4

REQUEST FOR PROPOSALS FOR AN ELECTRONIC DISTANCE MEASUREMENT SYSTEM APPROVED

CC-20

Council approved the request for proposals for an electronic distance measurement system.

Council was apprised that the 1987-88 Operating Budget included the purchase of an electronic distance measurement system for the Public Works Engineering Division. The budgeted amount is $21,700, split among the street and utility funds. The system will substantially increase productivity of the surveying function.

Due to the varying nature of this type of equipment and software, the proposal format is being followed rather than using strict specifications. The proposals will be evaluated by staff and a recommendation made at a later meeting.

CITY OF LODI

PUBLIC WORKS DEPARTMENT

COUNCIL COMMUNICATION

TO: City Council

FROM: City Manager

MEETING DATE: September 30, 1987

AGENDA TITLE: Approve Request for Proposals for Electronic Distance Measurement System

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RECOMMENDED ACTION: That the City Council approve the request for proposals for an electronic distance measurement system.

BACKGROUND INFORMATION: The 1987/88 Operating Budget included the purchase of an electronic distance measurement system for the Public Works Engineering Division. The budgeted amount is $21,700, split among the street and utility funds. The system will substantially increase productivity of the surveying function.

Due to the varying nature of this type of equipment and software, the proposal format is being followed rather than using strict specifications. The proposals will be evaluated by staff and a recommendation made at a later meeting.

Jack L. Ronsko
For: Public Works Director

JLR/RCP/ma

Attachment

APPROVED:

THOMAS A. PETERSON, City Manager

FILE NO.

CELECTRO/TXTW.02M

September 21, 1987

CITY OF LODI

CITY HALL, 221 WEST PINE STREET
CALL BOX 3006
LODI, CALIFORNIA 95241-1910
(209) 334-5634
TELECOPIER (209) 333-6795

October 1, 1987

To Prospective Suppliers:

The City of Lodi is requesting proposals for an electronic total station and surveying software. The system is to be used for topographic surveying, construction staking, and drainage basin design and layout. Proposals are requested for compatible and fully supported software and hardware. Individual proposals for hardware or software will be accepted, however, the vendors must be able to demonstrate compatibility. Detailed requirements are contained in the document "Request for Proposals - Electronic Distance Measurement System for the City of Lodi" available at the office of the Public Works Director, City of Lodi, 221 W. Pine Street, Call Box 3006, Lodi, California, 95241-1910 (telephone 209-333-6706).

Sealed proposals will be received by the Purchasing Agent at the above address until 11:00 a.m., Friday, October 23, 1987, at which time they will be publicly opened and read in the Council Chambers.

Jack L. Ronsko
Public Works Director

JLR/RCP/ma

Enclosure

NOTE: If you have questions or comments concerning the Request for Proposals, please contact:

Richard C. Prima Jr.
Chief Civil Engineer
209-333-6706

CITY OF LODI
PUBLIC WORKS DEPARTMENT
ENGINEERING DIVISION

ELECTRONIC DISTANCE MEASUREMENT SYSTEM REQUEST FOR PROPOSALS

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ELECTRONIC DISTANCE MEASUREMENT SYSTEM
for the
CITY OF LODI

I. INTRODUCTION

The Electronic Distance Measurement (EDM) System is to be used by the City of Lodi Public Works Department, Engineering Division, to perform topographic surveying, construction staking, and general surveying. In addition, computer software will be used to manipulate field data, provide printed and plotted output, and perform drainage basin design. The software is to be used on existing City computers.

II. APPLICATION INFORMATION

A. General Background

The system will be used by the City's Public Works Engineering Division. Primary users will be Engineering Technicians. Engineers will occasionally use the software.

The Division's present computer hardware and operating system software consists of the following Hewlett Packard equipment:

° Vectra PC w/640K RAM, 40 Mb hard disc, 360K floppy disc, serial, parallel and IEEE 488 interfaces, internal modem, 80287 coprocessor (MSDOS 3.1 operating system)

° 7475A plotter w/IEEE 488 interface

° 7585B plotter w/serial and IEEE 488 interfaces

° HP1000 Model A900 w/1.5 Mb RAM, 132 Mb hard disc, cartridge tape backup and 2-2397A terminals (RTE-A operating system bundled with Holguin ADC 400 drafting software)

° Quietjet-plus printer (on Vectra)

° Thinkjet printer (on HP 1000)

The proposed software shall run on one of the two systems.

