

Special Experimental Project No. 14 (SEP-14) Alternative Contracting Work Plan

for

303 MA 112 H7875 010 (SR303L) PEORIA AVENUE TO WADDELL ROAD NEW  
FREEWAY CONSTRUCTION

and

303 MA 114 H7876 010 (SR303L) WADDELL ROAD TO MOUNTAIN VIEW

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## **A. INTRODUCTION:**

The Arizona Department of Transportation (ADOT) submits this work plan for review and approval for the use of the Construction Manager at Risk (CMAR) alternative contracting method to design and construct a segment of State Route 303 (SR 303L) under the provisions of Special Experimental Project No. 14 (SEP 14). The Department has traditionally used the design-bid-build method of highway construction.

State Route 303L is a 40 mile long planned new freeway in the western and northwestern portions of the Greater Phoenix Metropolitan Area. The final configuration will make an arc through the West Valley to connect 1-17 with 1-10, and ultimately, the proposed SR 801 in Goodyear. Currently, SR 303L extends for more than 21 miles from 1-10 in Goodyear to Happy Valley Parkway in Peoria, operating primarily as a two-lane roadway from 1-10 to US 60 (Grand Avenue) and becoming a four-lane divided highway from US 60 to Happy Valley Parkway.

The construction under this proposed CMAR work plan will reconstruct SR 303L from Peoria Avenue to Mountain View Boulevard. The design of this segment of SR 303L is ongoing under two separate design contracts; the first from Peoria Avenue to Waddell Road and the second from Waddell Road to Mountain View Boulevard. The Department proposes to undertake the CMAR process with a project team consisting of Department staff along with the two design consultants and the Construction Manager at Risk.

A project location map is Attachment A.

## **B. PURPOSE:**

The Department is authorized under AR.S.28-7366 (see Attachment B) to utilize alternative contracting methods to deliver projects listed in the ADOT Five-Year Transportation Program.

### **What is the CMAR Process?**

The CMAR alternative contracting method is an innovative process that is being widely used by local governments and the private sector throughout the country. It is a process that allows selection of a contractor based on qualifications during the project development process. Once selected the CMAR becomes a collaborative member of the project team. As the contract documents are developed, the CMAR and Department will work together to negotiate a Guaranteed Maximum Price (GMP). If the GMP is accepted by the Department and a construction contract executed, the CMAR will construct the project for the GMP or less. If the actual cost of the work exceeds the GMP, the contractor is obligated to complete the work at no additional cost to the Department.

If the Department and the CMAR cannot agree on a GMP, the Department has the option to advertise the project for bids. Use of the CMAR alternative delivery method will allow the Department to take advantage of the contractor's expertise during the design phase of the project. This is an advantage to the Department whether or not the Department and the CMAR are able to agree upon a GMP.

The CMAR method is expected to foster a cooperative owner-designer-contractor effort to develop and review design documents, to identify potential cost or time saving methods, to work with the local community and to complete construction of the roadway improvements. To accomplish this objective, the CMAR, the designer, and the Department commit to a high degree of collaboration throughout the project development process.

The CMAR's involvement in the design of the project provides a means to allocate the risk between the owner and the Department through the negotiation of the GMP, and should eliminate or greatly reduce change orders during construction. Proactive participation by the CMAR during the design process will produce substantial benefit by providing constructability reviews, using the CMAR's best efforts to see that the project can be constructed in the best, most expeditious and economical manner consistent with the interests of the Department.

Additionally, using the CMAR method allows the project to be designed to the specific strengths of the contractor who is expected to perform the construction work. Rather than designing for an average equipment spread or type of crew, the work can be planned based on the actual equipment and crews that will be used on the project.

In summary, the aim of the CMAR alternative contracting method is to engage construction expertise in the design process to enhance the constructability and to manage risk.

### **Competition in the CMAR Process:**

While the CMAR Preconstruction Services and Construction contracts are awarded by means other than low bid, there are many opportunities for competition in the process. The selection of the CMAR is a highly competitive process based on qualifications rather than price. The Department received thirteen Statements of Qualifications for its first federally funded CMAR project.

Even though the CMAR will not compete directly to be the low bidder, each of its subcontractors and suppliers will. The CMAR will request sealed quotes from each prequalified subcontractors for each GMP Proposal that they submit. The CMAR, subcontractors and suppliers have a more in-depth understanding of the project because they will be involved throughout design. The process reduces the cost and the risk that contractors often build into their bids when aspects of the work are unclear. In fact, one of the major advantages of the CMAR process is that both the designer and the CMAR are selected based on qualifications, while competitive bidding is preserved at the subcontractor level.

