

City of Phoenix  
Work Plan  
for  
SEP (Special Experimental Project) 14  
Construction Manager at Risk Contract

Phoenix Downtown Traffic Management System

January 17, 2002



# City of Phoenix

Phoenix Project: ST 85140004  
Federal Aid Project: CM-PHX-0 (25) P & CM-PHX-0 (35) P

Project Manager:  
Robert R. Steele  
ITS Manager  
City of Phoenix  
Street Transportation Department  
200 West Washington Street, 6<sup>th</sup> Floor  
Phoenix, AZ 85003-1611

602-495-0238  
[bob.steele@phoenix.gov](mailto:bob.steele@phoenix.gov)

## INTRODUCTION

The City of Phoenix Street Transportation Department (PHXSTD) submits this work plan for review and approval as a Construction Manager at Risk (CM@R) project under the provisions of Special Experimental Project No. 14 (SEP 14) for the use of innovative contracting practices. Both the City of Phoenix and the State of Arizona have approved this contract method.

The City of Phoenix currently has the following CM@R projects underway:

1. Sky Harbor Airport East Economy Parking Garage II
2. Salt River Outfall Sewer Line Repair
3. Terminal 4 Retail Renovation
4. America West Arena Interior Improvements
5. North Gateway Reclamation Plant Phase I
6. 91st Avenue Wastewater Treatment Plant Unified Plant Expansion
7. Consolidated Rental Car Facility
8. North Transfer Station
9. Fire Station # 43 Union Hills WTP Modifications
10. 91st Avenue WWTP Three-Phase Digestion
11. 79th Avenue Park and Ride Upgrade
12. Neighborhood Resources Center
13. Desert View Northeast Library
14. Arizona Science Center Upgrades
15. 91st Avenue WWTP Chlorine Gas Piping
16. 23rd Avenue WWTP Chlorine Gas Piping
17. SCADA Control Center and Training Facility

The Downtown Traffic Management System (DTMS) is not a typical Street Transportation construction project. Instead, it is a hybrid project. This project includes traditional street construction components, such as conduit installation, minor roadway geometric enhancements, and installation of Intelligent Transportation System (ITS) field devices. However, a key component for this project is the development, furnishing, installing, integrating, and testing of the ITS control software. The completed plans and special provisions cover approximately 80% of the project. The software component to be developed and integrated comprises approximately 20%.

The existing special provisions include functional requirements for the control software. All the software requirements identified for the DTMS are not available as a commercial off the shelf software package. Due to the nature of the project, the prime contractor must be carefully evaluated and selected based on several criteria, not only that of lowest responsive bid. The selection emphasis needs to consider the firm's qualifications. The firm's experience with software development and integration of projects comparable to the requirements of the DTMS are critical to the successful completion of the project. In addition, the firm's resources need to be carefully considered.

## **PURPOSE**

The proposed CM@R method of award is an innovative process, which has been approved by both the City of Phoenix and the State of Arizona's Legislature. Utilizing the CM@R methodology will place the responsibility for developing and integrating the control software and constructing the DTMS with a single Contractor. This approach will produce a quality system and provide for efficient project scheduling/coordination, which will result in cost savings. The traditional construction contract method, which results in award of a contract to the lowest responsive bidder, is not appropriate for this unique project.

As described in Innovative Contracting Practices for ITS, Task E – Final Report by L.S. Gallegos & Associates, prepared for the FHWA. Page III-A-15, 3<sup>rd</sup> paragraph, when cost is the primary method of evaluation, the following disadvantages to “low bid” awards have to be considered.

Disadvantages of traditional “low bid” contract award:

- A. “Prescriptive specifications may either be unavailable for emerging technology, or too difficult or time consuming for the public agency to prepare,
- B. It discourages (or precludes) innovation in design and construction or installation methods,
- C. It does not allow the owner to consider any factors other than price in selecting the contractor (except at a fairly low responsibility pre qualification level),
- D. The contractor is likely to feel they left too much money on the table and may try to cut costs during design and construction, adversely affecting quality, and,
- E. It does not permit a meaningful dialogue between the owner and the individual bidders to work out the appropriate solution to the transportation agency's needs.”

