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Project Delivery Selection Matrix Meeting Minutes US50 BLUE CREEK SAND DOME

Project: NH 0502-072 / 19495

Meeting Held: April 1, 2013 – Montrose Residency Conference Room
 Video feed to Denver HQ Room 159, Grand Junction Room 308

ATTENDEES:

Participants:	Representing:
Ron Alexander	CDOT Montrose Resident Engineer
Hans Egghart	CDOT Montrose Project Manager
Jason Fullerton	CDOT Montrose Design Engineer
Kathy Freeman	CDOT R3 Right-of-Way
Mike Vanderhoof	CDOT R3 Environmental Manager
Nabil Haddad	CDOT Innovative Contracting
Nancy Lambertson	Muller Engineering Co
Rick Andrew	Yeh & Associates

	DISCUSSION	ACTION ITEMS	DUE
1. Introductions			
2. Project Overview	<p>This project consists of reconstructing US 50 through Blue Creek Canyon, mileposts 121.71 to 124.30 (approximately 4 miles east of the Montrose-Gunnison county line). The roadway will be widened to construct 12-foot travel lanes with 8-foot shoulders. Horizontal alignment curvature will be flattened to improve safety and increase design speed. This will require rock cuts and cantilevered MSE walls throughout the inner canyon. The excavated rock will be used to construct a rock buttress to mitigate slope stability problems near milepost 122.</p>		
3. Project Delivery Selection Overview	<p><i>Overview of Project Delivery Selection:</i> Nabil Haddad (CDOT Innovative Contracting) provided an overview of the project delivery selection process. Nabil explained the Innovative Contracting Project Delivery Selection Approach document. The document includes an overview of three contracting methods including Design-Bid-Build (DBB), Design-Build (DB) and Construction Management/General Contractor (CM/GC), a description of how to develop Project Goals, a Delivery Selection Matrix, and information on how to assess Risk Opportunities/Obstacles for a project.</p> <p>Nabil cautioned the participants not to have any pre-conceived expectations regarding the outcome of the project delivery selection process.</p> <p>Ron Alexander indicated that the amount of the construction budget is dependent on the availability of RAMP funding; \$20M with RAMP, 5M-8M without.</p>		

Project Description Checklist

The following items should be considered in the project description as applicable. Other items can be added if they influence the project delivery decision. Relevant documents can be added as appendices.

- Project Name – US50 BLUE CREEK SAND DOME
- Location – US50 MP 121.7 to MP 124.3
- Estimated Budget – Design Phase is already funded. Construction budget is unknown at this time. If RAMP funds are provided, Construction budget could be \$20M, if not, \$5M-8M.
- Estimated Project Delivery Period – Ad late 2014, Construction 2015, 2016
- Required Delivery Date (if applicable) – DECEMBER 2016 if RAMP funding is provided
- Source(s) of Project Funding
- Project Corridor - US50
- Major Features of Work – Reconstruction, realignment, Horizontal alignment curvature will be flattened to improve safety and increase design speed. This will require rock cuts and cantilevered MSE walls throughout the inner canyon. The excavated rock will be used to construct a rock buttress to mitigate slope stability problems near milepost 122.
- Major Schedule Milestones
 - Risk Assessment
 - Project Delivery Selection
 - Contractor RFP, including short list and selection
 - FIR
 - FOR
 - Guaranteed Maximum Price negotiation
 - Begin Construction
 - End Construction
- Major Challenges (as applicable)
 - Right of Way, Utilities, and/or Environmental Approvals
- Main Identified Sources of Risk
 - Blasting – 4 hour roadway closures permissible. Production rates for rock excavation will be slow unless SH50 can be closed 10 hrs/day.
 - Slope stability mitigation constructability
 - Lack of CDOT experience with the CM-GC Process
 - Traffic Control during rock blasting
- Safety Issues
 - Blasting
 - 25-ft deep excavation for rock buttress
- Sustainable Design and Construction Requirements
 - Re-use excavated rock to build rock buttress to mitigate slope stability near MP 122.

Project-Specific Goals (Non-Prioritized)

1. Construction Completed by December, 2016. (RAMP funding requirement)
2. Improve long-term operations and safety
3. Provide an aesthetically pleasing project.
4. Maximize safety of workers and traveling public during construction.
5. Demonstrate wise use of funds. Facilitate and foster collaboration, communication and partnership with all stakeholders.
6. Provide 12 ft lanes with 8 ft shoulders with a design speed of 40 to 45 mph. (Maximize mobility and safety through the canyon.

