

ADDENDUM TO:
ADAPTIVE TRAFFIC CONTROL SYSTEM

Addendum Number: 1

Date Issued: February 17, 2016

Bid Due Date: February 23, 2016

I. Instructions to Bidders:

This addendum is hereby made a part of the bid packet issued for **Adaptive Traffic Control System**, and therefore must be attached to the bid packet response from bidders.

II. Clarifications:

The following items have been modified, clarified, added to or deleted from the Adaptive Traffic Control System and are hereby issued as an addendum to the plans and specifications for said project:

- Under: **2. ADDITIONAL INFORMATION** (pg. 5)
 - A. Project Description

The City of Casa Grande is in need of an Adaptive Traffic Control System (ATCS). The ATCS will adjust, in real time, traffic signal timings based on current traffic conditions, traffic demand, and system capacity. This project requires furnishing all equipment, materials, supplies, and labor to make a complete and fully-functional Adaptive Traffic Control System specifically designed for the City. The system must include an ~~adaptive traffic control system closed loop master field processor~~, upgrade of existing traffic signal controllers, adaptive traffic control system software, deployment and testing of the system, and training of City staff on operation and maintenance the ATCS.

- Under: **TECHNICAL SPECIFICATIONS** (pg. 10)
Adaptive Traffic Control System (ATCS) Requirements

 The proposed ATCS system shall be fully compatible with any manufacturer or type of ATC traffic signal controller *or alternately, must be compatible with a controller compliant with the latest ITE, AASHTO, and NEMA standards- 5201: Advanced Transportation Controller (ATC); 5401: Application Programming Interface.* ~~Bid proposals that cannot fulfill this requirement will be determined as non responsive and rejected from further consideration.~~

- Under: **2. Project Adaptability** (pg. 12)
 (g.i) The system shall be capable of reporting ~~delay for all performance metrics~~ for all movements for all time periods, enabling comparison of traffic operations pre- and post-system turn- on.

- Under: **3. Primary System Requirements** (pg. 12)
 (a.)The ATCS shall ~~determine~~ *allow for changing* the order of phases at a user-specified intersection *by TOD*.

- Under: **3. Primary System Requirements** (pg. 13)
 (f.) When a large change in traffic demand is detected, the ATCS shall respond within ~~the next~~ 3 cycle periods, subject to user-configured limits.

- Under: **3. Primary System Requirement** (pg. 13)
~~The ATCS shall use the following alternate data sources for operations in the case of failure of a video camera detector:~~
~~i. Data from a user-specified alternate detector (e.g. loop, radar, etc.);~~
~~ii. Stored historical data from the failed detector.~~
 (j): The ATCS shall store the following data by movement in 15 minute increments:
 - i. Volume

- Under: **3. Primary System Requirement** (pg. 13)
 (k): The ATCS shall store *two or more of the* following data by movement in 5-minute or smaller increments:
 - i. Queue Length,
 - ii. First-Vehicle Delay,
 - iii. *Percent of Vehicle Arrivals on Green*
 - iv. *GrnOcc: Green occupancy at stop bar*
 - v. *RedOcc(5): Occupancy during first 5-seconds of Red at stop bar*

- Under: **3. Primary System Requirement** (pg. 13)
 - (1): The ATCS shall adjust signal timing *with the objective* so that vehicles approaching a signal that have been served during a user-specified phase at an upstream signal do not stop.

Contractor's Signature & Date

Company Name

Note: A signed copy to this addendum is to be returned with the Contractor's bid proposal. The Contractor shall also acknowledge this addendum in the space provided on the bid proposal form.

INFORMATION FOR BIDDERS

1. SECURING BID DOCUMENTS

- A. Specifications and other bid document forms are available at the following locations:

Remilie S. Miller, MMC, City Clerk
City of Casa Grande City Clerk's Office
510 East Florence Boulevard
Casa Grande, Arizona 85122
(520) 421-8600

Or on the City web site at www.casagrandeaz.gov

- B. Specifications and Bid Forms will be registered and provided at no cost to prospective bidders. Each bidder must supply all the information required by the Bid Documents and Specifications. Bids received from bidders not on the official list of plan holders, or submitted on bid forms without an official tracking number, may be considered to be non-responsive.

2. ADDITIONAL INFORMATION

- A. Project Description

The City of Casa Grande is in need of an Adaptive Traffic Control System (ATCS). The ATCS will adjust, in real time, traffic signal timings based on current traffic conditions, traffic demand, and system capacity. This project requires furnishing all equipment, materials, supplies, and labor to make a complete and fully-functional Adaptive Traffic Control System specifically designed for the City. The system must include an upgrade of existing traffic signal controllers, adaptive traffic control system software, deployment and testing of the system, and training of City staff on operation and maintenance the ATCS.

The locations of the seven existing traffic signals on Florence Boulevard to be included in the ATCS are shown in the Technical Specifications section of these Bid Documents. The signals are owned by the City of Casa Grande.

