet the needs of the growing Bay Area population and beyond.

## C. Project Delivery Options

The campus explored three (3) delivery strategies for the development of the UCSF Helen Diller Medical Center at Parnassus Heights Program<sup>1</sup>:

- I. Design-Build Contract (CPCC 10503(b))
- II. Construction Manager at Risk Contract (CPCC 10503(c))
- III. Integrated Form of Agreement (CPCC 10503(e))

### I. Design-Build Contract (CPCC 10503(b))

Design-Build is characterized by a *single point of responsibility for both design and construction activities*. Design-Build is often chosen to transfer risk and coordination responsibility to one contracting party to ensure a higher level of coordination for these two critical components of project delivery.

In Design/Build, the University retains a single entity that constructs the project to a design that it largely developed. The flexibility this provides the builder can reduce project duration and cost, but with a corresponding reduction in the University’s ability to control project quality, adjust the design to changing business conditions and medical technology,

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<sup>1</sup> Design-Bid-Build (CPCC 10503(a)) was not considered due to the tight schedule requirements and poor outcomes of design-bid-build delivery for major design-bid-build healthcare projects.

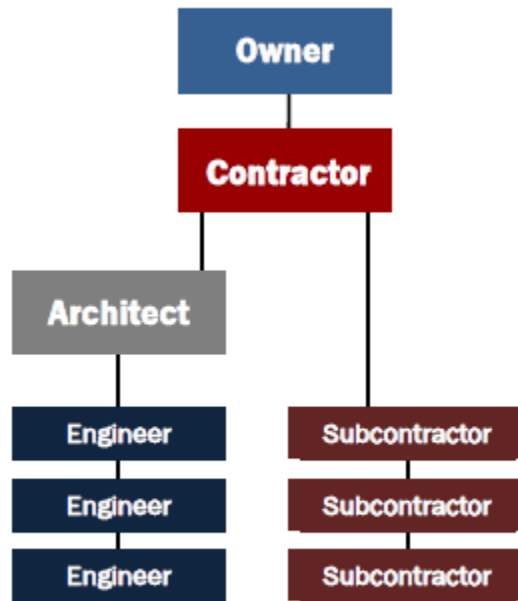
and to tune the project design to meet the University's operational and facility needs.

Because of these deficiencies, Design/Build is rarely used for complex healthcare projects and was determined to be inappropriate for the Hellen Diller Medical Center Program at Parnassus Heights.

### Design-Build Contract Characteristics

- Single point of contact/responsibility
- Need a well-defined scope at outset of Project
- Need for timely decisions
- Must effectively administer design-build process
- Change Orders/Claims due to project evolution

### Design-Build Contract Structure



### Design-Build Contract Advantages

- Owner retains some control of design until construction phase locks in price and scope into a Guaranteed Maximum Price (GMP)
- Some construction work and input often occurs during the design process
- Design/Builder can select subcontractors from previous projects
- CM as Owner's representative, if utilized, may manage the construction in the Owner's best interest

### Disadvantages of Design-Build Contracts

- Need up-front, comprehensive Owner-provided program & performance criteria
- Owner responsible for changes, overlaps and gaps in contract scope, subcontractor delay impact and unpredictable quality
- Owner needs to manage quality control
- Owner is pushed for early decisions
- Exposure to Design-Builder's lack of proper oversight
- Subcontractor selection is at Design/Builder's discretion with no direct Owner relationship
- Relative to a single-phase Design-Build procurement, a multi-phase Design-Build procurement entails separate procurement processes, elongating the time for substantial completion, as well as increasing costs. Also, a multi-phase approach requires repeating the procurement process for additional phases, decreases economies of scale and the leveraging of volume, and increases mobilization and demobilization costs relative to a single-phase approach.
- Incentive by Design-Builder to issue Change Orders to preserve Design-Builder fee