Project Constraints

There are potential aspects of a project that can eliminate the need to evaluate one or more of the possible project delivery methods. General constraints are provided, but it is critical to identify constraints that are project specific.

Constraints

- Source & Availability of Funding
- Schedule constraints
- Federal, state, and local laws
- Third party agreements with BLM - ROW,
- Constructability of Rock Buttress
- Balancing Costs of Rock Ex against MSE Walls
- Contractors wish to close the road for extended time for Blasting clean-up

4. Project Delivery Selection Matrix

The group discussed each of the four Primary Factors of the Project Delivery Selection Matrix and modified the matrix to include scores for 'least appropriate', 'appropriate', and 'most appropriate' delivery method for Design-Bid-Build and CM/GC. The final matrix is attached to these minutes showing each score. CM/GC was determined to be most appropriate for all four primary factors thus the secondary factors were not considered.

CDOT will present the decision of the Project Delivery Selection group to FHWA for their approval.

Project Delivery Selection Matrix Summary

Determine the factors that should be considered in the project delivery selection, discuss the opportunities and obstacles related to each factor, and document the discussion on the following pages. Then complete the summary below.

PROJECT DELIVERY METHOD OPPORTUNITY/OBSTACLE SUMMARY			
	DBB	DB	CM/GC
Primary Evaluation Factors			
1. Delivery Schedule	++	-	+
2. Project Complexity & Innovation	++	-	++
3. Level of Design	+	X	++
4. Cost	5M++, 20M +		5M+, 20M++
5. Perform Initial Risk Assessment			
Secondary Evaluation Factors			
6. Staff Experience/Availability (Owner)	++		+
7. Level of Oversight and Control	++		+
8. Competition and Contractor Experience	+		++

++	Most appropriate delivery method
+	Appropriate delivery method
-	Least appropriate delivery method
X	Fatal Flaw (discontinue evaluation of this method)
NA	Factor not applicable or not relevant to the selection

Project Delivery Selection Matrix Summary Conclusions and Comments:

RAMP Funding:

- If RAMP funding is provided such that the construction budget is \$20M, then CM-GC is the preferred method of project delivery.
- If construction funds are limited to \$5M to \$8M, Design-Bid-Build is the preferred method.
- The Design-Build alternative was eliminated because the project design is too far advanced to realize any benefit from the D-B method.
- CM-GC requires much more oversight by the CDOT Project Manager to avoid runaway escalation of design costs by excessive iterations of design alternatives requested by the contractor.

1) Delivery Schedule

Delivery schedule is the overall project schedule from scoping through design, construction and opening to the public. Assess time considerations in getting the project started or funding dedicated and assess project completion importance.

DESIGN-BID-BUILD	
Requires time to perform sequential design and procurement, but if design time is available has the shortest procurement time after the design is complete.	
Opportunities	Obstacles
Schedule is more predictable and more manageable	Design and construction schedules can be unrealistic due to lack industry input
Elements of design can be advanced prior to permitting, construction, etc.	Errors in design lead to change orders and schedule delays
Milestones easier to define	
ROW/Environmental clearances are already in process and can be completed within schedule.	

DESIGN-BUILD	
Can get project under construction before completing design. Parallel process of design and construction can accelerate project delivery schedule; however, procurement time can be lengthy due to the time necessary to develop an adequate RFP, evaluate proposals and provide for a fair, transparent selection process.	
Opportunities	Obstacles
Shifting schedule risk to DB team	Undefined events or conditions found after procurement, but during design can impact schedule and cost

CM/GC	
Quickly gets contractor under contract and under construction to meet funding obligations before completing design. Parallel process of development of contract requirements, design, procurements, and construction can accelerate project schedule. However, schedule can be slowed down by coordinating design-related issues between the CM and designer and by the process of reaching a reasonable Guaranteed Maximum Price (GMP).	
Opportunities	Obstacles
Continuous constructability review and VE	GMP negotiation can delay the schedule
Early identification and resolution of design and construction issues (e.g.ROW, and earthwork)	Designer-contractor-agency disagreements can add delays
	Strong agency management is required to control costs and schedule

Delivery Schedule Summary

	DBB	DB	CM/GC
1. Delivery Schedule	++	-	+

Notes and Comments:

Due to clearances being already in process, DBB should not impact schedule

2) Project Complexity & Innovation

Project complexity and innovation is the potential applicability of new designs or processes to resolve complex technical issues.

