

MOBILE COUNTY COMMISSION

205 Government Street 8TH FL South
Mobile, Alabama 36644

BID INVITATION

NO. 160-21

November 30, 2021

In accordance with General Act No. 217, Special Session 1967, notice is hereby given that the Mobile County Commission, Mobile, Alabama, will receive bids on the following items:

NEW TOPCON HIPER VR AND SOKKIA GRX3 GPS UNITS WITH NECESSARY ACCESSORIES FOR MOBILE COUNTY ELECTRONICS DEPARTMENT AS PER ATTACHED SPECIFICATIONS:

Any questions or comments concerning the bid requirements must be brought to the attention of Susan Holland, Purchasing Agent, 205 Government Street, 7th FL South, Mobile, Alabama 36644, prior to the bid opening or will be forever waived.

All bidders shall furnish a five percent (5%) bid bond on any contract exceeding \$15,000.00: provided that bonding is available for services, equipment or materials. Bid bond will be accepted in the form of a certified check, cashier's check, or postal money order, etc. Out of State Corporations shall furnish a Certificate of Authority to transact business in the State of Alabama. Out of State limited liability companies shall furnish proof of registration to transact business in this state. Alabama law requires that a successful bidder, if it has employees in the State of Alabama, provide proof of enrollment in E-Verify prior to the award of a contract. (See enclosed notice which must be completed, signed and returned with your bid.)

If applicable to a contract resulting from this invitation, the successful bidder must comply with the Contractor Felony Investigation Policy, available in the Purchasing Department or at mobilecountyal.gov.

THE MOBILE COUNTY COMMISSION DOES NOT DISCRIMINATE ON THE BASIS OF RACE, AGE, SEX, NATIONAL ORIGIN, RELIGION, OR DISABILITIES.

F.O.B. Mobile DATE OF DELIVERY _____ TERMS _____ You are invited to bid on the above specifications. The restrictions contained herein are for the purpose of fixing a quality level, and any deviation therefrom must, in detail establish that it meets the quality requirements.

BIDS WILL BE RECEIVED UNTIL 10:00 A.M. DECEMBER 29, 2021.

ALL BIDS MUST BE SEALED, THE WORD "BID", THE BID NUMBER AND THE NAME OF THE ITEM MARKED ON THE OUTSIDE OF THE ENVELOPE. BIDS WILL BE RECEIVED BY THE RECEPTIONIST IN THE OFFICE OF THE COUNTY COMMISSION ADMINISTRATOR, 205 GOVERNMENT STREET ON THE EIGHTH FLOOR OF THE MOBILE COUNTY GOVERNMENT PLAZA. FAILURE TO OBSERVE THE ABOVE INSTRUCTIONS WILL CONSTITUTE GROUNDS FOR REJECTION OF YOUR BID. THE COMMISSION RESERVES THE RIGHT TO REJECT ANY OR ALL BIDS.

MOBILE COUNTY COMMISSION

Glenn L. Hodge
GLENN L. HODGE, COUNTY ADMINISTRATOR

We propose to meet the above specifications for the sum of

\$ _____.
Delivery can be made in _____ days from receipt of order.

RESPECTFULLY

BY _____



Company ID Number: 477783

To be accepted as a participant in E-Verify, you should only sign the Employer's Section of the signature page. If you have any questions, contact E-Verify at 888-464-4218.

Employer Mobile County Commission	
Connie Hudson Name (Please Type or Print)	Title
Electronically Signed Signature	12/21/2011 Date

Department of Homeland Security – Verification Division	
USCIS Verification Division	
Name (Please Type or Print)	Title
Electronically Signed Signature	12/21/2011 Date

Information Required for the E-Verify Program	
Information relating to your Company:	
Company Name:	Mobile County Commission
Company Facility Address:	205 Government Street 8th Floor South Tower Mobile, AL 36644
Company Alternate Address:	
County or Parish:	MOBILE
Employer Identification Number:	636001644



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Date: _____

BID #160-21

NEW TOPCON HIPER VR AND SOKKIA GRX3 GPS UNITS WITH NECESSARY ACCESSORIES FOR MOBILE COUNTY ELECTRONICS DEPARTMENT:

Name of Company: _____

Company Representative _____
(Print)

Company Representative _____
(Signature)

Address _____

Phone number () _____ Fax number () _____

Federal ID Number _____

Email Address _____

Company Web Address _____

PLEASE ATTACH A COPY OF YOUR CURRENT W9

SOKKA GRX3 MULTI-CONSTELLATION GNSS RTK SURVEY

SYSTEM OR EQUIVALENT

REQUEST FOR QUOTATION

General Clauses & Conditions

The equipment furnished under these specifications shall be the latest improved model in current production to commercial trade, and shall be of quality workmanship and material. The bidder represents that all equipment offered under these specifications shall be new. **USED, SHOPWORN, DEMONSTRATOR, PROTOTYPE, OR DISCONTINUED MODELS ARE NOT ACCEPTABLE.**

Bidders are requested to submit with their bid the latest print literature and detailed specifications of the equipment offered.

