Construction Manager General Contractor (CMGC) Delivery Method Overview

Presented by
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Division of Design

Caltrans
CALIFORNIA DEPARTMENT OF TRANSPORTATION

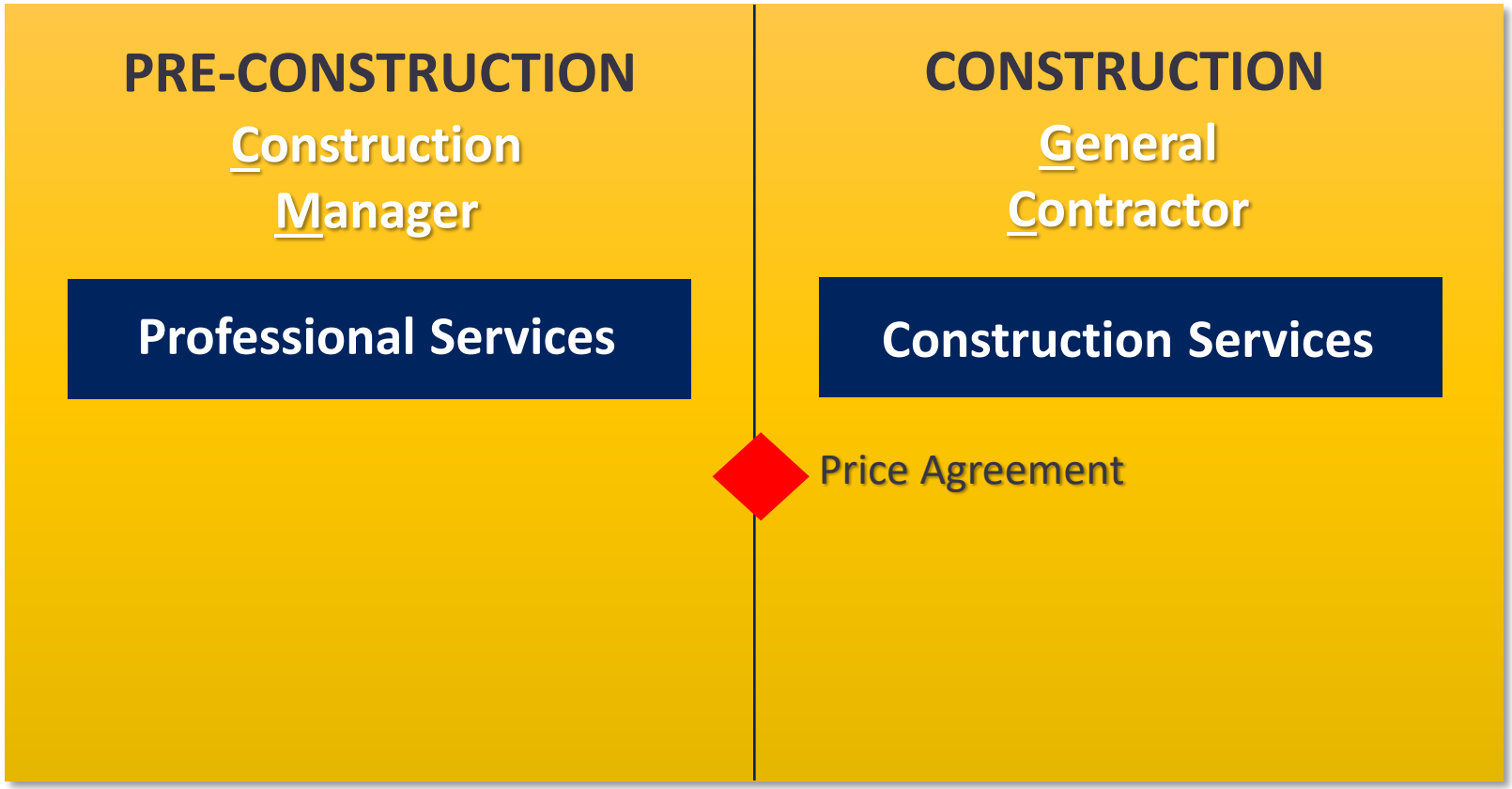
Agenda

- Background
- Delivery Process
- Challenges
- California Infrastructure Delivery Coalition (CALINFRA) Prospective
- Benefits
- Program Awards