The development of the GMP with an open book approach allows the Department to ensure

that the public transportation facilities are constructed with a high standard of quality and at a reasonable price. The Department will develop an independent cost estimate for the work, considering material costs, labor, equipment, and fees. Additionally, an independent third party will provide an estimate for the work. These estimates will be compared with the CMAR's GMP proposal, item by item. If the GMP deviates from the estimates, the CMAR must provide backup documentation to validate their unit prices.

In addition, working directly with contractors throughout the design of CMAR projects, the Department can see first hand how contractors determine the cost of a construction project. This provides a significant benefit to the Department that will continue beyond the CMAR projects.

### **Why evaluate the CMAR Process?**

The CMAR alternative contracting method is evaluated under the SEP 14 process because it is nontraditional in that it deviates from the competitive bidding process.

As part of the evaluation of the CMAR process, the Department will be able to contrast the perceived lack of price competition on CMAR projects with the potential cost savings based on the relationship developed between the owner, designer and CMAR. This relationship throughout the design and construction of the project can provide the best design, the best value and the best price.

In addition to comparing the CMAR process with the design, bid, built process that the Department typically uses for construction of highway projects, the CMAR process will be compared with other alternative delivery methods. The Department will evaluate the value added on CMAR projects versus Design Build and A+B projects to learn the benefits and disadvantages of the different alternative delivery methods. The Department's initial conclusion is that the CMAR process is the alternative delivery method with the most merit.

In order to effectively evaluate the CMAR process, the Department needs to use the CMAR alternate delivery method on different types of highway projects with different contractors. The delivery method may prove to be more, or less, effective for certain types of construction projects. In addition, each contracting firm will provide a different perspective to the process. If the sample is too small, it is possible that the evaluation will be skewed, either positively or negatively, based on project or contractor specific experiences.

### **Why choose this project to evaluate the CMAR process?**

The Department determined that this 303L project is ideally suited for the purposes of evaluation of the CMAR process for many reasons. The construction of the proposed SR303L is the Department's first proposed Federal Aid CMAR project involving an Urban Freeway. The relatively large size of this project enhances its complexity and plays an important role in the evaluation.

The project consists of the construction of a new freeway facility within the existing high volume two-lane SR 303L corridor. The existing corridor is a major trucking and commuter corridor and has a current ADT of 20,000.

A major challenge on this project will be to move approximately 1,200,000 cubic yards of material from the north end of the project to the south end. There are no frontage roads so this material will need to be moved within the same corridor, if not in the same roadway, as the travelling public. The Bell Road, Greenway Road, Waddell Road and Cactus Road crossroads will also be impacted by the earthwork.

The project is located in the City of Surprise. Surprise is an engaged and vocal community and the Department believes that a CMAR with positive relationships with the local jurisdiction, residents and utilities will minimize impacts to the community and facilitate the smooth construction of this complex project.

The Department believes that CMAR input during the design phase will be invaluable on this project. The CMAR will provide value to the project by evaluating the most efficient phasing of the project while still maintaining traffic on the existing two-lane 303L and some or all of the cross streets.

As an added benefit, design costs for completion of the construction phasing plan may be reduced as a result of contractor input. Typically designers undergo an iterative phasing design process, with input from technical groups, the Department's Construction District, and the project managers. Contractors develop phasing plans independently during the bidding process and their phasing may be significantly different from the plan proposed by the design team. In developing their own phasing, contractors have limited time and information during the bidding period. As a result their bids may not be based on the most efficient construction phasing. By using the resources and knowledge of the CMAR during development of the phasing plan, the number of iterations to reach a final plan will be significantly reduced. The final phasing used in construction will have been developed by the team including the CMAR and will be based on all of the project development background information and the CMAR's construction expertise.

The SR303L construction under this work plan will be the Department's fourth CMAR project, (see Attachment C). The first two CMAR projects were state funded and the Department is currently negotiating the preconstruction services contract on its first federally funded CMAR project. The Department continues to incorporate the lessons learned with each CMAR alternative delivery project to refine the process.

The Department's reasons for choosing a project for the CMAR process will dictate when in the development process the CMAR's input will be the most valuable. For example, if the Department wants contractor input in selecting structure types or alignments then the CMAR should be brought into the project team prior to finalizing the project alignment and structure selection. If however, the contractor's input is needed for construction phasing, traffic control, or earthwork balance, then the CMAR's input will be most valuable later in the project development process. For this 303L project, the Department proposes to select the CMAR and include them on the project team between the Stage III and IV submittals. At this point

there will be enough information available so that the CMAR can immediately become a valuable part of the project development team.

