

REQUEST FOR BIDS

GPS Field Equipment and Training

January 2022



Department of Public Services

1015 S Lincoln Avenue

Three Rivers, MI 49093

(269) 273-1845

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Bidding Information

Performance Bids

The City of Three Rivers is committed to the concept of performance bids. All vendors are encouraged to submit bids which conform to the stated specifications, as well as, suggest deviations from the specifications, which in the vendor's opinion would be beneficial to the City in terms of price and performance. The City reserves the right to accept or reject any bid under these terms.

I. Instructions

- A. Bids must be typewritten or clearly printed in ink and signed by a duly-authorized representative of the firm submitting the quote.
- B. Bids must be submitted in sealed envelopes, clearly marked on the outside, "**Bids for GIS Field Equipment and Training**".
- C. Bids will be received by the Office of the City Clerk, City Hall, 333 West Michigan Avenue, Three Rivers, Michigan, 49093, until **2:00 p.m. local time, Thursday, February 3, 2022**. All bids will be date stamped and time marked when received.
- D. Faxed or emailed bids shall not be accepted.
- E. If you received this document from our website, please e-mail your contact information to aroth@threeriversmi.org so we can place you on the bidders list for addenda.

II. Conditions Applicable to Bids

- A. Applicable Laws: The Ordinances and Charter of the City and laws of the State of Michigan concerning competitive bidding, contracts and purchases will be employed.
- B. Taxes: The City of Three Rivers is generally exempt from Federal Excise and Michigan State Sales Tax. Prices should not include tax.
- C. If the bidder elects to deviate from the specifications stated, all exceptions or other changes must be clearly noted.
- D. The City reserves the right to reject any and all bids, waive informalities or defects in bids, or accept such bids as it shall deem to be in the best interest of the City of Three Rivers.
- E. The City does not discriminate on the basis of race, color, national origin, sex, religion, age or disability in employment or the provision of services.
- F. The Contractor shall provide proof of Liability and Workman's Compensation Insurance and a completed W-9 form prior to award.
- G. The successful bidder shall provide the City with a copy of their liability insurance policy in the amount of \$2,000,000 (Two million Dollars) which names the City of Three Rivers as second insured.
- H. Anticipated award is at the **February 15, 2022** Commission meeting. Final completion of this project shall be no later than **September 15, 2022**.

III. General

Equipment

It is the intent of these specifications to describe GPS Field Equipment.

The below listed specifications and instructions are in no way intended to eliminate any company, vendor, bidder or product from the bid process. It is the sole intent of these specifications and instructions to describe GPS Field Equipment that will be the best product available to the City of Three Rivers and its residents.

Specifications are based on the EOS Arrow Gold RTK GNSS Receiver with survey pole, Arrow quick release pole adapter kit, and ram mount.

If a substitute product is the bid basis, detailed specifications regarding the product and supporting equipment is required to be submitted with the bid. Also required is a list of local municipalities utilizing the substitute product.

Minimum Equipment Requirements

General description

High-accuracy Bluetooth® GNSS receiver with ability to implement all four global GNSS constellations (GPS, GLONASS, Galileo, BeiDou), triple frequency, and satellite-based RTK augmentation on any iOS, Android, and Windows devices. Full-band support for all GNSS signals including Galileo's new, free High-Accuracy Service (HAS). Receivers work with all apps that run on iOS, Android, and Windows.

GPS Sensor

Receiver Type: GNSS multi-frequency RTK with carrier phase

GNSS Signals Received: GPS: L1CA, L1P, L1C, L2P, L2C, L5

GLONASS: G1, G2, G3+, P1, P2

Galileo: E1BC, E5a, E5b, E6+

BeiDou: B1i, B2i, B3i+, B10C+, B2A+, B2B+, ACEBOC+

QZSS: L1CA, L1C, L2C, L5, LEX+ IRNSS: L5+

SBAS Support: 3-channel, parallel tracking WAAS/EGNOS/MSAS/GAGAN/SouthPAN

L-Band (Atlas®): 1

Update Rate: 1 Hz Default, Optional 10 Hz, 20 Hz, and 50 Hz

RTK Accuracy: 8mm¹ + 1 ppm Horizontal

1.5 cm¹ + 1 ppm Vertical

SBAS Accuracy: < 30 cm HRMS¹, < 60 cm 2dRMS

Atlas® Accuracy (RMS): H10: 4 cm

H30: 15 cm

Atlas® Basic: 30 cm

Autonomous Accuracy: 1.2 meters HRMS¹
Cold Start: < 60 sec typical (no almanac or time)
Reacquisition: < 1 sec
Max Speed: 1,850 kph (1,150 mph / 999 knots)
Max Altitude: 18,288 meters / 60,000 ft

Communication

Port: Bluetooth®, USB 2.0, Serial
Bluetooth® Transmission: Class 1, 300 m typical range², up to 1 km
Frequency: 2.400 - 2.485 GHz
Fully Bluetooth® Pre-Qualified: Bluetooth® 2.1 + EDR
Supported Bluetooth® Profiles: SPP, iAP, Multi-point+
Data I/O formats: NMEA 0183, RTCM SC-104, Binary
Output Datum: Autonomous: WGS-84
 SBAS & Atlas®: ITRF (current year epoch)
 RTK: Same as RTK base