All parts not specifically mentioned which are necessary for the unit to be complete and ready for operation or which are normally furnished as standard equipment, shall be furnished by the successful bidder. All parts shall conform in strength, quality, and workmanship to the accepted standard of the industry.

Any variation from these specifications must be included on the Bid or on a separate attachment to the Bid. This sheet shall be labeled as such.

Specifications – Functional Requirements

Hardware

General Description

The high-precision GNSS measurement system must have the following items:

- Integrated GNSS receiver, antenna, wireless communication mechanism.
- 226 **universal** channel GNSS receiver that features GPS, GLONASS, GALILEO, BEIDOU, QZSS and SBAS tracking.
- Handheld computer operating on the Windows 10 operating system as a user-interface with functionality that includes RTK topo and staking, feature codes, static and kinematic survey, GNSS Status and navigation.
- Receiver kit hard-case, capable of housing two GNSS receivers, data collector and accessories.

Integrated Receiver

- GNSS receiver, antenna, integrated UHF radio, internal memory and *Bluetooth*[®] wireless technology must be integrated into a single unit that can be mounted on top of a standard tripod, adjustable range pole or fixed height pole.
- GNSS receiver shall have the option for integrated UHF radio with additional wireless options for LTE (4G) cell modules.
- GNSS receiver shall feature an integrated 9-axis Inertial Measurement Unit (IMU) that can compensate mis-leveled field measurements up to 15 degrees.
- GNSS receiver shall feature an L-Band correction service to provide continuous coverage during RTK base station or network outages.
- GNSS receiver shall support a baseline length of up to 50km, depending on atmospheric and multipath conditions.
- GNSS receiver shall support an initialize time from 1 second depending on the baseline length (D) and multipath conditions
- GNSS receiver shall support 1 Hz standard; 10, 20 Hz optional output intervals for CMR/RTCM
- GNSS receiver shall support an elevation of 0 to 90 degrees (independent of data logging)
- GNSS receiver shall support a solution mode of delay (synchronization) or extrapolation (not synchronized)
- GNSS receiver shall support the following 'real-time' accuracies:
 - RTK: H: 3mm + 0.8ppm; V 5mm + 1.0ppm
 - DGPS (RTCM): H <0.25m V <0.50m
- GNSS receiver shall support the following 'static' accuracies:
 - H: 3mm + 0.4ppm (x baseline length); V: 5mm + 0.5ppm (x baseline length)
- GNSS receiver shall support the following 'standalone' accuracies:
 - H: 1.2m V: 1.8m
- GNSS receiver shall support the following 'DGPS' (SBAS) accuracies:
 - H: <1.0m V: 1.5m
- GNSS receiver shall support the following start times to acquisition:
 - Cold Start <40sec
 - Warm Start <20sec
 - Reacquisition <1sec

- GNSS receiver shall feature a Time To First Fix (TTFF) of <20 sec after startup procedure is completed.
- GNSS receiver shall support the following frequencies on 226 universal channels:
 - GPS L1 C/A, L1C, L1P(Y), L2P(Y) L2C, L5
 - GLONASS L1 C/A, L1P, L2C/A, L2P, L3C
 - GALILEO E1, E5a, E5b, E5AltBOC
 - BEIDOU B1, B2
 - QZSS L1 C/A, L1C, L2C, L5
 - IRNSS: SPS-L5
 - SBAS (WAAS/EGNOS/MSAS)
 - L-band: 1525-1560 MHz
- GNSS receiver must use a shock and vibration mitigation technique to stabilize GNSS timing signals.
- The integrated receiver must include an integrated GNSS survey-grade antenna.
- GNSS receiver shall feature a 7 LED display that indicates battery life, remaining memory, satellite usage, occupation timer, indications when data is being recorded and notification of COM port and *Bluetooth* link activity.
- The occupation timer must provide the user with an indication as to when enough data has been collected for a particular length of baseline.
- GNSS receiver must have a power button that allows the user to turn the receiver on or off, reset the receiver to its factory defaults and erase memory.
- GNSS receiver should automatically open a file and begin recording data after being powered on.
- GNSS receiver shall be capable of output of raw GNSS measurements for post-processing to the internal memory card or an external device such as a PC.
- GNSS receiver shall effectively track satellites at a 10-degree elevation mask.
- GNSS receiver shall have one (1) power input port, one (1) RS-232 serial data port, one (1) USB port, one (1) external GNSS antenna port, one (1) external radio antenna port
- GNSS receiver shall feature a ODU-5 power connector
- GNSS receiver shall be capable of being operated from a PC using commercially available serial communication software.
- GNSS receiver shall incorporate *Bluetooth* technology for wireless communication with a data collector.
- GNSS receiver shall have the capability to turn off the internal *Bluetooth* enabled devices if not in use.
- GNSS receiver shall have the capability to rename the internal *Bluetooth* browsing name.
- GNSS receiver shall have the capability to operate without the use of any cable(s) when operating in any application including RTK, static and kinematic post-processing data collection.
- GNSS receiver shall be capable of being powered from a 9V to 27V (< 2.5Amps) DC power source.
- GNSS receiver shall accept multiple user-defined scheduled events to operate at specified times without requiring the user to manually power up the unit.
- GNSS receiver shall support a MINTER logging interface whereby static files can be started and stopped with the push of a button, without powering down the receiver.
- The MINTER interface can be customized via mobile or desktop utility software.
- The integrated GNSS receiver must weigh less than 1.061 kg (2.34 lb).
- The integrated GNSS receiver's size should not exceed (mm) 149(w) X 149(l) X 94.6(h).
- GNSS receiver must be waterproof, fully sealed and submersible.
- GNSS receiver must be resistant to 100% condensing humidity.
- GNSS receiver must be completely protected against dust and water ingress (IP67)
- GNSS receiver must be RoHS compliant.
- GNSS receiver must be composed of magnesium alloy housing.