The two design consultants serving on the project team are committed to working together to produce a coherent design, combining both segments of the SR 303L into a unified project that is seamless in concept and functionality. The progress meetings for the two designs will be held consecutively and each meeting will be attended by both design teams and the CMAR. Construction plans including traffic control schemes will be consistent throughout both projects. The scopes of work for both design firms will be amended to include requirements for the designers for both projects to work together and with the CMAR.

### **C. SCOPE:**

#### **Project Description:**

The scope of work under this workplan will include the design and reconstruction of SR 303L between Peoria Avenue and Mountain View Boulevard with three general purpose lanes in each direction and auxiliary lanes between the traffic interchanges. Overpass bridges will be constructed at Cactus and Waddell Roads, and an underpass bridge will be constructed at Greenway Road. The ultimate facility will include four general purpose lanes plus, a High Occupancy Vehicle Lane, and an auxiliary lane between the interchanges in each direction. An overall reconstruction concept drawing is attached.

SR303L from Peoria Avenue to Waddell Road, approximately 2-miles in length, is currently at the 60percent design stage. It is being designed for the Department by Ritoch-Powell and Associates. The construction costs are expected to be approximately \$60,000,000. This segment of SR303L is expected to require a significant amount (approximately 1.2 million cubic yards) of borrow material.

SR303L from Waddell Road to Mountain View Boulevard, approximately 3.6 miles in length, is currently at the 60-percent design stage. The designer is Premier Engineering. The construction costs are expected to be approximately \$94,000,000. SR303L between Waddell Road and Mountain View Boulevard is expected to generate enough waste material to provide the material required between Peoria Avenue and Waddell Road.

By using the CMAR alternative delivery method, the Department proposes to select one CMAR to participate in the design and ultimately the construction of both design projects. The CMAR will be able to balance the earthwork, effectively phase the project to limit double handling of the excavation, reduce the impacts to the motoring public, the surrounding businesses and residents, and avoid any conflicts, delays, and change orders that might occur if separate construction contracts were let on adjacent segments of the highway.

The CMAR will be tasked with recommending construction sequencing, maintenance of traffic options, earthwork balance, and construction methods. This freedom will allow the CMAR to aid in developing a project that will best use the contractor's abilities and equipment

and limit the impacts to the traveling public.

**CMAR Process Description:**

The Department will advertise for Statements of Qualifications (SOQs) and select the CMAR in accordance with ARS 28-7366. A general description of the process follows:

The Department will advertise for SOQs from interested, prequalified contractors. Each contractor proposing on the CMAR project will submit its SOQ following the format required by the Department.

Based on an evaluation of the SOQs, the selection team will invite firms to participate in oral interviews. Interviews will be held with at least the number of firms on the final list and not more than the number on the final list plus two.

Combined scoring from the SOQs and the oral interviews will determine the rankings on the final list. The Department will enter into negotiations with the highest ranked firm on the final list for a Preconstruction Services Contract. During the design phase of the projects, the CMAR will be compensated in accordance with ARS 28-7366. The highest ranked firm will provide a list of specific billable rates that it expects to use during the Preconstruction Phase of the project and these rates will be negotiated with the Department. The Preconstruction Services Contract will be paid by the hour at the negotiated billing rates for each job classification required.

If the Department is not able to negotiate a satisfactory contract with the highest ranked firm on the final list, the Department may undertake negotiations with the next ranked firm on the final list.

The Department has the authority to award the Preconstruction Services Contract and to reject any and all proposals. If a proposal is rejected, the contractor will be notified in writing of the reason for the rejection.

Under the Preconstruction Services Contract, the selected CMAR will be expected to perform the following tasks (list is illustrative and not intended to be all inclusive):

- Coordinate with the design consultants
- Prepare a construction management plan for the combined construction projects
- Prepare a CPM schedule for the combined projects
- Attend regularly scheduled progress team meetings with both design teams
- Review design developed construction documents and make suggestions
- Provide suggestions to improve efficiency and save construction or long-term operational costs
- Provide a cost model for the entire project within 30 days of NTP for the Preconstruction Services Contract and at each subsequent stage of project development

- Provide constructability reviews
- Evaluate and suggest construction phasing, sequencing and site logistics
- Identify long lead-time procurement items
- Provide bidability reviews
- Permitting, subcontractor preparation and packaging
- Provide a GMP