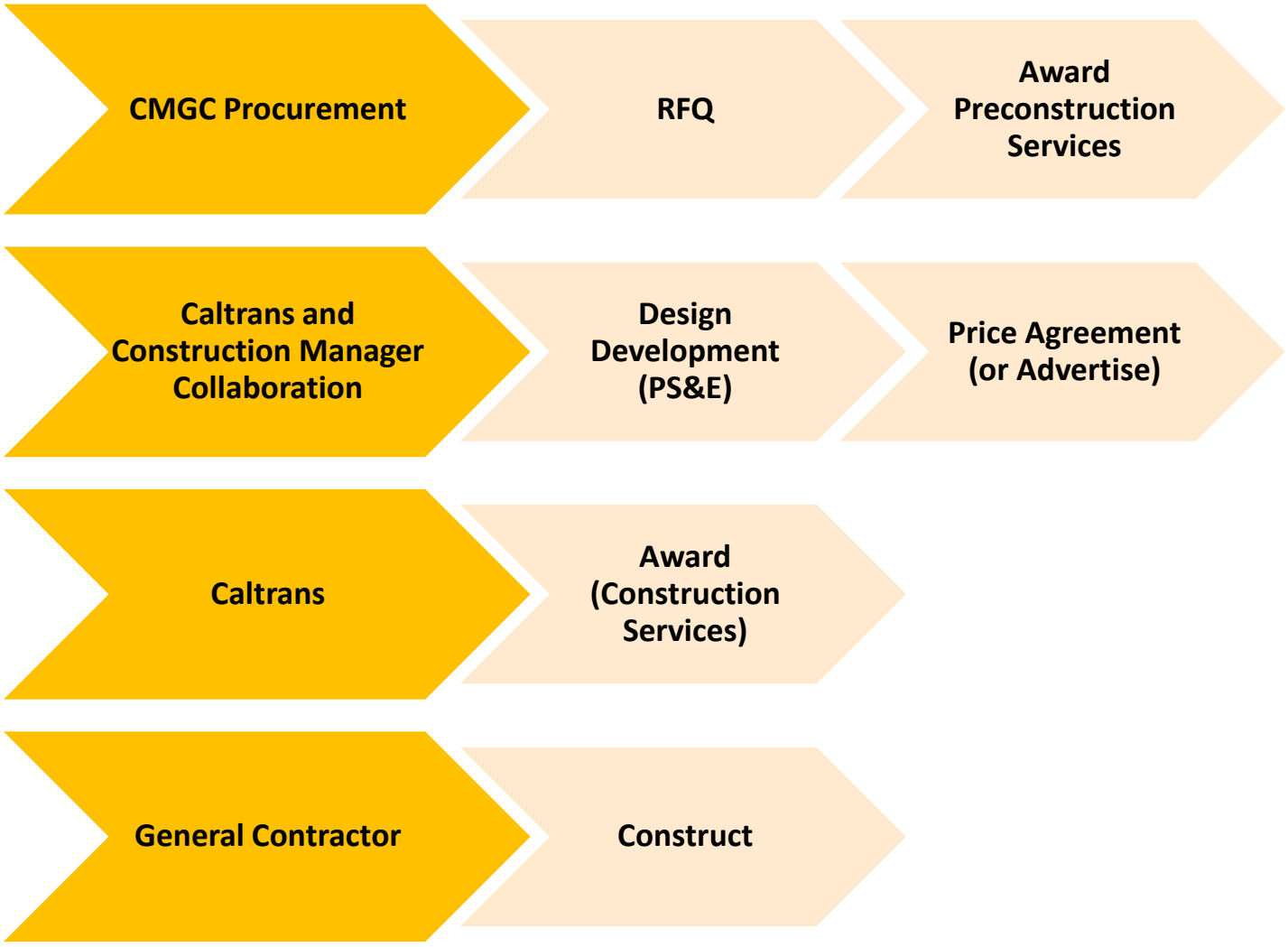
Legislation

- Assembly Bill 2498 (Gordon)-2012
- Assembly 2126-2016
- Assembly Bill 114-2017
- Senate Bill 1262 (Beall)-2018

