



Independent Cost Estimation Information Session

February 16th, 2023

Frankfort, KY

Progressive Contracting

- KYTC is actively developing projects that will be delivered using progressive contracting methods such as Progressive Design Build (PDB) and Construction Manager General Contractor (CM/GC)
- The key feature of these contracting methods is that construction price is not established until after selection of the PDB contractor or CM/GC. This allows for multiple benefits including better risk mitigation and greater price certainty.

Statewide Independent Cost Estimating Services Contract

- 2 year cycle
- Currently known projects will be assigned through the statewide
- Project Specific ICE Contracts are a possibility
- Stanton Constructability
 - Sara Snow
- ICE Teams
 - Dan Bender
 - Chris Wilson

Role of ICE in PDB

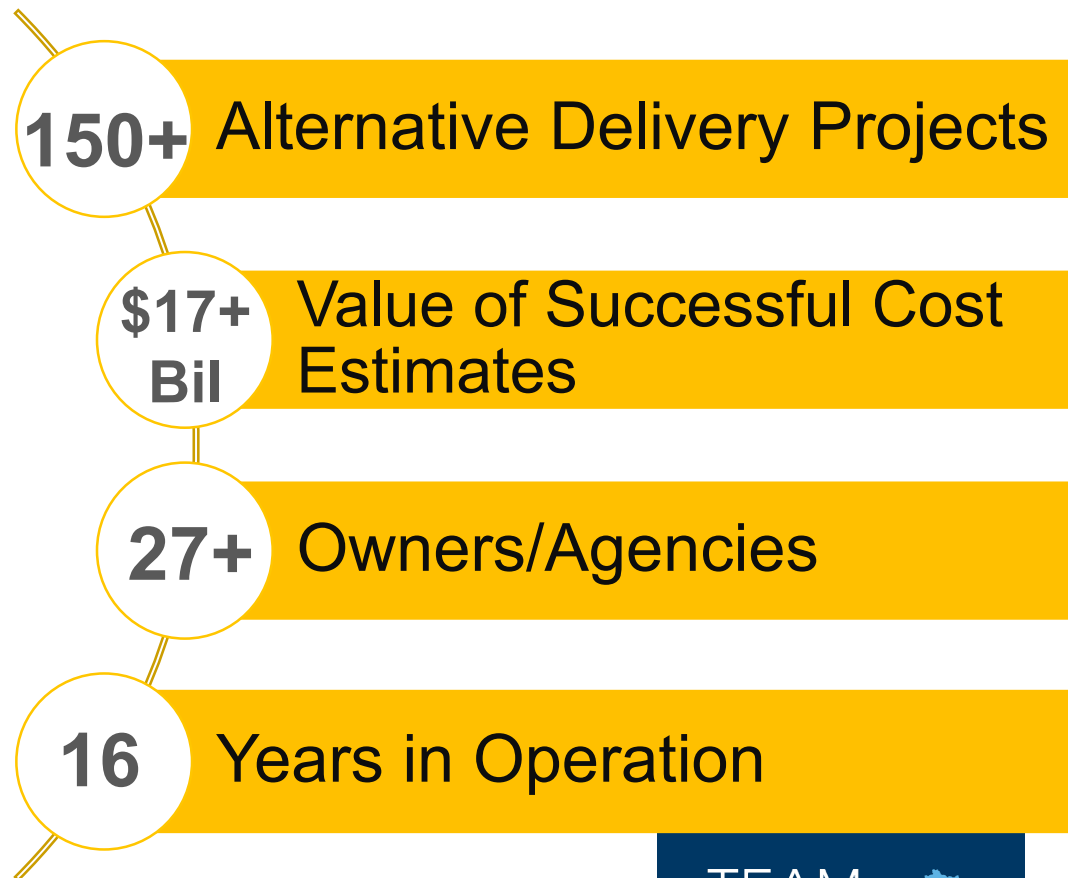
- Independent Cost Estimating (Contractor Style Estimating)
- Fair-market Analysis
- Scope Alignment
 - Quantities, Risk Assumptions, Limitations and Constraints
- Budget and Alternatives Analysis
- Early Work Package Evaluation
- Risk Management (Creating Transparency)
- Innovations Vetting and Evaluation
- Helping the Owner and Contractor get to a Contract