B. Application Details

1. Topographic Surveying

The survey crew performs topographic surveys for street improvements; water, sewer, storm and other utility improvements; parking lot, landscaping and park improvements; and related projects.

2. Construction Staking

The survey crew performs construction staking for all the improvement projects described in Item 1 above.

3. Drainage Basin Construction

A specialized use of the system will be in drainage basin construction. Projects include topographic surveying of existing land (roughly 30-acre parcels), preparation of site plans including existing contours and new grading, computation of basin volumes/depth curves, and construction staking.

III. HARDWARE

A. General Requirements

All system components shall be completely compatible with each other and the software, and preferably made by the same well-established manufacturer. All components shall have the following features:

1. Rechargeable battery operation

2. Rugged construction for field use

3. Meet all Federal and State regulations regarding interference and radiation

4. Be new, latest model

B. Specific Requirements

1. Theodolite/EDM

° Measures and displays horizontal angles and/or circle readings determined by the repetition or direction methods.

° Measures and displays angles in the vertical plane as zenith angles (0 degrees along the upward vertical) or vertical angles (0 degrees at horizontal).

° Dual pickup of horizontal and vertical circles.

° Can be set to indicate positive angles through the keyboard in either the clockwise or counterclockwise direction. The clockwise mode can also be set so that during repetition of angles, the display will accumulate angles up to 1999 degrees 59' 59".

° Standard Deviation of mean of both horizontal and vertical measurement taken (both faces, DIN 18723): 3" (seconds).

° Direct Reading Display: 1" (second) (1 mgon) or better.

° Unit of Measure: 360 degrees divided sexagesimally or 400 grads divided decimally (selected by operator).

° Displays the horizontal and vertical angles in a digital readout, continuously, in Face I and Face II.

° Updates angle readings continuously during rotation of horizontal or vertical motions.

° Telescope: Erect image, 30X magnification.

° Vertical circle compensator which automatically eliminates the influence of vertical axis inclination when vertical angles are being measured.

° Operating Temperature Range (-4 degrees F. to 122 degrees F.)

° EDM may be integral or detachable.

° Measure slope distance to the reflector(s) and be capable of automatically converting this slope distance into a correct horizontal or vertical distance.

° Compute and display horizontal and vertical projections of a line with automatic corrections for earth curvature, refraction, temperature and atmospheric pressure.

° Track continuously and update at .8 second (min.) intervals, both circles.

° Perform self-checks to determine if the instrument is working properly and display diagnostic error codes if not.

° EDM Range:

	Average atmospheric condition - (slight haze, approx. 10 mile visibility)
1 prism	1600 ft.
3 prisms	2600 ft.

° Accuracy: ± (5 mm + 5 ppm) (Standard deviation of a single measurement)

° Readout: In feet or meters (selected by operator) in figures to nearest 0.01 foot or 0.001 meter in an illuminated display.

° Keyboard and two displays on both sides of the instrument so that it is fully operable and functional when making measures in either face (direct or reversed).

° Theodolite/EDM Special Functions:

- Initiate slope, horizontal or vertical distance reading, i.e., through pressing of a single key to start a

measurement and to reduce it as required.

- Automatically obtain the difference in elevation by sighting the telescope at the desired point if first a measurement is made to a reflector placed directly above or below the desired point. Note that a reflector is not used at the desired point in this procedure.

- Automatically determine the horizontal distance and difference in elevation between any two observed points. Whenever this function key is used, the horizontal and vertical distance between the observed point and the previously observed point will be displayed.

- The electronic total station's compensator should be able to output the tilt of the vertical axis to the display to allow the operator to examine this value at any time and if the operator wishes to level the instrument using this facility.

- Hold horizontal angle, i.e., to enable fixing of the horizontal rotation of the alidade around the vertical axis.

- Electronically read horizontal and vertical incremental circles using dual photo optical reading heads.

- Record Key - send measurement data followed by error checking data.