- B. City Project Manager

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City Traffic Engineer
City of Casa Grande
3181 North Lear Avenue, Casa Grande, AZ 85122
(520) 421-8625 deitel@casagrandeaz.gov

TECHNICAL SPECIFICATIONS

Adaptive Traffic Control System (ATCS) Requirements

The ATCS will adjust, in real time, traffic signal timings based on current traffic conditions, traffic demand, and system capacity. This project requires furnishing all equipment, materials, supplies, and labor to make a complete and fully-functional Adaptive Traffic Control System specifically designed for the City. The system must include an adaptive traffic control system closed loop master field processor, upgrade of existing traffic signal controllers, adaptive traffic control system software, deployment and testing of the system, and training of City staff on operation and maintenance the ATCS.

The locations of the seven (7) existing traffic signals to be included in the ATCS are listed below:

1. N Trekell Rd & E Florence Blvd
2. N Pueblo Dr & E Florence Blvd
3. N Colorado St & E Florence Blvd
4. N Pottebaum Ave & E Florence Blvd
5. N Peart Rd & E Florence Blvd
6. N Arizola Rd & E Florence Blvd
7. Banner Medical Center Entrance & E Florence Blvd

The locations of the traffic signals along East Florence Boulevard are shown on the following page. The signals are all owned by the City of Casa Grande.

The proposed ATCS system shall be fully compatible with any manufacturer or type of ATC traffic signal controller or *alternately, must be compatible with a controller compliant with the latest ITE, AASHTO, and NEMA standards- 5201: Advanced Transportation Controller (ATC); 5401: Application Programming Interface.*

Bid Proposal Information

The proposer shall **provide with the proposal bid form 'ATCS Written Detailed Information'** on letter size paper (8.5"x11") in regards to the following items:

1. **Project Understanding**
2. **Project Adaptability**
3. **Primary System Requirements**
4. **Project Experience**
5. **Key Personnel**
6. **Project Schedule**

Bid Proposal Requirements

The Bidder/Contractor shall submit the requested information detailing the specific features of their ATCS as part of the Bid Proposal Pamphlet for each of the six categories outlined below:

1. Project Understanding

- a. Provide a summary of the primary goals and objectives for the project.
- b. Provide detail regarding the quality assurance plan that your firm will conduct to ensure contract performance and ATCS performance.

2. Project Adaptability

- a. Provide a detailed explanation on how the proposed adaptive traffic control system adapts to changes in the traffic stream in real-time.
 - i. The ATC system shall be capable of measuring queues at each approach several times per minute and scheduling green time accordingly.
- b. Describe how the system intelligently assigns green time at each intersection locally.
- c. Describe how the system moves platoons of vehicles through the corridor globally.
- d. Provide a detailed explanation of how the system is capable of uncompromised bi-directional progression.
- e. Provide detail on the proposed ATCS's dependency (or lack of dependency) on a central server.
- f. Provide detail on how the proposed ATCS accommodates pedestrian movements in conjunction with coordinated traffic movements within a group of traffic signals.
- g. Provide detail on the specific data the system will collect and provide in a viewable format and provide examples of the viewable format.
 - i. The system shall be capable of reporting *performance metrics* for all movements for all time periods, enabling comparison of traffic operations pre- and post-system turn- on.

3. Primary System Requirements

- a. The ATCS shall *allow for changing* the order of phases at a user-specified intersection *by TOD*.
 - i. The calculation will be based on the optimization function instantaneous actuation of non-repetitive sequences based on the traffic volume and delay data observed at each approach at the time of actuation.
- b. System should maximize the throughput on coordinated routes, provide smooth flow along coordinated routes, and manage the length of queues on all legs of signalized intersections.

- c. The ATCS shall provide yellow trap protection when running protected/protected left turn operations with green ball or flashing yellow arrow.
- d. The ATCS shall support variable left-turn phasing (e.g. protected only, protected/protected, and protected only) based upon user-configured time of day schedule.
- e. The ATCS shall not prevent the protected left turn phase to lead or lag the opposing through phase based upon user-configured conditions.
- f. When a large change in traffic demand is detected, the ATCS shall respond within 3 cycle period, subject to user-configured limits.
- g. The ATCS shall not prevent any phases from being designated as a coordinated phase.
- h. The ATCS shall not prevent the controller from displaying flashing yellow arrow left turn or right turn.
- i. The ATCS shall be compatible with the following detector technologies:
 - i. Physics based: Radar.
 - ii. Video and Physics based: IP Capable Cameras & Radar.
- j. The ATCS shall store the following data by movement in 15 minute increments:
 - i. Volume
- k. The ATCS shall store *two or more of* the following data by movement in 5-minute or smaller increments:
 - i. Queue Length,
 - ii. First-Vehicle Delay,
 - iii. *Percent of Vehicle Arrivals on Green*
 - iv. *GrnOcc: Green occupancy at stop bar*
 - v. *RedOcc(5): Occupancy during first 5-seconds of Red at stop bar*
- l. The ATCS shall adjust signal timing *with the objective* so that vehicles approaching a signal that have been served during a user-specified phase at an upstream signal do not stop.
- m. The ATCS shall be remotely accessible and configurable through the agency network.
- n. The ATCS shall permit local and remote manual override.
- o. The ATCS system shall permit a security management and administrative system that allows access and operational privileges to be assigned, monitored and controlled by an administrator, and conform to the access and security policy of the City.