## **GMP PROPOSAL REVIEW AND APPROVAL**

1. The CMAR shall meet with the Project Managers and Design Consultants to review any GMP Proposal(s) and the written statement of its basis. In the event the Project Managers or Design Consultants discover inconsistencies or inaccuracies in the information presented, the CMAR shall make adjustments as necessary to the GMP Proposal, its basis or both.
2. The GMP Proposal and GMP may include allowances if they are agreed to by the project team. Allowances are used to account for the cost of anticipated increases in project quantities or work. Allowances provide a means to manage risk for the Department and the CMAR. Items for which an allowance may apply must be identified, in advance, in the GMP. The dollar amount of the allowance must be established, in advance, in the GMP. No new allowances may be added after acceptance of the GMP by the Department. Allowances may not be reallocated to any other item, and there is no payment for unused allowances.

The Department has established three types of allowances on previous CMAR projects:

- a) Fixed allowances are used to establish the upper limit that the Department will pay for the corresponding item of work. For example, if there is a fixed allowance for 1,000 linear feet of saw cutting, the Department may pay the CMAR up to 1,000 linear feet of saw cutting in addition to the quantity in the GMP Item Schedule.
- b) Open allowances are used to designate those allowances without an upper limit for a corresponding item of work. The Department may pay the approved quantity of the corresponding item in excess of the GMP Item Schedule. For example, if there is an open allowance for geotextile and the Department directs the CMAR to place more geotextile than what is included in the GMP Item Schedule, the Department will pay for the full amount placed.
- c) Provisional allowances establish an upper limit that the Department may pay for work, identified in the Preconstruction Phase that may be required on the project under certain circumstances. For example, a provisional allowance may be established for the excavation of unsuitable material if the design geotechnical information indicates that it may be required.

3. Upon receipt of any GMP Proposal from the CMAR, the Department may submit the same documents that were used by the CMAR in developing the GMP to an independent third party or to a Design Consultant for review and verification.
4. If the GMP Proposal is greater than the Department's estimate, the Department may require the CMAR to reconfirm its GMP Proposal. The CMAR may be requested to, or may, at its own discretion, submit a revised GMP Proposal for consideration by the Department. At that time the Department may do one of the following:
  - a. Accept the CMAR's original or revised GMP Proposal, if within the Department's budget, without comment.
  - b. Accept the CMAR's original or revised GMP Proposal that exceeds the Department's budget, and indicate in writing to the CMAR that the Project Budget has been increased to fund the differences.
  - c. Reject the CMAR's original or revised GMP Proposal because it exceeds either or both the Department's budget and the independent estimate, in which event, the Department may terminate the Preconstruction Services Contract and/or elect to not enter into a separate construction contract with the CMAR.
5. If design changes are required during review and negotiation of the GMP Proposals, the Department may authorize and cause the Design Consultant to revise the Construction Documents to the extent necessary. Such revised Construction Documents will be furnished to the CMAR and the Project Manager for review. The CMAR shall promptly notify the Project Manager if any such revised Construction Documents are inconsistent with the agreed upon revisions.

The Department is not obligated to have the CMAR construct the project, the CMAR has no right to construct the project, and the CMAR has no claim against the Department if the Department elects to terminate the project or to advertise the project for bid through the Department's construction bidding process. If the Department elects to bid the project, the CMAR will not be allowed to submit a bid.

The Design Phase and the Construction Phase are not mutually exclusive in timing. The Construction Phase may begin before all activities of the Design Phase are complete. However, no construction activities shall begin until the site has been cleared by the Department's Environmental, Utility, and Right-of-Way Sections. Regardless of when or whether the Construction Phase begins, the CMAR will remain obligated to complete the Preconstruction Services Contract.

#### **D. SCHEDULE:**

The CMAR process will have the following steps:

Step 1: Preparation of the Request for Statements of Qualifications (SOQ): (estimated time:

one month)

A Request for SOQs will be developed by the Department. The Request for SOQs from the Department's first federally-funded CMAR project will be used as a template. The template will be updated to include any applicable standards that may have changed since the last project and to address these specific projects. As part of the Request for SOQs the Department will provide all of the project information developed to date. This will include the 60-percent design plans, Traffic Report, Initial Materials Design Report, and existing environmental documentation.