- GNSS receiver must operate in a temperature range of -40° to +65° C using external power source.
- GNSS receiver must operate in a temperature range of -20° to +50° C using battery power (non-charging).
- GNSS receiver must feature a storage temperature of -40° to +85° C
- The internal batteries must provide power to the receiver during RTK and static operations.
- The internal batteries must be able to power the integrated GNSS receiver for at least 5 hours of operation.

Integrated UHF Radio

- Integrated UHF radio will operate at a frequency range of 425-470 MHz.
- Integrated UHF radio will support 6.25 KHz, 12.5 KHz and 25 KHz channel spacings.
- Integrated UHF radio will support transmitter carrier powers of 100, 200, 500 and 1000 mW, user selectable
- Integrated UHF radio will support a dynamic range of -110 to -10 dBm
- Integrated UHF radio will support a serial data rate of 115200bps
- Integrated UHF radio will support modulation techniques of GMSK and 4FSK.
- Integrated UHF radio will support a receiver sensitivity as follows:
 - GMSK: -115 dBm at 10-5 BER and 12.5 KHz spacing
 - 4FSK: -106 dBm at 10-5 BER and 12.5 KHz spacing
- Integrated UHF radio will support an antenna connector type BNC
- Integrated UHF radio will support a data interface baud rate of 115200 bps.
- Integrated UHF radio will support user selectable Forward Error Correction (on/off).
- Integrated UHF radio will support Scrambling (on/off).
- Integrated UHF radio will support a 'time division duplex' communication mode.
- Integrated UHF radio will operate as a transmitter, receiver or repeater.
- Integrated UHF radio will support the following protocols:
 - TPS
 - PDL
 - Trimble
 - Satel 3AS

The effective range of the internal UHF radios shall be up to 4.5 miles depending on conditions

Integrated Bluetooth

- Integrated unit will feature a range of up to 50 m (indoor); up to 1000 m (outdoor)
- Integrated unit will feature a Class 1 unit.
- Integrated unit will feature SPP and LongLink™ profiles
- Integrated unit will feature North America and Europe frequency country codes

RECEIVERS SHALL BE “MADE IN THE USA”

Controller and Software

General Description

- The controller software will run on a Windows 10 Professional platform that features either a portrait or landscape display and have the following:
- Intel Quad Core Pentium N4200 Processor
- 802.11 a/b/g/n 2.4 and 5 Ghz WIFI
- Internal GSM 4G LTE data modem
- 8GB LPDDR3 RAM, micro SD slot , user accessible
- 7" Sharp screen, Wide XGA at 1280 x 800 sunlight readable that is glove, small tip and water capable and has chemically-strengthened Dragontrail High Ion-Exchange coverglass for impact and scratch resistance
- Standard Sensors/Features: Ambient light sensor, compass, accelerometer, gyroscope and Trusted Platform Module v2.0
- Front 2 MP camera and rear 8 MP camera with LED illumination
- Integrated 72 channel GNSS tracking with uBlox NEO M8M with an accuracy of 2-4 meter with an update/output rate of 5 Hz
- Drop test MIL-STD-810G: drop 4 ft to concrete
- Vibration, humidity and tumble spec: 1,000 1.6 ft tumbles (2,000 drops)
- Operating temperatures: - 4 to 122 degrees F
- Dimensions 13.71 x 3.45 x 21.5 cm (L x W x H)
- Internal 19.3 Whr rechargeable battery provides hot swappable capability for the user removable rechargeable Li-ion 3.7VDC 10600 mAh 38.7 Whr battery with an effective run time of up to 20 hours. Charge time 4 to 6 hours with built-in battery intelligence
- Controller shall have a charging port, UBS 3.0 host full size port, 3.5 mm microphone/earphone jack and docking station sensors
- IP68 certified for water resistance and dust/humidity. ME-52 water immersion of up to 1 M
- The data collection software must be capable of remotely transferring real-time survey data from the field to the office via data collector.
- The software will contain a chat function whereby the field workers can instant message office personnel.
- The software will be capable of displaying and converting data in the following units:
 - Meters
 - International Feet
 - US Feet
 - International Feet and Inches
 - US Feet and Inches
 - International Chains
 - US Chains
- The software must be capable of uploading/downloading survey jobs and associated files to a cloud-based storage service.
- The software will be able to perform RTK surveys.
- The software will be able to perform static surveys.
- The software will be able to perform kinematic stop and go surveys.
- The software will contain a method to customize GNSS Instrument profiles.
- The software will feature a coordinate system manager:

- The software must convert and display data in various datums and coordinate systems. The software must accept user defined projection parameters for several projections including: Universal Transverse Mercator, Transverse Mercator, State Plane, Oblique Mercator, Lambert Conformal Conic 1, Lambert Conformal Conic 2, Local Grid, Stereographic and Double Stereographic.
- The software will feature a graphical method to navigate to a design point.
- The software will feature a map or planimetric view that provides visual confirmation of the survey.
- The software will feature blunder detection setting that notifies the user of an antenna height breach.
- The software will feature entity identification settings where the user can define a start identifier (point identification).
- The software will allow the user to create a custom feature code library.
- The software can be loaded with the following languages:
 - English
 - French
 - German
 - Russian
- The software will contain a GNSS Status module that contains:
 - Skyplot that shows positions of both GPS and GLONASS satellites.
 - Tracking
 - Receiver information
 - Current position
 - Current velocity

GIS GPS NMEA Survey

The software shall be able to use the internal NMEA GPS of the controller to collect and stake out data using a sub-meter differential correction in State Plane coordinates or Latitude, Longitude and Ellipsoid height or Elevation

RTK Survey

- The software will feature a product activation module where various functionality can be purchased (GPS+, GIS, Optical, Roads and Robotic).
- The software will feature a yearly subscription option that includes all drivers and functionality
- The software will feature a Calculate (COGO) module that contain the following functions:
 - Inverse
 - Point In Direction
 - Intersection
 - Calculator
 - Curves
 - Area
 - Corner Angle

- Offsets
 - Adjust
 - Traverse
 - Surface
 - Triangle
- The software will feature a RTK Topo and Stake settings dialog that contain the following tolerance settings:
 - Solution Type Filter (Fixed, Float, Single, etc.)
 - Measurement Averaging
 - Precision Tolerance
 - The software shall have a map view that will bring in a Bing Map in the background and also support Autocad .dxf and .dwg files as background maps. Shall also support a 3D view
 - The software shall allow the user to create customized quick code lists for quick and easy collection of repetitive points
 - The software will contain a method to customize GNSS Instrument profiles in the following configurations:
 - RTK Base and Rover
 - Network RTK
 - Real Time DGPS
 - Network DGPS
 - Post Processed Static
 - Post Processed Kinematic
 - Once a solution has been established the Survey module will support the following functionality:
 - Topo
 - Auto-Topo
 - X-Section
 - Find Station
 - Tape Dimension
 - Surface Topo
 - Once a solution has been established the Stake module will support the following functionality:
 - Stake Point
 - Stake Line (by End Point or Azimuth from Start Point)
 - Stake Offsets (Line, Intersection, Curve, 3pt Curve, Spiral)
 - Stake Surface (by Surface, Elevation or Code)
 - Stake Point In Direction (by Azimuth or Azimuth to Point)
 - Stake Point List
 - Stake Curve (by Radius, Chord Angle, Curve Angle)
 - Stake Real-Time Road (Road, H-Alignment, HV-Alignment)
 - Stake Road (Road, H-Alignment, HV-Alignment)
 - Stake Slope (Road, H-Alignment, HV-Alignment, Code, Linework)
 - Stake Linework (from Linework or Code)

- There shall be 4 information lines on the stake out screen (e.g. cut/fill, delta north, ect.) that may be easily changed by the user
- Shall be able to stake in a normal, data, overhead or map view
- The Stake Module will be able to produce a Stake Report which will contain relative staking info for staked points, lines, surfaces, roads, slopes.
- The software will be able to upload/download data from a cloud based data service
- The software will be able to import/export to the following common data formats:
 - ASCII (PNEZD or Custom)
 - CSV (NEZ, ENZ)
 - Topcon 3DMC TP3 (Points, Lines, Roads)
 - Topcon 3DMC PT3 (Points)
 - Topcon 3DMC LN3 (Linework)
 - Topcon 3DMC TN3 (Surface)
 - Topcon 3DMC GC3 (Localization)
 - Topcon XML (Codes)
 - AutoCAD DXF (Points, Lines, Roads, Surfaces)
 - AutoCAD 2000 DWG (Points, Lines, Roads, Surfaces)
 - ESRI SHP (Points, Lines, Areas)
 - TDS CR5
 - Carlson RW5
 - Carlson FCL (Codes)
 - LandXML (Points, Lines, Roads, Surfaces)
 - MOSS Genio MGN (Points)
 - MX Genio TXT (Lines)
 - Microstation DGN
 - SBG Geo (Points and Lines)
 - SBG LIN (Roads)
 - SBG PXY (Points and Lines)
 - Sokkia SDR (Points)