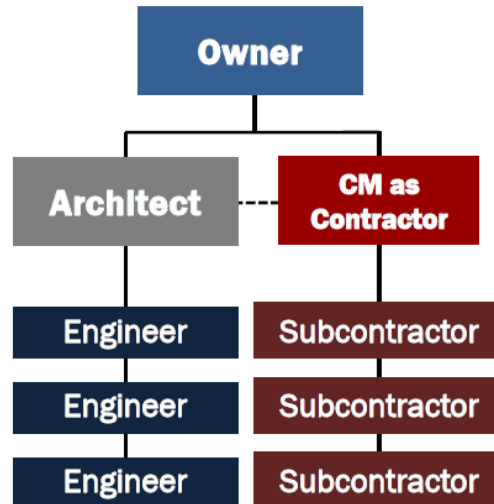
## **II. Construction Manager at Risk (CPCC 10503(c))**

In the Construction Management at Risk delivery model, the University separately retains an architect and a contractor that each then retain the respective design consultants and trade contractors. The contract with the contractor (referred to as a CMGC - construction manager/general contractor) can require construction in accordance with the architect's design on a cost plus basis, limited by the guaranteed maximum price. Because of the serial nature of design and then construction, schedule can be elongated. Transparency is reduced because the consultants and trade contractors are subcontracted to the architect and CMGC, respectively, and because all parties are under separate contracts, significant opportunities exist for problems to result in claims and litigation. Some major healthcare projects, such as UCSF Mission Bay, have been delivered successfully using CM at Risk, but CM at Risk has a mixed record for delivering complex healthcare projects.

### CM at Risk Contract Characteristics

- ◆ Two contracts (Owner/Architect & Owner/CMGC)
- ◆ Some construction risks are transferred to CMGC
- ◆ May not have cost transparency
- ◆ Similar to CM Multi-Prime for selection and management of the work
- ◆ Flexibility to price the project
- ◆ Subcontracts are held by or assigned to the CM
- ◆ Bonding can be for the entire scope of the work (GC and subcontractors)
- ◆ Risks can push the CM to not act as the agent of the Owner

### CM at Risk Contract Structure



### Advantages of CM at Risk

- Retain control of design
- Contractor involved early
- Flexibility to price the project

### CM at Risk Disadvantages

- Owner responsible for changes
- Architect may not take input from CMGC during design
- Some lack of ability to pool contractor and subcontractor contingency
- Multiple bidding of trades
- Resultant elongation of schedule
- Increased risk of change orders, claims and litigation
- Historical, mixed-record of success in large healthcare projects

CMGC and subcontractors are not responsible for coordination costs between design documents and field conditions.

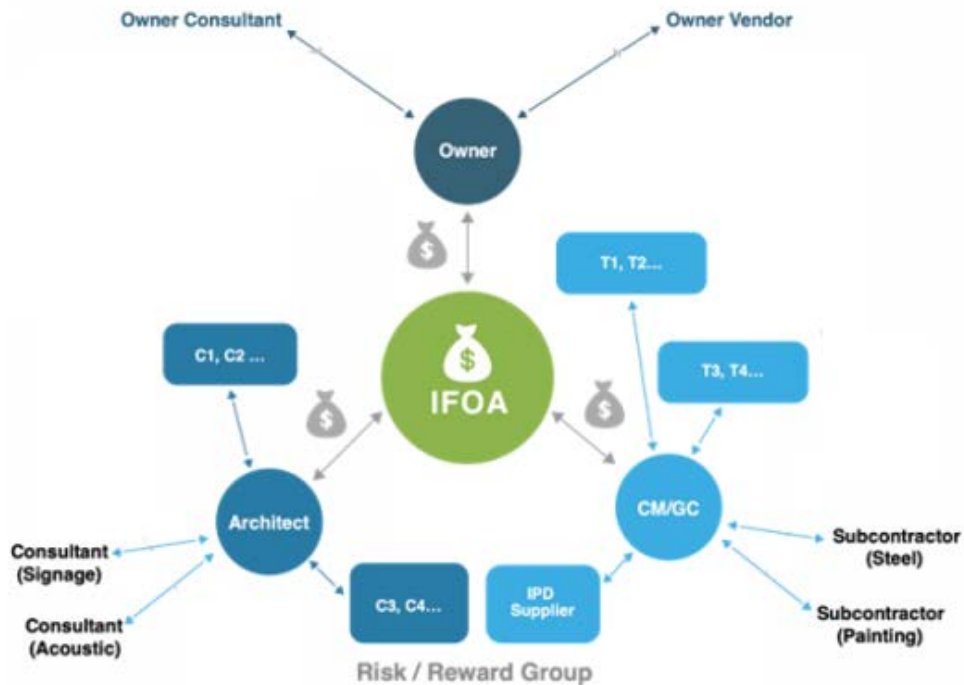
### **III. Integrated Form of Agreement (IFOA) (CPCC 10503(e))**