### General Description of CM@R:

“This system, adopted and promoted by many large general contracting firms, is similar in many ways to the traditional system, in that the CM@R acts as a general contractor during construction. That is, the CM@R holds the risk of subletting the construction work to trade subcontractors and guaranteeing completion of the project for a fixed, negotiated price following completion of the design. However, in this scenario, the CM@R also provides advisory professional management assistance to the owner prior to construction, offering schedule, budget and constructibility advice during the project-planning phase. Thus, instead of a traditional general contractor, the owner deals with a hybrid construction manager/general contractor.

In addition to providing the owner with the benefit of pre-construction services, which may result in advantageous changes to the project, the CM@R scenario offers the opportunity to begin construction prior to completion of the design. The CM@R can bid and subcontract portions of the work at any time, often while design of unrelated portions is still not complete. In this circumstance, the CM@R and owner negotiate a guaranteed maximum price (GMP) based on a partially completed design, which includes the CM@R's estimate of the cost for the remaining design features. Furthermore, CM@R may allow performance specifications or reduced specifications to be used, since the CM@R's input can lead to early agreement on preferred materials, equipment types and other project features.

An owner wishing to use the CM@R approach can realize many benefits. Chief among them are the opportunity to incorporate a contractor's perspective and input to planning and design decisions and the ability to "fast-track" early components of construction prior to full completion of design. However, since a commitment is made to a contractor earlier in the process, a premium is placed on the proper selection of the CM@R to provide the best value to the owner."

## CHOOSING THE BEST DELIVERY METHOD FOR YOUR FACILITY PROJECT by Blake Peck, CCM, McDonough Bolyard Peck, Inc.

### Innovative Contract Features:

The CM@R will have the keystone responsibility of developing, furnishing, installing, integrating, and testing a DTMS Central Control System (software & hardware) and a DTMS Remote Control System System (software & hardware). These are critical to the performance of this system.

The CM@R will provide advisory professional management assistance prior to construction (pre-construction services). The CM@R will have the latitude to recommend and implement design changes, provided a benefit is recognized.

The CM@R approach will enable construction to begin before the software component is completed. Thus, allowing for a shorter completion schedule.

## **SCOPE**

### Description of Project:

The CM@R shall furnish, install, integrate and test a DTMS in the City of Phoenix as per the Plans and Special Provisions. The DTMS and the existing City of Phoenix signal system will function as parallel systems under the City's Advanced Traffic Management System (ATMS) program. Both the DTMS and the City's signal system will share Closed Circuit Television (CCTV) and Variable Message Sign (VMS) subsystem resources; however, the DTMS focuses on the downtown area and the signal system is intended to cover the entire City.

The DTMS project is located in Maricopa County, within the City of Phoenix in the area bounded by McDowell Road to the north, 12<sup>th</sup> Street to the east, Buckeye Road to the south, and 7<sup>th</sup> Avenue to the west.

### Phasing:

The CM@R method will include the following sequential phasing:

#### Phase 1: Prepare and advertise the Request for Qualifications (RFQ)

The RFQ will include a general project description and scope as well as information on how to obtain the bid package including the completed plans, specifications, special provisions and City of Phoenix and FHWA requirements.

The RFQ will request that the contractors submit a qualification proposal that will include:

1. Experience and qualifications of the Contractor and proposed team members in providing these services on similar projects. For each project, provide the project description, award, date, construction cost estimate, and percent of work currently completed. List a reference for each project. – 20 points
2. Experience and qualifications of the Contractor and proposed team members in developing, furnishing, installing, integrating, and testing ITS control software. – 20 points
3. Understanding of the project by the Contractor, including discussion on the team's proposed implementation approach. Contractor shall describe intended project management methods, quality control plan, and how the project will be coordinated with City staff. – 20 points
4. Current/recent workload. Also, list all projects awarded to the Contractor by the City during the last two years (excluding annual service contracts). – 10 points

5. Principal office location and local office work role. Identify each team members' home office and the percent of work to be performed at the local office. – 5 points
6. Provide statements of the financial condition of the Contractor. – 5 points
7. Overall evaluation and opinion of the team's capability to provide the required services. – 20 points

Maximum Score = 100 points

Phase II: Interview Contractors

- Hold RFQ pre-submittal meeting
- Evaluate statement of qualifications submittals and select the most qualified for interviews
- Interview

At the pre-submittal meeting for all the interested contractors, the City of Phoenix will answer questions and clarify the project scope.