Static Survey

- The controller software will be able to perform static surveys with the functions.
 - The software will be able to assign a Point ID to the observation file
 - The software will store the point to the software's database and the plan view.
 - The software will be able to assign an antenna height to the observation file.
 - The software will be able to assign an antenna model to the observation file.
 - The software will be able to assign an antenna method (slant, vertical, true vertical) to the observation file.
 - The software will be able to store a feature code chosen from a pre-defined library.
 - The software will be able to set the receiver recording interval.
 - The software will be able to set the receiver's elevation mask.
 - The software will be able to store note records at any time during the observation.
- The observation site data will be automatically stored into the raw GNSS file, eliminating the need to download the controller file into the post-processing software.

- The software will feature an epoch counter that informs the user how many measurements have completed for the observation
- The software will feature a counter that informs the user how much real time has elapsed during the observation.
- The software will store the point to the software's database and the plan view.
- The software shall automatically back up the job information as a separate file per the user defined schedule to assure that data is secure in case of a malfunction

Kinematic Stop and Go Survey

- The controller software will be able to perform kinematic 'stop and go' surveys with the following functions.
 - The software will be able to assign a Point ID inside the observation file
 - The software will store the point to the software's database and the plan view.
 - The software will be able to assign an antenna height to the measurement.
 - The software will be able to assign an antenna model to the measurement.
 - The software will be able to assign an antenna method (slant, vertical, true vertical) to the measurement.
 - The software will be able to store a feature code chosen from a pre-defined library.
 - The software will be able to set the receiver recording interval.
 - The software will be able to set the receiver's elevation mask.
 - The software will be able to store note records at any time during the measurement.
- The measurement site data will be automatically stored into the raw GPS file, eliminating the need to download the controller file into the post-processing software.
- The software will feature an epoch counter that informs the user how many measurements have completed for the observation
- The software will feature a counter that informs the user how much real time has elapsed during the measurement.

Warranty

The GNSS receivers shall be warranted against defects in material and workmanship for a period of no less than twelve (12) months and the tablet no less than twenty four (24) months. Accessories and cables shall be warranted against defects in material and workmanship for a period no less than 90 days.

NOTE: Service after delivery is of utmost importance to the County and we shall reserve the right to reject ANY bid regardless of price if we deem that the level of service does not meet the following:

NOTE: Equipment being bid MUST be compatible with the County's existing Topcon equipment and Magnet Field data collector. The successful bidder MUST be an authorized dealer for the equipment they are quoting to assure that all after sale support, repair and firmware updates may be performed as promised and must have a sales representative who lives in and covers the state of Alabama for timely follow up post sale.

Successful bidder **MUST** have a full-service factory-authorized repair facility on-site located in the Southeastern USA with at least one factory trained GNSS AND tablet service technician for ALL in-house repairs and shall have the ability to provide a loaner for warranty repairs within 24 hours if necessary and must certify to this ability before being awarded the bid.

Successful bidder must have at least **TWO** full-time technical support persons and the manufacturer shall provide free technical support through the dealer

After the warranty period has expired successful bidder shall provide a rental for a one-time flat fee equal to one week's rental that shall cover ANY duration of time for the repair to be completed. Successful bidder shall deliver the following:

Qty. 2 SOKKIA GRX3 or equivalent GNSS receivers per the above specifications with 2 chargers, 12V cable, tribrach with adaptor and extender, 3 UHF rubber antennas, shoulder straps and one hard carrying case

Qty. 2 TILT Option Authorization File (OAF) for Base and Rover

Qty. 1 each tripod, 2M Composite collapsible rover rod, Seco bipod and Hybrid 360 Prism adaptor to mount GPS receiver

Qty. 1 SOKKIA SCH6000 Windows 10 tablet or equivalent per the above specifications with charger, pointed and "wet" stylus, hand strap and soft carrying case with Magnet Field GNSS, ROBOTICS, GIS, Optical, Hybrid and Roads Modules installed or equivalent per the above specifications and a Ram pole bracket

Activation of Hybrid module on County's existing FC5000 with Magnet Field

TWO days of on-site install and training with 2 days of on-site follow up if needed. The County reserves the right to reject ANY AND ALL bids *REGARDLESS* of price that do not satisfactorily meet the technical and/or after sale service specifications. Consideration will be given to equipment that is made in the USA.