What is a CMGC



CMGC Lifecycle



CMGC Element of Success

Project Nomination Process

- District: Prepares Nomination Fact Sheet
- Expert Panel: Review Nomination Fact Sheet
- Alternative Delivery Committee: Review and Vote
- Recommendation to Chief Engineer

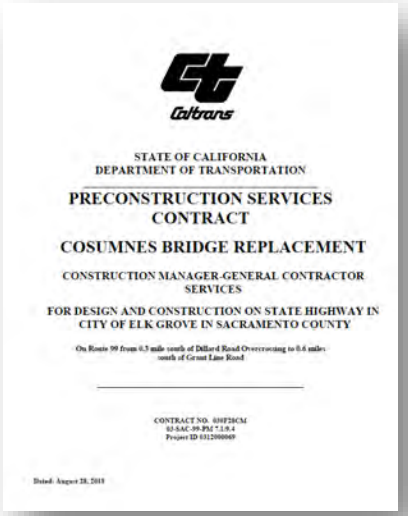
CMGC Element of Success

Project Nomination Criteria

- Complex projects
- Environmental challenges
- Multiple third-party approval
- Short construction windows
- Challenging traffic staging

CMGC Elements of Success-continued

Specialized Experience



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PRECONSTRUCTION SERVICES CONTRACT

COSUMNES BRIDGE REPLACEMENT

CONSTRUCTION MANAGER-GENERAL CONTRACTOR SERVICES

FOR DESIGN AND CONSTRUCTION ON STATE HIGHWAY IN CITY OF ELK GROVE IN SACRAMENTO COUNTY

On Route 99 from 0.3 mile south of Dillard Road Overcrossing to 0.4 miles south of Grant Line Road

CONTRACT NO. 03HF20CM
03-SAC-99-PM 7.1/9.4
Project ID 0312000069

Dated: August 28, 2013

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REQUEST FOR QUALIFICATIONS

SR 70 BINNEY JUNCTION ROADWAY REHABILITATION AND COMPLETE STREETS

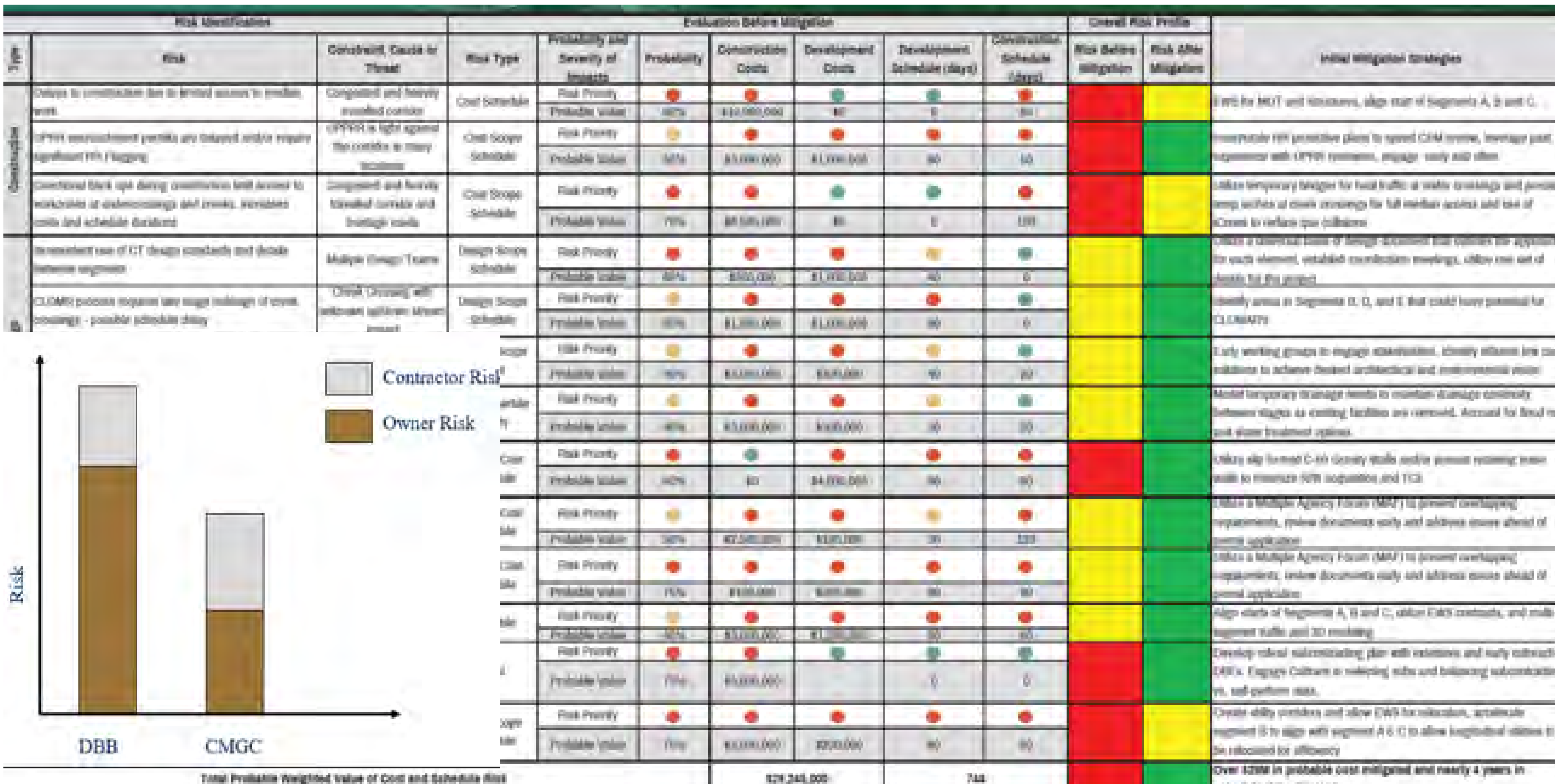
CONSTRUCTION MANAGER/GENERAL CONTRACTOR SERVICES