ICE Teams Qualifications

- Former Contractors
- Risk Managers by Trade and Education
- Provided ICE Services on Alternative Delivery Projects since 2009
- Provided ICE Services in 22 Different States
- Project Controls, Claim Management Support, Construction Scheduling
- Leader in Innovative Construction Methods
- Provided ICE Services on 14 PD-B Projects
- Provided ICE Services on over 100 CMGC projects

Stanton Constructability Services Qualifications

- Well versed in estimating all project delivery methods – DBB, DB, PDB, CMAR, CMGC, ECI
- Specialize in ICE, life cycle project estimating & schedule services
- Specialized Estimators all come from General Contracting Background
- Public/Private Owners – DOT's, Transit, PPP, Rail, Utilities, Port Authority
- Helped establish the process with many owners



Independent Estimating Firms Involvement on Alternative Delivery

Pre-Construction Project Team Coordination

- Initial Kickoff Meeting / Site Visit
- Contractor Estimate Coordination
- WBS Development
- Design/Constructability Reviews and Risk Workshops
- Scope – Quantity Reconcile
- Keeps the Reconcile Meeting Productive

Production Based Cost Estimating

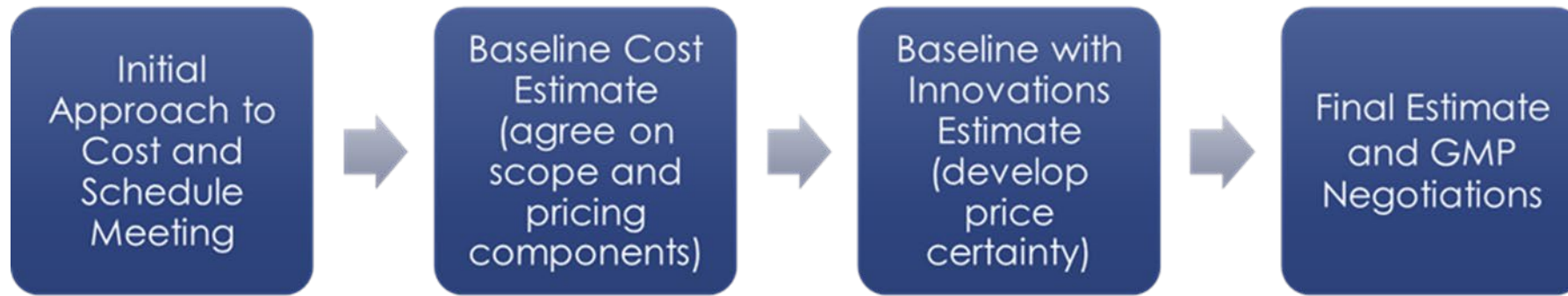
- **Approach to Price / Estimating Instructions**
- **Coordination of local market rates on Labor, Equipment, Materials, Fuel, Etc.**
- **Subs, Plugs and Suppliers Coordination. (Transparency and Information Shared with Estimating Teams)**



Reviews with DB/KYTC Team

- Similar Process at 30%, 60%, 90% and Final
 - Early involvement so opportunities are not missed (Value Engineering opportunities)
 - Constructability/Risk Reviews
 - Plan/Spec Review at each phase
 - Quantity takeoff's
 - Design Status Meetings – Provide Opportunities for Constructability Reviews and Pricing of Options
 - Bid Price and Proposal Analysis
 - Recommendation for Award
- Review Phasing, labor availability, mobilization and site access, sequence of design and construction, availability and procurement of equipment and materials
 - VE – Price options for cost effective solutions
 - Budget or Contract Issues

Process Workflow



Risk and Innovation Project Team

- Risk Management Plan Overview
 - Collaborative process
 - Protects both Owner and Contractor
 - Pulls risk out of initial cost estimates
 - Risk Register is always evolving until GMP
 - Owner will manage risk register
 - Disposition of risk contingency
 - Controlled by Owner with lots of input from Contractor