In the Integrated Form of Agreement, the University, designer and builder enter into a single contract where the parties agree to limit change orders and claims, place the team's profit at risk based on the overall project success, and jointly design and construct the project to meet the University's goals. This project delivery method provides exceptional owner control, adapts well to changing circumstances, and encourages direct information exchange between owner and all key participants and is the most predictable regarding cost and schedule. The IFOA is currently the preferred method for delivery of complex healthcare projects.

### IFOA Characteristics

- Single agreement among Risk/Reward Participants
- Direct and open communication
- Cost Transparency
- Validation Process of scope and cost prior to commitment of construction phase(s)
- Contractual Limitation on Non-Owner Change Orders
- Contractual Limitation on Claims
- Enhanced indemnity provision by non-Owner Participants
- Incentive Compensation layer
- Profit at risk by non-UC design and construction participants

### IFOA Contract Structure



### Advantages of IFOA

- Changes can be more easily accommodated and priced due to Owner involvement and cost transparency.
- Key trades are in direct contract with Owner
- Full access and transparency allow better quality and financial control
- Innovation occurs because designer, owner, trades, manufacturers are working together from the inception and jointly share in the benefits of innovation

- IFOA also allows design construction overlap and leads to increased productivity due to collaboration of designers and trades
- IFOA has the highest probability and best record for cost reliability
- IFOA has the highest probability and best record for schedule reliability
- IFOA minimizes change orders
- IFOA minimizes claims
- Research has shown that the greater the collaboration between the owner, designers and builders, the better the chance for successful outcome; IFOA maximizes that opportunity

*Disadvantages of IFOA*

- IFOA is a new delivery model to the University
- Requires experience in Integrated Project Delivery
- To optimize results requires experience in Lean processes and tools
- Participants must have some familiarity with fee at risk business model

**D. Comparison of the IFOA Approach with Design-Build and CM at Risk Delivery Options for UCSF’s Healthcare Program**

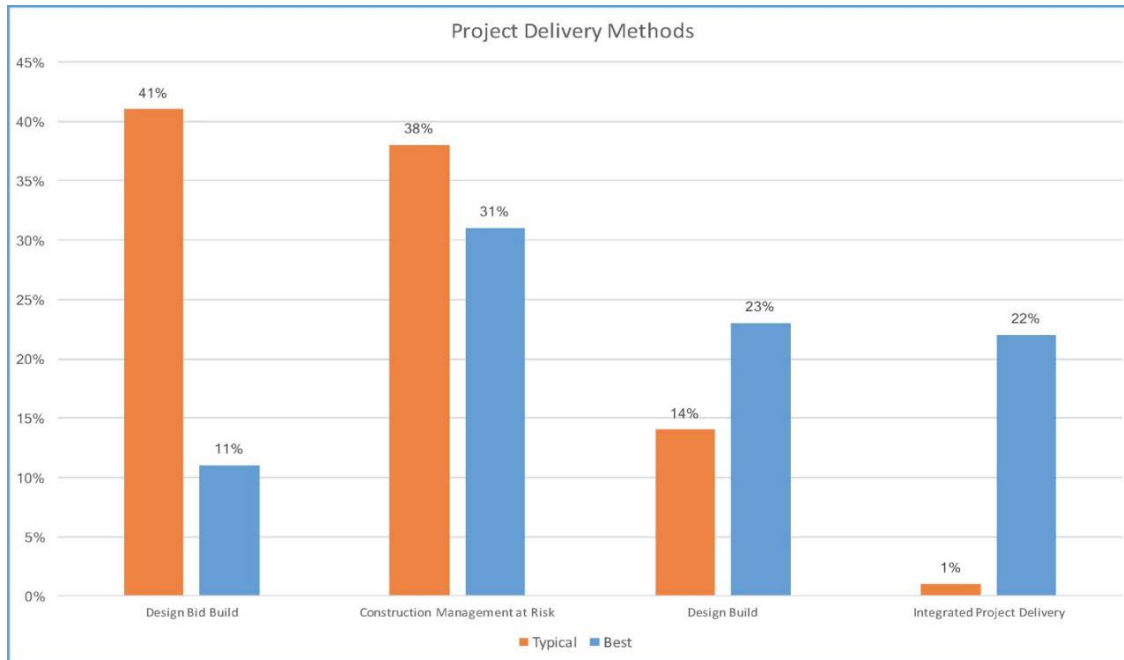
Numerous studies have chronicled the relative ineffectiveness of traditional project delivery.<sup>1</sup> Beginning over 40 years ago and continuing with the 2016 World Economic Forum report<sup>2</sup> and the 2017 McKinsey report<sup>3</sup>, researchers have shown that traditional project delivery systems have had only sporadic success and often result in significant overruns, delays and lowered quality. The Construction Industry Institute research indicated that only 30% of projects met cost and schedule. These were generally much smaller projects than UCSF. Studies of large projects report almost complete failure, by any reasonable standard.<sup>4</sup>