CMGC Elements of Success-continued

Early Partnering

CMGC Elements of Success-continued

Contractability and Risk Resolution

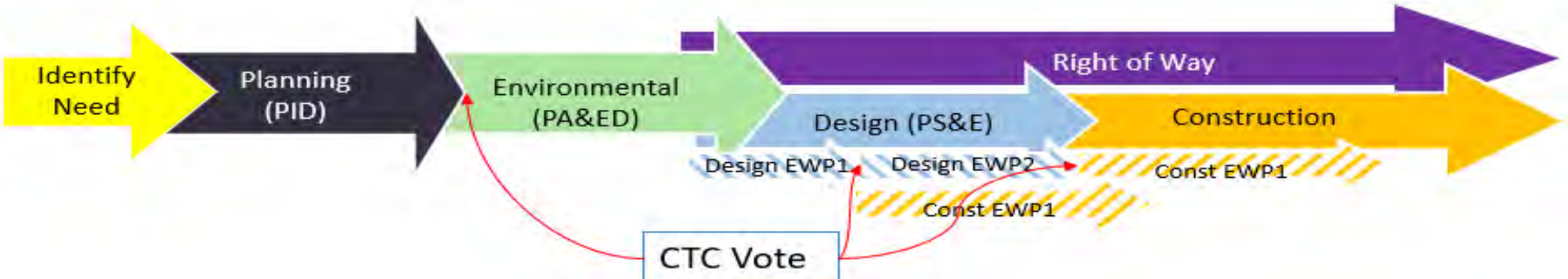


CMGC Elements of Success-continued

Early Work Packages

Commonly used for:

- Securing long lead material
- Utility Relocation
- Independent Part
- Streamline Delivery



CMGC Elements of Success-continued

Construction Price Check

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Project Name: Highway 101: Carpinteria to Santa Barbara Project - Segment 4D North (San
Preconstruction Services Contract No.: 05-0N70CM
Construction Contract No.: 05-
Estimate Name: OPCC3 - 100%- Read 5 - No RR Cert.