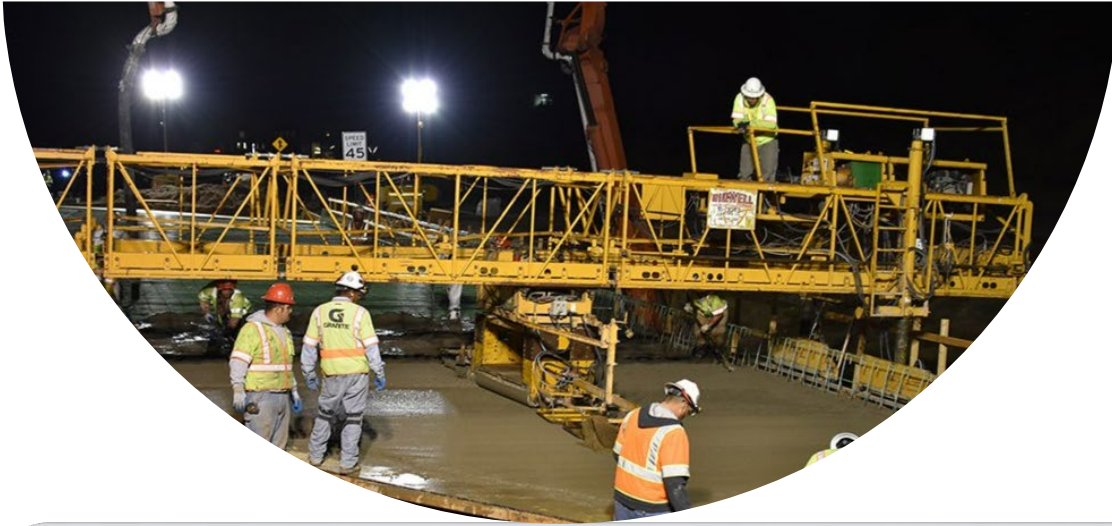
Risk and Innovation Project Team

- Process
 - Initial Risk Register development
 - Initial Risk Workshop Goals
 - Monthly updates (via email, task force meetings & workshops)
 - Progress Risk Workshops
 - Prior to milestone OPCC meetings
 - Goal = align risk assumptions
 - Phase Goals
 - Baseline – Identification/Impacts/Strategy
 - Innovations – Refine impacts and strategy
 - GMP – Finalize (add Resolutions and Triggers)

Project Risk Examples

RISK NAME	DESCRIPTION	TASK GROUP	Status (Active or Retired)	OWNER	CHAMPION(s)	PROBABILITY	IMPACT COST	IMPACT TIME Calendar	MITIGATION STRATEGY 1	RESOLUTION (DESCRIPTION)	TRIGGER TO ENGAGE RISK RESERVE
Utilities - Unknown	Unknown utilities - Cause delays in critical path construction activities, impacting cost and time	Highway	Active	WRA	Todd / Debbie	50%	\$ 50,000.00	8	Most of the issues would be at the ramps. Extensive SUE has been performed and design has been optimized. The risk cost impact would be to cover costs of unknown unknowns.	Carry cost and time impacts in the risk register. Pay Time and Materials basis for addressing unknown utility conflicts. Time impact would only be awarded if the conflict impacts critical path activities.	Physical conflict with unknown utility that impacts work activity.
Stormwater - Existing conditions	Drainage pipes in the south section of the project may be deteriorated / clogged. Could impact traffic safety and roadway integrity (i.e. soft subgrades, flooding)	Highway	Retired	DelDOT	Jason C. /	0%	\$ -	0	Propose to video inspect areas of the system where we have concerns. Carry cost impacts in the risk register. May be retired if DelDOT fixes soft spots prior to construction. LaTonya provided pipe video and summary spreadsheet. Percy will coordinate with Maintenance to see if they will be able to repair pipe failures prior to construction (mitigates risk). Otherwise, WRA will include pipe fix design in mainline design package.	Retire. Pipe repair areas are not included in EWP 2.	
Contaminated Materials	what if contaminated materials are encountered during excavation (Main concern is at the drainage tie-ins)	Highway	Active	DelDOT	Kevin & Jeff / Tom	100%	\$ 10,000.00		Contaminated Materials special provision is included in the contract. KW will stockpile materials per SP and DelDOT's on-call contractor will collect and dispose of contaminated materials.	Cost for Stockpiling materials will be included in the contractor's cost model. Coordination between KW & DELDOT's ONCALL. Kiewit will be paid for backfill through the borrow pay item.	Discovery of contaminated materials. Kiewit will be paid as force account to stockpile and cover contaminated material.
Permitting - Construction Zone	Getting permits prior to construction. (submitted by June 2020)	Permitting	Retired	WRA	Laura / Heidi		\$ -		DelDOT to get permits as required (WRA Support); access & laydown areas at 744 & 745	744 (Christina River) - moved to Bearings contract. 745 (Norfolk Southern) - Not a risk.	