Based on the above evaluation criteria and assigned point valuation, select the most qualified. (Minimum of two contractors must be selected). Request the selected contractors to prepare for an interview. The interview will require the contractors to elaborate on the following:

- Qualifications – 10 points
- Experience – 10 points
- Project Management Team – 10 points
- Project Vision – 10 points
- Project Objectives – 10 points
- Project Deliverables – 10 points
- Proposed Schedule – 10 points
- Technical Considerations – 10 points
- Issues and Barriers – 10 points
- Cost Saving Measures – 10 points

Maximum Score = 100 points

### Phase III: Pre-Construction Negotiations

- Selection of the most qualified CM@R
- Prepare scope and fee
- Negotiate a contract for pre-construction services
- Prepare contract
- Obtain approvals
- Issue a notice to proceed

Based on the interview scoring select the most qualified Contractor to perform as the CM@R. Negotiate a contract for pre-construction services. If a contract agreement cannot be reached with the most qualified, offer a contract to the second most qualified and begin negotiations, etc,

### Phase IV: Pre-Construction Services

Pre-construction services will consist of the CM@R reviewing the scope of work, existing plans, specifications, and special provisions. Recommending changes and modifications if needed. Begin the development of the DTMS Central Control System and the DTMS Remote Control System. The CM@R also will provide advisory professional management assistance to the City of Phoenix prior to construction, offering schedule, budget, and constructibility advice.

### Phase V: Construction Services

- Prepare scope and fee
- Negotiate and execute a contract amendment with a guaranteed maximum price
- Prepare contract amendment
- Obtain approvals
- Issue a notice to proceed

The CM@R and the City of Phoenix will negotiate a guaranteed maximum price based on the completed design and the CM@R estimate for the remaining design features. The primary duties of the CM@R during the Construction Phase will be to:

1. Manage and coordinate design and construction activities
2. Address and satisfy all Federal requirements
3. Complete project as described by the final plans and specifications
4. Coordinate all activities with the City's Construction Manager

The CM@R will bid and subcontract portions of the work. The CM@R shall adhere to Federal DBE requirements. The DBE goal for this project is 8%. The final acceptance of this turnkey project will be based on the successful completion of the Systems Acceptance Test as described in the Special Provisions. The CM@R will solicit and procure sub-contractors as needed.

Selection Committee:

The following selection committee will evaluate the Qualifications and Proposals:

1. City of Phoenix Engineering and Architectural Services, Project Manager
2. City of Phoenix Street Transportation Department, Management
3. City of Phoenix Street Transportation Department, Project Manager
4. City of Phoenix Department of Construction Management, Project Manager
5. Kimley-Horn and Associates, Professional Transportation Engineer
6. Independent Software Developer

**SCHEDULE**

Phase I: Estimated duration is four (4) weeks

Phase II: Estimated duration is thirteen (13) weeks

Phase III: Estimated duration is sixteen (16) weeks

Phase IV: Estimated duration is six (6) weeks

Phase V: Estimated duration is fifteen (15) months

Total project duration is approximately twenty five (25) months

## MEASURES & REPORTING

The intent is to evaluate this project based on improved quality, cost saving, and timesaving. The City of Phoenix will be retaining Kimley-Horn and Associates for construction management support to assist in this evaluation. Kimley-Horn and Associates will also assist with the initial, interim and final report.

PHXSTD will prepare and submit an initial, interim and a final report on this project. The initial report will be prepared at the approximate time of award of the pre-construction services contract. The initial report will include a description of the CM@R process to date, problems encountered, benefits received, and lessons learned.

An interim report will be submitted upon the award of the construction services contract. Again, this report will include a description of this phase of the process, problems encountered, benefits received, and lessons learned.

A final report will be submitted upon completion of the contract and final PHXSTD acceptance. The final report will contain an overall evaluation of the project from the City of Phoenix, Kimley-Horn & Associates and the Contractor along with any suggestions and recommendations for improving the process. In addition, we will discuss our relationship with the Contractor, quality of the final product, number of changes to the original scope of work, additional cost, problems encountered and benefits received.