Again, healthcare projects, especially large hospital projects, present very significant challenges. They are complex projects that need to optimize requirements for patient health, staff efficiency, operating efficiency, sustainability, cost and schedule in buildings that are densely packed with specialized mechanical equipment and have to meet strict requirements imposed by OSHPD, DHS and other regulators, in addition to building and planning code requirements.

Project delivery choice can strongly affect outcome. Design Build (DBB) is a very risky approach with a high probability of cost and schedule overruns, lower quality and disputes. Construction Management at Risk (CM@R) can improve on DBB through early contractor involvement, but has shown highly variable results.

A recent study of 80 owners and 160 projects by Dodge Data and Analytics, grouped the projects in to best (blue columns) and typical (orange columns). Typical projects did not meet owner expectations for 5 factors, including cost, schedule and safety.





Their analysis tracks UCSF’s experts’ own experiences. DBB is occasionally successful, but generally is not. CM@R has a greater opportunity for success, but also a significant probability of failure. DB is more stable, but not suited for complex projects requiring extensive design flexibility. IFOA was highly successful with an almost insignificant failure rate. From an Owner’s perspective, it is the least risky project delivery method.<sup>2</sup>The IFOA and procurement strategy has been used and embraced by local Unions (*See SF Building Trades Council and ENR published articles evidencing support of the Sutter Health IFOA/procurement and construction processes*). Sutter Health has performed 24 healthcare projects, totaling \$4B, averaging overall a 5% cost savings, on schedule delivery, and a 92% success rate, with zero litigation.

Selection of this core team is key to all parties working together to achieve the best cost and value for the University. The proposed delivery model insures economy and excludes favoritism and corruption. The transparency in the subcontracts, transparent and pooled contingency funds, and decision-making methods during construction will further insure that the University’s interests and the public fisc are protected.

### UCSF Helen Diller Medical Center Program at Parnassus Heights

<sup>2</sup> See, as examples, *Constructing the Team, Joint Review of Procurement* (Sir Michael Latham 1994); *Rethinking Construction: The Report of the Construction Task Force to Her Majesty’s Government* (Sir John Egan 1998); *Collaboration, Integrated Information and the Project Lifecycle* (CURT 2004); *Optimizing the Construction Process: An Implementation Strategy* (CURT 2006).

<sup>2</sup> *Shaping the Future of Construction*, World Economic Forum 2016.

<sup>3</sup> *Reinventing Construction*, McKinsey 2017.

<sup>4</sup> *Industrial Megaprojects*, E. Merrow, Wiley 2015.

*Comparison of Project Delivery Approaches for Major, Complex Healthcare Programs* prepared by Program Advisor, Howard W. Ashcraft, Jr., Hanson Bridgett LP.