2. Data Collector

° Portable and completely compatible with Theodolite/EDM.

° Sufficient memory to store field data for a minimum of 1000 points.

° In addition to point number and measurement data, the system shall handle alpha-numeric descriptors of points.

3. Accessories

The system shall include the following accessories. Due to the variation in manufacturers' products, the vendor shall provide the closest equivalent to the items listed. All accessories shall be the same brand as the total station or be approved by the manufacturer for use with their equipment.

° Two single prism reflectors with range poles

° One triple prism reflector with mount for above range pole

° One instrument tripod

° Tool kit

- Case
- Sunshade
- Rain cover
- Complete instruction manuals
- Battery packs/charger (it is the intent to have a battery pack in the field instruments and another being charged or ready for use)
- Interfaces/cables for all connections including to the computer.

C. Hardware Support

The proposal shall include hardware service support for one year. The support shall be from the hardware manufacturer or authorized representative. The location of the support center shall be indicated. The proposal shall be clear as to the end of manufacturer's warranty period and the beginning of extended support service.

IV. SOFTWARE

A. General Requirements

The software shall be fully integrated including data transfer, editing, printing, plotting use in applications, and system management. The software shall not rely on operator knowledge of the computer's operating system. However, access to the operating system must be easily available.

The program shall be installable on a hard disc. Disc space required for storage of the software program shall be indicated in the proposal.

Systems having optional modules or auxiliary programs shall be clearly identified as to what is included in the proposal. Options and interfaces to other programs/languages shall be describ .

The proposal shall include discussion (including applicable costs) of the system's compatibility with the Holguin ADC 400 drafting system.

B. Software Features

The complexity of surveying software precludes listing detailed requirements in this Request for Proposals. The proposal shall include sufficient descriptions of the software capabilities and command structure to allow the City to evaluate the system. Suppliers are encouraged to emphasize features applicable to the City's application. It is suggested that a set of actual user manuals be included in the proposal. (The City will return any

proposal materials requested by the supplier at the end of the evaluation.)

C. Software Support

The proposal shall describe software support including the following:

1. Help with software questions and problems.

2. Help with software/hardware interface questions and problems.

3. User group program.

4. Software updates and enhancements.

V. INSTALLATION AND TRAINING

A. Installation

The proposal shall include delivery, installation and testing of all hardware and software.

B. Training

The proposal shall include software and hardware training. The training shall include:

1. System overview and capabilities - primarily for engineers who will supervise overall system use and implementation (approximately two hours).

2. System operation - primarily for system operators (Engineering Technicians) who will actually use the system (approximately 12 hours on 2 or 3 separate days).

Online training courses and "help" screens shall be described. The proposal shall indicate duration of all proposed training. Training shall take place in Lodi. All supplier expenses involved in training shall be included.

VI. PRICE AND PAYMENT

The proposal shall clearly indicate the price of the hardware, software, support and miscellaneous items requested in this Request for Proposals.

All quotations shall be protected from price increases for a minimum of 30 days. Sales tax on applicable items shall be included.

Upon completion of installation and testing of software and hardware, the City will pay 90% of the purchase price of the items included.

Upon completion of training, the City will pay 100% of the price for training.

During the 30 days following the completion of installation/testing or training, whichever is last, the City will use and test the system. Following satisfactory completion of this test period, final payment will be made.

Payment for maintenance and support will be in accordance with terms agreed to between the City and the suppliers.

VII. PROPOSAL REQUIREMENTS

In addition to the items specifically requested in this Request for Proposals, the proposal shall include the following information:

A. Background description of the software including introduction date, revision history, and company background.

B. List of names and telephone numbers of users of the proposed system, preferably northern California public agencies using the system for purposes similar to Lodi's application.

C. A copy of the software license agreement.

D. Availability of demonstrations.

E. Complete hardware list.

F. Background description of the hardware (major components - theodolite, EDM, and data collector) including introduction date, production history, company history, and anticipated support life.

G. Delivery time from date of order.

H. Cost breakdown and total cost with options and "not included" items clearly identified.

I. List of any "exceptions" to the requested features or requirements.

J. Name and telephone number of supplier contact person who can answer technical questions about the proposed system.