DESIGN-BID-BUILD	
Allows CDOT to fully resolve complex design issues and qualitatively evaluate designs before procurement of the general contractor. Innovation is provided by CDOT/Consultant expertise and through traditional owner directed processes such as VE studies and contractor bid alternatives.	
Opportunities	Obstacles
CDOT can have more control of design of complex projects	Innovations can add cost or time and restrain contractor's benefits
Aids in consistency and maintainability	No contractor input to optimize costs
Complex design can be resolved and competitively bid	
Provides more time for CDOT Design Review	

DESIGN-BUILD	
Incorporates design-builder input into design process through best value selection and contractor proposed Alternate Technical Concepts (ATCs) – which are a cost oriented approach to providing complex and innovative designs. Requires that desired solutions to complex projects be well defined through contract requirements.	
Opportunities	Obstacles
Constructability and VE inherent in process	Quality assurance for innovative processes are difficult to define in RFP
Sole point of responsibility	Sole point of responsibility
	Little control over construction methods

CM/GC	
Allows independent selection of designer and contractor based on qualifications and other factors to jointly address complex innovative designs through three party collaboration of CDOT, designer and Contractor. Allows for a qualitative (nonprice oriented) design but requires agreement on GMP.	
Opportunities	Obstacles
Highly innovative process through 3 party collaboration	Innovations can add cost or time
VE inherent in process and enhanced constructability	Scope additions can be difficult to manage
Can take to market for bidding as contingency	Process depends on designer/CM relationship

Project Complexity & Innovation Summary

	DBB	DB	CM/GC
2. Project Complexity & Innovation	++	-	++

Notes and Comments:

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3) Level of Design

Level of design is the percentage of design completion at the time of the project delivery procurement

DESIGN-BID-BUILD	
100% design by CDOT, with CDOT having complete control over the design.	
Opportunities	Obstacles
The scope of the project is well defined through complete plans and contract documents	Can reduce the level of constructability since the contractor is not bought into the project until after the design is complete
Project/scope can be developed through design	Owner design errors can result in a higher number of change orders, claims, etc.
Well-known process to the industry	

DESIGN-BUILD	
Design advanced by CDOT to the level necessary to precisely define contract requirements and properly allocate risk (typically 30% or less).	
Opportunities	Obstacles
Contractor involvement in early design, which improves constructability and innovation	Must have very clear definitions and requirements in the RFP because it is the basis for the contract
	If design is too far advanced it will limit the advantages of design-build
	Less agency control over the design

CM/GC	
Can utilize a lower level of design prior to procurement of the CM/GC and then joint collaboration of CDOT, designer, and CM/GC in the further development of the design. Iterative nature of design process risks extending the project schedule.	
Opportunities	Obstacles
Contractor involvement in early design improves constructability	Three party process can slow progression of design
CDOT controls design	
Design can be used for DBB if the price is not successfully negotiated.	If design is too far advanced it will limit the advantages of CMGC or could require design backtracking
CDOT has greater control to select Contractor, (ie Contractor with expert blasting experience.	

Level of Design Summary

	DBB	DB	CM/GC
3. Level of Design	++	X	++

Notes and Comments:

The design is too far advanced to realize any benefit from Design/Build.

4) Cost

Project cost is the financial process related to meeting budget restrictions, early and precise cost estimation, and control of project costs.

DESIGN-BID-BUILD	
Competitive bidding provides a low cost construction for a fully defined scope of work. Costs accuracy limited until design is completed. More likelihood of cost change orders due to contractor having no design responsibility.	
Opportunities	Obstacles
Construction costs are contractually set before construction begins	More potential of cost change orders due to owner design responsibility

DESIGN-BUILD	
Designer-builder collaboration and ATCs can provide a cost-efficient response to project goals. Costs are determined with design-build proposal, early in design process. Allows a variable scope bid to match a fixed budget. Poor risk allocation can result in high contingencies.	
Opportunities	Obstacles

CM/GC	
CDOT/designer/contractor collaboration to reduce risk pricing can provide a low cost project however non-competitive negotiated GMP introduces price risk. Good flexibility to design to a budget.	
Opportunities	Obstacles
Early contractor involvement can result in construction cost savings through VE and constructability	Escalation of design costs by excessive iterations of design alternatives requested by the contractor.
Integrated design/construction process can provide a cost efficient strategies to project goals	Difficulty in GMP negotiation introduces some risk that GMP will not be successfully executed requiring aborting the CM/GC process

Cost Summary

	DBB	DB	CM/GC
4. Cost	++		++

Notes and Comments:

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5) Initial Risk Assessment

Risk is an uncertain event or condition that, if it occurs, has a negative effect on a project’s objectives. Risk allocation is the assignment of unknown events or conditions to the party that can best manage them. An initial assessment of project risks is important to ensure the selection of the delivery method that can properly address them. An approach that focuses on a fair allocation of risk will be most successful. Refer to risk discussion and checklists in appendix B.