The attached evaluation matrix provides additional detail regarding the potential advantages and disadvantages of the proposed project delivery methods. The factors are color coded with green indicating “desirable”, yellow indicating “acceptable”, and red indicating “unacceptable.”

Factor	CM@Risk	Design / Build <sup>3</sup>	IFOA
Owner Control	Owner can have significant control during design, but later changes are costly. Hospitals often have late changes. CM is commonly utilized by public owners.	More difficult to make late changes. Owner under D/B needs to have a clear and static program. Not appropriate for hospitals, D/B is commonly utilized by public owners.	Changes can be more easily accommodated and priced due to owner involvement and cost transparency. IFOA is new to public sector.
Access to Trades	Under traditional CM@Risk, very little involvement. Early contractor involvement CM improves access, but still limited due to subcontract structure. Modified allows greater trade access.	Limited or no access to trades, which are key to successful hospital projects.	Key trades are in direct contract with owner. Full access and transparency allow better quality and financial control.
Innovation	Variable. Traditional CM@Risk has few opportunities. Modified allows greater trade involvement	Design/Build can be very innovative, but the value of innovation is mostly for the benefit of the Design/Builder.	Innovative because designer, owner, trades, manufacturers are working together from the inception and jointly share in benefits of innovation.
Flexibility	Flexible, at a cost. The lack of direct contracts with trades and manufacturers increases costs for changes.	Design/Build gains its performance advantages by NOT having the owner deeply embedded in execution and allowing the Design/Builder to control design and execution. Changes are expensive and cause loss of performance.	Flexible because IFOA team—including the owner—can make appropriate tradeoffs and adjustments. Because costs are transparent, pricing and evaluating change is easier.
Schedule	CM@Risk projects have varied outcomes for schedule. Sometimes performance is good.	Design/Build can overlap design and construction leading to schedule reduction. And providing contractor control over the project leads to better schedule outcomes—if change is minimal.	IFOA also allows design construction overlap and leads to increased productivity due to collaboration of designers and trades.
Cost Reliability	CM@Risk has a poor record for cost reliability, although some projects have been successful. There is no monetary incentive to reduce cost.	Cost reliability of Design/Build is good, if change is minimal, but this is unlikely in a hospital setting.	IFOA has the highest probability and best record for cost reliability. Sutter Health has delivered over 20 hospitals at, or significantly below, budget.

<sup>3</sup> A modified Design/Build approach has been utilized by the University in other instances but doesn't meet the objectives for this project.

Change Orders	CM@Risk projects have a poor record for change orders, particularly for complex projects because designers and contractors do not always have the same concept of design intent.	Design/Build has few change orders. If there are few changes, but this is unlikely in a hospital setting.	Change Orders under an IFOA format are limited to specific situations and offer the team fewer opportunities to request changes. Moreover, collaborative development and joint management allow resolutions without change orders.
Claims/Litigation	CM@Risk projects are exposed to significant litigation risk because of disputes relating to schedule and cost. However, CM is the one party responsible for all construction issues.	Design/Build has a limited liability exposure if changes are limited. Also, Design/Builder is the one point of contact for any and all design or construction claims.	It is estimated that there have been over 500 IFOA projects in the US with no known litigation. Claims/litigation is limited but may come from any party or be directed to any party.

The proposed scope and strategy for the Program have received extensive modeling and evaluation. Based on that analysis, the IFOA approach is viewed as the optimal solution to fulfill the Program goals, for the following reasons.

Benefits to UCSF of the proposed IFOA delivery model include:

- Improvement over prior UCSF Mission Bay Hospital CM at Risk Model on time and under budget delivery success based on “lessons learned” from prior project and experience since 2010 as reflected in the IFOA
- Industry interest – higher likelihood of attracting highest caliber “A” teams in current difficult Bay Area economic market
- Greater budget control, productivity and transparency due to direct access to subcontractors, consultants and vendors
- Places Program over individual objectives by pooling profit layer
- Joint profit at risk incentivizes cost control and provides overrun buffer
- Mandatory change order and claims risk reduced by contract provisions
- Structure and business model encourage innovation
- Owner embedded in team decisions
- Increased predictability in the areas of cost, schedule and quality