Partial Plug Items
Full Plug Items
New Items in Red - ~~Deleted Items~~

			Agreed Quantity		CM'S ESTIMATE			
					UNIT PRICE	UNIT PRICE W/	TOTAL COST	CM/ICE Δ%
Bid No.	Item Code	Description	Units	Quantity	OPPC3	MARKUP	OPPC3	OPPC3
1	70030	LEAD COMPLIANCE PLAN	LS	1	$ 3,590.00	$ 3,957.98	$ 3,590.00	
2	80060	LEVEL 2 CRITICAL PATH METHOD SCHEDULE	LS	1	$ 1,526.00	$ 1,682.42	$ 1,526.00	
3	90100	TIME-RELATED OVERHEAD (WDAY)	WDAY	580	$ 2,096.19	$ 2,311.06	$ 1,215,792.36	
4	90205	DISPUTE RESOLUTION BOARD ON-SITE MEETING	EA	11	$ 3,000.00	$ 6,000.00	$ 33,000.00	
5	90210	HOURLY OFF-SITE DISPUTE-RESOLUTION-BOARD-RELATED	HR	33	$ 125.00	$ 250.00	$ 4,125.00	
6	120090	CONSTRUCTION AREA SIGNS	LS	1	$ 123,500.00	$ 136,158.75	$ 123,500.00	
7	120100	TRAFFIC CONTROL SYSTEM	LS	1	$ 689,203.58	$ 759,846.95	$ 689,203.58	
8	120101	TRAFFIC CONTROL SUPERVISOR	DAY	580	$ 237.61	$ 261.96	$ 137,811.27	
9	120120	TYPE III BARRICADE	EA	9	$ 65.00	$ 71.66	$ 585.00	
10	120159	TEMPORARY TRAFFIC STRIPE (PAINT)	LF	139,000	$ 0.54	$ 0.59	$ 74,500.00	
11	120165	CHANNELIZER (SURFACE MOUNTED)	EA	1,200	$ 53.00	$ 58.43	$ 63,600.00	
12	120204	PORTABLE RADAR SPEED FEEDBACK SIGN SYSTEM DAY	EA	580	$ 47.16	$ 51.99	$ 27,352.39	
13	120300	TEMPORARY PAVEMENT MARKER	EA	1,950	$ 7.50	$ 8.27	$ 14,625.00	
14	128652	PORTABLE CHANGEABLE MESSAGE SIGN (LS)	LS	1	$ 62,131.47	$ 68,499.95	$ 62,131.47	
15	128654	TEMPORARY AUTOMATED END OF QUEUE WARNING SYST	EA	580	$ -	$ -	$ -	
16	128658	END OF QUEUE MONITORING AND WARNING WITH TRUC	EA	30	$ 752.00	$ 829.08	$ 22,560.00	
17	129000	TEMPORARY RAILING (TYPE K)	LF	72,400	$ 14.78	$ 16.30	$ 1,070,150.30	
18	14105	ALTERNATIVE TEMPORARY CRASH CUSHION - TL-3	EA	58	$ 4,211.00	$ 4,642.63	$ 244,237.88	
19	129100	TEMPORARY CRASH CUSHION MODULE	EA	2	$ 7,792.76	$ 8,591.52	$ 15,585.52	
20	129152	TEMPORARY RADAR SPEED FEEDBACK SIGN SYSTEM	EA	4	$ 3,279.18	$ 3,615.30	$ 13,116.73	
21	130100	JOB SITE MANAGEMENT	LS	1	$ 114,738.28	$ 126,498.95	$ 114,738.28	
22	130300	PREPARE STORM WATER POLLUTION PREVENTION PLAN	LS	1	$ 3,270.00	$ 3,605.18	$ 3,270.00	
23	130310	RAIN EVENT ACTION PLAN	EA	15	$ 436.00	$ 500.00	$ 6,540.00	