DESIGN-BID-BUILD	
Risk allocation for design-bid-build best is understood by the industry, but requires that most design-related risks and third party risks be resolved prior to procurement to avoid costly contractor contingency pricing and change orders and claims.	
Opportunities	Obstacles
Risks managed separately through design, bid, build is expected easier	Limited industry input in contract risk allocation
Risk allocation is most widely understood/used	Low-bid related risks

DESIGN-BUILD	
Provides opportunity to properly allocate risks to the party best able to manage them, but requires risks allocated to design-builder to be well defined to minimize contractor contingency pricing of risks.	
Opportunities	Obstacles

CM/GC	
Provides opportunity for CDOT, designer, and contractor to collectively identify and minimize project risks, and allocate risk to appropriate party. Has potential to minimize contractor contingency pricing of risk, but can lose the element of competition in pricing.	
Opportunities	Obstacles
Contractor can have a better understanding of the unknown conditions as design progresses	Disagreement among Designer-Contractor-Owner can put the process at risk
Contractor will help identify and manage risk	Strong agency management is required to negotiate/optimize risks
Avoids low-bid risk in procurement	Designer-contractor-agency disagreements can add delays

Initial Risk Assessment Summary

	DBB	DB	CM/GC
5. Initial Risk Assessment			

Notes and Comments:

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6) Staff Experience/Availability

Owner staff experience and availability as it relates to the project delivery methods in question.

DESIGN-BID-BUILD	
Technical and management resources necessary to perform the design and plan development. Resource needs can be more spread out.	
Opportunities	Obstacles
Agency, contractors and consultants have high level of experience with the traditional system	

DESIGN-BUILD	
Technical and management resources and expertise necessary to develop the RFQ and RFP and administrate the procurement. Concurrent need for both design and construction resources to oversee the implementation.	
Opportunities	Obstacles

CM/GC	
Strong, committed CDOT project management resources are important for success of the CM/GC process. Resource needs are similar to DBB except CDOT must coordinate CM's input with the project designer and be prepared for GMP negotiations.	
Opportunities	Obstacles
Agency can improve efficiencies by having more project managers on staff rather than specialized experts	Strong committed owner project management is important to success
	Existing staff may need additional training to address their changing roles
	Agency must learn how to negotiate GMP projects

Staff Experience/Availability Summary

	DBB	DB	CM/GC
6. Staff Experience/Availability	++		+

Notes and Comments:

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7) Level of Oversight and Control

Level of oversight involves the amount of agency staff required to monitor the design or construction, and amount of agency control over the delivery process

DESIGN-BID-BUILD	
Full control over a linear design and construction process.	
Opportunities	Obstacles
Oversight roles are well understood	Increased likelihood of claims due to owner design responsibility

DESIGN-BUILD	
Less control over the design (design desires must be written into the RFP contract requirements). Generally less control over the construction process (design-builder often has QA responsibilities).	
Opportunities	Obstacles

CM/GC	
Most control by CDOT over both the design, and construction, and control over a collaborative owner/designer/contractor project team	
Opportunities	Obstacles
Getting input from construction to enhance constructability and innovation	Agency must have experienced staff to oversee the CM/GC
	Higher level of cost oversight required

Level of Oversight and Control Summary

	DBB	DB	CM/GC
7. Level of Oversight and Control	++		+

Notes and Comments:

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8) Competition and Contractor Experience

Competition and availability refers to the level of competition, experience and availability in the market place and its capacity for the project.

DESIGN-BID-BUILD High level of competition, but GC selection is based solely on low price. High level of marketplace experience.	
Opportunities	Obstacles
Promotes high level of competition in the marketplace	Risks associated with selecting the low bid (the best contractor is not necessary selected)
Transparency and fairness	No contractor input into the process

DESIGN-BUILD Allows for a balance of price and non-price factors in the selection process. Medium level of marketplace experience.	
Opportunities	Obstacles

CM/GC Allows for the selection of the single most qualified contractor, but GMP can limit price competition. Low level of marketplace experience.	
Opportunities	Obstacles
Allows for qualifications based contractor procurement	Requires a strong project manager from the agency
	Currently there is not a large pool of contractors with experience in CMGC, which will reduce the competition and availability

Competition and Contractor Experience Summary

	DBB	DB	CM/GC
8. Competition and Contractor Experience	+		++

Notes and Comments:

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