Project Schedule Optimization



Scheduling Analysis

- **Validate overall duration for time related items**
 - Supervision
 - Traffic Control
 - Environmental Controls
- **Validate need for overtime**
- **Single vs Double Shift**
- **Limitations / Constraints**
- **Cost and Resource Loaded**
- **Review contractor schedule at each milestone**
 - Focus on Critical Path and High-Risk activities
 - Provide analysis and recommendations for usefulness

Project scheduler uses former contractor experience to preform the following



Developed independent schedules and updating schedules monthly on large DB projects

This includes What If Scenarios and Time Impact Analysis for changes and claims



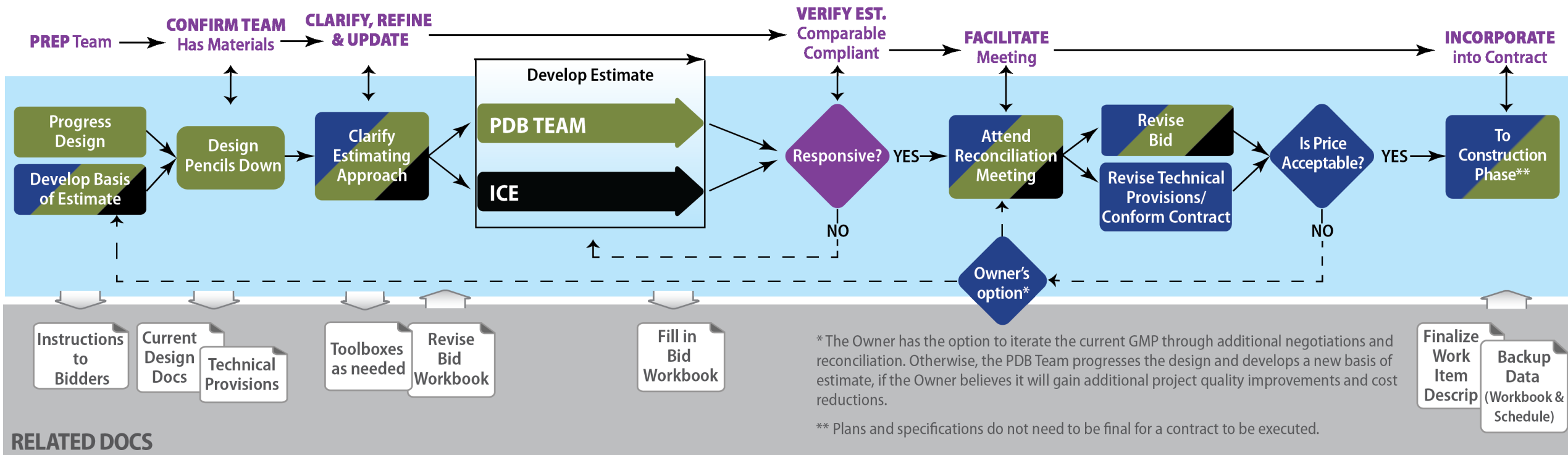
Review project limitation to on critical path impacts and optimize to save time