Raw Measurement Data: Binary and RINEX
Correction I/O Protocol: RTCM 2.x, 3.x, CMR, CMR+, proprietary binary
GPS Status LEDs: Power, GNSS, DGNSS, DIFF, Bluetooth®
Battery Status LED: 5 LED Indicator
Timing Output: (with optional serial port) 1PPS, CMOS, active high, rising edge sync, 10 kΩ, 10 pF load
Event Marker Input: (with optional serial port) CMOS, active low, falling edge sync, 10kΩ, 10 pF load

Power

Battery Type: Field replaceable, rechargeable Lithium-Ion pack (rechargeable inside unit or separately)
Battery Autonomy: 7+ hrs³, 11+ hrs³⁺
Charging Time: 4 hours (vehicle charger available)

Environmental

Operating Temperature: -40°C to +85°C (-40°F to +185°F)³
Storage Temperature: -40°C to +85°C (-40°F to +185°F)
Humidity: 95% non-condensing
Compliance: FCC, CE, RoHS and Lead-free

Mechanical

Enclosure Material: Xenoy
Enclosure Rating: Waterproof, IP-67

Immersion: 30 cm, 30 minutes

Dimensions: 12.5 x 8.4 x 4.2 cm (4.92 x 3.3 x 1.65 in.)

Weight: 372 g (0.82 lb)

Data Connectors: Mini USB Type B Receptacle

Arrow Antenna Port: SMA Female

Antenna

	<u>Arrow Gold®</u>	<u>Arrow Gold+™</u>
Impedance:	50 Ohms	50 Ohms+
Gain (no cable):	27 dB (± 2 dB)	28 dB (± 2 dB)+
LNA Noise Figure @25°C:	2.5 dB typ.	1.8 dB typ.+
Voltage:	+2.5 to +16 VDC	+3 to 16 VDC+
Dimensions mm:	68 Diam. x 20 H	127 Diam. x 55 H+
Dimensions in:	2.7 Diam. x 0.8 H	5.0 Diam. x 2.1 H+
Weight:	170 g (0.37 lbs)	217 g (0.48 lbs)+
RF Connector:	SMA female	
Operating Temperature:	-40°C to +85°C (-40°F to + 185°F)	
Humidity:	Waterproof	

Standard Accessories

Li-Ion Battery Pack (Field Replaceable)	Pole Bracket and Clamp
12VDC Power Supply	Hard Shell Carrying Case
USB Cable	Antenna Cable
GNSS Antenna	Antenna Mounting Plate

Field Activated Options

10 Hz, 20 Hz, 50Hz Output Rates

Atlas® satellite correction services

Notes

1. Depends on multipath environment, number of satellites in view, satellite geometry, baseline length (for local services) and ionospheric activities. Stated accuracies for baseline lengths of up to 50 km

2. Transmission in free space

3. Lithium-Ion battery performance degrades below -20°C (-4°F)

+ indicates item applies only to Arrow Gold+™

Minimum Training Requirements

Professional firm shall have previous experience training others on the GPS equipment to provide the following project goals:

- Setup GPS and field equipment
- Training on GPS hardware and software
- Technical Assistance

Documentation regarding previous training experience shall be provided with the bid documents.

The scope of services shall include:

An initial meeting to setup all equipment and devices – 2 hours

An introductory training over the various GIS software apps. – 4 hours

Three (3) training sessions focused on accessing, searching, and editing data that will be accessible in the office on your desktop computer and in the field on your mobile devices. Training sessions are planned for 2 hours each.

Training agendas will be prepared by professional firm and approved by the City before training begins.

Six (6) hours of time for either remote or in person technical assistance during the GPS training rollout.

Bids shall include all reimbursable expenses.

Measurement and Payment

The measurements which shall be used for payment are listed on the included bid form.

Timing Limitations

Project shall commence within 45 days of notice to proceed. Project completion date of no later than September 15, 2022.

GPS Field Equipment and Training - Bid Form

The undersigned having familiarized (himself/themselves) with the local conditions affecting the cost of the work and the Contract Documents hereby proposes to perform all work, furnish all labor, materials, necessary tools, equipment, utility and transportation services necessary complete the project in a workmanlike manner. All work required for project in accordance with the specifications as prepared by the Department of Public Services, City of Three Rivers, Michigan, for, including Addenda No. ____ issued thereto, the following unit prices:

COMPANY _____

ADDRESS _____

CITY _____ STATE _____ ZIP CODE _____

SIGNATURE _____ TITLE _____

TELEPHONE _____ DATE _____

EMAIL _____

GPS Field Equipment

Item No.	Item Description	Quantity	Unit	Unit Price	Total Price
1	GPS Receiver	1	EA		
2	Survey Pole	1	EA		
3	Quick Release Pole Adapter Kit	1	EA		
4	Ram Mount	1	EA		
5	Set up and implementation for GPS Hardware & Software	1	EA		
6	Technical Support for GPS Hardware & Software	1	EA		
Total Bid					