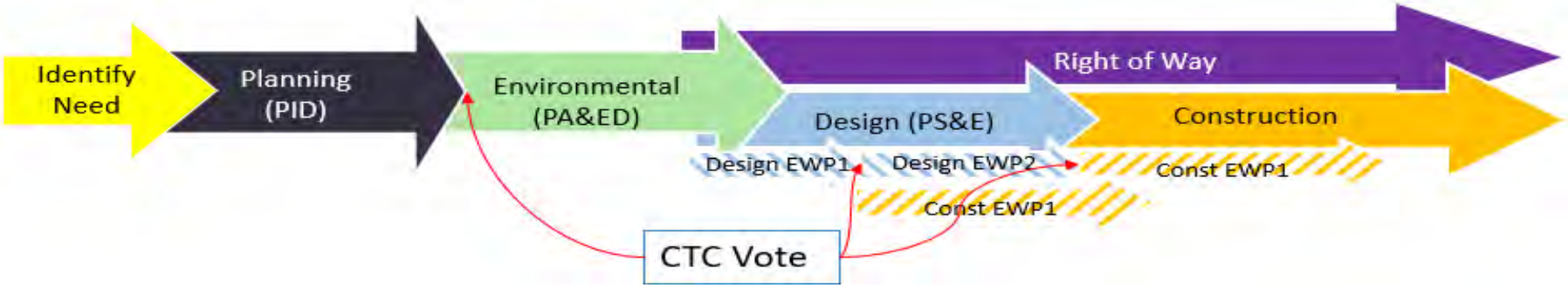
Programming/Allocation

- Programming Identification
- Amend Programming
- Allocation Flexibility

CTC Financial Vote List **May 16-17, 2024**

2.5 Highway Financial Matters

Project No. Allocation Amount Recipient RTPA/CTC County Dist-Co-Rte Postmile	Project Title Location Project Description Project Support Expenditures	PPNO Program/Year Phase Prgm'd Amount Project ID Adv Phase EA	Budget Year Item # Fund Type Program Code	Amount by Fund Type
2.5s.(5)	**State-Administered Multi-Funded SB 1 SCCP/SB 1 LPP (Formulaic) Project On**			**Resolution SCCP-A-2324-07**



CMGC Major Challenges

- Fairly new concept
- Estimate reconciliation
- Support costs
- Misconception

Industry Perspectives on CMGC

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Presented by:

GRANITE

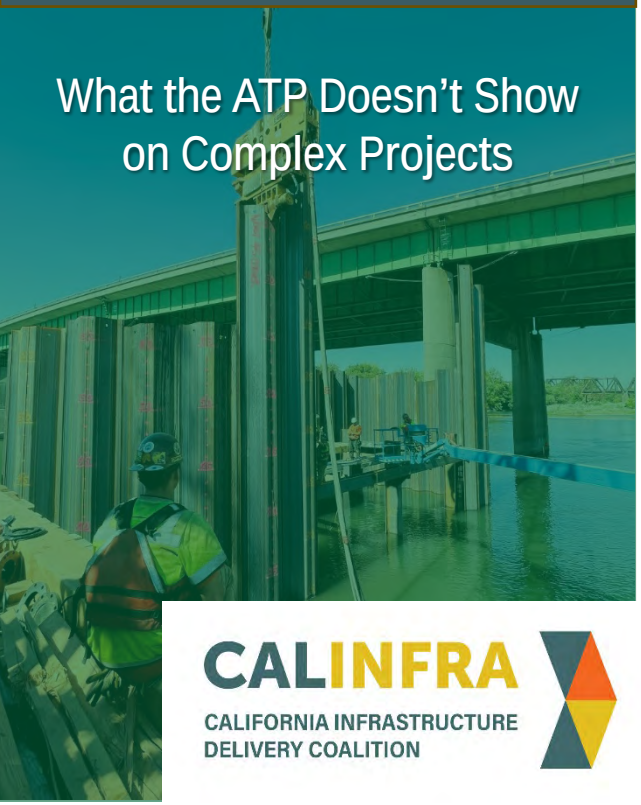
...Transformation Innovationeering

Kiewit

FLATIRON

CMGC Benefits on Complex Work

What the ATP Doesn't Show on Complex Projects



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Innovation

Constructability Reviews:

Lowers Final Cost | Speeds Delivery

Optimizes Staging

Reduces Risk | Avoids Long Lead Material | Matches Permits to Means

Leverages the Knowledge & Experience of the Team (Caltrans, CMGC, ICE)

Risk Mitigation

Identification and Quantification:

Forms Plans to Eliminate & Mitigate Risk in Preconstruction

(Both Caltrans Risk and Construction Risk)

Creates Plans in Preconstruction to Mange Risk in Construction

Eliminates Cost & Schedule Claims | Eliminates or Reduces Change Orders

Cost and Schedule Certainty

Cost & Schedule Validated 3-ways & 3-times:

Third Party Bottom-Up Estimate & Schedule Validation (ICE)

Engineers Estimate Based on Contract Cost Data

(Sometimes May Not be Applicable to Complex Projects)

CMGC Bottom-Up Estimate & Schedule

Risks for Cost and Schedule are Incorporated into ATP

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Does Lowest Bid Mean Lowest Cost

DART Summary Tracking Sheet

GRANITE | Summary

DART No.	Item Description	Realized savings in GMP	Projected ROW savings
Total Innovation Savings (SR99 Project)		($35,256,380.95)	($7,082,176.00)
		Construction Cost	ROW Cost

$42M in scope and R/W savings on SR99

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FLATIRON Kiewit GRANITE

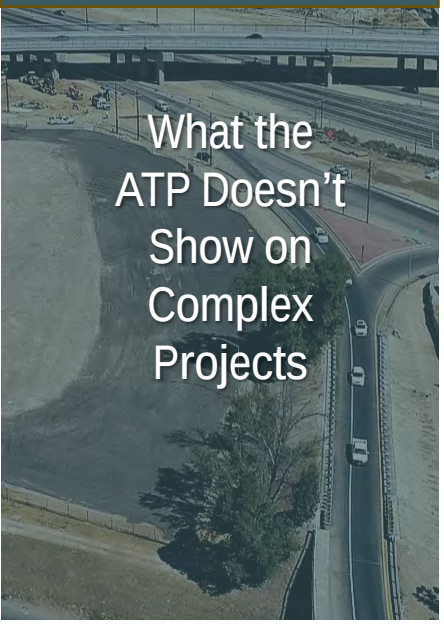
Comparing CMGC to DBB for Total Cost of Delivery

		Original Allocation	AUP/Original Contract Value	Change Orders	Claims	Final Costs
Construction Management General Contractor (CMGC) Projects	**SR-99 Realignment Project (Construction Only)**	**$158,780,000**	**$154,238,833**	**$7,404,663**	**$0**	**$161,909,250**
	Early Work Package (06-2HT114)	$29,000,000	$26,587,424	$2,016,033	-	$28,372,278
	Parent Package (06-2HT104)	$129,780,000	$127,651,409	$5,388,630	-	$133,536,972
	Cosumnes Bridge Replacement Project (Construction Only)	**$164,838,300**	**$149,515,287**	**$8,325,061**	**$0**	**$158,410,740**
	Early Work Package CP6 (03-0F2864)	$67,657,900	$62,554,557	$3,780,689	-	$65,716,371
	Early Work Package CP5 (03-0F2854)	$10,578,000	$9,279,791	$261,949	-	$9,178,975
	Early Work Package CP4 (03-0F2844)	$19,030,300	$16,311,046	$1,206,732	-	$17,503,717
	Early Work Package CP3 (03-0F2834)	$1,655,000	$1,541,834	$20,570	-	$1,565,085
	Early Work Package CP2 (03-0F2823)	$3,457,000	$2,919,312	$286,826	-	$3,164,608
	Early Work Package CP1 03-0F2814)	$11,087,000	$9,389,234	$1,230,980	-	$10,373,880
	Parent Package (03-0F2804)	$51,373,100	$47,519,513	$1,537,315	-	$50,908,104
DBB Projects	**I-5 Pavement Rehabilitation (03-0F5904)**	**$72,399,000**	**$58,639,586**	**$4,995,531**	**$0**	**$61,397,568**
	1-80 Across the Top (03-3797U4)	**$104,588,000**	**$88,422,860**	**$25,807,571**	**$9,400,000**	**$122,278,667**

VALUE TO CALTRANS

- **Transparency and competitive pricing**
- **Maximum innovation opportunities**
- **Comprehensive Risk Management Strategy**

Case Studies



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99 REALIGNMENT
CLINTON TO ASHLAN

Complex Project:
Multiple Funding Sources and Oversight by CHSR and Caltrans
Built Along Existing UPRR Yard & Crossings of UPRR
Significant Long-Lead Utility Relocations and Conflicts
Highly Complex Staging Complex ROW Acquisitions