Milestone Reconciliation Process

- Pre-Estimate Alignment Meeting(s)
- Open Book Estimating
- Review Approach to Construction (Schedules)
- Review PD-B's Estimate Details
- Identify Delta's in Cost Assumptions
- Verifying that Risk is Pulled Out of the Estimate
- ICE is “blinded”...But Contractor is Encouraged to Ask Questions
- Cost Reconciliations After the Meeting

Estimate Comparison

Getting to Contract with KYTC on CMGC/PDB



Estimate Comparison

Getting to Contract with KYTC on CMGC/PDB

Item No.	CM Code	Description	\$ / UOM	Detailed Item Cost Breakdown								Variance \$	Variance %
				Labor	Comp Equip	Outside Equip	Perm Mat	Const Mat	Sub	Hauling	Total		
233	23300	ROCK SLOPE PROTECTION (300 lb, Class IV, METHOL)	\$ 307.46	\$ 2,621	\$ 1,353	\$ 132	\$ 1,866	\$ 178	\$ -	\$ -	\$ 6,149		
			\$ 274.05	\$ 2,099	\$ 1,446		\$ 1,937	\$ -	\$ -	\$ -	\$ 5,481	\$ (668)	-12.19%
234	23400	ROCK SLOPE PROTECTION (150 lb, Class III, METHOL)	\$ 197.53	\$ 11,007	\$ 5,617	\$ 561	\$ 16,045	\$ 746	\$ -	\$ -	\$ 33,975		
			\$ 640.46	\$ 55,364	\$ 38,141		\$ 16,654	\$ -	\$ -	\$ -	\$ 110,159	\$ 76,184	69.16%
235	23500	ROCK SLOPE PROTECTION (60 lb, Class II, METHOL)	\$ 697.68	\$ 55,048	\$ 28,408	\$ 2,770	\$ 32,836	\$ 3,729	\$ -	\$ -	\$ 122,791		
			\$ 498.39	\$ 41,848	\$ 28,830		\$ 17,040	\$ -	\$ -	\$ -	\$ 87,717	\$ (35,074)	-39.99%
236	23600	ROCK SLOPE PROTECTION FABRIC (CLASS 8)	\$ 6.27	\$ 14,008	\$ 1,072	\$ -	\$ 5,000	\$ 918	\$ -	\$ -	\$ 20,998		
			\$ 4.83	\$ 8,360	\$ 3,418		\$ 4,378	\$ -	\$ -	\$ -	\$ 16,156	\$ (4,842)	-29.97%
237	23700	MINOR CONCRETE (GUTTER)	\$ 48.45	\$ 4,834	\$ 682	\$ 425	\$ 574	\$ 315	\$ -	\$ -	\$ 6,831		
			\$ 103.76	\$ 688	\$ 747		\$ -	\$ -	\$ 13,195	\$ -	\$ 14,630	\$ 7,799	53.31%
238	23800	DETECTABLE WARNING SURFACE	\$ 32.35	\$ 3,290	\$ 628	\$ -	\$ 6,700	\$ 221	\$ -	\$ -	\$ 10,838		
			\$ 28.85	\$ 1,919	\$ 445		\$ 7,303	\$ -	\$ -	\$ -	\$ 9,666	\$ (1,172)	-12.12%
239	23900	MINOR CONCRETE (MISCELLANEOUS CONSTRUCTION)	\$ 725.49	\$ 307,541	\$ 55,271	\$ -	\$ 144,359	\$ 79,024	\$ -	\$ -	\$ 586,195		
			\$ 707.12	\$ 296,572	\$ 86,731		\$ 176,060	\$ 11,990	\$ -	\$ -	\$ 571,353	\$ (14,843)	-2.60%
240	24000	MINOR CONCRETE (LITHOCRETE)	\$ 27.84	\$ 23,249	\$ 4,959	\$ 7,360	\$ -	\$ 1,605	\$ 724,980	\$ -	\$ 762,153		
			\$ 27.13	\$ 6,905	\$ 3,717		\$ -	\$ -	\$ 732,134	\$ -	\$ 742,756	\$ (19,397)	-2.61%
241	24100	MINOR CONCRETE (EXPOSED AGGREGATE CONCRETE)	\$ 13.34	\$ 598,098	\$ 63,588	\$ 114,844	\$ 347,449	\$ 87,106	\$ 83,500	\$ -	\$ 1,294,585		
			\$ 13.25	\$ 586,611	\$ 85,099		\$ 375,036	\$ 13,843	\$ 225,137	\$ -	\$ 1,285,727	\$ (8,858)	-0.69%
341	34000	MOBILIZATION	\$ 4,369,031.57	\$ -	\$ -	\$ -	\$ -	\$ 2,911,612	\$ 1,457,420	\$ -	\$ 4,369,032		
			\$ 3,899,127.16	\$ 21,722	\$ 16,522		\$ -	\$ 1,054,893	\$ 2,055,991	\$ 750,000	\$ 3,899,127	\$ (469,904)	-12.05%
342	34200	BASE BID SUBTOTAL		46,521,191	11,310,963	2,787,790	18,713,743	42,760,324	89,403,208	788,200	212,285,419		
SUBTOTAL	SUBTOTAL	ICE - TOTALS WITH INDIRECTS		24,490,078	13,080,899		27,360,298	22,883,307	88,309,736	7,839,336	183,963,654	\$ (28,321,765)	
											\$ 238,502,668		
											\$ 204,199,657	\$ (34,303,011)	