**Step 2: Advertisement and Selection of the CMAR: (estimated time: three months)**

The request for SOQs will be advertised for a minimum of four weeks. The Selection Team will have approximately two weeks to review the SOQs and determine which firms to invite for interviews. The firms submitting SOQs will be notified if they have been selected for interviews or not. Those contractors invited for oral interviews will be given approximately one week to prepare their presentations. The final list will be announced within five business days of the last oral interview. The Department will negotiate and execute the Preconstruction Services Contract.

**Step 3: Design/Preconstruction Services Phase: (estimated time: three to six months)**

Preconstruction Services will be initiated upon execution of the Preconstruction Services Contract by the Department and the CMAR. The CMAR will prepare cost models (estimates) within 30 days of NTP and at each subsequent stage of design. When the CMAR is comfortable that they can construct the project for the amount in the cost model, or less, they will submit a Guaranteed Maximum Price Proposal.

**Step 4: Construction Phase: (estimated time: twelve to twenty four months)**

Once the Department and the CMAR agree upon a GMP, all required clearances are completed, and Federal concurrence has been received, the Department will recommend the GMP for award at a State Transportation Board meeting. Once the State Transportation Board awards the construction contract for the GMP or less, the CMAR may begin construction of the project.

Completion of the entire project is expected to be in mid to late 2011. Evaluation reports will be prepared as noted below in the reporting section.

**Selection Team:**

The SOQs and oral interviews will be evaluated by a Selection Team composed of a minimum of three individuals. ARS 28-7366 states that:

- Selection Team members may be Department employees or outside consultants
- At least half of the Selection Team shall be engineers or architects registered in the State of Arizona.
- At least one member of the Selection Team must be a senior management employee

- of a licensed contractor who is not involved in the project.
- Any architect or engineer on the Selection Team that is not a Department employee shall not be otherwise involved in the project.

The FHWA will be given the option of including a representative on the Selection Team.

### **Evaluation of SOQs and Oral Interviews:**

The Department has developed selection procedures in order to provide a balanced assessment of the SOQs and oral interviews. Evaluation criteria will be tailored to each project. The evaluation criteria and the associated points used to evaluate the SOQs will be included in the Request for Statements of Qualifications.

Example selection criteria follow:

- Qualifications of the firm/consortium
- Experience of key personnel (Resumes to be provided in SOQ)
- Project understanding and approach including public relations
- Firm's overall approach to safety
- Other miscellaneous project specific criteria

The oral interview process will be defined in the Request for SOOs

### **Scoring:**

All responsive submittals and oral interviews will be scored.

Final scores for each firm will be determined as follows: Selection Team members will score each criterion, as well as the interview, to create that Selection Team member's combined score for the firm. The combined scores from the Selection Team members will be averaged to determine the mean score for the firm. In the event that the combined score of any Selection Team member deviates from the mean score by more than 1.65 times the Standard Deviation of the combined scores, that Selection Team member's combined score for that firm will be discarded (see the example scoring calculation, below).

**SAMPLE SCORING CALCULATION FOR ONE FIRM:**

Criteria	Max Score	Selection Team Member 1	Selection Team Member 2	Selection Team Member 3	Selection Team Member 4	Selection Team Member 5	Selection Team Member 6	Selection Team Member 7
Qualifications of Firm	20	16	15	15	17	16	13	14
Experience of Key People	15	12	13	12	14	11	10	13
Project Understanding	30	23	20	22	26	25	24	23
Safety	10	8	7	6	8	8	6	7
Miscellaneous	15	12	12	13	13	10	9	12
Interview	20	16	15	17	17	17	18	15
Maximum Possible Score	110	87	82	85	95	87	80	84
Mean Score	85.71							
1.65 X Standard Deviation	7.95							
Mean Plus 1.65 Std Dev	93.67							
Mean Minus 1.65 Std Dev	77.76							
FINAL SCORE ("OUT" if out of range)		87	82	85	OUT	87	80	84

**E. REPORTING:**

The Department will prepare and submit to the Federal Highway Administration initial, interim and final reports on the project. The initial report will be submitted after execution of the Preconstruction Services Contract. It will include any feedback received from the contracting industry on the CMAR process.

An intermediate report will be prepared and submitted at the point where the CMAR and the Department agree on a GMP. The intermediate report will discuss how the preconstruction services portion of the project has progressed to date. Included will be discussion of project quality and schedule, the GMP compared to the Department's initial program amount, and work performance by the CMAR.

A final report evaluating the overall effectiveness of the CMAR alternative contracting method will be submitted upon completion of construction and acceptance by ADOT and FHWA. The benefits and advantages as well as any deficiencies noted during the CMAR process will be identified and documented to use in determining whether this process is viable for continued use.