TOPCON GRX3 MULTI-CONSTELLATION GNSS RTK SURVEY

SYSTEM OR EQUIVALENT

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- GNSS receiver shall feature a ODU-5 power connector
- GNSS receiver shall be capable of being operated from a PC using commercially available serial communication software.
- GNSS receiver shall incorporate *Bluetooth* technology for wireless communication with a data collector.
- GNSS receiver shall have the capability to turn off the internal *Bluetooth* enabled devices if not in use.
- GNSS receiver shall have the capability to rename the internal *Bluetooth* browsing name.
- GNSS receiver shall have the capability to operate without the use of any cable(s) when operating in any application including RTK, static and kinematic post-processing data collection.
- GNSS receiver shall be capable of being powered from a 9V to 27V (< 2.5Amps) DC power source.
- GNSS receiver shall accept multiple user-defined scheduled events to operate at specified times without requiring the user to manually power up the unit.
- GNSS receiver shall support a MINTER logging interface whereby static files can be started and stopped with the push of a button, without powering down the receiver.
- The MINTER interface can be customized via mobile or desktop utility software.
- The integrated GNSS receiver must weigh less than 1.061 kg (2.34 lb).
- The integrated GNSS receiver's size should not exceed (mm) 149(w) X 149(l) X 94.6(h).
- GNSS receiver must be waterproof, fully sealed and submersible.
- GNSS receiver must be resistant to 100% condensing humidity.
- GNSS receiver must be completely protected against dust and water ingress (IP67)
- GNSS receiver must be RoHS compliant.
- GNSS receiver must be composed of magnesium alloy housing.

- GNSS receiver must operate in a temperature range of -40° to +65° C using external power source.
- GNSS receiver must operate in a temperature range of -20° to +50° C using battery power (non-charging).
- GNSS receiver must feature a storage temperature of -40° to +85° C
- The internal batteries must provide power to the receiver during RTK and static operations.
- The internal batteries must be able to power the integrated GNSS receiver for at least 5 hours of operation.

Integrated UHF Radio

- Integrated UHF radio will operate at a frequency range of 425-470 MHz.
- Integrated UHF radio will support 6.25 KHz, 12.5 KHz and 25 KHz channel spacings.
- Integrated UHF radio will support transmitter carrier powers of 100, 200, 500 and 1000 mW, user selectable
- Integrated UHF radio will support a dynamic range of -110 to -10 dBm
- Integrated UHF radio will support a serial data rate of 115200bps
- Integrated UHF radio will support modulation techniques of GMSK and 4FSK.
- Integrated UHF radio will support a receiver sensitivity as follows:
 - GMSK: -115 dBm at 10-5 BER and 12.5 KHz spacing
 - 4FSK: -106 dBm at 10-5 BER and 12.5 KHz spacing
- Integrated UHF radio will support an antenna connector type BNC
- Integrated UHF radio will support a data interface baud rate of 115200 bps.
- Integrated UHF radio will support user selectable Forward Error Correction (on/off).
- Integrated UHF radio will support Scrambling (on/off).
- Integrated UHF radio will support a 'time division duplex' communication mode.
- Integrated UHF radio will operate as a transmitter, receiver or repeater.
- Integrated UHF radio will support the following protocols:
 - TPS
 - PDL
 - Trimble
 - Satel 3AS

The effective range of the internal UHF radios shall be up to 4.5 miles depending on conditions

Integrated Bluetooth

- Integrated unit will feature a range of up to 50 m (indoor); up to 1000 m (outdoor)
- Integrated unit will feature a Class 1 unit.
- Integrated unit will feature SPP and LongLink™ profiles
- Integrated unit will feature North America and Europe frequency country codes

RECEIVER SHALL BE "MADE IN THE USA"

Controller and Software

General Description

- The controller software will run on a Windows 10 Professional platform that features either a portrait or landscape display and have the following:
 - Intel Quad Core Pentium N4200 Processor
- 802.11 a/b/g/n 2.4 and 5 Ghz WIFI
- Internal GSM 4G LTE data modem
- 8GB LPDDR3 RAM, micro SD slot , user accessible
- 7" Sharp screen, Wide XGA at 1280 x 800 sunlight readable that is glove, small tip and water capable and has chemically-strengthened Dragontrail High Ion-Exchange coverglass for impact and scratch resistance
- Standard Sensors/Features: Ambient light sensor, compass, accelerometer, gyroscope and Trusted Platform Module v2.0
- Front 2 MP camera and rear 8 MP camera with LED illumination
- Integrated 72 channel GNSS tracking with uBlox NEO M8M with an accuracy of 2-4 meter with an update/output rate of 5 Hz
- Drop test MIL-STD-810G: drop 4 ft to concrete
- Vibration, humidity and tumble spec: 1,000 1.6 ft tumbles (2,000 drops)
- Operating temperatures: - 4 to 122 degrees F
- Dimensions 13.71 x 3.45 x 21.5 cm (L x W x H)
- Internal 19.3 Whr rechargeable battery provides hot swappable capability for the user removable rechargeable Li-ion 3.7VDC 10600 mAh 38.7 Whr battery with an effective run time of up to 20 hours. Charge time 4 to 6 hours with built-in battery intelligence
- Controller shall have a charging port, UBS 3.0 host full size port, 3.5 mm microphone/earphone jack and docking station sensors
- IP68 certified for water resistance and dust/humidity. ME-52 water immersion of up to 1 M
- The data collection software must be capable of remotely transferring real-time survey data from the field to the office via data collector.
- The software will contain a chat function whereby the field workers can instant message office personnel.
- The software will be capable of displaying and converting data in the following units:
 - Meters
 - International Feet
 - US Feet
 - International Feet and Inches
 - US Feet and Inches
 - International Chains
 - US Chains
- The software must be capable of uploading/downloading survey jobs and associated files to a cloud-based storage service.
- The software will be able to perform RTK surveys.
- The software will be able to perform static surveys.
- The software will be able to perform kinematic stop and go surveys.
- The software will contain a method to customize GNSS Instrument profiles.
- The software will feature a coordinate system manager:

- The software must convert and display data in various datums and coordinate systems. The software must accept user defined projection parameters for several projections including: Universal Transverse Mercator, Transverse Mercator, State Plane, Oblique Mercator, Lambert Conformal Conic 1, Lambert Conformal Conic 2, Local Grid, Stereographic and Double Stereographic.
- The software will feature a graphical method to navigate to a design point.
- The software will feature a map or planimetric view that provides visual confirmation of the survey.
- The software will feature blunder detection setting that notifies the user of an antenna height breach.
- The software will feature entity identification settings where the user can define a start identifier (point identification).
- The software will allow the user to create a custom feature code library.

- The software can be loaded with the following languages:
 - English
 - French
 - German
 - Russian

- The software shall include a ROADS module that allows the entry of Horizontal and Vertical alignments for Road and Cross Section stakeout with offsets and full curves support

- The software will contain a GNSS Status module that contains:
 - Sky plot that shows positions of both GPS and GLONASS satellites.
 - Tracking
 - Receiver information
 - Current position
 - Current velocity

GIS GPS NMEA Survey

The software shall be able to use the internal NMEA GPS of the controller to collect and stake out data using a sub-meter differential correction in State Plane coordinates or Latitude, Longitude and Ellipsoid height or Elevation

RTK Survey

- The software will feature a product activation module where various functionality can be purchased (GPS+, GIS, Optical, Roads and Robotic).
- The software will feature a yearly subscription option that includes all drivers and functionality
- The software will feature a Calculate (COGO) module that contain the following functions:
 - Inverse
 - Point In Direction
 - Intersection

- Calculator
 - Curves
 - Area
 - Corner Angle
 - Offsets
 - Adjust
 - Traverse
 - Surface
 - Triangle
- The software will feature a RTK Topo and Stake settings dialog that contain the following tolerance settings:
 - Solution Type Filter (Fixed, Float, Single, etc.)
 - Measurement Averaging
 - Precision Tolerance
 - The software shall have a map view that will bring in a Bing Map in the background and also support Autocad .dxf and .dwg files as background maps. Shall also support a 3D view
 - The software shall allow the user to create customized quick code lists for quick and easy collection of repetitive points
 - The software will contain a method to customize GNSS Instrument profiles in the following configurations:
 - RTK Base and Rover
 - Network RTK
 - Real Time DGPS
 - Network DGPS
 - Post Processed Static
 - Post Processed Kinematic
 - Once a solution has been established the Survey module will support the following functionality:
 - Topo
 - Auto-Topo
 - X-Section
 - Find Station
 - Tape Dimension
 - Surface Topo
 - Once a solution has been established the Stake module will support the following functionality:
 - Stake Point
 - Stake Line (by End Point or Azimuth from Start Point)
 - Stake Offsets (Line, Intersection, Curve, 3pt Curve, Spiral)
 - Stake Surface (by Surface, Elevation or Code)
 - Stake Point In Direction (by Azimuth or Azimuth to Point)
 - Stake Point List
 - Stake Curve (by Radius, Chord Angle, Curve Angle)
 - Stake Real-Time Road (Road, H-Alignment, HV-Alignment)
 - Stake Road (Road, H-Alignment, HV-Alignment)
 - Stake Slope (Road, H-Alignment, HV-Alignment, Code, Linework)

- Stake Linework (from Linework or Code)
- There shall be 4 information lines on the stake out screen (e.g. cut/fill, delta north, ect.) that may be easily changed by the user
- Shall be able to stake in a normal, data, overhead or map view
- The Stake Module will be able to produce a Stake Report which will contain relative staking info for staked points, lines, surfaces, roads, slopes.
- The software will be able to upload/download data from a cloud based data service
- The software will be able to import/export to the following common data formats:
 - ASCII (PNEZD or Custom)
 - CSV (NEZ, ENZ)
 - Topcon 3DMC TP3 (Points, Lines, Roads)
 - Topcon 3DMC PT3 (Points)
 - Topcon 3DMC LN3 (Linework)
 - Topcon 3DMC TN3 (Surface)
 - Topcon 3DMC GC3 (Localization)
 - Topcon XML (Codes)
 - AutoCAD DXF (Points, Lines, Roads, Surfaces)
 - AutoCAD 2000 DWG (Points, Lines, Roads, Surfaces)
 - ESRI SHP (Points, Lines, Areas)
 - TDS CR5
 - Carlson RW5
 - Carlson FCL (Codes)
 - LandXML (Points, Lines, Roads, Surfaces)
 - MOSS Genio MGN (Points)
 - MX Genio TXT (Lines)
 - Microstation DGN
 - SBG Geo (Points and Lines)
 - SBG LIN (Roads)
 - SBG PXY (Points and Lines)
 - Sokkia SDR (Points)