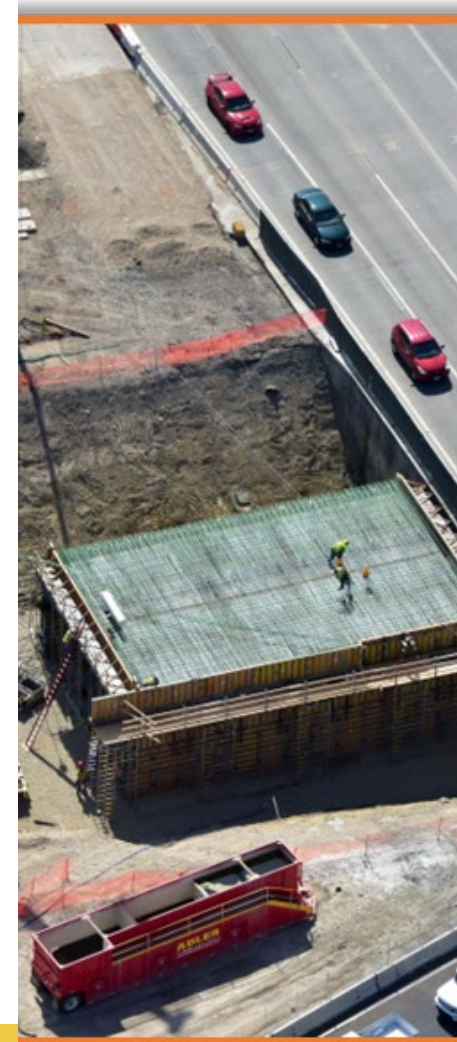
- Attend Price Reconciliation Meetings
- Pre-meet with KYTC, Develop the Agenda
- Item Not in the pre-determined range to review
- Facilitate the Discussions with Contractor
- Advise KYTC of more Cost-Effective Solutions
- GMP,
- Maintain Severability
- Options to transition to Design-Bid-Build

Past Project Examples – Stanton Constructability

Table 1. Caltrans CMGC Pilot Program

Final Agreed-To Cost Summary

Project	CMGC	ICE	VAR %
SFOBB Phase 1	\$14,500,000.00	\$12,682,000.00	12.5%
SFOBB Phase 2	\$105,000,000.00	\$92,094,976.00	12.3%
SFOBB Phase 3	\$49,750,000.00	\$47,290,000.00	4.9%
SR-99 Realignment EWP	\$27,000,000.00	\$25,365,000.00	6.1%
SR-99 Realignment Main	\$141,000,000.00	\$138,780,000.00	1.6%
SR-58 Upgrade	\$164,500,000.00	\$158,360,000.00	3.7%
I-215 Barton Road Interchange	\$47,732,000.00	\$45,750,000.00	4.2%
Ferguson Slide Phase 1	\$15,750,000.00	\$14,551,000.00	7.6%
North Coast Corridor Seg 1 - I-5 San Elijo	\$166,779,000.00	\$156,853,000.00	6.0%
North Coast Corridor Seg 6 - Double Track San Elijo	\$51,478,000.00	\$47,225,000.00	8.3%
North Coast Corridor Seg 8 - San Elijo Lagoon Restoration	\$94,621,000.00	\$87,634,000.00	7.4%
North Coast Corridor - Cardiff Rail Trail	\$5,480,700.00	\$5,026,200.00	8.3%
North Coast Corridor - Seg 2,3	\$225,000,000.00	\$207,037,000.00	8.0%