Preconstruction Innovation:
Staged Construction to Coincide with ROW Acquisition **Saving $2.5M**
Developed a Slip-Formed Gravity Wall Saving **$2.66M**
Restaging of Project **Saving $4.6M** Optimized CRCP Tie-ins Saving **$2.3M**
Preconstruction Coordination with UPRR & AT&T **Saving $6.11M**

Risk Avoidance and Mitigation:
Mitigated Production and Delay Impacts from UPRR
Eliminated Impacts from ROW Acquisition and Challenges
Eliminated CHSR Funding Delay Impacts
Eliminated over 12 months of AT&T Relocation Delays

Cost & Schedule Benefits & Certainty: (Budget for Risks Were Established with ATP)
Delivered Ahead of Schedule
All Change Orders Were Related to Scope Additions and Betterments
Interchange Construction Was Reduced from 18 Months to 6 Months in Preconstruction
Adjustments to Staging and Tie-ins During Preconstruction Saved Over 80 Calendar Days
The Construction Support Savings and ROW Savings is NOT Reflected in Final Costs

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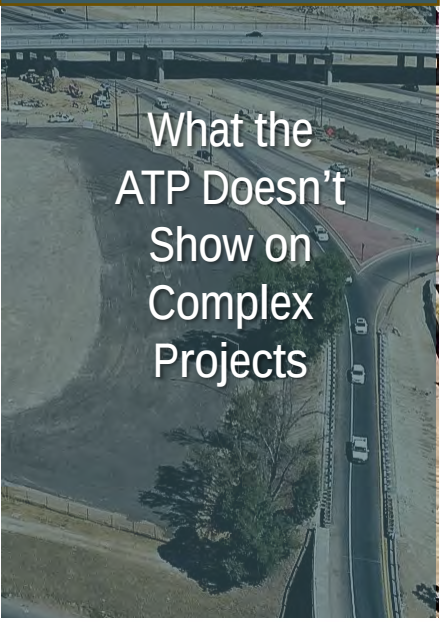
Case Studies



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Consumnes River Bridge Replacements

Complex Project:
Complex Permitting and Environmental Constraints
Highly Complex Staging of a Major Freight Corridor with Phased Construction
Anticipated Relocation of a Major SMUD 245kV Transmission Line and Towers
A ½ Mile of Bridge Construction Over an Uncontrolled Flood Plain and River

Preconstruction Innovation:
Saved Over $33 M in Construction Costs During Preconstruction
Reduced Staging from **3 Phases over 3 years to 2 Phase over 2 years**
Reduced a 3-Span Bridge over UPRR to a Single Span Bridge
Partnership On Permitting Delivered the Impossible in Record Time

Risk Avoidance and Mitigation:
Mitigated Permitting Delays
Reduced Mitigation and Impacts to the Threatened and Endangered Species
Early Engagement of UPRR Mitigated Construction and Design Risk
Alternative Staging Avoided **18+ Months** In Transmission Line Relocation

Cost & Schedule Benefits & Certainty: (Budget for Risks Were Established with ATP)
Delivered Two Years Ahead of Schedule
All Change Orders In EWS were transfers of Parent Project Scope to EWS, Total CO's <1%
Cost Avoided in Relocations of the 245 kV Transmission Line is NOT Reflected in the ATP
The Cost Avoided In Railroad Flagging Time is NOT Reflected in the ATP or Final Costs
The Construction Support Savings and ROW Savings is NOT Reflected in Final Costs

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CMGC Benefits Summary

- **Schedule optimization**

Cosumnes River Bridge Replacement Project

	Design Bid Build	CMGC
Begin Construction	10/15/2020	9/16/2019
End Construction	11/1/2024	4/11/2023

- **Better Cost Certainty During Construction**
- **Assist with permits/3rd party approvals**
- **Quality Design**
- **Innovations**

Project Awards

North Coast Corridor CMGC Project
2023 ASCE Region 9 Outstanding Transportation Project

Project Awards-continued

I-80/I-680/Route 12 Interchange CMGC Project
2023 Solano County Transportation Authority Project of the Year

Project Awards-continued

I-215 Barton Road Interchange Reconstruction- 2021 Honorable Mention Award by International Partnering Institute

Thank you!