Static Survey

- The controller software will be able to perform static surveys with the functions.
 - The software will be able to assign a Point ID to the observation file
 - The software will store the point to the software's database and the plan view.
 - The software will be able to assign an antenna height to the observation file.
 - The software will be able to assign an antenna model to the observation file.
 - The software will be able to assign an antenna method (slant, vertical, true vertical) to the observation file.
 - The software will be able to store a feature code chosen from a pre-defined library.
 - The software will be able to set the receiver recording interval.
 - The software will be able to set the receiver's elevation mask.
 - The software will be able to store note records at any time during the observation.

- The observation site data will be automatically stored into the raw GNSS file, eliminating the need to download the controller file into the post-processing software.
- The software will feature an epoch counter that informs the user how many measurements have completed for the observation
- The software will feature a counter that informs the user how much real time has elapsed during the observation.
- The software will store the point to the software's database and the plan view.
- The software shall automatically back up the job information as a separate file per the user defined schedule to assure that data is secure in case of a malfunction

Kinematic Stop and Go Survey

- The controller software will be able to perform kinematic 'stop and go' surveys with the following functions.
 - The software will be able to assign a Point ID inside the observation file
 - The software will store the point to the software's database and the plan view.
 - The software will be able to assign an antenna height to the measurement.
 - The software will be able to assign an antenna model to the measurement.
 - The software will be able to assign an antenna method (slant, vertical, true vertical) to the measurement.
 - The software will be able to store a feature code chosen from a pre-defined library.
 - The software will be able to set the receiver recording interval.
 - The software will be able to set the receiver's elevation mask.
 - The software will be able to store note records at any time during the measurement.
- The measurement site data will be automatically stored into the raw GPS file, eliminating the need to download the controller file into the post-processing software.
- The software will feature an epoch counter that informs the user how many measurements have completed for the observation
- The software will feature a counter that informs the user how much real time has elapsed during the measurement.

Warranty

The GNSS receivers shall be warranted against defects in material and workmanship for a period of no less than twelve (12) months and the tablet no less than twenty four (24) months. Accessories and cables shall be warranted against defects in material and workmanship for a period no less than 90 days.

NOTE: Equipment being bid MUST be compatible with the County's existing Topcon equipment and Magnet Field data collector. The successful bidder MUST be an authorized dealer for the equipment they are quoting to assure that all after sale support, repair and firmware updates may be performed as promised and must have a sales representative who lives in and covers the state of Alabama for timely follow up post sale.

Successful bidder MUST have a full-service factory-authorized repair facility on-site located in the Southeastern USA with at least one factory trained GNSS AND tablet service technician for ALL in-house repairs and shall have the ability to provide a loaner for warranty repairs within 24 hours if necessary and must certify to this ability before being awarded the bid.

Successful bidder must have at least TWO full-time technical support persons and the manufacturer shall provide free technical support through the dealer

After the warranty period has expired successful bidder shall provide a rental for a one-time flat fee equal to one week's rental that shall cover ANY duration of time for the repair to be completed.

Successful bidder shall deliver the following:

Qty. 2 HIPER VR or equivalent GNSS receivers per the above specifications with 2 chargers, 12V cable, tribrach with adaptor and extender, 3 UHF rubber antennas, shoulder straps and one hard carrying case

Qty. 2 TILT Option Authorization File (OAF) for Base and Rover

Qty. 1 each tripod, 2M Composite collapsible rover rod, Seco bipod and Hybrid 360 Prism adaptor to mount GPS receiver

Qty. 1 FC6000 Windows 10 tablet or equivalent per the above specifications with charger, pointed and "wet" stylus, hand strap and soft carrying case with Magnet Field GNSS, ROBOTICS, GIS, Optical, Hybrid and Roads Modules installed or equivalent per the above specifications and a Ram pole bracket

Activation of Hybrid module on County's existing FC5000 with Magnet Field

TWO days of on-site install and training with 2 days of on-site follow up if needed.

Successful bidder shall give a total trade-in value as is for the following equipment that the county currently owns:

Topcon GR-3 GGD Digital UHF Base and Rover S/N 442-0880 and 442-0879 with standard accessories

Spectra Precision Ranger 3L Survey Pro MAX S/N RS26C43461

TDS Ranger 300X Survey Pro GNSS S/N SS63C20022

TDS Ranger 300X Survey Pro GNSS and Leveling S/N SS55C14568

Topcon GPT3003LW total station S/N 4H0587

Mobile County reserves the right to reject ANY AND ALL bids REGARDLESS of price that do not satisfactorily meet the technical and/or after sale service specifications. Consideration will be given to equipment that is made in the USA.