Similar Project Experience

I-65	Location	Deliver Method	Bridge Reconstruction	Bridge Rehab	Urban Area	Work Near RR	ICE Services
Cosumnes	CO	CMGC	X			X	X
Arvada	CO	CMGC	X			X	X
North Coast Corridor	CA	CMGC	X	X	X	X	X
Crystal Valley Interchange	CO	CMGC	X			X	X
Dunsmuir Gap	CA	CMGC		X		X	X
Western Hills Viaduct	OH	P3	X		X	X	
UTA North Temple Line	UT	CMGC	X		X	X	X
Cline Avenue Bridge	IN	P3	X	X	X	X	
Blacrock Bridge Replacement	UT	CMGC	X	X		X	X
5600 S	UT	PDB	X	X	X	X	X

US 421	Location	Deliver Method	Mountainous Terrain	Rerouting of Roadway	Climbing Lanes	Local Road improvement	Rural Location	ICE Services
West Vail Pass	CO	CMGC	X		X	X	X	X
SH-7	CO	CMGC	X	X			X	X
Ferguson Slide	CA	CMGC	X	X			X	X
Floyd Hill	CO	CMGC	X	X	X	X	X	X
Big Thompson Canyon	CO	CMGC	X	X		X	X	X
SR-14	UT	CMGC	X	X			X	X
Page Slide	AZ	CMGC	X	X			X	X

❑ Past Project Examples

Innovative Contracting and Engineering

I-95 Wilmington Project

- 12-mile freeway rehabilitation project including 17 bridge structures
- Contractor's initial price was \$230M; project budget was \$160M
- Team worked to mitigate identified risk removing cost of risk from the price.
- Added innovations
- Received cost certainty and awarded the GMP at \$167 million

Innovation Log									
Item #	Item Description	Innovation Description	Project Name	Project Number	Project Date	Project Status	Project Phase	Project Location	Project Contact
1	ICE 3	ICE 3	ICE 3	ICE 3	ICE 3	ICE 3	ICE 3	ICE 3	ICE 3

OPCC Comparison Form									
Item #	Item Description	Item Description	Item Description	Item Description	Item Description	Item Description	Item Description	Item Description	Item Description
1	ICE 3	ICE 3	ICE 3	ICE 3	ICE 3	ICE 3	ICE 3	ICE 3	ICE 3

Risk Register									
Item #	Item Description	Item Description	Item Description	Item Description	Item Description	Item Description	Item Description	Item Description	Item Description
1	ICE 3	ICE 3	ICE 3	ICE 3	ICE 3	ICE 3	ICE 3	ICE 3	ICE 3

Quantities Reconciliation Log									
Item #	Item Description	Item Description	Item Description	Item Description	Item Description	Item Description	Item Description	Item Description	Item Description
1	ICE 3	ICE 3	ICE 3	ICE 3	ICE 3	ICE 3	ICE 3	ICE 3	ICE 3



❑ Past Project Examples

Innovative Contracting and Engineering

Moana Lane Diverging Diamond Interchange

- Converted a double-diamond to DDI
- Initial construction schedule was 8-months
- Collaborated with Contractor, NDOT and Public to delivery the project in 67 calendar days!!
- Added scope (underdeck ped lighting)
- Managed risk and finished under budget

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❑ Past Project Examples

Innovative Contracting and Engineering

WSDOT – 29 Fish Passage PD-B

- Construction windows
- Tight work zones
- Remote project location
- Labor and material availability
- Multiple stakeholders
- Environmental constraints
- 6- work packages (bundles)

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